

No. 661,015.

Patented Oct. 30, 1900.

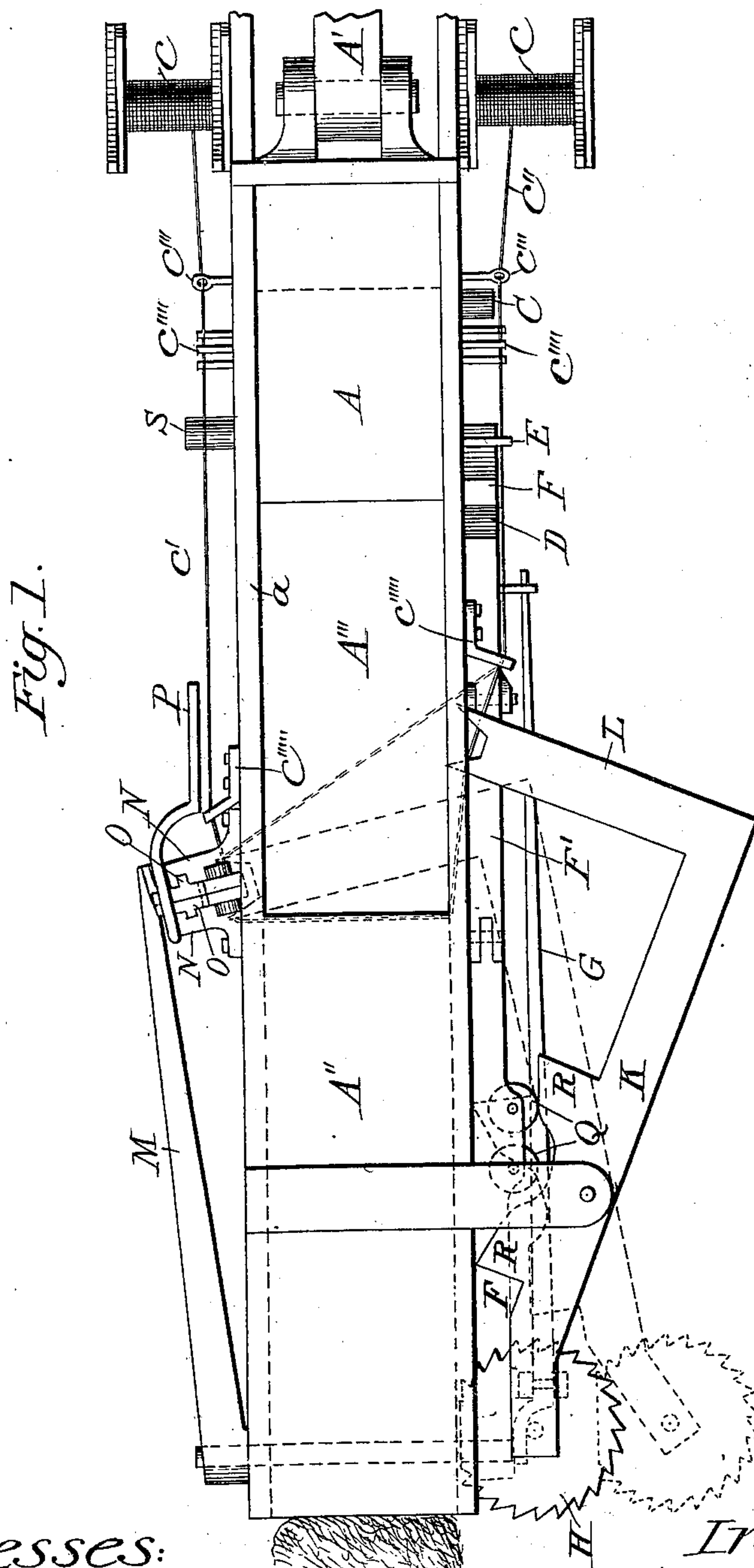
W. KENNEDY & J. M. HUNT.

BAND TYING MECHANISM FOR BALING PRESSES.

(Application filed Sept. 19, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:

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Vincent A. Sheehy.

Inventors:

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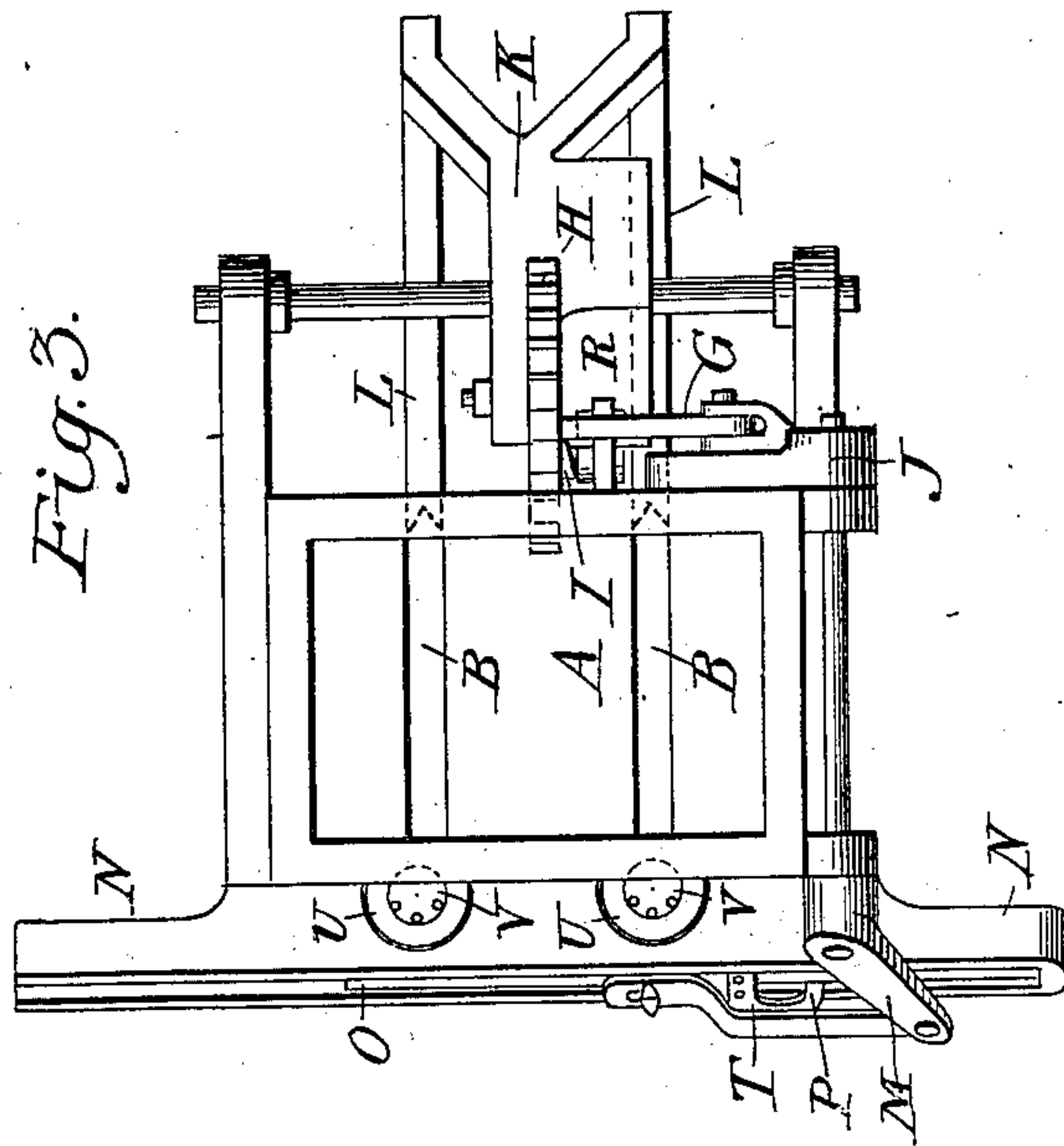
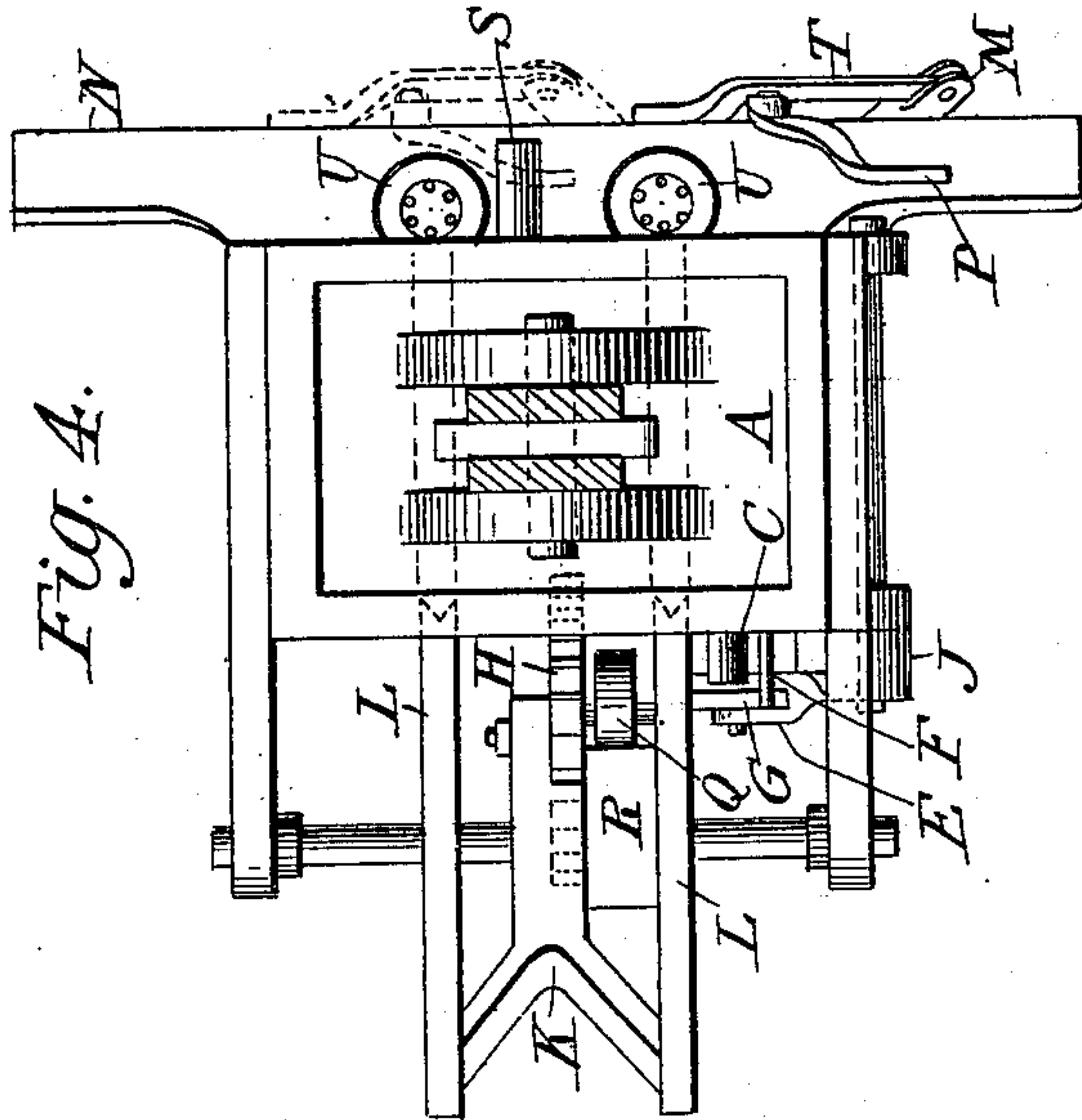
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