

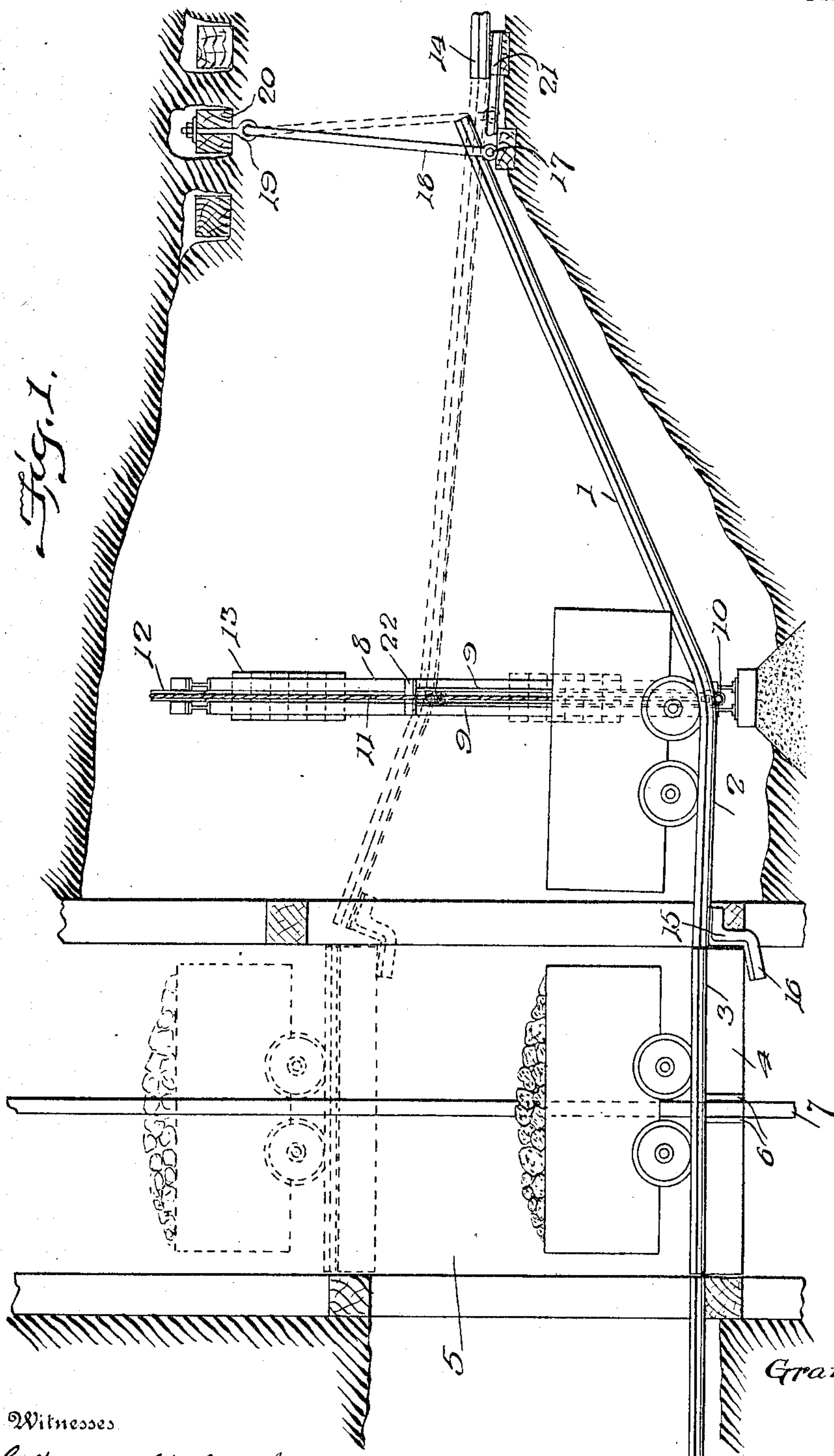
No. 871,120.

PATENTED NOV. 19, 1907.

G. HOLMES.
AUTOMATIC LIFTING MECHANISM.

APPLICATION FILED MAY 18, 1907.

