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Patented Aug. 26, 1902.

J. W. FOREMAN.  
CONVEYING APPARATUS.

(Application filed Jan. 28, 1902.)

(No Model.)

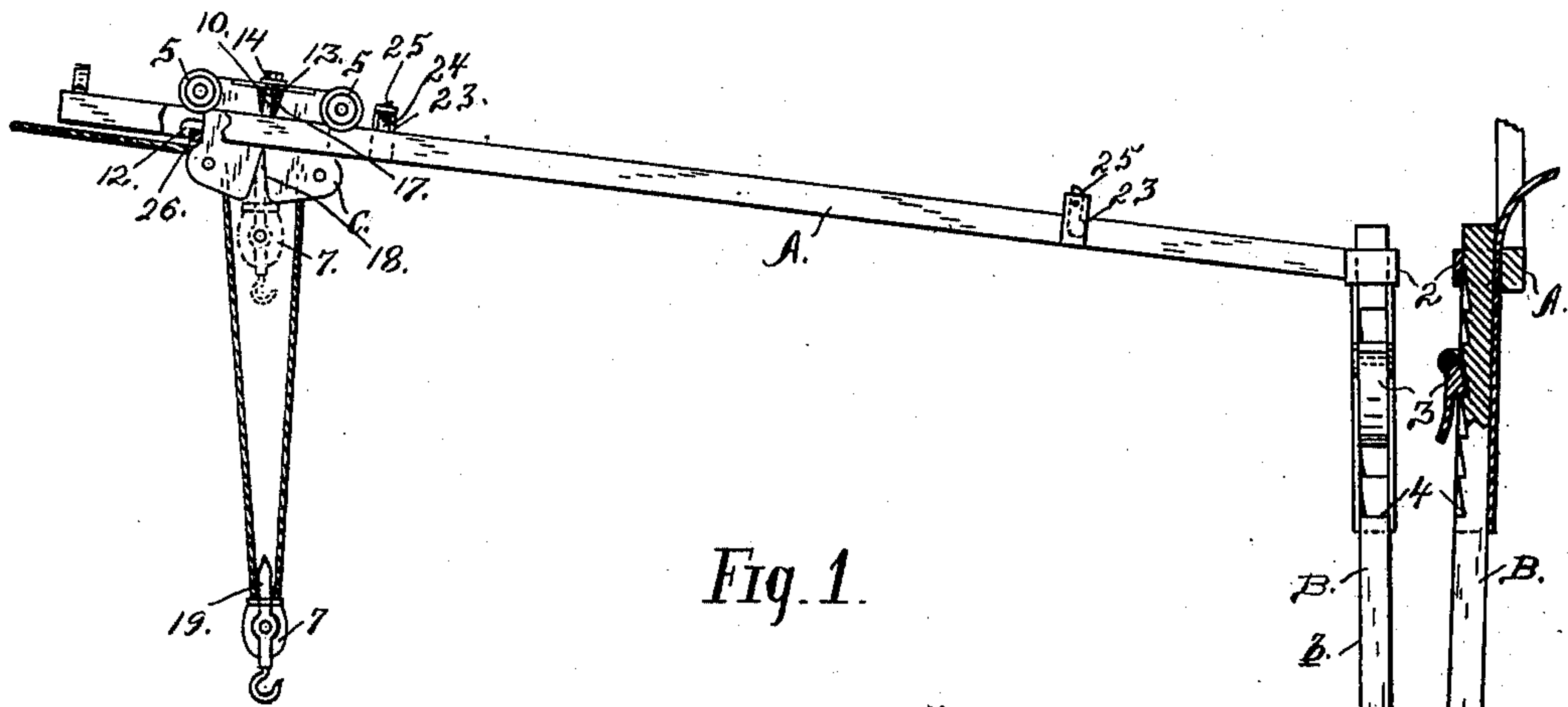


Fig. 1.

