

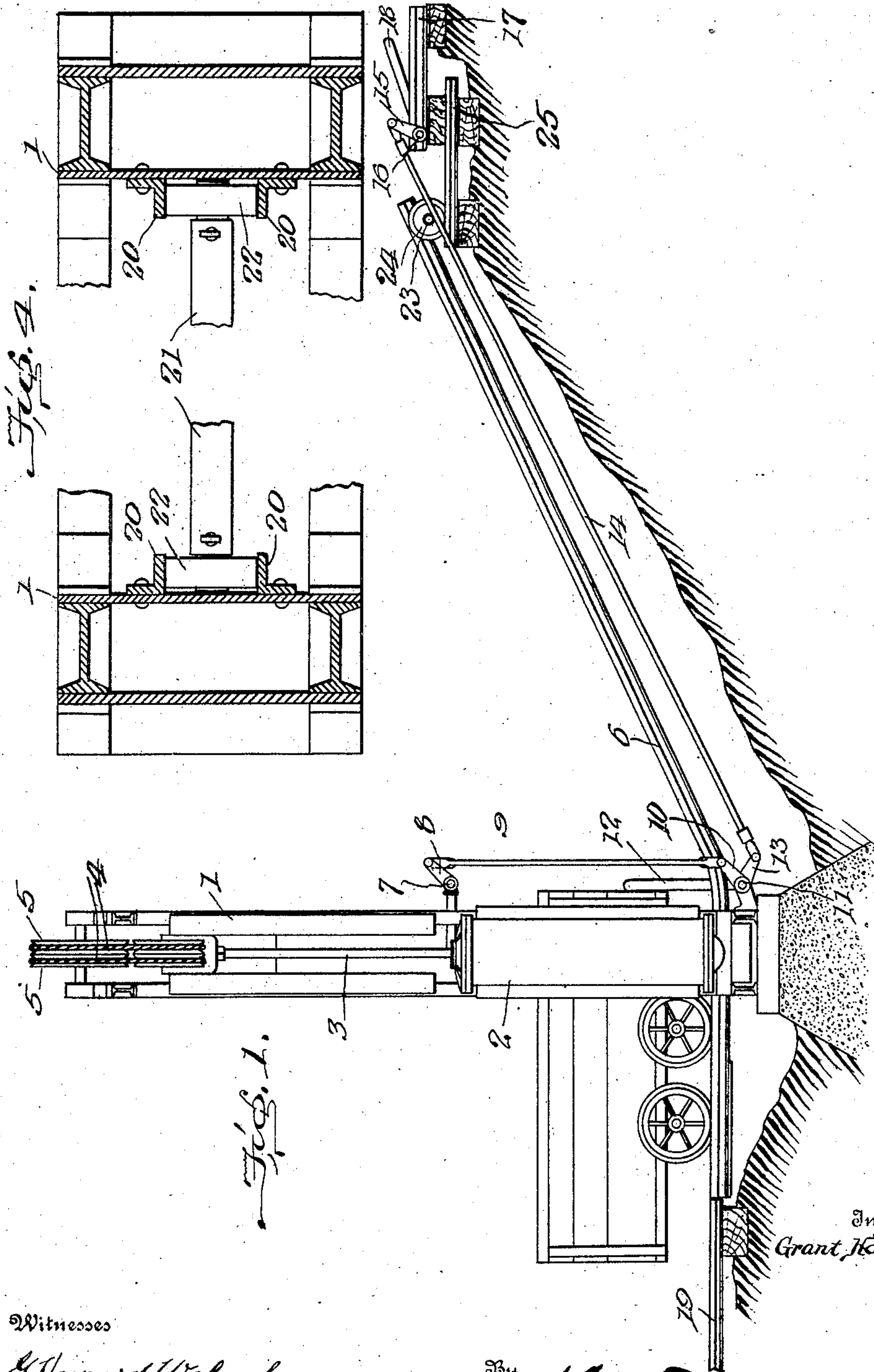
No. 850,647.

PATENTED APR. 16, 1907.

G. HOLMES.  
AUTOMATIC LIFTING MECHANISM.

APPLICATION FILED FEB. 4, 1907.