2 SHEETS—SHEET 1.



Inventor

Grant Holmes,

Witnesses

G. Howard Walmsley,
Edward L. Reed,

By H. A. Toculmin,

Attorney

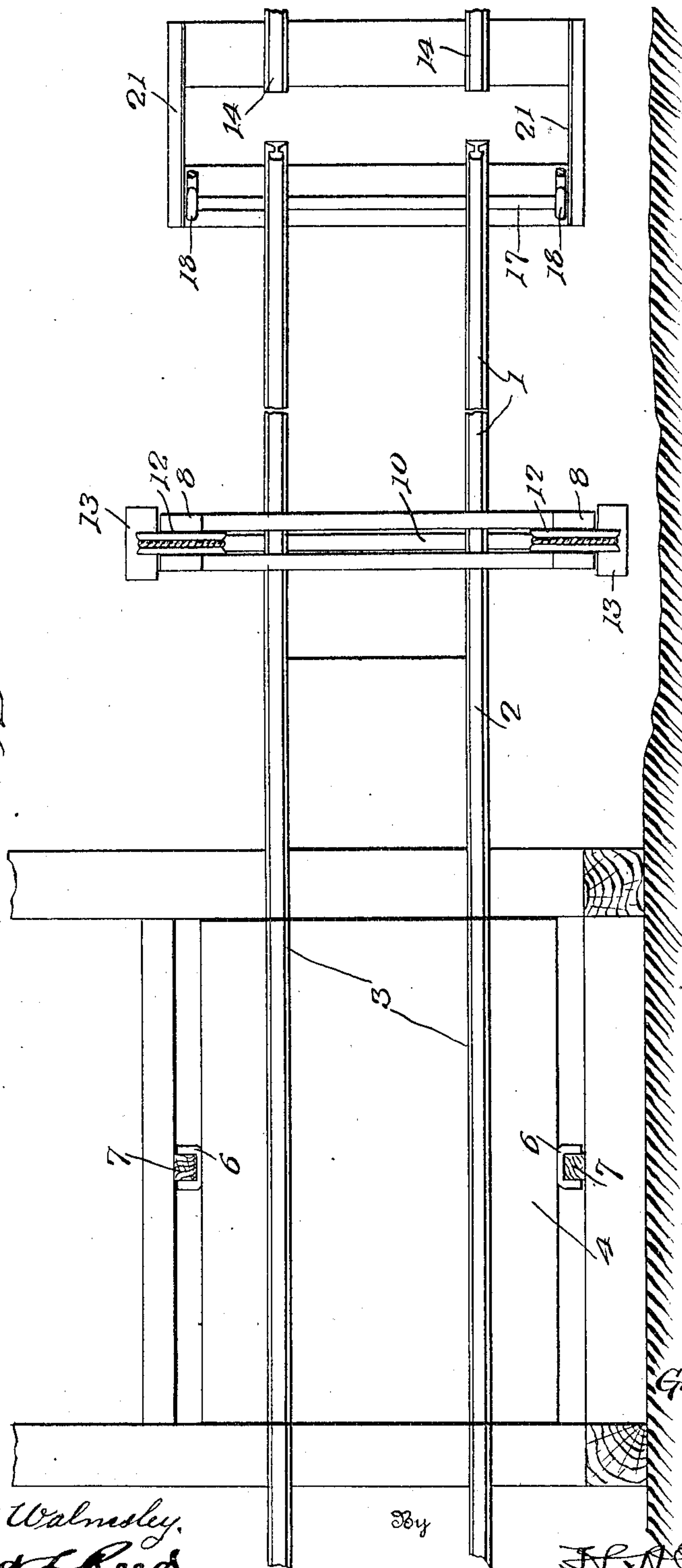
No. 871,120.

PATENTED NOV. 19, 1907.

G. HOLMES.
AUTOMATIC LIFTING MECHANISM.
APPLICATION FILED MAY 18, 1907.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses

G. Howard Walmsley,
Edward L. Reed,

By

G. H. Holmes,
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. 871,120.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed May 18, 1907. Serial No. 374,476.

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.

10 The present invention relates to automatic lifting mechanism designed particularly for handling empty cars at the bottom of a mine shaft.

