

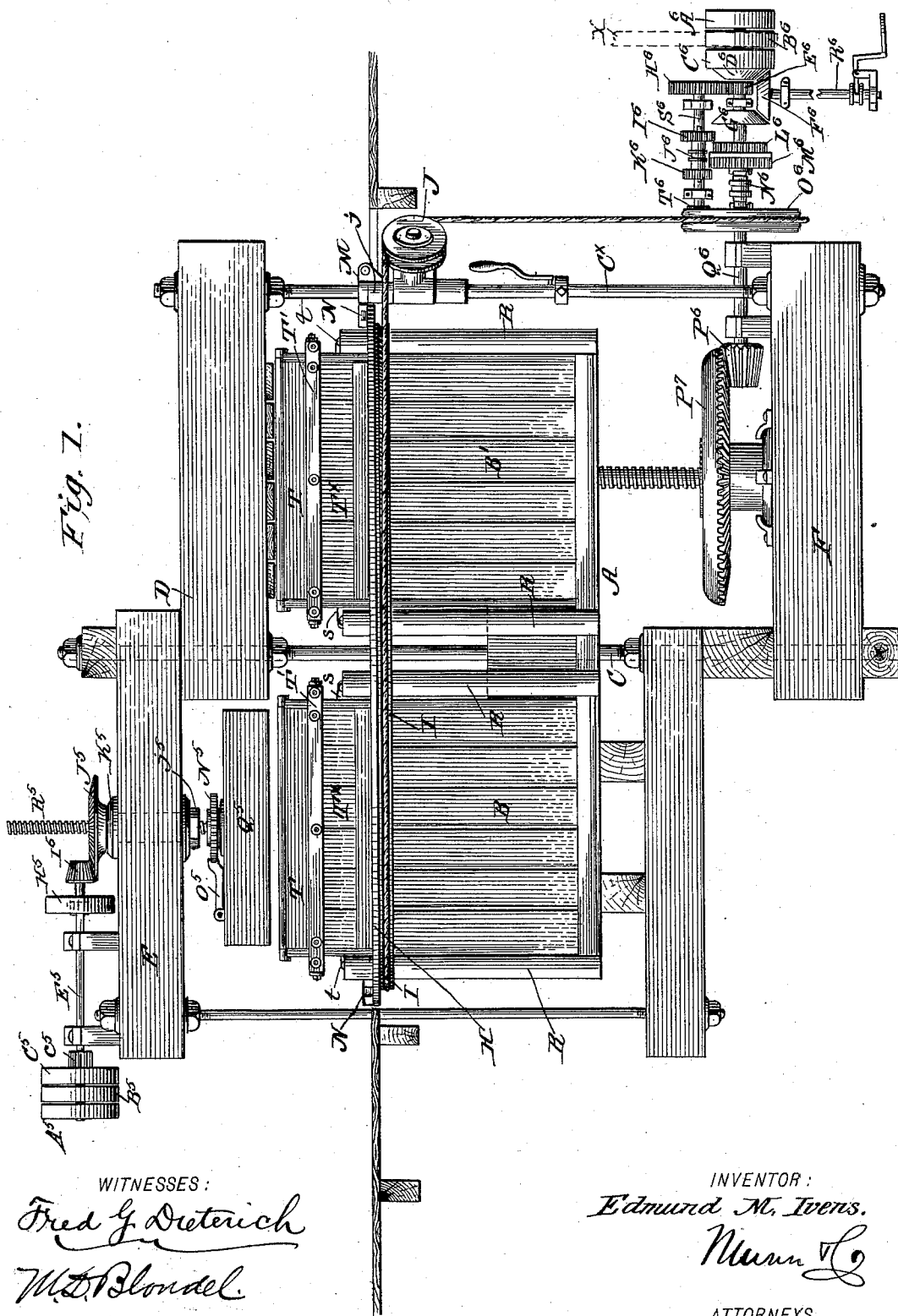
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4 Sheets—Sheet 1.

E. M. IVENS.
COTTON BALING APPARATUS.

No. 504,983.

Patented Sept. 12, 1893.



