

No. 666,294.

Patented Jan. 22, 1901.

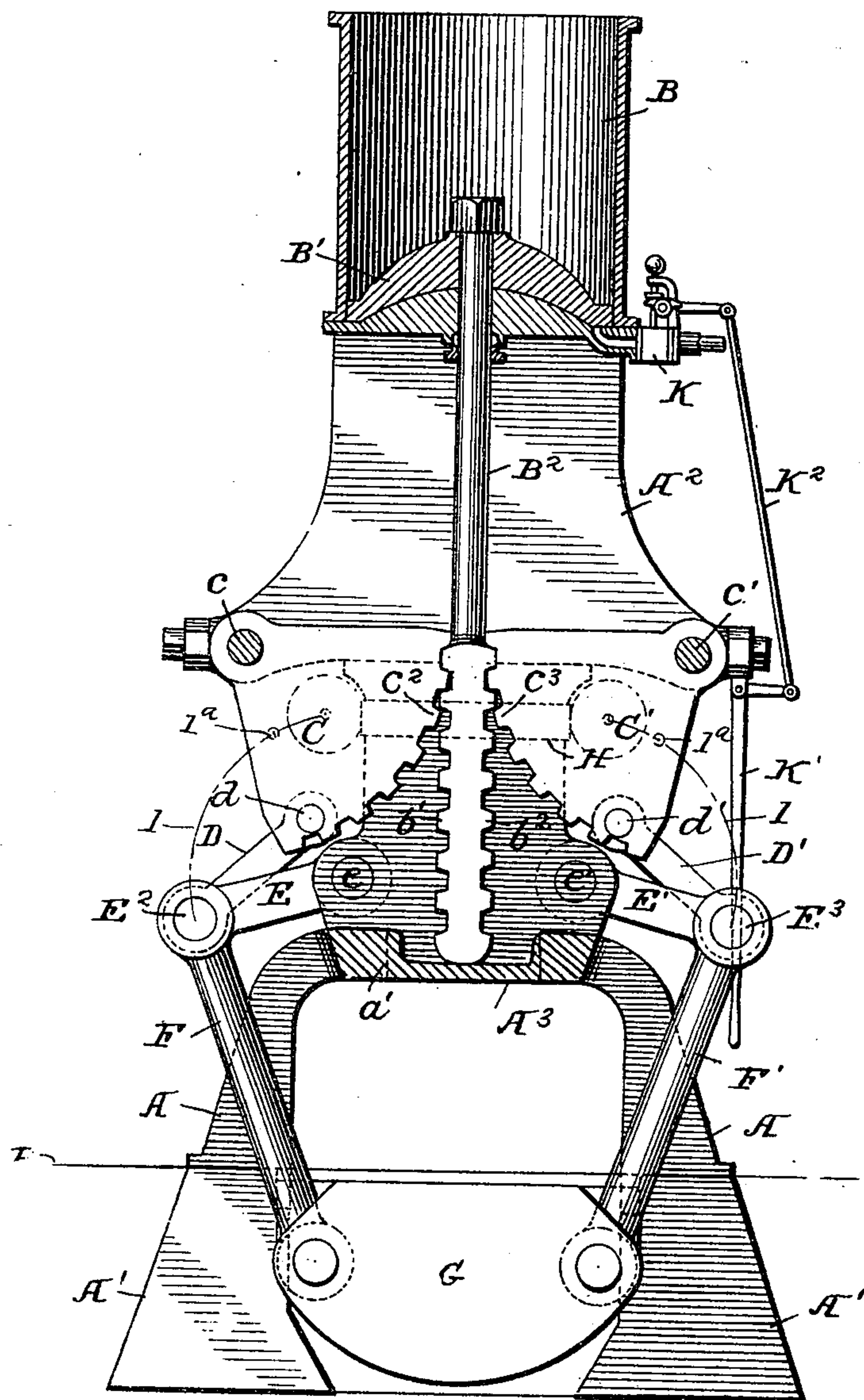
S. J. WEBB.
STEAM LEVER COTTON PRESS.

