No. 652,506. Patented June 26, 1900.

C. L. BESSONETTE.

BALING PRESS.

(Application filed Dec. 11, 1899.)

(No Model.) 4 Sheets—Sheet 1.

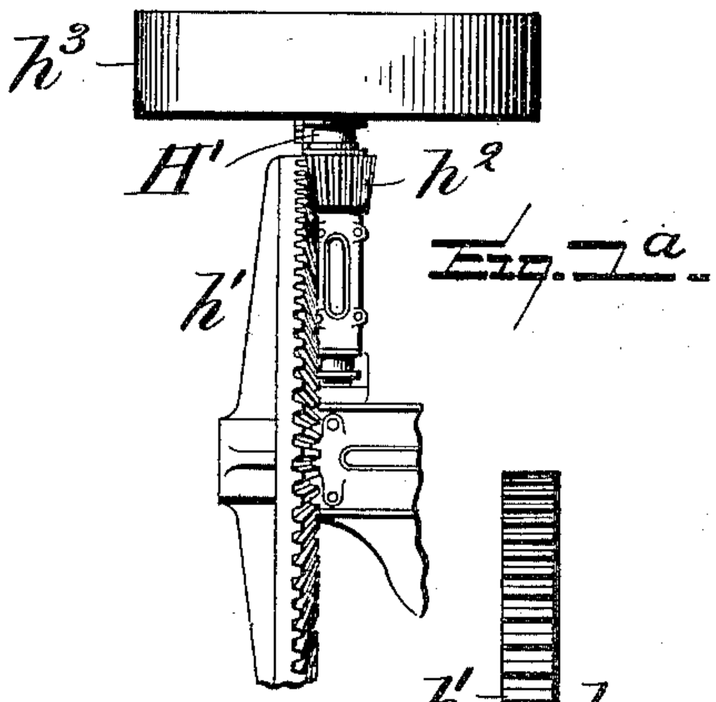


Fig. 1a.

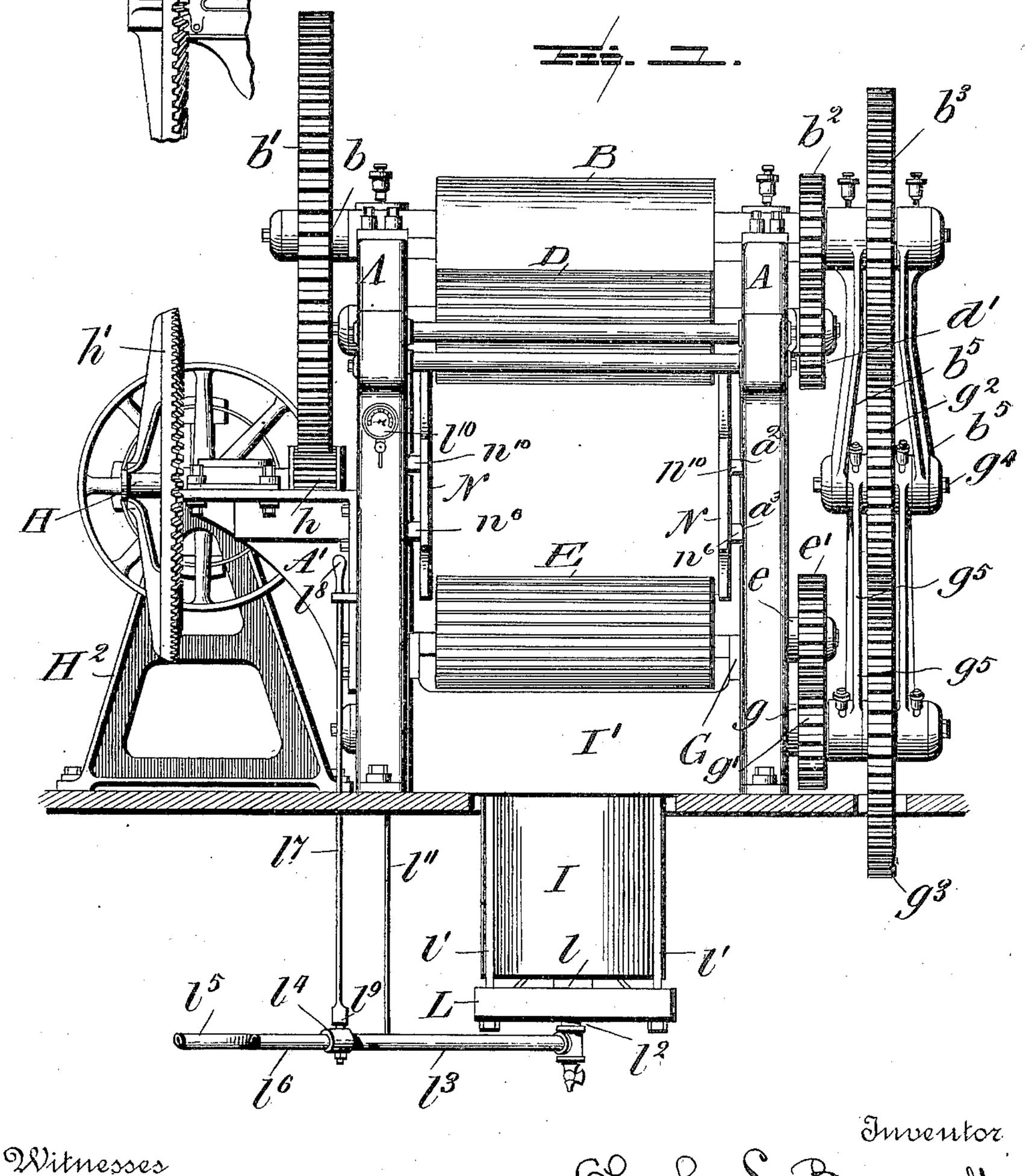


Fig. 1.