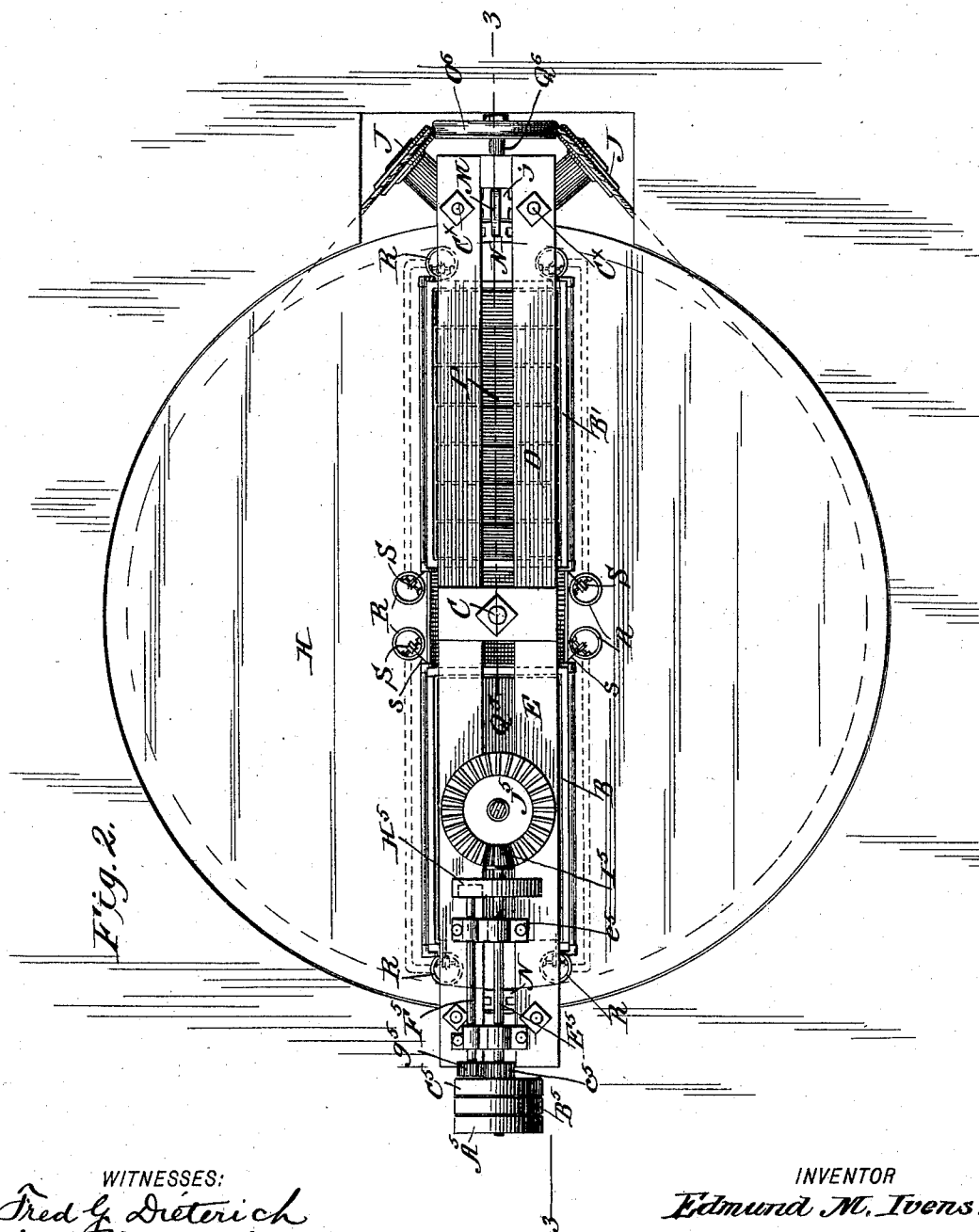
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WITNESSES:
Fred G. Dietrich
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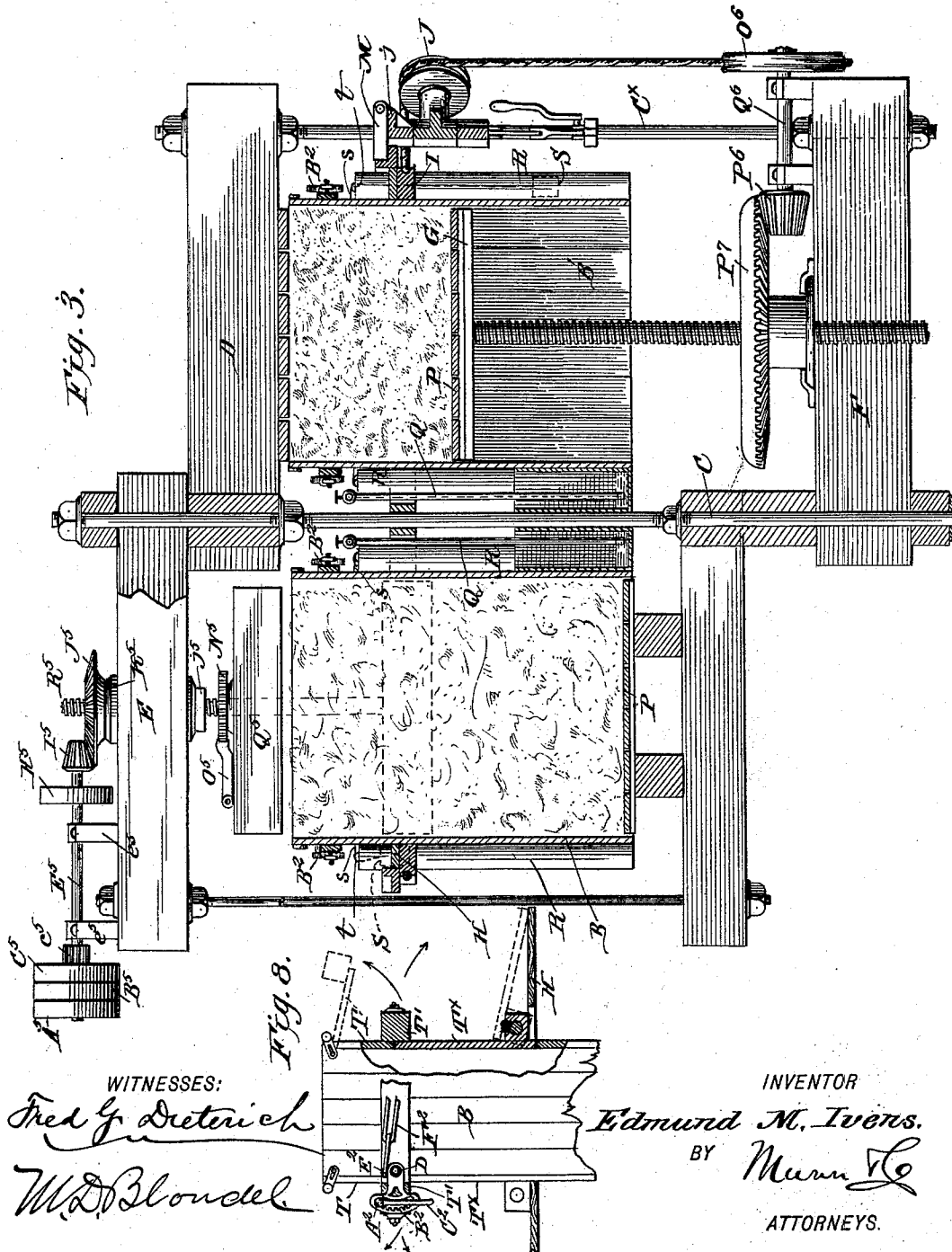
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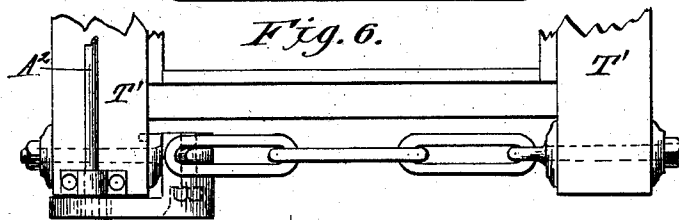
