

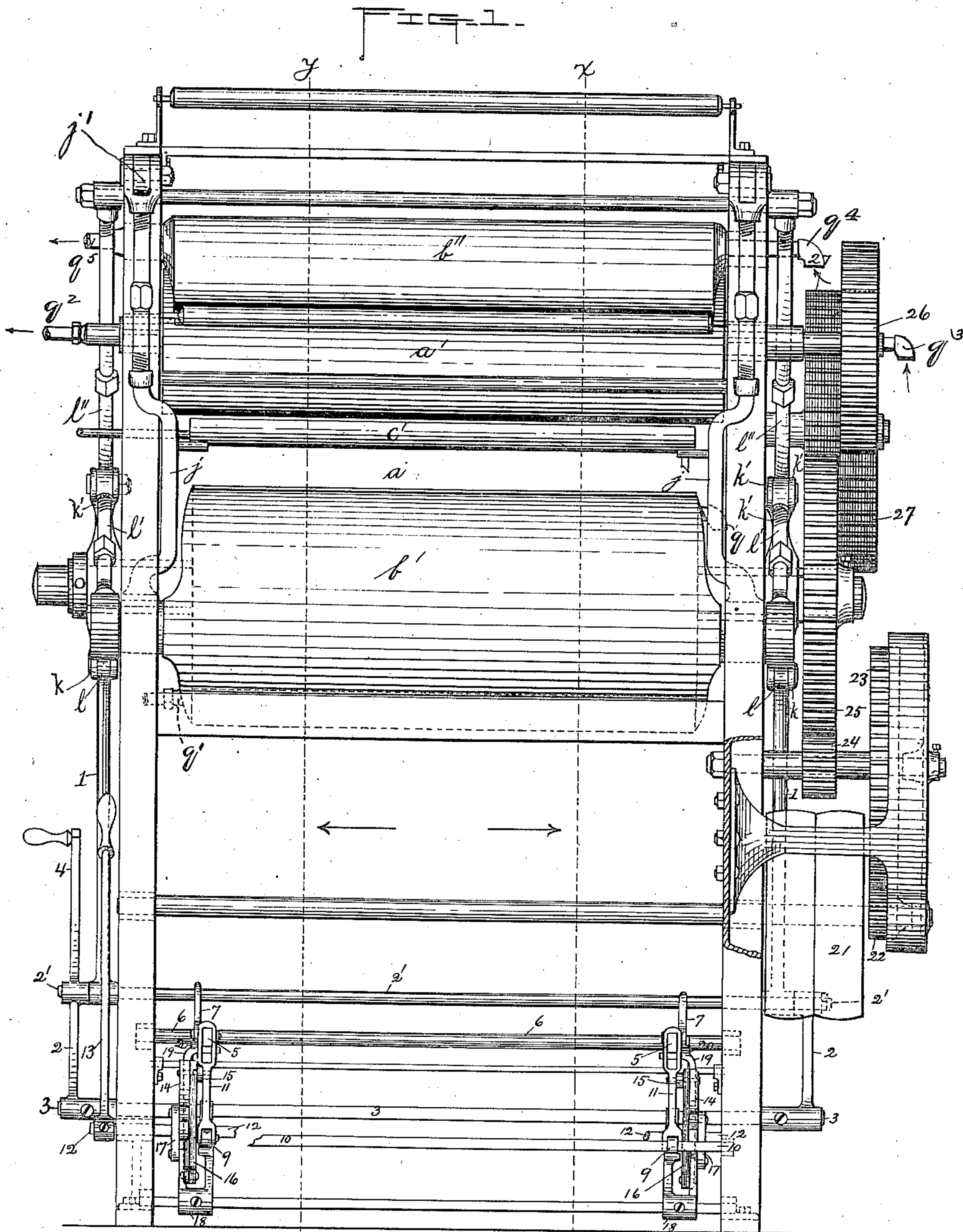
(No Model.)

6 Sheets—Sheet 1.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



Witnesses;
R. H. Briscoe.
Geo. Wadman.

Inventor;
David Gessner.

By Efford & Brown, Attys

(No Model.)

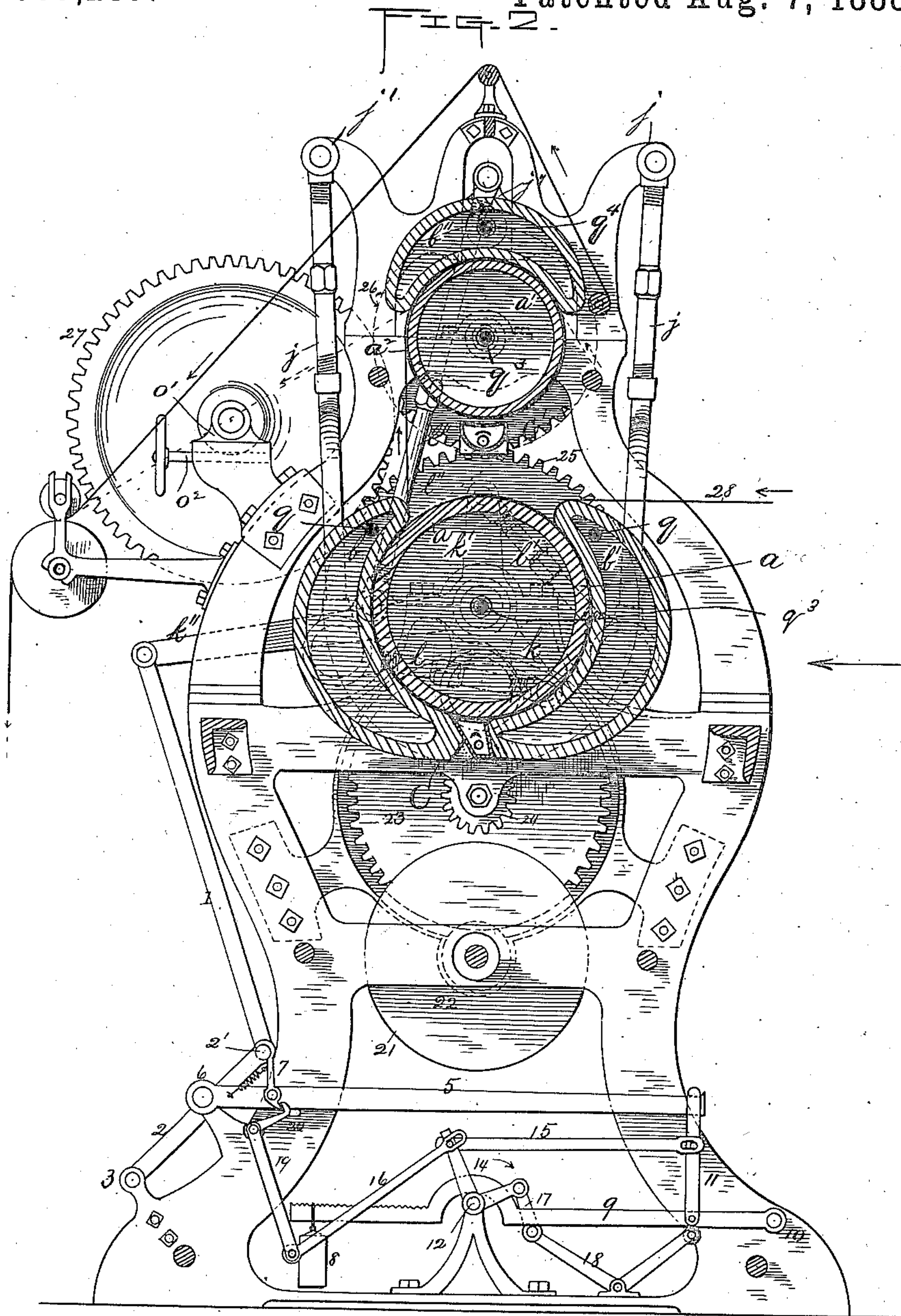
6 Sheets—Sheet 2.

D. GESSNER.

CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



Witnesses:

Geo. Wadman,

D. H. Griswold.

Inventor;