(Application filed May 20, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses

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Fig. 2.

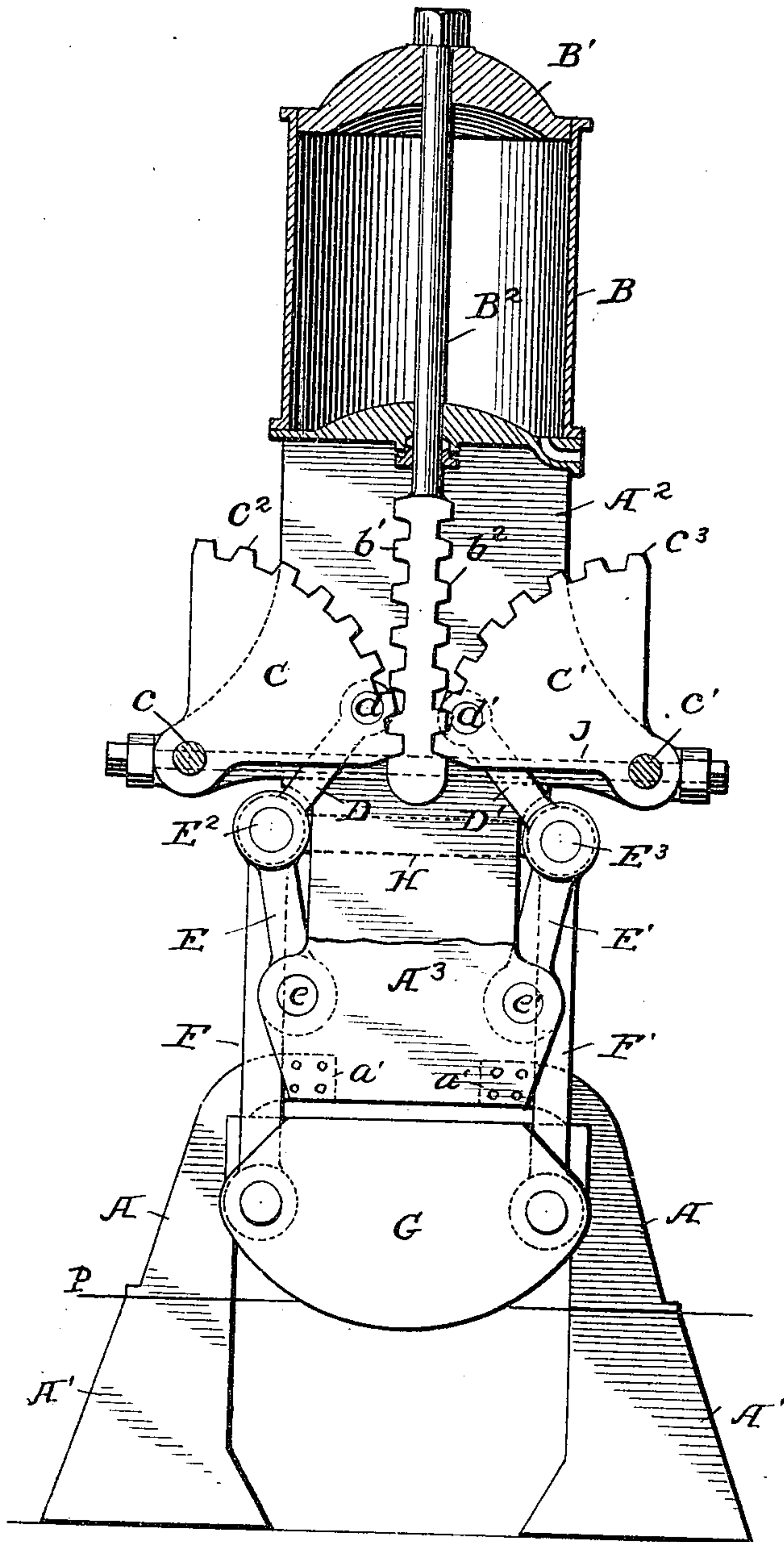
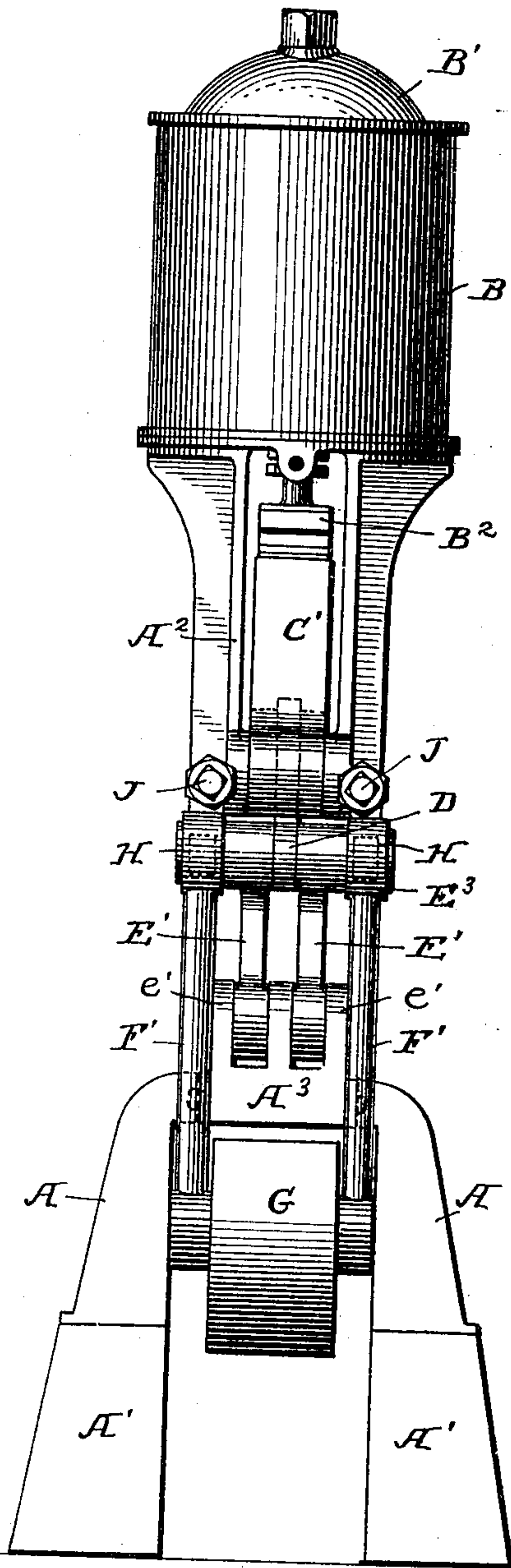


