

(No Model.)

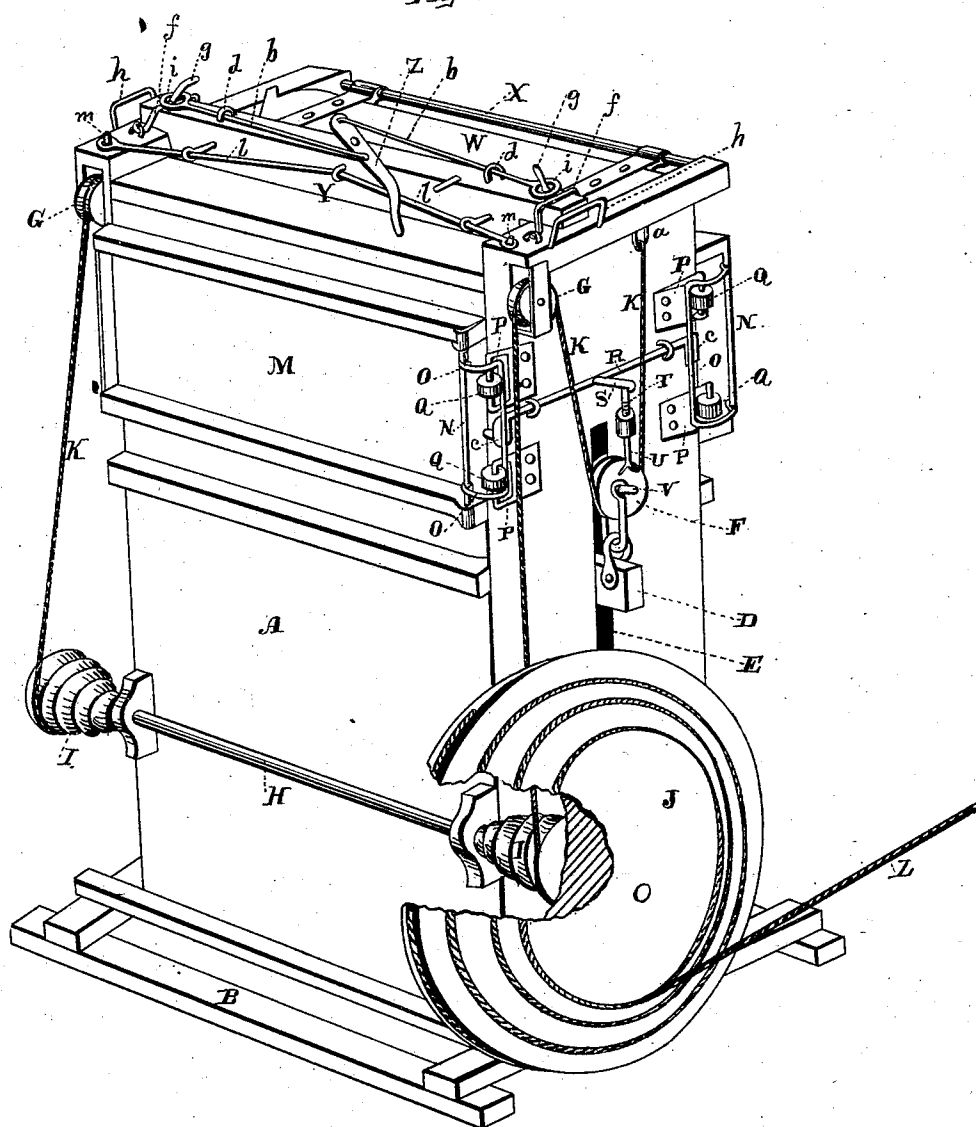
2 Sheets—Sheet 1.

J. N. GRANT.  
BALING PRESS.

No. 244,448.

Patented July 19, 1881.

Fig. 1.



Witnesses  
Geo. H. Strong.  
Frank A. Brook.