15 The object of the invention is to provide a mechanism of this character which will be automatically raised and lowered by gravity without the use of power-actuated mechanism, such as is usually employed in devices of this character; and further, to provide 20 the track section with improved means for pivotally supporting one end thereof.

With these objects in view my invention consists of certain novel features of construction and in certain parts and combinations 25 hereinafter to be described, and then more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a lifting mechanism embodying my invention; 30 and Fig. 2 is a top plan view of the same.

In these drawings I have illustrated the preferred form of my invention, which comprises a track section 1 pivotally supported at one end and having its opposite end 2 35 turned at an angle to the main portion thereof so that, when the track section is in its lowermost position, the portion 2 will lie in substantially a horizontal plane and in proper alinement with the track 3, carried 40 by the cage 4, which is mounted in a suitable shaft 5 and provided with guideways 6 adapted to engage a guide 7. This cage is raised and lowered in the shaft in any suitable manner. The track section 1 extends 45 between two upright members 8, which are preferably located adjacent to the junction of the horizontal member 2 with the main portion of the track section 1 and are provided with a suitable vertical guideway, 50 preferably consisting of flanges or plates 9 extending inwardly from the inner sides of the upright member and adapted to receive the ends of a supporting bar or axle 10, which is rigidly secured beneath the track

section. Suitable cables or ropes 11 are se- 55 cured at their lower ends to the axle 10 and extend upwardly and over pulleys 12, journaled near the upper ends of the upright members 8, and are provided on their other ends with suitable weights 13. The coun- 60 terbalancing weights 13 are of sufficient weight to raise the lower end of the track with an empty car thereon when said track section is free to move and will move said track section upwardly a distance sufficient 65 to incline the same rearwardly, thus permitting the empty car to run off of the rear end of said track and onto the main or elevated track 14, from which the car is carried by means of suitable switches to the desired 70 part of the mine.

The upward movement of the track section is limited by suitable stops, which may be engaged either by the track section itself or by the weights 13. As here shown, the 75 stop consists of a block or plate 22 secured on the inner side of the upright member 8, and adapted to be engaged by the track section when it has reached the upper limit of its movement. The forward end of the 80 track section is provided with a part adapted to extend into the shaft 5 and lie in the path of the cage 4. As here shown, this part consists of a projection or lip having a vertical portion 15, secured to the under side of 85 the track section near its forward end and having its lower end bent at an angle thereto, as shown at 16, and adapted to extend into the path of the cage. The part 16 is preferably bent at an angle slightly greater 90 than a right angle so that it will be inclined downwardly from the vertical portion 15 and thus, at all times, present a broad engaging surface to the bottom of the cage.

The rear end of the track section 1 is piv- 95 otally supported in any suitable manner, but I prefer to support the same in the manner herein shown, in which the track section is provided with a support or axle 17, secured beneath the same and extending beyond the 100 same at both sides thereof. Suitable rods or links 18 are journaled at their lower ends to the axle 17, preferably near its outer end and are pivotally connected at their upper ends to a fixed support above the track, that 105 herein shown consisting of an eye-bolt 19 secured to an overhead beam 20. Suitable guideways 21 are provided on opposite sides

of the track adjacent to the ends of the axle 17 and serve to prevent lateral movement of the track section and to maintain the same in proper alinement with the track section 14.

5 With the cage in its elevated position, the movable track section will be held by the weights 13 in its elevated position and will be empty, the car having been discharged from the rear end thereof. When the cage 4
10 is moved downwardly with an empty car thereon, said cage comes into engagement with the projection 16 carried by said track section and moves the same downwardly against the action of the weights 13. When
15 the cage is in its lowermost position, the portion 2 of the track section is in alinement with the track on said cage, and, when the loaded car is pushed onto the cage, the empty car is pushed off of the same and onto
20 the portion 2 of said track section. When the cage is elevated to remove the loaded car, the track section 1 is again free to move upward and the weights 13 raise the same until it comes into engagement with the stop
25 22, at which point the inclination is sufficient to discharge the car. The ends of the axle 10, which is rigidly secured to the under side of the track section 1, being confined between the guides 9 on the upright mem-
30 bers 8, cause the forward end of the track section to move in a vertical plane. Consequently, the rear end of the said track section must be free to move in a longitudinal direction. This longitudinal movement is
35 permitted by the swinging support, upon which the rear end of the track section is mounted, the guideways 21 serving to prevent lateral movement of the track section and causing the ends thereof to move into
40 proper alinement with the main track 14 when the track section 1 is in its elevated position. The axle 17, to which the supporting rods 18 are connected, is preferably secured to the track section 1 some distance
45 from the rear end thereof. Thus, when the track section is in its lowermost position, the extreme rear end of the same will be elevated and will be moved away from the ends of the track 14, thus forming a buffer adapted to
50 check the movement of any car which should run back on the track 14 after having once been discharged from the track section.