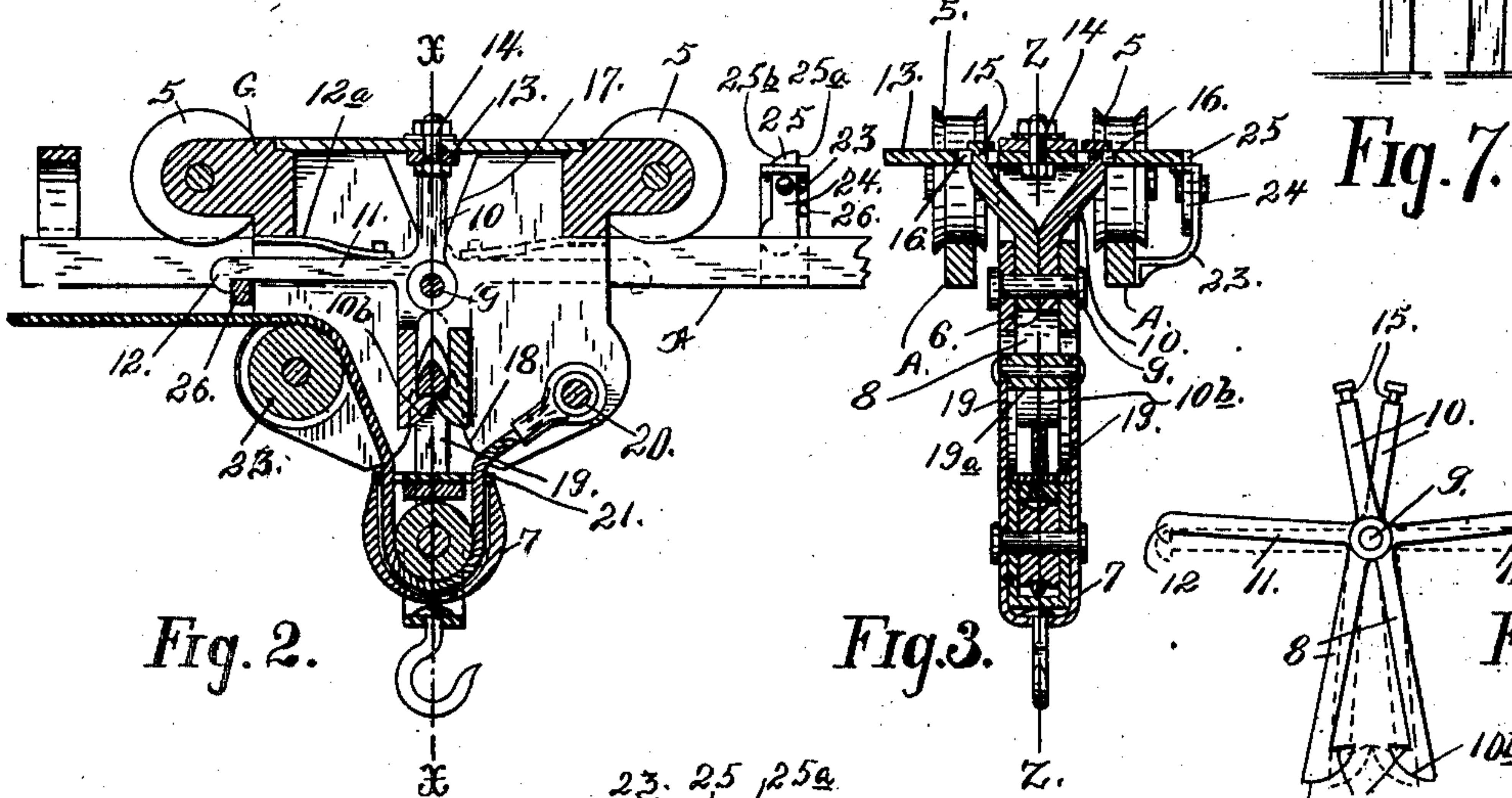


Fig. 2.

Fig. 3.

Fig. 4.