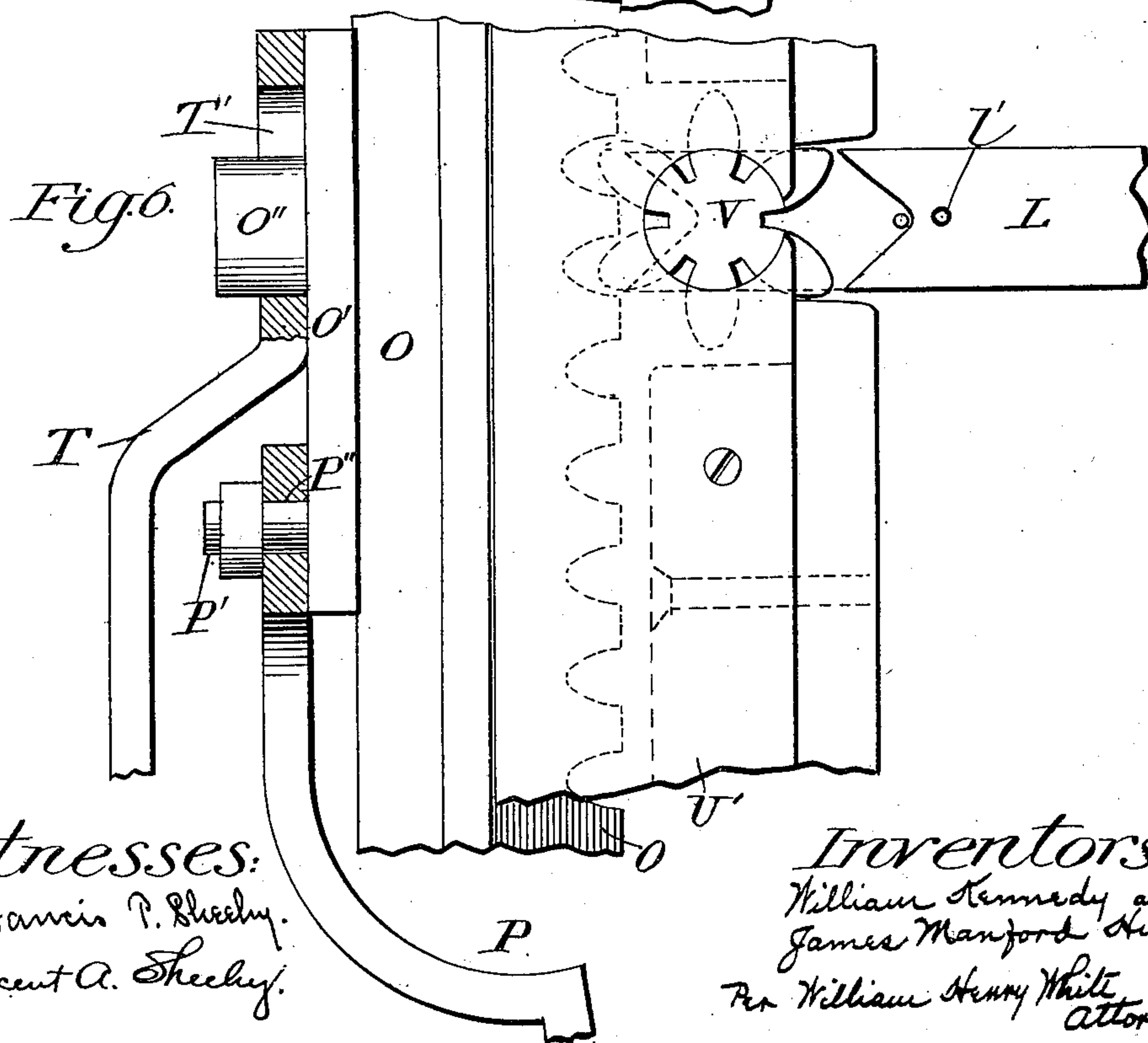
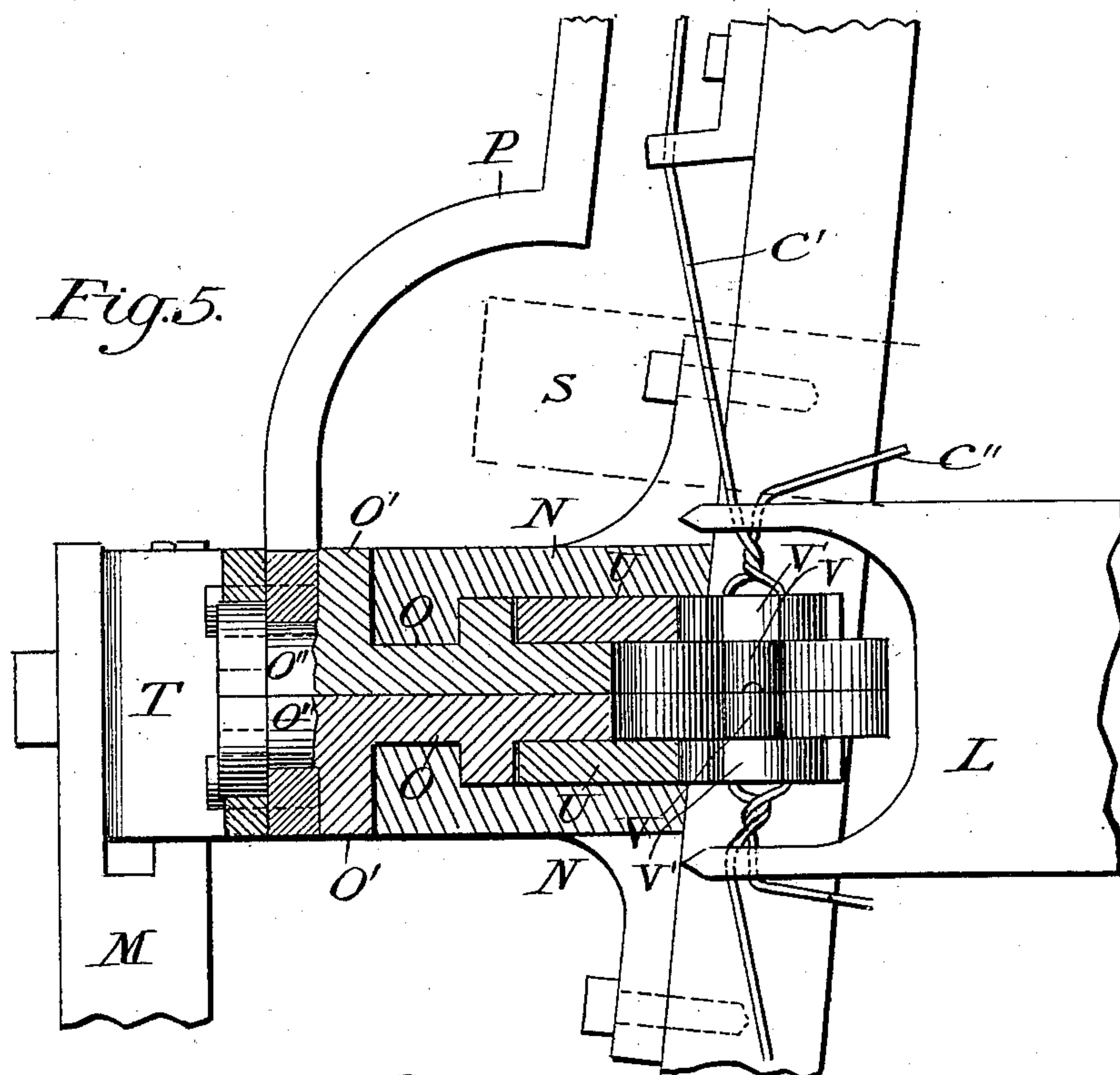
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4 Sheets—Sheet 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM KENNEDY AND JAMES MANFORD HUNT, OF HARRISONVILLE,
MISSOURI, ASSIGNORS OF ONE-THIRD TO MARY LEONARD WHITE,
OF SAME PLACE.

