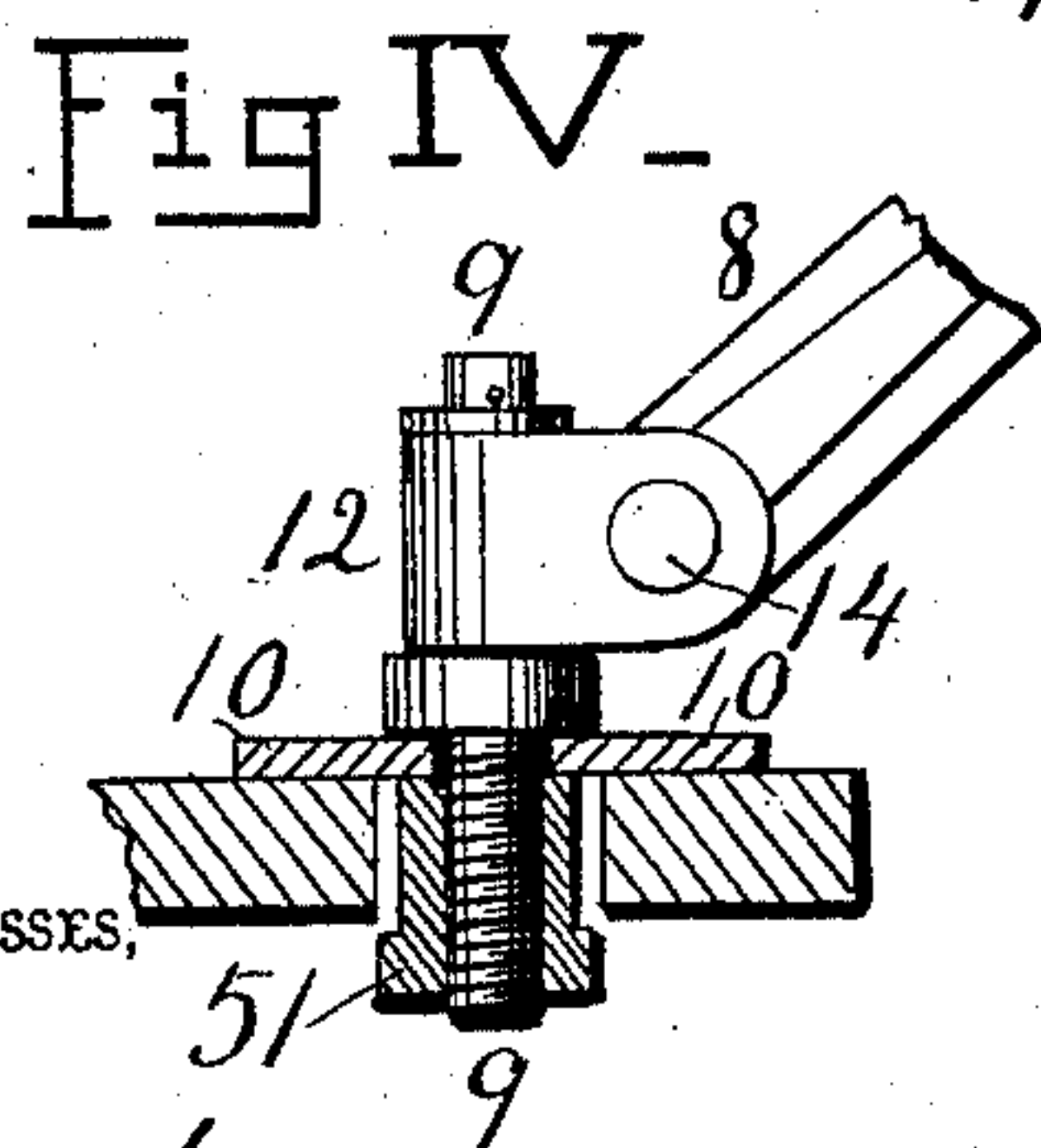
