

I. W. DAVIS & M. J. EVANS.

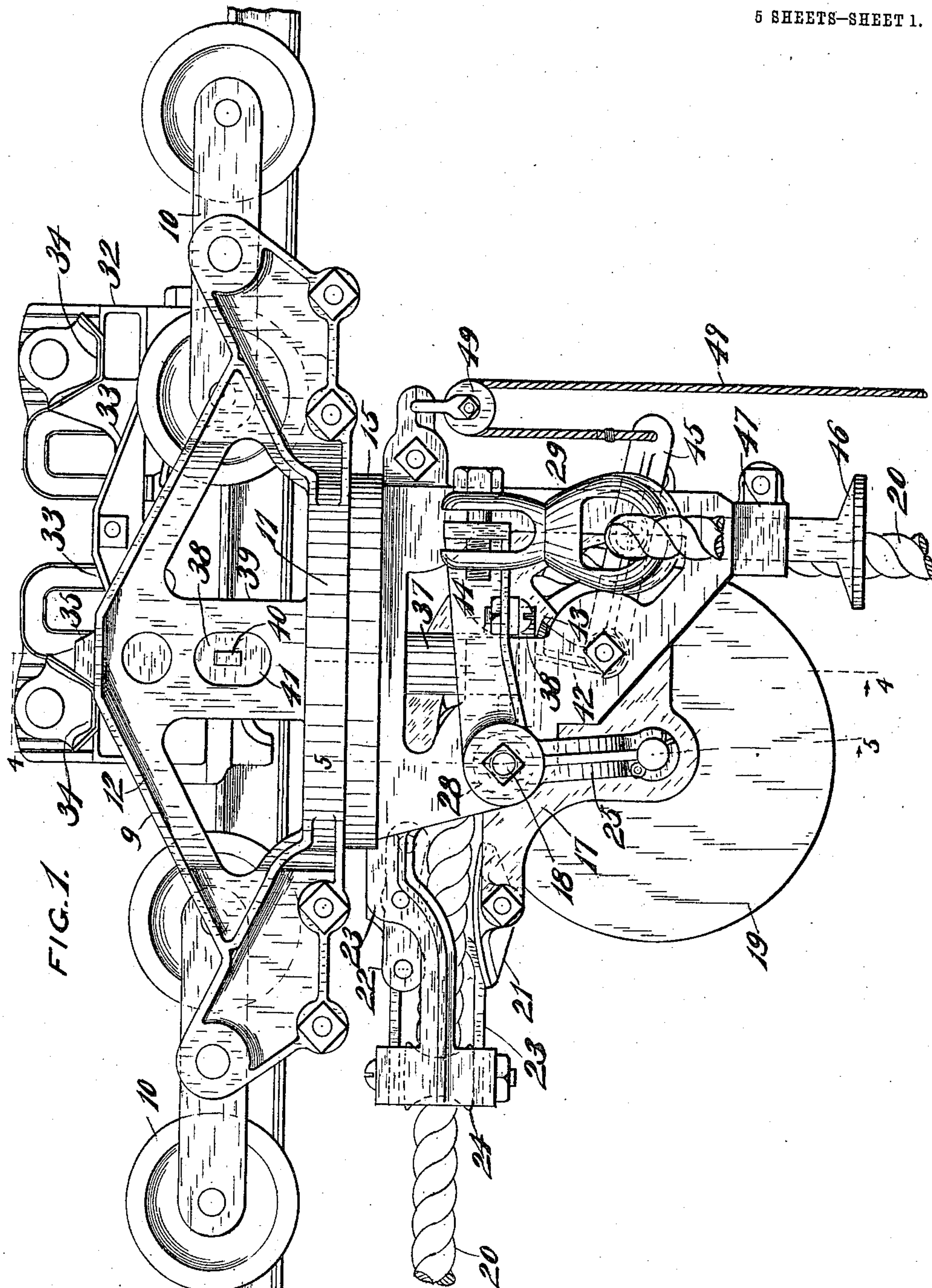
HAY CARRIER.

APPLICATION FILED SEPT. 3, 1909.

975,836.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 1.