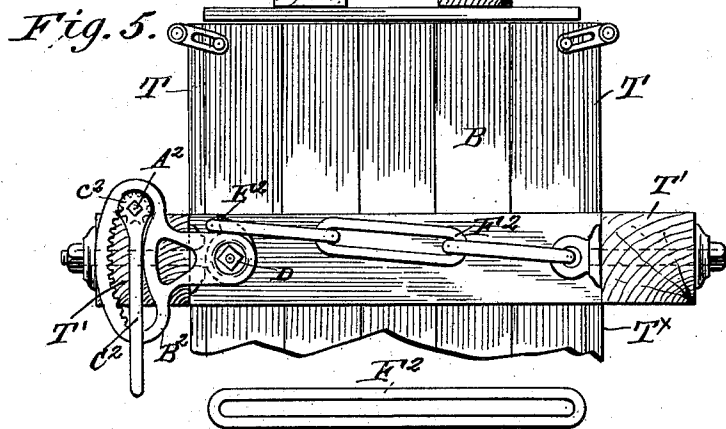
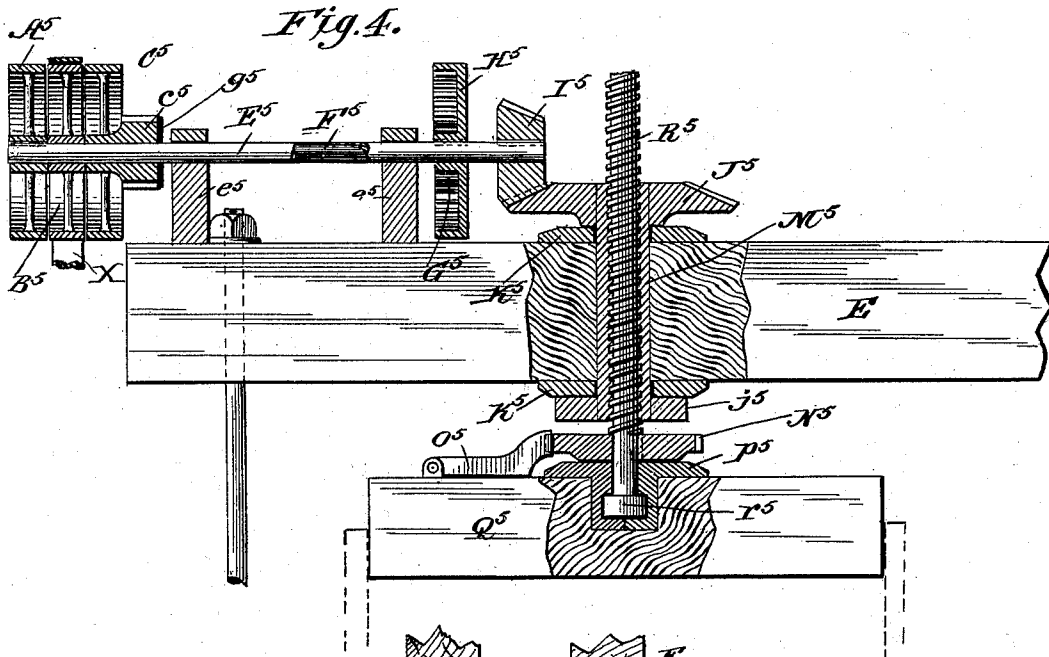
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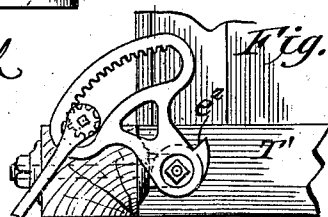
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UNITED STATES PATENT OFFICE.

