

No. 767,631.

PATENTED AUG. 16, 1904.

W. R. COLMAN.
BALING PRESS.

APPLICATION FILED JAN. 22, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

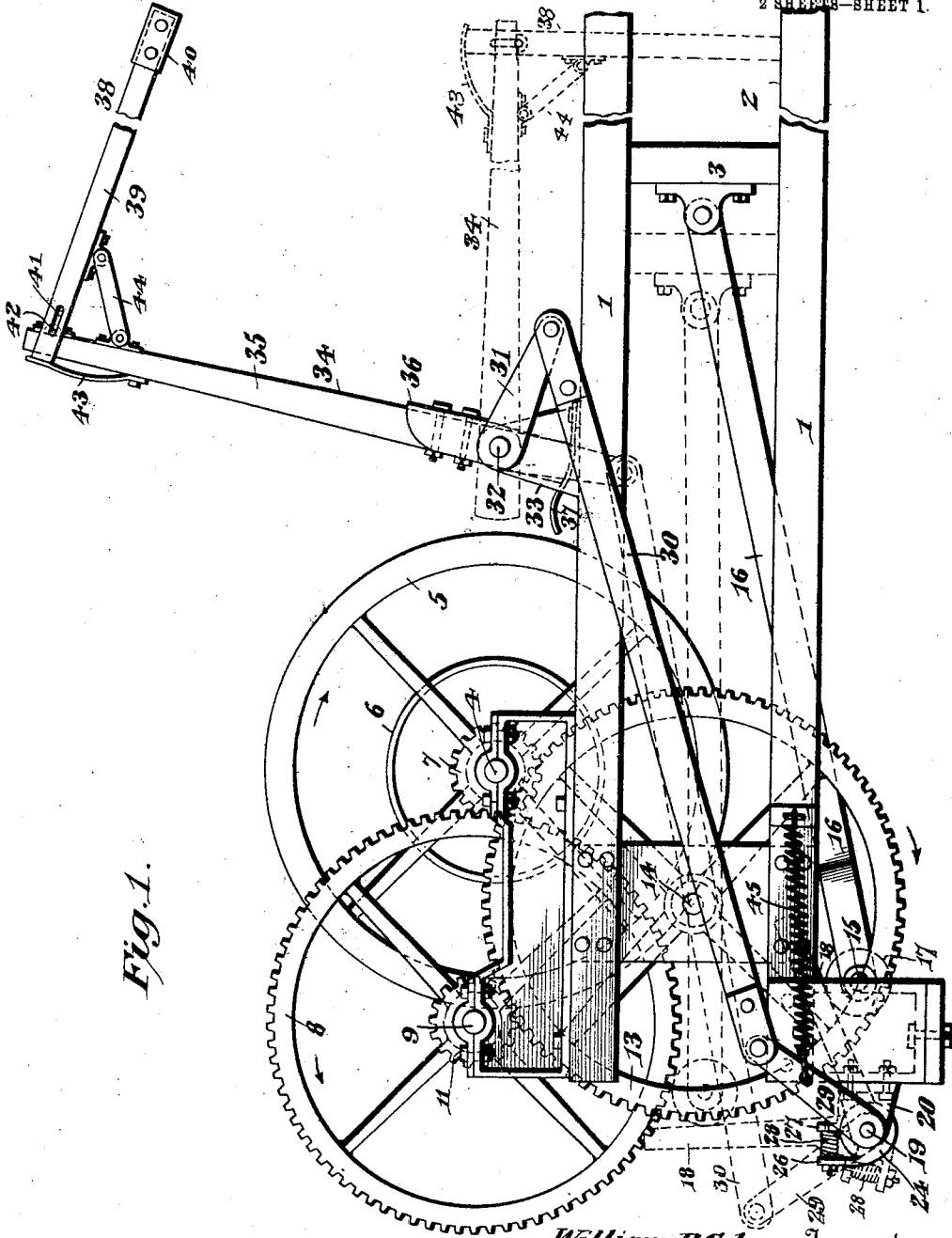


Fig. 1.

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Witnesses
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2 SHEETS—SHEET 2.

NO MODEL.

