No. 689,399. Patented Dec. 24, 1901.

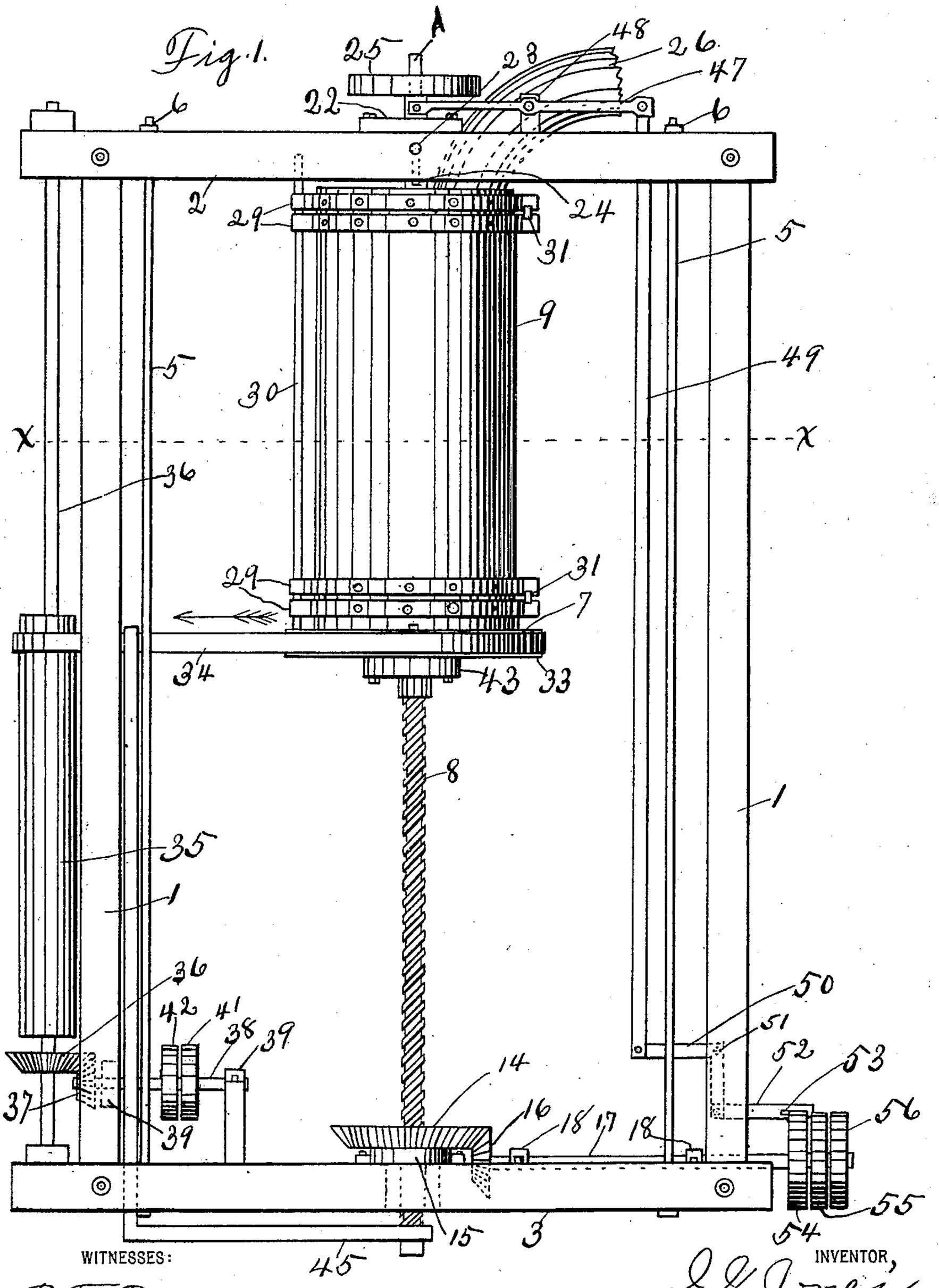
I. VAN Z. JONES.

BALING PRESS.