EDMUND M. IVENS, OF NEW ORLEANS, LOUISIANA, ASSIGNOR TO EMILY
L. IVENS, OF SAME PLACE.

COTTON-BALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 504,983, dated September 12, 1893.

Application filed June 28, 1892. Serial No. 438,340. (No model.)

To all whom it may concern:

Be it known that I, EDMUND M. IVENS, residing at New Orleans, in Orleans parish, in the State of Louisiana, have invented a new and Improved Cotton-Baling Apparatus, of which the following is a specification.

My invention relates to an automatic cotton baling apparatus in which a cumulative power is used, and it has for its objects, first, to bale lint or condensed cotton direct from the gin without tramping the same in the press box; secondly, to pack the cotton in a seven foot box instead of a twelve foot box as is now most generally done, whereby to lighten the weight of such box and to shorten the travel of the main screw presser platen; thirdly, it has for its object to provide in connection with a swinging press box having two chambers a "junior" presser follower mechanism which presses down upon the cotton in the receiving chamber and imparts thereto an initial pressure, a senior or cumulative presser platen which imparts the secondary or final compression to such partially compressed bale, after the box is swung to change the position of the chambers, such "junior and senior" pressing operations being simultaneous, *i. e.*, as the initial pressure is applied to the cotton in one chamber, the final pressure is applied to the partially compressed bale in the other chamber.