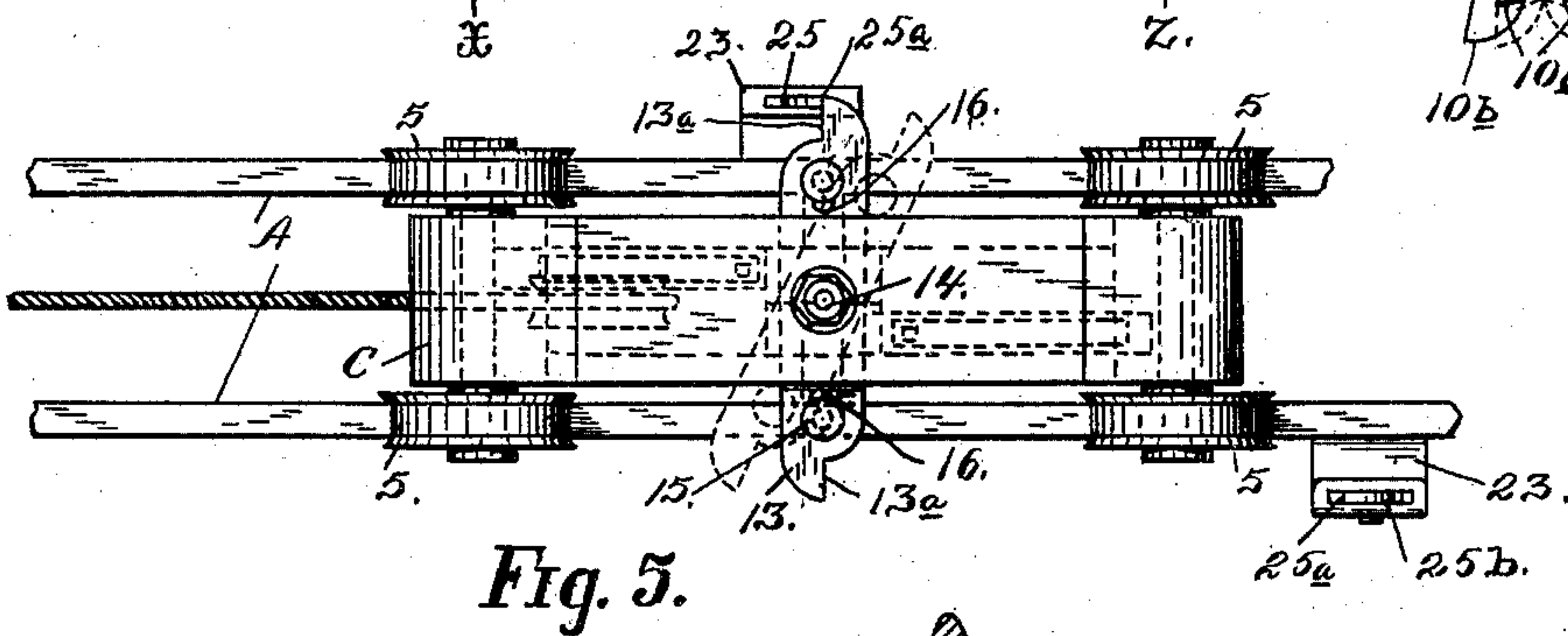


Fig. 5.

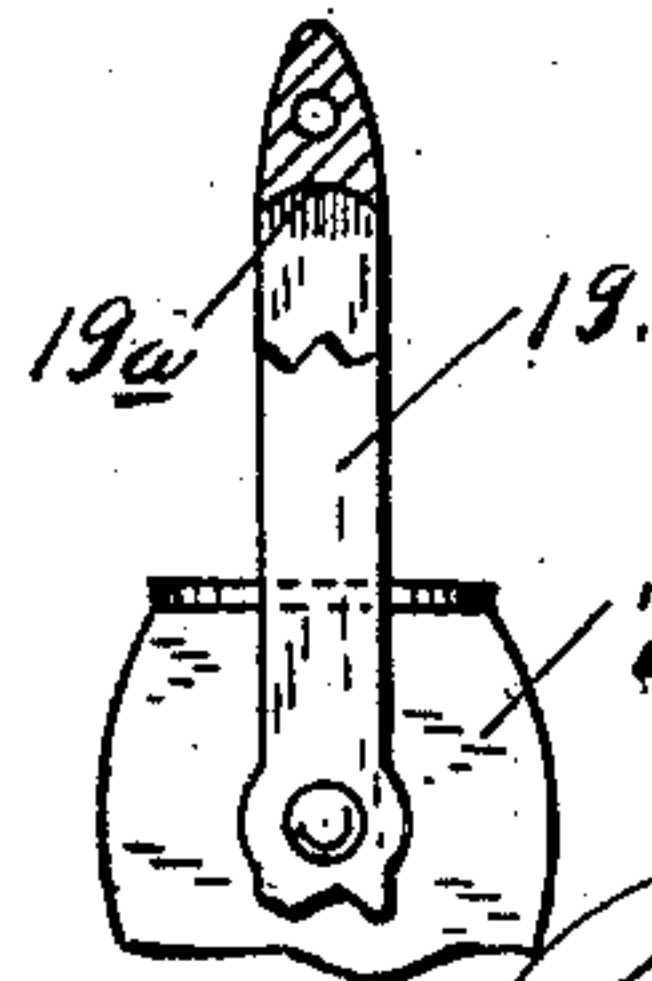


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 707,688, dated August 26, 1902.

