

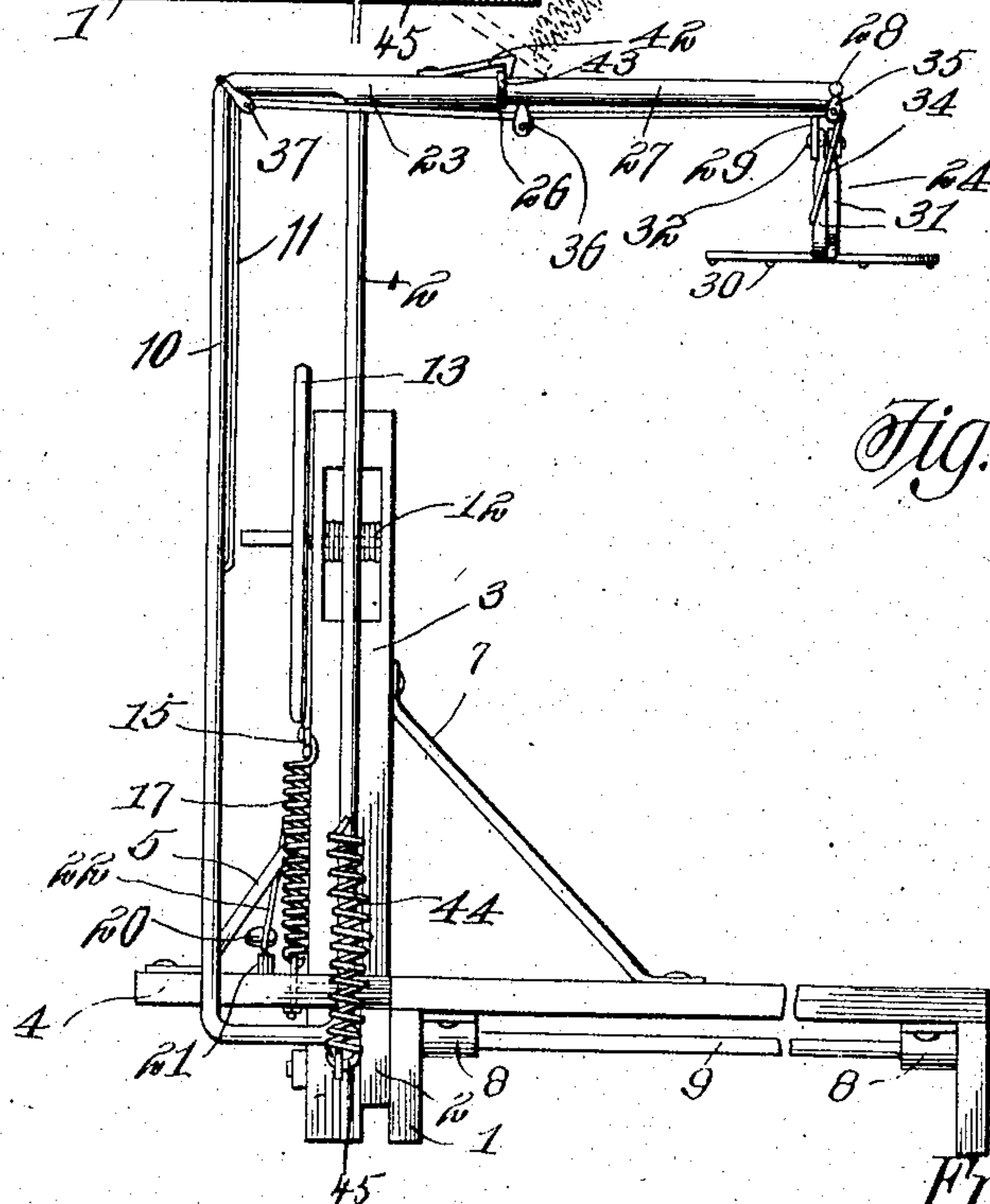
