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B 15329

# TRAITÉ

THÉORIQUE ET PRATIQUE

DES

# MOTEURS A VAPEUR

COMPRENANT PRINCIPALEMENT :

L'ÉTABLISSEMENT DES GÉNÉRATEURS ET DE LEURS APPAREILS DE SURETÉ, LES DIVERS MODES DE DISTRIBUTION, D'APPAREILS ALIMENTAIRES ET DE CONDENSATION  
TOUTS LES SYSTÈMES DE MACHINES A VAPEUR FIXES, A UN ET DEUX CYLINDRES,  
LES LOCOMOTIVES ET LES LOCOMOTIVES, LES APPAREILS DE NAVIGATION, LES MACHINES A AIR CHAUD ET A GAZ, ETC.

PAR ARMENGAUD AÎNÉ

INGÉNIEUR, ANCIEN PROFESSEUR AU CONSERVATOIRE IMPÉRIAL DES ARTS-ET-MÉTIERS

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## ATLAS

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PARIS

CHEZ L'AUTEUR, RUE SAINT-SÉBASTIEN, 45

1862



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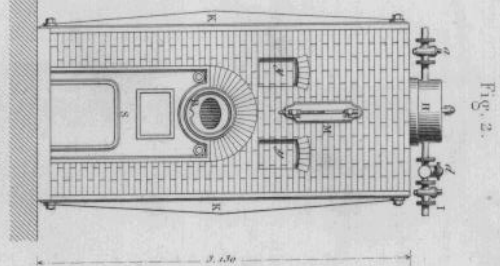


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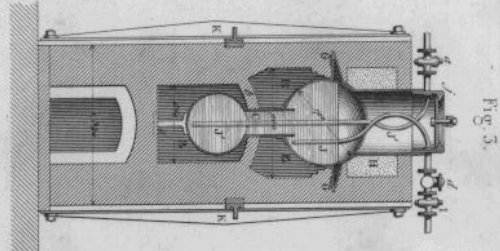


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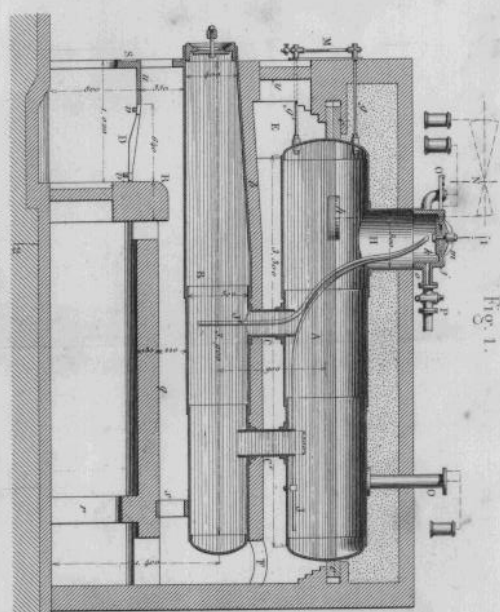


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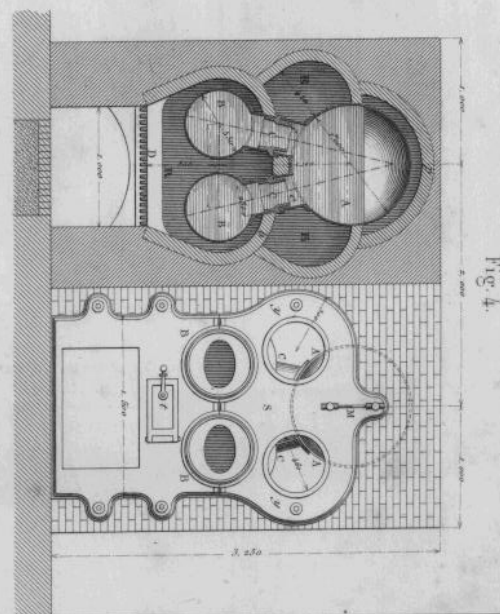


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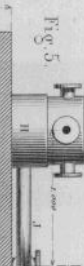


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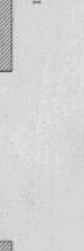


Fig. 6.



Fig. 7.



Fig. 8.

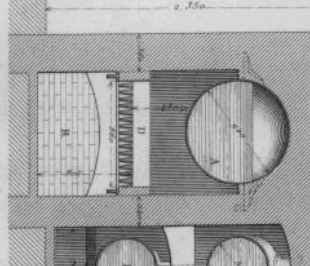


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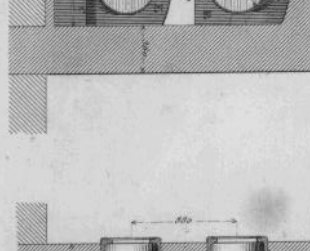


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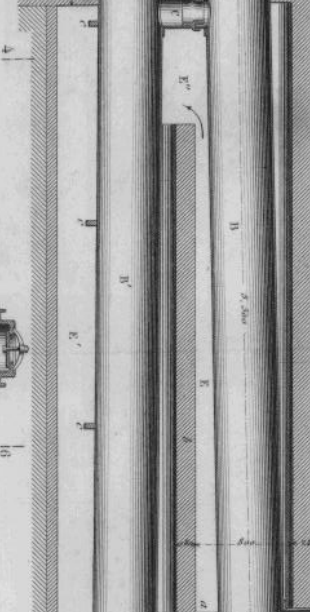


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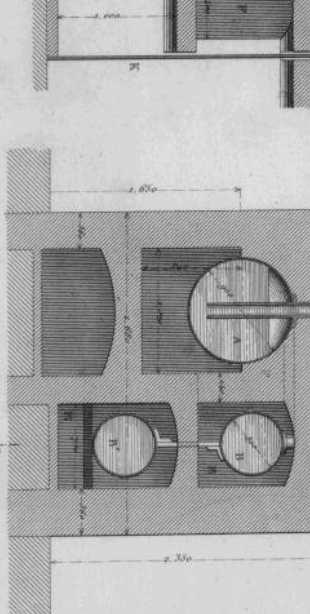


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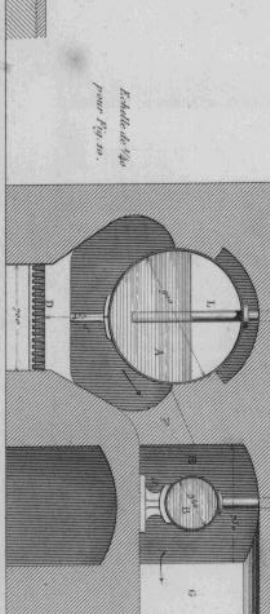
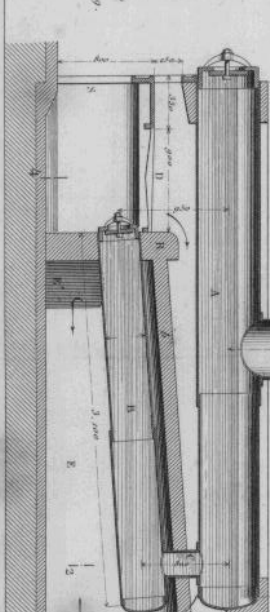
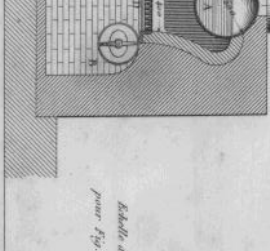
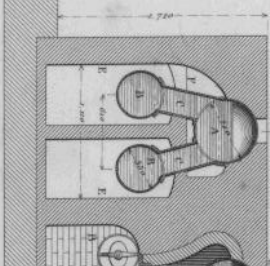


Fig. 16.

Échelle de 1/100  
pour Fig. 1 à 9.

Échelle de 1/100  
pour Fig. 10.

J. Petitcolin et L. L'Amant sculp.

Paris, chez les éditeurs, 31, rue de la Harpe.

Aménagement aîné.





*Générateurs des machines atmosphériques de S. Gorman.*

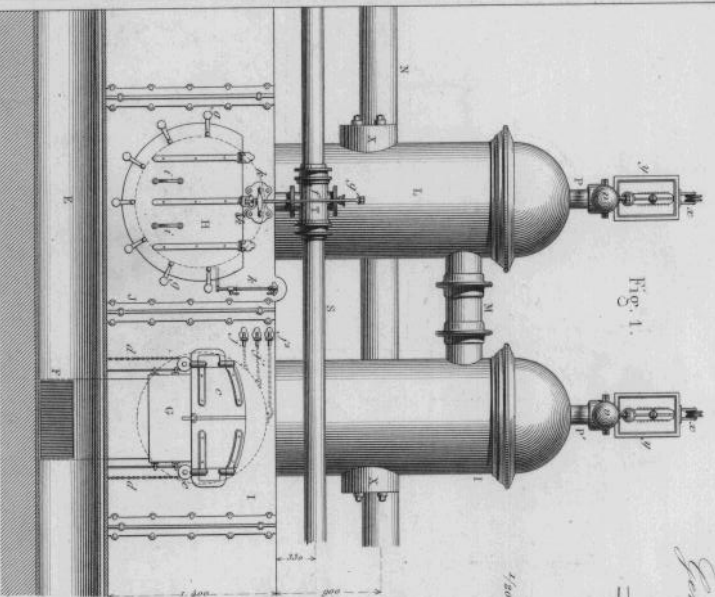


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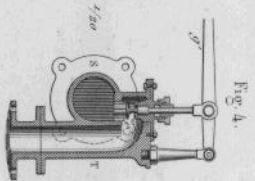


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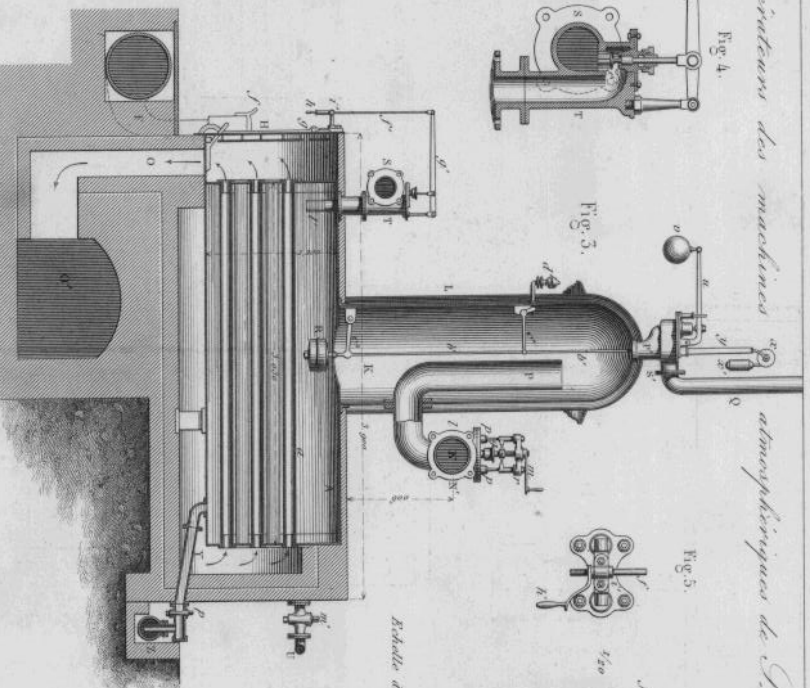


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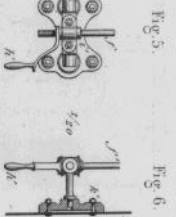


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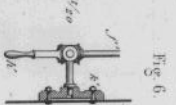


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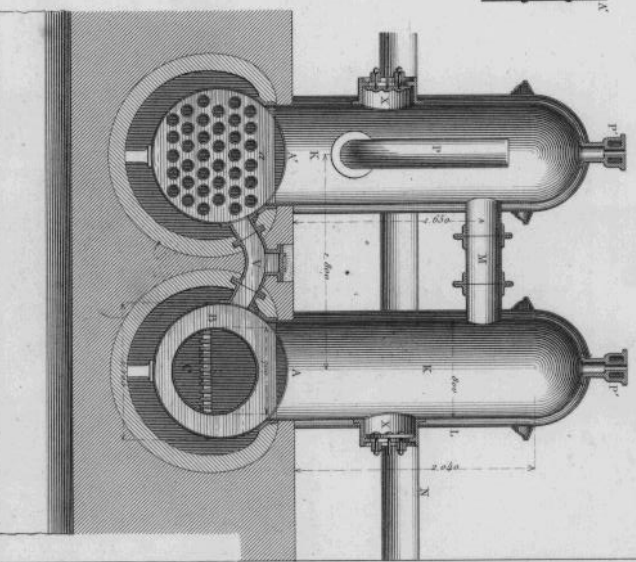
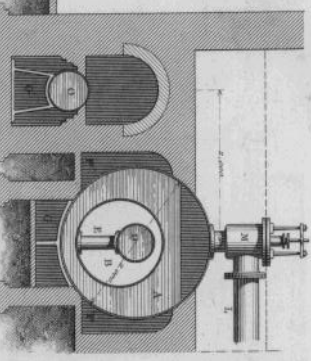


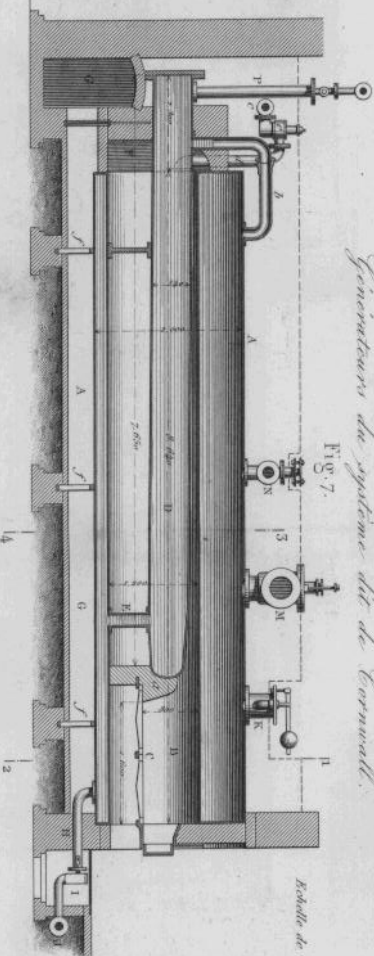
Fig. 2.

Fig. 9.



*Générateurs du système dit de Cornwell.*

Fig. 7.



Echelle de 1/50

Fig. 8.

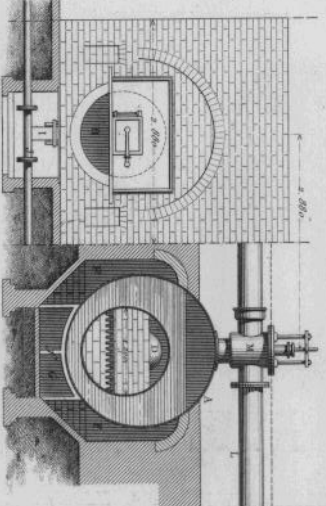
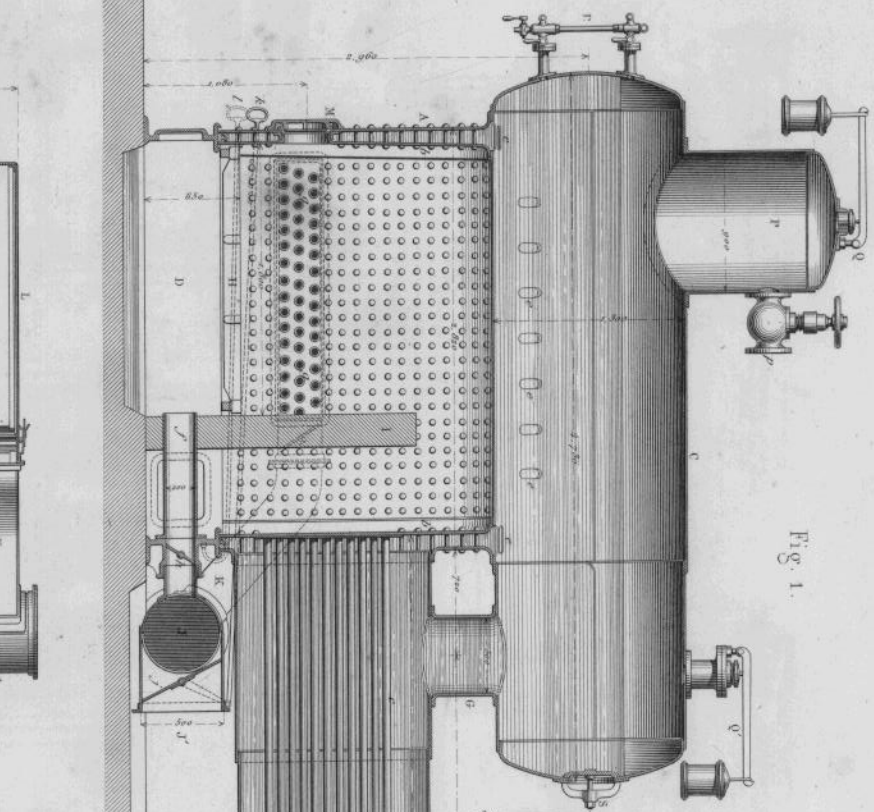


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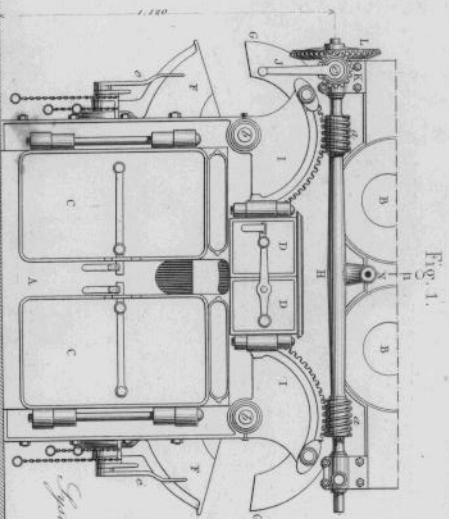


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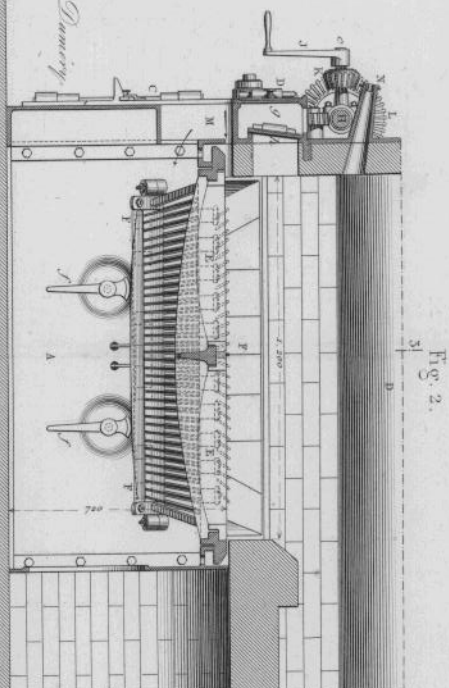


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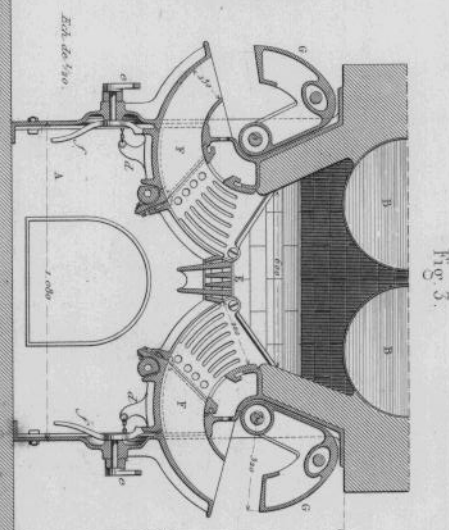


Fig. 3

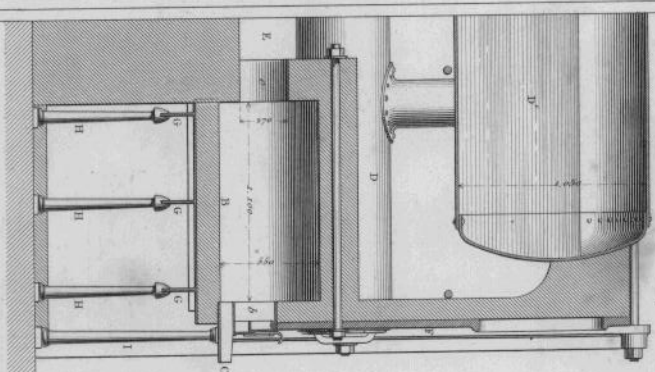


Fig. 6.

Thérèse Corbin

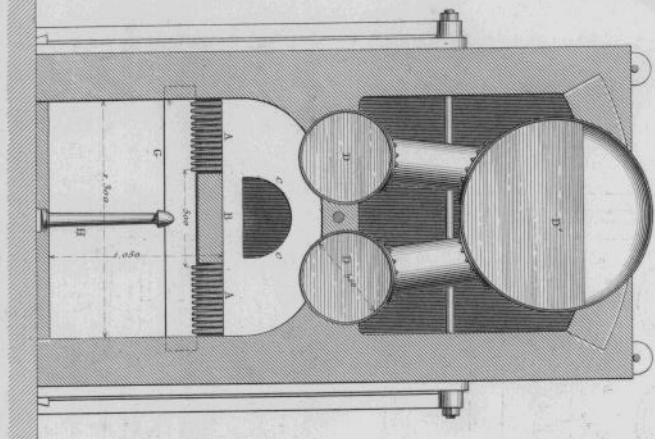


Fig. 7

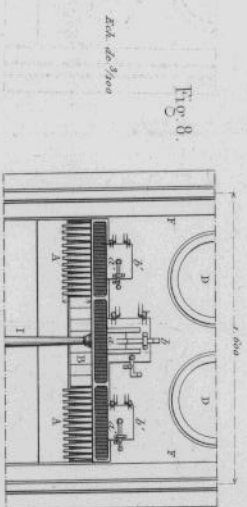


Fig. 8.

Ech. de 3/100

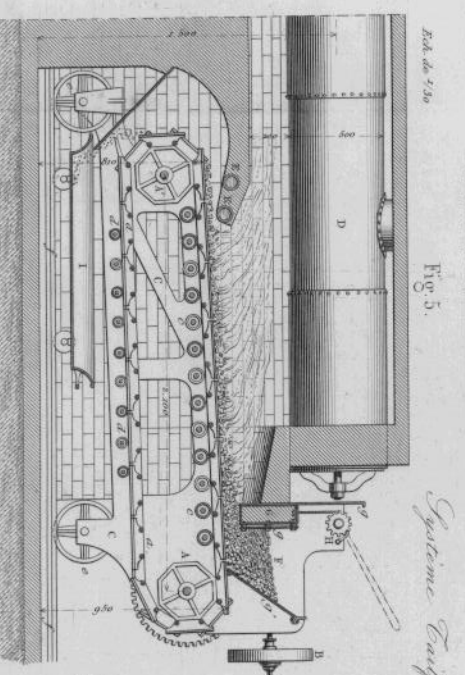


Fig. 5.

Systeme Tafel:

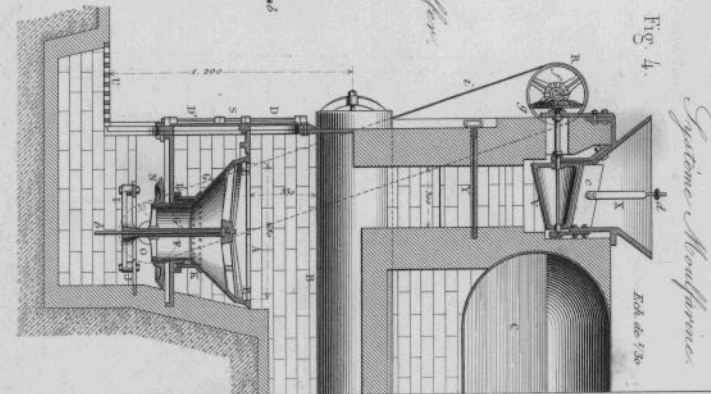


Fig. 4

*Système Bouffaire*

Feb. de 1/30



Fig. 6.  
*Manomètre de M. Dubouché.*

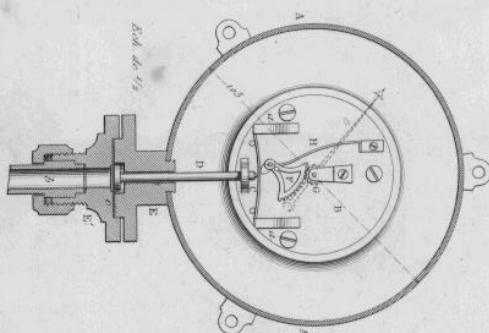


Fig. 1.

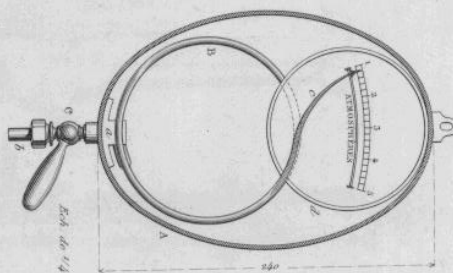


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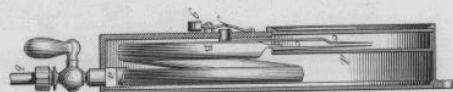


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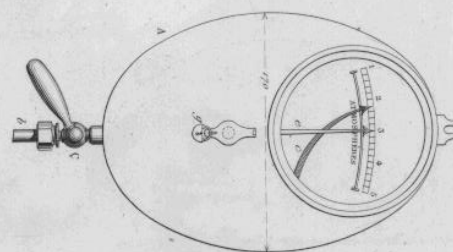


Fig. 14.

*Opérateur par M. Dubouché.*

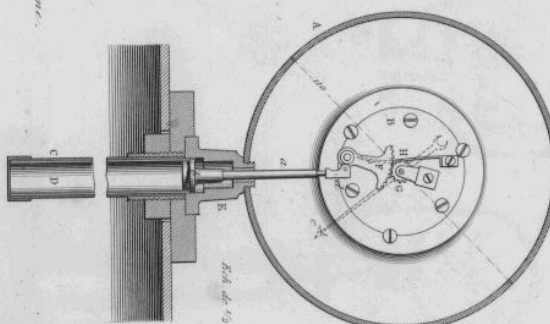


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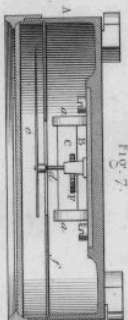


Fig. 13.

*Indicateur de vide.*

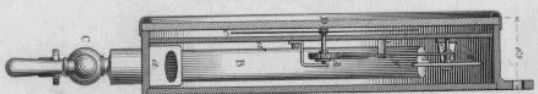
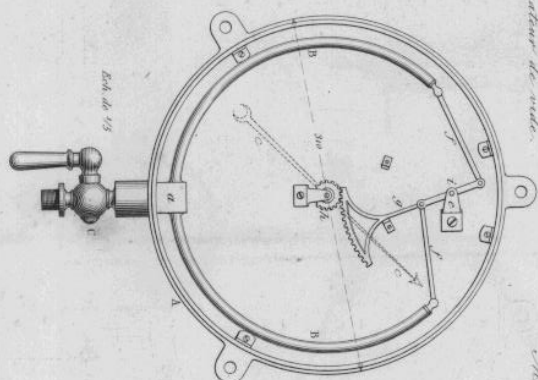


Fig. 12.



*Manomètre à diaphragme.*

Fig. 10.