Witnesses
L. C. Hills
J. D. Kingsbery

Inventor
Charles L. Bessonette
By Whitaker & Prevost Attorneys

No. 652,506. Patented June 26, 1900.

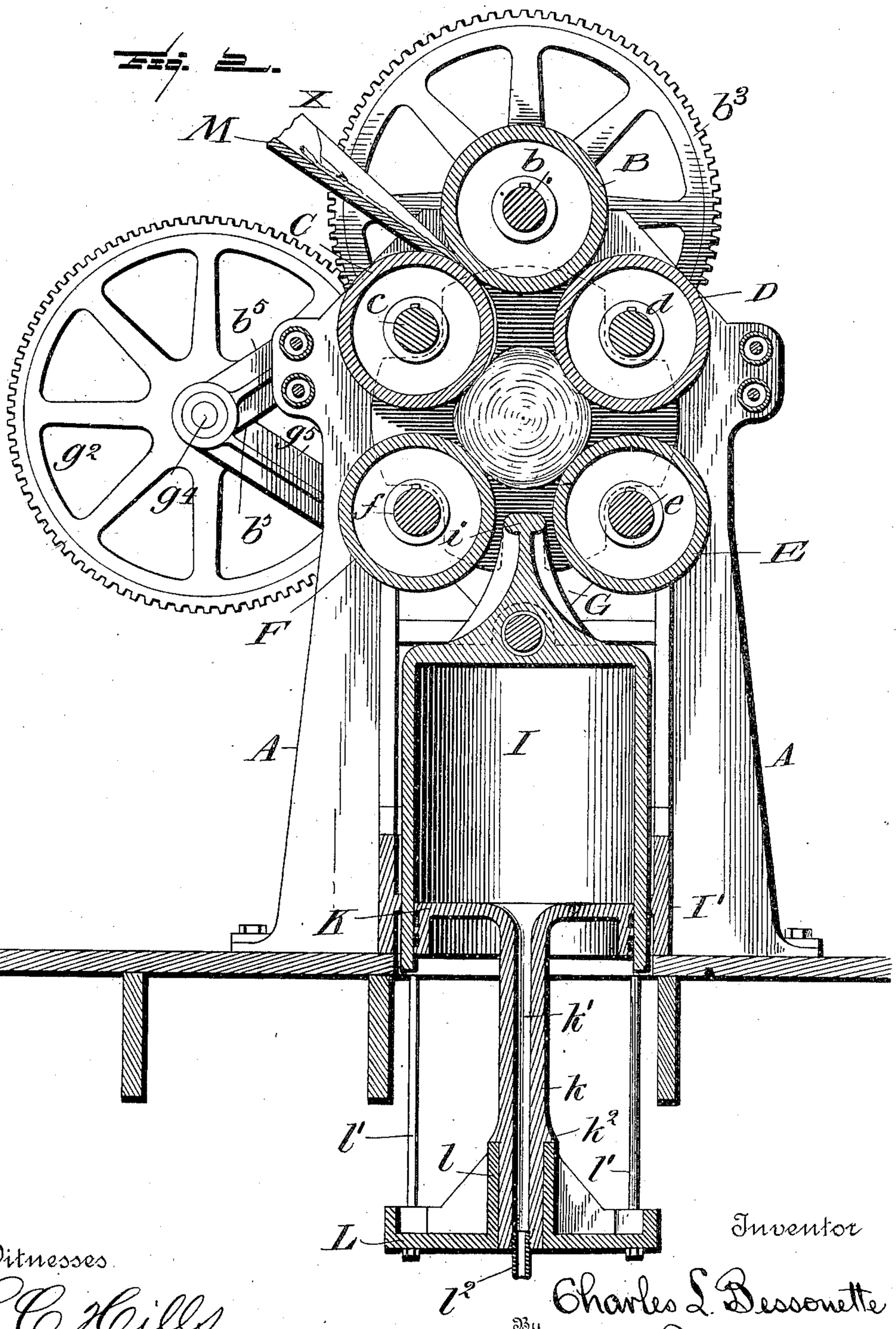
C. L. BESSONETTE.

BALING PRESS.

(Application filed Dec. 11, 1899.)

(No Model.) 4 Sheets—Sheet 2.

Fig. 2.



Witnesses.
L. C. Hills.
J. D. Kingsbury

Inventor
Charles L. Bessonette
By Whittaker & Prevost Attorneys.