Application filed January 28, 1902. Serial No. 91,561. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. FOREMAN, a citizen of the United States, residing at Healdsburg, in the county of Sonoma, State of California, have invented an Improvement in Conveying Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in apparatus for transporting burdens from one point to another by means of a carriage traveling upon a rigid track. Its object is to provide a means for loading and unloading vessels, for removing earth from excavations, and for use generally wherever a burden is to be picked up at one point and transferred and deposited at another point. It is especially designed to engage and release the fall-block automatically at these points.

It consists of a rigid track, standards adjustable in length by which the elevation of said track may be varied, a carriage adapted to travel over said track, grip members upon said carriage by which a fall-block may be engaged, tripping devices upon the track whereby the members are automatically opened to release the fall, means for holding the carriage after the fall has been released, and means for moving the carriage.

It also comprises details, which will be more fully set forth hereinafter, having reference to the accompanying drawings, in which—

Figure 1 shows a side elevation of my improved conveying apparatus. Fig. 2 is a sectional view taken on the line  $z z$  of Fig. 3. Fig. 3 is a sectional view taken on the line  $x x$  of Fig. 2. Fig. 4 shows the operating mechanism of carriage. Fig. 5 is a top view of carriage. Fig. 6 is a partial sectional and side elevation of bail of "fall-block." Fig. 7 shows the locking device for the adjustable standard.

A represents a two-rail track of any suitable length. Where used for unloading car- goes upon wharves from vessels lying alongside, this track may be made portable and adapted to be supported at one end from the rigging, while the other end is supported upon the wharf by means of the adjustable standards B. These standards each consist of a channel-iron portion, in which a member  $b$  is slidable, the latter being held in place by

means of the straps 2 and the pawl 3. The members  $b$  are formed with the notches 4. As they are moved outward to lengthen the standards the pawls engage the notches and lock the members  $b$  against being pushed in until the pawls are turned outward to free them from the notches. The device is thus applicable for varying conditions of tide, cargo, size of ship, &c., for it is intended that this track shall always be maintained on an incline, as the carriage C, which transports the burden, is intended to run by gravity in one direction.

The carriage C is suitably mounted upon the trucks 5 running upon the track. The body of the carriage depends between the rails and is in a measure guided thereby and prevented from being derailed. The body of the carriage may be made of two plates, separated to form a space 6 between them and suitably bolted together to form a rigid structure. In this space 6 the grip members which carry the fall-block 7 operate. These grip members each consist of a jaw portion 8, pivoted to the carriage at 9, provided with an upward and divergent extension 10 and provided also with a horizontal extension 11. The latter projects beyond the end of the carriage and carries a downwardly-extending projection 12. The jaws are normally held closed by means of springs 12<sup>a</sup>. A bar or yoke 13 is fulcrumed at 14 to a plate on the top of the carriage, and the end of each arm 10 carries a pin 15, which projects into a slot 16 in the bar, so that when the bar is oscillated on its fulcrum the arms are moved to open the jaws and simultaneously raise the extensions 11. The function of these latter will be explained later. The walls of the carriage may be cut away, as at 17, in order to permit of the proper movement of the arms and bar. The under side of the carriage is transversely slotted, as at 18, to admit the bail 19 of the fall-block to the jaws. The walls of the slot 18 diverge, as shown, for the purpose of furnishing a suitable guide to the jaw-opening. The jaws 10 may have their upper surfaces 10<sup>a</sup> slightly concaved. Their lower edges 10<sup>b</sup> are curved, as shown, to permit the bail 19 of the block 7 readily to be engaged. The horizontal portion of the bail is essentially triangular in cross-section with the under surface 19<sup>a</sup>



