

No. 760,117.

PATENTED MAY 17, 1904.

G. D. HAYES.
BALING PRESS.

APPLICATION FILED OCT. 15, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

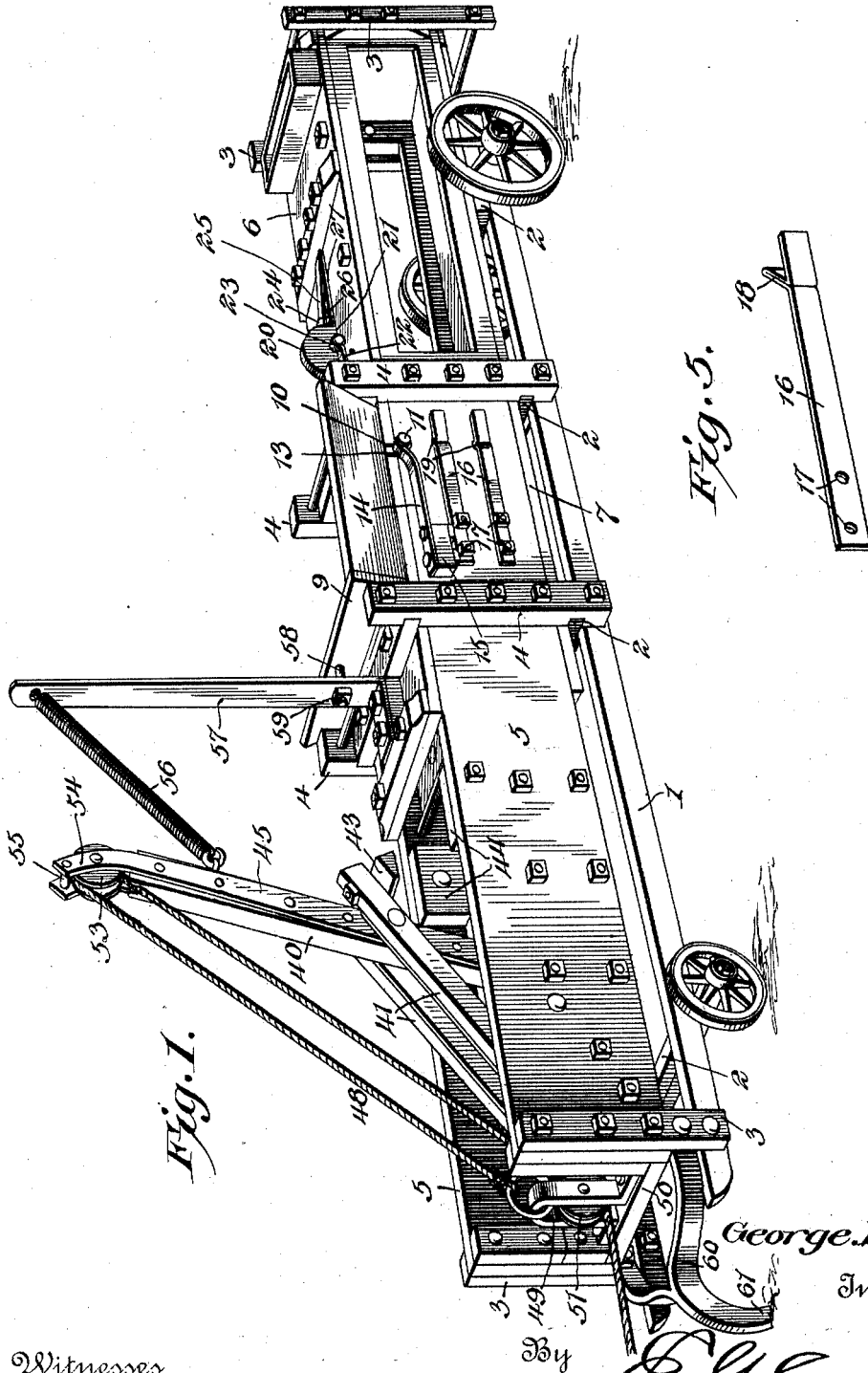


Fig. 1.

Fig. 5.

George D. Hayes,
Inventor,

Witnesses
Howard D. Orr.
H. J. Shepard.

E. G. Singer,
Attorney

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2 SHEETS—SHEET 2.