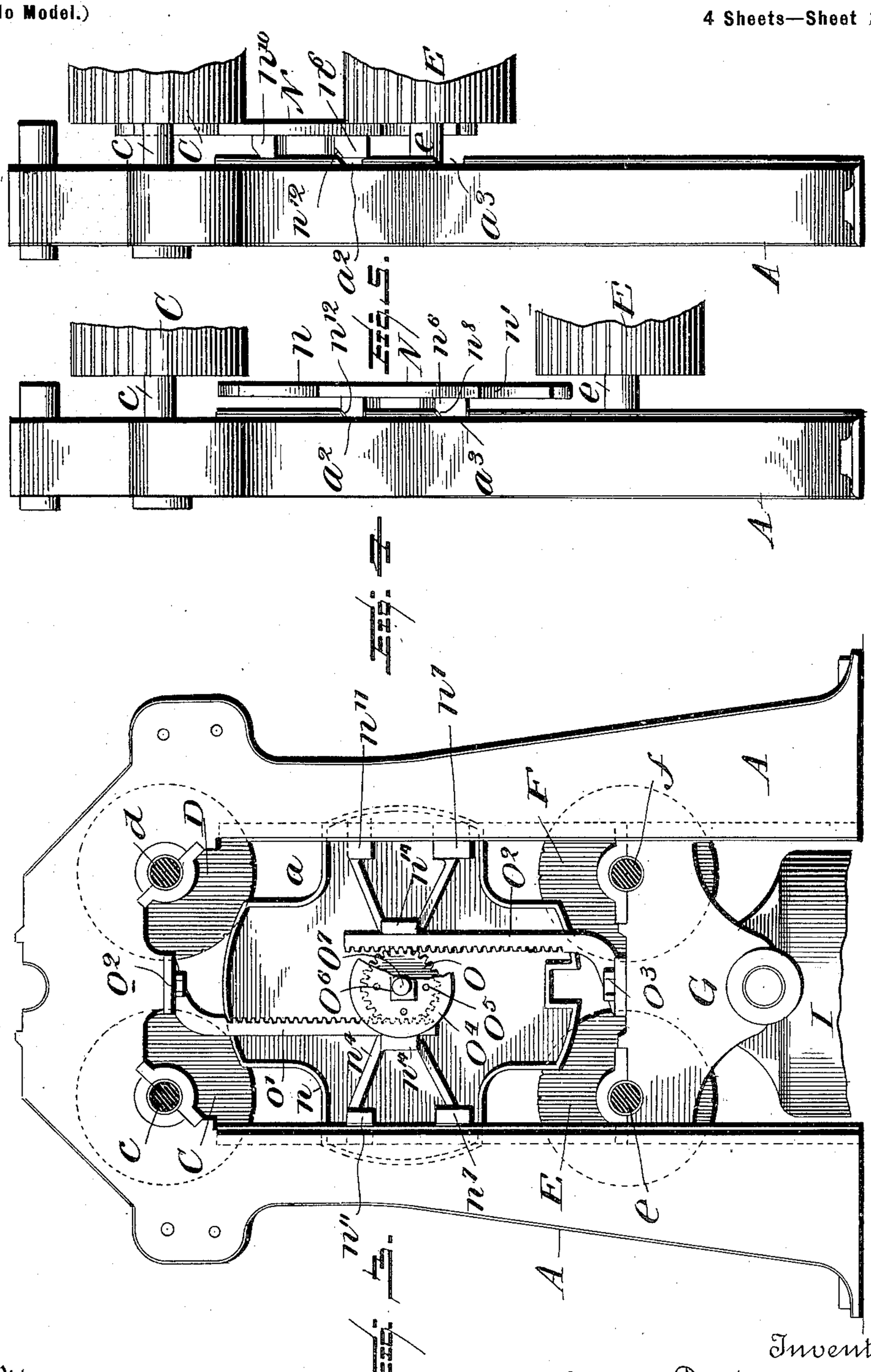
No. 652,506. Patented June 26, 1900.

C. L. BESSONETTE.

BALING PRESS.

(Application filed Dec. 11, 1899.)

(No Model.) 4 Sheets—Sheet 3.



Witnesses
L. C. Hills
J. D. Knight

Inventor
Charles L. Bessonette
By Whitaker & Prevost Attorneys.

No. 652,506 Patented June 26, 1900.

C. L. BESSONETTE.

BALING PRESS.

(Application filed Dec. 11, 1899.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 6.