BAND-TYING MECHANISM FOR BALING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 661,015, dated October 30, 1900.

Application filed September 19, 1899. Serial No. 731,005. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM KENNEDY and JAMES MANFORD HUNT, citizens of the United States, and residents of Harrisonville, Cass county, State of Missouri, have invented a new and useful Improvement in Band-Tying Mechanism for Baling-Presses, of which the following is a description.

The object of our invention is to provide a band-tying mechanism of such a character as to be readily adapted to use on any of the well-known "plunger-presses"; and it consists of such novel combinations of devices as are more fully hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of so much of a plunger baling-press as is necessary to illustrate the application of our invention. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation. Fig. 4 is a front elevation with the plunger-driving mechanism removed. Fig. 5 is a detached plan view of the tying mechanism, parts being in section to more clearly illustrate the relation of the various elements. Fig. 6 is a detached elevation of the same.

As above stated, the drawings illustrate only so much of a baling-press as to clearly disclose the manner of attaching our improved mechanism, such part being the baling-chamber and plunger-way A".

A is the plunger, which may be reciprocated in any suitable manner from the source of driving power, as by the pitman A', pivotally secured at its front end and traversing the receiving-chamber A"', completing its stroke by entering the baling-chamber A". The plunger A is provided at its lower side with two lateral and relatively diagonally disposed pins or lugs C and S, each of which projects through the horizontal slot in the side of the receiving-chamber, and they serve the purpose of guides for the plunger A, as well as for another purpose more fully hereinafter set forth. The plunger is also provided with the needle slots or grooves B, which extend horizontally for some considerable distance and into the face end of the plunger, as shown.

Extending laterally from the upper and lower sides of the baling-chamber are the brackets k', which serve the purpose of pivotally supporting the vertical shaft k, to which is secured, about midway of its height, the needle bar or arm K. This bar K is bifurcated at its forward end, each fork being bent at right angles to the body of the bar to form the needles L. The point of each needle is doubly bifurcated or notched—i. e., vertically and horizontally—thereby forming the four points l. Just back of the horizontal bifurcation is a small aperture extending from the forward side of the forward needle-point rearwardly through the same, serving as an eye through which the baling-wire is passed. At the pivotal point of the bar K are two cam projections R R, extending toward the baling-chamber. The measuring-wheel H is pivotally secured to the rear end of the bar K, as shown, and is provided at its periphery with ratchet-shaped teeth which extend nearly the entire distance around the wheel. A segment, however, is removed from one side of the wheel, leaving a flattened part, for a purpose hereinafter described.

At the lower right-hand side of the baling-chamber is located a horizontally-reciprocating slide F, which is arranged in suitable guides (not shown) and is hinged near the middle of its length by the rule-joint f. The forward end F'—the hinged portion—is provided with a hinged hook F'', which is held in position by the spring f'', so as to form the opening D, which when the slide F is in operative position engages with the pin C on the plunger A. A pin or lug E projects from the lower side of the bale-chamber, which when the slide F is returned to its normal position serves to engage the forward beveled end of the hook F'' and to disengage the same from the pin C.

The spring-lever G is pivoted to the bracket G'', is secured to the baling-chamber near its end, and has a short upwardly and rearwardly extending arm which engages the inclined lug I on the lower side of the measuring-wheel H. The forwardly-extending portion of the lever G'' is in the form of a flat spring and engages the pin f''', which extends lat-

erally from the side of the hinged member F' forward of the hinge f' and serves to elevate the said hinged member, together with the hook F'', into position for engagement with the pin C of the plunger A when the end of the lever G engages the lug I of the measuring-wheel H.

The slide F is provided near its rear end with an upward projection, which serves to carry the antifriction-rollers Q, which engage the cam projections R on the bar K and operate the said bar during the tying process. The rear portion of the slide F terminates in a beveled point f'''' , which engages the notch i on the rock-arm J. The rock-arm J is rigidly secured to the rock-shaft I', which is journaled in suitable brackets secured to the lower side of the baling-chamber at its rear end. To the opposite end of the rock-shaft I' is rigidly secured the rock-arm M, which actuates the tying mechanism proper.