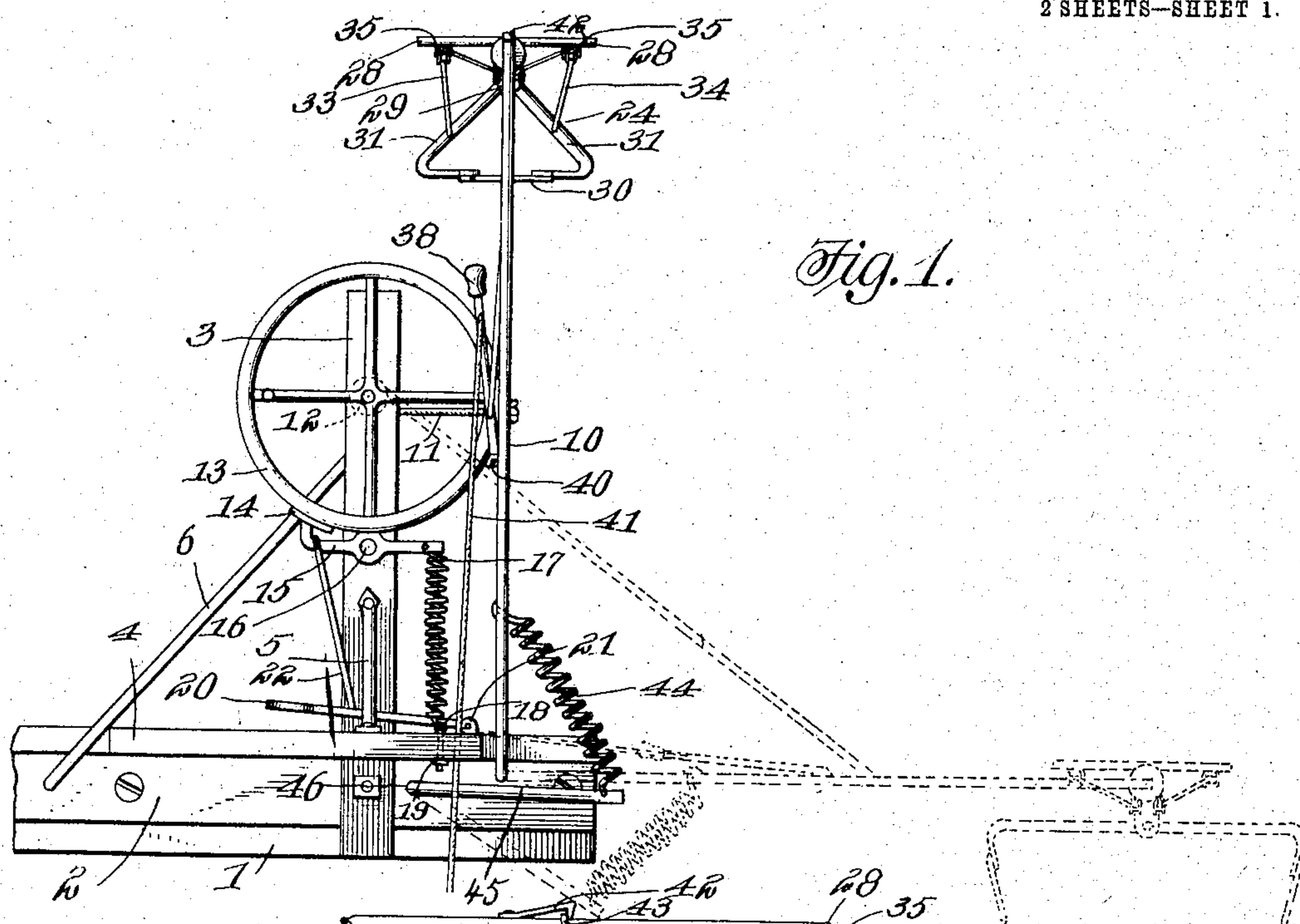
No. 781,092.

