

COURS

de

Physique industrielle

*Quelques applications
de la chaleur aux usages industriels,*

par

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Première Partie.

*Combustion et Combustibles.
Foyers, Chaudières à vapeur.*

ATLAS.

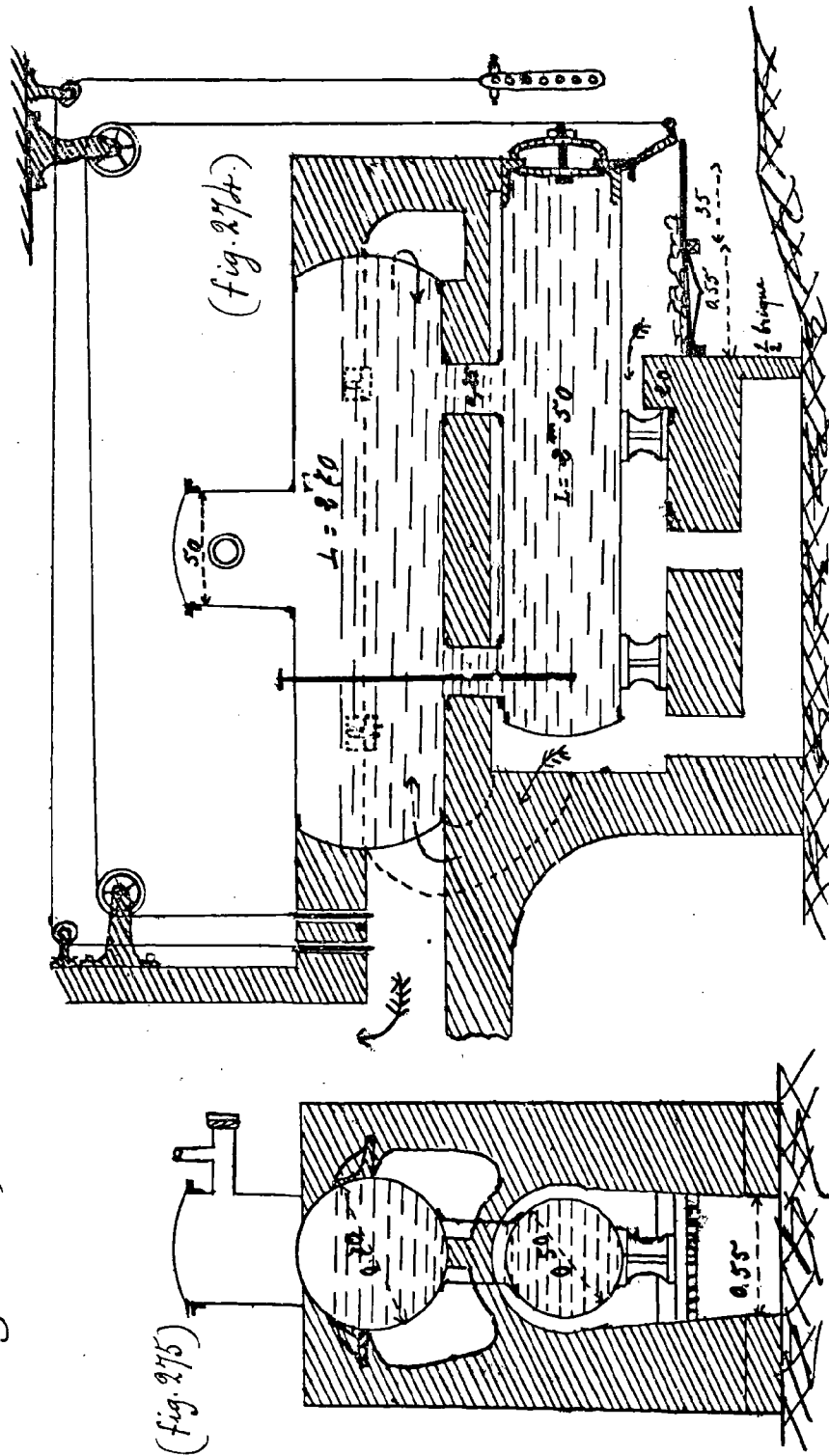
MONS

E. DACQUIN, Éditeur.

Rue de la Peine Perdue. 12-14.

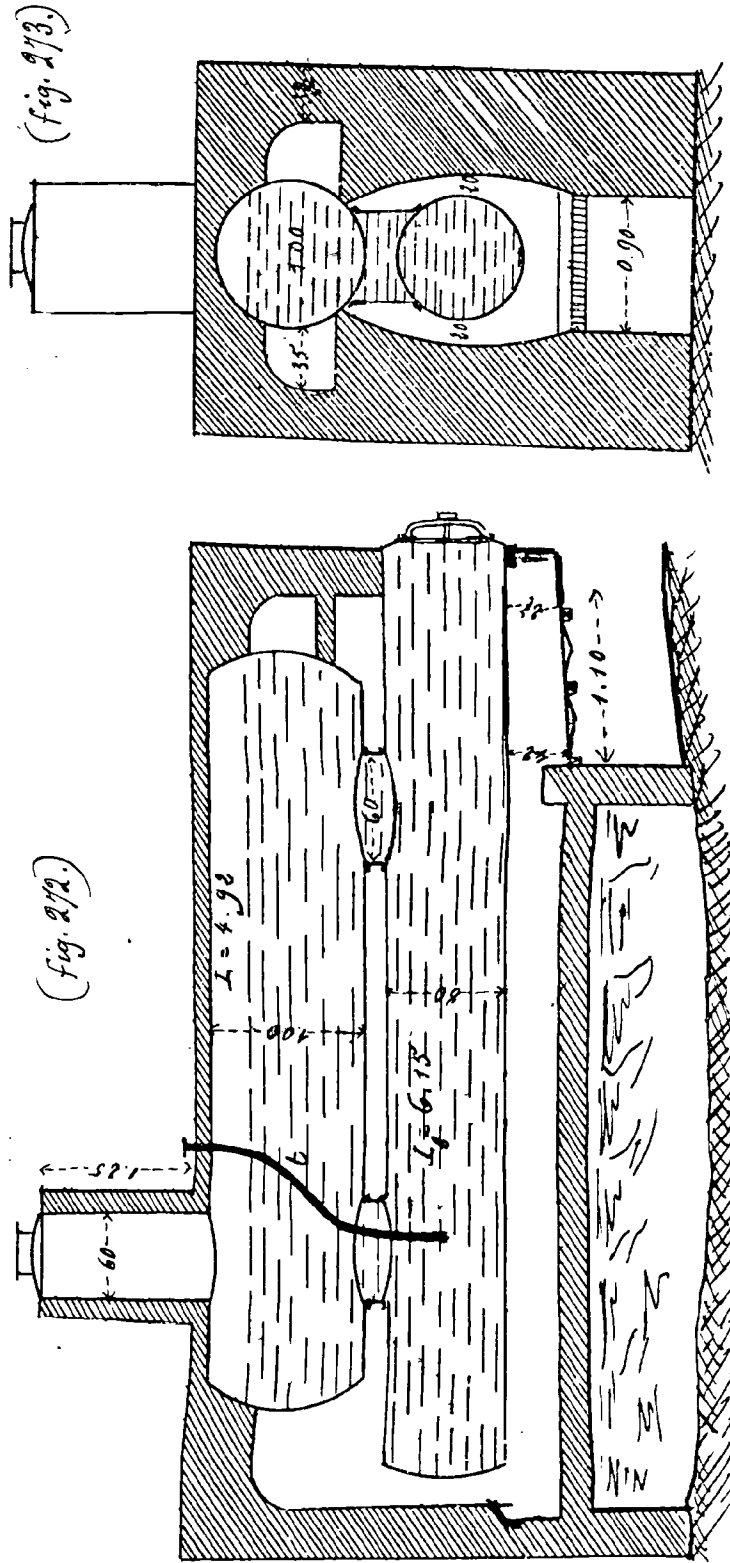
1886.

Petite chaudière à un bouilleur, avec appareil Revet à double registre, pour commander le tirage.



Dimensions principales: $S = 7.80 \text{ m}^2$ $G = 0.30 \text{ m}^3$ $N = 5.2 \text{ ch}$
 $\frac{S}{d} = 26$ $F = 1,260 \text{ m}^3$ $V = 0.440 \text{ m}^3$
 $V = 1,700 \text{ m}^3$ $\frac{V}{S} = 220 \text{ litres}$

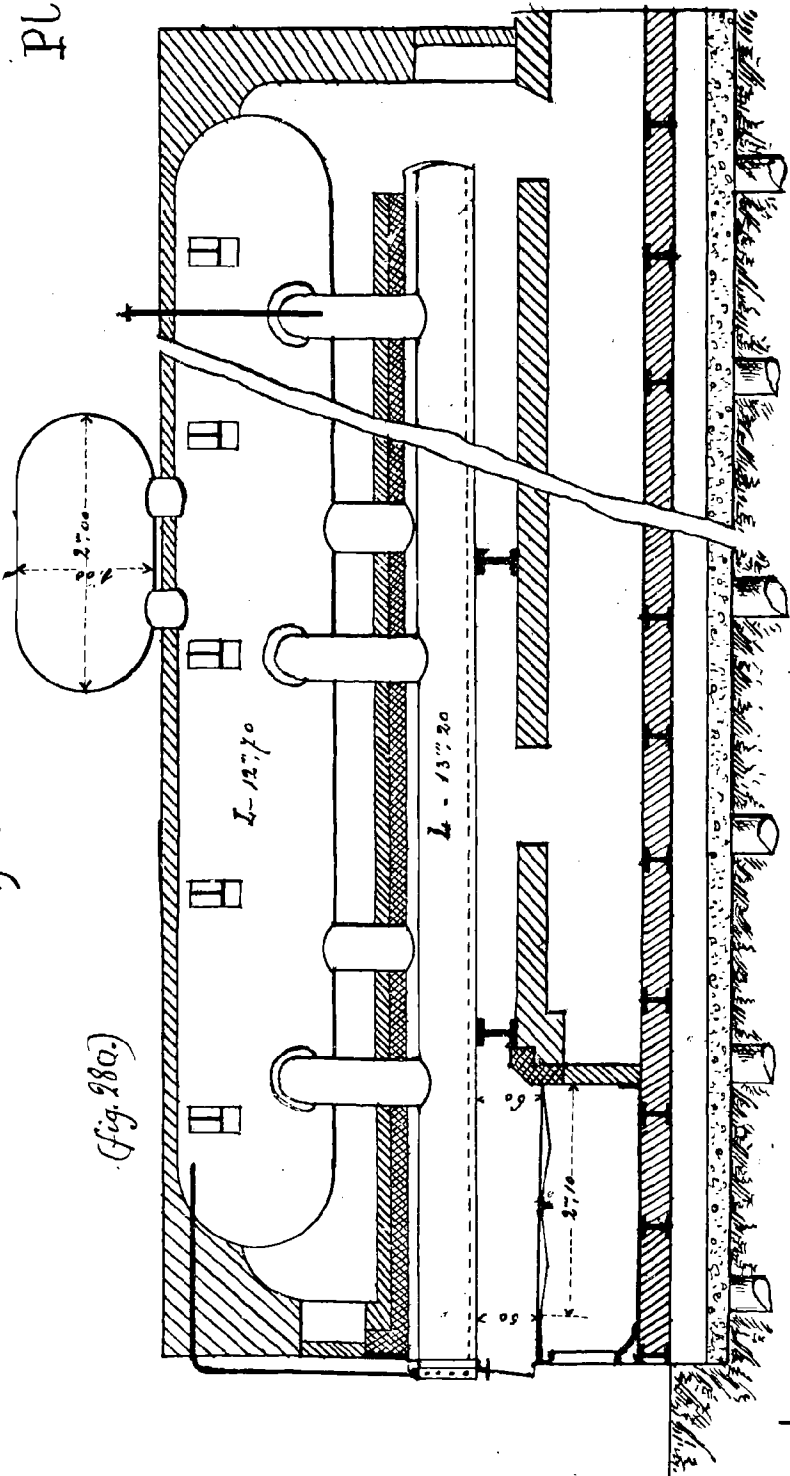
Chaudière à un bouilleur.



Dimensions principales. $S = 23 \text{ m}^2$ $\alpha = 0.990 \text{ m}^2$ $N = 15 \text{ à } 16 \text{ ch}$
 $\frac{S}{\alpha} = 23$ $E = 6.122 \text{ m}^3$ $V = 1.360 \text{ m}^3$
 $V = 7.480 \text{ m}^3$ $\frac{V}{S} = 325 \text{ litres.}$

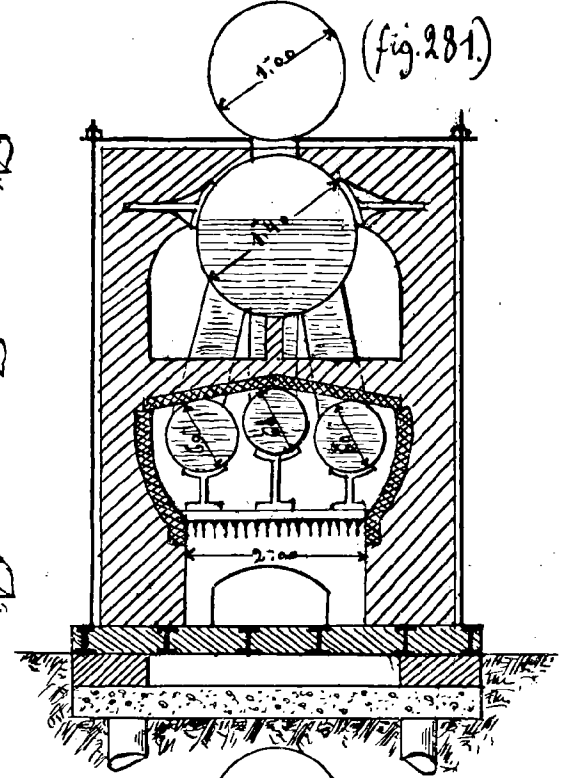
Chaudière à 3 boudins.

P. II.



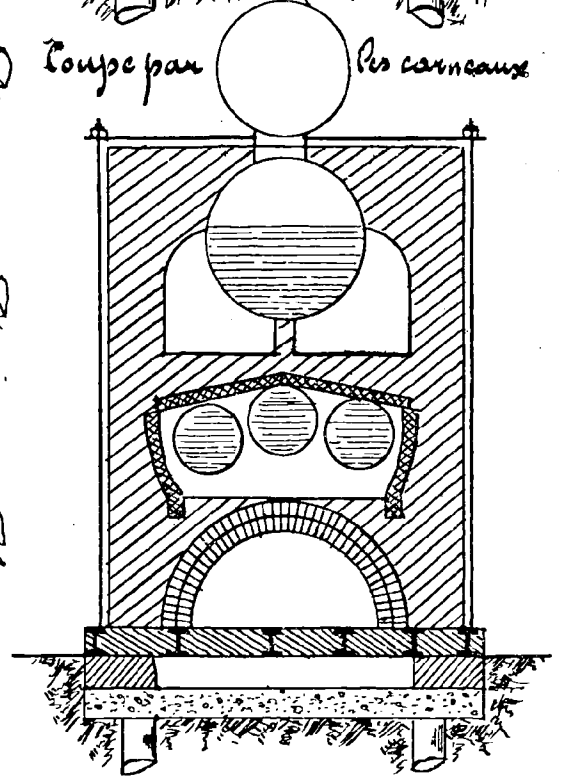
(fig. 280)

Coupe par le foyer.



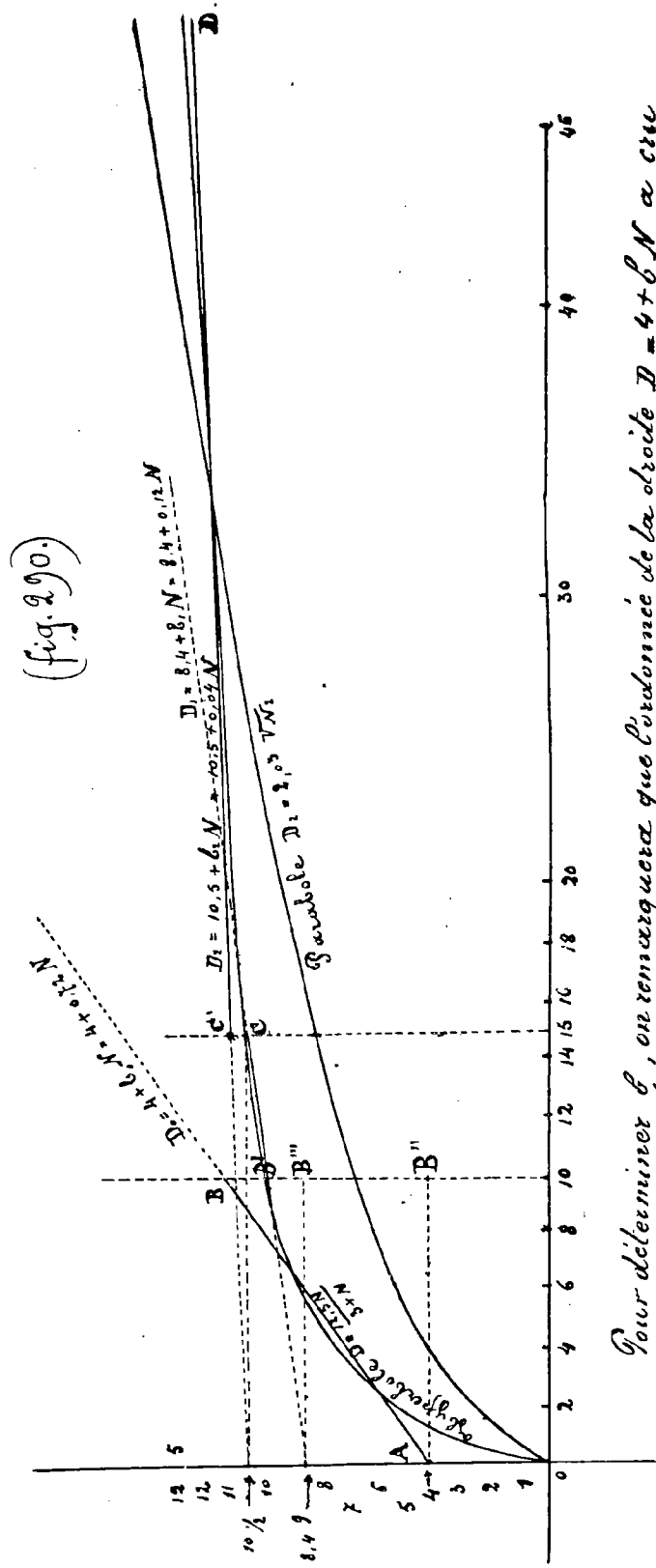
(fig. 281)

Coupe par les carneaux



(fig. 282)

Construction et figuration des lieux géométriques des diamètres pour diverses forces.



(fig. 290.)

Pour déterminer ℓ , on remarquera que l'ordonnée de la droite $D_0 = 4 + 6N$ a lieu

de $B''B$ quand l'abscisse a lieu de 0,10, c'est à dire pour 10 chevaux

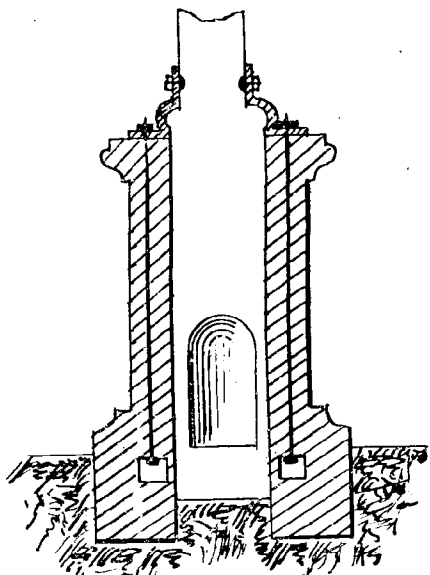
Pour par cheval, elle croit de $\frac{B''B}{10}$, or $B''B$ mesuré au compas égale

$$\frac{36}{5} = 7,2 \text{ . Donc } \ell = \frac{36}{5 \times 10} = 0,72$$

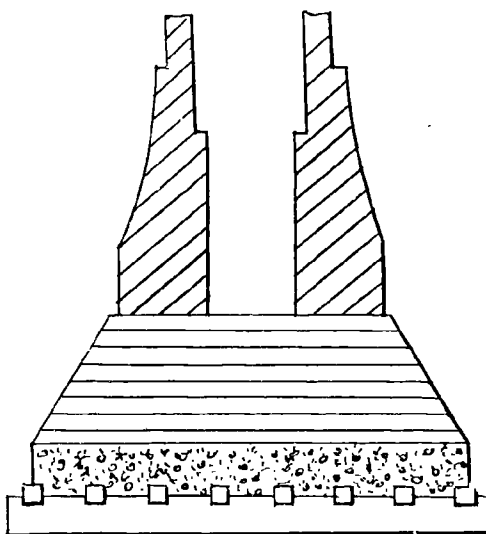
Pour déterminer ℓ , on a : $B'''B' = 9,6 - 8,4 = 1,2$. Donc $\ell_1 = \frac{1,2}{10} = 0,12$

Pour déterminer ℓ , on a : $OC' = 11 - 10,4 = 0,6$. Donc $\ell = \frac{0,6}{15} = 0,04$

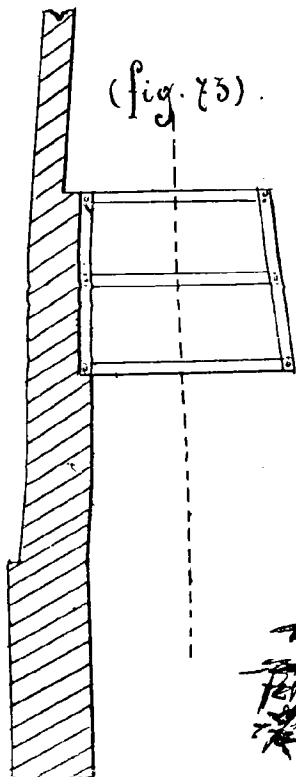
(fig. 70).



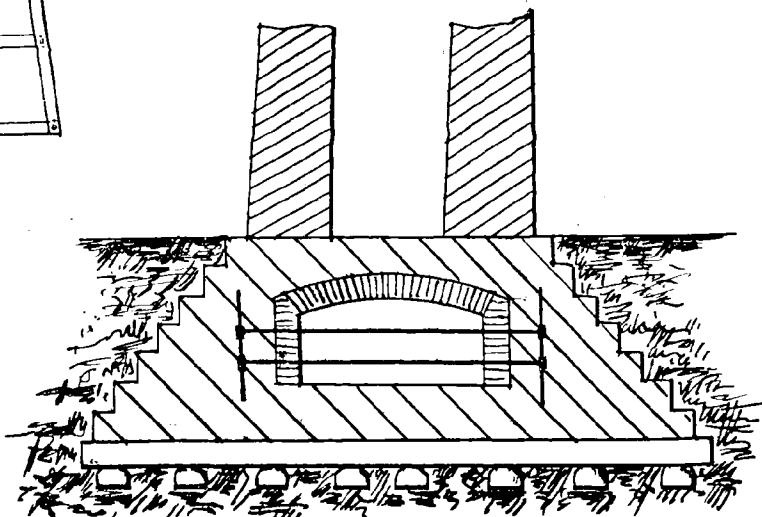
(fig. 74.)



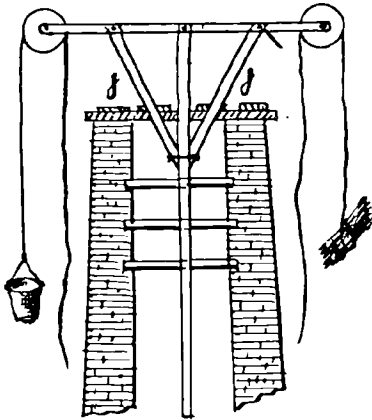
(fig. 73).



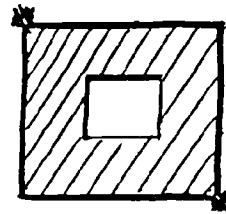
(fig. 75).



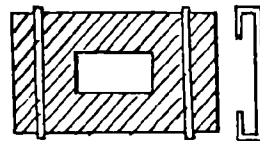
(fig 76.)



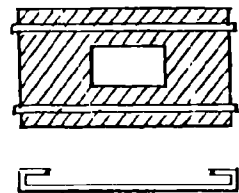
(fig 79.)



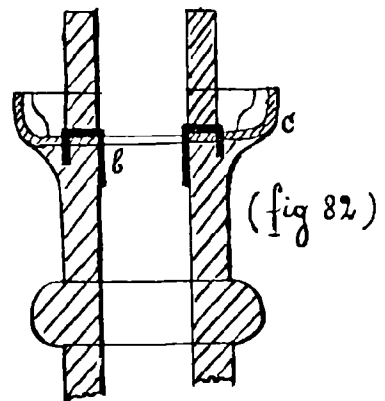
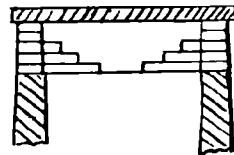
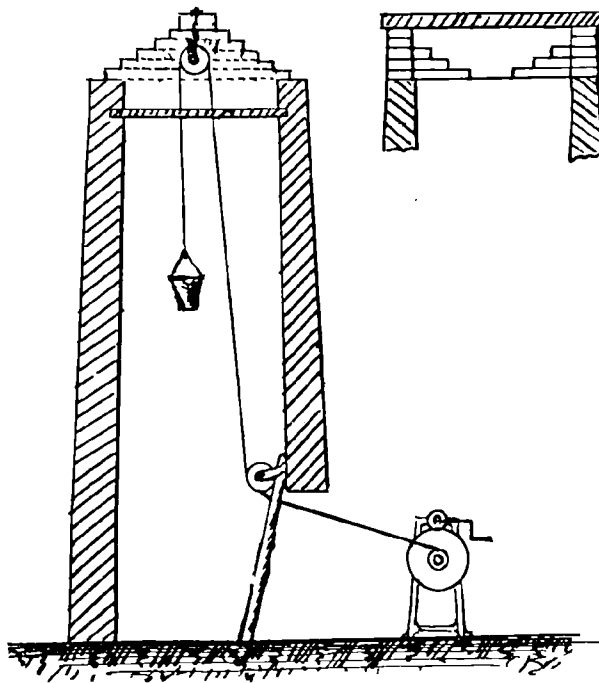
(fig 80.)



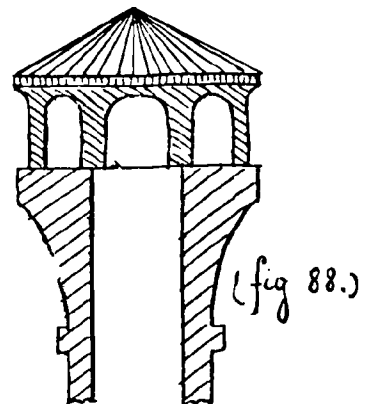
(fig 81.)



(fig 77.) et (fig 78.)

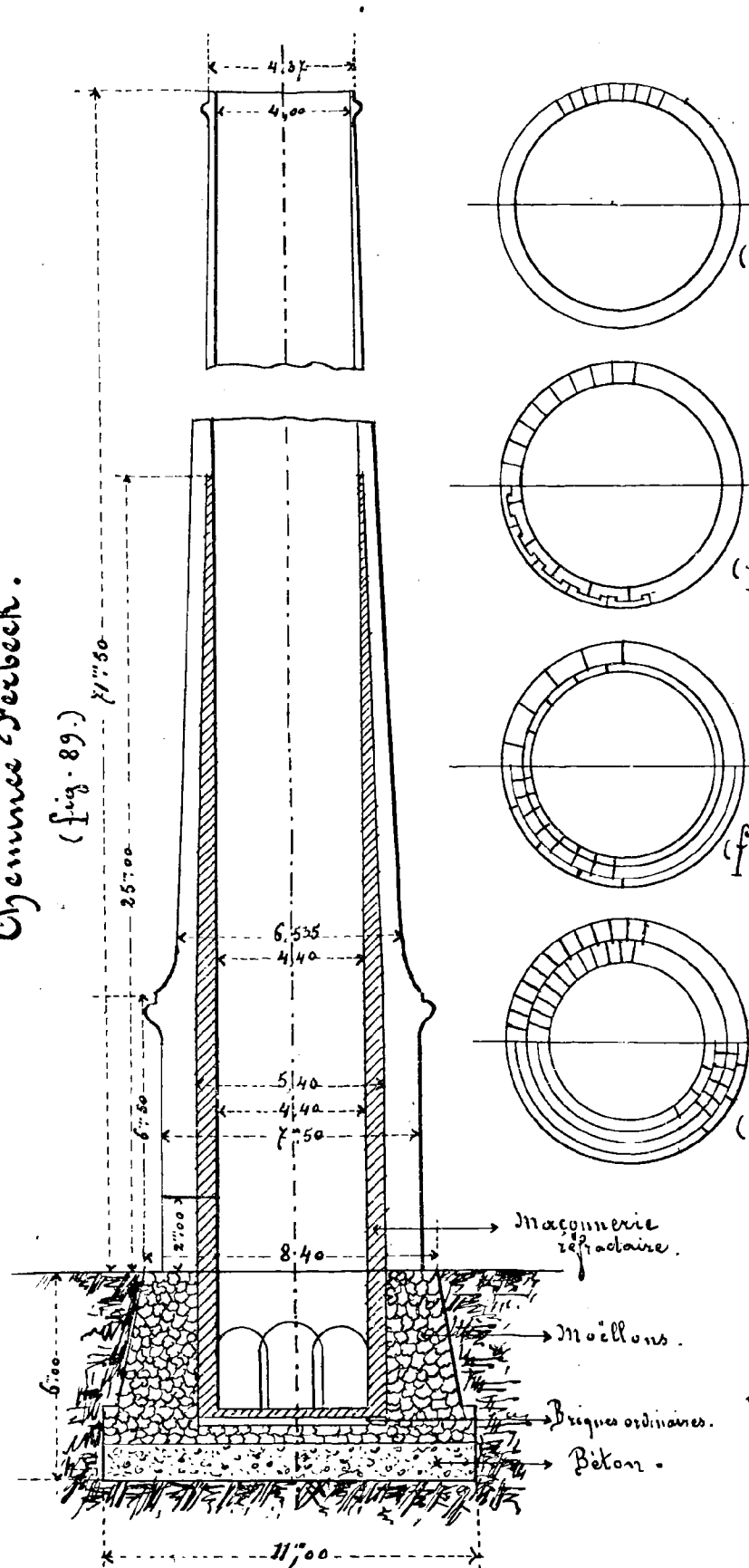


(fig 82.)



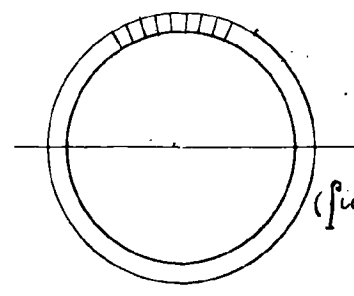
(fig 83.)

Cheminée Serbeck.



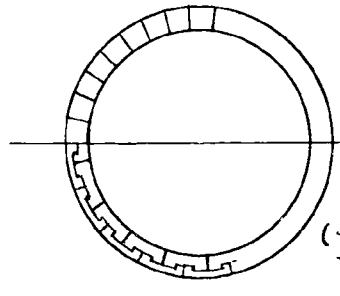
(fig. 89.)

Appareil pour épaisseur de 155 à 235 m.m.



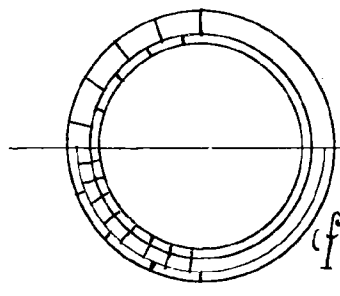
(fig. 93.)

Appareil pour épaisseur de 260 à 350 m.m.



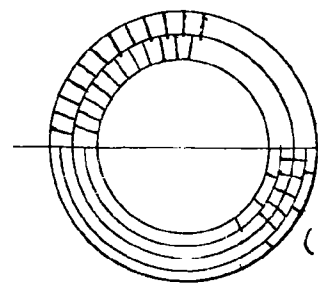
(fig. 92.)

Appareil pour épaisseur de 365 à 525 m.m.



(fig. 91.)

Appareil pour épaisseur de 550 à 700 m.m.



(fig. 90.)

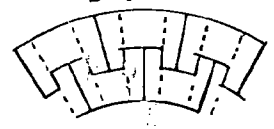
Maçonnerie réfractaire.

Moellons.

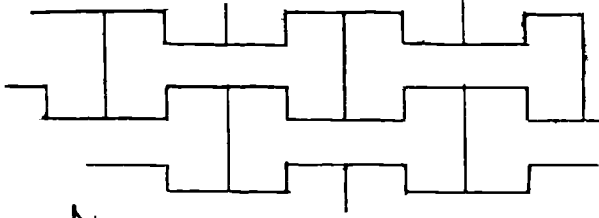
Briques ordinaires.

Béton.

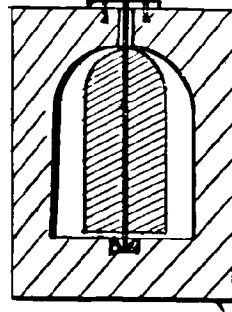
(fig. 94.)



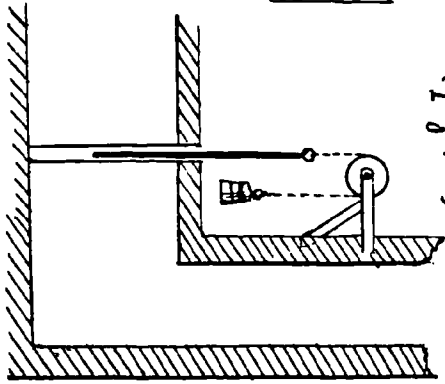
(fig. 95).



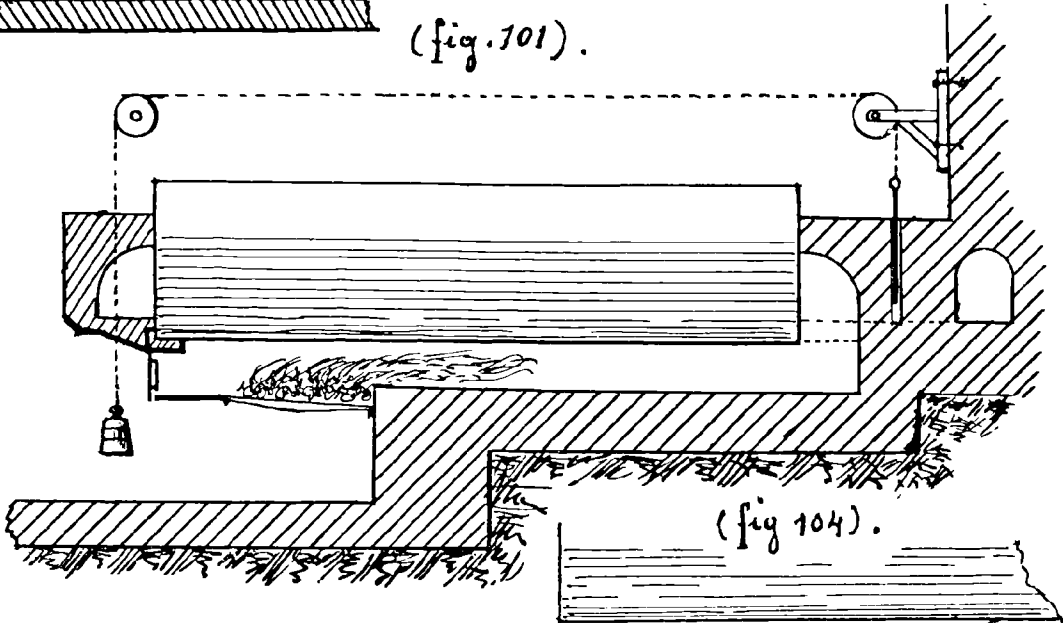
(fig. 99)



(fig. 100)

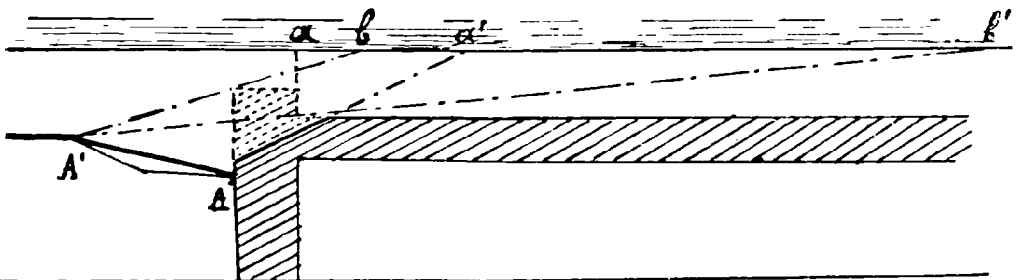


(fig. 101).

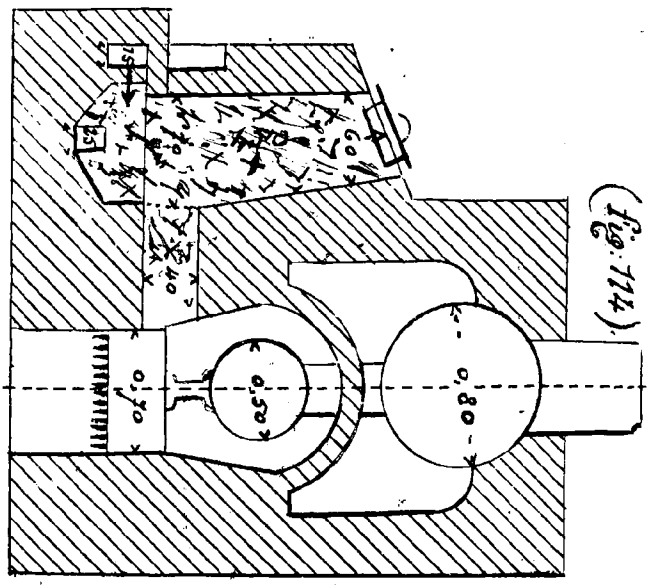


(fig. 104).

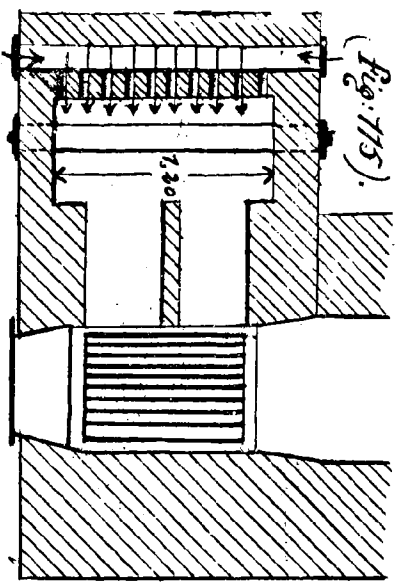
(fig. 105)



Boyer à scieure de Bois simple

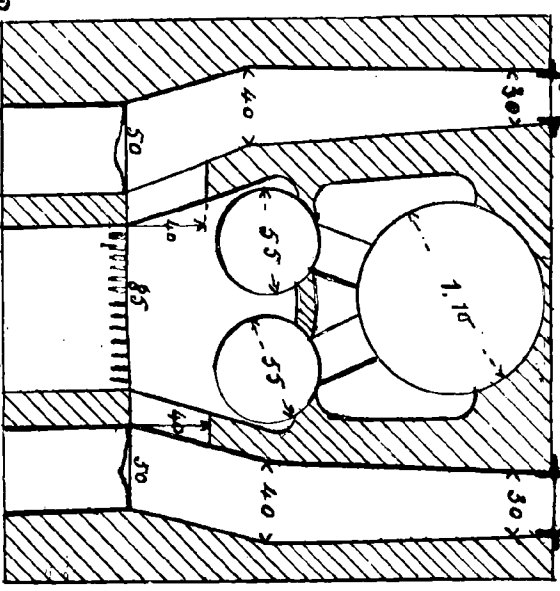


(Fig. 114)



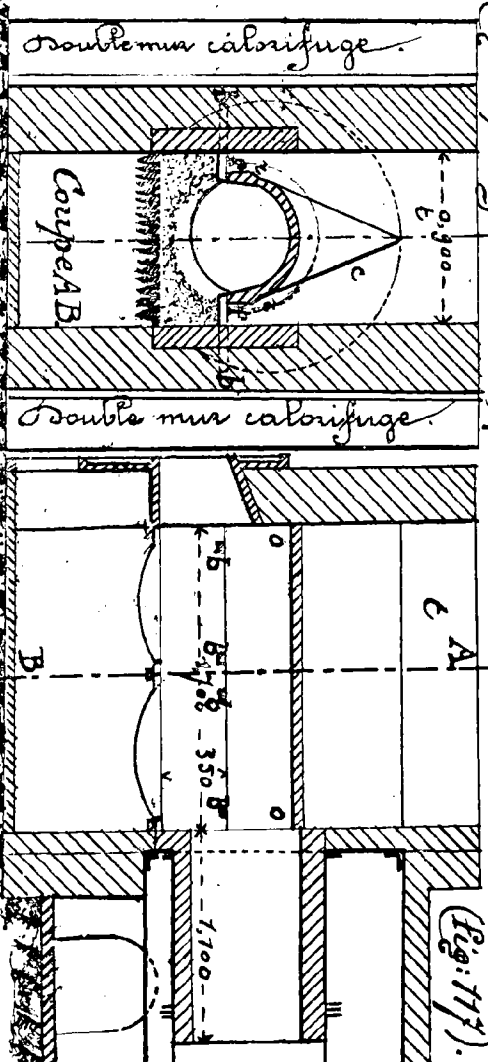
(Fig. 115)

Boyer à Bûcher Pa lannée.



(Fig. 116)

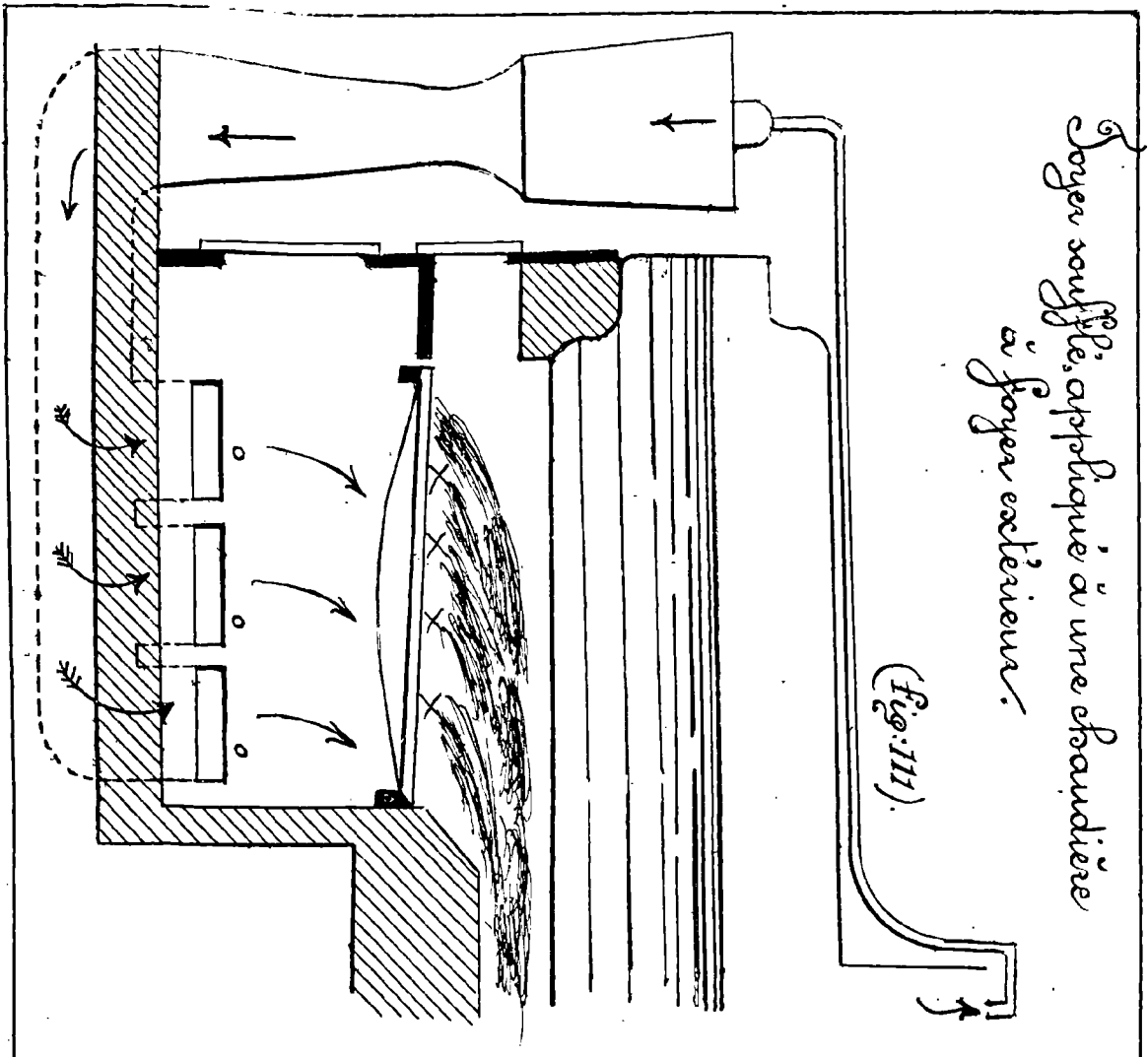
Boyer Brevet, pour lannée.



(Fig. 117)

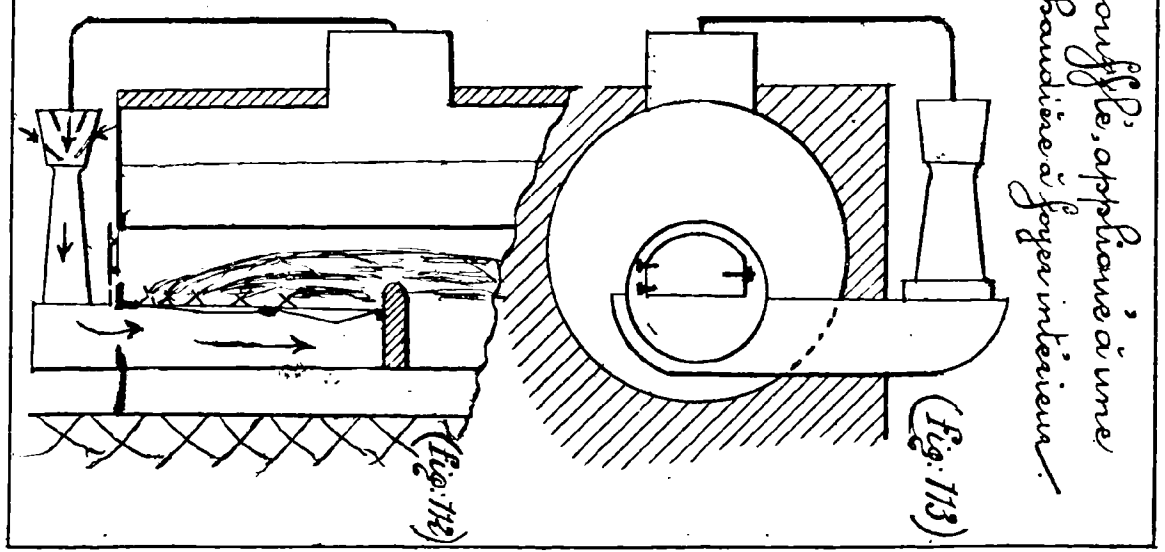
Foyer soufflé, appliqué à une chaudière
à foyer extérieur.

(Fig. 111).



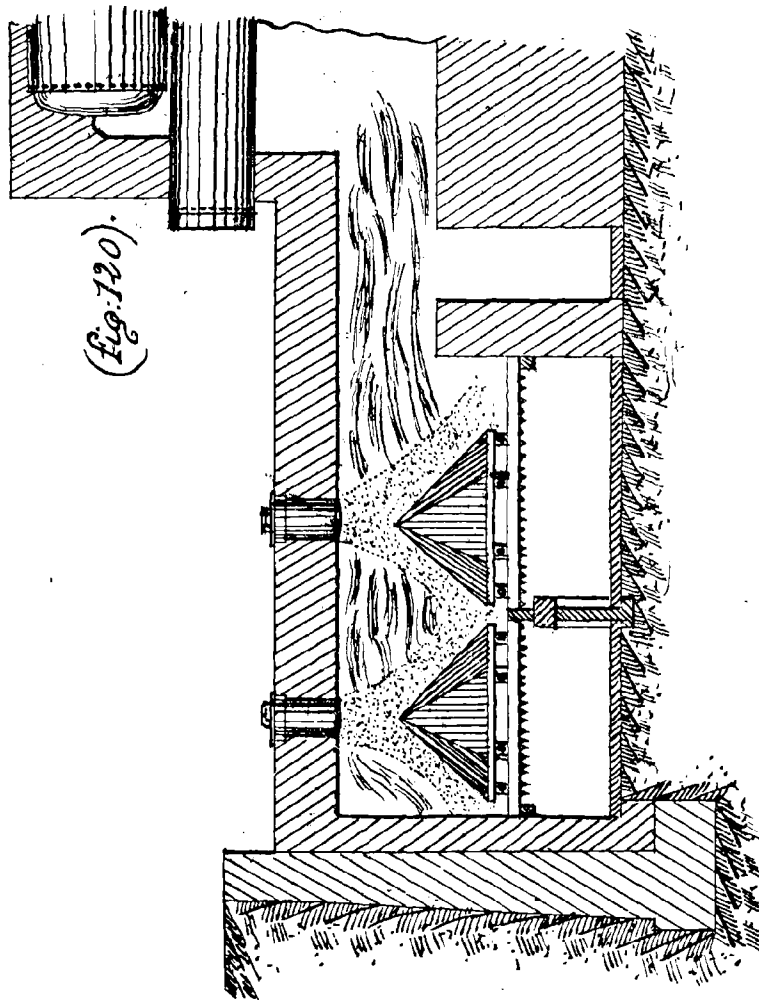
Foyer soufflé, appliqué à une
chaudière à foyer intérieur.