David Hunter

By Hifford & Brown, Att'ys

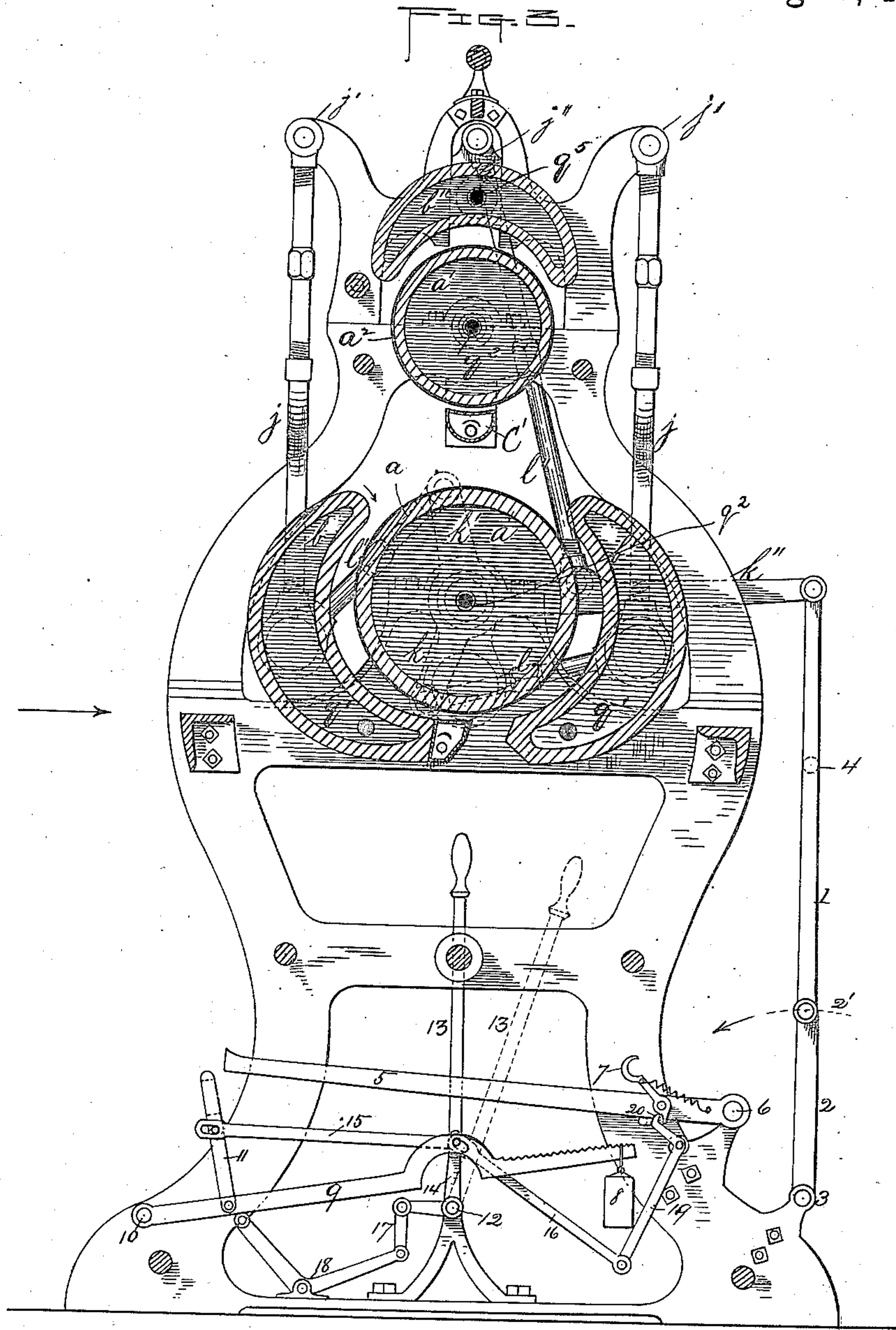
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6 Sheets—Sheet 3.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



W. H. Thompson;

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Inventory

David Guane.

