(No Model.) 2 Sheets—Sheet 1.

L. W. FRANKS.

BALING PRESS.

No. 557,573. Patented Apr. 7, 1896.

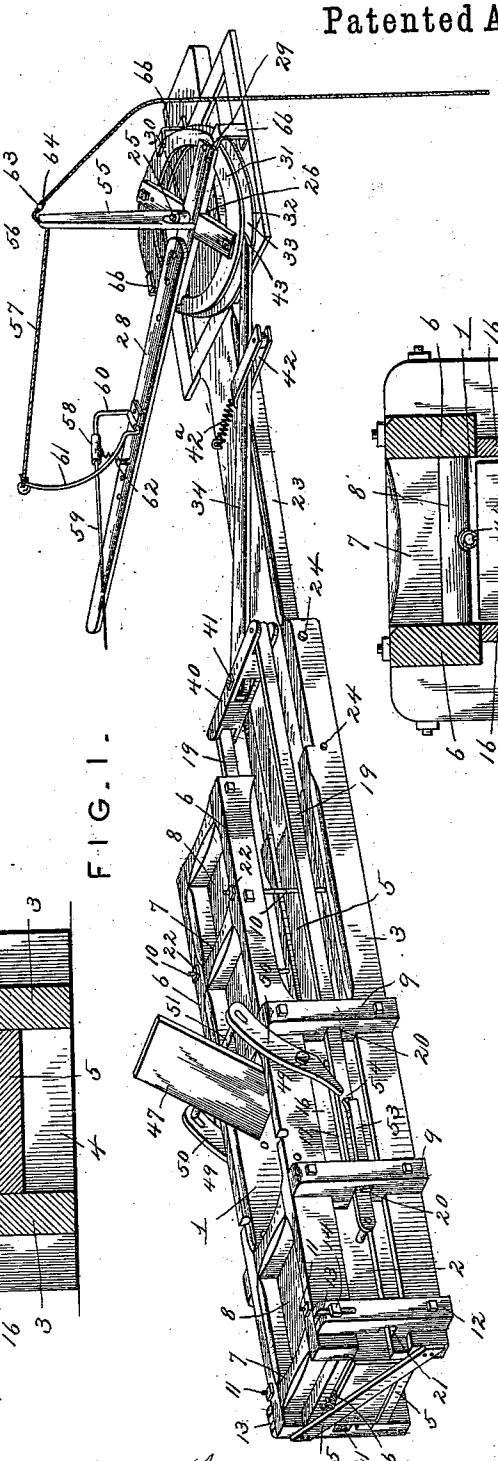

FIG. 1.

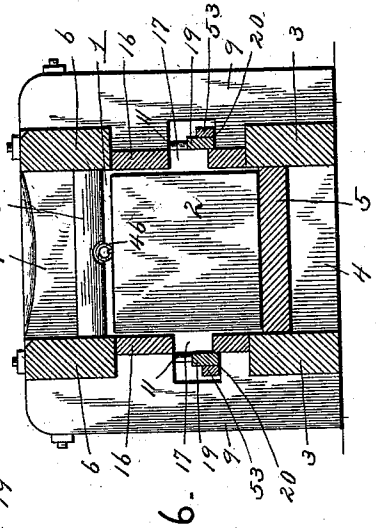

FIG. 6.

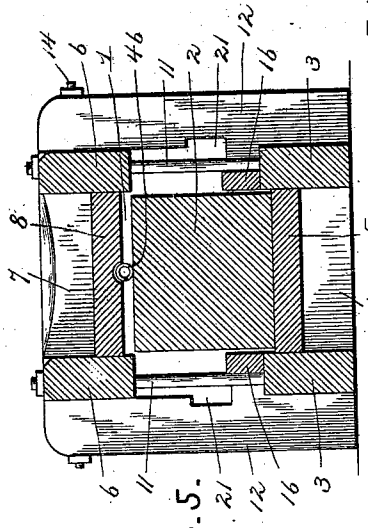

FIG. 5.

Witnesses
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By his Attorneys. Lewis W. Franks.
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(No Model.) 2 Sheets—Sheet 2.

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BALING PRESS.

