No. 711,097. Patented Oct. 14, 1902.

E. BYARS.

BALING PRESS.

(Application filed June 10, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

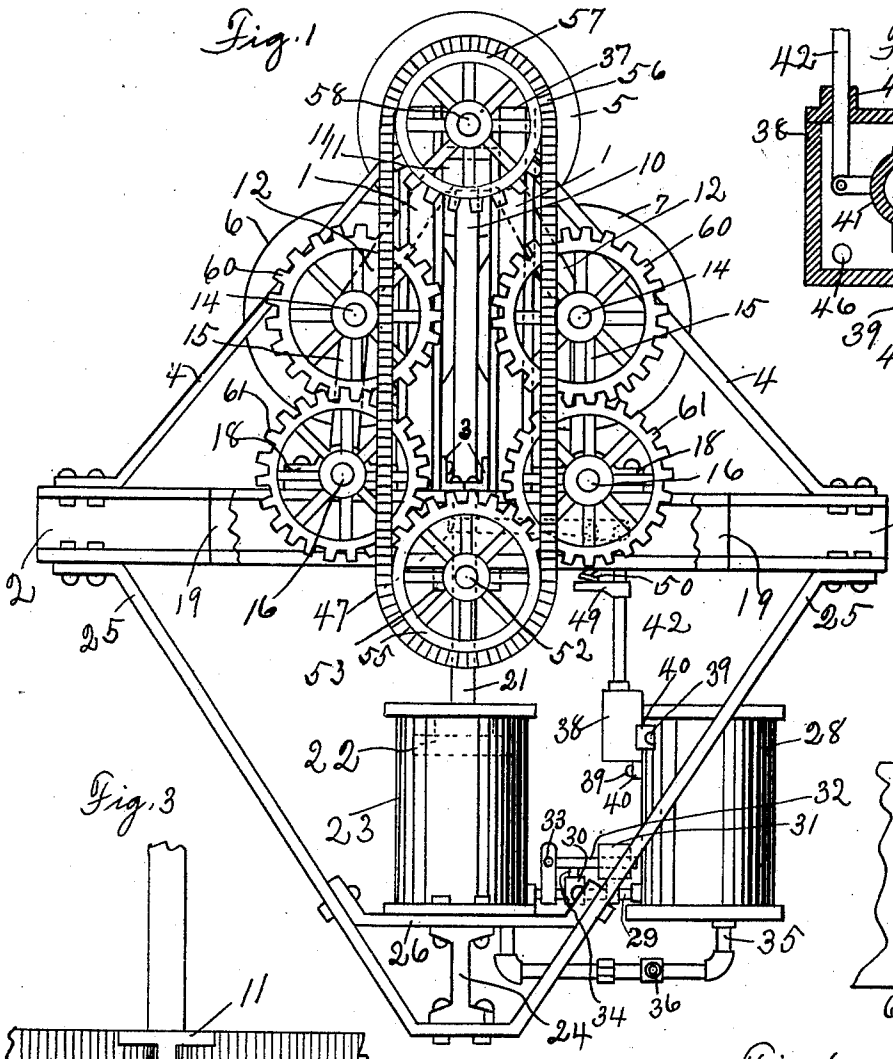

Fig. 2.

Fig. 3

Fig. 4

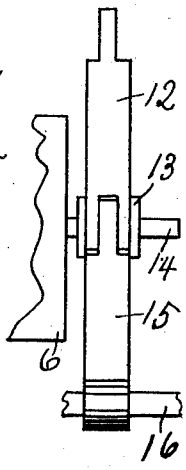

Fig. 5.

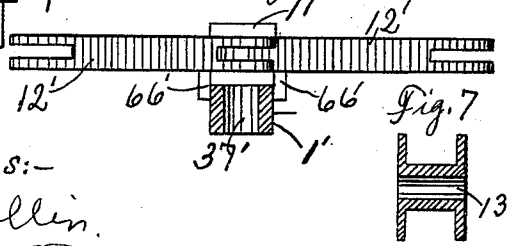

Fig. 6

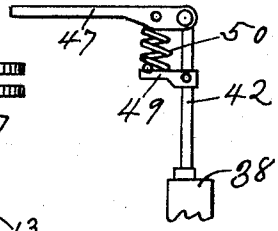

Fig. 7

Witnesses:-
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J. W. Stout.

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No. 711,097. Patented Oct. 14, 1902.

