

No. 626,646.

Patented June 6, 1899.

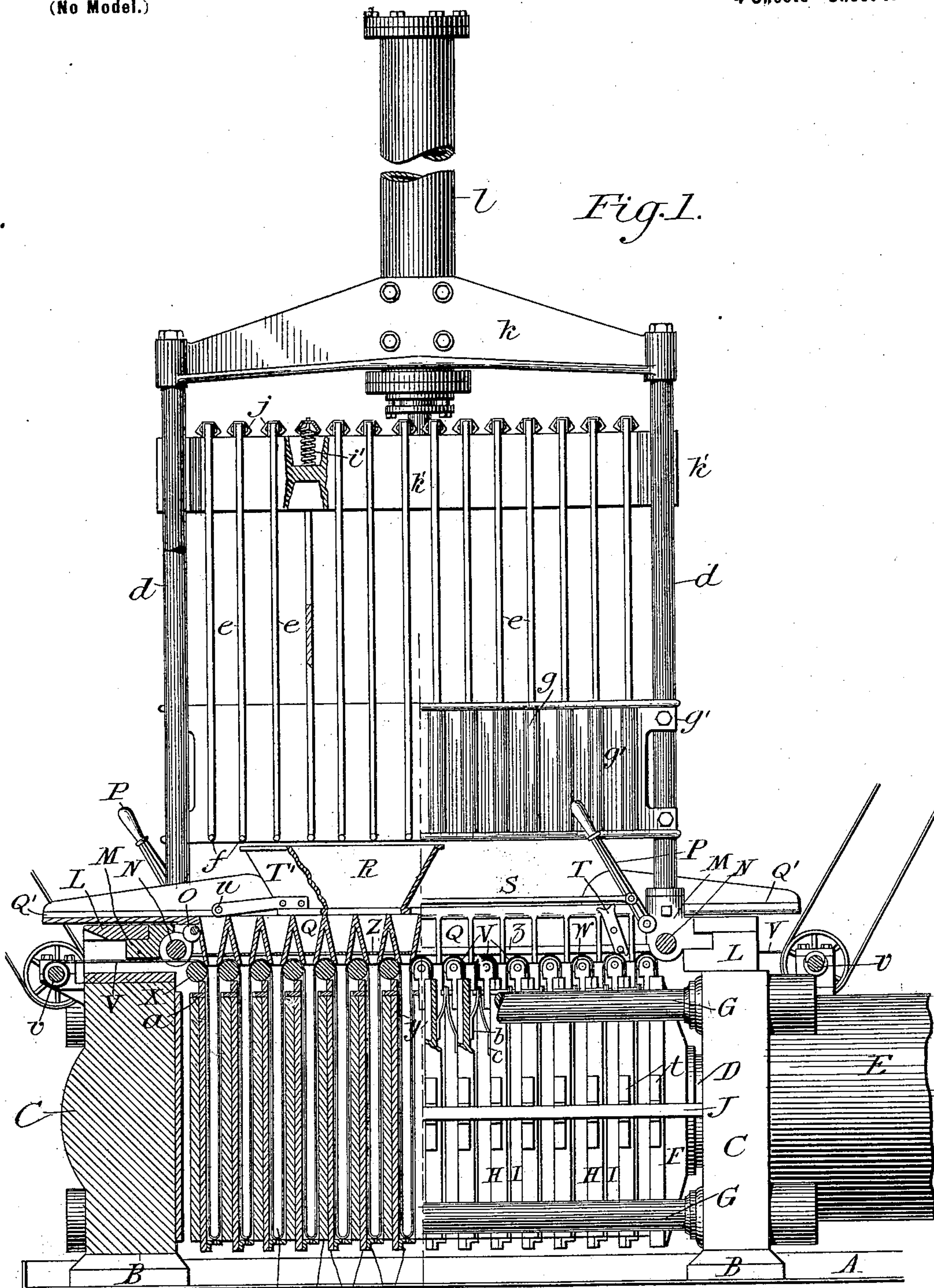
L. BAGGETT.

PRESS FOR EXPRESSING LIQUIDS FROM SOLIDS.

(Application filed Apr. 1, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:  
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Inventor:  
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By Stowson & Stowson,  
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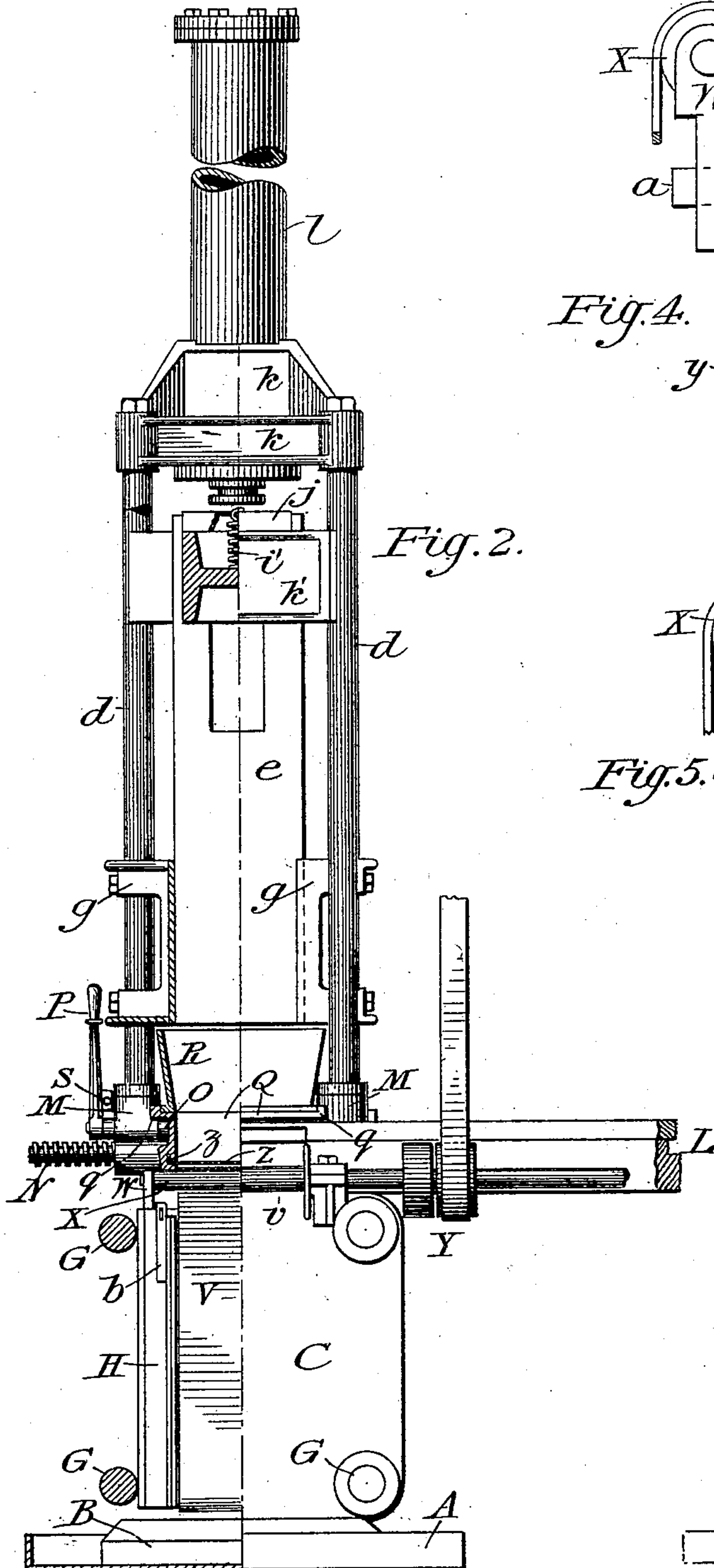


Fig. 2.

