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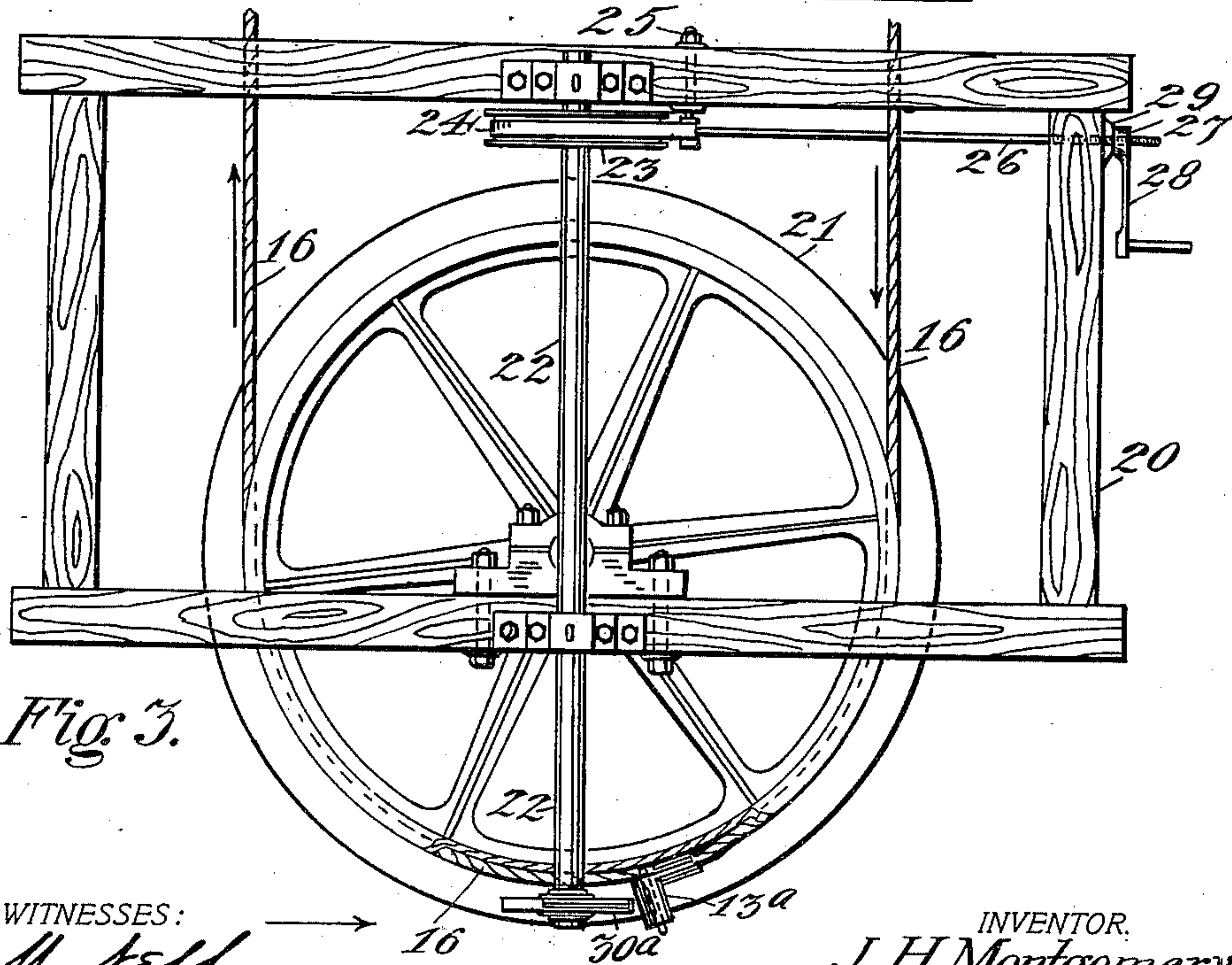
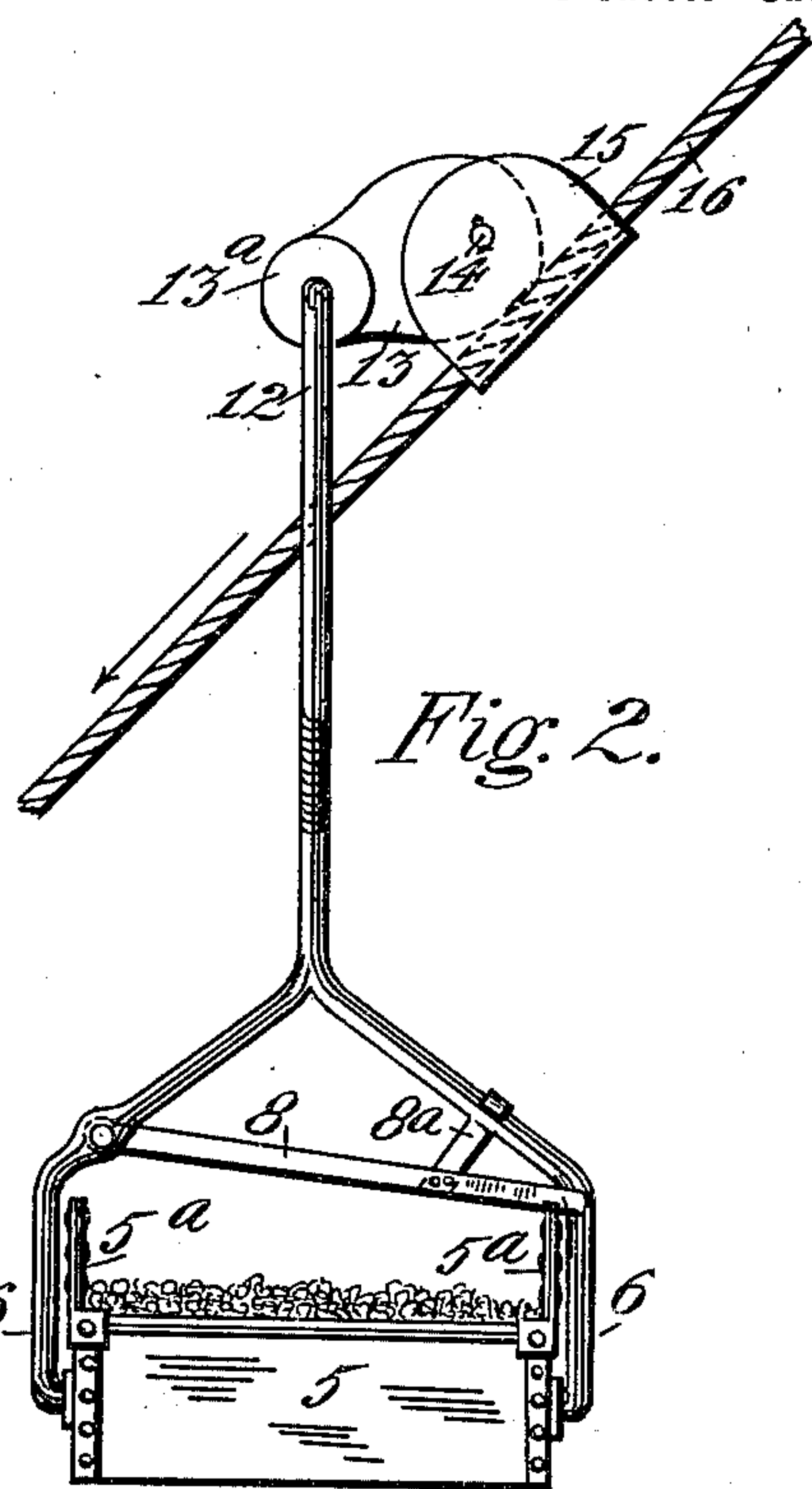
