No. 882,214.

PATENTED MAR. 17, 1908.

R. J. SPARKS.

SWINGING HAY STACKER.

APPLICATION FILED DEC. 26, 1906.

3 SHEETS—SHEET 1.

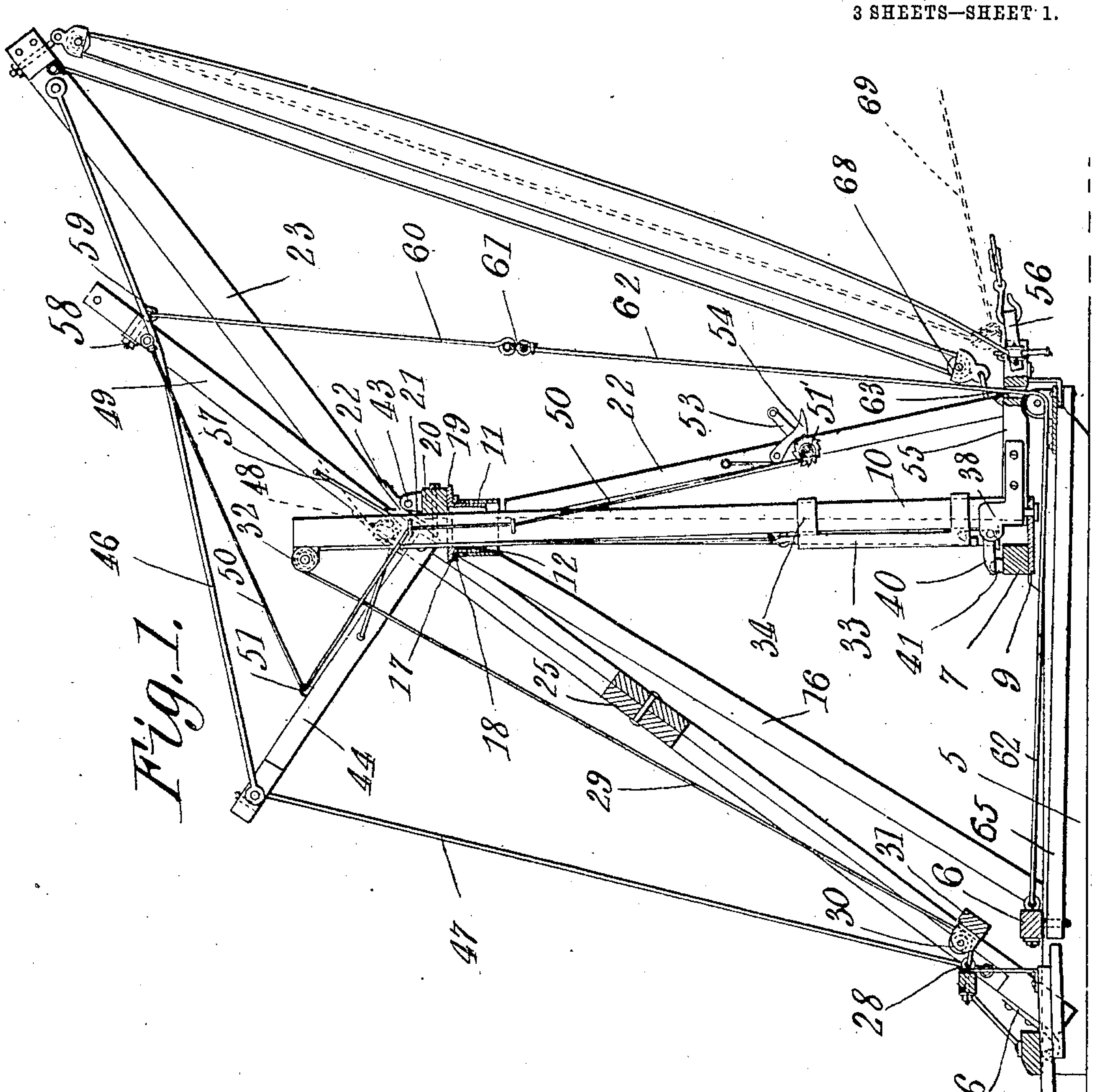

Fig. 1.