Fig. 3.



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Fig. 4.

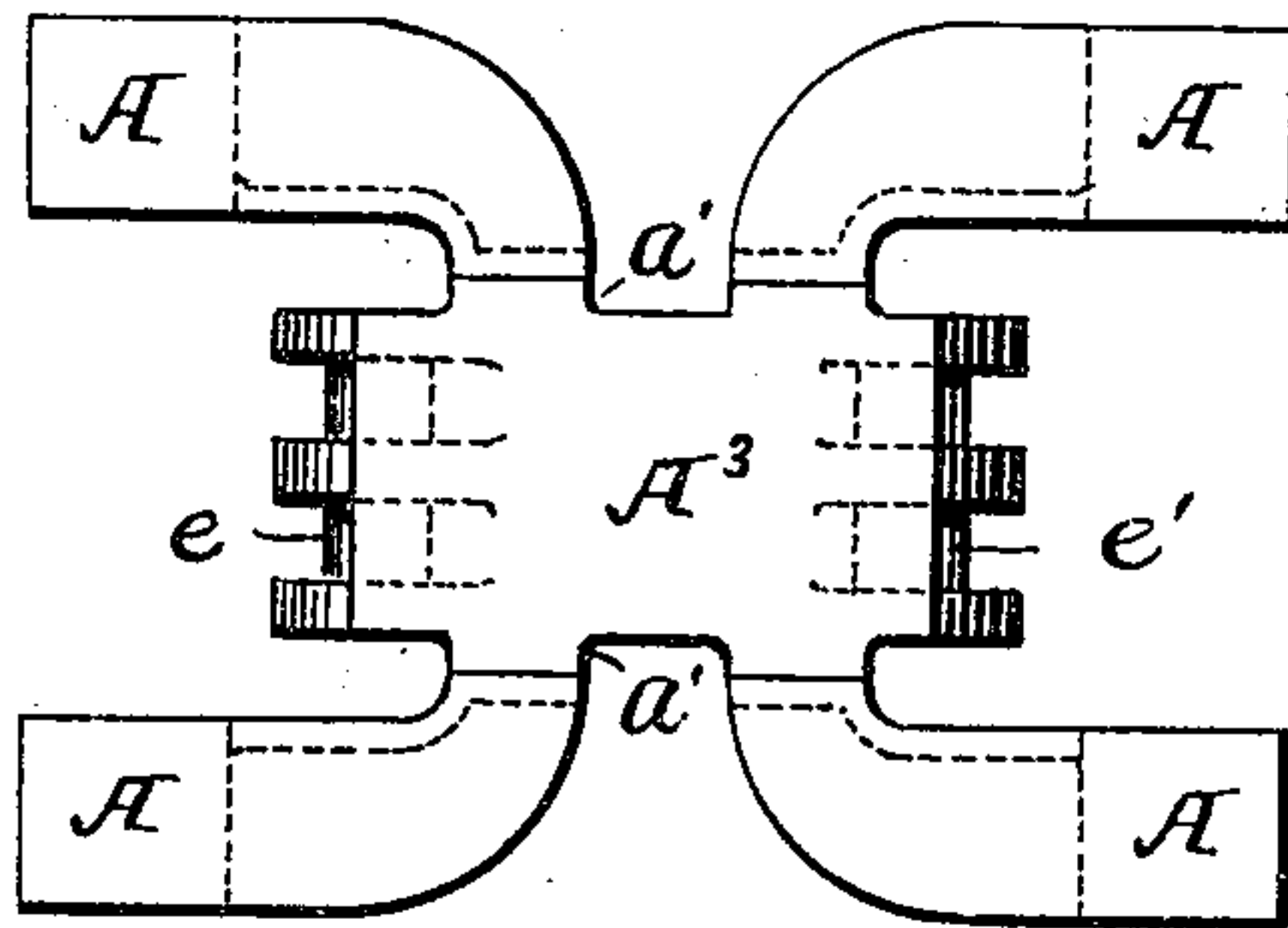


Fig. 5.

