

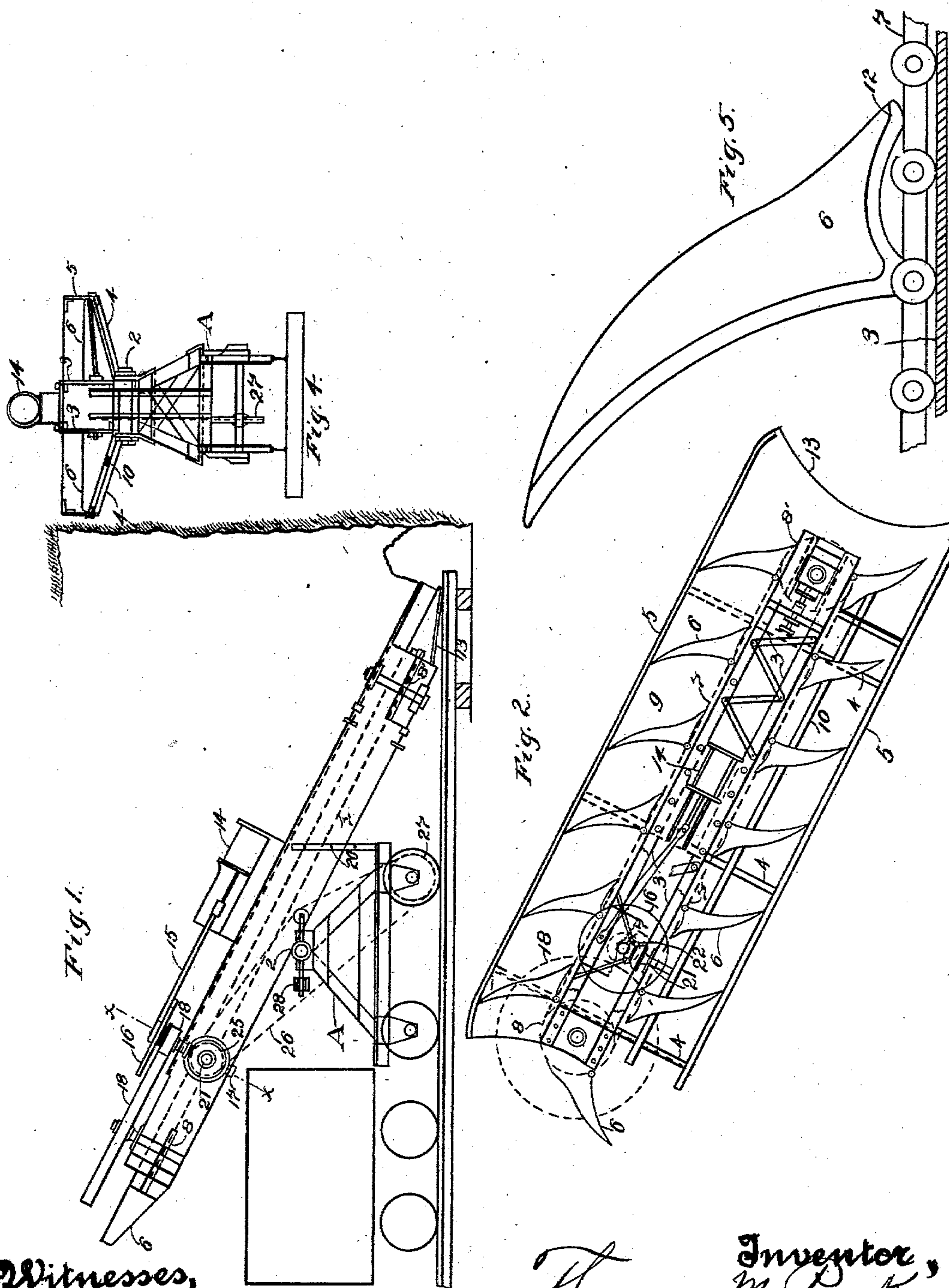
No. 720,960.