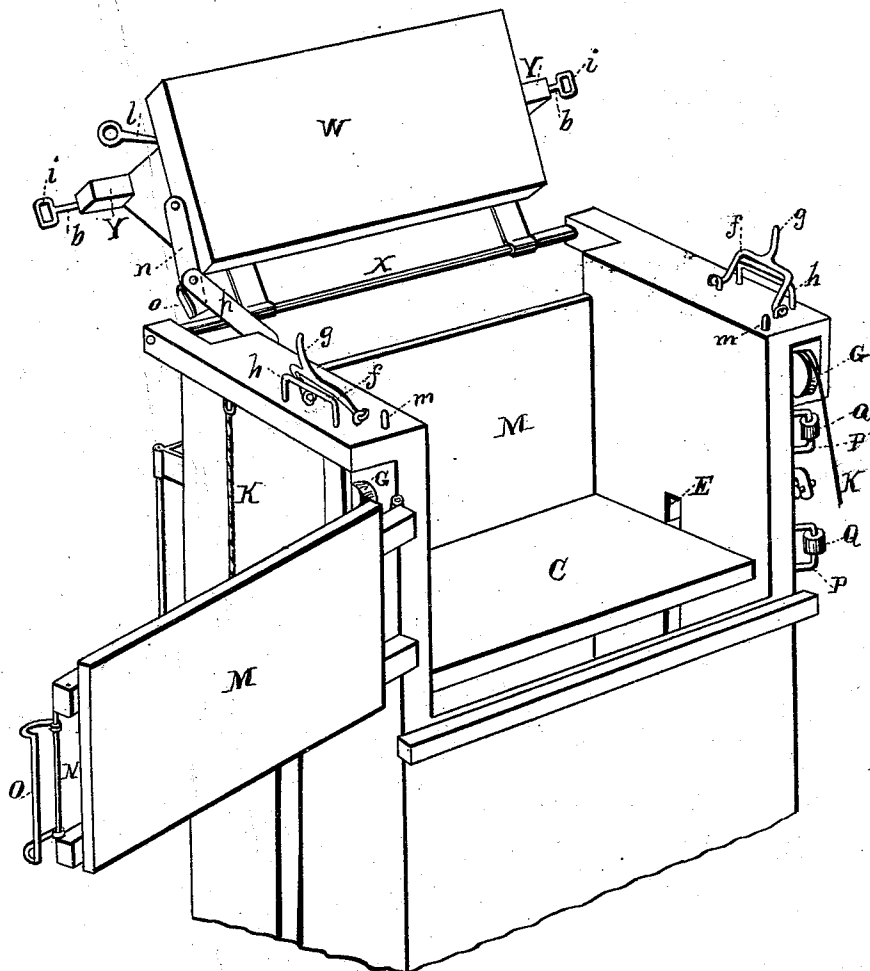
Inventor  
James N. Grant  
By Dewey & Co.  
Atty's

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*Fig. 2*



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# UNITED STATES PATENT OFFICE.

JAMES N. GRANT, OF COLUMBUS, NEVADA.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 244,448, dated July 19, 1881.

Application filed May 6, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES N. GRANT, of Columbus, county of Esmeralda, State of Nevada, have invented an Improved Baling-Press; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in baling-presses; and it consists in a peculiar and novel construction and arrangement of conical pulleys, whereby I am enabled to operate the follower with an economy in power; and in a novel construction and means for automatically opening the side doors of the press; and, lastly, in a novel means of securing and opening the top door and of supporting it in position when opened, all of which will hereinafter more fully appear.

Referring to the accompanying drawings, Figures 1 and 2 are perspective views of my baling-press.

Let A represent the frame or chamber of the press, supported on an appropriate base, B, and having the follower C, adapted to travel within the chamber or press by means of the end lugs or guides, D, fitting through slots E in the sides of the press. Connecting with the guides D are the pulleys F, and journaled near the top of the press and to one side are stationary pulleys G.

On the back of the press, near the bottom, is journaled the shaft H, extending across and to each side. Upon the ends of this shaft, on both sides of the press, are the conical pulleys I I, rigidly secured to the shaft. These pulleys have their smaller or apex ends toward the press and increase their spiral circumference outward away from the press. Upon the end of the shaft H, outside the pulley I, is secured the large driving conical pulley J. This pulley, with relation to its spiral circumference, is oppositely placed to the smaller pulleys I I, it having its base or greater circumference nearer the press and gradually decreasing outwardly away from said press.

I attach a rope, K, on one side of the press to its top, as shown at a. These ropes pass down under the pulleys F, attached to the follower, thence up over the stationary pulleys G, and thence down to the conical pulleys I I, and are attached to the largest and outer circumference or face of said pulleys, so that when

said pulleys are turned the ropes K will wind around the largest faces of the pulleys from the outside in toward the apex to the smallest faces or circumferences. I attach a rope, L, to the driving-pulley J at a point upon its inner and larger circumference or face, and wind it thence outwardly away from the press to the smallest circumference on said pulley J. Suppose the follower to be at the bottom of the press. The hay is put in the press in the usual manner. The rope L about the large pulley J is wound thereon. Power is applied to the end of the rope L. As it unwinds from the smaller faces of its pulley it causes it to turn rapidly, and the ropes K, in winding upon the larger faces of the pulleys I I, are thus made to conform to the same speed, and the follower is raised rapidly. As the rope L begins to reach the larger faces of the pulley J there is a decrease of speed but an increase in power, and the ropes K, winding toward the inside smaller circumferences of the pulleys I I, conform to the slower speed, and an increase of power is also gained. At the first part of the rise of the follower the hay, being loose, does not require much pressure, so that power can be sacrificed to speed. As the pressure requires to be increased the speed is lowered, and both pulleys give increased power.

I am aware that it is not new to use conical pulleys for the purpose of applying graduated power, and that such have been applied to operate presses to accomplish the result herein set forth. Their use heretofore has been confined, however, to a single set of such pulleys, and the driving-pulley has been a large pulley of ordinary shape with but one circumference. In the operation of such devices there has therefore been speed at first and increased power afterward as a result of the single set of conical transmitting-pulleys, and the driving-pulley has had nothing to do with the inverse graduation of power and speed, those remaining as far as it was concerned constant factors; but with my device the driving conical pulley enters directly into the result, combining with the transmitting conical pulleys I I, to effect this inverse graduation of speed and power.

