

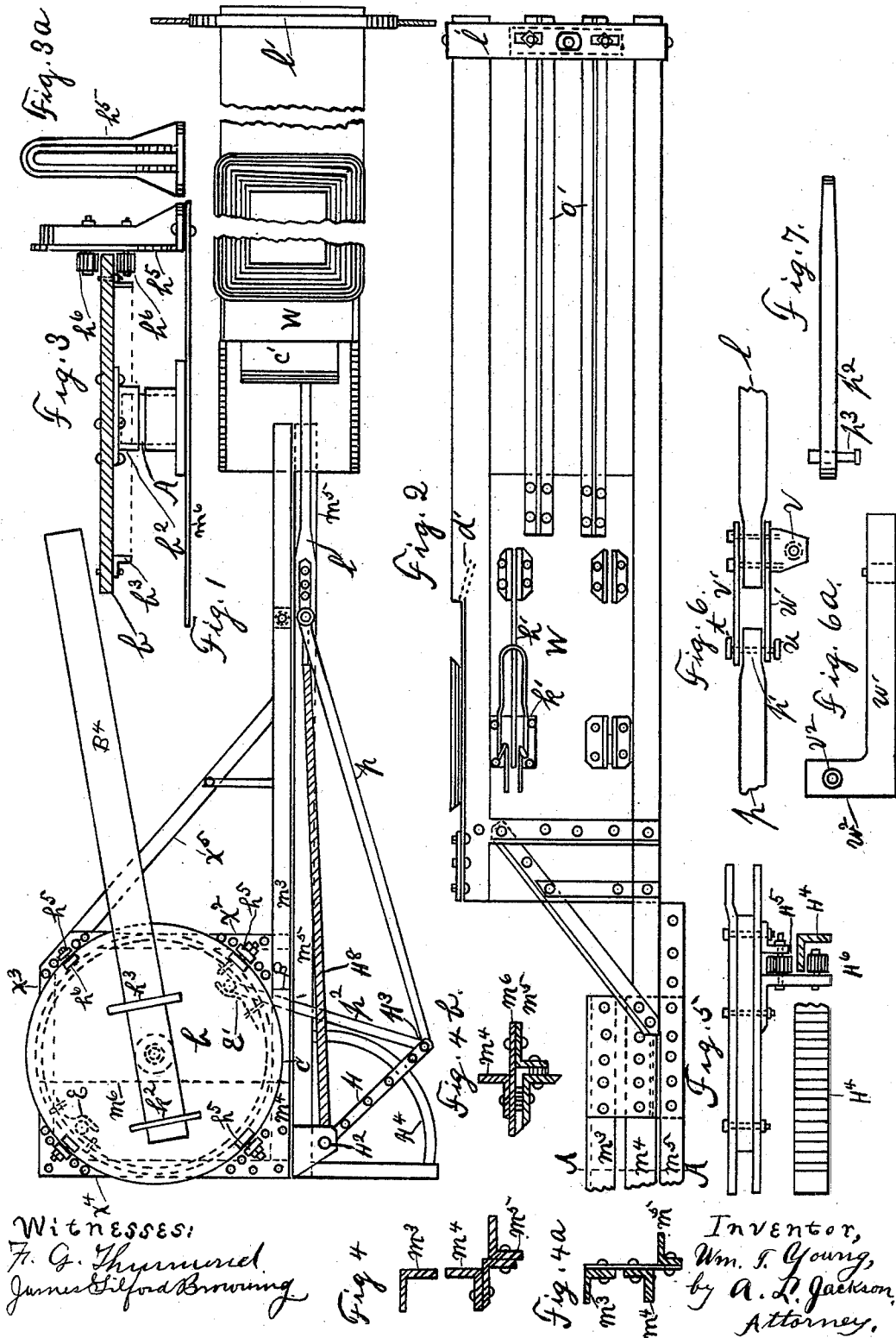
(No Model.)

3 Sheets—Sheet 1.

W. T. YOUNG.
HAY PRESS.

No. 584,300.

Patented June 8, 1897.