WITNESSES.
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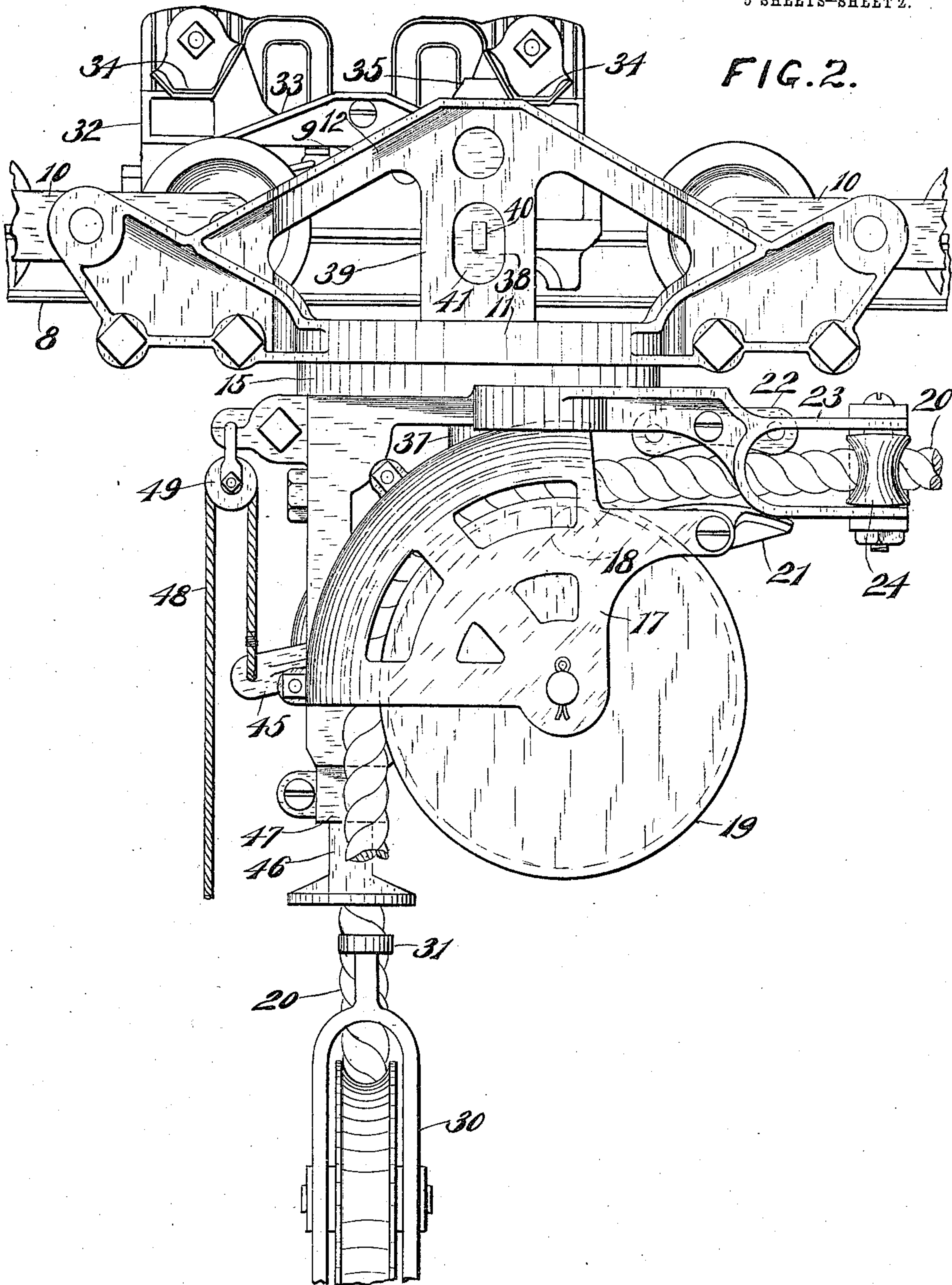
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5 SHEETS—SHEET 2.



