

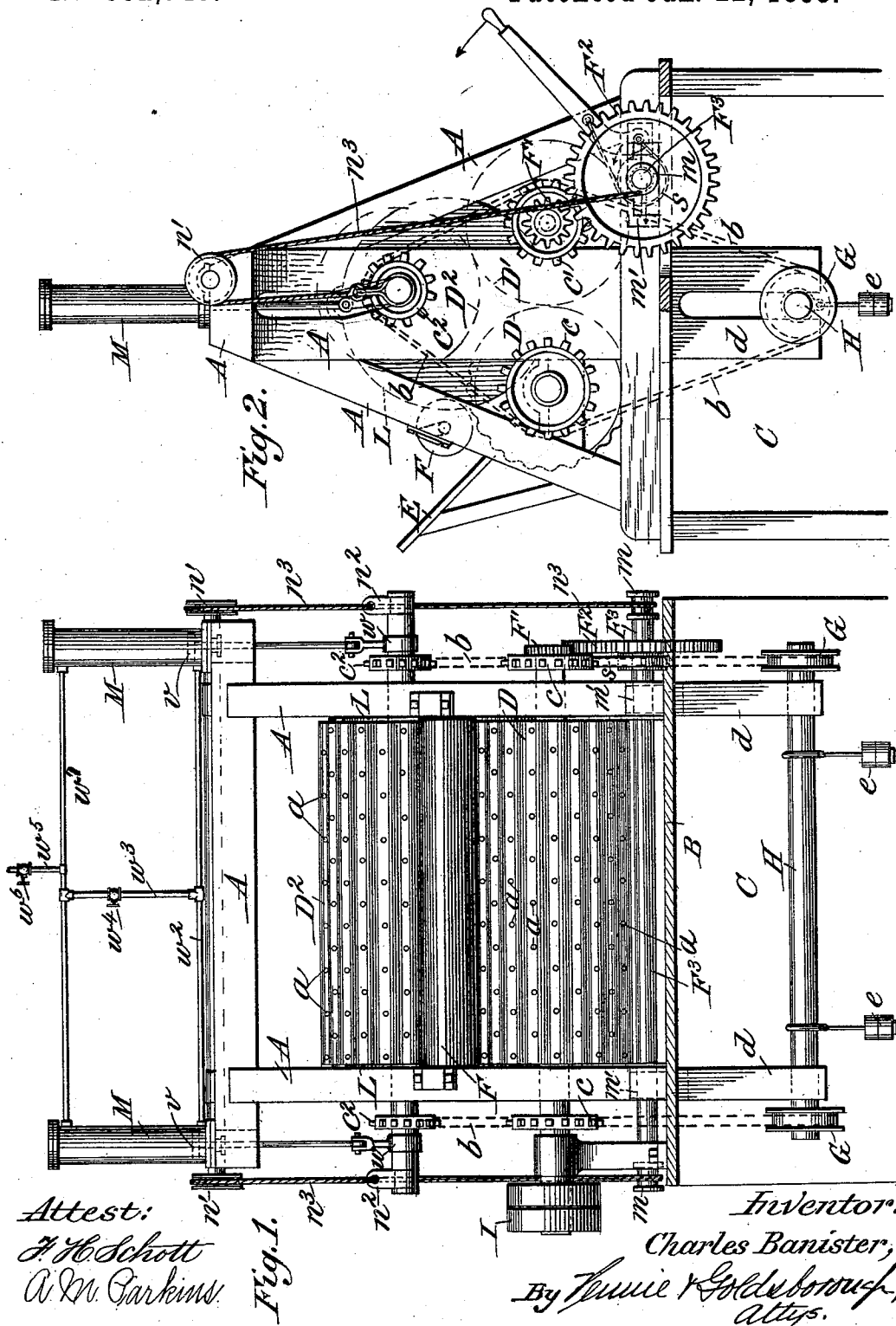
(No Model.)

C. BANISTER.
COTTON PRESS.

2 Sheets—Sheet 1.

No. 532,749.