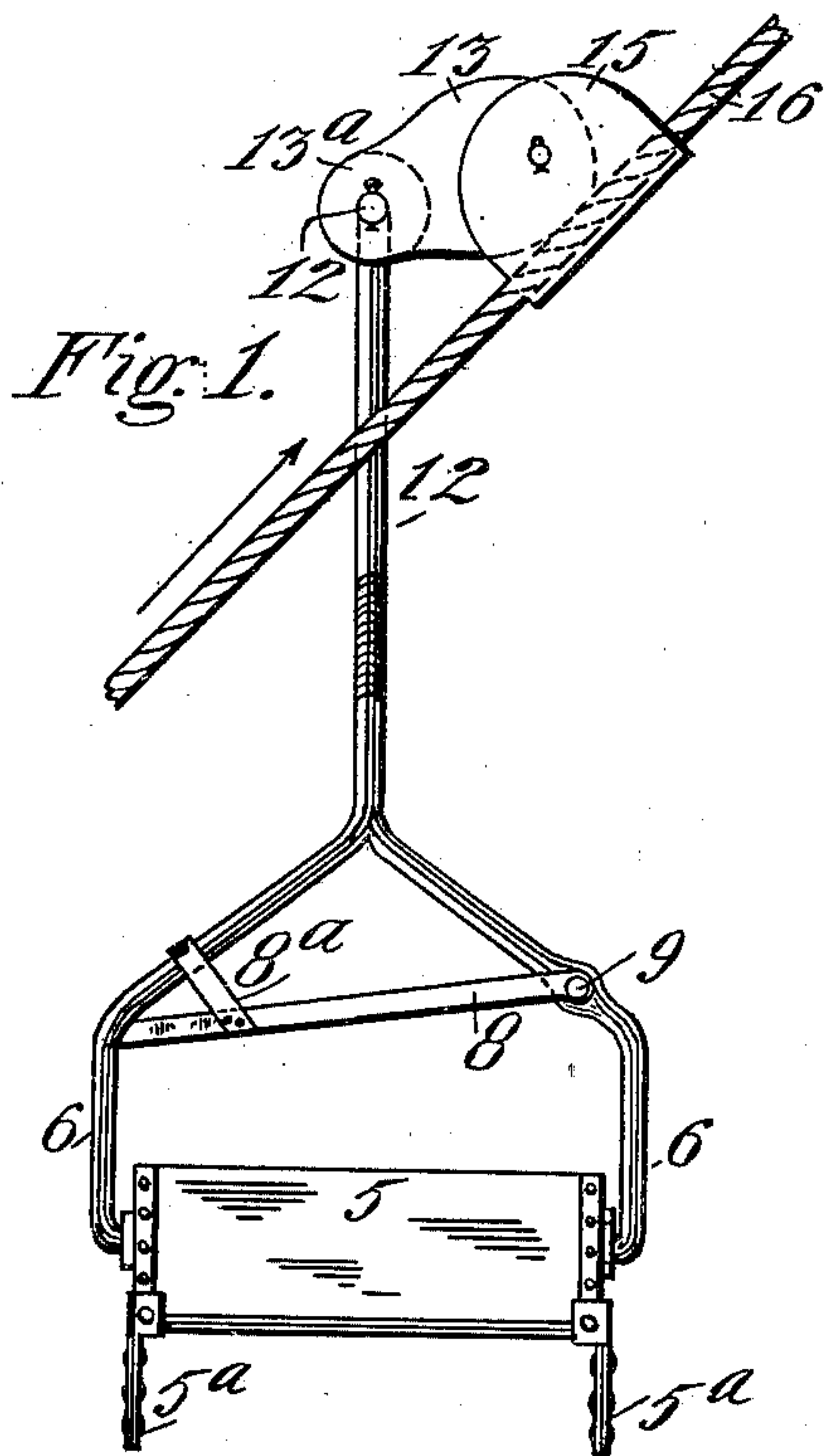
Patented Dec. 11, 1900.