(Application filed Dec. 9, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

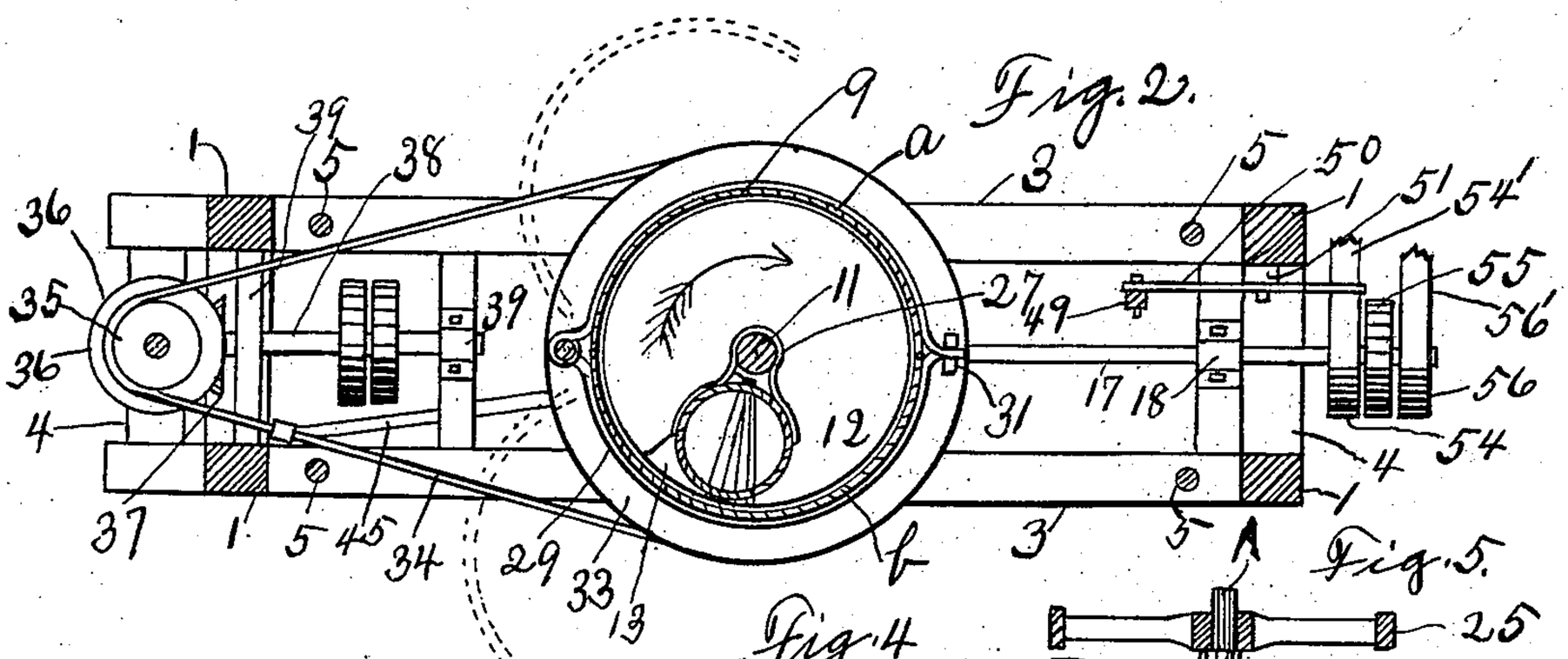


Fig. 3

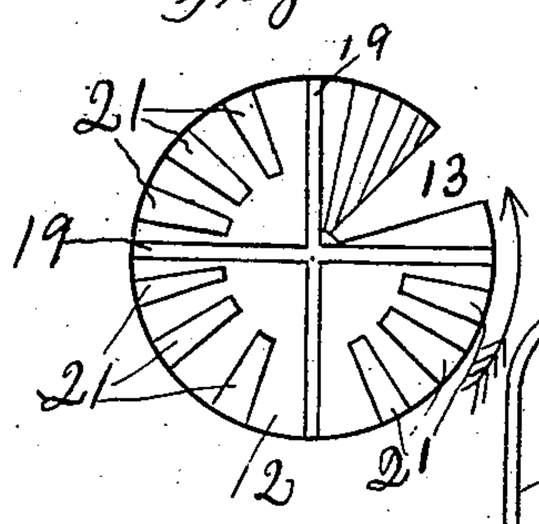


Fig. 4

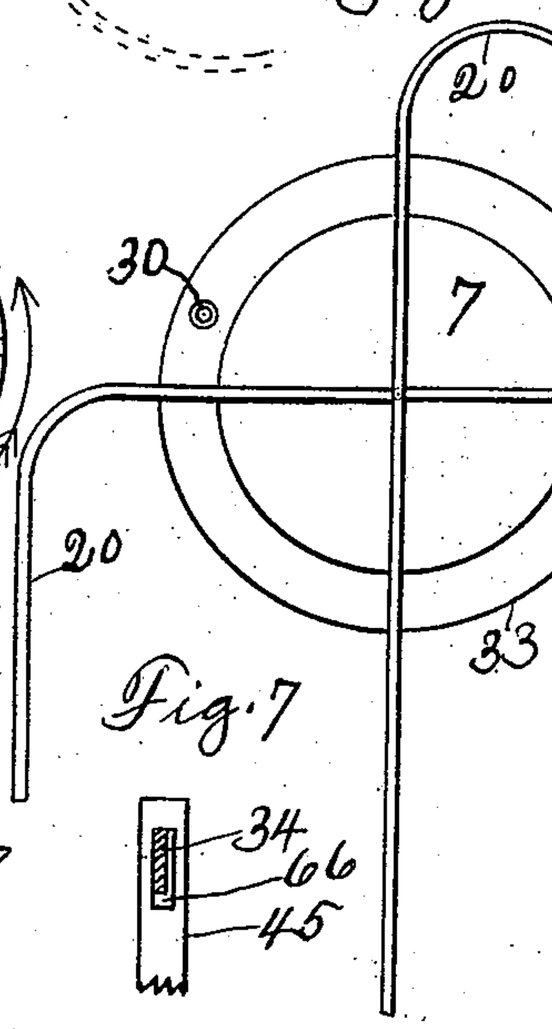


Fig. 5.