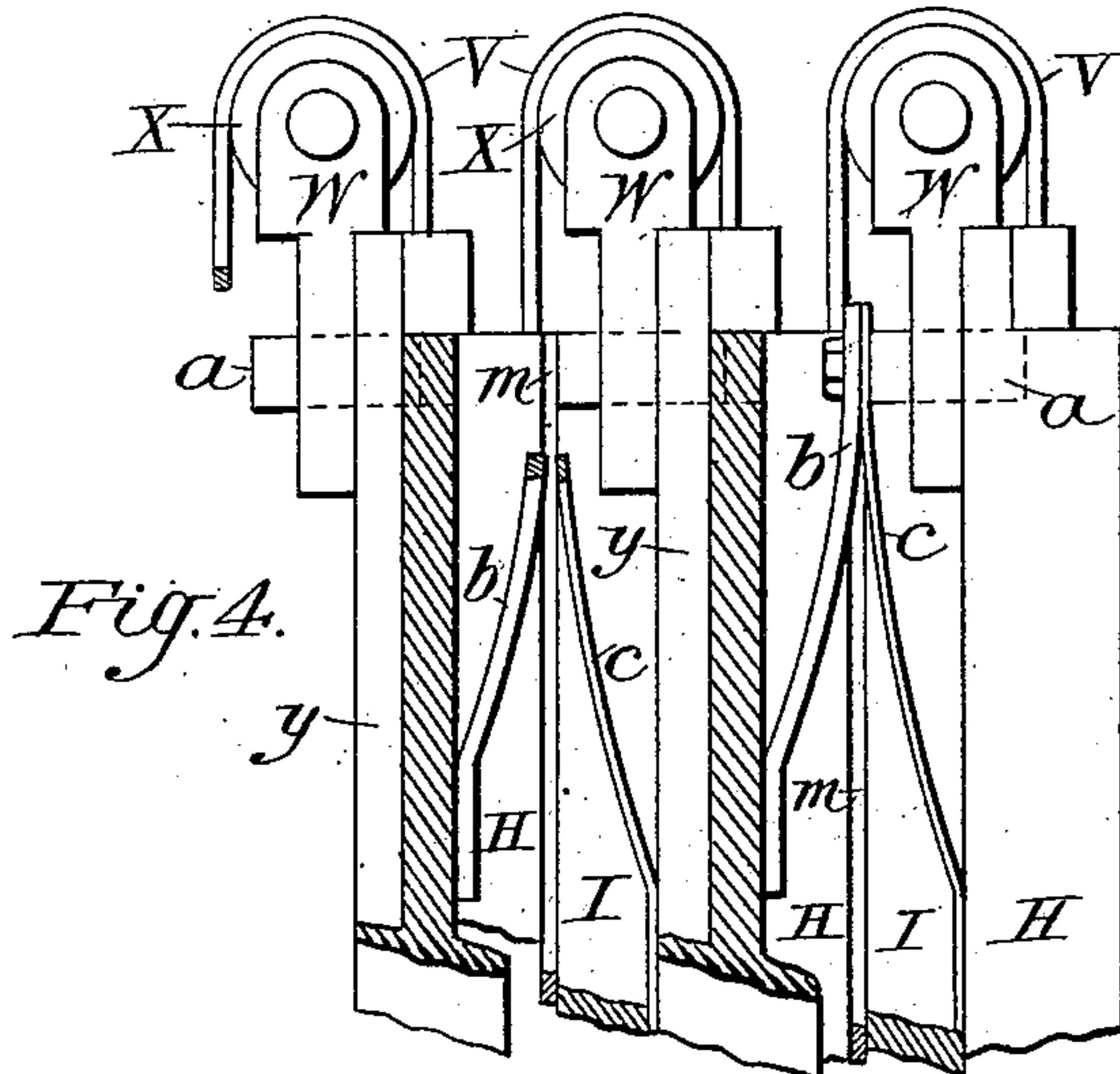


Fig. 4.

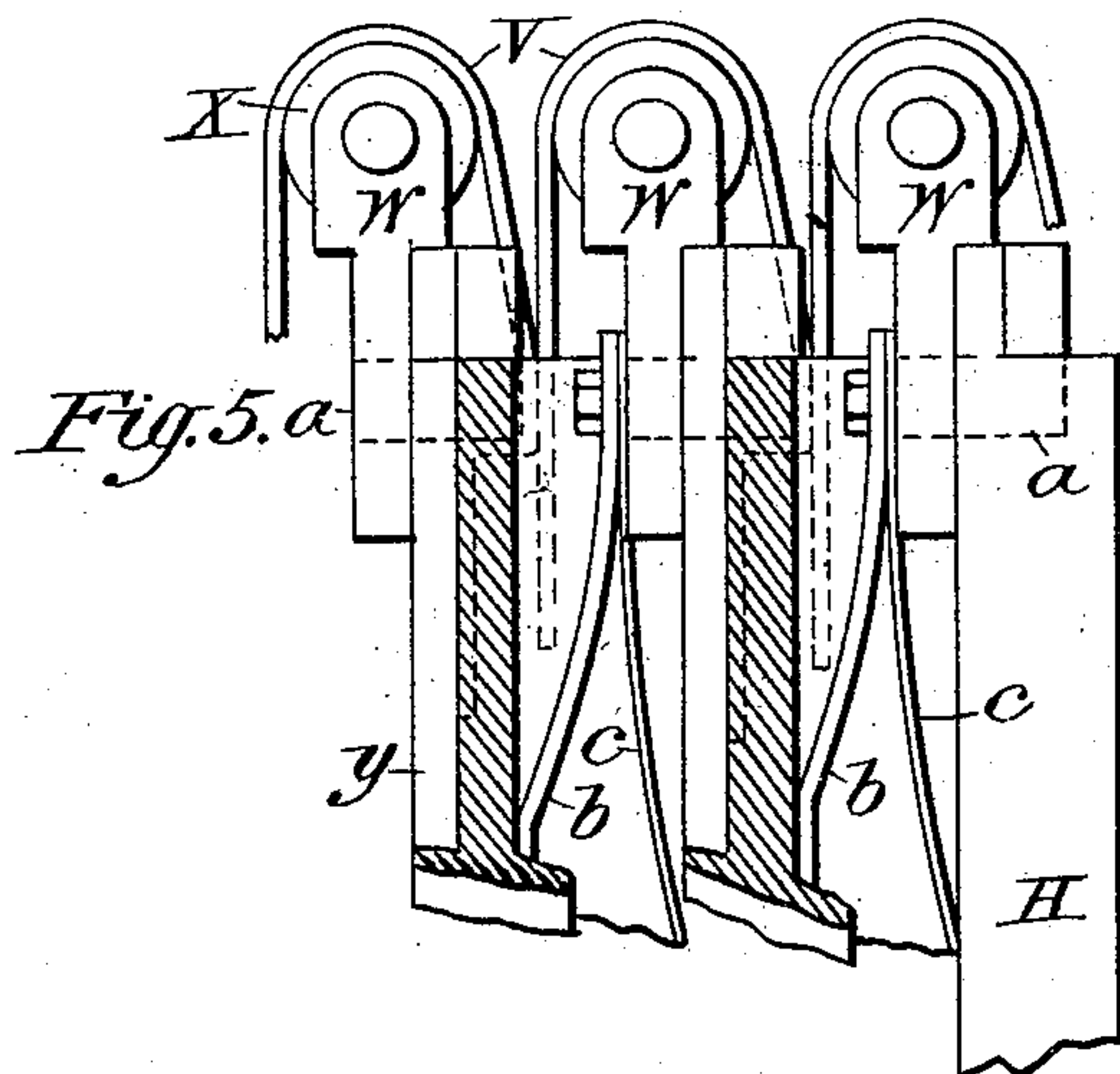
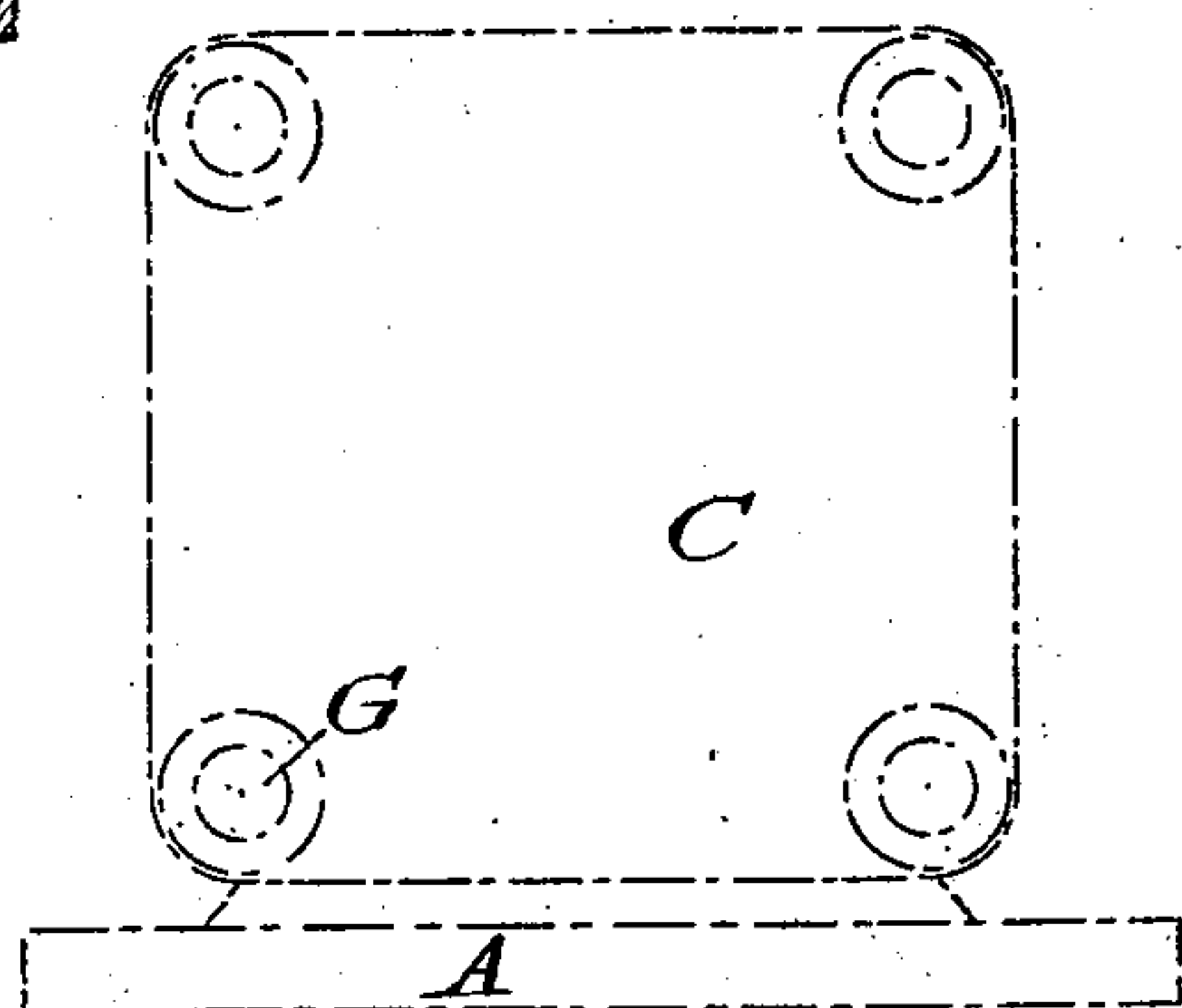


Fig. 5.

