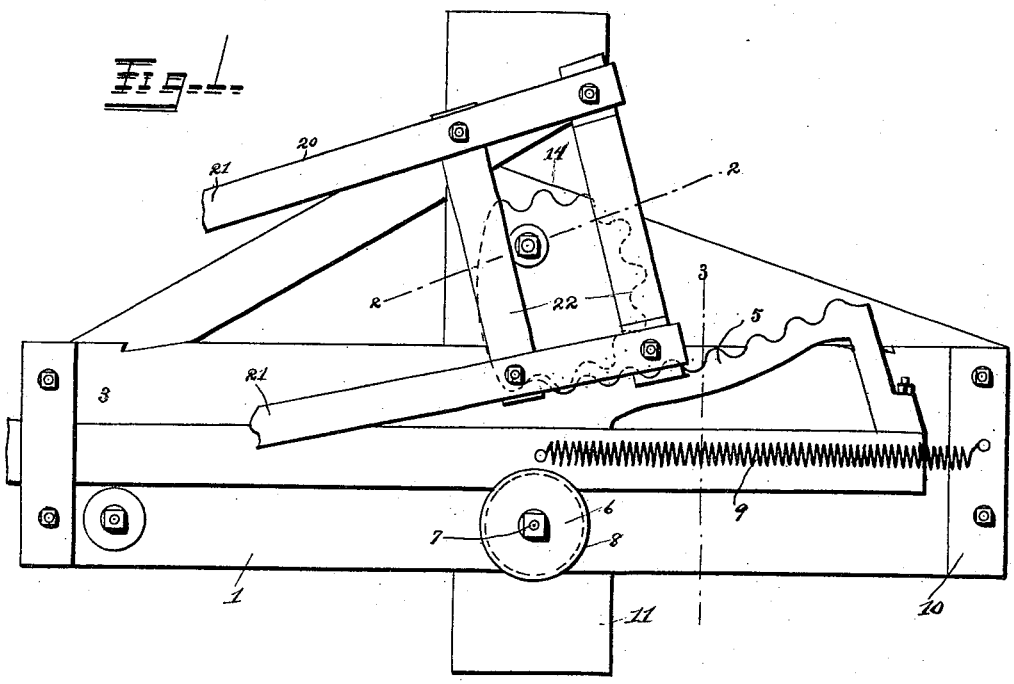
(No Model.) 2 Sheets—Sheet 1.

# H. H. HUNTLEY.

## OPERATING MECHANISM FOR BALING PRESSES.

No. 494,527. Patented Mar. 28, 1893.

Fig. 1.



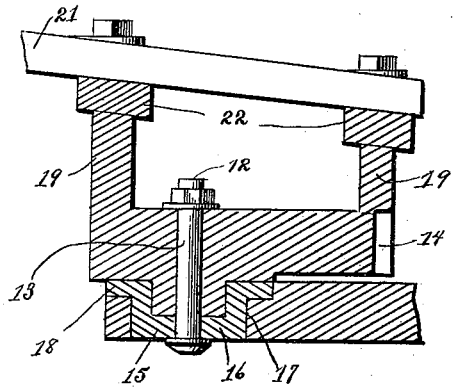
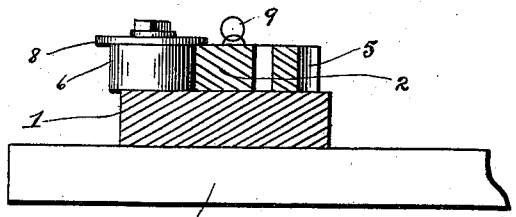




Fig. 2.

Fig. 3.

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Chas. Rhodes.

Hosea H. Huntley.
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Attorney.

(No Model.) 2 Sheets—Sheet 2.