(Fig. 113).



(Fig. 112)

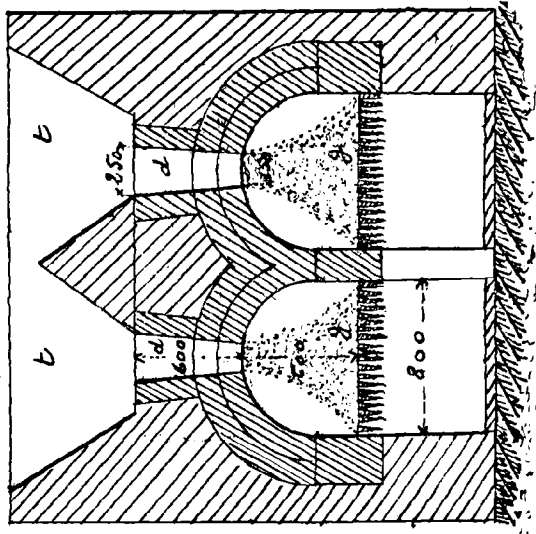
Foyer à grille pavillon, de Sodiphot.



(Fig. 120).

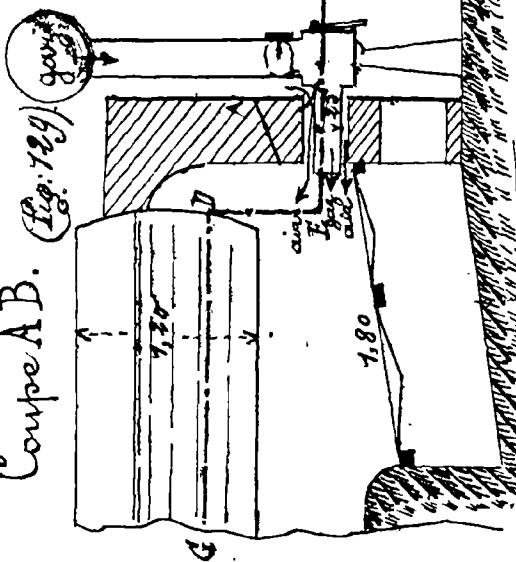
Foyer pour déchets de bois humides.

(Fig. 119).

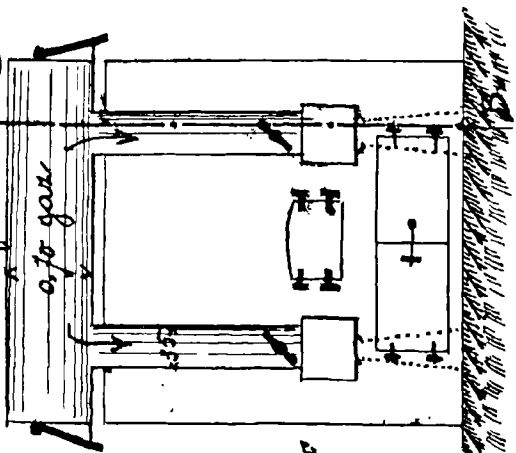


Fourneau à gaz simple

Coupe A.B. (Fig. 129)

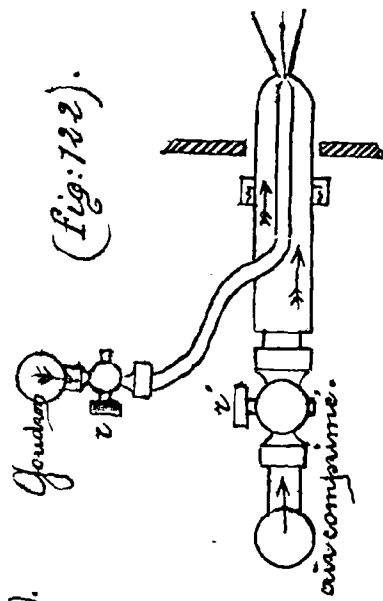


Coupe A (Fig. 130)

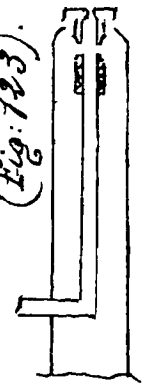


(Fig. 130)

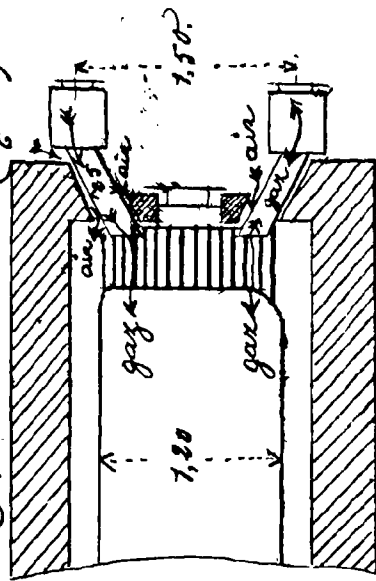
(Fig. 122)



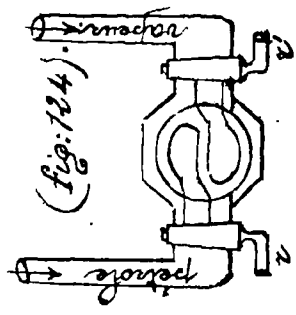
(Fig. 123)



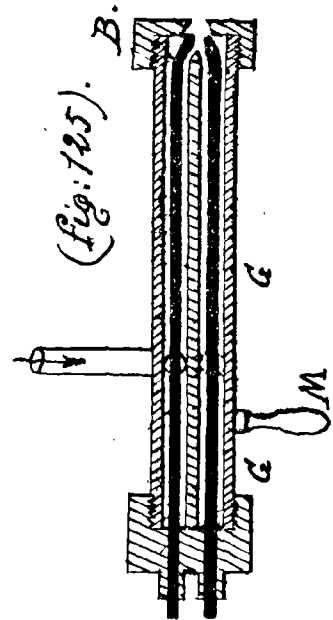
Coupe biséc CDEE. (Fig. 131)



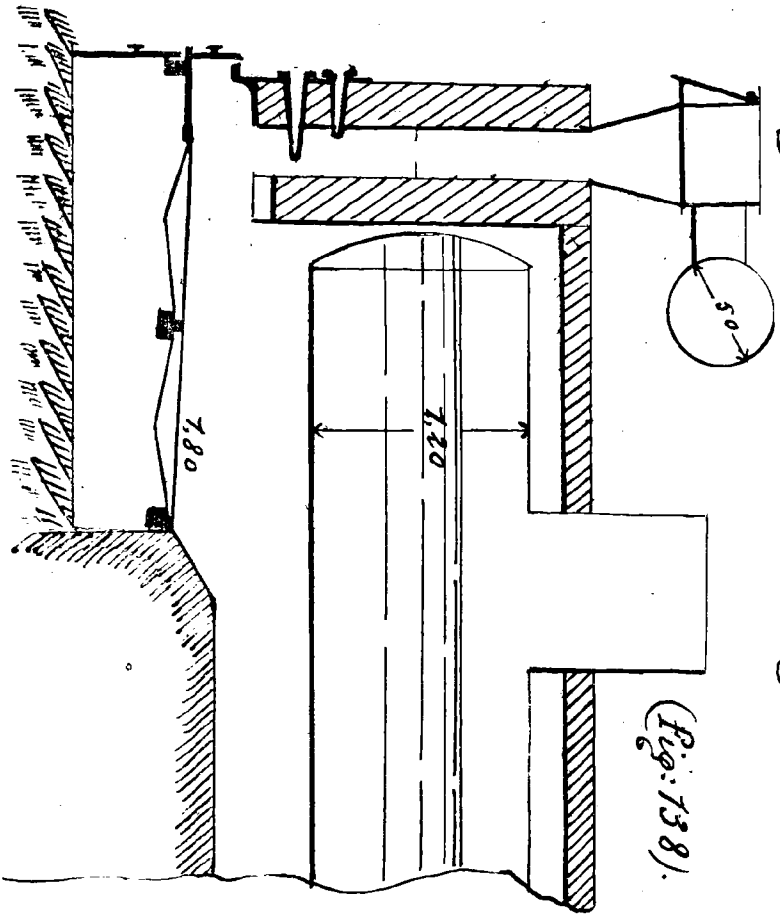
(Fig. 124)



(Fig. 125)

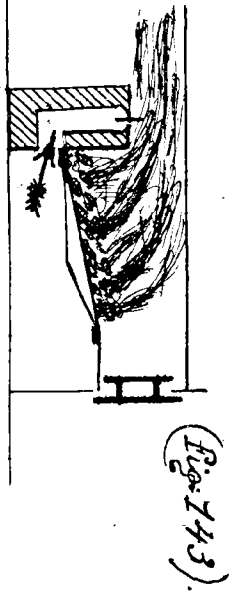


Le foyer à gaz mûrte, avec tuyères à air.



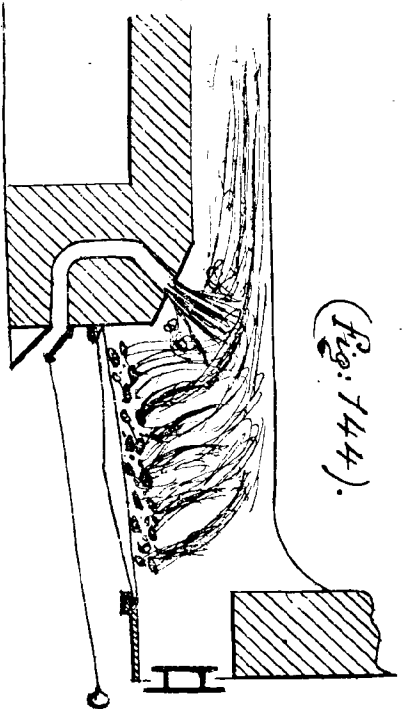
(Fig. 138).

Quel fendu de Parkes.



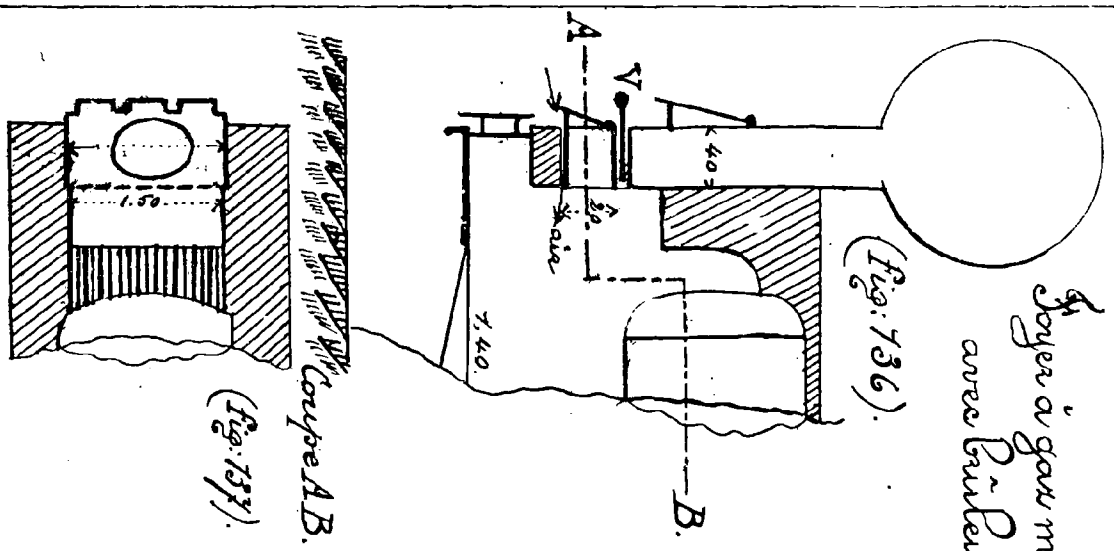
(Fig. 143).

Le foyer Daret.

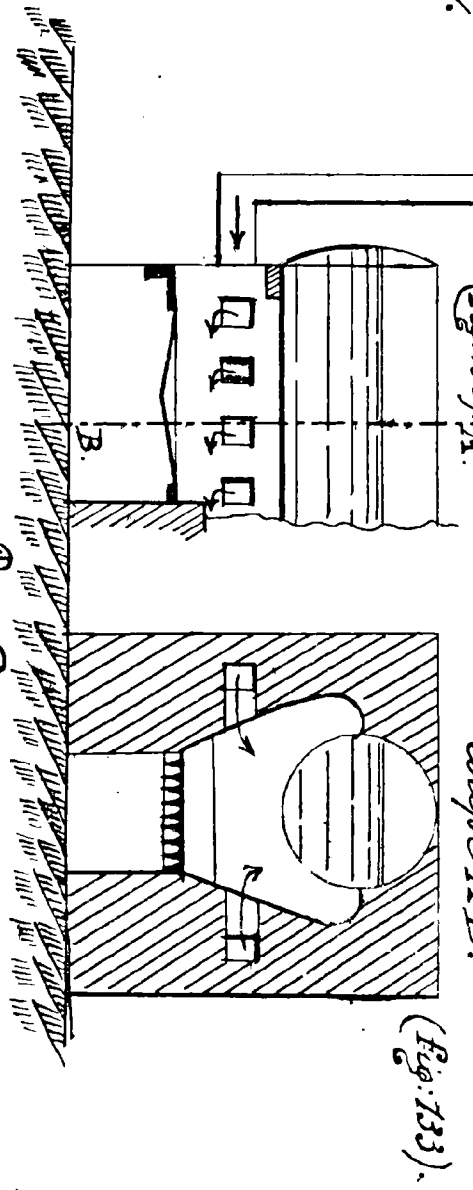


(Fig. 144).

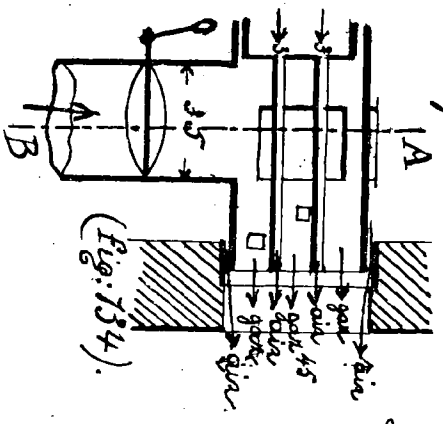
Foyer à gaz mixte,
avec brûleurs.



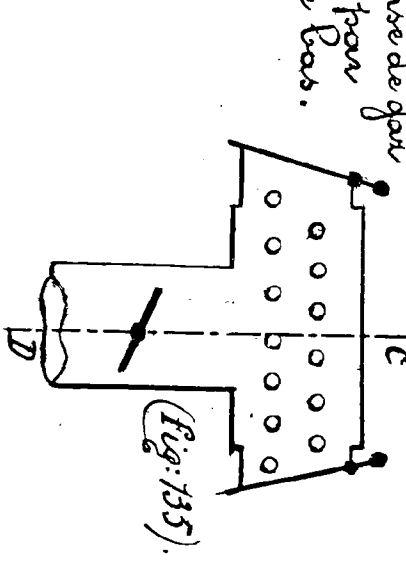
Foyer à gaz mixte.
Disposition à gueulards en maçonnerie.
Coupe A B.



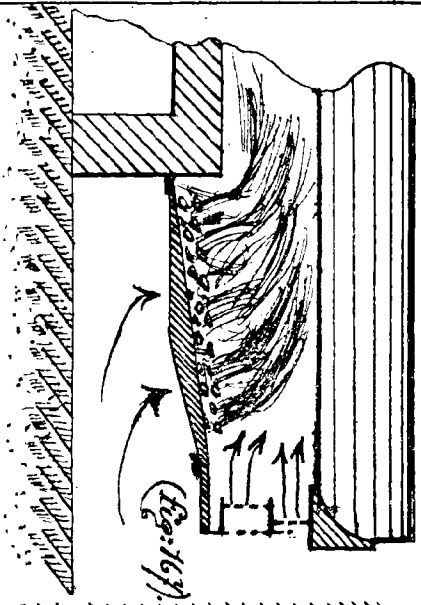
Fûteaux à gaz, Coupe C D.



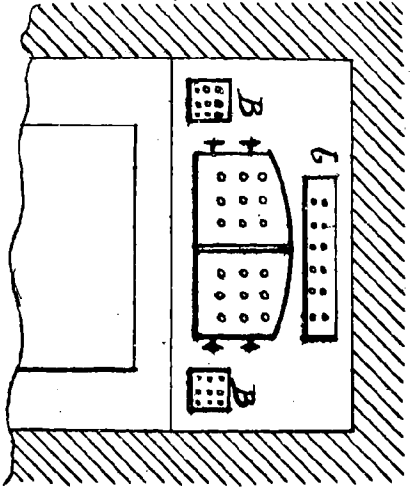
Grise de gaz
pour
brûleurs à gaz, Coupe A B.



Sortes et Boites fumivraies

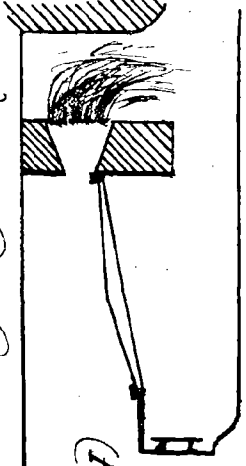


(Fig. 167)



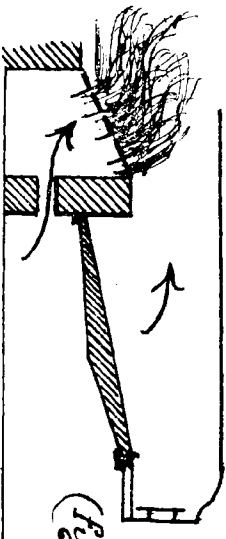
(Fig. 168)

Foyer de M. Williams modifié.



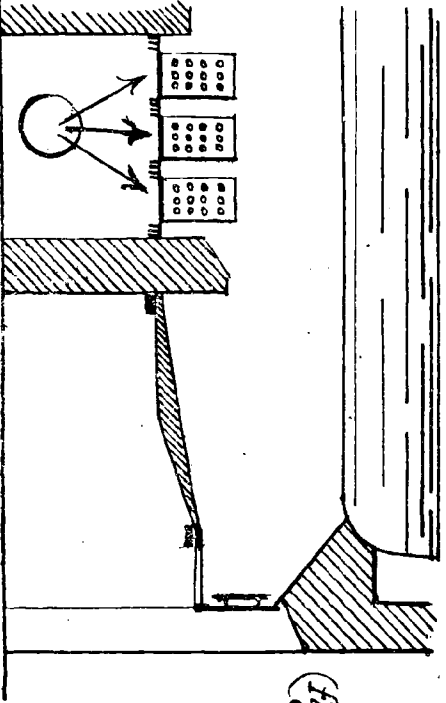
(Fig. 152)

Foyer de M. Williams.
1^{re} disposition.



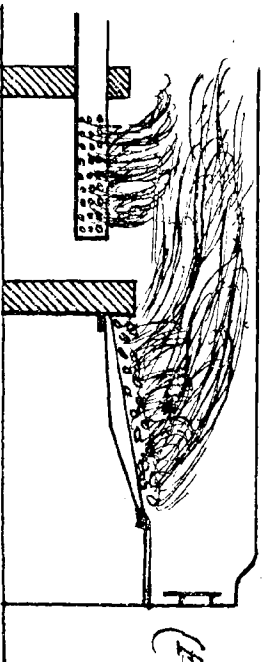
(Fig. 151)

Foyer de Ungand.



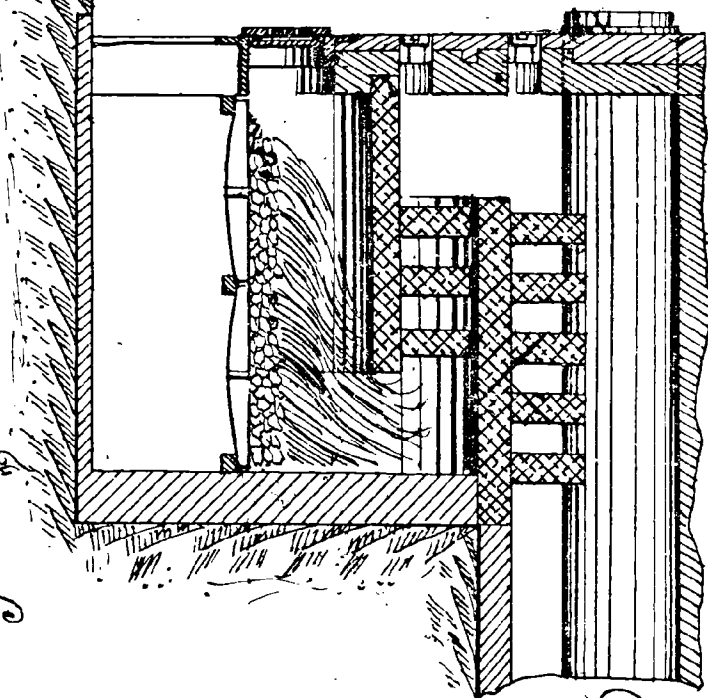
(Fig. 149)

Modification du foyer de Ungand.



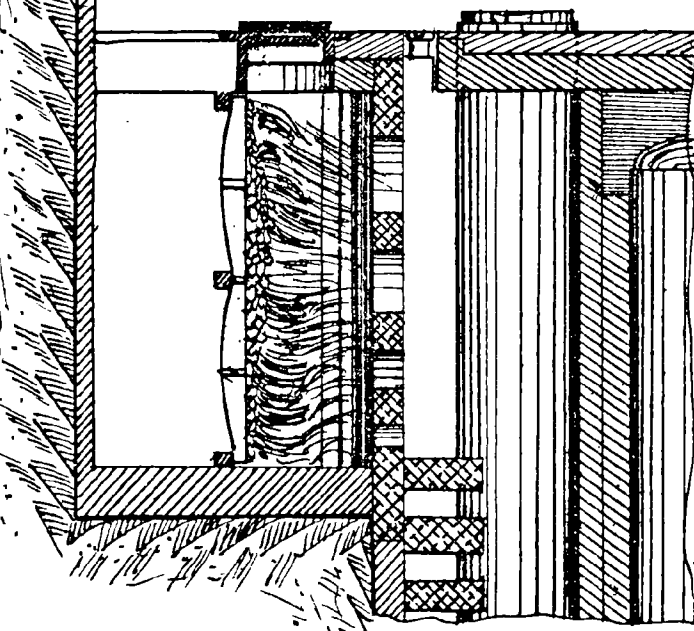
(Fig. 150)

Foyer linier.



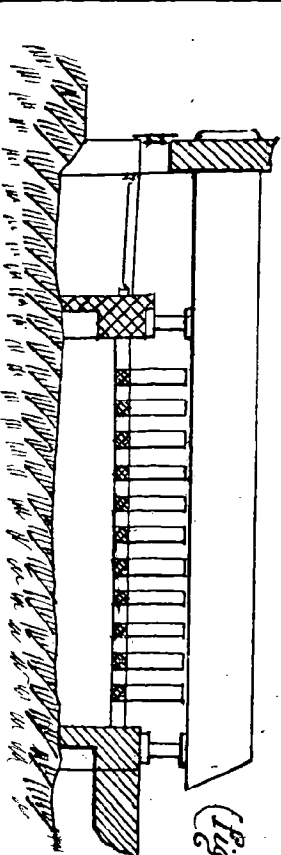
(Fig. 164.)

Foyer linier.
(autres dispositions)



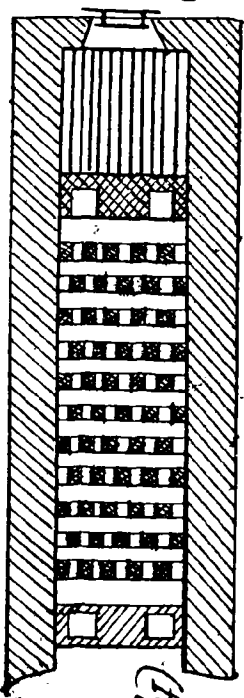
(Fig. 165.)

Foyer linier.



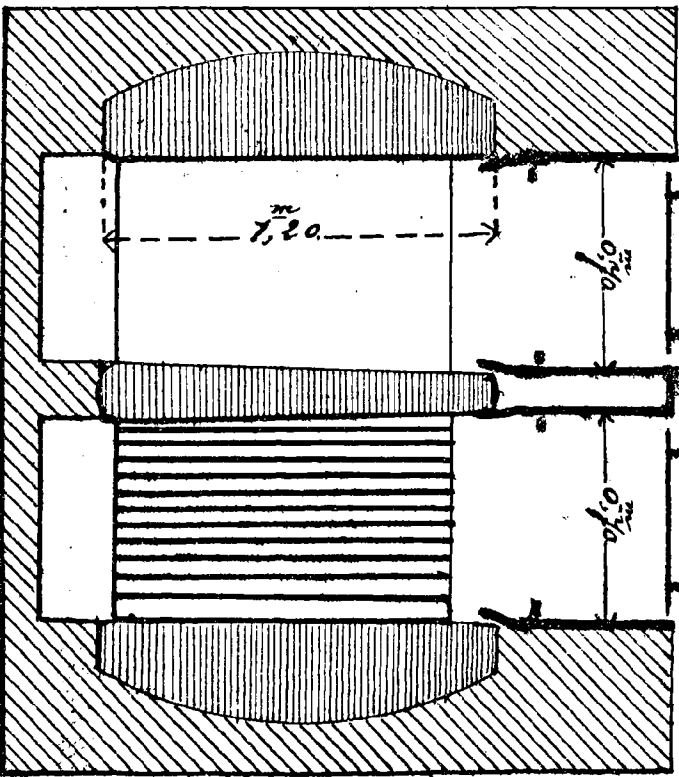
(Fig. 166.)

Disposition de raccourc.



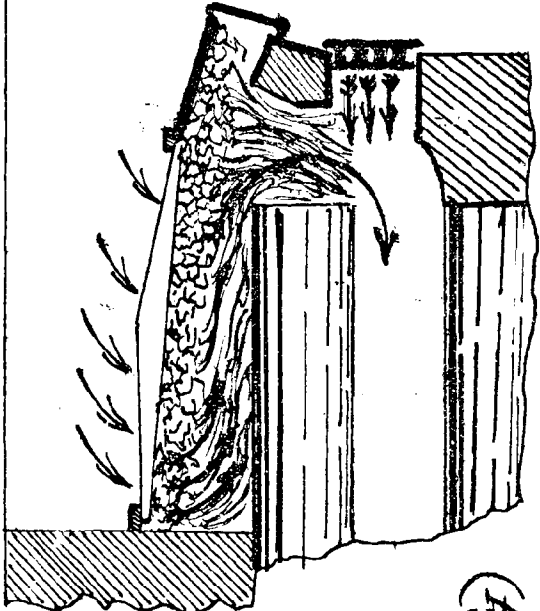
(Fig. 166 bis.)

Amiroro Bern-Dinck.
Coupe au-dessus des grilles.



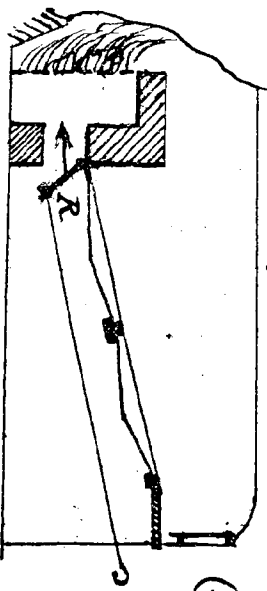
(Fig. 156).

Foyer Bern-Dinck.



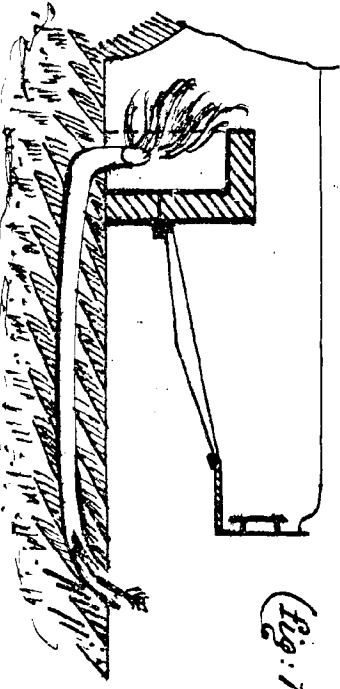
(Fig. 155).

Autre foyer type Williams modifié.



(Fig. 153).

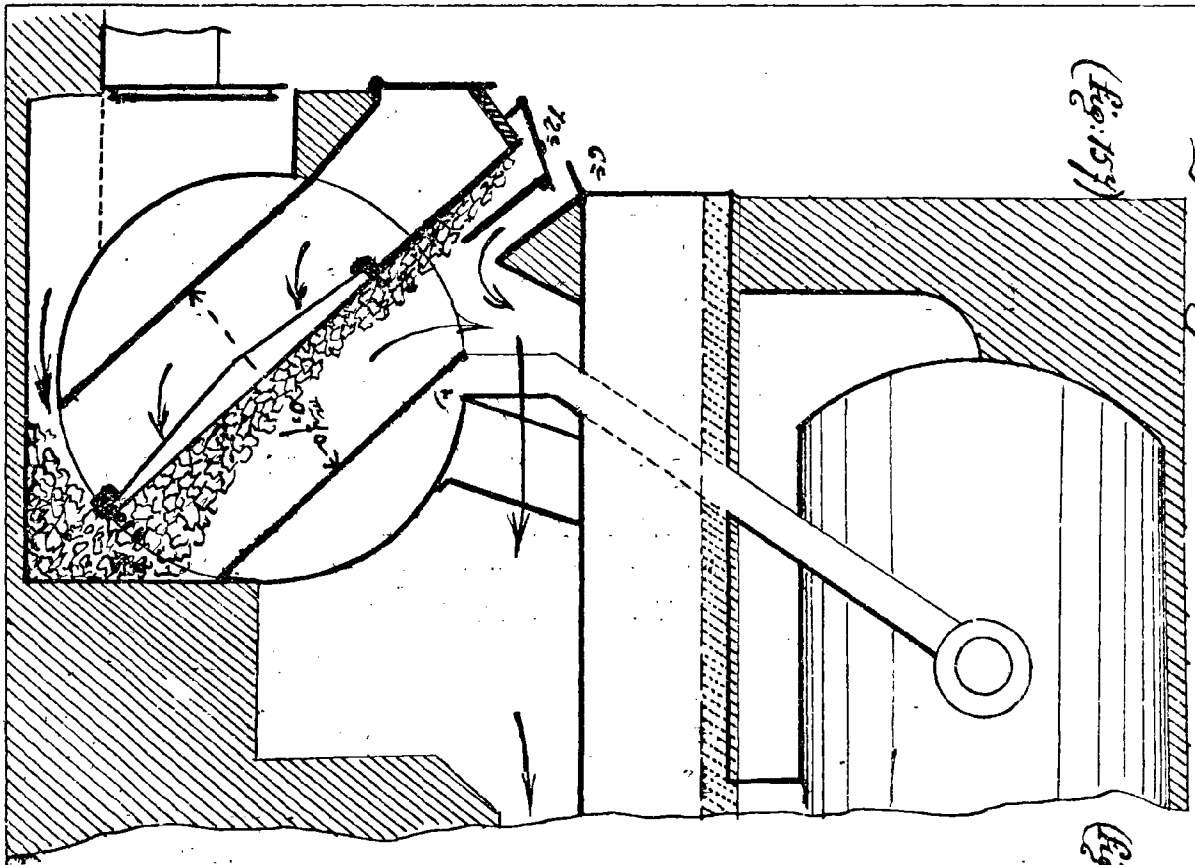
Foyer type Williams, dernier type.



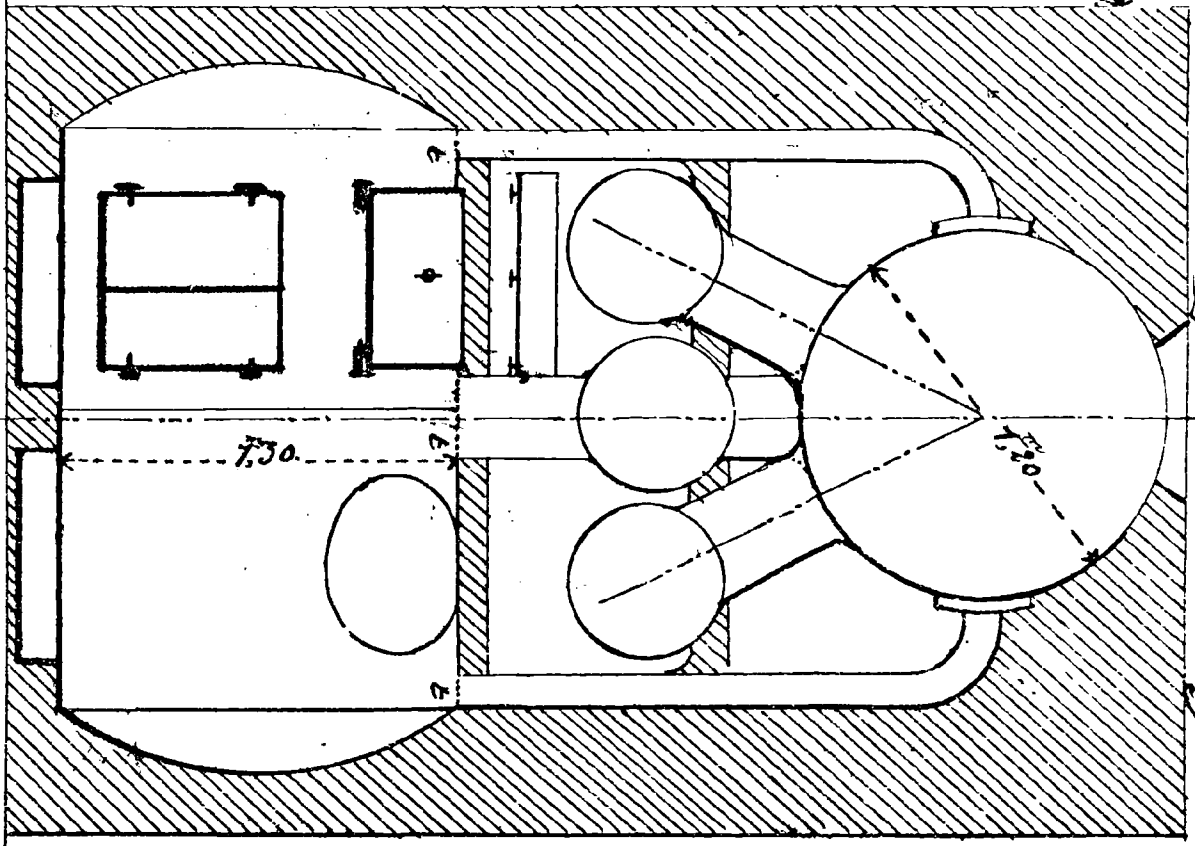
(Fig. 154).

Coupe longitudinale. Suminore Ben-Simoh. Coupe transversale et face.

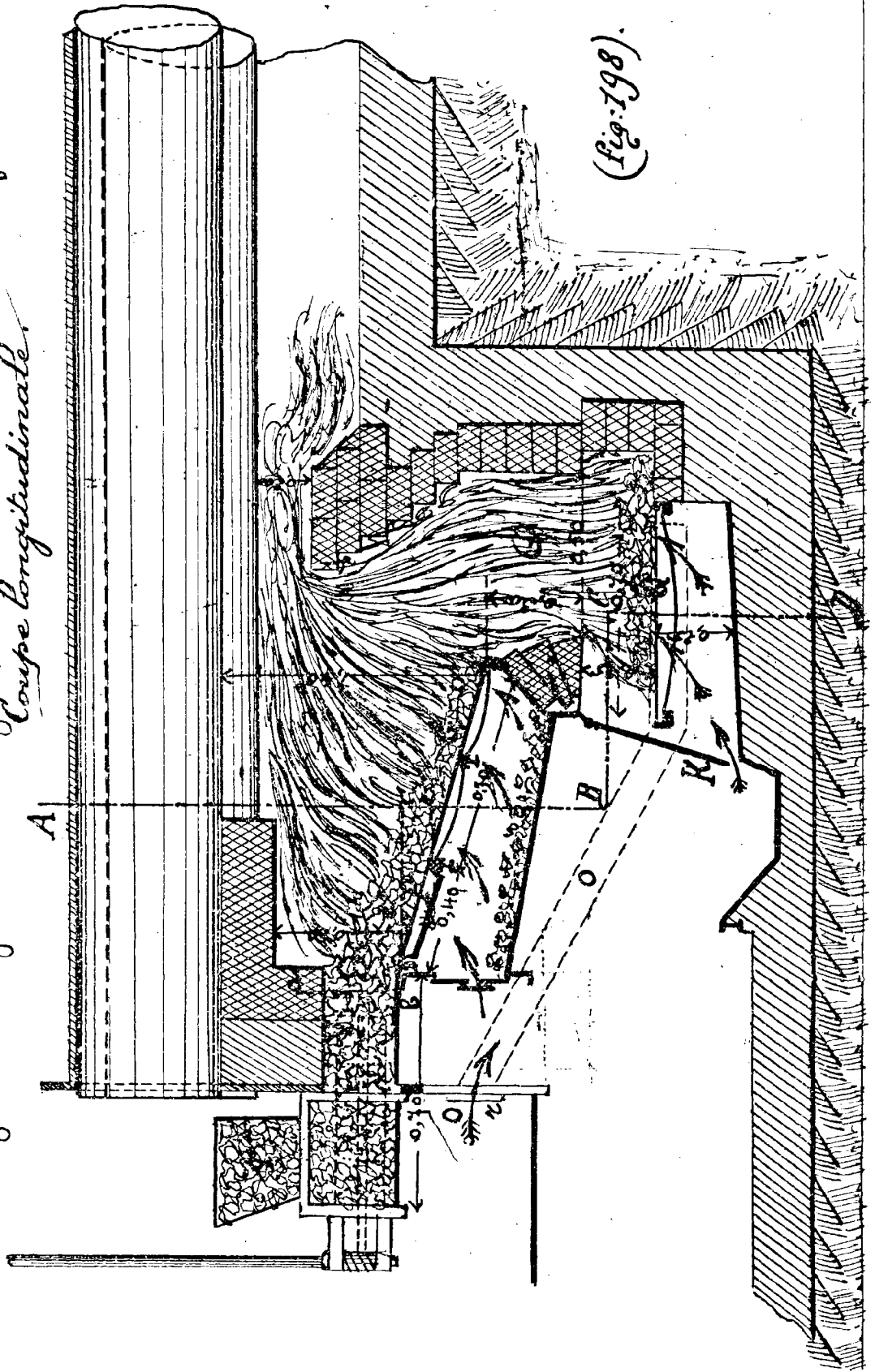
(Fig. 157)



(Fig. 158)



Loyer Schultzy - Schlumberger pour chaudière de 30 m² de surface de chauffe.
Coupe longitudinale.



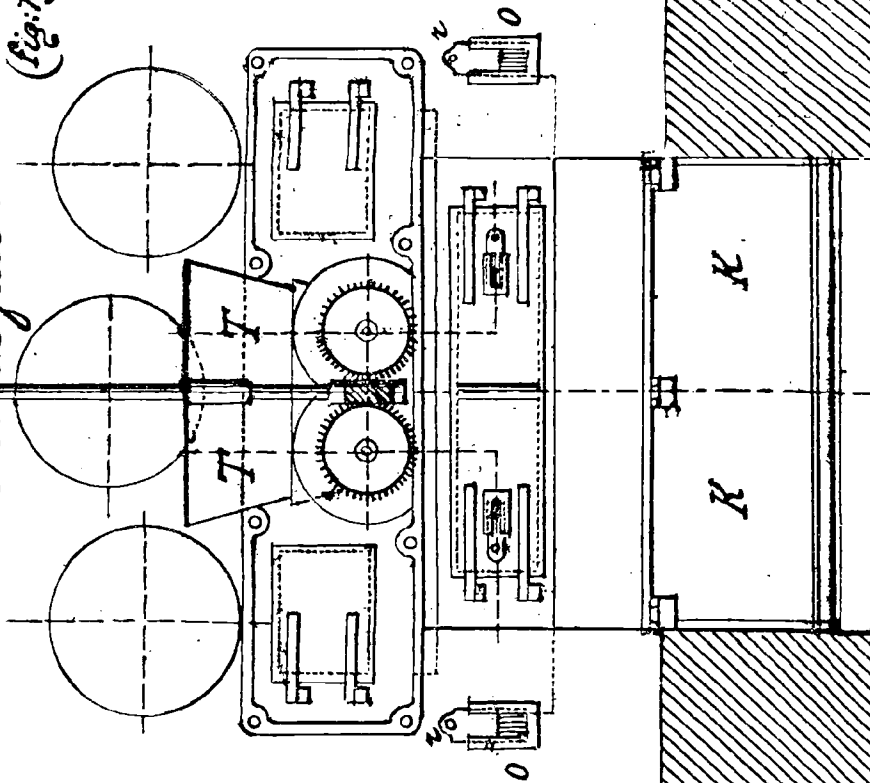
(Fig. 198).

Foyer Schoubly
pour chaudière de
face de face.

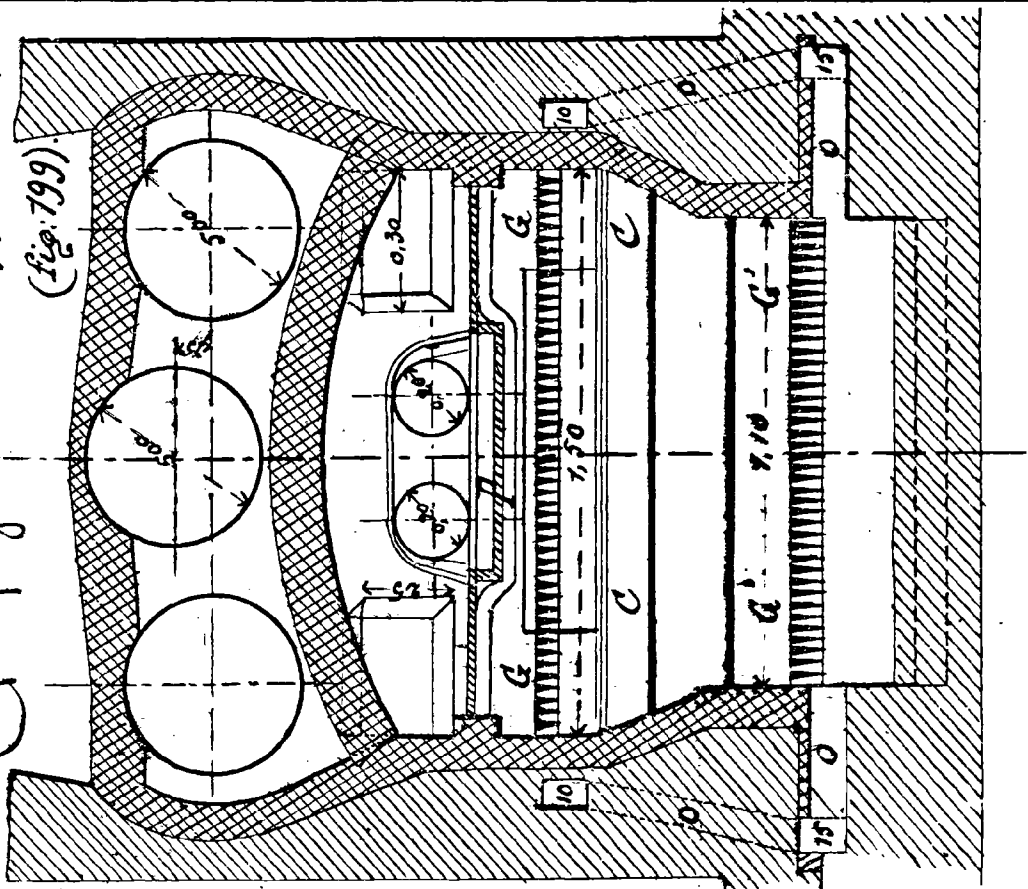
(Schlumberger)

30 m² de surface de chauffe

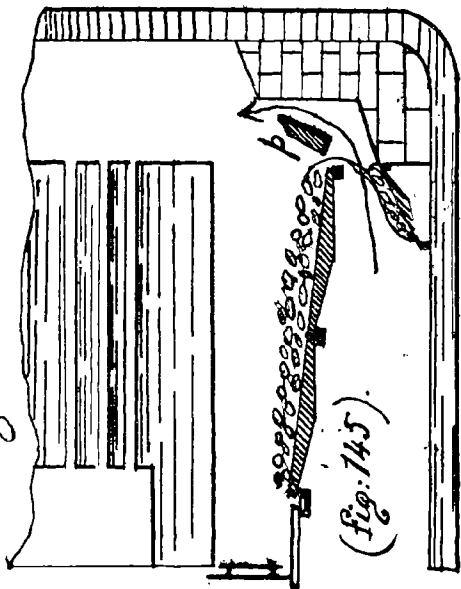
(Fig: 797)



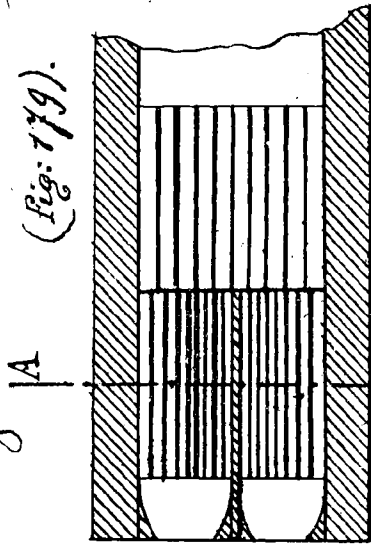
Coupes-projections A B C D, a b c d e B.
(Fig: 799)



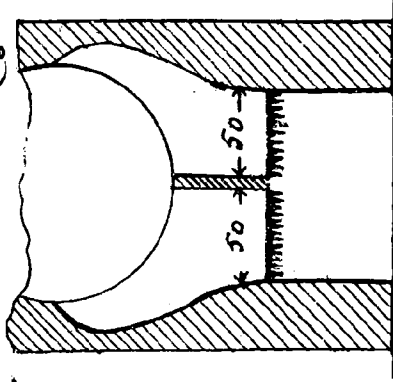
Foyer Charrier.



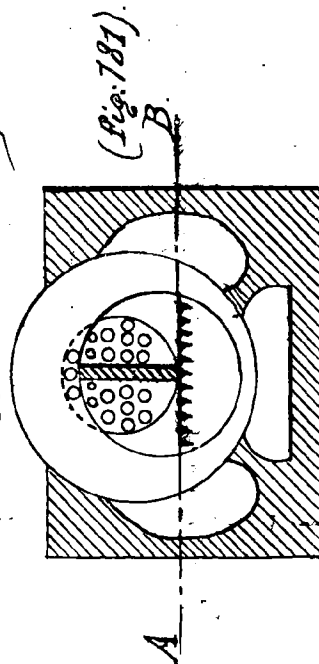
Foyer double de Sainbains.



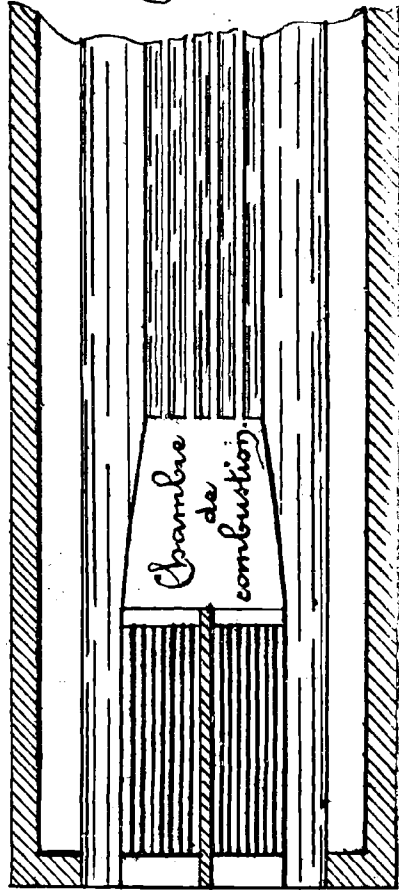
Coupe A.B. (Fig. 180).



