

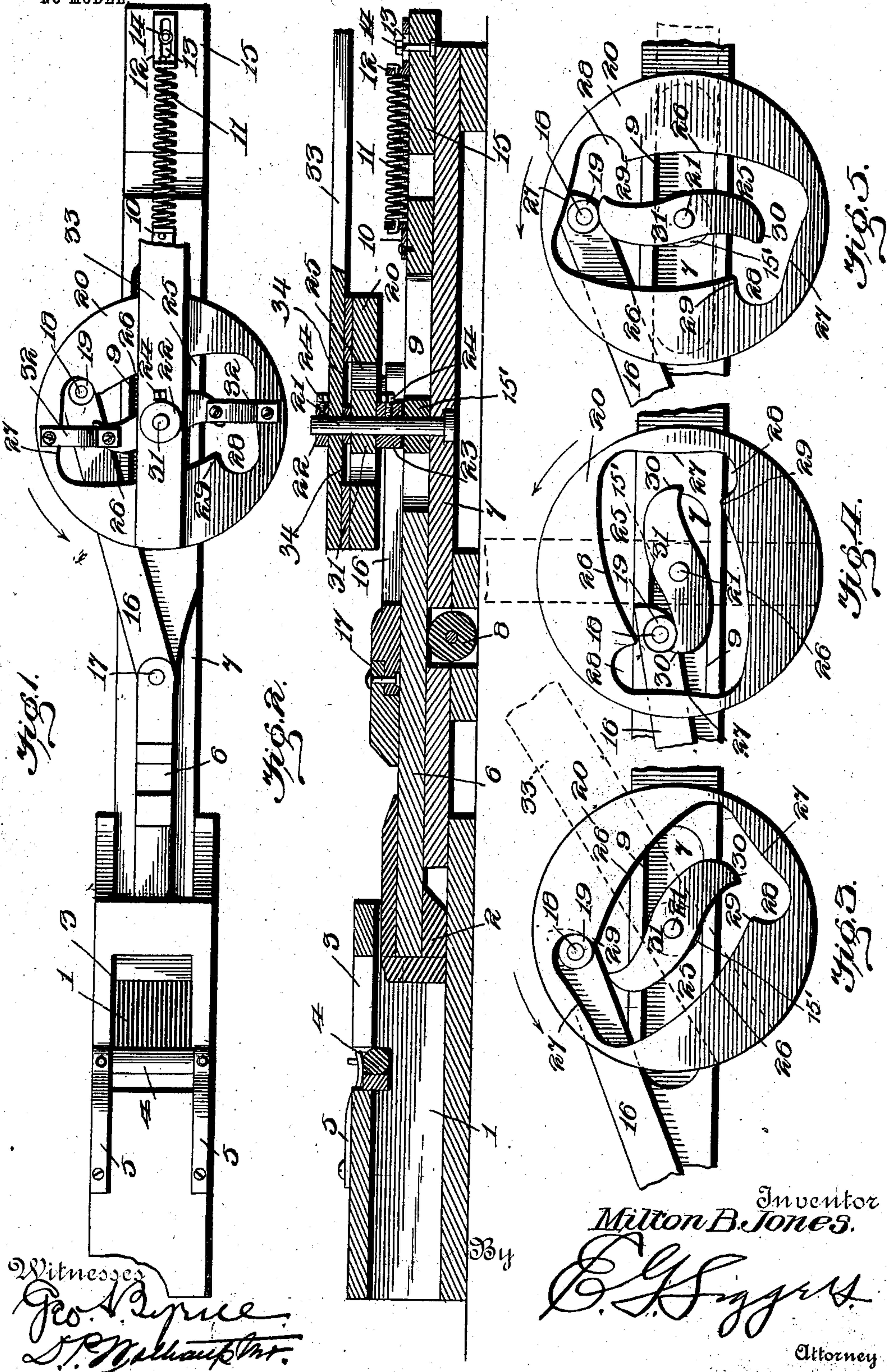
No. 726,694.

PATENTED APR. 28, 1903.

M. B. JONES.  
BALING PRESS.

APPLICATION FILED SEPT. 27, 1900.

NO MODEL.





# UNITED STATES PATENT OFFICE.

MILTON BRANARD JONES, OF MERIDIAN, MISSISSIPPI.

## BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 726,694, dated April 28, 1903.

Application filed September 27, 1900. Serial No. 31,281. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON BRANARD JONES, a citizen of the United States, residing at Meridian, in the county of Lauderdale and State of Mississippi, have invented a new and useful Baling-Press, of which the following is a specification.

This invention relates to baling-presses, and has special reference to that type of plunger-presses adapted for the baling of hay, straw, and other material.