Fig. 3.



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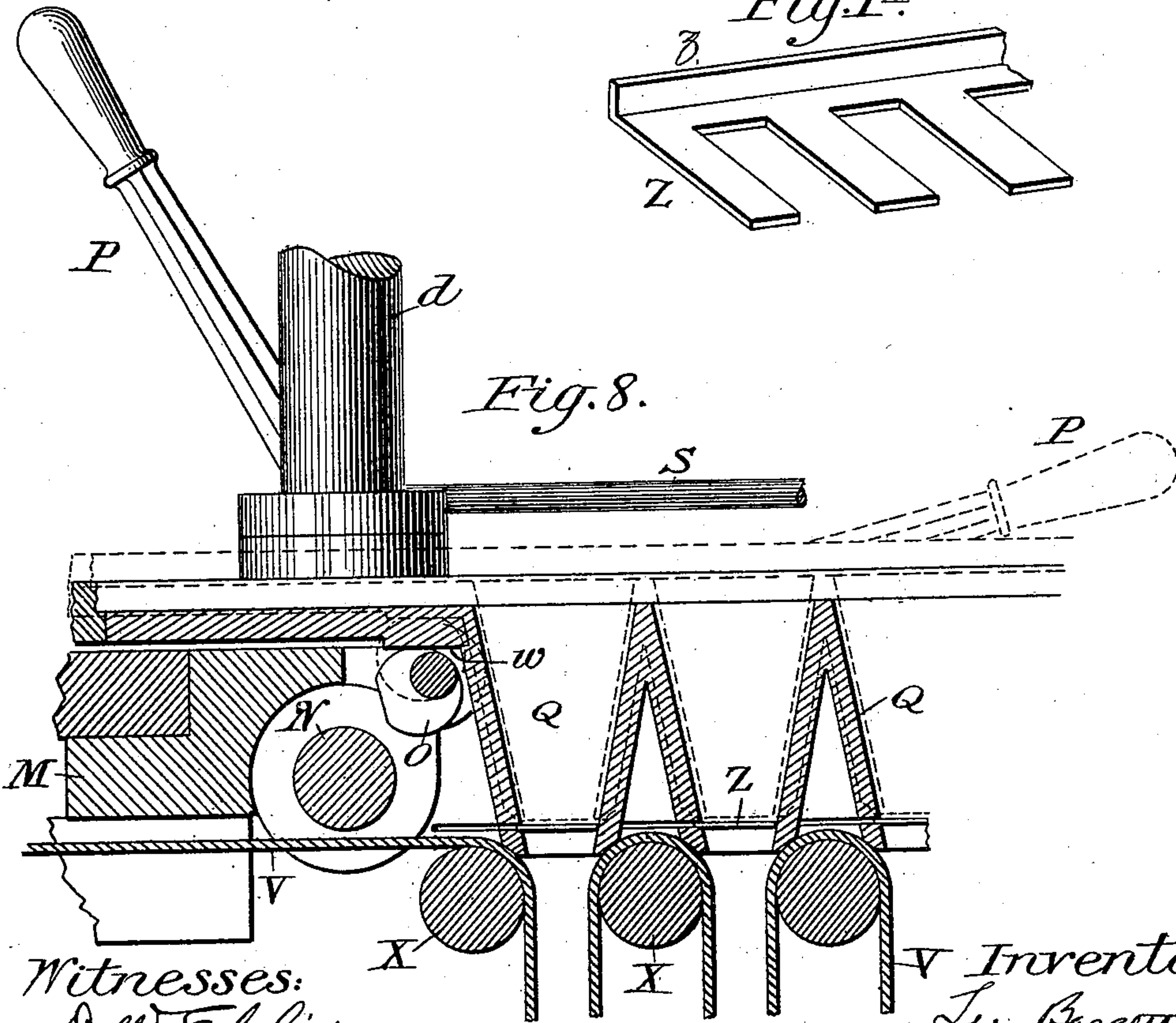