E. BYARS.

BALING PRESS.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 8

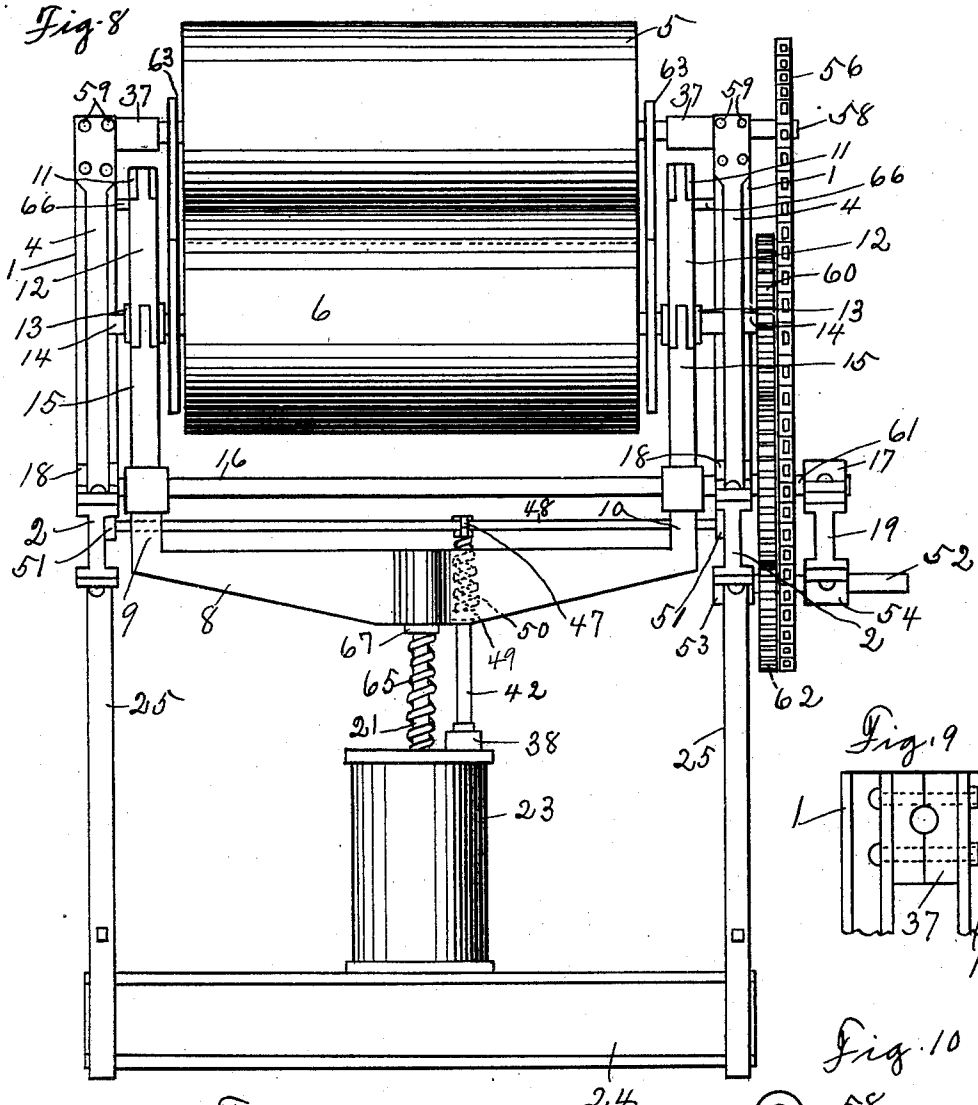


Fig. 9

Fig. 10

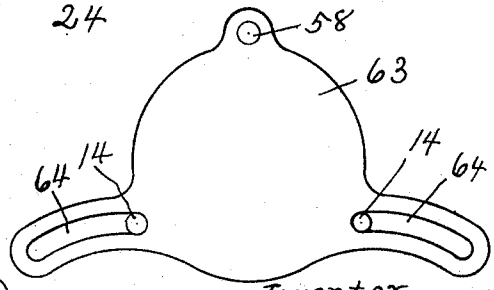
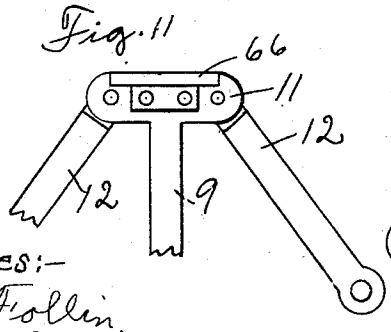


Fig. 11



Witnesses:—
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J. W. Slatt

Inventor,
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UNITED STATES PATENT OFFICE.