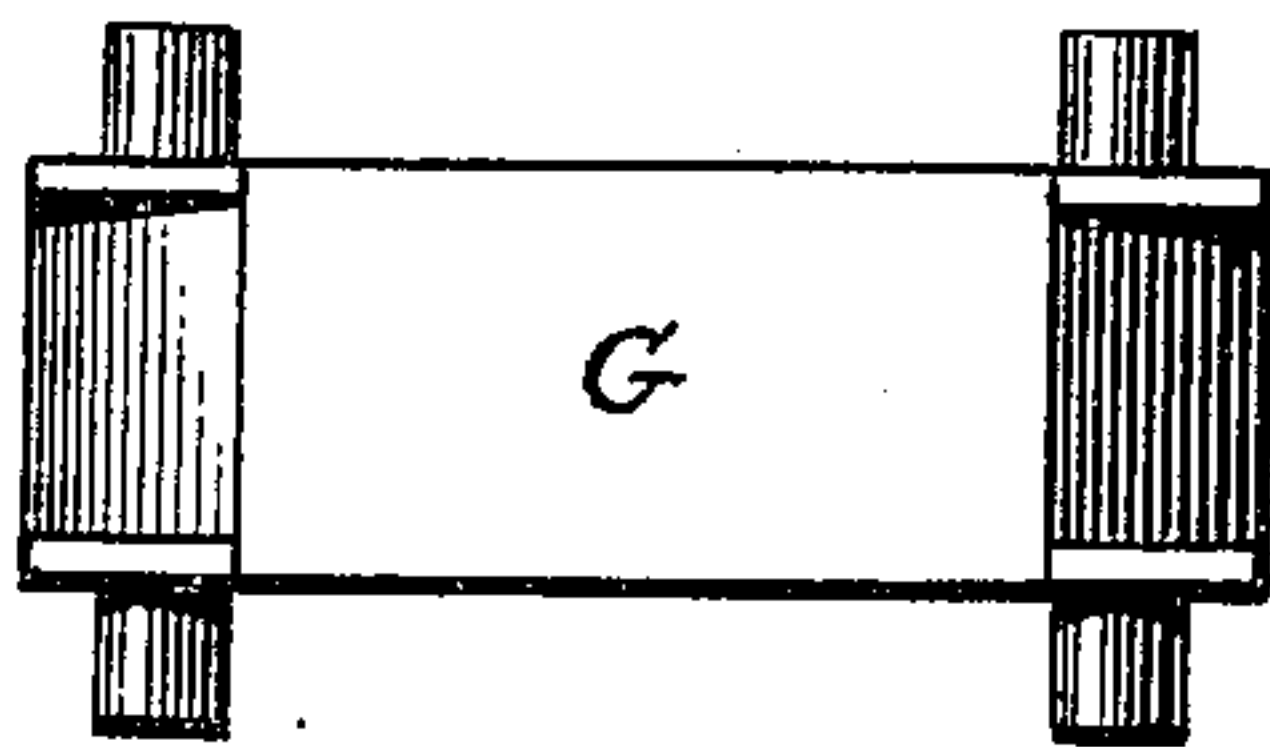