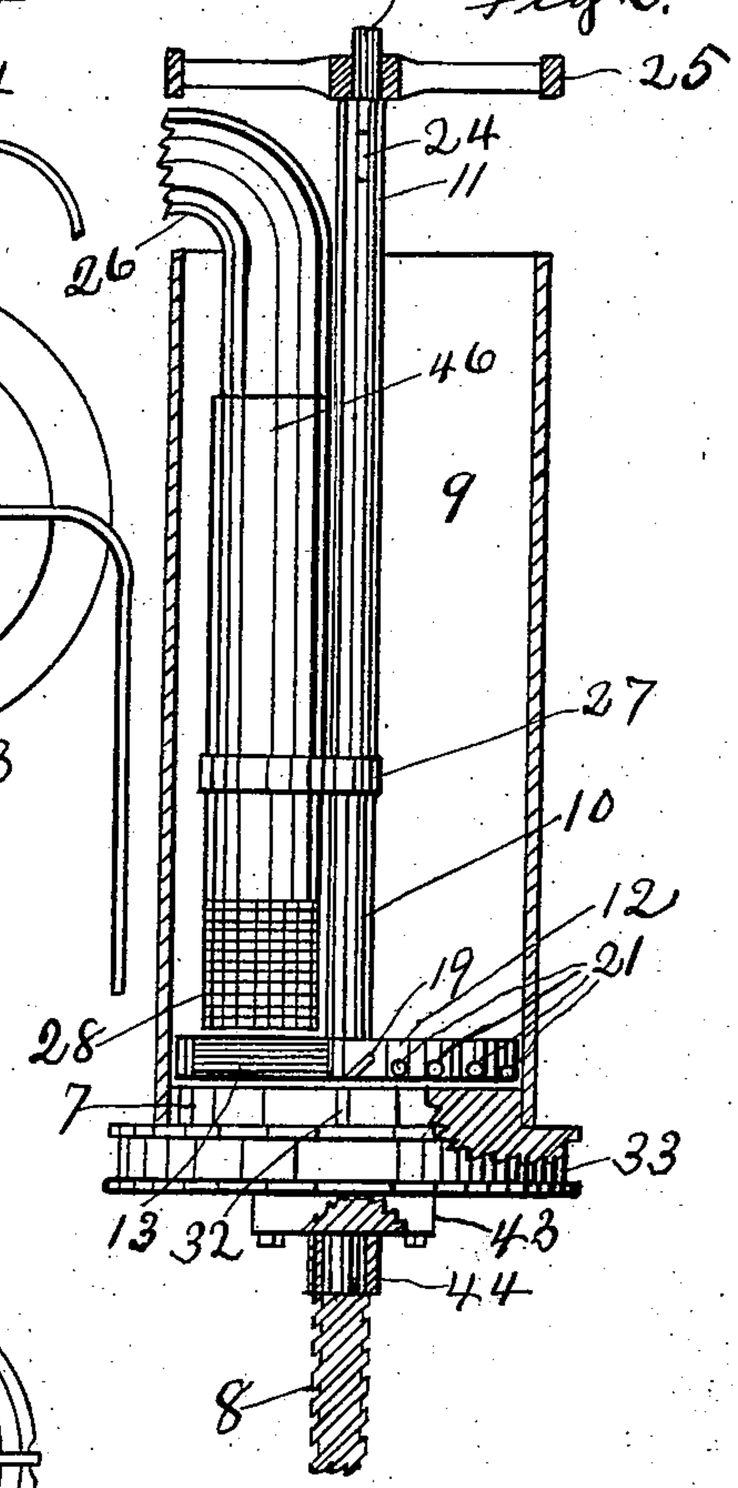


Fig. 6

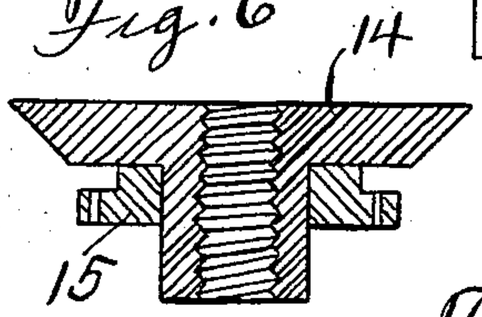
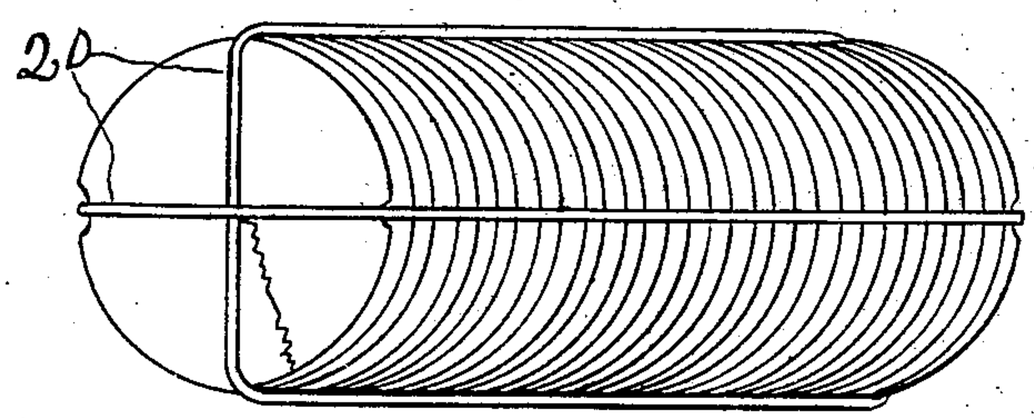


Fig. 7

Fig. 8



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(No Model.) 3 Sheets—Sheet 3.

Fig. 9.