# H. H. HUNTLEY.

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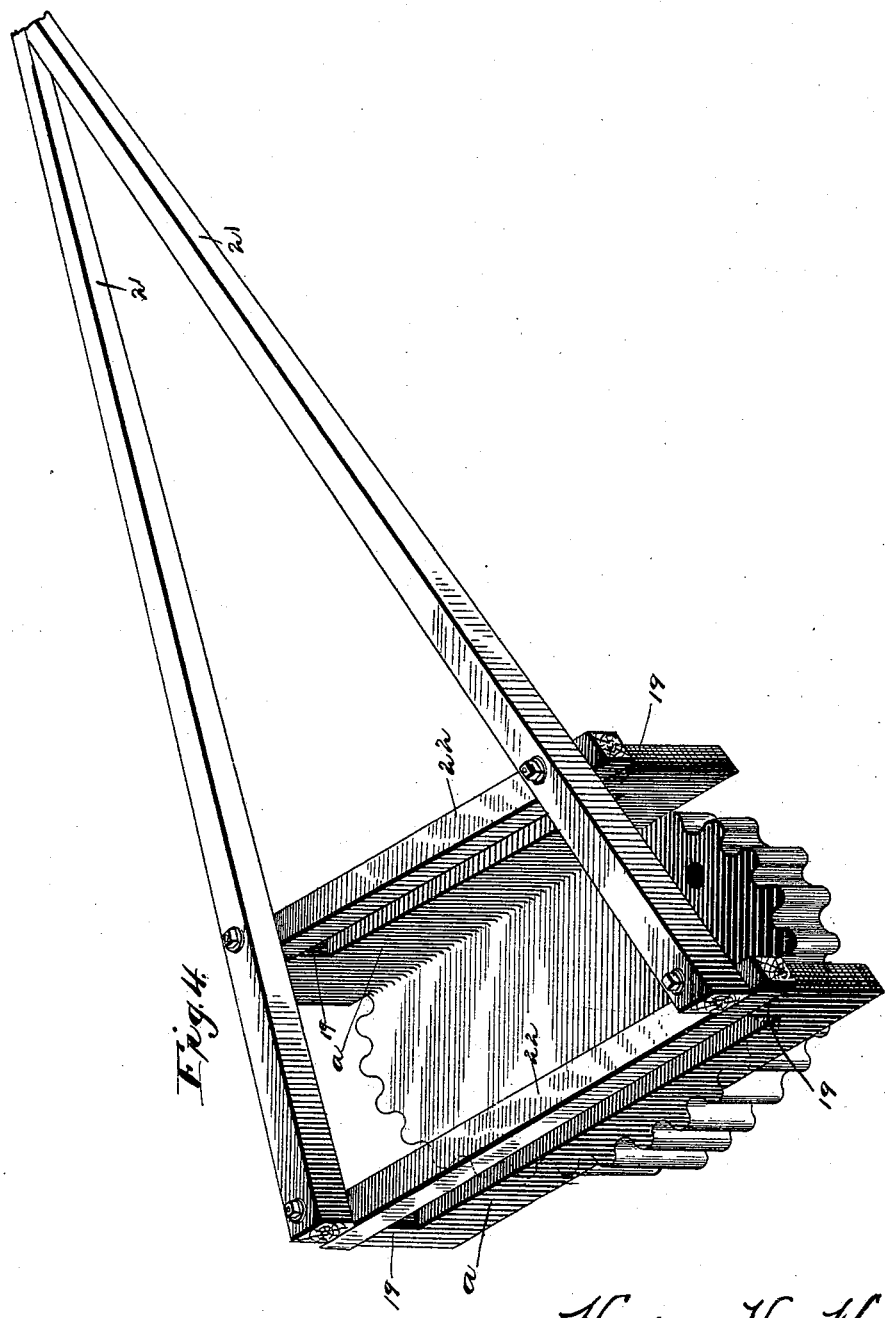


Fig. 4.

Witnesses
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# UNITED STATES PATENT OFFICE.

HOSEA H. HUNTLEY, OF QUINCY, ILLINOIS, ASSIGNOR TO MICHAEL ROONEY AND MARY L. HUNTLEY, OF SAME PLACE.