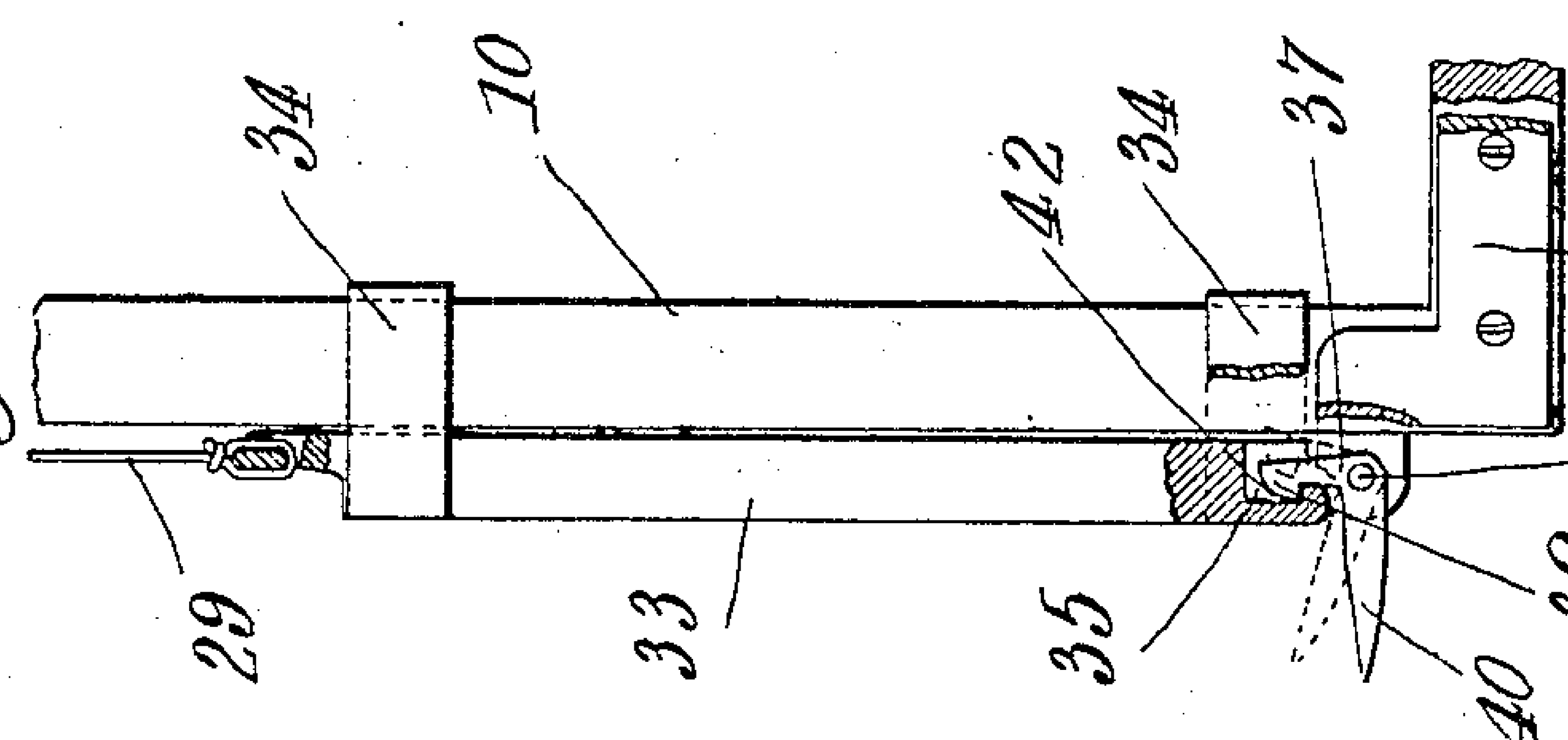

Fig. 5.