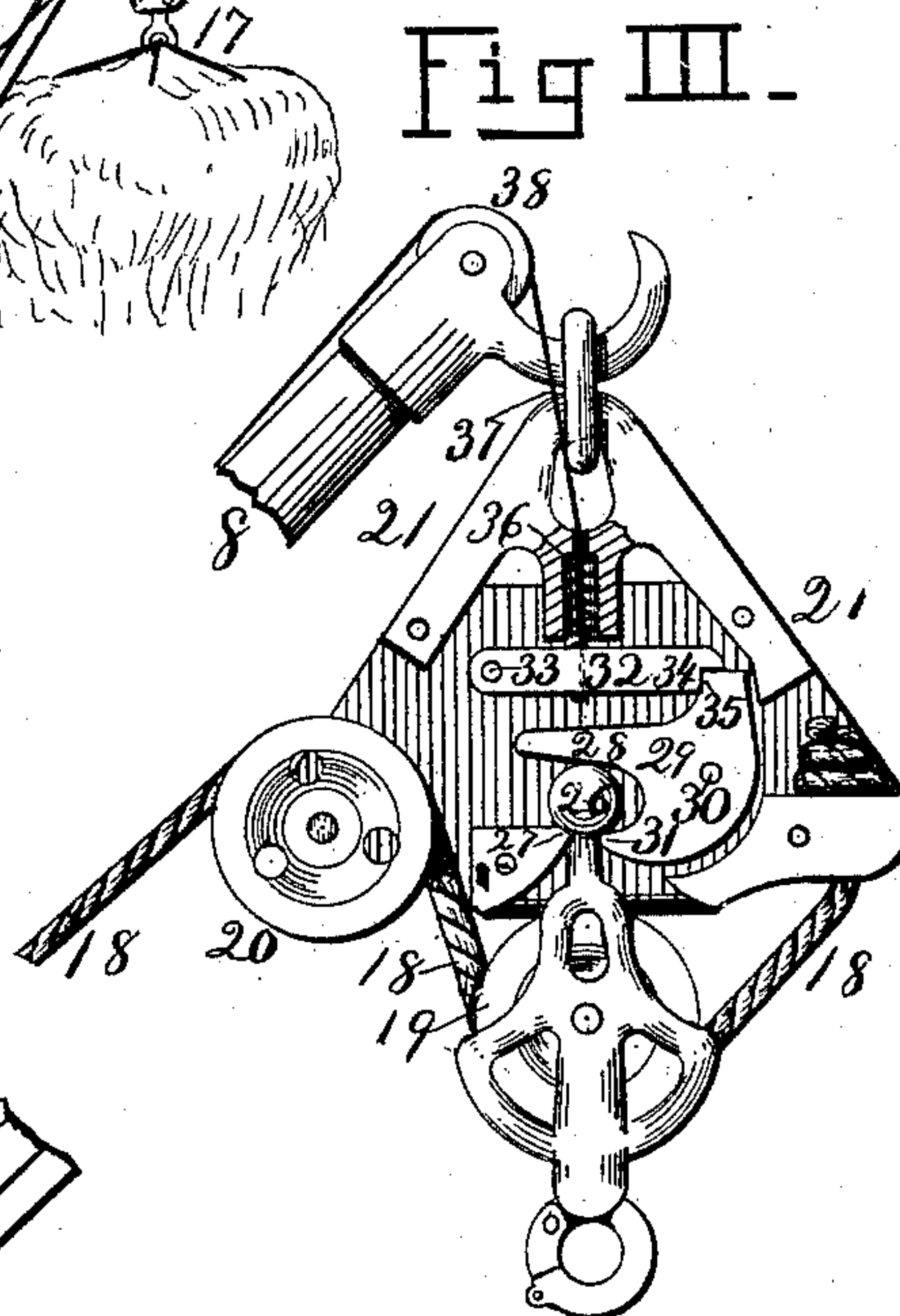