slightly concaved, whereby there is no likelihood of the jaws being opened when a heavy load is hung thereon. The end of the fall-rope, which also acts as a cable to move the load in one direction, is secured to the carriage at 20. It thence passes down through the guide-plate 21 on the block 7 around the sheave therein, out again through the plate 21, and over a pulley 22 in the carriage. From thence it connects with any suitable source of power, as the drum of an engine. The relation of the point of attachment 20 and the pulley 22 to the jaw-opening is such that when the fall-block hangs below the carriage, supported only on the fall-line, the block and bail will always stand in vertical alinement with the jaw-opening, so that when the line is wound up the block will be raised and the bail enter the slot 18 and engage automatically with the jaws. The carriage, with its load, having moved along the track to the point of discharge, or, vice versa, the carriage, relieved of its burden, has been moved to the loading-point, it is desired in either case to lower the fall either for loading or unloading purposes. This I accomplish automatically by means of trippers secured upon the track and engaging the ends of the yoke 13. These trippers are disposed one on one side and one on the opposite side and at either end of the track or wherever the respective loading and unloading points are. They each consist of a projection 23, rigidly secured to the track and having a gravity-actuated pivoted arm 24, with a wedge-shaped portion 25, adapted to project into the path of the end of the yoke 13. The latter is obversely curved at the ends, as shown, and the opposite side of each end is provided with a short straight-edge portion 13<sup>a</sup>, which contacts with the vertical portion 25<sup>a</sup> of an arm end 25 as the carriage moves in one direction. A stop 26 prevents the arm 24 from swinging beyond a vertical line as the carriage approaches from the direction just indicated. The result is that the striking of the arm against the vertical portion 25<sup>a</sup> causes the yoke 13 to oscillate, open the jaws, and release the fall-block. When the carriage returns by this tripper, the curved portion of the bar strikes the inclined portion 25<sup>b</sup> of the arm, turning the latter easily and allowing the carriage to move past without disturbing the jaws. As the carriage runs by gravity in one direction, it is necessary to devise some means of holding it stationary at the highest point of the track while the fall is being operated. Hence the object of the horizontal arms 11 and projections 12. Adjacent to either of the fall points I provide a bar or other suitable catch 26, with which the projections 12 may engage at the proper moment and hold the carriage against return until the arms 11 have been raised.

As has been seen, the oscillation of the yoke 13, the opening of the jaws, and the raising of these arms 11 are simultaneous. Accordingly, assuming the carriage to be at its

highest point of travel and the fall lowered to engage a burden, as the load is lifted the bail engages the jaws to open them and admit the bail. As this is done and the rope is slackened the weight of the carriage, block, and burden is sufficient to cause the projection 12 to release its hold of the catch 26 and allow the loaded carriage to move downward to its point of discharge, where it is tripped, as before described. When the block is again raised and tension put on the rope to haul the carriage upward, the catch 26 at that end is released. The relative amount of movement of the jaws and arms 11 is such that the act of releasing the projection 12 will not open the jaws where the release is subsequent in point of time to the engagement of the bail in the jaws. As a matter of fact the engagement and release may be and frequently is simultaneous, so that as the jaws open the arms 11 raise and the carriage moves on its journey in one direction or the other, as the case may be.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A conveying apparatus including, in combination, a rigid track; standards upon which said track may be supported; a carriage adapted to travel upon said track; a grip comprising pivoted members having arm extensions; a pivoted yoke engaging said extensions and holding the grip members closed; a fall-block engaged by said grip; and a stop in the path of the yoke for actuating the grip to release the fall-block at a predetermined point along the track.

2. The combination in a conveying apparatus of an inclined trackway, and supports therefor; a carriage; a grip comprising opposing members pivoted to the carriage and having radial arm extensions; a yoke pivoted between its ends and engaging said radial extensions, to hold the grip members closed; a fall-line having one end secured to the carriage; a burden-carrier to be raised and lowered by the fall-line and to be engaged by the grip members; and means by which the yoke is moved about its pivotal connection whereby the members of the grip may be automatically opened at a predetermined point along said trackway.

3. The combination in a conveying apparatus of a trackway; a carriage; means for advancing the same along the trackway; a grip on the carriage and including opposing pivoted members having radial arm extensions; a horizontal holding member for said extensions said member pivotally mounted; a burden-carrier to be engaged by said grip members; and a means for automatically tripping said member and causing it to open the grip members at a point along the trackway.