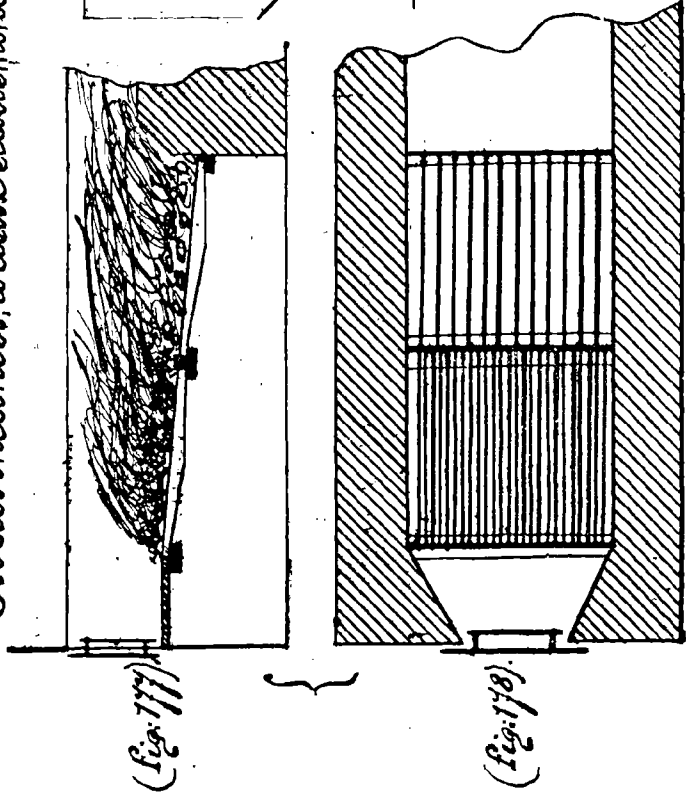
Foyer double de Sainbains, avec chambre de combustion.



Coupe - projection A.B.



Grilles inclinées, à deux écartements.

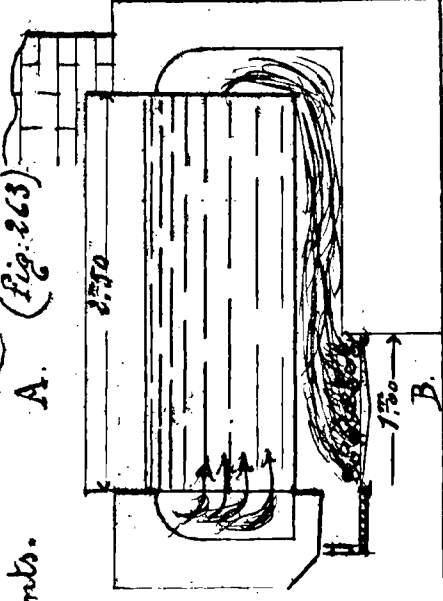


(Fig. 177)

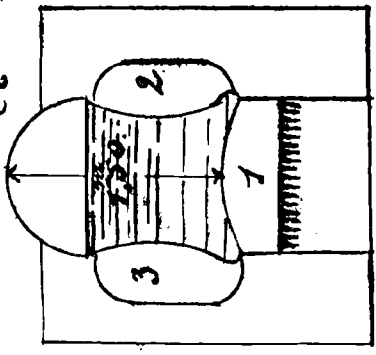
(Fig. 178)

Chaudière en tombeau de Batt.

A. (Fig. 263)

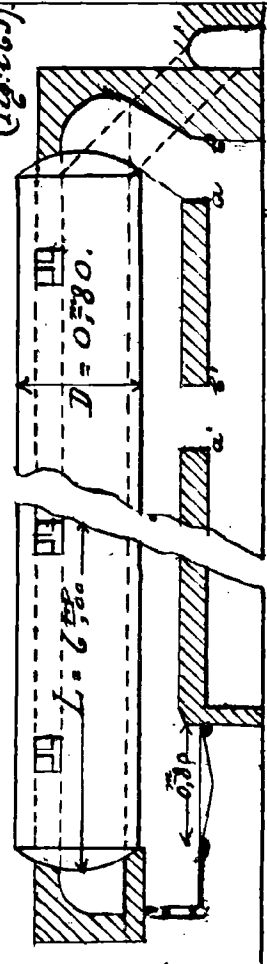


Coupe A.B. (Fig. 264)

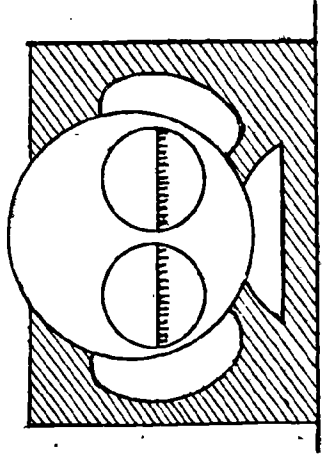


Chaudière cylindrique ordinaire.

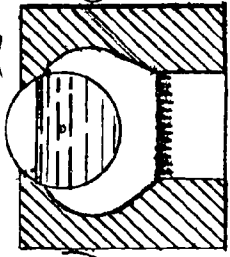
(Fig. 265)



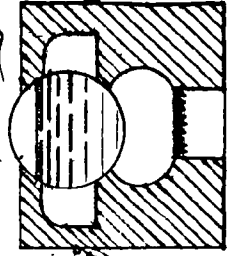
Coupes transversales par les foyers.



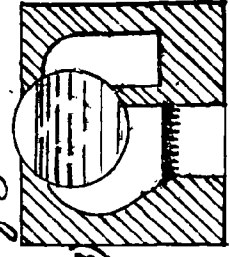
(Fig. 183)



(Fig. 266)



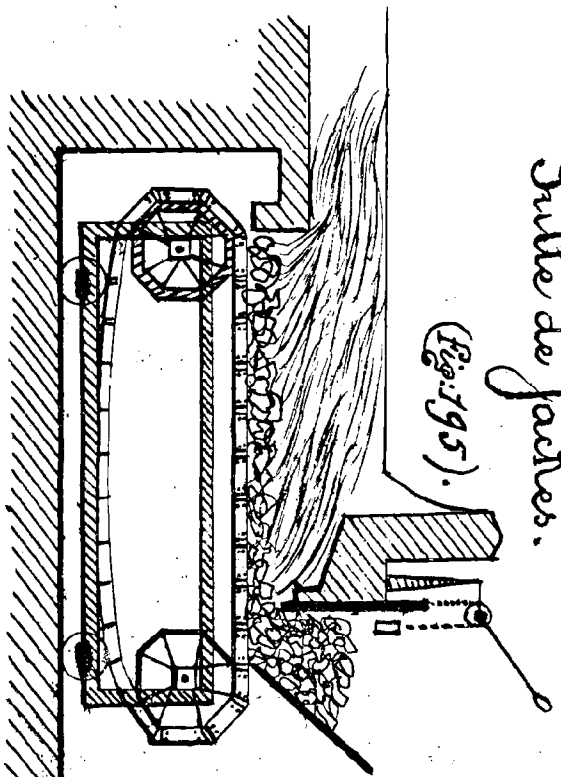
(Fig. 267)



(Fig. 268)

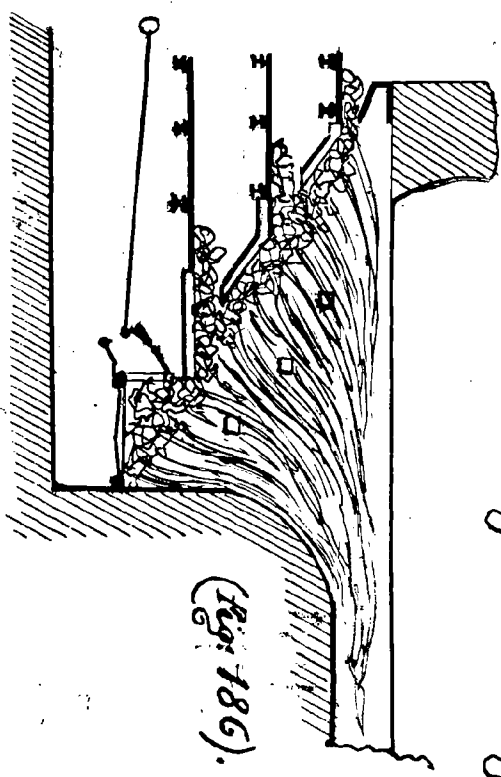
Grille de Jachtes.

(Fig. 195).



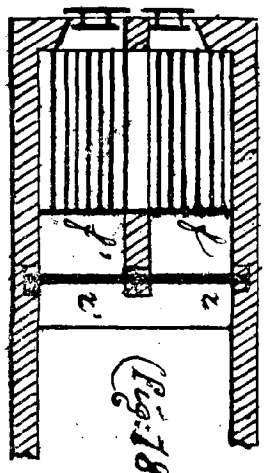
Grille à étages de Chang.

(Fig. 186).



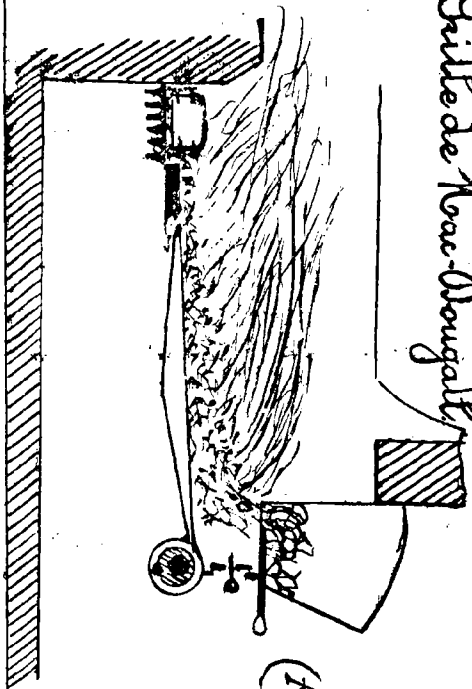
Boyer double à registres.

(Fig. 184).



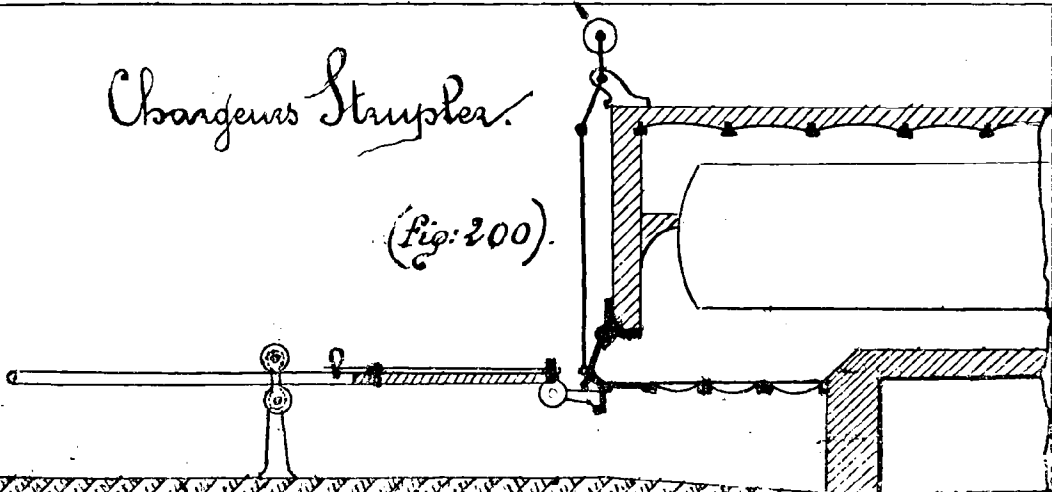
Grille de Houe-Dougall

(Fig. 196).

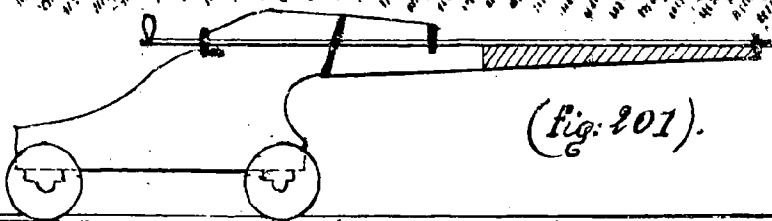


Changemens Struypster.

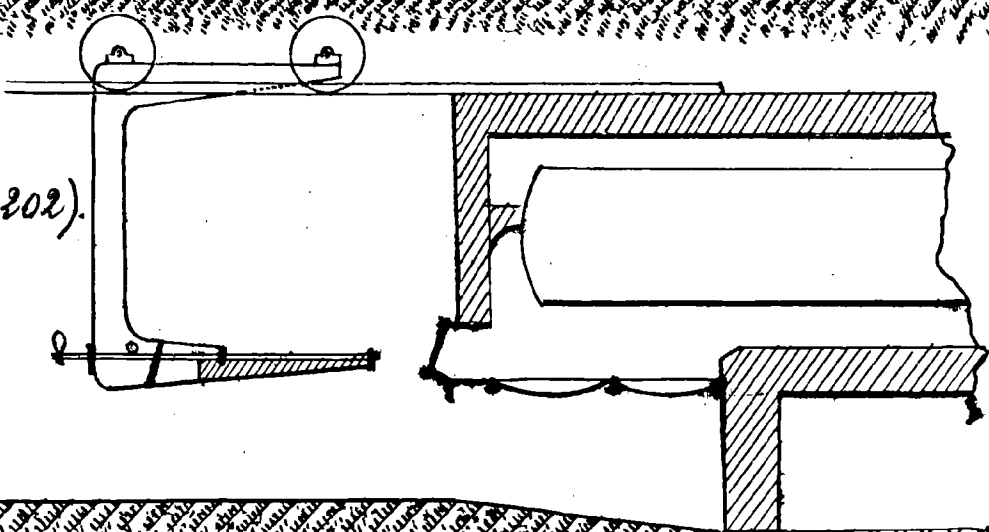
(Fig: 200).



(Fig: 201).

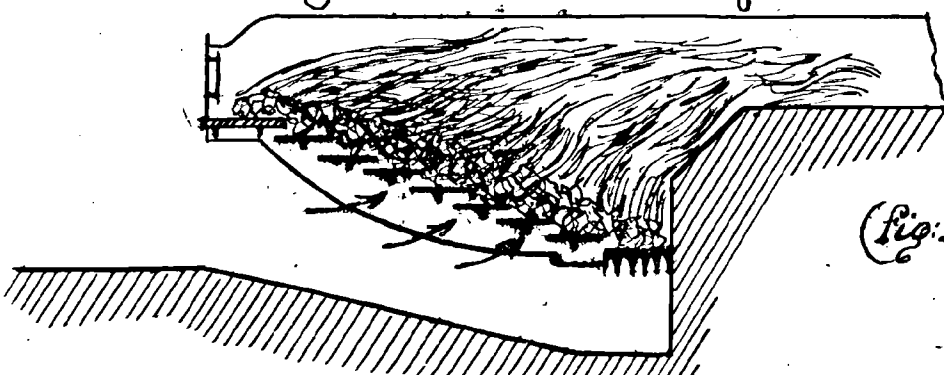


(Fig: 202).



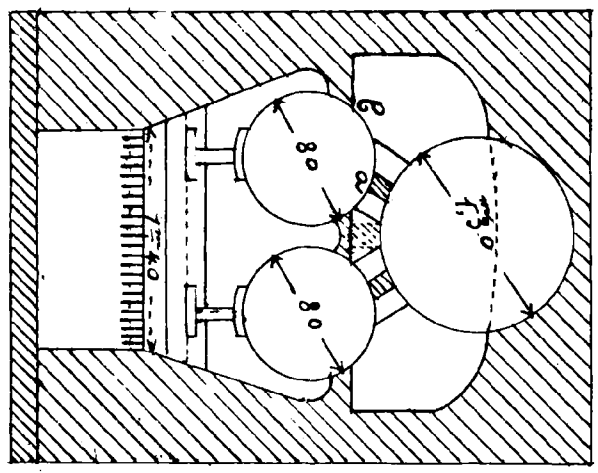
Foyer en escalier ou à gradins.

(Fig: 185).

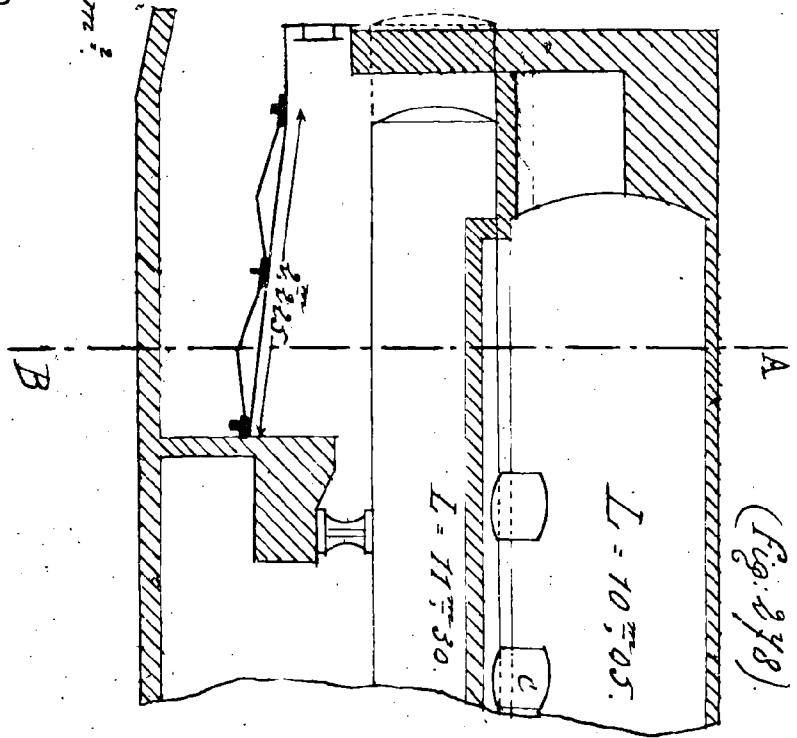


Chaudière à deux tubes Bourilliers de proportions et d'installation defectueuses.

(Fig. 299). Coupe AB.



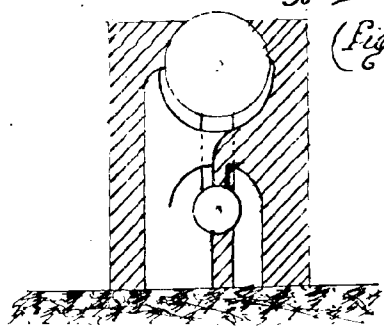
(Fig. 298).



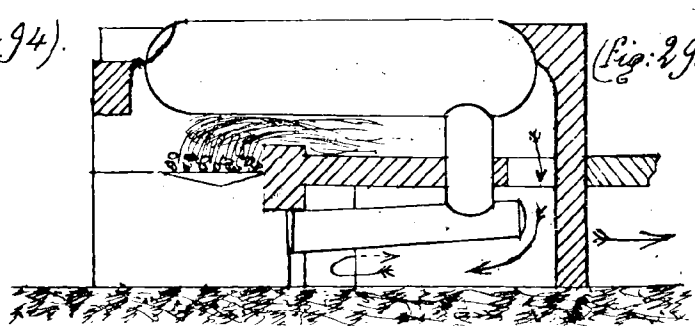
$S = 38 m^2$, $S' (\text{réduite}) = 60 m^2$
 $G = 3,108 m^3$
 $\frac{G}{S} = 25$
 $N \left\{ \begin{array}{l} 54 \text{ ch: marche normale} \\ 33 \text{ ch: marche forcée} \end{array} \right.$
 $N' (\text{réduite}) = 40 \text{ ch.}$

Chaudière à un tube réchauffeur chauffé par deux carneaux.

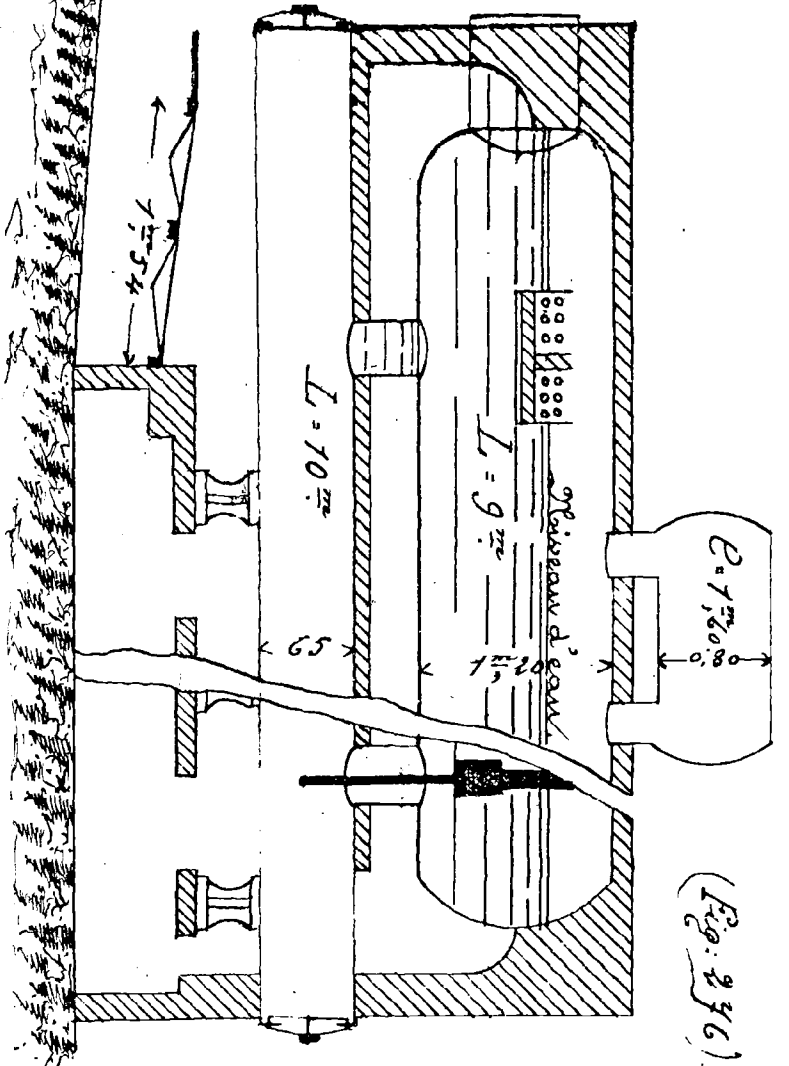
(Fig. 294).



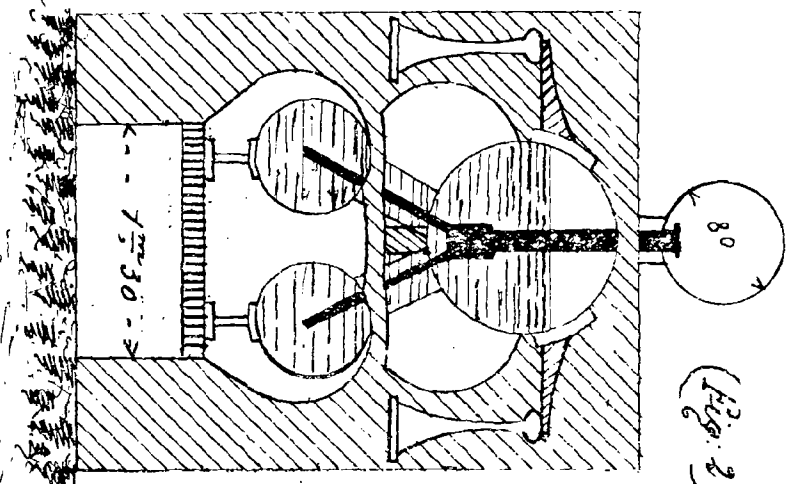
(Fig. 293).



Chaudière à deux tubes Bouillottes.



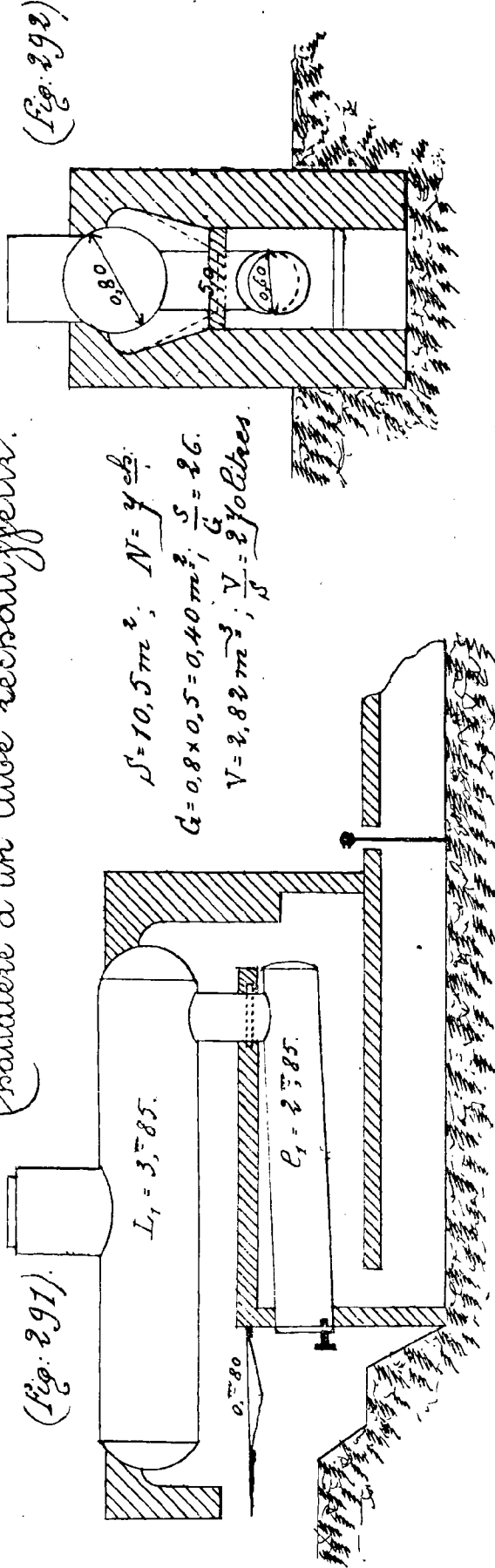
(Fig. 236)



(Fig. 237)

$S = 60 \text{ m}^2$; $G = 2 \text{ m}^2$; $E = 12,4 \text{ m}^2$; $v = 5,6 \text{ m}^2$; $V = 18 \text{ m}^3$;
 $\frac{S}{G} = 30$; $\frac{V}{S} = 300 \text{ litres}$; $N = 40 \text{ ch}$.

Chaudière à un tube réchauffeur.



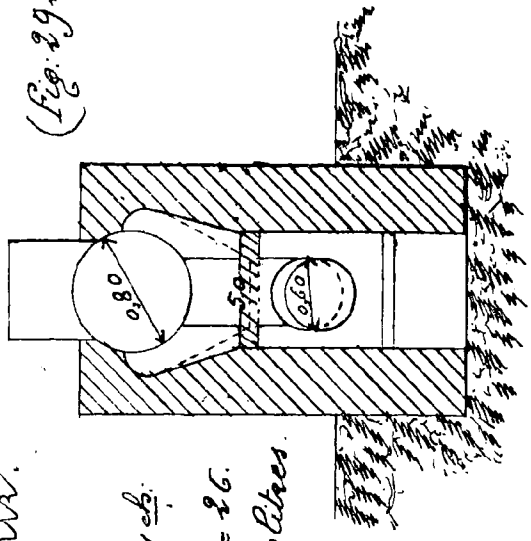
(Fig. 291).

$$S = 10,5 m^2; N = 4 \text{ ch.}$$

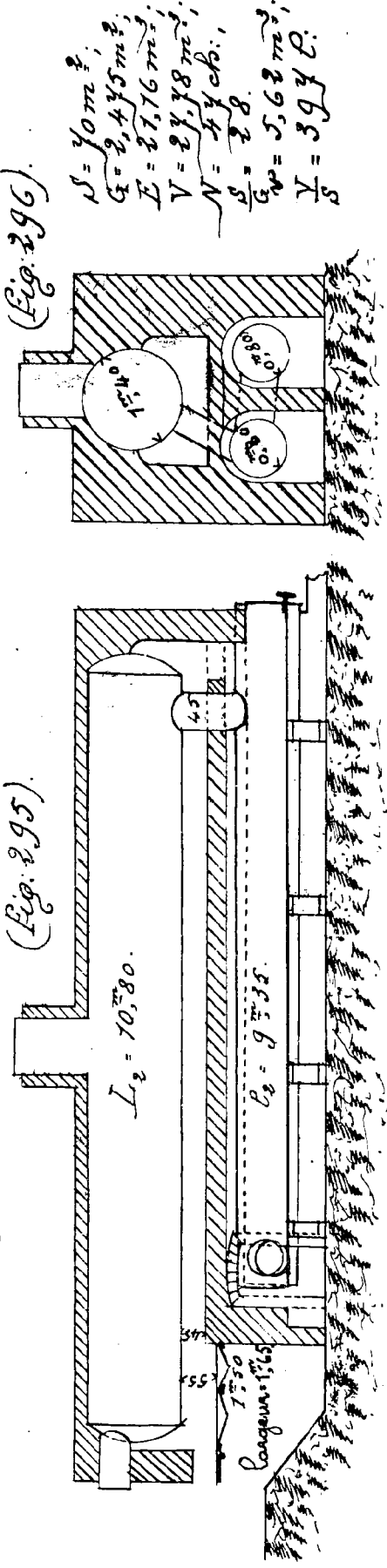
$$G = 0,8 \times 0,5 = 0,40 m^3; \frac{S}{G} = 26.$$

$$V = 2,82 m^3; \frac{V}{S} = 27 \text{ litres.}$$

(Fig. 292)



Chaudière à deux tubes réchauffeurs.



(Fig. 295).

(Fig. 296).

$$S = 40 m^2;$$

$$G = 2,445 m^3;$$

$$E = 27,76 m^3;$$

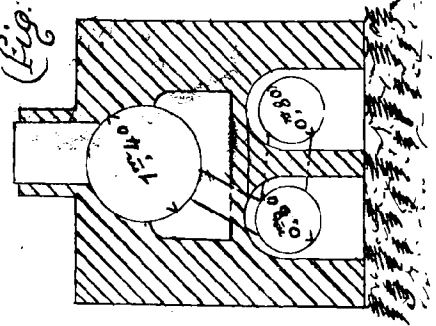
$$V = 24,78 m^3;$$

$$N = 44 \text{ ch.};$$

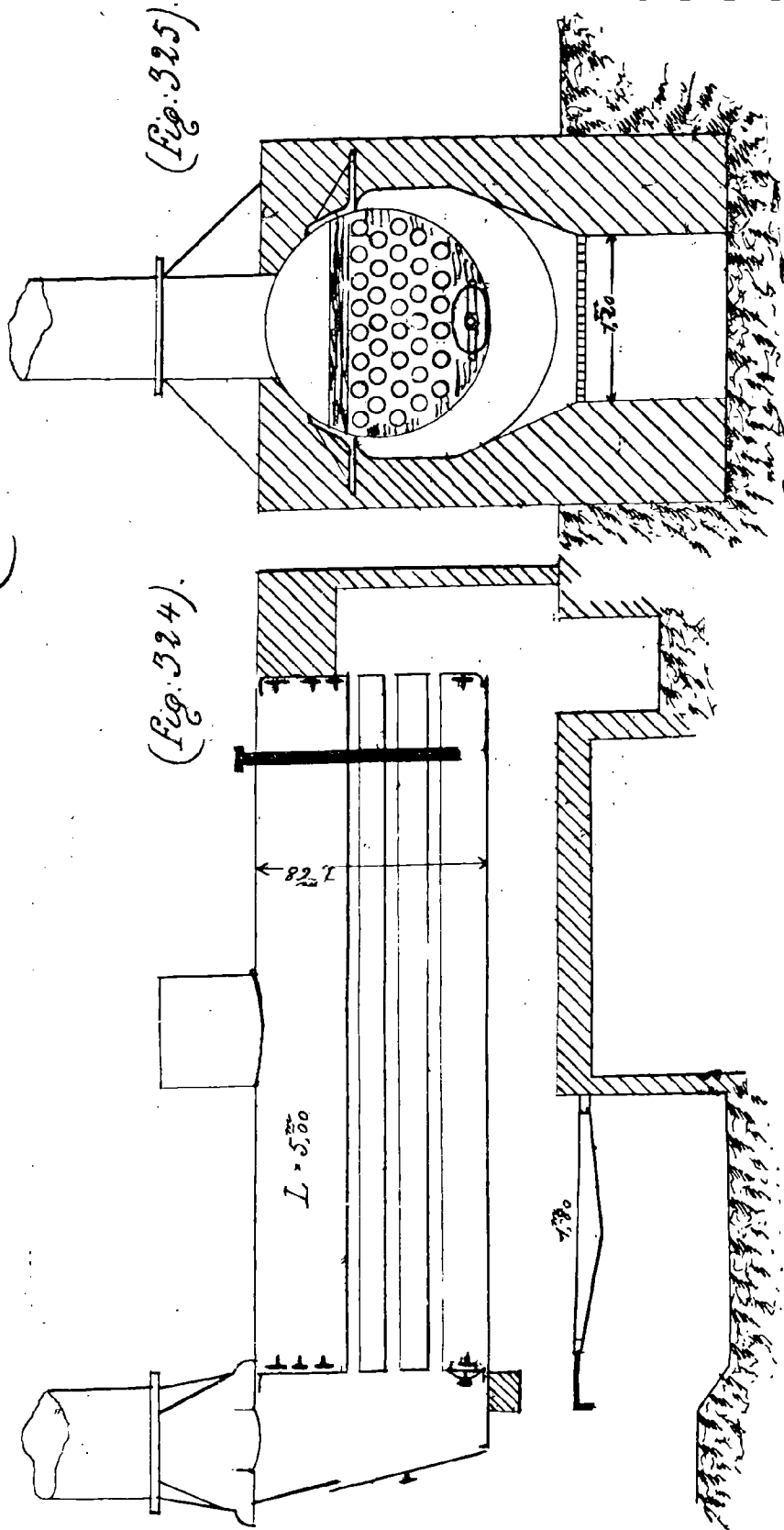
$$\frac{S}{G} = 16;$$

$$\frac{V}{S} = 5,62 m^3;$$

$$\frac{V}{N} = 394 \text{ l.}$$



Générateur semi-tubulaire (ail et Cie).

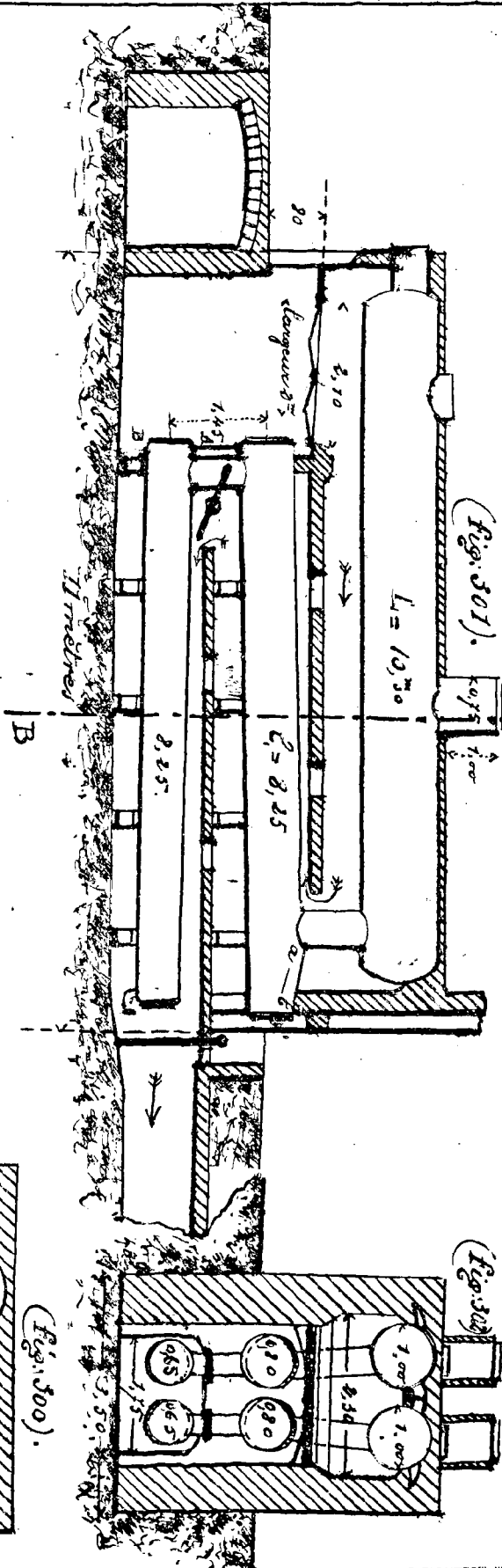


Emplacement: $\frac{6795}{3750} = 18,12$;
 $S = 120 \text{ m} \cdot 9,4 = 1128$;
 $N = 80$; $\frac{S}{G} = 55$;

Diamètre des tubes 9^{e} ;
 Nombre de tubes 80.

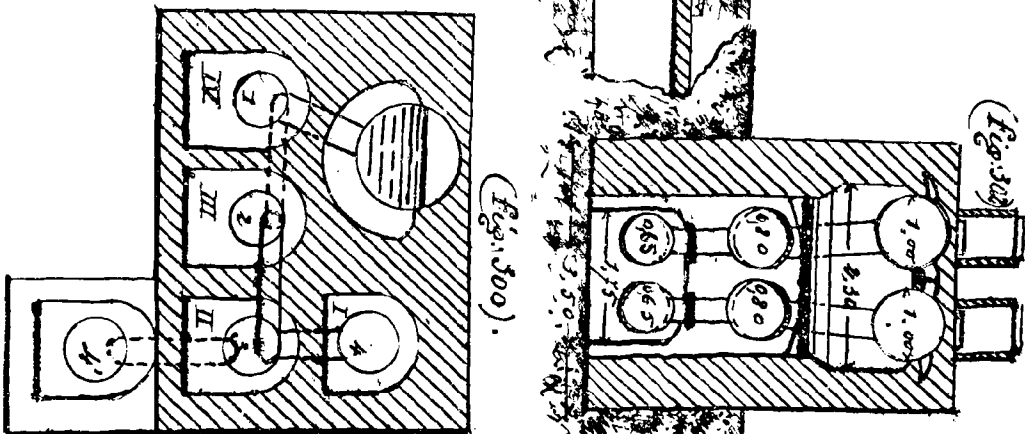
Chaudière à quatre réchauffeurs.

(Fig. 301).



Coupe A.B.

(Fig. 302).



(Fig. 300).

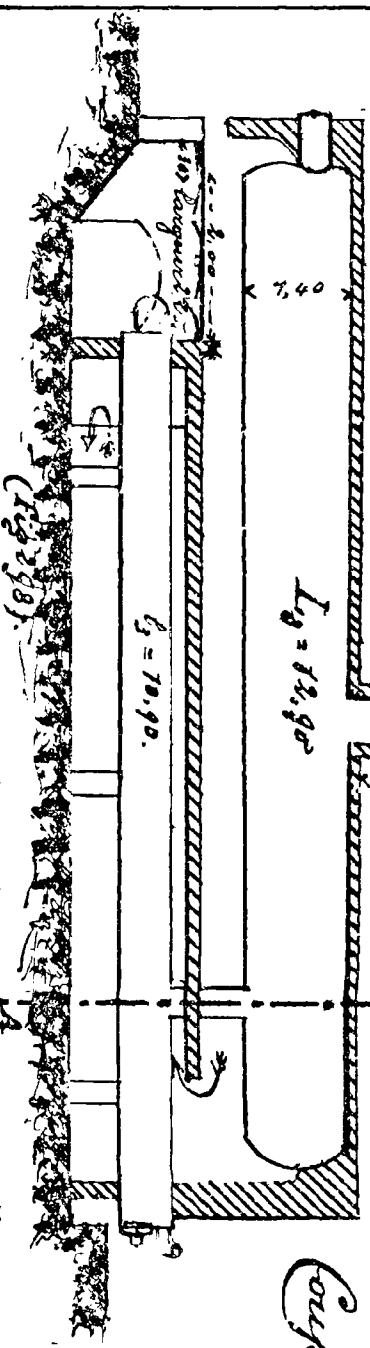
$$S = 105 \text{ m}^2 \quad E = 23,7 \text{ m}^3 \quad V = 30,4 \text{ m}^3 \quad G = 0,27, 20$$

$$N = 70 \text{ ch} \quad U = 6,7 \text{ m}^3 \quad \frac{V}{U} = 290 \text{ l} \quad \frac{S}{G} = 225$$

REM: Remarque: La porte donnée à la partie de tube a-b
située au delà de la communication, pour éviter toute
chambre de vapeur en ce point.

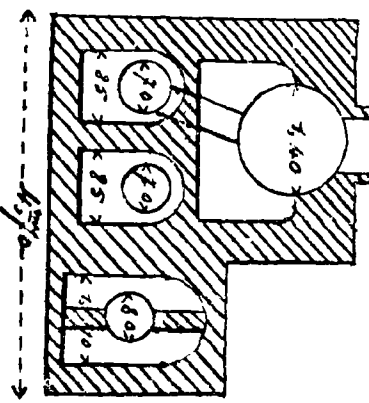
Boudière à trois réservoirs.

(Fig. 297).

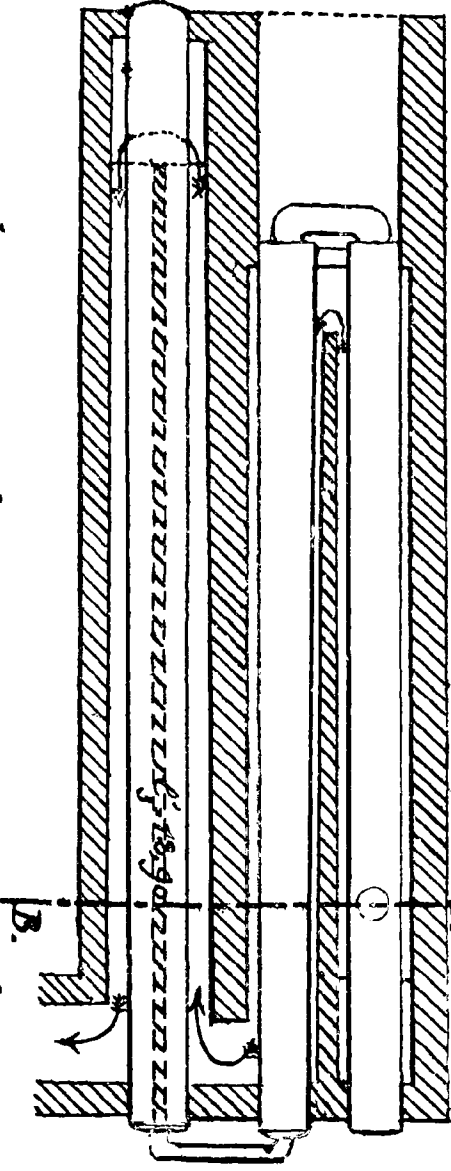


Coupe transversale A-B.

(Fig. 299).

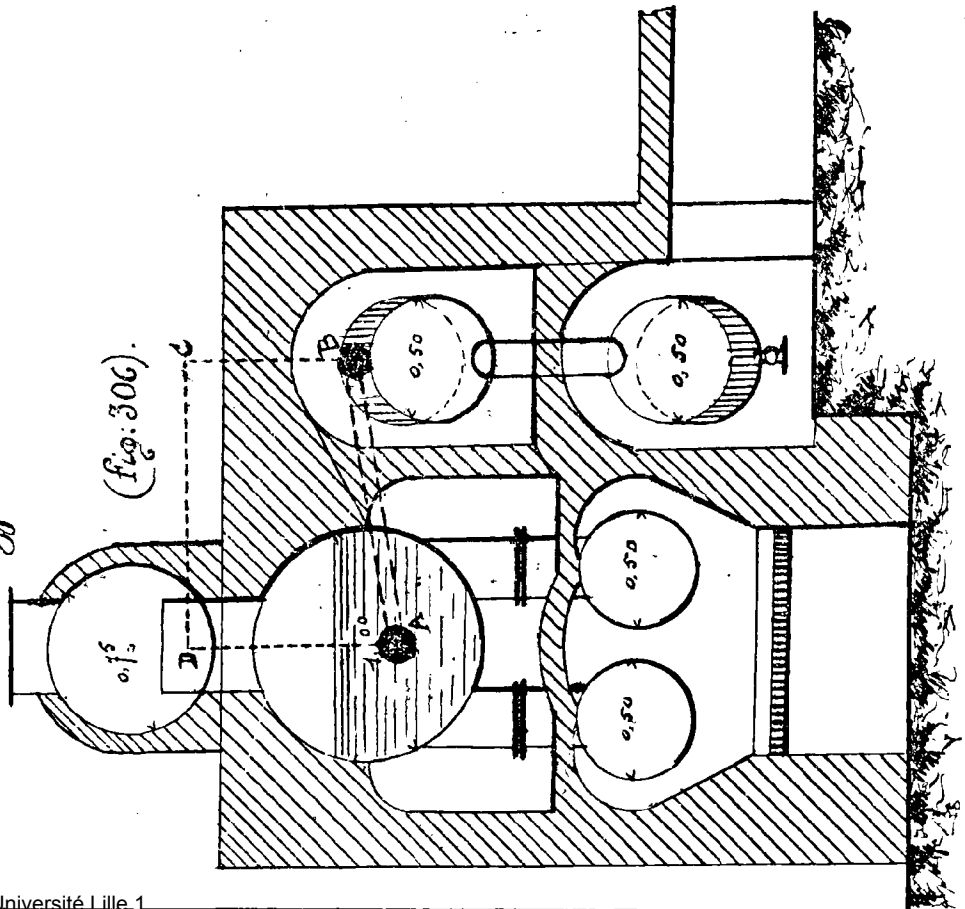


alimentation

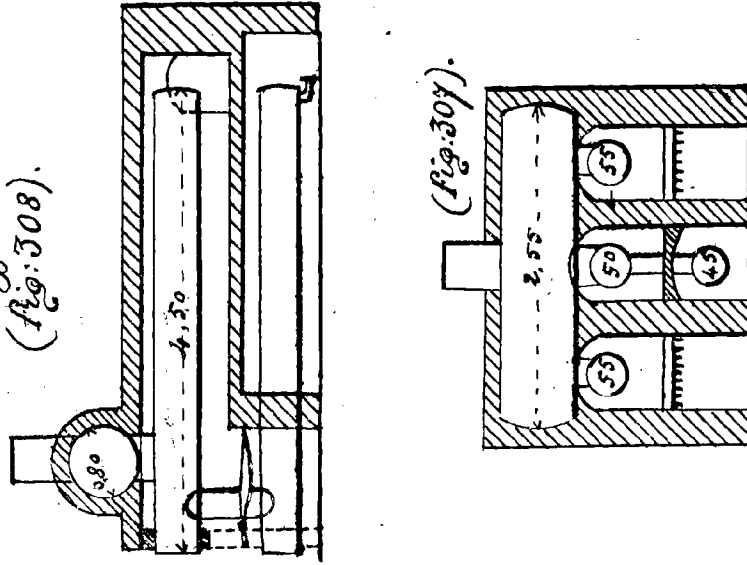


$S = 105 \text{ m}^2$ $E = 29,40 \text{ m}^3$ $V = 36,05 \text{ m}^3$ $G = 4,40 \text{ m}^2$
 $N = 70 \text{ ch.}$ $V = 6,65 \text{ m}^3$ $\frac{S}{V} = 29 \text{ l.}$ $\frac{S}{G} = 24.$

Chaudière à deux bouilleurs et deux réchauffeurs.



Chaudière à deux bouilleurs, sur deux foyers distincts, et munie de deux réchauffeurs communs.



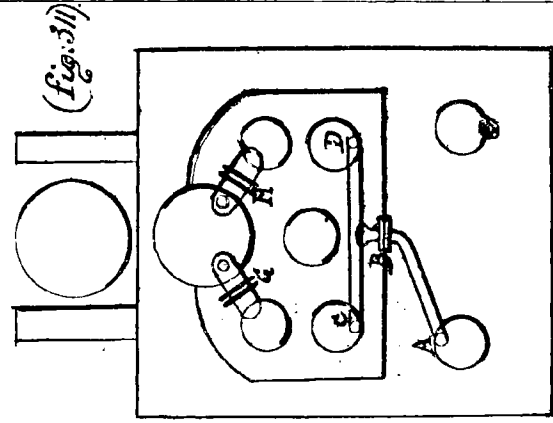
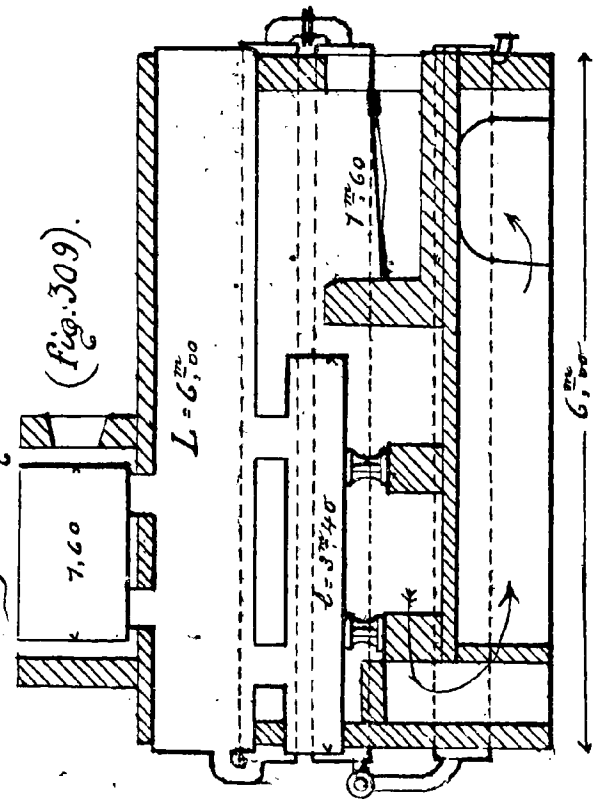
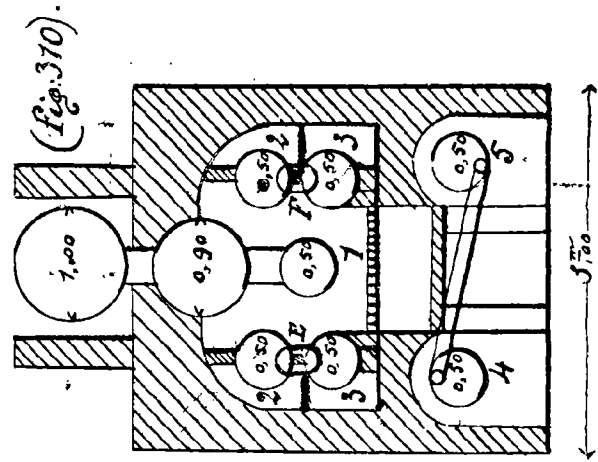
Generateur Loachim.