3 SHEETS—SHEET 1.



Witnesses

*G. Howard Walmsley*  
*Edward Reed*

By

*H. A. Paulino*

Attorney

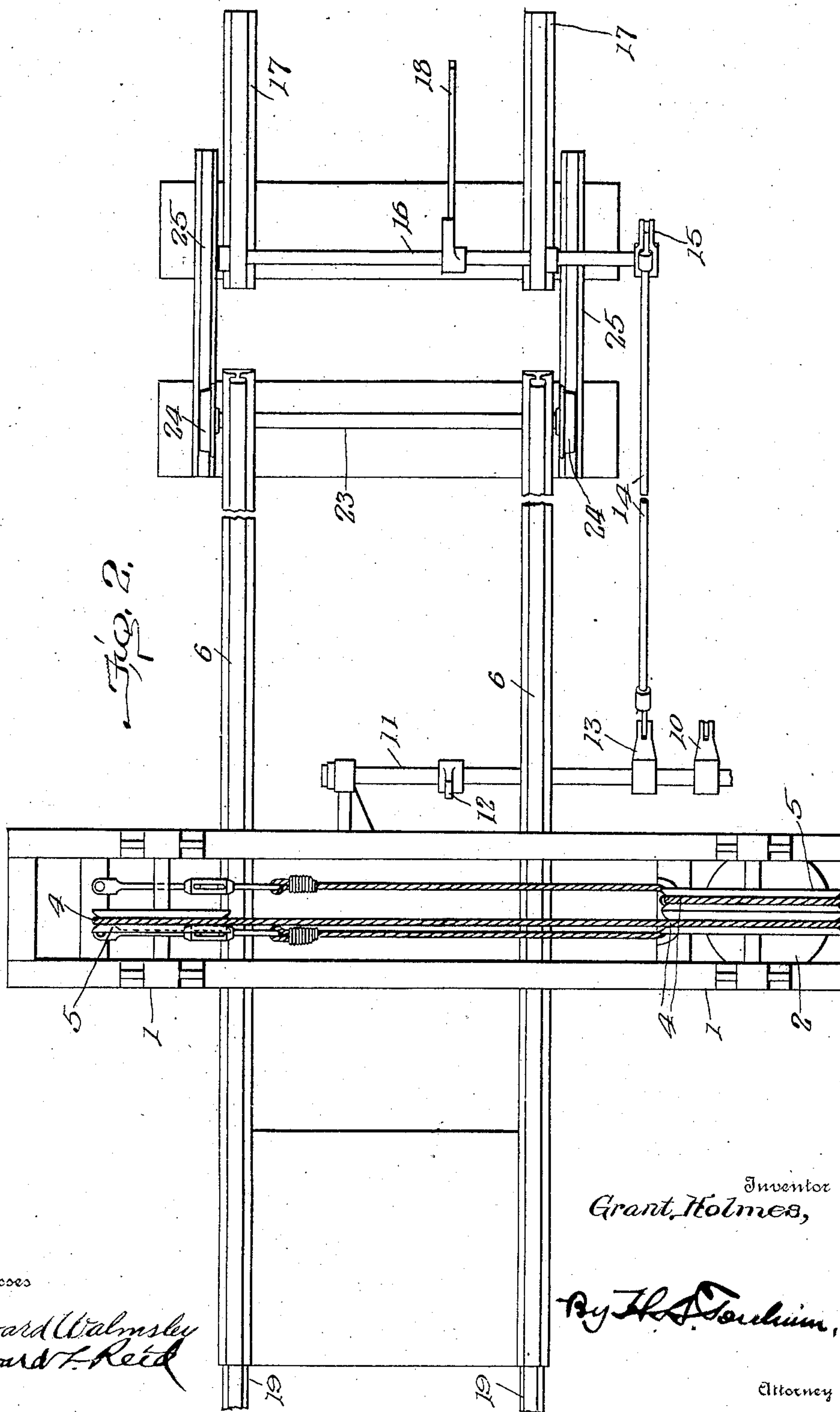
No. 850,647.

PATENTED APR. 16, 1907.

G. HOLMES.  
AUTOMATIC LIFTING MECHANISM.

APPLICATION FILED FEB. 4, 1907.