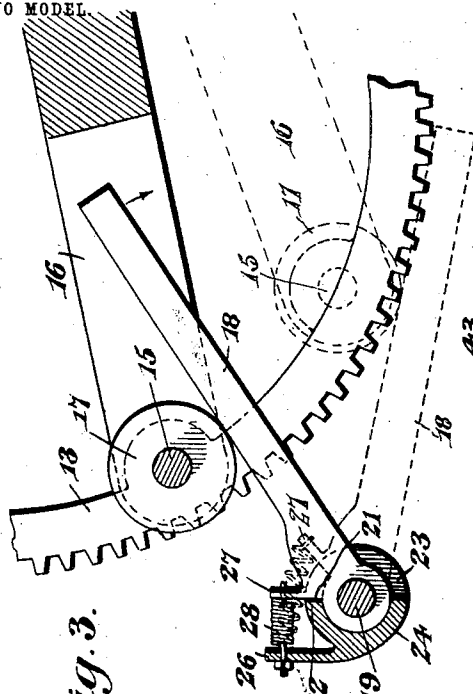


Fig. 3.

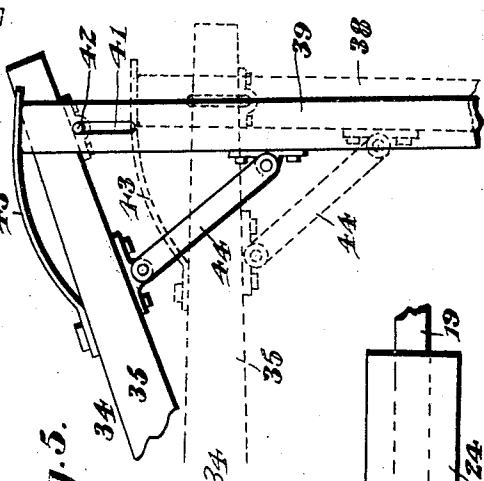


Fig. 5.

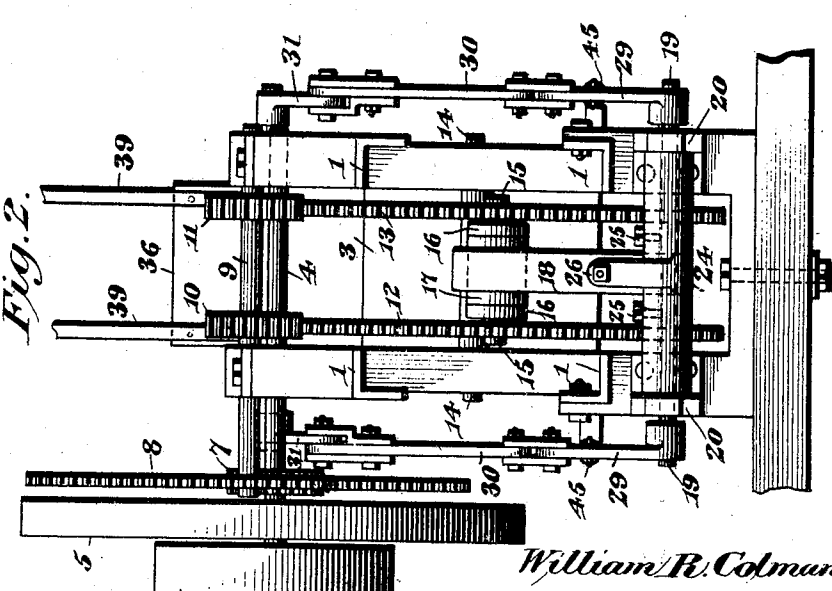


Fig. 2.

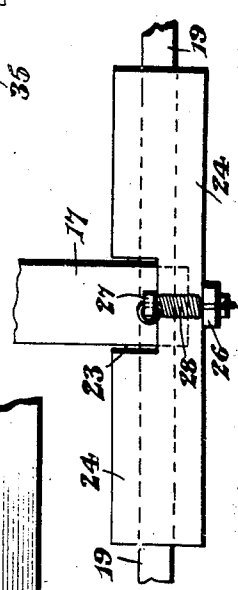


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM RICHARD COLMAN, OF QUINCY, ILLINOIS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 767,631, dated August 16, 1904.

Application filed January 22, 1903. Serial No. 140,184. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RICHARD COLMAN, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Baling-Press, of which the following is a specification.

This invention relates to a baling-press, and more particularly to the feeder and its operating mechanism.

