No. 642,099. Patented Jan. 30, 1900.

J. J. FAULKNER.

ROLLER BALING PRESS.

(Application filed Mar. 21, 1899.)

(No Model.) 3 Sheets—Sheet 1.

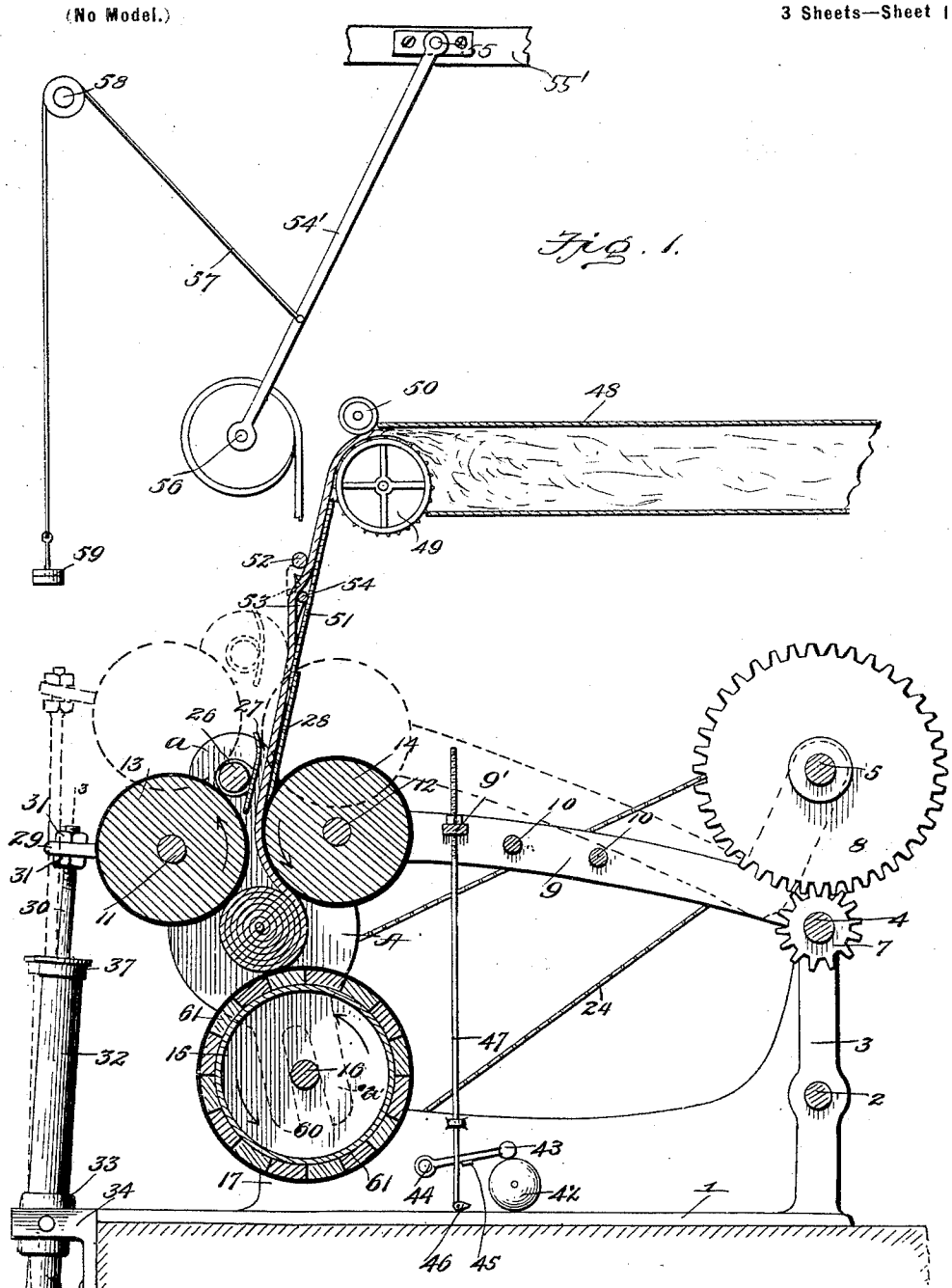


Fig. 1.

Witnesses

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Fig. 2.