3 SHEETS—SHEET 2.



Inventor  
Grant Holmes,

By *H. D. Torlum,*

Attorney

Witnesses  
*G. Howard Walmsley*  
*Edward F. Reid*

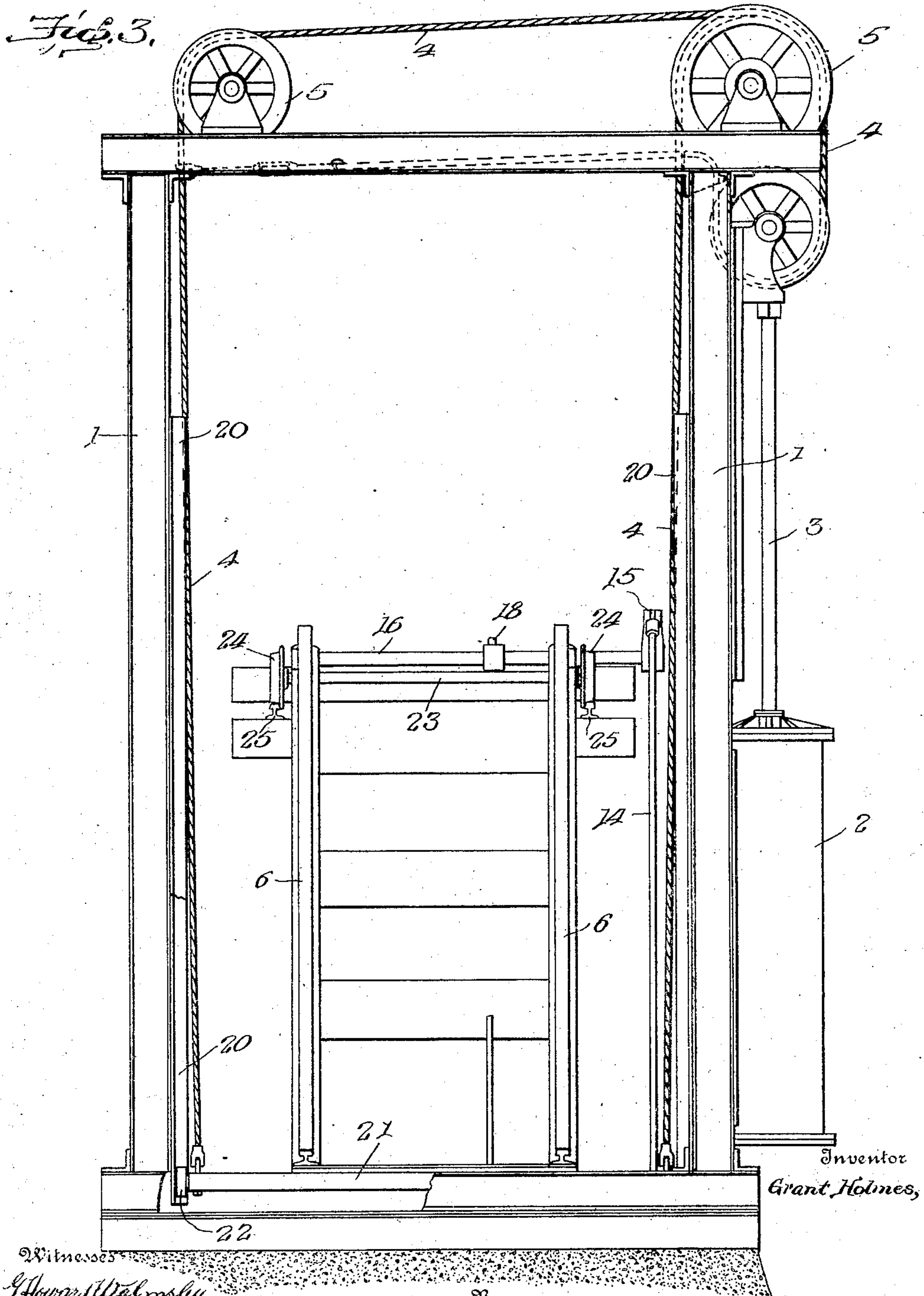
No. 850,647.

PATENTED APR. 16, 1907.

G. HOLMES.  
AUTOMATIC LIFTING MECHANISM.

APPLICATION FILED FEB. 4, 1907.