PATENTED FEB. 17, 1903.

T. M. PARK.
AUTOMATIC ORE LOADER.
APPLICATION FILED APR. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses,
May Wilke.
J. A. Morse

Inventor,
Thomas M. Park
By Duway Strong & Co. atty

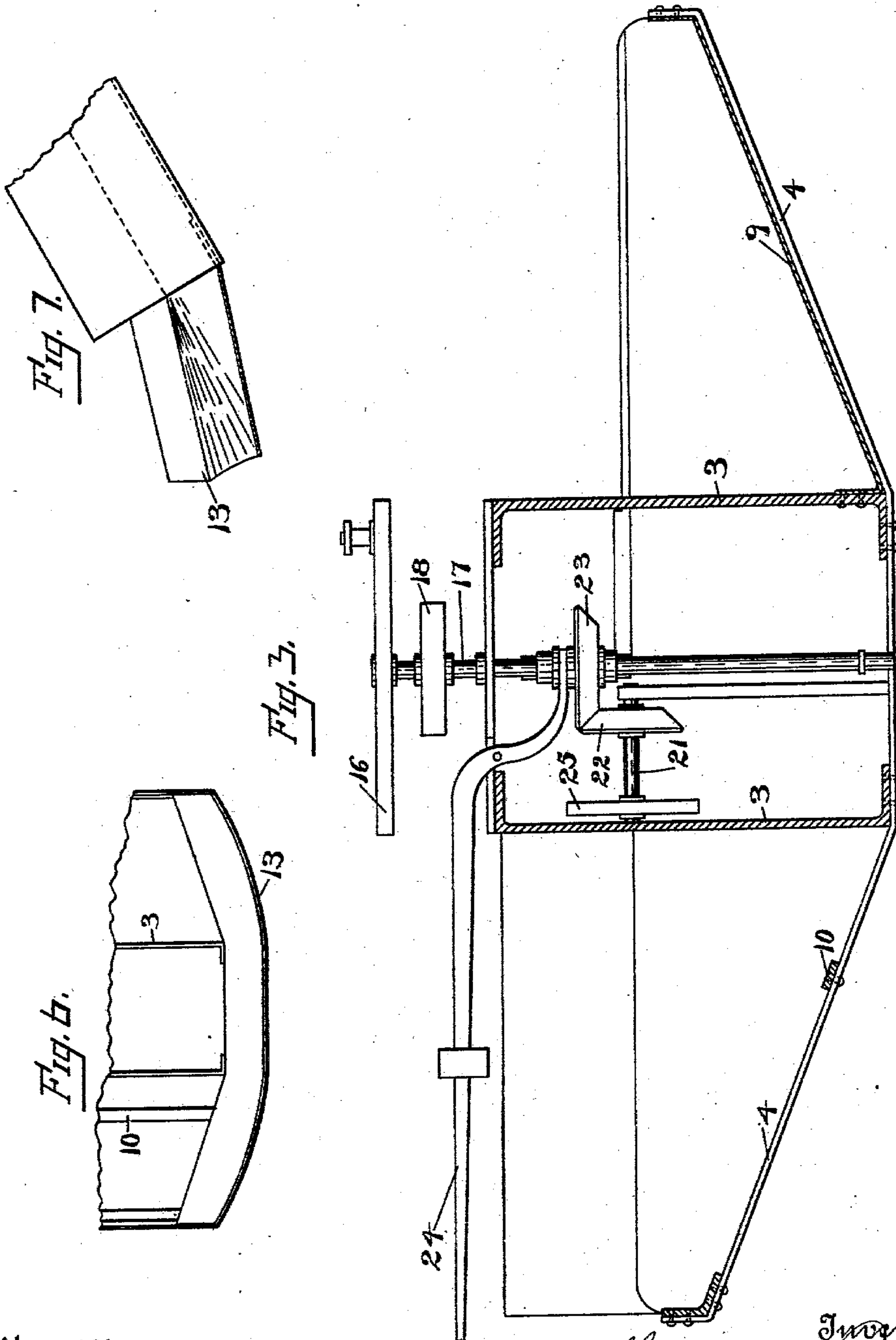
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Witnesses,
Dudley Moss.