4. The combination in a conveying apparatus, of a track, a carriage thereon, gripping members pivoted on said carriage, arm extensions on said members, a pivoted yoke con-



necting with said extensions, trippers on the track extending into the path of said yoke by which the grip members are opened and a fall-line and a fall-block in connection with said carriage.

5 5. The combination in a conveying apparatus, of a track, a carriage thereon, gripping members pivoted on said carriage, divergent arm extensions on said members, a yoke pivoted intermediate of said members and engaging the ends of said arms, trippers disposed on opposite sides of the track adjacent to the points of loading and unloading, said trippers extending into the path of the yoke by which the grip members are opened, and a fall-line and a fall-block in connection with the carriage.

6. The combination in a conveying apparatus of a track, a carriage thereon, grip members pivoted on the carriage, arms on said members by which the latter are moved to open, other arms or extensions rigid with said members and means thereon for engaging a fixed support to hold the carriage stationary and a fall-line and fall-block or burden-carrier in connection with said carriage.

7. In a conveying apparatus, the combination of a track, a carriage having pivoted grip members thereon, arms on said members, a yoke connecting said arms whereby they may be moved simultaneously to open the jaws, means in the path of the yoke for tripping the same, and a cable and fall in connection with said carriage.

8. In a conveying apparatus, the combination of a track, a carriage having grip members pivoted thereon, arms on said members, a yoke or bar pivotally connected to each of said arms, and trippers having fixed points of supports adapted to extend into the path of said bar whereby the latter may be oscillated and the grip members opened.

9. In a conveying apparatus, the combination of a track, a carriage, grip members pivoted thereon, arms on said grip members and means including an oscillating member and a trip device in the path thereof by which said members may be automatically operated to open the jaws.

10. In a conveying apparatus the combination of a carriage having a longitudinal slot; a grip including opposing pivoted members having horizontal and vertical arm extensions lying within said slot; a yoke upon the carriage and engaging said vertical extensions; means for tripping the yoke to release the extensions; a fall line and block attached to the carriage; and means carried by the block to be engaged by the grip members.

11. In a conveying apparatus, a fall-block having a rigid bail secured thereto, and means

upon said block consisting of a point of attachment at one side of the fall-block and a guide at the opposite side of the fall-block whereby said bail is made always to stand vertical when the block is suspended upon the portion of the line or cable between said point of attachment and guide.

12. In a conveying apparatus, the combination with the track and a carriage thereof, of a fall-block, having a rigid bail, said bail including a horizontal portion essentially triangular in cross-section and adapted to engage grip members on said carriage and a line or cable secured to said carriage at one side of the fall-block and a guide-pulley at the other side of the fall-block said line or cable passing through said block and over said pulley by which the block is raised and lowered and the carriage moved along the track.

13. In a conveying apparatus, a carriage having a longitudinal slot, grip members pivoted therein, vertical and horizontal arm extensions on each of said members, a yoke connecting said vertical arms, and projections upon said horizontal arms.

14. In a conveying apparatus, the combination with a track of a wheeled carriage thereon, having a longitudinal slot-opening, jaws pivoted therein, arms upon said jaws, a yoke pivotally connected with each arm, trippers having a fixed point of support, each of said trippers including a pivoted arm adapted to have one end extend into the path of the yoke and to engage and oscillate the yoke to open the jaws when the carriage moves in one direction and said trip-arm adapted to allow the yoke to pass without disturbing the jaws when the carriage moves in the other direction.

15. In a conveying apparatus, the combination with a track, of a carriage having a longitudinal slot-opening, jaws pivoted therein, vertical and horizontal arm extensions on each of said members, means by which the latter are normally kept closed, means connected with the vertical arms whereby the jaws are moved in unison, tripping devices upon the track whereby the movement of said jaws is automatically effected, a fall-line attached to the carriage, a fall-block adapted to be raised and lowered by said line, and means upon the track engaging said horizontal-arm extensions whereby the carriage may be held stationary.

In witness whereof I have hereunto set my hand.

JOHN W. FOREMAN.

Witnesses:

FRANK A. MADEIRA,  
FRANK GUM.