PATENTED JAN. 31, 1905.

F. S. PIERCE.
GRAIN OR FODDER LOADER.

APPLICATION FILED APR. 28, 1904.

2 SHEETS--SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

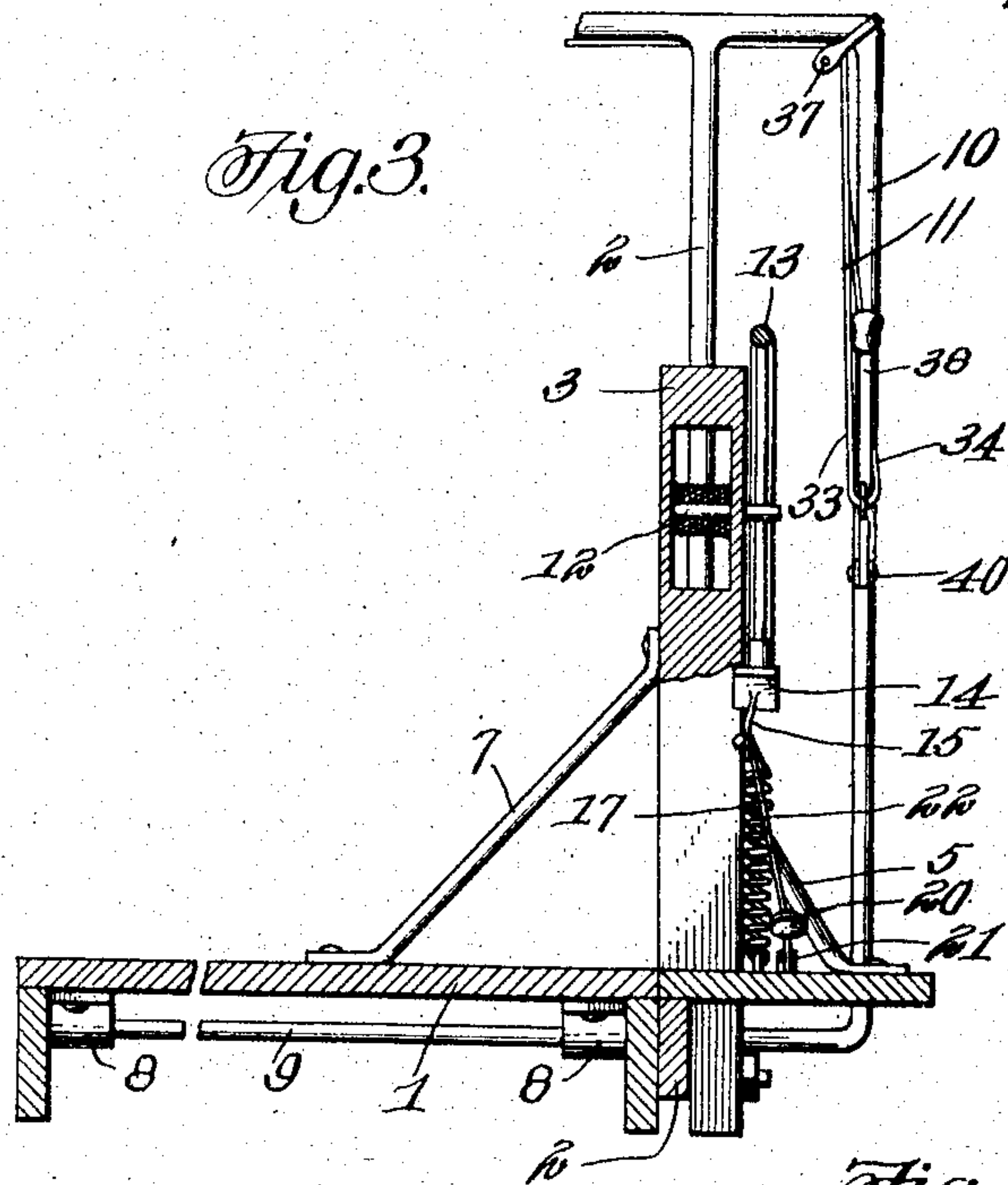


Fig. 4.

