No. 645,726. Patented Mar. 20, 1900.

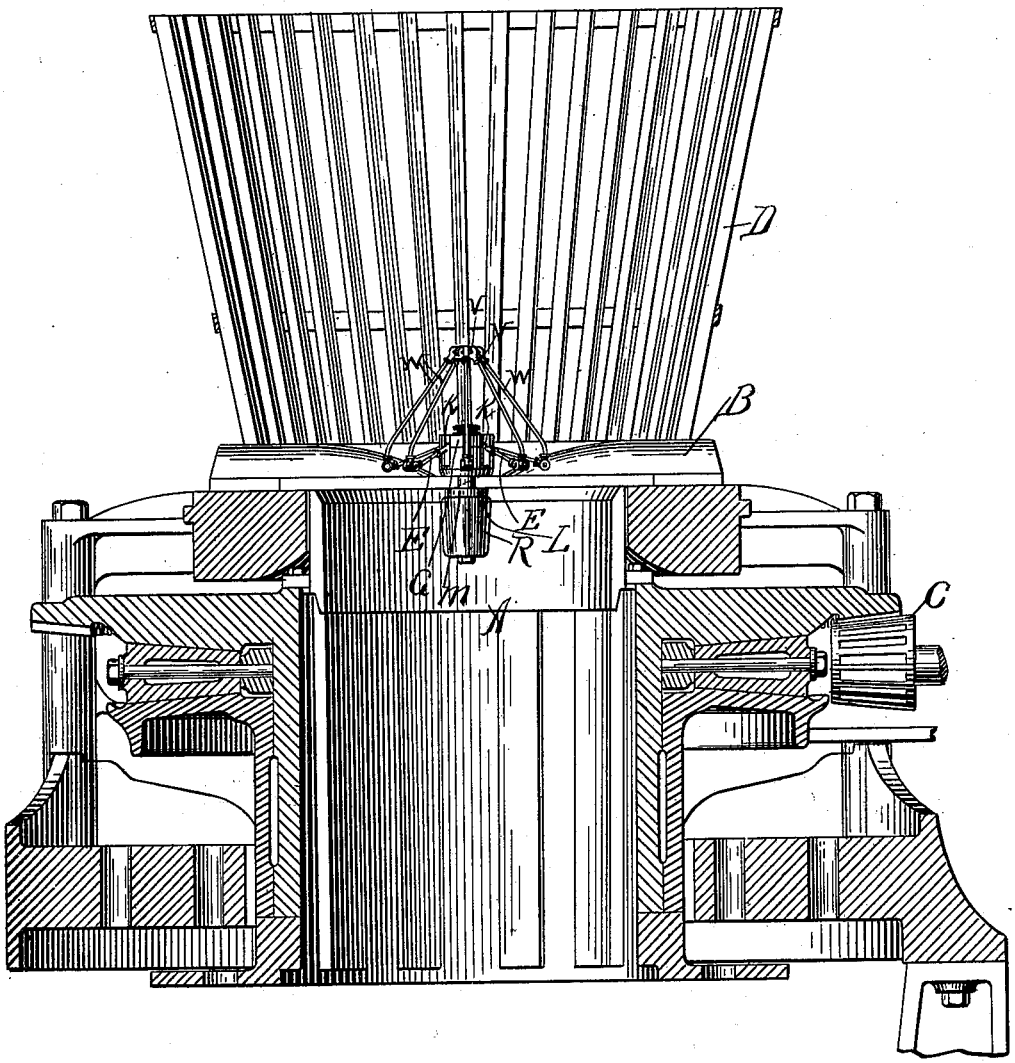
G. A. LOWRY & J. A. BUTLER.

FEEDING DEVICE FOR PRESSES.