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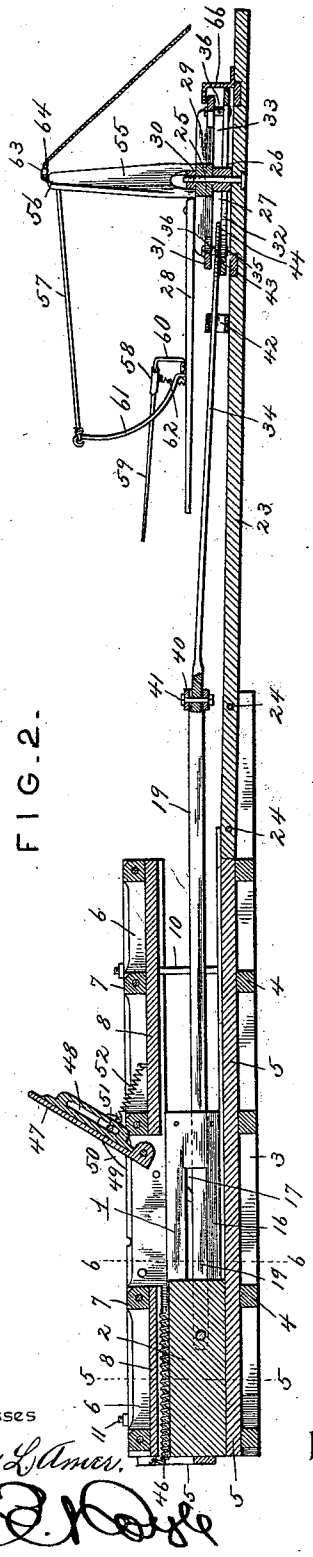

FIG. 2.

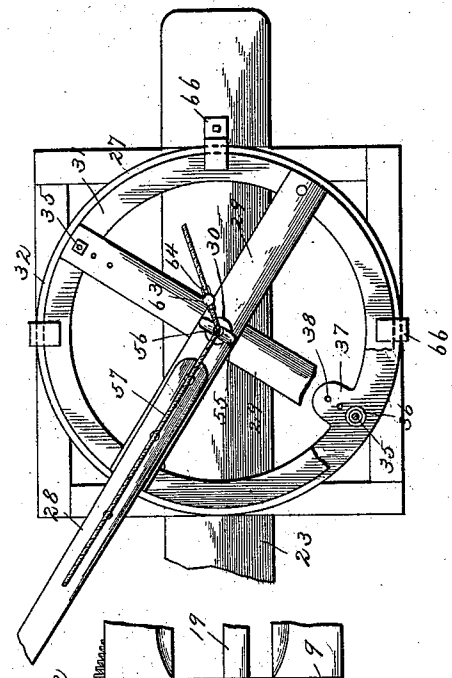

FIG. 4.

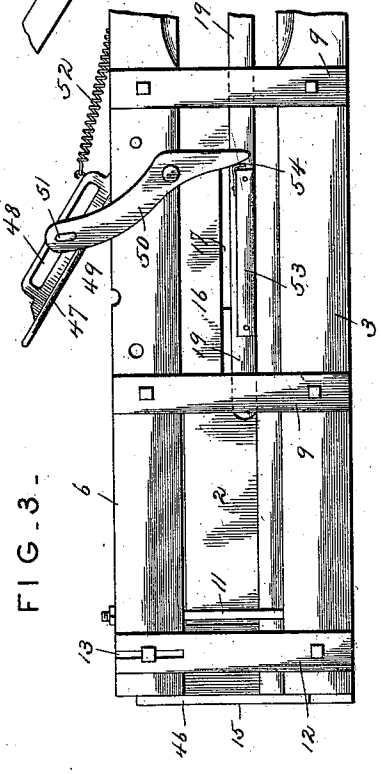

FIG. 3.

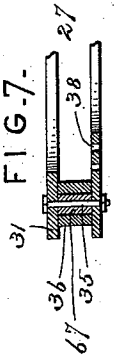

FIG. 7.

Witnesses
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UNITED STATES PATENT OFFICE.

LEWIS W. FRANKS, OF BUDA, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 557,573, dated April 7, 1896.

Application filed May 28, 1895. Serial No. 550,999. (No model.)

To all whom it may concern:

Be it known that I, LEWIS W. FRANKS, a citizen of the United States, residing at Buda, in the county of Hays and State of Texas, have invented a new and useful Baling-Press, of which the following is a specification.