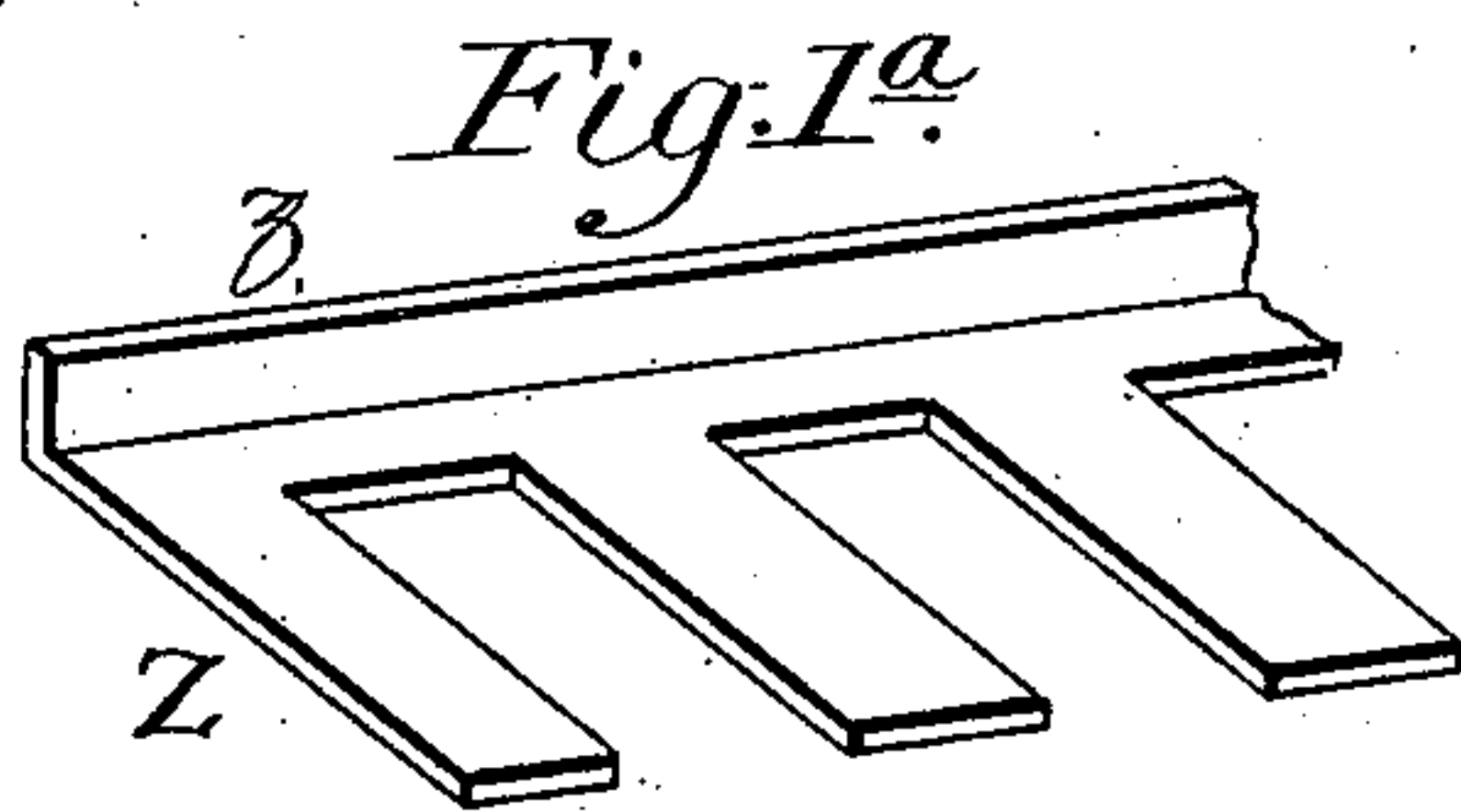
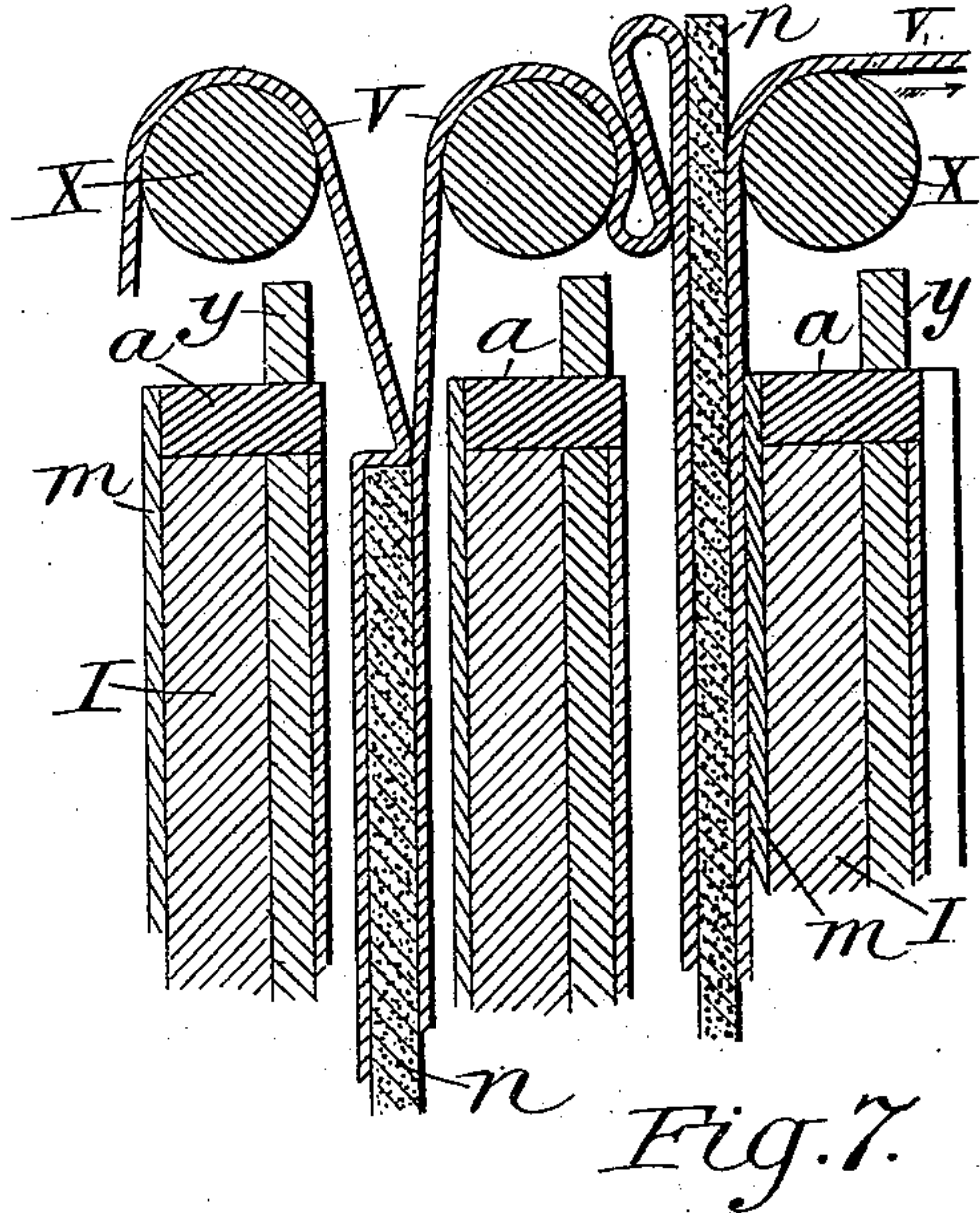
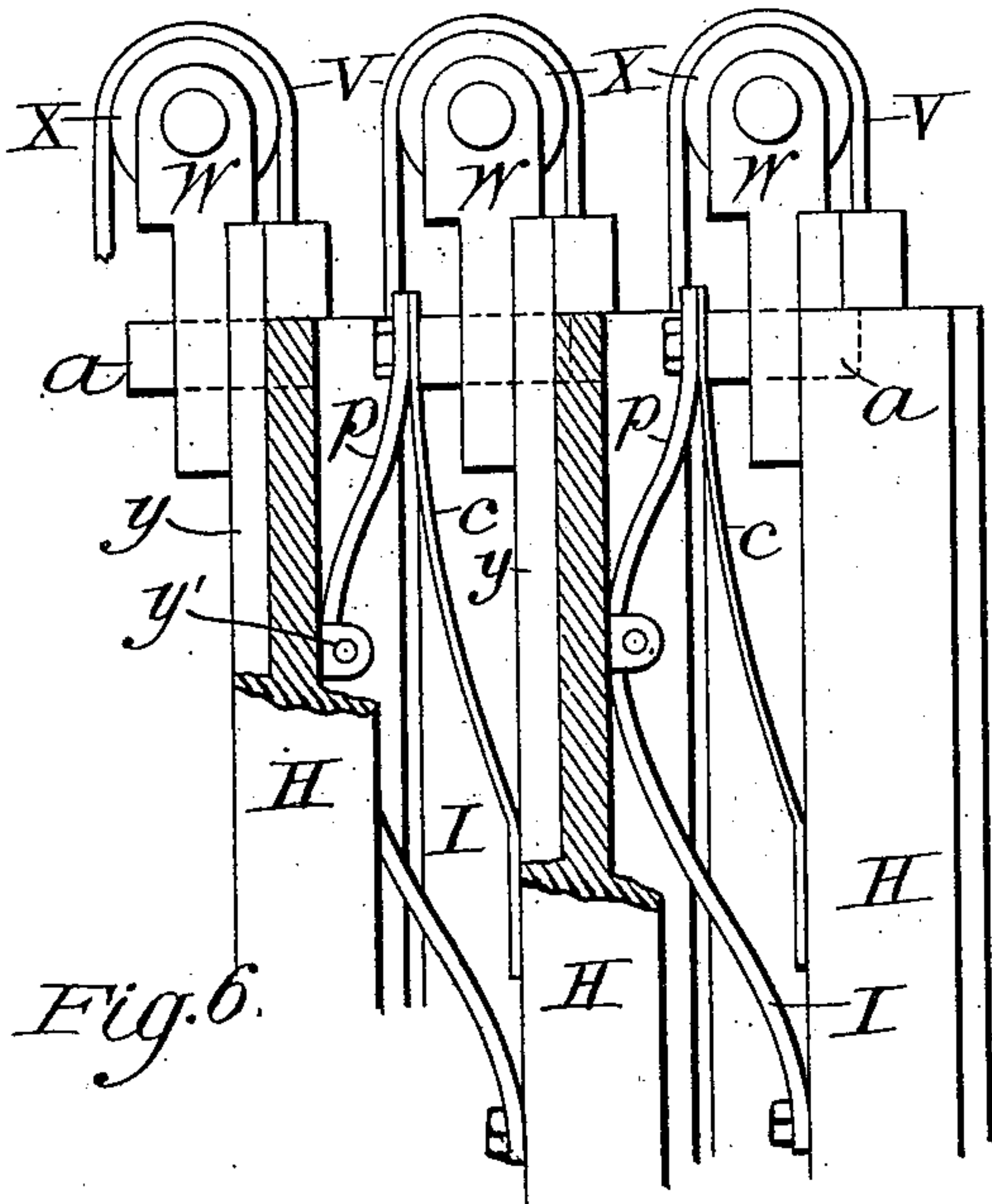
L. BAGGETT.