3 SHEETS—SHEET 3.



Inventor  
Grant Holmes,

Witnesses  
Howard Walmsley,  
Edward F. Reed

By

H. S. Foulmer,  
Attorney



# UNITED STATES PATENT OFFICE.

GRANT HOLMES, OF DANVILLE, ILLINOIS, ASSIGNOR TO ROBERT HOLMES & BROTHERS, OF DANVILLE, ILLINOIS, A CORPORATION OF ILLINOIS.

## AUTOMATIC LIFTING MECHANISM.

No. 850,647.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed February 4, 1907. Serial No. 355,534.

*To all whom it may concern:*

Be it known that I, GRANT HOLMES, a citizen of the United States, residing at Danville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Automatic Lifting Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention relates to automatic lifting mechanism for mine-cars, and is in the nature of an improvement upon the device shown and described in Patent No. 804,950, issued to the assignee of the present invention November 21, 1905.

The object of the present invention is to provide the movable track-section with a vertical guideway whereby the said section will be caused to move in a vertical plane and one end thereof will be held against either lateral or longitudinal movement, to provide the opposite end of the track-section with a pivotal support adapted to be moved longitudinally of the track-section to shift the pivotal center thereof to compensate for the arc of the circle transcribed about said pivotal center and to so construct said pivotal support that the ends of the rails of said track-section will be positively moved into accurate alinement with the rails of the main track, and, further, to provide the movable parts of said track-section with rollers, thereby diminishing the friction and facilitating the movement of said track-section.

With these objects in view my invention consists of certain novel features of construction hereinafter to be described and then more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a lifting mechanism embodying my invention. Fig. 2 is a top plan view of the same, partially broken away. Fig. 3 is a front elevation of the same, and Fig. 4 is a transverse section of the vertical frame of the lifting mechanism.

In the drawings I have illustrated my invention as embodied in one form of lifting mechanism. This lifting mechanism may be of any suitable construction; but I have here shown and I prefer to use that shown and described in the above-mentioned patent, which consists of a vertical frame comprising the upright members 1 and a fluid-pressure cylinder 2, having a piston-rod 3 connected

with the cables 4, which extend over the pulleys 5, supported at the upper end of the frame 1, and have their lower ends connected to the forward end of the movable rail-section 6. The admission and exhaust of the fluid to the tank 2 is controlled by a three-way valve 7, which is provided with an actuating-arm 8, connected by a rod 9 with an arm 10 on a rock-shaft 11, which extends transversely of the track-section 6 and is provided with a trip-lever 12, which occupies a substantially vertical position when the fluid is cut off from the cylinder 2. The rock-shaft 11 is provided with a second arm 13, connected by a rod 14 and an arm 15 with a rock-shaft 16, extending transversely of the main track 17, and is provided with a trip-lever 18, the relation of the trip-lever 12 to the trip-lever 18 being such that when the lever 12 is in a vertical position the lever 18 is in a substantially horizontal position, and vice versa. Thus it will be seen that as a car passes from the inclined track 19 onto the forward end of the track-section 6, which is turned at an angle to the main portion thereof, so that it will occupy a substantially horizontal position, the body of the car will come in contact with the trip-lever 12, actuating the rock-shaft, and thereby shifting the valve 7 to admit the pressure fluid to the cylinder 2, moving the piston and the piston-rod 3 downward and elevating the track-section 6. As the track-section approaches its uppermost position the inclination of the said track-section is reversed, and the car passes off the rear end of the same onto the main track 17. As it does so it engages the trip-lever 18, which is then in a vertical position, and depresses the same, thereby again closing the inlet-valve and connecting the cylinder with the exhaust.