J. H. MONTGOMERY.
AERIAL WIRE ROPE TRAMWAY.

(No Model.)

(Application filed May 14, 1900.)

3 Sheets—Sheet 1.



WITNESSES:

H. M. Steff
Grace Mytinger

INVENTOR.

J. H. Montgomery,
By *[Signature]*
ATTORNEY

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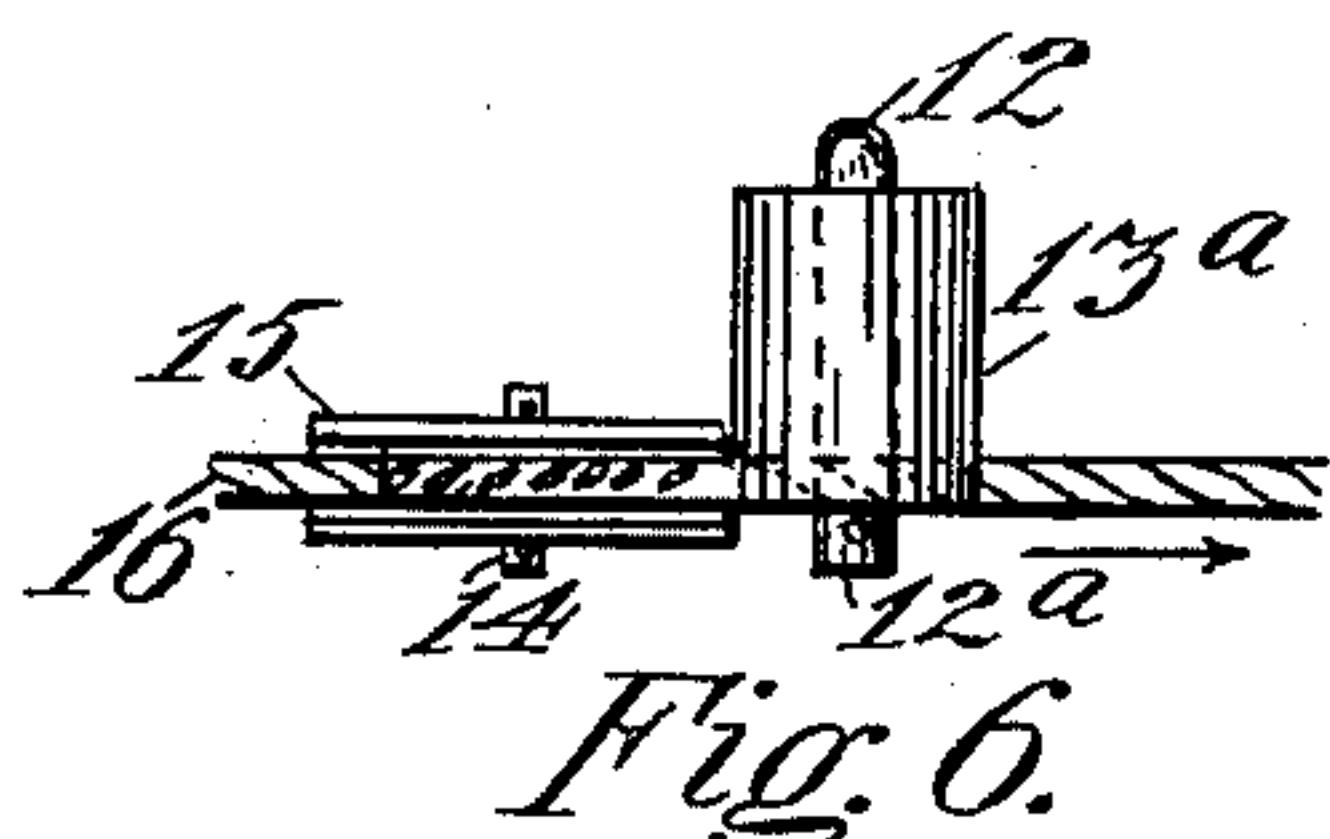
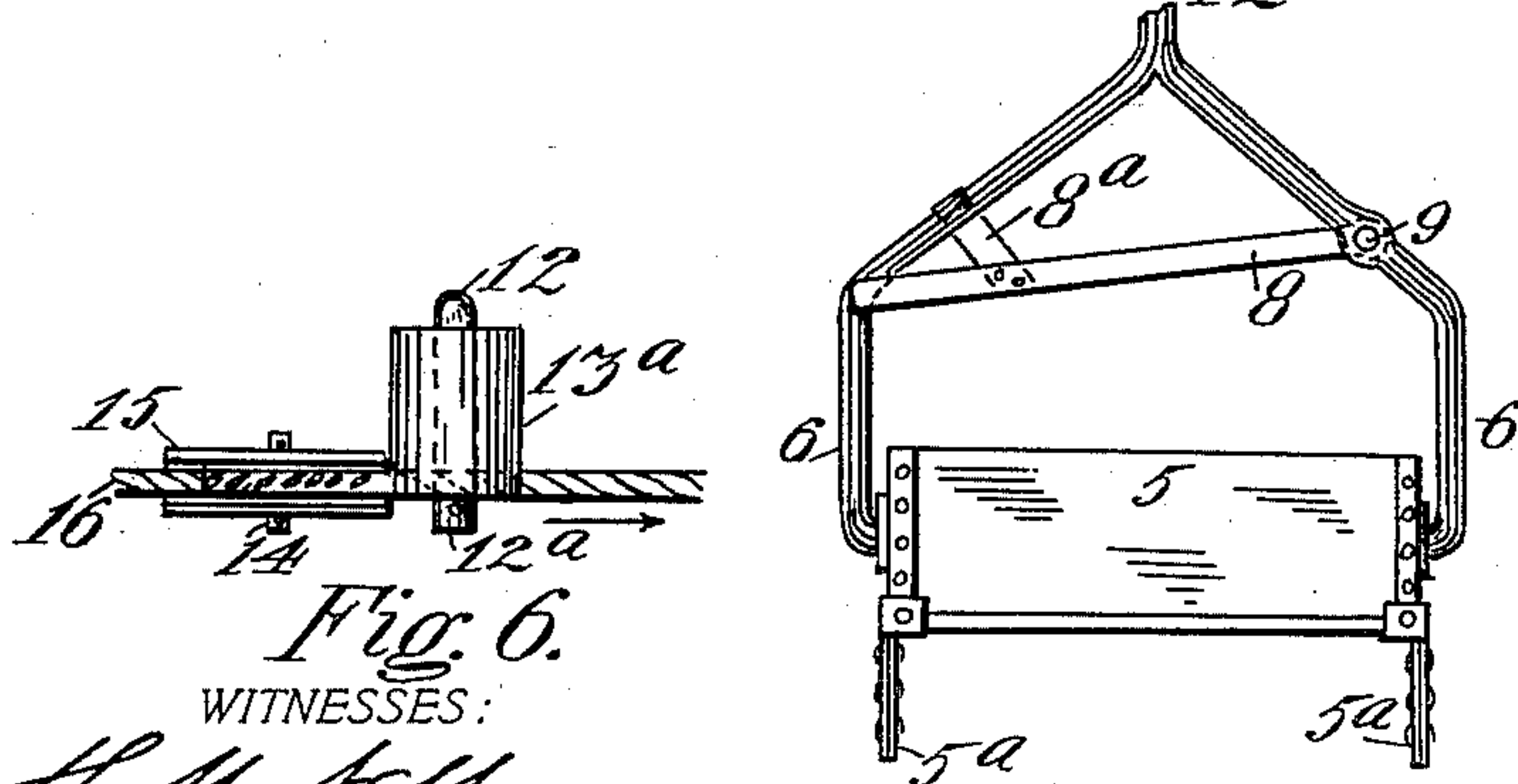
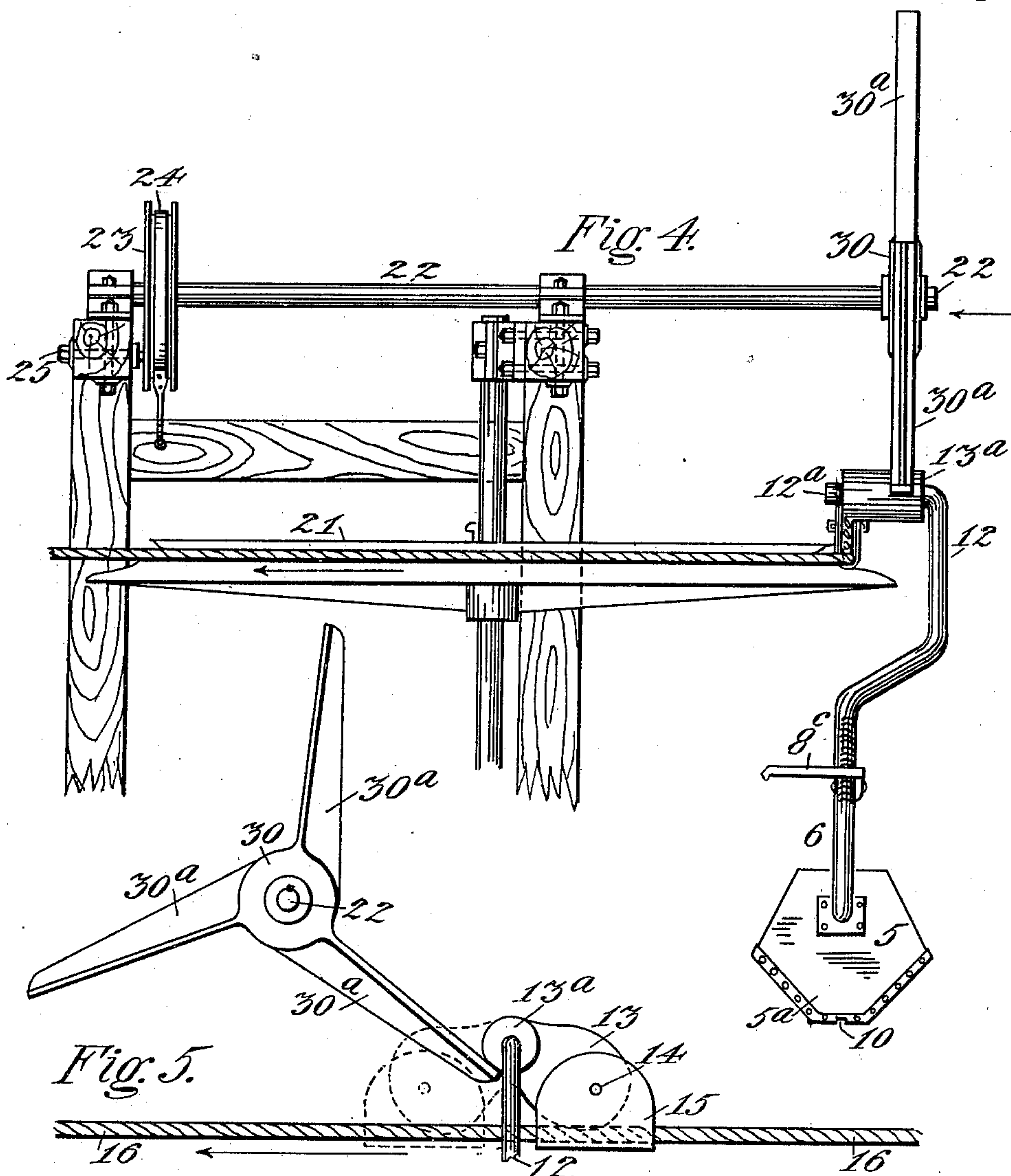
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WITNESSES:

H. M. Jeff
Grace Myttinger.

INVENTOR.
J. H. Montgomery,
By *[Signature]*
ATTORNEY.

No. 663,817.

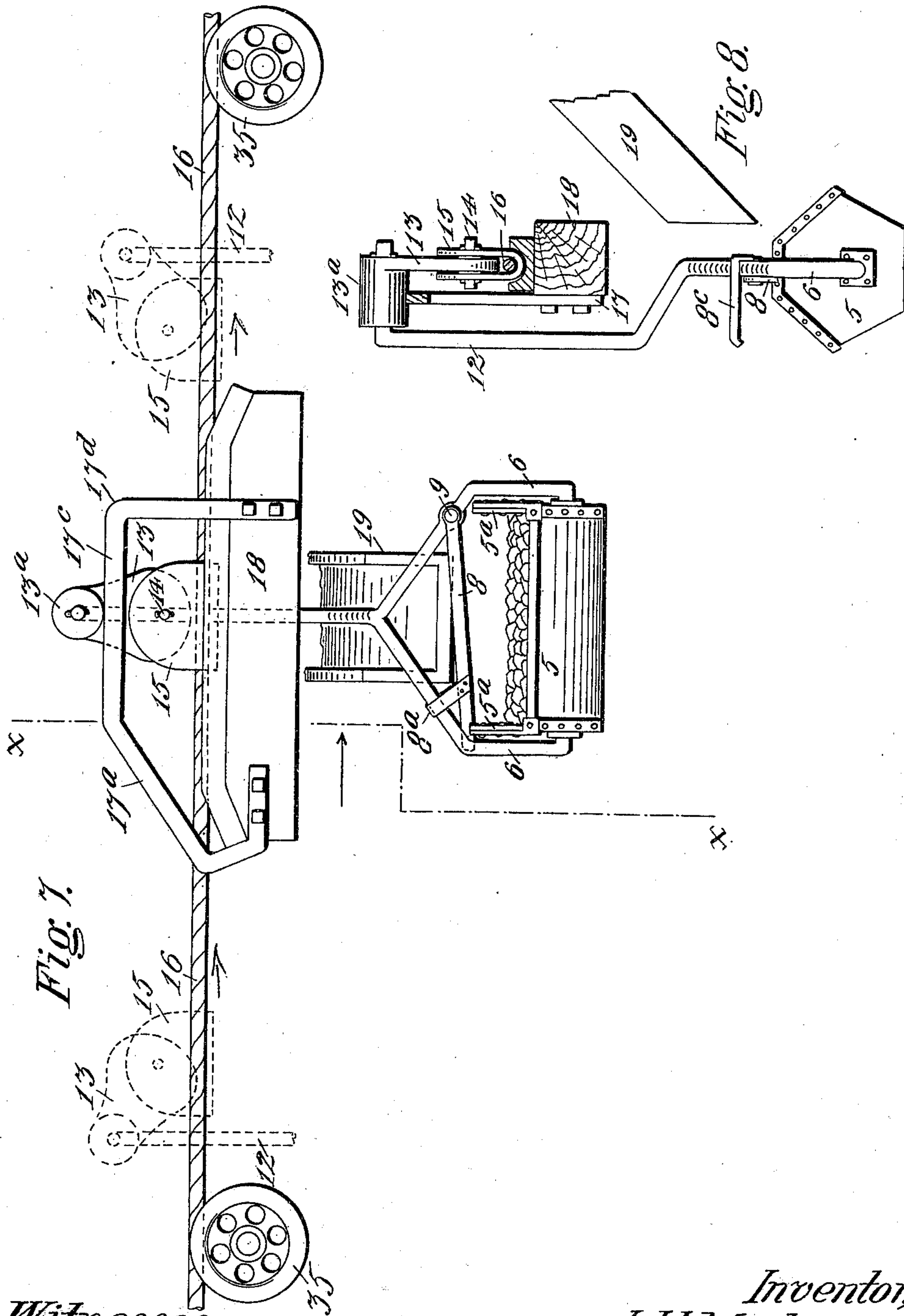
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3 Sheets—Sheet 3.



Witnesses,
H. M. Neff
Grace Mytinger.

Inventor,
J. H. Montgomery,
By *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

JAMES H. MONTGOMERY, OF DENVER, COLORADO.

AERIAL WIRE-ROPE TRAMWAY.

SPECIFICATION forming part of Letters Patent No. 663,817, dated December 11, 1900.

Application filed May 14, 1900. Serial No. 16,697. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MONTGOMERY, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Aerial Wire-Rope Tramways; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to aerial wire-rope tramways, and more especially to the gripping device connected with the carriers forming a part of a structure of this class.

In addition to the gripping device proper my present improvement embodies means for automatically releasing the gripping-lever at the loading-station, whereby the carrier is allowed to stop until the bucket is filled, while the endless rope or cable continues its movement, and means for automatically releasing the cam-lever at the dumping-station or lower terminal of the tramway.