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3 SHEETS—SHEET 2.

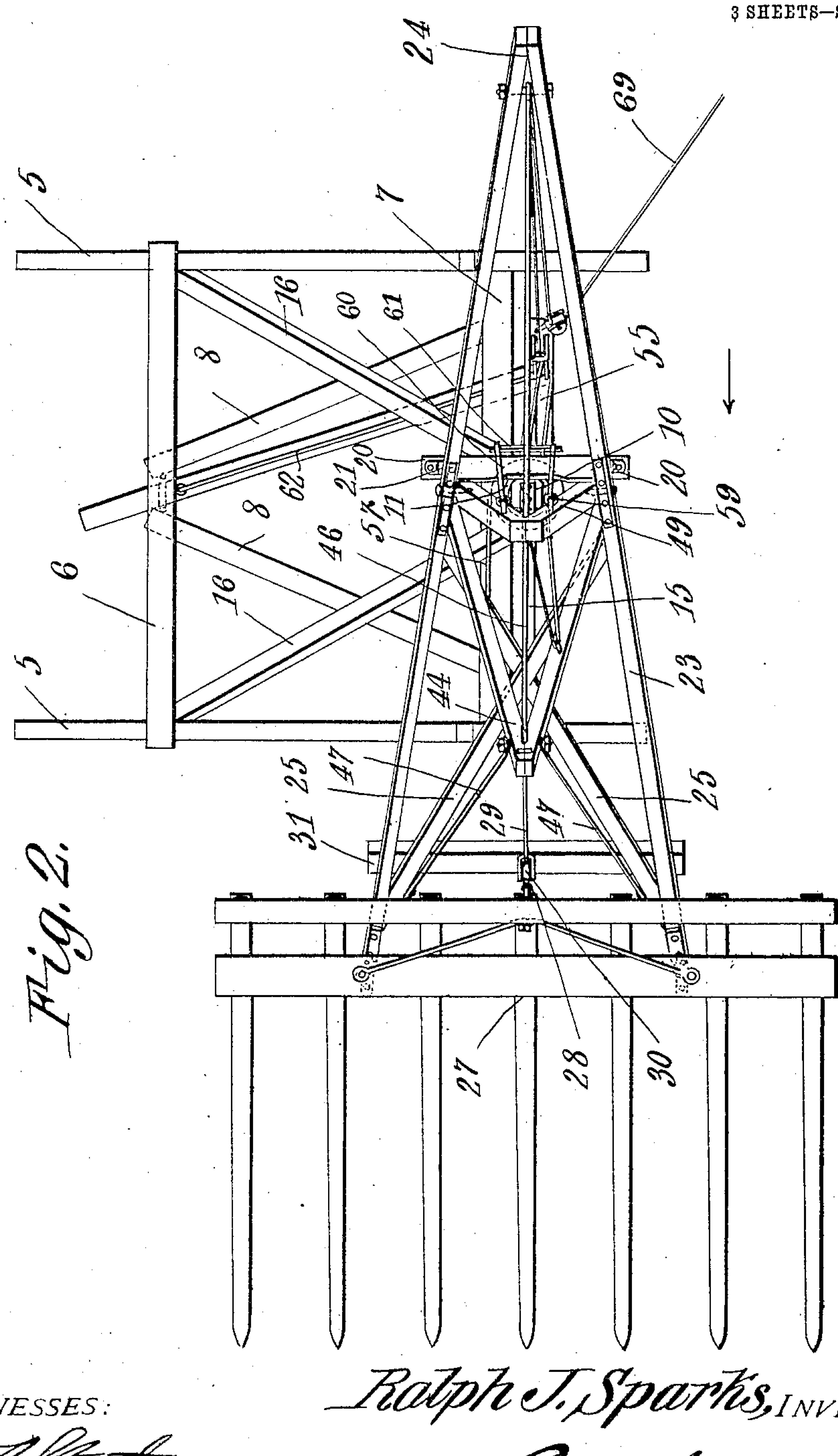

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