EDGAR BYARS, OF RHOME, TEXAS, ASSIGNOR TO S. H. MOUNT, E. E. MOUNT, AND T. S. MOUNT, OF RHOME, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 711,097, dated October 14, 1902.

Application filed June 10, 1902. Serial No. 110,975. (No model.)

To all whom it may concern:

Be it known that I, EDGAR BYARS, a citizen of the United States, residing at Rhome, Texas, have invented a new and Improved Baling-Press, of which the following is a specification.

This invention relates to a press for making cylindrical bales of cotton or other fibrous material; and the object is to construct a press particularly for baling cotton as the cotton comes from a condenser in a sheet or bat and which is strong and capable of adding powerful pressure to the bale as the bale increases in size, and which is comparatively light, and which is practical, and which may be constructed at comparatively small cost.

Other objects and advantages will be fully explained in the following description and more particularly pointed out in the claims.

Reference is had to the accompanying drawings, which form a part of this specification and application.

Figure 1 is an end elevation of the press with a spiral spring omitted from the piston-rod and one of the short bearing beams or sills broken. Fig. 2 is a broken sectional view of the valve-box, illustrating the manner of operating a slide-valve. Fig. 3 is a plan view of one of the fixed bearings and of one side of the yoke for controlling the motion of the compression-rollers, the bottom connecting-beam being broken away. Fig. 4 is an edge view of two bearing-links. Fig. 5 illustrates a variation of the mechanism shown in Fig. 3. Fig. 6 is a side elevation of the lever for operating the slide-valve, showing the connecting means for operating the same. Fig. 7 is a longitudinal section of a bearing 13. Fig. 8 is a side elevation of the press. Fig. 9 is a detail view of one of the fixed bearings. Fig. 10 is a side elevation of the disk or guard for forming smooth ends of the bales. Fig. 11 is a broken side elevation of the yoke.

Similar characters of reference are used to indicate the same parts throughout the several views.

The frame of this press is constructed of iron beams, preferably I-beams. Uprights 1 are mounted on sills 2 and secured thereto in any suitable manner, the drawings showing cleats or tie-bars 3, which are bolted to the uprights and to the sills. The uprights 1 and the sills 2 are further connected and braced by the braces 4, which are bolted to the uprights and to the sills. One compression-roller 5 is stationarily mounted in bearing-blocks 37, which are mounted between and attached to the uprights 1. Compression-rollers 6 and 7 are mounted in movable bearings, so that these rollers will yield and allow the bale to increase in size until the bale is completed. A yoke comprising a horizontal beam 8 and upright extensions 9 and 10 is provided for controlling the yielding motion of the rollers 6 and 7. The yoke is provided with horizontal arms 11 at the top parts of the extensions 9 and 10. The links 12 are pivotally connected to the arms 11. Bearings 13 are mounted on the shafts 14, and the links or arms 12 engage the bearings 13. The compression-rollers 6 and 7 are thus journaled in the bearings 13. The links or arms 15, which are journaled on the shafts 16, also engage the bearings 13 in the manner shown. Shafts 16 are provided with bearings 17 and 18, the bearings 17 being bolted to the sill 19 and the bearings 18 being bolted to the sills 2. Consequently the shafts 16 are journaled in stationary bearings. The movement of the yoke 8 is controlled by hydraulic power. This yoke has enlarged portion 20, which constitutes a socket for the piston-rod 21, which engages a piston-head 22 in the hydraulic cylinder 23. The cylinder 23 is supported on the sill 24, which must rest on some solid support. The sill 24 is tied to the sills 2 by braces 25, which pass beneath the sill 24 and then upward and are bolted to the sills, as shown. The braces 25 are themselves braced from the top part of the sill 24 by means of the tie-bars 26, which are bolted to the braces 25 and to the sill 24, one at each end. The hydraulic cylinder 23 sits on the sill 24. A second cylinder 28 is provided for the retreat of the water from the cylinder 23. The liquid passes from the cylinder 23 through a pipe 29, which is provided with a safety-valve 30. The valve 30 is controlled by the weight 31, which is mounted on the lever 32. The lever 32 is provided

with a fulcrum 33 and has a lug 34, which presses on the valve 30. The liquld is forced back from the cylinder 28 through a pipe 35, which is provided with a check-valve 36, to the cylinder 23, the check-valve being provided so that the liquid cannot pass from the cylinder 23 to the cylinder 28 through this pipe, but must pass through the pipe 29, which is provided with a regulating or safety valve. The liquid is forced out of cylinder 28 into cylinder 23 by means of steam or compressed air. A valve-box 38 is mounted on and attached securely to the cylinder 28 by bolts 39, which engage the ears 40 of the valve-box. A valve 41 is mounted in the box 38 and is provided with a valve-stem 42, which is provided with suitable packing 43. This valve 41 is adapted to open and close the intake-port 44 for the cylinder 28 and to open and close the exhaust 45 of the valve-box 38. Steam or compressed air may be admitted to the box 38 through the aperture 46.