WITNESSES.

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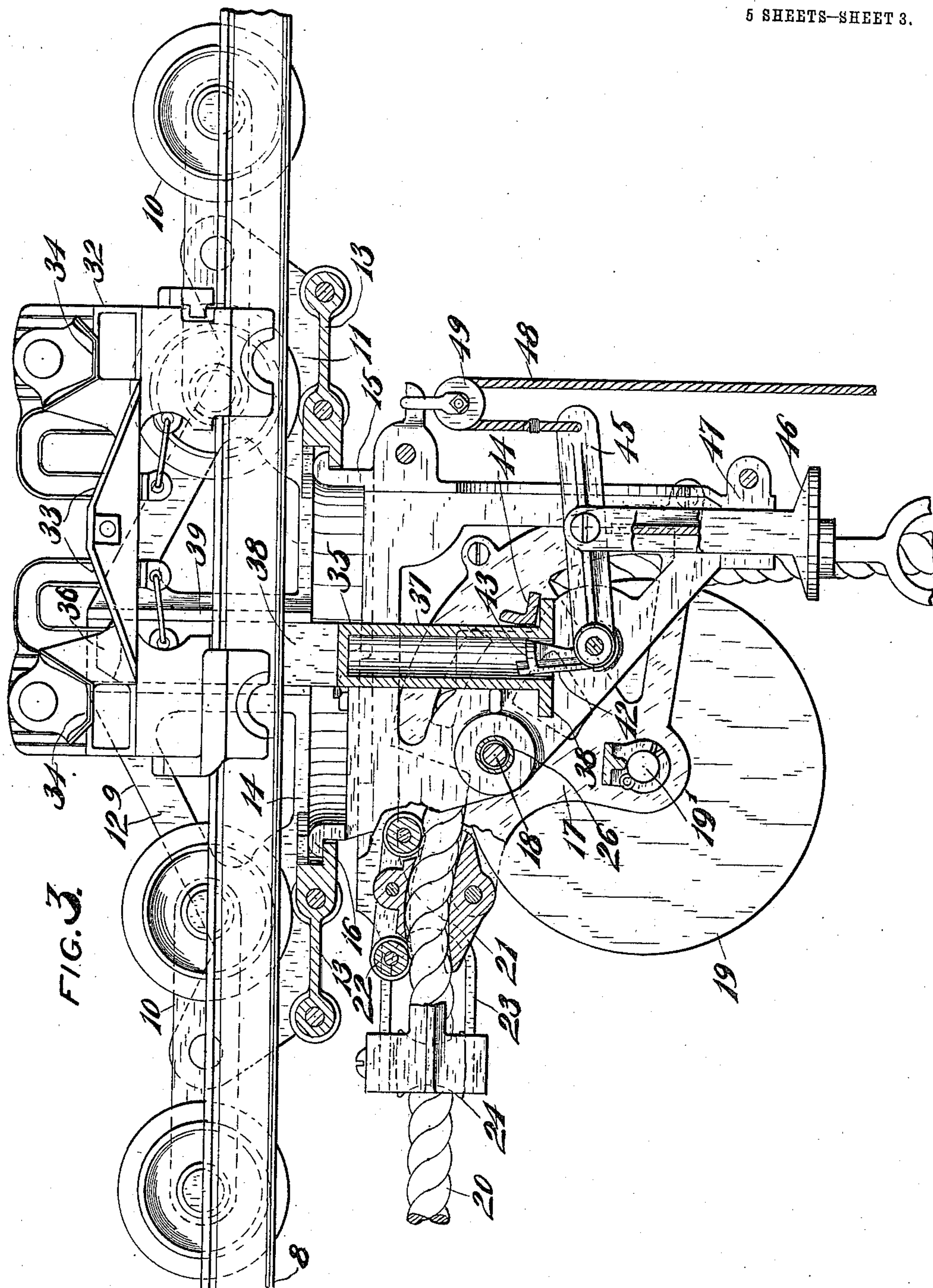
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5 SHEETS-SHEET 3.