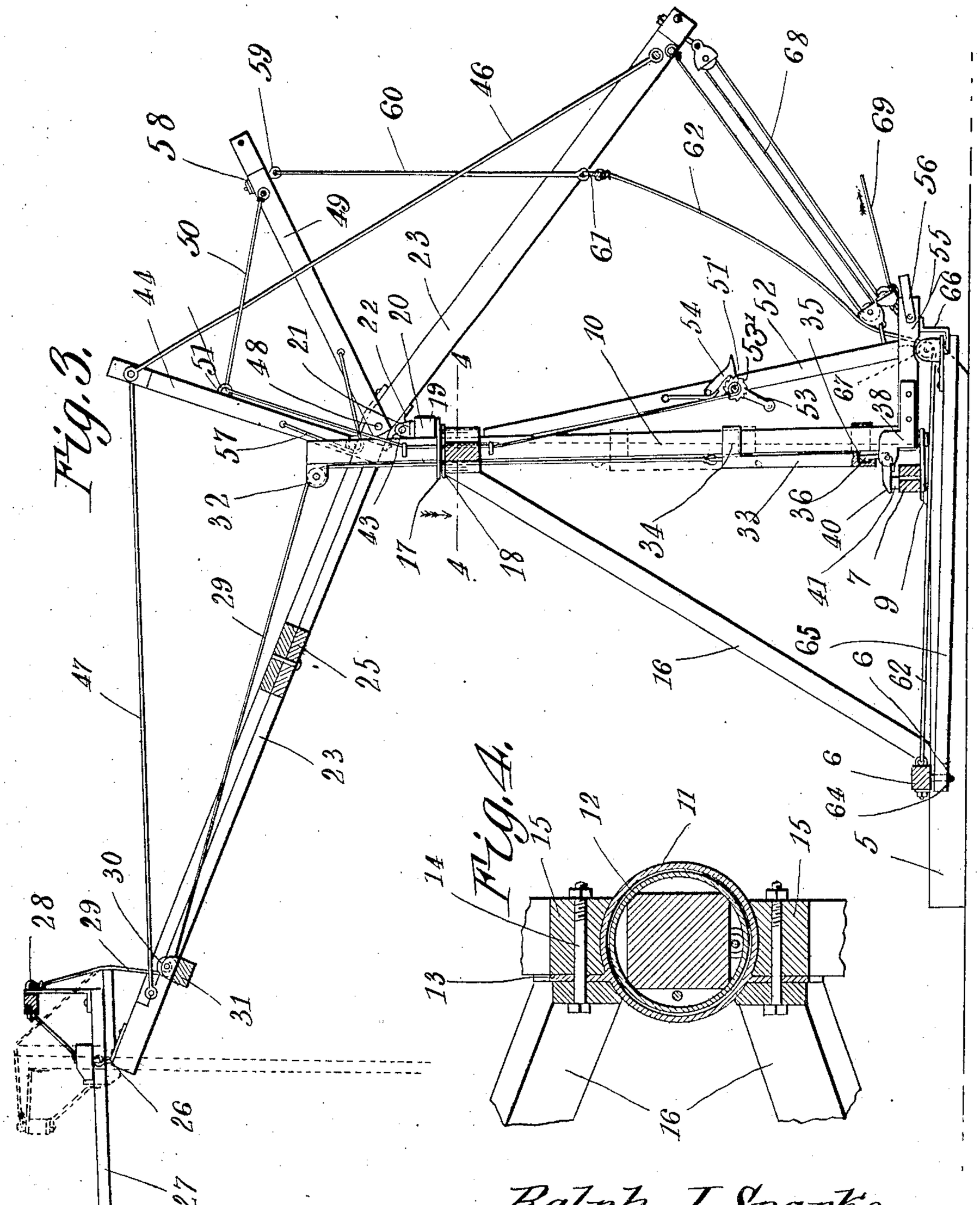

Fig. 4.

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RALPH J. SPARKS, OF BROWNING, MISSOURI.