The means for operating the valve 41 consist of a lever 47, pivotally mounted on a shaft 48, which serves as a fulcrum for the lever, the stem 42, pivotally connected to the short arm of the lever 47, the lug 49, carried by the stem 42, and a spiral spring 50, set on the lug 49 and pressing against the under side of the lever 47 beneath the shaft 48. The spring 50 causes the valve 41 to stand normally with the exhaust open. When the lever 47 is depressed, the exhaust is closed and the steam-intake is opened. The dropping of the bale out of the press will have this effect. The shaft 48 is supported in bearings 51, which are attached to the sills 2, or the shaft might extend through said sills.

Power for driving or rotating the compression-rollers may be applied to shaft 52. This shaft is journaled in bearings 53 and 54, which are bolted to the under side of sills 2 and 19. A sprocket-wheel 55 is mounted on shaft 52 and drives a sprocket-chain 56, and this chain drives the sprocket-wheel 57. The sprocket-wheel 57 is mounted on shaft 58. This shaft is journaled in the bearing-blocks 37. These blocks have elongated bearings for the shaft to take too great strain from the shaft 58. The bolts 59 pass through the blocks 37 and the uprights 1, and the braces 4 are bolted to uprights 1. A cog-wheel 60 is provided for driving each of the shafts 14 of the compression-rollers 6 and 7. The wheels 60 are driven by the cog-wheels 61, which are mounted on the shafts 16. The wheels 61 are driven by the cog-wheel 62, which is mounted on shaft 52. Driving the shaft 52 will rotate the compression-rollers.

The press is provided with disks 63 for shaping the ends of the bales. These disks are provided with openings engaging the shafts 58 and 14 of the compression-rollers, there being curved slots 64 for the shafts 14.

A spiral spring 65 is provided and mounted on the piston-rod 21 for resisting the downward motion of the yoke 8 as that yoke is forced down by the forming bale and for replacing the compression-rollers after a bale drops from the press.

The compression-roller 5 being mounted in stationary bearings, which are attached between and to the upper parts of uprights 1, the compression-rollers 6 and 7 must be mounted in yielding bearings. The bale is formed beneath the roller 5, the bale being pressed down against the rollers 6 and 7. As the bale increases in size (the cotton being fed to the compression-rollers in any suitable manner) the rollers 6 and 7 must yield to the increasing bale and in yielding force the yoke 8 down by reason of the bearings for the rollers 6 and 7 being pivotally connected to arms of said yoke. The arms 11 are formed on the extensions 9 and 10, which extend from the outer horizontal parts of the yoke up between the ends of the compression-rollers and the frame-pieces or uprights 1. Guides 66 are placed on the arms 11 to give the arms 11 steady up and down movement. The downward motion of this yoke is resisted by the liquid in the hydraulic cylinder, this yoke engaging the piston-rod of the piston in said cylinder, and by the spiral springs 65, or by the hydraulic pressure alone. The bearings for rollers 6 and 7 are pivotally engaged by the links 15, which are pivotally mounted on the shafts 16, and these shafts are bound to the sills of the press by reason of the bearings 17. The compression-rollers 6 and 7 must yield outward and downward, and in order to do this they have to force the yoke 8 downward. This operation goes on until the center of the bale becomes even with lines run longitudinally through the center of the compression-rollers 6 and 7, when the bale drops from the press. When the bale drops from the press, the lever 47 is depressed. This closes the exhaust 45 and turns steam into the cylinder 28. The steam will force the liquid, which has retreated in the cylinder 28 during the formation of the bale, back into the cylinder 23 and raise the piston, and so force the yoke back to starting position to replace the rollers for commencing a new bale. The springs 65 aid in replacing the rollers. The rollers might be replaced by the spring alone, or they might be replaced by the steam and liquid, as described. The arms 11 in their upward and downward motion are guided and held in place by the guides 66, which project out and engage loosely the upright beams 1, as shown in Fig. 3. The spiral spring operates between a collar 67 and the cylinder-head.