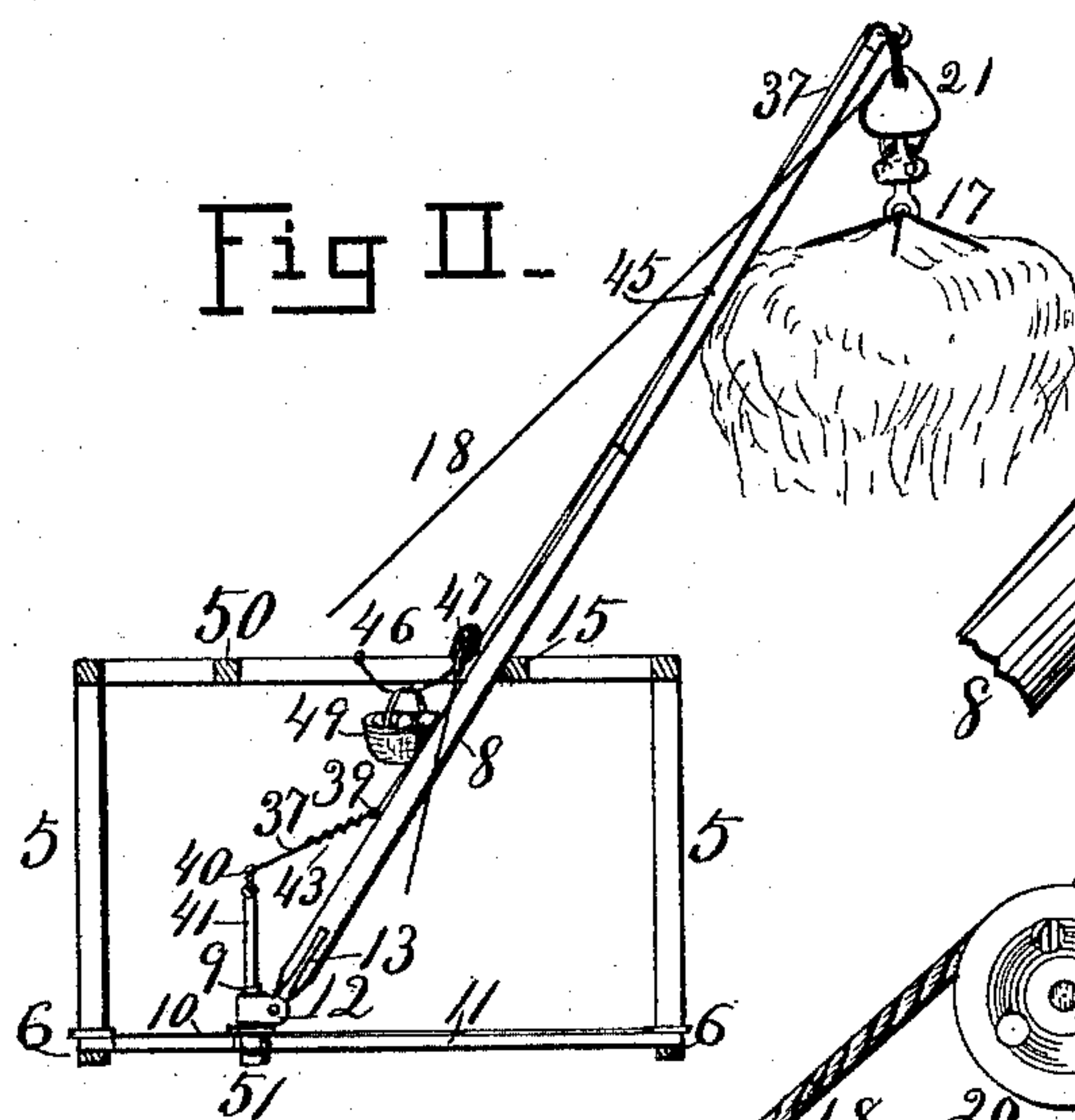