WITNESSES.

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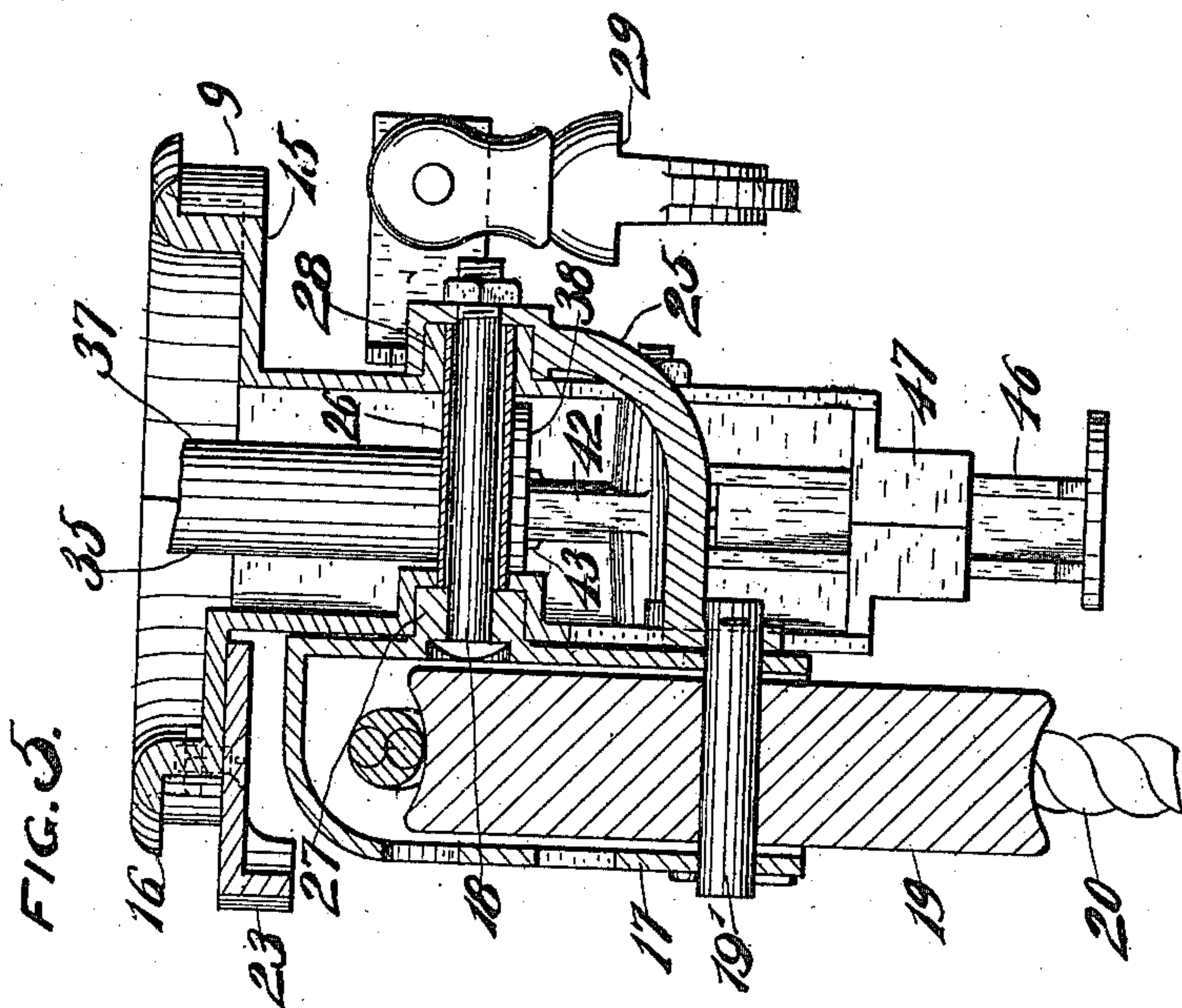
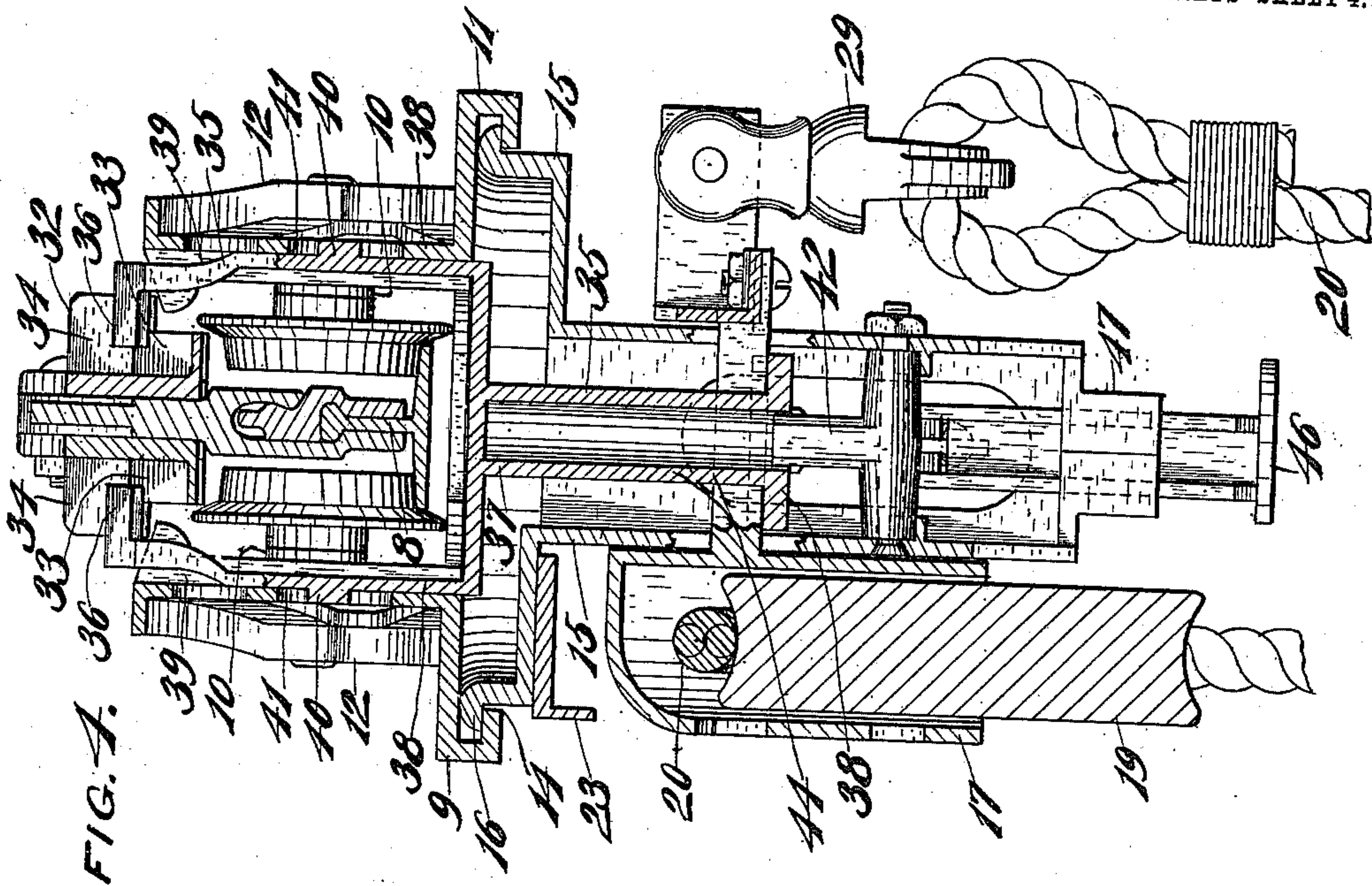
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6 SHEETS—SHEET 4.