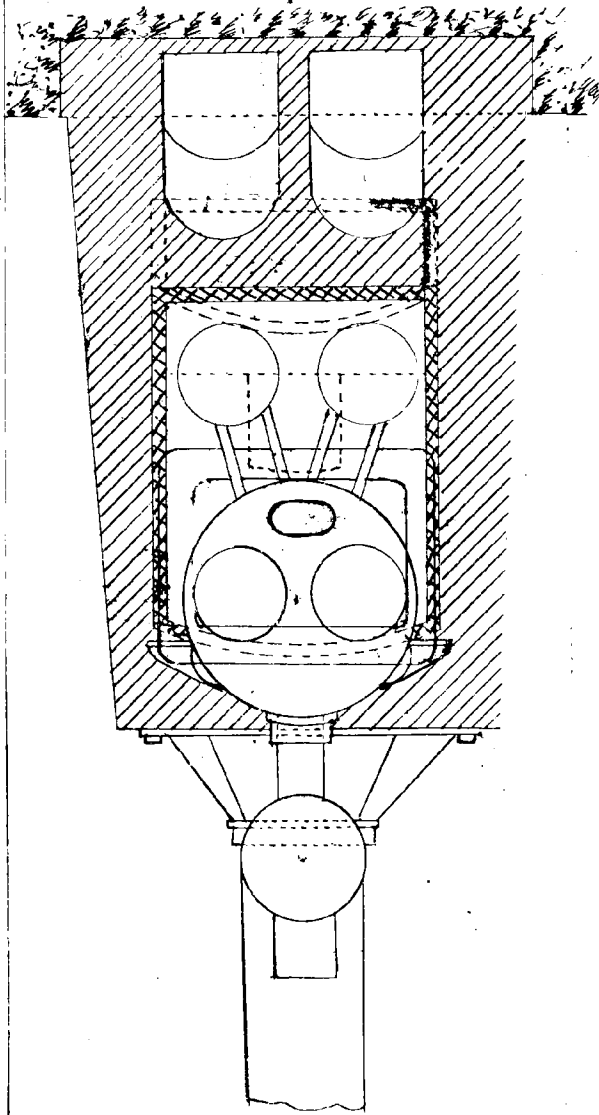
Coupe transversale
et vue de la face avant
avec ses communications.

à bouilliers, rechauffeurs, et bouilliers.
- rechauffeurs.

du
vue de la face arriere
avec
ses
communications.

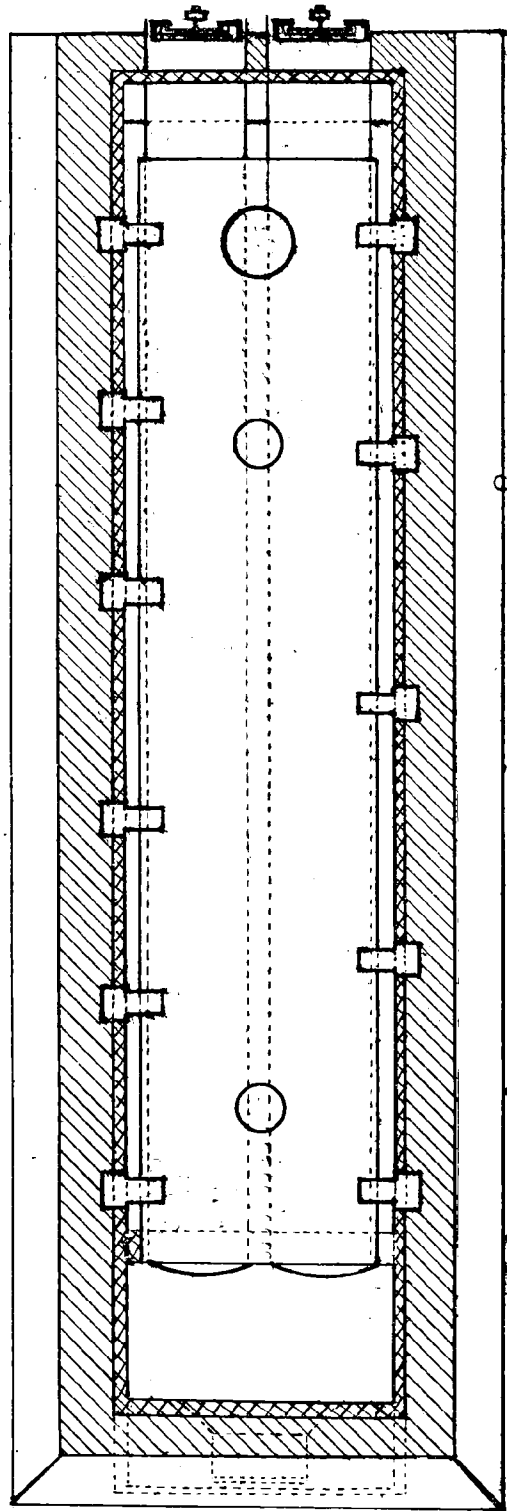
Coupe longitudinale.





(Fig: 323)

Course et projection
verticales.



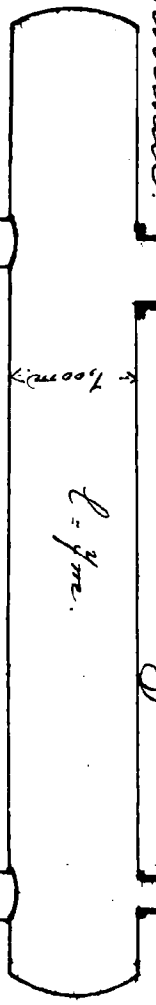
Projection horizontale.

(Fig: 322)

Chaudière à deux tubes bouilleurs et à deux

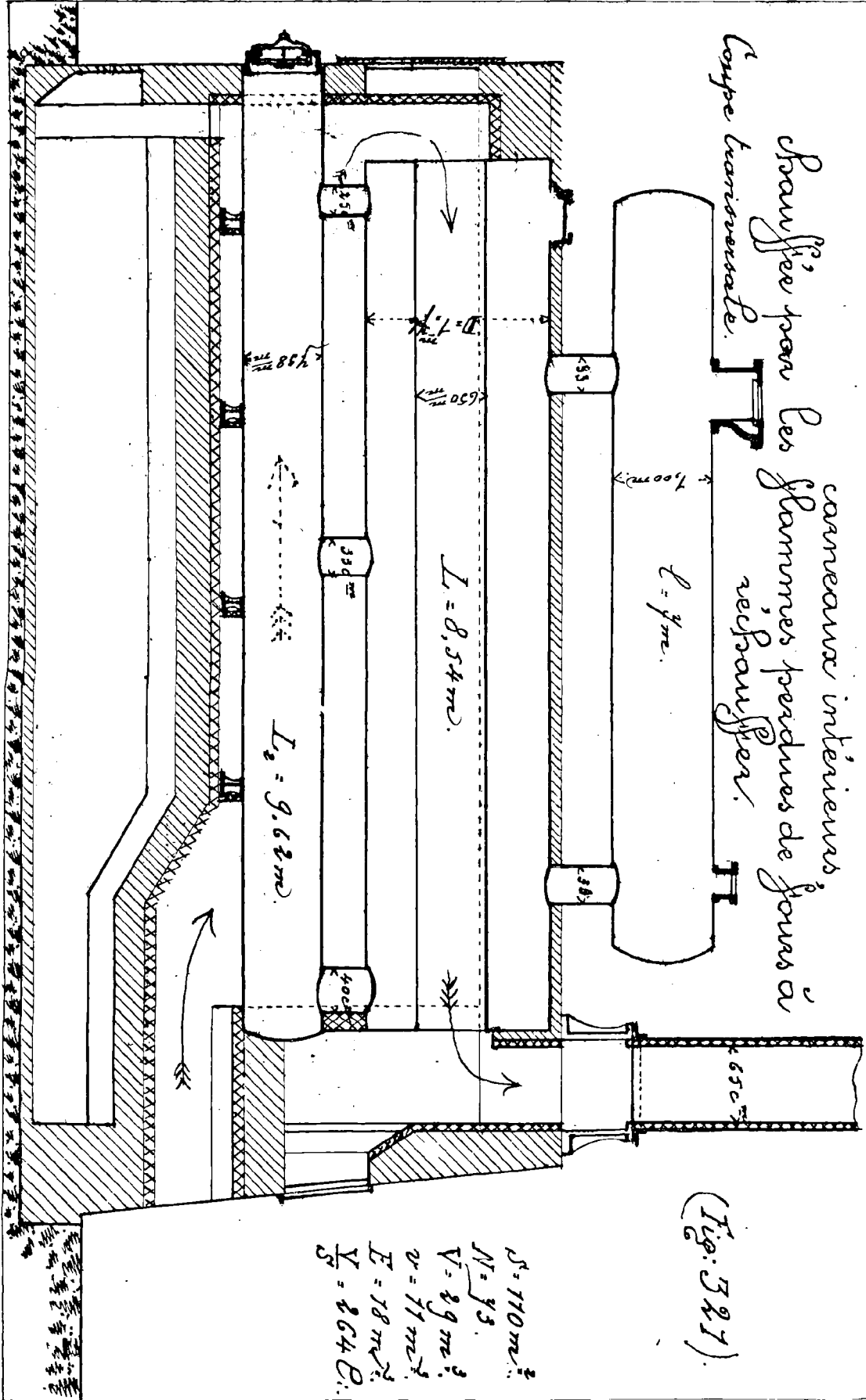
passées par les flammes intérieures, canaux intérieurs, canaux extérieurs de four à

Coupe transversale.



$l = 8,54m.$

$L_2 = 9,62m.$

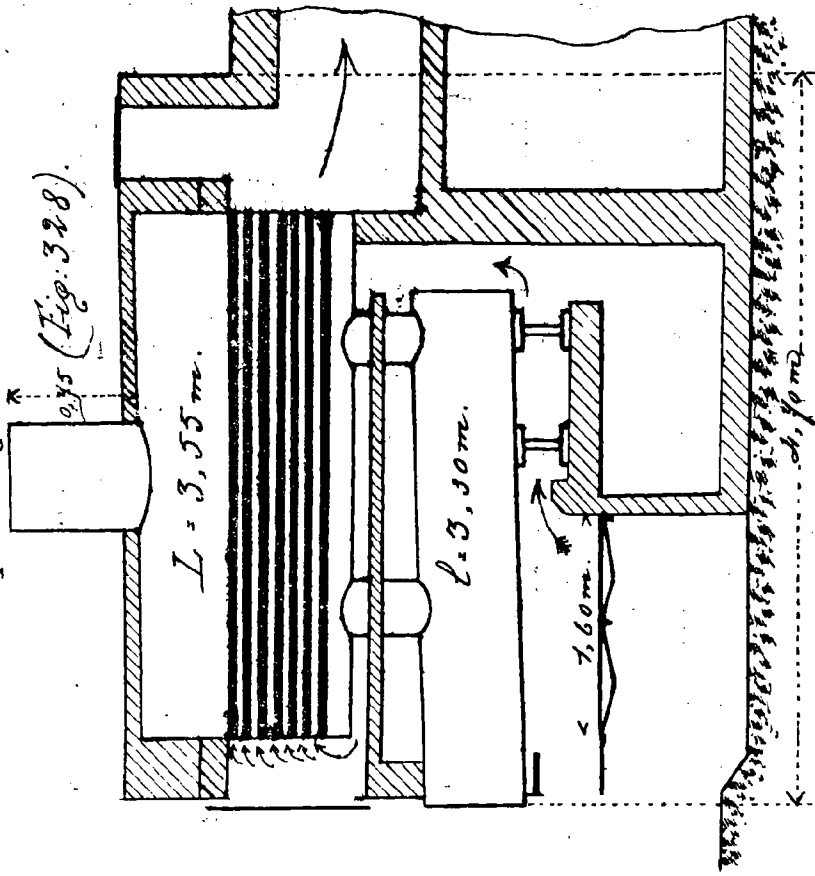


(Fig. 321).

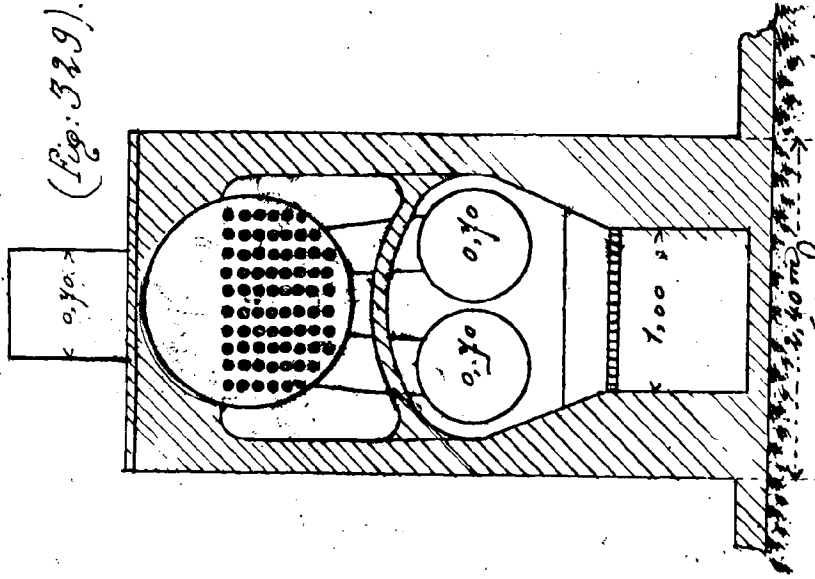
$S = 110m^2$
 $N = 43$
 $V = 29m^3$
 $v = 71m^2$
 $E = 18m^2$
 $\frac{V}{S} = 264 B.$

Générateur semi-tubulaire avec faisceau en troisième circulation.

Coupe longitudinale.



Coupe transversale.

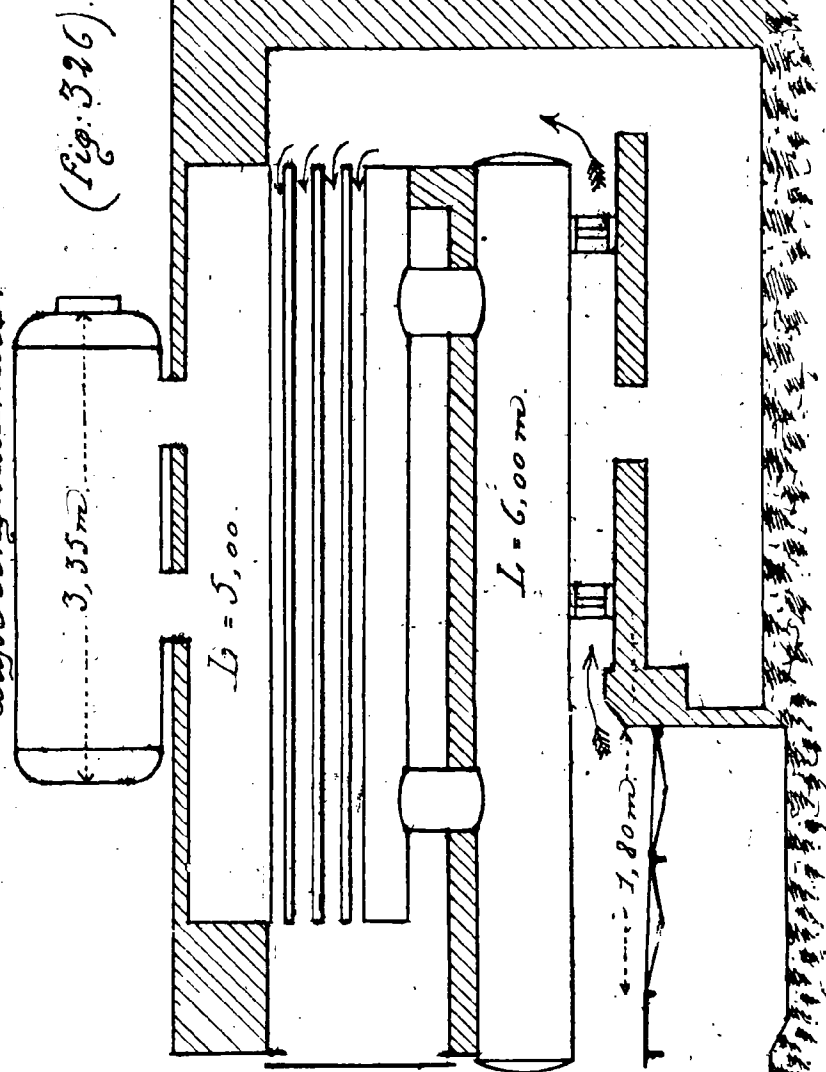


Emplacement } en longueur: 4,70 m.
 en largeur: 2,40 m.
 en surface: 11,3 m².

$S = 70 \text{ m}^2$; $N = 49 \text{ ch}$; $G = 1,60 \text{ m}^3$; $\frac{S}{G} = 44$.

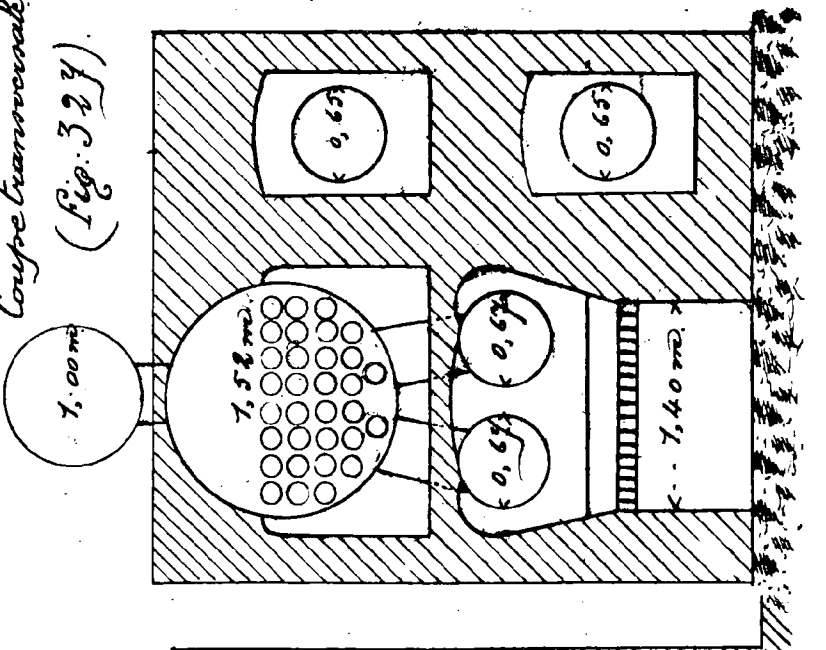
Générateur semi-tubulaire avec faisceau en deuxième circulation.

Coupe Longitudinale.



(Fig. 326)

Coupe transversale

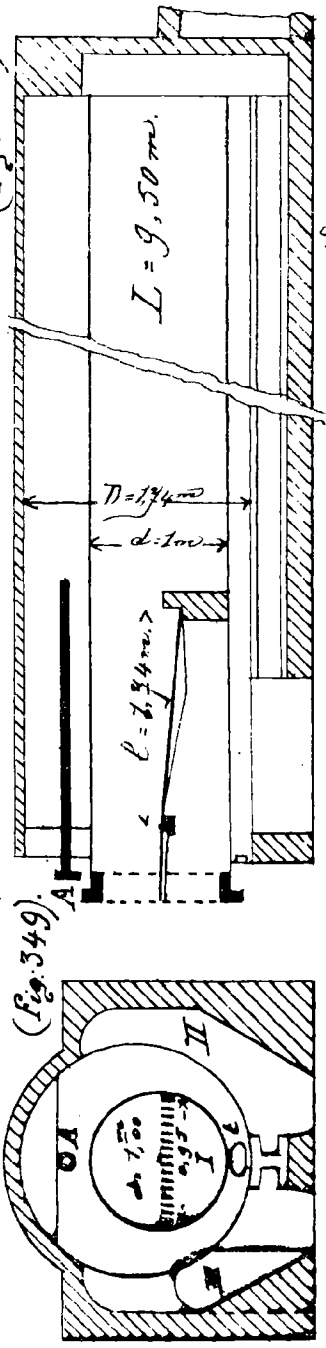


(Fig. 327)

$S = 120 \text{ m}^2$; $G = 2,52 \text{ m}^3$; $\frac{S}{G} = 48$;
 $N = 80 \text{ cfs}$, Nombre de tubes du faisceau 32.

Emplacement { en longueur: 7 m.
 en largeur: 4 m.
 en surface: 28 m².

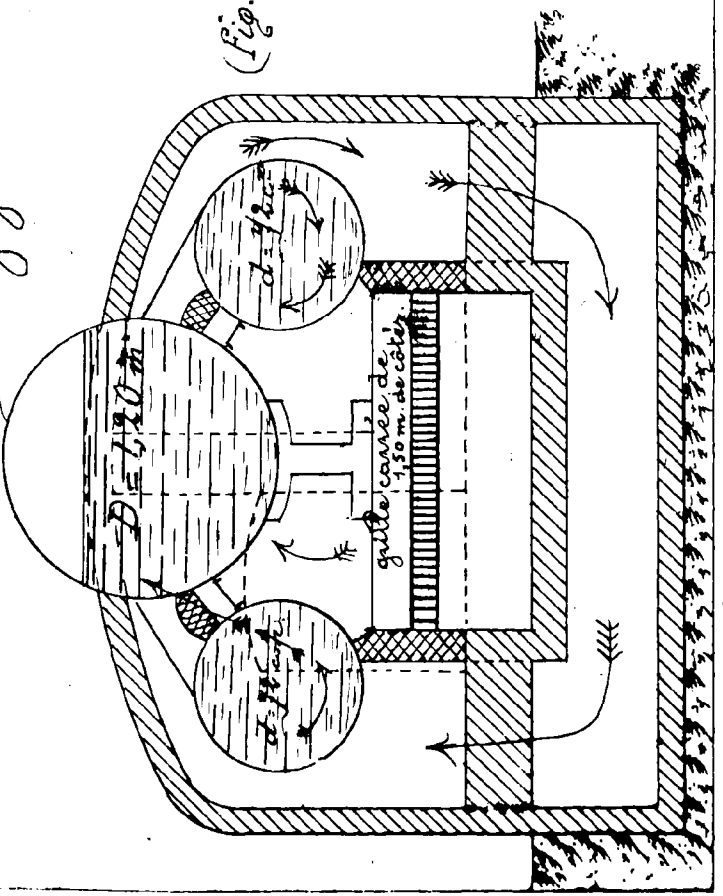
Chaudière du Cornwal.



(Fig. 350).

- $S = 63 \text{ m}^2$
- $G = 1,65 \text{ m}^3$
- $\frac{S}{G} = 38$
- $\frac{L}{G} = 13 \text{ m}^2$
- $v = 2 \text{ m}^2$
- $V = 15 \text{ m}^3$
- $\frac{V}{S} = 238 \text{ litres.}$

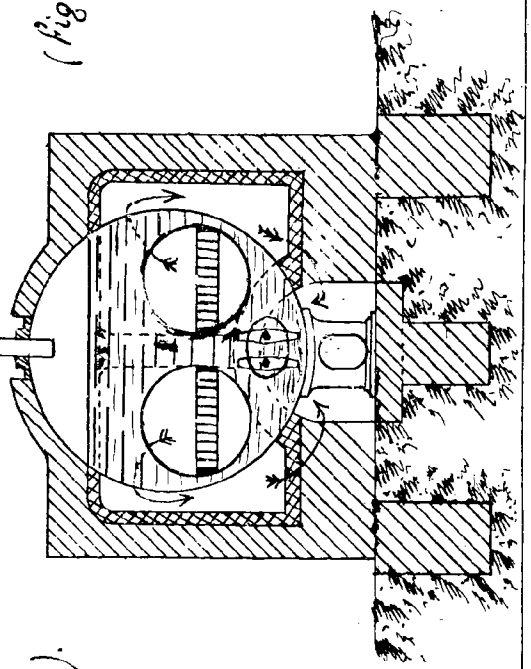
Section transversale par le foyer d'une chaudière Cornwal.



(Fig. 354).

Coupe transversale AB de la chaudière Cornwal Fig 351

alimentation par eau chaude.

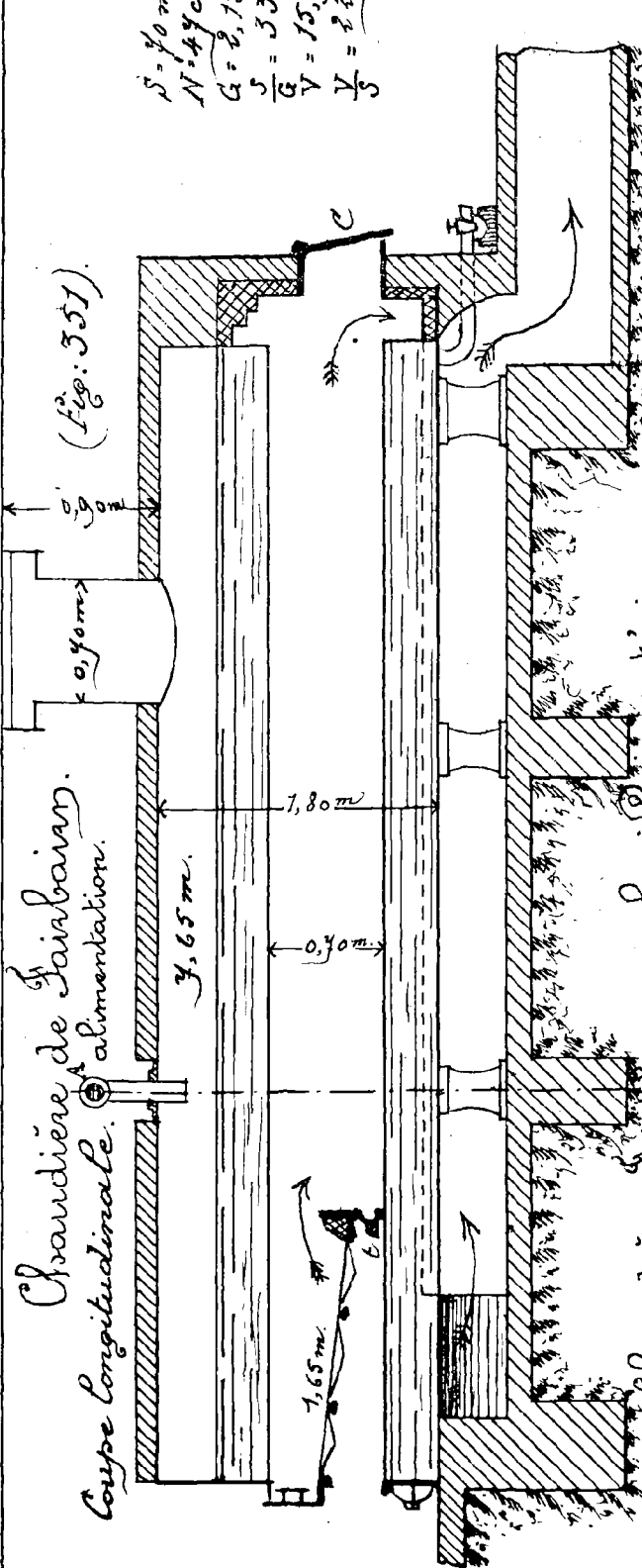


(Fig 352)

Chaudière de Fairbairn.
Coupe Longitudinale.
Alimentation.

(Fig. 351)

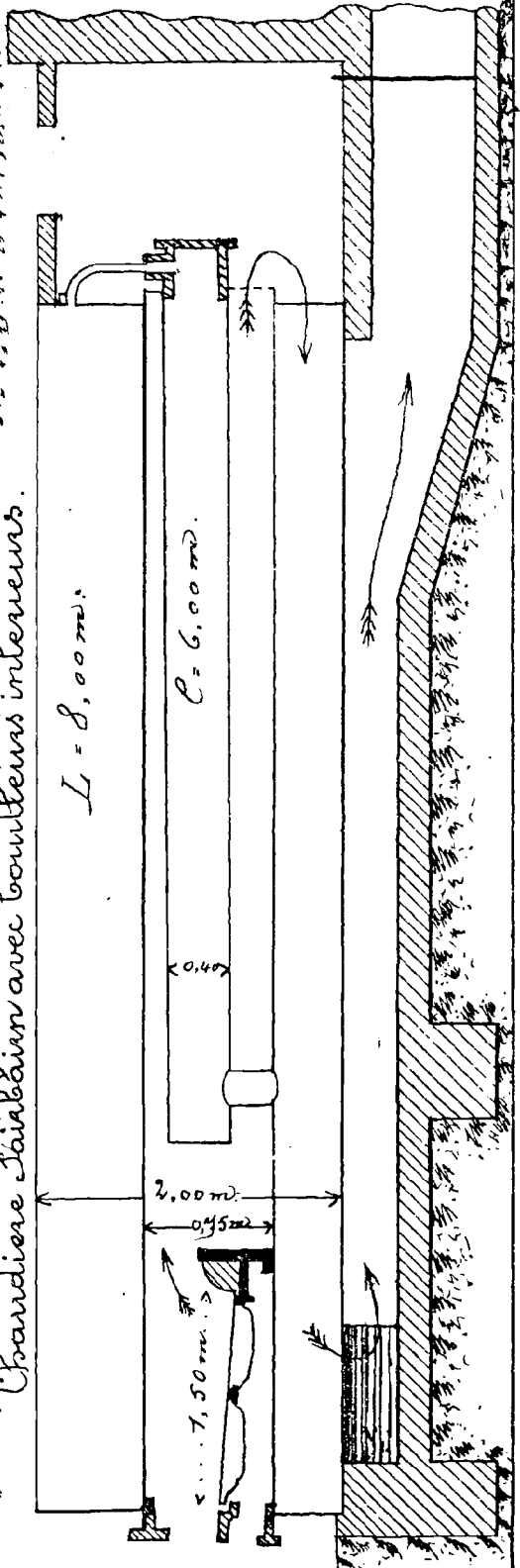
$$\begin{aligned}
 S &= 40 \text{ m}^2 \\
 N &= 49 \text{ cb.} \\
 G &= 2,15 \text{ m}^3 \\
 \frac{S}{G} &= 33 \\
 V &= 15,9 \text{ m}^3 \\
 \frac{V}{S} &= 2 \text{ l} \text{ } \frac{1}{\text{p.}}
 \end{aligned}$$



Chaudière Fairbairn avec bouilleurs intérieurs.

(Fig. 352)

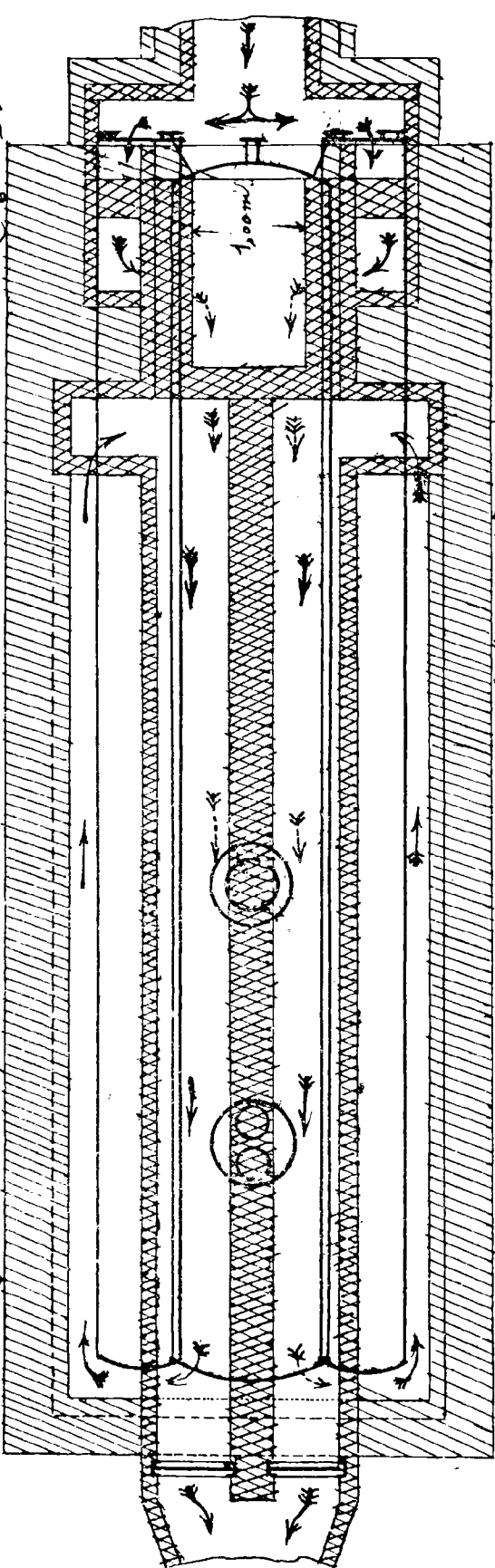
$$\begin{aligned}
 S &= 84 \text{ m}^2 \\
 G &= 2,10 \text{ m}^3 \\
 \frac{S}{G} &= 40
 \end{aligned}$$



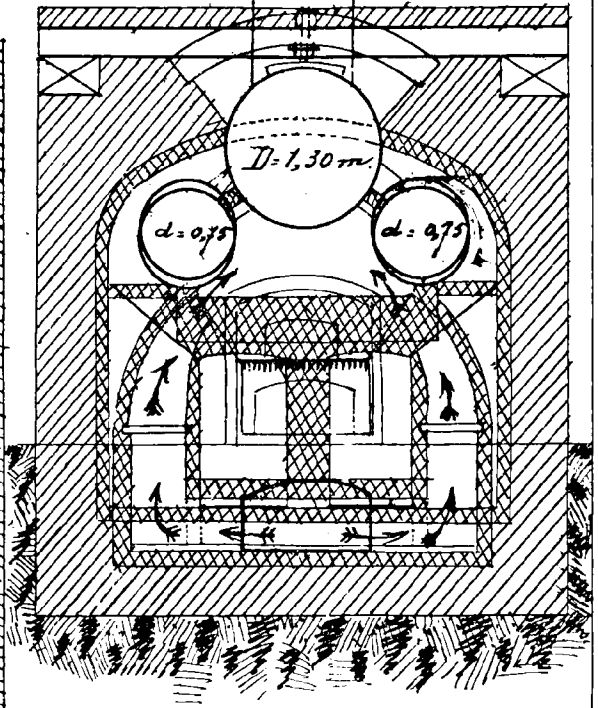
Pl. XXX.

Projection et Coupe horizontale biséc.

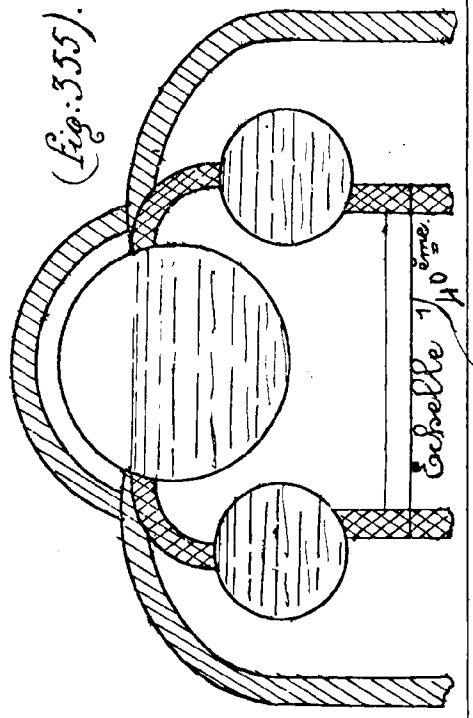
(Fig. 355).



Coupe transversale bisécée et vue de face. (Fig. 358)



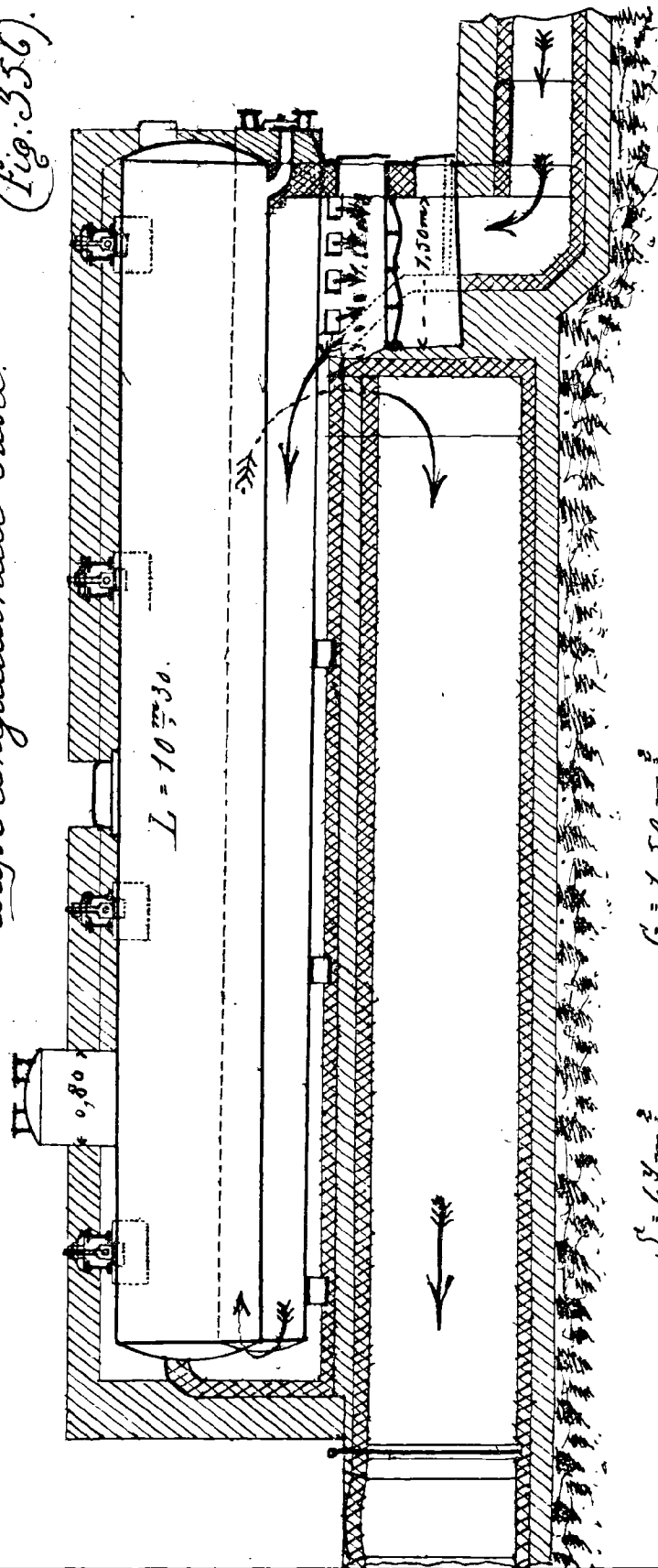
(Fig. 355).



*Chaudière Mervez
avec foyer mixte, à bouille et à gaz.*

Coupe longitudinale brivée.

(Fig. 356).



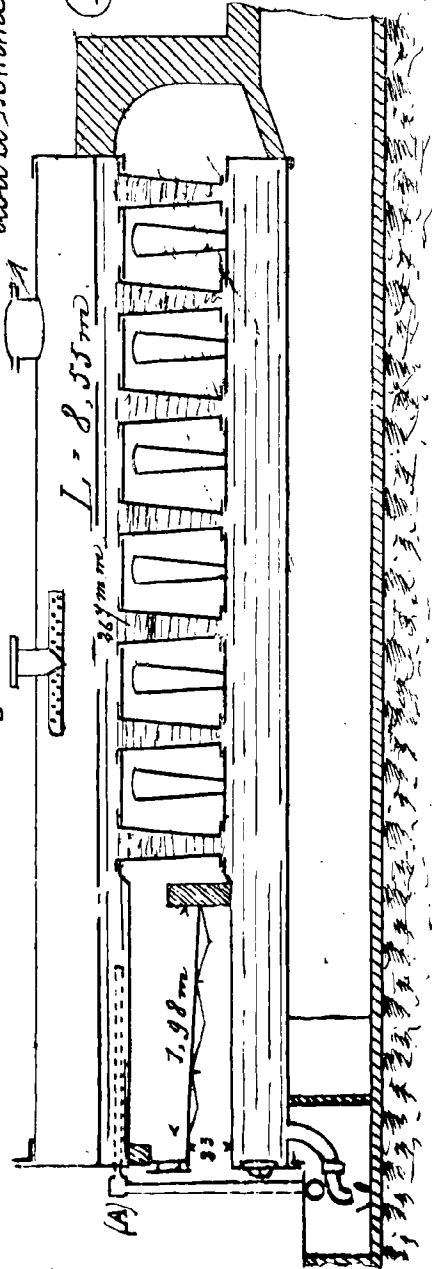
$$S = 67 \text{ m}^2$$

$$G = 1,50 \text{ m}^2$$

$$\frac{S}{G} = 44 \text{ (maison chargée à gaz). } N = 44 \text{ cb.}$$

Chaudière Salorway.
Coupe Longitudinale.

trou d'homme.



(Fig. 363).

$$S = 106 \text{ m}^2;$$

$$G = 3,20 \text{ m}^2;$$

$$v = 22,85 \text{ m}^3;$$

$$V = 29,35 \text{ m}^3;$$

$$\frac{V}{S} = 2,74 \text{ l.};$$

$$N = 70 \text{ à } 85 \text{ ch.};$$

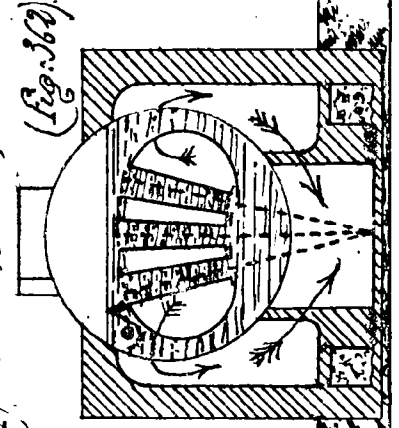
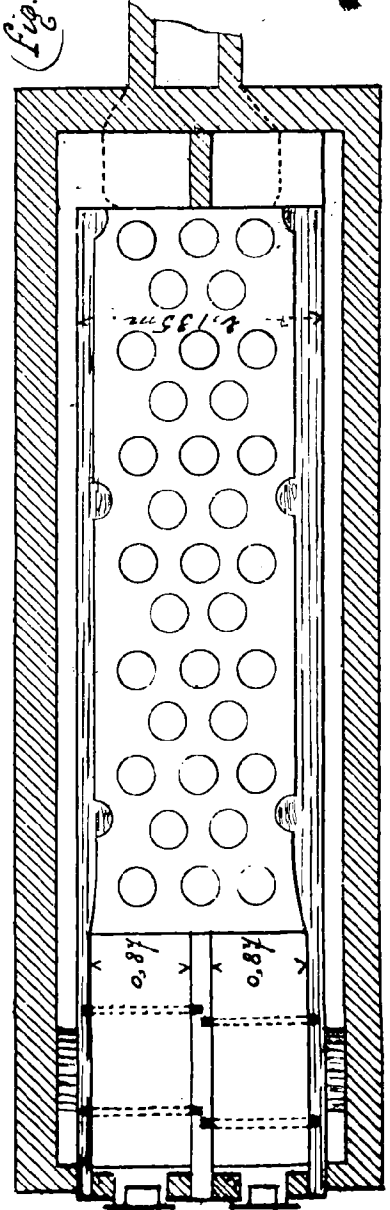
$$\frac{S}{G} = 33;$$

$$E = 6,5 \text{ m}^3 \sim 33 \text{ tubes.}$$

(Fig. 364)

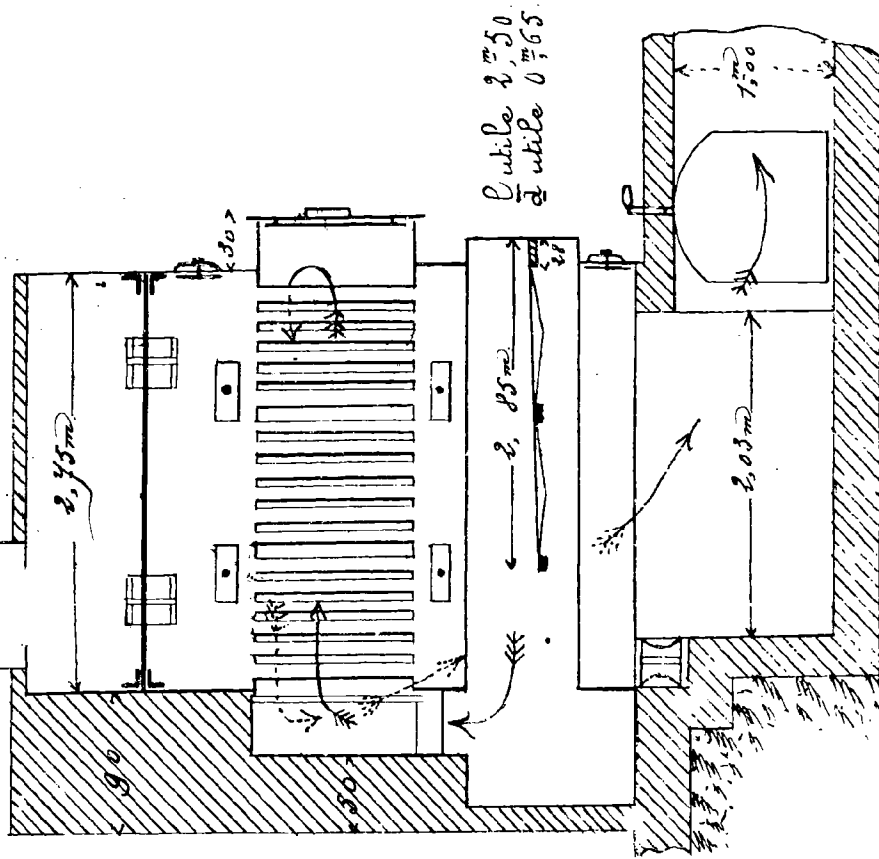
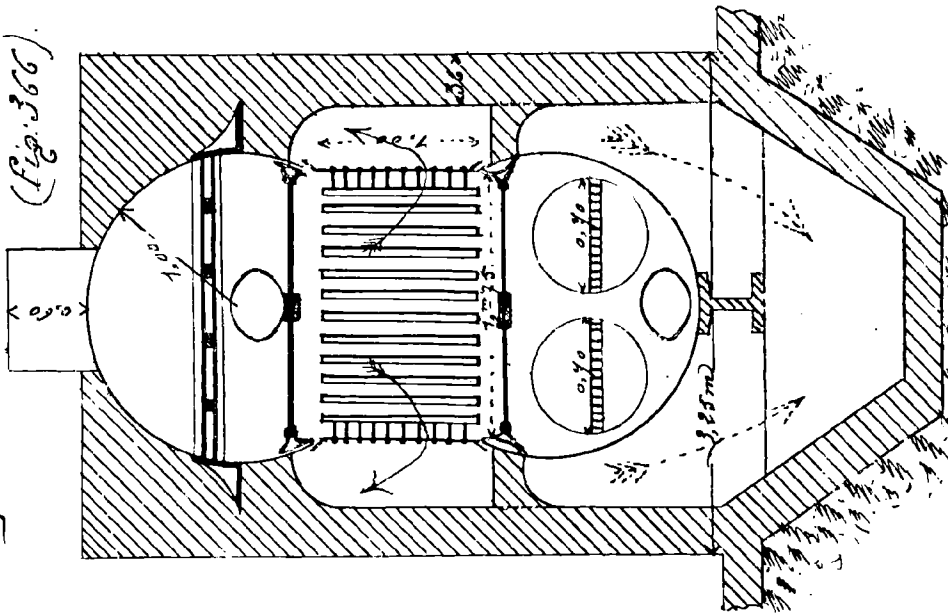
(Fig. 364)

Coupe - projection horizontale.



Coupe transversale
(Fig. 366).

Coupe longitudinale
(Fig. 367).

