

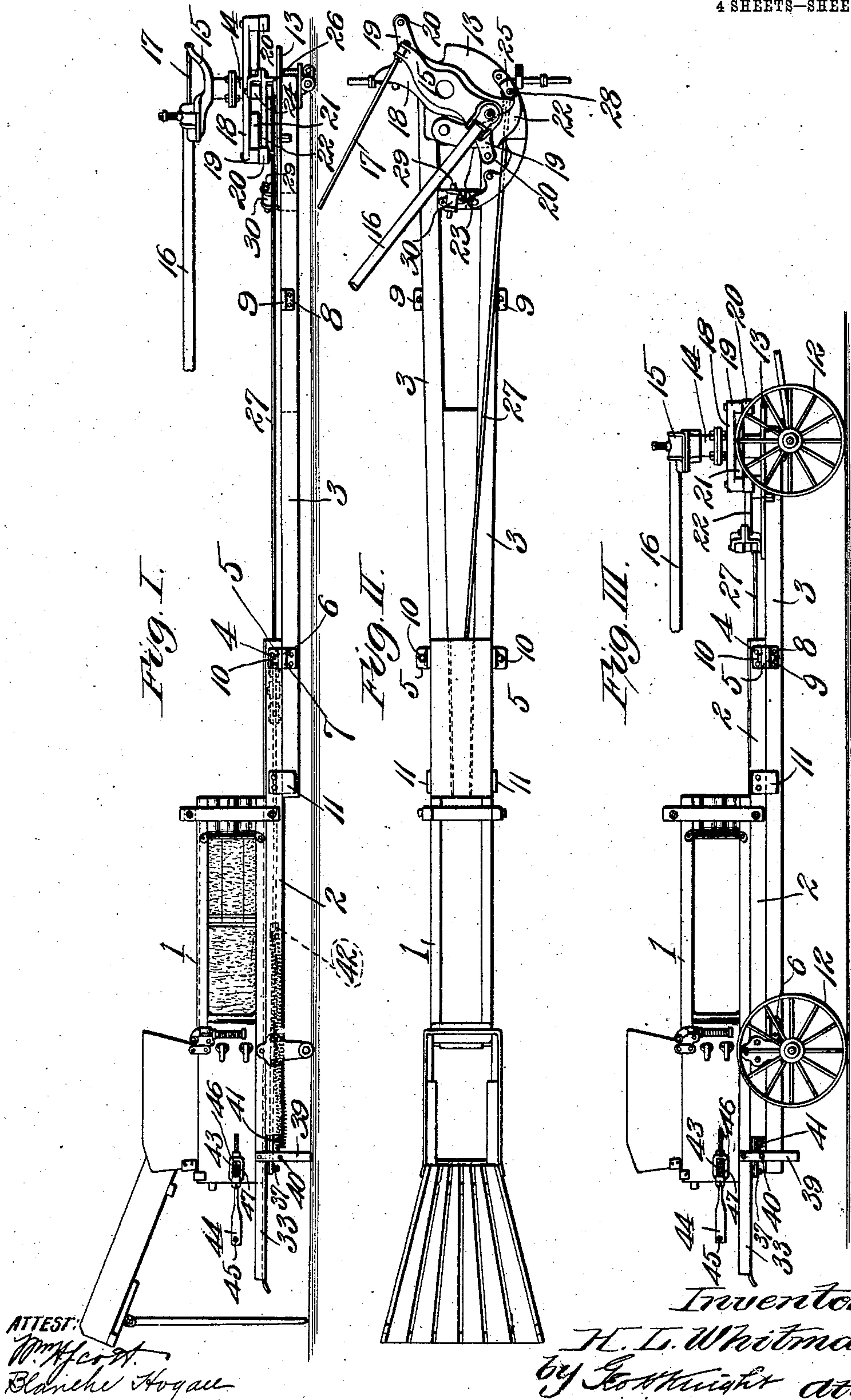
No. 849,874.

PATENTED APR. 9, 1907.

H. L. WHITMAN.
BALING PRESS.

APPLICATION FILED AUG. 16, 1906.

4 SHEETS—SHEET 1.



No. 849,874.

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H. L. WHITMAN.
BALING PRESS.

APPLICATION FILED AUG. 15, 1906.

4 SHEETS—SHEET 2.

Fig. IV.