WITNESSES:

F. G. Thymmer.
James Alfred Browning

Inventor,
Wm. T. Young,
by A. L. Jackson,
Attorney.

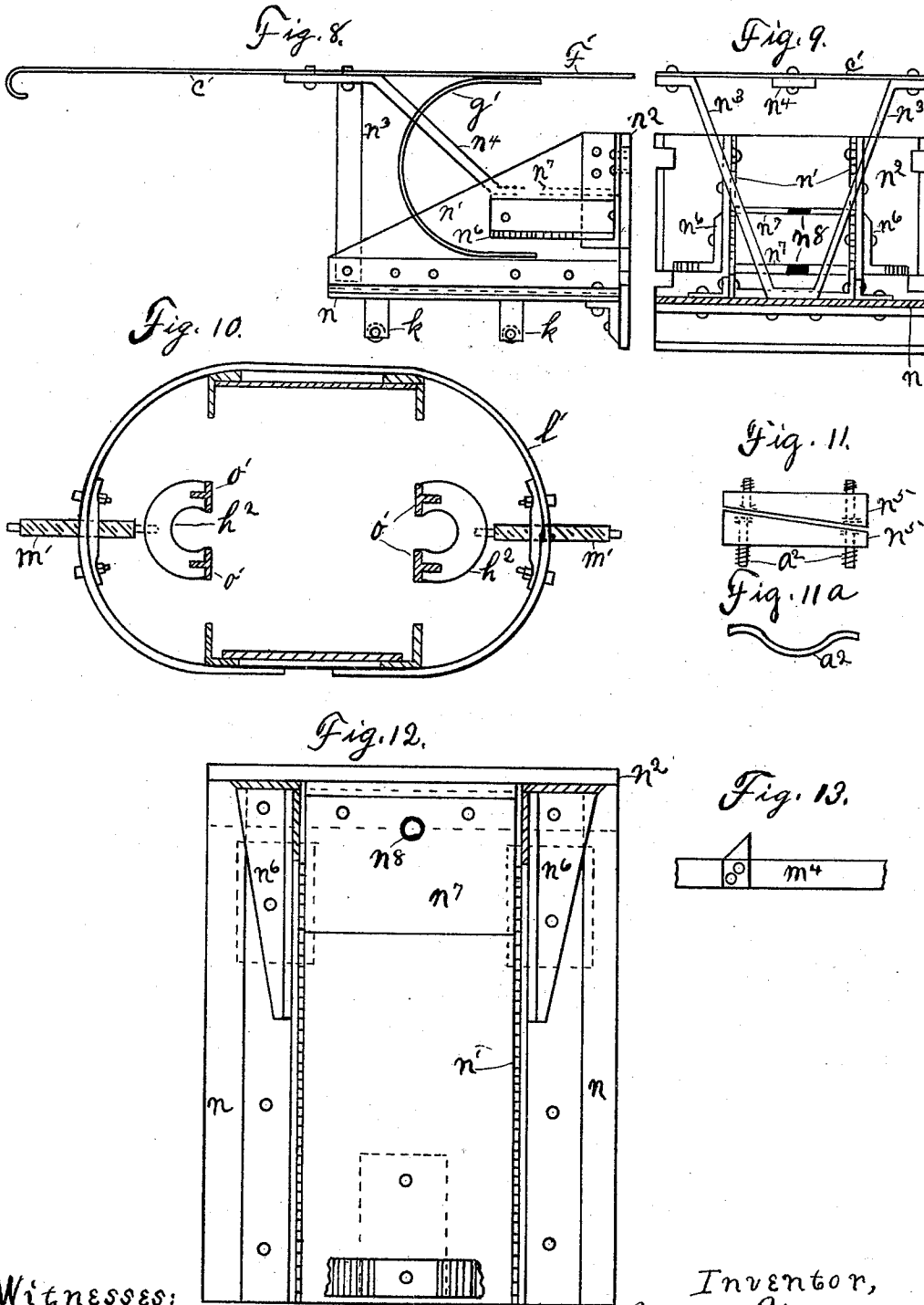
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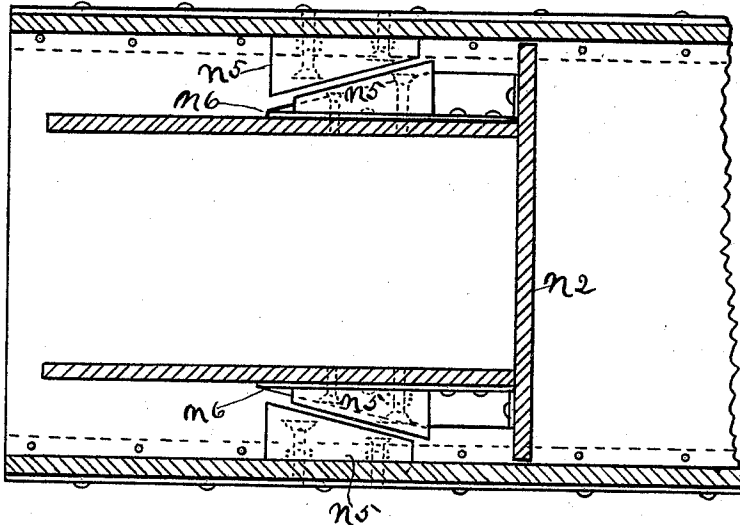
W. T. YOUNG.
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3 Sheets—Sheet 3.