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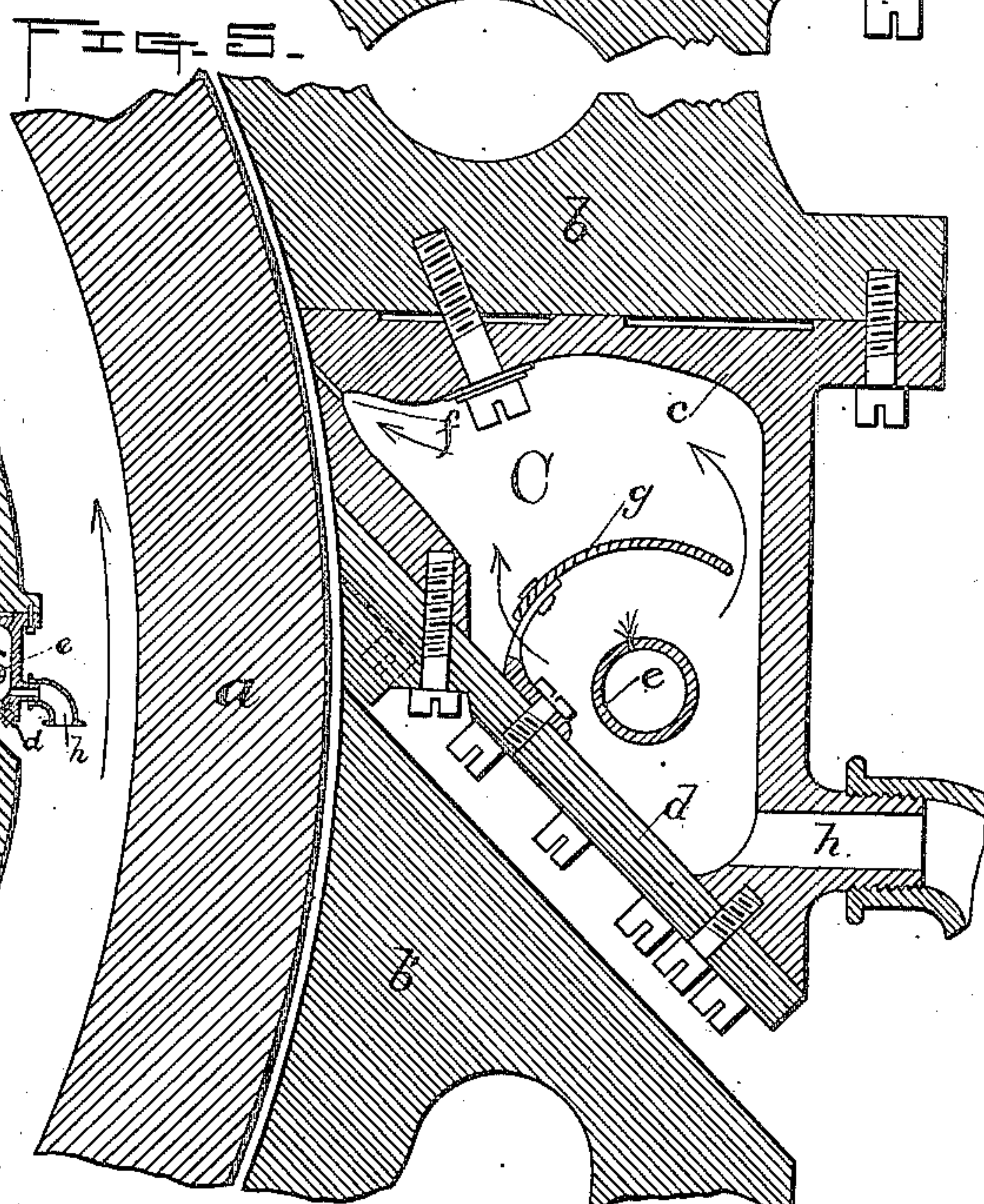
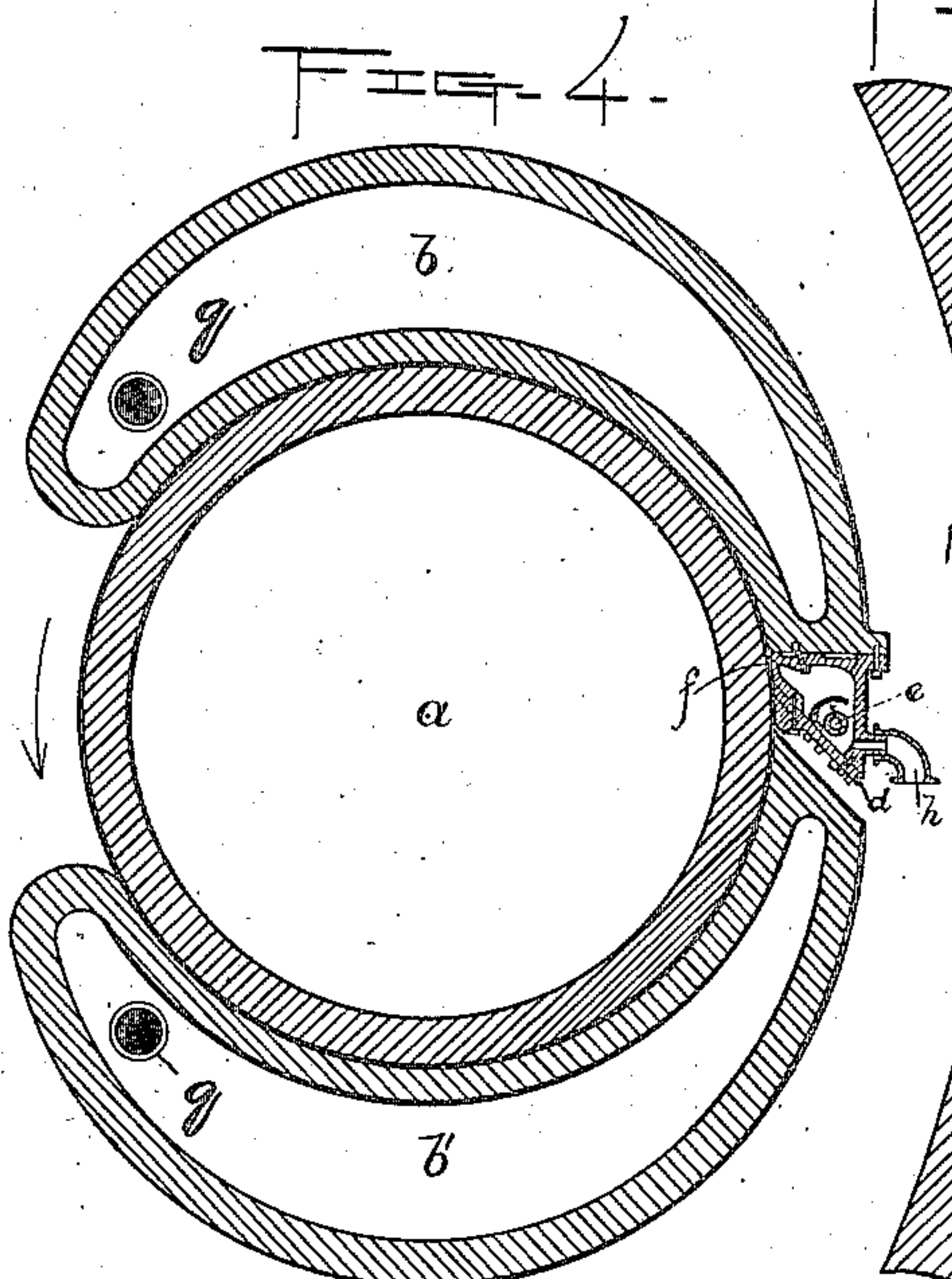
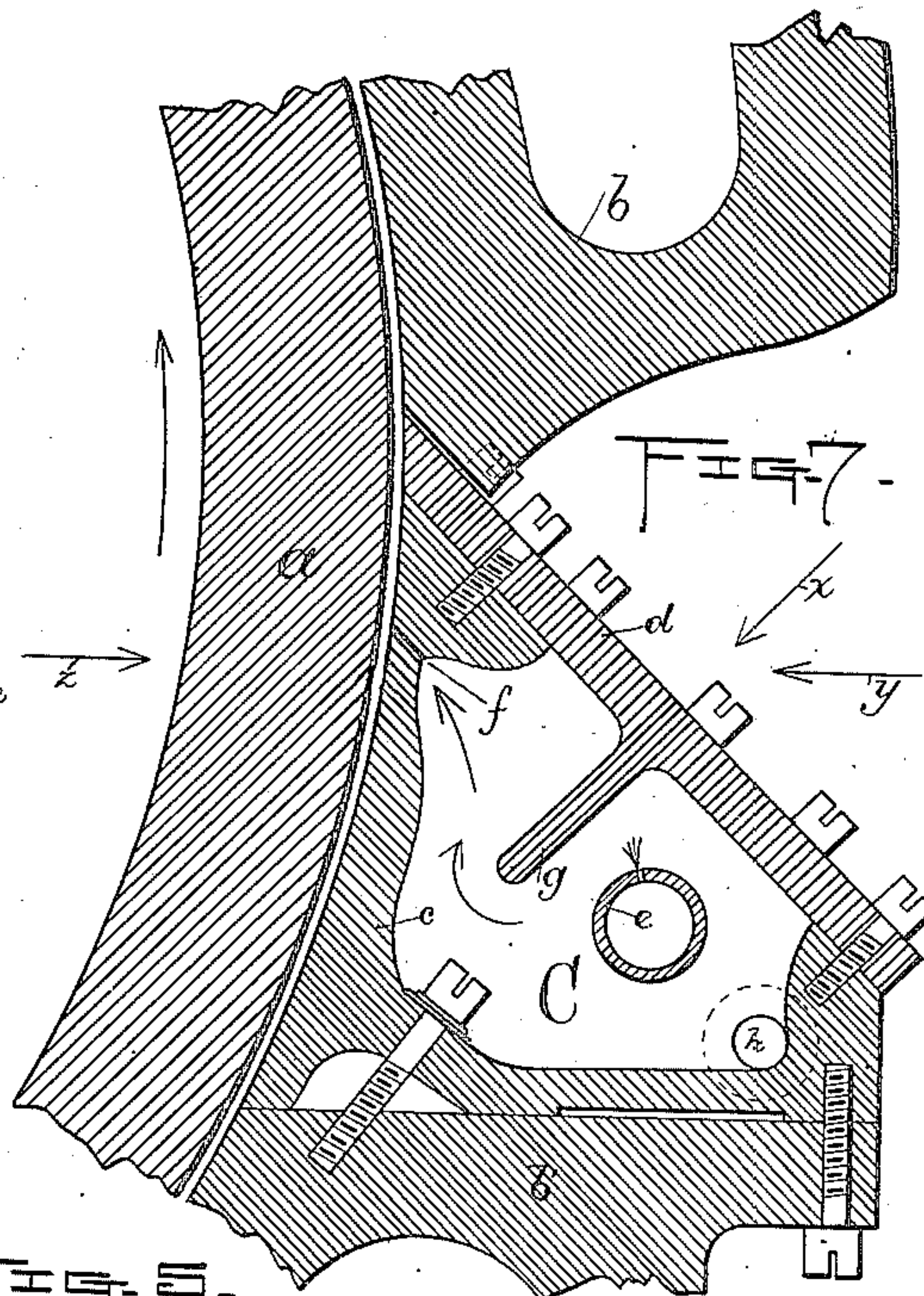
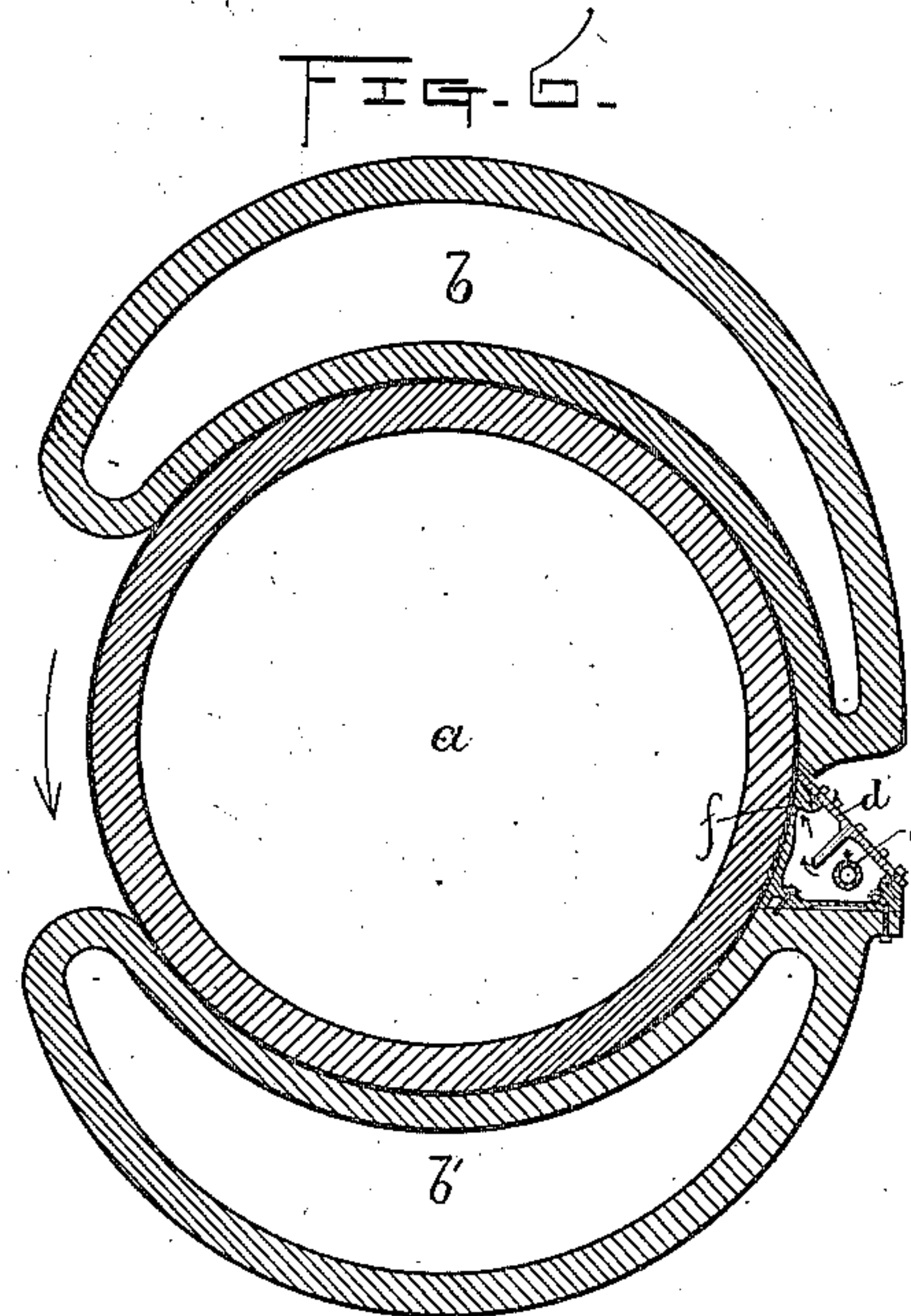
(No Model.)

6 Sheets—Sheet 4.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



Witnesses;