The vertical guides N N are secured at a slight angle to the opposite sides of the baling-chamber in order that the band-tying mechanism may be secured at the proper angle to receive the band-wires as one leaves the guide c'''' and the other is presented by the needles L. They carry the vertically-reciprocating juxtaposed racks O O, which are splined into said guides N N. At the rear edges of the racks O O are the lateral projections O' O', from each of which extends one half of a bearing O'' O'', which enter the slot T' of the link T, the link T being pivoted to the rock-arm M. From the lateral projections O' O' extend the pins P', upon which the operating-lever P is pivoted, the oscillation of which lever gives relative movement to the racks O O. At the sides of the guides N N are secured the C-shaped bearings U, as shown in Fig. 3, or said bearings may be located in a plate U', as shown in Figs. 5 and 6, and secured to the guides N N. The inner sides of the guides N N are open toward the bale-chamber. V V are the tying-wheels, which are provided with the trunnions V' V', carried by the bearings U U. These wheels are juxtaposed and are provided with six teeth, each of which mesh with the teeth of the racks O O, the spaces or grooves between the wheel-teeth extending some depth into the body of the wheels and their trunnions, as shown in Fig. 2.

At the forward ends of the bale-chambers are located the wire-reels c c , the number of such reels being double the number of the bands used in baling, two band-wires—one from each side of the press—being used in forming each band. The wire c' from the needle-bar side of the press is carried through the guides c''' , over the tension-pins c'''' , through the guide c'''' , through the needle-eye l on the needle-bar, and through the needle-slot in the side of the bale-chamber, while the opposite wire is similarly threaded through guides c''' and c'''' and over the tension-pins c'''' , the ends of the two wires being

tied in any suitable manner in the chamber. When the needles are so threaded, the mechanism is ready for operation, which will now be described.

With the parts in position as shown in Fig. 1, hay or other material to be baled is fed into the space A'', and the plunger A, being driven by any suitable power, presses the hay into the chamber A'', carrying with it the tied binding-wires. As the plunger is drawn back more hay is fed into the space A'', and the operation is repeated until the compressed hay coming into contact with the measuring-wheel H rotates the same until the lug I on its under side contacts with the lever G, thereby raising the spring end of said lever and carrying with it the forward pivoted end F' on the slide F. At the next stroke of the plunger A the pin C will engage the hook F'' and the opening D and carry with it the slide F. The further movement of the slide F brings the rear roller Q into contact with the rear cam R upon the needle-bar K, thereby driving the needles L through the openings l'' and slots B in the plunger A to the position shown in dotted lines in Fig. 1. In the meantime the projection f'''' has engaged the notched rock-arm J and rotated it and the rock-arm M into the dotted-line positions, as shown. The upward movement of the arm M carries with it the strap-link T and racks O O. During the process of filling the bale-chamber the wire C' has been drawn by the bale between the teeth of the wheels V, and now with the wheels in the position shown in Fig. 5 these wheels are rotated by the upward movement of the racks O O, thereby giving the wires a twist, as shown. As the plunger approaches the end of the stroke the pin S will engage the operating bar or lever P, which is of cam shape, and rotate it upon one of the pins P', thereby giving relative movement to the racks O O and through them to the wheels V V, which now have the twisted sections of the two wires c' and c'' located in diametrically-opposite grooves, thereby shearing the two wires between the twists or knots. The return stroke of the plunger A carries with it the slide F, which now permits the rock-arm J and, through the connecting mechanism, the twisting or tying device to resume their normal positions. When the plunger has made somewhat more than half of its return stroke, the hook F'' will engage the pin E, thereby releasing the pin or lug C and leaving the slide F and needle-bar K in the position shown in full lines in Figs. 1 and 2, ready for the next bale. It should be here noted that of the two twists or knots one is upon the bale and the other connects the two wires C' and C'' for the next bale. Upon the restoration of the needle-bar K to the position shown in full lines in Fig. 1 the measuring-wheel H will again come into contact with the bale just bound. Should, however, such wheel H have slightly turned during the tying process, the end of the flattened por-

tion will come into contact with the bale first, and further pressure, due to the action of the needle-bar, will force said flattened portion against the bale. In this manner the bales
5 are all made of a uniform size.

From the description, in connection with the drawings, it will be seen that our tying mechanism is automatic and needs no other attention than that of supplying the baling-chamber with material to be baled and that when
10 a bale of proper size has been made the measuring-wheel trips the tying mechanism, all parts being operated by the movement of the plunger.

15 We do not limit ourselves to the precise mechanism shown and described, as many minor changes may be made without changing the scope of our invention, and all such changes as come within the spirit of our invention we desire to cover.