SWINGING HAY-STACKER.

No. 882,214. Specification of Letters Patent. Patented March 17, 1908.

Application filed December 26, 1906. Serial No. 349,435.

To all whom it may concern:

Be it known that I, RALPH J. SPARKS, a citizen of the United States, residing at Browning, in the county of Linn and State of Missouri, have invented a new and useful Swinging Hay-Stacker, of which the following is a specification.

This invention relates to hay stackers and has for its object the provision of a stacker which shall be strong and durable in construction and efficient in operation and which will elevate and stack the hay or other material with a minimum expenditure of power and without undue friction on the several parts.

A further object of the invention is to provide a stacker in which the fork-carrying arm or beam is free to swing laterally on the supporting frame thereby to permit the hay or other material to be received or delivered on either side of said frame.

A further object is to provide a sliding bar or evener for guiding the fork-carrying beam and locking the same against accidental rotation when the fork is in lowered position.

A still further object of the invention is to generally improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification:

Figure 1 is a side elevation partly in section of a hay stacker constructed in accordance with my invention showing the fork-carrying arm resting on the supporting frame of the stacker and the latter in position to be moved from place to place. Fig. 2 is a top plan view showing the fork-carrying arm moved laterally to operative position at one side of the supporting frame. Fig. 3 is a similar view showing the fork-carrying arm in elevated position, and in dotted lines the fork in dumping position. Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 3. Fig. 5 is an enlarged side elevation partly in section of the locking device.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved device comprises a main supporting frame consisting of longitudinal runners 5 spaced apart by transverse beams 6 and 7 and reinforced and strengthened by diagonal bars 8, the latter being bolted or otherwise rigidly secured to the transverse beams, as shown.

Extending laterally from the transverse beam is a supporting bracket 9 in which is journaled one end of a mast or standard 10 the opposite end of which extends through a collar or sleeve 11 and is provided with a bearing sleeve 12 which engages the interior walls of the collar 11 and thus serves to prevent wear on the mast.

The collar or sleeve 11 is provided with laterally extending wings 13 to which are secured by bolts or similar fastening devices 14 the converging ends of inclined brace bars 15 and 16.

The bars 16 are secured in any suitable manner to the runners at a point adjacent the transverse beam 6 while the bars 15 are secured to said runners on one side of the transverse bar 7 thus serving to brace the mast against lateral strains and support the same in vertical position.

The bearing sleeve 12 is provided with a laterally extending flange 17 which bears against a correspondingly shaped stop flange 18 secured to the sleeve or collar 11, there being an extension 19 formed on the flange 17 and adapted to support a cross-head or arm 20.

The cross-head or arm 20 is provided with spaced brackets having upwardly extending lugs 21 between which are pivotally mounted the depending bearings 22 of the lifting bar or fork-carrying beam, indicated as a whole at 23.

The fork-carrying beam 23 consists of spaced bars having their rear ends converged and united at 24 and their forward ends spaced apart and reinforced by diagonal braces 25. The spaced ends forming the lifting bar 23 are provided with terminal brackets 26 on which is pivotally mounted for swinging movement the hay-fork 27.

Secured to an eye or loop 28 carried by the hay-fork 27 is one end of a cord or other flexible medium 29 which passes over a guide-pulley 30 secured to a beam 31 on the lifting bar and thence passes over a similar pulley 32 secured to the upper or free end of the mast 10, the adjacent end of the cord being extended through the sleeve 12 and connected to a gravity actuated locking member 33.

The locking member 33 is slidably mounted on the mast 10 and is provided with spaced loops or guiding bands 34 which embrace the mast 10 and serve to retain the locking device in engagement therewith.

The lower end of the locking member is formed with a recess 35 defining an inwardly extending lip 36 which coöperates with a pivoted locking pawl 37 carried by a bracket 38 secured to the adjacent end of the mast.

The locking pawl 37 is pivotally mounted at 39 and is provided with a lateral extension 40 which extends in the path of movement of one or more actuating pins or lugs 41 secured to or mounted on the adjacent transverse beam 7.