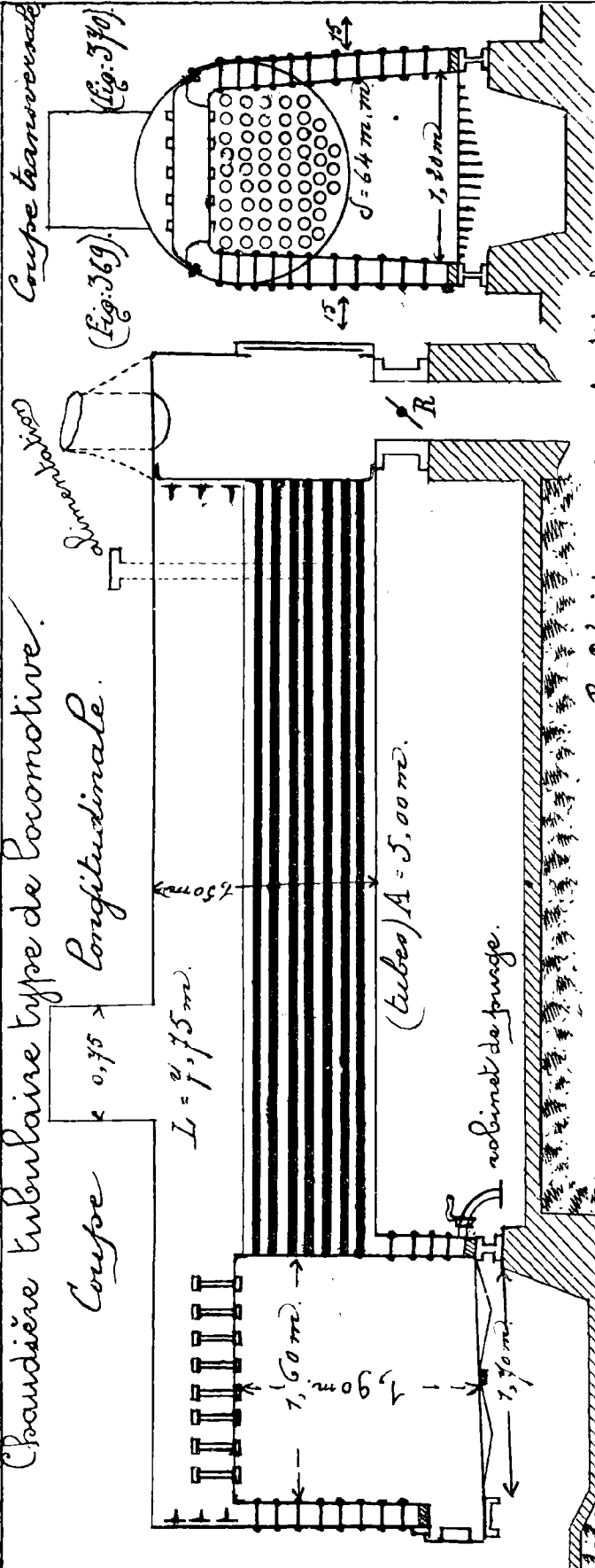


$L_{\text{utile}} 2,50$
 $d_{\text{utile}} 0,65$

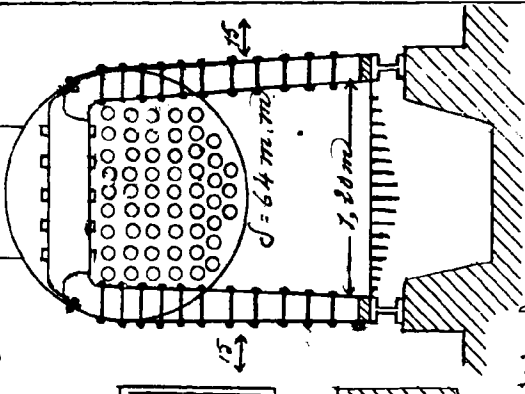
$S = 105 \text{ m}^2$ dont 48 pour le faisceau tubulaire ; $N = 70$; $G = 3,25 \text{ m}^2$; $\frac{S}{G} = 32$; $F = 8 \text{ m}^3$; $v = 5,2 \text{ m}^3$; $V = 13,2 \text{ m}^3$; $\frac{V}{S} = 125 \text{ l}$

Chaudière tubulaire type de locomotive.

Coupe $\times 0,75$ > Longitudinale.



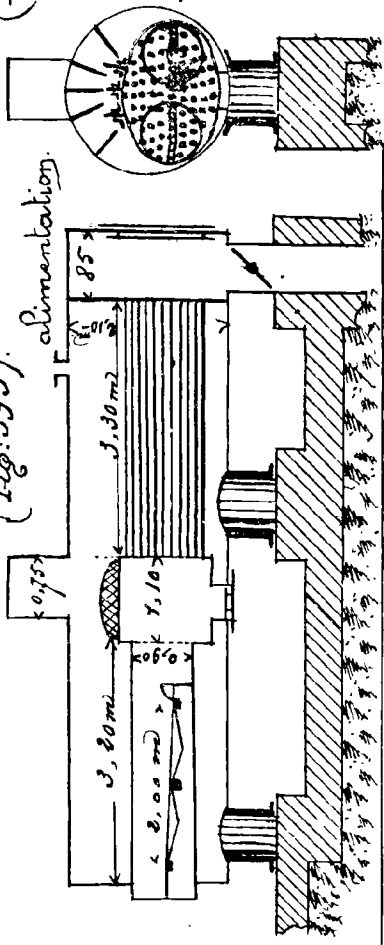
Coupe transversale (Fig: 370).



R. Régistère mu par des tingles de renvoi vers la devanture.

Chaudière tubulaire d'airbain.

(Fig: 393).



Légende des figures 369 et 370.

- $S = 115 \text{ m}^2$;
- $G = 2,04 \text{ m}^2$;
- $S = 420 \text{ m}^2$;
- $G = 3,45 \text{ m}^2$;
- $V = 8,4 \text{ m}^3$;
- $N = 80 \text{ ch}$;
- $\frac{S}{G} = 35$;
- $G = 0,384 \text{ d m}^2$;
- $V = 73 \text{ l}$;
- $\delta = 0,4 \text{ dm}$;
- $A = 44 \delta$.

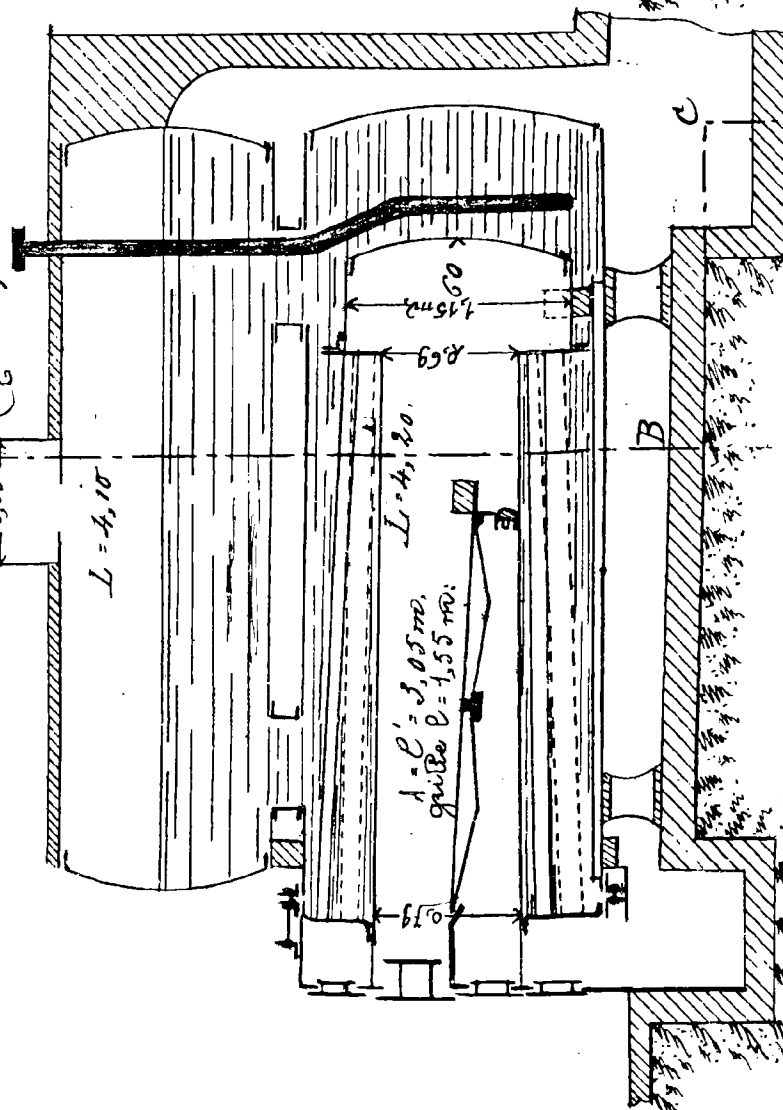
$\frac{S}{G} = 56$;

$I = 4,8 \text{ m}^2$;

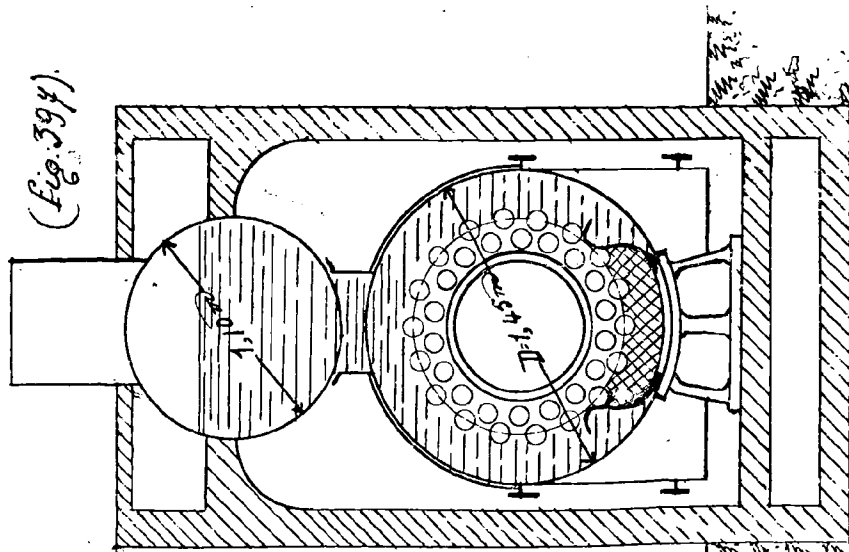
nombre de tubes, $n = 105$.

Chaudière Cornas et Laurens.

Coupe Longitudinale. (Fig. 396).



Coupe transversale A.B.C.D. (Fig. 394).

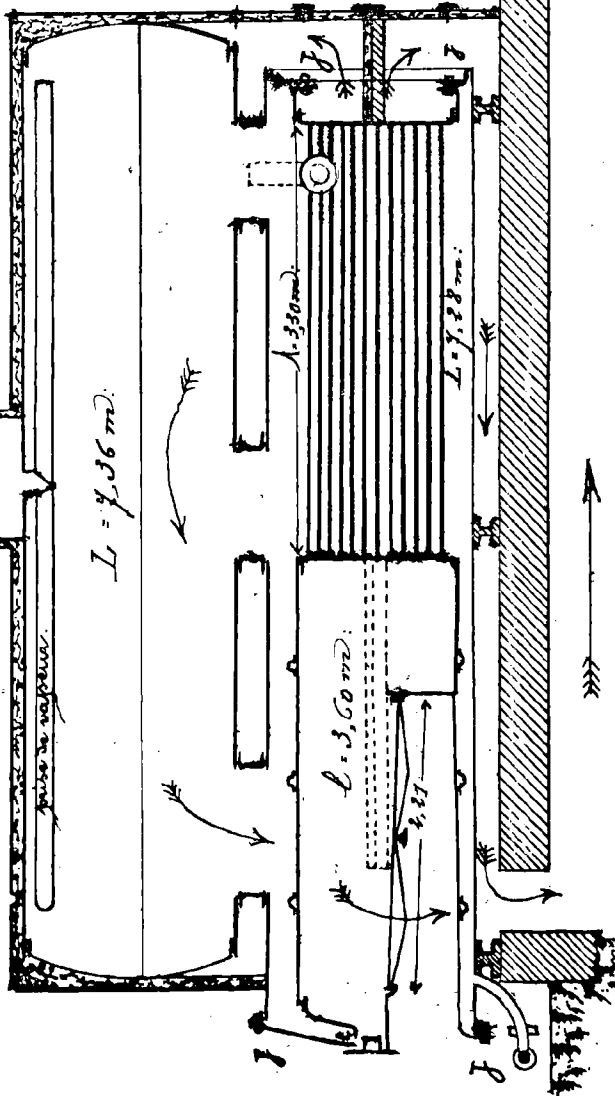


$S = 67 \text{ m}^2$; $N = 45 \text{ ch}$; $G = 1,30 \text{ m}^3$; $\frac{S}{G} = 51$; $L = 6,3 \text{ m}^3$; $v = 2,2 \text{ m}^3$; $V = 8,5 \text{ m}^3$; $V = 124 \text{ l}$; 35 tubes;
 $1.3,05 \text{ m}$; $\phi = 88 \text{ m. m.}$, Surface d'emplacement 12 m^2 ; Diam de manoeuvre 8 m^2 ;
 Surface totale $2,0 \text{ m}^2$; Surface de charge par m^2 occupé $3,35 \text{ m}^2$.

Chaudière Forcet.

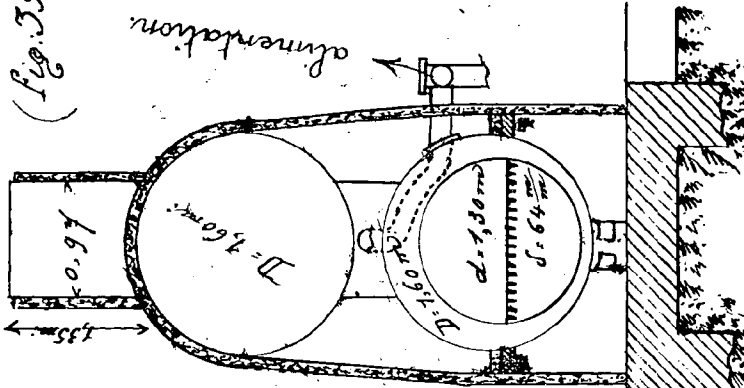
Coupe longitudinale

(Fig. 398).



Coupe transversale

(Fig. 399).

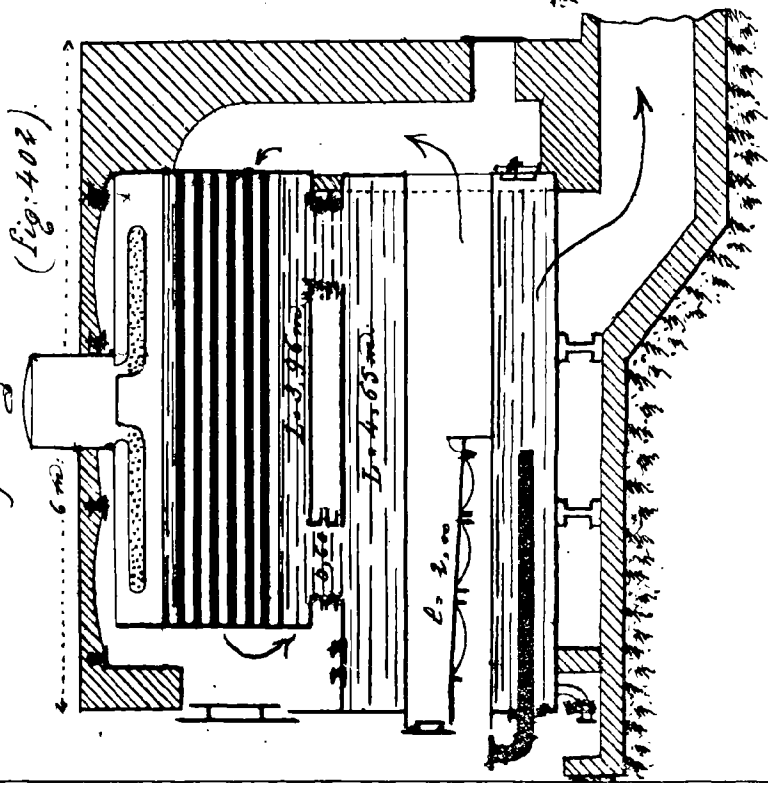


140 tubes; $A = 3.30 \text{ m}^2$; $S = 6.64 \text{ m}^2$; $G = 2,85$; $V = 16,8$; $E = 10 \text{ m}^2$; $v = 6,8 \text{ m}^3$; $N = 9 \text{ ch}$; $\frac{S}{G} = 5,1$; $\frac{V}{S} = 1,16$.

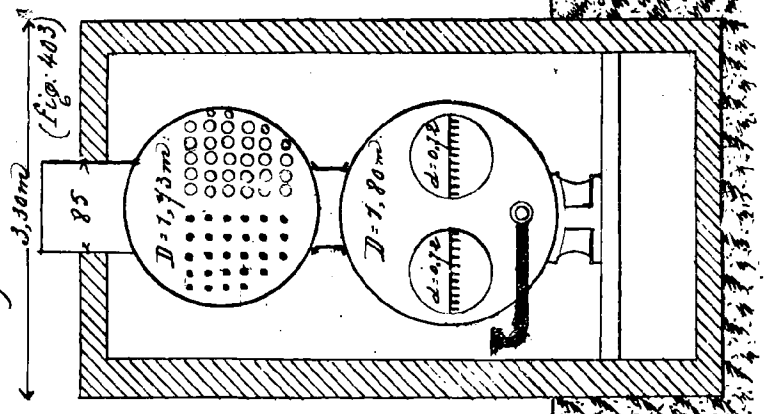
Combustion moyenne, Rendement en vapeur par Kg. charbon = $8 \frac{1}{2}$
 Surface d'emplacement du générateur: $.19 \text{ m}^2$
 Emplacement total, générateur et aise de manoeuvre: $.54 \text{ m}^2$
 Surface de chauffe par m^2 d'emplacement total: $.4,24 \text{ m}^2$

Chaudière Piedbœuf

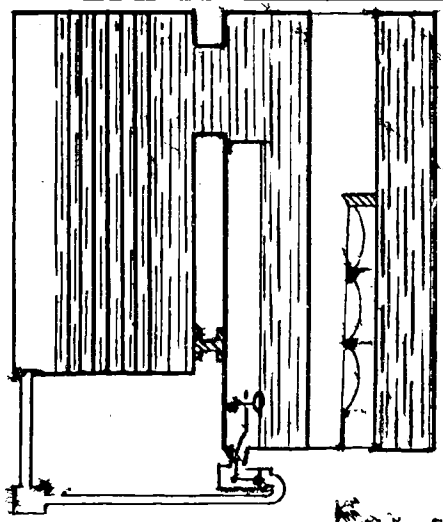
Corpe longitudinale (Fig. 402)



Corpe transversale (Fig. 403)



Chaudière à deux chambres de vapeur (Fig. 404)

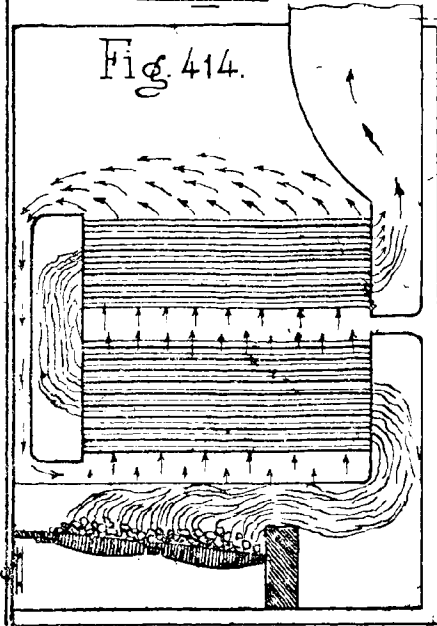


$S = 153 \text{ m}^2$; $G = 2,80 \text{ m}^3$;
 $V = 76,08 \text{ m}^3$; $N = 100 \text{ ch.}$;
 $\frac{S}{G} = 55$; $\frac{V}{S} = 105 \text{ l.}$

Emplacement: $19,80 \text{ m}^2$;
 Surface de chauffe par m^2 : $7,73 \text{ m}^2$;
 ou
 Surface par Kg. de charbon: $8 \text{ Kg. à } 8,5 \text{ Kg.}$

*Chaudière rectangulaire
à double faisceau
tubulaire.*

Coupe longitudinale



Coupe transversale

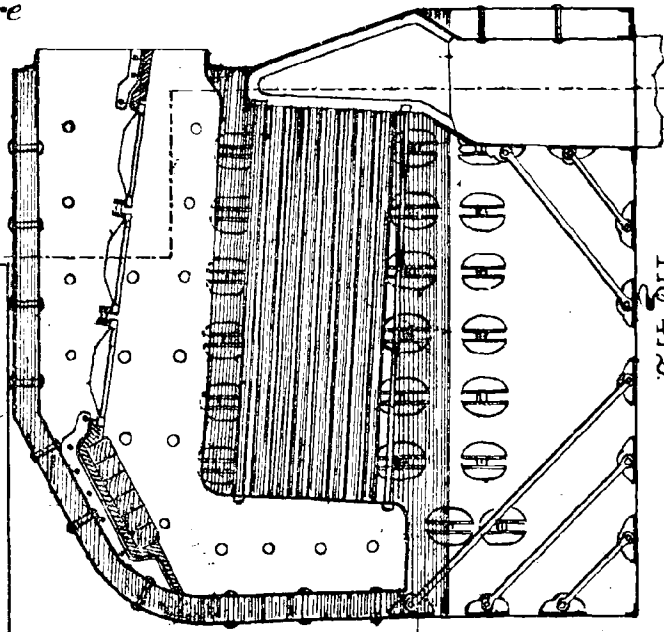
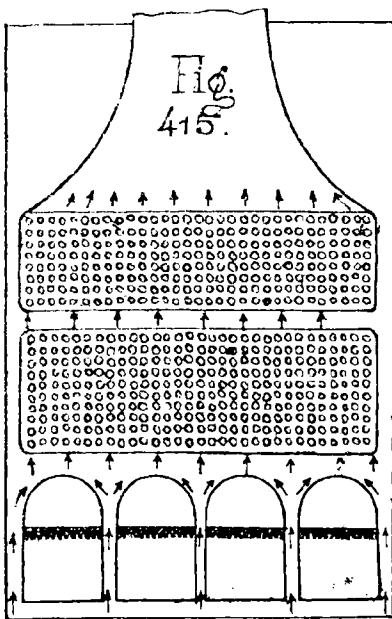


Fig. 412.

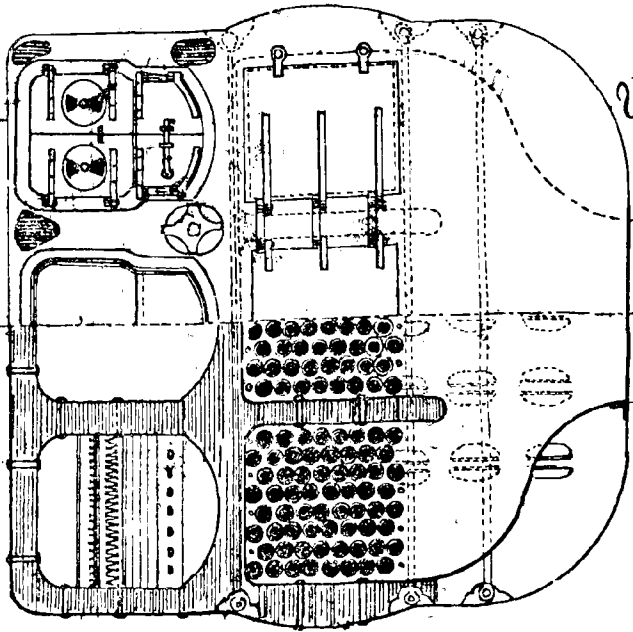
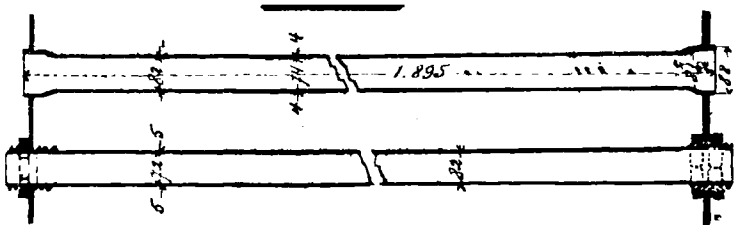


Fig. 413.

*Détail des Tubes du Transatlantique
figuré PL. XXV.*



ANCIENS TYPES PARALLÉLIPIÉDIQUES TUBULAIRES.

CHAUDIÈRES DE MARINE À GALERIES.

Fig. 406.

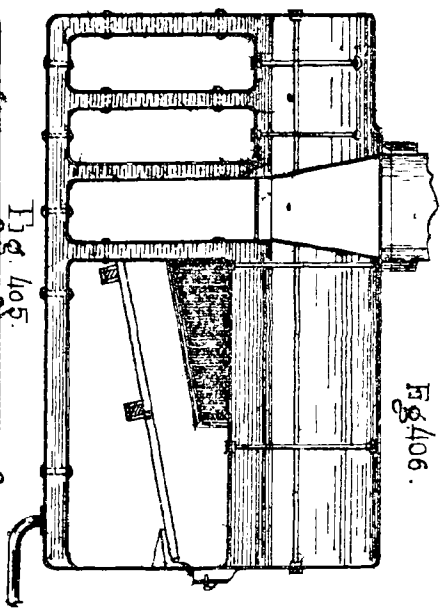
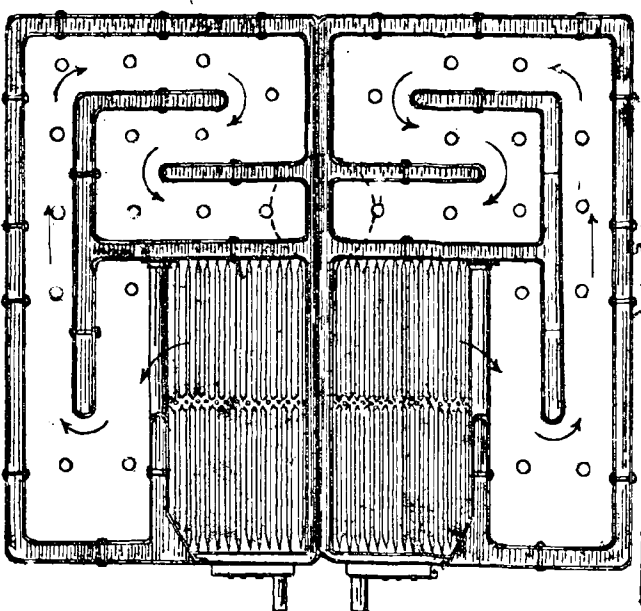


Fig. 405.



ANCIENSTYPES TUBULAIRES.

Fig. 410.

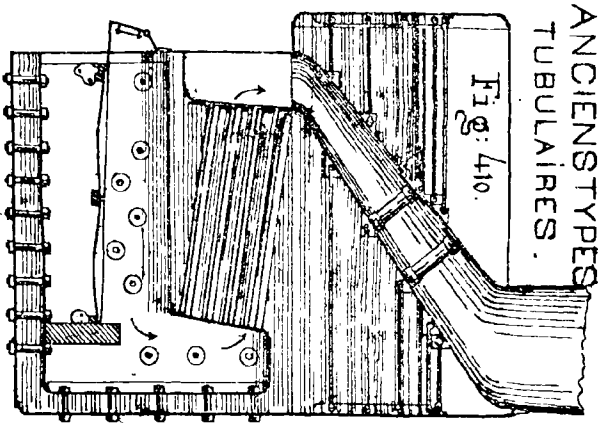


Fig. 411.

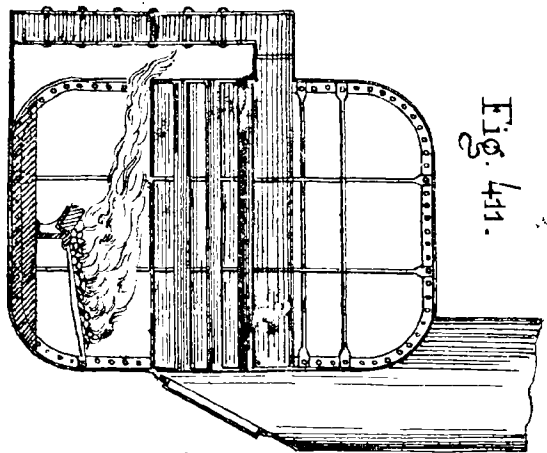
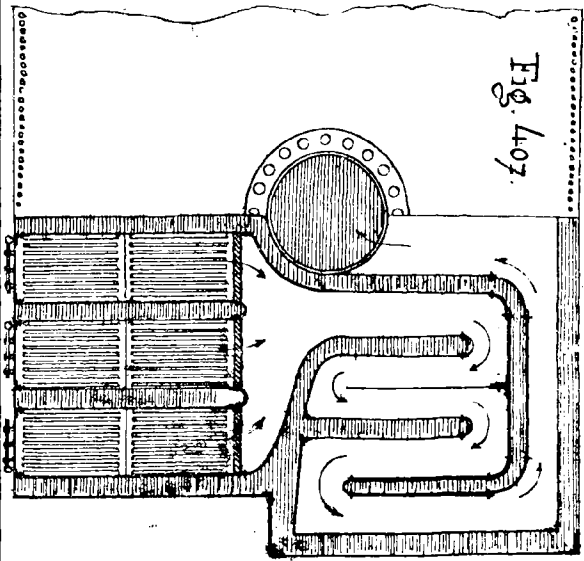
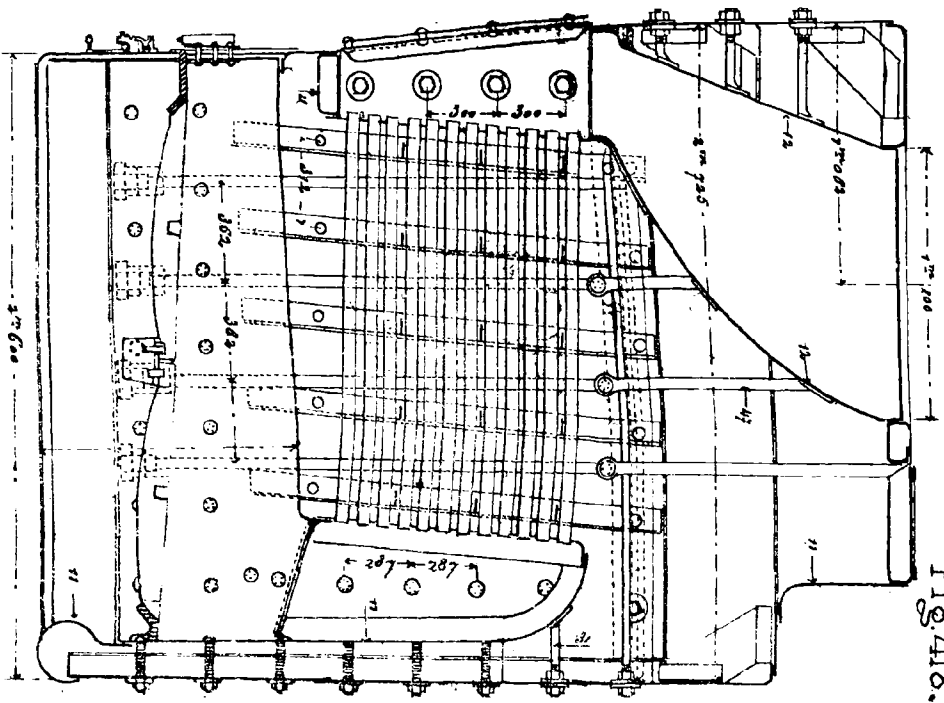


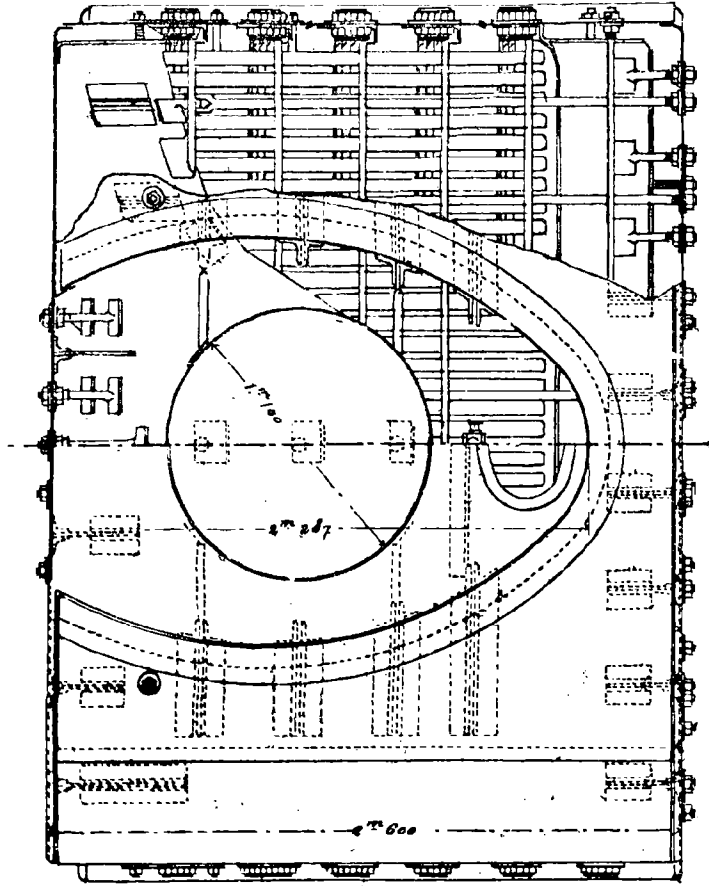
Fig. 407.





Coupe Longitudinale.

Fig. 418.

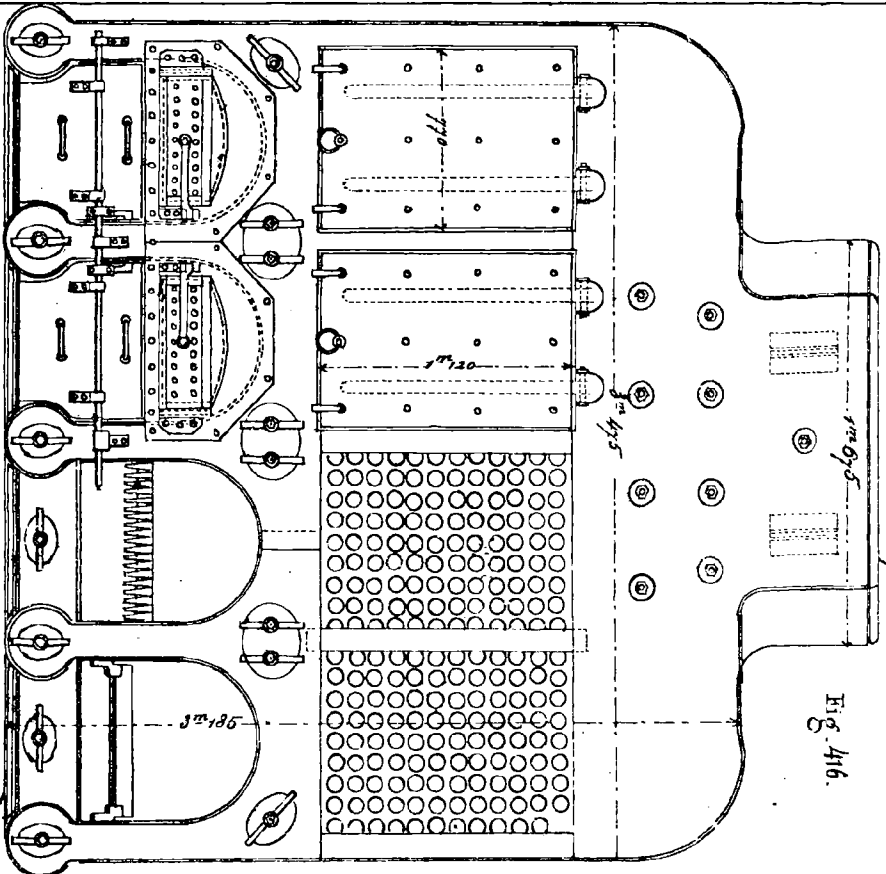


*Projection
et
Coupe Horizontale.*

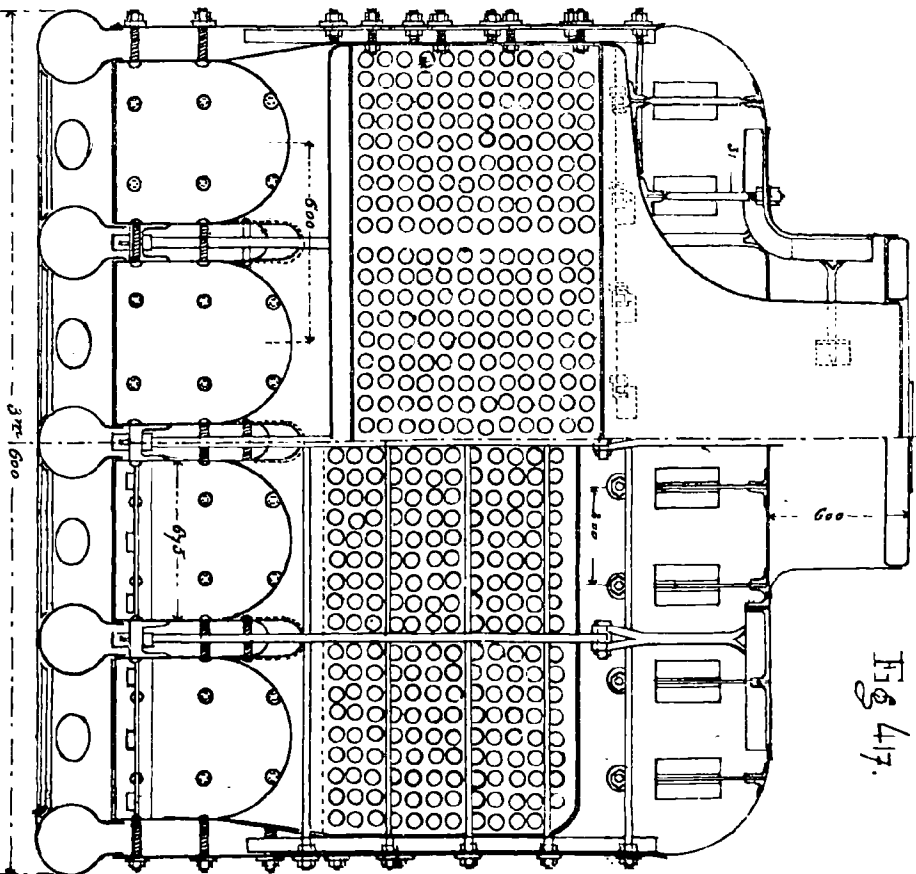
Fig. 419.

CHAUDIÈRE D'UN YACHT DE LA MARINE ANGLAISE.

Vue de face et Coupe.



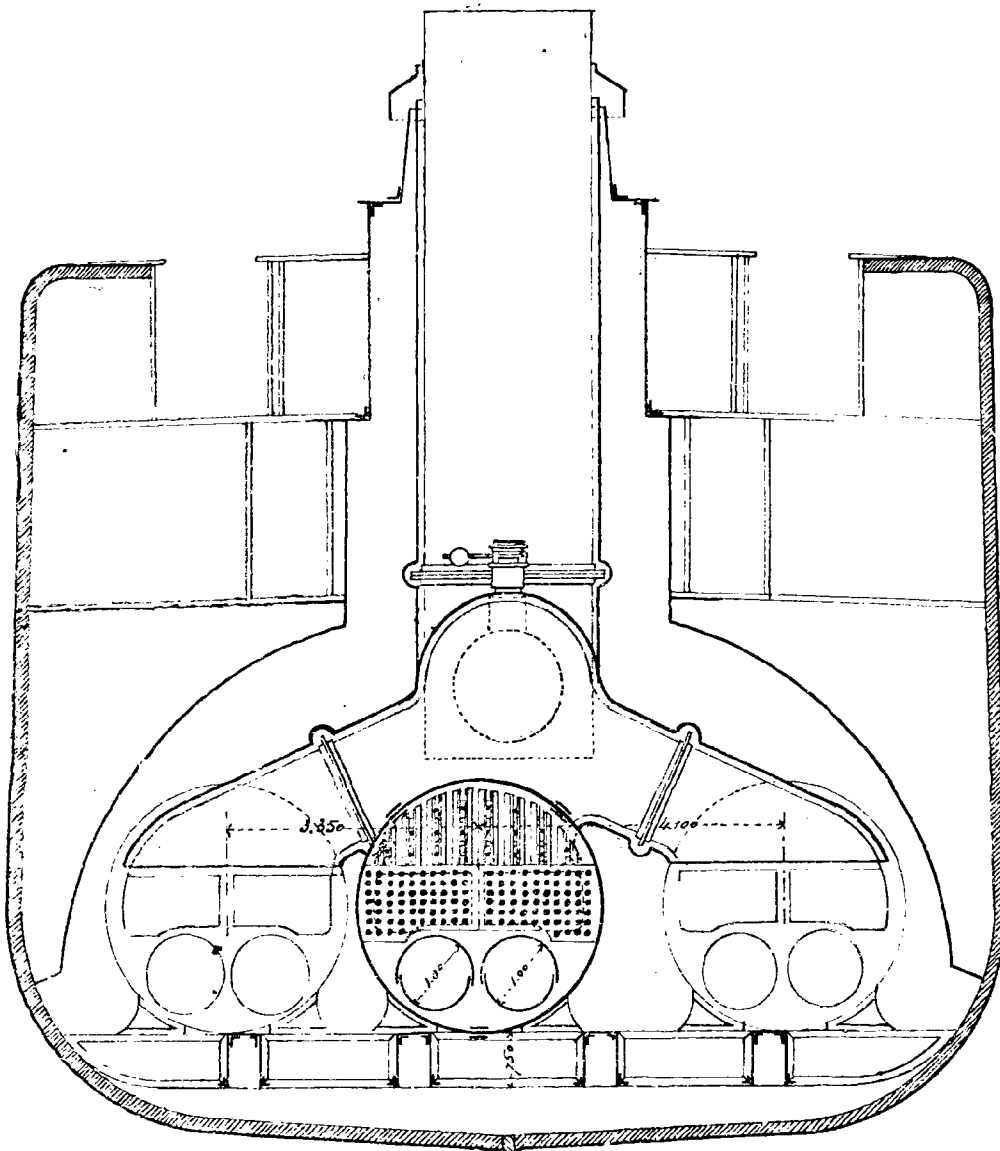
Coupes transversales.



CHAUDIÈRE DE BÂTEAUX TRANSATLANTIQUES

Coupe Transversale

Fig. 421.

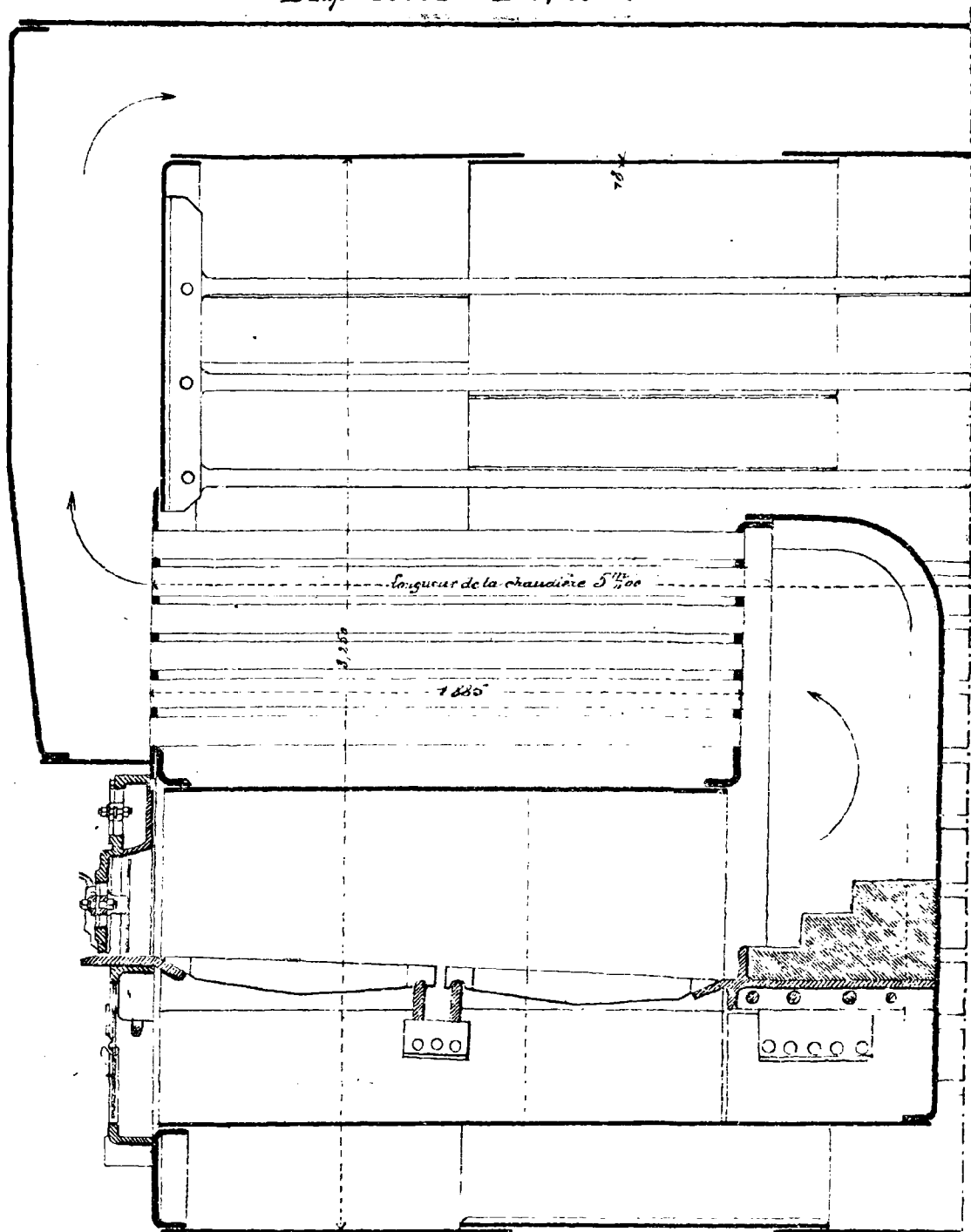


$D = 3,25^m$ $l = 5,00^m$
 4 foyers et Chambres de combustion $d = 1,00^m$ $l = 2,35^m$.
 256 Tubes ayant $\delta = 7,4^m$; $\lambda = 1^m885$.
 $S = 150^m^2$ $N = 100$ Chevaux
 $G = 6,5^m^2$ $S = 23$
 G
 Timbre 5 Kgs.

CHAUDIÈRE DE BÂTEAUX TRANSATLANTIQUES. (CREUSOT)

DEMI-COUPÉ LONGITUDINALE.

Fig. 490.

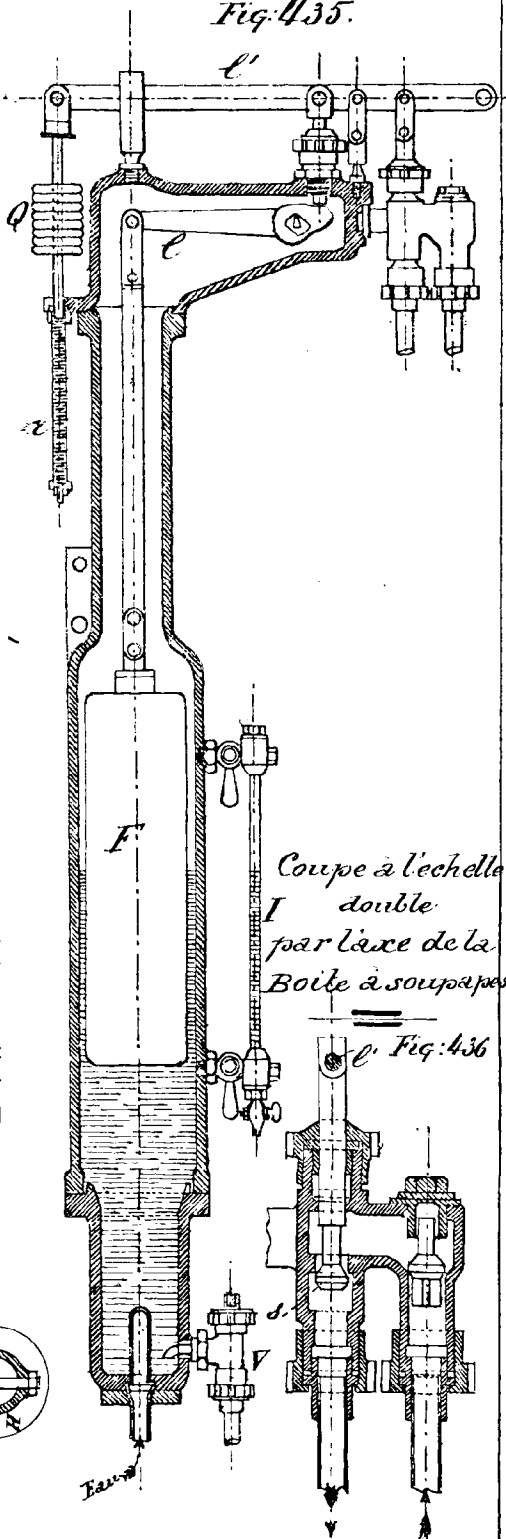


PL. XXVI

Régulateur d'alimentation

Elevation de Côté Coupe

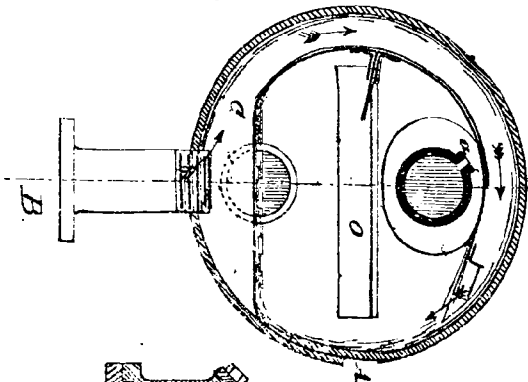
Fig. 435.