N. H. H. H. H. H.
Geo. Wadman.

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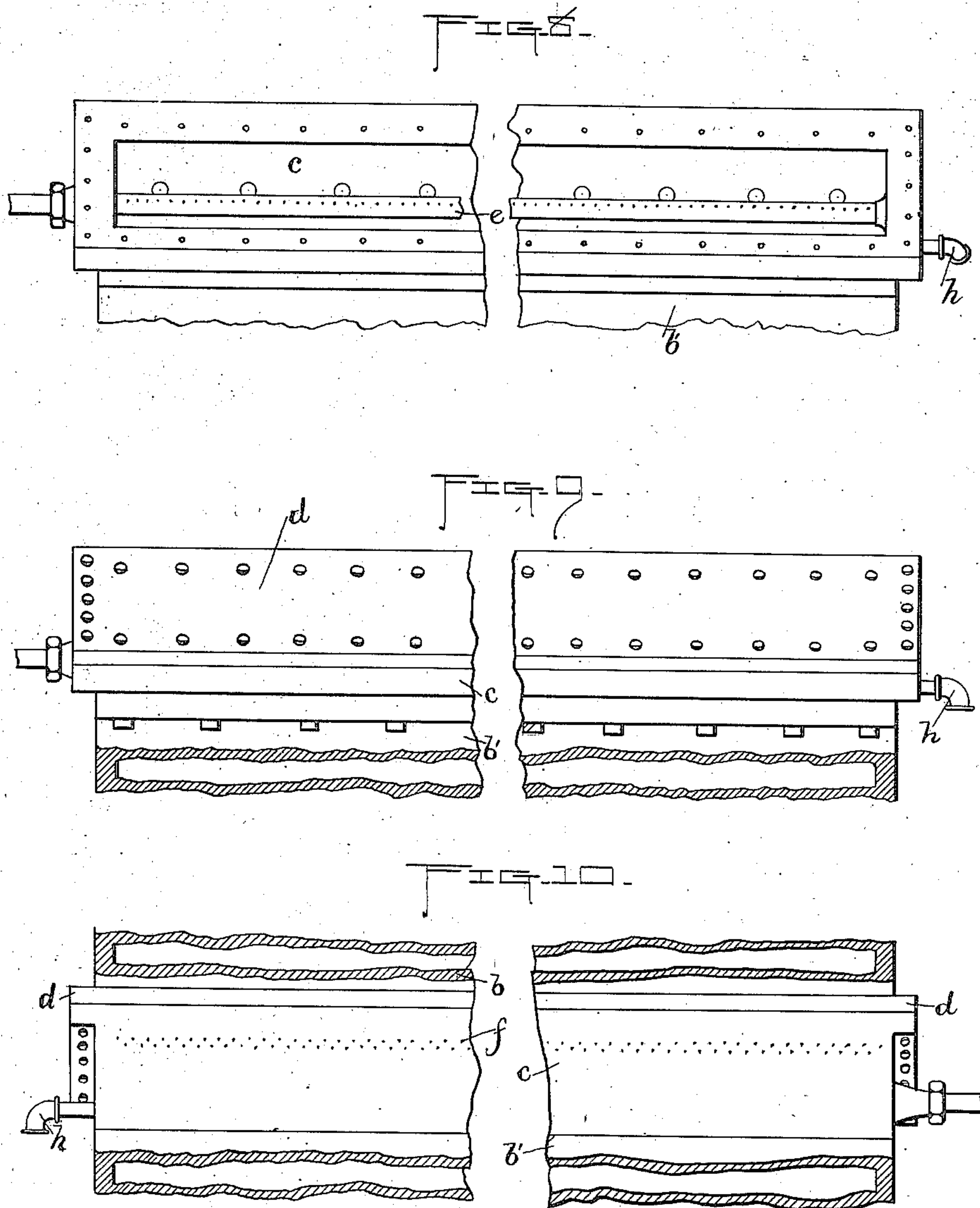
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6 Sheets—Sheet 5.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



Witnesses;

N. Horisecoll.
Geo. Wadman.

Inventor;