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Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM T. YOUNG, OF FORT WORTH, TEXAS, ASSIGNOR TO THE SOUTHWESTERN BRIDGE AND IRON COMPANY, OF SAME PLACE.

HAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 584,300, dated June 8, 1897.

Application filed December 21, 1895. Serial No. 572,865. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. YOUNG, of Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Hay Pressing and Baling Machines, of which the following is a specification.

My invention relates to improvements in presses for compressing and baling hay or other fibrous material; and it consists in various improvements in the manner of compressing the material in a chamber by a plunger and forcing the accumulated mass through the contracted end of the baling-chamber, novel means for contracting the end of the baling-chamber, and improvements in the manner of applying power to the plunger, whereby great power is easily obtained and rapidly applied to the plunger.

Other objects and advantages will be fully understood from the following description and claims. I accomplish these objects by means of the mechanism hereinafter described, and particularly pointed out in the claims.

Reference is had to the accompanying drawings, forming part of this specification, in which similar characters of reference are used to indicate the same parts throughout the several views.

Figure 1 is a plan view of my invention. Fig. 2 is a side elevation of the compressing and baling chamber. Fig. 3 is a detailed view showing a section of power-disk and manner of mounting same. Fig. 3^a is an outside view of one of the disk roller-standards. Fig. 4 is a sectional view through A A of Fig. 2. Fig. 4^a is a similar view through the frame at the point B in Fig. 1. Fig. 4^b is a similar view through the frame at the point C in Fig. 1. Fig. 5 is an elevation of the radial arm and circular track with antifriction-rollers. Fig. 6 is an elevation of sections of plunger and connecting rods. Fig. 6^a is a detail view of cross-head and antifriction-rollers. Fig. 7 is an elevation of the tension-rod. Fig. 8 is a side elevation of plunger. Fig. 9 is a front elevation of plunger. Fig. 10 is a rear elevation of baling-chamber and showing tension-spring. Fig. 11 is a plan view of the wooden wedges. Fig. 11^a shows

a variation in the springs used in or under the wedges. Fig. 12 is a plan view of the plunger in section. Fig. 13 is an elevation of a plate for throwing tension-rod in place. Fig. 14 shows sections of the baling-chamber and the plunger and the arrangement of the wooden wedges.