My invention relates to baling-presses, and particularly to the construction of the press-box and the power for operating the plunger, the objects in view being to provide simple and efficient means for compressing the bales by the movement of a plunger toward the power, or by a tensile, in contradistinction to a pushing, strain, in order that the connections between the power and the plunger may be of lighter structure and less weight than in the ordinary practice; furthermore, to provide means for closing the feed-opening of the press-box during the advance movement of the plunger, the operation of the closure being automatic; and, furthermore, to provide improved means for operating a rebounding plunger by simplifying the means for engaging and disengaging the pitman, motion being communicated to the pitman by means of a continuously-rotating operating wheel or head.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a baling-press constructed in accordance with my invention, the plunger being shown in its retracted position. Fig. 2 is a longitudinal section of the same. Fig. 3 is a partial side view showing the parts in the positions which they occupy during the forward movement of the plunger. Fig. 4 is a plan view, partly broken away, of the power or driving mechanism. Fig. 5 is a transverse section on the line 5 5 of Fig. 2. Fig. 6 is a similar view on the line 6 6 of Fig. 2. Fig. 7 is a detail section of one side of the operating-wheel and contiguous portions of the mechanism to show the means for clamping the rings together, and the antifriction-rolls whereby the pitman is engaged.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The press-box or baling-chamber is provided at its end with a space or receptacle 1 for the plunger 2 when the latter is in its retracted position, and in advance of this receptacle is the feed-opening through which the material to be baled is introduced in advance of the plunger. The baling-chamber is constructed of parallel side sills 3, connected by transverse bars 4, to which is secured a flooring 5, parallel top bars 6, also connected by transverse bars 7, which support a roofing 8, and the sills and parallel top beams 3 and 6 are connected by uprights 9 and by tie-rods 10 and 11. The tie-rods 11 are arranged near the rear ends of the baling-chamber at the sides of the receptacle 1 and contiguous to an upright 12, which is similar to the uprights 9, with the exception that the upper end thereof is slotted, as shown at 13, for the reception of the transverse tie-bolt 14.

The slots at the upper ends of the rear uprights provide for contracting the receptacle 1 to avoid excessive jar as the plunger reaches the limit of its return movement. The rear end of the receptacle is crossed by a stop-bar 15 to prevent the plunger from passing beyond the prescribed limit of its return movement, said stop-bar being applied after the plunger has been introduced. The intervals between the contiguous edges of the beams 3 and 6 are partly closed between the uprights 9 or at the sides of the feed-opening by side walls 16, having horizontal slots 17, in which operate lateral pins 18 carried by the plunger, and attached to the extremities of these lateral pins are the rear ends of the side bars 19 for communicating motion to the plunger, said side bars being arranged outside of the plane of the side walls 16 in notches or guide-openings 20, formed in the uprights 9. The uprights 12 are provided with similar notches 21, through which the side bars are passed in introducing the plunger into the chamber.

The only connection between the beams 3 and 6, in advance of the upright 9, which is located at the front end of the feed-opening, is the tie-rod 10, and hence by varying the tension of this tie-rod the front end of the chamber may be contracted to provide the necessary friction of the top and bottom walls against the upper and lower sides of the bales to secure the desired compression of the ma-

terial forming the bales, said tie-rod being provided with suitable nuts 22 to facilitate varying the tension thereof.

The sills or lower beams 3 are extended beyond the front end of the floor 5, and between these extensions is fitted the rear end of a coupling-beam 23, which is held in place by horizontal pins 24, engaging registering perforations in the beams 3 and 23. This coupling-beam supports the power or operating mechanism of the press, which consists, essentially, of a vertical gudgeon 25, rising from a boss or supporting-block 26, a power or operating-wheel 27 mounted upon said gudgeon, and a sweep 28 attached to the wheel. This operating-wheel comprises an armed spider 29, the arms of which intersect at their centers and are perforated to form the bearing 30 for the reception of the gudgeon 25, and parallel upper and lower rings 31 and 32 are combined to form the horizontally-slotted rim of the wheel, said rings being spaced apart to form an intervening slot 33, in which operates the extremity of the pitman 34. Said rings are held at the desired interval, sufficient to receive extremity of the pitman, by means of pins 35 arranged approximately at diametrically opposite points of the wheel, and in the construction illustrated in the drawings antifriction rolls or sleeves 36 are fitted upon these bolts between the contiguous faces of the rings forming the rim. The lower ring is provided with diametrically opposite ears 37, arranged vertically under diametrically opposite arms of the spider, and said ears and arms are provided with a plurality of openings 38 for the reception of the pins 35, whereby the latter may be arranged at different distances from the center of rotation of the operating-wheel to vary the length of stroke of the plunger.