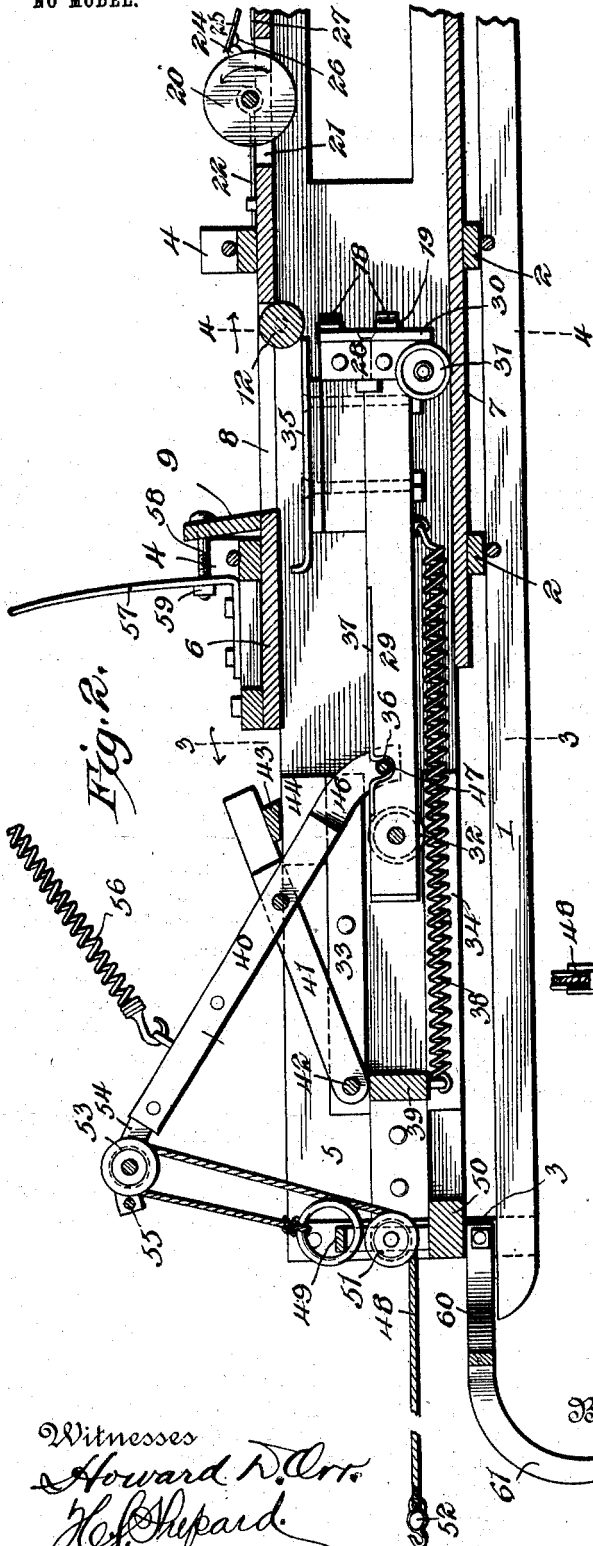


Fig. 6.

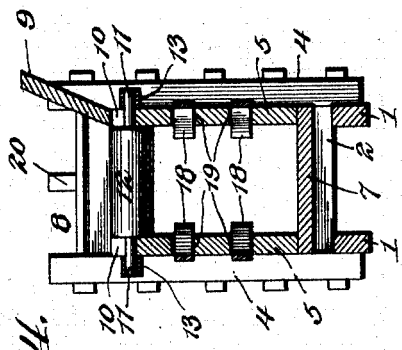
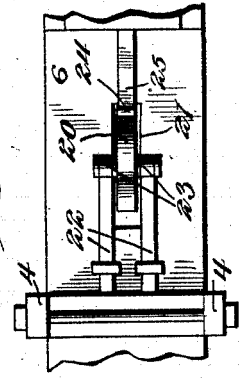


Fig. 4.

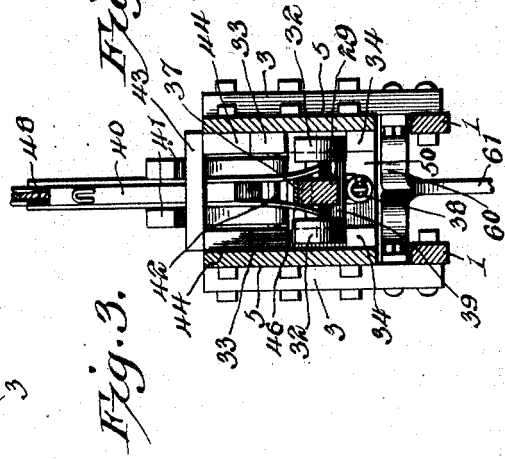


Fig. 3.