The hay-fork 27 is normally locked in operative position, that is to say in position to sustain the load, by means of the locking member 33.

When the extension 40 however, engages one of the pins or lugs 41 said pawl will be tilted upwardly to the dotted line position shown in Fig. 5 of the drawing thus disengaging the catch 42 from the lip 36 and allowing the weight of the load to tilt the fork and elevate the locking member 33, the weight of the member 33 automatically returning the fork to operative position after each tilting or dumping operation of the latter.

The longitudinal bars comprising the fork-carrying beam are inclined downwardly on each side of the pivotal axis 43 and secured to said bars is a relatively stationary A-shaped frame 44 which is connected with one end of the lifting beam by means of a truss-rod 46 and with the opposite end of said beam by spaced truss bars 47. Pivotally mounted at 48 between the bars comprising the fork-carrying beam is a movable frame 49 similar in construction to the relatively stationary frame 44 and capable of being adjusted laterally to vary the height of delivery, as will be more fully explained hereinafter.

Secured to one side of the movable frame 49 is a cord or cable 50 which passes through an eye 51 on the relatively stationary frame 44 and thence extends downwardly through the sleeve 12 for engagement with a winding drum 51′.

The drum 51′ is mounted for rotation on an inclined bar 52 and is provided with a terminal operating handle 53 and ratchet teeth 53′ for engagement with a spring locking pawl 54 thereby to maintain the cable 50 under tension.

Extending laterally from the lower end of the mast 10 and bolted or otherwise rigidly secured to the bracket 38 is a laterally extended arm 55 having its free end provided with a clevis 56 of any approved construction whereby the stacker may be conveniently moved from place to place.

The inclined bar 52 extends between the arm 55 and the mast 10 and serves to reinforce and strengthen said arm as well as to support the winding drum 51′.

The movable frame 49 is normally and yieldably supported in engagement with the adjacent truss rod 46 by means of a spring 57 one arm of which is secured to the relatively stationary frame 44 while the opposite arm thereof is secured in any suitable manner to the movable frame 49.

Extending laterally through the free end of the movable frame 49 are spaced bolts 58 provided with terminal eyes 59 which form supports for a pair of depending rods 60, the latter being connected at their lower or free ends by means of a yoke or cross-bar 61.

Secured to the yoke or cross-bar 61 is a cord or cable 62 which extends downwardly in proximity to the inclined bar 52 and passes through an opening 63 formed in the arm 55 of the mast for attachment to the rear transverse bar 6 of the supporting frame.

Depending from the bar 6 between the inclined braces 8 of the supporting frame is a guide-loop 64 in which is loosely mounted for sliding movement a bar or evener 65, the latter being pivotally connected with the free end of the arm 55 by means of an angle bar or bracket 66, there being a pulley 67 secured to the guide bar 65 near the bracket 66 for engagement with the cord or cable 62.

Extending between the free end of the arm 55 and the adjacent or reduced end of the fork-carrying beam 43 is a suitable block and tackle 68 for attachment to a draft animal or other suitable source of power for operating the stacker.

In operating the stacker, the fork-carrying arm 22 is swung laterally on the supporting frame to the position shown in Fig. 2 of the drawings and the draft animal attached to the end of the rope or cable 69 constituting the draft device. The animal is then caused to move in the direction of the arrow indicated in Fig. 2 of the drawings which tilts the lifting beam and at the same time partially rotates the arm 55 so as to move the beam 23 together with the fork laterally on the supporting frame to the position shown in Fig. 3 of the drawing. As the arm 55 is partially rotated on the supporting frame the extension 40 of the pawl 37 will engage the adjacent stop or tripping lug 41 and release the pawl from engagement with the locking device 32 thus permitting the weight of the hay or other material on the fork to automatically dump the same, said locking device being returned by its own weight to operative position in engagement with the pawl after the load has been removed from the fork so that the latter will be again locked in position to receive another load of hay. As soon as the fork-carrying arm or beam passes the center of the supporting frame the progress of the draft animal is checked thus allowing the ten-

sion of the cord 62, through the medium of the evener or guide bar 65, to move the arm 55 in the opposite direction and shift the fork back to its original position to again receive a load. The rods 60 and cable 62 serve to prevent the fork from sluing around after the fork has been dropped to lowered position while the evener or guide bar 65 by reason of its pivotal connection between the arm 55 serves as a guide for said arm.