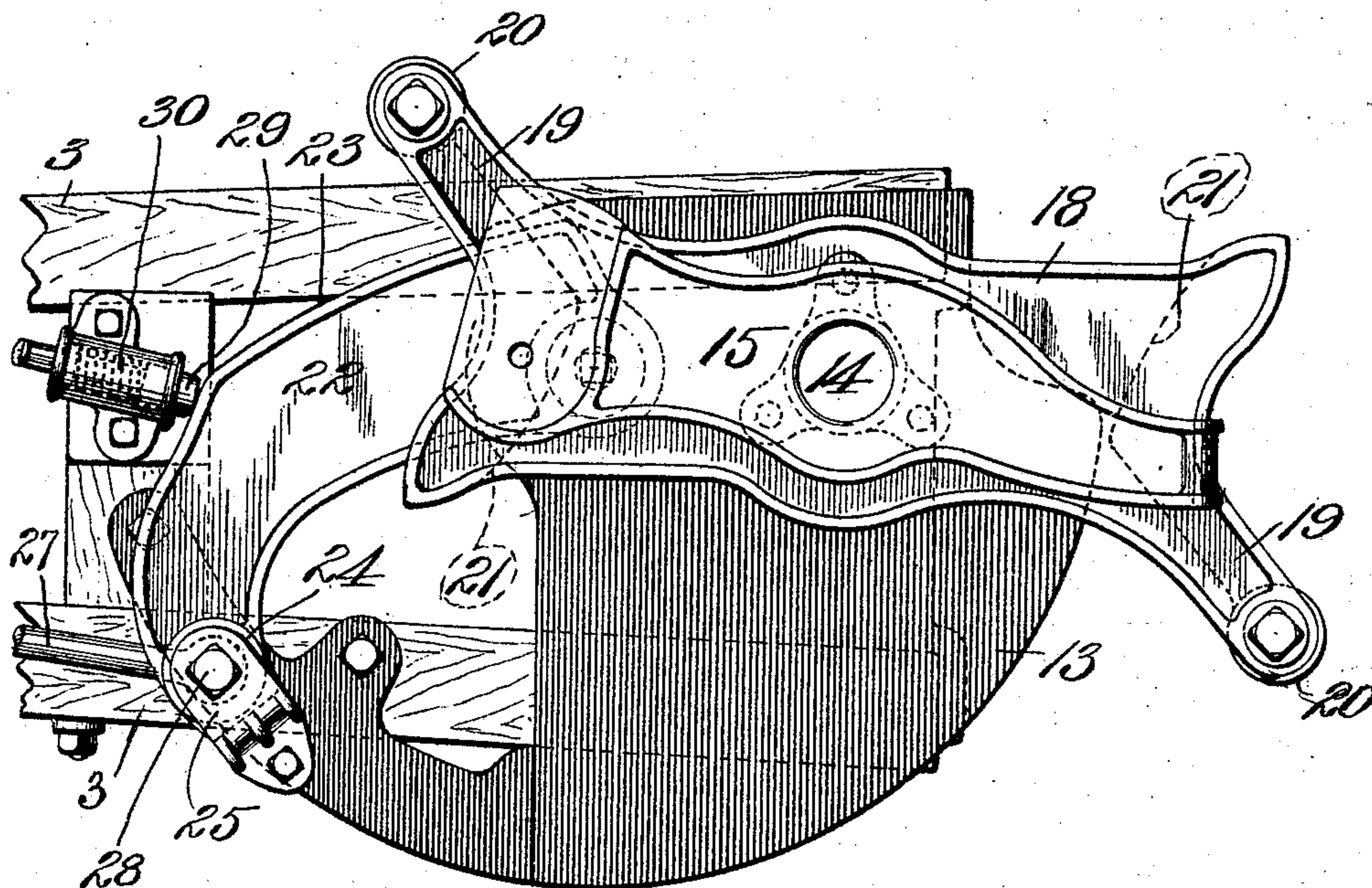
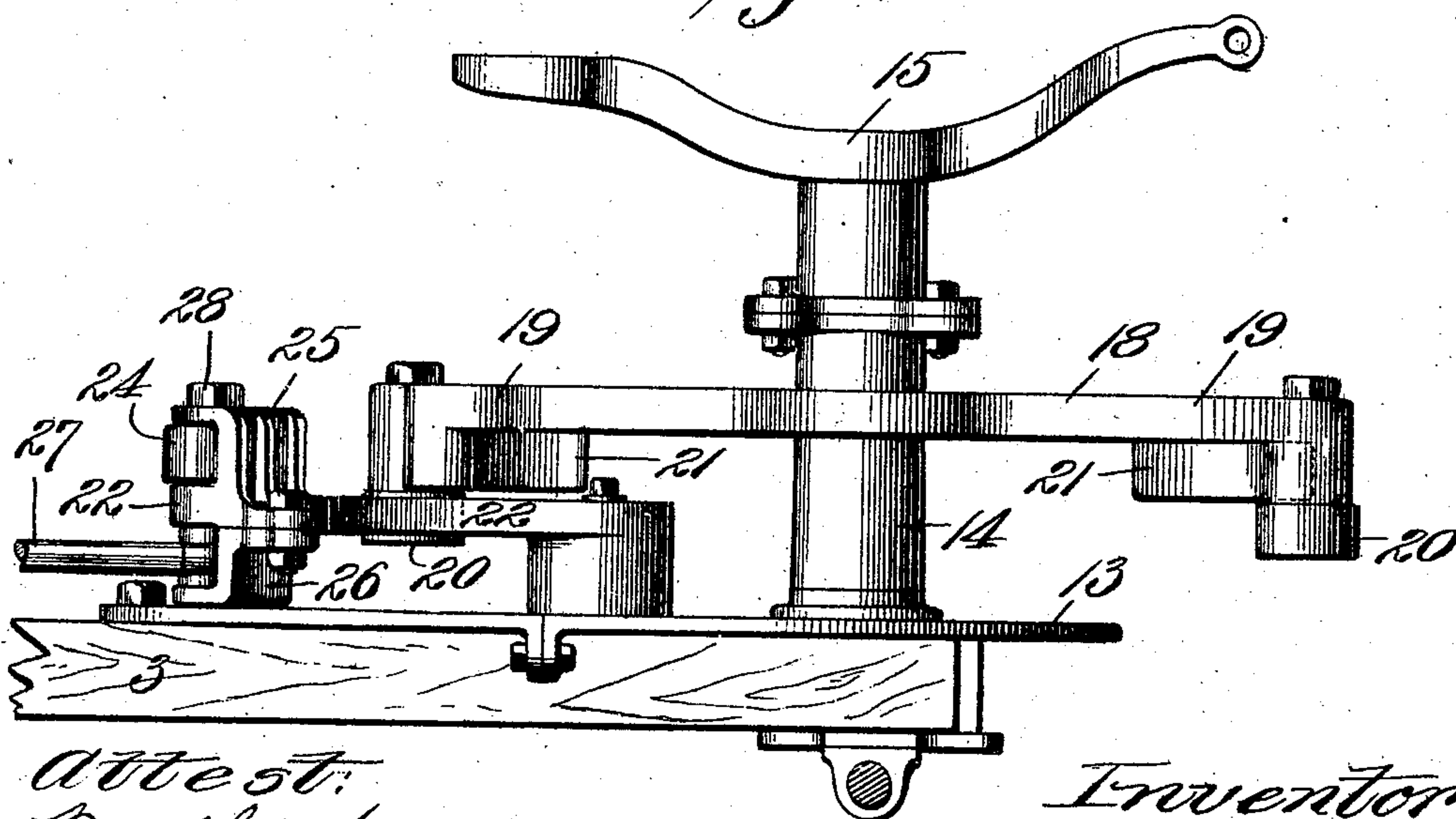