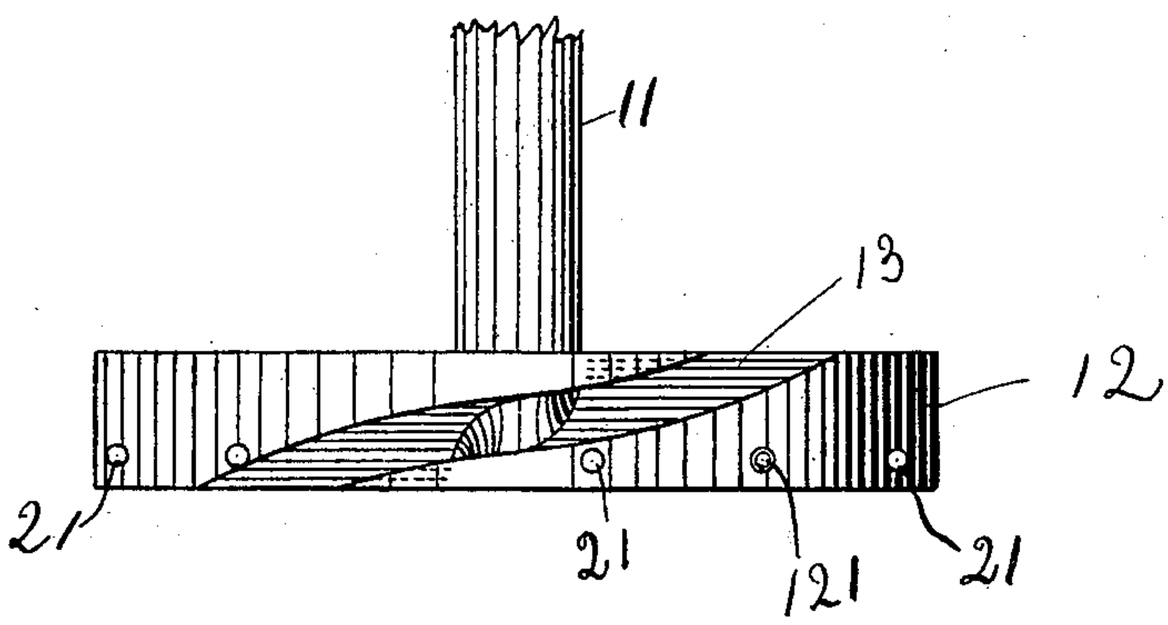
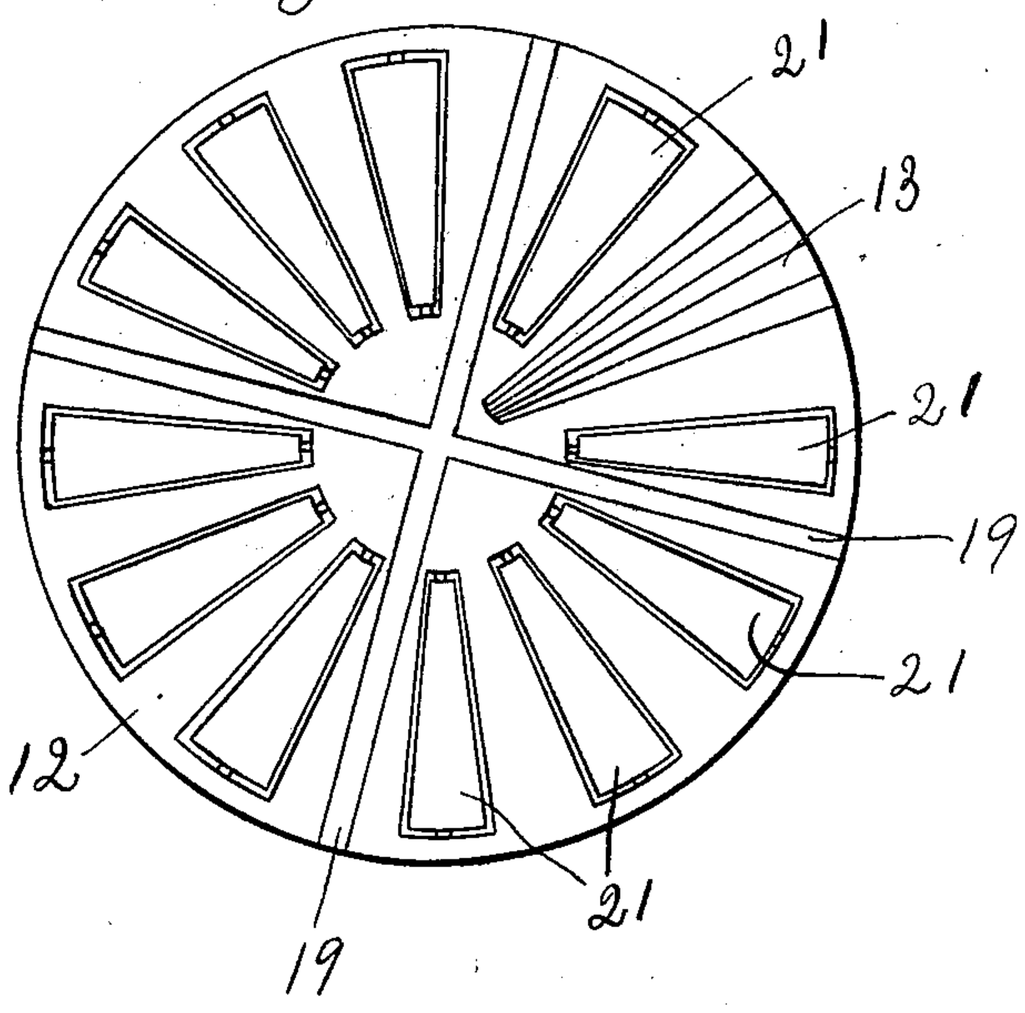


Fig. 10



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Attorney.

UNITED STATES PATENT OFFICE.

ISAAC VAN ZANDT JONES, OF KOLLS, TEXAS.

BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 689,399, dated December 24, 1901.

Application filed December 9, 1899. Serial No. 739,753. (No model.)

To all whom it may concern:

Be it known that I, ISAAC VAN ZANDT JONES, a citizen of the United States, residing at Kolls, in the county of Bell and State of Texas, have invented a new and Improved Cylindrical Baling-Press, of which the following is a specification.

This invention relates to an improved press for making cylindrical bales of cotton, and cotton-seed hulls, and for packing bran and similar articles; and the object is to construct a press which is simple and durable and by which the power of a screw is utilized to press on the bales from the beginning to the completion of the bales and in which bales of great density are made with very little power.

Other objects and advantages will be more fully understood from the following description and claims.