Having now fully ascertained the construction and method of operation of our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

25 1. In a band-tying mechanism for baling-presses, the combination of a pair of vertical guides secured to the side of the press, a pair of vertically-reciprocating toothed racks splined into said guides, a pair of juxtaposed
30 toothed wheels or pinions having trunnions pivoted in said guides, the teeth of said pinions meshing with the teeth of said racks, the grooves between the teeth of said pinions extending into the trunnions to receive the band-
35 wires, a needle threaded with the band-wire having two points, each point being grooved or slotted to receive a band-wire, the points of said needles being separated to such a distance that when brought into proper position
40 the points will straddle the faces of said pinions and cause the wire carried thereby to drop into one of the grooves of the pinions, means for actuating said needle and means for reciprocating said racks, thereby rotating
45 said wheels or pinions and doubly twisting the band-wires together, substantially as described.

2. In a band-tying mechanism for baling-presses, the combination of a pair of vertical
50 guides secured to the side of the press, a pair of vertically-reciprocating toothed racks splined into said guides, a pair of juxtaposed toothed wheels or pinions having trunnions pivoted in said guides, the teeth of said pinions meshing with the teeth of said racks, the
55 grooves between the teeth of said pinions extending into the trunnions to receive the band-wires, a needle threaded with the band-wire having two points, each point being grooved or slotted to receive a band-wire, the points
60 of said needles being separated to such a distance that when brought into proper position the points will straddle the faces of said pinions and cause the wire carried thereby to
65 drop into one of the grooves of the pinions, means for actuating said needle and means

for reciprocating said racks, thereby rotating said wheels or pinions and doubly twisting the band-wires together, and means for giving relative movement to said wheels or pinions whereby the twisted band-wires are sheared or cut between the respective twists, substantially as described.

3. The combination in a baling-press of a plunger having transverse, open-ended slots, a pivoted, cam-actuated needle-bar, a measuring-wheel carried thereby, a jointed, reciprocating slide actuated by said plunger, cam-wheels on said slide for operating said needle-bar, a rock-shaft located at the end of the
80 baling-press, having a rock-arm secured at one end for contact with said slide, a rock-arm secured at the opposite end of said rock-shaft, said latter rock-shaft designed to actuate a bale-tying device in conjunction with
85 said needle-bar, substantially as described.

4. In a baling-press, the combination of a slotted plunger and baling-chamber, a pivoted needle-bar carrying needles, said needle-bar being actuated by the plunger to cause said
90 needles to traverse said slots in the plunger, a band-tying device comprising juxtaposed tying-wheels, suitable supports for said wheels, means for rotating said wheels independently or in unison, intermediate means
95 between said plunger and said tying device for actuating the same whereby the wires carried by the needle-bar and the wires carried by the tying device are doubly twisted or tied together by the movement of the plun-
100 ger, substantially as described.

5. In a baling-press, the combination of a slotted plunger and baling-chamber, a pivoted needle-bar carrying needles, said needle-bar being actuated by the plunger to cause said
105 needles to traverse said slots in the plunger, a band-tying device comprising juxtaposed tying-wheels, suitable supports for said wheels, means for rotating said wheels independently or in unison, intermediate means
110 between said plunger and said tying device for actuating the same whereby the wires carried by the needle-bar and the wires carried by the tying device are doubly twisted or tied together by the movement of the plun-
115 ger and means for severing the band-wires between the twists or knots, substantially as described.

6. In a baling-press, the combination of the plunger, the needle-bar and the jointed slide-carrying rollers engaging cam-surfaces on said needle-bar for actuating the needle-bar, said slide cooperating with the plunger to actuate said needle-bar and means for connecting
120 said slide with the plunger, substantially as described.

7. In a baling-press, the combination of a slotted plunger, a slide and a pivoted needle-bar carrying needles, means for connecting
130 said jointed slide with the plunger, cam mechanism carried by said slide and said needle-bar for actuating said needle-bar to cause

the needles to traverse the slots of the plungers when said slide is actuated by said plunger, substantially as described.

8. In a baling-press, the combination of a plunger, a slide and a pivoted needle-bar, means for connecting said slide with the plunger, cam mechanism carried by said slide and said needle-bar for actuating said needle-bar when said slide is actuated by said plunger and means for disconnecting said slide from the plunger at the end of the plunger-stroke, substantially as described.

9. In a baling-press, the combination of a slotted plunger, a slide and a pivoted needle-bar carrying needles, means for connecting said jointed slide with the plunger, cam mechanism carried by said slide and said needle-bar for actuating said needle-bar to cause the needles to traverse the slots of the plungers when said slide is actuated by said plunger, a rock-arm mounted upon one end of a rock-shaft, said rock-arm cooperating with said slide to actuate band-tying mechanism, substantially as described.