Fig. V.



Attest:
Wm. H. Scott
Blanche Hogan

Inventor:
H. L. Whitman,
by *Scott & Hunslett*
attys.

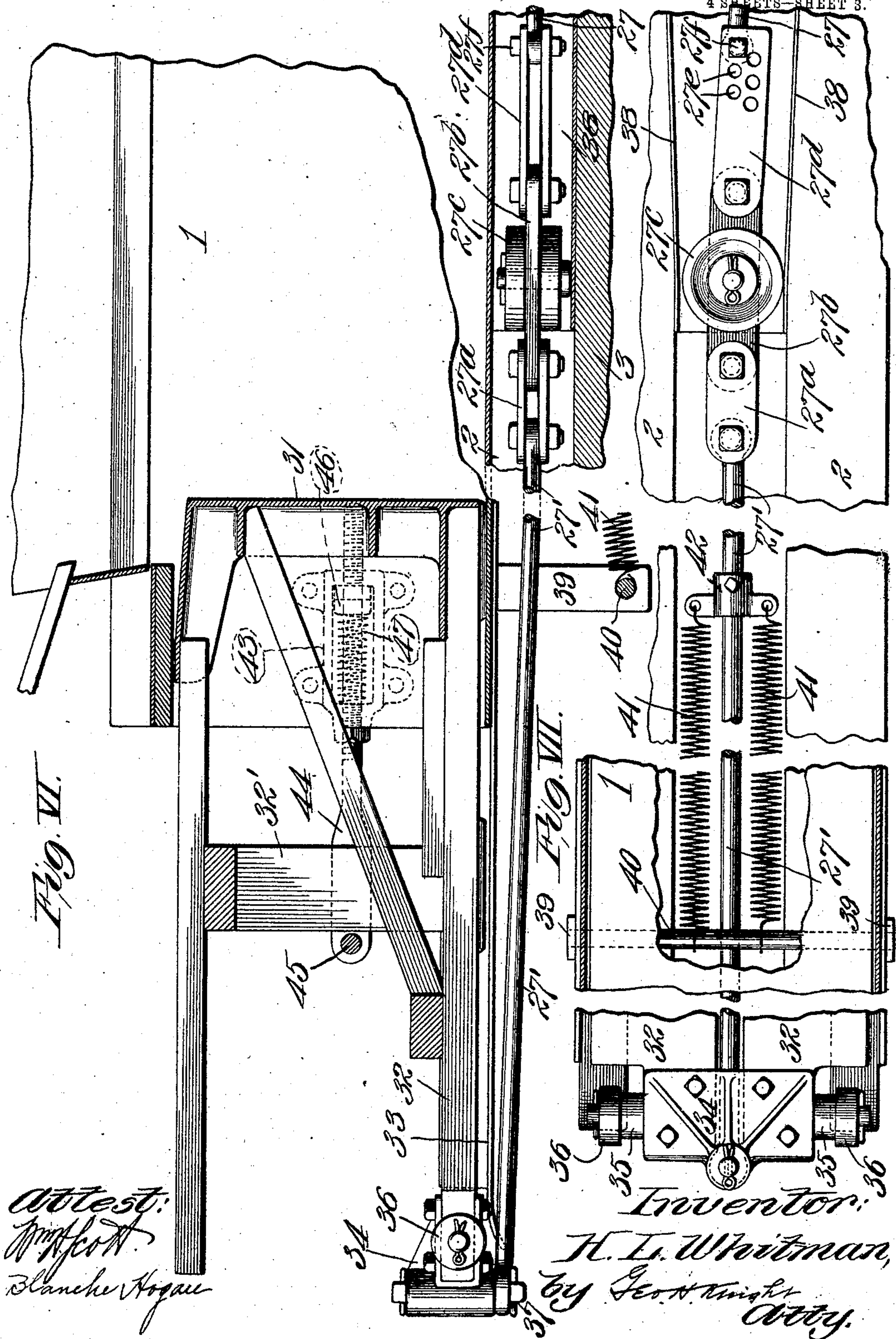
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4 SHEETS—SHEET 3.



Attest:
Blanche Hogue

Inventor:
H. L. Whitman,
by Geo. H. Knight
Atty.