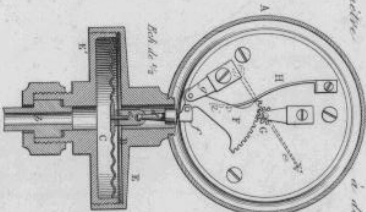


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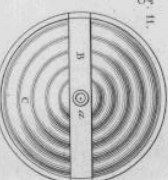


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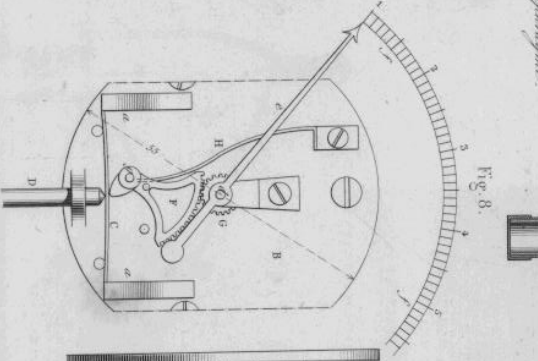


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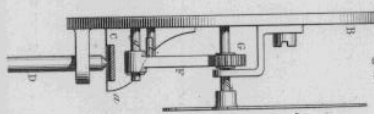


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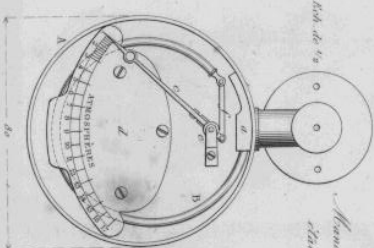


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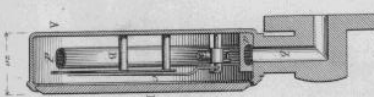


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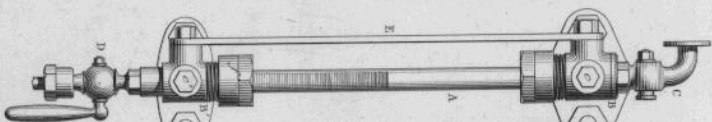


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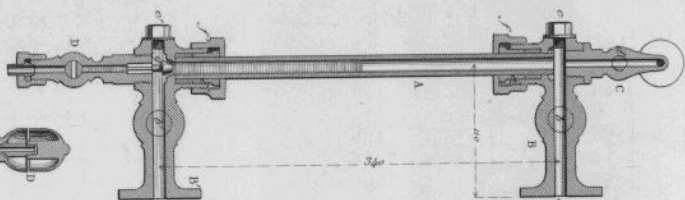


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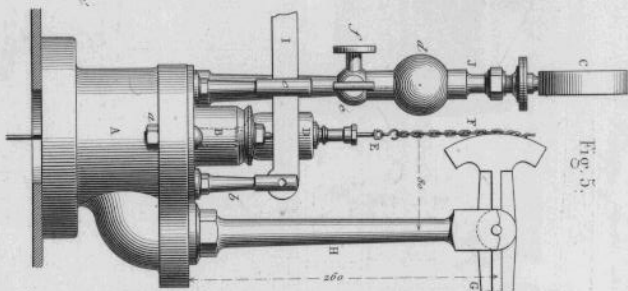


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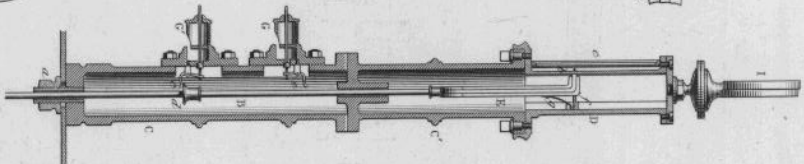


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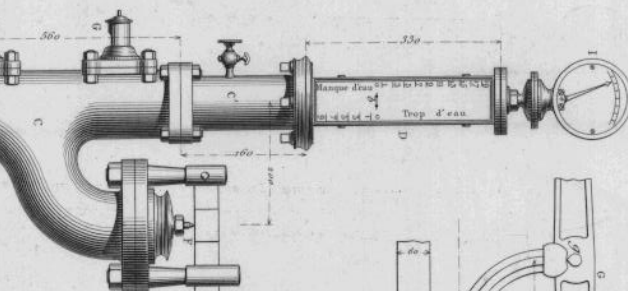


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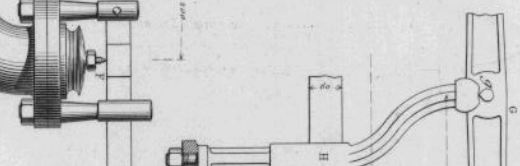


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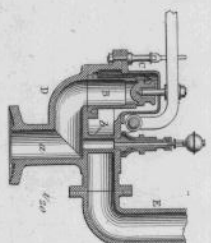


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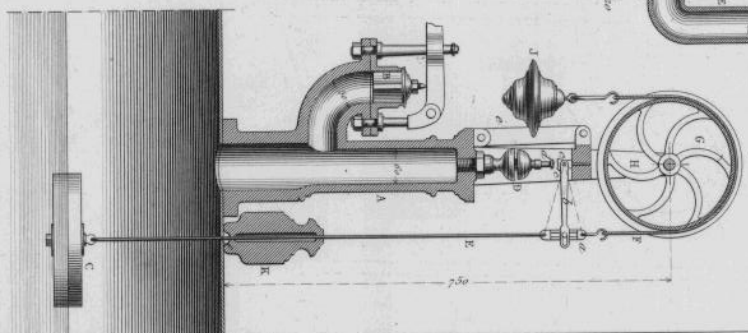


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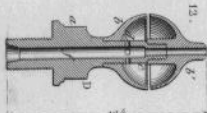


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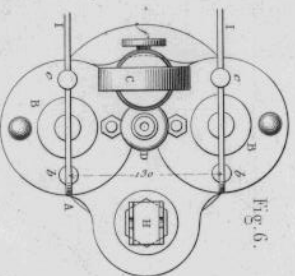


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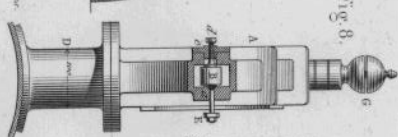


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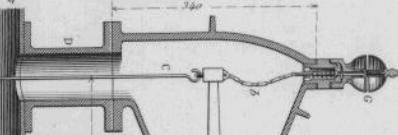


Fig. 13.



Fig. 14.

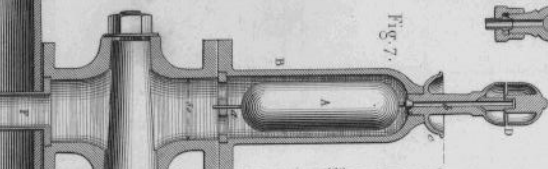


Fig. 15.



Fig. 16.



Fig. 17.

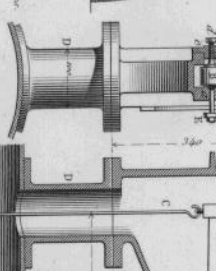


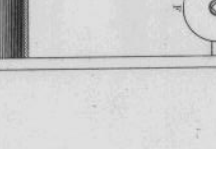
Fig. 18.



Fig. 19.



Fig. 20.



DISPOSITIONS GÉNÉRALES D'UN MOTEUR A VAPEUR.

Fig. 1.

*Coupe faite suivant l'axe principal.*

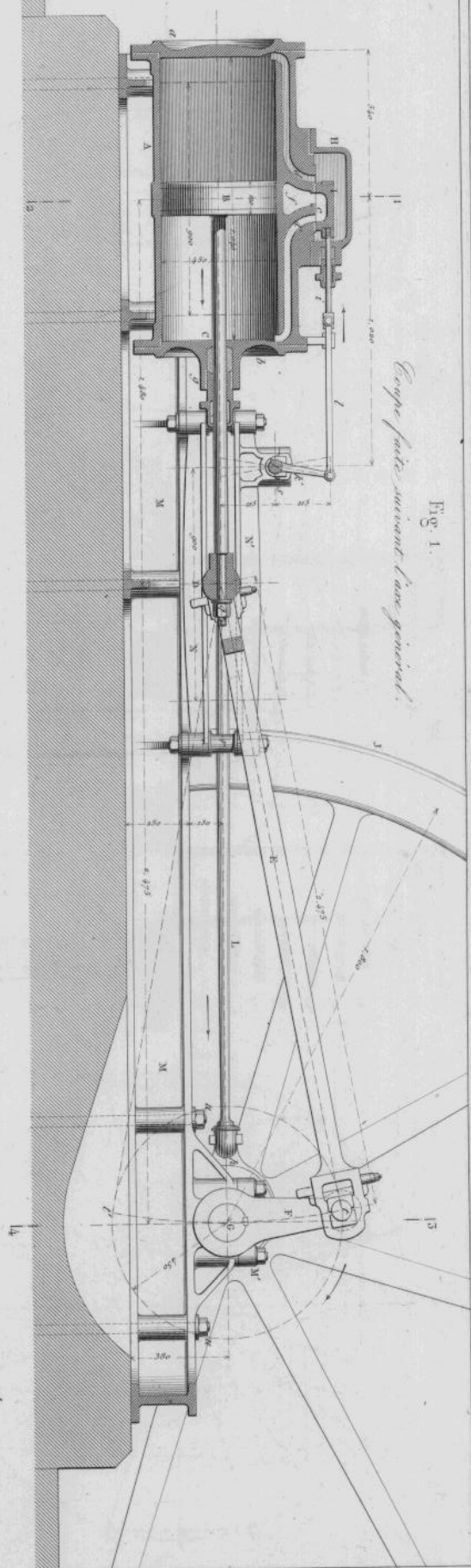


Fig. 5.

*Trace géométrique des mouvements relatifs des points de la bielle et de la manivelle.*

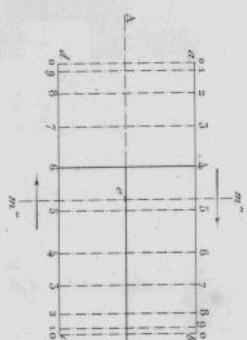


Fig. 2.

*Coupe transversale suivant l'axe 1-2 des manivelles et de la bielle.*

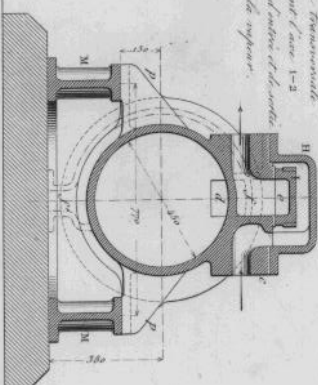


Fig. 4.

*Mouvement de l'excentrique de distribution.*

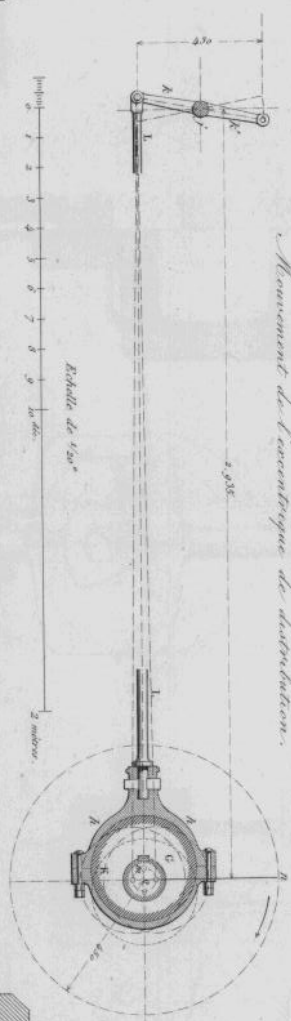
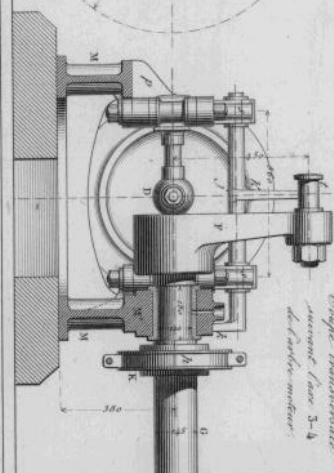


Fig. 3.

*Coupe transversale suivant l'axe 3-4 de l'arbre moteur.*





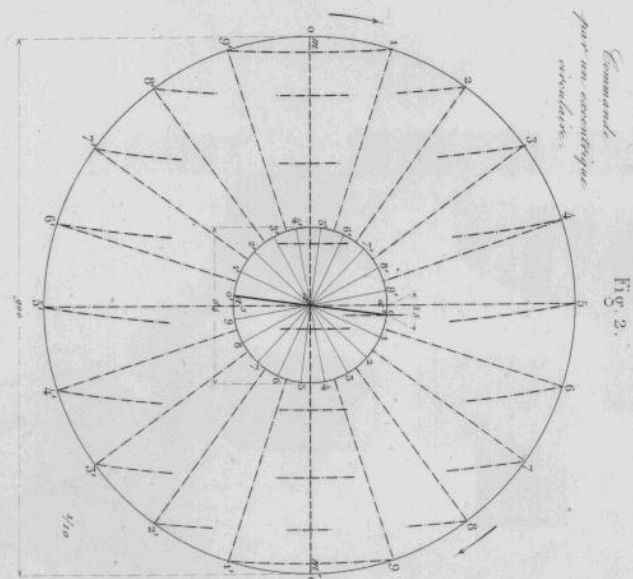
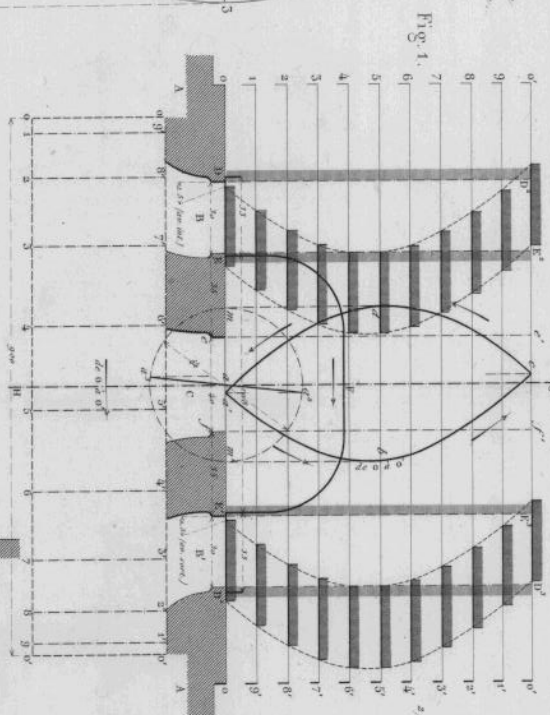
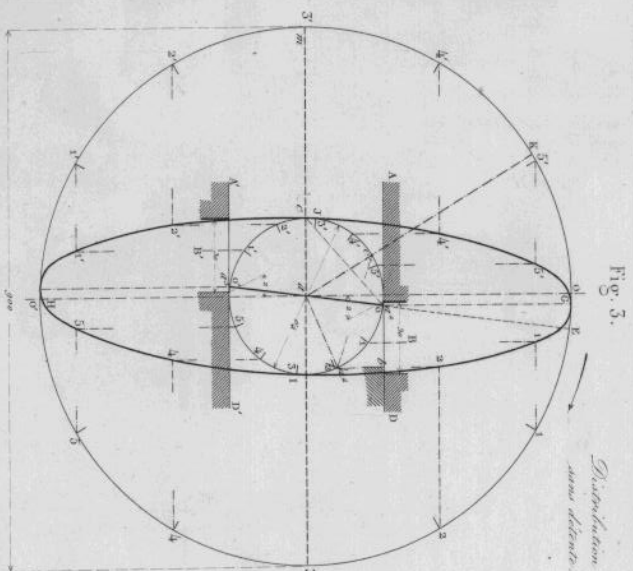


Fig. 7.

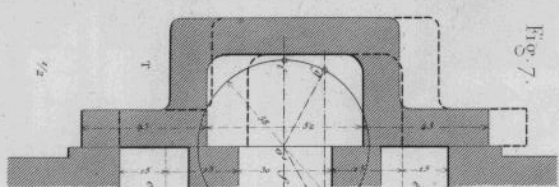


Fig. 6.

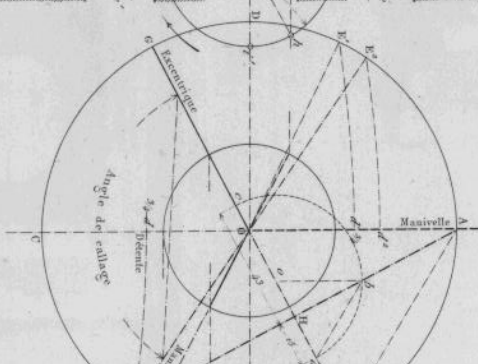


Fig. 8.

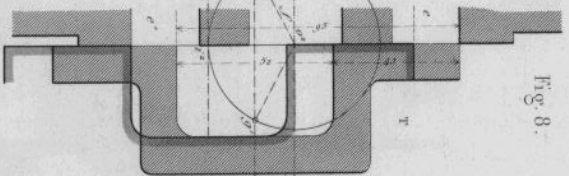


Fig. 4.

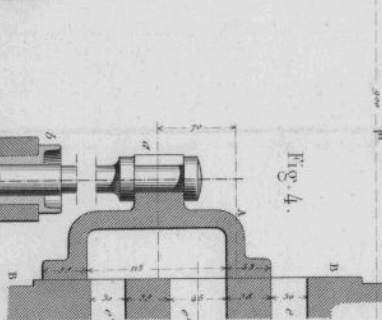
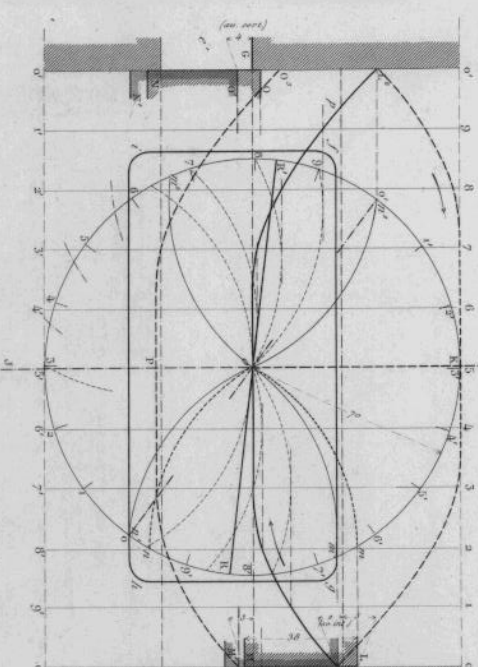


Fig. 5.



*Détente variable par le système de M. Tarnet.*

Fig. 5.

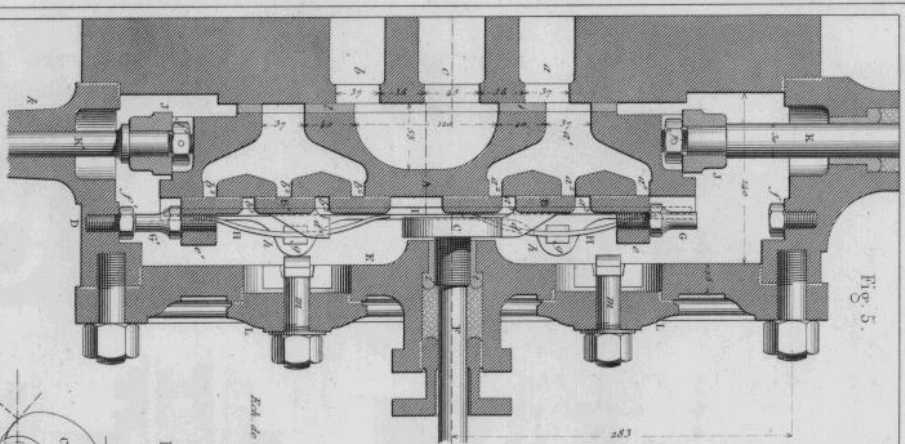


Fig. 6.

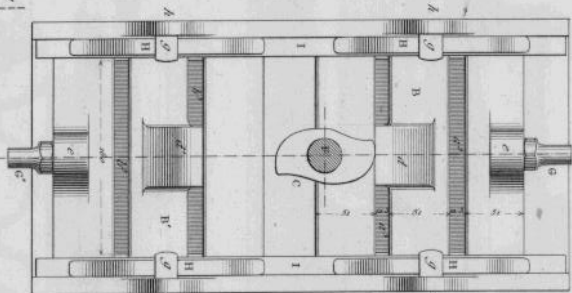


Fig. 7.

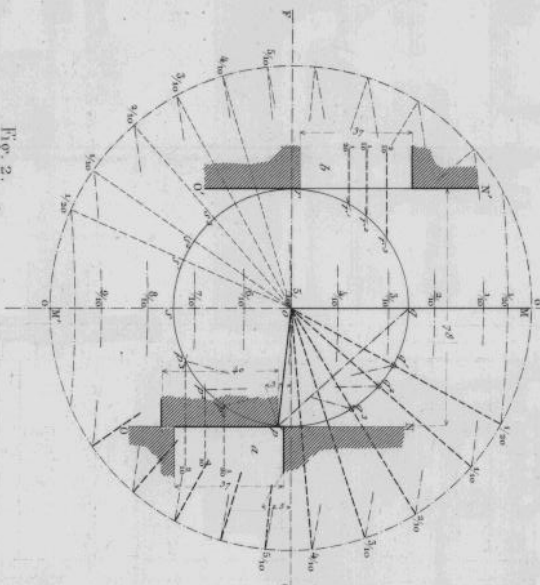


Fig. 8.

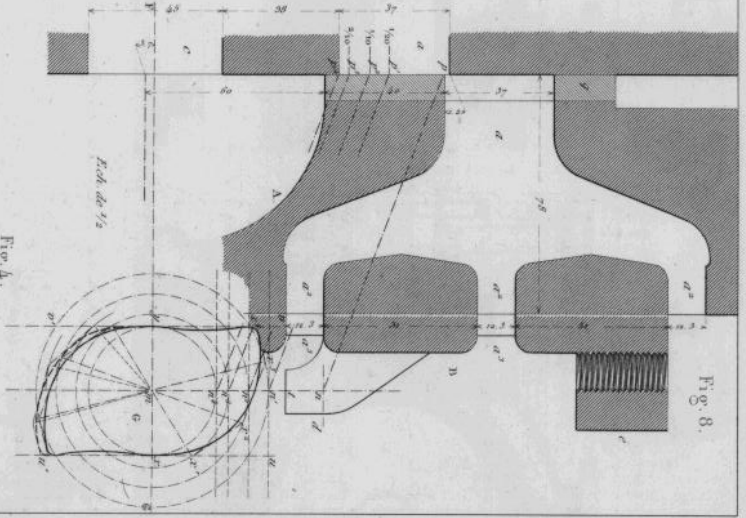


Fig. 2.

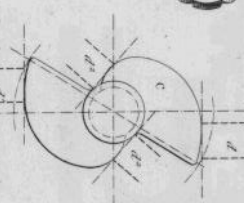


Fig. 1.

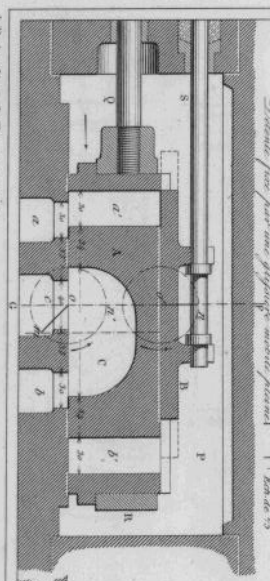


Fig. 2.



Fig. 4.

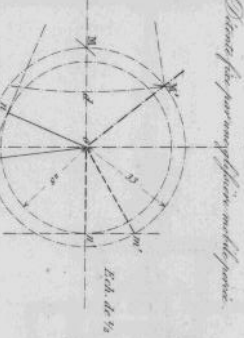
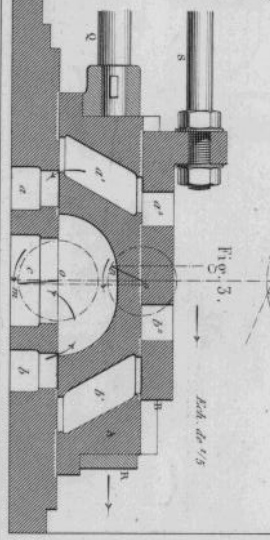
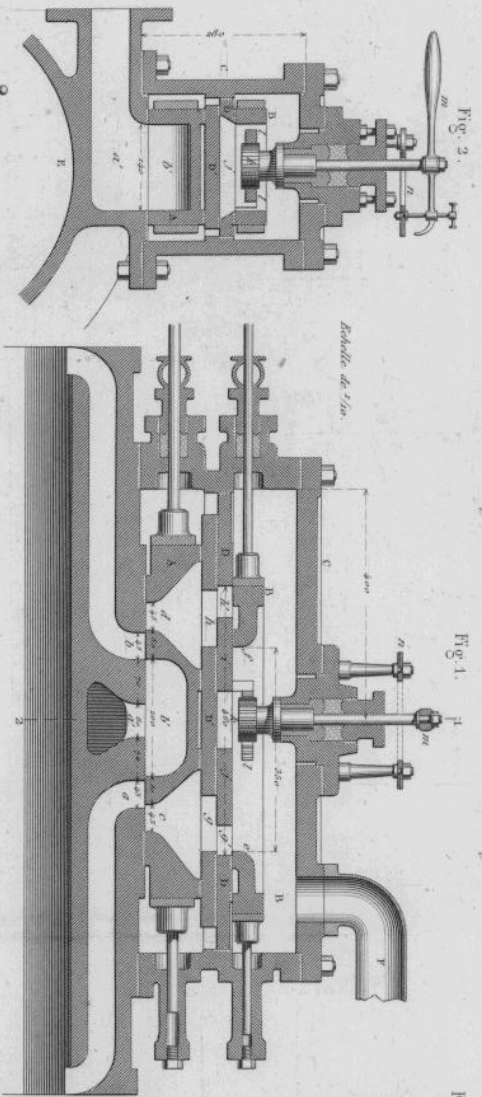


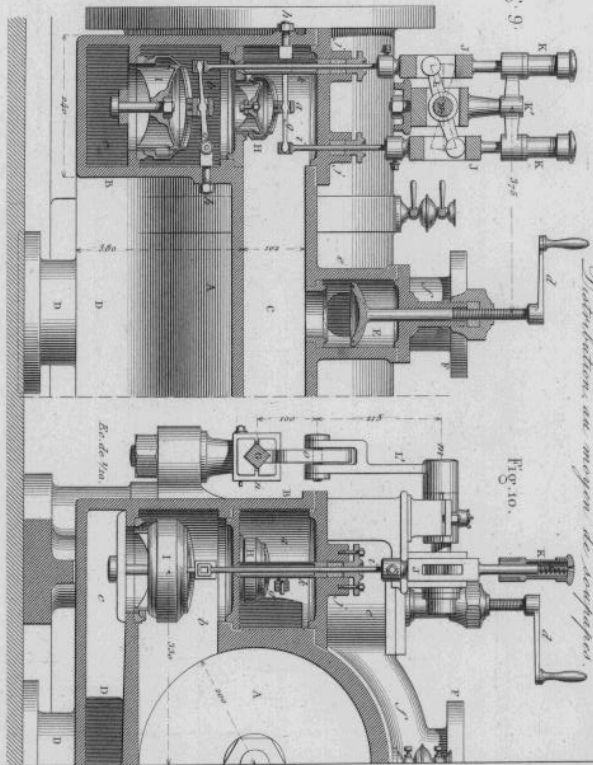
Fig. 3.