George D. Hayes, Inventor,

By

E. J. Singer

Attorney

Witnesses
Howard N. Orr
H. J. Shepard

UNITED STATES PATENT OFFICE.

GEORGE DANIEL HAYES, OF HILLSBORO, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 760,117, dated May 17, 1904.

Application filed October 15, 1902. Serial No. 127,402. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DANIEL HAYES, a citizen of the United States, residing at Hillsboro, in the county of Hill and State of Texas, have invented a new and useful Baling-Press, of which the following is a specification.

This invention relates to baling-presses of the rebounding-plunger type, and is designed to provide certain new and useful improvements in the construction shown in my prior patent, No. 685,838, dated November 5, 1901.

It is furthermore designed to provide improvements in the mounting of the plunger-operating lever, so as to insure a quick and positive disengagement thereof from the plunger-rod at the completion of the stroke and also to arrange for applying the power to the lever in such a manner as to obviate twisting thereof.

Another object is to provide an improved tension device for the plunger-operating lever and to have the same adjustable, so as to take up wear and to accommodate the device to existing circumstances.

Another object is to provide the press with means whereby all of the bales may be formed of equal lengths.

Other objects reside in the provision of an improved tucker and also means for preventing backward movement of the bales.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a baling-press constructed and arranged in accordance with the present invention. Fig. 2 is a longitudinal sectional view thereof. Fig. 3 is a cross-sectional view on the line 3 3 of Fig. 2. Fig. 4 is a cross-section on the line 4 4 of Fig. 2. Fig. 5 is a detail perspective view of one of the devices for

preventing backward movement of the bales. Fig. 6 is a detail plan view of the means for indicating when a bale has been completed.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

The frame of the present press consists of opposite longitudinal sills 1, which are connected by suitable cross-bars 2 and from which rise end and intermediate posts 3 and 4, respectively. Opposite longitudinal sides 5 are secured to the posts, and a top 6 and bottom 7 are provided at the rear portion of the frame, so as to form an elongated baling-box. This frame structure is supported upon a suitable running-gear or wheels for convenience in transportation.

The press-box proper is defined between the intermediate posts 4 and is provided in its top with a feed-opening 8, from which rises a suitable hopper 9. At the rear end of the feed-opening each upper edge thereof is provided with a vertical slot 10, which receives the adjacent journal 11 of a roller 12, which is thus mounted within the top of the feed-opening so as to project slightly below the top of the baling-box and is designed to form a tucker for tucking the hay into the box and is also an anti-friction device to prevent binding of the hay against the back of the opening. In order that the roller may yield in a vertical direction, so as to prevent injury to the journals or frame of the machine, each journal is projected externally of the box and is received within a terminal eye 13, carried by the free end of a leaf-spring 14, the forward end of which is secured to a block or projection 15, carried by the outside of the box. To prevent backward movement of the bales, there is provided means at opposite sides of the box consisting of a pair of upper and lower metallic plates 16, which are applied longitudinally to the exterior of the box, with their forward ends rigidly secured to the box, as indicated at 17. The rear end of each plate is free to move laterally outward, and an intermediate portion of the plate, preferably near the rear free end thereof, is bent or folded upon itself to form a lateral projection 18, which extends in-

wardly through an opening 19 in the side of the box and is inclined rearwardly, so as to present a beveled or inclined front face and an abrupt rear shoulder, whereby the projections and plates will yield outwardly when the bales are being forced along under the action of the plunger; but the projections will offer a stationary abutment to prevent backward movement of the bales. By folding the plate to provide a projection the latter is materially strengthened, and by having the free terminal of the plate bear against the outer side of the box it limits the inward movement of the projection to prevent the plunger from catching on the projection during its rebounding movement.