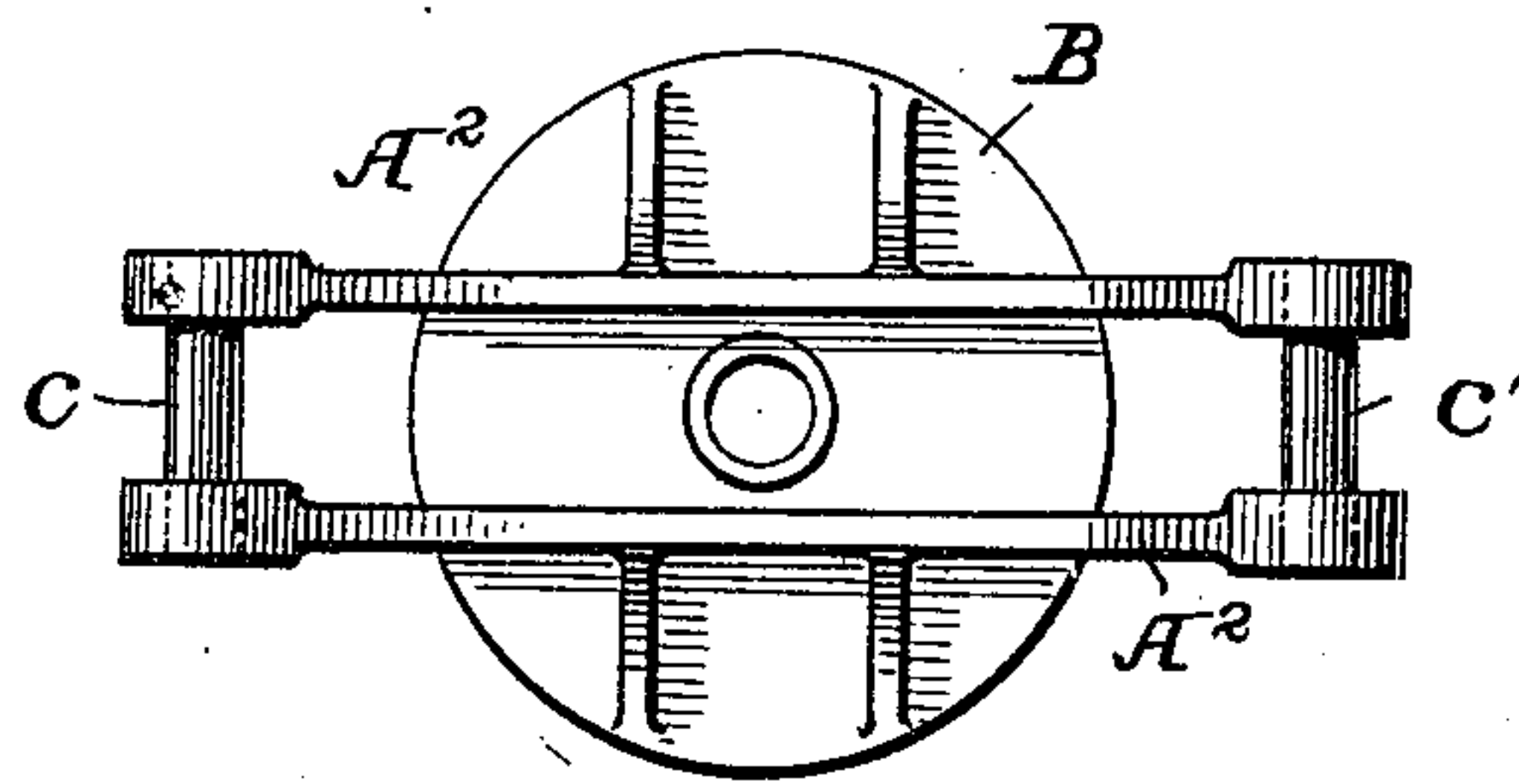