PRESS FOR EXPRESSING LIQUIDS FROM SOLIDS.

(Application filed Apr. 1, 1899.)

(No Model.)

4 Sheets—Sheet 3.



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**No. 626,646.**

**Patented June 6, 1899.**

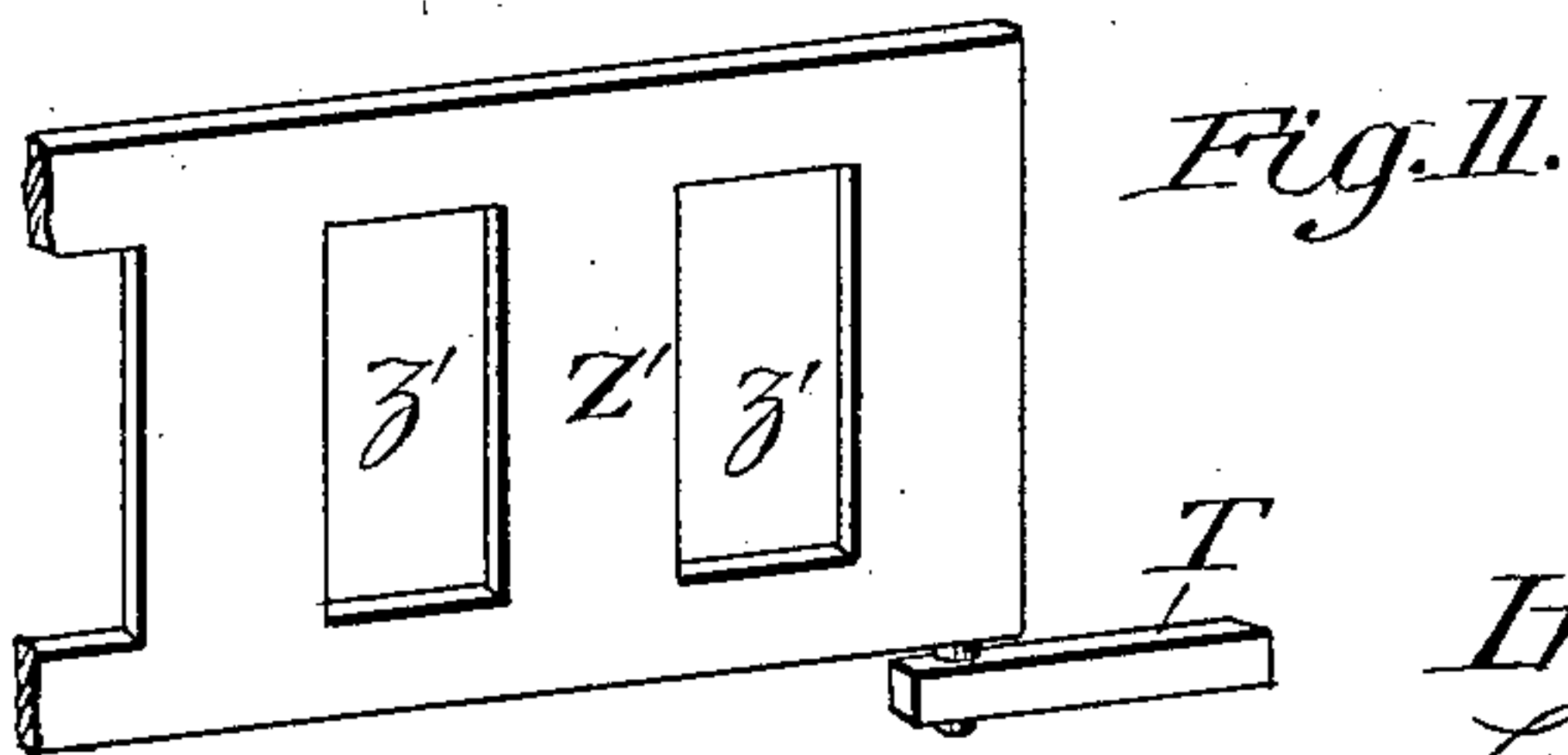
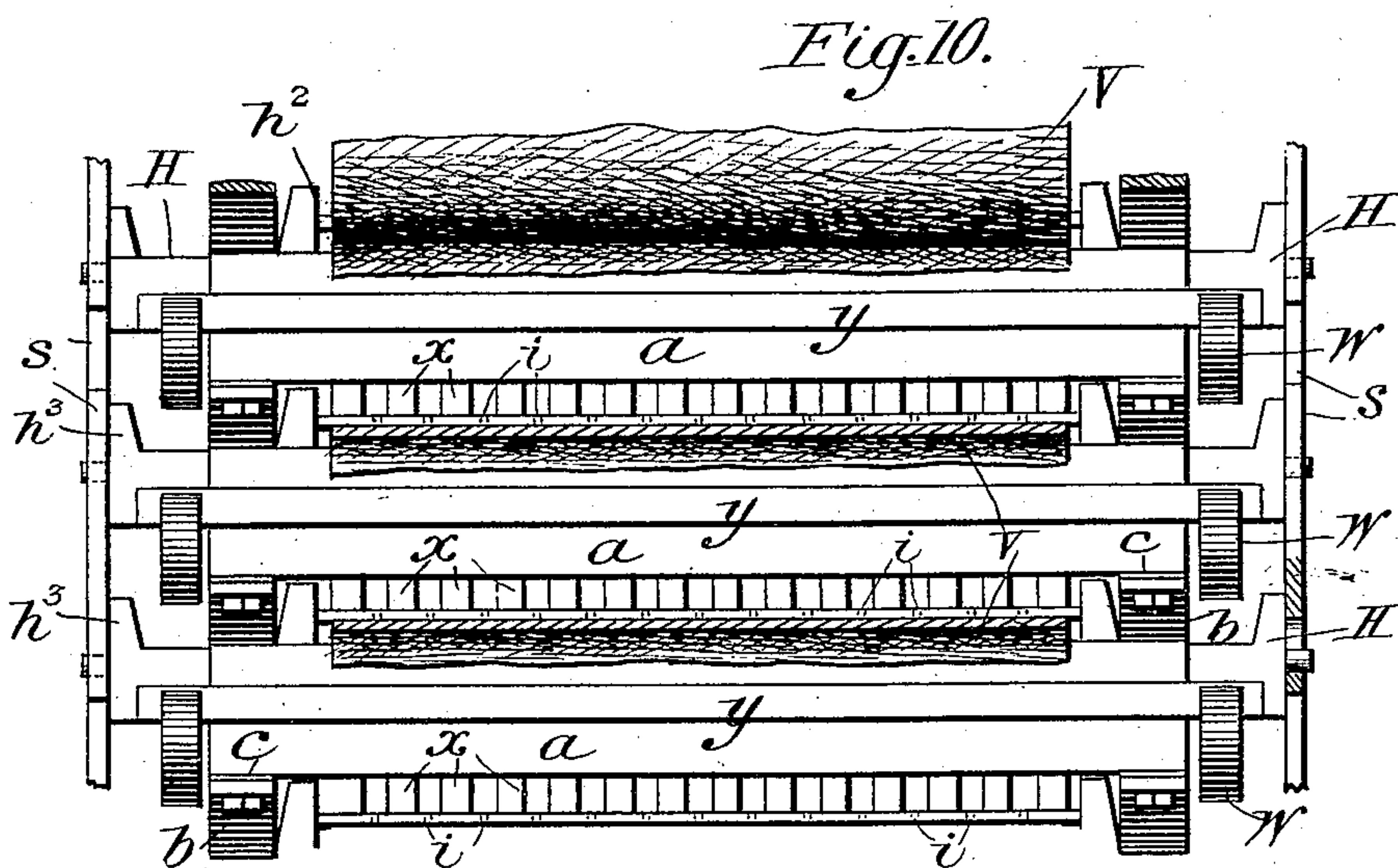
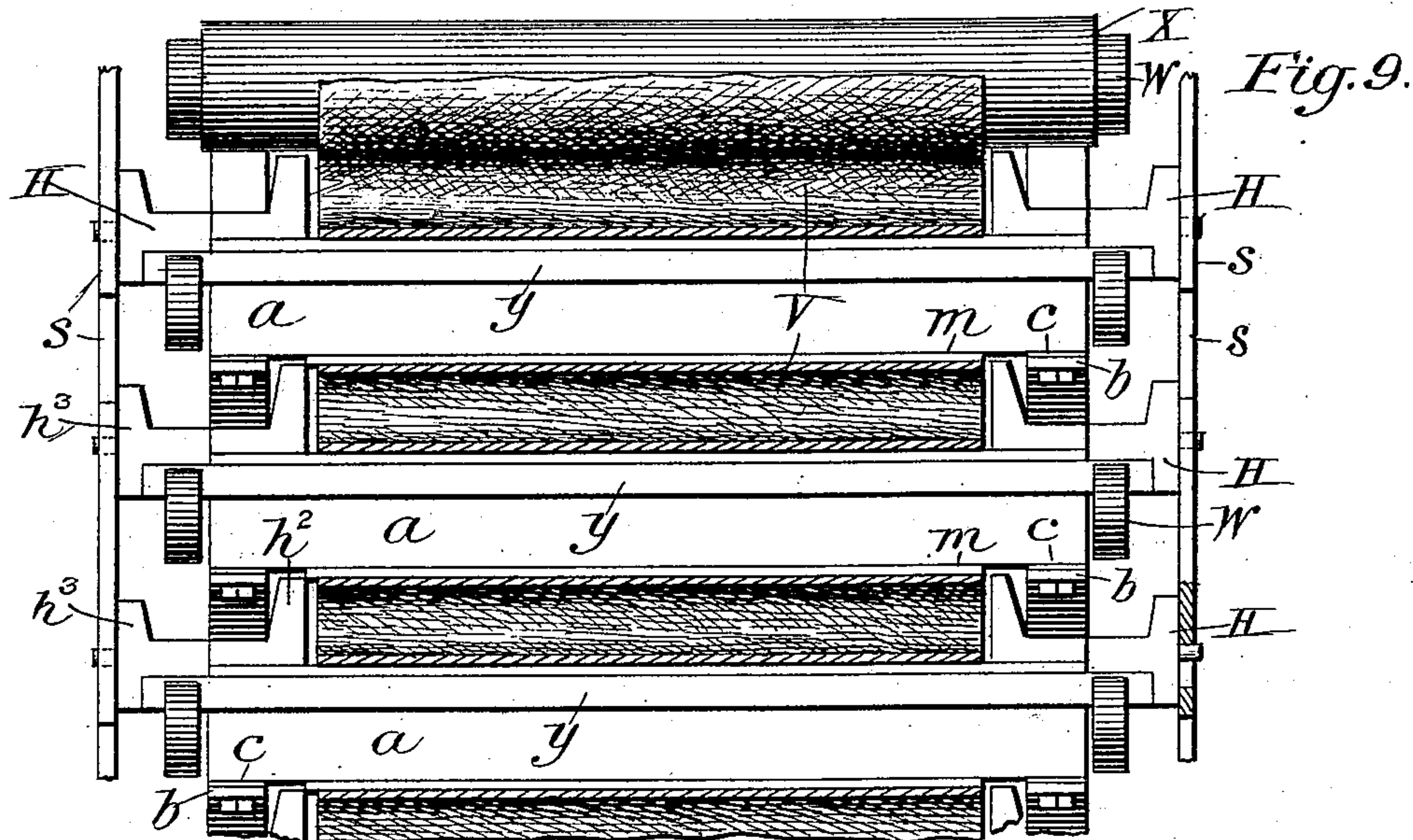
**L. BAGGETT.**

**PRESS FOR EXPRESSING LIQUIDS FROM SOLIDS.**

(Application filed Apr. 1, 1899.)

(No Model.)

**4 Sheets—Sheet 4.**



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# UNITED STATES PATENT OFFICE.

LEE BAGGETT, OF JACKSON, MISSISSIPPI.

## PRESS FOR EXPRESSING LIQUIDS FROM SOLIDS.

SPECIFICATION forming part of Letters Patent No. 626,646, dated June 6, 1899.

Application filed April 1, 1899. Serial No. 711,393. (No model.)

*To all whom it may concern:*

Be it known that I, LEE BAGGETT, a citizen of the United States, residing at Jackson, in the county of Hinds and State of Mississippi, have invented certain new and useful Improvements in Presses for Expressing Liquids from Solids, of which the following is a specification.