Another advantage in my device is as follows: Power is generally applied to presses by

horses. These are attached to the operating-rope of the driving-pulley and travel away from the press. Now, when the driving-pulley has but one circumference, it is obvious that the rope must be longer and the horses travel farther than when the pulley is a conical one, such as the pulley J herein. In the former power is applied at first when it is not so much needed and speed is reduced. In the latter the speed is increased, the rope shorter where it is needed, and the loss of power at that time does not affect the result. This is important when a great many bales are to be made.

In my device, as compared with those I have mentioned, I start in with greater speed, make the horses go a shorter distance, and end with the same power.

Let M M represent the usual side doors of the press, hinged to the frame appropriately at one end. The other ends are provided with rods N, on which are journaled or hinged the catches O. These catches are made of rods, and form with the rods N a quadrilateral figure or parallelogram, as shown. To the sides of the frame A are fastened projecting supports or bearings P, to which are journaled rollers Q. When the doors are closed the catches O fit over and behind the rollers Q, and the pressure upon the doors from the inside exerted outwardly will not loosen the catches from behind the rollers. Across the sides of the frame A, just below the bearings of the pulley G, is the transverse rod or lever R, journaled and supported appropriately so as to turn, and provided with arms c at its ends. These arms c fit under the catches O at about their middle when the doors are closed, and said catches are in position behind the rollers Q.

The lever R is provided at its middle with a crank-arm, S, to which is pivoted a pitman, T, projecting downwardly, as shown. The end of this pitman is provided with a screw, U, having a bifurcated or notched head. This screw, by inserting it in the pitman deeper or unscrewing it, varies the length of the said pitman, and thus adjusts it.

Extending outwardly from the traveling pulley F, attached to the follower, is a pin, V.

The operation of this device is as follows: After the hay is put into the press the doors M M are closed, and their catches O fit over and behind the rollers Q and over the arms c of the lever-rod R, which said arms, by the weight of the rod R, extend downwardly and parallel with the catches O. When the follower ascends the pin V comes in contact with and fits into the notched end of the pitman-screw U as it continues to ascend, raises the pitman T, which turns the lever-rod R, and the arms c are turned outwardly, thus pressing out the catches O from behind the roller Q and releasing them, so that the pressure of the bale within will cause them to spring open.

In order to adjust the arms c to make them work properly, I can place small set-screws in them, the points of which project in front and

impinge upon the catches O. Thus when an arm c becomes worn, by setting up the screws a little they can be adjusted.

By adjusting the pitman-screw U the pin V can be made to engage therewith just at the proper time when the doors should yield to the pressure of the bale.

Let W represent the top door of the press. It is hinged to a transverse rod, X, attached to the frame A at one side, as shown. The top of the door W is provided with a beam, Y, on the top of which and about the middle is pivoted the lever Z, to which on each side of the pivot-point are pivoted the rods b b, extending to the ends of the beam Y, and provided on their ends with loops i, as shown. Guide-staples or eyes d d direct these rods properly. Secured in the top of the press on each side are the bails f f, having an upwardly-projecting arm, g. Supports h h just outside of these bales prevent them from falling down and keep the arm g in an upright position. When the door or lid W is closed down the loops i on the end of the rods b b fit over the arms g of the bails f f. By turning the lever the bails will be drawn over the ends of the beam Y and the lid secured. By turning the lever the other way the bails will be pushed off the beam and the door unlatched.

The advantage in this construction is that the loops i and the bails f f, by being always in position to engage with each other, are practically connected, and still allow the lid to be raised. A catch or rack, k, holds the lever Z in place when the bails are drawn over the beam Y. A brace, (marked l,) fitting over pins m in the top of the press, further guides and secures the door.

In order to prevent the lid W from falling back too far when opened, I have the following novel device: To one end of the lid W is pivoted a plate, n, having on its end a flange-support or socket, o. Another plate, p, is pivoted to the inside of the frame A, and also to the first plate, n, as shown. When the lid is closed the first plate extends upward and the second is inclined to meet its upper end. When the lid is opened the two plates turn on each other about their pivot-point until the second plate, p, fits into the flange-support or socket o, and both are stopped and form a rigid connection and hold the door from falling back.

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

1. In a baling-press having a follower, C, and side doors, M M, the device for latching and automatically unlatching said doors, consisting of the hinged latches O, rollers Q, lever-rod R, with arms c, crank S, pitman T, with its forked head, and traveling pulley F, with its pin V, when arranged substantially as herein described.

2. In a baling-press having a hinged or swinging top door or lid, W, the device for locking said door in place and releasing it, consisting

of the bails *f f*, with their arms *g*, rods *b b*, with their end loops, *i*, and lever *Z*, all arranged and operated substantially as herein set forth.

- 5 3. In a baling-press, the combination of the swinging top door or lid, *W*, and the holding or supporting device consisting of the plate *n*, with its flange-support *o*, and plate *p*, when ar-

ranged and constructed substantially as herein set forth.

In witness whereof I have hereunto set my hand.

JAMES N. GRANT.

Witnesses:

S. H. NOURSE,  
FRANK A. BROOKS.