David Gessner

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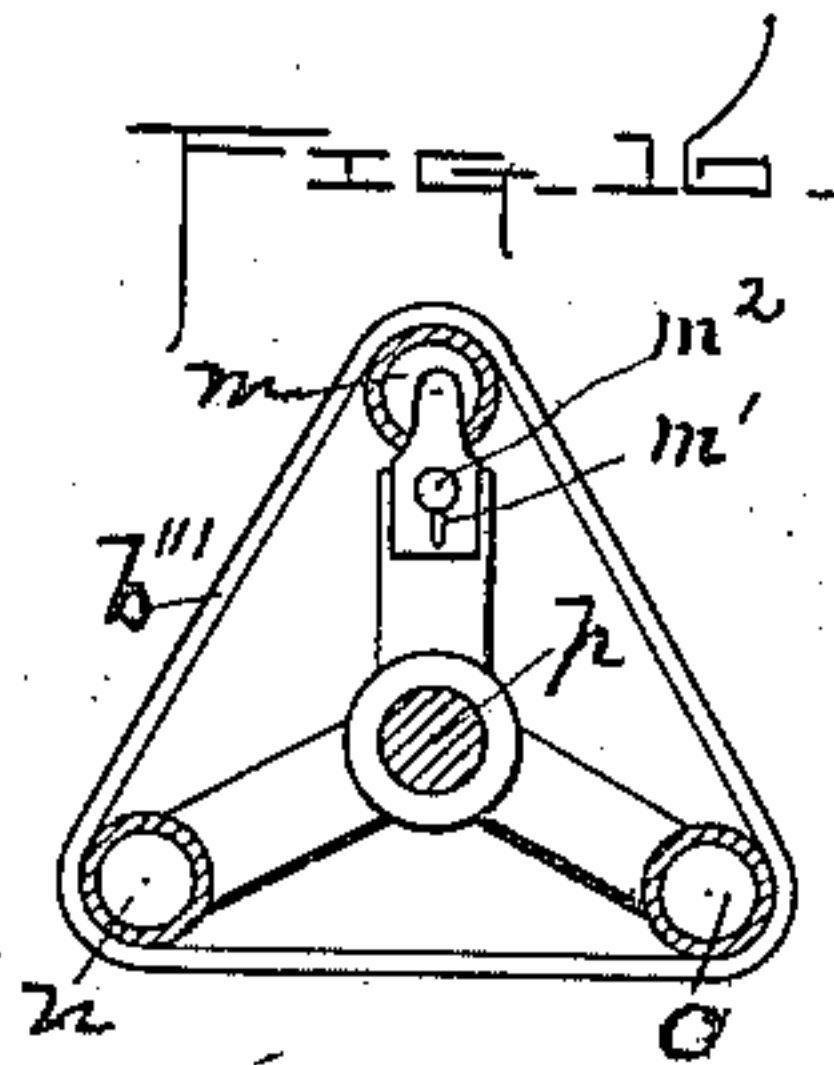
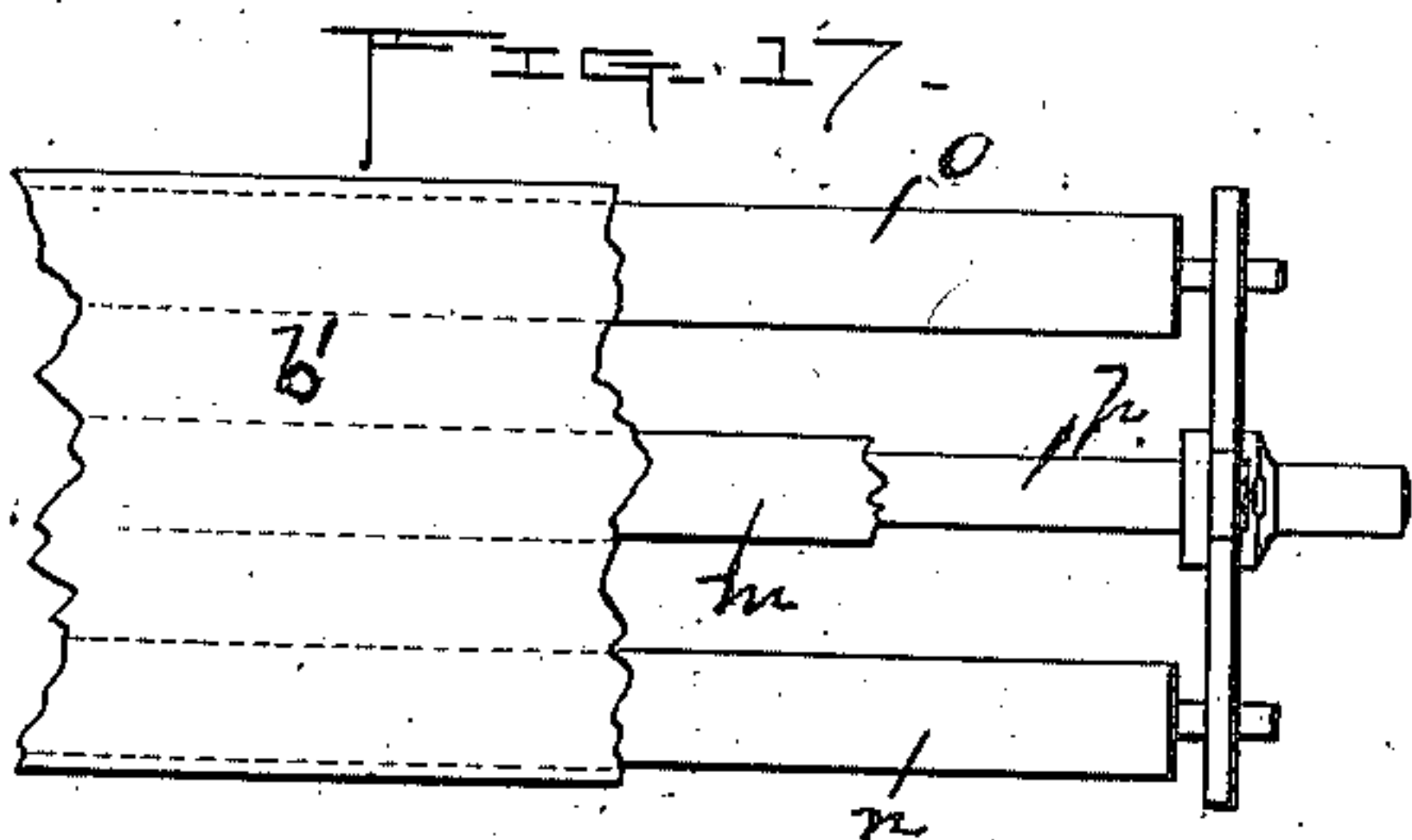
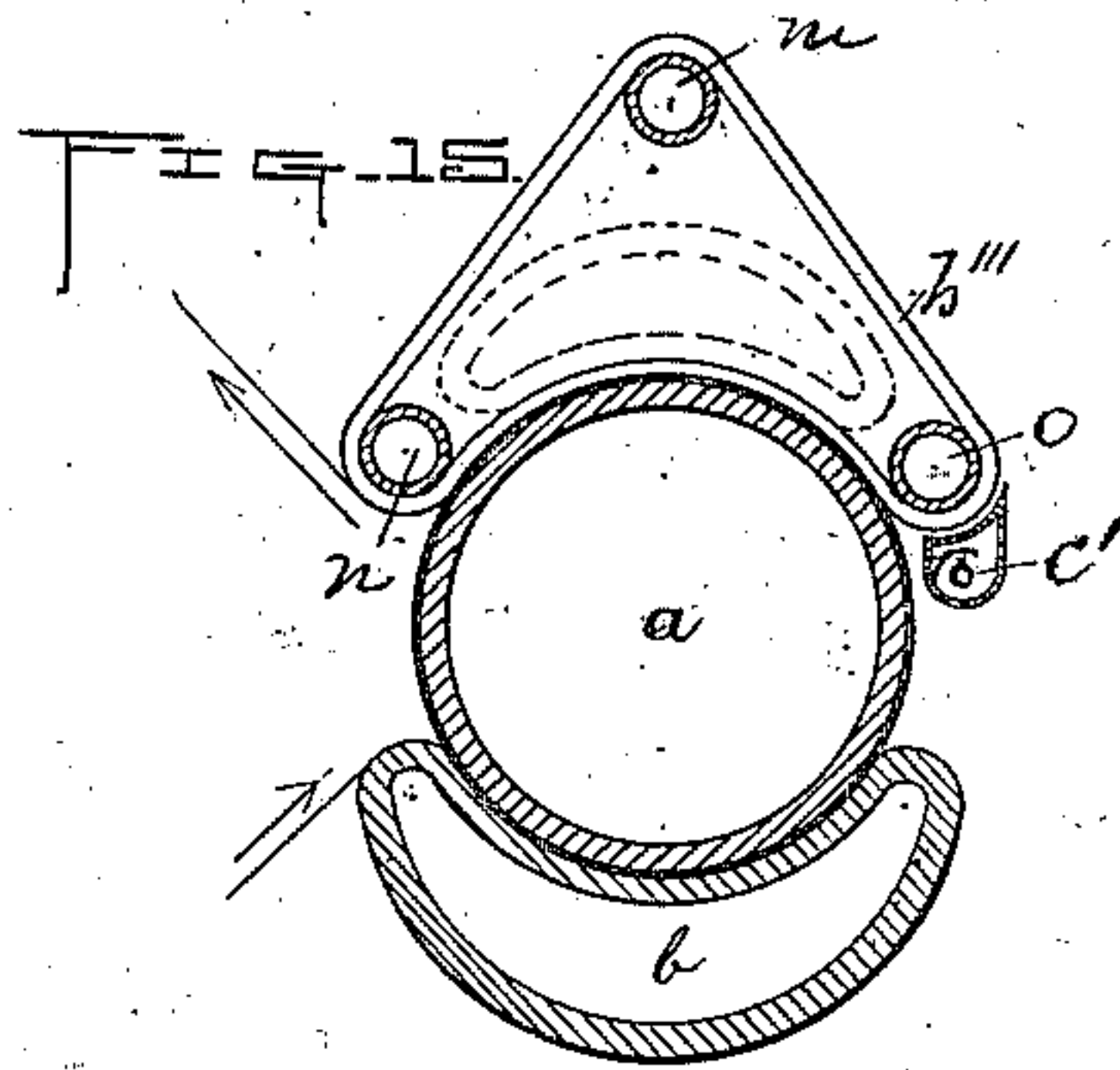
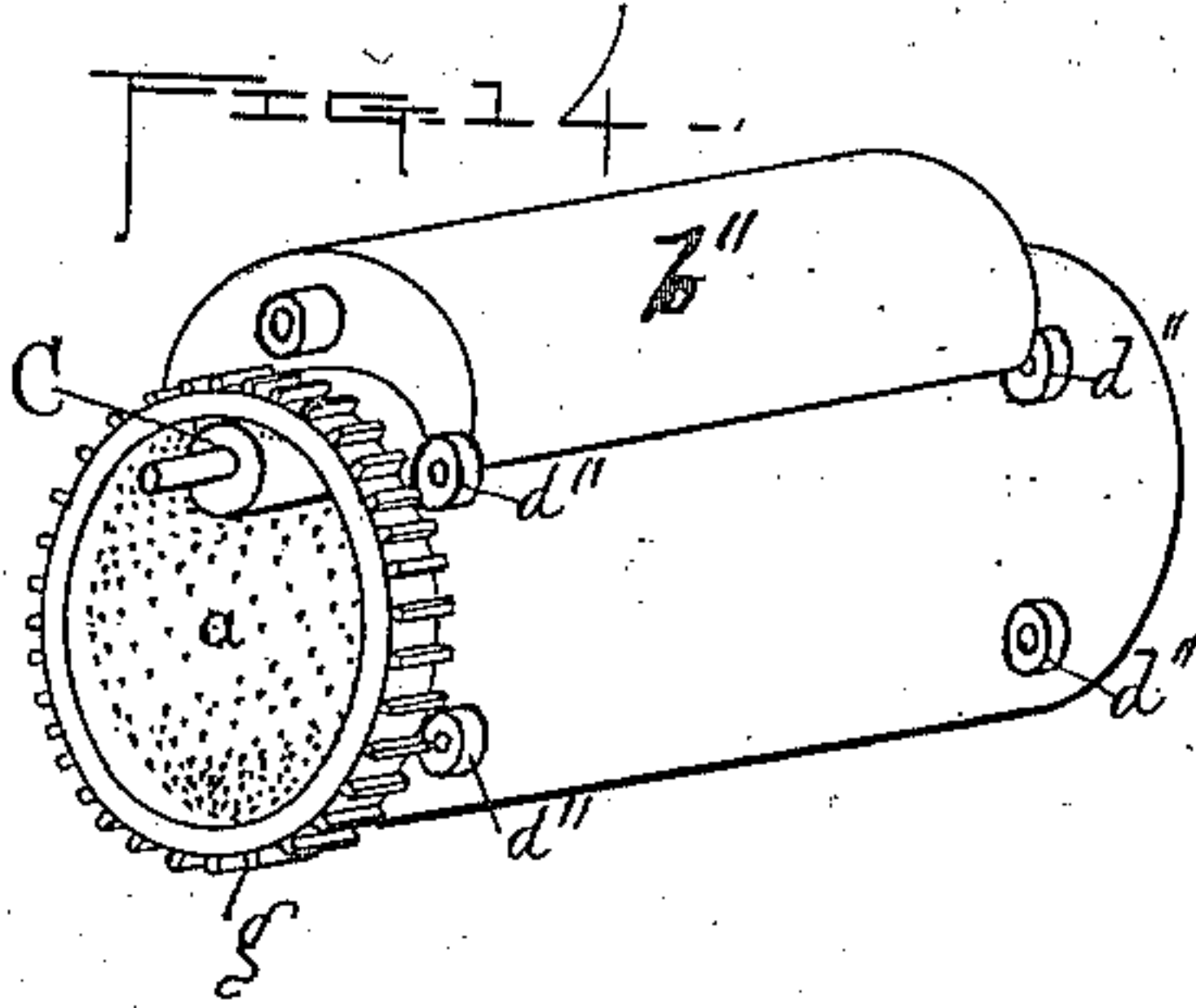
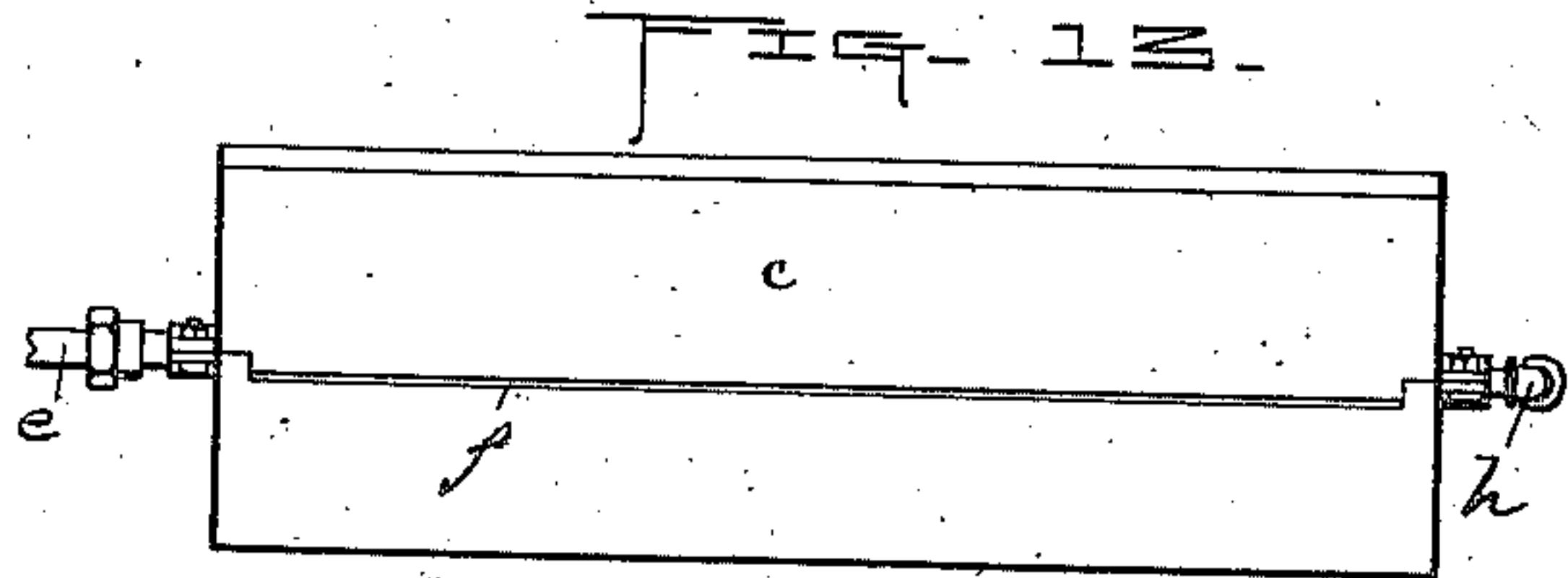
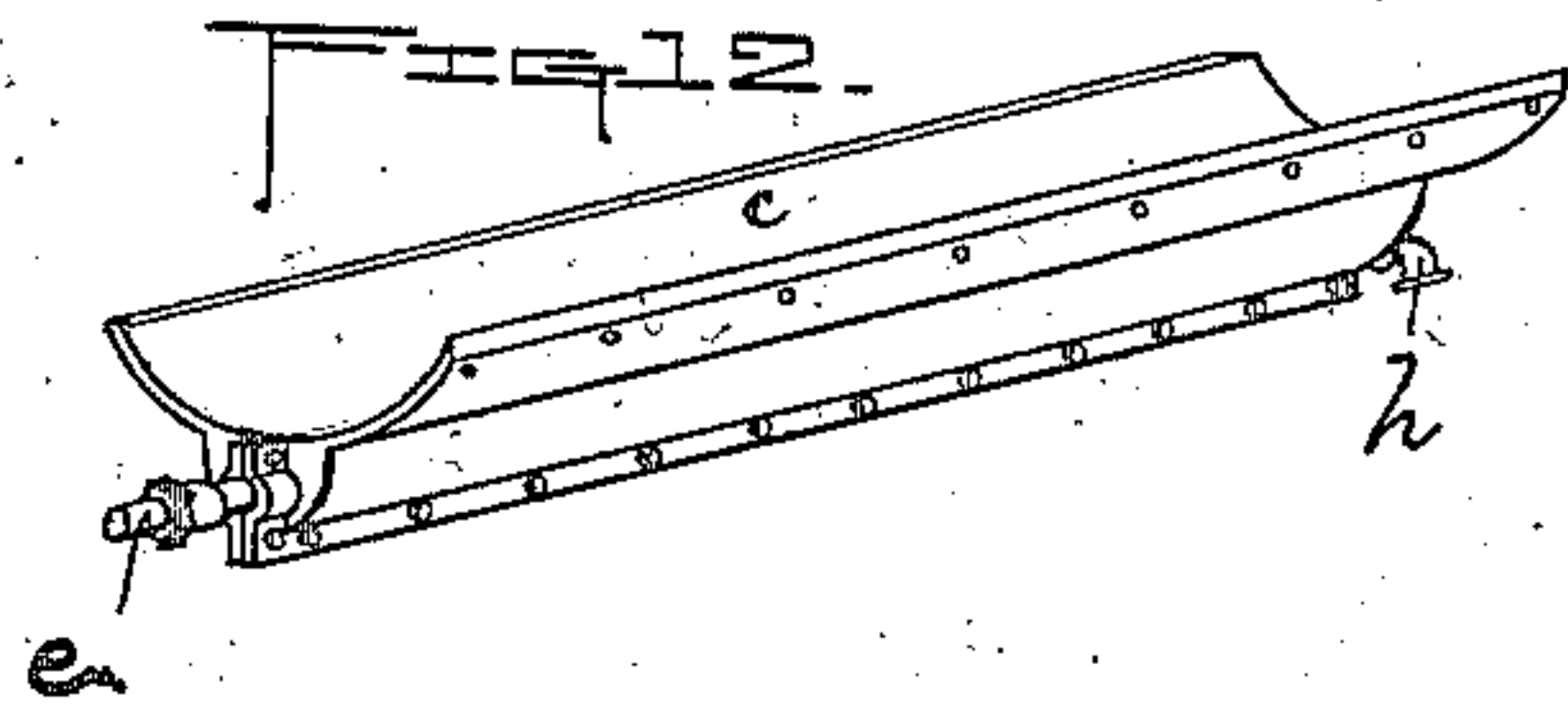
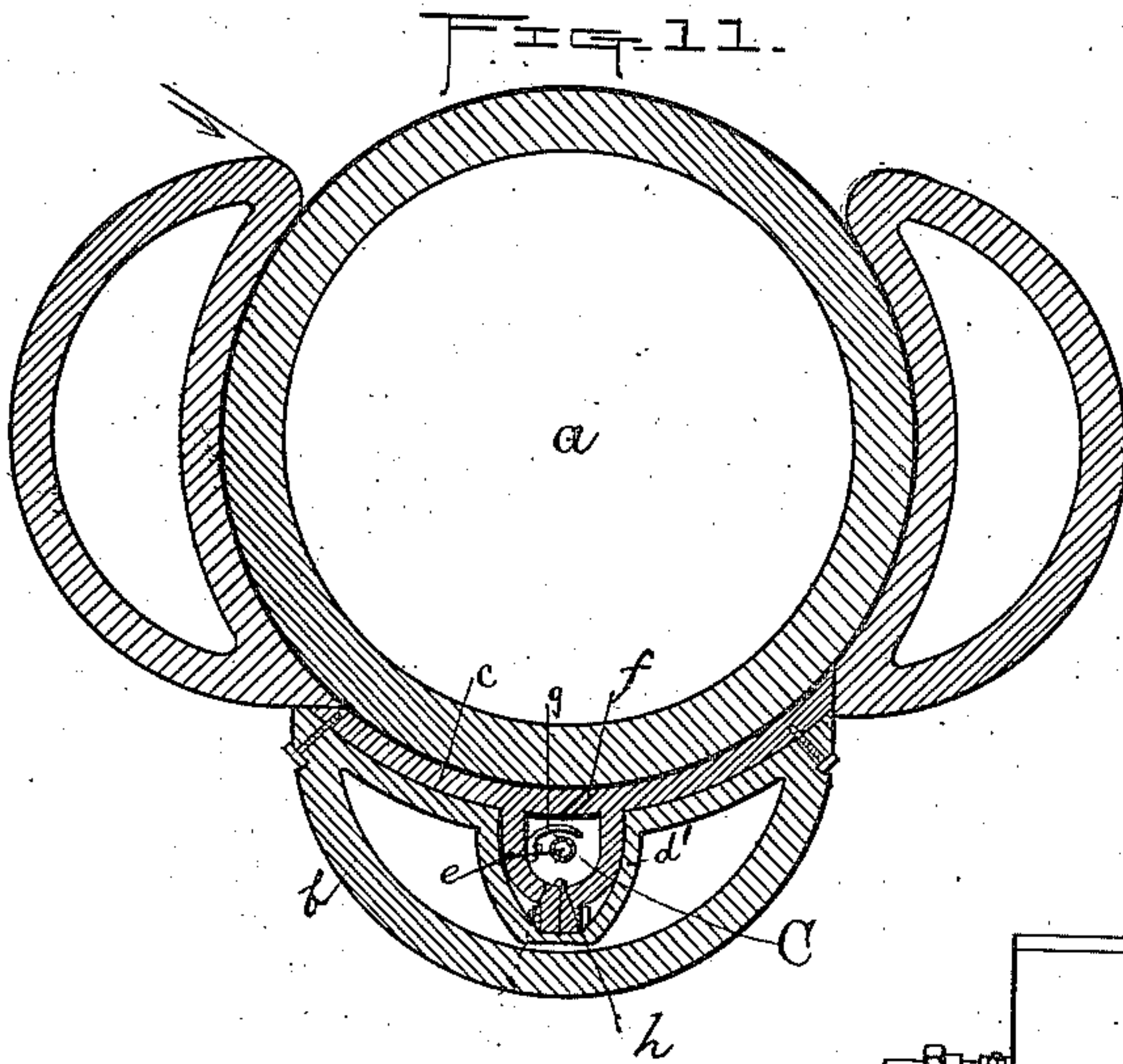
(No Model.)