My invention relates generally to presses for expressing liquids from solids, and particularly to that class of presses in which there is employed a series of press-boxes utilizing filtering material, such as filtering-cloth, for inclosing the solids, preferably in a powdered or granular condition, in which boxes the solid material to be treated is subjected to pressure and from which the liquid drains into a suitable receptacle as it is expressed from the solid.

The objects of my invention are, first, to provide means for placing the filter-cloth in the press-boxes and charging the said boxes with the material to be acted upon, thereby dispensing with the present necessity in the operation of presses of this character for the use of separate formers for molding or forming the material into cakes or blocks previously to charging the same into presses; second, to provide improved means of charging the boxes, so that a cake of uniform density throughout its extent will always be obtained; third, to provide means for automatically closing the fronts or tops of the boxes, according as the press may be what is known as the "horizontal" or "vertical" press, and to prevent the cloth and material contained therein from creeping when the pressure is applied, thus avoiding breaking of the cloth by obviating the strain on the cloth to which it might otherwise be subjected and also avoiding displacement of any of the material from the boxes at the open sides, as the case may be; fourth, to provide means for charging one or more presses by a single charging apparatus adapted to be readily shifted from one press to another either automatically or otherwise, as desired; fifth, to provide means for automatically ejecting the cake of material from the press-box after the liquid has been extracted therefrom, stripping the filtering-cloth therefrom, and delivering the cake to a

suitable place, and, lastly, to improve the construction and mode of operation of presses of the character hereinbefore defined, whereby greater economy in the operation of the press with expenditure of the same or less power, resulting in increased production, and a material reduction in the number of operators necessary to work each press are secured, thus reducing the cost of labor and, further, securing an increase in the durability or length of life of the parts, particularly of the filter-cloths.

With these general objects in view my invention consists, first, in means for automatically placing the filtering material or cloth in the boxes or chambers; second, in improved means for charging the press-boxes in a single press with a predetermined amount of material and in means for charging a battery of presses by the use of a single charging apparatus movable from one press to another; third, in the use of a continuous filtering-cloth, in combination with means for forcing separate folds or portions of the said cloth into a plurality of boxes which have open sides, and particularly those open sides through which the material has been charged, and, lastly, in the details of construction hereinafter described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a press, partly sectional, showing the application of my invention thereto. Fig. 1<sup>a</sup> is a perspective detail hereinafter referred to. Fig. 2 is an end elevation of the same, partly sectional. Fig. 3 is a diagrammatic view of a sufficient part of a press showing the location, with reference to the press shown in Fig. 2, of two or more presses. Fig. 4 is a sectional detail of the means for automatically closing the open sides of the boxes. Fig. 5 is a similar view showing the parts in closed position. Fig. 6 is a similar view of a modification thereof. Fig. 7 is a sectional detail showing the means for stripping the filtering material from the cake. Fig. 8 is a sectional detail of a part of the upper portion of the boxes, illustrating the means for clamping the filtering-cloth to the boxes. Figs. 9 and 10 are plan views showing mechanism for closing



the tops of the boxes in the act of closing and closed, respectively; and Fig. 11 is a detail of a modification.

I have shown in the drawings my invention as applied to a horizontal press, as that is a convenient form to which the improvements may be applied; but it is to be distinctly understood that my invention is not limited thereto, as it is obvious that it may be applied to any form of press employing boxes in which the material is subjected to pressure for expressing liquid therefrom whether such boxes be arranged to receive the pressure in a horizontal, vertical, or other direction, and in this specification I shall use the term "open" side or top to designate that side through which the material is introduced into the box, with the understanding that I do not thereby limit the invention to the horizontal press shown.

Referring now to the drawings, in which the same reference characters relate to the same or corresponding parts in all the views, A indicates an oil pan or trough adapted to receive the liquid as it passes from the press, said pan also serving the purpose of catching any leakage from the hydraulic connections where hydraulic means are used for operating the press, and from which pan the drained liquid is led through suitable pipes or outlets to tanks or reservoirs, as usual in this class of machines.

The foundation or supporting structure of the machine consists of the base-blocks, B upon which rest the stationary heads C, such heads being connected by suitable stay-rods G, thus forming a rigid and strong supporting structure.

E indicates a sufficient portion of a hydraulic cylinder for operating the press-boxes, from which cylinder extends a ram D, carrying at its outer end a follower or head F, to which is secured the first plunger I of the series of plungers which are adapted to telescope into the several boxes, the said first plunger telescoping into the first box in the series.

Each box consists of a plate  $y$ , to which is attached at its back a plunger I, adapted to telescope into the adjacent rear box, the sides of the box being closed by channel-bars H, the inner flange of which,  $h^2$ , constitutes the side of the box, the plate  $y$  being secured to the side of said bar opposite the said flange, while the outer flanges  $h^3$  of said channel-bars on the same side of the press are connected together by the usual slotted links  $s$ . The plunger-plate I consists, preferably, of a metal plate  $m$ , which is provided with perforations  $i$ , located between drainage-bars  $x$ , secured to said latter plate, and the bottom of the box is closed by a channel-bar K, having its flange perforated to permit drainage from the box.

In order to maintain the press-boxes in alinement as they are moved by the ram, guide-rods J, extending between the two heads C, engage guiding-ears  $t$ , carried by the boxes.

The foregoing construction, with the exception of the specific form of the boxes, is substantially the same as that in common use, and the details thereof need not be specifically described, as it is well known that in such construction the material from which the liquid is to be extracted is first placed in a former or mold having therein a filter-cloth, said cloth being folded over the mass, so that when the same is subjected to pressure the material will be pressed into the form of a cake adapted to fit the press-box. From the former the cake contained in the filter-cloth is in the present practice removed and inserted into the press-box, and when all the boxes are filled one by one pressure is applied through the medium of the ram, thereby extracting the liquid. When the liquid is all extracted, the ram is reversed, relieving the pressure and at the same time withdrawing the boxes from one another. The cake in each box is then removed by hand and the filter-cloth stripped therefrom for further use. Aside from the great loss of time incident to this slow process of first forming the cakes and then introducing them separately into the several boxes frequent accidents occur to the operator of the former, whose hands are not only subject to injury therein, but are often burned in manipulating the hot cakes, particularly in treating cotton-seed meal for extracting cotton-seed oil, and considerable quantity of the material is spilled around the former and the floor adjacent thereto, which is either lost or partially deprived of its oil-producing quality through the necessity of re cooking, producing an inferior quality of oil. By my improvements I dispense with this tedious process of first forming the cakes and then transferring the same to the press-boxes, and at the same time avoid the equally tedious and costly operation of stripping the cloth from the cakes and overcome the serious objections above noted, and I will now describe such improvements.

Mounted upon the heads C are grooved slide-ways L, which support base-blocks M, having screw-threaded perforations engaged by screws N, said base-blocks supporting rods  $d$ , connected at their upper ends by a suitable cross-piece  $k$ , carrying a hydraulic or other suitable power-cylinder  $l$ . Mounted to slide upon the rods  $d$  is a cross-head  $k'$ , to which is attached a series of plate-plungers  $e$ , corresponding in number to the boxes and adapted to be brought into alinement with said boxes. These plungers are guided vertically by suitable guides  $g$ , carried by plates  $g'$ , fixed to the rods  $d$ . In order to provide for a limited amount of yielding movement of the plunger  $e$  with respect to the cross-head  $k'$ , I preferably connect each of the plungers to the cross-head by a yielding connection, which in the present instance consists of a spring  $i'$ , attached to the cap  $j$  on the upper end of the plunger above the cross-head, the lower end of said spring bearing upon the web of the



cross-head, which is preferably in the form of a channel-beam. It will be observed that the upper part of each plunger is cut away, so that there is one member of the fork thus  
5 formed on each side of the cross-head guided in suitable grooves therein.

It is obvious that the plungers may be operated by any suitable power-operating means and that such means—as, for example, the cylinder shown—may be placed in any desirable position and suitably connected to the plungers as the conditions may require.

The cap *j*, fixed to the upper end of the plunger, serves to limit the downward movement of the plungers, and under ordinary conditions is in contact with the upper face of the cross-head. Each of the plungers is preferably provided with an antifriction-roller *f* at the lower end.

20 Journalled in suitable bearings at each end of the press is a reel *v*, over which the filter-cloth in a continuous web *V* is wound, such reels being preferably provided with a suitable means for rotating the same, such as a belt and pulley *Y*, driven from any suitable source of power and provided with the usual clutches or shifting mechanism for throwing the same  
25 into and out of action. As shown in the drawings, the web of filter-cloth rests over the open sides of the boxes, the said sides of which boxes are preferably provided with antifriction-rolls *X*, mounted in suitable bearings *W*, secured to the said boxes in any suitable way, into contact with which rolls the  
30 cloth is adapted to move, whereby the passage of the cloth into the boxes is facilitated.

I should state here that while my invention is not limited to the use of antifriction-rollers on the boxes or on the ends of the plungers I  
40 deem it desirable to use both of these features, because by the use of the former the introduction of the cloth into the boxes is accomplished with the least expenditure of power and the least strain on the cloth, and by the  
45 use of the latter not only are these advantages derived, but the removal of the cakes and the stripping of said cakes from the cloth are greatly facilitated, while the strain upon the cloth incident to the operation of ejecting the  
50 cakes and stripping them from the cloth is reduced to a minimum.