My object is to increase the efficiency and facilitate rapidity of operation in tramways of the class stated, and to this end my invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 illustrates my improved gripping device shown in connection with the carrier, the bucket being bottom side up and traveling upwardly with the wire rope or cable toward the loading-station. Fig. 2 is a similar view showing the bucket loaded and traveling downwardly. Fig. 3 is a top view of the lower terminal, illustrating the means for reversing the position of the cam-lever of the gripper. Fig. 4 is a side elevation of the same viewed in the direction indicated by the arrow in Fig. 3. Fig. 5 is an elevation of the same viewed in the direction of the arrow in Fig. 4, the carrier-pendant being partly broken away. Fig. 6 is a top view of the gripper. Fig. 7 is a side view illustrating the releasing device located at

the loading-station. Fig. 8 is a section taken on the line X X, Fig. 7.

Similar reference characters indicating corresponding parts in the views, let the numeral 5 designate the bucket, which is trunnioned on the bail 6, the trunnion-axis being below the center of gravity when the bucket is in the upright position, as shown in Fig. 2, whereby when the locking device is released the bucket will tip over automatically and dump its contents. The locking device consists of an arm 8, pivoted on the bucket-bail at 9 and adapted to enter a recess 10, formed in one of the upwardly-projecting end walls 12 of the bucket. The arm 8 is provided with an auxiliary arm 8^a, resting on the bail of the bucket and supporting the arm 8 in position to engage the said recess. The auxiliary arm is adapted to engage any suitable device (not shown) which may be located at the dumping-station, whereby the arm 8 is raised sufficiently to disengage it from the recess 10, allowing the bucket to assume the dumping position shown in Figs. 1, 4, and 5. Extending upwardly from the bucket-bail is a bent pendent arm 12, whose upper extremity 12^a is bent at right angles to the body of the arm. Upon the part 12^a is journaled or movably mounted the cam-lever 13, whose extremity is provided with an integral sleeve 13^a, through which the part 12^a of the pendent arm passes. The lever 13 is eccentrically fulcrumed at 14 on the shoe 15, which embraces the wire rope or cable 16, the arrangement being such that the cam-lever will grip the cable tightly by virtue of the gravity of the bucket when the lever is thrown in either direction from the dead-center position shown in Fig. 7, the two gripping positions of the lever being indicated by dotted lines in the said figure. At the loading-station the sleeve 13^a of the lever comes in contact with a bracket 17, mounted on a stationary support 18. This bracket is provided with an inclined part 17^a and a horizontal part 17^c. Assuming that the rope or cable is moving in the direction indicated by the arrows in Fig. 7, as the sleeve 13^a engages the incline 17^a of the bracket the lever is disengaged from the rope or cable, which passes on without the carrier, which continues to move by virtue of its momentum until it reaches the horizontal

part 17^c of the bracket, where it stops with the bucket in position to receive the load from the chute 19. The bucket is first turned to the upright position (see Figs. 6 and 7) by the person in charge of the loading-station, after which it is filled with ore or other material which it is desired to transport down the mountain, for instance. After this is done the carrier is moved in the direction of the traveling cable far enough to cause the sleeve of the cam-lever to pass over the rounded or inclined corner 17^d of the bracket, allowing the lever to assume the position shown by dotted lines at the right of Fig. 7, when the lever again grips the cable and the loaded bucket travels on downwardly toward the dumping-station. After the dumping-station is reached and the bucket has been emptied in the manner heretofore explained it becomes necessary to again reverse the position of the lever 13 before the carrier starts on its upward journey toward the loading-station in order that the gripping-lever may act to the best advantage on the moving cable. The manner of as well as the mechanism for effecting this result will now be explained.

In a stationary framework 20 (see Figs. 3 and 4) is journaled a large terminal sheave-wheel 21. In this same frame is journaled a shaft 22, extending at right angles to the axis of the sheave-wheel. At one extremity of the shaft is made fast a brake-wheel 23, engaged by a brake-band 24, one extremity of which is secured to the stationary frame by a bolt 25, while the other extremity is connected with a tension-rod 26, which passes through an opening in one of the frame-bars, its protruding extremity being threaded and engaged by a nut 27, operated by a crank 28. This nut engages a washer 29, made fast to the frame-bar, and through which the threaded portion of the rod passes. It is evident that the braking power of the band 24 may be regulated by adjusting this nut. To the opposite extremity of the shaft 22 is made fast a hub 30, provided with arms 30^a, adapted to project into the path of the sleeve 13^a of the gripper-lever as the carrier is passing around the terminal wheel 21. The brake-band 24 is set sufficiently tight to cause the arm 30 to offer sufficient resistance to the lever to move the same from the position shown in full lines to the dotted-line position, (see Fig. 5,) after which the cam-lever and its connections will continue their movement, turning the hub 30 sufficiently to throw the engaging arm 30^a out of the way. It must be understood that during the lever-reversing operation the shoe 15 continues to travel with the cable, since the shoe is clamped between the cable and the wheel sufficiently tight to produce this result even after the cam-lever is released. Hence the shoe will travel independently of the lever and bucket until the lever has reached the dotted-line position shown in Fig. 5, the hub 30 and its arms 30^a in the meantime re-

maining stationary. However, as soon as the lever reaches the dotted-line position it begins to move forwardly with the shoe and acts on the arm 30^a to turn the hub, as explained.