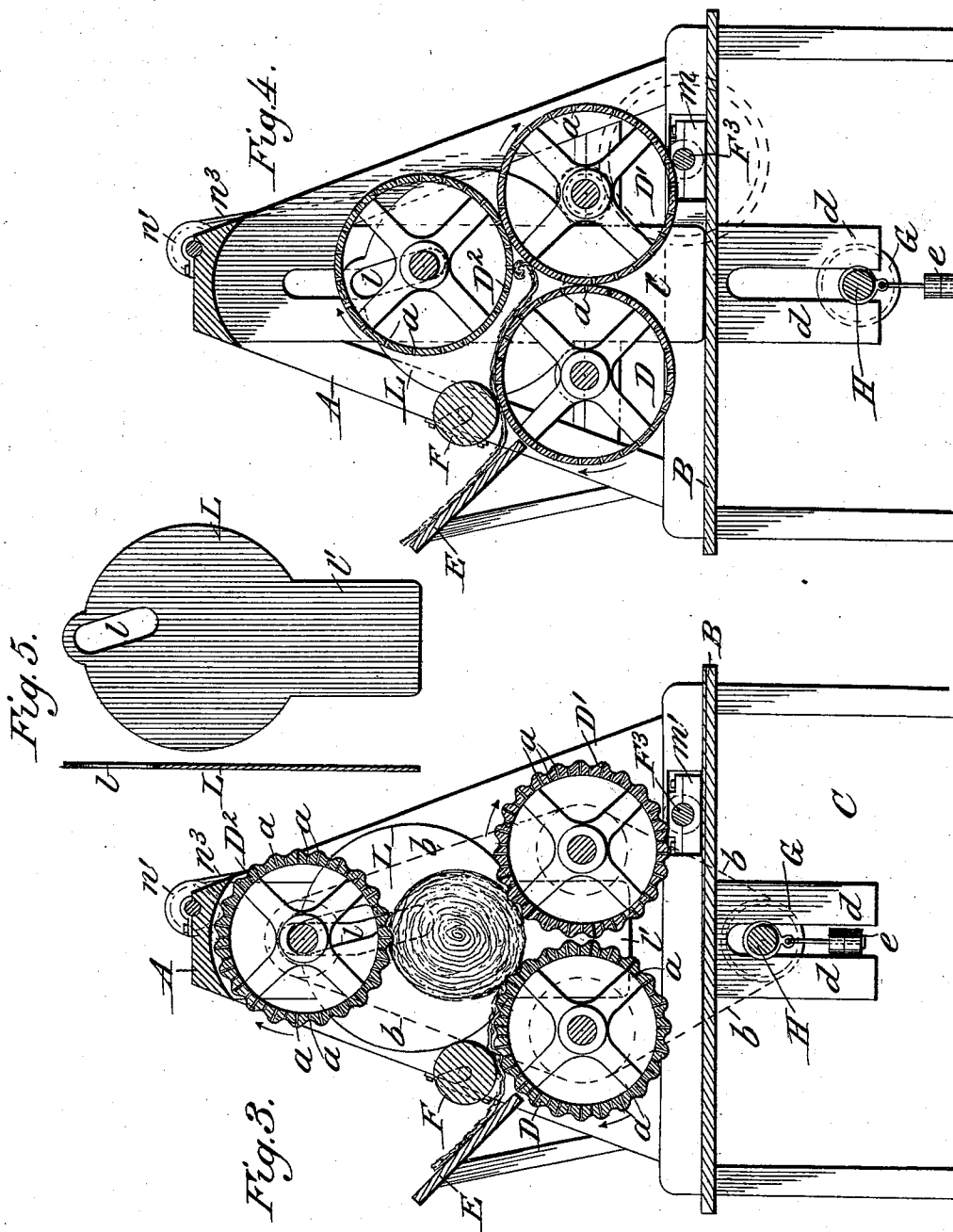
Patented Jan. 22, 1895.



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COTTON PRESS.

No. 532,749.

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Attest:

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UNITED STATES PATENT OFFICE.

CHARLES BANISTER, OF WACO, TEXAS.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 532,749, dated January 22, 1895.