## OPERATING MECHANISM FOR BALING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 494,527, dated March 28, 1893.

Application filed December 9, 1890. Serial No. 374,069. (No model.)

*To all whom it may concern:*

Be it known that I, HOSEA H. HUNTLEY, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Operating Mechanism for Baling-Presses, of which the following is a specification.

This invention relates to baling presses and more especially to that class of presses for baling hay, cotton, and the like which are provided with a reciprocating plunger.

My present invention has especial reference to the operating mechanism for this class of presses, and it has for its object to provide mechanism by means of which the plunger may be operated easily and effectively and with a power increasing in force toward the completion of the stroke, the speed of such increase also increasing.

With these objects in view the invention consists in the improved construction, arrangement, and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the drawings hereto annexed—Figure 1 is a plan view of a baling press operating mechanism constructed in accordance with my invention. Fig. 2 is a vertical sectional view taken on the line 2—2 in Fig. 1. Fig. 3 is a vertical sectional view taken on the line 3—3 in Fig. 1. Fig. 4 is a perspective view of the cam showing the ribs *a*, *a*, which extend beyond the plane of one side of the cam.

Like numerals and letters of reference indicate like parts in all the figures of the drawings.

1 designates a suitable supporting frame or sill which may form a part of the frame of a baling press of ordinary construction. The press, which forms no part of my invention has not been shown in the drawings hereto annexed.

2 designates the reciprocating plunger rod which is mounted to slide longitudinally upon the sill or base, a cross bar 3 being provided to retain said plunger rod in position. Upon one side of the said plunger rod is bolted a casting 4 having a segmental rack bar or series of teeth 5 which are curved outwardly and upwardly from the plunger rod at the rear end of the latter instead of extending outwardly in a straight line oblique to the rod, as heretofore. Friction rollers 6 journaled upon vertical spindles 7 are arranged to form bearings for the opposite side of the plunger rod, and said wheels or rollers may be provided at their upper edges with flanges such as 8 for the purpose of holding the plunger rod down against the base. A retracting spring 9 connects the plunger rod with a cross bar or bracket 10, upon the rear end of the base. The base 1 rests upon a cross bar or sill 11 which is provided with a vertical shaft or spindle 12 upon which is pivoted a cam 13, a portion of the periphery of which is provided with teeth 14 the point of pivoting and the shape of toothed face being such as will cause said teeth to mesh with the teeth 5 of the segmentally curved rack bar 4 and said teeth are arranged on the periphery of the cam in such a manner that the teeth engaging the forward end of the casting are farthest from the shaft on which the cam is mounted and as the same has moved the curved casting forward the teeth of the cam have gently ridden up the casting until at its highest point the teeth of the cam are near to the shaft 12 and have regularly receded from one end of the cam to the other. The increase in power has been regular and regularly increased up to the point where the communication of power at the top of the casting is near to the center of power (shaft 12) from which said motion is derived, and not only increases the strength of stroke but the speed thereof as will be readily apparent. The cam 13 is preferably provided on its under side with a boss 15 having a bearing in a socket 16 which is sunk in a recess 17 in the sill. The upper edge of the socket 16 has a flange 18 to form a bearing for the under side of the cam 13. The upper side of the latter is provided with brackets 19 to which the operating lever 20 may be secured; and said operating lever will be preferably constructed of converging side pieces 21 suitably connected by transverse braces 22 and firmly connected with the toothed eccentric operating disk.