One of the objects of the invention is to equip a power-operated press with an oscillatory feeder arranged to be intermittently operated through the medium of a trip-arm disposed in the path of the pitman-head, the arrangement being such that the feeder will be projected through the feed-throat of the press and retracted to its normal position in the briefest possible space of time in order that it may have a maximum period of rest, during which the hay or other material to be baled may be fed to the press-box or to the feed-hopper above the same.

Another object of the invention is to so mount the head of the feeder that it will retain its plumb or vertical position during its movement into the press-box to pack the hay, this object being attained by so connecting the feeder-head with the swinging arms of the feeder that the angular disposition of the head with respect to the arms will be varied during the downward movement of the latter.

A still further object of the invention is to so organize the feeding mechanism as a whole that it may be readily applied to presses already in use and to so connect the trip-arm with the various other feeder-operating elements that the press may be operated in a reverse or backward direction without endangering the integrity of the mechanism.

To the accomplishment of the several objects stated and others subordinate thereto the invention in its preferred embodiment resides in that construction and arrangement of parts to be hereinafter described, illustrated in the accompanying drawings, and succinctly defined in the appended claims.

In said drawings, Figure 1 is a side elevation of a portion of a baling-press equipped with my improved feeding mechanism, the

depressed position of the feeder and the corresponding positions of the other parts being indicated in dotted lines. Fig. 2 is a rear end elevation of the subject-matter of Fig. 1, the upper portion of the feeder being broken away. Fig. 3 is a detail sectional view illustrating the mounting of the trip-arm and the manner in which the latter is independently moved to prevent the possibility of deranging the parts when the press is operated in a reverse or backward direction. Fig. 4 is a detail view in elevation of a portion of the subject-matter of Fig. 3; and Fig. 5 is detail view of a portion of the feeder, one position of the parts being shown in dotted lines and the figure being designed to illustrate the manner in which the angular relation of the feeder-head with respect to the arms is automatically changed to keep the head in a substantially vertical position during the portion of its movement which is effective to pack the hay.

Like numerals of reference are employed to designate corresponding parts throughout the several views.

1 indicates the frame of a press, a large portion of which (including most of the press-box 2) is broken away. At the rear end of this frame 1 is located the power or press-operating mechanism, belted or otherwise connected to an engine or the like and arranged to operate the press-plunger 3, which reciprocates in a manner well understood in the art to compress successive charges of hay or other material fed into the press-box from above.

The power mechanism includes a power-shaft 4, journaled in suitable bearings and to which are keyed a fly-wheel 5, a band-wheel 6, and a pinion 7. The pinion is in turn geared to a comparatively large gear-wheel 8, keyed or otherwise secured upon a shaft 9, which is also provided with a pair of pinions 10 and 11, meshing with a pair of driving-gears 12 and 13, mounted on stud-shafts 14, projecting inwardly from opposite sides of the frame. The driving-gears are designed to rotate in unison and are connected by an eccentrically-disposed wrist-pin 15, which passes through the bifurcated rear end or head of a pitman 16, the opposite extremity

of which is pivotally connected to the plunger 3. It will therefore appear that as the driving-gears are rotated the head or plunger 3 will be given a reciprocatory movement.

5 The bifurcated end of the pitman 16 straddles an antifriction-roller 17, mounted on the wrist-pin 15 and arranged to strike and swing a trip-arm or feeder-operating arm 18, extending radially from a shaft 19, disposed horizon-
10 tally beyond the rear end of the frame 1 and preferably journaled in bearings 20, as shown. The arm 18 is mounted to swing independently on the shaft 19 when urged in one direction, (indicated by the arrow in Fig. 3,) but when
15 moved in the opposite direction a shoulder 21, with which said arm is provided, is arranged to contact with a shoulder 22, constituting one end of a slot 23 and in one side of a sleeve 24, which encircles the shaft 19 and is rigidly se-
20 cured thereto, as by set-screws 25. It will therefore appear (assuming the arm to be in its normal position, as indicated at Fig. 3) that the movement of the arm in one direc-
25 tion will be entirely independent of the shaft, while its movement in the opposite direction will effect the rotation of the shaft, and thereby operate any mechanism which may be con-
30 nected to the shaft for movement therewith. The mechanism which is connected with the shaft 19 for operation thereby is the feeder; but before proceeding to describe the latter
35 it may be stated that the sleeve 24 and the arm 18 are provided with lugs 26 and 27, connected to the opposite ends of a spring 28, which serves to return the arm 18 to its normal position after the latter has been swung to the position shown in dotted lines in Fig. 3 and the wrist has passed beyond its end. At its opposite ends the shaft 19 is provided
40 with crank-arms 29, connected by long links 30 with crank-arms 31 at the opposite ends of the feeder-shaft 32, mounted in suitable bearings 33, supported by the press-frame and carrying an oscillating feeder 34. Obviously
45 this duplicate connection between the shaft 19 and the feeder need not be employed, as a single series of connecting elements is all that is necessary to effect the desired cooperative relation of the parts.