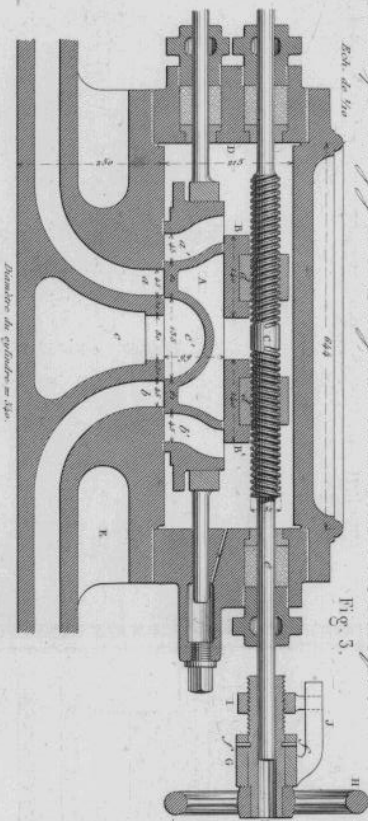
*Détente variable par le longeur des organes par M. Gouge.*



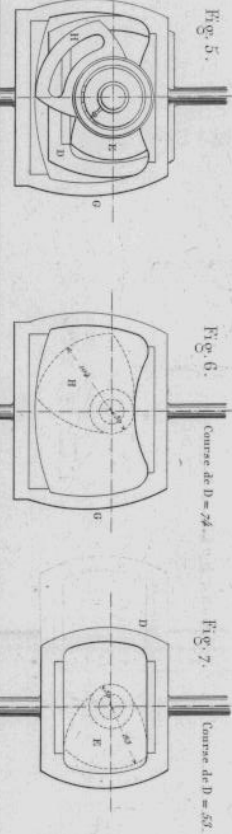
*Distribution au moyen de soupapes.*



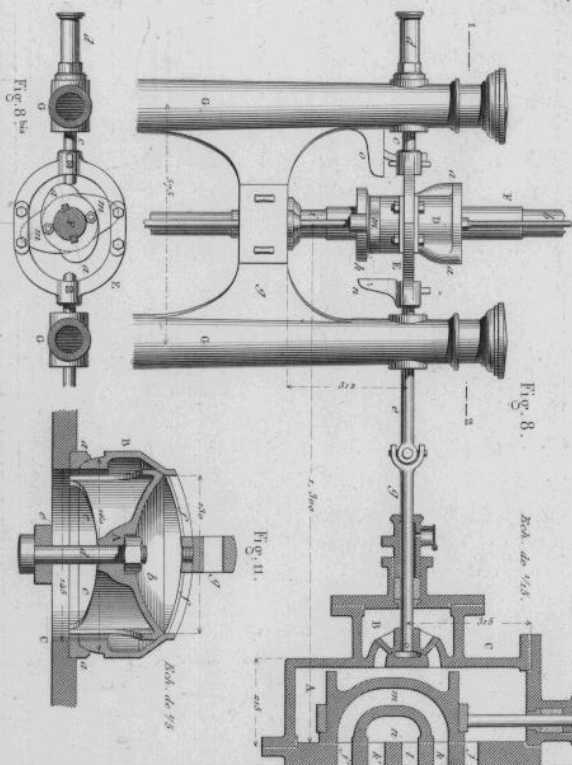
*Détente par une pousée à longueur variable de M. Meyer.*



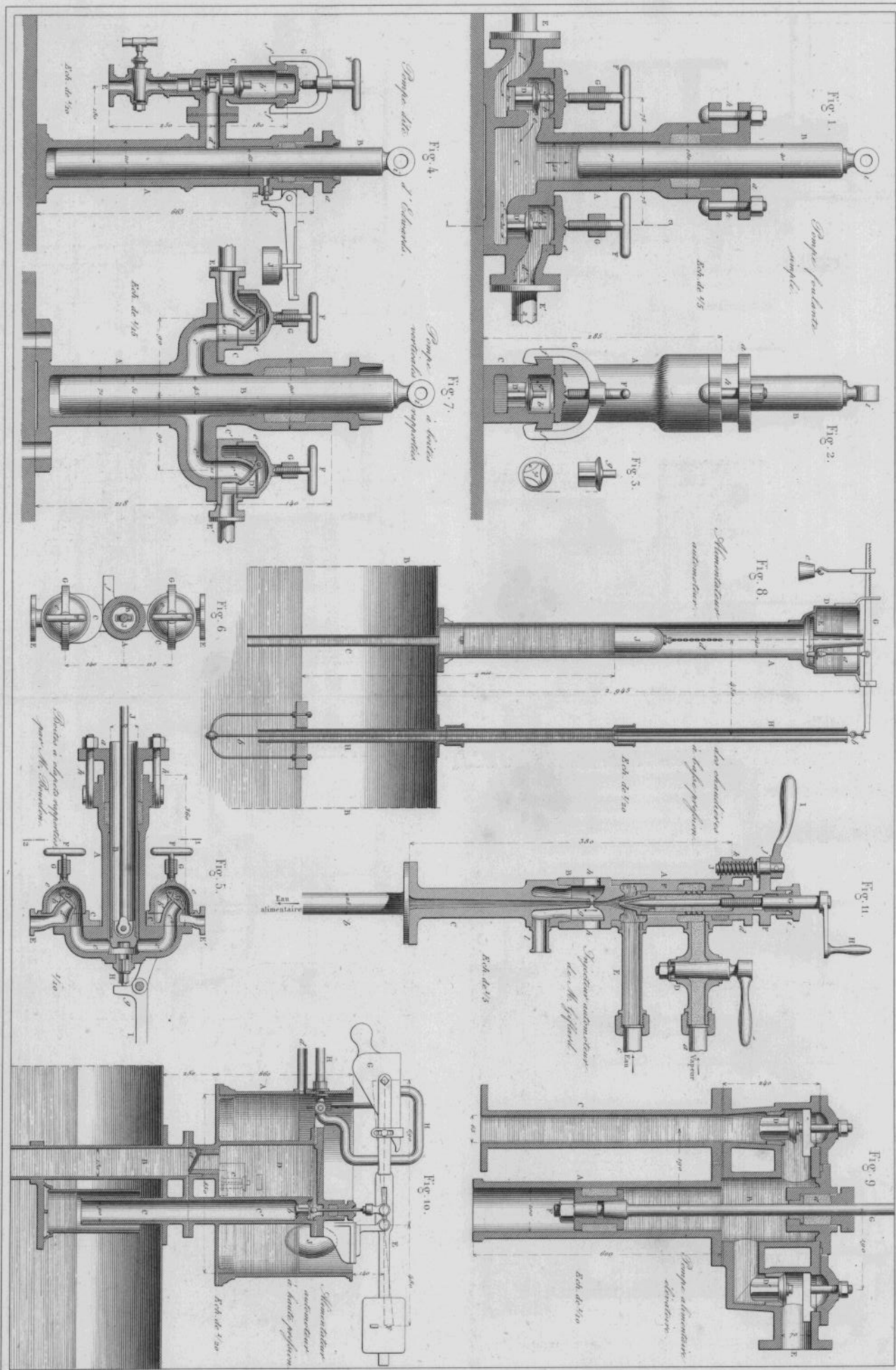
*Détente variable par l'angle de collage par M. Fournet.*

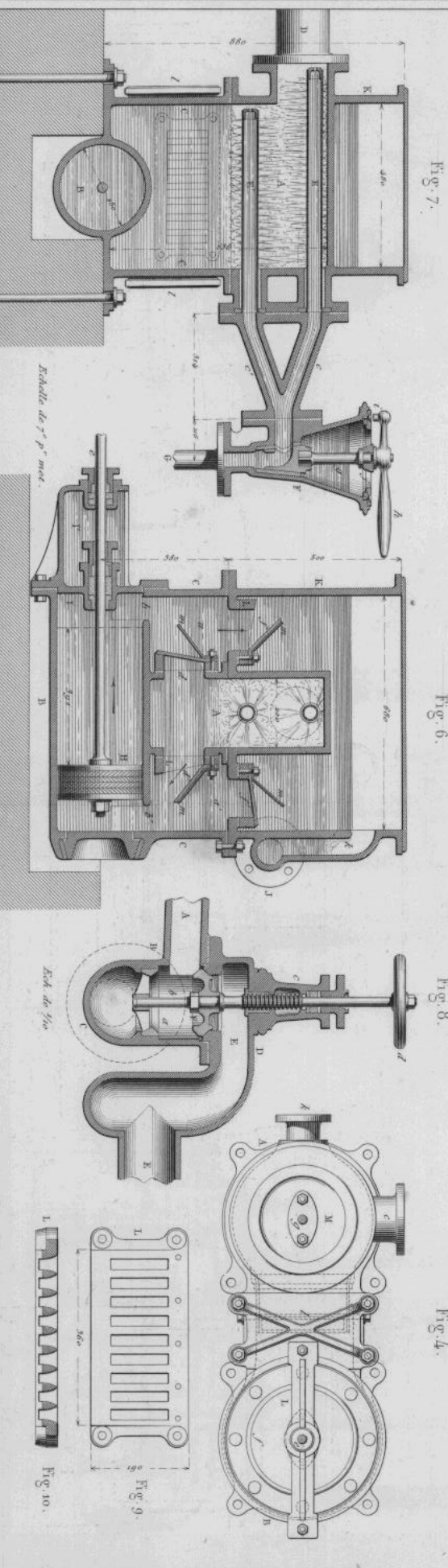
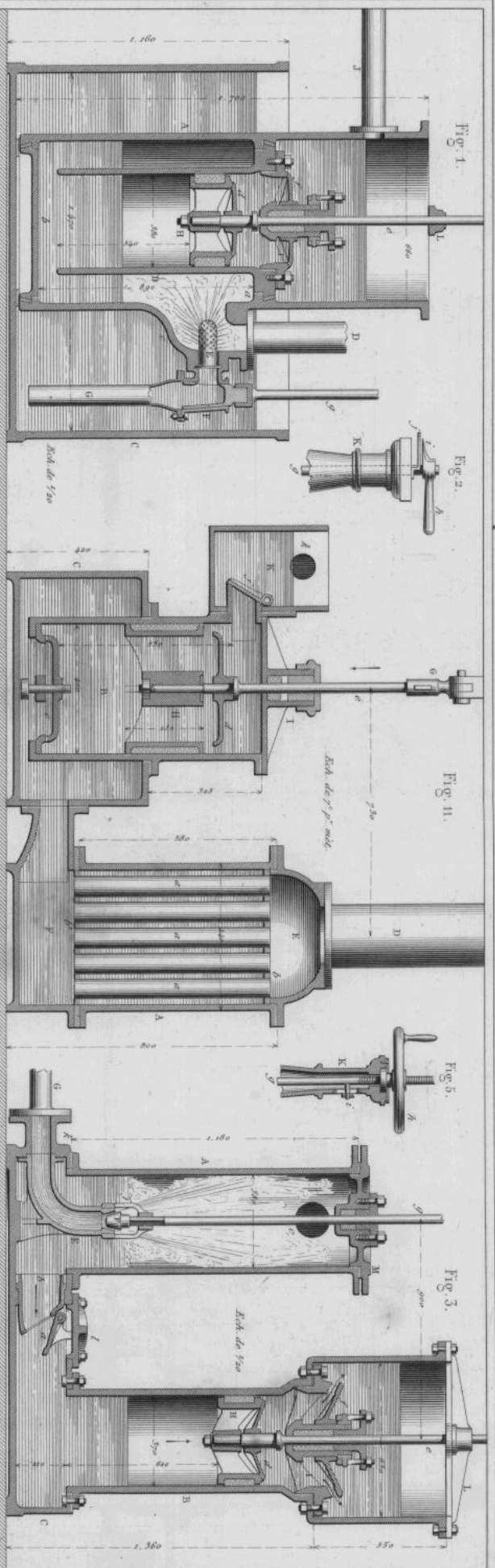


*Détente par un mandon à bégas.*

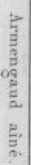


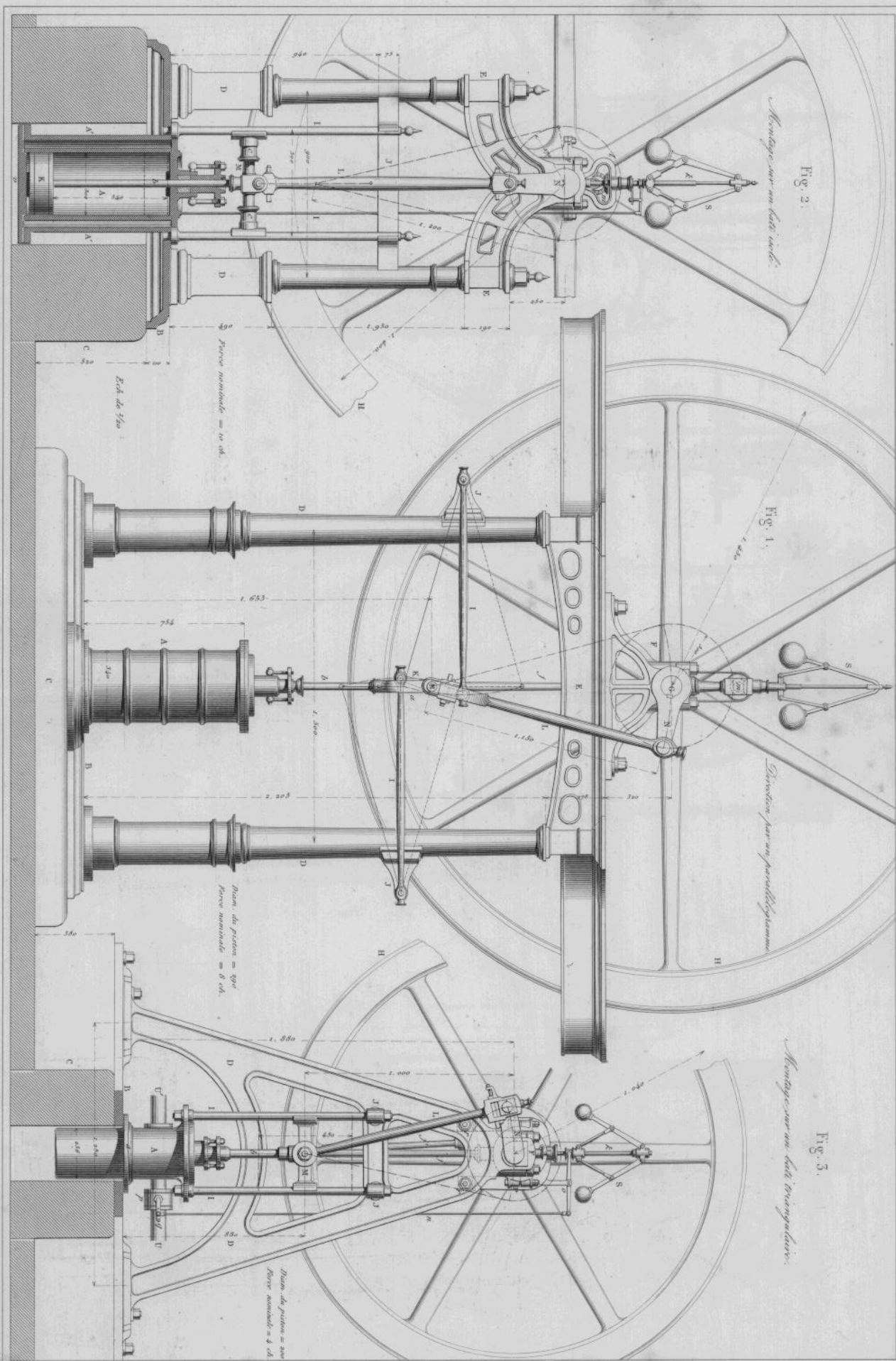












MACHINE VERTICALE. A QUATRE COLONNES. PAR M FARCOT.

Fig. 1.

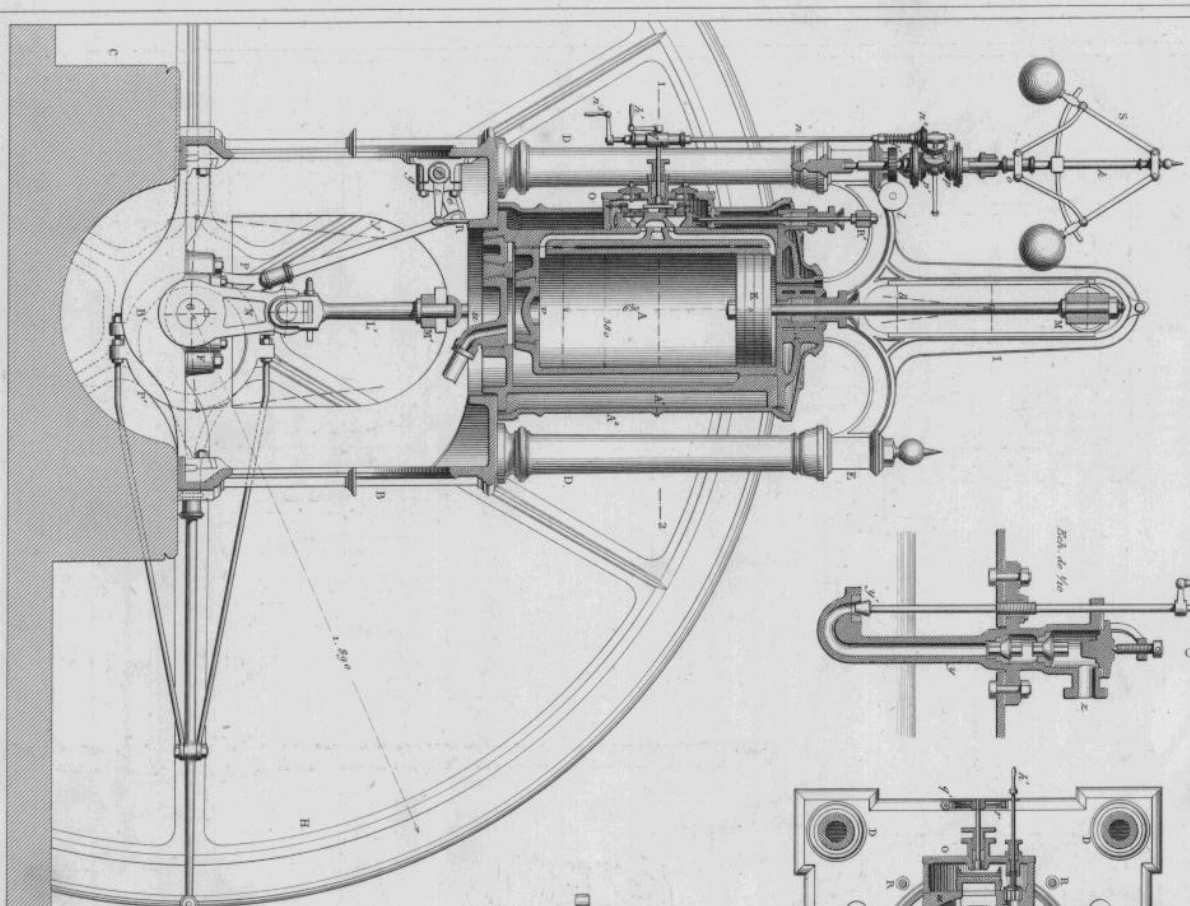


Fig. 5.

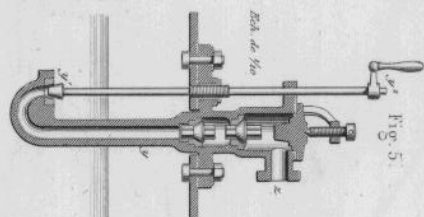


Fig. 3.

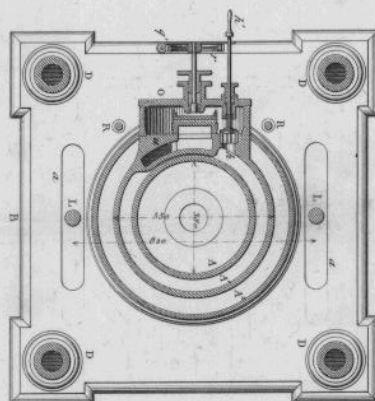
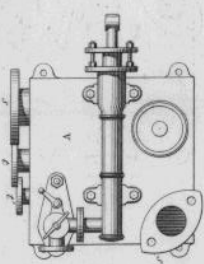


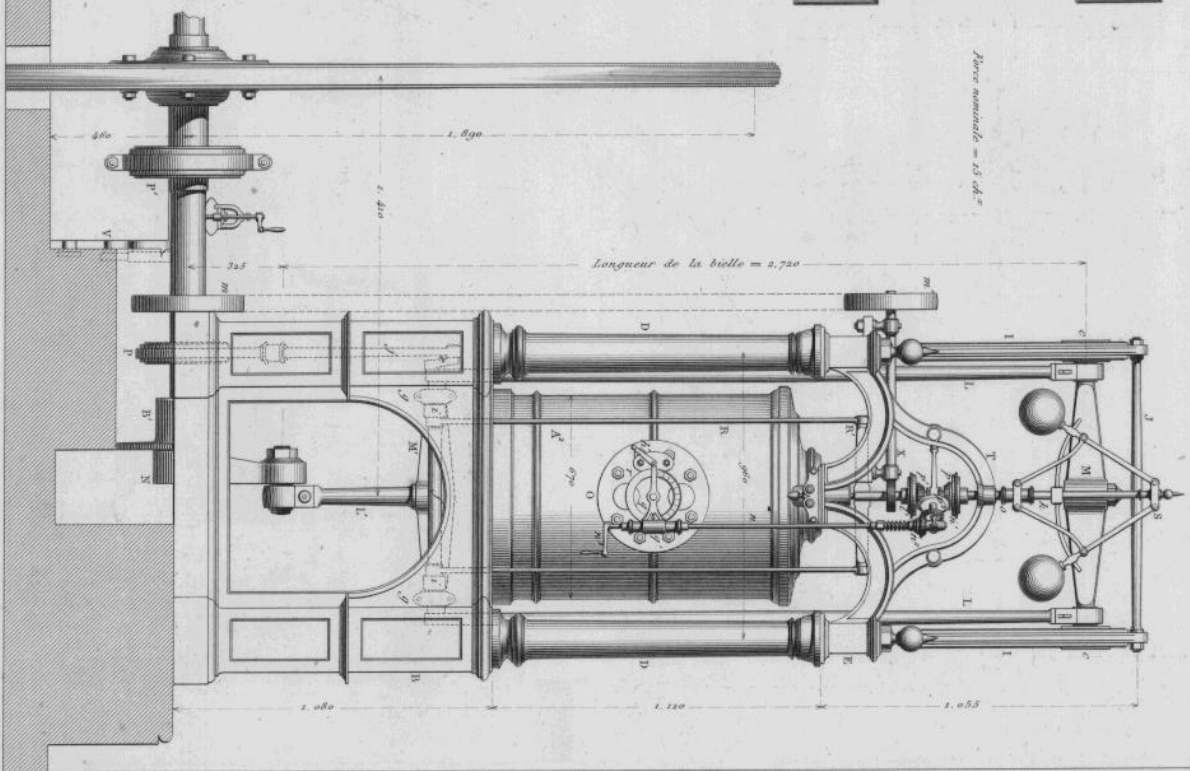
Fig. 4.



*Rob. de 1/20 p. Fig. 1 & 4.*

*Puissance nominale = 35 ch.*

Fig. 2.





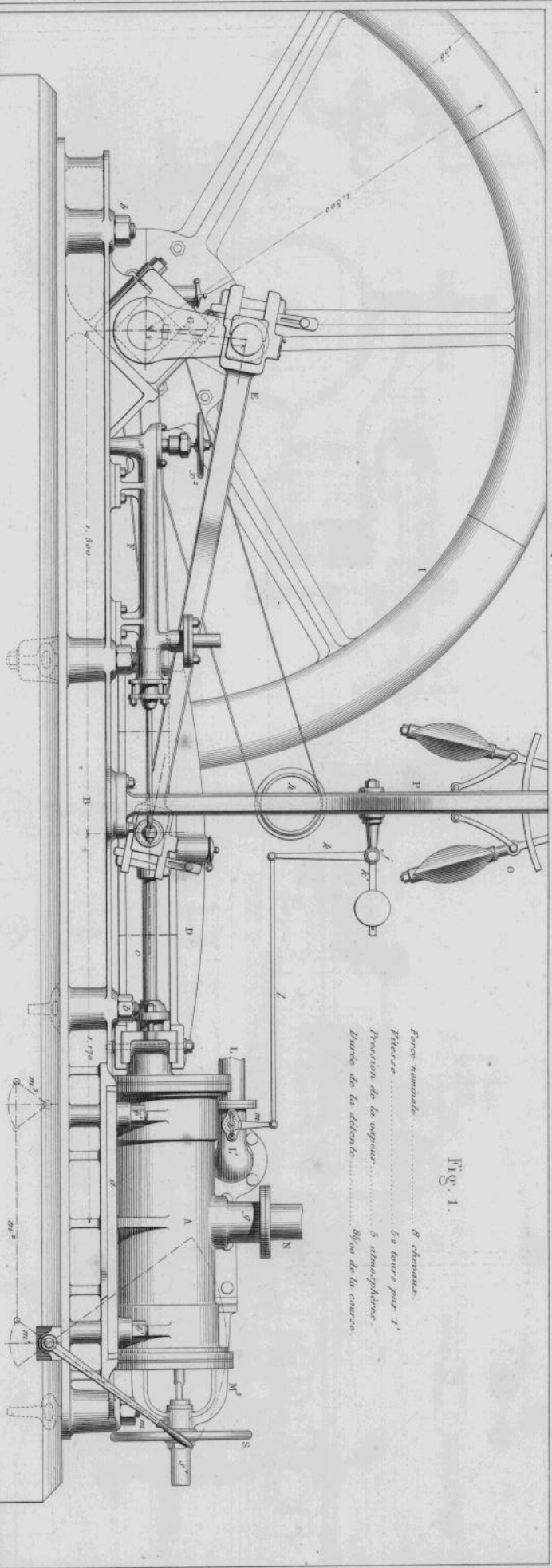


Fig. 1.

Force nominale ..... 8 chevaux.  
 Vitesse ..... 62 tours par s.  
 Pression de la vapeur ..... 5 atmosphères.  
 Durée de la détente ..... 1/3 de la course.

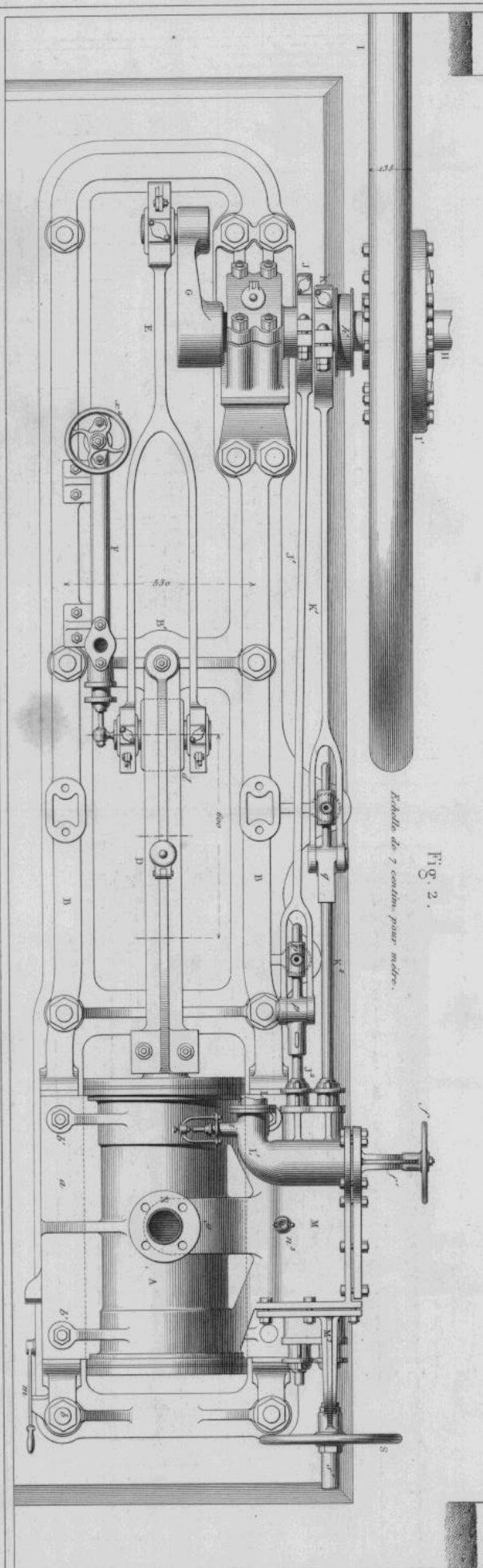


Fig. 2.

Échelle de 7 centim. pour mètre.