Mounted between the rods *d*, above the press-boxes, is a funnel structure for charging the press-boxes, consisting in the present  
55 instance of a series of funnels *Q*, connected together and having at each end a table extension *Q'*, underneath which extension, at each end of the press, is a shaft carrying a cam *O*, adapted to engage the under side *w*  
60 of the table extension *Q'*; said shaft being preferably journaled in the base-blocks *M* and having a handle *P*, the two handles being connected by a rod *S*, the purpose of which construction is to provide means for raising  
65 and lowering the funnel structure to a limited

extent, as hereinafter more particularly described.

Slidably mounted upon the funnel structure is a carrier or hopper *R*, which is adapted to be traversed back and forth over the tops of  
70 the series of funnels, such hopper being laterally confined by suitable guide-rails *q* on the funnel structure. This hopper when out of action rests upon the table extension *Q'* of the funnel structure at either end. Attached  
75 to the hopper *R* is an arm *T'*, carrying a pin *u*, which is adapted to engage a lever *T*, pivoted upon the side of the funnel structure, the lower end of which lever is provided with a fork engaging a pin upon a slide-bar *z*, carrying a series of plates *Z*, sliding in slots or  
80 grooves, (see Fig. 1<sup>a</sup>,) adapted to be brought into register with the funnels for closing said funnels to prevent the flow of material into the press-boxes. When the hopper *R* is moved,  
85 for example, from the right-hand table *Q'* to the left, the pin *u*, engaging the lever *T*, causes the latter to move the slide *z*, thus closing the funnels, the further traverse of said hopper effecting the filling of the funnels in succession, and on the reverse movement of the hopper the said pin *u*, contacting with the lever  
90 *T*, will move the slide, thereby moving the plates or valves *Z*, carried by said slide *z*, away from the funnels, permitting the material to be discharged into the press-boxes.

Instead of separate plates *Z*, attached to a slide, as described, a single plate *Z'*, having perforations *z'*, adapted to register with the funnels, may be employed, the lever *T* in such  
100 case engaging a pin on the plate, the imperforate portions of which act as the closing-valve for the funnels, as shown in Fig. 11.

In order to place the filter-cloth within the press-boxes, the funnel structure, with the  
105 plates *Z* withdrawn from register with the funnels, is raised by the cams *O*, so that the lower ends of the funnel will be slightly above the filter-cloth, which extends over the open sides of the press-boxes. Power is then applied to the cross-head *k'*, thereby moving  
110 the same, with the plungers *e*, into contact with the cloth, the lower ends of such plungers engaging the filter-cloth and in their further movement carrying the same in a series  
115 of folds into the press-boxes, one fold in each box, thus lining the said box with such cloth. The cams *O* are then operated to lower the funnel structure, so that the lower edges of the funnel will clamp the cloth at the upper  
120 ends of the said boxes. The plungers are then raised by their operating means, leaving the filter-cloth in a series of folds within the several press-boxes, as shown in Fig. 1. The boxes are then filled by the hopper in the  
125 manner hereinbefore indicated and the funnel structure raised out of contact with the said box and cloth. Pressure is then applied in the usual way through the medium of the ram, and the liquid is extracted from the ma-  
130



material contained in the said boxes within the filter-cloth, such liquid flowing out through the perforations or slots in the plunger-plates I and through the perforated bottoms or sides of the boxes into the pan A.

In order to close the open side of the box through which the filter-cloth and the material have been fed, I provide a simple automatically-operating mechanism. The essential feature of this mechanism resides in the fact that it is controlled by some moving part of the machine, so as to effect the closure as the pressure is applied, and it is preferably controlled by the pressure-operating mechanism, so that as the boxes begin to move under the influence of the pressure device they will be closed sufficiently in advance of the extreme pressure to prevent creeping. In the present instance I have shown means operated by the movement of the boxes, such means constituting connections between the boxes and the pressure device. I find a convenient form of this closure mechanism to be that shown in Figs. 1, 4, and 5. Slidably mounted in a slot at the upper end of each of the plates *y* is a closing or cut-off plate *a*, which is normally retracted by a spring *b*, connected at its lower end to a channel-bar *H* and having its upper end bearing against and preferably attached to the said plate *a*, such spring being of such strength that when pressure is applied by the ram and the boxes begin to move, so as to telescope one within the other, the tension of the spring will cause the plate *a*, which bears against the filter-cloth, to move the said plate until it confines the filter-cloth against the plunger-plate *I* of the box in front of it, thus effectually closing the opening of the box. If the press be used upon material not needing a filter-cloth, it is obvious that the cut-off plate will be moved so as to completely cover the open side of the box. By this construction the creeping of both cloth and material is prevented, thereby obtaining a uniformly dense cake under compression, and also preventing undue strain upon the cloth when the latter is used. I should also observe that by the elimination of the end strain upon the cloth I am enabled, if desired, to dispense with the necessity of using an expensive filter-cloth, such as that made of camel's hair, now commonly employed, because a cloth of less strength may be substituted therefor.

In order to facilitate the return of the closure-plate to its normal position, I provide a lighter spring *c*, acting in opposition to the spring *b*. In some cases as a modification of this closing device I use, as shown in Fig. 6, a rod *p*, attached at its upper end to the closure-plate *a* and at its lower end to the channel-bar of the same box and confined at or near its middle portion by a pin *y'*, passing through ears on the back of the channel-bar of the closing-box. This construction may be more desirable where quicker and

more positive action is deemed necessary, in which case the part *p* may be in the form of a rod instead of a spring, such rod being illustrated in Fig. 6.

After the liquid has been extracted from the material in the several boxes and the ram retracted I can readily strip the filter-cloth from the cakes and remove the same from the boxes by throwing into action suitable mechanism for revolving the reels on which the cloth is carried—as, for example, the pulleys shown—under which action, as shown in Fig. 7, the cloth, moving in the direction of the arrow, strips thoroughly from that side of the cake and partially from the opposite side, at the same time drawing the said cake *n* out of the press-box and carrying it to the end of the machine, where it is discharged. The boxes are discharged in succession in this manner, and both reels may be operated at the same time, thus dividing the work of stripping the cloth and removing the cakes equally between them, at the same time re-winding the cloth on said reels for another operation.

The plungers for placing the filter-cloth, the hopper, and the funnel structure may be removed from any one press to another by means of the screws *N*, operated by any suitable power which, it will be observed, will cause the whole structure to slide longitudinally upon the slideways *L*, and the shifting of this mechanism may be accomplished as soon the press is charged, so that in a battery of presses little time is lost in charging said presses.

In Fig. 3 I have shown in a diagrammatic view the relative location of a second press for the above purpose, the way *L* being extended from the press Fig. 2 to that in Fig. 3, and it is obvious that a plurality of presses may be arranged in the same or a similar manner.

While the plunger-plates *e* are intended mainly to place the filter-cloths in the boxes, it is obvious that they may be utilized to advantage for forcing the meal into the boxes, particularly when the meal may contain any moisture. Furthermore, when it is desired to charge the boxes with meal under initial compression these plungers may be used to ram successive charges into the boxes before applying pressure.

While I have shown and described my invention as applied to a press employing a series of boxes, I wish it understood that the essential features of my invention are not limited to such application, as they may be applied to a press with a single box, should it be desired, without departing from the spirit of my invention, although it is preferable for obvious reasons to utilize a series of boxes, and hence the use of the plural number in the claims and specification is to be understood as including the singular wherever such may be preferable and desirable,



and it is obvious that changes may be made in the details of my invention without departing therefrom.

I claim as my invention—

5 1. The herein-described improvement in presses for expressing liquids from solids, comprising one or more press-boxes adapted to hold the material to be treated, and means for subjecting the said material to pressure in said box or boxes, in combination with means for automatically placing filtering-cloth within said box or boxes, substantially as described.

15 2. The herein-described improvement in presses for expressing liquids from solids, comprising a series of press-boxes adapted to hold the material to be treated and means for subjecting said material to pressure in said boxes, in combination with means for automatically and simultaneously placing filter-cloth in said boxes, substantially as described.

25 3. The herein-described improvement in presses for expressing liquids from solids, comprising a series of press-boxes adapted to hold the material to be treated and means for subjecting said material to pressure in said boxes, in combination with a continuous web of filter-cloth extending over the open sides of said boxes, and means for forcing separate folds or portions of said cloth into the several boxes, substantially as described.

35 4. The herein-described improvement in presses for expressing liquids from solids, comprising a series of press-boxes adapted to hold the material to be treated and means for subjecting said material to pressure in said boxes, in combination with a filter-cloth in a continuous web extending over the open sides of said boxes, and means for forcing separate folds or portions of said cloth simultaneously into the said boxes, substantially as described.

45 5. In a press for expressing liquids from solids, the combination of a series of press-boxes adapted to hold the material to be treated, means for subjecting the material to pressure in said boxes, means for filling said boxes through open sides thereof, and means for automatically closing said open sides in succession as the pressure is applied to the boxes, substantially as described.

50 6. In a press for expressing liquids from solids, the combination of a series of press-boxes adapted to hold the material to be treated, means for subjecting said material to pressure in said boxes, means for filling said boxes through open sides thereof, and means for automatically closing said open sides operated by movement of said boxes, as the pressure is applied, substantially as described.

60 7. In a press for expressing liquids from solids, the combination of a series of boxes adapted to hold the material to be treated, means for filling said boxes with said material, means for subjecting said material to pressure in said boxes, movable plates carried by the boxes adapted to automatically close the open sides of said boxes, in succession as

the pressure is applied, substantially as described.