The entire frame of the press is constructed, preferably, of steel or other metal shapes and plates. The chamber is of ordinary construction, having a hopper, follower-heads, spring-compressed dogs, &c. The plunger-head N² is attached or bolted to the plunger in any suitable way, and the plunger is mounted on rollers k, which travel on the bottom of the compression-chamber. Wooden wedges n⁵ are bolted to the plunger on angle-plate n⁶ and to the front of the inside of the compression-chamber. Spiral or other springs a² are inserted in or under the wooden wedges to take up the shock and to prevent the rebound of the plunger. A tucker c' or top plate is mounted above the plunger on suitable braces n³ and n⁴. The brace n⁴ is attached to the plunger-rod, and the braces or supports n³ are attached to the bottom plate of the plunger. The plunger-rod l is connected to the plunger by means of a pin running through the angle-plates n⁸.

The charge on entering the baling-chamber W is tucked by means of the top plate c' of the plunger acting in connection with the depression d' in the top plate of the baling-chamber. The top plate c' is bolted or hinged to the supports, so that the end F' may be depressed on entering or being withdrawn from the baling-chamber. The end F' has for flexible supports the springs g'. By this arrangement the wedging of the plunger in the baling-chamber is avoided, and the easy withdrawal of the same and thorough tucking of charge are assured. The recoil of the charge is checked by means of retainers h', held in position by the springs k', the retainers being hinged to the walls of the compression-chamber and acting through slots in its side walls.

The tension of the rear of the press is secured by the taper given to the baling-chamber by means of the curved steel spring l', the screws m', and the arches h², which force in the longitudinal bars o' in the side of the

balancing-chamber and contract the vertical depth of the chamber by bringing the top and bottom plates nearer together.

The frame for supporting and guiding the plunger-rod and its connections consists of the angle-bars m^3 , m^4 , and m^5 , suitably riveted together, as shown in Figs. 4, 4^a, and 4^b. The plunger-rod l is attached to the connecting-rod p , as shown in Fig. 6. This rod is made to act in a straight line by means of an antifriction cross-head at junction of the connecting-rod p and the plunger-rod l . This cross-head consists of the jaw-plates v' and w' , the rollers t and u acting on a vertical pin p' , and roller v acting on a horizontal pin with a suitable box. These rollers run on longitudinal bars m^3 , m^4 , and m^5 . The lower jaw W' of the cross-head has an arm W^2 , that works between bars m^3 and m^4 , and rollers V^2 , one above and one below arm W' , are mounted on this arm. These rollers revolve on a vertical pin and run against bars m^3 and m^4 .

The power for driving the plunger is obtained by means of a revolving disk or crank mounted on a suitable frame. To the center of the disk is bolted a boss or bearing b^2 for receiving the center pin A . The power-bearing for pin A is mounted on a plate m^6 . (Shown in Figs. 3 and 4^b and in dotted lines in Fig. 1.) This plate is mounted on the frame composed of the pieces x^2 , x^3 , and x^4 , bolted to bar m^4 , the latter forming one side of the frame. This frame is braced by a piece x^5 , riveted to x^2 and x^3 and to the bar m^4 . Standards h^5 are mounted on the frame at various points about the circumference of disk b . In these standards are mounted antifriction-rollers h^6 , one above and one below the disk, thus securing the steady revolution of this disk. This disk can be revolved by any suitable power. To use animal power, I attach a lever B^4 to the top of the disk b by means of straps k^2 and k^3 . The legs of strap k^3 are longer than those of strap k^2 , and the lever is bolted to the strap k^3 .

To drive the disk by steam or other power, a pulley-wheel could be mounted on the center of the disk to be operated by a band and a drive wheel, or a rack could be attached to the rim of the disk to be operated by a pinion. An annular flange b^3 is riveted to the under side of disk b , and dogs E and E' are riveted to this flange. A radial arm H is pivoted to the frame at H^2 and to connecting-rod p and flexion-rod p^2 at H^3 . This radial arm travels over curved track H^4 , and a steady movement over this track is secured by the rollers H^5 and H^6 . Flexion-rod p^2 is pivoted at H^3 and carries a pin p^3 in the other end. This pin is operated by the dogs E and E' .