The main object of the invention is to effect certain improvements in that type of plunger baling-presses commonly known as the "rebounding plunger-press," involving the employment of a plunger which has a powerful forward movement imparted thereto and which may easily rebound or return to its normal position.

To this end the invention contemplates a novel construction of power mechanism embodying simple and positive means for thrusting the plunger forward with a powerful force and to increase the power thereof in proportion to the increase in the resistance of the material being pressed—in other words, to increase the leverage exerted upon the plunger in its forward movement as the pressure or resistance of the material increases.

The invention also contemplates an improved power mechanism which permits the free and sharp retraction of the plunger, while at the same time relieving the draft-animal from the shock thereof.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

While the essential features of the invention are necessarily susceptible to some modification without departing from the spirit or scope thereof, still the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a plan view of a baling-press equipped with the improvements contemplated by the present invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is a detail plan view of the rotating power-head, showing the initial relation of

parts during the forward thrust or movement of the plunger. Fig. 4 is a view similar to Fig. 3, showing a second position of the parts in which the plunger has started upon its rebounding movement. Fig. 5 is a similar view showing a third position, illustrating the relation of parts when the plunger is completely retracted and the operating connection or pitman for the plunger is about to be caught again by the power-wheel for thrusting the plunger forward.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In carrying out the invention the improvements in the power or power mechanism may be associated with any of the ordinary types of plunger baling-presses; so for illustrative purposes there is shown in the drawings a simple form of press embodying a baling-chamber 1, adapted to receive therein the reciprocating baling-plunger 2 and provided in the top thereof with a feed-opening 3, at one side of which feed-opening is arranged a vertically-movable pressure-roller 4, yieldingly held depressed through the medium of holding-springs 5 and adapted to yield upwardly as the plunger 2 passes beneath the same to permit of the hay or other material being freely folded or tucked thereunder by the plunger, said roller 4 therefore serving, in connection with the plunger, as a folder for the material which is compressed within the baling-chamber proper within which the bale is formed.

While the power or power mechanism forming the essential part of the present application may be operatively related to the plunger 2 in different ways, still in the drawings there is shown the preferred way which is employed. This involves the mounting of the reciprocating plunger 2 at one end of the reciprocating plunger-staff 6, arranged to work horizontally over the extended power-base 7 and riding upon a bearing-roller 8, mounted within the said base and serving as a roller or bearing-support for the staff 6 to relieve the same from undue friction in the reciprocatory movements thereof. The said plunger-staff 6 is provided contiguous to the end opposite the plunger with a longitudinally-disposed slot 9 and has connected to



said end opposite the plunger, as at 10, one end of a retractile spring 11, the other end of which spring is fitted in an adjustable holding-plate 12, which is shown as being provided with a slot 13, receiving a clamping-bolt 14, passing through a supporting-block 15, mounted upon one end of the power-base 7. The said holding-plate 12 may be freely adjusted to regulate the tension of the retractile spring 11, and thereby provide means for regulating the speed and sharpness of the rebound of the plunger, and it will be understood that the spring 11 normally exerts its tension in a direction to retract the plunger out of the baling-chamber and at one side of the feed-opening 3 thereof. An antifriction-roller 15' surrounds the pivot-post 21, herein-after referred to, and operates within the slot 9 of the plunger to obviate any tendency of the plunger to bind under the influence of the lateral pressure of the pitman.

In the construction shown in the drawings the operative connection between the power or power mechanism and the plunger is effected through the medium of a swinging pitman 16, pivotally coupled at one end, by means of a rabbeted knuckle connection 17, with the plunger-staff 6 at a point intermediate the ends of the latter, the pitman 16 carrying at its opposite or unpivoted end an offset wrist-pin 18, carrying an antifriction-roller 19 and adapted to cooperate with the rotating power-head 20 in the manner to be presently explained. By reason of the employment of the pitman connection between the power-head and the plunger-staff the latter is given a straight forward movement, and the plunger has no tendency to sidewise movement, as when the plunger is pivoted to the end of a plunger-staff, which is the common construction in hay-presses.

The rotating power-head 20 is preferably in the form of a wheel mounted to rotate upon the stationary pivot-post 21, secured to and arising from the base 7 and having mounted thereon the holding-collars 22 and 23, arranged, respectively, above and below the power head or wheel 20 and removably and adjustably held upon the pivot-post 21 by means of the set-screws 24, the said collars 22 providing for holding the power head or wheel 20 in the proper working position upon the pivot-post, while at the same time permitting the ready removal and replacing thereof for repair or other purposes. The said revoluble power head or wheel 20 has formed therein a peculiarly-shaped camway or slot 25, which by reason of the general rectangular form thereof and the different lengths of the side and end walls of the same may be described as being of an approximately oblong form with the opposite curved outside walls 26 and the substantially straight or convexed outer end walls 27. The said camway 25 is not truly oblong in shape by reason of the fact that in diagonally opposite corners thereof the cam head or wheel is formed with