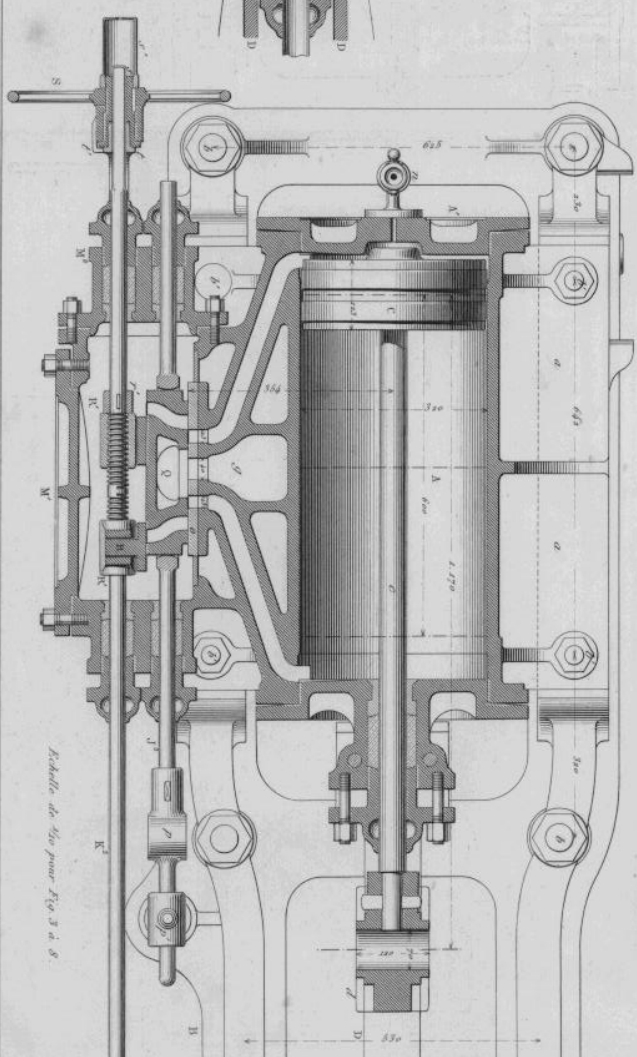
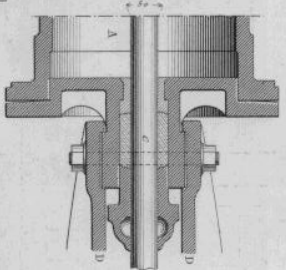
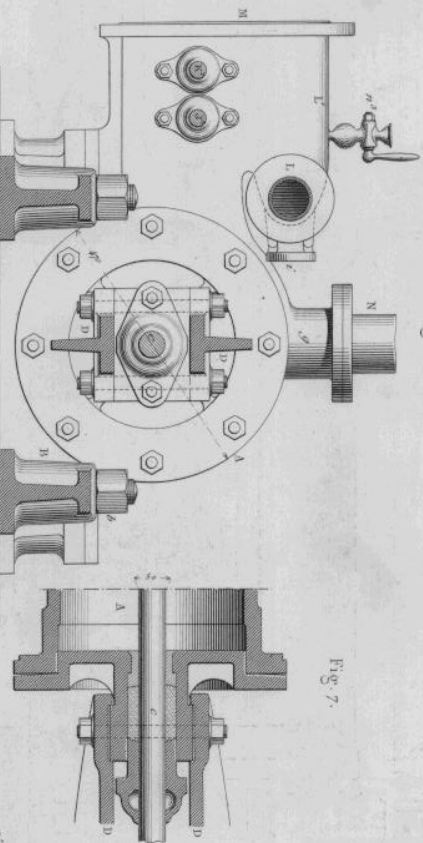
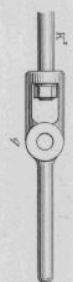
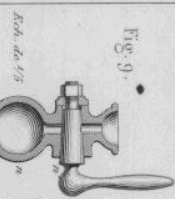
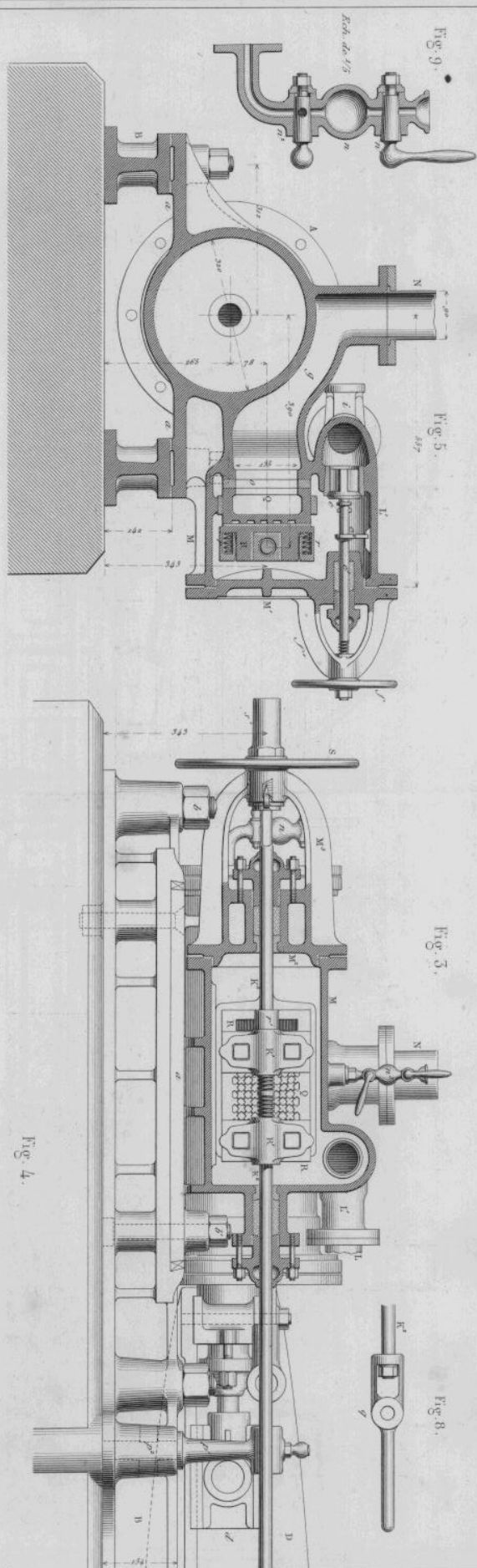
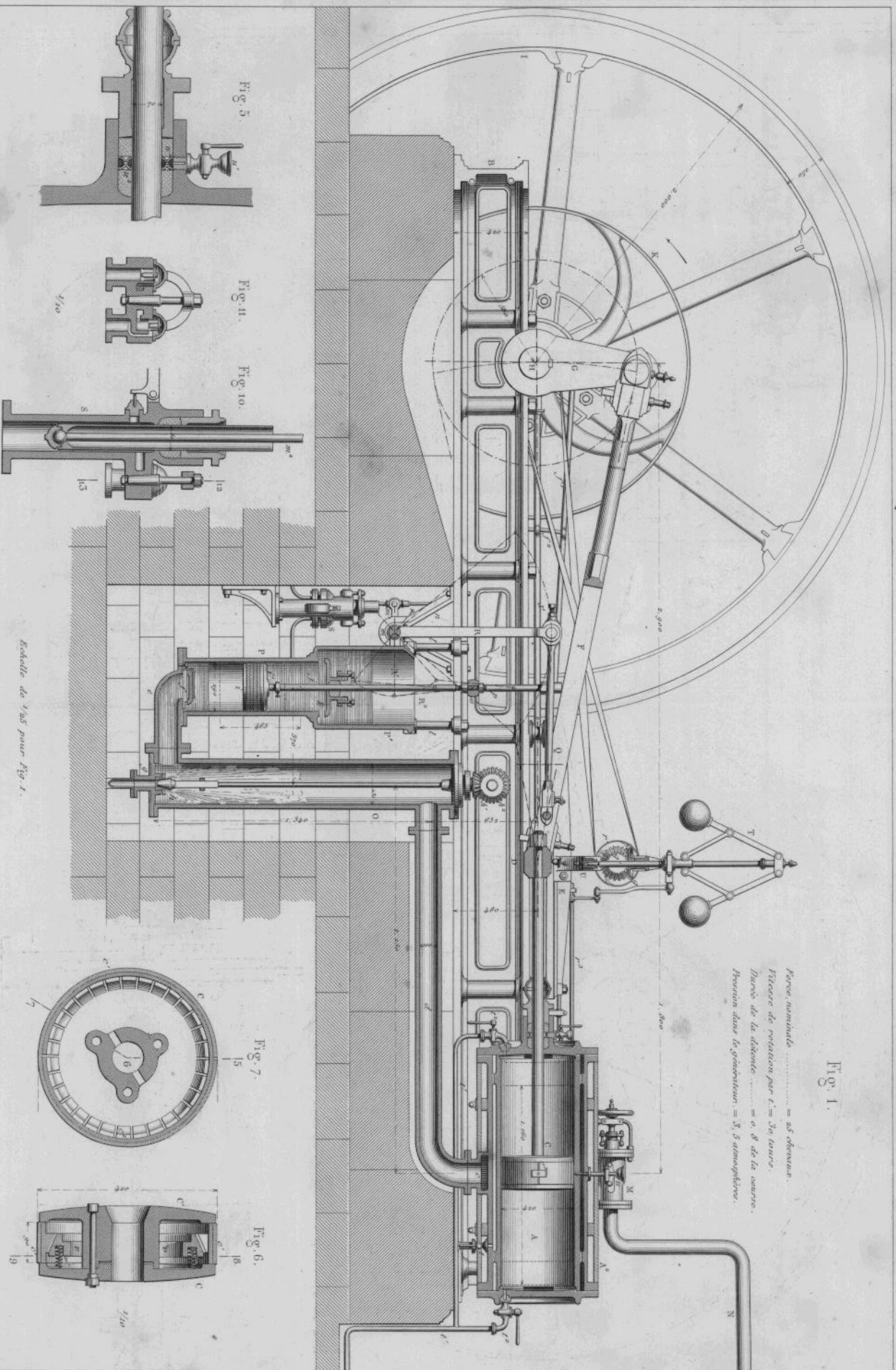
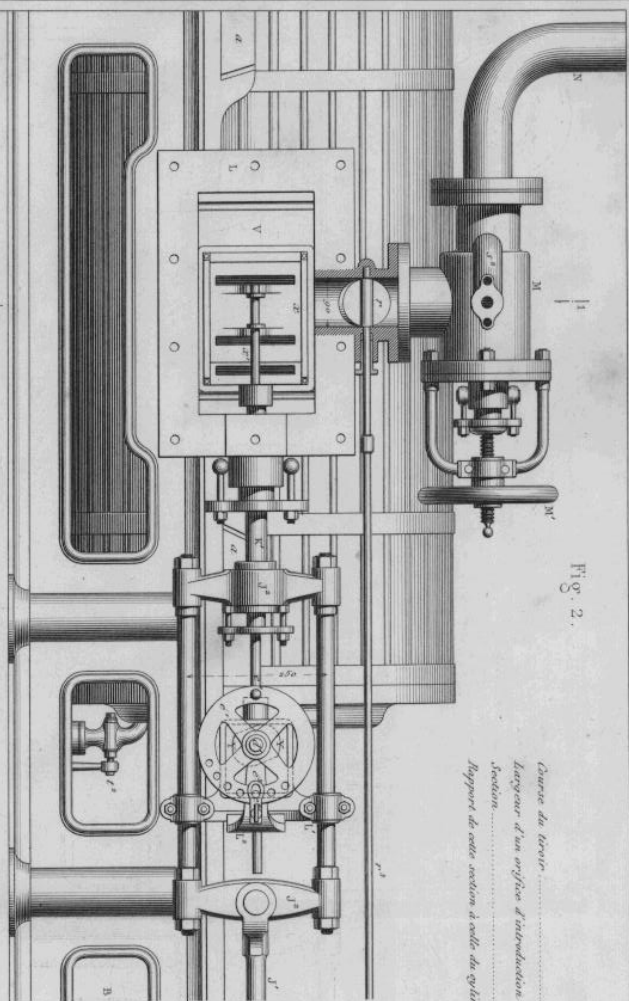


Fig. 1.

Pour le nombre ..... = 25 révolutions.  
 Durée de la détente ..... = 0, 8 de la course.  
 Pression dans le cylindre = 3, 5 atmosphères.







Fi 8.2.

Course du tiers .....	= 6,9 mill.
Largeur d'un organe d'introduction .....	= 30 mill.
Section .....	= 44,40 cent. carrés
Rapport de cette section à celle du cylindre .....	= 0,532

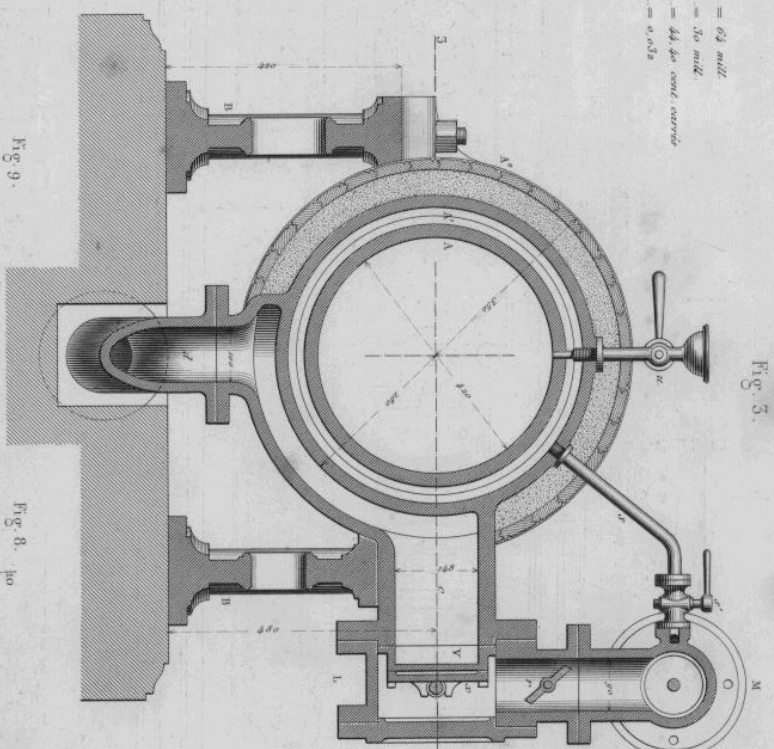


Fig. 3.

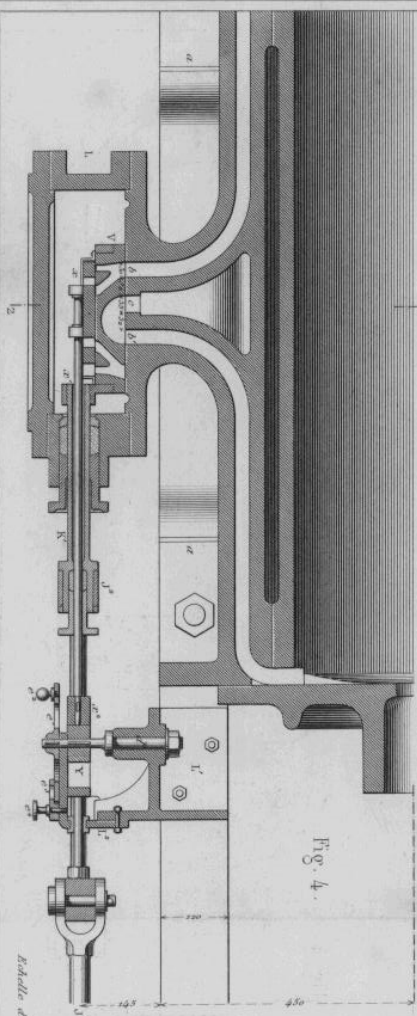


Fig. 4.

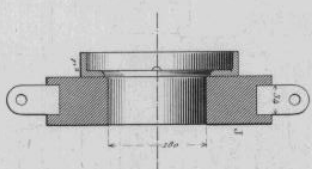


Fig. 9

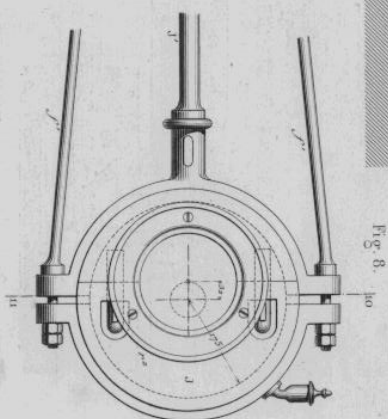


Fig. 8.

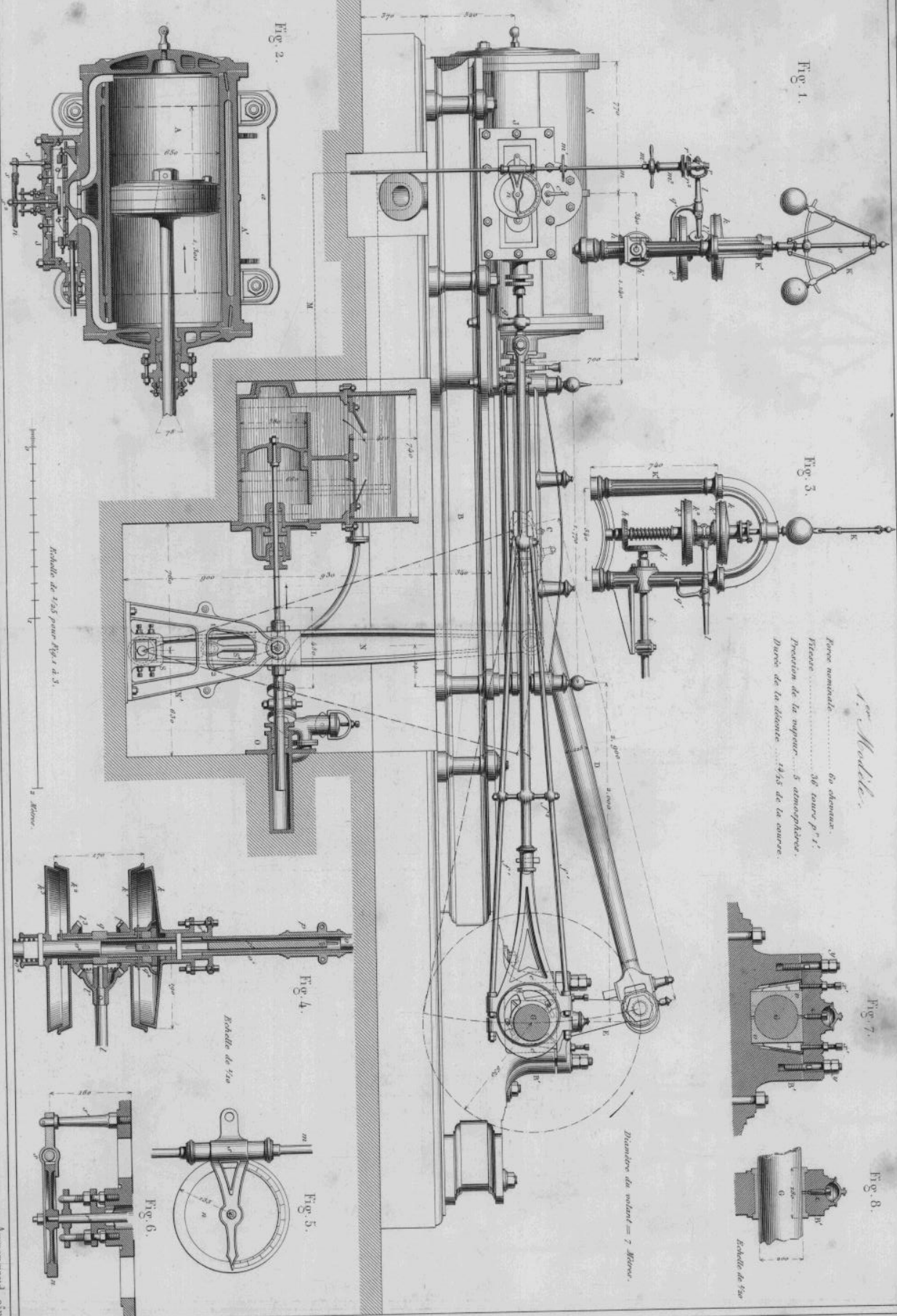
Echelle de 1/10

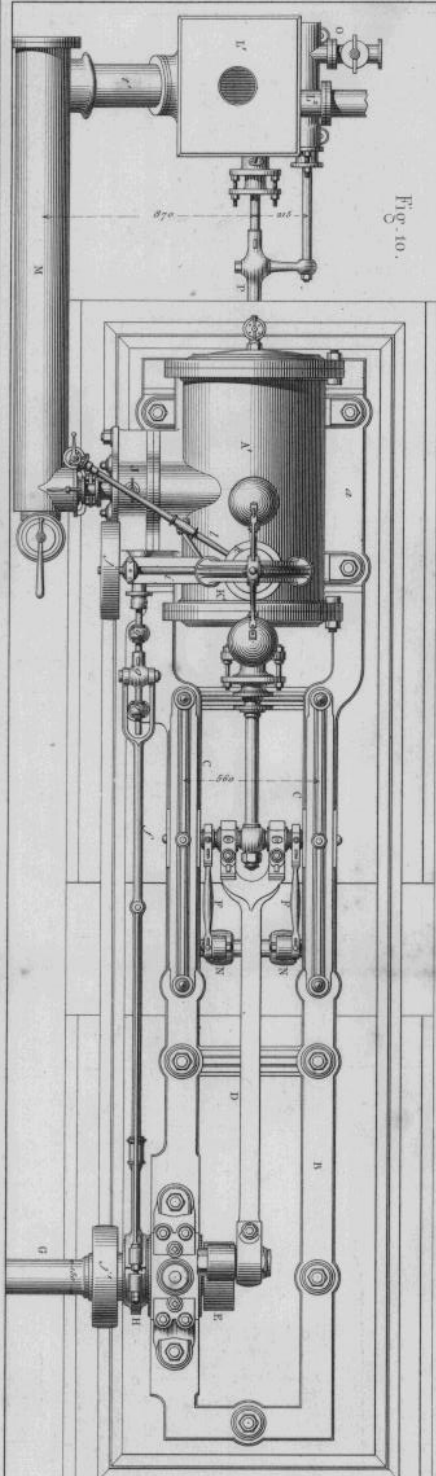
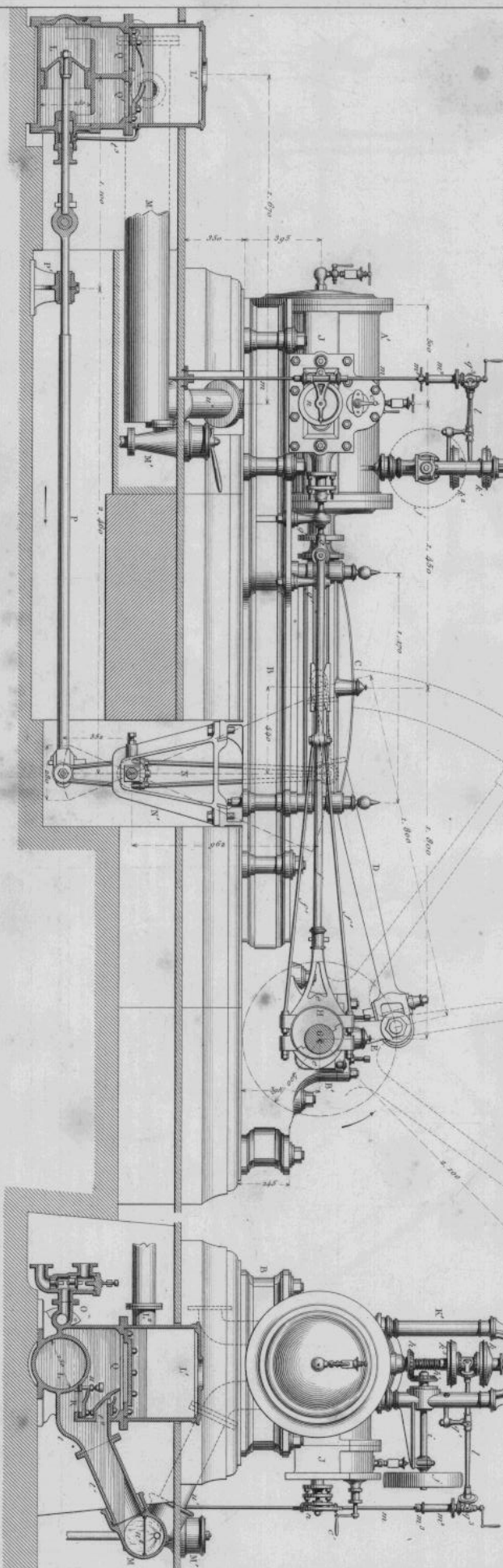
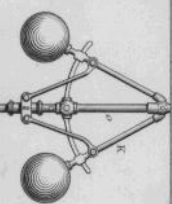
J. Petitcolin et L. Chaumont sculp

*Imp. beny-Grae r. d. laquies. 33. Paris.*

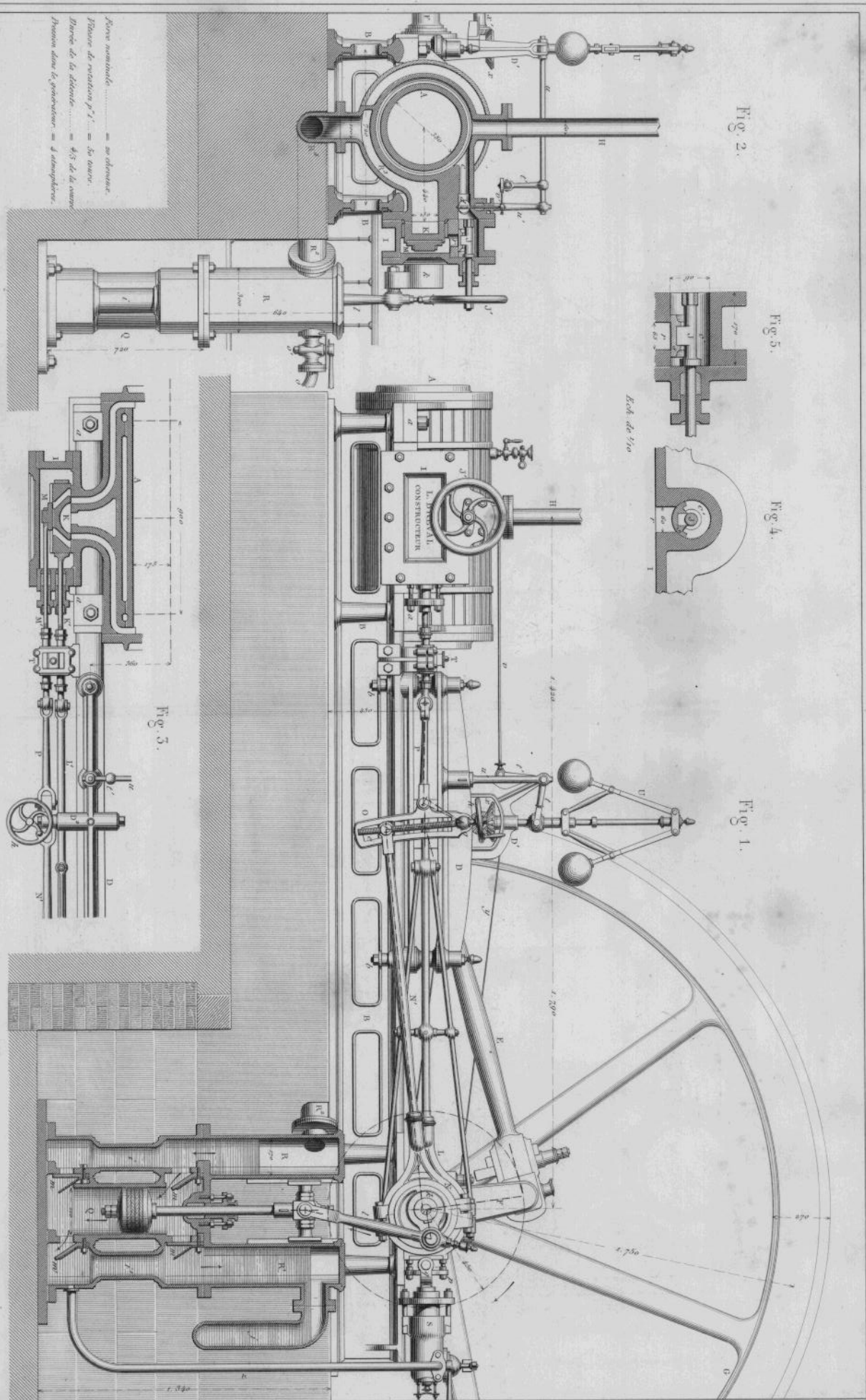
Armengaud aîné.











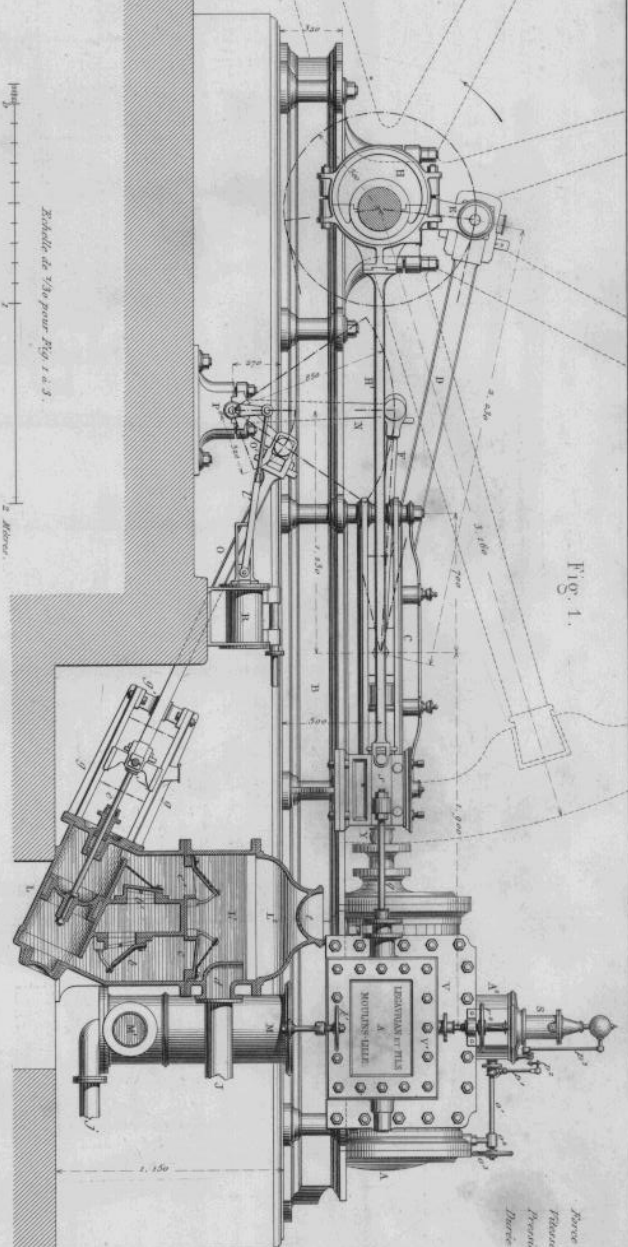


Fig. 1.

Force nominale .....	35 chevaux.
Vitesse par minute .....	38 tours.
Pression de la vapeur : 8, 5 atmosphères.	
Durée de la séance : 9/10 de la course.	

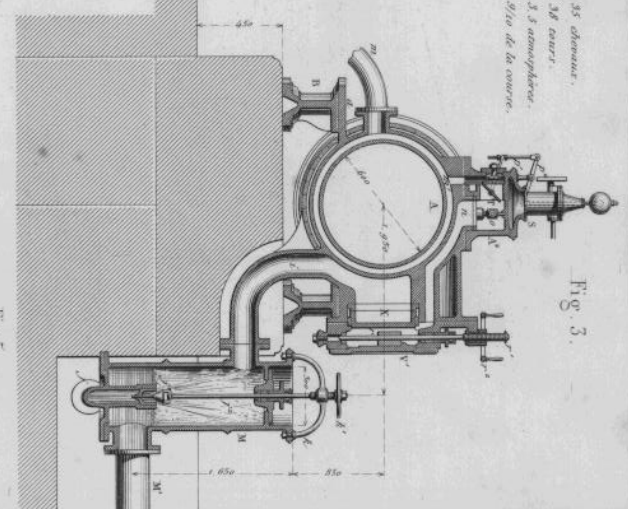


Fig. 3.

*Relevé de 1/30 pour Fig. 1 a 3*

2 River

Fig. 2.