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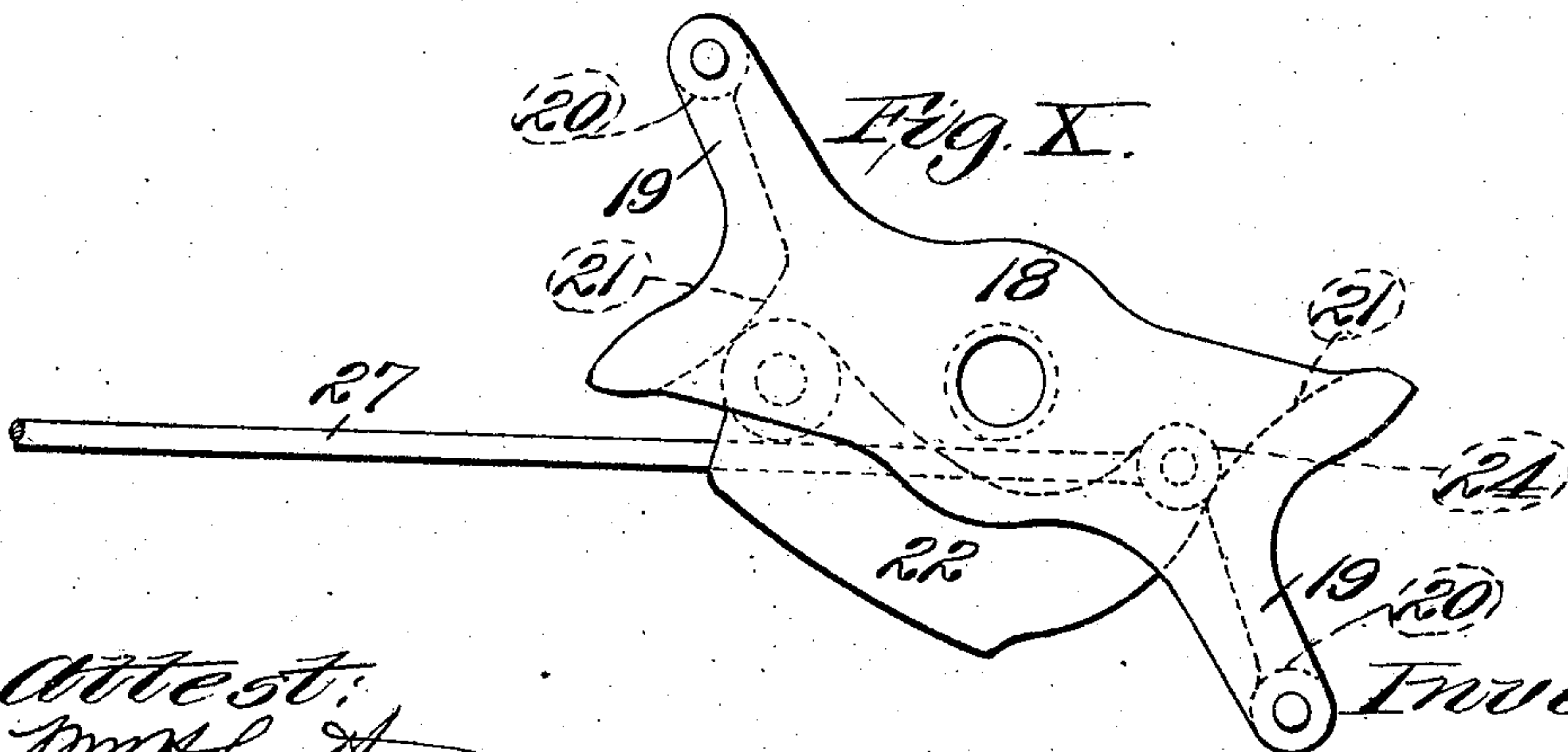
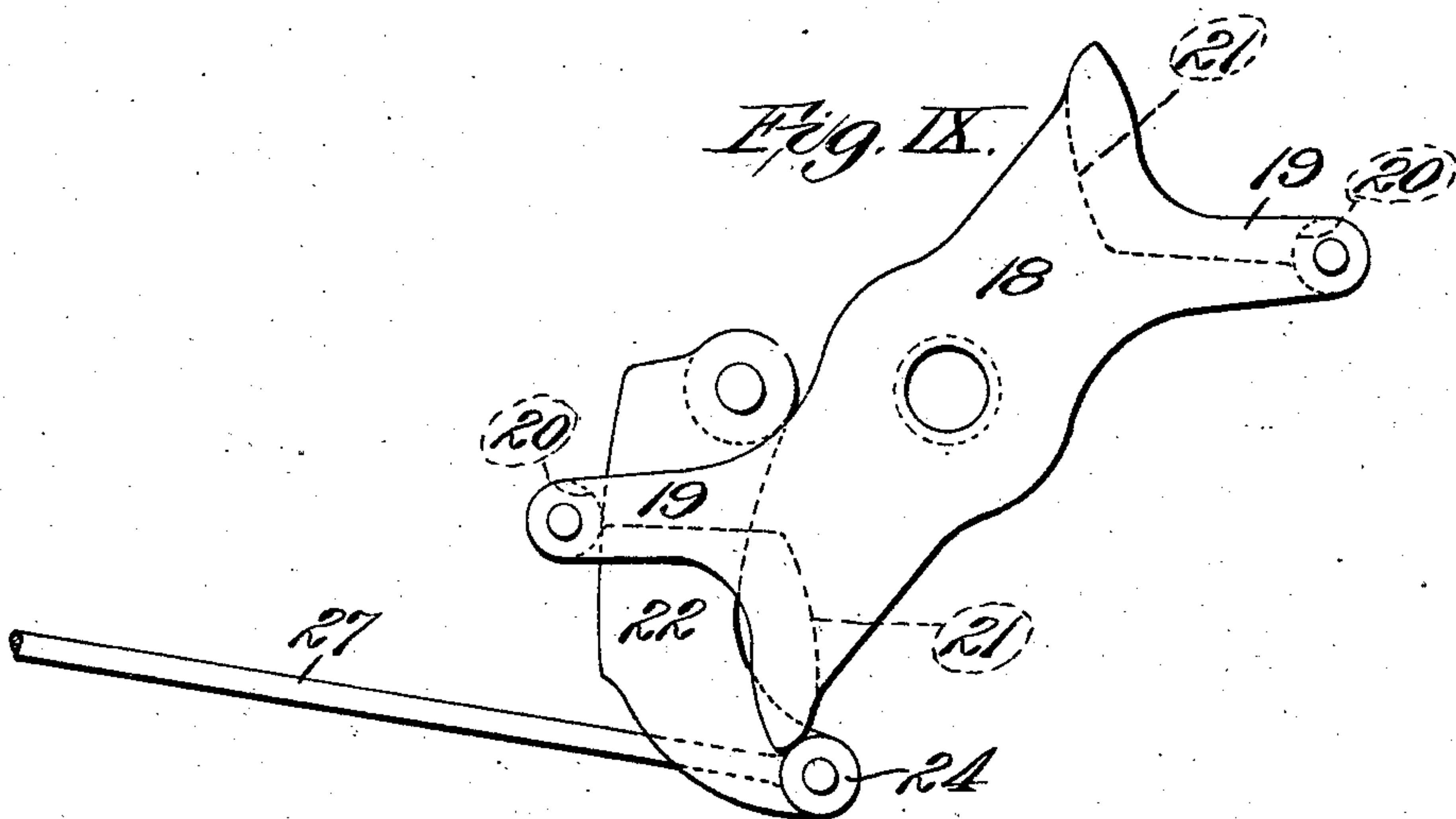