(Application filed June 5, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

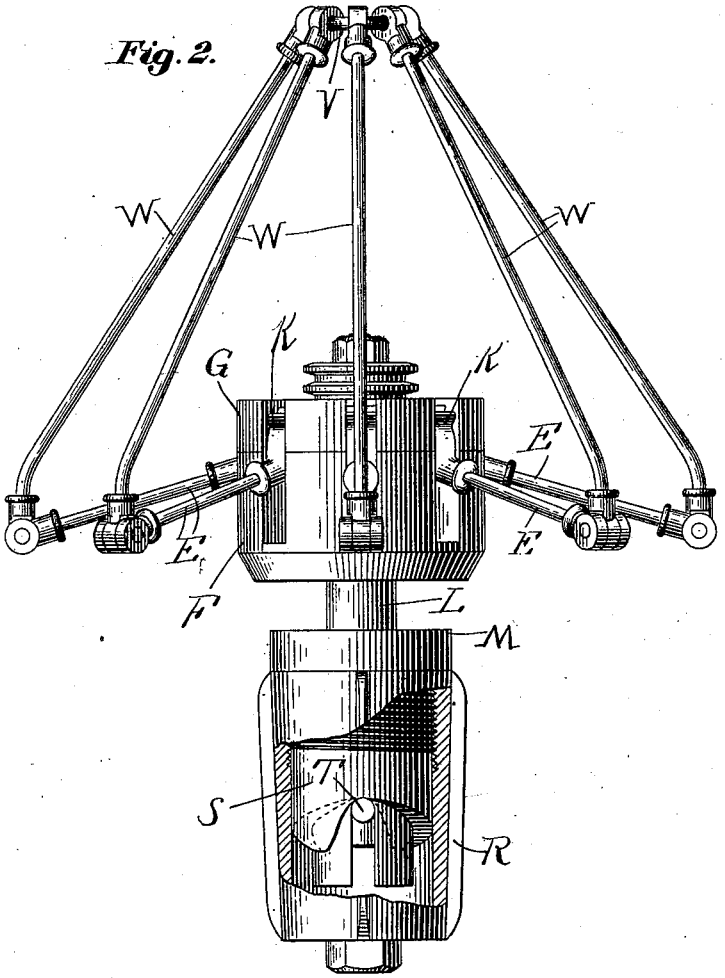

Fig. 3.

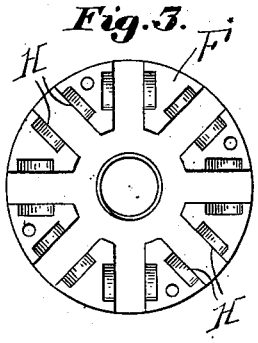

Fig. 4.

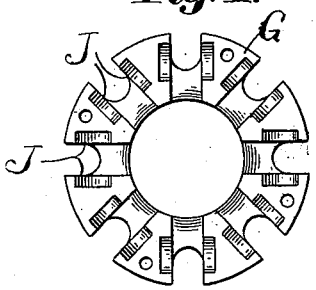

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Fig. 5.

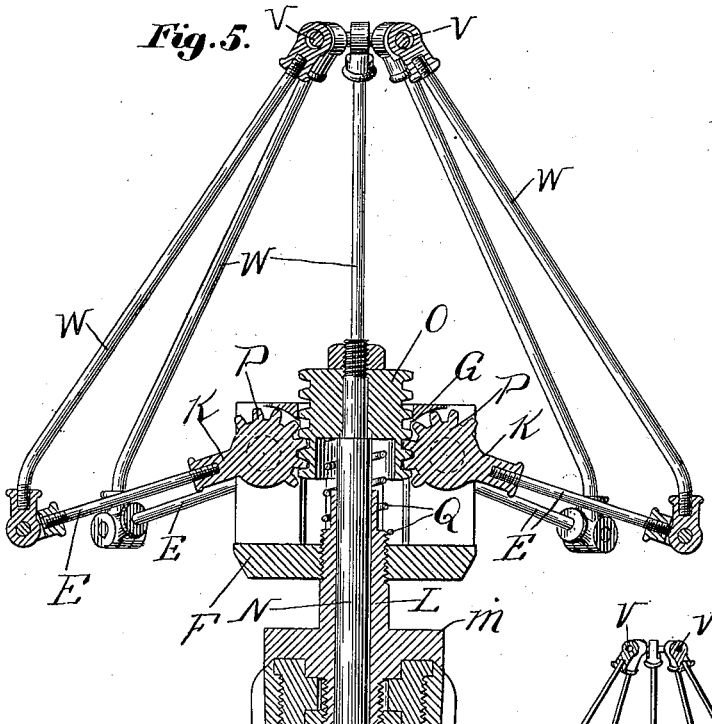
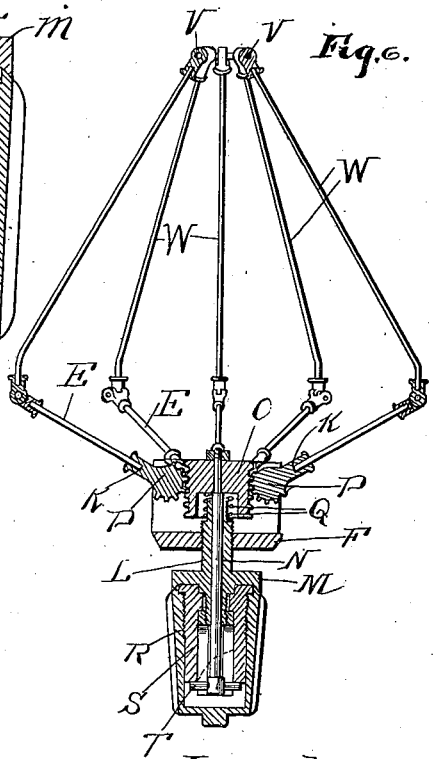