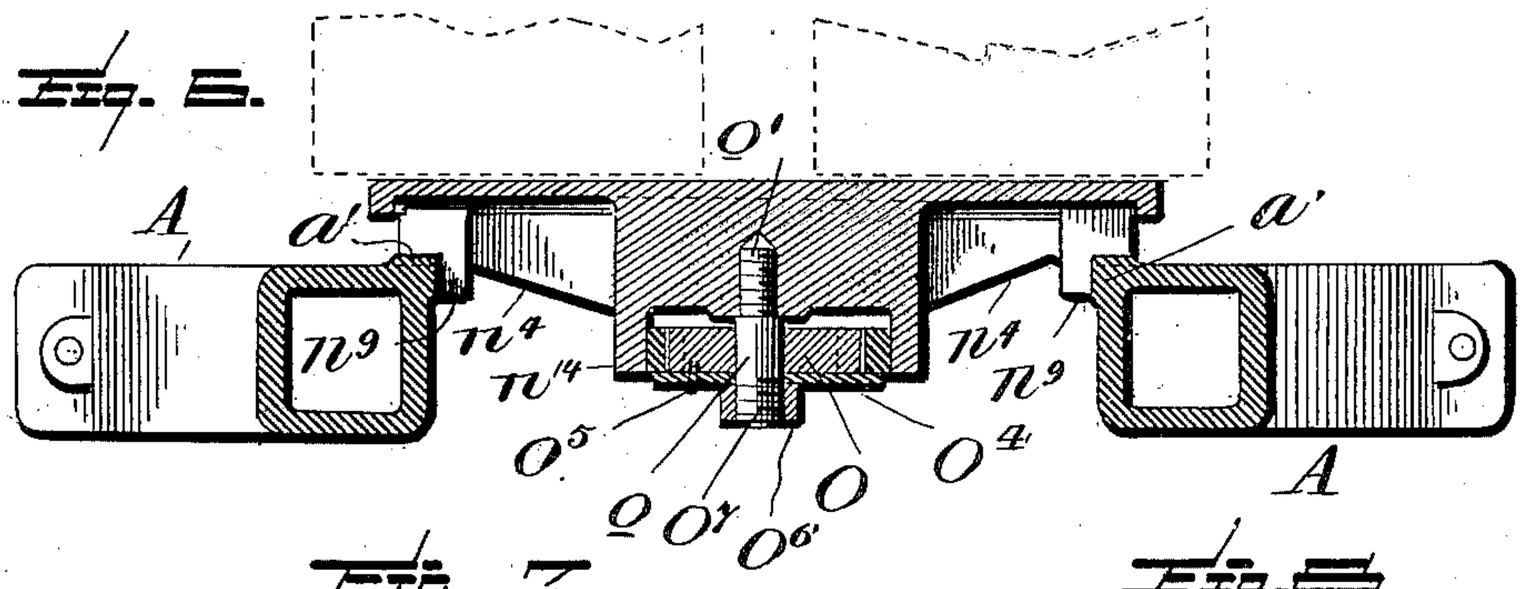
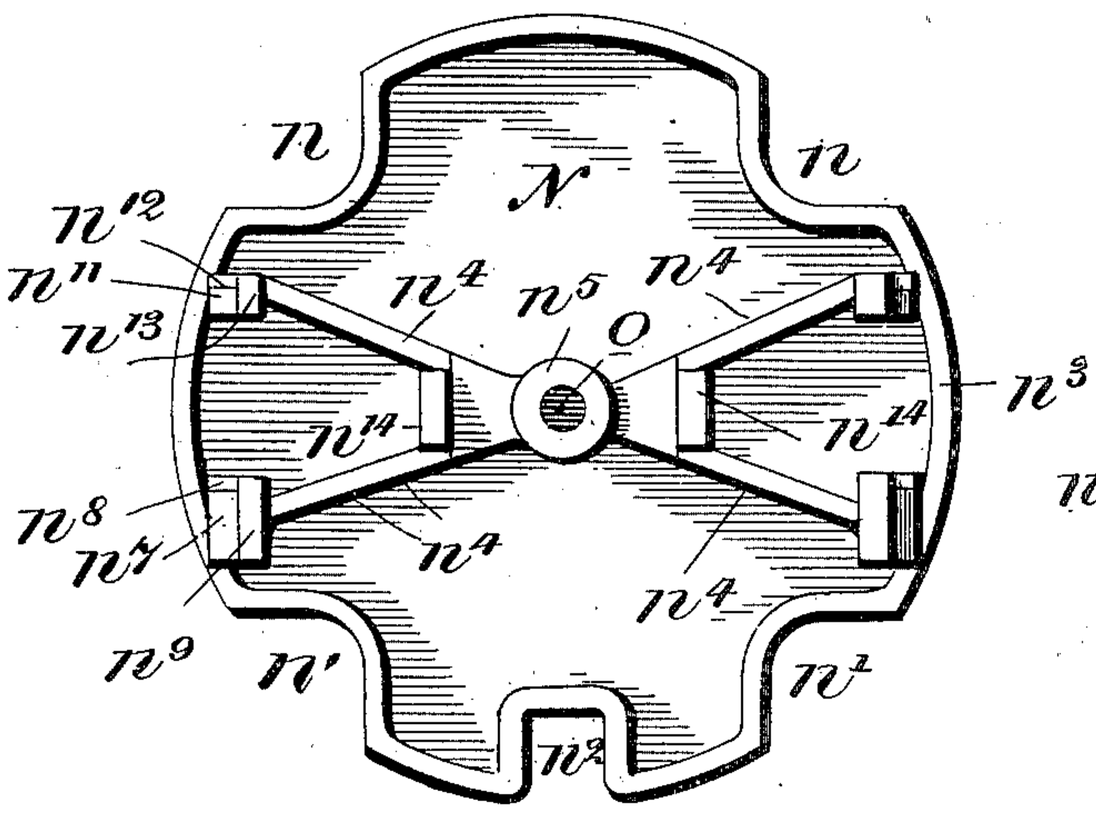
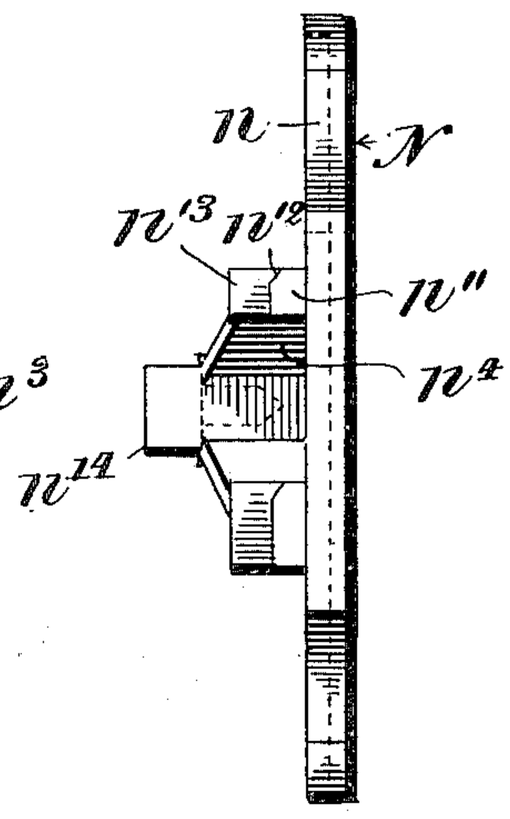