A very important object of the present invention is to provide for insuring a uniform length to the bales, and this is accomplished by means of a wheel or roller 20, turning in a longitudinal slot or opening 21, formed in the top of the baling-box and immediately in rear of the press-box, with its lower peripheral edge projected below the top of the box, so as to frictionally turn upon the tops of the bales. The roller is yieldably mounted, so as to prevent binding thereof upon the bales, by means of a pair of spring-arms 22, secured to the top of the box and provided at their free ends with bearing-eyes 23, which receive the journals of the roller or wheel. Upon the periphery of the wheel is a projection 24, which is adapted to strike against the free end of a spring-knocker 25, which consists of an arm having its rear end secured to the top of the box and its forward free end provided on its under side with a head or enlargement 26 to snap down against a wear-plate 27 upon the top of the box after the free end of the spring-arm has been disengaged from the projection. It will of course be understood that the periphery of the wheel or roller is of a predetermined length—that is to say, it is of a length equal to the length of the bale to be formed by the press. Hence the amount of hay which is required to give the wheel or roller one complete rotation constitutes a single bale, and the noise made by the spring tripping from the projection upon the roller is a signal to the operator for tying the bales for indicating the intervals for inserting the blocks into the press for separating the bales.

Working within the press-box is the plunger 28, having the usual plunger-rod 29. A head or face plate 30 is secured to the end of the plunger, so as to have a working fit within the box, and immediately in rear of the head and carried by the plunger are opposite rollers 31, which travel upon the bottom of the box. A similar pair of rollers 32 are carried at the rear end of the plunger-rod and travel in a guideway formed by the upper and lower cleats or rails 33 and 34, which are secured to the inner faces of the opposite sides of the device, so as to guide the plunger-rod and

prevent lateral movement thereof. Upon the top of the plunger there is a plate 35, which is designed to close the feed-opening when the plunger moves into the press-box. The plate has its rear end upturned, as shown in Fig. 2, for the purpose of preventing the dust and trash from falling off the rear end of the plate and getting behind the plunger-head. The upturned rear end of the plate is adapted to rake the material forward instead of passing under the same. In the upper side of the plunger-rod and just in front of the rear rollers 32 is a seat or socket 36, which is protected by a metallic wear-plate 37 and is designed to receive the lower end of the actuating-lever. The plunger is caused to rebound by means of a helical spring 38, which lies longitudinally beneath the plunger-rod, with one end connected thereto and its opposite end connected to a cross-bar or abutment 39 at the rear end of the guideways in which the rollers 32 work. For operating the plunger there is an upstanding lever 40, which is fulcrumed intermediate of its ends upon a swinging support consisting of a pair of arms or members 41, which embrace the lever, with their lower ends pivoted or fulcrumed to and between the upper set of cleats or rails 33, as indicated at 42, their upper ends being connected and spaced by means of a cross-bar 43, which is secured across the front or under sides of the arms or members, projects at opposite sides thereof, and has its forward or under face beveled, so as to strike flat against the stops 44, which are blocks secured to the sides of the apparatus and supported upon the upper pair of rails or cleats 33. The plunger-operating lever is preferably of wood and is strengthened by means of a pair of metallic bars or plates 45, the lower ends of which are projected beyond the end of the wooden portion of the lever, so as to form a fork 46, between the members of which an antifriction-roller 47 is mounted, said roller being disposed inwardly from the ends of the fork members and adapted to engage the seat or socket 36 in the top of the plunger-rod, the terminals of the fork members normally lying at opposite sides of the plunger-rod, so as to form guards to prevent lateral displacement of the lever from the plunger.

The means for imparting motion to the plunger-actuating lever consists of a rope or cable 48, which has one end connected to an inverted substantially U-shaped bracket 49, which is secured to a cross-sill 50 at the front of the press, the said front being open to accommodate the bracket. Within this bracket is a grooved pulley 51, under which the free portion of the cable or rope passes, and is provided at its outer end with a whiffletree or other suitable draft connection 52. At the upper end of the plunger-actuating lever is a groove-pulley 53, which is mounted in a fork 54, formed by the upper ends of the plates or