Application filed June 15, 1894. Serial No. 514,632. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BANISTER, a citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Cotton-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 relates to certain new and useful improvements in cotton presses, and is designed to produce tightly wound bales from the cotton bats formed upon the condenser, and fed into the press. To this end I have devised the construction and arrangement of parts illustrated in the accompanying drawings, wherein—

Figure 1 represents a side elevation of a cotton press embodying my improvements. Fig. 2 represents an end elevation thereof. Fig. 3 represents a section on the line 3—3 of Fig. 1, showing the location of the parts at the termination of the bale-forming operation. Fig. 4 represents a like view at the beginning of the operation, and shows also a modified construction of the press rollers. Fig. 5 represents a detached side elevation of one of the slotted plates through which the upper roller shaft passes.

Similar letters of reference indicate similar parts throughout the several views.

The salient or main characteristic feature of my improvement is its capacity not only to compress the bale by the weight applied through the upper roller and to wind it by the joint action of the three rollers, but, by graduating the relative speed of the rollers with which the bat successively comes in contact, to thereby cause each roller to more tightly wind the bat as the bale is being formed.

In the drawings, A indicates the framework of the press, which may be mounted as usual upon the gin floor B above the basement C. Within the side members of the frame are mounted, in stationary bearings, the rollers D, D' constituting the roller bed and above them in adjustable bearings the roller D², these three rollers constituting, in my preferred form, the bale-making elements, although, for reasons hereinafter set forth I do not restrict myself to the use of three rollers.

The rollers may, as shown in Fig. 4, have a comparatively smooth periphery, although in any event they should not be too smooth to lack the necessary friction to permit them to carry the bat forward from one to the other. In practice, however, to insure this result, I corrugate the rollers longitudinally, as illustrated in Figs. 1 to 3, or in lieu thereof, or in addition thereto, I provide the shell of the rollers with perforations *a* extending into the open interior. These perforations engage with small projecting fibers of the bat pressed into them by the roller action and thus increase the frictional contact between the rollers and the bat. A further and important function of the perforations is that they permit the air present in the bat to be forced out therefrom, by reason of the compressive action of the rollers, thereby removing a considerable obstacle to the baling operation.

The rollers D, and D' are located just out of contact with each other, and the roller D, is located at the termination of a chute or inclined platform E, which receives the condenser bat and carries it down so as to enter the press between the roller D and an idle roller F, journaled loosely in oblique or inclined bearings in the frame. The rollers D, D', D² are revolved by sprocket chain *b* whose links engage the teeth of cogs *c*, *c'*, *c*², fixed upon the ends of the roller shafts, said chains passing over the slack take-up idlers G. These idlers G are mounted upon an arbor H, which is thus suspended from the chains with capacity for vertical movement between guides *d*. Upon the shaft H are hung suitable weights as *e*, both for the purpose of keeping the chains taut and for applying additional weight to the upper roller D² so as to render its compressive action the more effectual.

It will be noted that by reason of the difference in the number of gear teeth on the several rollers, the roller D² receives a faster rotation than the roller D', and that the roller D' receives a faster rotation than the roller D. It will be seen that by this arrangement the roller D' serves to more effectually strip the bat from the roller D, and at the same time to wind or wrap the bat more tightly, and, in like manner, the roller D² more effectually strips the bat from the roller D' and still further increases the tightness of wind-

ing of the bale. So far as I am aware it is broadly new to thus run any two rolls acting upon the same bat at different speeds for the purpose of more tightly winding the bale, and I desire therefore to be understood as claiming the feature broadly wherever it is used in cotton presses for such purpose, whether the number of rollers acting upon the bat be two or more than two. The power for actuating the rollers may be supplied to any of them in any suitable manner, as for instance by means of the belt pulley I.

The upper roller D^2 is passed at its opposite ends through two vertically movable heads L, having slots l which incline downwardly from the vertical and correspond in that respect with similar slots l^2 in the frame. The purpose of this inclination is to carry the roller D^2 , when in its lowered position, over toward the roller D' as indicated in Fig. 4, thereby preventing the bat from being carried out of the press by the roller D' , and also furnishing the necessary enlargement of the throat of the press on the opposite side.