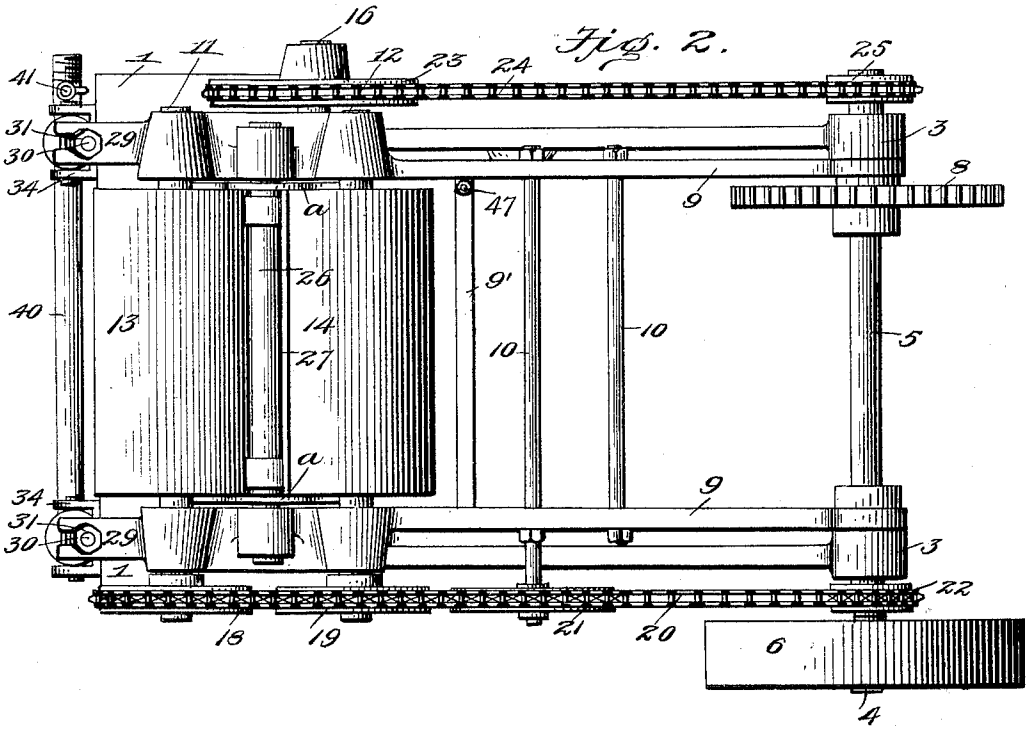
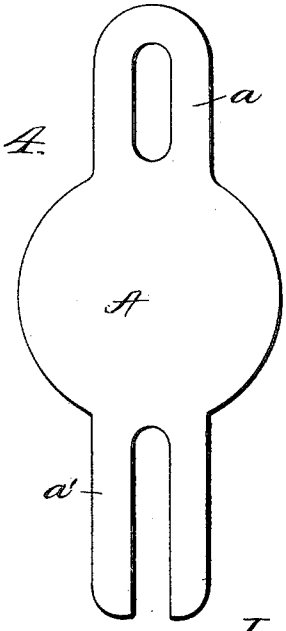


Fig. 4.