It has also for its object to provide suitably arranged locking devices for the doors which are adapted when operated to simultaneously release the doors.

With other minor objects in view all of which will hereinafter be fully set forth my invention consists in the novel combination and arrangement of parts all of which will hereinafter be fully described in the specification and pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved baling apparatus. Fig. 2 is a top plan view thereof. Fig. 3 is a longitudinal section thereof on the line 3—3, Fig. 2. Fig. 4 is a view of the "junior" presser mechanism. Figs. 5, 6, 7 and 8 are detail views illustrating the door locking devices hereinafter specifically referred to.

Referring to the accompanying drawings, A indicates the rotatable press box formed with dual chambers B, B', it being of the ordinary construction, except, that it is of a much less depth than boxes of this kind usually are. Such box is centrally mounted upon a king post C. The post C is secured at its upper end in the fixed upper cross head D, disposed over the lower or what I shall term the "senior" presser platen, and the oppositely extending timbers E, upon which is mounted the upper or "junior" presser platen, which operates over the receiving end of the press box. The lower end of the post C is secured in the base timbers F, upon which the lower or cumulative presser platen is secured, and the lower cross head or presser block G located under the feed end of the box as shown most clearly in Fig. 3 of the drawings.

Any suitable means for rotating the press box may be employed as also for limiting the swinging of the box to a semi rotation at each movement. I prefer however, to employ the means shown in the drawings and which are fully described and claimed in another application filed by me on the 25th day of June, 1892, Serial No. 438,037. Such devices consist broadly in a circular platform H, secured to the press box at a point below the side doors, on the under face of which is a large band wheel I, over which passes an endless rope or cable which passes over guide pulleys J, held on the queen posts C^x C^x, and over an externally grooved drive pulley O mounted on the main drive shaft Q^s of the cumulative feed mechanism for operating the main press or platen such mechanism having suitably arranged shifting devices whereby the pulley can be thrown into and out of engagement when desired.

M indicates pivoted latches held on the guide wheel bearing plate j, which are adapted to automatically drop into engagement with lock plates N on the ends of the press box at each half turn of the box.

Heretofore where dual swinging press boxes have been employed one chamber has been used as a receiving chamber while the other serves as a baling or pressing chamber.

To obtain the proper density of the bale in this class of boxes it requires that such boxes

be at least twelve feet high to permit of at least an eleven-foot travel of the presser platen. This, I have found, objectionable, in that it requires the use of very heavy press boxes and too great a travel of the platen and too much time and loss of power in the finishing of the bale. To overcome this I make the box about two-thirds the usual height, reduce the travel of the accumulative presser platen proportionately and employ a "junior" presser mechanism which primarily compresses the cotton in the receiving chamber before such chamber is turned over the main presser platen.

Before describing the particular construction of the senior and junior presser platens it should be stated that in each chamber of the press box operate counter balance followers P, which serve the double function of balancing the cotton as it is fed into the receiving chamber and also as a support therefor after the main pressure platen has receded and before the tied bale is removed from the main compression chamber, such followers also serving as a bottom stop which bears against the lower cross head when the "junior" presser is applied.

In the practical construction of my machine I prefer to employ the devices shown in the drawings and which are fully described and claimed in my other application referred to and consist broadly of a water holding tank mounted on the press box, which supplies water through a series of valved pipes Q to a series of cylinders R, in which operate pistons S, which are connected by the wires or cords s, s to the followers P, such cords passing up from the pistons over sheaves T as shown.

In operation when the followers are depressed the pistons rise in the cylinders and the water follows up and when such pistons recede, the water is forced back into the tank. When it is desired to hold the followers to any of their adjusted positions the valve on the particular supply pipe when the follower platen Q⁵ is in the press box is closed which holds the water in the cylinders under the pistons and prevents their downward movement.

I desire it understood that any other means for counter balancing the followers, as for instance such as is shown in my Patent No. 475,117, May 17, 1892, may be employed.

The "junior" presser mechanism which is most clearly shown in Figs. 1 and 4 comprises a follower block or platen Q⁵, swivelly supported upon the lower end of a screw shaft R⁵, such shaft having a collar r⁵ which fits in a socket plate p⁵ secured in the upper face of the platen Q⁵.