[Signature]

Inventor,
Thomas M. Park
[Signature]
atlas

UNITED STATES PATENT OFFICE.

THOMAS M. PARK, OF DARRINGTON, WASHINGTON.

AUTOMATIC ORE-LOADER.

SPECIFICATION forming part of Letters Patent No. 720,960, dated February 17, 1903.

Application filed April 21, 1902. Serial No. 103,903. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. PARK, a citizen of the United States, residing at Darrington, county of Snohomish, State of Washington, have invented an Improvement in Automatic Ore-Loaders; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in machines for loading ore, gravel, broken rock, and the like upon cars.

The purpose of the machine is to load ore or other rock as it is ordinarily blasted from the breast of a tunnel up into cars. This is ordinarily done by hand. Such a process is slow and tedious, requiring the ore to be handled twice in order to clear the breast in as short a time as possible and necessitating the employment of a number of men. The present invention will do the work in far less time and will require the attention of only one or two men.

The invention consists, essentially, of a tilting frame mounted on a wheeled carriage, an endless conveyer having blades projecting beyond the lower end of the frame and adapted to scoop up earth and transport it to the upper end of the frame, whence it is discharged into the cars, means for driving said conveyer, and means for moving the carriage.

It also comprises details of construction which will be more fully explained hereinafter, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention. Fig. 2 is a plan. Fig. 3 is an enlarged transverse sectional view on the line $x x$ of Fig. 1, showing parts in elevation. Fig. 4 is a front view of the apparatus with the frame thrown up into horizontal position. Fig. 5 is a plan of one of the carrier-blades. Fig. 6 is an end view showing the apron. Fig. 7 is a section of the apron, showing the attachment of the apron to the frame.

A represents a wheeled carriage or truck of any suitable design, upon which the framework of my apparatus is pivotally supported, as at 2. This frame comprises two main channel-bars 3, disposed with their flanges adjacent to each other and rigidly connected by cross-plates and lattice-bars. Extending outwardly and upwardly from the lower edges

of the channel-pieces 3 are brackets 4, which support the lateral walls 5 parallel with the axis of the machine. These outer walls are of sheet metal properly stiffened with light angles. The space between the walls and the channel-bars 3 forms a trough through which the conveyer travels. The latter consists of a series of peculiarly-shaped arms or blades 6, pivoted to an endless link belt 7, running over the sprockets 8 8', disposed, respectively, at the upper and lower ends of the frame. The bottom 9 of the trough on the load side of the conveyer consists of a steel plate riveted to the channel-bar and supported on the brackets 4, as shown in the enlarged view Fig. 3.

10 is a metal bar or guide secured to the guides on the opposite side of the machine, over which the empty arms slide.

The blades 6 have each a reinforcing web and flange 12, which rests on the chain, thereby giving a proper amount of elasticity to the blades. The chain slides on the web of the channel-bars 3, and the bottom edges of the blades are so inclined that when the latter are at the lowest point of travel these edges will be approximately parallel with the ground, and so sweep up a load onto the floored portion 9, whose outward slant corresponds to the incline of the lower edges of the blades. The load is discharged at the elevated end of the frame into a car, and the empty arms return over the guide-bar 10.

13 is a metal shoe secured to the lower end of the frame having its front edge horizontal where it comes close to the ground and its sides gradually curving upward till it meets the slanting bottoms of the conveyer-troughs, as shown in Fig. 6.

The conveyer is run by any suitable means. In the present instance I have shown a compressed-air engine 14 mounted upon the frame and deriving energy from any suitable source. The rod 15 connects with a crank on the horizontal fly-wheel 16, secured to the shaft 17, suitably journaled in the frame. Power is transmitted to the shaft of sprocket 8 through gearing 18. Any slack in the chain may be regulated by means of suitable take-up devices in connection with the shaft of sprocket 8'.

