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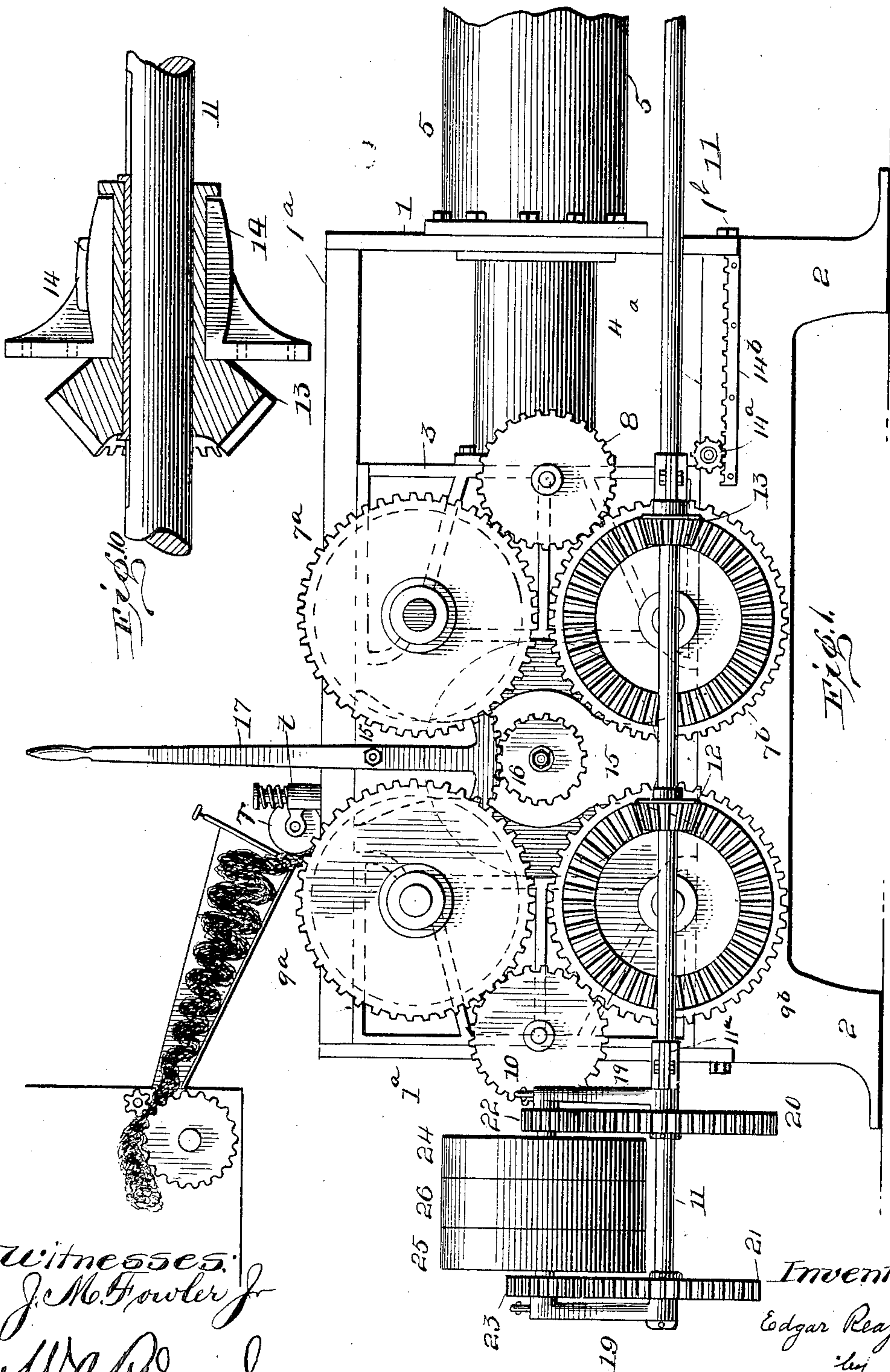
Patented Sept. 11, 1900.