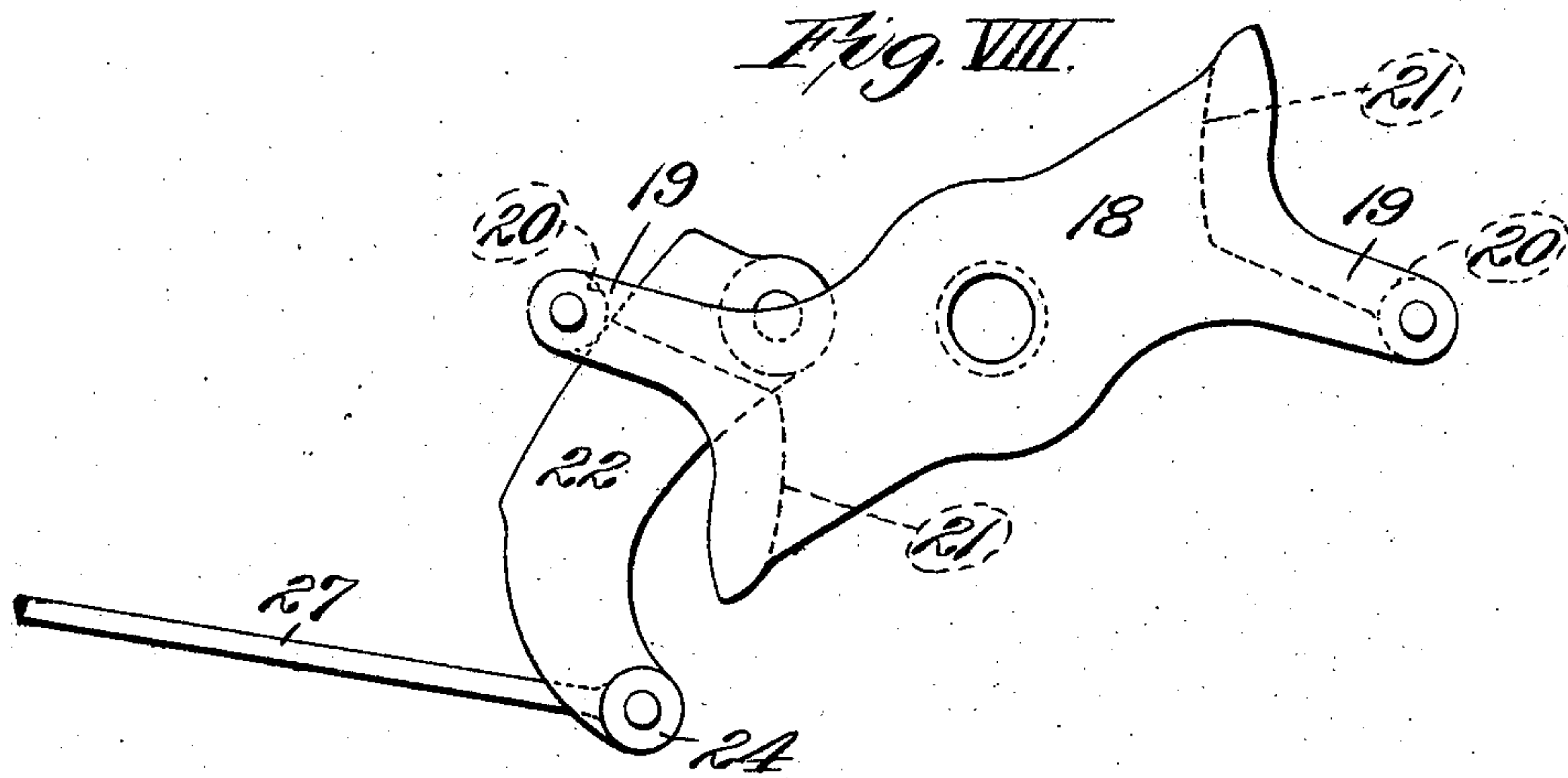
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BALING PRESS.