The conveyer-frame is so balanced on its

pivot 2 as automatically to incline itself in order that the shoe 13 will always follow the floor of the tunnel.

By mounting the device on wheels it can be advanced as necessity requires or moved to any part of the mine. This may be done by hand or other power. When it is desired to move the machine, the conveyer-frame is turned into a horizontal position and held by means of pins 20 in the truck-frame A.

As it is essential to the successful operation of the machine to have complete control of the backward-and-forward movement of the truck, I have devised means by which the engine 14 may also drive the carriage A. A horizontal shaft 21, journaled in the conveyer-frame, carries a bevel-gear 22, which is adapted to mesh with a gear 23, secured to a sleeve which is slidable in a feather on the shaft 17. These gears are moved in and out of engagement by means of a clutch-lever 24, as shown in Fig. 3. The shaft 21 carries a sprocket 25, over which a suitable link belt 26 passes. Power is transmitted, through the medium of the belt, to a sprocket 27 on the front axle of the truck. A weighted belt-tightener 28 serves always to keep the chain 26 taut as the conveyer-frame is turned about its pivot.

If desired, a separate motor may be mounted on the truck for the purpose of moving the machine along the track.

The machine may be of any convenient size. Generally it will be about twelve feet long by three and a half feet wide. It can be taken apart and easily brought down through chutes and other narrow places and set up wherever needed.

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

1. The combination in a loading apparatus of a tiltable frame, a support therefor, sprocket-wheels turnable on axes vertical to the bottom of the trough in which the conveyer operates, an endless conveyer traveling about said sprockets, said conveyer having blades adapted to sweep up a load at the lower end of the frame and to discharge the load at the upper end thereof.

2. The combination in an ore-loading apparatus, of a wheeled carriage, a frame pivoted thereon, sprocket-wheels at either end of the frame and rotatable upon axes vertical to the bottom of the trough in which the conveyer operates, a conveyer traveling about said

sprockets, said conveyer having outwardly-extending pivoted blades, said blades adapted at their lowest point of travel to project beyond the frame, and having their under edges when at that point substantially parallel with the surface of the ground beneath.

3. The combination in a loading apparatus, of a wheeled carriage, a tiltable frame mounted thereon, said frame having its lateral surfaces inclined upward and outward, sprocket-wheels turnable in a plane parallel with the bottom of the trough in which the conveyer operates, and an endless conveyer traveling about said sprocket-wheels and over said inclined surfaces.

4. The combination in an ore-loading apparatus of a wheeled carriage, a conveyer-frame pivotally supported thereon, said frame comprising two lateral extensions having their bottoms inclined upwardly and outwardly, and an endless conveyer traveling there-through and having blades conformable to the shape of said extensions.

5. The combination in an ore-loading apparatus, of a wheeled support, a frame pivotally mounted thereon, sprocket-wheels in a plane parallel with the frame, lateral inclined surfaces upon the latter, an endless conveyer traveling about said sprocket-wheels, said conveyer having pivoted blades whose lower edges are inclined outwardly and upwardly, and movable over said lateral surfaces, a shoe attached to and projecting beyond the lower end of the frame, and means upon the frame by which the sprocket-wheels and conveyer are driven.

6. The combination in an ore-loading apparatus, of a wheeled carriage, a conveyer-frame pivoted thereon, sprocket-wheels on said frame lying and rotatable on axes vertical to the bottom of the frame, an endless conveyer traveling about said sprockets, an engine mounted on said frame, connections between said engine and the sprockets whereby the conveyer is driven, connections with the trucks of the carriage and a shifting mechanism whereby said connections may be thrown in and out of engagement according as the machine is to be moved along its track.

In witness whereof I have hereunto set my hand.

THOMAS M. PARK.

Witnesses:

S. B. EMENS,
JOHN MONTAGUE.