10. In a baling-press, the combination of a plunger, a slide and a pivoted needle-bar, means for connecting said slide with the plunger, cam mechanism carried by said slide and said needle-bar for actuating said needle-bar when said slide is actuated by said plunger, a rock-arm mounted upon one end of a rock-shaft, said rock-arm cooperating with said slide to actuate band-tying mechanism and means for disconnecting said slide from the plunger at the end of the plunger-stroke, substantially as described.

11. In a baling-press, the combination of a plunger, a jointed slide and a pivoted needle-bar, means for connecting said jointed slide with the plunger, cam mechanism carried by said jointed slide and said needle-bar for actuating said needle-bar when said jointed slide is actuated by said plunger and means for disconnecting said jointed slide from the plunger at the end of the plunger-stroke, substantially as described.

12. In a baling-press, the combination of a slotted plunger, a jointed slide and a pivoted needle-bar carrying needles, means for connecting said jointed slide with the plunger, cam mechanism carried by said jointed slide and said needle-bar for actuating said needle-bar to cause the needles to traverse the slots of the plungers when said jointed slide is actuated by said plunger, a rock-arm mounted upon one end of a rock-shaft, said rock-arm cooperating with said jointed slide to actuate band-tying mechanism, substantially as described.

13. In a baling-press, the combination of a plunger, a jointed slide and a pivoted needle-bar, means for connecting said jointed slide with the plunger, cam mechanism carried by said jointed slide and said needle-bar for actuating said needle-bar when said jointed slide is actuated by said plunger, a rock-arm mounted upon one end of a rock-shaft, said

rock-arm cooperating with said jointed slide to actuate band-tying mechanism and means for disconnecting said jointed slide from the plunger at the end of the plunger-stroke, substantially as described.

14. In a baling-press, the combination of a plunger, a jointed slide, means for connecting said jointed slide with said plunger, separate means for disconnecting said jointed slide from said plunger, a pivoted needle-bar, needles carried by said needle-bar, band-wires passed through eyes in the points of said needles, band-tying mechanism carrying a second set of wires, intermediate mechanism between the jointed slide and the band-tying mechanism for actuating said band-tying mechanism and cam mechanism for actuating said needle-bar from the jointed slide, whereby, upon the reciprocation of the plunger, the needle-wires and the second set of wires are twisted together, substantially as described.

15. In a baling-press, the combination of a plunger, a jointed slide, means for connecting said jointed slide with said plunger, separate means for disconnecting said jointed slide from said plunger, a pivoted needle-bar, needles carried by said needle-bar, band-wires passed through eyes in the points of said needles, band-tying mechanism carrying a second set of wires, intermediate mechanism between the jointed slide and the band-tying mechanism for actuating said band-tying mechanism and cam mechanism for actuating said needle-bar from the jointed slide, whereby, upon the reciprocation of the plunger, the needle-wires and the second set of wires are doubly twisted together, substantially as described.

16. In a baling-press the combination of a plunger, a jointed slide, means for connecting said jointed slide with said plunger, separate means for disconnecting said jointed slide from said plunger, a pivoted needle-bar, needles carried by said needle-bar, band-wires passed through eyes in the points of said needles, band-tying mechanism carrying a second set of wires, intermediate mechanism between the jointed slide and the band-tying mechanism for actuating said band-tying mechanism, cam mechanism for actuating said needle-bar from the jointed slide, whereby, upon the reciprocation of the plunger, the needle-wires and the second set of wires are doubly twisted together and means for severing the twisted wires between the double twists, substantially as described.

17. In a baling-press, the combination of a plunger, a jointed slide, means for connecting said jointed slide with said plunger, separate means for disconnecting said jointed slide from said plunger, a pivoted needle-bar, needles carried by said needle-bar, band-wires passed through eyes in the points of said needles, band-tying mechanism carrying a second set of wires, intermediate mechanism between the jointed slide and the band-

5 tying mechanism for actuating said band-
tying mechanism, cam mechanism for actu-
ating said needle-bar from the jointed slide,
whereby, upon the reciprocation of the plun-
ger, the needle-wires and the second set of
wires are doubly twisted together and means
actuated by the plunger for severing the wires
between the double twists, substantially as
described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM KENNEDY.
JAMES MANFORD HUNT.

Witnesses:

HENRY TYSON EDWARDS,
LEE HUTCHINSON.

It is hereby certified that in Letters Patent No. 661,015, granted October 30, 1900, upon the application of William Kennedy and James Manford Hunt, of Harrisonville, Missouri, for an improvement in "Band-Tying Mechanism for Bailing-Presses," errors appear in the printed specification requiring correction, as follows: In line 130, page 3, the word *jointed* should be stricken out and inserted before the word "slide," line 128, same page, and line 16, page 4, the word "jointed" should be stricken out and inserted before the word "slide," line 14, same page; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 20th day of November, A. D., 1900.

[SEAL.]

THOS. RYAN,

First Assistant Secretary of the Interior.

Countersigned:

C. H. DUELL,

Commissioner of Patents.