bars 45. The outer ends of the fork members project beyond the periphery of the pulley and are connected and braced by a rivet or cross-bar 55, which also forms a guard to prevent the rope or cable from accidental displacement from the pulley. Normally the roller 47 at the lower end of the actuating-lever is in the seat or socket 36 of the plunger-rod, so that when power is applied to the free end of the rope or cable the upper end of the plunger-actuating lever is drawn forwardly and its lower end moved rearwardly, thereby moving the plunger into the press-box and compressing the hay. As the lower end of the lever moves upwardly it finally disengages from the plunger, and the latter automatically rebounds to its original position under the influence of the spring 38, so as to be in position for another operation. After the lever has become disengaged from the plunger-rod it is drawn back to its original position through the influence of a helical spring 56, connected to the upper portion of the lever and also connected to the upper end of an upstanding substantially L-shaped spring-arm 57, which has its lower end connected to the top of the frame between the lever and the hopper. There is an adjusting-screw 58, which pierces the adjacent side of the hopper and the upstanding member of the L-shaped spring, with a nut 59 fitted to the extremity of the screw and bearing against the spring-arm, so as to form a tension device for maintaining the proper tension upon the spring-arm. By combining the spring-arm with the helical spring a better effect is had to return the lever to its original position, and considerable strain is relieved from the helical spring, and the tension device is thereby rendered more durable. It will of course be understood that the lever is gradually drawn back to its original position after the completion of the stroke of the plunger without imparting a jar to the animals which are connected to the operating-rope. The purpose of the cross-bar 43 at the upper end of the arms 41 is to limit the downward swing of said arms by striking against the stop-blocks 44, whereby the lever has a movable or swinging fulcrum during its initial movement, resulting in a rapid initial movement of the lever and the plunger and a stationary fulcrum during the latter stages of its movement, resulting in a slower or more powerful movement to compress the hay in an effective manner.

To hold the press against movement when power is applied to the operating-rope, there is an anchoring device consisting of a yoke 60, swung or pivoted to the front end of the press and having its free end provided with an anchor-hook 61, which is forced into the ground when the team is driven away from the press, and thereby prevents the latter from creeping or working forward.

What I claim is—

1. In a baling-press, the combination of a

rebounding plunger having a socket or seat thereon, of a plunger-actuating lever having an antifriction-roller normally situated in the seat and adapted to automatically trip therefrom at the completion of the forward stroke of the plunger, means for automatically shifting the fulcrum of the lever during a portion of the forward movement of the plunger, means for holding the fulcrum against movement during the completion of the stroke of the plunger, and means for preventing the antifriction-roller from moving laterally in the socket or seat of the plunger, substantially as described.

2. In a baling-press, the combination with a rebounding plunger having a seat thereon, of a plunger-actuating lever having one end normally situated in the seat and adapted to trip automatically therefrom at the completion of the forward stroke of the plunger, means for shifting the fulcrum of the lever during a portion of the forward movement of the plunger, means for holding the fulcrum against such movement while the plunger is completing its stroke, and guards carried by the lever and lying at opposite sides of the plunger to prevent lateral displacement of the lever from the seat, substantially as described.

3. In a baling-press, the combination with a rebounding plunger having a seat thereon, of a plunger-actuating lever having a bifurcated end straddling the plunger, and normally arranged in the seat and adapted to trip automatically therefrom at the completion of the forward stroke of the plunger, and means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger and means for holding the fulcrum against such movement while the plunger is completing its stroke, substantially as described.

4. In a baling-press, the combination with a rebounding plunger having a seat, of a plunger-actuating lever having a bifurcated end straddling the plunger, a roller journaled in the bifurcation and normally situated in the seat of the plunger and adapted to trip automatically therefrom at the completion of the forward stroke of the plunger, and means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger and means for holding the fulcrum against such movement while the plunger is completing its stroke, substantially as described.

5. In a baling-press, the combination with a rebounding plunger having a seat, a plunger-actuating lever provided with strengthening-plates provided at opposite sides thereof and projected beyond one end to form guards for straddling the plunger, an antifriction-roller journaled between the guards and normally situated in the seat of the plunger and adapted to trip automatically therefrom at the completion of the forward stroke of the plunger,

and means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger and means for holding the lever against such movement while the plunger is completing its stroke, substantially as described.

6. In a baling-press, the combination with a rebounding plunger having a seat, of a plunger-actuated lever, a pair of strengthening-plates applied to opposite sides of the lever and projected at opposite ends thereof, one pair of projecting ends forming a guard for straddling the plunger, an antifriction-roller journaled between said ends and normally situated in the seat of the plunger and adapted to trip therefrom at the completion of the forward stroke, means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger, means for holding the fulcrum against such movement while the plunger is completing its stroke, a pulley journaled between the upper projected ends of the plates, and an operating-rope rove through the pulley with one end fixed and the opposite end adapted for the application of power, substantially as described.

7. In a baling-press, the combination with a plunger, of a plunger-actuating lever, a swinging fulcrum-support for the lever, and a stop device in the path of the swinging fulcrum for holding the same against movement while the plunger is completing its stroke.

8. In a baling-press, the combination with a plunger, of a plunger-actuating lever, a swinging fulcrum-support for the lever consisting of an arm pivoted to the frame of the press, and a portion of the press lying in the path of the swinging arm for holding the same against movement while the plunger is completing its stroke.