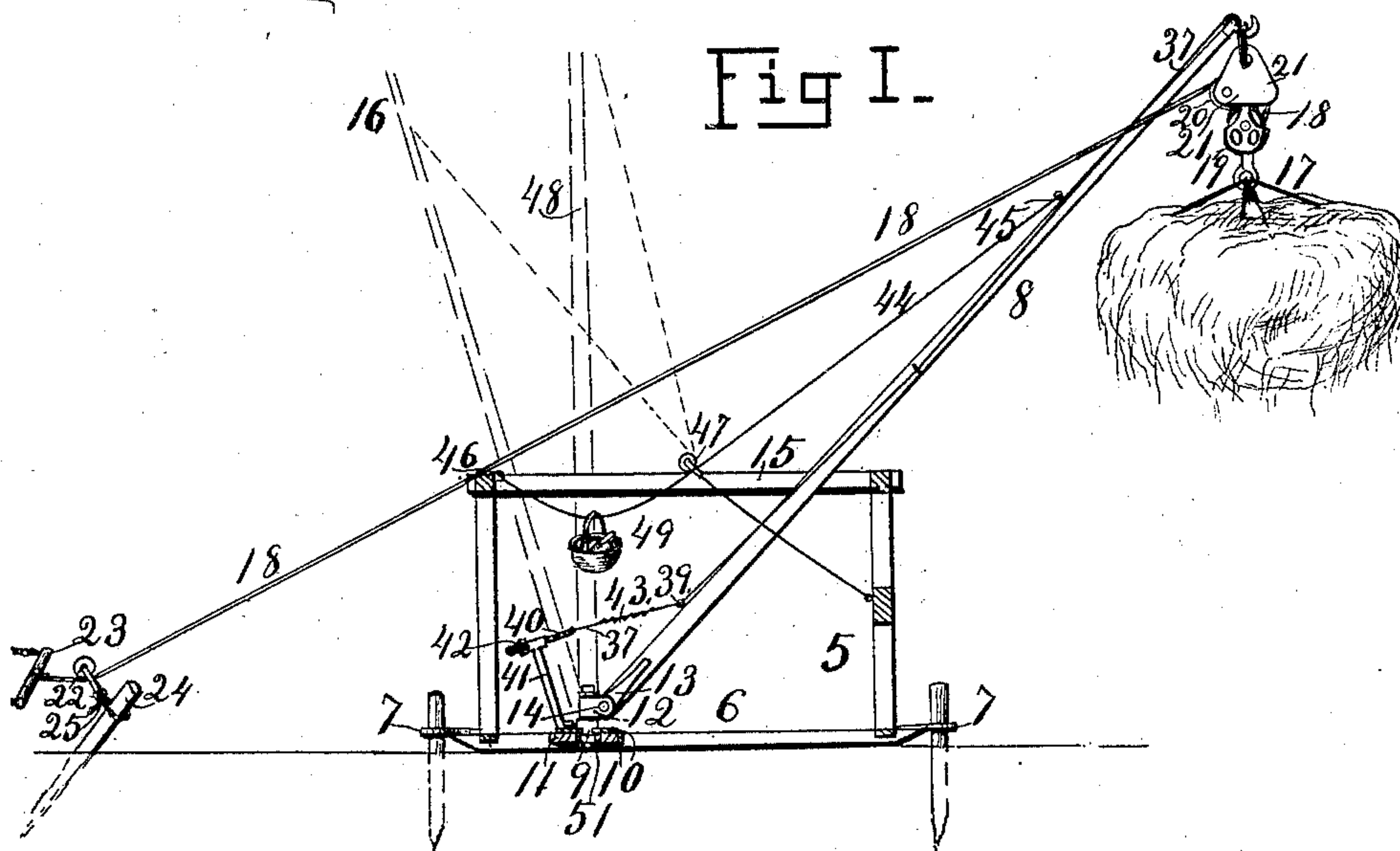