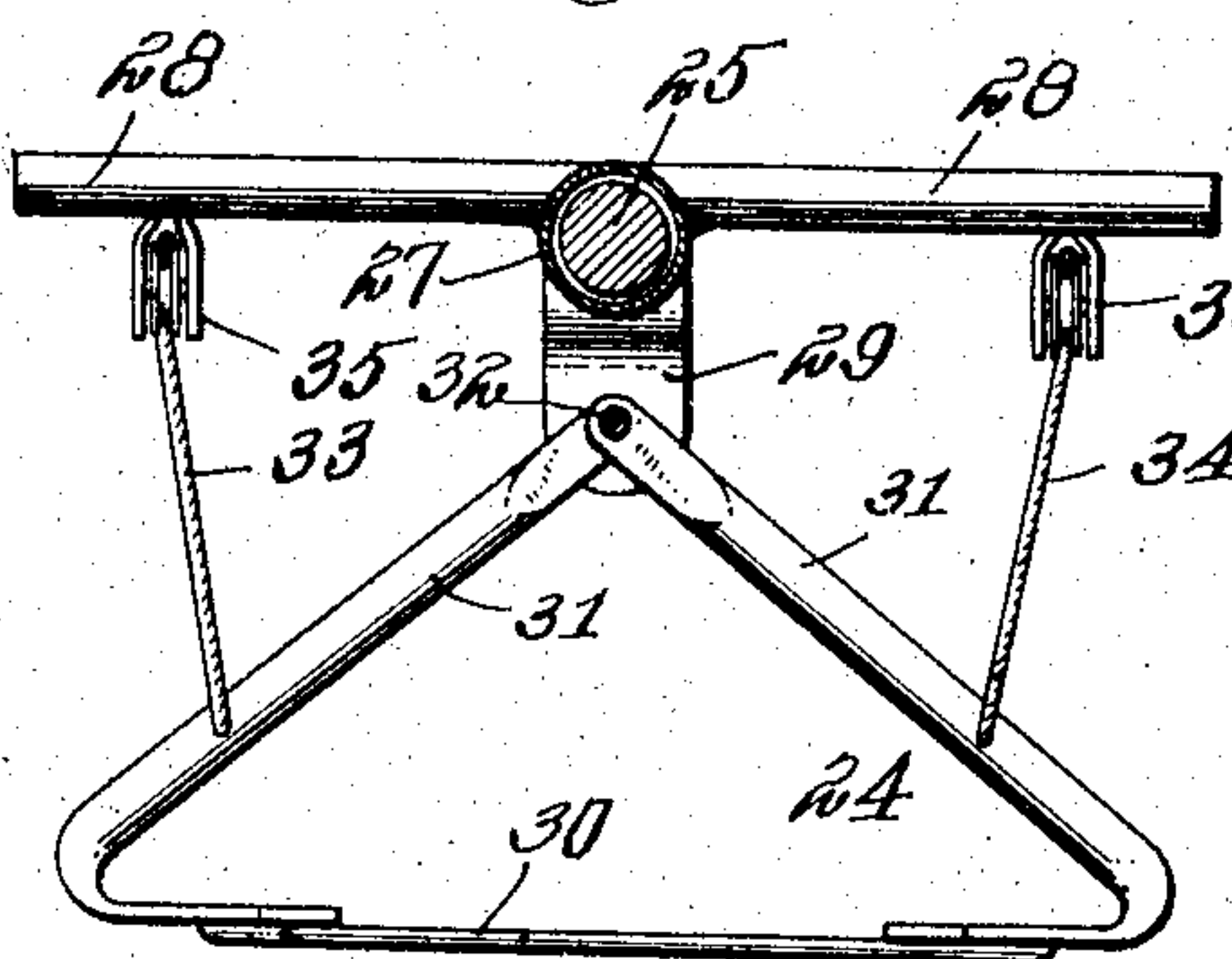


Fig. 5.