Witnesses

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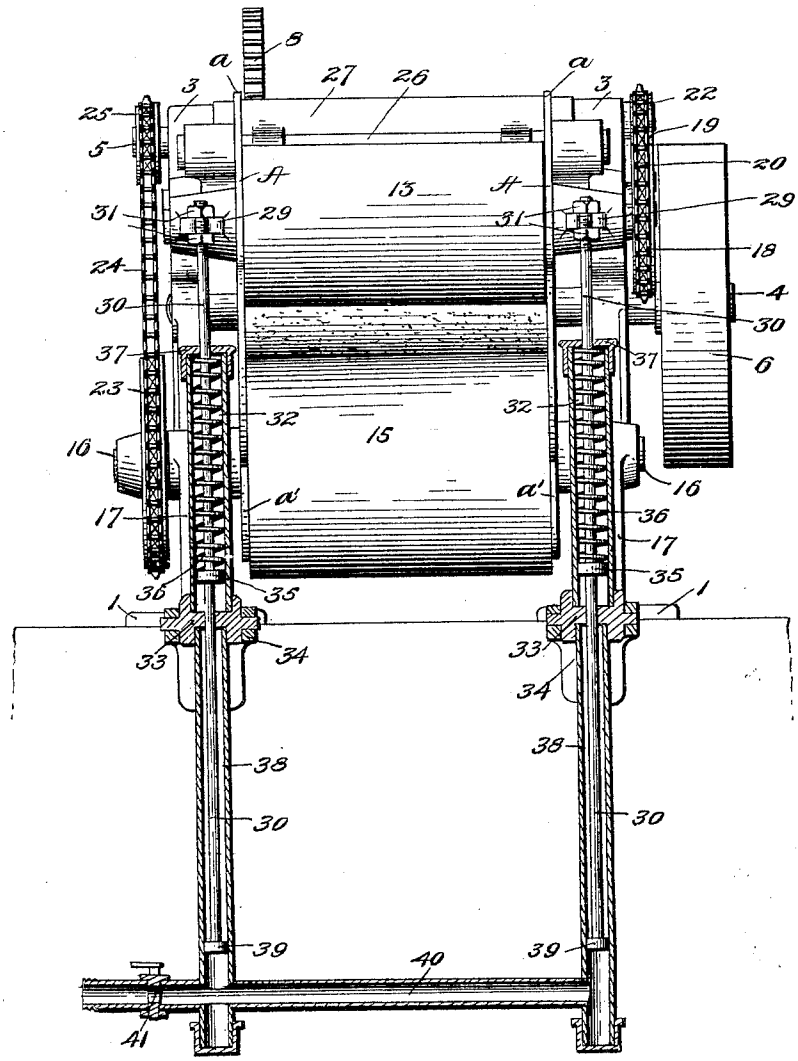
J. J. FAULKNER.

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(No Model.) 3 Sheets—Sheet 3

Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES J. FAULKNER, OF MEMPHIS, TENNESSEE.

ROLLER BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 642,099, dated January 30, 1900.

Application filed March 21, 1899. Serial No. 710,008. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. FAULKNER, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Roller Baling-Presses; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cylindrical-bale presses, and more particularly to that class of continuous presses in which the cotton as taken from the gin is passed through the condenser to form a bat and the resulting batting is fed to the press-rollers to be formed into a compact cylindrical bale.

The object of the invention is to provide a simple and effective device for forming these bales.

To this end the invention consists in the construction, combination, and arrangement of the several parts of the device, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference characters indicate the same parts of the device in the several figures.

Figure 1 is a longitudinal section with a partially-formed bale shown between the compression-rollers and in dotted lines showing the compression-rollers elevated to remove the bale. Fig. 2 is a top plan view. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 is a detail view of one of the guard-plates.

1 1 denote the bed-rails, which are connected by the brace-bolts 2 2, and 3 3 denote vertical parallel standards in which are journaled the main driving-shaft 4 and the driven shaft 5. The driving-shaft 4 is provided with a belt-pulley 6, to which the power is communicated from a prime motor in any suitable manner, and also with a pinion 7, which meshes with a gear-wheel 8, fixed on the shaft 5. A movable frame, consisting of the parallel arms 9 9, braced by the cross-rods 10 10, is fulcrumed on the shaft 5 between the standards 3 3, and in its free end are journaled the shafts 11 and 12, upon which are fixed the twin compression-rollers 13 14, and immediately beneath them is a bed-roller 15, fixed on a shaft 16, journaled in the standards 17 17. The shafts 11 and 12 are provided with sprocket-wheels 18 and 19, from which a sprocket-chain 20 extends over an idler 21 and around a sprocket-wheel 22, fixed on the shaft 5, to give the proper movement to the rollers 13 and 14, as shown by the arrows. The shaft 16 is also provided with a sprocket-wheel 23, from which a sprocket-chain 24 extends to a sprocket-wheel 25, fixed on the shaft 5.

26 represents a brace-rod connecting the arms 9 9 above the rolls 13 and 14, to which is fixed the fender 27, which, in connection with the parallel guard-plate 28, fixed to the arms, serve as guides to conduct the web or bat of cotton to the compression-rollers.