8. In a press for expressing liquids from solids, the combination of a series of boxes adapted to hold the material to be treated, means for filling said boxes with the material, sliding plates adapted to close the open sides of said boxes, connections between said plates and some moving part of the pressure mechanism, adapted to close the boxes successively as the pressure is applied, substantially as described.

9. In a press for expressing liquids from solids, the combination of one or more boxes adapted to hold the material to be treated, means for placing the filter-cloth in said box or boxes, means for filling said boxes with the material to be treated after said cloth is placed therein, means controlled by the movement of the press for clamping the two portions of cloth in each of said boxes together, and means for subjecting the material to pressure in said box or boxes, substantially as described.

10. In a press for expressing liquids from solids, the combination of a series of boxes adapted to hold the material to be treated, means for placing filter-cloths in said boxes, means for filling said boxes with material after the cloth has been placed therein, plates slidably mounted at the open sides of said boxes, means for subjecting the material to pressure in said boxes, and connections between the plates and the power-operating mechanism, whereby the said plates are caused to clamp the two portions of the cloth together at the open side of said boxes, thereby automatically closing the same, substantially as described.

11. In a press for expressing liquids from solids, the combination with the press-box in which the material is subjected to pressure and having an open side, a filter-cloth extending over said open side, of a plunger in alignment with said box, and means for forcing said plunger into the box to place the filter-cloth therein, substantially as described.

12. In a press for expressing liquids from solids, the combination with the press-box in which the material is subjected to pressure and having an open side, a filter-cloth extending over said open side, of a funnel movable toward and from said box, a plunger in alignment with the box, means for forcing the plunger into the box to place the cloth therein, and means for moving the funnel into contact with the cloth so as to clamp it to the box, whereby said plunger may place the cloth in the box and said cloth held in place as the plunger is withdrawn, substantially as described.

13. In a press for expressing liquids from solids, the combination with the press-boxes having open sides, of a funnel registering with said open sides, movable valves or cut-off plates carried by said funnels, a charging device adapted to traverse the said funnels to charge the same with material to be treated.



ed, and connections between said charging device and cut-off valves adapted to close the same prior to the charging of the funnels, and to open the said cut-off valves or plates to permit the material to pass from the funnel into the boxes, substantially as described.

14. In a press for expressing liquids from solids, the combination with the press-boxes having open sides, of a funnel structure having a series of funnels registering with the boxes, movable cut-off valves in said funnels, a charging-hopper adapted to traverse said funnel structure to charge the funnels with material, connections between said hopper and cut-off valves, adapted to move the cut-off valves so as to close the funnels prior to receiving the material, and to open the said valve to permit the charges of material to pass from the funnels into the press-boxes, substantially as described.

15. In a press for expressing liquids from solids, the combination with the press-boxes having open sides, of a funnel structure having a series of funnels registering with the boxes, cut-off valves carried by said funnels, mechanism for moving said valves to close the funnels prior to receiving the material and to open the same for charging the material into the boxes and means for charging the funnels with material, substantially as described.

16. In a press for expressing liquids from solids, the combination with the press-boxes having open sides, of a funnel structure having a series of funnels registering with the open sides of the boxes, valves in the funnels connected together, a carrier for material adapted to traverse the funnel structure to deliver material to the funnels, a lever pivoted on said carrier and connected to said valves, and means on the carrier for engaging the lever to move the valves prior to filling the funnels, substantially as described.

17. In a press for expressing solids from liquids, the combination with the press-boxes, having open sides through which material is fed to the boxes, reels mounted in suitable bearings at each end of the press, a filter-cloth extending from said reels over the sides of the boxes, means for forcing separate folds of said cloth into the boxes, means for filling the boxes with material, mechanism for compressing the material in said boxes, and mechanism for rotating the reels to remove the cloth therefrom, whereby the cakes of compressed material are ejected from the boxes and the cloth stripped from said cakes, substantially as described.

18. In a press for expressing liquids from solids, the combination with the boxes having open sides through which the material is charged, reels mounted in suitable bearings at each end of the press, a filter-cloth extending from said reels over the open sides of said boxes, a series of plungers carried by a cross-head movable toward and from the boxes, means for moving the cross-head so as to

cause the plungers to engage the cloth and force the same in separate folds into the boxes, means for filling the boxes, means for compressing the material in the boxes, and means for rotating the reels to withdraw the cloth from the boxes, thereby stripping the cloth from the cakes, and ejecting the same from the press, substantially as described.

19. In a press for expressing liquids from solids, the combination with the press-boxes having open sides through which the material is delivered to the boxes, a filter-cloth extending over the open sides of the boxes, a cross-head slidably mounted to move toward and from the open sides of the boxes, plungers carried by said cross-head, antifriction-rollers at the ends of said plungers, and at the open sides of the boxes for engaging the cloth, and means for moving the cross-head to cause the plungers to place the cloth in the boxes, substantially as described.

20. In a press for expressing liquids from solids, the combination with the press-boxes having open sides through which the material is fed to the boxes, of a filter-cloth extending over the open sides of the boxes, a cross-head movable toward and from the open sides of the boxes, plungers carried by said cross-head and having a yielding connection therewith, and means for moving the cross-head to cause the plungers to force the cloth into the boxes, substantially as described.

21. In a press for expressing liquids from solids, the combination with the press-boxes having open sides through which the material is fed to the boxes, means for filling said boxes, means for applying pressure to the boxes, sliding plates mounted at the open sides of the boxes, and springs interposed between the plates and the boxes, whereby upon the application of pressure the said plates are caused to close the open sides of said boxes, substantially as described.

22. In presses for expressing liquids from solids, the combination of two or more presses with press-boxes, having open sides through which the material is fed to the boxes, and a filter-cloth extending over the open sides of said boxes, of slideways connecting said presses, a charging mechanism mounted thereon comprising plungers adapted to force the cloth into the boxes, means for moving said plungers, and means for filling the boxes with material, and mechanism for moving the charging mechanism from one press to another, along said slideways, substantially as described.

23. In presses for expressing liquids from solids, the combination with two or more presses having press-boxes with open sides through which the material is fed to the boxes, a filter-cloth over the open sides of the boxes, and slideways connecting the several presses, of a charging mechanism comprising a supporting structure adapted to slide on said ways, a cross-head carrying a series of plungers movable toward and from the boxes, a



funnel structure for filling the boxes, a carrier for supplying the funnels, means for moving the cross-head to force the filter-cloth into the boxes, and means for raising and lowering the funnel structure to cause the same to clamp the cloth to the boxes, substantially as and for the purpose set forth.

24. In a press for expressing liquids from solids, the combination with a base, two stationary heads, of a series of boxes having rigid sides, guide-rods for said boxes, a series of plungers carried by the backs of the boxes and adapted to telescope into the fronts of the adjacent boxes, said plungers being formed of perforated plates and drainage-bars interposed between the same and the backs of the boxes, perforated bars forming the bottoms of the boxes, with means for filling the boxes, and means for applying pressure to the boxes, substantially as described.

25. The herein-described improvement in presses for expressing liquids from solids, comprising a series of boxes adapted to hold the material to be treated, a filter-cloth in a continuous web having separate folds thereof in each box, means for filling said boxes with material, and means for subjecting said material to pressure in said boxes.

26. In a press for expressing liquids from solids, the combination with one or more boxes adapted to hold the material to be treated, a filter-cloth in each of said boxes having portions projecting therefrom, adapted to be separated to permit the filling of the boxes, said cloth being adapted to inclose the material in said box, means for clamping the two projecting portions of the cloth together, and means for subjecting the material to pressure in said box.

27. In a press for expressing liquids from solids, the combination with one or more press-boxes open at one side thereof, a filter-cloth arranged over said side, one or more plungers provided with antifriction-rollers, and means for moving the plungers to cause said rollers to engage the cloth and place it in said box, substantially as described.

28. In a press for expressing liquids from solids, the combination with one or more press-boxes adapted to hold the material to be treated, of a funnel structure adapted to be

moved into alinement with the box or boxes for filling the same, one or more plungers in alinement with the boxes, and means for forcing the plungers into the boxes, substantially as described.

29. In a press for expressing liquids from solids, the combination with one or more press-boxes, each having an open side through which the material may be fed, a filter-cloth extending over the same, and adapted to have separate folds in each box, means for filling the box or boxes, mechanism for compressing the material therein, and mechanism for withdrawing the cloth, whereby the cake or cakes are ejected from the box or boxes, substantially as described.

30. In a press for expressing liquids from solids, the combination with one or more boxes each having an open side through which material may be fed, antifriction-rollers at the open side of each box, a filter-cloth extending over the same and adapted to have separate folds thereof forced into each box, substantially as described.

31. In a press for expressing liquids from solids, the combination with the press-boxes having open sides through which the material may be fed, a cross-head mounted to move toward and from said boxes, plungers carried by said cross-head, antifriction-rollers mounted at the open sides of said boxes, a filter-cloth extending over the same, and means for moving the cross-head to cause the plungers to place the cloth in said boxes and to pack the material therein.

32. In a press for expressing liquids from solids, the combination with the press-boxes having open sides through which the material may be fed, a cross-head movable toward and from the open sides of the boxes, a series of plungers carried by said cross-head and having a yielding connection with said cross-head, and means for moving the cross-head.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEE BAGGETT.

Witnesses:

R. J. PATTERSON,  
W. S. NEWTON.