The front ends of the side bars 19 are connected by means of vertical bolts 39 with the extremities of a cross-head 40, and the pitman 34 is pivotally connected to the center of this cross-head by means of a vertical bolt 41, whereby lateral vibration of the front end of the pitman is permitted. A guide-loop 42 is connected by means of a spring 42^a to the coupling-beam adjacent to the operating-wheel, and through this loop extends the pitman, whereby it is guided and drawn inwardly or toward the center of the wheel. The front end of the pitman is provided with a shoulder or hook 43 adapted to be engaged successively by the pins arranged transversely in the slotted rim of the operating-wheel, or by the antifriction sleeves or rolls with which said pins are fitted, and without the spring-actuated guide-loop 42 or its equivalent to exert a constant strain upon the pitman the shoulder thereof would slip prematurely from the pins on the wheel.

During the continuous rotation of the operating-wheel the pins successively engage the shoulder or hook at the free end of the pitman and draw the latter, and hence the plunger, forward until the pitman is engaged by the other of the two pins, and at the same time the central spindle. This engagement checks the movement of the pitman, while the uninterrupted movement of the wheel carries the pin out of engagement with the shoulder or hook and thus allows the plunger and pitman to be returned to the initial position by the rebounding spring 46 secured to the plunger and to the rear end of the baling-chamber. At the moment that the plunger reaches the limit of its return movement the shoulder or hook on the pitman is engaged by the other pin carried by the operating-wheel and the above-described operation is repeated.

The feed-opening in the baling-chamber is provided with a cover or closure 47 pivoted within the opening near its front end and provided upon its upper side with a slotted guide 48, and pivotally mounted upon the sides of the baling-chamber is a closing-lever 49 having side arms 50 connected at their free ends by a transverse rod 51, which operates in the slotted guide 48. A spring 52 is connected to the cover or closure to hold the same normally in its open position. The extremities of the side arms 50 of the closing-lever are arranged in the paths of ribs 53 carried by the side bars 19, spring-dogs 54 being arranged at the front ends of said ribs to engage the extremities of the arms 50 and close the cover at the beginning of the advance movement of the plunger, said ribs maintaining the cover in its closed position until the plunger has reached the limit of its forward movement. When the rear ends of the ribs reach the extremities of the side arms 50, the latter are released and the cover is opened by its actuating-spring to provide for the introduction of material through the feed-opening. Hence during the advance movement of the plunger the feed-opening is closed, the cover thereof being arranged in the plane of the top of the baling-chamber, and thus forming a continuation thereof, whereby no obstruction is offered to the forward movement of the hay or other material to be baled.

In addition to the mechanism as above described, the operation of which will be apparent from the explanation given in connection with the description of the construction, I employ a standard 55 rising from the operating-wheel and provided at its upper end with a guide 56, through which passes a cord 57 connected to a horse-driving device mounted upon the sweep 28. This horse-driver consists of a whip-socket 58 to receive the butt-end of a whip 59, said socket being carried by a crank-arm 60, which is fulcrumed upon the sweep, and an operating-arm 61, to which is attached the cord 57. A spring 62 is employed to return the crank-arm to its normal position and thereby deliver a blow upon the release of the operating-cord after the latter has been drawn back. The operating-cord,

after passing through the guide at the upper end of the standard, is provided with a stop-button 63 and also with a swivel-coupling 64 to prevent the rotation of the apparatus from twisting the cord.

By the use of tensile connections between the operating mechanism and the plunger I am enabled to construct the moving parts of the press of lighter material without danger of buckling during operation, it being obvious that in those presses in which the plunger is pushed from the operating mechanism the connections must be of great stiffness, and hence of considerable weight, in order to prevent bending.

In order to guide the wheel positively and prevent vibration of the parts in operation, I employ a base 65 constructed of cross-ties, and clamps 66 carried by said base and engaging the upper side of the wheel, said clamps or guides being arranged to engage the wheel at three or more points. In addition to the antifriction-rolls, which are mounted upon the pins 35, I also employ spacing-washers 67, against the opposite sides of which the rings forming the wheel are tightly clamped by means of the nuts of the bolts 35.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a baling-press, the combination with a baling-chamber and a rebounding plunger mounted therein, of operating mechanism arranged in front of the open or discharge end of the baling-chamber and including a rotary wheel carrying diametrically opposite perpendicularly-disposed pins, and tensile connections between the wheel and the plunger, consisting of a pulling-pitman mounted to swing in a plane parallel with the wheel and provided with a shoulder to engage said pins successively, the disengagement of the shoulder from a pin when the plunger reaches the limit of its forward movement being accomplished by the contact of the other pin with the pitman, the second pin moving in the opposite direction to that with which the shoulder is engaged, substantially as specified.