Coupe à l'échelle
I double
par l'axe de la
Boîte à soupapes

Fig. 436

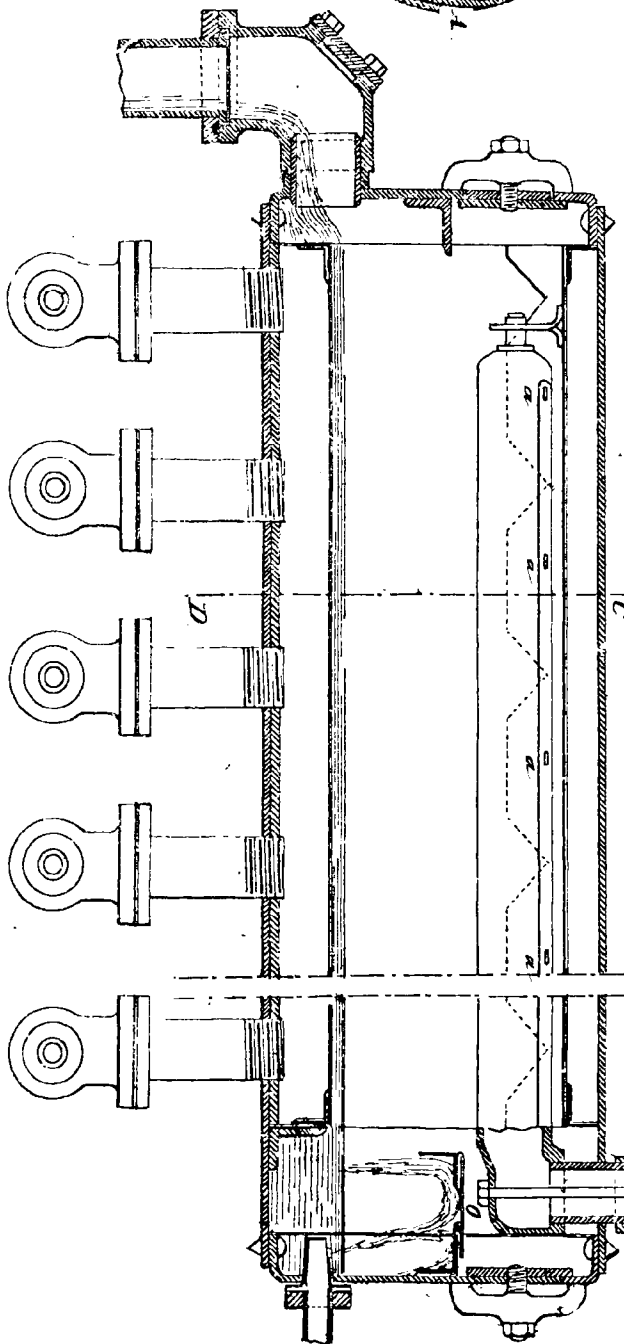
Vue de Côté Coupe suivant
Fig. 431 A
c. D.



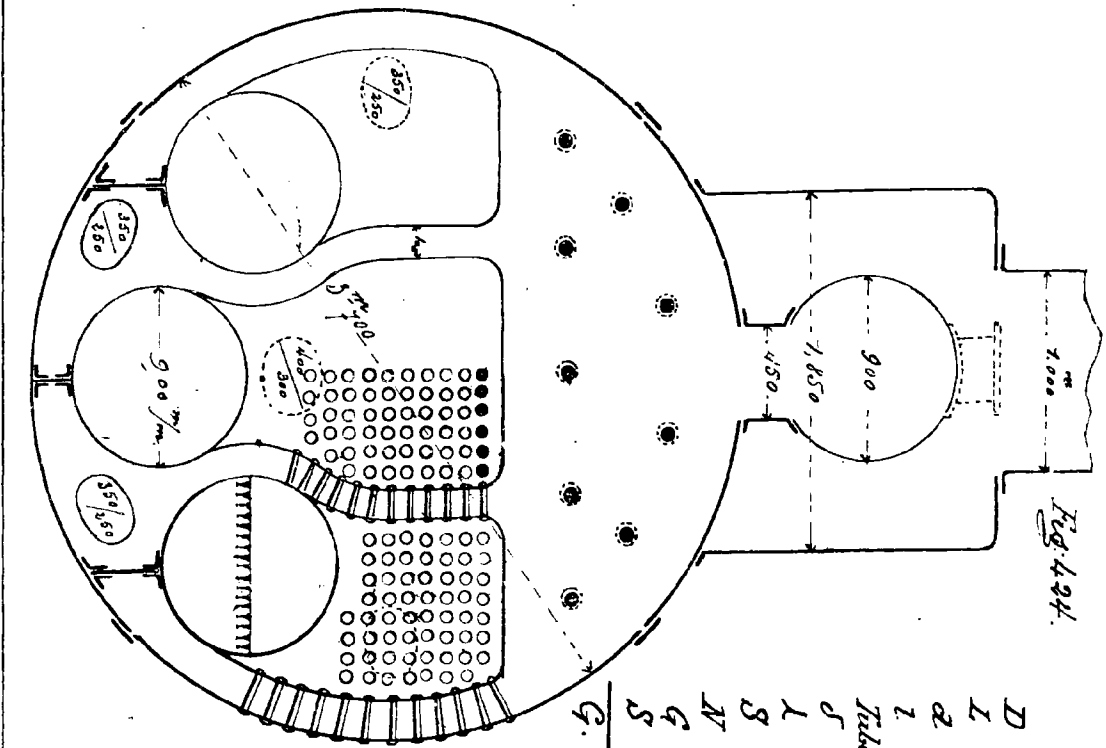
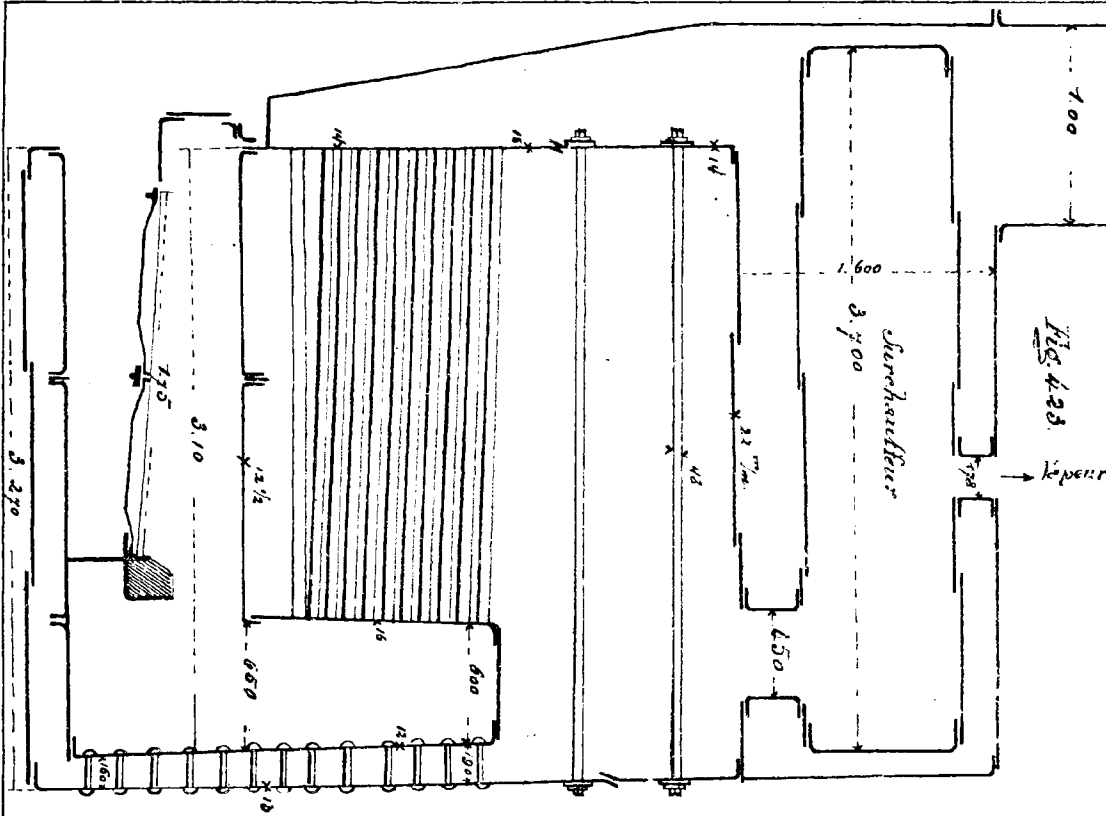
COLLECTEUR - ÉPURATEUR BELLE VILLE

Vue de face

Coupe suivant A B Fig. 432



CHAUDIÈRE DES TRANSPORTS DE LA SOCIÉTÉ COCKERILL.



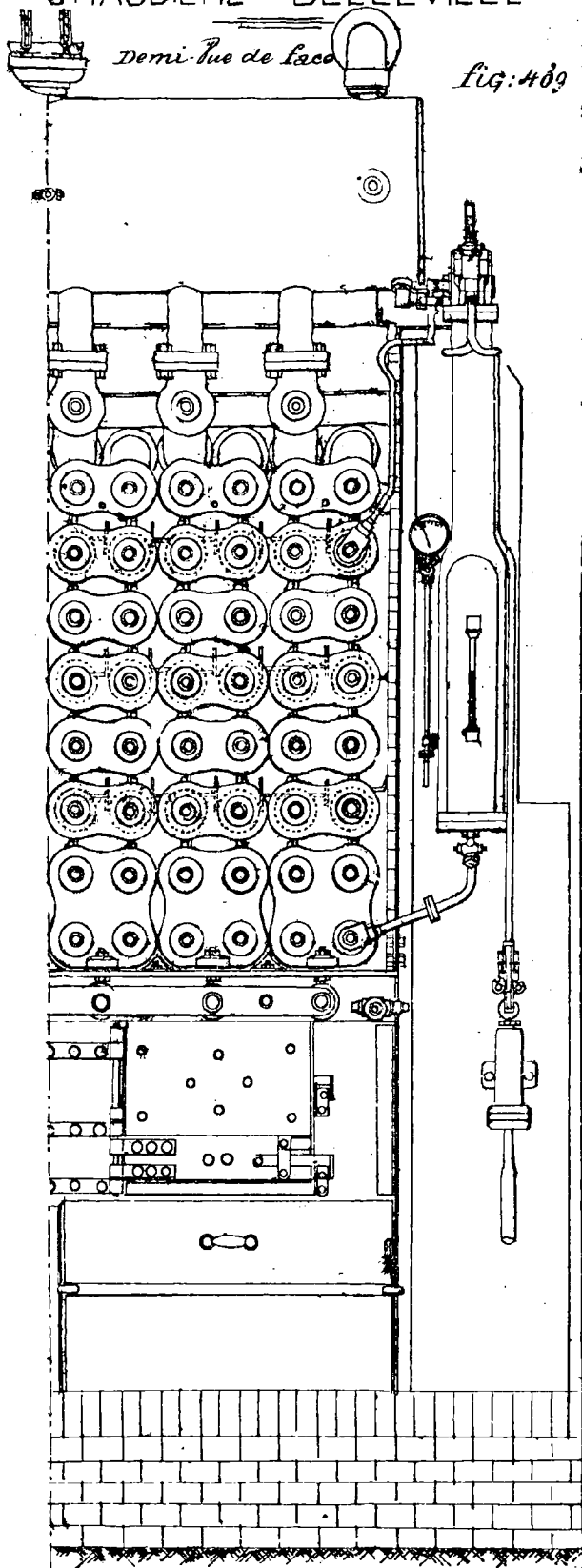
D	=	3,270 m
L	=	3,47 m
d	=	2,90 m
l	=	3,10 m
Tubes.....		201
f	=	85 m ² /m
l	=	2,43 m
S	=	153 m ²
N	=	102 est.
Q	=	4,50 m ³
S	=	34,4

Nombre: 4,54 m.

CHAUDIÈRE BELLEVILLE

Demi-tue de face

fig: 409



Reccords des Tubes des Elements Pool. Coupe longitudinale.

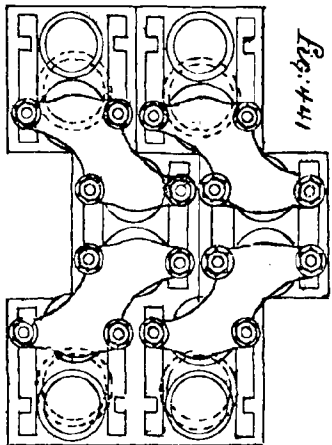
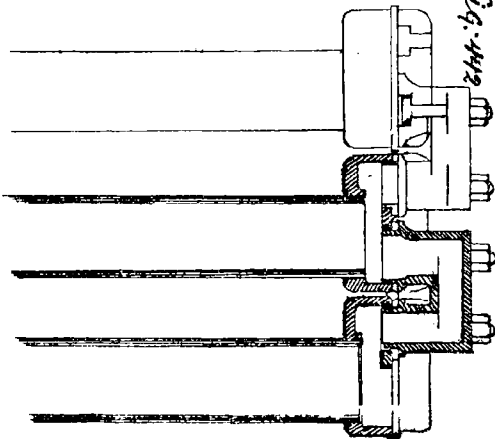
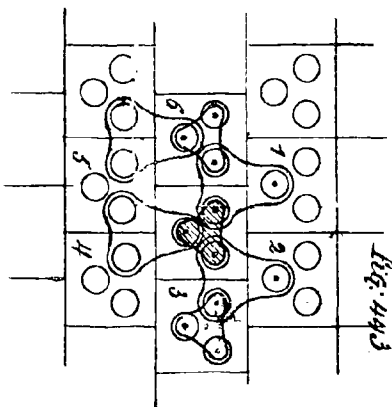


fig: 442

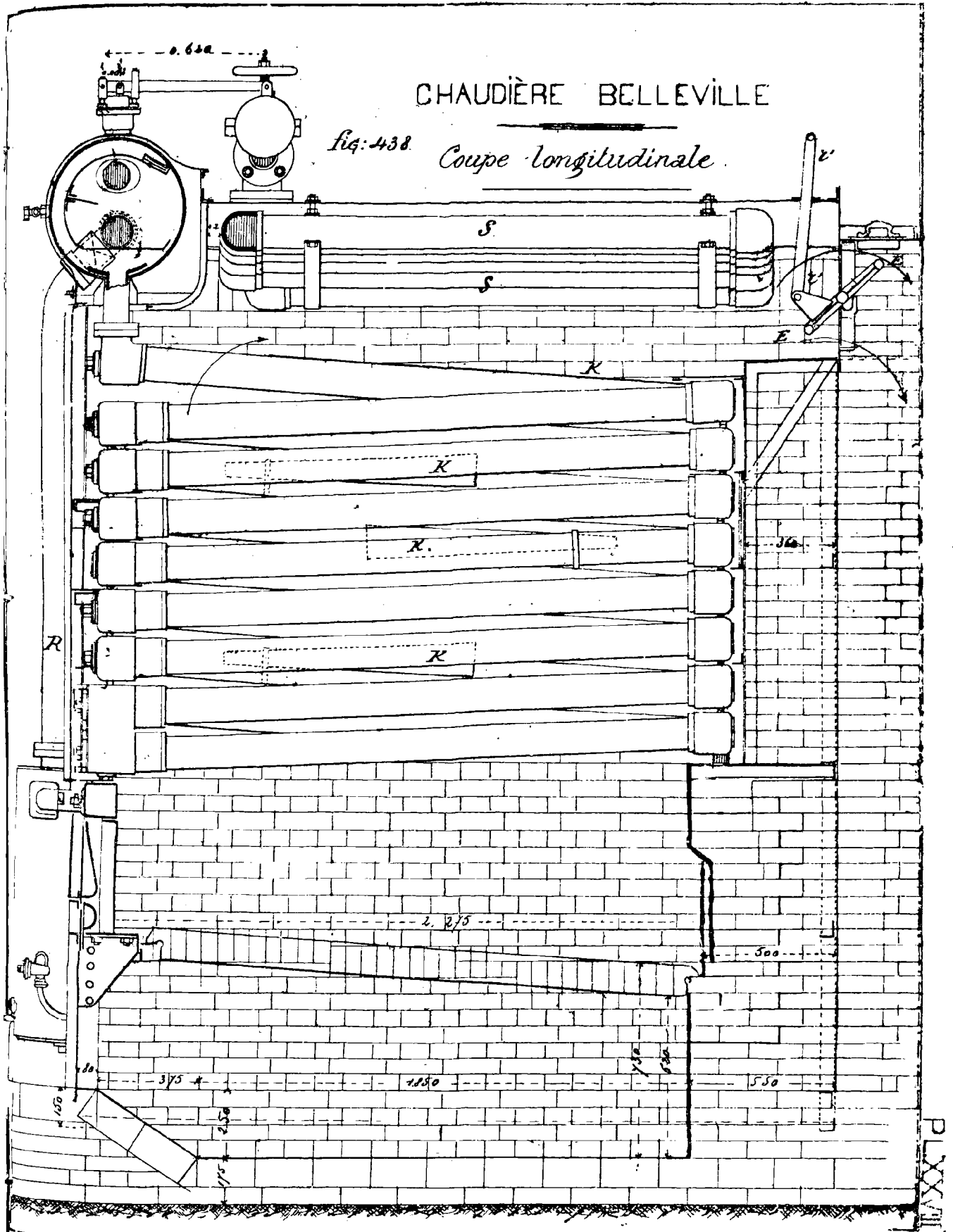


Disposition ancienne



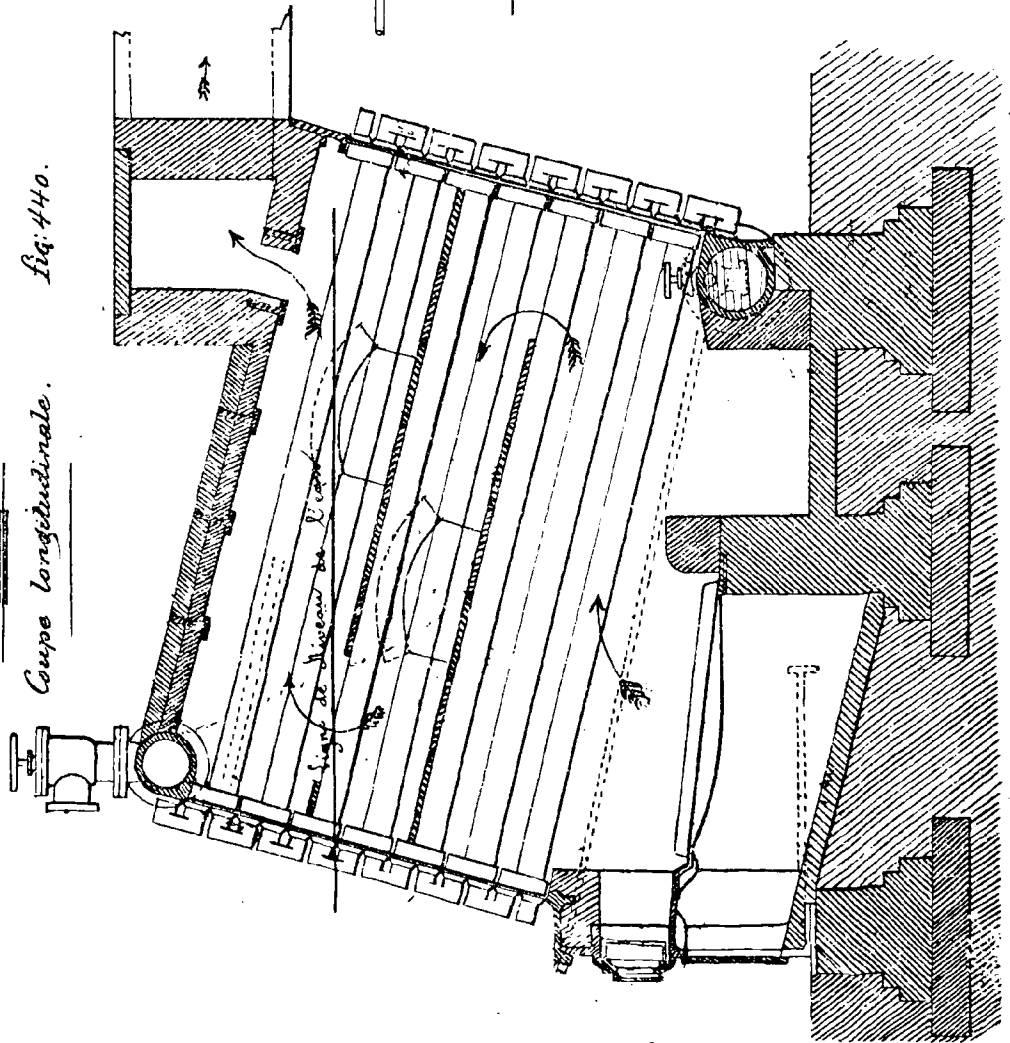
CHAUDIÈRE BELLEVILLE

fig. 438 Coupe longitudinale.

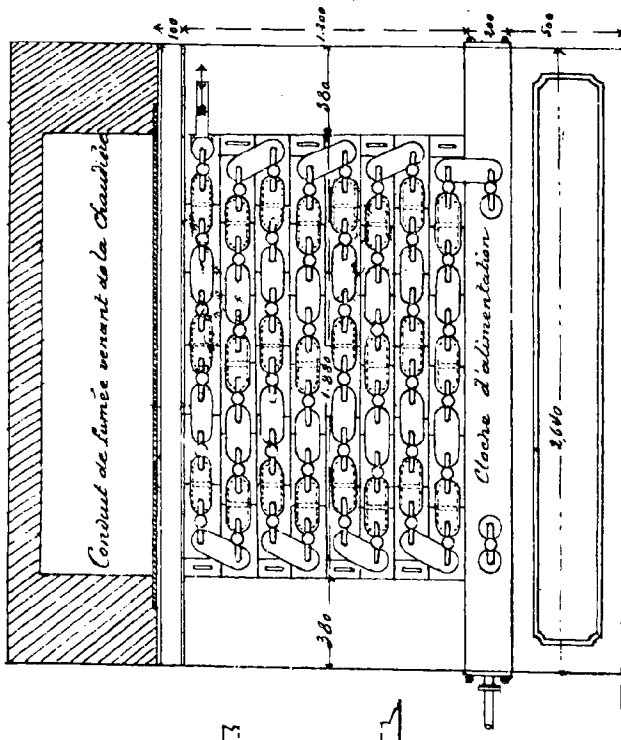


CHAUDIÈRE ROOT.

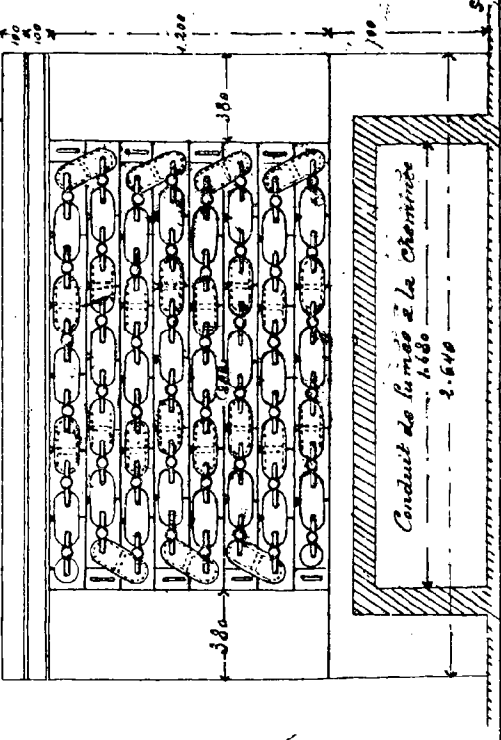
Coupe longitudinale. Fig. 440.



Rechauffeur De Payer de 12/8. Fig. 451.
Rue de devant.



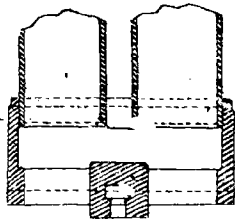
Rue de derrière. Fig. 452.



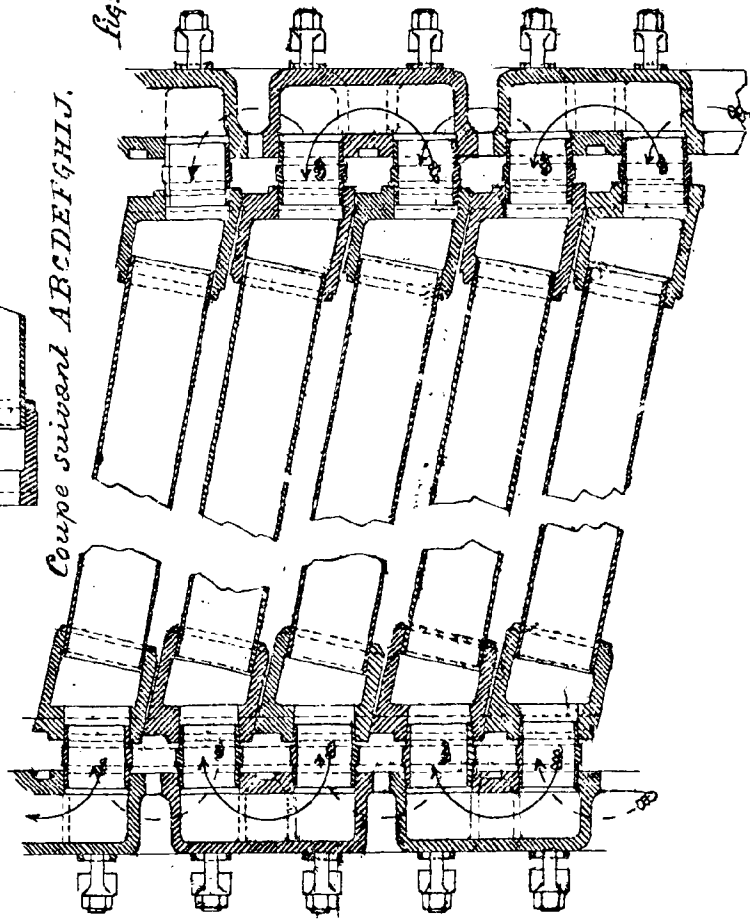
Communications des Éléments à façade droite.

Coupe Horizontale. (les boîtes étant enlevées)

fig: 449.

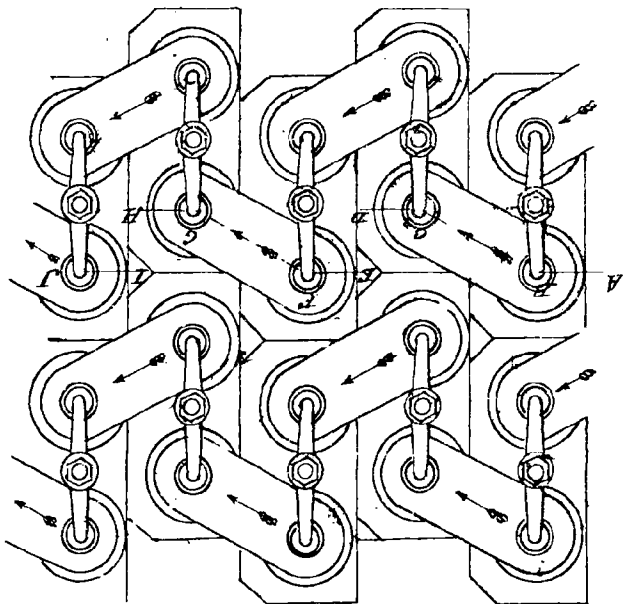


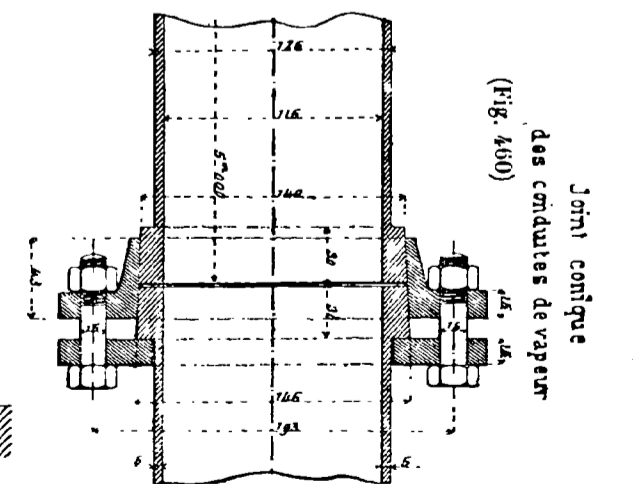
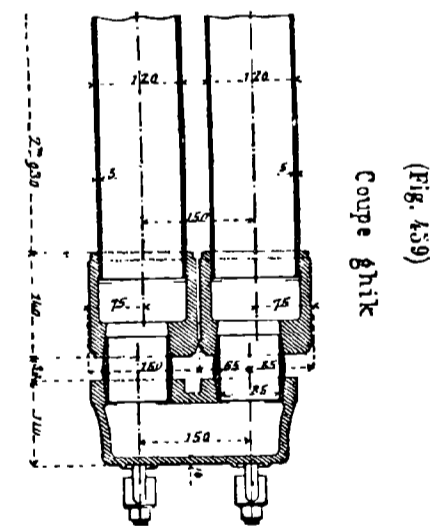
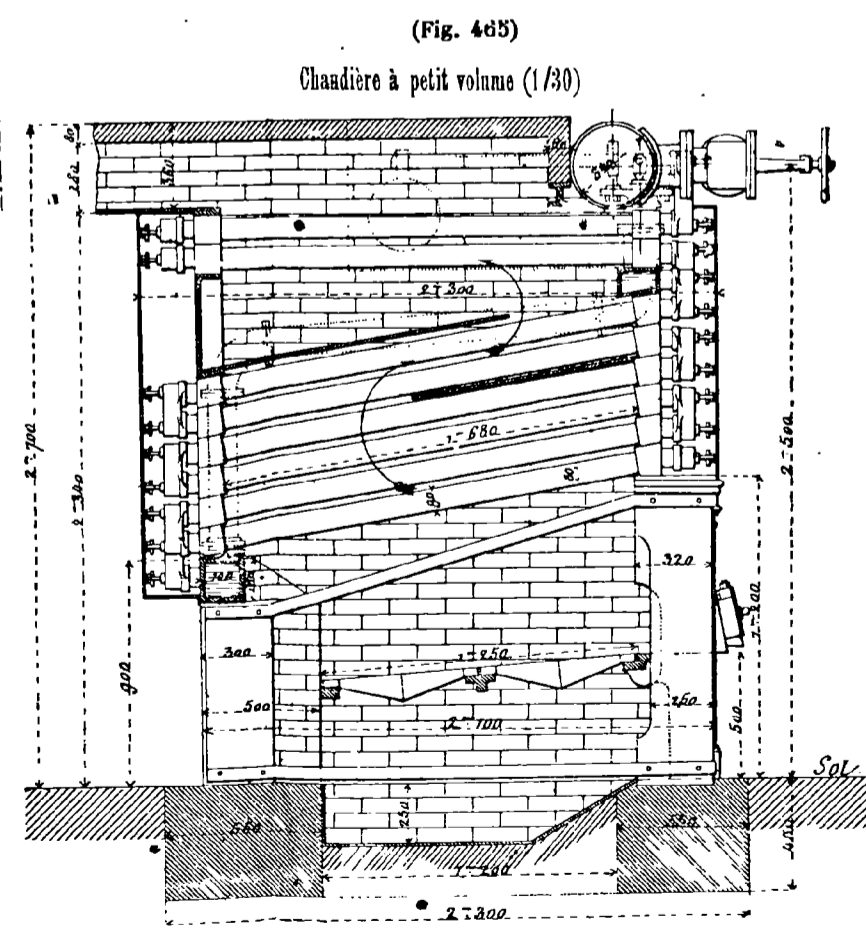
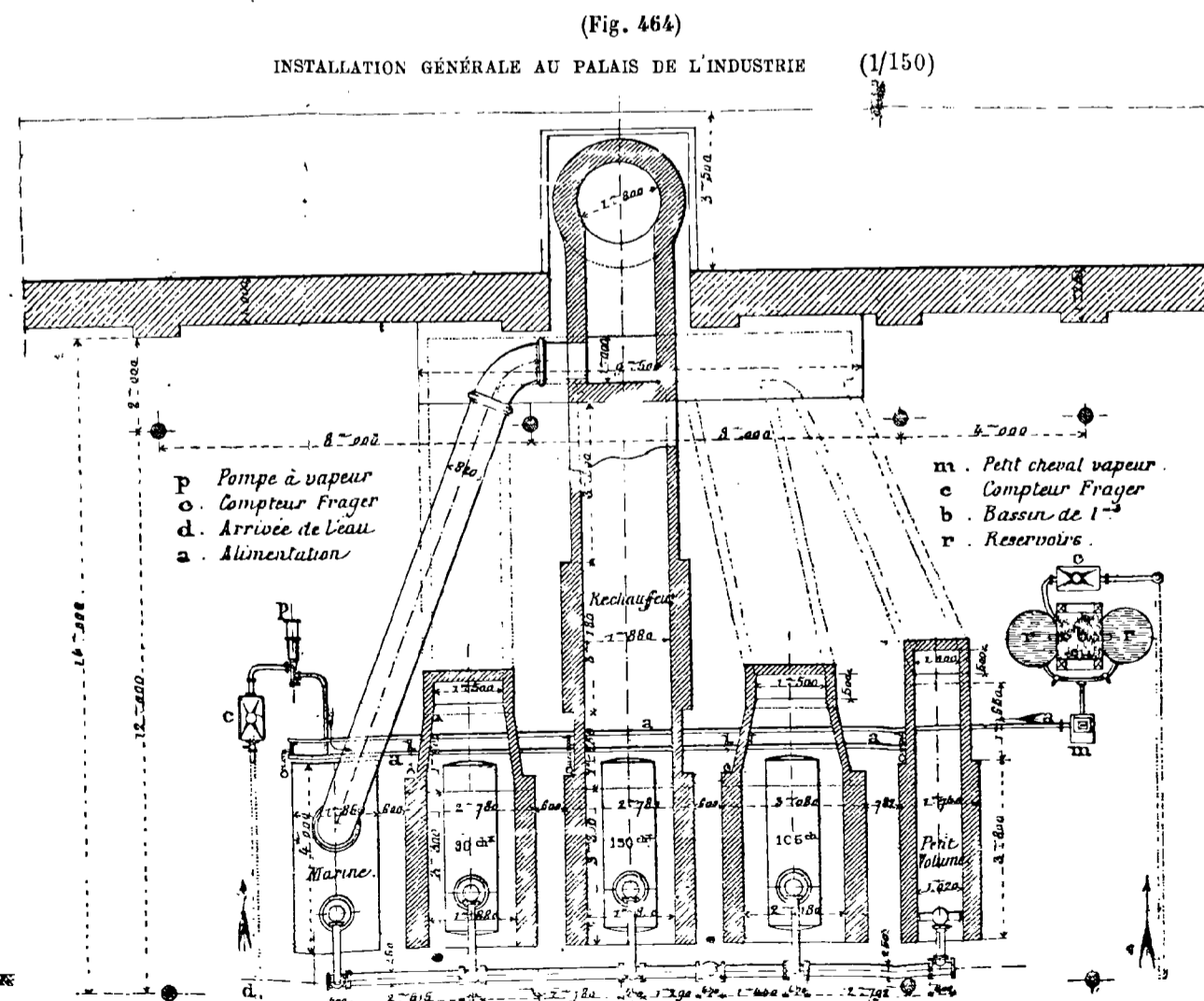
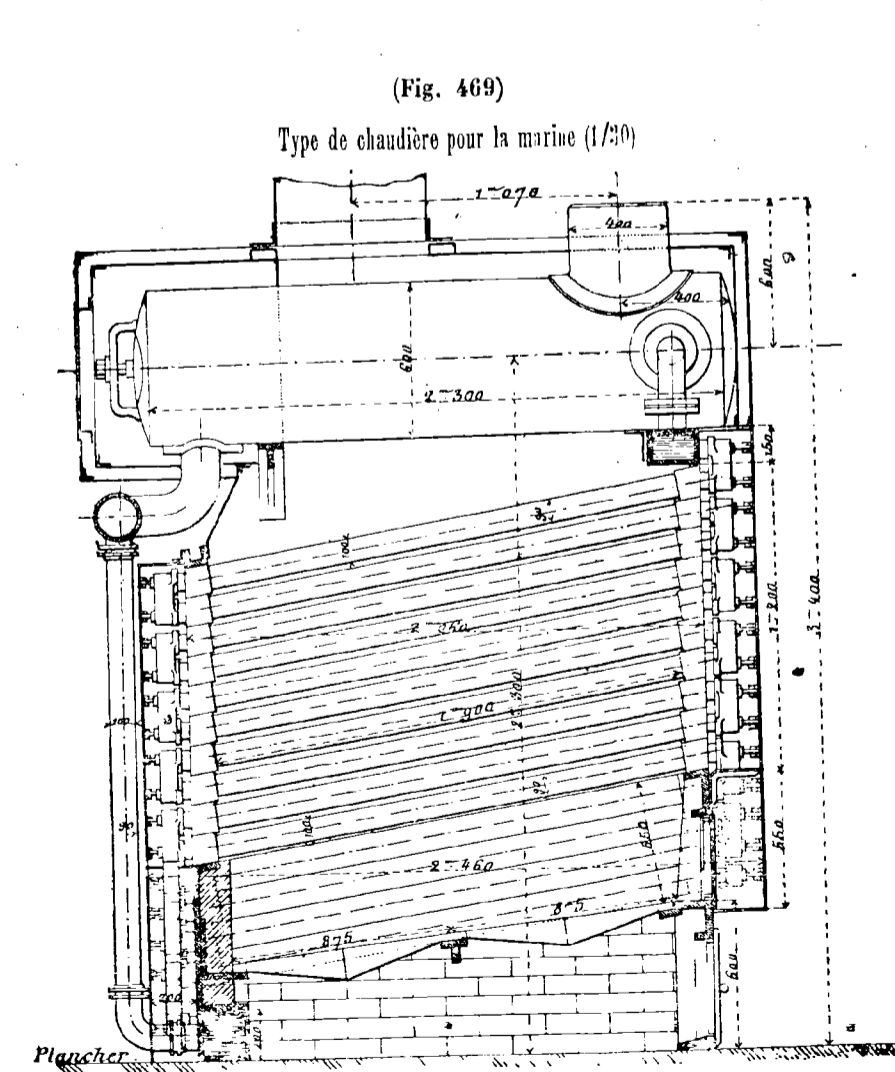
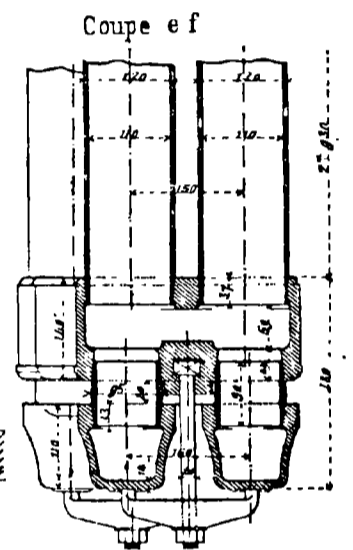
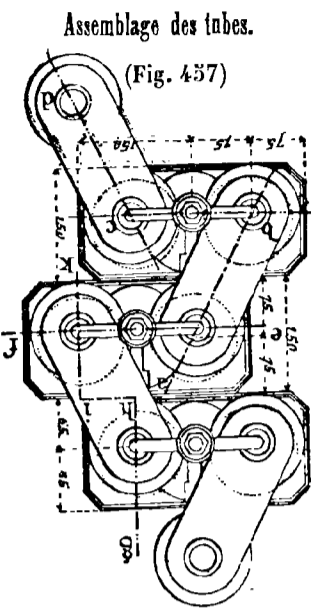
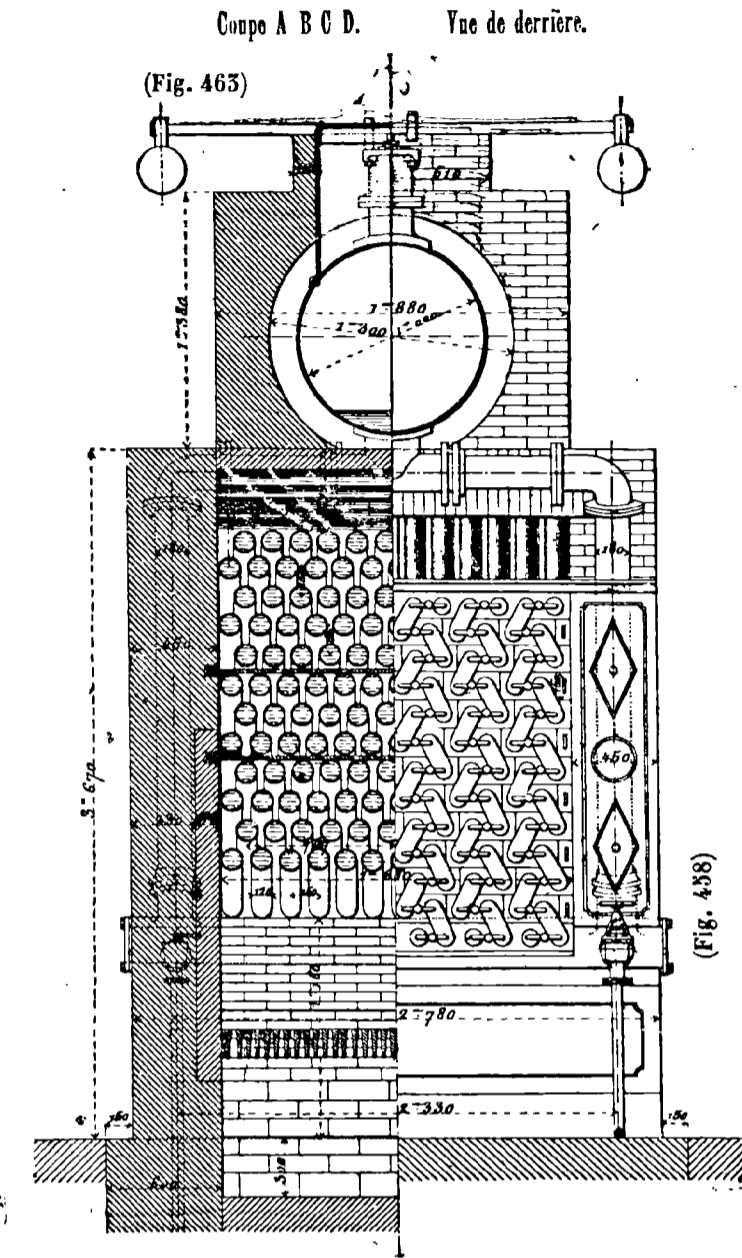
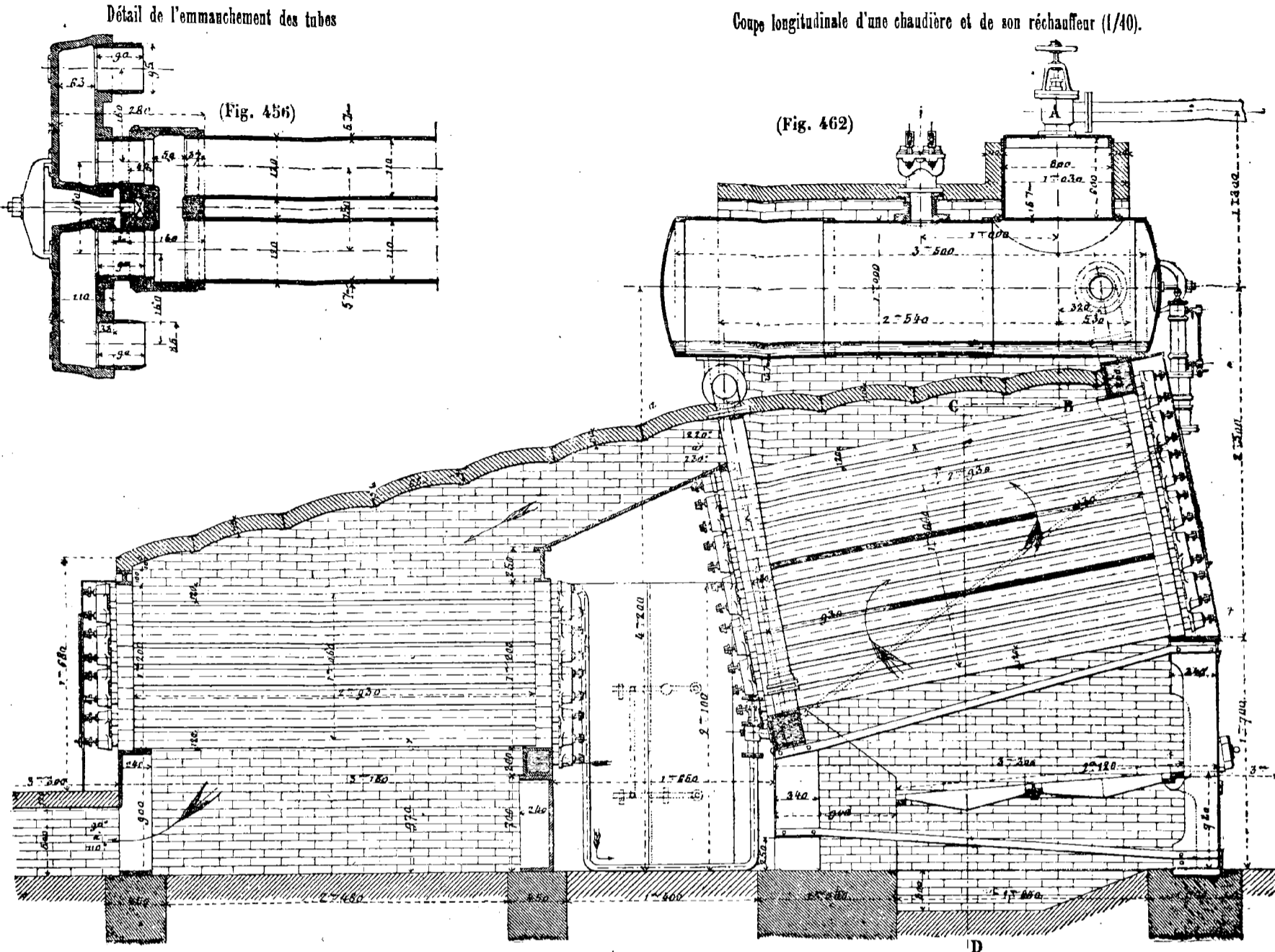
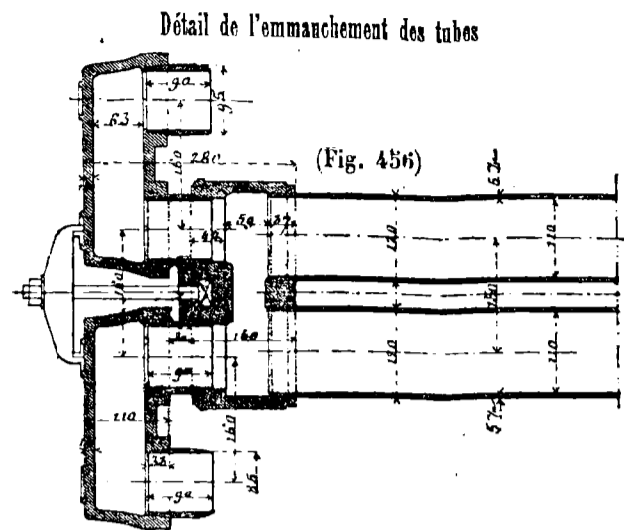
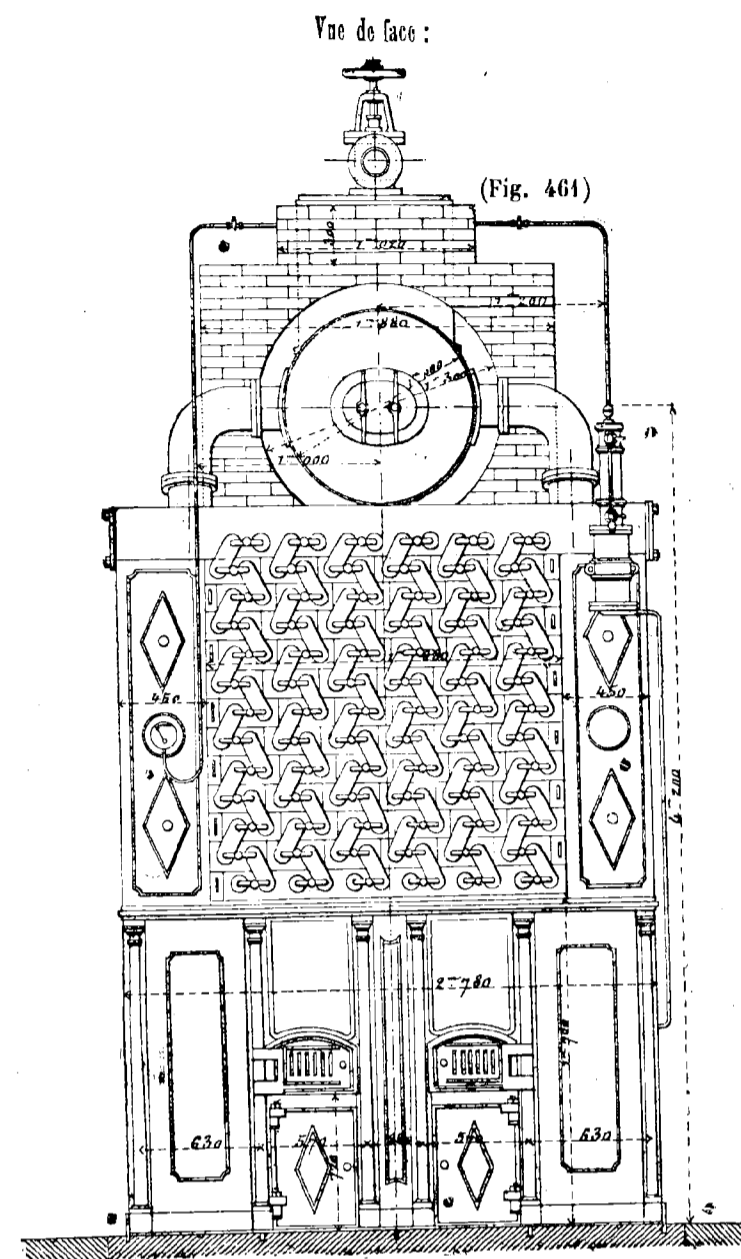
Coupe suivant ABCDEFGHIJ.