(No Model.)

T. C. LIPPITT.
HAY LOADER.

No. 474,476.

Patented May 10, 1892.



WITNESSES,
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THEODORE C. LIPPITT, OF SHENANDOAH, IOWA.

HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 474,476, dated May 10, 1892.

Application filed November 17, 1891. Serial No. 412,135. (No model.)

To all whom it may concern:

Be it known that I, THEODORE C. LIPPITT, a citizen of the United States, residing at Shenandoah, in the county of Page and State of Iowa, have invented certain new and useful Improvements in Hay-Loaders; 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.

This invention relates to that class of devices by means of which a fork full of hay may be taken from a wagon and placed upon a rick or stack, or by means of which the hay may be taken from rick or stack and placed upon the wagon, such devices being in general called "hay-loaders."

The object of this invention is to adapt a pole to swing to and fro in a vertical direction, and at the same time to move in a somewhat circular direction to carry the hay-fork to and fro between the wagon and the stack to be operated by means of horse-power or other power for drawing a rope.

To this end my invention consists in the construction and combination of parts forming a hay-loader, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I represents a side elevation, partly in vertical section, of a hay-loader according to my invention in the act of raising a fork full of hay from a load. Fig. II represents the same in front elevation, partly in vertical section, in the act of swinging the hay to the stack. Fig. III is a detail view representing the pulley-block on a larger scale with its front side removed to expose the interior works. Fig. IV is an enlarged detail view of parts in the position of Fig. I.

5 represents the frame, the sills 6 of which are slanted up at each end like sled-runners and provided with iron rings or loops 7, to which a team may be hitched to draw the frame to any convenient point and through which stakes may be driven into the ground to hold the frame steady when at work.

8 represents the pole which I hinge to the frame by means of a universal joint comprising a vertical stud 9, which is fitted to engage a slotted plate 10, fixed upon cross-pieces 11

between the sills of the frame, and a hinge-block 12, fitted to revolve around the stud 9 and further fitted to receive a hinge portion 13 of the pole which is pivoted to it at 14. The pole is adapted to slide freely upon the beam 15 to reach the position shown in dotted lines 16, and in doing this the pole not only swings upon its pivot-pin 14 in the block 12, but it swings around the stud 9 by means of the block 12 journaled thereon, thereby moving in a somewhat circular direction. The stud 9 is made adjustable in the slotted plate 10 across the frame in order to give the pole the slant required to reach the proper distance sidewise when moving along the beam 15 and to shift to the opposite side and let the pole slide on beam 50.

51 is a nut screw-threaded upon the stud 9 to bind it to the plate 10 at any point thereon. If, as shown in Fig. II, the stud were set farther to the left, the end of the pole would reach farther downward to the right, and if the stud were set across to the right of center the pole would fall to the left and slide on beam 50, thereby enabling the pole to carry hay to the left of the frame.

17 represents a hay-fork of any suitable construction, adapted to take as much hay at a time as can be conveniently raised by a horse.

18 represents a rope hitched at one end to a pulley-block 21, and passing under a pulley 19, which is journaled in a fork-handle, and over a pulley 20, which is journaled in the pulley-block, and under a pulley 22, to be attached to the whiffletree 23, whereby a horse may be attached to do the work of raising and moving the hay in loading and unloading wagons.

The pulley 22 is hung in a yoke, which is freely connected with the stake 24 that is driven in the ground. This connection is made free by means of a rope or chain 25, in order that the pulley may adjust itself to the direction of the rope 18 when the latter is drawn by a horse.

The handle of the fork or the pulley-block thereon is provided with a vertically-projecting knob 26, adapted to engage a shoulder of the pulley-block, and in the act of so doing it raises an arm 28 of the sentry 29, which is

pivoted at 30 to the pulley-block, whereby the hook end 31 of the sentry is brought to bear against the neck of the knob 26 to hold the knob in engagement with the shoulder 27.

32 is a detent, pivoted at 33 to the block and adapted to engage its free end 34 with an upward projecting arm 35 of the sentry, whereby the sentry is prevented from tipping downward to hold the knob 26. Should the weight of the detent 32 not be sufficient to hold it in engagement, a spring 36 may be provided to assist.

37 is a cord or wire connected with the detent and passing over a pulley 38 in the block and through a series of eyes on the pole, the latter one 39 of which is located a little above its base. Thence the cord passes to an adjusting-screw 40, to which it is freely attached. This screw passes through an arm 41, projecting from the plate 10 to the rear of the pole, and is provided with a check-nut 42, whereby it may be rigidly fixed at any point of adjustment. This adjustment is so arranged that the cord 37 will be drawn tight, and the detent will be thereby raised to disengage the sentry and the fork held by it at the instant when the pole reaches its forward limit of motion.

43 is a spring interposed in the line of the cord 37, giving a yielding tension thereon to prevent the cord being broken if the pole should spring too far forward in rapid service.

44 represents another cord or rope secured at one end 45 to the pole and the other end 46 to the frame, and passing midway under a pulley 47, which is attached to a portion of the frame, so as to be located a little forward of the pole when the latter is at its zenith, as shown in dotted lines at 48, and to the rear of the pole when the latter is in its extreme forward position.

49 is a weight attached to the cord 44 between the end 46 thereof and the pulley 47.