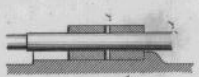
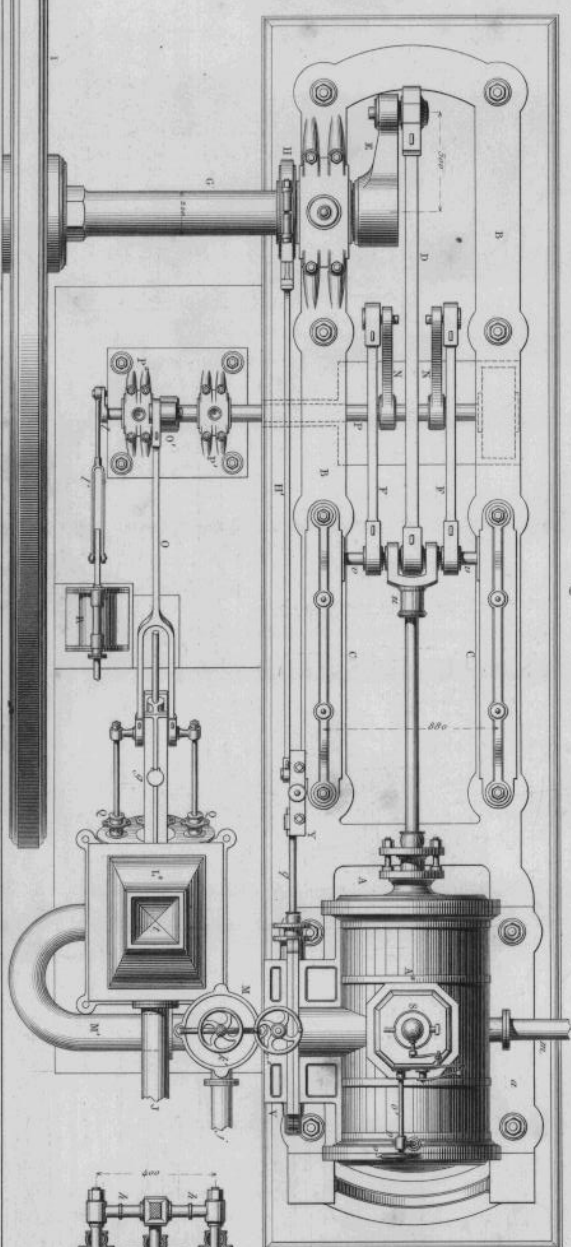


Fig. 8.

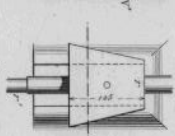


Fig. 7.



Fig. 9.

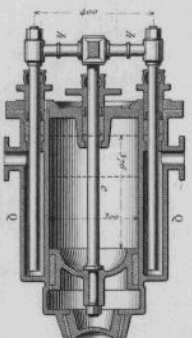


Fig. 4

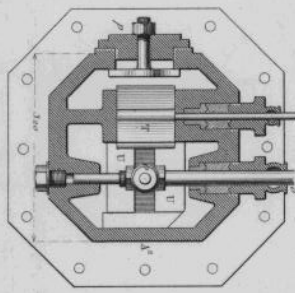
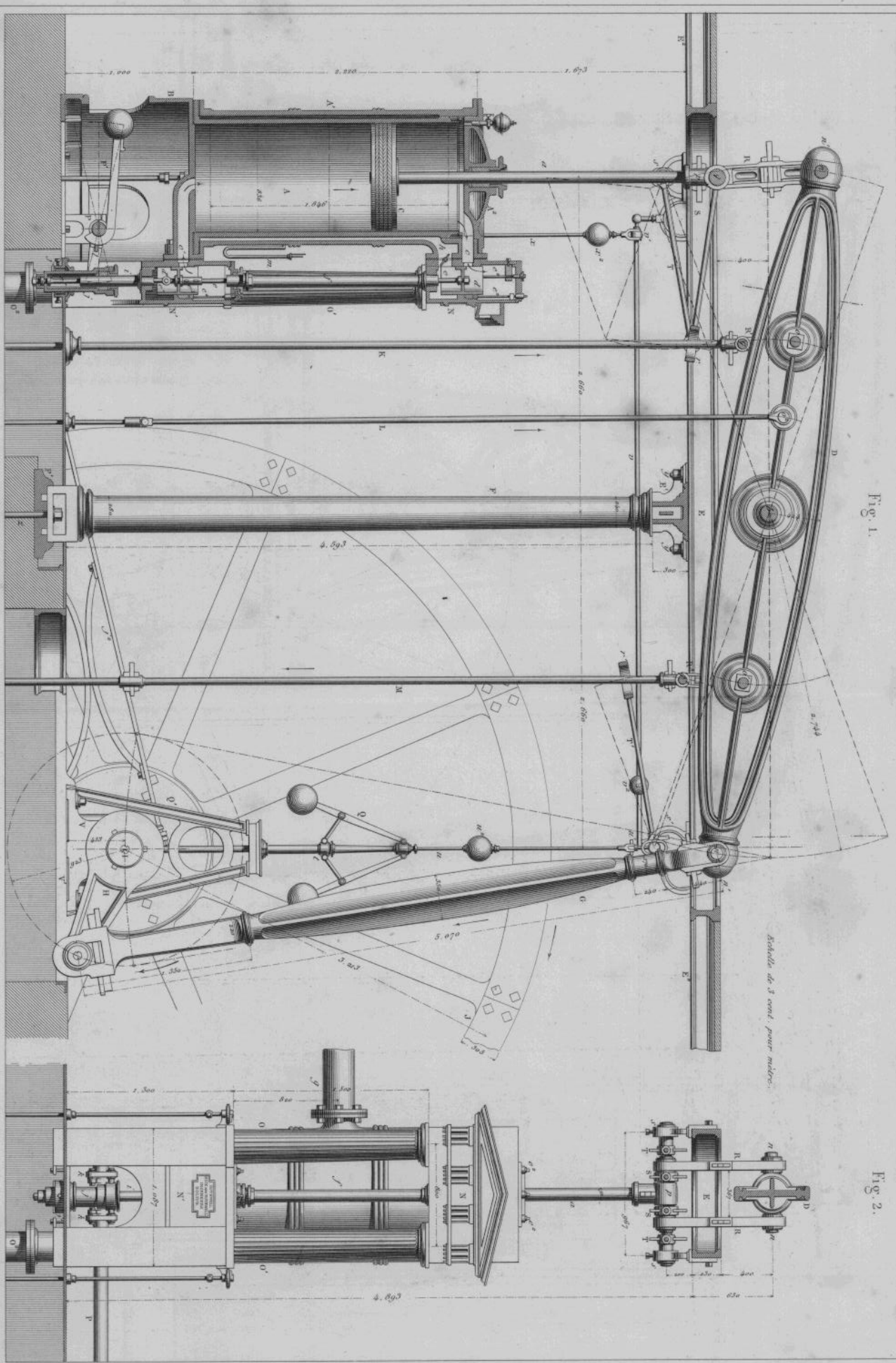
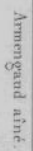


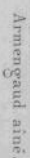
Fig. 6

Rev. de Vro  
pour Fig. 5 d. 9













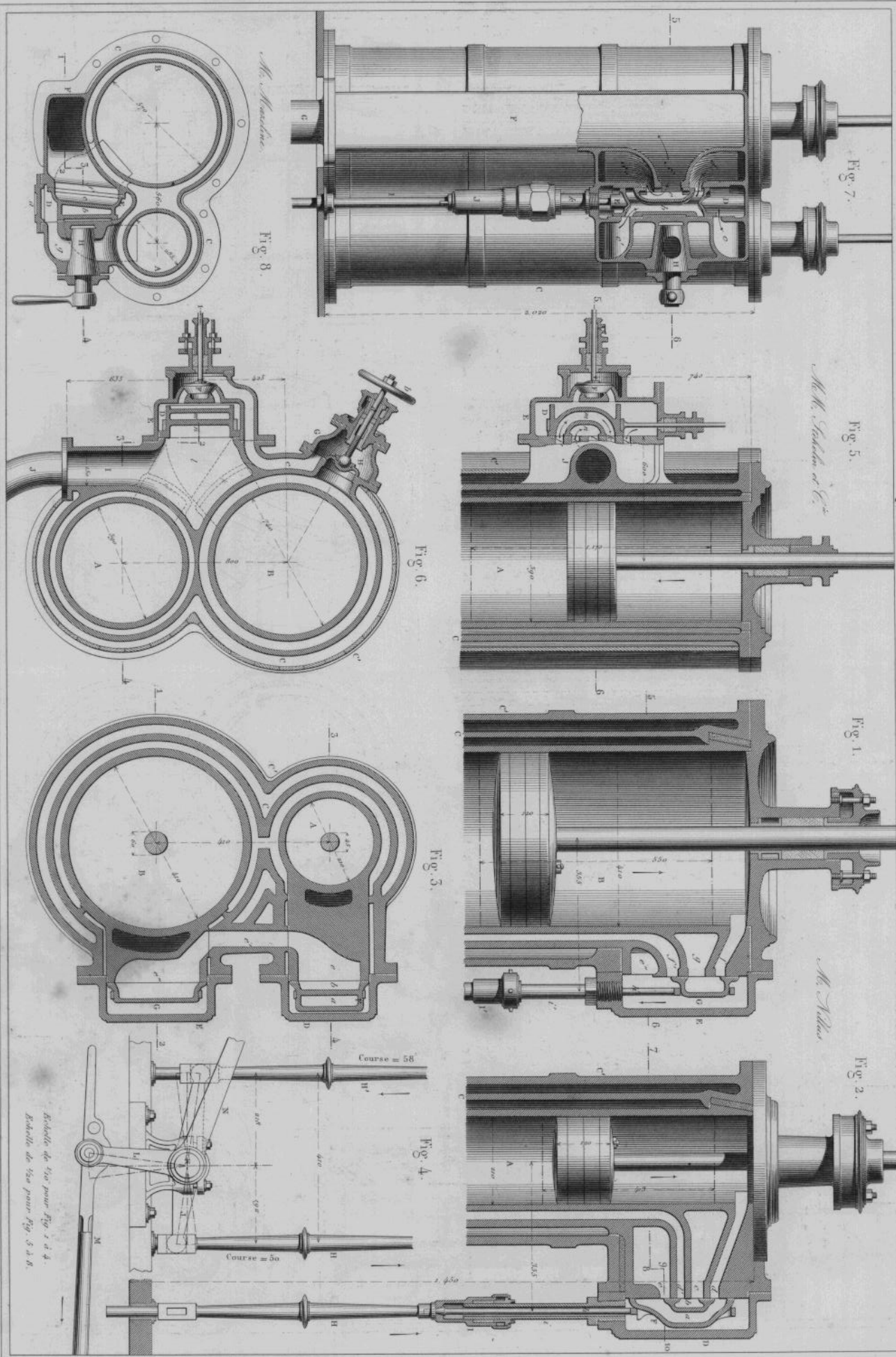


Fig. 3.

*M. Perrot.*

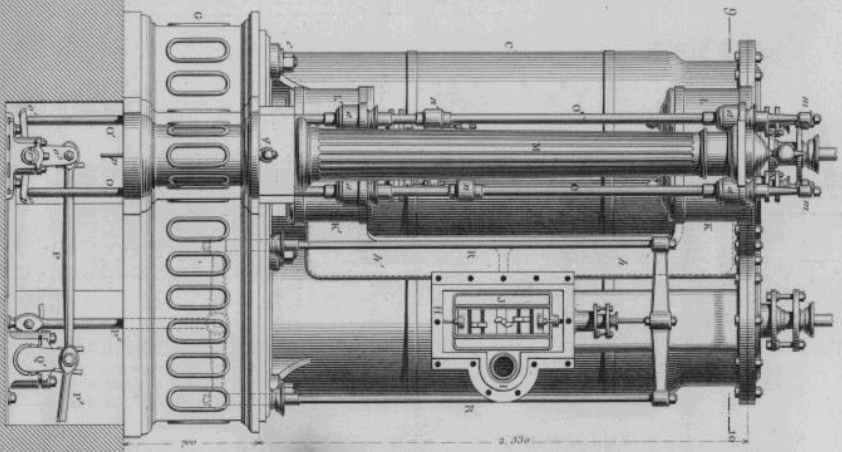


Fig. 6.

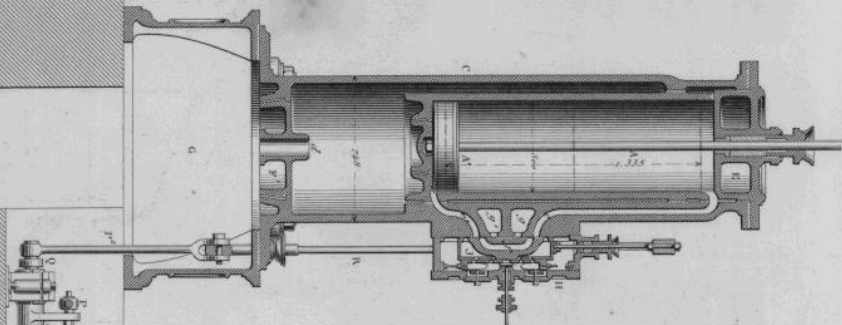


Fig. 8.

Coupe sur 1-4-5.

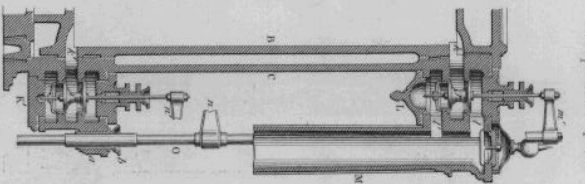


Fig. 5.

Coupe sur 1-2-3.

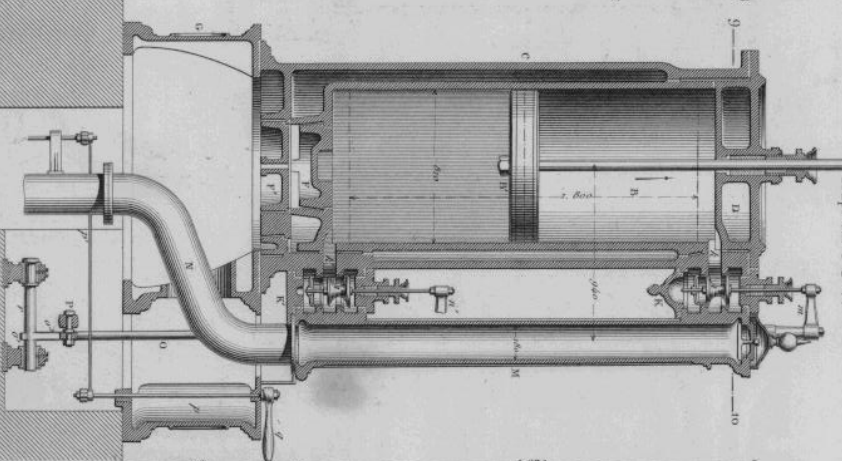


Fig. 1.

*M. Dupuy.*

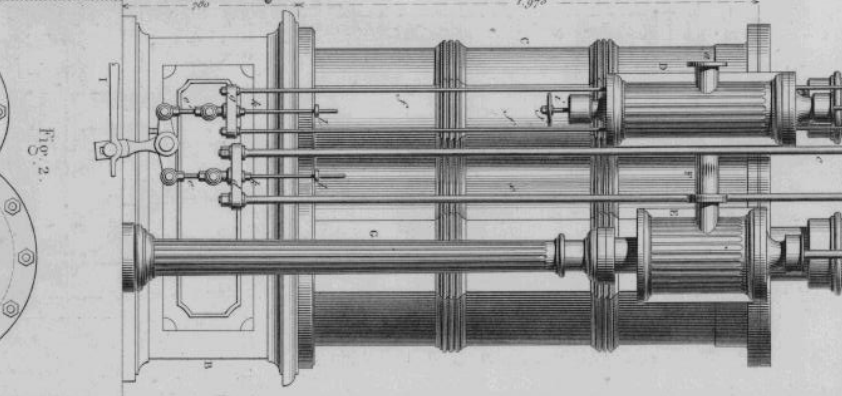


Fig. 4.

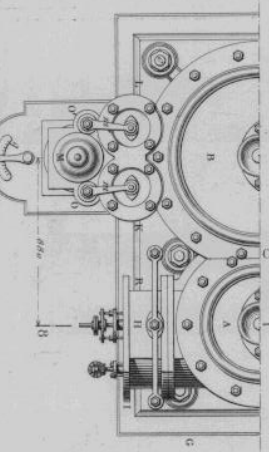
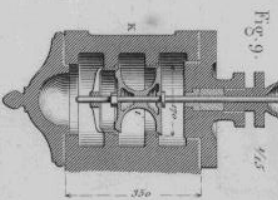
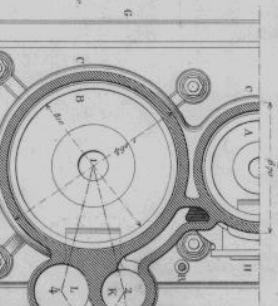


Fig. 9.



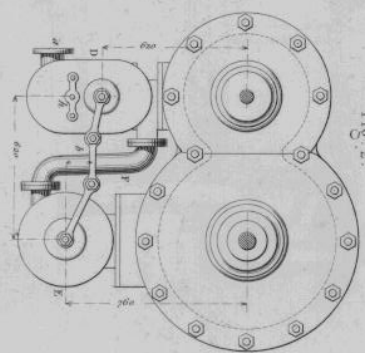
Échelle de 1/100 p. m. sur Fig. 1 et 2.  
Échelle de 1/25 p. m. sur Fig. 3 et 4.  
Échelle de 1/50 p. m. sur Fig. 5 et 6.  
Échelle de 1/100 p. m. sur Fig. 7 et 8.  
Échelle de 1/200 p. m. sur Fig. 9 et 10.

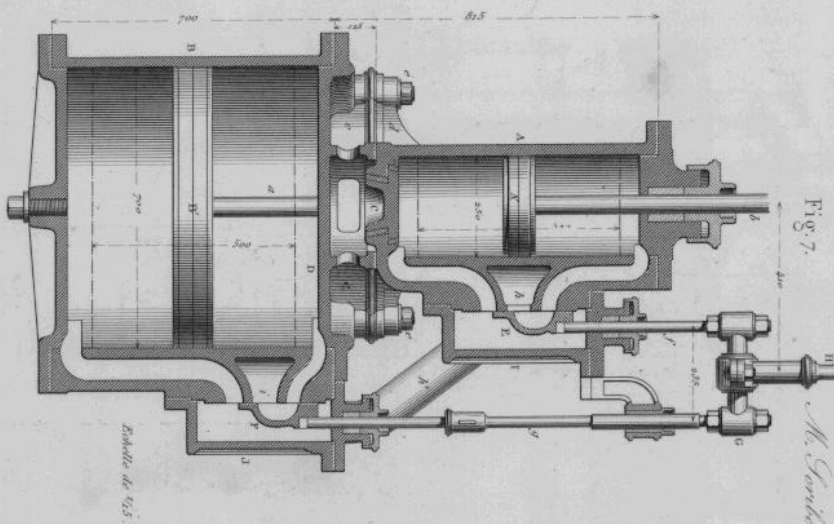
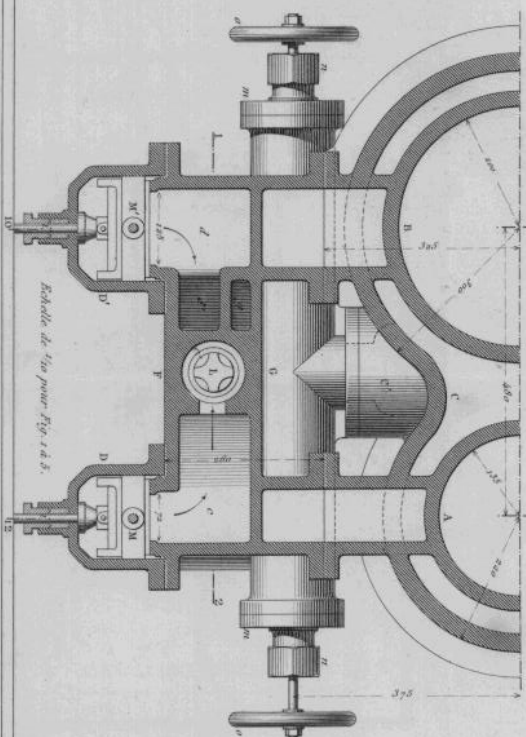
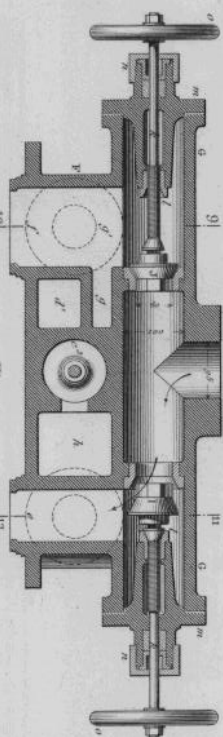
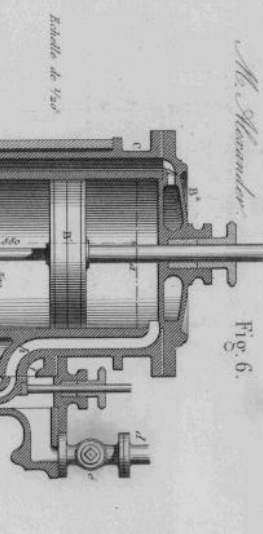
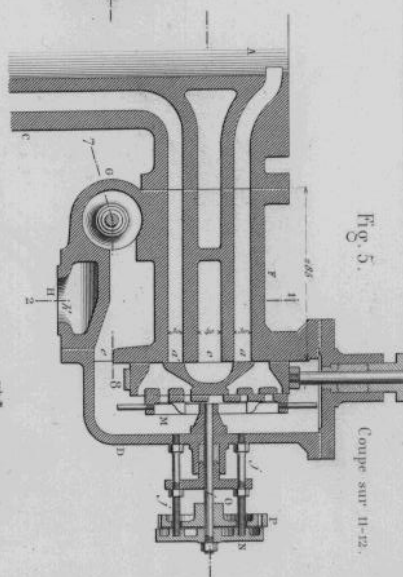
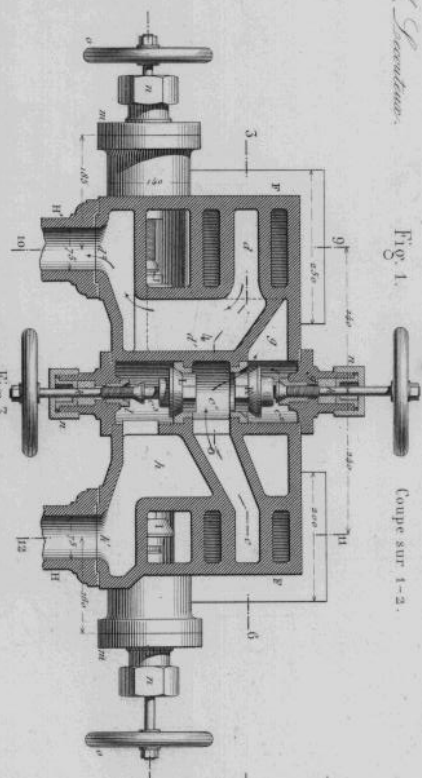
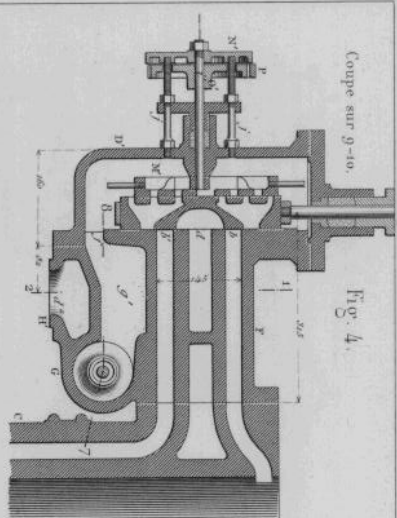
Fig. 7.



Coupe sur 9-10.

Fig. 2.







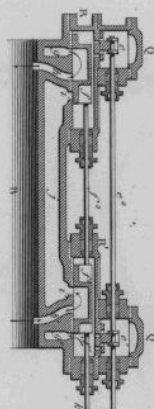


Fig. 5.

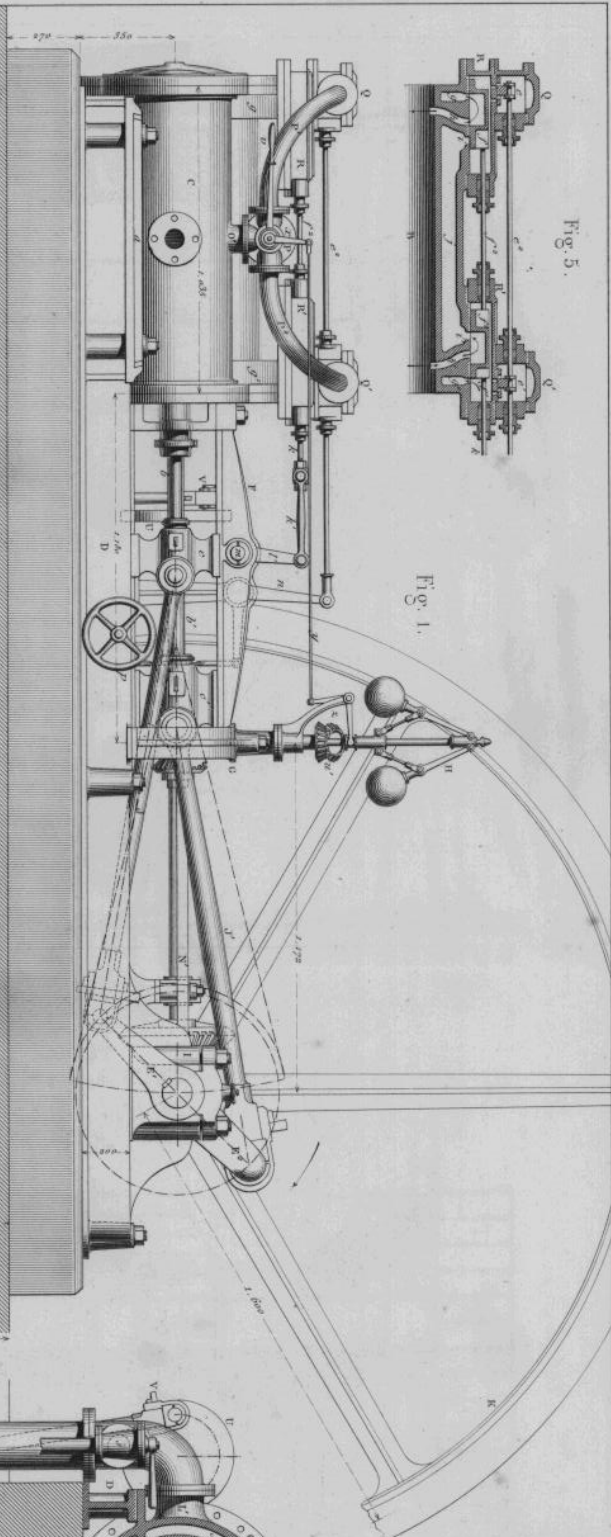


Fig. 1.

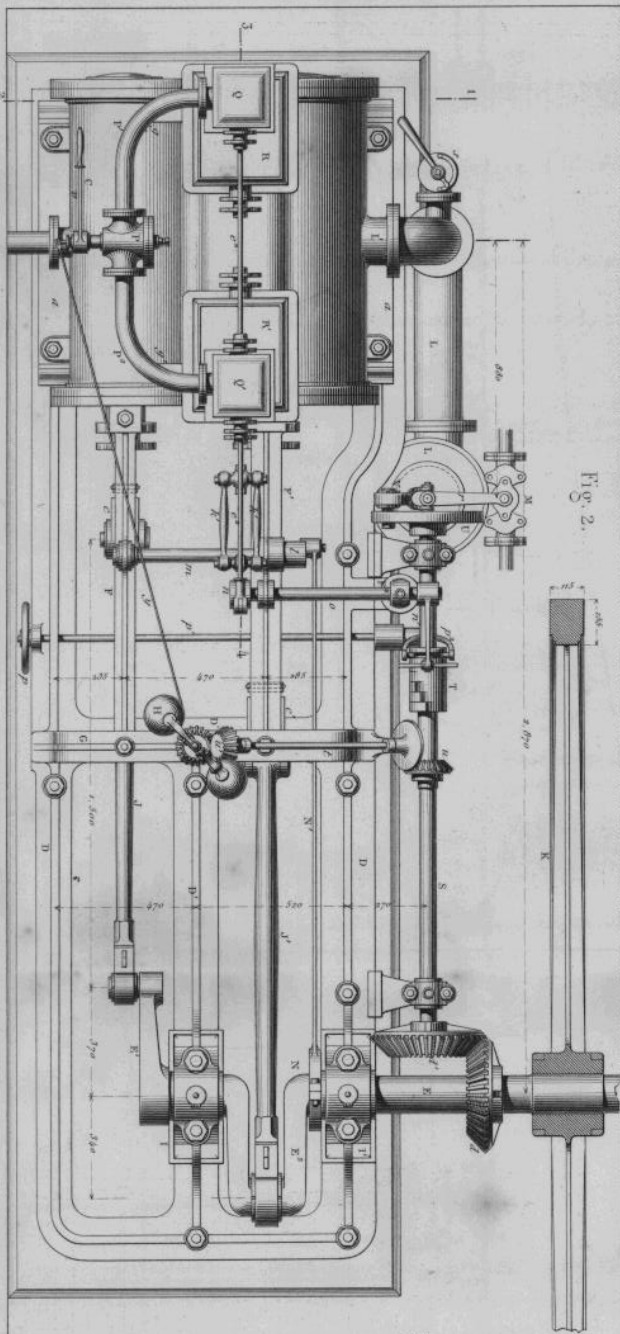


Fig. 2.