Fig. 7.

Fig. 5.





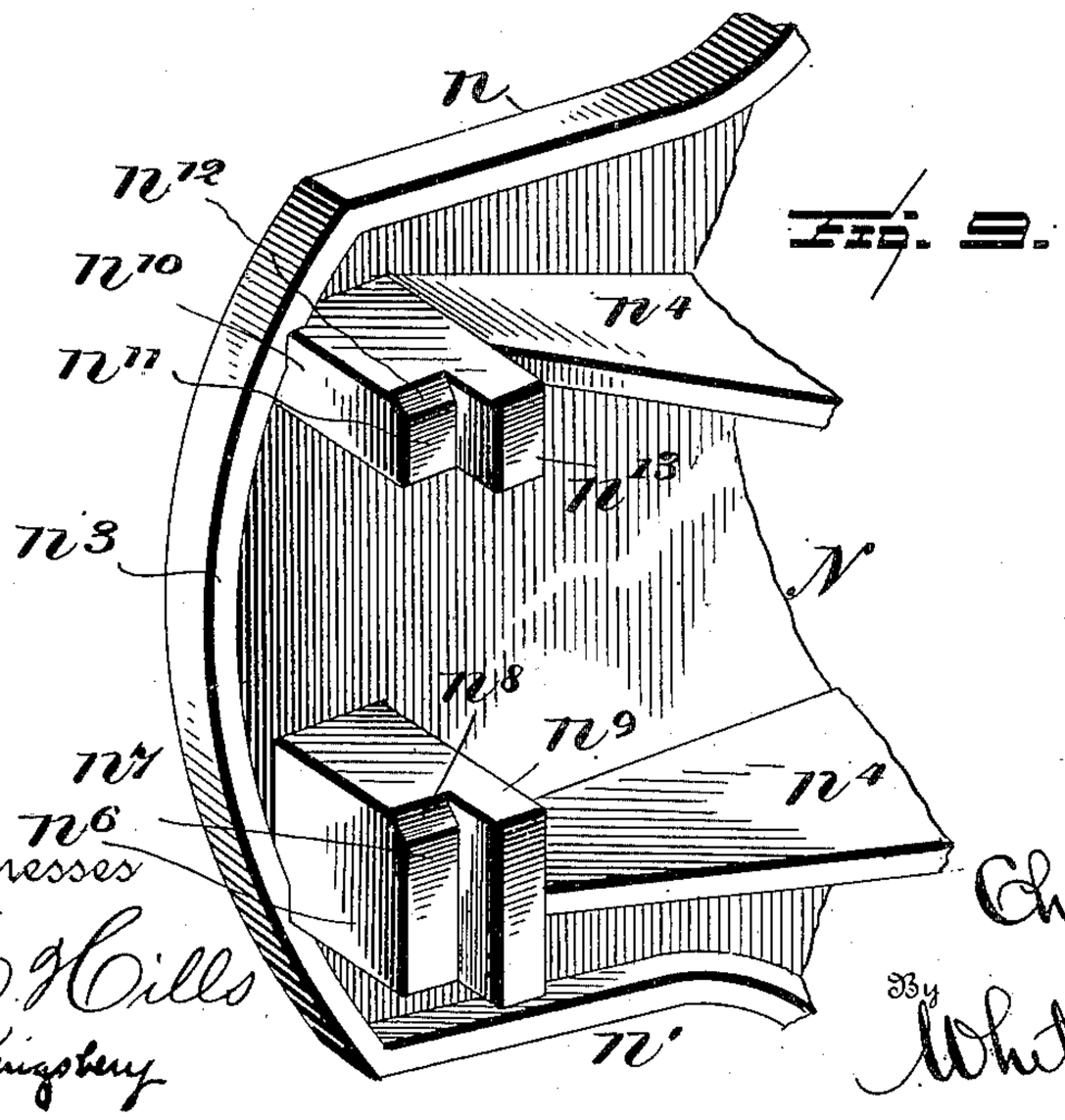


Fig. 8.

Witnesses
L. C. Hills
J. D. Kingsbery

Inventor
Charles L. Bessonette
By Whitaker & Prevost Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES L. BESSONETTE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GINNERS COMPRESS COMPANY, OF SAME PLACE.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 652,506, dated June 26, 1900.