50 The feeder 34 comprises a pair of arms 35, extending radially from the shaft 32 and normally disposed in a substantially upright position, as indicated in Fig. 1. These arms are connected at their lower ends by a transverse
55 plate 36, bolted or otherwise secured in place, and extend below or beyond the shaft 32, where their extremities contact with retaining-springs 37, mounted on the frame and designed to present sufficient frictional resist-
60 ance to the arms 35 to prevent premature downward swinging of the feeder. In addition to the arms 35 the feeder comprises a feeder-head 38, consisting of a pair of side bars 39, connected at their outer ends by a
65 shoe 40 and provided at their ends opposite

the shoe with slots 41 for the accommodation of pins 42, projecting outwardly from the side bars of the feeder. The feeder-head is thus capable of limited endwise movement in a direction transverse to the arms 35 and is urged
70 in one direction by springs 43, bolted upon the arms 35 and bearing against the adjacent extremities of the side bars 39 of the feeder-head. In addition to the slot-and-pin connection between the feeder-head and the arms
75 links 44 are connected at their opposite ends to the arms 35 and side bars 39 at points somewhat removed from the pins 42, these links being provided for the purpose of compelling the feeder-head to change its angular relation
80 with respect to the arms 35 whenever it is moved in an endwise direction, the reason for which will presently appear.

The operation of the device is as follows: Assuming the parts to be in the positions
85 shown in full lines in Fig. 1 and the driving-wheels to be rotating in the direction indicated by the arrow in said figure, the wrist or the roller 17 thereon will strike the feeder-operating arm 18 and will swing it to the position
90 indicated in dotted lines. The shoulders 21 and 22 of the arm 18 and sleeve 24 being in engagement, the shaft 19 will be rotated to swing the crank-arms 29, corresponding movement being imparted to the crank-arms 31
95 through the intermediate links. The swinging of the arms 31 will effect the partial rotation of the feeder-shaft 32, swinging the feeder toward the press-box and bringing the shoe of the head 38 in contact with the hay in the hop-
100 per. In order that the head 38 may be disposed in a substantially vertical position as it moves down into the body of hay, it is disposed normally at a more or less acute angle with respect to the arms 35 of the feeder, as
105 shown in full lines in Fig. 5. Obviously, however, this would result in a progressively greater inclination of the feeder-head during its movement into the press-box as the feeder-arms approach the horizontal. It is for this
110 reason that I have employed the slot-and-pin connection and the links 44 between the feeder-head and the arms 35. As the shoe of the head comes in contact with the hay and continues to move down the resistance opposed
115 by the hay being greater than that of the springs 43 will arrest the head, and the arms 35 continuing to move down, the pins 42 traveling in the slots 41, the links 44 will increase the angle defined by the arms and head, and
120 this change of the angular relation of these parts occurring during the effective portion of the movement of the feeder will cause the head to maintain a substantially upright or plumb position while performing its work.
125 As soon as the wrist has passed beyond the end of the arm 18 the feeder will be retracted to its normal position by retracting-springs 45, each of which is secured at its opposite ends to an arm 29 and to one side of the press- 130

frame, as shown in Fig. 1. As this complete operation and retraction of the feeder is effected in little more than one-sixth of the time required for the complete rotation of the driving-wheels, which is of course the time of one complete reciprocation of the plunger, the period of rest of the feeder will be comparatively great, thus serving to permit a maximum quantity of hay to be fed to the press in the intervals between the descents of the feeder. If, however, it should be necessary to run the press backward or if this should happen by accident, it would be impossible to derange the feeding mechanism thereby, because the arm 18 if struck by the wrist moving in the reverse direction—that is to say, in the direction of the arrow in Fig. 3—would simply move to the dotted-line position in said figure without affecting the feeder or the intermediate connections and as soon as released would be drawn back to its normal position by the spring 28.