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

Figure 1 is a side elevation of a press embodying my invention. Fig. 2 is a horizontal section on the line *x x* of Fig. 1, the view being downward from this line. Fig. 3 illustrates the bottom of the presser-feeder. Fig. 4 is a plan view of the platform, illustrating the manner of placing the binding-wires. Fig. 5 is a broken sectional view of the platform and cylinder and other parts. Fig. 6 is a vertical section of the nut for controlling the motion of the screw which exerts the pressure to form the bales. Fig. 7 is a detail view of the bar which shifts the belt for driving the platform of the press. Fig. 8 is a perspective view of a bale made on the press, illustrating how the bale is bound with wire. Fig. 9 is a side elevation of the presser-feeder, illustrating the spiral opening in the base, the post being broken away. Fig. 10 is a bottom view of the presser-feeder, illustrating the antifriction-rollers in the base.

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

The press is mounted in a frame composed of four uprights 1, which are rigidly secured to the upper beams 2 and to the sills 3. The upper beams and the sills may be secured together by means of suitable cross-beams 4. The upper beams 2 and the sills 3 are further secured in a rigid manner by four or more, if necessary, upright rods 5, provided with nuts 6. The great strain to which the beams 2 and the sills 3 are subjected will tend to spread these parts. The object of rods 5 is to prevent this spreading and to hold these parts rigid.

The press consists of a rotating and retreating platform 7, mounted on top of a screw 8, a cylinder 9, in two sections *a* and *b*, which is secured to the platform 7, a presser-feeder 10, which consists of an upright rod or post 11 and a flat base 12, having a spiral opening 13 therethrough, and the screw 8 for supporting and resisting the downward motion of the retreating platform 7. The nut 14 supports the screw 8, and the nut rests on a bearing 15, which is bolted to the sills 3. The nut 14 has beveled gearing integral therewith and is driven by the beveled pinion 16, which is mounted on a shaft 17. This shaft is provided with bearing-boxes 18. The presser-feeder 10 operates in cylinder 9. The presser-feeder is normally stationary, but will rise up when too great pressure is exerted on the bale. Grooves 19 are cut in the bottom of the presser-feeder, through which the wires 20 for binding the bale may be passed when the bale is complete. These grooves are cut at an incline, (see Fig. 5,) the incline being relatively in the same direction as the platform rotates, so that material will not be caught in the grooves as the bale is being formed. Small conical rollers are placed in the under surface of the base of the presser-feeder to prevent heat from being developed by friction of the material against the base of the presser-feeder. These rollers are indicated at 21 in Figs. 3 and 5. The presser-feeder extends up through a cross-beam 22, which is bolted to the beams 2. This beam 22 acts as a guide for the presser-feeder. A bolt 23 passes through the beams 2 and through a slot 24 in the upright rod 11 of the presser-feeder. This bolt also acts as a guide for the presser-feeder. The upper part A of the upright 11 is reduced, and weight may be mounted thereon in order to secure greater density of the bale. Any suitable weight may be attached to the presser-feeder for exerting greater pressure on the bale. The drawings show a weight 25, which is an ordinary iron wheel. A chute 26, leading from

a condenser or gin, directs cotton from the condenser or gin down in the cylinder 9 to the opening 13 in the base of the presser. The chute may be attached to the upright 11 of the presser-feeder by means of a metal strip 27. The lower part of the chute is made of wire screen 28 or perforated sheet metal, so that air will escape from the bottom of the chute and not go into the opening 13 of the presser-feeder. The cylinder 9 is composed of two half-sections *a* and *b*, which are secured together by means of two pairs of arms 29, which are mounted on an upright rod 30 by bending the ends of the arms around the rod, forming, in effect, hinges. Rod 30 is mounted in platform 7. The arms are secured on the other side of the cylinder by feather-keys 31. The lower arms clamp the cylinder to the platform 7. The upper part B of the platform 7 is reduced, and the cylinder 9 engages this reduced portion. When the bale is completed, the keys 31 are knocked out, and the cylinder-sections are swung open and occupy a position such as is shown in dotted lines in Fig. 2. The platform 7 has grooves 32 therein, in which are placed wires 20 for binding the bale before commencing the bale. When the cylinder is opened, the wires are passed through grooves 19 in the base of the presser-feeder and the ends secured together.