On entering the press the bat, passing between the idler roller G and the pressure roller D, is carried into contact with the roller D' , which thereupon, as shown in Fig. 4, brings it into contact with the roller D^2 . The effect is that the forward edge of the bat is folded, as shown, and such folded edge serves as a center upon which the outer layers of the bale are subsequently wound, a core being thereby wholly dispensed with. As the operation continues, the increasing diameter of the bale causes the upper roller D^2 to rise, and while the bale is being formed it becomes the more tightly wound through the action of the successively faster rollers D' and D^2 until the operation is completed and the bale has reached its desired diameter. During the formation of the bale its ends rest against the heads L, and as the roller D^2 rises it carries the heads up with it; the downward projection l' of the heads, however, serving still as surfaces of abutment for the ends of the bale. When the bale is completed it becomes necessary to raise the upper roller in order to remove the bale. This may be effected in a number of ways, for instance by throwing into gear with the pinion F' , on the power shaft, a gear wheel F^2 upon a shaft F^3 which carries the winding drums m , said shaft being mounted in bearings, one of which m' is movable. From the winding drums, cords or chains m^3 pass over the pulleys n' , and thence connect with the hangers n^2 for the upper roller shaft. When the winding drum shaft is thus thrown into engagement, the cords n^3 are wound on the drums and the roller D^2 thereby elevated so that the bale may be removed. After the removal of the bale, the upper roller is permitted to return to its original position by unclutching the winding drum shaft. To graduate the velocity of descent, I may employ a strap brake s , passing from the clutch lever about a brake pulley, as indicated in Fig. 2; or a more gradual descent may be secured, and one that can be readily regulated, by providing at the summit of the press, a pair of cylinders M fitted with pistons v , connected by depending rods with loose collars w upon the shaft of the roller D^2 . The cylinders are connected at top and bottom by pipes w' , w^2 , having a by-pass pipe w^3 provided with a valve w^4 , and water is supplied to the entire system of pipes and cylinders from a tank or other source of supply, as through the pipe w^5 , having a valve w^6 which is only opened to supply additional water when any part of the original supply has been lost by leakage or evaporation. During the rising of the roller D^2 , the pistons v are carried upward, and the water passes from the upper ends of the cylinders and along the pipe w' and thence downward through the pipe w^3 and pipe w^2 into the lower ends of the cylinders, so that when the roller D^2 is in its upper position the pistons are at the tops of the cylinders. Now, to graduate the descent of the roller D^2 , I partially close the valve w^4 thereby restricting the opening through which the water must be forced by the descent of the roller, it being evident that the more the valve is closed the slower will be the downward movement. It is, of course, evident that both the raising and lowering of the roller D^2 could be effected by a hydraulic or other pump suitably connected to the cylinders, but the means proposed by me are available in cases where it would not be practicable or economical to employ such a pump. Having thus described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A cotton press provided with a plurality of rollers, one receiving the bat from the other, and acting upon different parts of the bale as it is being formed, and means for rotating the second roller faster than the first; substantially as described.
2. A cotton press, provided with an upper roller, lower rollers, one of said lower rollers receiving the bat from the other, and acting upon different parts of the bale as it is being formed, and means for rotating the second of said lower rollers at a greater rate of speed than the first, and the upper roller at a greater rate of speed than the second of the lower rollers; substantially as described.
3. A cotton press, provided with lower rollers located at substantially the same height, one of said rollers arranged to receive the bat from the other, and adapted to act upon a different part of the bale as it is being formed and an upwardly movable roller located above the lower rollers and adapted to act upon the upper part of the bale, and means for rotating the rollers at different speeds; substantially as described.
4. In a cotton press, an upper roller, adapted to be moved bodily upwardly by the increasing diameter of the bale as it is formed, in

indicated in Fig. 2; or a more gradual descent may be secured, and one that can be readily regulated, by providing at the summit of the press, a pair of cylinders M fitted with pistons v , connected by depending rods with loose collars w upon the shaft of the roller D^2 . The cylinders are connected at top and bottom by pipes w' , w^2 , having a by-pass pipe w^3 provided with a valve w^4 , and water is supplied to the entire system of pipes and cylinders from a tank or other source of supply, as through the pipe w^5 , having a valve w^6 which is only opened to supply additional water when any part of the original supply has been lost by leakage or evaporation. During the rising of the roller D^2 , the pistons v are carried upward, and the water passes from the upper ends of the cylinders and along the pipe w' and thence downward through the pipe w^3 and pipe w^2 into the lower ends of the cylinders, so that when the roller D^2 is in its upper position the pistons are at the tops of the cylinders. Now, to graduate the descent of the roller D^2 , I partially close the valve w^4 thereby restricting the opening through which the water must be forced by the descent of the roller, it being evident that the more the valve is closed the slower will be the downward movement.