the offset thrust-notches 28, each of which notches is located at one end of one of the end walls 27 and merges directly into said end wall, but meets the adjacent side wall 26 in an inwardly-projecting nose or point 29, lying opposite to and at one side of the plane of the adjacent hook-point 30 of the interior S-cam or sigmoidal cam-block 31, which is centered within the camway or slot and constitutes the inner wall of the said camway. By reason of its S shape the interior cam or cam-block 31 is necessarily provided with sigmoidal sides lying opposite the curved side walls 26 of the way, and at its ends the said interior cam or cam-block is formed with the aforesaid aligned hook-points or concavities 30 reversely disposed opposite the offset thrust-notches 28 to receive the wrist 18 as it escapes from one of the thrust-notches.

The wrist 18 of the pitman 16 projects into the camway 25 and follows the peculiar contour or outlines thereof in the rotation of the power-head, and to provide for reinforcing the interior cam of the power-head arched braces 32 connect the points of the cam with the adjacent portions of the head or wheel and bridge the way or slot 25 to permit the wrist 18 to freely pass thereunder, said braces 32 being illustrated in Fig. 1 of the drawings, but omitted from Figs. 3 to 5, inclusive, so that the latter figures may clearly show the different positions of the parts.

Rotary motion is imparted to the power head or wheel 20 through the medium of the sweep 33, arranged transversely across the power head or wheel 20 on top thereof at substantially right angles to the disposition of the rotary cam 30, and preferably formed in its under side with clearance-grooves 34, arranged above the side portions of the camway or slot 25, in order to permit the wrist 18 to freely pass beneath the sweep.

Assuming the power head or wheel 20 to be rotated in the direction of the arrow shown in the drawings, it will be observed that when one of the offset thrust-notches 28 is engaged with the roller 19 of the wrist 18 the swinging pitman 16 may be said to be loosely interlocked with the power head or wheel, so that as the latter continues to rotate the said pitman 16, together with the plunger-staff, is thrust in a forward direction. At the same time the unpivoted end of the pitman is swung inward toward the plane of the plunger-staff, so that the leverage of the power head or wheel increases as the pressure or resistance of the material being compressed by the plunger increases, thus insuring a baling of the material under great density. This gradual increase of the leverage exerted against the resistance of the material is obviously due to the fact that at the beginning of the forward movement of the plunger the pivotal connection of the pitman with the power-head moves substantially in a plane parallel to the direction of pressure, the arcuate plane through which this con-



nection passes effecting a continually-changing relation of the parts, so that as this pivotal connection or knuckle nears the end of its movement it is moved in a plane nearly at right angles to the direction of pressure—that is to say, a large percentage of the movement of the head is absorbed by the movement of the pivotal connection in a direction transverse to the plunger. Therefore as the plunger will advance in a decreasing ratio to the movement of the power element it is evident that this loss of speed results in a corresponding gain of power. When the thrust-notch 28 is interlocked with the wrist 18, as shown in Fig. 3 of the drawings, which is a position about over the plane of reciprocation of the plunger-staff, the wrist-roller 19 is necessarily caused, under the retractive influence of the spring 11, to roll off of the inwardly-projecting point or nose 29 at one side of the said notch 28 and is prevented from swinging to the opposite portion of the camway by becoming engaged with the adjacent contiguous hook-point or concavity 30 of the interior cam. (See Fig. 4.) This breaks the force of the retractive movement of the plunger-staff. On the continued movement of the sweep the wrist is carried over by the force of the spring, so as to contact with the side wall 26 diagonally opposite to the hook-point 30, and the spring 11, therefore, having a free play, will retract the plunger and carry the wrist of the swinging pitman back to the opposite end portion of the way, as shown in Fig. 5 of the drawings, the curved walls of the way serving to retard to some extent the retractive movement of the plunger—that is to say, the wrist 18 as it is released from one of the thrust-notches will drop into the adjacent concavity of the sigmoidal block and will be caused to travel from one end of the block to the other for presentation in position to be engaged by a succeeding notch. This retractile movement is impeded, however, first, because the wrist must ride up the convex portion of the block, and, second, because as the power-head continues to rotate during the retraction of the plunger the position of the block will be constantly changed to present an increasing resistance to the rearward movement of the wrist thereover. In other words, during the retraction of the wrist the block will be moving toward a position at right angles to such retractile movement, and the shock usually incident to such retraction will therefore be minimized, and the strain will be removed from the draft-animals operating the sweep. The curvature of the outer side wall 26 holds the sweep off the horse until the wrist-roller reaches the extreme end of the said wall, where the completion of the retractive movement takes place. It will also be observed that the plunger remains at rest immediately after its rebound until the wrist-pin traverses one of the end or shorter portions of the camway, thus

giving sufficient time to supply material to the press without stopping the draft-animals.