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL J. WEBB, OF MINDEN, LOUISIANA.

STEAM LEVER COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 666,294, dated January 22, 1901.

Application filed May 20, 1899. Serial No. 717,625. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. WEBB, a citizen of the United States, residing at Minden, Webster parish, State of Louisiana, have invented certain new and useful Improvements in Steam Lever Cotton-Presses, of which the following is a specification.

My invention relates to presses for compressing cotton and other material, and has for its object to improve and simplify the construction of such presses; and the invention consists in a press embodying the various features of construction and arrangement of parts, operating substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a vertical section through a press embodying my invention. Fig. 2 is a similar view showing the parts in a different position. Fig. 3 is an end view. Figs. 4, 5, and 6 are detail views.

As above indicated, one of the objects of my present invention is to provide a simple compact press and one in which the strains during the operation are inward or toward the main frame of the press.

Another object is to provide a press in which the pressure applied to the bale or other material rapidly increases during the first part of the operation, and during the latter part the increased or maximum pressure is practically constant, so that bales may be pressed to a uniform density regardless of the ultimate thickness of the bale.

Another object is to provide a construction of the character above indicated in which are combined the advantages of a lever mechanism and a steam or other motive-fluid actuating device, making what may be termed a "combined steam lever-press." While such a press may be used for many and various purposes and the details of construction may be altered to adapt it for various purposes, it is more especially intended for compressing cotton bales, and I will describe my invention as embodied in a press of this character.

The press comprises a suitable frame, which in the present instance includes four posts A, mounted on a suitable base or bases A', and a main frame portion A², supported on the posts. This main frame portion may be

differently constructed; but in the present instance it carries or has formed integral with it the stationery bed or platen A³, and in this connection I provide brackets a', extending from the bed or platen A³ and secured to the posts A. This main frame portion forms a suitable support for the operating parts of the press, they preferably being attached to this portion substantially in the manner hereinafter pointed out.