The platform 7, with the cylinder 9, is rotated by means of the pulley 33, formed integral with the platform 7, and the pulley-band 34, which is driven by the pulley 35. Pulley 35 is mounted on an upright shaft 36, which is secured to the beams 2 and to the sills 3 and may be made more rigid in any suitable way. Pulley 35 is driven by the beveled cog 36 and the beveled pinion 37, the pinion 37 being mounted on the shaft 38, which is provided with suitable bearings 39. Two pulleys are mounted on this shaft for operating the same—a fast pulley 40 for driving when a bale is being formed and when the cylinder is returning to commence a new bale and a loose pulley 41 as an idler for the belt to run on when the bale is formed and being taken out of the press. Any suitable belt may be used to connect with a driving mechanism or motive power. The cylinder turns only in one direction, and that is relatively in the direction of the inclined opening in the base of the presser-feeder, as indicated by arrows in Fig. 2 and the inverted view in Fig. 3.

The drawings illustrate one way of locating the driving mechanism above described. It will be apparent that the driving mechanism may be varied in any suitable way. It is not necessary that the pulley 35 should be in line with or attached to the sills of the frame, but may be located at any convenient place where the shaft 38 may be in line with the main driving-shaft of the power.

The bale is formed between the platform 7 and the presser-feeder. It is apparent that the platform or the presser-feeder must retreat as the bale grows in size. I have provided means for allowing the platform to retreat. The platform is mounted on top of a screw which retreats only to relieve too great pressure on the bale during its formation. A cap 43 is bolted to the platform 7. This cap has a sleeve 44, in which the top of the screw operates. It will be seen that the baling-cylinder and the platform can recede only as the screw 8 passes through the nut 14 and that the screw will pass through only as the nut 14 is rotated. The belt 34 must be lowered as the cylinder and platform recede, so that the belt will continue to drive or rotate the cylinder and platform. Means are provided for shifting this belt, which consist of a bar 45, which is attached to the lower end of screw 8 and extended out and bent up and extended up to the belt 34. A slot 66 is cut in the bar 45 for the belt. The width of pulley 35 is equal to the distance through which the pulley 33 must travel during the formation of a bale. It will be understood now that as the nut 14 is rotated the screw 8 will pass up or down, and as the screw passes down or up the bar 45 will shift the belt 34 on the pulley 35. The nut must be rotated to relieve the pressure on the forming bale, as pressure on the screw will not cause the nut to rotate. The screw is prevented from rotating by the bar 45, this bar serving for two purposes—to prevent the screw from rotating and to shift the belt 34. This might be attached to the screw near the platform 7, as to the sleeve 43. The bar cannot rotate, because it has a slot which engages the belt 34. The nut 14 must be rotated systematically. The means for accomplishing this constitute a gage for securing uniform density of the bale. As stated above, the presser-feeder has a limited upward motion. The chute 26 must have a telescoping section 46 to permit this upward motion. The means for relieving the pressure is a shifting mechanism for shifting a belt on and off a fixed pulley. A lever 47 is pivotally attached to the presser-feeder and provided with a fulcrum 48. A link-bar 49 is pivotally attached to the lever 47 and to a bell-crank lever 50, which is provided with a bearing 51. A shifting-bar 52 is pivotally attached to the bell-crank lever 50 and is provided with a slot 53 for engaging a belt. A loose pulley 56 is mounted on shaft 17. This pulley supports a cross-belt 56′, which is to be shifted to a fixed pulley 55, mounted on the same shaft. A loose pulley 54, mounted on the same shaft, supports a straight belt 54′, which is to be shifted to the fixed pulley 55. The direction of the rotation of the nut 14 is changed by shifting the belts 54′ and 56′. During the formation of the bale the belts are supported on the loose pulleys if the presser-feeder is in its normal position; but when the presser-feeder recedes on account of the great pressure it operates lever 47 and by the intermediate mechanism of the link-bar 49, bell-crank

lever 50, and the shifting-bar 52 shifts the belt 54′ to the pulley 55, and thus the nut 14 is rotated to relieve the pressure, the belt 54′ being driven by any suitable motive power. When the presser-feeder resumes its normal position with reference to the press-frame, the belt 54′ is shifted back to the loose pulley 54. The cross-belt 56′ is shifted to the fixed pulley 55 for rotating nut 14 to raise the screw 8 to commence a new bale. It will be seen that the action for relieving the pressure is automatic and intermittent.