The power is obtained by revolving the disk in an opposite direction to the movement of the hand of a clock by means of lever B^4 . When the disk is revolved, the dogs E and E' alternately catch the pin p^3 and force the pin along with the disk until the disk has revolved far enough to throw the pin out of the

dog. This operation draws the radial arm H and connecting-rod p into a line with plunger-rod l , and thus forces the plunger-rod and the plunger into the baling-chamber. The pin p^3 is supported by and travels over the plate m^6 and may rest directly thereon or be provided with an antifriction roller or ball bearing. A plate (see Fig. 13) is riveted to bar m^4 to throw the tension-rod against the annular flange on disk b when this is drawn back by spring H^8 . The return stroke of the plunger is effected by means of the recoil in the pressed charge and by the steel spiral tension-spring H^8 bringing the plunger back to its original position. This spring is attached to the antifriction cross-head and to the front part of the frame to pivot-pin H^2 . There are two strokes of maximum length to each revolution of the disk or crank.

It will be seen that little power will be required to operate the press and that there is almost uniform demand for power, due to variable piston speed, with uniform velocity of disk or crank, securing to the prime motor b rapid increase in mechanical advantage simultaneously with the increased resistance which is offered to the plunger. This variable plunger speed or mechanical advantage results from the relatively slow speed of flexion-rod p^2 as compared with that of the disk or crank as the end of the stroke is approached, and from the fact that the connecting-rod p and radial arm H are approaching a straight line throughout the stroke and approximate the same closely at the end of the stroke, with the result that a straight pull on the flexion-rod p^2 exerts an enormous pressure on the plunger-rod l when most needed, thus equalizing the demand for power from prime motor b .

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

1. A hay-baling machine having a plunger consisting of a plunger-rod, a head-plate, angle-plates bolted to said head, said plates constituting means for attaching said plunger-rod, a top plate having one end curved, braces for supporting said top plate, springs supporting the rear end of said top plate, whereby said plate is made elastic, and spring-pressed blocks bolted to the plunger for taking up the shock caused by the rebounding of the pressed charge.

2. In a hay-baling machine a plunger having a spring-pressed top plate attached thereto and spring-pressed wedges bolted on the sides thereof and similar wedges bolted to the interior of the baling-chamber for taking up the shock caused by the rebounding of the charge, and means for driving said plunger.

3. A hay-baling machine having means for driving the plunger consisting of a frame, a revolving disk having a bearing bolted to the center thereof, a center pin operating in said bearing, a plate mounted on said frame for supporting said pin, standards on said frame,

rollers in said standards for guiding said disk, a radial arm pivoted to said frame, a flexion-rod and a connecting-rod pivoted to said radial arm, dogs bolted to said disk for engaging said flexion-rod, and means for connecting said connection-rod to the plunger.

4. In a hay-baling machine a cross-head adapted to connect the plunger-rod and the power-connecting rod, said cross-head consisting of jaw-plates *v'*, and *w'*, a vertical pin *p'*, journaled in said plates, rollers *t*, and *u*, mounted on said pin, a horizontal pin provided with a suitable box, roller *v*, mounted on said pin, arm *W*², a vertical pin through said arm, and rollers *V*², one above and one below said arm, said rollers being guided by the longitudinal bars of the machine-frame.

5. A hay-baling machine having means for applying power to the plunger consisting of a frame composed of angle-bars, a cross-head mounted on said bars, antifriction-rollers for said cross-head, a connecting-rod pivoted in said cross-head, a radial arm pivoted in a suitable bearing on said frame, a flexion-rod and said connecting-rod pivoted in said radial

arm, a curved track for said arm, a spiral spring attached at one end to said cross-head and the other end attached to or near the pivot-pin of the radial arm at front of frame, and means for operating said flexion-rod.

6. A hay-baling machine having motive power for pressing the hay consisting of a revolving disk mounted on a suitable frame, a lever for operating said disk, means for applying the power generated by said disk consisting of dogs attached to said disk, a flexion-rod, a connecting-rod, and a radial arm pivoted together, a pin carried in the other end of said flexion-rod and engaged by said dogs, a cross-head for attaching the other end of said connecting-rod, a spiral spring attached to said cross-head and together with said radial arm attached to the front part of the frame, and a rod for connecting with said cross-head and to the plunger.

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Witnesses:

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