The operation of my invention will be readily understood by those skilled in the art to which it appertains from the foregoing description taken in connection with the draw-

ings hereto annexed. Draft is attached to the end of the operating lever which latter is rotated. Normally the retracting spring holds the plunger at the extreme rear end of the base or frame. As the cam 13 rotates the tooth of said cam which is farthest from the center will engage the first tooth of the curved rack bar 5, being the one which is nearest the central longitudinal line of the plunger rod which latter is thus forced in a forward direction. Each successive tooth of the cam that engages the curved rack bar is nearer the center of said cam, and the leverage is consequently gradually increased until the last tooth is reached at which point the maximum power is exerted, said last tooth being the one nearest the pivotal point of the cam and lever. When the last tooth of the cam passes the last tooth of the curved rack bar, the plunger will be retracted by the spring 9, the rack bar 4 sliding easily past the untoothed portion of the eccentric cam. It will be seen that by this invention the plunger will receive less power, and be moved more rapidly at the beginning of the stroke when comparatively little power is required to compress the material which is acted upon by the plunger, while at the end of the stroke when the material has been partially compressed, the maximum power is exerted; and the strain upon the team is thus equalized and the press will be operated evenly and with the best results. Heretofore this increase of power has been effected by a rotary toothed cam engaging a straight rack mounted on the plunger at an angle to its line of movement; but, as the resistance increases not regularly but in geometric progression as the bale is compressed, such devices where the power increased regularly were inadequate to the strain exerted. In the present case, by curving the rack 5 outwardly from the plunger instead of leading it at an angle therefrom, not only is the power increased toward the completion of the stroke but its ratio of increase also increases. That is to say, it will be obvious that if the rack 5 inclined outwardly at a simple angle to its line of movement the radii of the cam toward the completion of its stroke must grow regularly shorter to accommodate the regular rise of the rack. But when the latter curves outwardly, not only must the said radii grow shorter but the speed of such diminution must increase to correspond with the increasing speed of the rise of the rack. Hence not only is the power increased by this construction, but it increases faster and faster until the plunger has completed its stroke. Near the outer ends of the ribs *a*, *a*, are provided posts, supporting bolts to which are secured cross pieces 22 22, and the bars 21, 21 which form the truss operating lever. These ribs *a*, *a*, serve the double purpose of strengthening the cam and elevating the operating lever a sufficient distance to allow it to clear the curved rack bar on the plunger as the press is operated.

Having thus described my invention, what I claim is—

1. In a press a rigid reciprocating plunger bar provided with a tapered toothed rack bar, said plunger bar held in position in front of the operating mechanism by a rigid cross bar and provided with friction wheels having flanges which embrace the plunger bar at opposite sides to secure perfect alignment; in combination with an operating lever and an eccentric irregularly curved, toothed cam, connected therewith, the teeth of which register with the teeth on the curved toothed rack bar on the plunger bar, the plunger bar being held firmly against lateral movement by the flanged friction wheels, and against vertical movement by the friction wheels and the toothed cam which are mounted at opposite sides of the plunger bar, substantially as and for the purpose specified.

2. In a press a rigid reciprocating plunger bar provided with a tapered, toothed rack bar, said plunger bar held in position in front of the operating mechanism by a rigid cross bar 3 and provided with friction wheels having flanges which embrace the plunger at opposite sides to secure perfect alignment, said rollers located back of the cross bar 3 near the operating mechanism and approximately opposite the spindle 12; in combination with an operating lever and an eccentric, irregularly curved, toothed cam, the teeth of which register with the teeth on the toothed rack bar on the plunger, the plunger bar being held firmly against vertical movement by the flanged friction wheels and against lateral movement by the cam and the face of the wheels, substantially as and for the purpose specified.

3. In a press, a rigid reciprocating plunger bar adapted to reciprocate in a right line and provided with a spring connecting it with a permanent part of the structure of the press, and held in position by a rigid guide in front and flanged friction wheels at the rear in the region of the operating mechanism, said plunger bar provided with a tapered toothed rack bar; in combination with a pivotally mounted eccentric cam provided with a series of teeth at different distances from the pivotal support of the cam and arranged on an irregular curved line, said cam provided with projections which extend beyond the line of the face of the cam, one side of the periphery of said cam being devoid of teeth and cut away to allow the rack bar to pass the cam as the rack bar flies back, and to which cam is secured an operating lever, all constructed and combined to operate substantially as described.

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

HOSEA H. HUNTLEY.

Witnesses:
ALBERT W. WELLS,
L. E. EMMONS.