E. REAGAN.  
ROLLER PRESS.

(Application filed Mar. 10, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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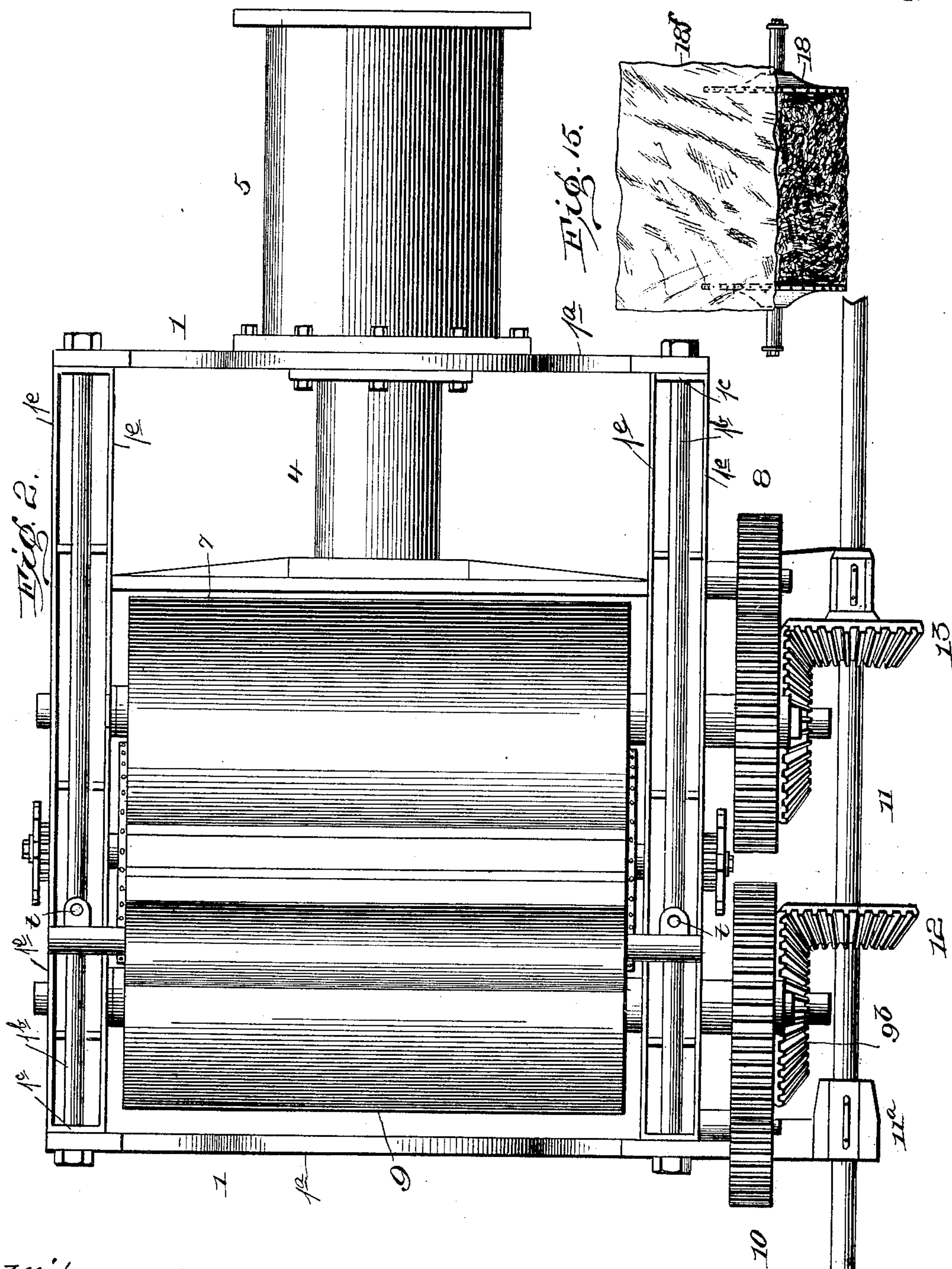
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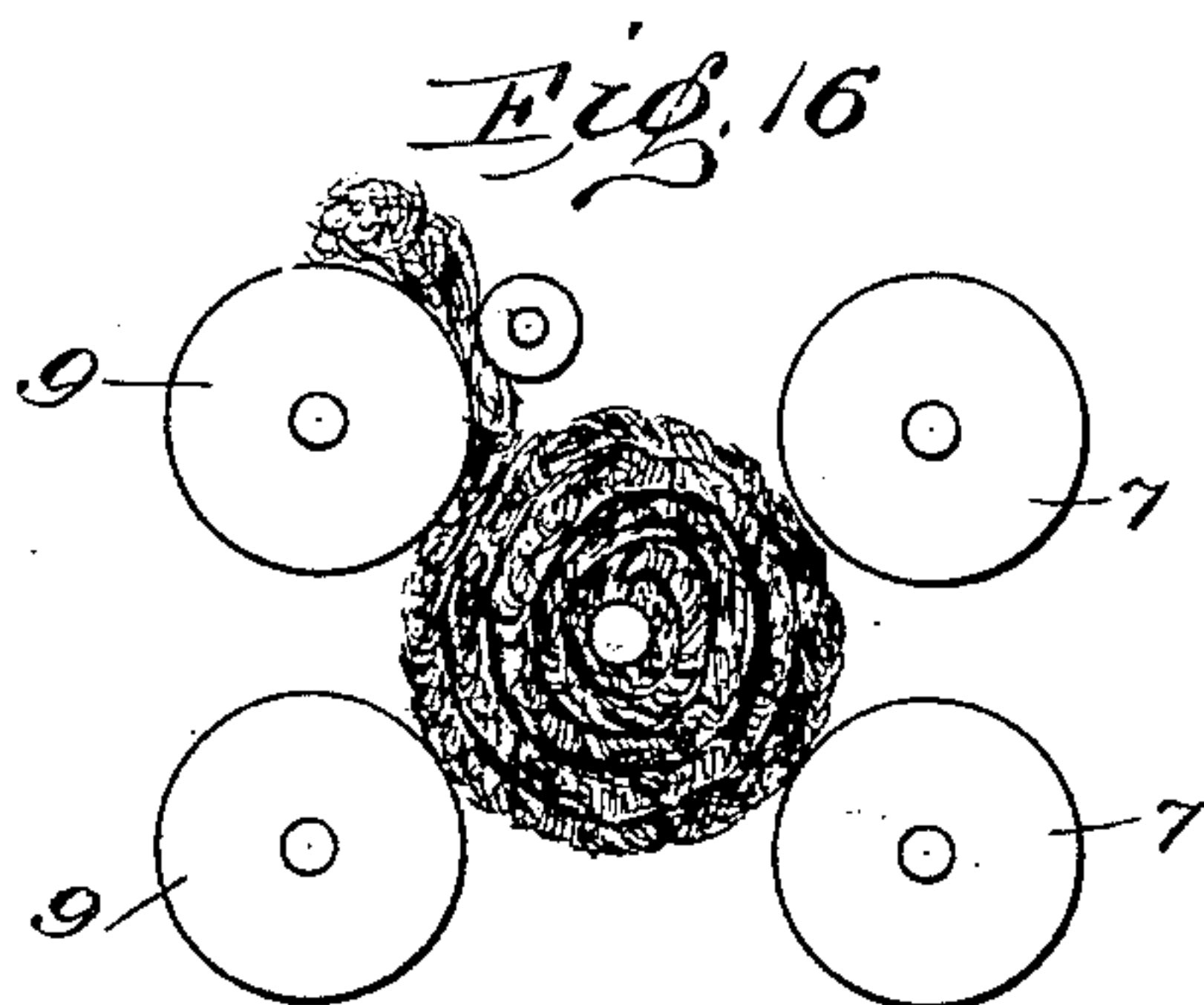
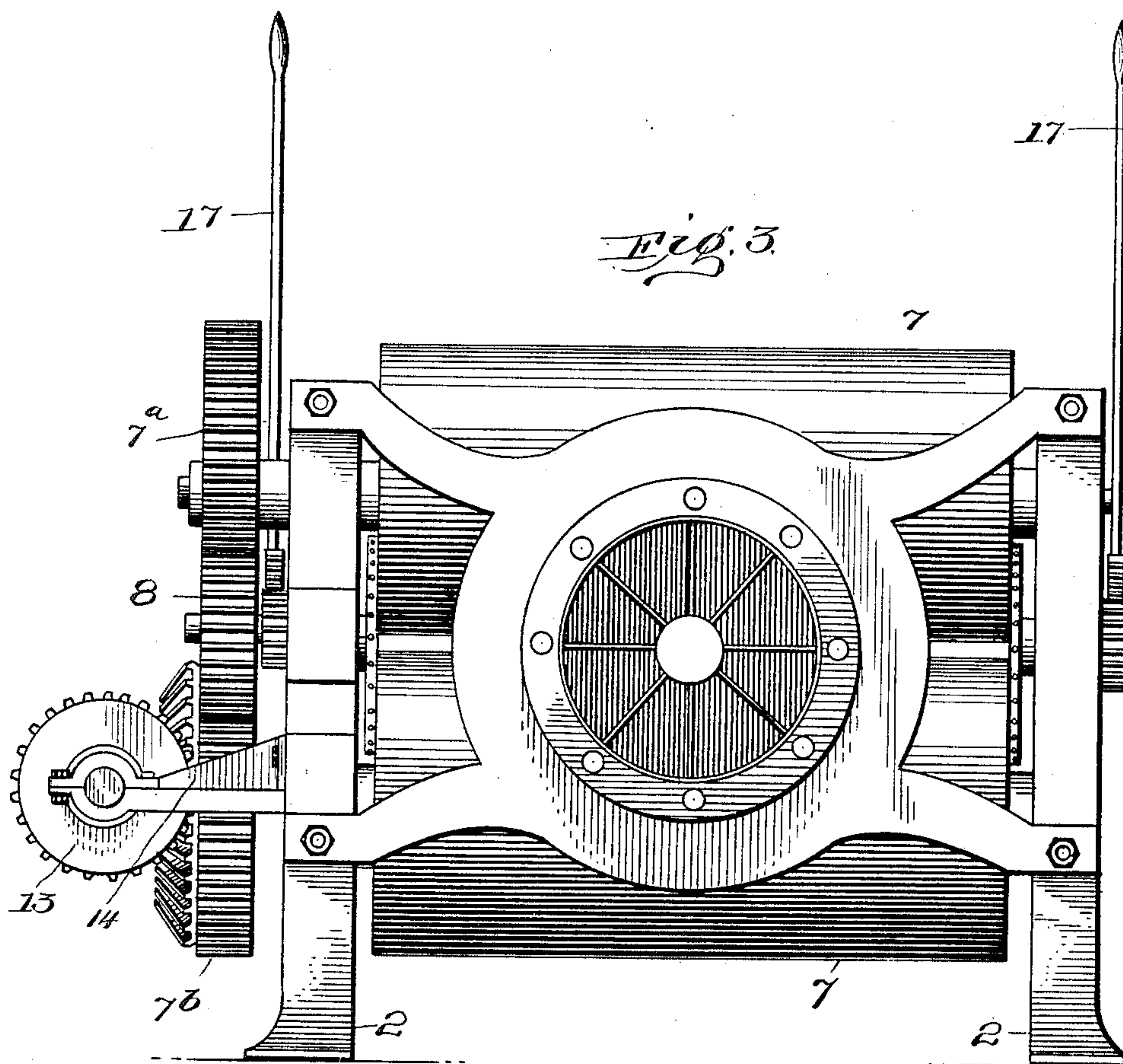