Application filed December 11, 1899. Serial No. 739,904. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. BESSONETTE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Baling-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in a roller-press for forming cotton and other materials into a cylindrical bale; and it consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate the best form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 is a front elevation of my improved press. Fig. 1ª is a plan view of a portion of the driving mechanism. Fig. 2 represents a transverse vertical section of the press, drawn to a larger scale than Fig. 1. Fig. 3 is a partial end view of the press. Figs. 4 and 5 are similar views of one of the side frames, showing one of the bale-retaining plates in different positions. Fig. 6 represents a horizontal section through one of the side frames and its adjacent bale-retaining plate. Fig. 7 is an elevation of one of the bale-retaining plates, the operating devices therefor being removed. Fig. 8 represents an edge view of said plate. Fig. 9 is an enlarged perspective view of a portion of one of the bale-retaining plates, showing the guiding-lugs.

A A represent the side frames of my improved press, which receive and support the main portions thereof. Each of these side frames is provided with a central vertical recess *a*, extending from the bottom of the same to near the top of the same and having the inner corners of the walls of said recess provided with vertical parallel guiding portions *a' a'*, each of said guiding portions having, preferably, two guiding-faces disposed perpendicularly to each other, as shown in Fig. 6. In the upper part of the side frames A A are mounted three rollers B, C, and D upon shafts *b*, *c*, and *d*, respectively supported in suitable bearings provided in the side frame. The rollers C D are in line with each other horizontally, and the roller B is located centrally above the rollers C D and has its surface almost, but not quite, in contact with said rollers.

G represents a vertically-sliding head which is mounted between the lower portions of the side frames and engages the vertical guides *a'* of said frame, and in said head G are mounted two rollers E and F upon shafts *e* and *f*, supported in bearings carried by the head G. (See Fig. 3.) The rollers E F are in line with each other horizontally and are directly beneath the rollers D and C, respectively. (See Fig. 2.)

The shaft *b* of the top roller B is provided at one end with a large gear-wheel *b'* and at its other end with a pinion b^2, which meshes with a pinion on each of the shafts *d c* of the rollers D C, thereby imparting motion to said rolls from the shaft *b*. In Fig. 1 only one of these pinions *d'* on the shaft *d* is shown, as the other pinion on the shaft *c* is directly behind it. The head G is also provided with a shaft *g*, carrying a pinion *g'*, which engages and drives a pinion *e'* on the shaft *e* of roller E and a similar pinion (not visible in Fig. 1) on the shaft *f* of the roller F. Motion is imparted to the shaft *g* from the shaft *b* as follows: A gear b^3 is mounted on the shaft *b*, and a gear g^3 of the same size is mounted upon the shaft *g*, in line therewith. g^2 is a third gear of the same size mounted upon a short shaft g^4 and meshing with the gears b^3 and g^3. b^5 b^5 represent links provided at their upper ends with bearing portions pivotally engaging the shafts *b* and at their lower ends with bearing portions pivotally engaging the short shaft g^4. $g^5 g^5$ represent similar links having bearing portions at their lower ends pivotally engaging the shaft *g* and having bearing portions at their upper ends engaging the short shaft g^4. These links hold the intermediate gear-wheel g^2 in mesh with the gear-wheels b^3 and g^3, while permitting the shaft *g* to rise and fall with the head G. By means of the arrangement of gearing just described it will be seen that all of the rollers will be positively driven from the shaft *b*.

On a bracket A', secured to the side frame

A below the large gear-wheel b', (see Fig. 1,) I mount a counter-shaft H, provided at its inner end with a pinion h, meshing with the large gear-wheel b', and at its outer end with a beveled gear-wheel h', which meshes with a bevel-pinion h^2 on the driving-shaft H', mounted in suitable bearings secured to supporting-standards H^2, said driving-shaft being provided at its outer end with a driving band-wheel h^3, which receives power from any suitable source for driving the apparatus.

I represents a hollow cylinder secured to and movable vertically with the sliding head G, the said cylinder being guided in its vertical movements by passing through an annular aperture in a guide I', secured to the side frames A A, at the bottom of the same. Within the cylinder I is a stationary piston K, provided with a hollow stem k, provided with a longitudinal aperture k', communicating with the interior of the cylinder. The lower portion of the stem k is provided with a shoulder k^2, the said lower portion of the stem being fitted into a collar l, attached to or formed integrally with a stationary supporting-plate L, which is connected by bolts l' with a stationary part of the main frame of the machine. A pipe l^2 is screwed into the lower end of the piston-stem k and is connected by a horizontal pipe l^3 with a three-way valve l^4, to which are connected an inlet-pipe l^5 and an exhaust or outlet pipe l^6. The three-way-valve stem is conveniently operated by means of a vertical rod l^7, mounted in suitable bearings, provided at its upper end with an operating-crank l^8 and at its lower end with a socket l^9, fitting over the stem of the valve l^4. When the valve l^4 is turned to such a position as to bring the inlet-pipe l^5 in communication with the pipe l^3, a communication is established between the pipe l^5 and the interior of the cylinder. The pipe l^5 will be connected to a supply of fluid under pressure, which may be either liquid, steam, or compressed air, as preferred, and this fluid under pressure will pass through pipes l^5 l^3 l^2 and the hollow stem k of the piston K into the cylinder I, and as the piston is held stationary the pressure of said fluid will raise the cylinder I and with it the sliding head G and the lower rollers E and F. I prefer to provide a sight pressure-gage l^{10}, as shown in Fig. 1, which is connected by a pipe l^{11} with the pipe l^3, so that the pressure of the fluid within the cylinder I will be indicated at a point convenient for the operator. When it is desired to allow the cylinder to descend, the valve l^4 will be turned so as to cut off the fluid-inlet pipe l^5 and open connection between the pipe l^3 and the exhaust or outlet pipe l^6, which will allow the fluid within the cylinder to escape more or less rapidly according to the position of the valve, and thus allow the rollers E F to descend.