Supported upon the upper part of the main frame portion A² there is a cylinder B, provided with suitable inlet and outlet ports for steam or other motor fluid and with a piston B', moving therein, to which is attached a piston-rod B², extending down through the recess of the main frame portion. This piston-rod at its lower end is provided with a suitable rack-gear or other equivalent means to cooperate with the lever mechanism, and I have shown its opposite sides as provided with teeth b. Also mounted on the main frame portion are two sectors C C', they being pivoted to the main frame portion, as at c c', and being provided with teeth or rack-bars c² c³, adapted to engage with the teeth or rack-bars on the piston-rod. Connected to the sectors are the arms D D', they being pivoted thereto, as at d d', the sectors being properly shaped to receive the arms and furnish supports therefor. These arms are connected with the arms E E', which are pivoted to the main frame portion, as at e e', and the arms D E and D' E' respectively form a sort of toggle-joint. In the present instance these arms are shown as pivoted together at their outer extremities, as by the pivot-pins E² E³; but they may be otherwise connected. Connected to these toggle-joints are the lifting rods F F', they being shown as mounted on the pivot-pins E² E³ and their other ends being connected to the movable bed or platen G, which slides between and is guided by the posts A. Usually in mounting the press the movable bed or platen G in its normal or downward position is preferably on a level with the floor or platform P, as this facilitates the handling of the bales or other material to be pressed.

I have not deemed it necessary herein to show any particular arrangement of valve

mechanism for controlling the motor fluid, as this is well understood by those skilled in the art, and in Fig. 1 I have shown the parts in what I have termed their "normal" positions, ready to receive a bale or other material to be pressed.

When it is desired to operate the press, steam or other fluid is admitted into the cylinder B beneath the piston B', and the piston-rod is raised under the direct action of the steam, and as the piston-rod moves upward the sectors C C' rotate on their pivots c c' at a speed commensurate with the movement of the piston. This rotation of the sectors tends to draw the arms D D' inward and upward. Their inward movement being resisted by the arms E E' tends to make the pivot-pins E² E³ travel in the line indicated by the curves 1 1, and this consequently causes the lifting rods F F' to rise with a rapid motion at first, when the resistance of the bale or other material is relatively small, so that the first part of the compression of the bale is accomplished in a relatively quick time, and as this continues the pressure increases and the upward movement of the movable platen decreases until the pivot-pins E² E³ reach about the point 1^a, and it will be observed that the movement between the pivots E² E³ and the pivot-pins d d', respectively, is relatively large, the former points traveling farther than the latter points owing to the peculiar arrangement of the toggle-levers. As the piston-rod continues its movement upward, completing the stroke, the relative movement between the sectors C C', the pivot-points d d', and the pivots E² E³ decreases until during the latter part of the upward movement of the piston they move for some distance in practically the same proportions—as, for instance, six to one—thereby causing a uniform pressure on the bale during a considerable portion of the latter part of the upward movement of the piston, so that the bales will be compressed to practically the same density independent of their ultimate thickness. The positions of the arms and lifting rods toward the close of the movement are indicated in Fig. 2, and it will be seen that the arms D D', attached to the sectors, are nearly in a vertical line with the arms E E', attached to the main frame portion, while the lifting rods F F' are in a nearly vertical position. It is manifest that in this relation the power of the sectors through the arms D D' has decreased owing to the angle assumed by the parts, the maximum power being practically when the pivot-point of the sector, the pivot E², and the pivot-point e are practically in a right line; but it will also be observed that as the power of the sector decreases the power of the toggle-joint formed by the arms D E and D' E' and the lifting rods F F', attached thereto, is increasing, and this increase is practically in the ratio of the decreasing power of the sector, so that, as before stated, the power exerted on the bale during the latter portion of the move-

ment of the movable platen is practically uniform. This arrangement, it will be seen, is simple of construction and the parts can be made strong and effective, and it will be seen that the tendency of the strains on the parts is inward toward the main frame portion, and it will further be observed that the operations are relatively rapid and require no special manipulation by the operator, who simply admits steam or other motive fluid to the cylinder. When the bale is completed, the exhaust is opened and the parts return to their normal positions by gravity.