Vue de face.

fig: 447





EXPOSITION UNIVERSELLE D'ANVERS

CHAUDIÈRES MULTITUBULAIRES INEXPLOSIBLES

Système DE NAEYER & C^o

Fig. 467

Élévation.

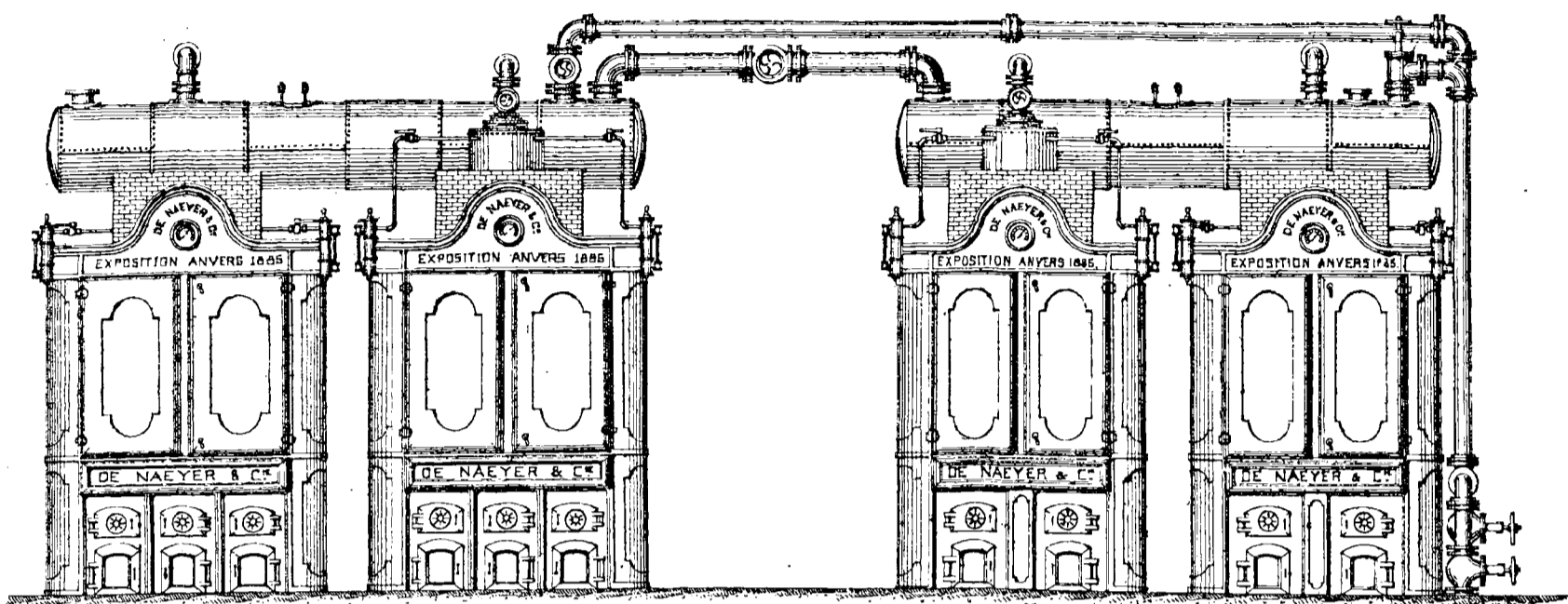
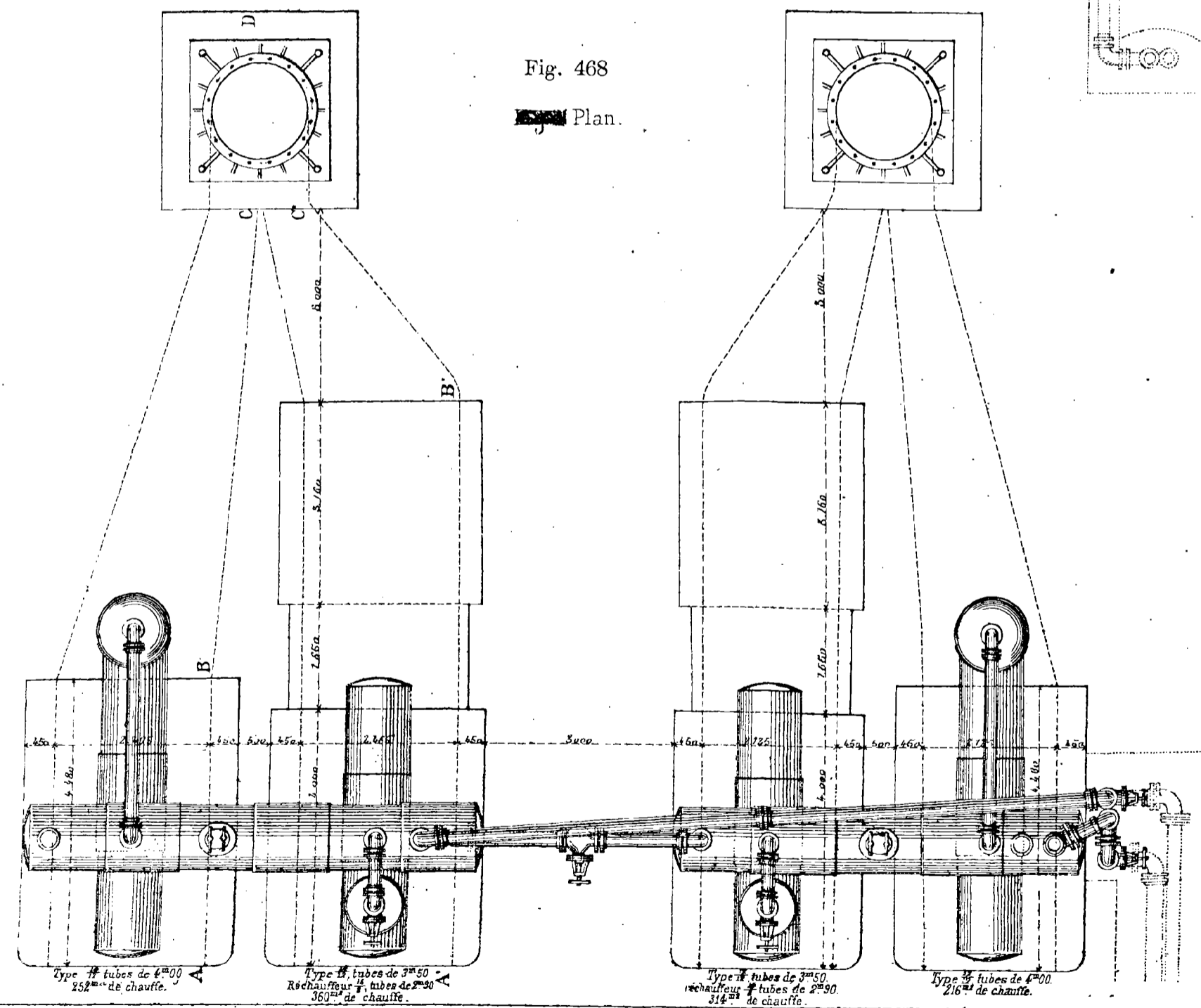


Fig. 468

Plan.



Type A tubes de 6^m00
252^m de chauffe.

Type B tubes de 3^m50
Régulateur tubes de 2^m40
360^m de chauffe.

Type C tubes de 3^m50
Régulateur tubes de 2^m40
314^m de chauffe.

Type D tubes de 6^m00
216^m de chauffe.

Fig. 469

Coupe suivant A'B'C'D.

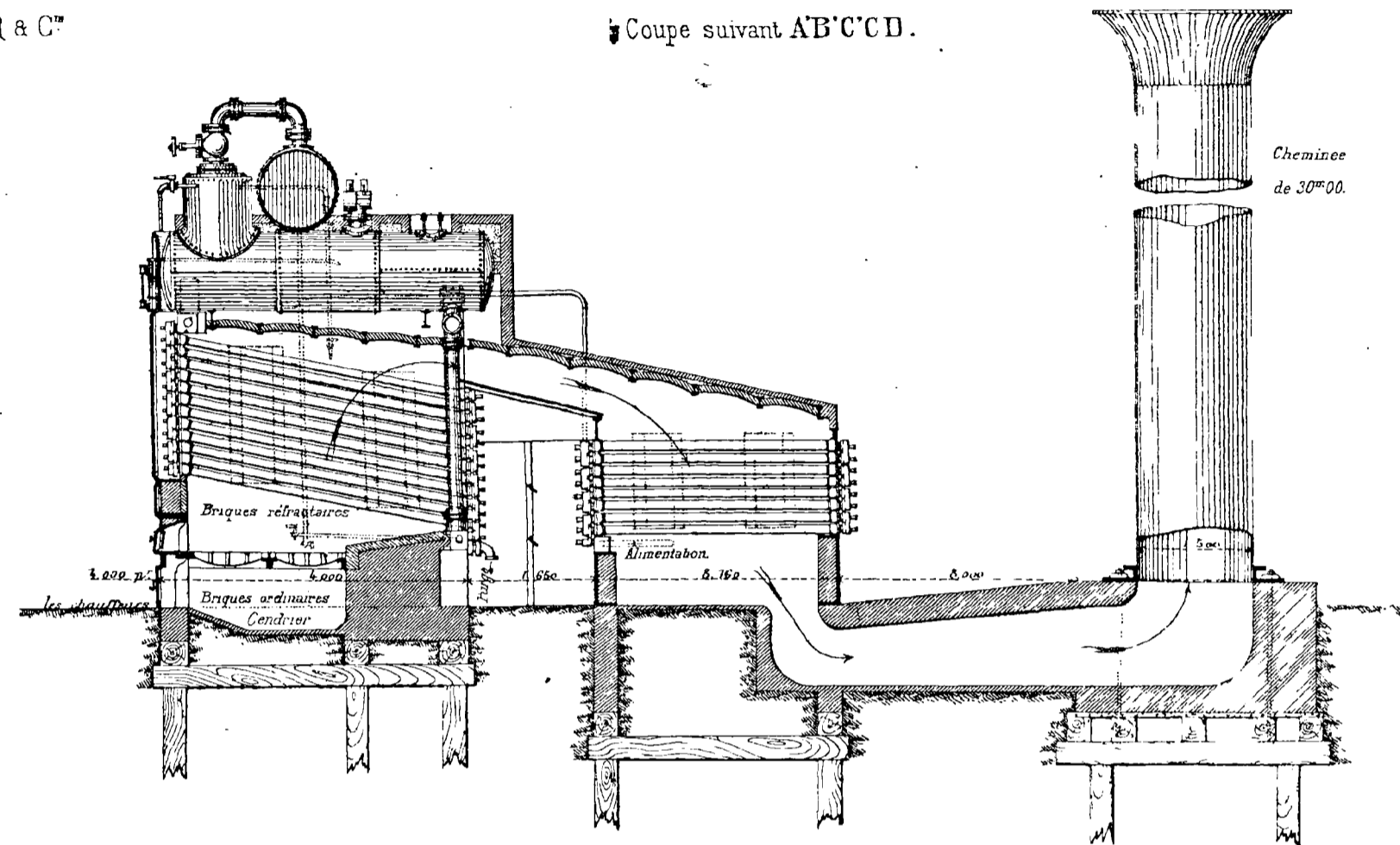
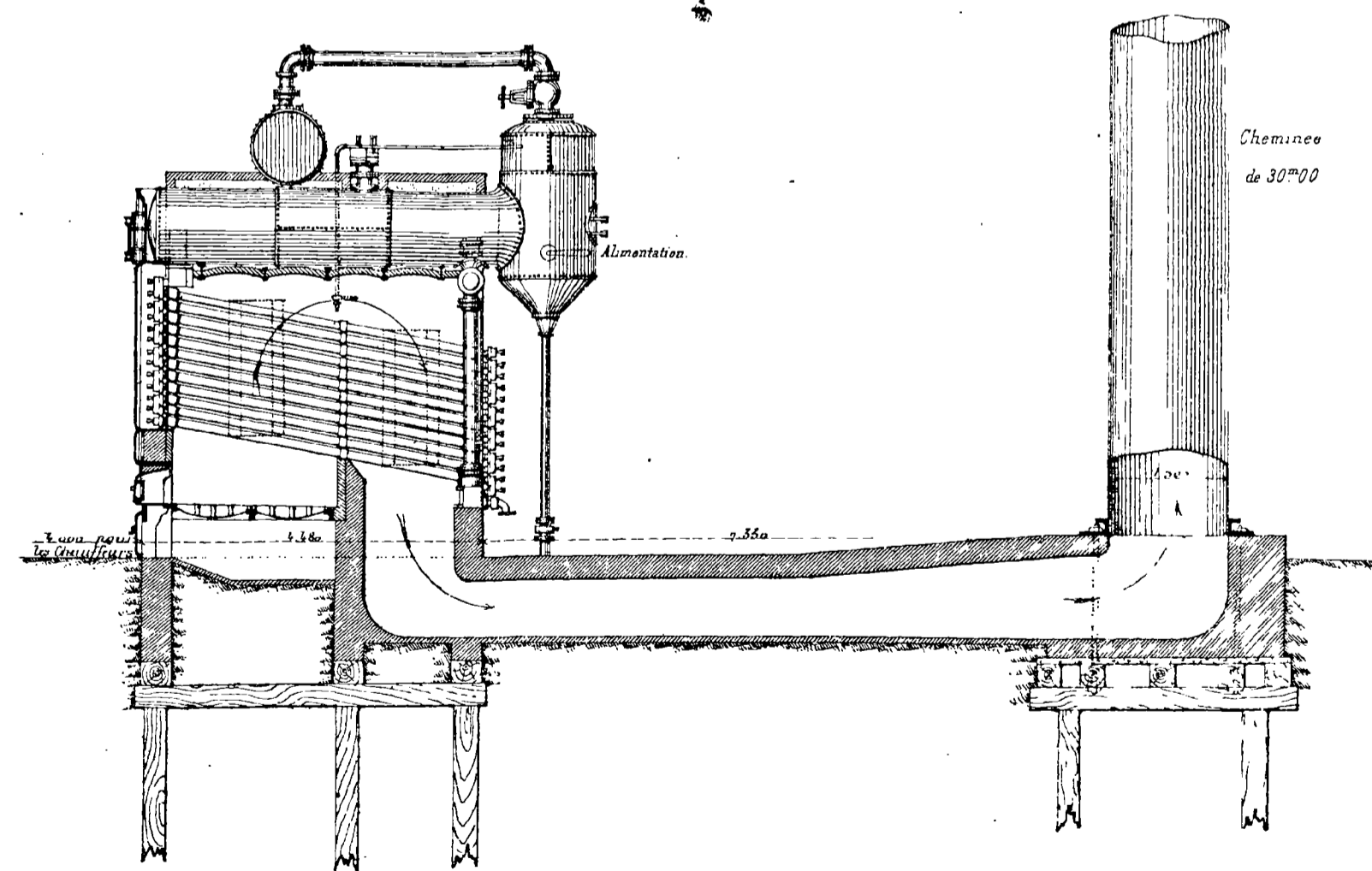


Fig. 470

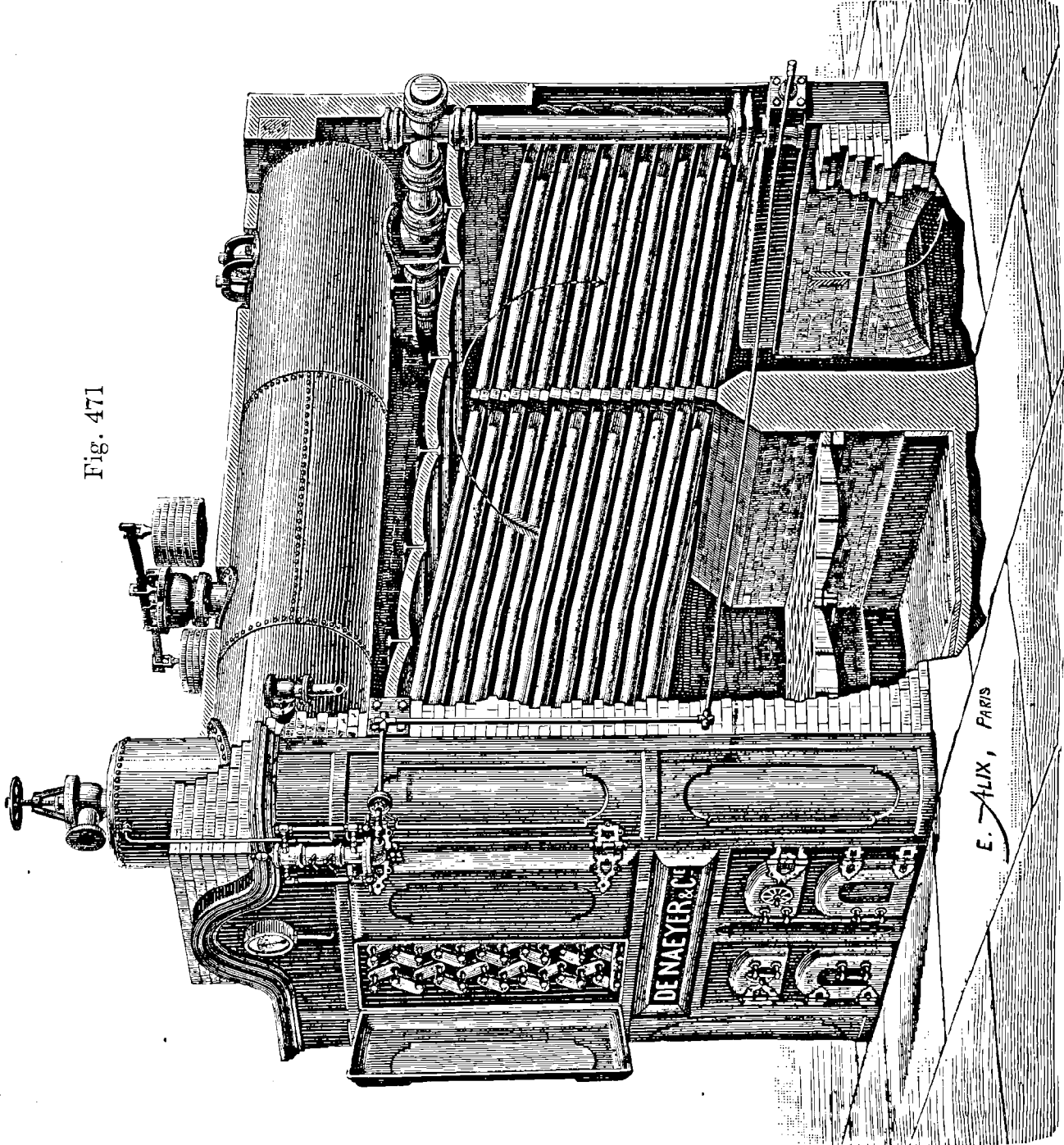
Coupe suivant ABCD.



Exp. Anst. & Const. 1853. Haut. 5^e Denis Paris

Exp. Anst. & Const. 1853. Haut. 5^e Denis Paris

Fig. 471



Chaudière système DE NAEYER & Co^{ie}, type droit à chicanes verticale.

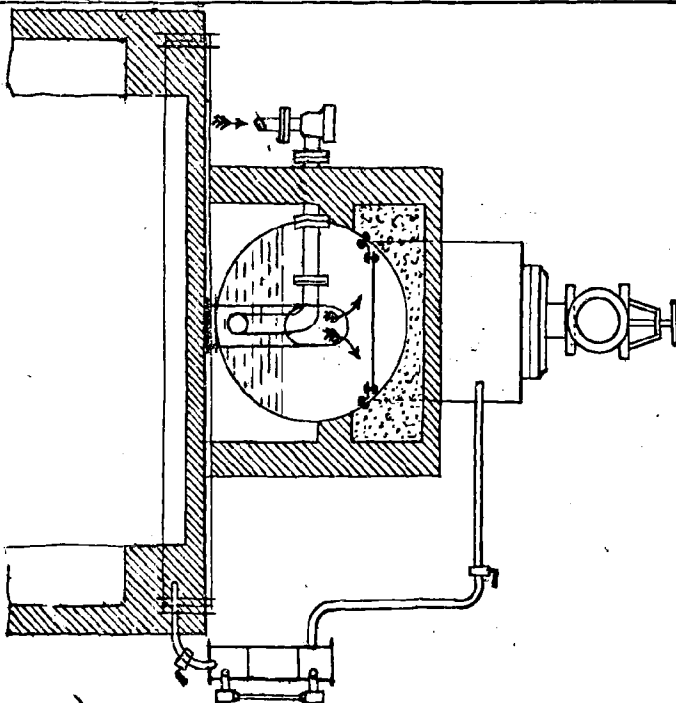
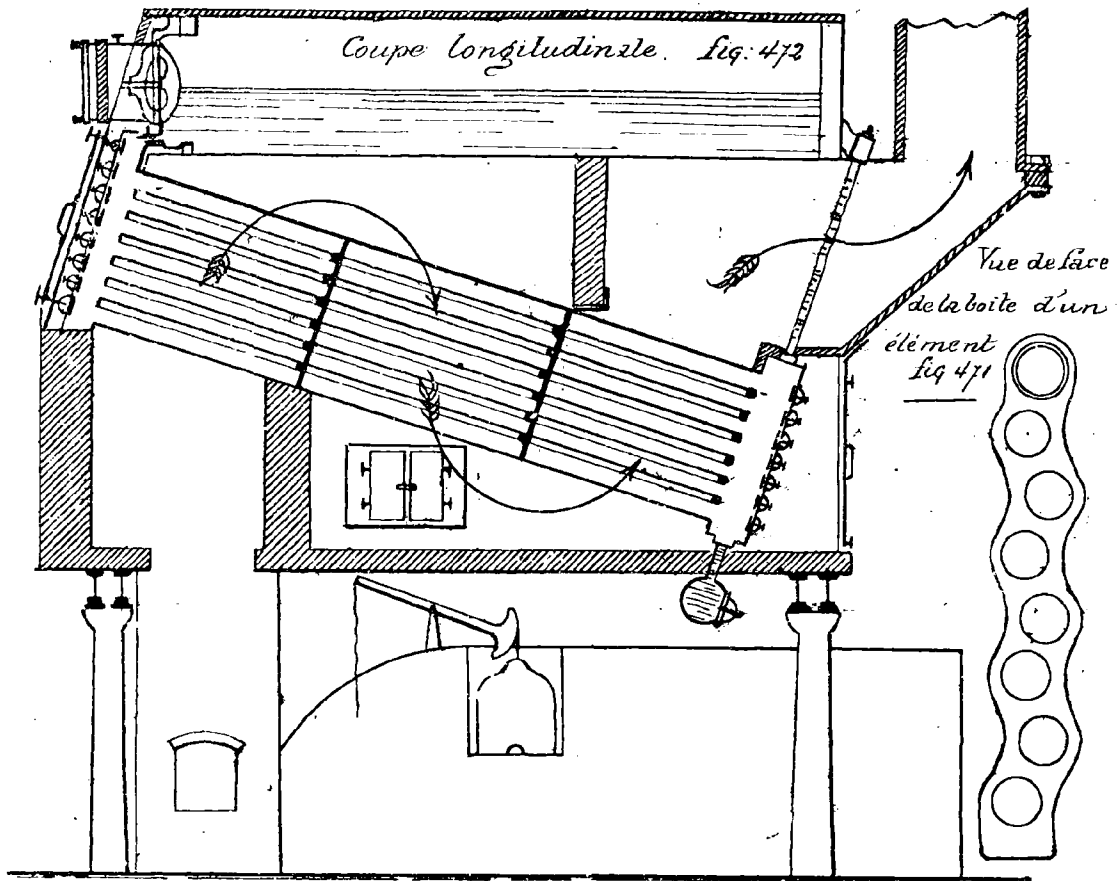


Fig. 453.

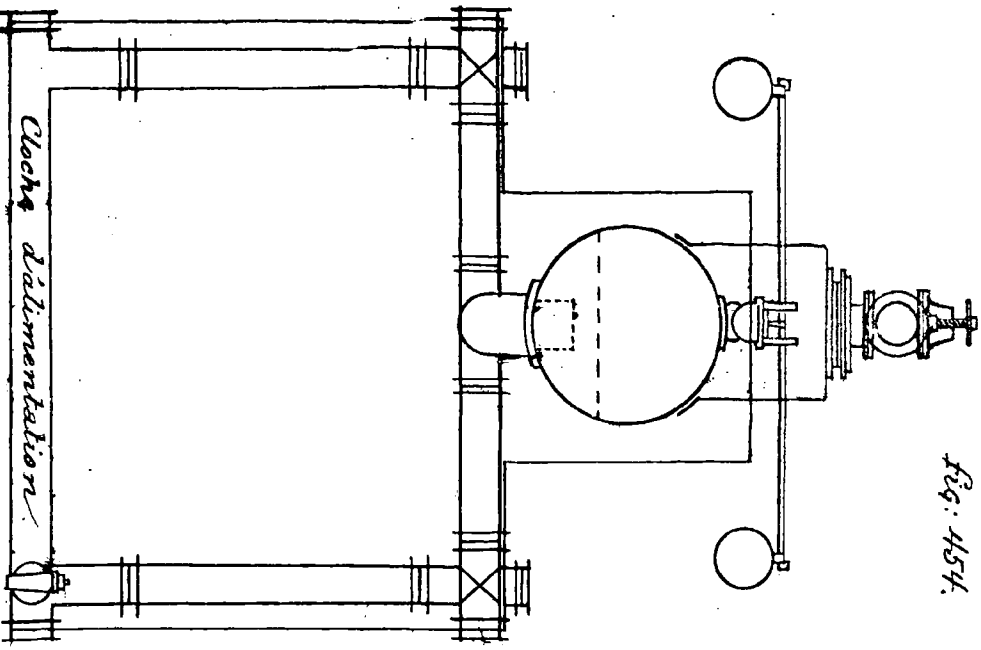
Coupe transversale. - Vue de face.
 Communication du Collecteur de Vapeur
 alimentation, indicateur de niveau
 d'eau.

CHAUDIÈRE BABCOCK ET WILCOX.



Coupe transversale Vue de derrière.
Communication de la Cloche d'alimentation.

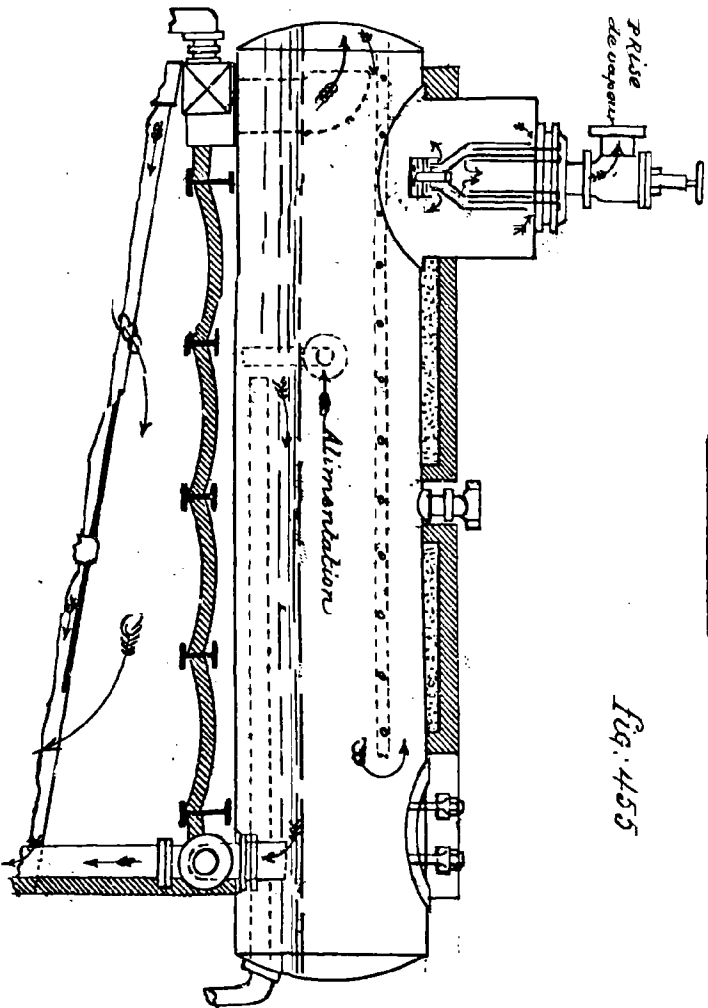
Fig. 454.



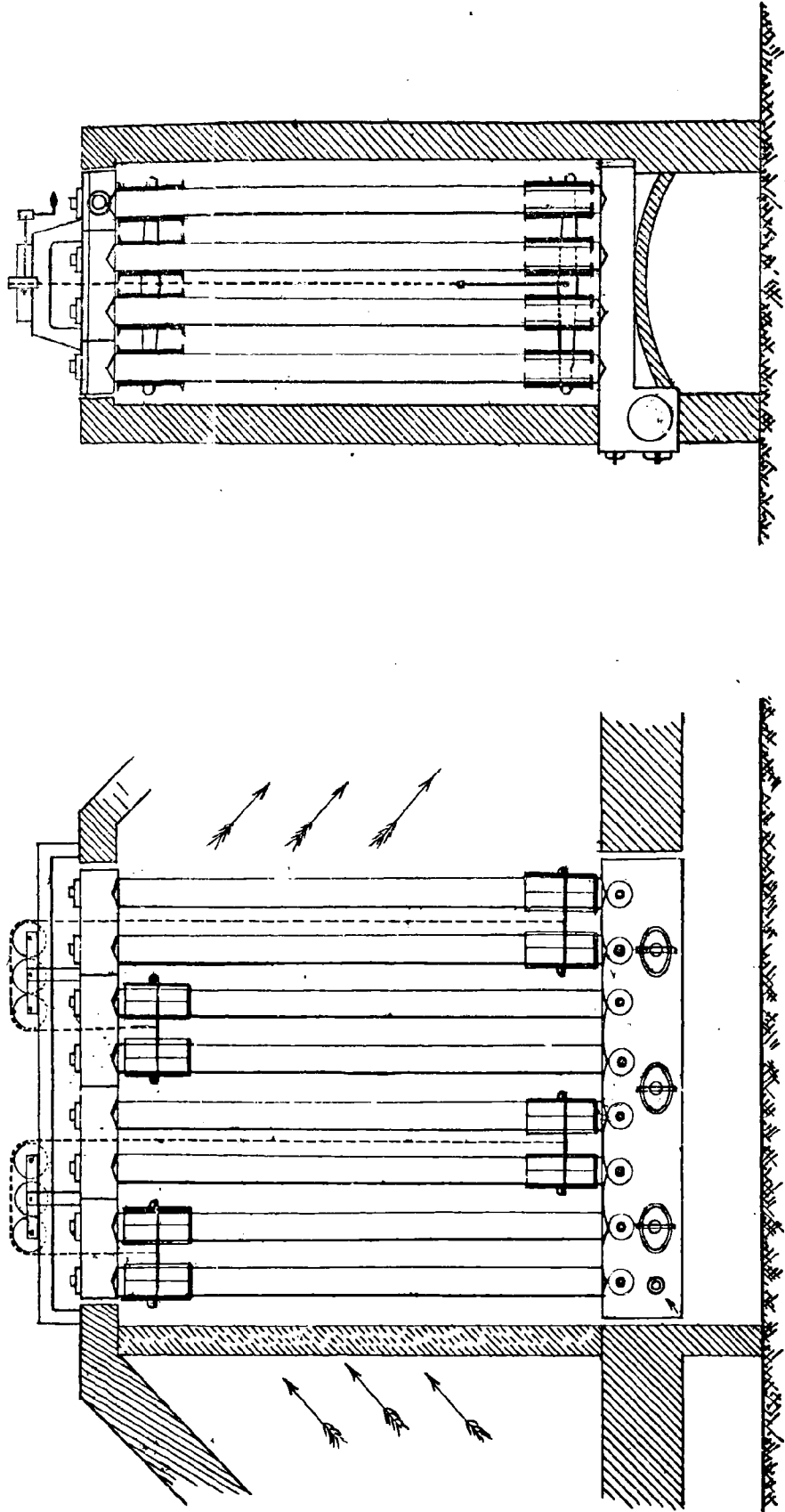
Coupe longitudinale
par le Réservoir de Vapeur.

Vue des dispositifs pour l'assèchement
de la Vapeur, l'alimentation et le débouclage.

Fig. 455

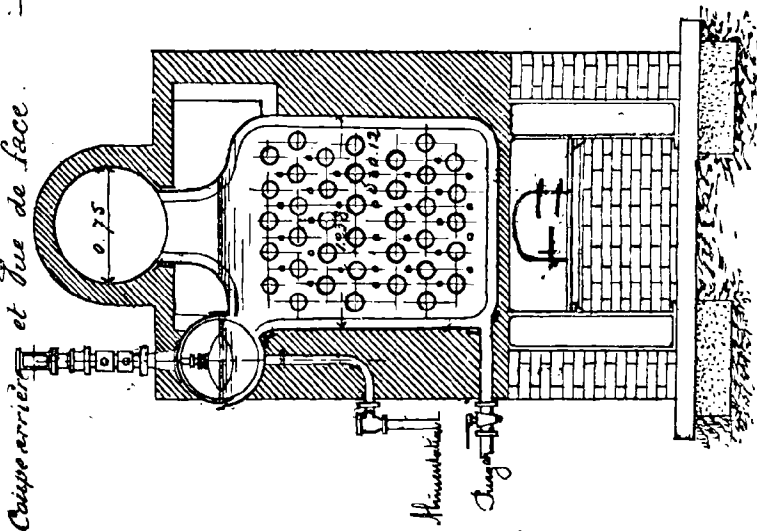


Réchauffeur ou économiseur Babcock et Wilcox.

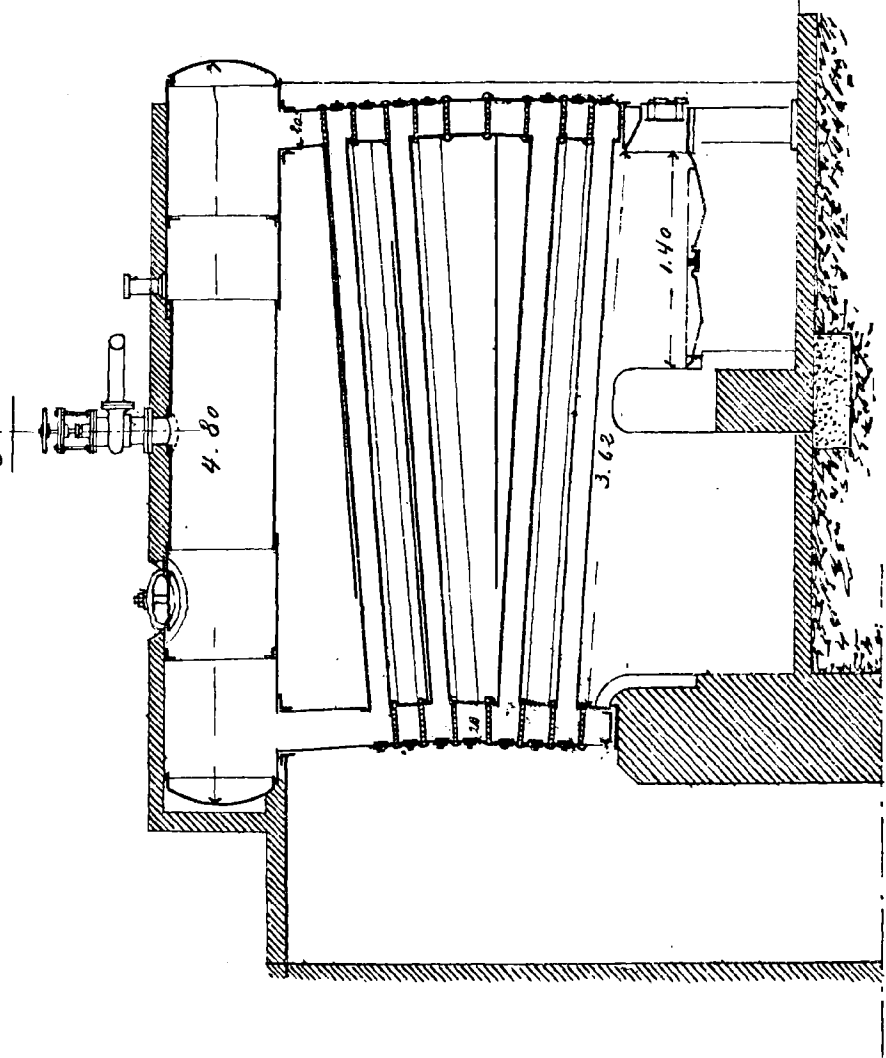


CHAUDIÈRE SINCLAIR MAC NICOL.

Coupe arrière et Vue de face.



Coupe Longitudinale.



CHAUDIÈRE BARBE ET PÉTRY.

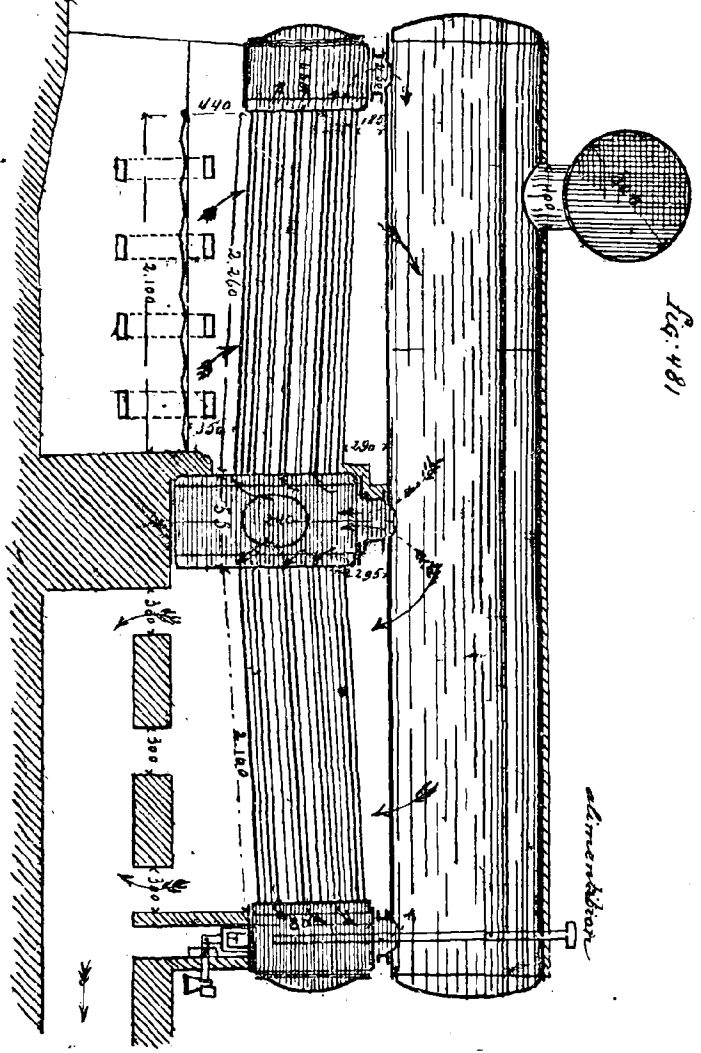


Fig. 481

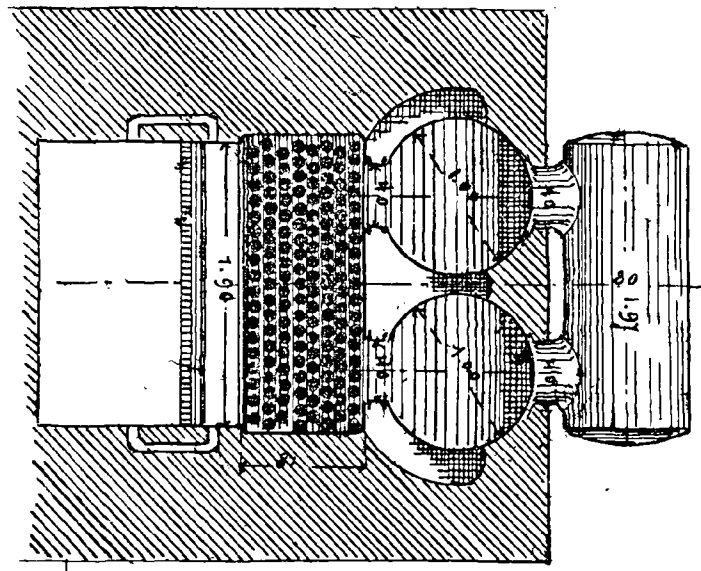
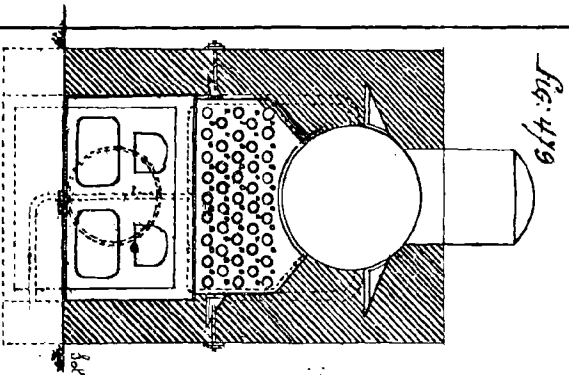


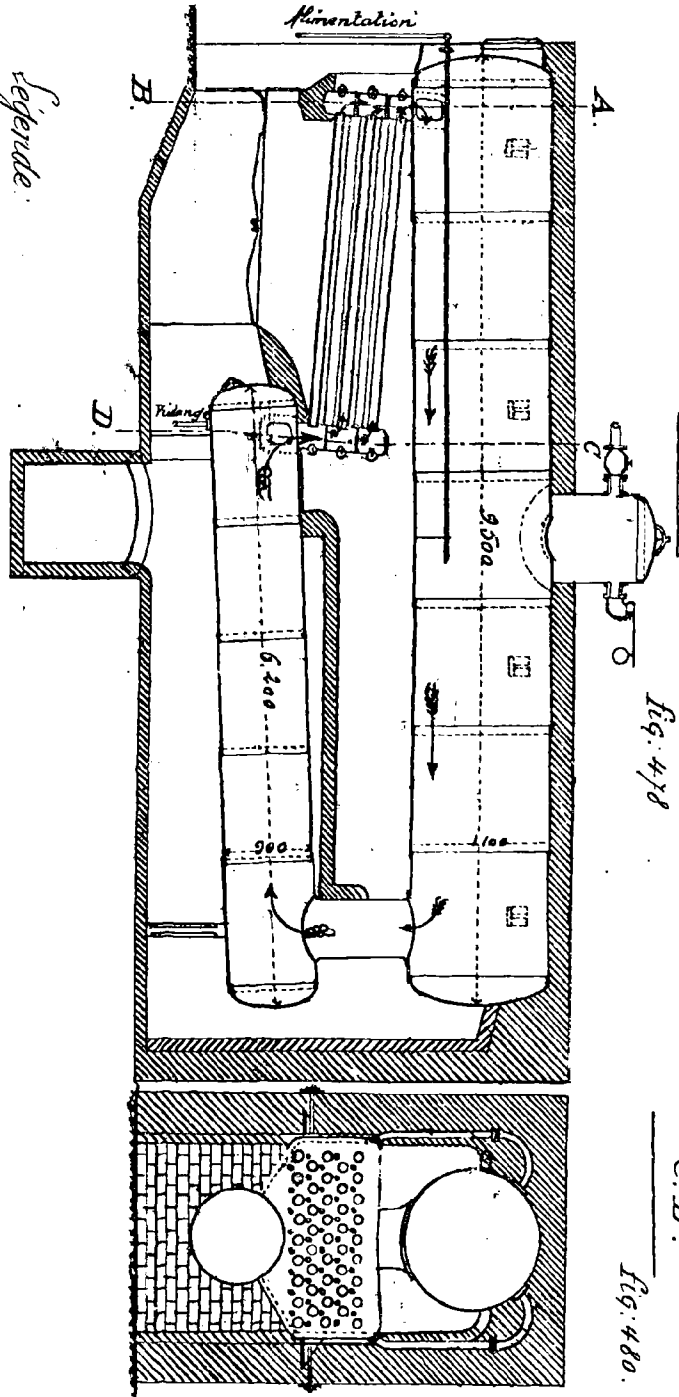
Fig. 482

CHAUDIÈRE MAC-NICOL

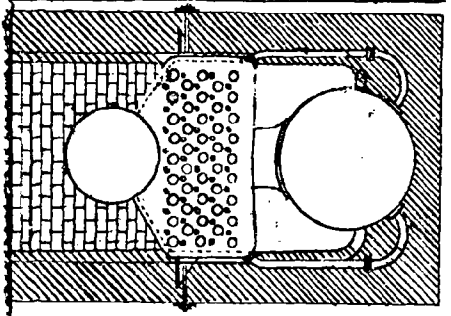
Coupe transversale
A. B.



Coupe longitudinale
C. D.



Coupe transversale
C. D.



Legende:
 Surface de chauffe du Corps principal 24 m²
 " " " Rouilleur 10
 Sarcocoeur tubulaire 43 tubes 40.600
 Surface totale 83⁷/₈ 600.

Chaudière verticale Hermann Lachapelle.

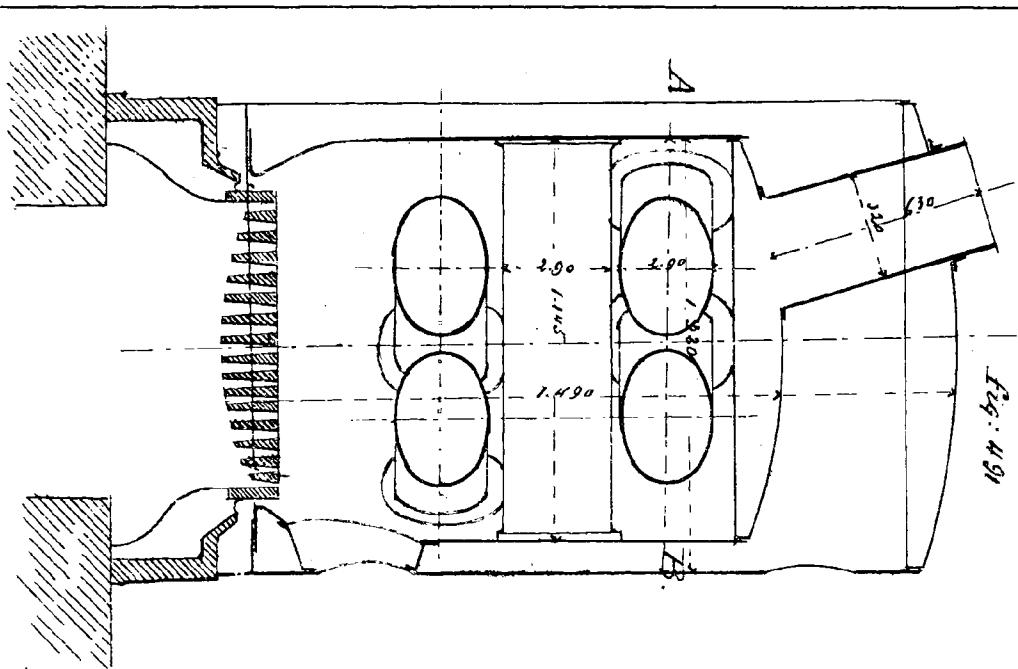


Fig. 491

Coupe horizontale par une Chaudière à quatre Bouilleurs croisés.