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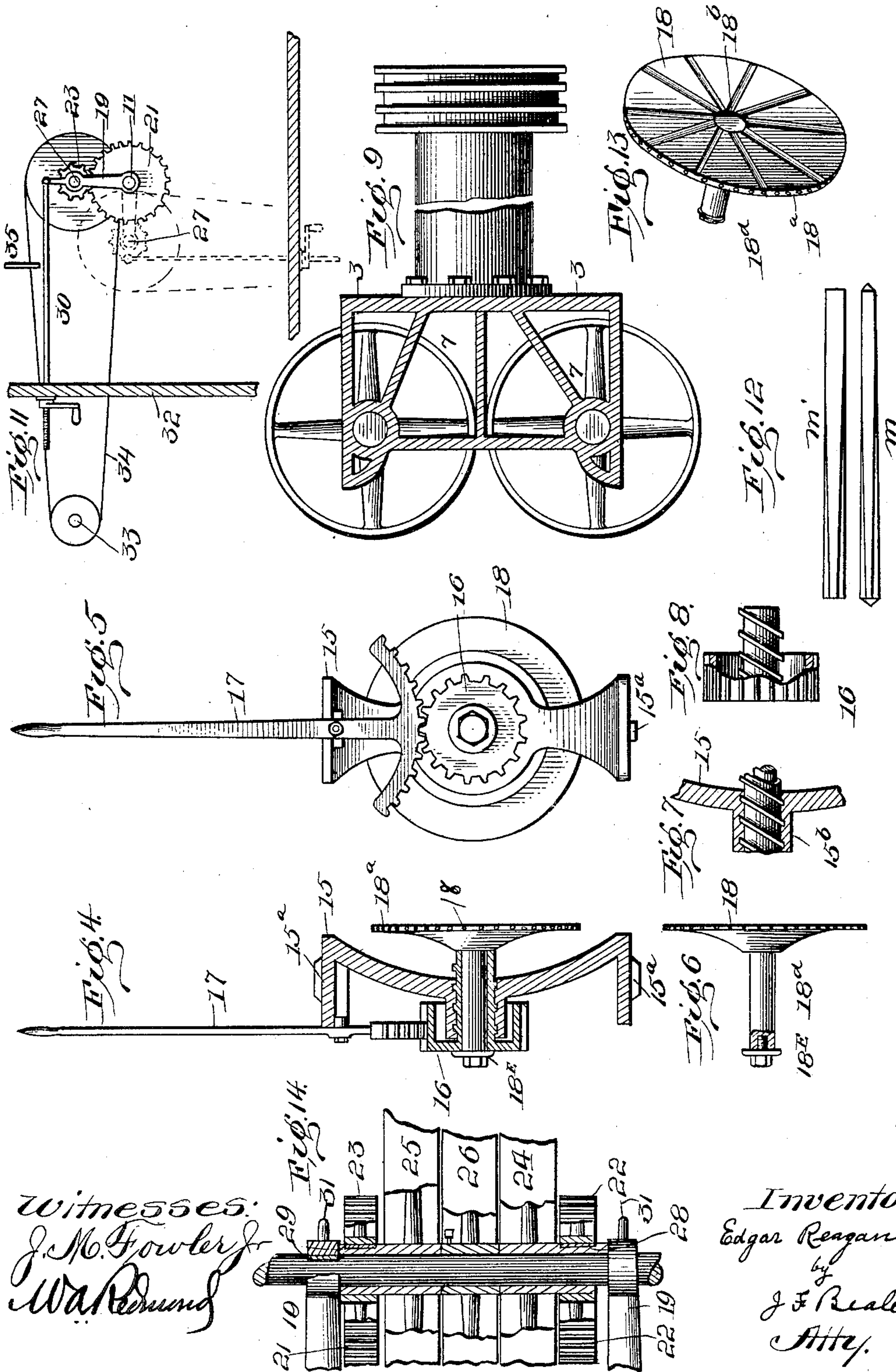
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