M⁵ indicates an internally threaded tubular nut which passes up through the beam E and has secured at its upper end a bevel gear J⁵, while its lower end has a collar j⁵.

K⁵ K⁵ indicate washers interposed between the gear J⁵ and flange m⁵ on the lower end of

the nut M⁵. Upon its lower end the shaft R⁵ has a ratchet or notched wheel N⁵ keyed thereto with which engages a trigger or latch O⁵ secured upon the top of the platen Q which holds the screw from turning by force of gravity. A driveshaft E⁵ is journaled in bearings e⁵ e⁵, the inner end of which has a bevel pinion I⁵, which meshes with the bevel wheel J⁵, an internal cog wheel H⁵ being also fixedly held on the shaft E⁵ near such inner end.

Upon the outer end of the shaft E⁵ is keyed a drive pulley A⁵, and journaled two loose pulleys B⁵ and C⁵, one of which C⁵ has a gear c⁵, which meshes with a gear g⁵ on a counter shaft F⁵, the outer end of which has a small gear G⁵ which meshes with the internal gear wheel H⁵ as shown.

The manner in which the junior presser mechanism operates is as follows—assuming the screw and platen to be up at the highest point and the receiving chamber below filled with cotton: When the chamber is full the ratchet O⁵ is raised, which releases the screw shaft, and allows it to revolve on its own thread by gravity, until it is stopped by the cotton in the box. The latch or trigger is then allowed to drop into engagement with the ratchet wheel N⁵, and thereby holds the shaft R⁵ from further rotation. The belt X is then moved from loose pulley B⁵ to pulley C⁵. This will then press the cotton below through the internal gear H⁵, shaft F⁵ and gears g⁵ and c⁵, and transmit power to the shaft E⁵ and through it and the bevel gear I⁵ to the tubular threaded sleeve or nut M⁵. When as low as desirable move belt X across pulley B onto fast pulley A, when screw will run up three times as fast as it went down, the gearing being arranged relatively for such operation. This operation can be repeated as often as necessary in making a bale and it effectually serves to bale lint cotton without the necessity of tramping it. After the cotton has been thus primarily pressed the box is turned to bring the empty chamber under the junior presser while the partially pressed cotton is moved over the senior presser for a final compression.

The senior presser mechanism consists of a cumulative mechanism adapted to operate to raise the platen at a fast speed and medium power at the start and at much slower but with a cumulative power at the end of its stroke.

In the drawings I have shown an accumulative feed mechanism adapted for three independent pressure movements and such mechanism consists in a main shaft Q⁶ having loose pulleys A⁶ B⁶ C⁶, a fixed bevel friction wheel G⁶ and a fixed pinion P⁶ which meshes with the master screw gear P⁷ as shown. On the shaft Q⁶ is loosely held an internally threaded pulley O⁶, a double sliding clutch N⁶ and loose integral gear wheels L⁶ M⁶. The loose pulley C⁶ has a bevel friction wheel D⁶ and a gear E⁶ with which meshes a large cog wheel H⁶ on a counter shaft S⁶ provided with a gear T⁶ which engages the

internal gear O⁶. Upon the shaft S⁶ is held a double sliding clutch J⁶ carrying at opposite ends gears I⁶ and K⁶.

F⁶ indicates a bevel friction wheel mounted on the upper end of a vertically movable shaft R⁶.

In operation, to apply a direct application to the main presser platen the belt X is shifted from the loose pulley B⁶ to the fast pulley A⁶, the clutch N⁶ being held out of engagement. A rapid motion is thus transmitted to the shaft Q⁶. After this power is exhausted an intermediate cumulative pressure can be applied by moving the gear wheel I⁶ on shaft into engagement with the gear L⁶ and the clutch N⁶ into engagement with the wheel M⁶ and shifting the belt to the loose pulley C⁶. To obtain a very powerful but slow movement of the platen, the clutch J⁶ is moved to release gears L⁶ and I⁶ and the gears K⁶ and M⁶ are brought to mesh, the belt being applied to the loose pulley C⁶. While the bale is being hooped the cog wheels I⁶ and K⁶, are disengaged and the clutch N⁶ locked into the pulley O⁶, the belt is again applied to the loose pulley C⁶ and the platen is run down sufficiently to remove the bale from the press. The clutch N⁶ is then disengaged entirely and the friction wheels D⁶ G⁶ and F⁶ are thrown into gear and held so by holding the shaft R⁶ up by a suitably arranged foot lever.