Various changes may be made in the construction of this press without departing from my invention. Instead of the arms 11 a simple bearing 11′, in which arms 12′, similar to arms 12, may be pivotally connected, as shown in Fig. 5, and instead of two uprights 1 one upright 1′ may be used and a bearing 37′ for each side of the press formed in the upper part of the upright 1′ for the shaft 58.

A guide 66′ would be attached to each upright extension 9 and 10 for engaging the uprights 1′, as shown.

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

1. A baling-press comprising a compression-roller journaled in stationary bearings, two compression-rollers journaled in movable bearings, a yoke extending beneath and up by the ends of the press and provided with arms, shafts journaled in bearings attached to the frame of the press, links for pivotally connecting said arms and said movable bearings and links for pivotally connecting said movable bearings and said shafts, and means for resisting the motion of said yoke.

2. A baling-press provided with a suitable frame, a compression-roller journaled in stationary bearings in said frame, compression-rollers journaled in movable bearings, a yoke provided with arms for controlling the motion of said movable rollers, links pivotally connecting said movable bearings to said frame and links connecting said bearings to said arms, and means for controlling the motion of said yoke.

3. A baling-press comprising a frame composed of sills and uprights attached to said sills, a compression-roller journaled in fixed bearings in said uprights, compression-rollers journaled in movable bearings, a yoke for controlling the motion of said movable rollers provided with arms adjacent to said stationary bearings, links pivotally connecting said movable bearings with said arms and with said sills, and means for controlling the motion of said yoke.

4. A baling-press comprising a frame composed of sills and uprights attached to said sills, a compression-roller journaled in stationary bearings in said uprights, compression-rollers journaled in movable bearings, a yoke provided with arms for controlling the motion of said movable bearings, shafts journaled in bearings attached to said sills, links pivotally connecting said movable bearings to said shafts, links pivotally connected to the arms of said yoke and pivotally connected to said movable bearings, and means for controlling the motion of said yoke.

5. A baling-press comprising a compression-roller journaled in stationary bearings, compression-rollers journaled in movable bearings, a yoke provided with arms and links pivotally connected to said arms and to said movable bearings for controlling the motion of said movable rollers, means for controlling the motion of said yoke consisting of a frame to which said movable bearings are pivotally connected and a hydraulic cylinder provided with a piston and a piston-rod, said piston-rod being connected to said yoke.

6. A baling-press comprising a frame composed of sills and uprights attached to said sills, a compression-roller journaled in bearings attached to said uprights, compression-rollers journaled in movable bearings, a yoke having arms and links pivotally connected to said arms and to said movable bearings for controlling the motion of said movable rollers and having guides for engaging said uprights whereby said yoke is guided in its upward and downward motion, and means for controlling the motion of said yoke.

7. A baling-press comprising a compression-roller journaled in fixed bearings, compression-rollers journaled in movable bearings, means for rotating said rollers, a yoke having arms and links pivotally connected to said arms and to said movable bearings for controlling the motion of said rollers, and means for controlling the motion of said yoke consisting of a frame to which said movable bearings are pivotally connected, a hydraulic cylinder provided with a piston and a piston-rod engaging said yoke, a sill for supporting said cylinder, and means for holding said sill at a fixed distance from said frame.

8. A baling-press comprising a compression-roller journaled in fixed bearings, compression-rollers journaled in movable bearings, means for rotating said rollers, a yoke for controlling the motion of said movable bearings having arms and links pivotally connected to said arms and to said movable bearings, and means for controlling the motion of said yoke consisting of a frame to which said movable bearings are pivotally connected, a hydraulic cylinder provided with a piston and a piston-rod engaging said yoke, and means for controlling the supply of liquid to said cylinder.

9. In baling-press provided with a compression-roller journaled in fixed bearings, compression-rollers journaled in movable bearings, a yoke for controlling the motion of said movable rollers and means for rotating the rollers; means for controlling the motion of said yoke consisting of a hydraulic cylinder provided with a piston and a piston engaging said yoke, a cylinder for containing a supply of liquid for said hydraulic cylinder, means for permitting and regulating the escape of liquid from said hydraulic cylinder to said cylinder, and means actuated by the bale as it drops from the press for automatically admitting steam into said cylinder to force the liquid back into said hydraulic cylinder.

In testimony whereof I set my hand, in the presence of two witnesses, this 5th day of May, 1902.

EDGAR BYARS.

Witnesses:
G. W. HAMBRIGHT,
W. C. HUDDLESTON.