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE A. LOWRY, OF CHICAGO, ILLINOIS, AND JAMES A. BUTLER, OF WAREHAM, MASSACHUSETTS, ASSIGNORS TO THE PLANTERS COMPRESS COMPANY, OF BOSTON, MASSACHUSETTS.

FEEDING DEVICE FOR PRESSES.

SPECIFICATION forming part of Letters Patent No. 645,726, dated March 20, 1900.

Application filed June 5, 1899. Serial No. 719,367. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. LOWRY, residing at Chicago, in the county of Cook and State of Illinois, and JAMES A. BUTLER, residing at Wareham, in the county of Plymouth and State of Massachusetts, citizens of the United States, have invented a new and useful Feeding Device for Presses, of which the following is a specification.

This invention relates to feeding devices for presses, and is designed as a specific construction embraced in and covered by the generic invention and claims of the application of George A. Lowry for patent for feeding devices for presses, filed May 29, 1899, Serial No. 718,647.

The object of the invention is to provide means for efficiently presenting the material into proximity to the slots in the head-plate and to prevent the same from arching or bridging across the slots, thus providing for the efficient feed of the material to the press.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon—

Figure 1 is a broken view, in longitudinal central section, of a press, showing the application thereto of a construction embodying the principles of our invention. Fig. 2 is a detached detail view in side elevation, parts being in section, showing the feeding device and means for operating the same. Fig. 3 is a top plan view of the lower part of the head or cap in which the feed-arms are journaled. Fig. 4 is a bottom plan of the upper part of said head or cap. Fig. 5 is a view in longitudinal central section of the feeding device detached. Fig. 6 is a similar view showing a displaced position of the feeder-arms.

In the drawings reference-sign A designates a chamber or holder in which the material is compressed, and B a slotted head-plate therefor. These parts are suitably supported and mounted for relative rotation. For instance, and in the form shown, to which, however, the invention is not limited or restricted, the head-plate is held stationary, while the chamber is mounted to revolve. Rotation may be imparted to the rotating part in any suitable or convenient manner—as, for instance, through pinion C, driven from any suitable or convenient source. The chamber or holder A is open at both ends, and, if desired, may be tapering in internal diameter. The head-plate is arranged over the larger end of the chamber or holder.

In the operation of a press embodying the features above noted a sufficient amount of material is preliminarily placed in the chamber to fill the same to a point such as to cause the same to exert some pressure against the under surface of the head-plate. Now by imparting a relative rotation to the chamber and head-plate the material thus preliminarily introduced to the chamber and which moves in contact with the under surface of the head-plate effects a drawing action across the slot or slots in the head-plate as it moves across them. Therefore if additional material is presented to the slot or slots and in such close proximity thereto as to be brought into contact with the surface of the mass of material in the chamber or holder, such additional material, the fibers of which are already more or less entangled or interlaced with each other, is caught or engaged by the material in the chamber and is thereby drawn through the slot or slots into the chamber and between the surface of the mass in the chamber and the inner surface of the head-plate, thus building up the bale in superposed flattened and condensed spiral layers or convolutions, each succeeding layer being compressed upon the preceding layers and adding to the extent thereof an increment to the compressed mass in the chamber. In practice the feed slot or slots in the head-plate do not extend quite to the center of the head-plate, and consequently in the building up of the compressed mass of material in the chamber in the manner above set forth a longitudinal opening or hole is formed centrally of the compressed column.

Thus the material is compressed and correspondingly advanced through the chamber by each spiral layer added as an increment thereto, such material finally emerging from the chamber in the form of a condensed highly-compressed column having an opening through the longitudinal center thereof, the chamber forming a holder for the compressed mass and the head-plate forming an abutment against which the end of the compressed mass bears.