The height of the delivery may be regulated by rotating the winding drum 51′ which winds the cable or cord 50 on said drum and thus tilts the movable frame 49 against the action of the spring 57 so that said movable frame may be adjusted at any desired angle with respect to the fork carrying frame.

In order to swing the fork 27 laterally in engagement with the supporting frame when it is desired to transport the stacker, the pawl 54 is released from engagement with the teeth 53′ and the cord 50 unwound from the reel or drum thus allowing the spring 57 to draw the movable frame 59 against the adjacent truss rod 46.

As the movable frame 49 is tilted rearwardly it causes a certain amount of slack in the rope or cable 62 so that the fork may be swung laterally to the position shown in Fig. 1 of the drawing without interference from the cable 62 or evener 65.

It will here be observed that when the movable frame 49 is adjusted to regulate the height of delivery of the fork 27, the cable 62 by engagement with the frame 49 will support the front end of the lifting beam and fork 27 in elevated or adjusted position.

While the device is principally designed for swinging movement on both sides of the supporting frame it is obvious that the same may be used on one side only if desired.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame, a bar slidably mounted on the frame and pivotally connnected with one end of the mast, a fork-carrying beam pivotally mounted on the opposite end of the mast, and a draft device operatively connected with one end of the fork-carrying bar.

2. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted on the mast, a bar slidably mounted on the frame and operatively connected with the free end of the arm, and a draft device connecting the arm with the fork-carrying beam.

3. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted for rocking movement on said mast, a bar slidably mounted on the frame and pivotally connected with the arm, and a draft device extending between the arm and one end of the fork-carrying beam.

4. In a hay-stacker, a supporting frame, a mast mounted for rotation thereon, a fork-carrying beam pivotally mounted on the mast and provided with stationary and movable frames, a bar operatively connected with the mast, a draft device secured to the mast and one end of the fork-carrying beam, and a connection between the movable frame and the supporting frame.

5. In a hay-stacker, a supporting frame, a mast mounted for rotation thereon, a fork-carrying beam pivotally mounted for rotation on the mast and provided with stationary and movable frames, means for adjusting the movable frame laterally, a flexible connection between one side of the movable frame and the supporting frame, and a draft device connecting the mast and the fork-carrying beam.

6. In a hay-stacker, a supporting frame, a mast mounted for rotation thereon, a fork-carrying beam pivotally mounted on the mast and provided with relatively stationary and movable frames, means secured to one side of the movable frame for adjusting the latter, a flexible connection between the opposite side of the movable frame and the supporting frame, and a draft device operatively connected with the mast and one end of the fork-carrying beam.

7. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted on the mast and provided with relatively stationary and movable frames, means operatively connected with one side of the movable frame for adjusting the same, a flexible connection secured to the opposite side of the movable frame and extending through an opening in the arm of the mast for attachment to the supporting frame, and a draft device connecting the arm and fork-carrying beam.

8. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted for tilting movement on the mast and provided with relatively stationary and movable frames, a winding drum, a flexible connection secured to one side of the movable frame and passing through an eye on the stationary frame for attachment to the winding drum, a flexible connection between the opposite side of the movable frame and the supporting frame, a sliding bar pivotally connected with

the arm of the mast, and a draft device extending between said arm and the adjacent end of the fork-carrying beam.

9. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a sliding bar pivotally connected with the free end of the arm, a fork-carrying beam pivotally mounted on the upper end of the mast, stationary and movable frames carried by the beam, means for adjusting the movable frame, a flexible connection between the upper end of the movable frame and one end of the supporting frame, and a draft device connecting the lateral arm and the fork-carrying beam.