I wish it to be understood that I do not desire to be limited to the exact details of
55 construction 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
60 Letters Patent, is:—

1. A lifting mechanism of the character described comprising a pivoted track section, a weight connected to one end thereof and adapted to elevate the same, means for
65 lowering said track section against the ac-

tion of said weight and a longitudinally movable support for the other end of said track section.

2. In a lifting mechanism of the character described, the combination, with a movable
70 track section, and a vertically reciprocating member near one end thereof, of means for elevating one end of said track section, a part carried by said track section and extending into the path of said vertically mov-
75 able member and adapted to be engaged thereby on the downward movement thereof.

3. In a lifting mechanism of the character described, the combination, with a movable
80 track section, and a vertically reciprocating member near one end thereof, of a weight connected to said track section and adapted to elevate the same, and a part carried by said track section and extending into the
85 path of said vertically movable member and adapted to be engaged thereby on the downward movement thereof.

4. In a lifting mechanism of the character described, the combination, with a movable
90 track section, and a vertically reciprocating member near one end thereof, of upright members on the opposite sides of said track section, pulleys mounted near the upper end of said upright members, cables connected at
95 one end to said track section extending over said pulleys and provided at the other end with weights, and a projection carried by one end of said track section and extending into the path of said reciprocating member.

5. In a lifting mechanism of the character
100 described, the combination, with a movable track section, and a vertically reciprocating member near one end thereof, of upright members extending on opposite sides of said
105 track section, guideways on the inner faces of said upright members, an axle extending transversely of said track section and having its ends in engagement with said guideways, a pulley mounted near the upper end of said
110 upright members, cables secured to said axle near the opposite ends thereof extending upwardly and over said pulleys and provided at their opposite ends with weights, and a projection carried by said track section and extending into the path of said reciprocating
115 member.

6. A lifting mechanism of the character described comprising a movable track section, means for raising and lowering one end
120 thereof, and a swinging support for the opposite end thereof.

7. A lifting mechanism of the character described comprising a movable track section, means for raising and lowering one end
125 thereof in a vertical plane, and a swinging support for the opposite end thereof.

8. A lifting mechanism of the character described comprising a movable track section, means for raising and lowering one end
130 thereof, and rods pivotally connected at one

end to said track section and pivotally connected at their other ends to a fixed support above said track section.

5 9. A lifting mechanism of the character described comprising a movable track section, means for raising and lowering one end thereof, an axle extending transversely of said track section near the opposite end thereof, links connected at one end to said
10 track section and at the other end to a fixed support above said track section, and guide-ways on the opposite sides of said track section adapted to engage the ends of said axle.

15 10. A lifting mechanism of the character described comprising a movable track section, weights connected thereto and adapted to elevate the same, positively operated means adapted to engage one end of said track section to lower the same, and a swing-
20 ing support for the opposite end of said track section.

11. In a lifting mechanism of the character described, the combination, with a movable track section, a vertically reciprocating member near one end thereof, vertical guides 25 on the opposite sides of said track section, an axle extending transversely of said track section and having its ends in engagement with said guides, weights connected to said track section and adapted to elevate the same, 30 and a projection carried thereby and extending into the path of said reciprocating member, of links pivotally connected at one end to said track section and at the other end to a fixed support above said track sec- 35 tion.

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

GRANT HOLMES.

Witnesses:

FRED B. PENWELL,
GERTRUDE C. KOCH.