EDGAR REAGAN, OF FLORESVILLE, TEXAS, ASSIGNOR OF ONE-HALF TO  
WILBUR C. BRUFF, OF SAME PLACE.

## ROLLER-PRESS.

SPECIFICATION forming part of Letters Patent No. 657,676, dated September 11, 1900.

Application filed March 10, 1900. Serial No. 8,224. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR REAGAN, a citizen of the United States, residing at Floresville, in the county of Wilson and State of Texas, have invented certain new and useful Improvements in Roller-Presses; and I do hereby 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.

My invention relates to roller-presses designed to form a cylindrical bale of the cotton-batting as it is delivered from the gin, and more particularly to such type of presses employing fixed and movable compression-rollers and a bale-core mounted in a movable frame.

Heretofore in the continuous operation of ginning cotton and pressing it into cylindrical bales the compression-rollers and the condenser were run at the same speed, and when the bale was completed and the press-rollers stopped to remove the bale the gin was kept running, causing an accumulation of bat in the gin-chute. In most instances two presses were employed for each gin to avoid this accumulation of bat.

Now one of the objects of my invention is to provide a driving mechanism for a roller-press which will afford a comparatively fast and slow speed for the rollers, the fast speed to be employed in taking up the accumulation of bat and after this is wound on the bale-core then to employ the slower speed for forming the bale. Thus the two speeds given the press will enable the ginner to use but one press where before it was necessary to use two.

It is also my object to provide means which will facilitate the removal of the bale and the adjustment of the bale-core; also, to provide means for drawing the bale-cover around the bale while it is in the press, utilizing the action of the compression-rollers and the bale end disks therefor.

It is also my object to provide a sheet-metal tube to be pressed with and left in the bale, which shall be proof against fire and dampness entering the center of the bale.