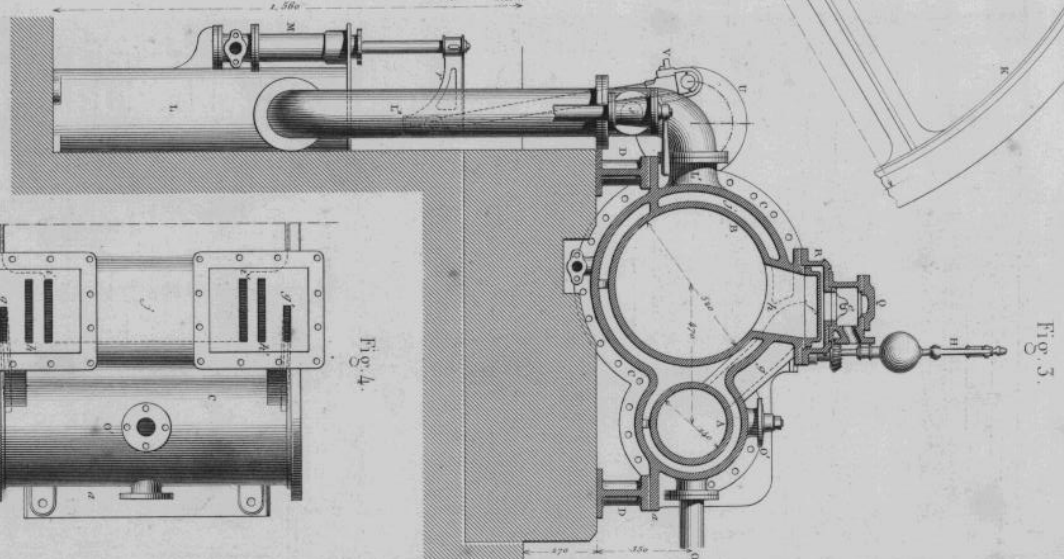


Fig. 3.

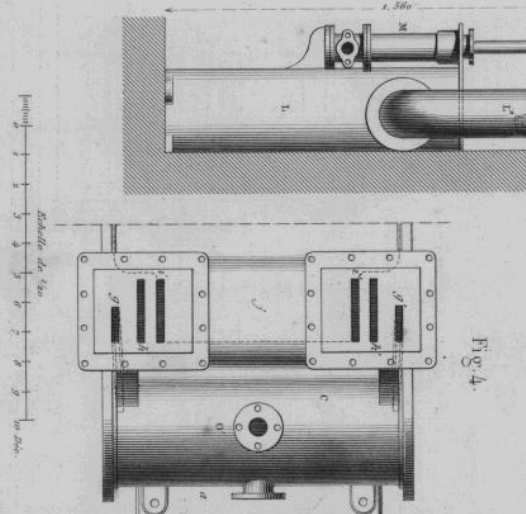


Fig. 4.

Fig. 1.

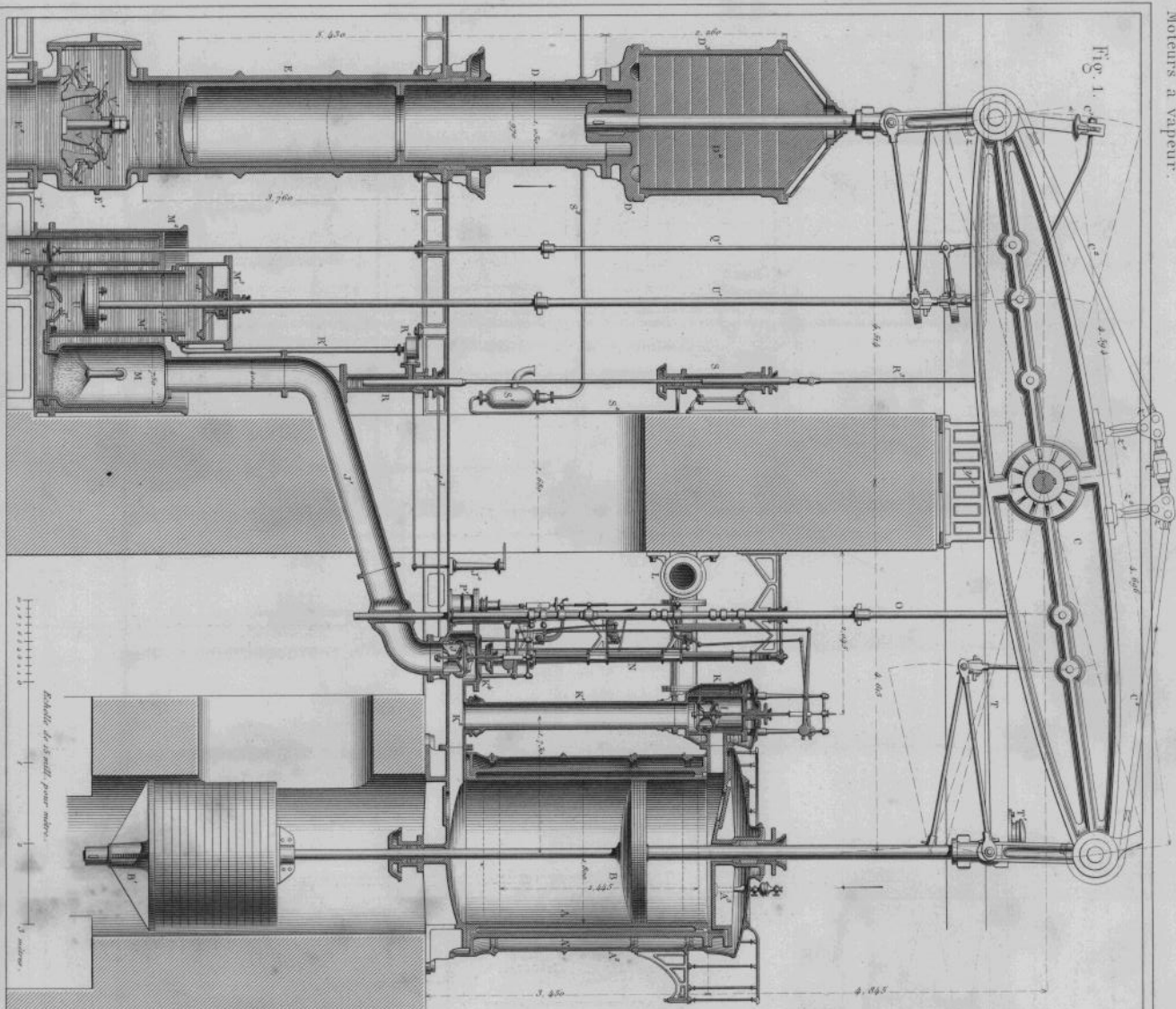
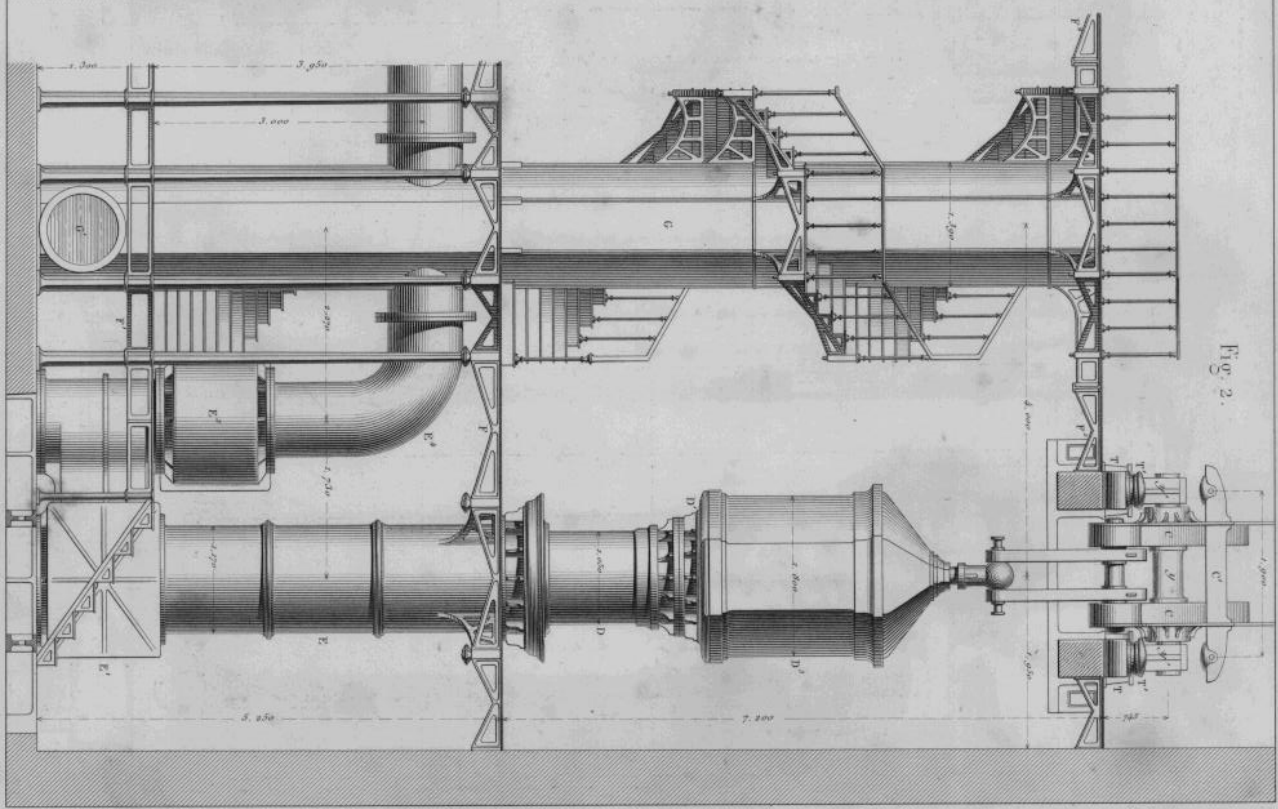
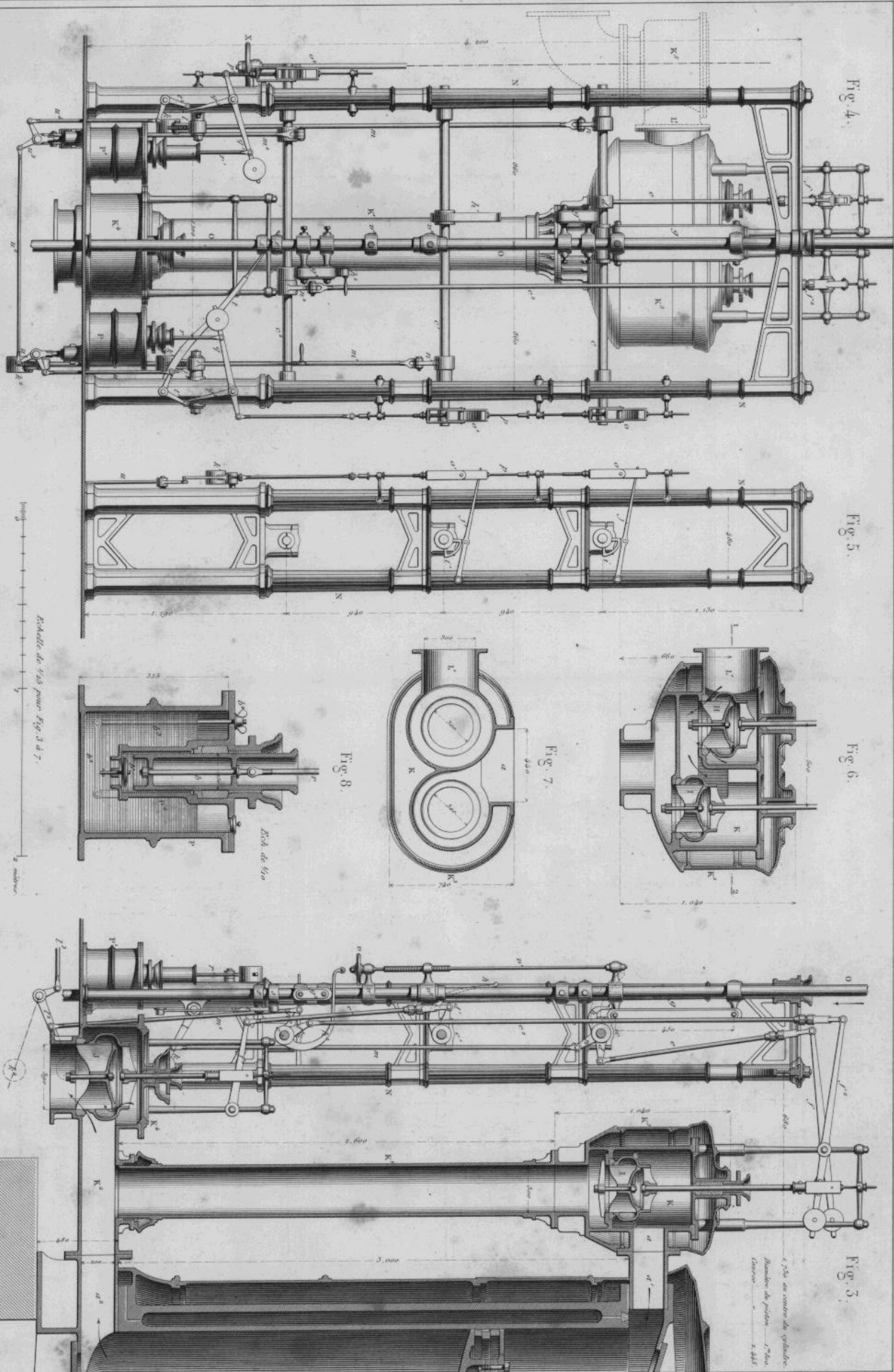
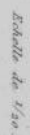


Fig. 2.









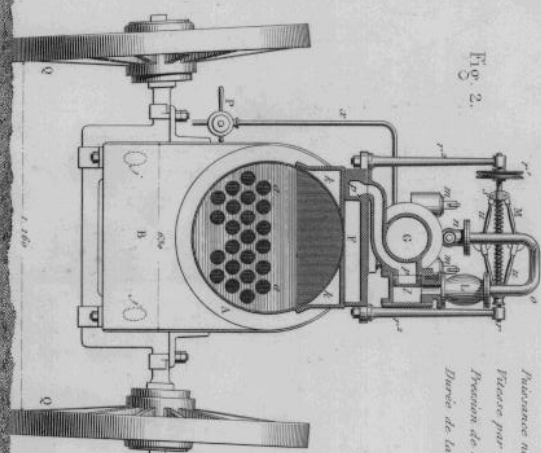


Fig. 2.

Pression nominale ..... 5 at.  
Pression par minute ..... 50 tours.  
Pression de la vapeur ..... 6 atm.  
Diamètre de la cylindrée ..... 1/2.

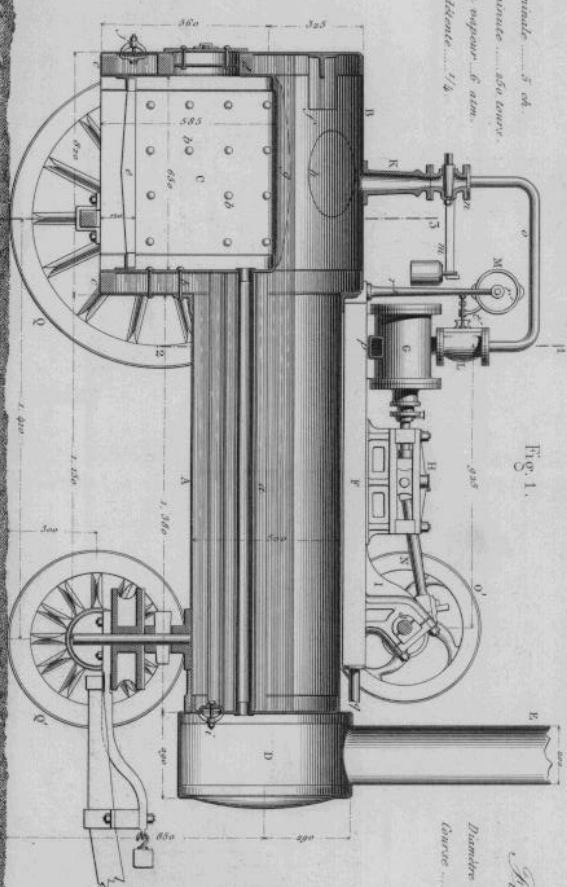


Fig. 1.

*Grand.*  
Diamètre du piston ..... 140.  
Course ..... 180.

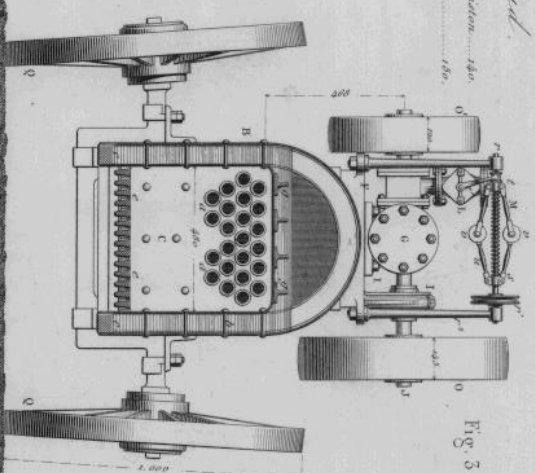


Fig. 3.

Fig. 5.

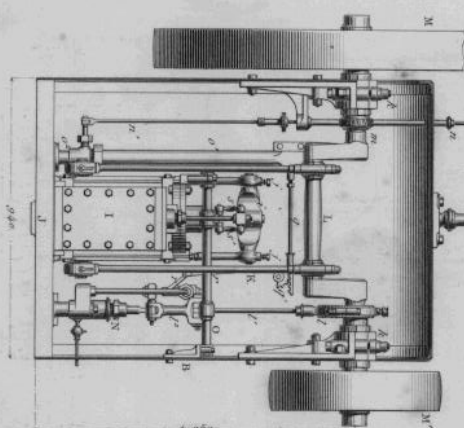
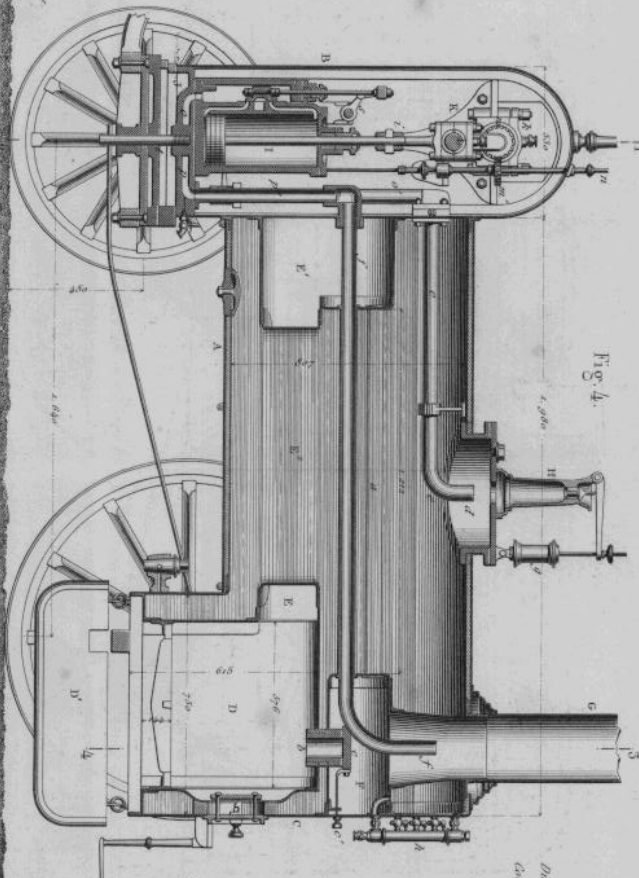
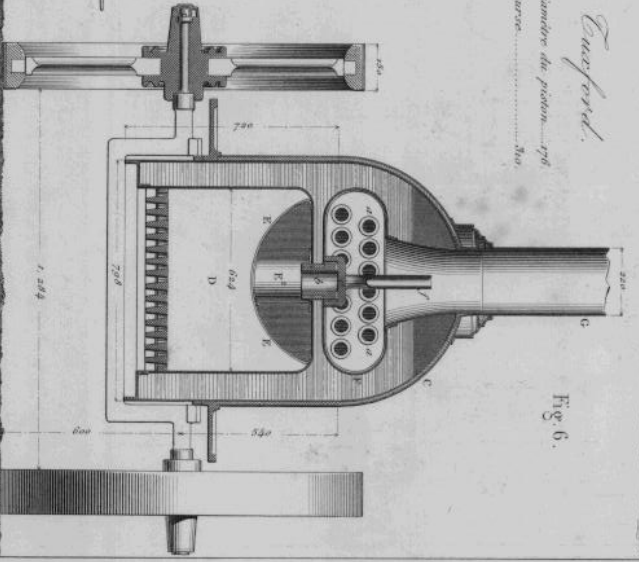


Fig. 4.



*Tuxford.*  
Diamètre du piston ..... 170.  
Course ..... 200.

Fig. 6.



Échelle de 1/20.  
1 2 3 4 5 6 7 8 9 10

Fig. 12.

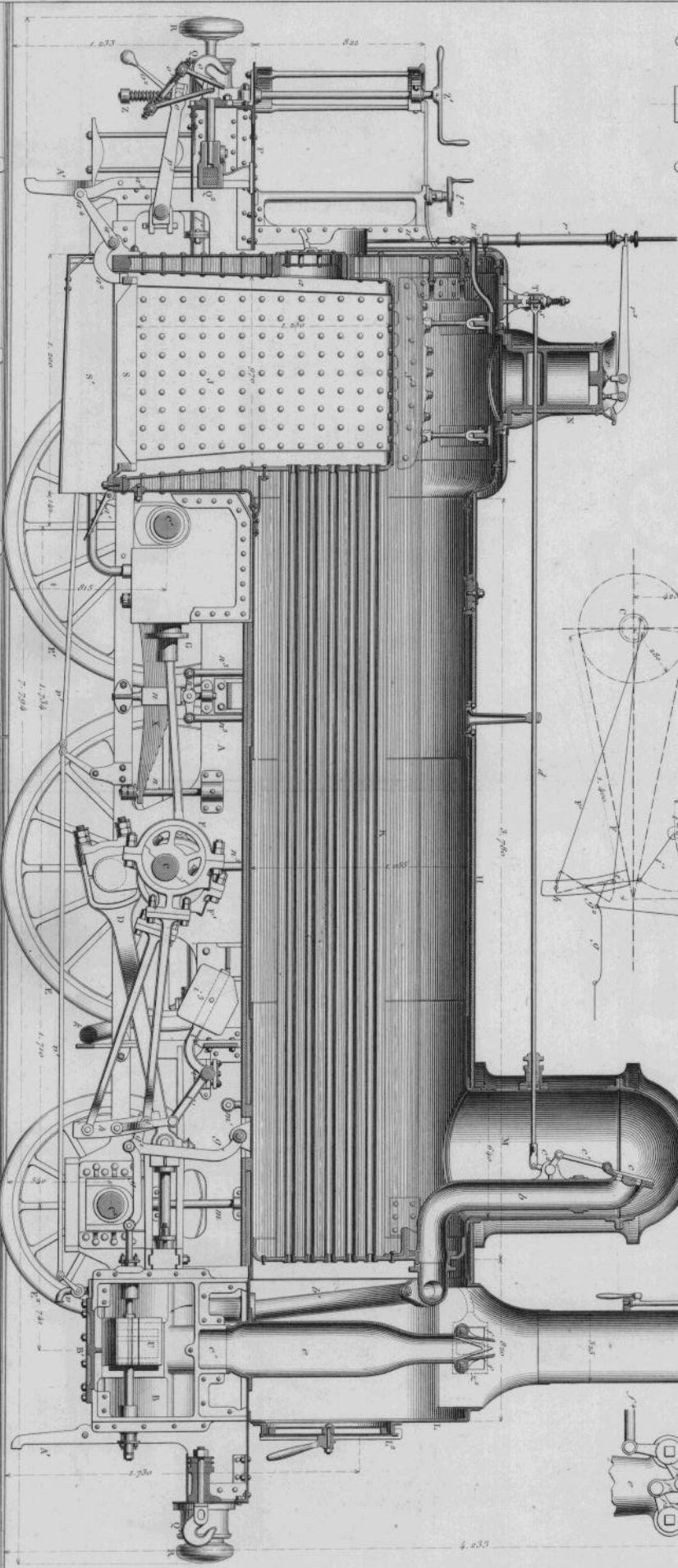
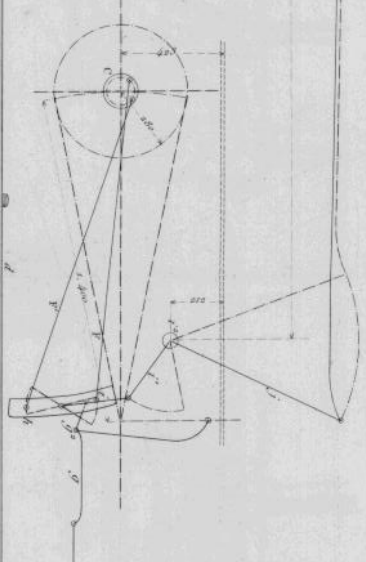
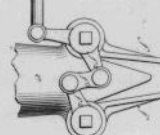
*Trace géométrique du changement de marche.*

Diamètre des pistons ..... 3.680  
 Course ..... 0.560  
 Diamètre des roues motrices ..... 2.650  
 Surface de chauffe totale ..... 937.456

Fig. 1.

*Coupe longitudinale.*

Fig. 9.



Échelle de 1/25

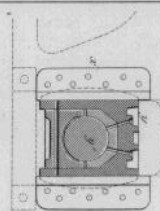
L. Chasson sculpt.

Imp. Goussier, à Paris.

Armengaud aîné.



Fig. 13.



Fac. extérieure du fond d'arrière.

Fig. 2.

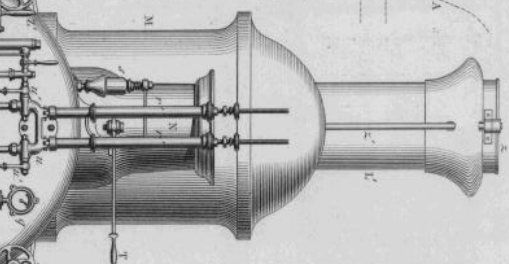
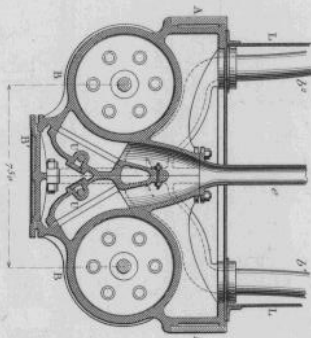


Fig. 5.



Coupe sur les cylindres.

Fig. 6.

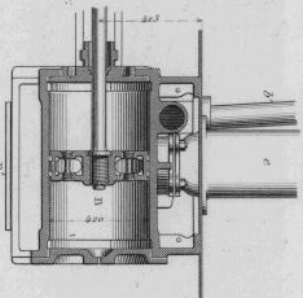


Fig. 3.

Coupe sur l'axe moteur.

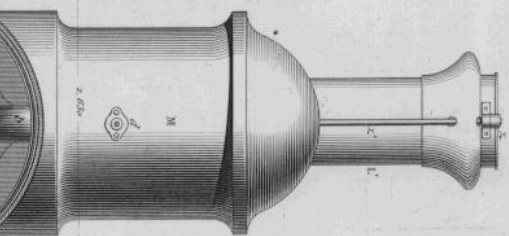


Fig. 10.