The free ends of the arms 9 9 are formed with slotted lugs 29 29 to receive the upper ends of the tension-rods 30 30, which are adjustably and removably secured therein by means of the nuts 31. The upper ends of these rods 30 30 are encompassed by the tubes 32 32, the lower ends of which are provided with sockets 33 33, formed with trunnions fulcrumed in the brackets 34 34, fixed to the ends of the bed-rails, so as to permit the rods to oscillate to conform to the arc of the circle of which the arms 9 9 form the radius.

35 denotes a collar fixed on each of the rods, and 36 a tension-spring encompassing each rod between the collar and the cap 37, the tension of the springs being exerted to draw the rollers 13 and 14 toward the roller 15.

The rods 30 30 extend through the sockets 33 33 and into the cylinders 38 38, secured to and depending from said sockets, and the lower end of each rod is provided with a piston 39, and the lower ends of the cylinders are connected by a pipe 40, provided with a valve 41, communicating with a tank or water-supply only for the purpose of holding piston of cylinder when bale is being doffed, giving easy recession to the parallel compression-rollers preparatory for a new bale, this being governed by said valve or cock 41. This valve or cock is open when the bale is formed in order to supply the cylinder with water, always giving it reliable support in case of accident or when changing bale, and the rollers can be released or returned to their beginning-place for a new bale by the exhaustion of water through said valve or cock from

the cylinder to the tank of supply. The compression exerted on top or parallel rollers is solely given by the described coiled springs and weight. The doffing of the bale is produced by simply stopping the motion of the upper parallel rollers, while the bottom large stationary roller continues on its motion, causing bale to be doffed.

42 designates a gong fixed to one of the bed-rails, and 43 a hammer-arm fulcrumed on a stud 44, also fixed to said rail, and 45 denotes a toe on said hammer-arm, which projects into the path of a pawl 46, pivoted on the trip-rod 47, adjustably secured to the superimposed arm 9, the operation being such that when the said arm is raised a predetermined distance the rod 47 will trip the raised hammer-arm, which, falling by gravity, will sound an alarm on the gong.

A A denote the parallel end plates, which form guards for the ends of the bale while in process of formation. These plates are provided with slotted extension-pieces *a a* to encompass the ends of the brace-rod 26 between the ends of the rollers 13 14 and the arms 9 9 and with similar oppositely-arranged extension-pieces *a' a'*, which have a sliding engagement with the shaft 16, between the ends of the roller 15 and the standards 17 17.

48 denotes the lint-flume, leading from the cotton-gin, (not shown,) and 49 denotes a condenser-cylinder journaled in the forward end of said flume, and 50 a spring-actuated pressure-roller mounted above the condenser-cylinder to form the lint into a bat as it is fed by the air-blast in the flume between the pressure-roller and condenser-cylinder.

51 denotes an apron suspended from the discharge end of the flume and overlapping the guard-plate 28 and which forms a support for the bat while passing from the condenser to the compression-rollers 13 14.

52 denotes a roller fixed in the path of the bat, and 53 a knife fixed on a rotatable shaft 54, mounted contiguous to and parallel with said roller 52 and adapted to be turned upward and across the path of the bat or web to sever it from the roll when a bale has been formed.

54' represents a frame suspended from a rod 55, supported from suitable timber 55', and its lower end carries a shaft 56, upon which the severed end of the bat or web is wound while the finished bale is being removed from the press, said shaft being driven by any suitable means. (Not shown.)

57 denotes a cord attached to the frame 54 and passing over a sheave 58, and its free end carries an adjustable weight 59, which regulates the winding and doffing of the bat on the shaft 56.

In practice the large bed-roller 15 may be a solid or hollow cast-iron drum; but where lightness and portability combined with cheapness are desired I prefer to form it of two circular heads or disks 60 60, which are connected by the longitudinally-arranged parallel staves 61 61, which form a wooden shrouding or lagging, as shown, and which is covered by a casing of roughened or indented sheet-iron to assist in rotating the bale.

The compression-rollers 13 14 have their surfaces coated with an abrasive substance or may have their surfaces roughened in any suitable manner to facilitate the rotation of the bale.