It is also my object to provide a driving

mechanism for the four compression-rollers which shall insure their rolling smoothly and at an even speed upon the bale formation, whether slow or fast, without injury to the fiber, giving the same pressure throughout the formation of the bale.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my roller-press, above which is shown a portion of the gin feeding the cotton-batting. Fig. 2 represents a top plan view of the press. Fig. 3 represents a rear end view of the same. Fig. 4 represents a vertical cross-section of the sliding housing, boxing, and releasing devices for one of the bale end disks. Fig. 5 represents a front elevation of the housing, boxing, &c., shown in Fig. 4. Figs. 6, 7, and 8 show detail views of housing, boxing, &c., shown in Fig. 4. Fig. 9 shows detached a side view of the sliding frame which carries the movable compression-rollers. Fig. 10 shows a side elevation in section of the sliding pinion which operates the movable rollers, together with the box for same, the pinion being splined to the driving-shaft. Fig. 11 is a front end elevation showing swinging arms, mountings, and connections for operating the drive-pulleys and driving-shaft of press by the motor-shaft. Fig. 12 is a detail view of the tube and mandrel therefor, which together form the bale-core proper. Fig. 13 is a detail perspective of one of the bale end disks, showing corrugated face and center bearing for bale-core mandrel. Fig. 14 is a detail view in section of the stationary shaft with means attached for connecting the drive-pulleys, spurs, and supporting swing-arms therefor. Fig. 15 is a top plan view showing manner of attaching bale-cover to bale end disks. Fig. 16 is a diagrammatic view showing relative position of the four compression-rollers, bale, and feed and presser roller.

Referring more particularly to the drawings, 1 denotes the main frame of the press, mounted upon a base 2. Said frame consists of upper and lower end rails 1<sup>a</sup>, connected by tie-bolts 1<sup>b</sup> to upper and lower side frames 1<sup>c</sup>, said side frames being each composed of two parallel members 1<sup>e</sup>, the under sides of the



upper members of said frames and the upper sides of the lower members of said frames forming ways, hereinafter mentioned.

1<sup>a</sup> denotes a stationary frame mounted in frame 1.

3 denotes a sliding frame mounted in, adapted to move lengthwise of the frame 1, and fastened to a plunger 4, which enters a cylinder 5. Said cylinder is provided with suitable connections, valves, and valve-gear operated by hand-lever (not shown) for actuating the sliding frame 3 forward or moving it backward. Steam, compressed air, or other power may be employed in the cylinder. The sliding frame, as shown in Fig. 9, is composed of an upper and lower sliding or bearing surface, which fits within the main frame. Said parts are connected by vertical, diagonal, and horizontal braces, together forming a truss or skeleton frame having journals through which pass the axles of the upper and lower compression-rollers.

7 7 denote the movable compression-rollers, journaled in said sliding frame, their axles projecting at one end. The upper roller is provided with a gear-wheel 7<sup>a</sup> and the lower roller with a like gear-wheel 7<sup>b</sup>, which has also a beveled gear, as hereinafter mentioned.

8 denotes a pinion which is journaled to the sliding frame and meshes with the gears of the upper and lower rollers, serving as a spur for the upper roller and causing it to revolve at an even speed with the lower one.

9 9 denote the stationary compression-rollers, journaled in frame 1<sup>a</sup>, which is a duplicate of frame 3, their axles projecting at one end and provided with like gear-wheels 9<sup>a</sup> 9<sup>b</sup>, the latter having also a beveled gear, as hereinafter mentioned.

10 denotes a pinion journaled in the frame 1<sup>a</sup> and meshing with the wheels 9<sup>a</sup> 9<sup>b</sup>, serving as a spur for the former and causing it to revolve at an even speed with the lower roller.

The rollers 7 7 and 9 9 and their attached gears are of like dimensions, and the axles of the upper rollers and those of the lower rollers are mounted in like horizontal planes.

11 denotes the driving-shaft for the press, carrying a beveled pinion 12, rigidly secured thereto, which meshes with the gear-wheel 19<sup>b</sup>. Said shaft also carries a beveled pinion 13, which is splined thereto, which pinion through the medium of a sliding bearing 14 is rigidly secured to the sliding frame, as shown in Figs. 3 and 10. Said bearing, as shown in Fig. 3, is also bolted directly to the sliding frame, and the purpose of this direct connection between the sliding frame and bearing and pinion is to prevent any vibration of the shaft 11.

14<sup>a</sup> denotes a pinion fastened to the sliding frame, which meshes with a rack-bar 14<sup>b</sup>, fastened to the base 2. (Shown in Fig. 1.) A like pinion and rack-bar are secured to the opposite side of said frame and together serve to steady the movement of the sliding frame. The pinion 13 drives the movable compression-

rollers and being of like size and gear with pinion 12 the four rollers move with uniform speed.