In Fig. 7 a supporting sheave-wheel 35 for the cable 16 is shown on each side of the loading-station.

Having thus described my invention, what I claim is—

1. In an aerial tramway, the combination with a rope or cable and a carrier, of a shoe adapted to embrace the cable and a cam-lever fulcrumed on the shoe and connected with the carrier, the arrangement being such that the gravity of the carrier causes the lever to automatically grip the cable.

2. In an aerial tramway, the combination with a rope or cable and a carrier, of a shoe adapted to embrace the cable, a reversible cam-lever fulcrumed on the shoe and connected with the carrier at a point remote from the fulcrum, the arrangement being such that the gravity of the carrier causes the lever to automatically grip the cable when the carrier extremity of the lever is pointed in either direction from the shoe.

3. In an aerial tramway, the combination with a rope or cable and a carrier, of a shoe mounted on the cable, a lever fulcrumed on the shoe, its opposite extremity terminating in a sleeve journaled on the carrier, the arrangement being such that the gravity of the carrier causes the lever to automatically grip the cable.

4. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of a shoe, a lever connecting the shoe with the pendent arm of the carrier, and arranged to grip the cable automatically, and suitable means mounted on a stationary support and lying in the path of a portion of the lever, whereby the extremity of the lever connected with the pendant is raised sufficiently to release the cable, allowing the latter to travel through the shoe which remains stationary.

5. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of a shoe, a lever fulcrumed on the shoe and having a sleeve journaled on the pendent arm of the carrier and projecting at right angles to the body of the lever, and a stationary bracket lying in the path of said sleeve and having an inclined part adapted to engage the sleeve and raise the pendent extremity of the lever sufficiently to release the cable whereby the carrier is allowed to stop at predetermined intervals.

6. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of a shoe, a lever fulcrumed on the shoe and movably connected with the pendent arm of the carrier, the lever being adapted to grip the cable automatically when its carrier extremity is pointed in either direction, and means lying in the path of the lever and arranged to throw it from one position to the other.

7. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of a shoe, a lever fulcrumed on the shoe and movably connected with the pendent arm of the carrier, the lever being adapted to grip the cable automatically when its carrier extremity is pointed in either direction from the shoe, and means arranged to throw it from one position to the other, said means comprising a hub having arms adapted to project into the path of the lever and arranged to offer sufficient resistance to perform the function stated, after which the lever acts on the arm to turn the hub sufficiently to permit the carrier to pass on.

8. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of a shoe, a lever fulcrumed on the shoe and movably connected with the pendent arm of the carrier, the lever being adapted to grip the cable automatically when its carrier extremity is pointed in either direction from the shoe, and means arranged to throw the lever from one position to the other, said means comprising a shaft suitably journaled, brake mechanism connected with the shaft, a hub fast on the shaft and provided with arms projecting into the path of the lever, the brake mechanism being so regulated that the hub does not move until the position of the lever has been reversed.

9. In an aerial tramway, the combination with a rope or cable and a suitable carrier, of

a shoe, a lever fulcrumed on the shoe and movably connected with the pendent arm of the carrier, the lever being adapted to grip the cable automatically when its carrier extremity is pointed in the other direction, and means arranged to throw the lever from one position to the other, said means comprising a shaft suitably journaled, a pulley fast on the shaft, an adjustable brake-band adjusting the pulley, and a hub fast on the shaft and provided with arms projecting into the path of the lever.

10. In an aerial tramway, the combination with a rope or cable, and a carrier, of a shoe adapted to embrace the cable, and a cam-lever fulcrumed on the shoe and connected with the carrier, the arrangement being such that the gravity of the carrier causes the lever to automatically grip the cable by direct contact therewith.

11. In an aerial tramway, the combination with a rope or cable and a carrier, of a shoe adapted to embrace the cable, and a reversible cam-lever fulcrumed on the shoe and connected with the carrier, the arrangement being such that the gravity of the carrier causes the lever to automatically grip the carrier.

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

JAMES H. MONTGOMERY.

Witnesses:

A. J. O'BRIEN,

GRACE MYTINGER.