WITNESSES.

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Anna Schmidtbauer

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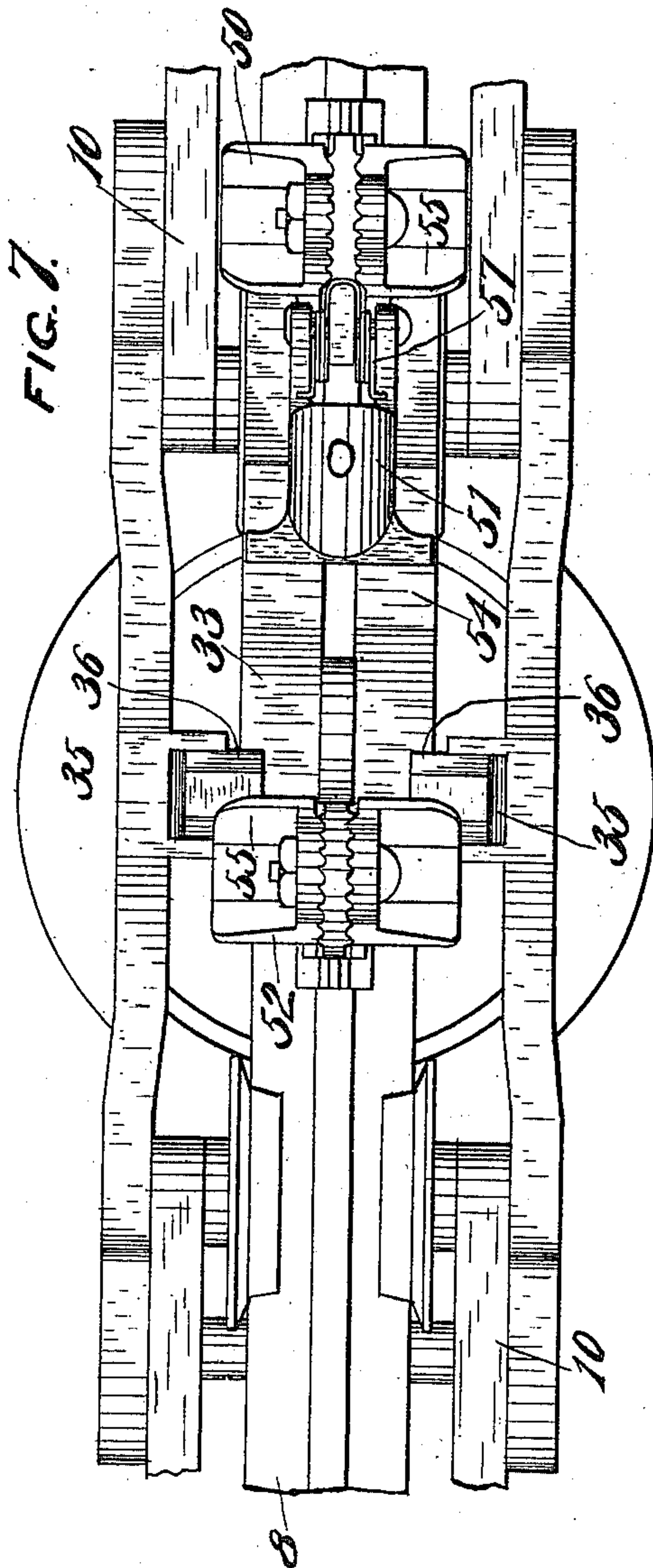
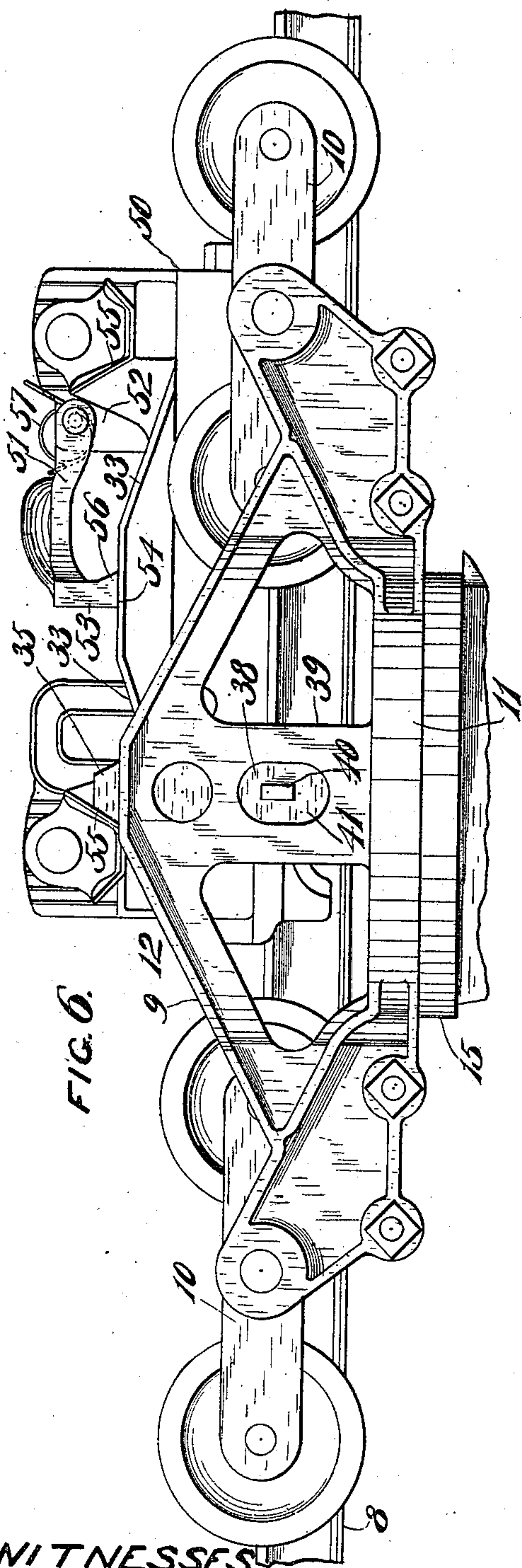
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5 SHEETS—SHEET 5.



WITNESSES:
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UNITED STATES PATENT OFFICE.

IRVIN W. DAVIS AND MORGAN J. EVANS, OF MILWAUKEE, WISCONSIN, ASSIGNORS TO
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HAY-CARRIER.

975,836.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed September 3, 1909. Serial No. 516,122.

To all whom it may concern:

Be it known that we, IRVIN W. DAVIS and MORGAN J. EVANS, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Hay-Carriers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in hay carriers and particularly to that type in which the weight of the load suspended from the carrier is applied to rope clutching means in order to lock the suspended load to the carriage while traveling on its track.

One of the objects of the invention is to provide a hay carrier with new and improved automatic means for locking the load-carrying rope to the carriage when supporting a load.

A further object of the invention is to provide a hay carrier with new and improved means for tripping the rope locking means when the load is drawn up to proper carrying height.

A further object of the invention is to provide a hay carrier with new and improved means for unlocking the carrier from its locked position on the track simultaneously with the locking of the rope to the carriage so that the carriage may be drawn by the rope to its point of unloading.

A further object of the invention is to provide a hay carrier with new and improved means for automatically unlocking the rope locking device and drop the pulleys when the carrier arrives at its point of loading.

A further object of this invention is to provide a hay carrier stop which is adapted to stop and hold a carrier moving into engagement therewith from either end thereof and which is provided with means for limiting the travel of the carrier stop lugs to prevent possibility of the carrier moving into wedging engagement with the stop while under strain of a load.

A further object of the invention is to provide a hay carrier in which the loop of the load supporting rope is positioned transversely with relation to the carrier.