The construction and operation so far described embodies in its generic principles the features set forth and claimed, broadly, in Patents Nos. 581,600 and 581,601, granted April 27, 1897, to George A. Lowry, and in the pending application of George A. Lowry, Serial No. 682,947, filed June 8, 1898.

The material to be compressed may be delivered to the head-plate in any suitable or convenient manner. In the form shown, to which, however, the invention is not limited or restricted, a basket or receptacle D is arranged over the head-plate, and into this basket or receptacle the material to be compressed is delivered and from which it is drawn into the chamber in the manner above described. It sometimes happens where the material is light and fluffy, as in the case of cotton, wool, and the like, and is supplied in large quantity to the head-plate, that such material arches or bridges across the slot or slots in the head-plate. This is particularly true where in order to secure the desired rigidity in the construction of that portion of the head-plate which overhangs the open end of the chamber to enable it to withstand the pressure against the inner surface thereof to which it is subjected the head-plate is so constructed as to leave a considerable ridge or elevation in the surface thereof between adjacent slots, the surface of which ridges or elevations slopes or tapers toward the edges or lips of the slot or slots. This bridging or arching of the material also sometimes occurs in the basket or receptacle before the material reaches the head-plate. This is objectionable, for the reason that the material is thereby prevented from coming into sufficiently-close proximity to the slot or slots in the head-plate to enable it to contact with the surface of the mass in the chamber. It is the purpose of the present invention to provide means for preventing or breaking up these arches or bridges and for crowding or pushing the material into sufficiently-close proximity to the slot or slots to enable it to be caught or engaged by the material in the chamber and be thereby drawn into the chamber. The purposes in view are accomplished in the present case by means of a series of arms E, pivotally mounted or supported in a head or cap. In the form shown the head or cap is composed of the lower part F and the upper part G, suitably secured together and having registering seats H J to receive the journal ends of castings or blocks K, in which the feeder-arms E are mounted. The plates G F, composing the cap or head in which the feed-arms E are journaled when assembled together, constitute a washer screwed upon a stem or support L, adapted to pass through a hole or opening formed at the center of the head-plate B, as clearly shown in Fig. 1, and when said washer is screwed down tightly against the top surface of the head-plate the support for the feeding device is securely and firmly held in place, said washer coöperating with a shoulder M, formed on the stud L, to clamp the head-plate therebetween. Arranged to slide longitudinally through the bore of stud L is a rod N, carrying a rack-gear O upon its upper end, the teeth of which are arranged to mesh with gear-teeth P, formed on the hub or pivotal ends of arms E— as, for instance, on the castings or blocks K. From this construction it will be seen that when rod N is reciprocated endwise the gears P are axially rocked, thus raising or lowering the outer or free ends of the feeder-arms E. A spring Q may be employed to yieldingly maintain the feeder-operating rod N in one limit of its endwise reciprocation. Positive reciprocation may be imparted to said rod N in one direction and against the action of spring Q in any suitable or convenient manner. We have shown a simple and efficient construction for accomplishing this result, to which, however, the invention is not limited, and wherein a gear or other engaging device R is mounted to rotate upon the inner end of support or stud L. This gear or engaging device is arranged to enter the longitudinal central hole or opening in the mass of compressed material in the chamber, and therefore when relative rotation is imparted to the chamber and its head-plate a corresponding movement or rotation will be imparted to gear or engaging device R—that is, when the head-plate is stationary and the chamber revolves said gear R will also be revolved, and when the head-plate revolves and the chamber is held stationary then said gear or engaging device will be held stationary. Connected to gear R is a sleeve S, having a cam-surface arranged to engage a pin T, carried by the feeder-operating rod N, as clearly shown. Therefore when relative rotation is imparted to the rod N and gear R the cam-surface of sleeve S will engage pin or projection T, thereby causing the rod N to be moved endwise and against the action of spring Q, the tension of which is constantly exerted to return rod N to its normal position, and hence to maintain the engagement of pin T with the cam-surface of sleeve S. To the outer or free end of each feeder-arm E is pivotally connected one end of a rod or link W, the other ends of said links or rods being loosely pivoted or connected together, as through a ring V.