In Fig. 5 the power-head is shown in the position at the time when the plunger is substantially at rest, though the sweep is being carried around by the horse. During this period the feeder can supply the press-box with a fresh amount of hay.

The construction described permits of a continuous operation of baling with a minimum expenditure of power, besides insuring a positive and reliable action of the plunger with a minimum strain upon the draft animal or animals attached to the sweep.

It is thought that the construction, operation, and many advantages of the herein-described baling-press will be readily apparent to those familiar with the art without further description, and I will also have it understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

The prominent features of my hay-press are the arrangement of the straight solid plunger-staff which is guided on the pivot-post of the sweep and is operated from the power-head by a pivoted pitman connection and the peculiar construction of the power-head with its central interior cam-block 31, which has two functions—first, to retard the retractive movement of the plunger-staff and prevent the shock being transmitted with great force to the sweep, and, second, to allow for feeding the press-box without stopping the draft-animals. The simplicity of the construction which enables these results to be accomplished is a point not to be overlooked. There is nothing complex about the construction or operation of my press which the average farmer may not readily understand.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a baling-press, the combination with a press-box, a rotary power-head in rear of said box, a stationary pivot-post for said head, and a plunger within the press-box, of a plunger-staff having rigid connection with the plunger and provided with a longitudinal slot for the reception of the pivot-post of the power-head, whereby said pivot-post constitutes guiding means for the plunger-staff to prevent lateral movement of the latter, a retracting device connected to the rear end of the plunger-staff, a pitman having pivotal connection at one end with the plunger-staff at a point between the press-box and pivot-post, the opposite end of said pitman having pivotal connection with the power-head at an eccentric point, and the axis of the power-head being located directly in rear of the pivotal connection between the pitman and the plunger-staff, whereby a constantly-increasing leverage will be exerted upon the



plunger during its forward movement to effect the application of correspondingly-increasing pressure as the resistance of the bale increases.

5 2. In a baling-press, the combination with a press-box, a power-base extended rearwardly from the box, a horizontal bearing-roller mounted in the base at a point intermediate of its ends, and a block mounted upon said  
10 base at the rear extremity thereof, of a plunger within the box, a plunger-staff rigidly fixed thereto and provided adjacent to its rear end with a longitudinal slot, a pivot-post upstanding from the power-base, an antifric-  
15 tion-roller mounted on said post and disposed within the slot of the plunger-staff, a rotary power-head mounted on said pivot-post, whereby said post performs the triple func-  
20 tion of guiding means for the staff, an axle for the antifriction-roller and a support for the power-head, a pitman eccentrically connected to the power-head and pivoted at its outer end to the plunger-staff at a point be-  
25 tween the pivot-post and press-box, and plunger-retracting mechanism carried jointly by the rear end of the plunger and the block mounted on the base.

3. In a baling-press, the combination with the plunger and the plunger connection hav-  
30 ing a wrist, of a rotary power-head provided with a substantially oblong camway, the outer side walls of which are provided with thrust-notches located at diagonally opposite cor-  
35 ners of the way, a block defining one wall of the way and terminating opposite the notches, and means for retracting the plunger to cause the wrist when released from a notch to travel  
40 upon the block from one end to the other thereof for presentation to a succeeding notch, whereby the change in position of the block, due to the continued rotation of the head dur-  
ing the retraction of the plunger, will pre-

sent an increasing resistance to such retrac-  
tion and thereby minimize the shock incident thereto.

4. In a baling-press, the combination with a plunger and a pitman having a wrist, of a ro-  
tary power-head provided with a substantially oblong opening and with diagonally-opposed  
50 thrust-notches formed in the side walls of the opening, a sigmoidal block centered within the opening and having its concave portions disposed adjacent to the notches to receive  
the wrist as it escapes therefrom, and means  
55 for retracting the plunger to cause the wrist to travel from end to end of the block, where-  
by said block opposes an increasing resist-  
ance to the retraction of the plunger for the purpose of minimizing the shock incident thereto.

5. In a baling-press, the combination with the plunger and the pitman having a wrist, of a rotary power-head provided with a sub-  
stantially oblong opening having diagonally-  
60 opposed thrust-notches, a block centered within the opening and having its ends dis-  
posed opposite the thrust-notches to receive the wrist, means for retracting the plunger to cause the wrist to travel from end to end  
of the block, and means for limiting such re-  
70 traction when the wrist has reached the rear extremity of the block, whereby the plunger will remain at rest during such continued movement of the head as is necessary to pre-  
sent the next succeeding thrust-notch to the  
75 wrist.

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

MILTON BRANARD JONES.

Witnesses:

E. L. HENDERSON,  
J. F. WESTMORELAND.