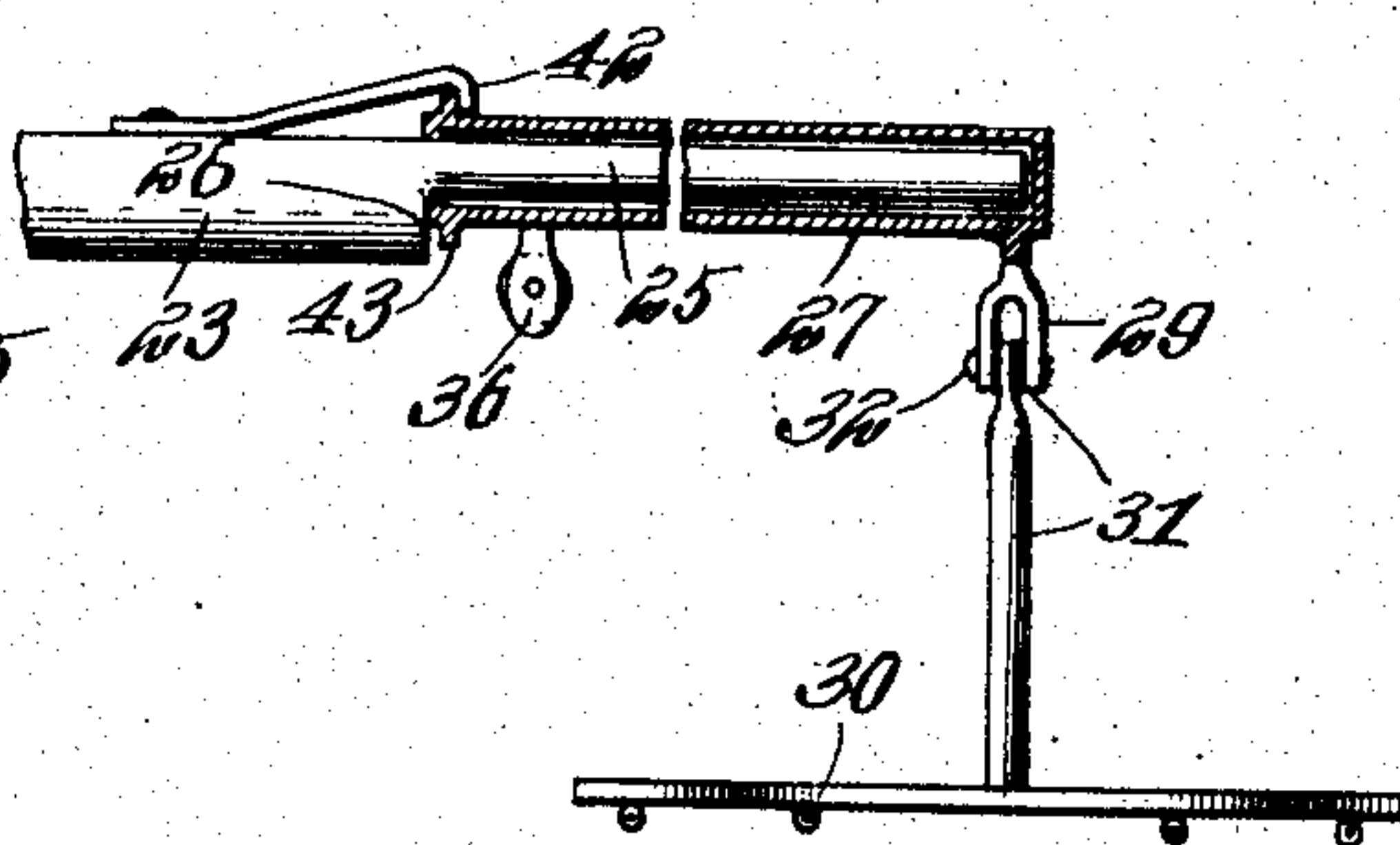
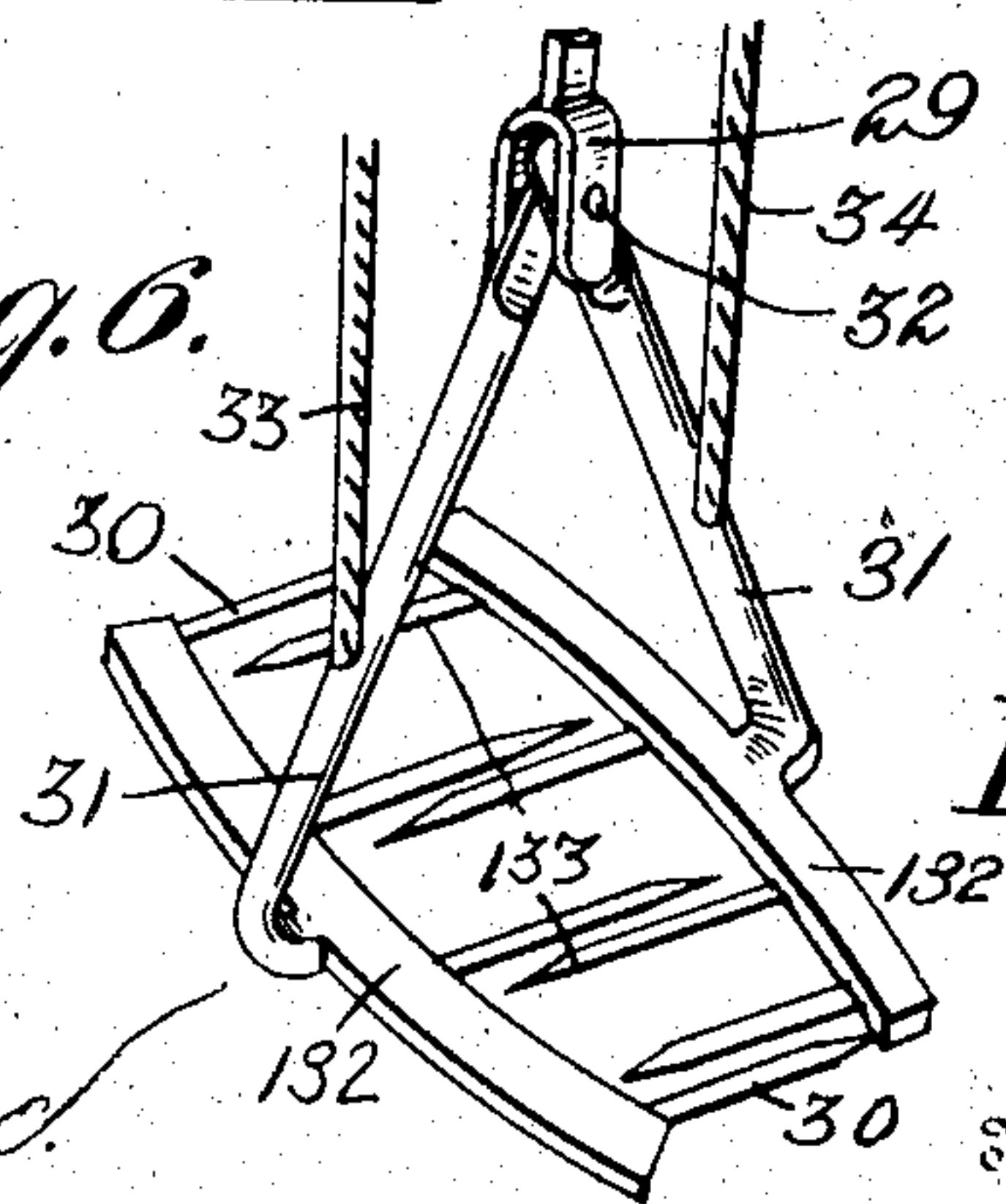