From the foregoing description it will be

seen that when relative rotation is imparted to the chamber and head-plate—as, for instance, by rotating the chamber—then by reason of the engagement of the compressed material in the chamber with gear or engaging device R a corresponding axial rotation is imparted to said gear or engaging device, thus effecting an endwise movement of rod N against the action of spring Q, which movement, through the engagement of rack O with gears P, effects the rocking of the feeder-arms, thereby raising or lowering said arms after the fashion of an umbrella, and the raising and lowering of said arms away from or toward the surface of the head-plate causes said arms to crowd or push the material against or toward the head-plate, thus breaking up or preventing the formation of bridges or arches of such material across the slots in the head-plate and also effecting a crowding of the material toward and in proximity to the slots in the head-plate, whereby it may be efficiently engaged or caught by the material in the chamber, and thereby drawn in and compressed.

One or any number of feeder-arms may be employed, as may be desired, and where several of such arms are used they may be arranged at suitable intervals or spaces radially around the center of the head-plate, and when said arms are actuated to move toward the surface of the head-plate they crowd or push the material toward such head-plate in the manner above described. An efficient and preferable arrangement is to employ a feeder-arm in connection with each slot in the head-plate and to arrange such arm to operate in the plane of such slot and between adjacent ridges or elevations in the surface of the head-plate. By this arrangement the formation of arches or bridges is prevented, and the material to be pressed is crowded or pushed down into such close proximity to the slots as to insure engagement of the same with the relatively-moving compressed mass in the chamber, thus effecting an efficient feed of the material to the chamber.

Many changes and variations in the details of construction and arrangement would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of our invention. We do not desire, therefore, to be limited or restricted to the exact construction shown; but,

Having now set forth the object and nature of our invention and a construction embodying the same and having explained such construction, its function, and mode of operation, what we claim as new and useful and of our joint invention, and desire to secure by Letters Patent of the United States, is—

1. A feeding device for presses, comprising a head or cap, a plurality of feed-arms, said arms being radially arranged and pivotally mounted with respect to said head or cap, a rod connected to all of said arms for rocking the same about their pivots, and means for projecting said rod endwise through said head or cap, as and for the purpose set forth.

2. A feeding device for presses, comprising a head or cap, a series of castings or blocks pivotally mounted in said head or cap, and having gear-teeth formed thereon, feeder-arms connected to said castings or blocks, an endwise-movable rod carrying a rack arranged to engage said gear-teeth, and means for reciprocating said rod, as and for the purpose set forth.

3. In a press, a chamber, a slotted head-plate therefor, and means for relatively rotating these parts, in combination with a stud arranged to pass through said head-plate at its axial center and clamped to said head-plate, a feeder-arm pivotally supported upon said stud, a longitudinally-movable rod arranged to pass through the bore of said stud and engage said arm, and means for reciprocating said rod, whereby said arm is rocked or swung toward or away from said head-plate, as and for the purpose set forth.

4. In a cotton or other press, an open-ended chamber, means for rotating the same, and a stationary slotted head-plate for one end of said chamber, in combination with a stud mounted centrally with respect to said head-plate, a series of arms pivotally supported upon said stud, a rod mounted to slide longitudinally through the bore of said stud and connected to said arms for rocking the same, and means for reciprocating said rod, as and for the purpose set forth.

5. In a cotton or other press, an open-ended chamber, a slotted head-plate therefor, and means for relatively rotating these parts, in combination with a stud secured to said head-plate and passing centrally therethrough, a feeder-arm pivotally mounted upon said support above the head-plate, a rod passing longitudinally through said stud and engaging said arm for rocking the same, a gear supported upon said stud within the chamber and arranged to engage the material in said chamber, a cam actuated by said gear and arranged to engage said rod to reciprocate the same, as and for the purpose set forth.

6. In a cotton or other press, an open-ended chamber, means for rotating the same, and a stationary slotted head-plate for one end of such chamber, in combination with a stud adapted to be clamped to said head-plate and arranged to pass centrally therethrough, a feeder-arm pivotally supported upon said stud above the head-plate, a rod arranged to pass longitudinally through said stud and adapted to engage said arm, whereby when said rod is moved longitudinally said arm is rocked or swung toward or away from the surface of said head-plate, a gear rotatively

supported upon the inner end of said stud and adapted to enter the longitudinal hole or opening in the mass of material contained in the chamber, a cam connected to said gear and arranged to engage said rod to move the same longitudinally, and a spring for maintaining the engagement of said rod with said cam, as and for the purpose set forth.

In witness whereof we have hereunto set our hands, this 27th day of May, 1899, and the 31st of May, 1899, in the presence of the subscribing witnesses.

GEORGE A. LOWRY.
JAMES A. BUTLER.

Witnesses for George A. Lowry:
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S. E. DARBY.

Witnesses for James A. Butler:
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