2. In a baling-press, the combination with a baling-chamber and a rebounding plunger mounted therein, of operating mechanism including a rotary wheel having a slotted rim, diametrically-opposite pins arranged in and intersecting the slot of the rim, and tensile connections between the wheel and the plunger, including a pulling-pitman adapted to swing in a plane parallel with the operating-wheel with its free end arranged in the slot of the rim, the pitman being provided with a shoulder for engagement successively by the pins of the wheel and being disengaged therefrom by contact with the pitman of the pin opposite to that with which the shoulder is engaged, the slotted rim of the wheel forming a guide to prevent transverse deflection of the pitman, substantially as specified.

3. In a baling-press, the combination with a baling-chamber and rebounding plunger operating therein, of operating mechanism including a wheel constructed of a rotary spider and parallel spaced rings forming a slotted rim, pins arranged at intervals between and perpendicular to the planes of the rings, one of the rings being secured to the spider and the other ring being held in place by said pins, connections between the operating-wheel and the plunger including a pitman adapted to swing in a horizontal plane and having its free end arranged between said rings, the pitman being provided with a shoulder for engagement successively by the pins on the wheel, and means for disengaging the shoulder of the pitman from the pins, substantially as specified.

4. In a baling-press, the combination with a baling-chamber and a rebounding plunger operating therein, of operating mechanism including a wheel, pins arranged upon the wheel perpendicular to the plane thereof, means for adjusting the pins to vary the distances thereof from the center of rotation, connections between the wheel and the plunger including a pitman having its free end provided with a shoulder arranged in the path of for engagement by said pins, and means for disengaging the shoulder of the pitman from the pins, the adjustment of the pins providing for altering the throw of the plunger, substantially as specified.

5. In a baling-press, the combination with a baling-chamber and a rebounding plunger operating therein, of operating mechanism including a horizontal wheel provided with spaced pins, side bars secured to the plunger and extending forward parallel with the sides thereof, a cross-head connecting the front ends of the side bars, a pitman pivotally connected to the cross-head and provided with a shouldered front end to operate parallel with the plane of the operating-wheel, the shoulder being in the path of the pins carried by said wheel, means for disengaging the shoulder of the pitman from the pins, and a loose spring-actuated loop-guide in which the pitman adjacent to its free end operates, whereby a constant inward strain is exerted upon the free end of the pitman in all positions to prevent premature disengagement of the shoulder from the pins, substantially as specified.

6. In a baling-press, the combination with a baling-chamber having a feed-opening, and a plunger operating in the chamber, of a pivotal spring-opened cover for the feed-opening, a closing-lever connected at one end to the cover and arranged at the other end in the path of a projection on the plunger, whereby the cover is closed during the forward movement of the plunger, substantially as specified.

7. In a baling-press, the combination with

a baling-chamber having a feed-opening, a plunger operating in the chamber, and operating mechanism connected to the plunger, of a pivotal cover for said feed-opening, a closing-lever pivotally mounted upon the baling-chamber and slidingly connected to the cover, and ribs carried by the plunger to engage arms of said lever during the forward movement of the plunger to close the cover, substantially as specified.

8. In a baling-press, the combination of a baling-chamber having a feed-opening, a plunger operating in the chamber, and operating mechanism connected to the plunger, of a pivotal cover for the feed-opening, a lever pivotally mounted upon the baling-chamber and slidingly connected to the cover, means carried by the plunger for engaging said lever to close the cover, the same including a spring-dog to engage and throw the lever to the closed position, and a continuous rib for maintaining the lever in said position until the plunger has completed its forward movement, substantially as specified.

9. In a baling-press, the combination of a baling-chamber having a feed-opening, a plunger operating in the chamber, and operating mechanism connected to the plunger, of a pivotal cover for the feed-opening having a slotted guide, a lever pivotally mounted upon the baling-chamber and having a transverse rod engaging said slotted guide, a spring for opening the cover and means carried by the plunger for engaging said lever to close the cover, said means including a rib in the path of which the extremity of the lever is arranged, substantially as specified.

10. The combination of a follower, a pitman connected therewith, mechanism for operating the pitman, means for periodically releasing the pitman from its operating mechanism, a coiled spring arranged transversely at right angles to the pitman, a guide-loop through which the pitman extends connected with the spring, and a roller carried by the guide-loop and bearing against the pitman, substantially as specified.

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

LEWIS W. FRANKS.

Witnesses:
G. D. HARGIS,
J. P. HALL.