6 Sheets—Sheet 6.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 387,287.

Patented Aug. 7, 1888.



Witnesses:

A. H. Risell,
Geo. Wadman,

Inventor:
David Gessner,

By Lifford & Brown, Att'ys

UNITED STATES PATENT OFFICE.

DAVID GESSNER, OF WORCESTER, MASSACHUSETTS.

CLOTH-PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 387,287, dated August 7, 1888.

Application filed September 4, 1886. Serial No. 212,702. (No model.)

To all whom it may concern:

Be it known that I, DAVID GESSNER, of Worcester, county of Worcester, State of Massachusetts, have invented a new and useful Improvement in Cloth-Pressing Machines, of which the following is a specification.

The object of this invention is to provide means whereby cloth may be treated with moisture after it has received a pressing and while it is still under pressure, so that as the moisture is introduced the fibers of the cloth are in a pressed condition and are held in such condition. This process is carried out by combining with pressing-surfaces a steamer or other moistening apparatus in such a way that the moisture is applied to the cloth under the conditions stated. The arrangement of these parts may be varied to a great extent; but I will first describe the apparatus which I prefer to employ, and then point out some of the modifications of which it is susceptible.

Figure 1 of the drawings is an elevation of the machine taken from the side at which the cloth enters, the bed-plates being in position to press. Fig. 2 is a section taken through the line *x x* of Fig. 1, looking toward the right. Fig. 3 is a section through the line *y y*, Fig. 1, looking toward the left, excepting here the parts are shown in position with the bed-plates thrown back. Fig. 4 is a detail cross-section of the main cylinder, its bed-plates and steamer attached to the right-hand bed-plate. Fig. 5 is an enlarged view of portions of the same thing. Figs. 6 and 7 are the same as Figs. 4 and 5, excepting that here the steamer is attached to the left-hand bed plate. Fig. 8 shows the steamer of Fig. 7, with the cover removed and viewed in the direction of arrow *x*. Fig. 9 shows the same with the cover in place and viewed in the direction of arrow *y*. Fig. 10 shows the same from the direction of arrow *z*, with the cylinder removed. Figs. 11 to 17, inclusive, are some modifications of which the pressing-surfaces and moistening apparatus are susceptible, which will be more particularly referred to hereinafter.