T T^x indicate the upper and lower door sections of the press box, which are hung on the upper end of such box in the ordinary manner, the upper section being adapted to swing upward while the lower is hung to swing down against the floor or platform, and the lower end of the upper section has the usual strain beams T' which overlap the upper end of the lower door section as most clearly shown in Fig. 8 of the drawings. Heretofore so far as I know these doors have been connected with each other at their ends by means of separate fastenings. This is objectionable, in that each door is necessarily opened separately. To provide for simultaneously opening such doors I employ the means most clearly shown in Figs. 5, 6 and 7 of the drawings, and such means consist of a shaft A² journaled on the upper face of the timber T and extending entirely across the face of the press. The ends of this shaft are extended into slotted sectors B², and such ends are squared to receive the operating levers C², which levers have pinions c² cast integral therewith, which engage the tooth racks on the sectors as shown. Each sector is pivotally journaled upon a bolt D secured in the timber T, and such sectors have each an upwardly projecting lug E² having slightly undercut lock faces e². F² indicates the usual chain link connections. In operation, when the doors are closed the several parts are in the position shown in Fig. 5, the sectors being at their down positions and the levers with their handles extending perpendicularly downward. After the bale is finished and the

doors are to be opened the handle C² is turned once entirely around, its pinion and the pinion on the opposite lever (which is turned by the revolution of shaft A²) serving to raise both sectors. This operation partly turns the pivot ends of the sectors and changes the lock faces of the lugs E² from an acute to an obtuse angle and as a consequence, the links slip off. (See Fig. 7.)

In baling lint cotton there is always a very heavy side strain, which springs the doors into irregular shapes and causes the ordinary fastenings to jump off. The fastening devices shown and described act in unison, apply the same strain to both ends of the doors, are positive, and also operate to gradually loosen the chain fastenings before the link is allowed to slip off, a result not obtainable by the ordinary methods of fastenings.

From the foregoing description taken in connection with the drawings the advantages and complete operation of my improved baling apparatus will be clearly understood by those skilled in the art to which it appertains.

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

1. In a cotton baling apparatus essentially as described, in combination, a rotatable press box having dual compartments, a cross head under one of such compartments, a cross head over the other compartment, a presser mechanism, including a follower, adapted to drop by gravity at the first portion of its movement, and screw operated to finish its thrust, a second presser mechanism, including an accumulative presser platen adapted to engage the partially compressed cotton from below, after the press box has been turned, substantially as and for the purposes described.

2. In a cotton baling apparatus, in combination with the press box, a presser mechanism, including a gravity and screw operated follower, and shifting gear devices adapted to be set to engage the screw follower and move it to a final thrust by screw pressure, substantially as and for the purposes described.

3. In a cotton baling apparatus, in combination with the press box, a presser mechanism, including a screw operated follower, adapted to drop by gravity against the cotton, a locking device on such follower adapted when set to hold the follower from such gravity movement after it enters the press box substantially as and for the purposes described.

4. In a cotton baling apparatus, the combination with a cross head and a press box, of a screw operated follower, movable in such box against the cross head and constructed to fall by gravity when not locked to the feed screw, a locking device for locking it to such screw, and shifting gear mechanism meshing with the feed screw adapted to operate such screw shaft substantially as and for the purposes described.

5. In a cotton baling apparatus, the combination with the press box, the oppositely swinging doors and link fastenings secured at the edges of one door, of the pivoted sectors having lock lugs, secured to the other door, and means for operating such sectors in unison, substantially as and for the purpose described. 15

6. In a cotton baling apparatus, the combination with the press box doors and the link couplings secured to one of such doors, of the slotted sectors having rack faces and a trans-

verse shaft journaled to the opposite door, such shaft projected through the slotted sectors and having squared ends, said sectors having lock lugs adapted to engage the link couplings and levers adapted to fit the ends of the shaft and having a pinion arranged to engage the rack face of the sectors, all substantially as and for the purposes described. 20

EDMUND M. IVENS.

Witnesses:

AMBROSE WAGNER,
R. TOOMBS WRIGHT.