It will be observed that other means for actuating the sectors and connected levers may be used in place of the cylinder and piston; but I have found the arrangement shown to be satisfactory.

It will be observed that in the normal position the toggle-arms of each toggle lie nearly parallel to each other and in a substantially horizontal position, while when the press is in operation and has nearly completed the same the toggle-arms are nearly in a right line and substantially vertical and the lifting rods have been swung inward to a practically vertical position.

It will further be observed that the pivotal points of the sectors and the ends of the toggle-arms where they are pivoted to the frame and the sectors are in nearly right lines when the press is in its normal condition, and when the final compression is made the pivotal point of the sectors, the pivotal point of the toggles on the frame, and the pivotal point of the lifting rods and toggles are in substantially right lines.

Bumpers or stops H may be arranged so that when the parts reach the end of their movement the upper ends of the lifting rods (F F' in this case) strike against said bumpers, and thus prevent any further movement of the parts. These bumpers may be located so that some other moving part may strike them for the same purpose.

Tie-rods J may be used to strengthen the frame.

What I claim is—

1. In a press, the combination with the frame, of sectors and means for moving them, toggle-arms connected to the frame and the sectors, lifting rods connected to the toggle-arms, and a movable platen connected to the lifting rods, substantially as described.

2. In a press, the combination with the frame, of sectors pivotally mounted thereon, means for moving the sectors, toggle-arms the ends of which are connected respectively to the frame and to the sectors, lifting rods connected to the toggle-arms at their central pivotal points, and a movable platen connected to the lifting rods, substantially as described.

3. In a press, the combination with the frame, of sectors pivotally mounted thereon, means for moving the sectors, toggle-arms pivoted to the frame and the sectors so as normally to be in nearly a parallel position, lift-

ing rods connected to the toggle-arms, and a movable platen connected to the lifting rods, substantially as described.

4. In a press, the combination with the frame, of sectors pivotally mounted thereon and provided with teeth, a piston-rod provided with teeth engaging the sectors, toggle-levers one arm of each pair of which is pivoted near the lower portion of the sectors and the other arm of each pair pivoted to the frame adjacent thereto, lifting rods connected to the toggle-levers, and a movable platen connected to the lifting rods, substantially as described.

5. In a press, the combination with the frame, of sectors, means for moving the same, toggle-levers connected together and to the frame and sectors, and lifting rods connected to the movable platen and to the toggle-arms at the point of connection of the arms, the arrangement being such that on first moving the sectors the movable platen will move rapidly with increasing pressure and at the latter part of the movement of the sectors the movable platen will move slowly with practically a uniform pressure, substantially as described.

6. The combination in a press, of a frame, movable platen, and arms D D', E E', lifting rods connected with the arms E E' and forming toggles therewith, and sectors C C' connected with the arms D D', and forming toggles therewith, whereby during the upward movement the power of the lower toggles increases, while that of the upper toggles first

increases and then decreases, substantially as set forth.

7. The combination in a press of a frame, movable platen, and arms D D', E E', lifting rods connected with the arms E E', and forming toggles therewith, and sectors C C' connected with the arms D D' and forming toggles therewith, the parts arranged so that during the latter part of the upward movement of the platen the power of the upper toggles diminishes in about the same proportion as that of the lower toggles increases, substantially as set forth.

8. In a press, the combination with the frame, of arms connected to a stationary part of the press, a movable platen connected to said arms, sectors connected to a stationary part of the press and to said arms, and means for moving the sectors, substantially as described.

9. In a press, the combination with the cylinder and piston, of the frame A², stationary platen A³, posts A below the frame A², sectors C C', and arms E E', pivoted above the platen A³, lifting rods F F' connected to the movable platen and arms E E', and movable platen G, substantially as described.

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

SAMUEL J. WEBB.

Witnesses:

W. Z. DECK,
ELMER W. DECK.