With the above, and other objects in view, the invention consists of the hay carrier and

its parts and combinations and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views; Figure 1 is a side view of the complete carrier shown in connection with a fragment of a supporting track and a stop, the parts being in position to lift the load to the carrier; Fig. 2 is a side view of the opposite side of the carrier, the rope pulley and operating lug also being shown; Fig. 3 is a central longitudinal sectional view of the carrier, the parts being shown in position for traveling on the track with the rope locked to the carriage and the carriage unlocked from the track stop; Fig. 4 is a transverse sectional view thereof taken on line 4—4 of Fig. 1; Fig. 5 is a transverse sectional detail taken on line 5—5 of Fig. 1; Fig. 6 is a side view of a modified form of stop provided with means for limiting the travel of the carrier stop lugs thereon, and also showing a fragment of the carrier; and Fig. 7 is a plan view of the parts shown in Fig. 6.

Referring to the drawings the numeral 8 indicates the hay carrier track which is of the ordinary T-rail type and 9 the hay carrier adapted to travel thereon. The carrier is mounted on the usual overhead trucks 10, the rollers of which travel on the horizontal flanges of the rail, and the main frame 11 of the carrier is suspended from these trucks. The main carrier frame consisting of two similar side members 12 and two bottom members 13 bolted together to form a rigid structure is provided with a circular flanged opening 14 to which is swiveled the lever frame 15 also formed of two half sections bolted together. The lever frame is provided with an outwardly turned circular flange 16 which is positioned to rest on the flange of the circular opening. The lever frame has mounted thereon the tripping, locking and load supporting mechanism positioned to turn with the lever frame. A rope locking lever 17 pivoted to one side of the lever frame by a pivot bolt 18 has mounted thereon a grooved draft pulley 19 which is adapted to support the load-carrying rope 20. The locking lever is in the form of a pulley case extending over both

sides of the pulley and the front portion thereof has a clutch jaw 21 fastened rigidly thereto which is adapted to coact with an upper roller member or equalizing jaw 22 pivoted to the extension portion 23 of the lever frame and to clamp the rope therebetween in traveling on the track. The outer end of the extension portion is provided with side rollers 24 which serve to guide the rope laterally.

The locking lever is provided with a bell-crank lever 25 which forms a part of the locking lever and is positioned on the opposite side of the lever frame and rigidly connected thereto by means of the journal pin 19' of the pulley and the pivot bolt and a sleeve 26 surrounding the bolt and spacing said levers apart. In order to relieve the bolt of the direct strain of the load the locking lever is provided with a trunnion 27 which has its bearing in a recess formed in the lever frame and a trunnion 28 formed on said frame enters a recess provided in the bell-crank lever. This construction forms the two levers into one unitary structure which in some cases may be cast integral.

The outer end of the bell-crank lever has pivotally connected thereto an eyed member 29 to which is connected the end of the rope 20. The rope 20 depends from this eye and forms a loop (only the upper portion of the loop is shown in the drawing) transversely of the track between the eye and the draft pulley, and a tackle pulley 30 is suspended from this loop. The top of the tackle pulley case is provided with a bumper 31 which is adapted to release the carrier from the stop on the track. The track is provided with a stop 32 of ordinary construction which has inclined ways 33 and depending stop lugs 34.

A stop dog 35 slidably mounted in the main frame of the carrier and having lugs 36 projecting inwardly therefrom is adapted to engage the inclined ways of the stop and be raised into locked position with the depending lugs of the stop. The stop dog consists of a tubular shank portion 37 having a head 38 at its lower end and two upstanding arms 38' which straddle the track and the stop and are provided with the lugs 36 before mentioned. The stop dog is guided in ways 39 formed in the sides of the main frame of the carrier and its movement of travel is limited by means of lugs 40 projecting outwardly from the upstanding arms and through openings 41 provided in the main frame and positioned to strike against the shoulders formed by said openings.

A locking dog 42 pivotally connected to the lever frame immediately beneath the tubular portion of the stop dog 35 and provided with a shoulder 43 is adapted to extend into the opening of the lower end of the tubular portion of the stop dog when said dog is in its lowermost or unlocked

position with relation to the track; and when the stop dog is raised by engaging the inclined portions of the track stop the shoulder of the locking dog will drop by gravity beneath the lower edge of the tubular portion of the stop dog and hold it in its raised position and in which raised position the inwardly projecting lugs 36 will strike against the depending lugs 34 of the stop and hold the carrier locked to the track.

The head 38 of the stop dog 37 in moving to its uppermost position is adapted to engage and swing the rope locking lever 17 to release the load supporting rope by means of a transverse connecting bar 44 which forms an integral part of the casing of the locking lever and extends across to and connects with the bell-crank lever 25. This connecting bar is positioned directly above the head 38 of the locking dog and to one side of the pivotal connection of the locking lever to the lever frame so that an upward pull on the connecting bar will cause the separation of the locking jaws and the release of the rope.

The horizontal arm 45 of the locking dog is provided with a depending tripping member 46 pivoted thereto which is adapted to be engaged by the bumper 31 when the load is lifted to the proper traveling position. The bumper in moving upwardly will strike the tripping member and move the shoulder of the locking dog out of engagement with the shank of the stop dog and permitting the stop dog to drop to its lowermost unlocked position and the weight of the load to tilt the rope locking lever so that the jaws will tightly clamp the rope therebetween and the carriage being unlocked from the stop is free to be drawn on the track with the rope. The depending tripping member 46 is guided in a portion 47 of the lever frame.

A tripping rope 48 connected to the end of the arm 45 and passing over a pulley 49 depending from the lever frame is adapted to trip the locking dog when it is desired to release the carrier from the stop at any desired height.