T denotes a feed and presser roller mounted in feed and presser bearings *t t*.

*m* denotes the bale-core mandrel, and *m'* denotes the tube which fits over the mandrel. Said tube is preferably made of thin sheet metal and when pressed in with the bale forms a proof against fire or dampness entering the center of the bale.

Between the stationary and movable rollers within frame 1 are mounted the movable or sliding housings 15, one upon each side of said frame, provided with lugs 15<sup>a</sup> on their top and bottom bearing-surfaces which play between the ways on the upper and lower side frames 1<sup>c</sup>, upon which said surfaces bear. Said housings are dished, as shown in Fig. 4, and provided with hubs 15<sup>b</sup>, having an internal screw-thread therein. As shown in Fig. 7, said housings serve to carry the bale end disks which support the bale-core and are slid or moved forward by the action of the movable compression-rollers as they press the bale formation forward in the direction of the stationary compression-rollers. As the bale increases in diameter there may be a slight backward movement to said housing to admit or allow for the growing diameter of the cotton-bale.

16 denotes a pinion provided with a threaded sleeve adapted to enter the hub 15<sup>b</sup>.

17 denotes levers mounted on the housings 15 and provided with segmental racks which mesh with the pinions 16, as shown in Figs. 1, 4, and 5.

18 denotes bale end disks provided with pin-holes 18<sup>a</sup> about a sixteenth of an inch in diameter and about an inch in depth arranged two inches apart around their peripheries and adapted to receive pins, as hereinafter described. The faces of said disks are corrugated to give a better hold upon the edge of the cotton-bat and have at their centers cone-shaped recesses 18<sup>b</sup> to receive the cone-shaped ends of the bale-core. Said disks have axle-arms 18<sup>d</sup>, provided with pin and washer 18<sup>e</sup> to hold the arms in place, as shown in Fig. 6.

It will be seen that by operating the lever 17 the segmental rack will turn pinion 16, having the threaded sleeve, which thread bearing upon the thread in hub 15<sup>b</sup> will cause said pinion to be forced backward and in its turn, as said pinion bears against the washer 18<sup>e</sup>, will move the bale end disk back, thus causing the bale-core to drop and release the bale, as hereinafter described.

18<sup>b</sup> denotes the bale-cover.

The driving-shaft 11 projects through the front end of the frame 1, passing through a journal-box 11<sup>a</sup>, and has journaled thereto two swinging arms 19 and keyed thereto two gear-wheels 20 and 21, the former having a larger diameter.

22 and 23 denote spur-gears which mesh



with gears 20 and 21, the latter having a larger diameter.

Gear-wheel 20 and its spur 22 cause the shaft 11 to revolve at a speed of about sixteen revolutions per minute, while gear 21 and its spur 23 revolve said shaft about twenty revolutions per minute. This ratio of said gears may be varied to suit contingencies.

24, 25, and 26 denote pulleys, the latter being an idler. Said pulleys are loosely mounted on a stationary shaft 27, which is keyed to the arms 19. The spur-gears 22 and 23 are also loosely mounted on said shaft, but adapted to be keyed, respectively, to the hubs of the adjacent pulleys by keys 28 and 29.

30 denotes a metal rod hooked to eyes 31 on the upper ends of arms 19 and extending rearwardly of the same pass through and are held in a partition 32 in screw-threaded sockets. The outer ends of said rods are threaded to pass through said sockets and are provided with a crank for tightening the rods and adjusting the same to tighten the belt 35. In Fig. 11 a diagrammatic view is shown in dotted lines to illustrate that the swinging arms carrying the shaft 27 and incumbent pulleys and gears may be shifted to any position to meet the location of the motor-shaft, which should be common to both the gin and press. Thus the press can readily be attached to the motor-shaft of any gin.

33 denotes the motor-shaft, which also operates the gin, and 34 the belt for operating the press.

35 denotes the belt-shifter.

The end of shaft 11, projecting outside of the main frame, may be supported by a hanger or otherwise secured.