The cotton-bat, which is indicated at X, Fig. 2, is fed into the machine by means of a chute M between the top roller B and the roller C, and the cylindrical bale is formed between the four rollers C D E F, as clearly indicated in Fig. 2. In order to prevent the bale from working out past the ends of the rollers and also for the purpose of placing a tension upon the central portion of the bat, as hereinafter described, for the purpose of winding the bat more tightly upon the bale, I provide the vertically-movable and laterally-movable end or retaining plates, the construction and operation of which are particularly illustrated in Figs. 3 to 9, inclusive. I provide one of these plates at each side of the machine, and as the construction of said plates is identical a description of one of the same and its operation will suffice for both.

N represents one of the end or retaining plates, which is preferably of the shape best seen in Fig. 7, having at its upper end recesses n n to accommodate the shafts c d of the upper rollers and at its lower end recesses n' n' to accommodate the shafts e f of the lower rollers and having its lower edge provided also with a central recess n^2 to accommodate a horizontally-disposed web i, secured to and extending above the cylinder I, for the purpose of partially closing the space between the two lower rollers E F to prevent the first portions of the bat from falling down between said rollers in commencing the formation of a bale. The inner face of the plate N is smooth and its rear face is preferably provided with a rearwardly-extending web n^3, following the outline of the plate for the purpose of strengthening the same. The plate is also provided with strengthening-webs n^4, extending diagonally across the plate from the edges to a central hub or boss n^5, which is provided with a central threaded aperture. At the outer extremities of the webs n^4 are four angular guides for engaging the guides a' on one of the side frames A. The lower guides n^6 are each provided with a bearing-face n^7 for engaging the lateral face of one of the guides a', the upper portion of said bearing-face terminating in a bevel portion n^8, and each of said guides n^6 is also provided with an outwardly-extending lug n^9 for engaging the face of the guide a' adjacent to the recess a of the side frame. The upper guides n^{10} are each provided with a bearing-face n^{11}, having a bevel portion n^{12} at its upper end and having also an outwardly-projecting lug n^{13}, similar to the lug n^9 on the lower guide. By reference to Figs. 7, 8, and 9 it will be seen that the bearing portions n^7 of the lower guides are of greater extent vertically than the bearing portions n^{11} of the upper guides for a purpose which will be hereinafter explained.

At each side of the central hub or boss n^5 of the plate N is a vertically-disposed guiding-lug n^{14}. o represents a stud having a threaded portion o', which is screwed into the hub or boss n^5, (see Fig. 6,) and upon said stud is mounted a pinion O, the teeth of which engage the teeth of two racks O' and O^2, which

lie between the pinion and one or the other of the guiding-lugs n^{14}. (See Figs. 3 and 7.) The rack O′ has its upper end secured to the upper portion of the side frame A by bolts o^2, and the lower rack O^2, which engages the pinion O on the side opposite the upper rack, has its lower end secured to the sliding head G by suitable bolts or screws o^3. o^4 represents a plate provided with a central aperture to pass over the stud o and with a number of smaller apertures eccentric to the central aperture adapted to engage pins o^5, projecting from the outer face of the pinion O, so that the plate o^4 will revolve with said pinion, and said plate is held in position by means of a nut o^6, which engages a threaded portion o^7 at the outer end of the stud o.

Referring now to Fig. 3, it will be seen that when the sliding head G, to which the lower rack O^2 is attached, moves up or down the rack O^2 will move with it, thereby causing the pinion O to rotate upon its stud, and as said pinion is also in engagement with the stationary rack O′ it will follow that the vertical movement of the pinion and the plate N, which carries it, will be one-half of the vertical movement of the slide G, so that the plate will at all times have its center substantially in line with the center of the bale which is being formed.

The portion of each of the guides a' on the side frames which is engaged by the bearing-faces n^7 n^{11} of the plate-guides is provided with two recesses a^2 and a^3. The upper recesses a^2 are of such size and shape as to receive the bearing portions of the upper plate-guides n^{10}, and the lower recesses a^3 are of greater vertical extent than the upper recesses and are adapted to receive the lower plate-guides n^6, and said recesses are so arranged that when the plate N is in its lowest position to which it can be moved by the downward movement of the sliding head G the said plate-guides will slip into the said recesses a^2 a^3 and allow the plate N to recede from the ends of the rollers to allow the bale to be removed from the press. In Fig. 5 I have illustrated the position of one of these plates N when moved upward by the head G, and it will be noticed that the plate-guides n^6 n^{10} are of such width that the plate N is held very close to the ends of the bale-forming rollers. As the plate N is moved downward by the downward movement of the head G, as before described, it will be necessary for the lower guides n^6 to pass over the recesses a^2, which they will do readily, as the lower guides n^6 have bearing-faces of greater width than the recesses a^2. Fig. 4 shows the plate N in its lowest position, with the upper guides n^{10} engaging the upper recesses a^2, the lower guides n^6 engaging the lower recesses a^3, and the plate N moved away from the ends of the bale-forming rollers.