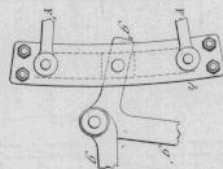
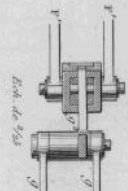
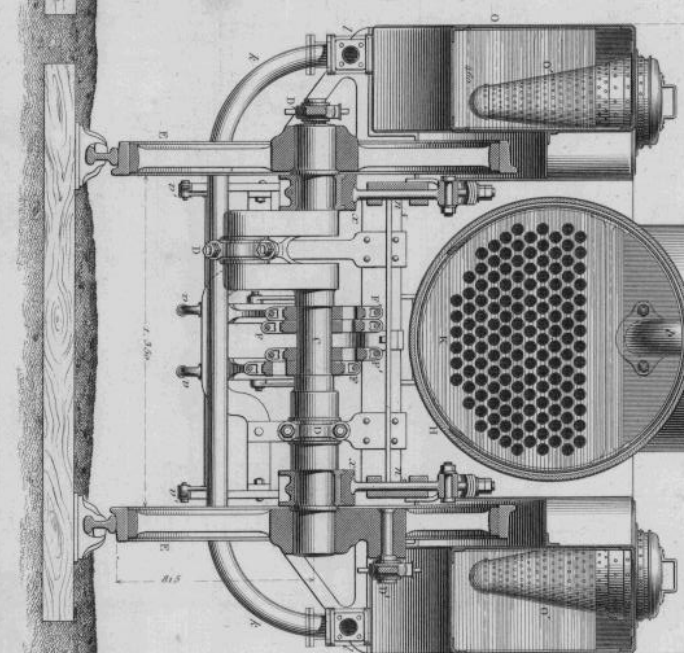
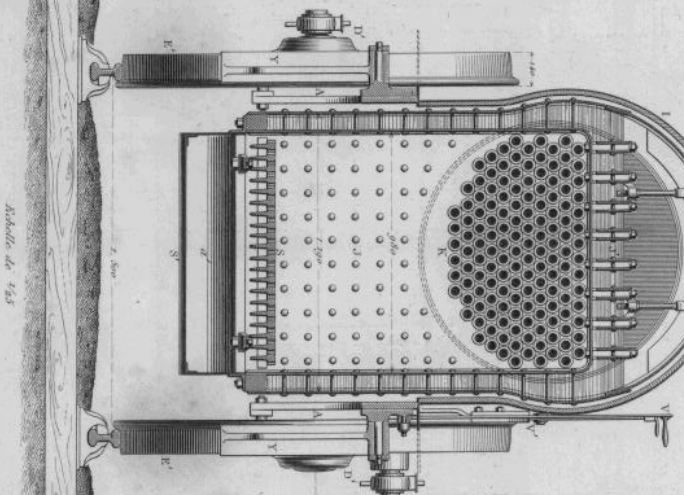
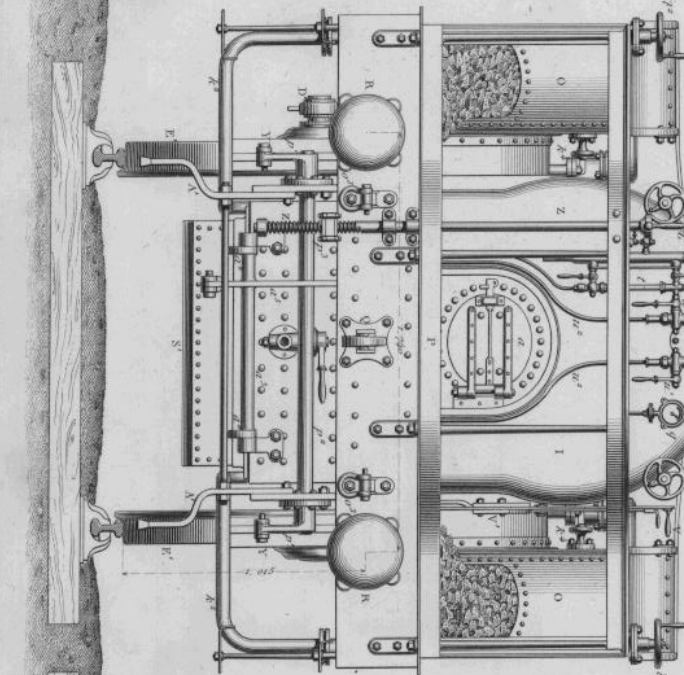


Fig. 11.



End de 1/23



Modèle de 1855

Don. Geng. Gouss. à Paris.

Amengaud aîné.

L. Chaumont sculp.

Fig. 7.

*Coupe sur la caisse à eau.*

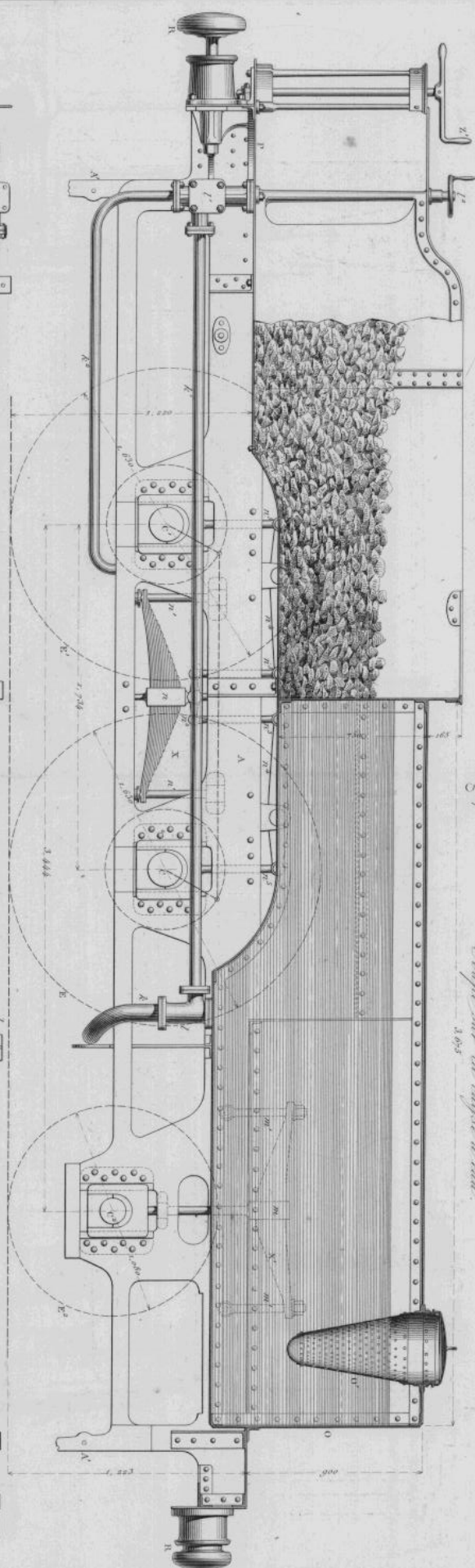
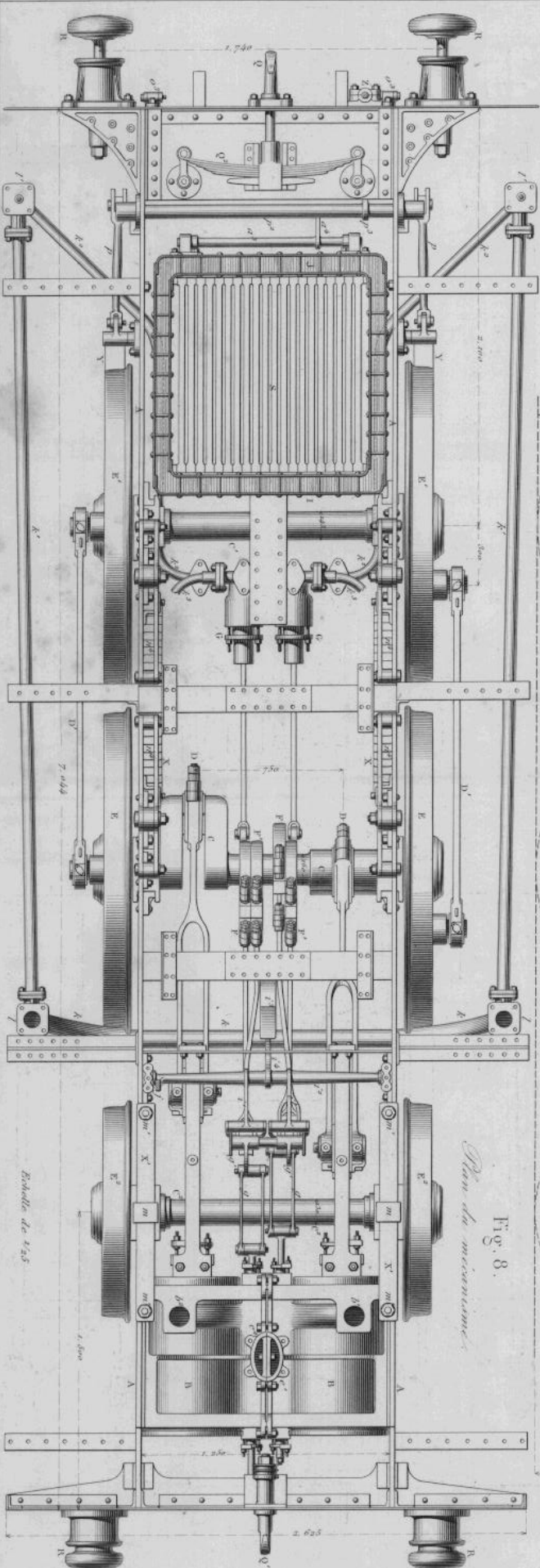


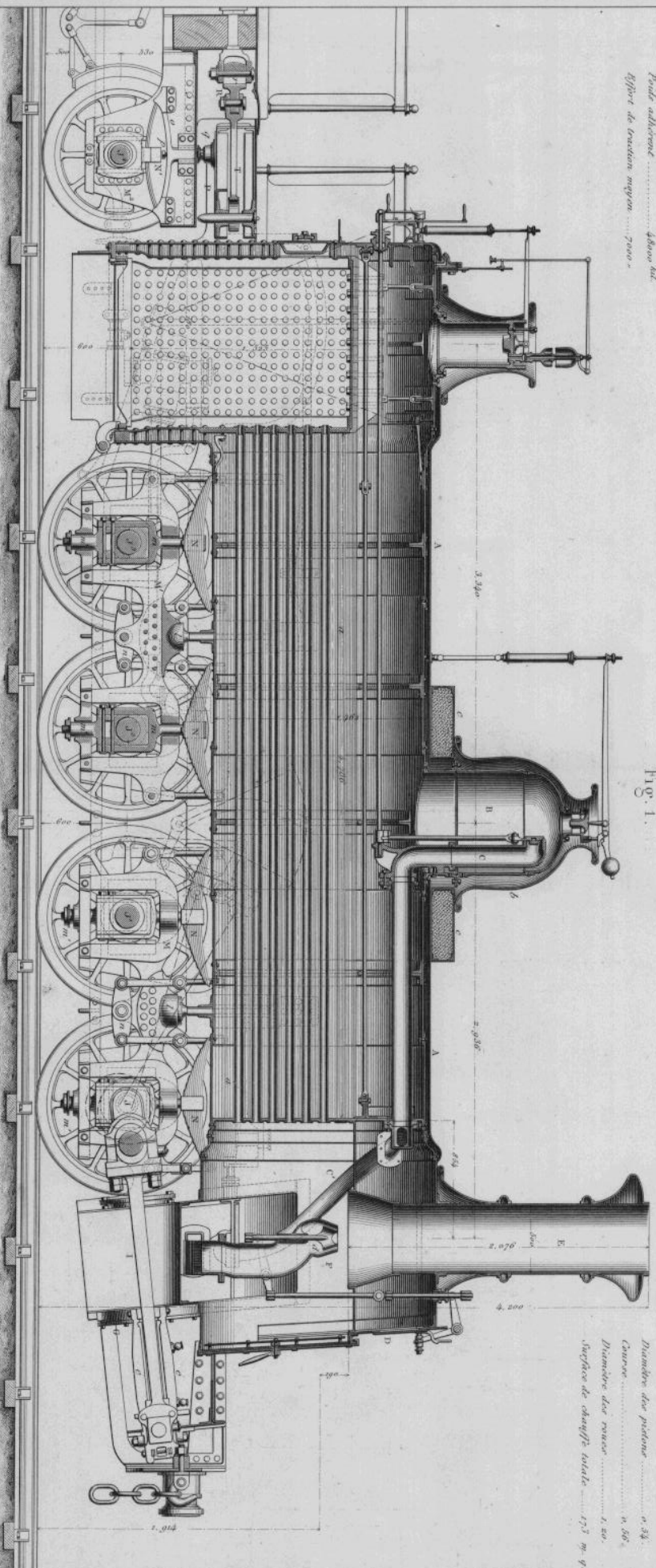
Fig. 8.

*Plan du mécanisme.*



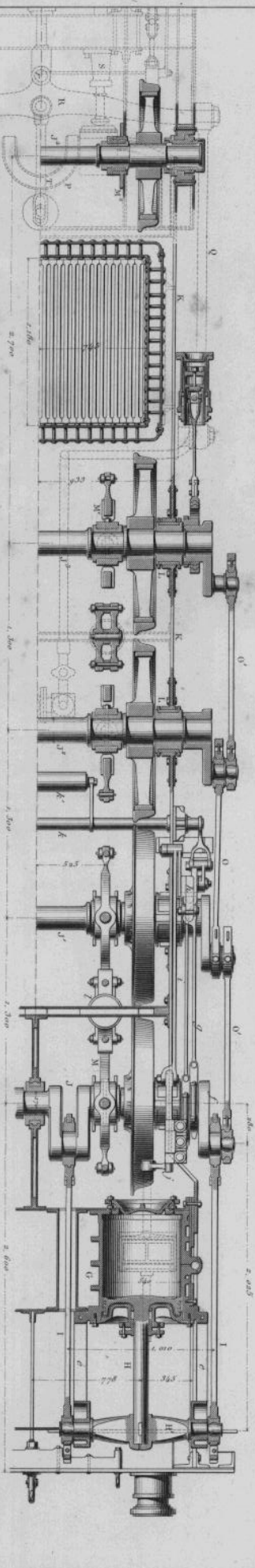
Poids adhérent ..... 48000 kg.  
Effort de traction moyen ..... 7000 "

Fig. 1.



Diamètre des pistons ..... 0.34.  
Course ..... 0.66.  
Diamètre des roues ..... 1.20.  
Surface de chauffe totale ..... 273 m. q.

Fig. 2.



Échelle de 3 centimètres pour mètre.

L. Chaurmont sculp.

Imp. Georg. Goussier, 8, Paris.

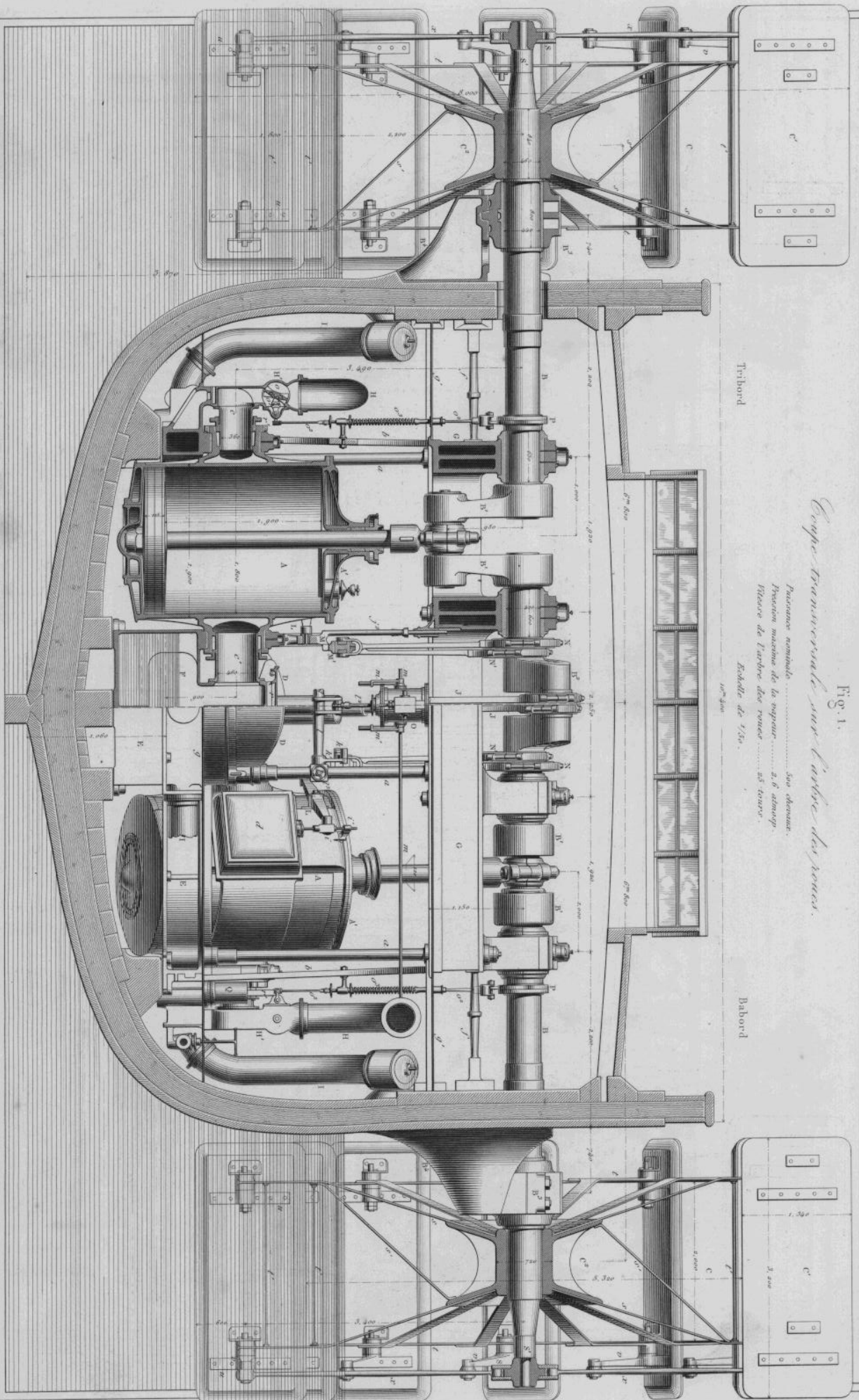
Armengaud aîné.



Fig. 1.

*Coupe transversale sur l'axe des roues.*

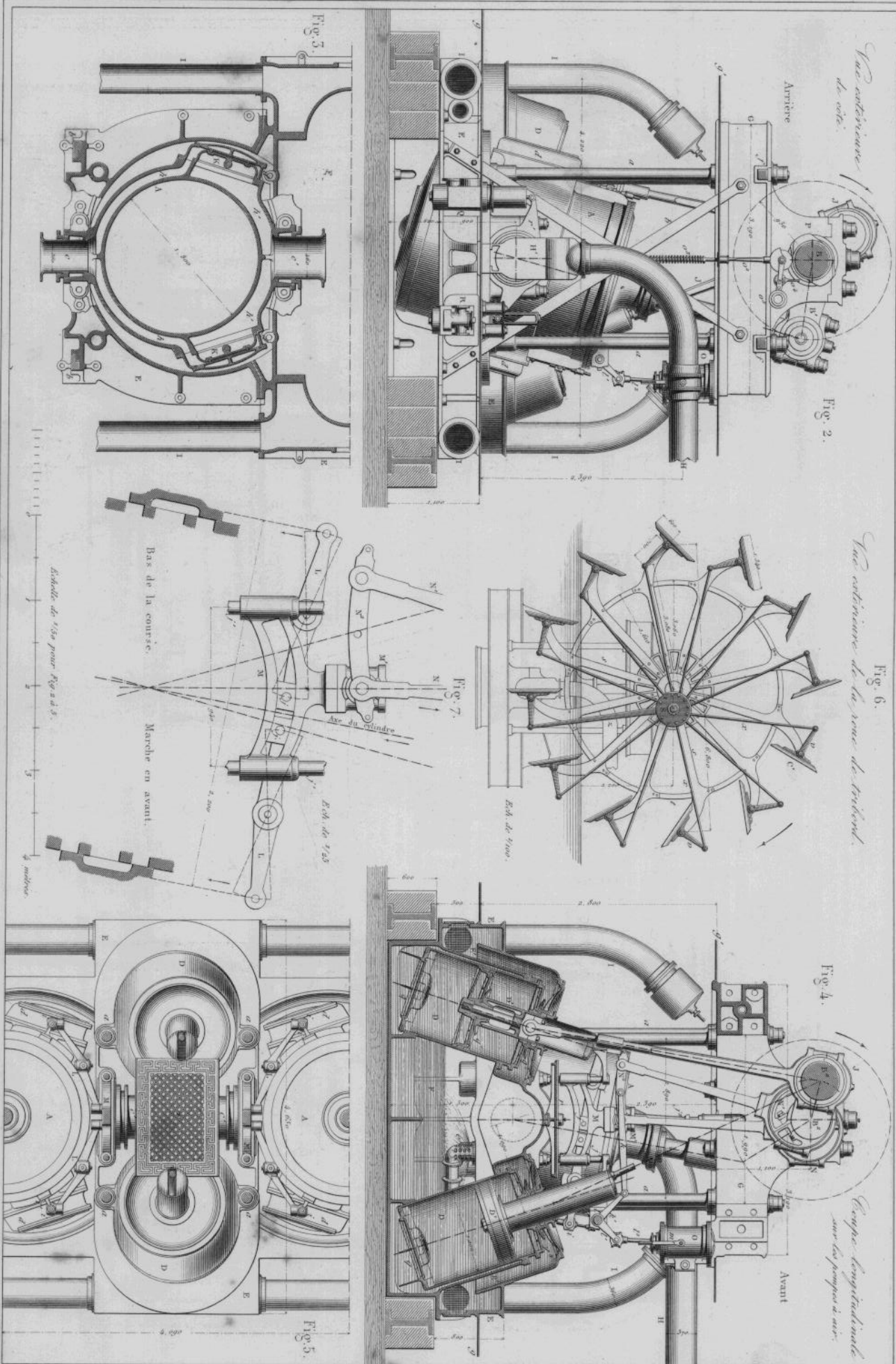
Pression nominale ..... 5,6 atmosph.  
Pression maxima de la vapeur ..... 2,6 atmosph.  
Vitesse de l'arbre des roues ..... 25 tours.  
Echelle de 1/50.



L. Chassagnon sculp.

Geng. Goussier imp. Paris.

Armengaud aîné.

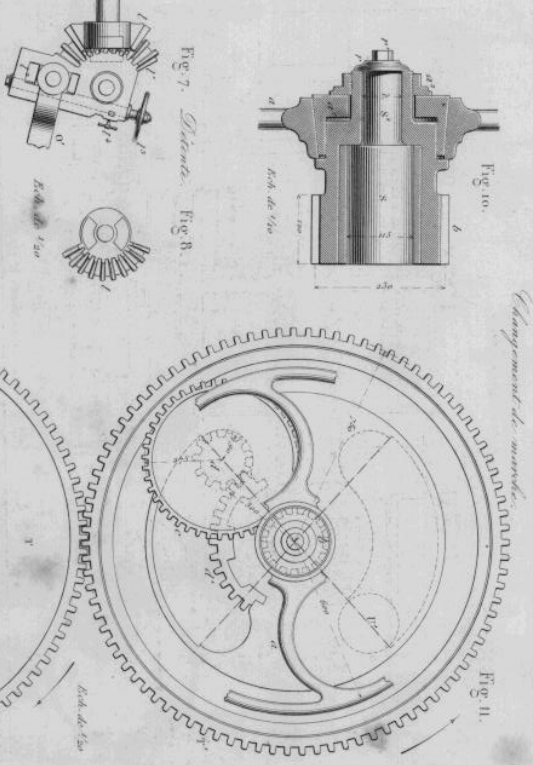
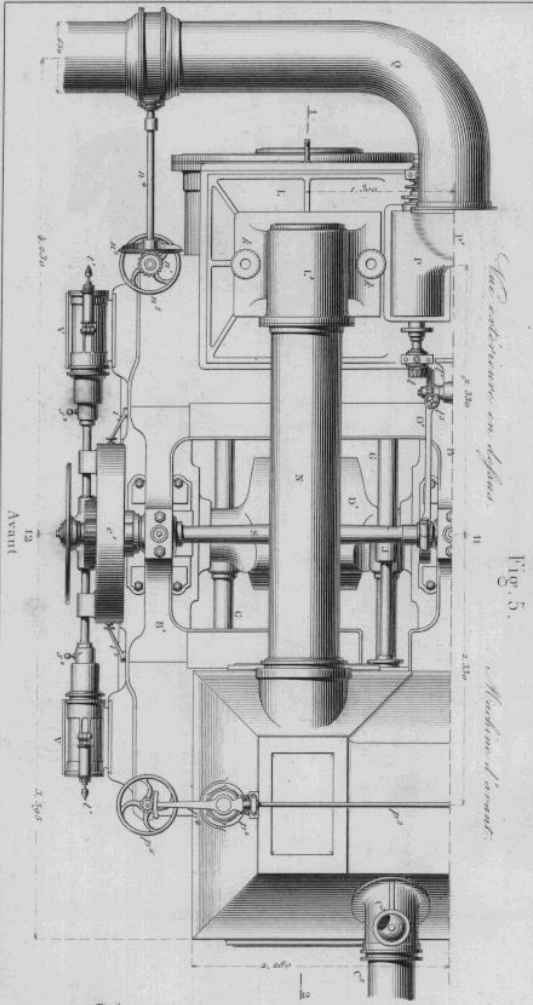
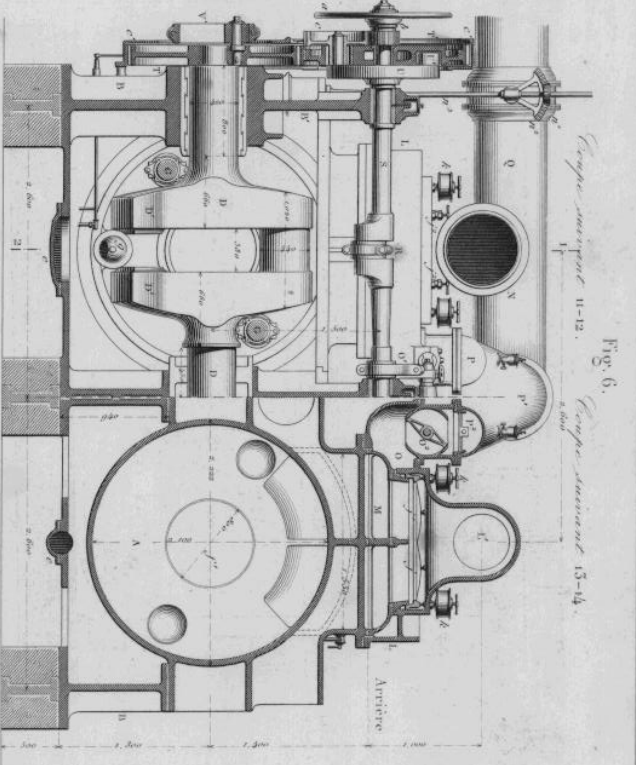
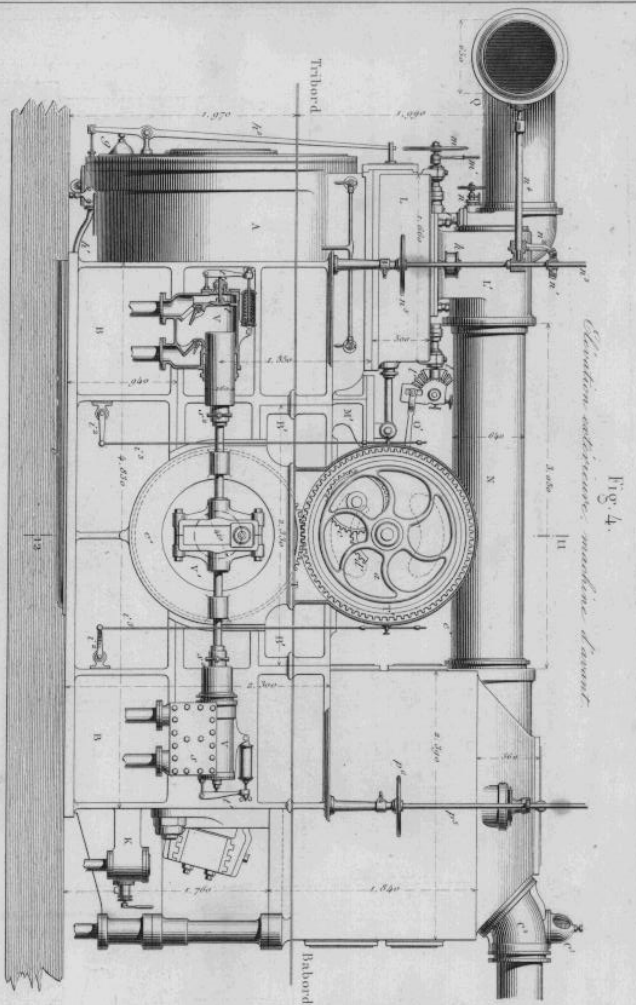






APPAREIL A HÉLICE, DE 1000 CHEVAUX, PAR MM. MAZELINE ET C<sup>ie</sup>

Pl. 45.



J. Petitcollin et L. Chassagnon sculpt.

Imp. Goussier, à Paris.



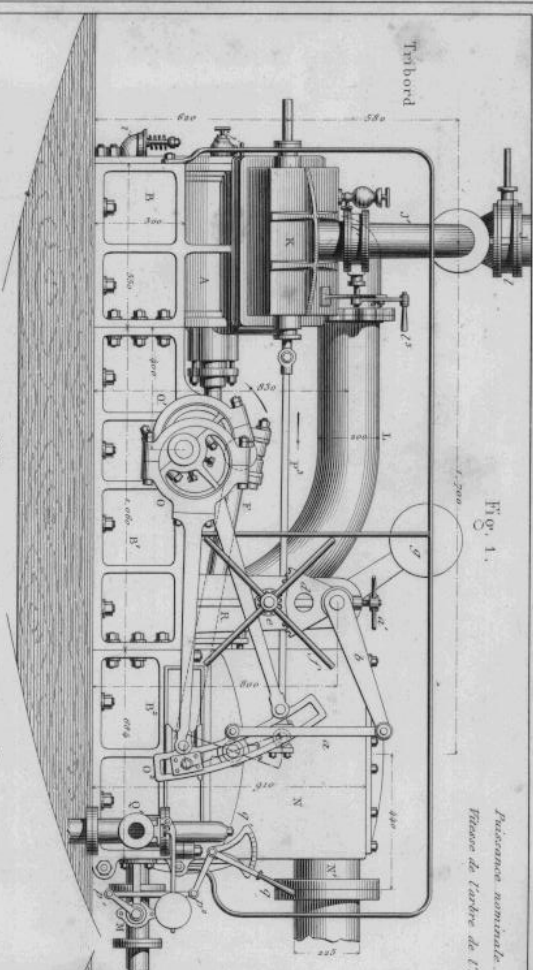


Fig. 1.