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK S. PIERCE, OF MINNEAPOLIS, KANSAS.

GRAIN OR FODDER LOADER.

SPECIFICATION forming part of Letters Patent No. 781,092, dated January 31, 1905.

Application filed April 28, 1904. Serial No. 205,391.

To all whom it may concern:

Be it known that I, FRANK S. PIERCE, a citizen of the United States, residing at Minneapolis, in the county of Ottawa and State of Kansas, have invented certain new and useful Improvements in Grain or Fodder Loaders; 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 a grain and fodder loading apparatus for use in the field for loading shocks of grain or fodder upon a wagon or rack.

The objects of the invention are, first, to provide an apparatus of this kind which may be mounted upon the rear end of the wagon or rack bed and employed to handle an entire shock, thus preventing the waste of grain occasioned by the separate handling of the sheaves and at the same time effecting a saving of time and labor over the customary operation; second, to provide an improved crane and operating mechanism therefor whereby the operation of the entire apparatus may be controlled by one man; third, to provide means for governing and facilitating the handling of the crane, and, finally, to generally simplify and improve the construction and increase the general efficiency of this class of apparatus.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a rear elevation of a loading apparatus embodying my invention, showing it as applied in use and illustrating in full and broken lines the operation of the parts. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section taken on the irregular line 3 3 of Fig. 1. Fig. 4 is a cross-section through the crane-arm and swinging head or sleeve, showing the construction of the grapple; and Fig. 5 is a longitudinal section through the outer end of the crane-arm, swinging head or sleeve, and grapple. Fig. 6 is a detail perspective view of the grapple.