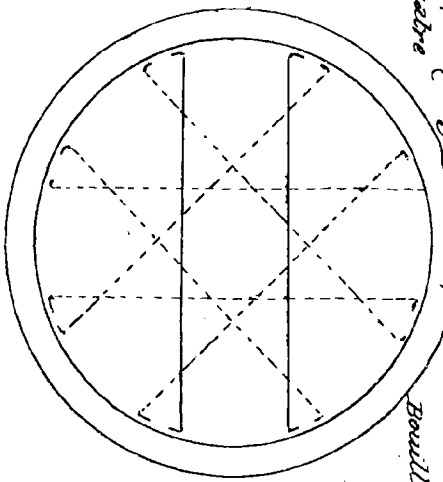


Fig. 490

Coupe longitudinale A. B. par les tubes supérieurs.

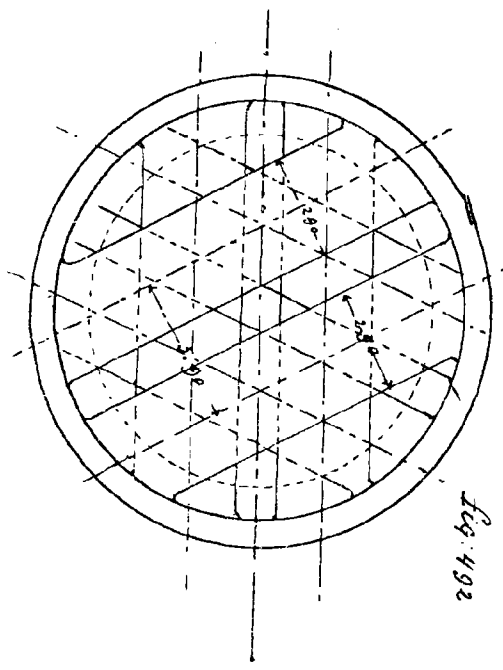


Fig. 492

CHAUDIÈRE HEINE

$$\begin{array}{llll}
 S = 75 \frac{m^2}{7} & N = 50 \text{ Ch} & G = 7 \frac{m^2 80 m^2}{7} & S' = 41,7 \\
 E = 0,47 \frac{m^3}{7} & U = 2,51 \frac{m^3}{7} & V = 8,98 \frac{m^3}{7} & V' = 120 \text{ L}
 \end{array}$$

Emplacement = 11,61 m² Chauffage p^r m² d'emplacement = 0,46 m²

Fig. 484

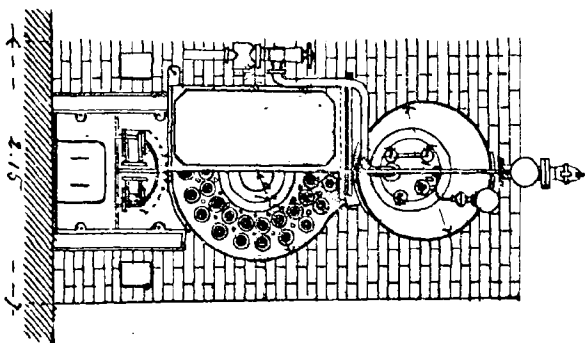


Fig. 484

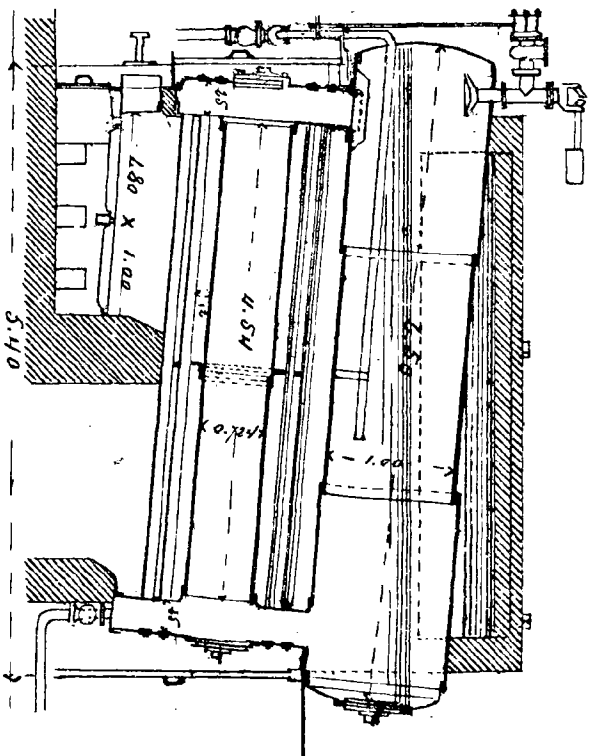
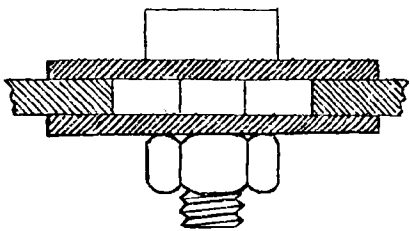


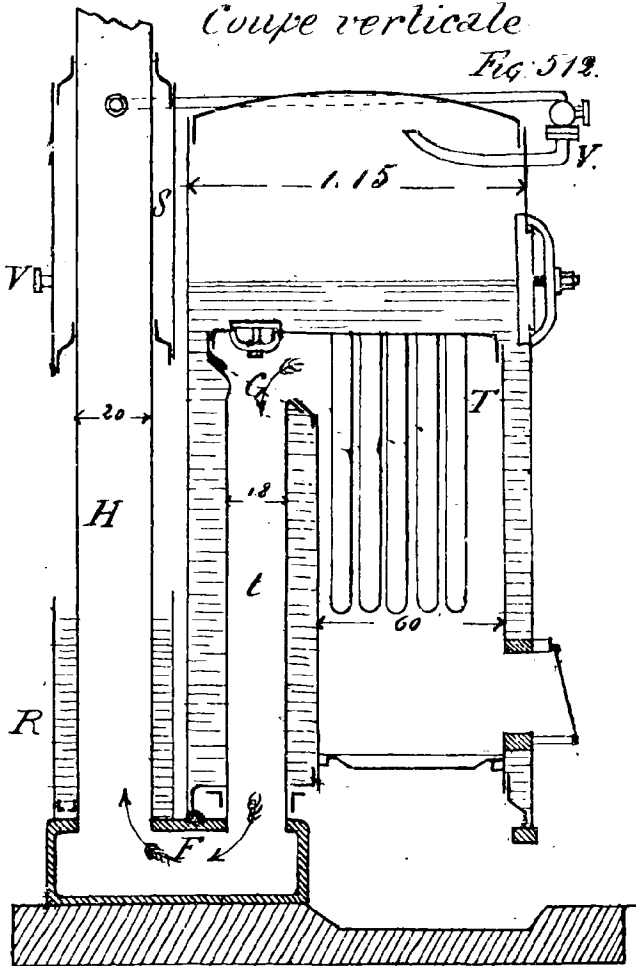
Fig. 485



CHAUDIÈRE MOUNIER

Coupe verticale

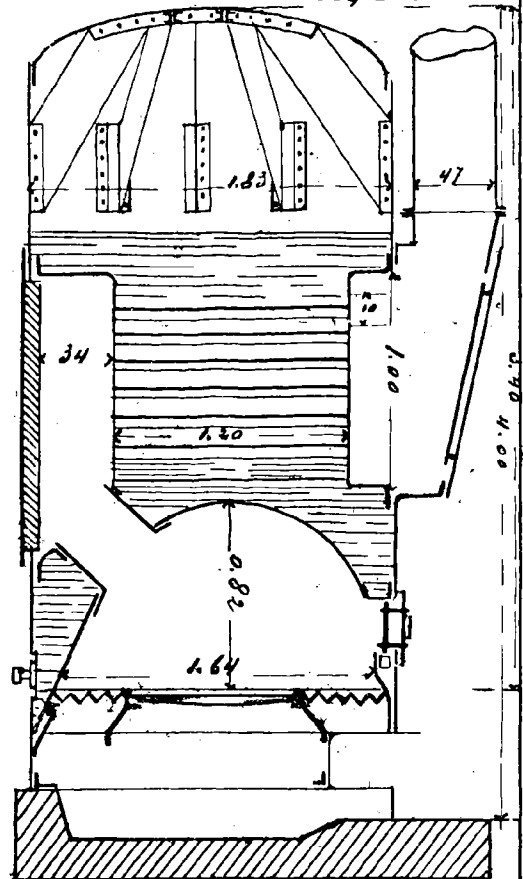
Fig: 512.



CHAUDIÈRE COCHRANE

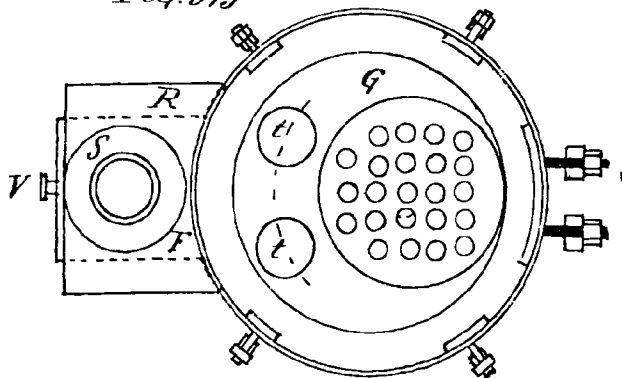
Coupe verticale

Fig: 506



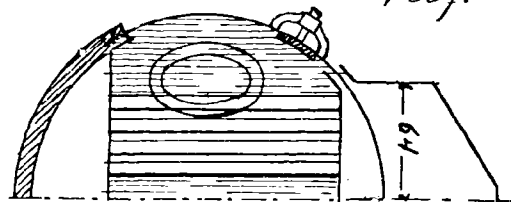
Coupe Horizontale

Fig: 513



Coupe Horizontale

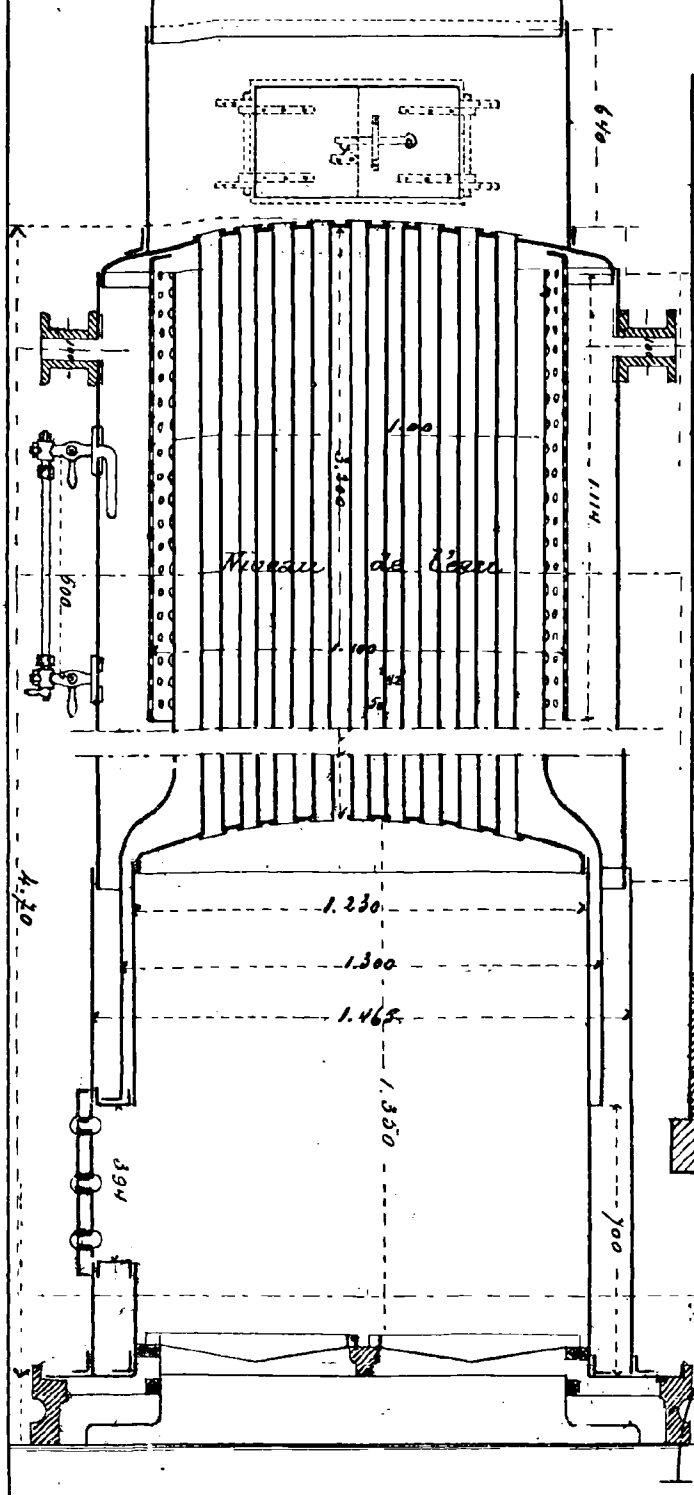
Fig: 507.



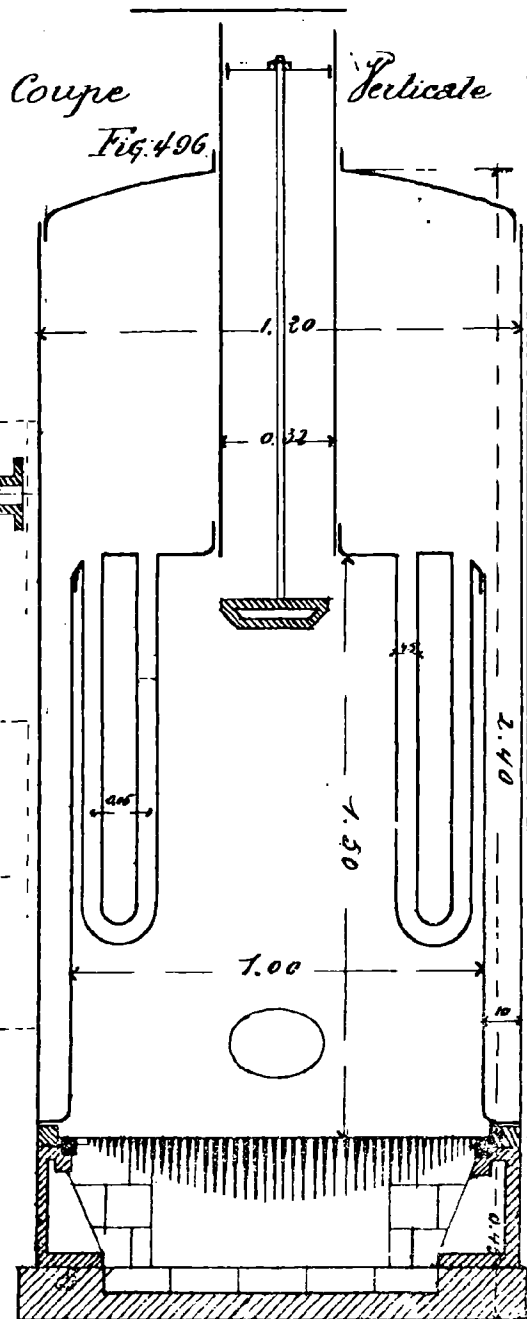
CHAUDIÈRE THIRION

Fig. 505

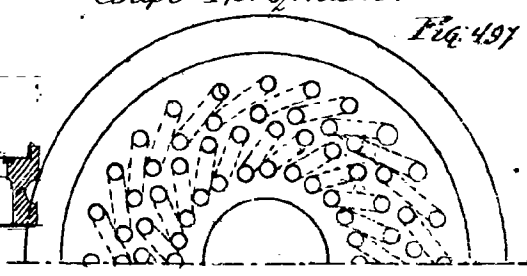
CHAUDIÈRE ZAMBEAUX.



Coupe
Fig. 496



Coupe Horizontale
Fig. 497



Chaudières verticales pour fours à puddler et à réchauffer Système Mac-Nicol.

Coupe A-B.

Fig: 22

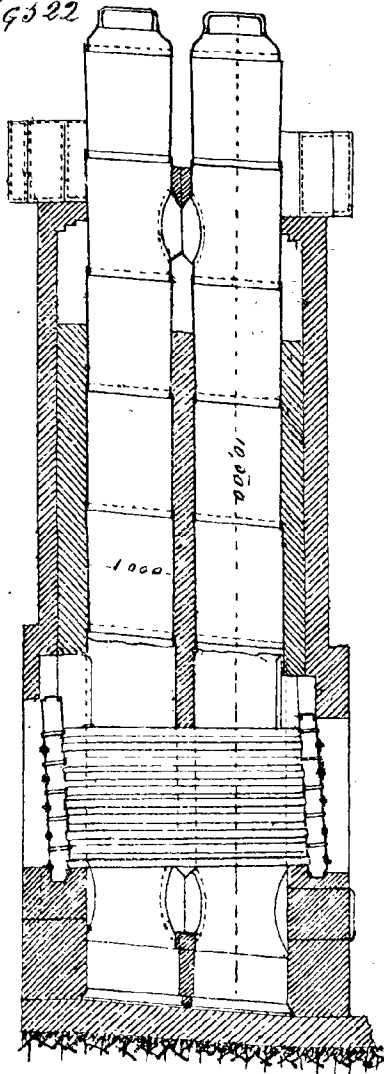
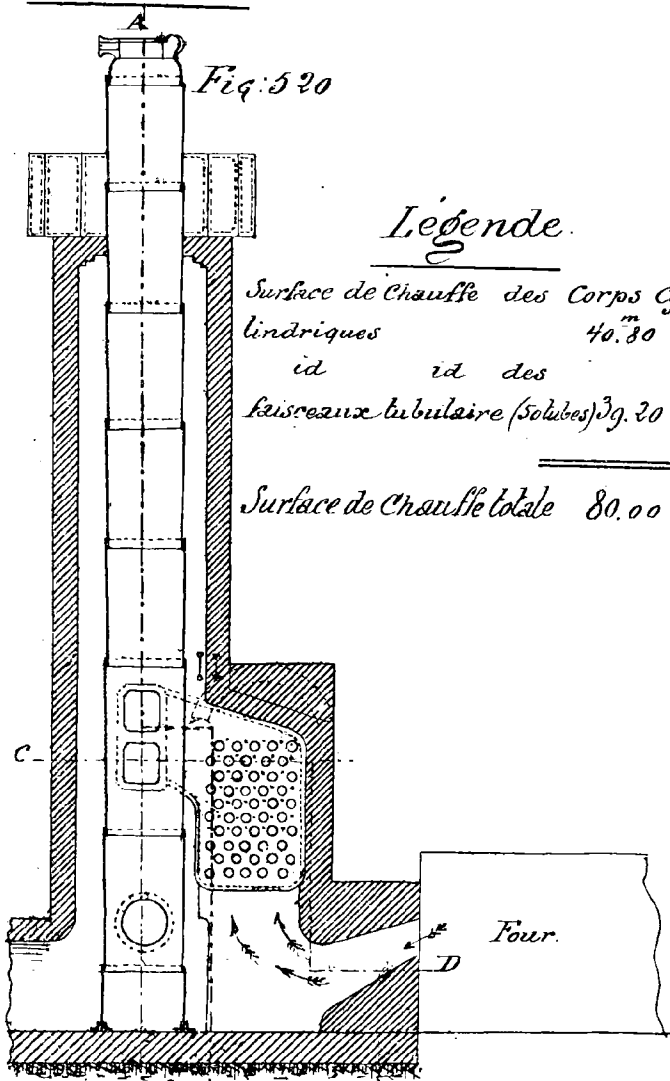


Fig: 20

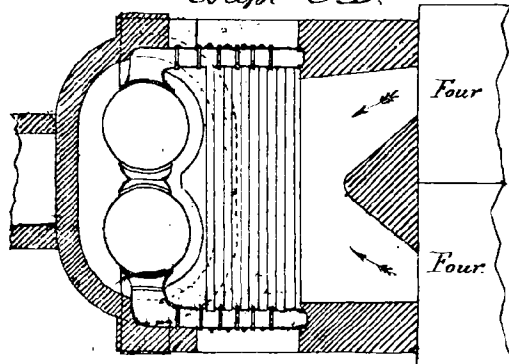


Légende.

Surface de Chauffage des Corps Cy-
lindriques 40.80
id id des
faisceaux tubulaire (solides) 39.20

Surface de Chauffage totale 80.00

B.
Coupe C-D.



Chaudières verticales pour fours à puddler et à réchauffer.

Fig. 516.

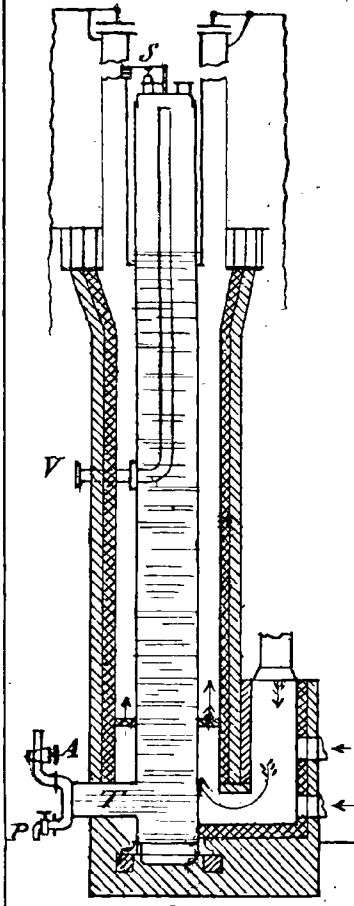


Fig. 517

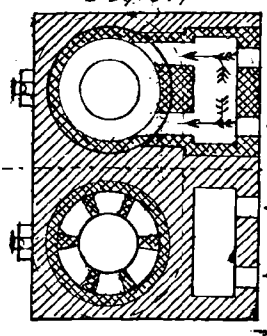


Fig. 518

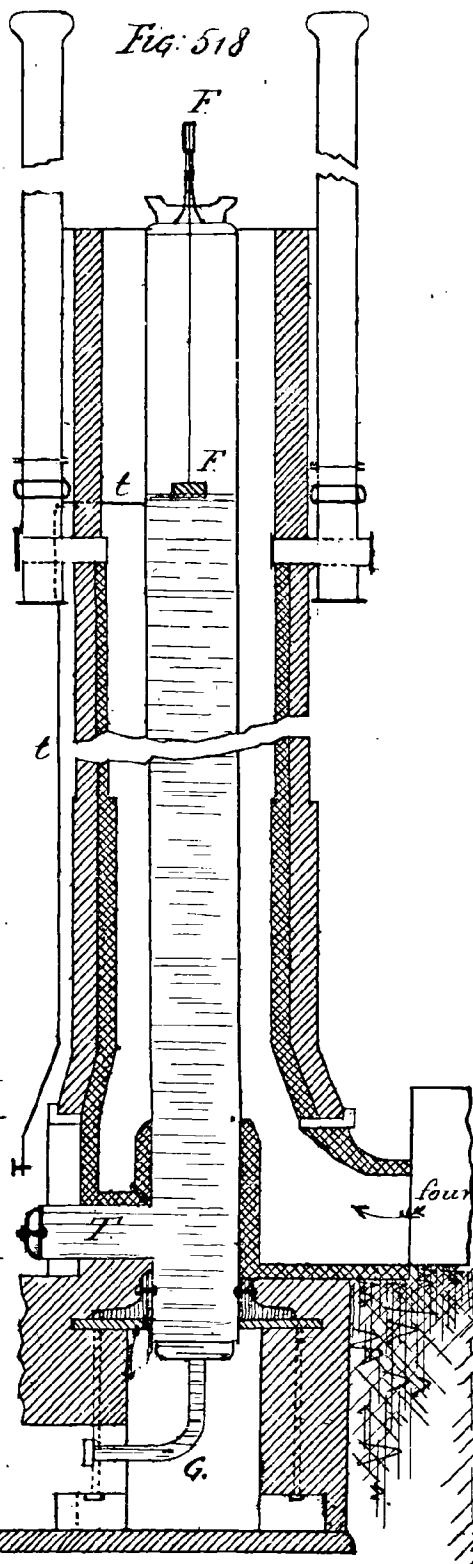
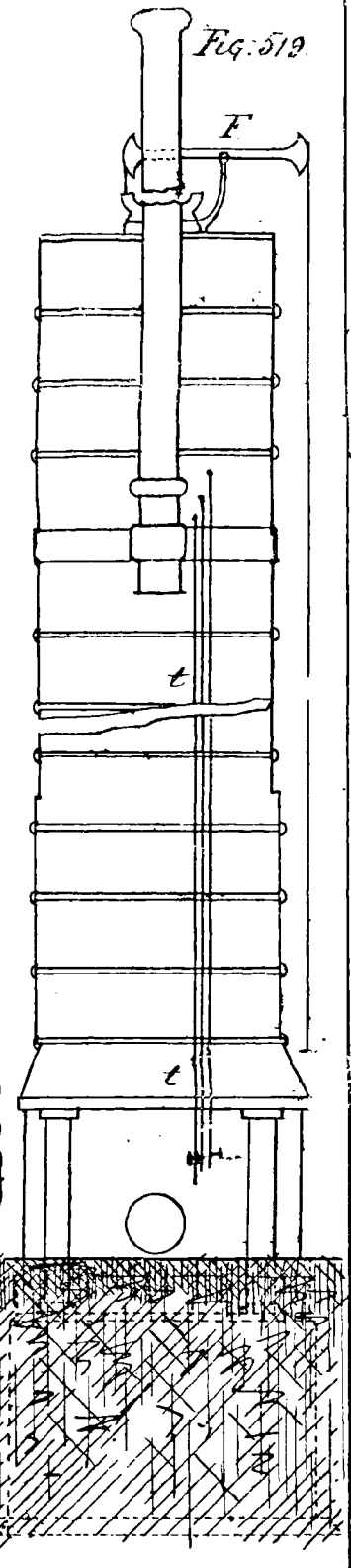


Fig. 519.



PLXXXVIII.

Pompe alimentaire.

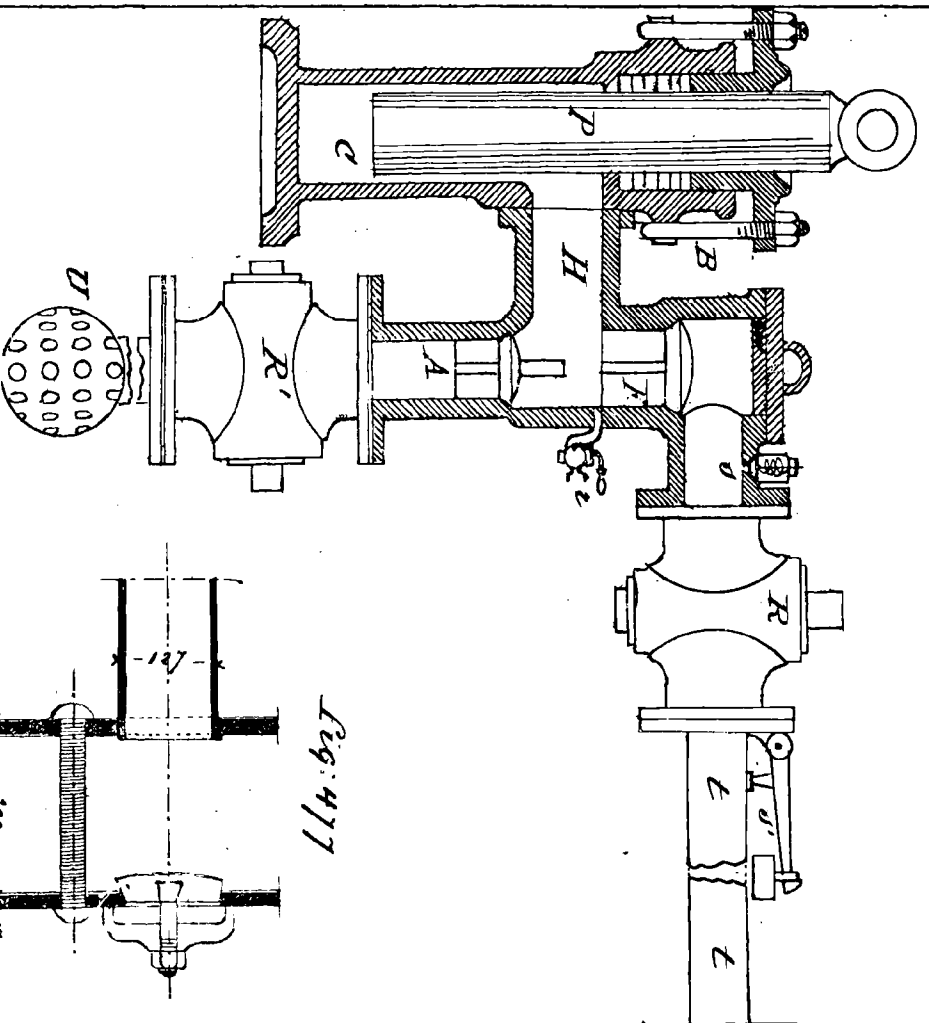
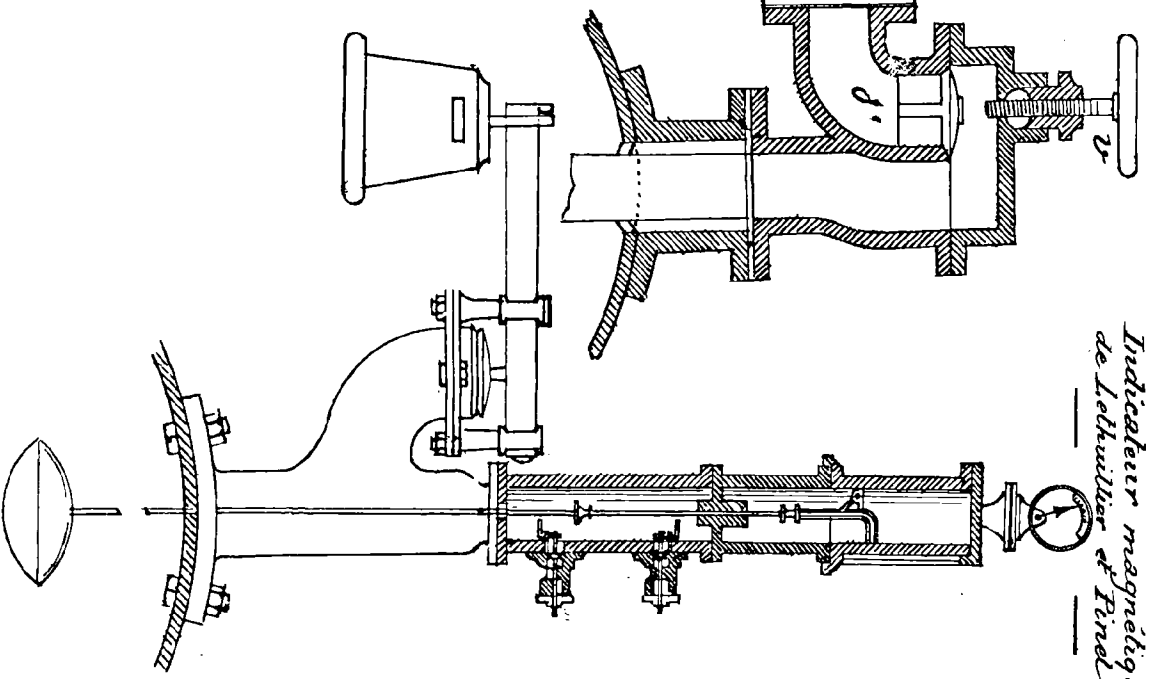


Fig. 477

Echelle 1/10^e

Indicateur magnétique de Leebullier et Pinel.



Floteur et Sifflet Bertrinchamp.

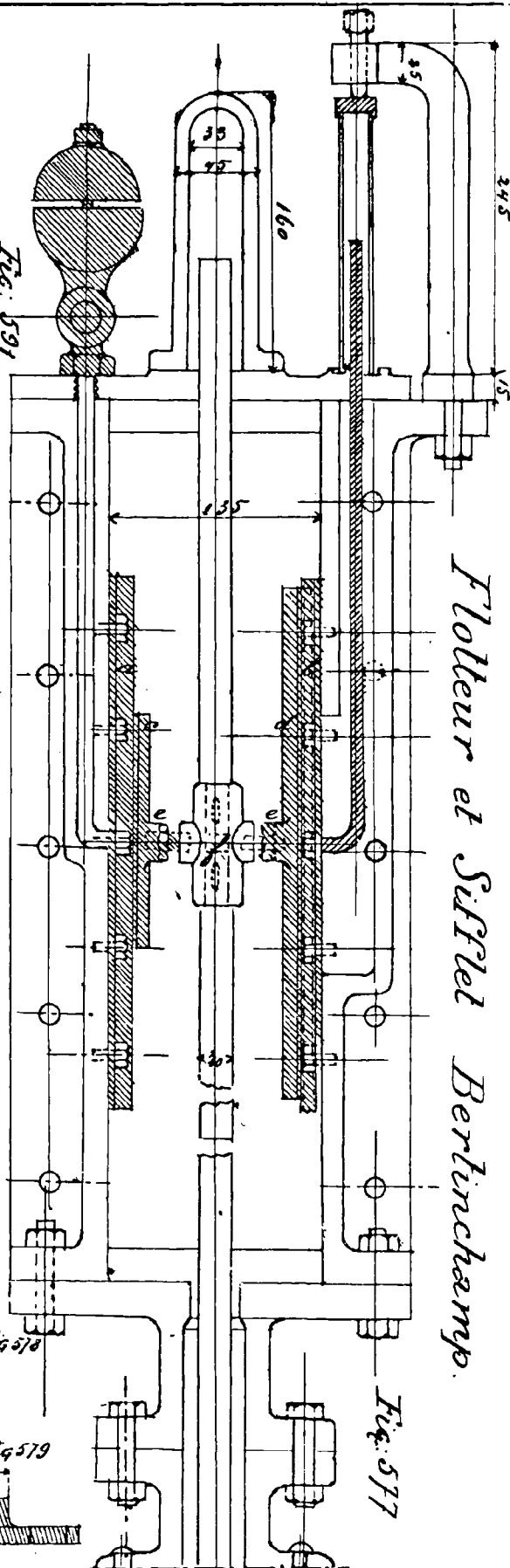
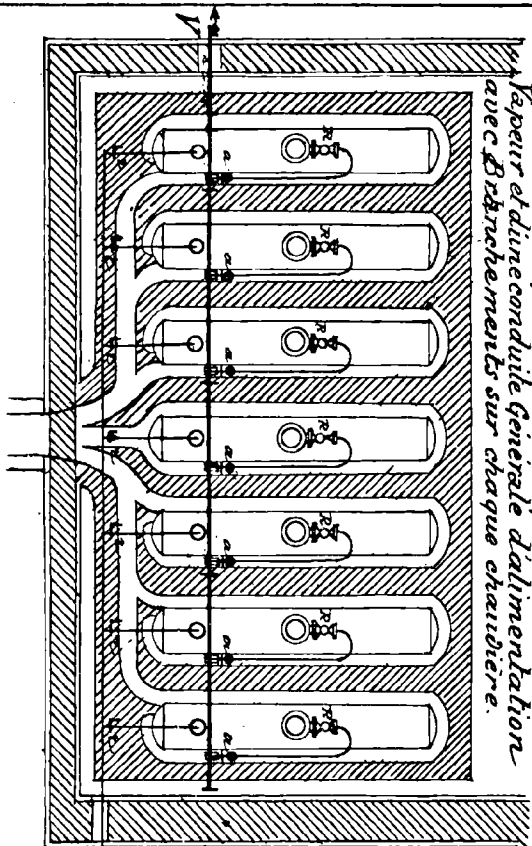


Fig. 591

Ensemble de la disposition d'une prise générale de
vapeur et d'une conduite générale d'alimentation
avec branchements sur chaque chaudière.



Bouteille d'alimentation

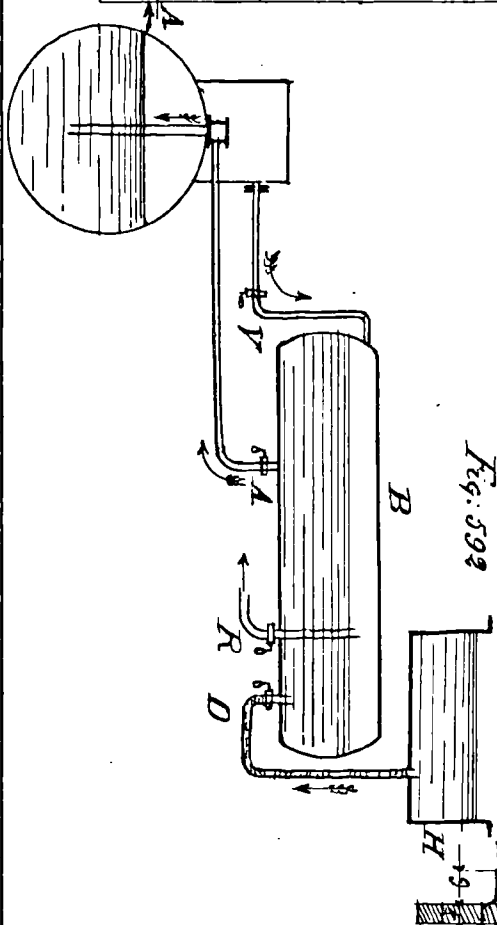


Fig. 599

Epurateurs Bérenger et S. Stinzel.

Fig: 606

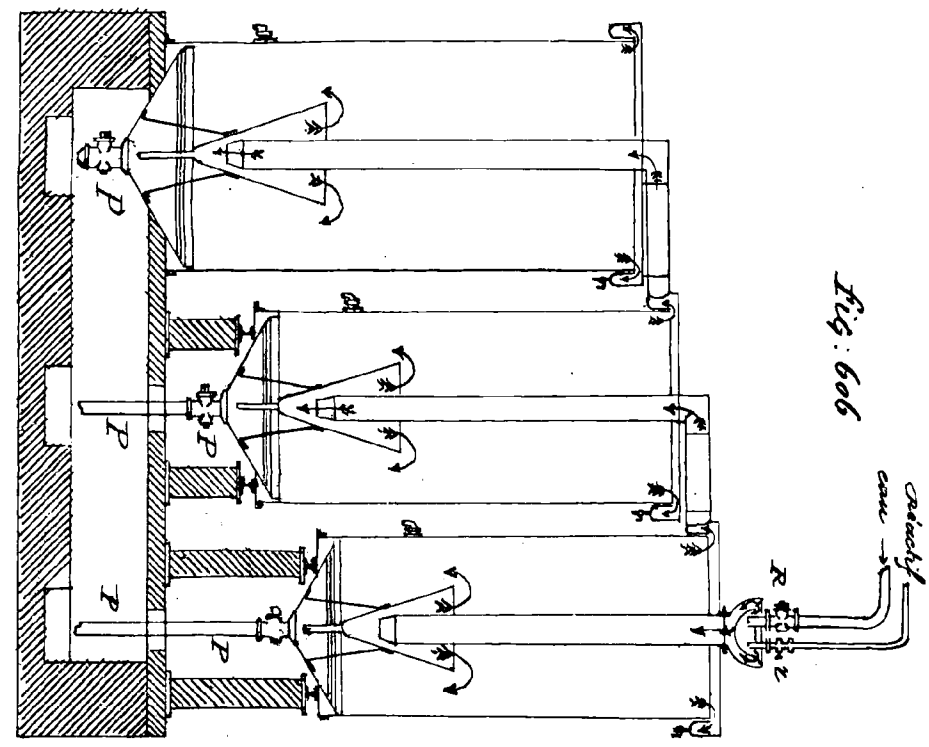
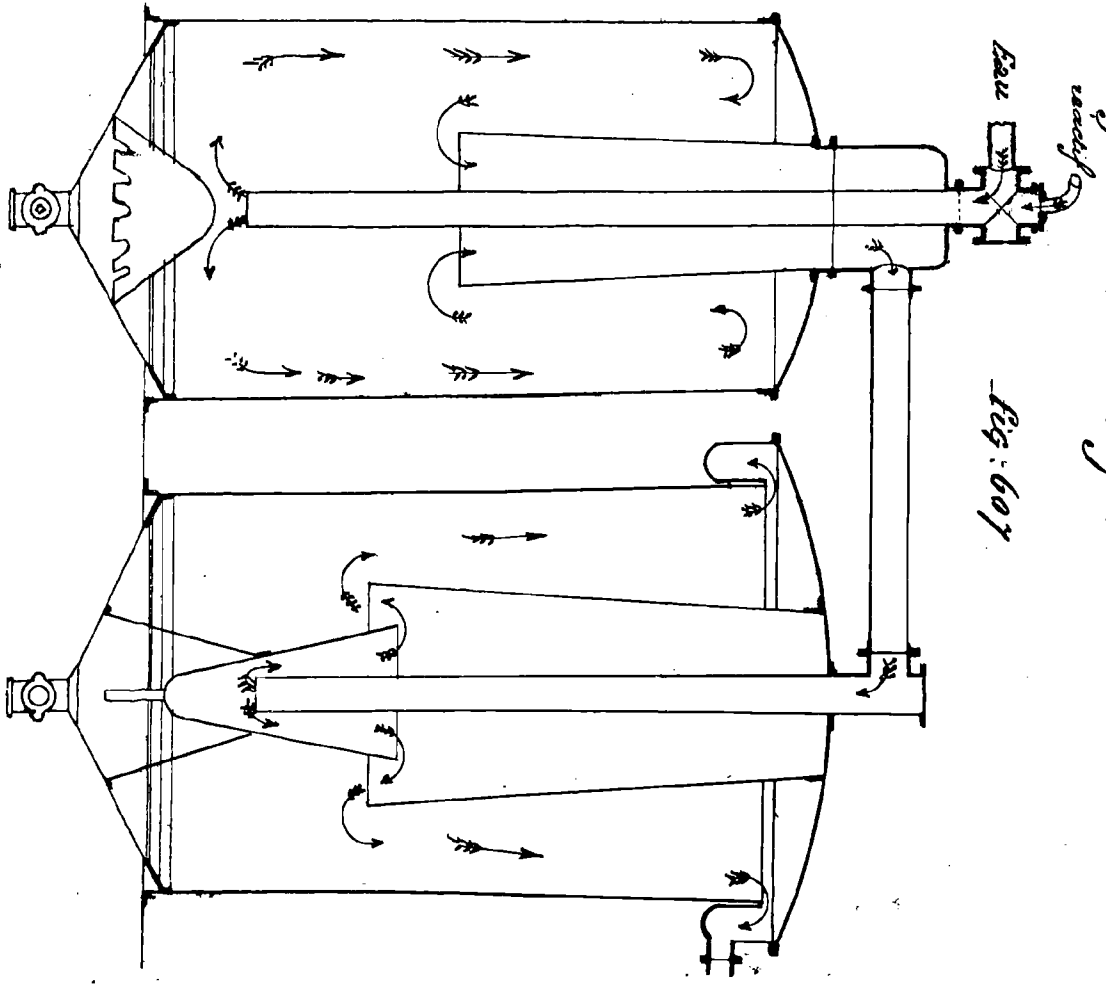


Fig: 607



Appareil Cohnfeld

Epurateur Le Tellier

Fig: 593

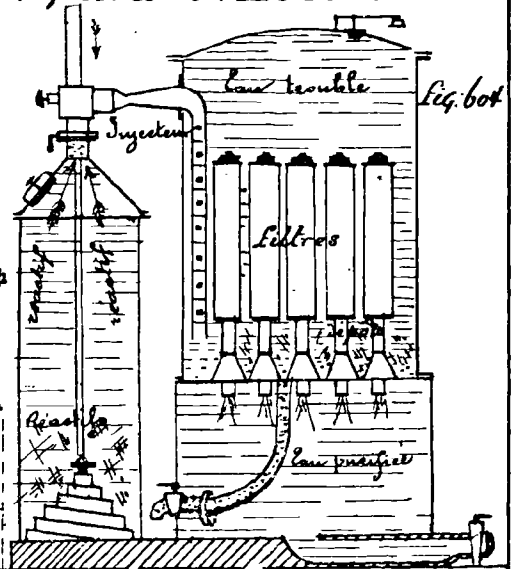
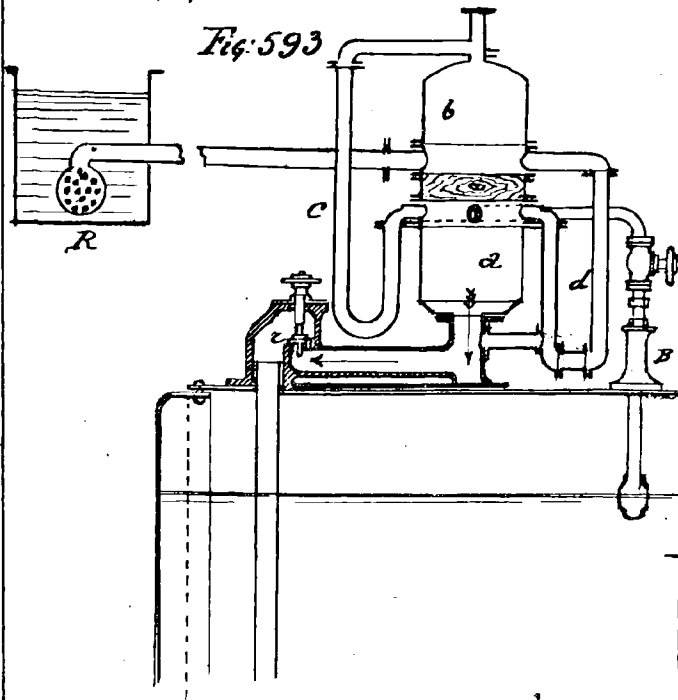
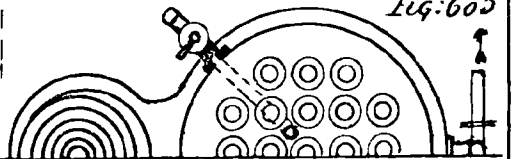
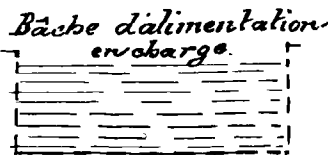


Fig: 605

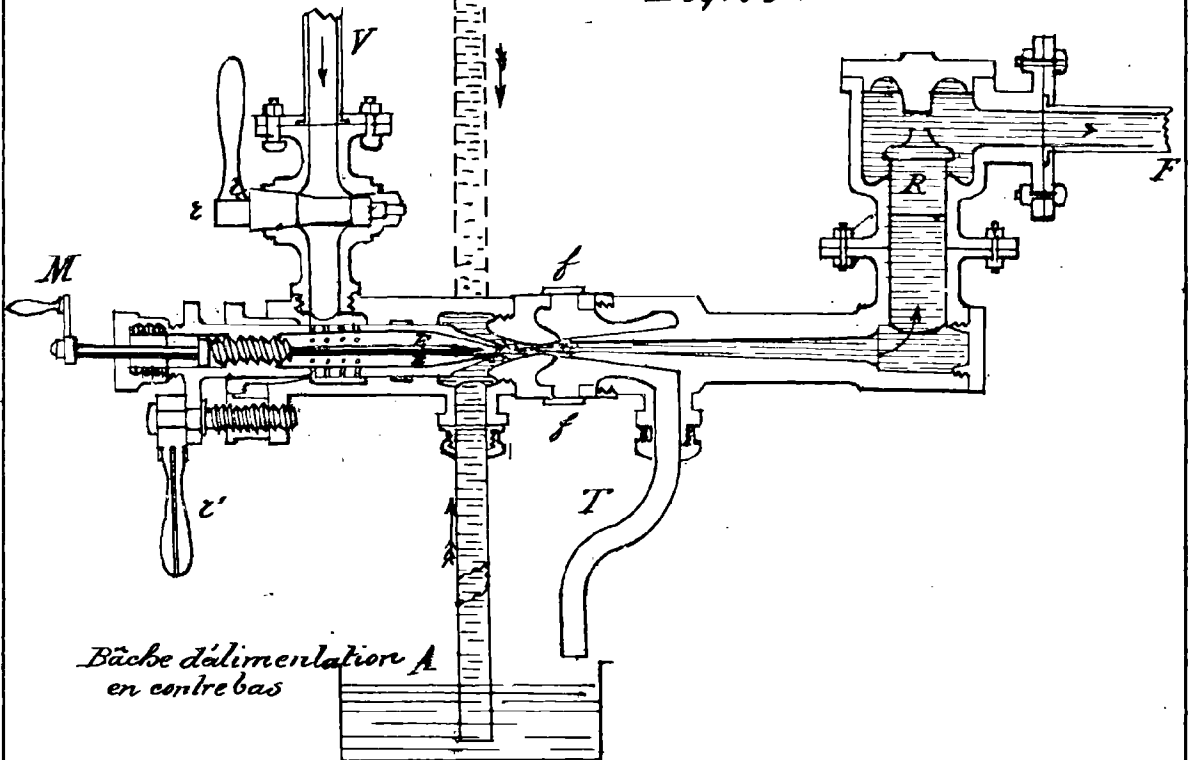


Injecteur



Giffard

Fig: 594



Bâche d'alimentation A en contre bas