APPLICATION FILED AUG. 15, 1906.

4 SHEETS—SHEET 4.



Attest:
M. H. Scott.
Blanche Hogue

Inventor:
H. L. Whitman,
by Geo. H. Wright atty.

UNITED STATES PATENT OFFICE.

HENRY L. WHITMAN, OF ST. LOUIS, MISSOURI.

BALING-PRESS.

No. 849,874.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed August 15, 1906. Serial No. 330,667.

To all whom it may concern:

Be it known that I, HENRY L. WHITMAN, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Baling-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in that class of baling-presses used for baling hay or other materials, the present improvements having more particular reference to a novel form of power mechanism and means of connection between the power mechanism and the plunger of the press, also to an extensible framework in the press, whereby the parts may be adjusted into a contracted condition when the press is not in use and is being transported from place to place and into an extended condition to furnish ample space between the power mechanism and the baling-chamber for the passage of the draft-animals attached to the sweep of the press for the operation of the power mechanism, also to certain other details of construction of the press, as will hereinafter appear.

Figure I is a side elevation of my press with the frame members in extended condition. Fig. II is a top or plan view of the press in the condition illustrated in Fig. I. Fig. III is a side elevation of the press with the frame members in retracted position and the press proper supported by the truck-wheels utilized only when the press is being transported. Fig. IV is an enlarged top or plan view of the power end of the press. Fig. V is a side elevation of the power end of the press. Fig. VI is an enlarged vertical longitudinal section taken through the baling-chamber end of the press, partly broken out. Fig. VII is an enlarged horizontal section taken through the baling-chamber end of the press, partly broken out. Figs. VIII to X, inclusive, are diagrammatical views illustrating the movement of the power-head of the press and the pull-rod-operating lever actuated by said power-head.

1 designates the baling-chamber of my press, which is mounted upon supporting-sills 2, that constitute parts of the press-frame.

3 are power-mechanism-supporting sills

which are located beneath the baling-chamber sills and are susceptible of movement in a longitudinal direction beneath said baling-chamber sills.

4 are upper brackets secured to the baling-chamber sills. (See Figs. I to III, inclusive.) These upper brackets are provided with outwardly-projecting wings 5, and each wing is provided with a bolt-receiving hole.

6 and 8 are lower brackets secured to the power-mechanism sills 3 at distances from each other and provided with laterally-extending wings 7 and 9, respectively, containing bolt-receiving holes. When the press is to be put into operation, the power-mechanism sills 3 are drawn forwardly into the extended position (illustrated in Figs. I and II) and bolts 10 (see Fig. II) are inserted through the wings 5 and 7 of said upper and lower brackets 4 and 6, respectively, which mate with each other at this time, thereby connecting the baling-chamber sills 2 to the power-mechanism sills 3. When the press is to be transported, the power-mechanism sills 3 are retracted beneath the baling-chamber sills and the lower brackets 8 are thereby brought into mating positions with the upper brackets 4, as seen in Fig. III, after which the bolts 10 are inserted through the wings 5 and 9 of said mating brackets 4 and 8, respectively, to hold the upper and lower sills in united condition.

11 are guides fixed to one set of the sills—for instance, the baling-chamber sills 2—and by which the movement of the other power-mechanism sills 3 is directed when the power-mechanism sills 3 are being withdrawn or retracted beneath the baling-chamber sills.

12 are truck-wheels on which the press is supported when being transported and which are removed when the press is to be put into use for baling operation in order that the press may be located as close to the ground as possible.

13 designates a bed-plate mounted upon the power-mechanism sills 3.

14 is a post rotatably mounted on the bed-plate and bearing at its upper end a sweep-head 15, to which is connected the sweep 16 and sweep brace-rod 17. (See Figs. I to III, inclusive.)

18 designates a power-head of peculiar construction that is carried by the rotatable post

14 and is adapted to partake of the same movement as that imparted to the sweep-head 15 during the operation of the power mechanism. This power-head is provided at its ends with arms 19, having depending pins to which antifriction-rollers 20 are journaled. The power-head is also provided with approximately right-angle depending inwardly-projecting cams 21, extending from above the rollers 20, beneath the arms, across the power-head to the opposite corners of the latter, the diverging working faces of which are at their inner sides—in other words, at the sides which face the power-head-supporting post 14. The cams 21 are located nearer the axis of the power-head 18 than the rollers 20, and they are adapted to operate upon a pull-rod-operating lever 22 to draw the pull-rod in contradistinction to pushing it, as hereinafter more particularly referred to, after said lever has been operated upon by the rollers 20.

22 designates the pull-rod-operating lever pivoted at one end to the bed-plate 13. The lever 22 is provided with an outer or rear bearing-face 23, that is adapted to be engaged by either of the antifriction-rollers 20, carried by the power-head 18. Mounted upon a pin at the free end of the lever 22 is an antifriction-roller 24, which is adapted to be engaged by the power-head cams 21 after a partial movement has been imparted to said lever through the medium of either of the antifriction-rollers 20 during the rotation of the power-head. The roller 24 is mounted between the upper side of the lever 22 and an overhanging yoke-arm 25, which is preferably integral with said lever. Secured to the lever at its under side is a strap 26, between which and the lever the forward end of a pull-rod member 27, leading to the plunger of the press, is held. The antifriction-roller 24 and the forward end of the pull-rod are secured to the free end of the lever 22 by a bolt 28, passing through said lever and through the yoke-arm 25 and strap 26.