Referring to the drawings, 1 represents the rear portion of the bed of a wagon-body or rack, to the outer end of which is secured a transverse bar or beam 2, from which rises a fixed standard or mast 3, bolted or otherwise secured at its lower end to said bar and rear cross-piece of the bed 1. Secured to and projecting rearwardly from the bar 2 is a platform 4, on which the operator stands to control and direct the movements of the parts of the loading apparatus. This platform is stayed by a brace 5 from the standard 3, and the latter is stayed from the bed 1 and bar 2 by braces 6 and 7.

Journaled in bearings 8 on the bed 1 is a rock-shaft 9, which extends longitudinally of the bed and projects beyond the rear end thereof. Fixed to the projecting end of this shaft is a swinging crane 10, which may be of any approved general construction. As shown, this crane 10 is mounted at its lower end upon the shaft 9 to swing beyond one side of the bed 1 and transversely of said bed. The operation of the crane is controlled through the medium of a cable 11, connecting the same with a winding-drum or windlass 12, mounted upon the standard 3. One end of this windlass carries a crank-wheel 13, by which the windlass may be turned to wind up or pay out the cable 11, and thus swing the beam toward the bed or allow it to swing downwardly and laterally beyond one side of the same. The crank-wheel 13 is adapted to be held against movement by brake mechanism comprising a brake-shoe 14, mounted upon one end of a rocking lever 15, pivoted intermediate of its ends, as shown at 16, to the standard 3 below said wheel and connected at its opposite end to the upper end of a spring 17, which is secured at its lower end to an eyebolt 18, passing downward through the platform 4, and having upon its lower end an adjusting-nut 19, whereby it may be adjusted to regulate the tension of said spring. The function of the spring 17 is to pull down upon the lever 15 and throw the brake-shoe 14 into engagement with the periphery of the wheel 13, whereby the latter will be locked from movement, thus preventing the windlass from turning, and thereby allowing the crane to be held in any de-

sired position in its path of movement. The foot-lever 20 is pivoted at one end, as shown at 21, to the platform 4 and is connected with the brake-shoe end of the lever 15 by a link, 5 connecting-rod, or a suitable flexible connection 22, so that by depressing said lever the brake-shoe 14 may be moved downward and released from engagement with the crank-wheel, allowing the windlass to be operated.

10 The crane 10 is provided at its outer or free end with an arm 23, extending at right angles thereto and in a direction longitudinally of the body, so as to swing to a position above the center of the bed 1 when the crane is 15 moved inwardly. A shock-grapple 24 is mounted upon the free end of this arm and is applied thereto and constructed as follows: The free end of the arm 23 is reduced to form a journal and supporting portion 25, having 20 at its inner end a shoulder 26, and on its journal portion a head or sleeve 27 is mounted to turn and carries at its outer end laterally-projecting rods or arms 28 and below the same is formed or provided with a bifurcated 25 hanger 29. The forks 30 of the grapple are carried by shanks 31, which are mounted upon a pivot pin or bolt 32 between the sides of the hanger 29 to permit the forks to swing toward and from one another. Each of the 30 forks comprises a transverse longitudinally-curved head 132, to the center of which one of the shanks 31 is attached, and a plurality of tines 133, adapted to pass through the shock when the forks of the grapple are closed 35 thereon from opposite sides. Secured to said shanks are cables 33 and 34, which pass upwardly and rearwardly over pulleys 35 on the rods or arms 28, thence through pulleys 36 and 37 on the head or sleeve 27 and crane 10 40 and extend downwardly to about intermediate the length of the crane, where they are connected to a grapple-controlling lever 38. This lever 38 is pivoted at one end 40 to one of the sides of the crane and has attached to 45 its opposite end a rope or cable 41, extending through the platform 4, whereby it may be operated. These cables 33 and 34 are connected to the lever 38 closer to its pivot end than to its outer end, so that when 50 said lever is turned back toward the platform 4 to lie substantially parallel with the crane, in which position it has passed a suitable distance beyond its pivotal center, the said lever 38 will be locked against reverse movement 55 and the cables 33 and 34 will be drawn upon to swing the forks of the cable open and maintain them in such position until the lever is released and swung forward. The function of the head or sleeve 27 is to allow the grapple 60 to have free oscillation upon the journal portion 25 of the arm 23 to adapt the grapple to adjust itself by gravity to always maintain a position below the arm. The head or sleeve is held upon the journal portion 25 by a dog

or catch 42 upon the arm 23, adjacent to the 65 shoulder 26, which dog engages a flange 43 upon the head or sleeve, and thus detachably holds the sleeve against outward movement, the shoulder 26 preventing inward move- 70 ment.