It is thought that from the foregoing the construction and operation of my baling-press will be clearly comprehended; but while the illustrated embodiment of the invention is believed at this time to be preferable I do not wish to be understood as limiting myself to the structural details defined, as, on the contrary, I reserve the right to effect such changes, modifications, and variations of the illustrated structure as may be fairly embraced within the scope of the protection prayed.

What I claim is—

1. In a baling-press, the combination with a press-box, a plunger, and plunger-operating mechanism; of a feeder, a shaft having operative connection therewith, and an arm extending from the shaft and movable in one direction independently thereof, said arm being disposed in the path of the plunger-operating mechanism for actuation thereby.

2. In a baling-press, the combination with a press-box, plunger, and pitman, of a driving-wheel having a wrist connected to the pitman, a feeder, a shaft having operative connection therewith, and a feeder-operating arm extending from the shaft and movable in one direction independently thereof, said arm being extended into the path of the wrist and arranged when moved in the opposite direction to rotate the shaft and thereby operate the feeder.

3. In a baling-press, the combination with a press-box, plunger, and pitman, of a driving-wheel having a wrist connected to the pitman, a feeder, a shaft having operative connection with the feeder, a feeder-operating arm mounted on the shaft and movable in one direction independently thereof and extended into the path of the wrist, means for connecting the arm to the shaft when the former is moved in one direction, means for retracting the feeder, and independent means for retracting

the arm when the latter is moved independently of the shaft.

4. In a baling-press, the combination with a press-box, plunger, and pitman, of a driving-wheel provided with a wrist connected to the pitman, a feeder, a shaft operatively connected thereto, a feeder-operating arm extending from the shaft and designed to swing independently in one direction, a spring for retracting the arm after much independent movement thereof, means for connecting the arm with the shaft when moved in one direction by the wrist to operate the feeder, and means for retracting the feeder.

5. In a baling-press, the combination with a press-box, plunger, and pitman, of a pair of driving-wheels, a wrist connecting the wheels to each other and to the pitman, a feeder, a transverse shaft operatively connected to the feeder, an arm extending into the path of the wrist from said shaft, said arm being independently movable in one direction and arranged to connect with the shaft when moved in the opposite direction, means for retracting the feeder and arm after each operation of the feeder, and separate means for independently retracting the arm when the latter is moved independently of the shaft.

6. In a baling-press, the combination with a press-box, plunger, and pitman, of a driving-wheel having a wrist connected to the pitman, a feeder, a shaft having operative connection therewith, a slotted sleeve fixed to the shaft, a feeder-operating arm loosely mounted on the shaft and capable of limited independent movement, a spring connecting the sleeve and arm for the purpose of normally retaining the arm in engagement with one end of the slot in the sleeve, and means for retracting the feeder after each operation thereof.

7. In a baling-press, the combination with a press-box, plunger, and pitman, of a pair of driving-wheels having a wrist connecting them to each other and to the pitman, a feeder-shaft, an oscillatory feeder carried thereby, a second shaft, crank-arms located at the ends of both shafts, links connecting the crank-arms, a slotted sleeve on the second shaft, a feeder-operating arm mounted on said shaft and extending through the slot in the sleeve and into the path of the wrist, a feeder-retracting spring, and a spring yieldingly connecting the feeder-operating arm with the sleeve.

8. In a baling-press, the combination with a baling appliance, of a feeder comprising an oscillatory arm, a head extending at an angle to the arm and flexibly connected thereto, whereby the relative movement of the arm and head will be effected when the head is opposed by sufficient resistance, and a link connecting the arm and head to shift the latter when such relative movement of the parts is effected.

9. In a baling-press, the combination with

a baling appliance, of a feeder comprising an oscillatory arm provided with a pin adjacent to its outer end, a head disposed at an angle to the arm and having a slot engaged by the
5 pin, a spring for maintaining the parts with the pin at one end of the slot, and a link connected to the arm and head respectively.

10 10. In a baling-press, the combination with a baling appliance, of an oscillatory feeder comprising a shaft, a pair of arms extending from the shaft and provided with pins, a head comprising a pair of side bars connected by a shoe at one end and having slots adjacent

to their opposite ends for engagement with the pins, links connecting the arms with the
15 side bars of the head, and springs carried by the arms and bearing upon the ends of the side bars.

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

WILLIAM RICHARD COLMAN.

Witnesses:

W. C. WHEELER,
OTTO HOFFMAN.