The press is started by shifting the belt from the idler-pulley 26 to pulley 25, which drives the shaft 11 at the maximum speed. As this speed is communicated to the four compression-rollers it causes them to revolve the bale formation at comparatively-high speed because of its small diameter. This speed of the rollers is continued until the accumulated bat is taken up. The belt is then shifted to the slow-speed pulley 24 and the bale is formed by the compression-rollers running at slow speed. This description of the manner of starting the press presupposes an accumulation of bat in the gin. It should be understood that in the operation of ginning and pressing cotton the gin is continuously forming the cotton-bat, which accumulates rapidly as soon as the press stops taking bat. This always occurs when the press is stopped to remove the bale and made ready to take another. There are other causes for stopping the press and all the while the gin is forming bat. Again, the diameter of the bale formation is small at first and does not draw upon the bat as fast as it does later when the diameter is increased. Therefore when my press is first started I employ the maximum speed of the press to take up this

accumulated bat on the bale-core and use the slower speed for taking the bat regularly as the diameter of the bale increases. When the bale is finished, the covering is adjusted while the bale is under pressure as follows: The covering being wide enough to project over the ends of the bale sufficiently to cover them also, it is fastened at one end to the disks by pins, which are passed through the covering and into one of the holes in each disk, the heads of the pins being pushed in until the covering is tightly clamped to each disk. The sides of the covering projecting over each end of the bale are accommodated in the space formed by the dished housings 15 between it and the back of the disks, the purpose of dishing said housings being to allow ample space around the back of the disks to accommodate an extra wide cover and allow the projecting sides of cover to pass around the back of the disks. It is evident that instead of having the holes 18<sup>a</sup> in the peripheries of the disks said holes may be made in the back of the disks, though I prefer the construction shown in the drawings. The compression-rollers are revolved until the covering is passed around the bale, when it is cut and the ends fastened. The bale is removed from the press after the pressure is taken off by operating from either side of the press one of the levers 17. This will move the corresponding disk outward within its housing and allow the bale-core to fall out of its bearing. The projecting sides of the covering are then drawn together at the core by a cord inserted in its edges. The tube which is pressed in with the bale under pressure may be made of sheet-iron or other material and should be proof against fire and dampness entering the center of the bale. The bale-core is removed from the tube when the bale is finished, and besides serving as a bale-core it acts as a mandrel to prevent the tube collapsing while under pressure. To adjust the bale-core, it is first placed within the sheet-metal tube and its projecting conical ends inserted in the recesses 18<sup>b</sup>, formed in said disks.

As the four compression-rollers are driven by a single shaft, an even speed is insured to each roller throughout the operation of forming the bale, and whether the rollers be moved faster or slower the pressure upon the bale is uniform throughout its formation at the points of contact of the four rollers.

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

1. In combination with a continuously-operating bat-feeding mechanism, a series of press-rollers, variable-speed mechanism for operating said rollers, and a driving mechanism connecting said feed mechanism with said variable-speed mechanism.

2. In a roller-press adapted to receive cotton-batting directly from the gin, the combination of the driving-shaft having means for actuating the compression-rollers, the com-



pression-rollers, two sets of independently-actuated gears attached to said shaft and adapted to give a relatively slow or fast speed to the compression-rollers, and means for actuating either of said sets of gears for operating said shaft.

3. In a roller-press adapted to receive cotton-batting directly from the gin, the combination, of a driving-shaft having means for actuating the compression-rollers, two sets of independent gears attached to said shaft and supported by arms mounted on said shaft, and independent means for operating said gears to give a variable speed to said shaft.

4. In a roller-press adapted to receive cotton-batting directly from the gin the combination, of a driving-shaft for the compression-rollers having gear-wheels of varying diameter, arms mounted on said driving-shaft supporting between them a stationary shaft having loosely mounted thereon spur-gears which mesh with said gear-wheels, companion pulleys adapted to be keyed independently to said spur-gears, and means for operating said pulleys.

5. In a roller-press for forming cylindrical

bales, the combination of the revoluble bale end disks having recesses or holes therein, for the insertion of pins for clamping the ends of the bale-covering in said recesses.

6. In a roller-press for forming cylindrical bales, the combination of the revoluble bale end disks, means for temporarily clamping the bale-covering to said disks, and dished or recessed bale-core holders, whereby space is afforded between the backs of said disks and said holders to accommodate a bale-cover of sufficient width to cover the ends of the bale.

7. In a roller-press having a detachable bale-core, the combination of the bale end disks having axle-arms for supporting the same, the dished housings having a threaded hub, a spur having a threaded sleeve fitting said hub through which said axle-arms pass, and a segmental rack meshing with said spur.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR REAGAN.

Witnesses:

O. A. McCracken,

W. H. Blanton.