Puissance nominale ..... 30 chevaux.  
Vitesse de l'arbre de l'hélice ..... de 4 p. min.

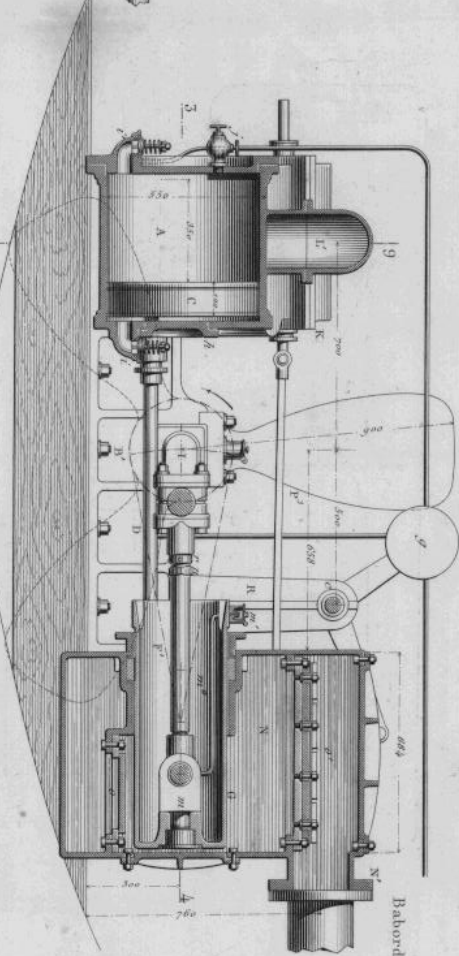


Fig. 3.

Coupe sur 1-2.

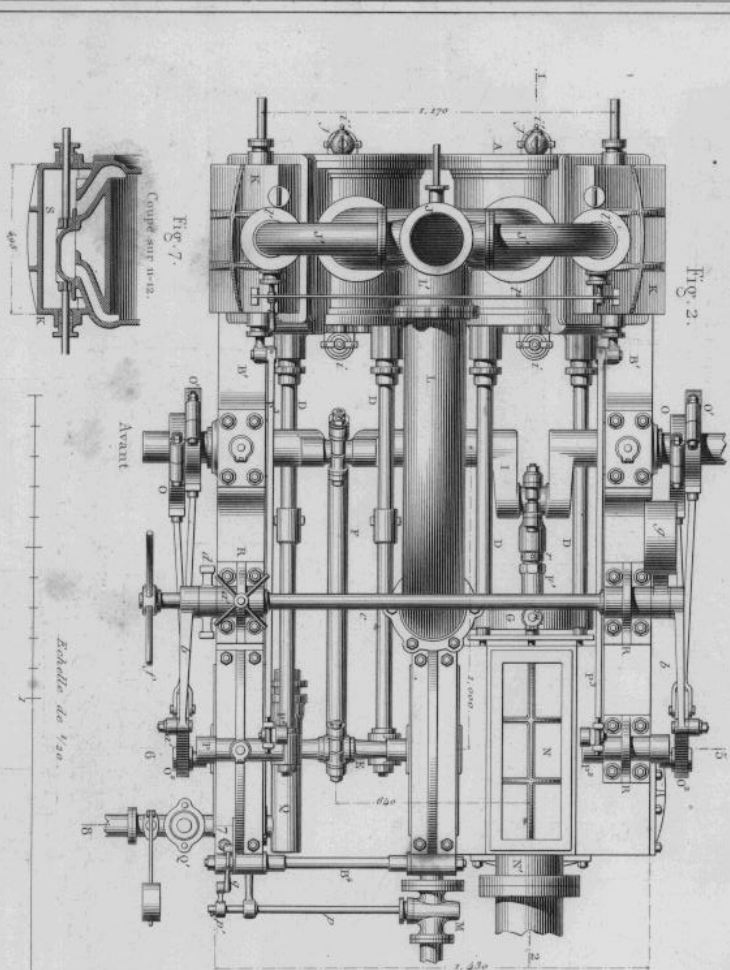


Fig. 2.

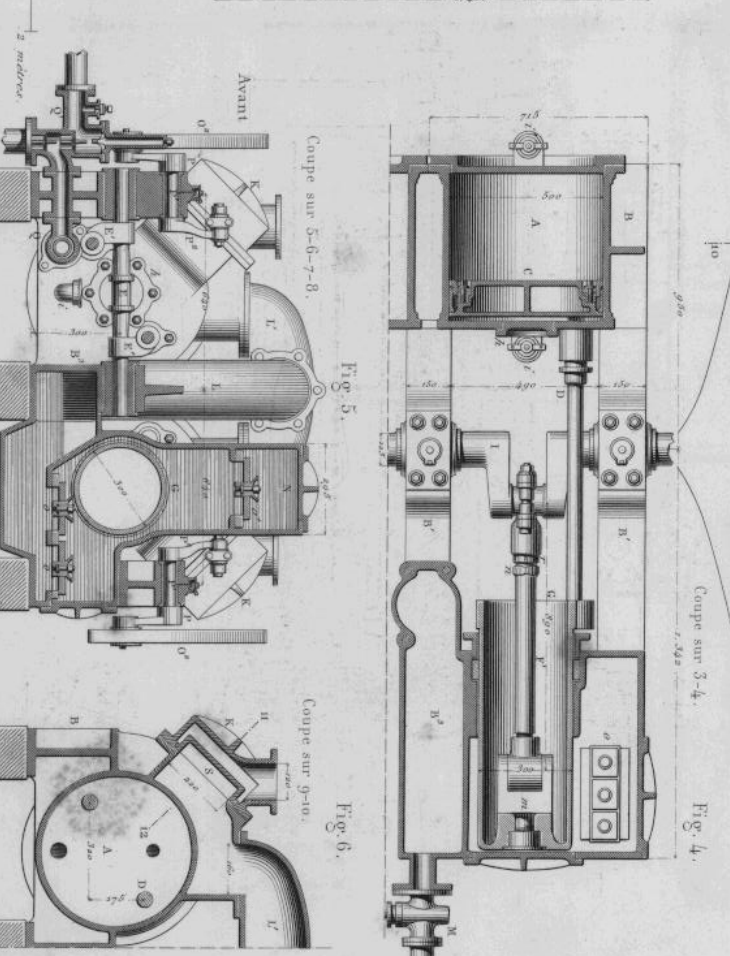


Fig. 4.

Coupe sur 3-4.

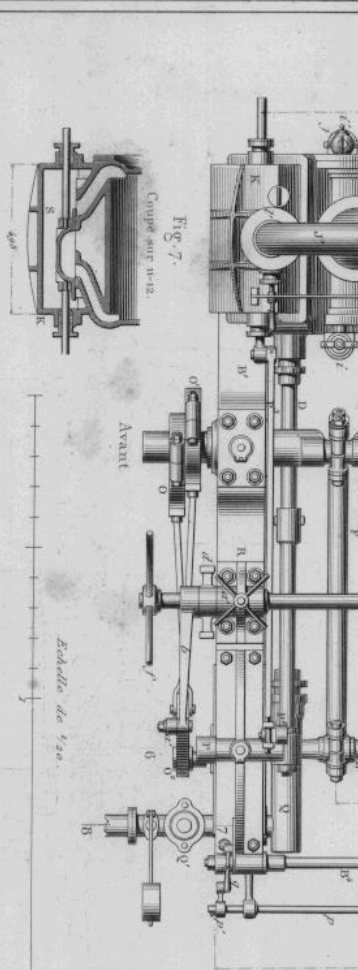


Fig. 5.

Coupe sur 5-6-7-8.

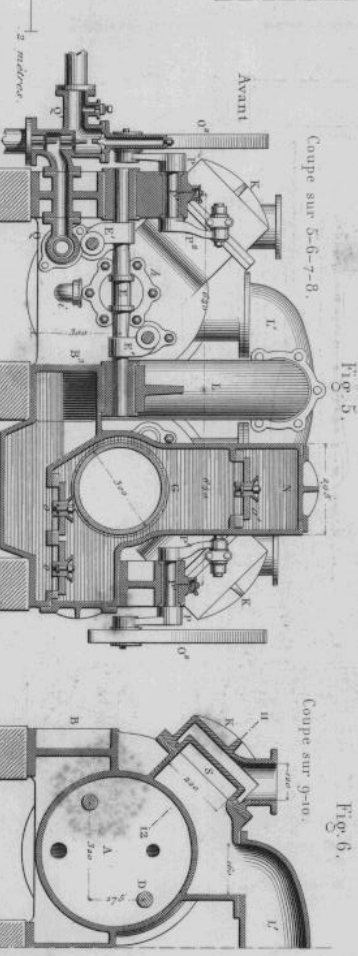


Fig. 6.

Coupe sur 9-10.

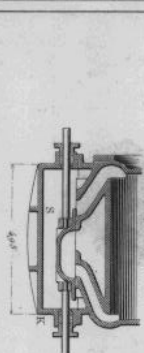


Fig. 7.

Coupe sur 11-12.



Fig. 8.

Coupe sur 13-14.

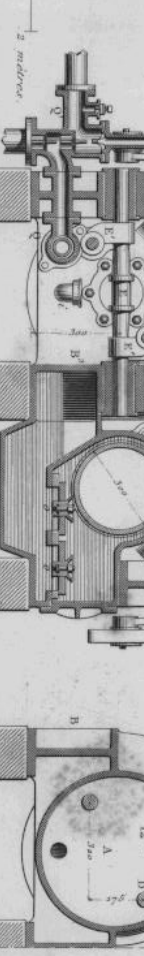
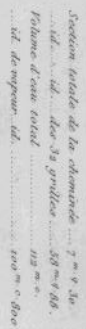


Fig. 9.

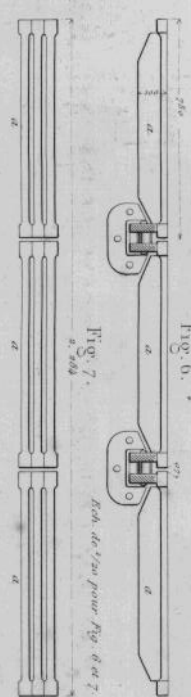
Coupe sur 15-16.



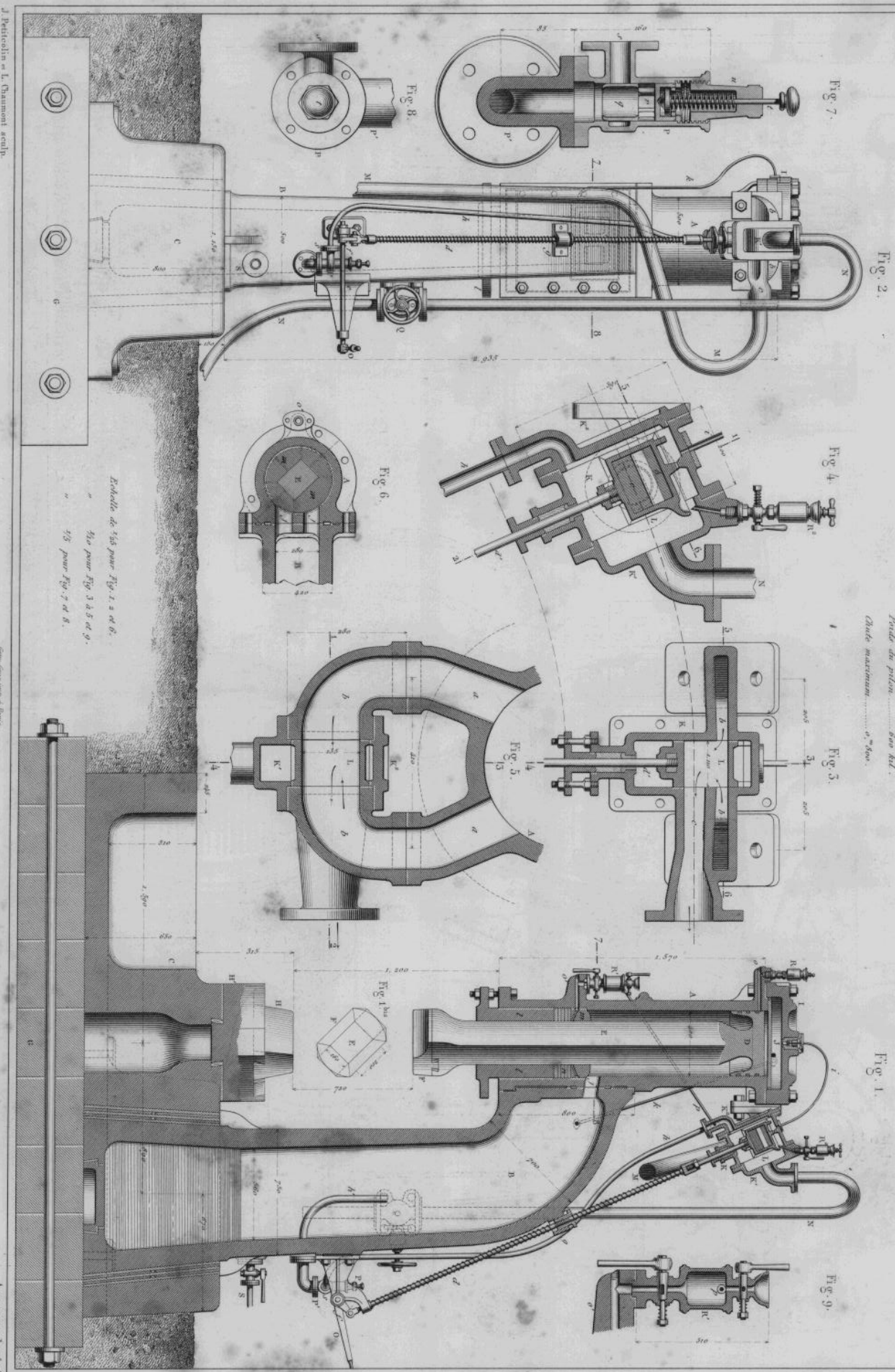
Coupe sur 1-2



Coupe sur 9-11







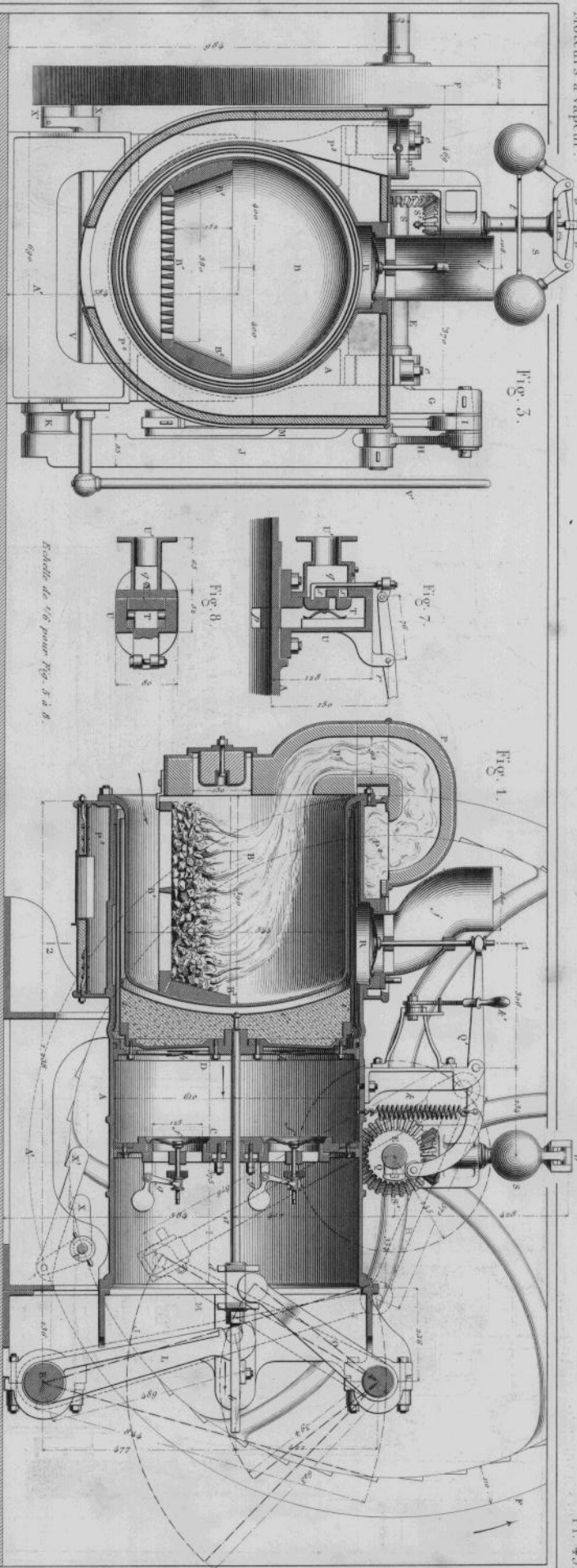


Fig. 3.

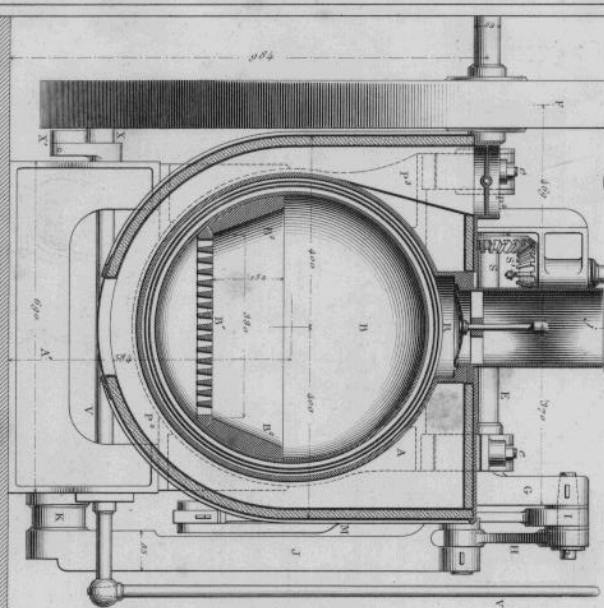


Fig. 7.

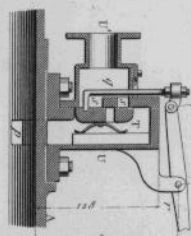
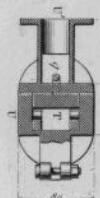


Fig. 8.



Echelle de 1/16 pour Figs. 3 à 8.

Fig. 4.

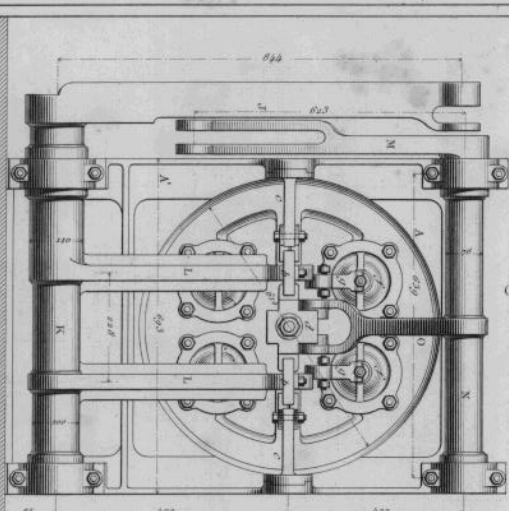


Fig. 5.

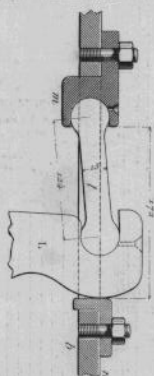
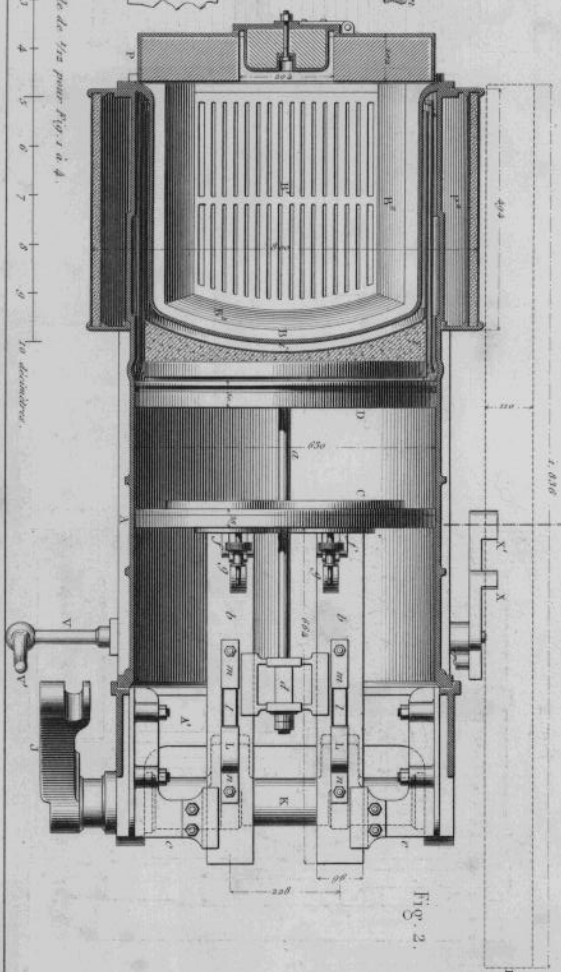


Fig. 6.



Fig. 2.



Echelle de 1/16 pour Figs. 1 à 6.

100 décimètres.

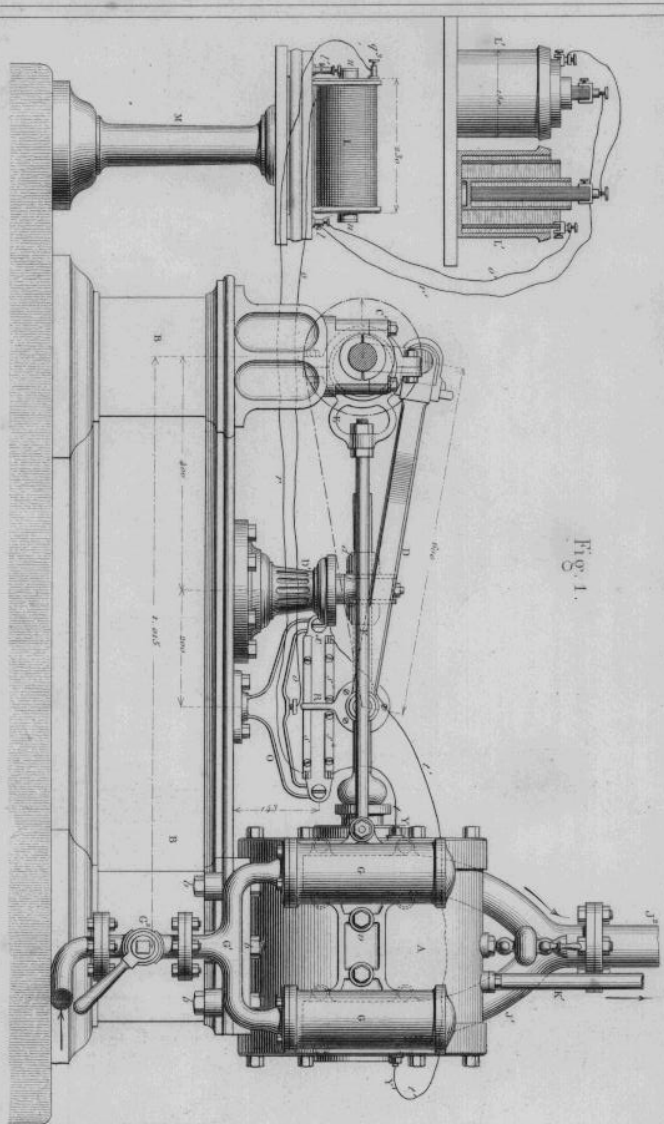


Fig. 1.

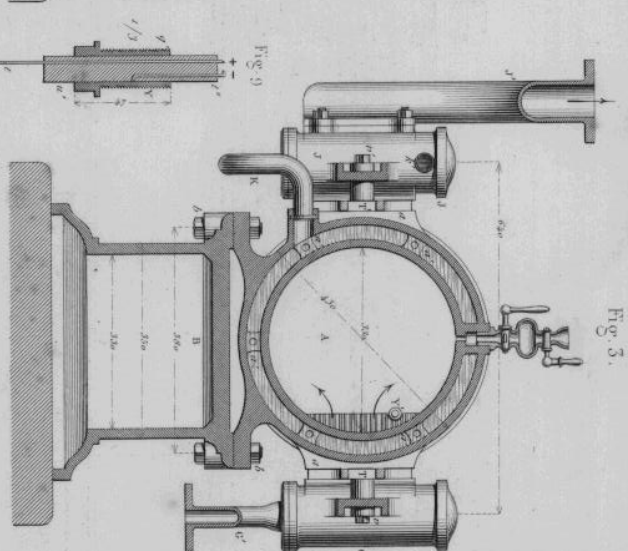


Fig. 3.

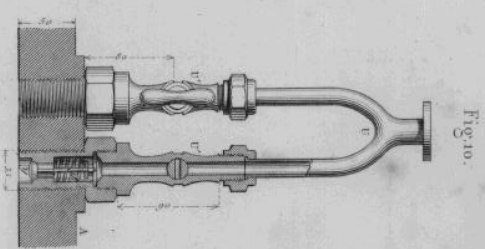


Fig. 10.

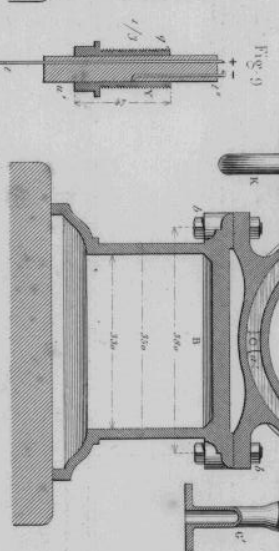


Fig. 9.

Fig. 2.

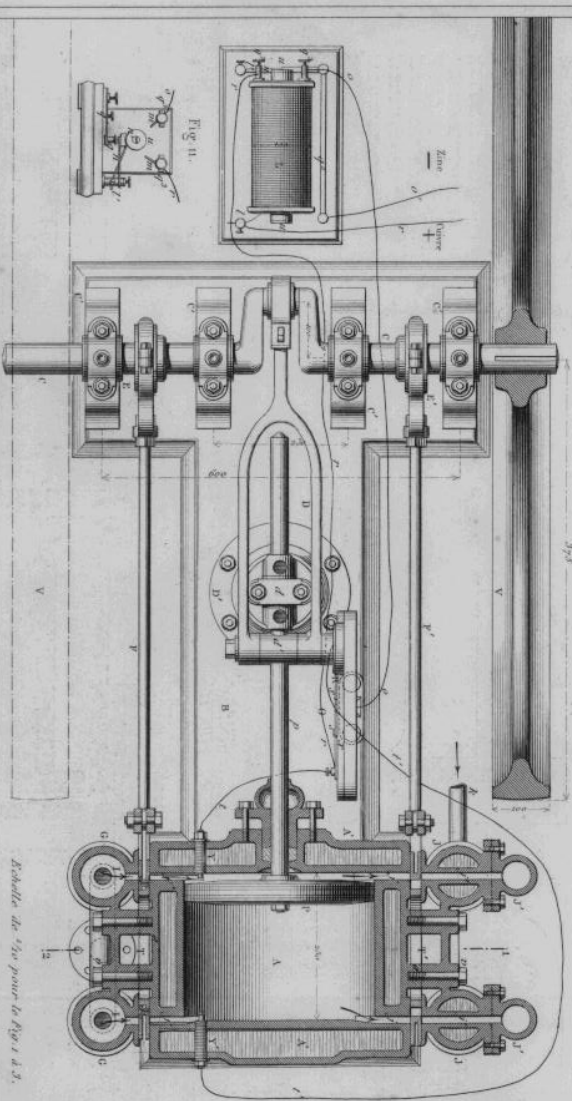


Fig. 2.

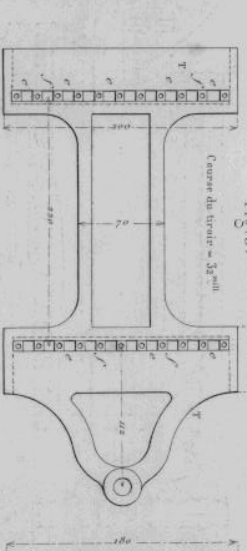


Fig. 5.

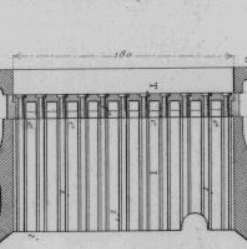


Fig. 6.

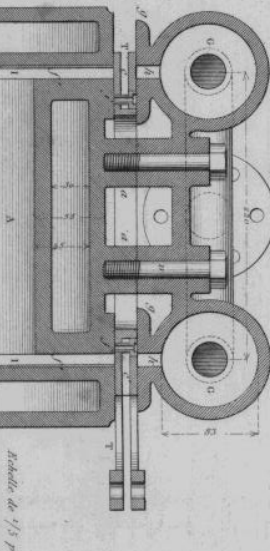


Fig. 4.

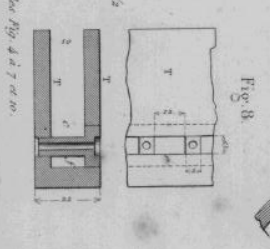


Fig. 8.