In the operation of the power mechanism the antifriction-rollers 20, carried by the power-head 18, operate in turn against the bearing-face 23 of the pull-rod-operating lever 22 during each complete rotation of the power-head and by so operating act to impart a forward swinging movement to said lever, thereby causing it to exert a pull upon the pull-rod member 27. Each antifriction-roller 20 acts upon the lever 22 until said lever is moved from the position illustrated diagrammatically in Fig. VIII to the position illustrated diagrammatically in Fig. IX, and when the power head and lever of the mechanism have reached the position in the last-mentioned figure the antifriction-roller 24, carried by said lever, has been moved into juxtaposition with the outer end of the

power-head cam 21, located at the end of the power-head corresponding to that which carries the antifriction-roller 20, that is in action against the lever 22. The cam 21, just referred to, then impinges against the antifriction-roller 24, and as the power-head continues its rotation said antifriction-roller is caused to ride along the inside face of said cam, with a result of continuing the operation of the lever 22 through the medium of the power-head. This actuation of the lever is continued until the antifriction-roller 24 and pull-rod-operating lever reach the position illustrated diagrammatically in Fig. X, the position of these parts, as there shown, being the maximum of their forward movements. As the power-head continues its travel the antifriction-roller 24 rides off of the cam 21 and the lever 22 is permitted to return to its former position and carries the pull-rod with it. It is to be noted that the cams 21, being located nearer the axis of the power-head 18 than the antifriction-rollers 20, an increase of power is obtained, while the lever 22 is being operated through the medium of said cams over that which is obtained while said antifriction-rollers are operated against said lever. As a consequence a rapid movement is imparted to the lever during the period that the antifriction-rollers are bearing thereagainst, and a more powerful operation of the lever is obtained during the period that the cams are operating against the lever, so that the pressing action upon each charge of the material being baled increases in degree as the plunger of the press is moved forwardly, due to the connection between it and the pull-rod member 27.

29 is a spring-controlled bumper located at the rear of the lever 22 in a housing 30 and adapted to receive the impact of said lever and project into a slight recess or depression in the outer or rear bearing-face 23 when the lever returns to its normal position after it is operated through the medium of the power-head, thereby providing for the cushioning of said lever and the avoidance of shock to the lever and the parts connected thereto.

The plunger of my press is located at the extreme rear end of the baling-chamber and is adapted to move forwardly in said chamber for pressing action instead of rearwardly for pressing action, as usual in baling-presses.

31 is the head of my plunger, which is carried by a frame 32, that is guided upon track-rails 33, preferably of angle form in cross-section, and which are located at the bottom of the baling-chamber.

34 is a block or yoke secured to the lower portion of the plunger-frame 32 and provided

with laterally-extending arms 35, to which are journaled antifriction-rollers 36, that are adapted to ride on the track-rails 33 during the reciprocation of the plunger in the baling-chamber.

The pull-rod of the press leads from the lever 22 of the power mechanism of the press to the frame of the press-plunger, and this pull-rod is composed of various sections to provide flexibility therein that is necessary due to the movement of the plunger being a reciprocatory one and the movement of the pull-rod-operating lever being a rocking one.

27' is the rear section of the pull-rod, which is pivoted at 37 to the plunger-carried block 34 at its rear end. (See Figs. VI and VII.)

Located between the forward or main member of the pull-rod are the following parts: 27^a are links connected to the forward end of the pull-rod section 27', and 27^b is an intermediate link pivoted to the links 27^a and having journaled thereto upper and lower antifriction-rollers 27^c. 27^d are forward links pivotally connected to the intermediate link 27^b and also to the rear end of the forward or main pull-rod member 27. The forward links 27^d are provided with a plurality of staggered pin-holes 27^e, either of which is adapted to receive the pin or bolt 27^f, that connects the forward pull-rod member to said links, thereby providing for adjustable attachment between said parts in order that the entire pull-rod may be lessened or increased in length, according to the movement it may be desired to impart to the plunger of the press. The antifriction-rollers 27^c are inclosed within a funnel-shaped guide-casing 38, by which the flexible members of the pull-rod are directed during their movement, said casing being made funnel-shaped for the purpose of permitting freedom of movement of said parts to a limited degree.

The elasticity in the hay or other materials being baled is sufficient in some instances to cause rebound of the plunger after each pressing action; but to provide for the positive return of the plunger after its forward and pressing movement has taken place I utilize retracting means that will now be described: 39 are legs depending from fixed portions of the press and in which is supported a cross-rod 40. (See Figs. I, III, VI, and VII.) 41 are retractile springs each having one of its ends attached to said cross-rod and its other end attached to a collar 42, mounted in a fixed position on the pull-rod of the press, this collar being preferably applied to the rear pull-rod section 27'.

When the pull-rod is drawn forwardly under the action of its operating-lever 22, the springs 41 are expanded to a degree sufficient to permit the desired forward movement of the press-plunger, and when the pull-rod-

operating lever is freed in the manner described the springs act to return the plunger, the pull-rod, and the pull-rod-operating lever to their normal positions.