The operation of the carrier is as follows: Assuming that the parts are in the positions shown in Fig. 1 with the stop dog in engagement with the depending lugs on one end of the stop and locked to the track and the rope locking lever unlocked from the rope, the rope is free to be pulled to lift the load. When the load has been almost lifted to its highest position the bumper will strike the tripping member and the shoulder of the locking dog connected thereto will swing to a position in register with the opening of the shank of the stop dog and the stop dog will drop and unlock the carrier from the track; simultaneously with this movement the transverse bar which was supported on

the head of the stop dog will move down therewith and the rope jaw of the locking lever will swing upwardly and tightly clamp the rope between said jaw and the roller member. As the weight of the load is supported on the locking lever and the bell-crank lever connected thereto the clamping effect of the jaw will increase as the weight of the load increases thus providing clamping means to securely hold loads of varying weights. As soon as these movements have taken place, the carrier, with parts in position as shown in Fig. 3, is free to be pulled along the track by the load supporting rope. When the carrier is unloaded in the usual manner and is returned to position on the track where the stop is located, the stop dog will ride up the inclines of the track stop and the head of the shank portion of the stop dog will lift up the rope locking lever and release the rope and drop the pulley connected thereto, and at the same time the shoulder of the locking dog will drop by gravity under the lower edge of the tubular shank portion of the stop dog and hold the stop dog in locked engagement with the depending lugs of the track stop and in which position the carrier is ready to elevate another load.

In order to limit the travel of the carrier after it has moved into locked engagement with the stop a modified form of stop is shown in Figs. 6 and 7 which is provided with means to prevent travel of the carriage after moving into locked engagement therewith and also to prevent any possibility of the parts binding due to traveling up and down the inclined portions of the stop. The stop 50 is provided with a latch 51 pivotally connected to one of the upstanding portions 52 of the stop which extends to a position medially of the stop and has a depending head 53. This head extends transversely across the inclined portions of the stop and rests on the upper flat portion 54 and is in the path of movement of the inwardly projecting lugs 36 of the stop dog 35 in order to stop further movement of the carriage after the stop dog 35 has traveled up the inclined portion of the stop and is locked in this position by the locking dog 42. While in locked position the carrier can only move the slight distance between the transverse head of the latch and the shoulders 55 formed on the upstanding portions 52 of the stop. The inner face 56 of the latch head is inclined downwardly and toward the pivotal connection of the latch to the stop so that when struck by the lugs of the carrier traveling in a direction toward the left in Fig. 6 there will be no tendency to cause the latch to swing upwardly and permit the carrier lugs to travel to the opposite end of the stop. A coiled spring 57 surrounding the pivot pin of the latch serves to hold the

latch yieldingly in position on the inclined way of the stop. When it is desired to have the lugs engage the opposite end of the stop the latch is swung upwardly to permit the lugs of the carrier to pass over the inclined way to the opposite end of the stop and the latch is then lowered into position again. If desired a rope or cord (not shown) may be connected to the latch for raising and lowering it.

The feature of the tackle pulley extending transversely with relation to the track is of considerable advantage in unloading from a wagon as the wagons are usually located transversely with relation to said track and it is of great convenience in unloading to extend the tackle hooks lengthwise to the wagon.

The swiveled connection between the main frame and the lever frame and the arrangement of the locking permits the lever frame to be swung at any angle horizontally so that the angle of the pull may be diverged from the line of the track.

When it is desired to release the carrier at an intermediate height, the tripping rope is pulled to release the locking dog and the operation is the same as before described.

The latch in the modified form is well adapted to limit the travel of the carrier while in engagement with the stop and to prevent possibility of the parts binding and wedging together.

From the foregoing description it will be seen that the carrier is very simple in construction and operation and is inexpensive to manufacture.

It is to be understood that this invention is not limited to any specific form or arrangement of parts except in so far as such limitations are specified in the claims.

What we claim as our invention is:

1. A hay carrier, comprising a carrier frame, a lever pivoted to one side thereof, a bell-crank lever connected to the lever and having a portion on the opposite side of the frame, and a rope engaging the lever and extending transversely across the carrier frame and engaging the portion of the bell-crank lever on the opposite side of the carrier frame.

2. A hay carrier, comprising a carrier frame, a lever pivoted to one side of the carrier frame, a bell-crank lever connected to the lever and having a portion on the opposite side thereof, a pulley mounted on one portion of the lever, and a rope engaging the lever on one side of the carrier frame and extending transversely across the carrier frame and passing over the pulley.

3. A hay carrier, comprising a carrier frame, a lever pivoted to one side of the carrier frame and having a portion on the opposite side thereof, a pulley mounted on one portion of the lever, a rope connected

to one portion of the lever and extending transversely across the carrier frame and passing over the pulley, and means coacting with the lever for clamping the rope to the carrier frame.

4. A hay carrier, comprising a carrier frame, a lever frame swiveled to the carrier frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a rope connected to one portion of the lever and extending transversely across the carrier frame and over the pulley and positioned to be engaged by the clamping jaw, and means controlling the movement of the locking lever.

5. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a rope connected to one portion of the lever and extending transversely across the lever frame and over the pulley and positioned to be engaged by the clamping jaw, a stop dog for locking the carrier to its supporting track and to hold the locking lever in unlocked position, and a locking dog pivoted to the lever frame for holding the stop dog in locked position.

6. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a rope connected to one portion of the lever and extending transversely across the lever frame and over the pulley and positioned to be engaged by the clamping jaw, a stop dog provided with a tubular shank portion and a head for locking the carrier to its supporting track and to hold the locking lever in unlocked position, and a locking dog pivoted to the lever frame immediately beneath the tubular shank portion to engage the lower edge of said shank portion when holding the stop dog in locked position and to extend into the opening of the shank portion when the stop dog is in unlocked position.

7. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a roller member pivoted to the lever frame, a rope clamping jaw connected to the locking lever and positioned beneath the roller member, a pulley mounted on one portion

of the locking lever, a rope connected to one portion of the lever and extending transversely across the lever frame and over the pulley and between the roller member and the clamping jaw, a stop dog provided with a tubular shank portion and a head for locking the carrier to its supporting track and to hold the locking lever in unlocked position, a locking dog pivoted to the lever frame immediately beneath the tubular shank portion to engage the lower edge of said shank portion when holding the stop dog in locked position and to extend into the opening of the shank portion when the stop dog is in unlocked position, and means for moving the locking dog.

8. A hay carrier and track comprising a track provided with a stop having inclined ways, a main frame provided with rollers mounted on the track, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame, a bell-crank lever rigidly connected to and forming part of the locking lever and extending to and positioned on the opposite side of the main frame, a roller member pivoted to the lever frame, a rope clamping jaw connected to the locking lever and positioned beneath the roller member, a pulley mounted on the locking lever, a rope connected to one arm of the bell-crank lever and extending transversely across the lever frame and over the pulley and between the roller member and the clamping jaw, a stop dog having upstanding arms provided with lugs positioned to ride on the inclined ways of the stop, said stop dog slidably mounted in the main frame and having a depending tubular shank portion and a head, a connection extending from the locking lever transversely across the lever frame to the bell-crank lever and resting on the head of the tubular shank, a bumper pivoted to and depending from the locking dog, and means for moving the bumper to operate the carrier.

9. A hay carrier and track, comprising a track provided with a stop having inclined ways and depending lugs, a main frame provided with rollers mounted on the track, a lever frame swiveled to the main frame and provided with a trunnion and a trunnion recess, a locking lever provided with a trunnion having its bearing in the trunnion recess, a bell-crank lever provided with a trunnion recess mounted on the trunnion of the lever frame, a bolt extending through both trunnions and the locking lever and the bell-crank lever to bind the bell crank lever to the locking lever, a sleeve surrounding the bolt and interposed between the locking lever and the bell-crank lever, a roller member pivoted to the lever frame, a rope clamping jaw connected to the locking lever and positioned beneath the roller member, a bolt connecting one arm of the bell-crank lever to the

locking lever, a pulley mounted on said bolt, a rope connected to one arm of the bell-crank lever and extending transversely across the lever frame and over the pulley and between the roller member and the clamping jaw, a stop dog having upstanding arms provided with lugs positioned to ride on the inclined ways and engage the depending lugs of the stop, said stop dog slidably mounted in the main frame and having a depending tubular shank portion and a head, stops provided on said upstanding arms and extending through openings in the main frame, a connection extending from the locking lever transversely across the lever frame to the bell-crank lever and resting on the head of the tubular shank, a locking dog pivoted to the lever frame, a tripping member pivoted to and depending from one arm of the locking dog, and a bumper supported by the rope for moving the tripping member to operate the carrier.

10. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a stop dog slidably connected to the main frame and having a depending tubular shank portion positioned concentrically with relation to the swiveled connection, a rope connected to one portion of the locking lever and extending transversely across the carrier frame and over the pulley and positioned to be engaged by the clamping jaw, and means connected to the rope for controlling the movement of the stop dog and the clamping jaw.

11. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a stop dog slidably connected to the main frame and having a depending tubular shank portion positioned concentrically with relation to the swiveled connection, a rope connected to one portion of the locking lever and extending transversely across the carrier frame and over the pulley and positioned to be engaged by the clamping jaw, a locking dog for holding the stop dog in locked position, and means connected

to the rope for controlling the movement of the stop dog and the clamping jaw.

12. A hay carrier, comprising a main frame, a lever frame swiveled to the main frame, a locking lever pivoted to one side of the lever frame and having a portion extending to the opposite side thereof, a rope clamping jaw connected to the locking lever, a pulley mounted on one portion of the locking lever, a stop dog slidably connected to the main frame and having a depending tubular shank portion positioned concentrically with relation to the swiveled connection, a rope connected to one portion of the locking lever and extending transversely across the carrier frame and over the pulley and positioned to be engaged by the clamping jaw, a locking dog provided with a shoulder for holding the stop dog in locked position, a tripping member connected to the locking dog, and means connected to the rope for operating the tripping member.

13. A hay carrier stop, comprising a stop member provided with inclined ways and upstanding shouldered portions, and a latch pivotally connected to one of the upstanding portions and extending to a position medially of the inclined ways to limit the travel of the carrier locking lugs.

14. A hay carrier stop, comprising a stop member provided with inclined ways and upstanding shouldered portions, a latch pivotally connected to one of the upstanding portions and provided with a depending transverse head extending to a position medially of the inclined ways and in the path of movement of carrier locking lugs, and means for yieldingly holding the latch in position.

15. A hay carrier stop, comprising a stop member provided with inclined ways and upstanding shouldered portions, a latch pivotally connected to one of the upstanding portions and provided with a depending transverse head having an inclined face and extending to a position medially of the inclined ways and in the path of movement of carrier locking lugs, and means for yieldingly holding the latch in position.

In testimony whereof, we affix our signatures, in presence of two witnesses.

IRVIN W. DAVIS.
MORGAN J. EVANS.

Witnesses:

R. S. C. CALDWELL,
ANNA SCHMIDTBAUER.