The operation of the press is as follows: The lint as it passes from the gin is carried by the air-blast through the flume 48, when it is delivered to the condenser and discharged in the form of a continuous web or bat, which passes over the apron 51 and guard-plate 28 and is fed between the rolls 13, 14, and 15, where an initial core is first formed by the combined action of the three rolls, and as this core increases in size the embryo bale is compacted or compressed as it grows by the tension imparted to the arms 9 9 through the medium of the springs 36 36. When the bale has grown in diameter to the proper size, the arms have been raised to a point where the trip-rod 47 releases the hammer-arm and sounds an alarm on the gong, thus notifying the attendant that the bale has attained the predetermined size and is ready to be removed from the press. The knife 53 is now turned upward across the path of the bat, which is thereby severed from the web, the severed end being drawn downward and wound around the bale, while the free end is passed to the shaft 56 and which, resting against the condenser-cylinder, is rotated thereby to wind the bat thereon while the finished bale is being removed from the press. Prior to removing the bale from the press the knife-blade is first turned downward and out of the path of the bat and the valve 41 opened to admit steam, water, or air under pressure to the cylinders 38 38, which, acting on the pistons 39 39, serve to hold up the compression-rollers 13 14 clear of the bale, as shown in Fig. 4, and the bale now being released is removed from the press, and the valve 41, being now reversed, cuts off the supply and permits the steam, water, or air to escape from the cylinders, thereby lowering the arms 9 9 and allowing the compression-rollers to settle down on the bed-roller and in position to receive the bat to form a new bale. The web or bat is now taken at a point between the roll on the frame 54 and the condenser-cylinder and conducted between the fender 27 and guard-plate 28 to the compression-rolls, when a bale is formed, as in the first instance.

Owing to the manner in which this press is geared a minimum expenditure of power is required to produce a compressed bale, and as the press itself is simple and inexpensive in construction the cotton planter or producer is thereby enabled to bale his cotton direct from the gin and condense the same into bales ready for shipment, with all the advantages of reduced transportation rates to any market, and thereby save the usual

expenses now borne by the planter in storing the ginned cotton, hauling it to the compress, and the various other incidentals, all of which are necessary to reduce the ordinary bale to the degree of density required by the transporting companies in order to obtain the most advantageous carrying rates.

In the accompanying drawings I have shown my invention in the best form now known to me; but it is evident that various departures in the details may be made without affecting the spirit of the invention as herein disclosed.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In a roller baling-press, the combination with a main frame and a bed-roller mounted thereon in fixed bearings, of a frame pivoted at one end to the main frame and projecting over the bed-roller, two compression-rollers mounted in the pivoted frame over the bed-roller, gearing for driving said rollers, a cylinder having two compartments, a rod attached to the free end of the pivoted frame, passing through the upper compartment of the cylinder and entering the lower compartment, a piston on the lower end of said rod, a pipe for fluid-pressure communicating with the lower end of the cylinder, and a spring in the upper compartment of the cylinder, one end of said spring connected with the rod, and the other end bearing against the upper end of the upper compartment of the cylinder.

2. In a continuous cylindrical-bale press, a stationary bed-roller, a movable frame above the stationary roller, a pair of compression-rollers journaled in said frame, a fender carried by the movable frame above the compression-rollers, and a guard-plate also carried by said frame parallel with the fender and adapted to conduct the material to said rollers, substantially as and for the purpose set forth.

3. In a press of the class described, a stationary bed-roller, a movable frame above said stationary roller, a pair of compression-rollers mounted on said movable frame, a fender carried by the movable frame, and a parallel guard-plate carried by said frame and adapted to travel to and from said bed-roller, and a pair of parallel end plates closing the end space between said bed and compression rollers, substantially as and for the purpose set forth.

4. In a continuous bale-press, the combination with a main frame and a bed-roller mounted in fixed bearings thereon, of a frame pivoted at one end and projecting over the bed-roller, two compression-rollers disposed above the bed-roller and carried by the pivoted frame, a cylinder pivoted between its ends to the main frame, a plunger in said cylinder, a rod connecting said plunger with the free end of the pivoted frame for raising the same and the compression-rollers and a spring normally resisting the upward movement of the pivoted frame and compression-rollers.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES J. FAULKNER.

Witnesses:
HUGH B. CULLEN,
J. L. MOORE.