For the purpose of cushioning the press-plunger upon its rearward movement to avoid shock thereto I provide the following parts: 43 are boxes rigidly mounted at the side of the baling-chamber. 44 are rods loosely mounted in the boxes 43, and in the rear ends of which is mounted a bumper-rod 45, that is adapted to be struck by an upright member 32' of the plunger-frame. The rods 44 have applied to them within the boxes 43 one or more nuts 46, between which and the rear ends of the boxes are cushion-springs 47. It will be seen that when the plunger reaches the rear end of its stroke its frame will come in contact with the bumper-rod and cause the rods 44 to be drawn rearwardly and the springs 47 to be compressed and cushion the plunger in a manner to prevent sudden shock thereto on the completion of its rearward movement.

One feature of my baling-press to which I wish to direct particular attention is that of the plunger of the press being located in and operating through the rear end of the baling-chamber and the pull-rod by which the plunger is operated being connected to said plunger entirely exterior of the baling-chamber, thereby avoiding the necessity of any channel or slot in the bottom of the baling-chamber through which the connection between the plunger and the pull-rod operate.

I am aware that baling-presses have heretofore been constructed in which the plunger operates in the rear end of the baling-chamber and the pull-rod is attached to the plunger by a connection that works through the chamber; but this form of construction is objectionable for the reason that the baling-chamber is weakened, due to the presence of the slot therein, and, moreover, it is necessary to provide plates at the sides of said channel, which adds materially to the expense of the construction of the press, all of which is eliminated in my construction.

Another feature of my press to which I wish to direct attention is that of the spring-controlled bumper 29 being located in such a position relative to the lever 22 that its lever, receiving face faces the pivot-point of said lever, thereby causing the force of the blow between said lever and bumper to be directed toward said pivotal point as distinguished from the force of the blow being directed at an angle to said point. This feature is valuable in that it prevents the bumper from causing rebound of the lever.

I claim—

1. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having

connection with said plunger, an operating-lever to which said pull-rod is connected, and a rotatable power-head provided with an arm and an inwardly-projecting cam arranged for successive operation upon said lever, substantially as set forth.

2. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, and a rotatable power-head provided with an arm and an inwardly-projecting cam arranged for successive operation upon said lever; said cam being located closer to the axis of said power-head than the portion of said arm at which engagement with said lever is effected, and having its working face opposed to the axis of the power-head, substantially as set forth.

3. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, and a rotatable power-head provided with an arm and an inwardly-projecting cam arranged for successive operation upon said lever; said cam having its working face located at its side nearest to and opposing the axis of said power-head, substantially as set forth.

4. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, a rotatable power-head, a pin having an antifriction-roller and carried by said power-head and adapted to engage said lever, and an inwardly-projecting cam carried by said power-head and adapted to actively engage said lever after it has been engaged by said pin, substantially as set forth.

5. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, a rotatable power-head, a pin having an antifriction-roller and carried by said power-head and adapted to engage said lever, and an inwardly-projecting cam carried by said power-head and adapted to engage said lever; said cam being located closer to the axis of said power-head than said antifriction-roller and having its working face opposing the axis of said power-head, substantially as set forth.

6. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, a rotatable power-head, an antifriction-roller carried by said power-head and adapted to engage said lever, and a cam carried by said power-head and adapted to engage said lever after the lever has been engaged by said

antifriction-roller; said cam being located closer to the axis of said power-head than said antifriction-roller and having its working face at its side nearest the axis of said power-head, substantially as set forth.

7. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, an operating-lever to which said pull-rod is connected, a pin having an antifriction-roller and carried by said lever, a power-head, a pin having an antifriction-roller and carried by said power-head and arranged for engagement with said lever, and an inwardly-projecting cam carried by said power-head and arranged for engagement with the antifriction-roller carried by said lever, substantially as set forth.

8. The combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, power mechanism for actuating said pull-rod, means for retracting said pull-rod, and cushioning means, associated with said plunger, comprising a pair of spring-controlled rods, and a bumper-rod adapted to be engaged by said plunger, substantially as set forth.

9. The combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, power mechanism for actuating said pull-rod, means for retracting said pull-rod, and cushioning means associated with said plunger; said cushioning means comprising a pair of spring-controlled rods, and a bumper-rod supported by said spring-controlled rods and adapted to be engaged by said plunger, substantially as set forth.

10. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger, and means for operating said pull-rod; said pull-rod being composed of a rear section, rear links pivoted to the forward end of the rear section, an intermediate link pivoted to the rear links, forward links pivoted to the intermediate link, and a main member pivoted to the forward links, substantially as set forth.

11. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger and composed of a rear section, rear links pivoted to the forward end of the rear section, an intermediate link having upper and lower antifriction-rollers and pivoted to the rear links, forward links pivoted to the intermediate link, and a main member pivoted to the forward links, a funnel-shaped casing for guiding the rollers, and means for operating said pull-rod, substantially as set forth.

12. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod having connection with said plunger and composed of a rear section, rear links, pivoted to the forward end of the rear section, an interme-

5 diate link pivoted to the rear links, forward links having a plurality of staggered pin-holes and pivoted to the intermediate link, and a main member, having a pin whereby it is adjustably pivoted to one of the pin-holes, and means for operating said pull-rod, substantially as set forth.

10 13. In a baling-press, the combination of a baling-chamber, a plunger, a pull-rod, an operating-lever having a slight recess or depression in its outer or rear bearing-face, to which said pull-rod is connected, means for

operating said lever, and a bumper for said lever arranged at the rear of the lever and having its lever-receiving face presented toward the pivotal point of the lever and adapted to enter the slight recess or depression, substantially as set forth. 15

In testimony whereof I have hereunto set my hand this 30th day of July, 1906.

HENRY L. WHITMAN.

In presence of—

E. S. KNIGHT,
WM. H. SCOTT.