I will refer first to the apparatus shown in Figs. 1 to 10, inclusive.

a is the main cylinder. *b b'* are bed-plates. *a'* is a second cylinder. *b''* is a bed-plate in connection with *a'*.

C is a steamer, which is fully shown in detail in Figs. 5 and 7. This steamer is composed of a trough, *c*, which is secured to the edge of one of the bed-plates by bolts. The side of this steamer next to the cylinder is so formed as to continue the curve of the bed-plate, and thus is in effect a prolongation of the pressing-surface of the bed-plate. It will be observed that the pressing-surfaces thus extend from the perforations for the steamer in the direction from which the cloth is fed, so that the pressure upon the cloth commences before it is moistened. Thus the bed-plate to which the steamer is attached is prolonged until, when pressing is going on, the edge of the opposite bed-plate is nearly in contact with the adjacent edge of the steamer. These two adjacent edges are beveled, as shown, so that the cloth will be carried smoothly from one bed-plate to the other, and the pressure on it will be practically continuous.

d is a cover which is suitably secured to the trough *c*, so as to make a steam-chest within.

e is a perforated pipe running from end to end of the steamer from which steam is admitted.

f is a series of perforations or a slot formed through the side of the steamer next the cylinder and through which the steam passes onto the cloth when held under pressure by the face of the cylinder and the steamer. Sometimes it may be desirable to have more than one series of perforations, as shown at Fig. 10, to make the flow of steam practically continuous, and thus prevent any streaking.

g is a deflector, placed between the pipe *e* and the perforations *f*, to throw back any water which will find an outlet by the pipe *h*.

The cylinders *a* and *a'* and the bed-plates *b*, *b'*, and *b''* are all hollow, so as to be heated by steam. The steam enters the cylinders and escapes therefrom through hollow journals, as shown at *q² q³*, and enters and escapes from the bed-plates, as shown at *q q' q⁴ q⁵*, in connection with the bed-plates *b'* and *b''*, respectively.

The cylinder *a'* will be covered by a felt jacket, *a²*, and a steamer, *C'*, of ordinary construction, will be located below the cylinder, so as to throw vapor onto the jacket.

The bearings of the cylinders *a* and *a'* are mounted in the frame of the machine, as shown.

The mechanism employed for sustaining and

operating the various bed-plates is such that all of them may be moved to or from their respective cylinders simultaneously and by one movement of the hand. The bed-plates *b* and *b'* are swung by pivots at the bottoms of the suspension-rods *j*, which rods in turn are pivoted to ears *j'*, projecting from the frame of the machine, as shown. These ears project out, so that when the bed-plates are pressing the suspension-rods will be inclined toward each other, as shown in Fig. 2; but when the bed-plates are back from the cylinder the rods will be about vertical. Thus the weight of the bed-plates will assist in throwing them back from the cylinder. The bed-plate *b''* is pivoted to a sliding bearing maintained in vertical guide-ways in the frame, as shown at *j''*.

k k' k'' are the three arms of a lever which is fulcrumed concentric with the cylinder *a*. These arms are respectively connected with the bed-plates *b*, *b'*, and *b''* by the rods *l*, *l'*, and *l''*. Each of these rods, as well as the rods *j*, is provided with means for adjustment lengthwise, consisting of opposite screw-threads formed on the ends of each rod, so that by turning the rod its available length will be shortened or lengthened, as required. The points of attachment of the rods *l l' l''* are all about equidistant from the fulcrum of the lever. The arm *k''* is longer than the others, and to its extremity is secured a rod, 1, pivoted at its lower end to the rod 2', which has on its ends levers 2, that are pivoted to the machine at 3 to another rod, as shown. A handle, 4, is connected with the lever 2, so that when it is desired to move the bed-plates the position of the rods 1 and levers 2 is moved from the position of Fig. 2 to the position of Fig. 3, or vice versa. This mechanism enables the operator to move the bed-plates to and from the cylinders and far enough away from the cylinders for all practical purposes. It will be observed that by reason of the connection of all the bed-plates to a common lever the weight of bed-plates *b* and *b'* tends to counterbalance the weight of *b''*.

It remains to provide means for applying pressure to the bed-plates when in position to press. 5 is a lever pivoted to the frame at 6. 7 is a hook, which connects the lever 5 with the rod 2', to which rod 1 and lever 2 are pivoted. Thus, when the parts are as shown in Fig. 2, downward pressure on the lever 5 is communicated to rod 1, and thence is converted into pressure by the bed-plates against the cylinders. This downward pressure on lever 5 is produced by the weight 8 and is intensified by the interposition of the lever 9, pivoted to the frame at 10 and connected with 5 by the link 11.

It now remains to provide for the ready connecting and disconnecting of the weighting mechanism with the rod 1. 12 is a shaft, which is turned by the handle 13 on the outside of the frame. On this shaft is fixed the bell-crank lever 14, to one arm of which are connected the links 15 and 16, and to the other

arm the link 17. A lever, 18, as shown, is fastened to a rod and pivoted to the frame, and one of its arms is pivoted to 17, while its other arm bears upward against the lever 9 and may be made to operate easily by a friction roller attached at this point, if desired. A lever, 19, as shown, is fastened to a rod pivoted to the frame, and one arm thereof is pivoted to the link 16, while on the other arm is formed a hook, 20, arranged to engage with a projection on the hub of hook 7, as shown. On the side of hook 20 a projection is made to extend under lever 5, as shown. There is a slotted connection between 11 and 15; also between 14 and 16. The connection between 15 and 11 is made by passing the end of 5 into a mortise in 11, so that the connection can be broken by slipping 11 off the end of 5.

When lever 14 is moved in direction of arrow, Fig. 2, by the handle outside of the frame, the first result will be to move bell crank lever 18, so as to slightly lift lever 9 and relieve lever 5 from the pressure of weight 8. This, by reason of the slotted connection, will take place before the links 11 or 16 are affected; but as soon as lever 14 has moved a short distance the link 11 will be disengaged from lever 5, as shown in Fig. 3, and the projection of hook 20 will reach under lever 5, so as to ease up on the grip which hook 7 has upon rod 2', whereupon the hook 20 will throw the hook 7 out of engagement with 2'. At the same time the projection on hook 20 will press on the under side of lever 5 and hold it up. Then the link will be relieved from weight and the bed-plates may be thrown back by the handle 4, as shown in Fig. 3.

It is not to be understood that the hook 7 is the only contrivance which may be employed to perform its functions.

The parts which I have described for operating the bed-plates are duplicated at each end of the machine.

The machine is driven by a belt on the pulley 21, the shaft of which is geared to the two cylinders by the gear-wheels 22 23 24 25 26, so that the circumferential speed of both cylinders is the same. The gear-wheel 26 is constructed to slide on the shaft of cylinder *a'*, so that it may be thrown into gear with 25 or with a gear-wheel, 27, which is provided with any known arrangement suitable for shifting its bearings, whereby it may be thrown into or out of gear with 25. This may be done by the sliding bearing *o'* and the worm-gear *o''* for moving the same, Fig. 2. Thus, by driving 26 directly from 25, or by the intervention of 27, the rotation of cylinder *a'* may be reversed. The cloth enters at 28 and follows the course shown in the drawings. It will be pressed by the bed-plate *b'*. Then it will be held under pressure and at the same time treated with vapor between the steamer C and the cylinder *a*. Then it will be pressed by the bed-plate *b*. Then it will enter between the cylinder *a'* and bed-plate *b''* and thence onward. While it is undergoing pressure by the bed-plate *b''* the

cloth will be held in contact with the jacket, which has carried up the vapor received from steamer C', and this vapor is communicated to the cloth while under pressure. I advise that the pressure exerted by the bed-plate *b''* be of less intensity than that of the other bed-plates. After leaving the cylinder *a* the cloth may follow the course shown in full line, Fig. 2, or the course shown in broken line. In one case the cylinder *a'* would be revolved in one direction, and in the other case in the opposite direction, and in the latter case the cloth would be moistened by the jacket on the same side as by the steamer C; but in the former case the cloth would be successively moistened on opposite sides. It is obvious that the bed plates *b* and *b'* may be also used for plain pressing simply while the introduction of moisture takes place between *a'* and *b''* only. It is equally obvious that the cylinder *a'*, bed-plate *b''*, and steamer C' may be omitted from the machine and the remaining parts used without them; or the steamer C may be omitted, and also one of the bed-plates *b*, &c. Instead of having steamer C arranged as described, it may be arranged as shown in Fig. 11, where it is placed in the middle of the bed-plate. In this construction the face of the bed-plate forms a trough, *d'*, within which fits the trough-shaped exterior of the steamer, which is extended into the metallic facing *c* of the bed-plate. This facing will be of unoxidizable metal. Within the steamer is the perforated pipe *e*, located beneath a deflector, *g*, and connected with the supply of vapor. Any water formed passes out through the escape-pipe *h*, and the vapor passes onto the cloth through the series of perforations or slot *f*, made in the facing *c*. Figs. 12 and 13 show the steamer separate from the bed-plate.