9. In a baling-press, the combination with the frame thereof, of a plunger, a plunger-actuating lever, a vertically-swinging arm pivoted to the frame, the lever being fulcrumed upon the arm, and a cross-bar carried by the arm, a portion of the frame lying in the path of the cross-bar for holding the swinging arm against movement while the plunger is completing its stroke.

10. In a baling-press, the combination with the frame thereof, of a rebounding plunger, a pair of vertically-swinging arms pivoted to the frame and separated by a longitudinal interspace, a plunger-actuating lever intermediately fulcrumed between the arms with its lower end in cooperative relation with the plunger, a cross-bar secured across the free ends of the arms and projected at opposite sides thereof, and opposite stops carried by the frame and located in the path of the respective ends of the cross-bar for holding the swinging arms against movement while the plunger is completing its stroke.

11. In a baling-press, the combination of a plunger, a plunger-actuating lever, a retract-

ing-spring arranged in an upright position and connected with the lever, and an adjusting device connected with the spring for varying the tension thereof, substantially as described.

12. In a baling-press, the combination with a plunger, of a plunger-actuating lever, a retracting device for the lever consisting of a helical spring connected to the lever, and a plate-spring carried by the frame of the press with its free end connected to the helical spring.

13. In a baling-press, the combination with the frame thereof, of a plunger, a plunger-actuating lever, an upstanding substantially L-shaped spring rising from the frame of the press, and a helical spring connected to the lever and the L-shaped spring.

14. In a baling-press, the combination with the frame thereof, of a plunger, a plunger-actuating lever, a plate-spring rising from the frame, a helical spring connected to the lever and the plate-spring, and a tension device carried by the frame and connected to the plate-spring.

15. In a baling-press, the combination with the frame thereof, of a plunger, a plunger-actuating lever, a plate-spring rising from the frame, a helical spring connected to the lever and the plate-spring, and a tension-screw carried by the frame and connected to the plate-spring.

16. In a baling-press, the combination with the frame thereof having a feed-hopper, a plunger, a plunger-actuating lever, a plate-spring rising from the frame adjacent to the hopper, a helical spring connected to the lever and the plate-spring, and an adjusting-screw piercing one side of the hopper and connected to the plate-spring.

17. In a baling-press, the combination with a plunger, a plunger-actuating lever, and means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger and for holding the fulcrum against such movement, while the plunger is completing its stroke, substantially as described.

18. In a baling-press, the combination with the press-box having openings in the opposite sides thereof, of spring-plates applied externally to opposite sides of the box, each plate being secured at one end only and folded intermediately to form a solid lateral projection which extends through the adjacent opening into the box and inclines rearwardly, the free end of the spring-plate lying at the outer side of the box and extending beyond the opening and forming a stop to limit inward movement of the projection.

19. The combination of a baling-press having an opening, springs mounted on the baling-press and provided with bearings, a rotatable member journaled in the bearings of the spring and extending through the opening of the baling-press for frictional engagement with

the material and provided with a trip, and a signal operated by the trip, substantially as described.

20. The combination of a baling-press having an opening, springs mounted on the baling-press at the opening and provided with bearings, a rotatable member journaled in the bearings of the spring and extending through the opening of the baling-press for frictional engagement with the material and provided with a trip projection, and a spring secured at one end to the press and having its free end arranged in the path of the trip projection and adapted to be deflected by the same, whereby it is caused to snap against the press, substantially as described.

21. In a baling-press, the combination of a plunger having a seat, a lever provided with an antifriction-roller normally arranged within the seat and adapted to automatically trip therefrom at the completion of the forward stroke of the plunger, means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger, and means for holding the lever against such movement during the completion of the stroke of the plunger, substantially as described.

22. In a baling-press, the combination of a plunger having a seat, a lever engaging the seat and adapted to trip therefrom at the completion of the forward stroke of the plunger, means for automatically shifting the fulcrum of the lever during a portion of the forward stroke of the plunger, and means for holding the same against such movement while the plunger is completing its stroke, substantially as described.

23. In a baling-press, the combination of a frame having an opening and provided with a press-box, a plunger, means for operating the plunger, and a metal plate bent upward at its rear end to form a flange and mounted upon the plunger and operating wholly within the press-frame and arranged to close the opening thereof to form a cut-off when the plunger moves into the press-box, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE DANIEL HAYES.

Witnesses:

L. C. HILL,
W. W. DE SHAZO.