10. In a hay-stacker, a supporting frame, a mast mounted for rotation on said frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted on the upper end of the mast and capable of being swung laterally to either side of the supporting frame, a sliding bar pivotally connected with one end of the mast, and a block and tackle extending between the arm and the adjacent end of the fork-carrying beam.

11. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame and provided with a laterally extending arm, a fork-carrying beam pivotally mounted on the mast and provided with relatively stationary and movable frames, a flexible connection between one side of the movable frame and the mast, rods depending from the opposite sides of the movable frame and connected by a yoke, a cable secured to the yoke and extending through the arm for attachment to the supporting frame, a draft device associated with the arm of the mast, and a guide bar pivotally connected with said arm and slidably mounted on the supporting frame.

12. In a hay-stacker, a supporting frame, a mast mounted for rotation on the frame, a fork-carrying beam pivotally mounted on the mast and provided with relatively stationary and movable frames, a winding drum, a flexible connection between one side of the movable frame and the winding drum, rods depending from the opposite end of the movable frame and connected by a yoke, a cable secured to the yoke and connected with the supporting frame, and a draft device connecting the mast and one end of the fork-carrying beam.

13. In a hay-stacker, a supporting frame provided with vertically disposed lugs, a mast mounted for rotation on the frame and having a laterally extending arm, a beam pivotally mounted on the mast, a fork carried by one end of the beam, a locking device slidably mounted on the mast and operatively connected with the fork, said locking device being adapted to engage the lugs for dumping the fork, and a draft device extending between the mast arm and one end of the beam.

14. In a hay-stacker, a supporting frame provided with vertically disposed lugs, a mast mounted for rotation on the frame and having a laterally extending arm, a beam pivotally mounted on the mast, a fork pivoted to one end of the beam, a locking device, a flexible connection between the locking device and fork, said locking device being adapted to engage the lugs on the supporting frame for dumping the fork, a guide rod slidably mounted on the frame and pivotally connecting the arm with the mast, and a draft device connecting said arm with the adjacent end of the fork-carrying beam.

15. In a hay-stacker, a supporting frame, a fork-carrying beam pivotally mounted for vertical and lateral movement on said frame, an arm extending laterally from the lower portion of the mast, a bar slidably mounted on the frame and pivotally connected with the arm, and a draft device for raising and lowering the beam and moving the same laterally on each side of the supporting frame.

16. In a hay-stacker, a supporting frame, a mast, a fork-carrying beam pivotally mounted on the mast and movable laterally to one side of the supporting frame, relatively stationary and movable frames carried by the beam, means for adjusting the movable frame, a guide bar operatively connected with the mast, a connection between the movable frame and the guide bar, and a draft device associated with the mast.

17. In a hay-stacker, a supporting frame, a mast provided with a laterally extending arm, a fork-carrying beam pivotally mounted on the mast and provided with relatively stationary and movable frames, means for adjusting the movable frame, a guide bar pivotally connected with the arm of the mast, a flexible connection operatively connected with the movable frame and supporting frame, respectively, and having an intermediate portion secured to the guide arm, and a draft device associated with said guide arm.

18. In a hay-stacker, a supporting frame, a collar secured to the mast and provided with a laterally extending bracket, a cross-arm secured to the bracket, a fork-carrying beam pivotally mounted on the cross-arm and consisting of longitudinal bars spaced apart at one end and connected at their opposite ends, relatively stationary and movable frames interposed between the bars of the fork-carrying beam, an arm extending laterally from the base of the mast, a guide bar pivotally connected with the arm, means for adjusting the movable frame with respect to the stationary frame, rods depending from

one side of the movable frame, a yoke connecting the rods, a cable secured to the yoke and extending over a pulley on the guide arm for attachment to the supporting frame, and a draft device extending between the mast arm and the reduced end of the fork-carrying beam.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

RALPH J. SPARKS.

Witnesses:

JOSEPH H. THARP,

ED. C. BAILEY.