In place of cylinder *a'* and steamer C' in Fig. 2, may be substituted a contrivance shown in Fig. 14. In this case the walls of the cylinder are perforated and the steamer C is arranged within, so that the vapor which it discharges will pass out upward through the perforations in the walls of the cylinder onto the cloth while under pressure by the bed-plate. The cylinder may in this case be sustained on its exterior and be driven by a gear, *g*. (Shown in Fig. 14.) Another modification is shown in Figs. 15, 16, and 17. Here the cylinder *a'* is provided with a bed-plate, *b*, and has also arranged to bear against it a felt apron which runs on the rollers *m*, *n*, and *o*. Figs. 16 and 17 show the arrangement of frame for supporting these rollers. It consists of three arms jointed upon a central shaft, *p*, and each arm provided with one of the rollers at its extremity. The bearings of the roll *m* are provided with any means of adjustment, so that it may be adjusted away from the shaft *p* and the belt drawn tightly. This adjustment may be effected by means of a set-screw, *m''*, and slot *m'*, between each bearing of the roller *m* and the arm supporting the same, as shown in Fig. 16.

By having the frame arranged so that the rolls *n* and *o* press the apron against the cylinder and drawing the apron tight, a pressure is exerted between the apron and the cylinder. A steamer is arranged, as at *c'*, by which the apron is impregnated with vapor, so that while the cloth is under pressure between the apron and cylinder it will be treated with this vapor. At the same time it will be noticed that the steamer is arranged so as to deposit its moisture on the face of the apron which comes next the cloth, so that just sufficient moisture may be supplied without completely saturating the apron, as would be necessary if the steamer was placed on the opposite side and required to force the moisture through the apron before reaching the cloth.

The cylinder *a'* and bed-plate *b* and the rolls *n* and *o* may all be hollow, so as to be heated by steam. By the above arrangement the cloth, after having received pressure from the bed-plate, will be again pressed in contact with the moistened apron.

The operation of the modification last described might be improved if a heated bed-plate be made to press the apron upon the cloth, as indicated in dotted lines, Fig. 15, or if the rollers *n* and *o* be enlarged so that the effect of their pressure will be increased.

It will be seen that in all cases when the steamer is attached to the heated bed-plates the steamer will be kept hot by the contact with the hot bed-plates, so that there is little or no danger of water forming inside of the steamer; and it is understood that the steam will be turned off automatically from the supply-pipe of the steamer when the feed of the machine stops or at any time when the bed-plates are relieved from pressure and required to be taken away from the cylinder, as shown. Such an arrangement is described in my application, Serial No. 195,943, filed March 20, 1886, and is not separately claimed herein.

The perforations for the steam or moisture may be either in form of holes, in one or more rows, or in the shape of slots, either being the equivalent of the other, and it will be noticed that such perforations of the steamer are inclined toward the direction in which the cloth travels, so that the cloth in traveling over such perforations will not be abraded by the edges thereof, and thus, too, be moistened in a more efficient manner than would be the case if the perforations ran in a vertical line to the path of the cloth.

It will be understood that, without departing from my invention in some cases, the pressure upon the cloth while being moistened will be less intense than the other pressure, and may be so light in some cases as to be in the nature rather of a confinement, which I intend to include by the use of the term "pressure."

I have made the process of treating the cloth herein described the subject of another application, No. 212,703, and therefore make no claim to the same herein.

A certain combination shown in the machine

described in this application has been made the subject of claim in an application filed by me June 9, 1887, Serial No. 240,712, and I do not wish to be understood as making the same claim herein. The said claim is as follows:

In combination, the following elements: A pressing-surface; a second pressing-surface opposite to the first; a steamer provided with a pressing-surface, which is also opposite to the first, and means whereby both the second pressing surface and the steamer are pressed against the cloth in opposition to the first pressing-surface, the second pressing-surface being arranged in advance of the steamer, whereby the cloth is pressed between dry surfaces and then pressed with the presence of steam or moisture, substantially as described.

The constructor of the machine described in this application may find the modifications shown in Figs. 11, 12, 13, 14, 15, 16; and 17 to be useful; but, excepting as the machine when containing the same may come within the scope of general claims, I do not wish in this application to lay claim to the specific subject-matter therein shown.

In an application filed by me December 27, 1887, No. 258,997, the specific modification shown in Fig. 14 herein is included; and I therefore make no claim herein for the special features of this modification in contradistinction to the other arrangements shown.

In an application filed December 27, 1887, Serial No. 258,998, the specific modification shown in Figs. 15, 16, and 17 herein are included; and I therefore do not make any claims herein to the specific features shown in said modification in contradistinction to the other arrangements shown.

In an application filed by me April 16, 1888, Serial No. 270,825, I have shown and described certain features which are shown and described herein; but to the extent that they are claimed in said application I do not propose to claim herein. Among these features may be mentioned the employment in the machine of an end frame having its openings and parts arranged so as to render the pressing-surfaces accessible from the end of the machine, and at the same time to provide for the support of the bed-plates and the upper cylinder above the main cylinder; also, the arrangement of the end frames, so that the bearings of the bed-plates project out through openings provided in the same, and the devices for supporting and actuating the bed-plates are arranged, respectively, inside and outside of the end frame; also, the details of the mechanism for supporting and actuating the bed-plates and the adjustability of said mechanism; also, the particular arrangement shown, whereby the gear-wheels are shifted to change the motion of the upper cylinder; but for greater certainty reference is made to the claims of said application.

I do not, however, intend in the claims at the end of this application to limit myself by general reference to devices, to the described de-

vices, since I am aware that in many cases the devices shown and described may be varied without departing from the scope of my invention.

I claim —

1. In combination, a cylinder and a surface, whereby pressure is exerted upon the cloth against the cylinder provided with perforations, connected with a supply of moisture, whereby the cloth is treated with moisture while under pressure, substantially as described.

2. A cloth-pressing machine having devices constructed to press the cloth at three points, the pressing-surfaces at the intermediate point being provided with means for depositing moisture on the cloth while under pressure, and the pressing-surfaces at the other two points being adapted to exert a comparatively dry pressure, substantially as described.

3. A machine for pressing cloth, having pressing devices constructed to press the cloth, a heated surface traveling in contact with the cloth after receiving a pressure, and a second pressing-surface, to press the cloth against said heated surface, provided with means, substantially as described, to permit moisture to be deposited on the cloth while the latter is traveling in contact with said heated surface and under pressure, substantially as described.

4. In combination, a cylinder and two bed-plates, and a pressing-surface provided with perforations interposed between the bed-plates, whereby, after receiving pressure, the cloth may be moistened while the pressure is retained, substantially as described.

5. In combination, a cylinder and two bed-plates, and a steamer or moistener provided with a pressing-surface attached to one bed-plate and extending nearly to the opposite bed-plate, whereby the cloth will be retained almost continuously under pressure, substantially as described.

6. In combination, a cylinder, a bed-plate, means for heating the bed-plate, and a steamer or moistener connected with the bed-plate, whereby the heat from the bed-plate will heat the steamer, so as to produce the proper conditions for the use of the steamer, substantially as described.

7. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a pressing-surface arranged to press the cloth against the moistened jacket on the second cylinder, substantially as described.

8. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a bed-plate arranged to press the cloth against the moistened jacket on the second cylinder, the said bed-plates being provided with means for heating the same, substantially as described.

9. In combination, two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a bed-plate arranged to press the cloth against the moistened jacket on the second cylinder, the said second cylinder being provided with means for heating the same, substantially as described.

10. In combination, the two cylinders, two bed-plates operating with the first cylinder, the steamer arranged to moisten the cloth in contact with the first cylinder, the moisture-absorbing jacket enveloping the second cylinder, a steamer or moistener for supplying moisture to the jacket, and a pressing-surface arranged to press the cloth against the moistened jacket on the second cylinder, substantially as described.

11. In combination, the two cylinders, a bed-plate operating with the first cylinder, a bed-plate operating with the second cylinder, a moisture-absorbing fabric interposed between the second cylinder and its bed-plate, and a moistener or steamer for moistening said fabric, whereby the cloth will be pressed with the moistened fabric against the second cylinder, substantially as described.

12. In combination, the two cylinders, a bed-plate operating with the first cylinder, a moisture-absorbing fabric operating with the second cylinder, a steamer or moistener for moistening the fabric, and mechanism whereby the moistened fabric and the cloth are pressed together against the second cylinder, substantially as described.

13. In combination, the two cylinders a a' , the bed-plates b b' b'' , the three-armed lever connected with each of said bed-plates, and mechanism whereby said lever is reciprocated, substantially as described.

14. In combination, the two cylinders a a' , the bed-plates b b' b'' , the rods j , whereby two

of the bed-plates are supported, the reciprocating bearings whereby the third bed-plate is supported, and the three-armed lever connected with each bed-plate, substantially as described, whereby the weight of the two bed-plates tends to counterbalance the weight of the third, substantially as described.

15. In combination with a bed-plate, a lever whereby it is reciprocated, and the jointed links 1 2, provided with the handle 4, whereby the lever is reciprocated, substantially as described.

16. A cloth-pressing machine having a cylinder and a bed-plate and a steamer, the steamer being arranged to deposit steam upon the cloth after receiving pressure by the bed-plate, and also being provided with a pressing-surface whereby the cloth is held against the cylinder while being moistened, substantially as described.

17. A cloth-pressing machine having a cylinder and a bed-plate and a pressing-surface, the said pressing-surface being provided with means for depositing moisture on the cloth as it is held against the cylinder, substantially as described.

18. In combination, the cylinder a , the bed-plates b and b' , and the swinging-rods j j , by which the bed-plates are suspended from above, the points of suspension being a greater distance apart than the diameter of the cylinder, whereby the weight of the bed-plates assists in relieving the pressure, substantially as described.

19. In combination, the cylinder a , the bed-plates b and b' , the pendants j j , by which the bed-plates are suspended from above, an actuating-lever, and the rods l l' , by which the bed-plates are connected with said actuating-lever, substantially as described.

DAVID GESSNER.

Witnesses:

MAURICE J. ROACH,
CHARLES T. WARD.