As above stated, so much of the mechanism as has been described is included in my former patent and forms no part of the present invention, which consists in providing the forward end of the track-section 6 with a vertical guide and providing the rear end thereof with a movable pivotal center. This I accomplish by providing the inner faces of the upright members 1 with inwardly-extending guideways, which are preferably formed by the oppositely-facing angle-irons 20, secured to the uprights 1 and forming a guideway between them. The forward end



of the track-section 6 is supported on a transverse axle 21, which extends beyond the opposite sides thereof and is provided with rollers 22, journaled on the projecting ends thereof. The length of the axle 21 is substantially equal to the distance between the inner walls of the uprights 1, and it will be apparent that the construction is such as to allow the axle 21 and the forward end of the track-section 6, which is rigidly secured thereto, a free and easy vertical movement, but to hold the same against all longitudinal or lateral movement. As the opposite end of the track-section 6 does not move vertically with the forward end thereof, it is necessary to provide some means to compensate for the arc of the circle described by the forward end of the track-section about the pivotal support at the rear end thereof. To accomplish this, I provide the rear end of the track-section with an axle 23, which is rigidly secured beneath the same and projects beyond the opposite sides thereof and is provided on the projecting ends with flanged wheels 24, which are journaled thereon and adapted to engage the short track section or guide 25, which extends substantially parallel with the main-track section 17 and preferably consists of short rails mounted on opposite sides of the track, extending substantially parallel therewith and located in a slightly lower plan than the main track 17, whereby the wheels 24 of the track-section when in engagement with the guide 25 will support the rear end of the track-section at the proper height to bring the same into accurate alinement with the rails of the track-section 17. The guides 25 are located at the ends of the track-section 17 and extend for a considerable distance in each direction beyond the ends of the rails of said track-section, thus allowing abundant space for the movement of the track-section 6. Thus it will be seen that as the lifting mechanism is actuated and the forward end of the track-section 6 moved about the pivotal support at the rear end thereof and held against longitudinal movement the pivotal support at the rear end thereof will be moved away from the vertical plane, in which the forward end of the track-section is moving, a distance equal to the arc of a circle which would be described about said pivotal support, if such support was fixed and the forward end of the rail-section free to move longitudinally.

When the track-section is in its lowermost position, the rear end thereof is moved some distance from the adjacent ends of the main track 17, thus leaving a space between the two sections of track and providing a buffer, and thereby preventing the return of any car after the same has been discharged from the track-section 6.

I wish it to be understood that I do not desire to be limited to the exact details of con-

struction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a device of the character described, the combination, with a movable track-section, and means for elevating one end thereof, of a pivotal support for the opposite end of said track-section movable in a longitudinal direction, substantially as described.

2. In a device of the character described, the combination, with a movable track-section, means for elevating one end thereof, and means for holding said end against longitudinal movement, of a pivotal support for, the opposite end of said track-section movable in a longitudinal direction, substantially as described.

3. In a device of the character described, the combination, with a pivoted track-section, and means for moving the same about its pivotal center, of means for shifting said pivotal center, substantially as described.

4. In a device of the character described, the combination, with a movable track-section, and means for elevating one end thereof, of a guideway near the other end of said track-section and extending longitudinally thereof, and a guide carried by said track-section and adapted to engage said guideway, substantially as described.

5. In a device of the character described, the combination, with a movable track-section, and means for elevating one end thereof, of guideways on the opposite side of said track-section and extending longitudinally thereof, and guides carried by said track-section on opposite sides thereof and adapted to engage said guideways, substantially as described.

6. In a device of the character described, the combination, with a movable track-section, and means for elevating one end thereof, of tracks near the other end of said track-section extending longitudinally thereof, an axle secured near the end of said track-section, and wheels journaled on said axle and adapted to engage said rails, substantially as described.

7. In a device of the character described, the combination, with a movable track-section, means for elevating one end thereof, vertically-extending guideways, and guides carried by said ends of said track-section and adapted to engage said guideways, of a pivotal support for the opposite end of said track-section movable in a longitudinal direction, substantially as described.

8. In a device of the character described, the combination, with a movable track-section, means for elevating one end thereof, a vertically-extending frame, guideways on opposite sides of said frame, an axle rigidly se-



cured near the forward end of said track-section, rollers journaled on said axle adapted to engage the guideways on said vertical members, of a pivotal support for the opposite  
5 end of said track-section comprising an axle secured thereto, wheels journaled on said axle, and a fixed guideway for said wheels, substantially as described.

9. In a device of the character described,  
10 the combination, with a movable track-section, means for elevating one end thereof, of

a pivotal support for the opposite end of said track-section movable in a longitudinal direction and adapted to form a buffer when said track-section is in its lowermost position, 15 substantially as described.

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

GRANT HOLMES.

Witnesses:

FRED. B. PENWELL,  
WALTER C. LINDLEY.