It is, of course, evident that both the raising and lowering of the roller D^2 could be effected by a hydraulic or other pump suitably connected to the cylinders, but the means proposed by me are available in cases where it would not be practicable or economical to employ such a pump.

Having thus described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A cotton press provided with a plurality of rollers, one receiving the bat from the other, and acting upon different parts of the bale as it is being formed, and means for rotating the second roller faster than the first; substantially as described.
2. A cotton press, provided with an upper roller, lower rollers, one of said lower rollers receiving the bat from the other, and acting upon different parts of the bale as it is being formed, and means for rotating the second of said lower rollers at a greater rate of speed than the first, and the upper roller at a greater rate of speed than the second of the lower rollers; substantially as described.
3. A cotton press, provided with lower rollers located at substantially the same height, one of said rollers arranged to receive the bat from the other, and adapted to act upon a different part of the bale as it is being formed and an upwardly movable roller located above the lower rollers and adapted to act upon the upper part of the bale, and means for rotating the rollers at different speeds; substantially as described.
4. In a cotton press, an upper roller, adapted to be moved bodily upwardly by the increasing diameter of the bale as it is formed, in

combination with a bed composed of a plurality of rollers, and means for rotating the upper roller at a greater speed than that of the rollers composing the bed; substantially as described.

5 5. A cotton press comprising three rollers, two of them being at substantially the same height, and the third being located above them and being upwardly movable, gears of a suc-
10 cessively decreasing number of teeth on the respective rollers, a sprocket chain engaging the gears, an idler over which said chain travels, and a weight upon the idler; substantially as described.

15 6. A cotton press, having two lower rollers, an upper movable roller, and heads at the ends of the rollers covering the space between said rollers, said heads having openings through which the shaft of the upper roller passes, and
20 being adapted to move with the upper roller; substantially as described.

7. A cotton press, having lower rollers, an upper movable roller between which and the lower rollers the material is fed and the bale
25 formed, heads covering the space between the upper and lower rollers at the ends, and means for guiding said upper roller in its vertical movement obliquely, so that in its lower position it will rest in such proximity
30 to the second of said lower rollers as not to permit the further passage of the material; substantially as described.

8. A cotton press, having lower rollers, an upper movable roller between which and the lower rollers the material is fed and the bale
35 formed, and means for guiding said upper roller in its vertical movement obliquely, so that in its lower position it will rest in such proximity to the second of said lower rollers
40 as not to permit the further passage of the material; substantially as described.

9. A cotton press, comprising lower rollers, and an upper roller, a winding shaft, a clutch for throwing said shaft into engagement with
45 the power mechanism of the press, and con-

nections from the winding shaft to the upper roller for raising the latter when the clutch is thrown into engagement; substantially as described.

10. A cotton press, comprising lower rollers, 50 and an upper roller, a winding shaft, a clutch for throwing said shaft into engagement with the power mechanism of the press, connections from the winding shaft to the upper roller for raising the latter when the clutch is
55 thrown into engagement, and means for graduating the subsequent descent of the upper roller when the clutch is disengaged; substantially as described.

11. In a cotton press, the combination with 60 the upper roller, of means for graduating its descent from the raised position, consisting of water cylinders having pistons connected to the said roller, said cylinders being joined at top and bottom by pipes, and a connecting
65 pipe between said pipes, said connecting pipe containing a regulable valve; substantially as described.

12. A cotton press, provided with bale-forming rollers having perforated peripheries; 70 substantially as described.

13. A cotton press provided with bale-forming rollers having corrugated and perforated peripheries; substantially as described.

14. A cotton press, having two lower roll- 75 ers, an upper movable roller, and heads at the ends of the rollers covering the space between said rollers, said heads having slots through which the shaft of the upper roller passes, whereby the said roller moves inde-
80 pendently of the heads until its shaft reaches the end of the slots when its continued movement carries the heads with it; substantially as described.

In testimony whereof I affix my signature 85 in presence of two witnesses.

CHARLES BANISTER.

Witnesses:

J. A. GOLDSBOROUGH,
JOHN C. PENNIE.