The operation is as follows: The frame of the loader being fixed to the ground, as before described, a wagon-load of hay is to be driven in front of it, and the horse being backed up to the stake 24 to free the rope 18 the fork 17 is to be let down upon the load and filled in the usual manner. Then the horse is started and moving away from the stake 24 forward draws upon the rope 18 and raises the fork 17, with its contents, until the knob 26 rises into engagement with the shoulder 27 and the sentry 29. Then if the horse continues pulling the pole will begin to raise and to move along the slide-beam 15, and when the pole is raised very little the cord 37 will be slackened, permitting the detent 32 to engage the sentry. The necessity for this rises from the fact that as the pole nears its perpendicular there is less and less draft upon the rope 18, and when the pole passes center it naturally descends of its own weight, so there is no draft upon the rope 18. Consequently the fork and hay therein would not be held elevated, but would run down of their

own weight; but by means of the sentinel and detent described the fork and its load are held raised until they reach the desired point of delivery, when the fork is to be opened by the usual means, according to the construction of the particular fork in service and the hay will be discharged. The discharge may be made at any point in the path of the pole.

The action of the weight 49 tends, first, to assist in raising the pole until it passes the pulley 47, at which point the rope 44, being drawn backward over the pulley 47, tends to raise the weight, and the further back the pole goes the more the weight resists, so that the natural tendency of the pole to rush ungovernably through the air from the time it approaches its vertical position to the end of its path is overbalanced. As soon as the load is released from the fork the weight 49 overbalances the weight of the pole and draws it backward until it passes pulley 47, at which point the pole in its passage forward by gravity begins to raise the weight and to be retarded thereby until it is stopped at the proper point to receive the next load. It may be seen that the action of the weight is to pull directly upon the pole without the mediation of any pulley in lifting the pole toward the left and that the pulley 47, being freely hung, is only a rider on the rope until the pole passes a point vertically over the pulley. Then the pulley begins to resist, so that the further passage of the pole raises the weight. This gives much greater range to the pole, permitting it to be set to swing to the right or left and to reach far or near without changing the location of the pulley 47, because that, being freely hung, will accommodate itself to any position of the pole. This could not be done with one fixed pulley nor with two fixed pulleys, one to act at each side of the rope. In the meantime, as soon as the horse has traveled far enough so that the pole and its load continue to move of their own accord the driver may be returning the horse to the stake 24, while the pole, continuing on its way, deposits its load on the stack or on the wagon, as the case may be, and is returned again to its forward position by the weighted cord 44. Thus the weighted cord renders assistance in raising the pole, in preventing its sudden fall backward, in limiting its distance of backward travel, in bringing the pole forward to and beyond its vertical position, in resisting its sudden fall forward, and, finally, in limiting the distance to which it can fall forward. When the pole reaches its forward position, the cord 37, being attached at a point to the rear of the pole, will be drawn upon, so as to raise the detent 32, permitting the sentinel to release the knob 26, and the fork will descend by gravity for another load. The screw 40 permits the cord to be adjusted to raise the detent at the right instant to drop the hay at the required point, and the spring 43 prevents the cord being broken by undue springing of the pole.

Should greater range be required in dropping the hay than the screw 40 will accommodate, the cord 37 may be taken in or let out at its point of attachment with the spring 43. In this case the pole acts like a derrick as a hay-carrier; but the catch-works in the pulley-block would work as well with other styles of carriers.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination, in hay-loaders, of a frame having a cross portion at its base, a stud adjustably fixed upon the said cross portion, a pole having a universal-joint connection with the said stud, and a beam fixed to the frame above the base in a line nearly at right angles with the line of the said cross portion,

the said pole being fitted to slide upon the said beam, substantially as described.

2. The combination, in hay-loaders, of a frame having a cross portion at its base, a stud adjustably fixed upon the said cross portion, two beams fixed to the frame as portions thereof above the base and in lines nearly at right angles to the said cross portion, and a pole having a universal-joint connection with the said stud and located between the said beams and adapted to slide upon either one thereof, substantially as described.

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

THEODORE C. LIPPITT.

Witnesses:

JOHN LINGO,
C. LIPPITT.