The operation of forming a bale in my improved press is as follows: The operator having by means of the valve l^4 admitted fluid under pressure unto the cylinder I, so as to raise the head G and lower rolls E F to their highest positions, and established within the cylinder I the desired pressure, as indicated by the gage l^{10}, the driving-shaft of the apparatus is started, communicating motion to all of the rolls, as hereinbefore described. The cotton-bat X is fed into the machine over the chute M, and the bat is preferably formed slightly narrower than the bale-forming rolls. The first portion of the bat entering the space between the four rollers C D E F will be loosely wound spirally upon itself, forming what I term the "cushion-core." As the operation continues the cushion-core will gradually fill the space between the four rollers and will then become compressed as the rolling in of the bat continues, and this lateral compression of the cushion-core causes a longitudinal expansion of the core, so that the ends of the core are pressed firmly against the end or retaining plates N N, which prevent the escape of the core at the end, and also by their frictional contact with the ends of the core retard the rotary movement of the core. This retarding of the rotary movement of the core by the friction against the end plates N N causes the bat to be wound on very tightly upon the core and slightly stretched as it is wound on, thus forming a very compact and uniform bale. As the bale continues to grow in size it will exert a downward pressure upon the rollers E F, the sliding head G, and the cylinder I, and the lower rollers E F may be permitted to descend slowly and gradually by turning the valve l^4, so as to open communication between the pipe l^3 and the exhaust or outlet pipe l^6, the valve being set so as to maintain the desired pressure within the cylinder as the lower rolls descend. When the lower rollers reach their lowest position, the end or retaining plates N N will have been brought into position to allow their guides n^6 n^{10} to enter the recesses a^2 a^3 in the stationary guides a', as before described, and the plates N N will be forced outwardly, thus relieving the bale from the frictional contact therewith and permitting it to be removed from the machine.

In my press it will be noted that the bat is not wound upon a mandrel or core, but is wound directly upon itself, and I term my apparatus a "press for forming coreless cylindrical bales" in distinction from those presses which are designed to wind the bat upon a central core or mandrel.

What I claim, and desire to secure by Letters Patent, is—

1. In a baling-press for forming a coreless cylindrical bale, the combination with the stationary and movable bale-forming rollers, of non-rotatable retaining-plates located adjacent to the ends of said rollers and operating devices for said plates for maintaining them, at all times during the baling operation, in a fixed relation to the longitudinal axis of the bale, substantially as described.

2. In a baling-press for forming a coreless cylindrical bale, the combination with the stationary and movable bale-forming rollers, of non-rotatable retaining-plates located adjacent to the ends of the rollers, operating devices for moving said plates in a direction transversely of the axes of said rollers, and means for permitting the movement of said plates away from the ends of said rollers, to permit the bale to be discharged, substantially as described.

3. In a baling-press for forming coreless cylindrical bales, the combination with the stationary and movable bale-forming rollers, of non-rotatable retaining-plates located adjacent to the ends of said rollers, and capable of movement transversely of the axes of said rollers, and operating mechanism connected with said plates for moving them at the same speed as the longitudinal axis of the bale, substantially as described.

4. In a baling-press for forming coreless cylindrical bales, the combination with the stationary and movable bale-forming rollers, of non-rotatable retaining-plates located adjacent to the ends of said rollers operating devices connected with said plates for moving said plates transversely of the axes of said rollers at the same speed as the longitudinal axis of the bale, and means for permitting said plates to move away from the ends of said rollers to facilitate the discharge of the bale, substantially as described.

5. In a baling-press, the combination with the stationary and movable bale-forming rollers, stationary guides parallel to the direction of movement of said movable rollers, retaining-plates located adjacent to the ends of said rollers and having portions engaging said guides and operative connections between said plates and the movable rollers for causing said plates to traverse said guides at half the speed of movement of said movable rollers, substantially as described.

6. In a baling-press, the combination with the stationary rollers, of a movable head adapted to move toward and from said stationary rollers, a movable roller carried by said head, movable retaining-plates located adjacent to the ends of said rollers, a pinion carried by each of said plates, a stationary rack engaging each of said pinions and racks secured to said head and engaging said pinion whereby the movement of said head will impart a reduced movement to said end plates, substantially as described.

7. In a baling-press, the combination with the stationary and movable bale-forming rollers, stationary guides adjacent to the ends of said rollers provided with recesses, retaining-plates located adjacent to the ends of said rollers and having bearing portions engaging said guides and adapted to fit within said recesses and means for moving said plates along said guides toward and from said recesses, substantially as described.

8. In a baling-press, the combination with the stationary and movable bale-forming rollers, of stationary guides adjacent to the ends of said rollers, each provided with two recesses of different longitudinal extent, retaining-plates located adjacent to the ends of said rollers and provided with bearing portions adapted to engage said guides and fit the recesses therein and means for moving said plates along said guides, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES L. BESSONETTE.

Witnesses:
FRANK W. BIGELOW,
RUPERT P. SORELLE.