The operation will be easily understood from the previous description. At the beginning of operation the cylinder occupies the position shown in Fig. 1. Cotton comes from a gin or a condenser through the pipe 26 down to the groove 13 in the presser-feeder. The presser-feeder is stationary. The cylinder, with the platform on which the cylinder is mounted, is rotated by belt 34. The direction of the rotation of the cylinder and platform is indicated in Fig. 2 by means of the arrow. The bale begins to be formed between the base of the presser-feeder and the platform. The platform will aid drawing the cotton through the groove in the base of the presser-feeder. The cotton is received and laid in a spiral layer until a complete bale is formed. The wires for binding the bale are placed in the grooves in the platform before commencing the bale, or they may be placed in the grooves at any time that is convenient if the grooves are cut deep enough. When the bale is complete, the feather-keys are knocked out and the cylinder opened to the position shown by dotted lines in Fig. 2. During the formation the cylinder and platform rotate and recede to allow the bale to increase in size. This receding motion is retarded by means of the screw 8 and the nut 14. The screw can recede only when the nut is rotated. This nut is rotated only when the pressure is becoming too great. When the pressure is becoming too great, the presser-feeder rises and shifts the belt from a loose to a fast pulley. The nut is rotated until the pressure is relieved. When this is done, the presser-feeder goes back to its normal position and in so doing shifts the belt back to the loose pulley. As the presser-feeder recedes it shifts the belt 34 on pulley 35 by means of the rod 45. When the bale is complete, it is bound and taken out. The cylinder is replaced and adjusted, and a cross-belt is shifted to a fast pulley. The nut 14 is rotated, and the cylinder is brought to starting-place.

Various changes may be made in the construction and arrangement of this press without departing from this invention.

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

1. A baling-press comprising a frame, an automatic presser-feeder, a rotating and receding cylinder for forming the bale, means for rotating said cylinder, and means for supporting said cylinder and for controlling the receding motion thereof during the formation of a bale consisting of a screw and a nut mounted in said frame and means for rotating said nut.

2. A baling-press comprising a frame, a rotating and receding platform and cylinder, a presser-feeder operating in said cylinder, a screw and a nut mounted in said frame for supporting said platform and cylinder and for controlling the receding motion thereof during the formation of a bale, and means for automatically and intermittently rotating said nut.

3. A baling-press having a frame, a rotating and receding platform and cylinder mounted in said frame, means for driving said platform and cylinder and means for controlling the receding motion thereof, a presser-feeder in said cylinder, said presser-feeder consisting of a base having a spiral groove therethrough and a stem having a slot therein for permitting a limited motion of said presser-feeder and a bolt through said slot and rigid in said frame.

4. A baling-press having a frame, a presser-feeder consisting of a base having a spiral groove therethrough and a stem having a slot therein, a bolt through said slot and through said frame for permitting a limited motion of said presser-feeder, a cylinder for forming the bale, means for supporting said cylinder and for resisting the receding motion thereof, and means for rotating said cylinder.

5. In a baling-press provided with a presser-feeder, a rotating baling-cylinder, and a frame therefor; a platform on which said cylinder is mounted, a nut and a screw for controlling the receding motion of said platform and cylinder, means for operating said nut, and means for driving said cylinder and platform consisting of a pulley mounted on a suitable driving-shaft, a pulley integral with said platform, and a belt mounted on said pulleys.

6. In a baling-press provided with a presser-feeder, a rotating baling-cylinder and platform, and a frame therefor; a nut and a screw for controlling the receding motion of said cylinder, means for operating said nut to allow said screw to recede, and means for driving said cylinder consisting of a pulley formed on said platform, a driving-pulley, a belt for said pulleys, and an arm attached to said screw for shifting said belt on said driving-pulley.

7. In a baling-press provided with a presser-feeder, a rotating baling-cylinder and platform, and a frame therefor; a nut and a screw for controlling the receding motion of said platform and cylinder, means for driving said nut consisting of a beveled cog-wheel integral with said nut, a beveled pinion and a shaft therefor for driving said cog-wheel, a fast and a loose pulley mounted on said shaft and a belt for driving said fast pulley, and means for shifting the belt from the loose to the fast pulley and vice versa consisting of a lever at-

tached to said presser-feeder, a link-bar attached to said lever, a bell-crank lever attached to said link-bar, and a shifting-bar attached to said bell-crank lever and engaging said belt.

8. A baling-press comprising a frame, a platform having an upward extension with slots therein, a rotating baling-cylinder mounted on said platform, the lower part of said cylinder engaging said extension, means for controlling the receding motion of said cylinder and platform, and means for rotating said cylinder and platform.

9. A baling-press comprising a baling-cylinder, a rotating platform for supporting said cylinder, means for controlling the receding motion of said cylinder and platform, means for feeding material in said cylinder consisting of a telescopic chute having a screen-section and a plunger having a stem and a base with a spiral groove therethrough and having antifriction-rollers in the under surface thereof, and means for rotating said cylinder.

In testimony whereof I set my hand, in the presence of two witnesses, this 7th day of September, 1899.

ISAAC VAN ZANDT JONES.

Witnesses:

B. A. LUDLOW,

W. S. HUNTER.