In order to easily and effectively control the action of the crane, I provide an automatic spring restrainer and starter which is adapted when the crane swings inward beyond the vertical to check the motion of the same, 75 thereby enabling the crane to be controlled without strain on the gearing, and when the crane is moved outward to effect an initial outward pull, thereby decreasing the amount of power necessary to swing the crane on its 80 outward movement. This device comprises a coiled expansion-spring 44, secured at one end to the under side of the crane 10 and at its opposite end to the free end of a swinging bar 45, pivotally connected to the beam 2, as 85 indicated at 46. This bar 45 extends beneath the shaft 9 or lower end of the crane 10 and is adapted to swing downward by gravity and is so related to said shaft that when the crane is swung outwardly and the spring 44 90 is lowered with the crane the free end of said bar 45 will drop downward and carry with it the spring, thus moving them out of the path of the crane and preventing interference. When the crane is swung upwardly and in- 95 wardly, however, as in the act of raising and depositing the load upon the wagon-bed, the bar 45 will be drawn upward with the spring until it contacts with the shaft 9 and is held 100 thereby from further movement, when the spring 44 will be permitted to extend as the crane swings inwardly beyond center, thereby resisting and preventing the crane from getting beyond control as it swings over the wagon-bed. When the crane is swung out- 105 wardly, the contraction and pulling action of the spring gives it an initial start, thus reducing the amount of power necessary to set it in motion.

Fig. 1 of the drawings shows the normal 110 position of the parts for transportation in full lines, from which it will be seen that the crane 10 is elevated and the forks of the grapple closed. As the wagon is driven across the field from shock to shock to load and transport 115 the same the operator, after the wagon arrives opposite a shock, first throws back the lever 38 to open the forks of the grapples and then releases the pressure of his foot on the brake-lever 20, allowing the spring 17 to throw the 120 brake-shoe 14 out of engagement with the crank-wheel 13, whereupon the cable 11 will unwind from the windlass 12 and allow the crane 10 to swing downward. The outward movement of the crane may be readily con- 125 trolled by means of the brake mechanism, and when the forks of the grapple have been lowered sufficiently to take position on opposite

sides of the shock to be loaded the lever 38 is released, allowing said forks to move toward each other and engage the shock, the weight of which will hold the forks closed during the upward and inward movement of the crane to load the shock upon the wagon. Upon the engagement of the forks with the shock the operator rotates the crank-wheel 13 to wind up the cable on the windlass 12 to swing the crane inwardly. When the crane has reached the limit of its inward movement and the shock is suspended above the bed of the wagon, the foot-lever 20 is again released, throwing the brake into operation to hold the windlass from movement, and the grapple-controlling lever 38 is pulled to release the forks and allow the shock to drop. The spring 44 now is expanded, and when the outward movement of the crane is started the spring contracts and assists the operator in swinging the crane past center.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be readily understood, and it will be seen that it provides an apparatus which will efficiently handle an entire shock and may be conveniently operated by one man from the platform 4, thus saving waste of grain and a large amount of labor in loading the shock upon the wagon or rack.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In a loading apparatus of the character described, the combination with a supporting-frame, of a swinging crane, an arm carried by the crane, an oscillating head or sleeve carried by said arm, a grapple comprising forks pivoted to said head or sleeve, arms projecting laterally from the head or sleeve and provided with guides, and cables connected to the forks and passing through said guides and adapted to be operated to control the forks substantially as described.

2. In a loading apparatus of the character described, the combination with a support, of a swinging crane, means for controlling the action of the crane, a swinging arm limited in its upward movement by the crane, and a spring connecting said crane with said arm, substantially as described.

3. In a loading apparatus of the character described, the combination with a supporting-frame, of a swinging crane, a windlass for operating said crane, a wheel for operating said windlass, a brake-lever having a brake-shoe to engage the wheel, a spring for projecting said brake-shoe, and means for retracting the brake-shoe against the tension of said spring.

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

FRANK S. PIERCE.

Witnesses:

J. W. BARKER,
ED. A. DAVIS.