

A. C. STEWART.  
COAL HANDLING APPARATUS.  
APPLICATION FILED AUG. 14, 1908.

929,993.

Patented Aug. 3, 1909.

3 SHEETS—SHEET 1.

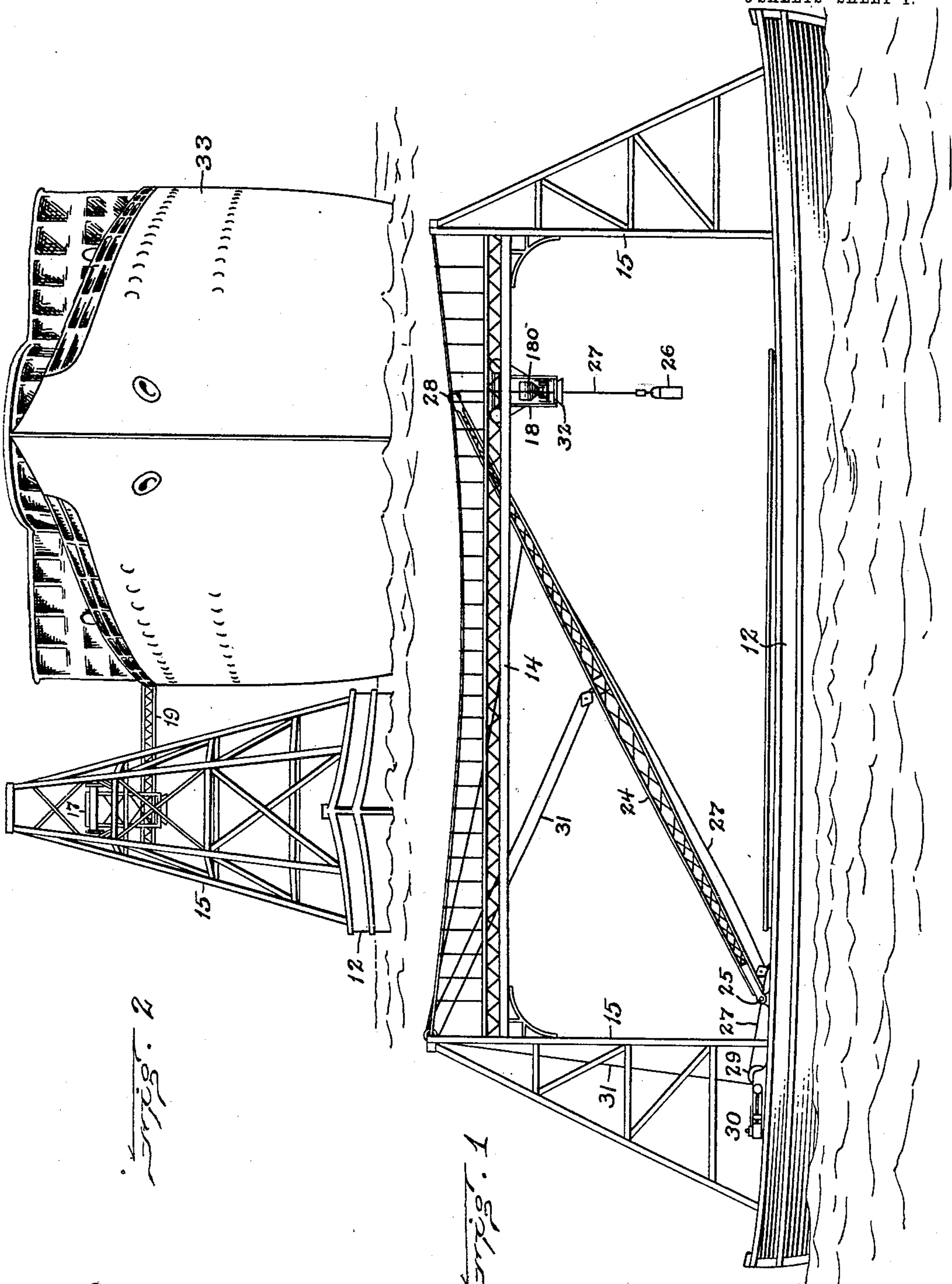


Fig. 2

Fig. 1

Witnesses:  
W. P. Abell  
E. Batchelder

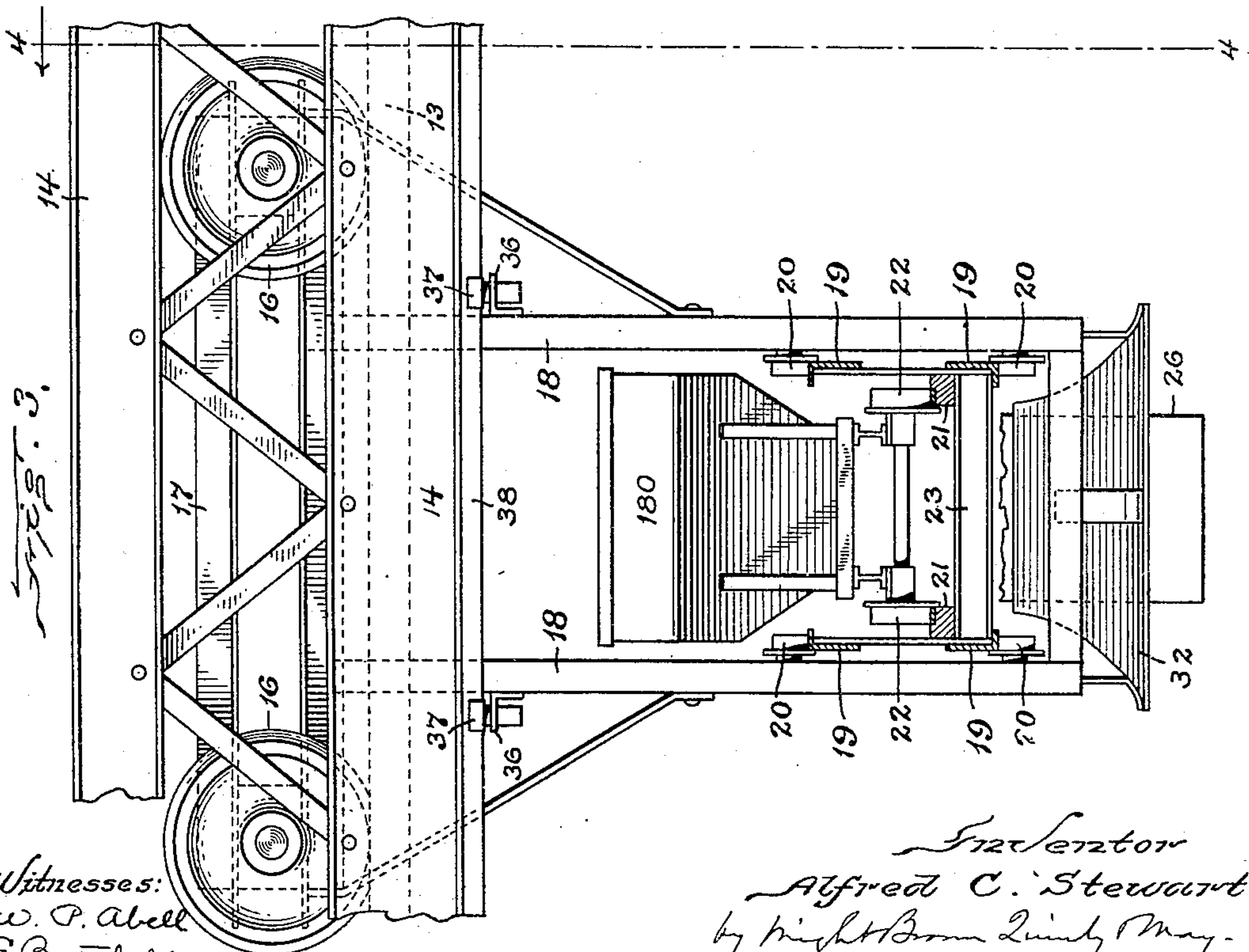
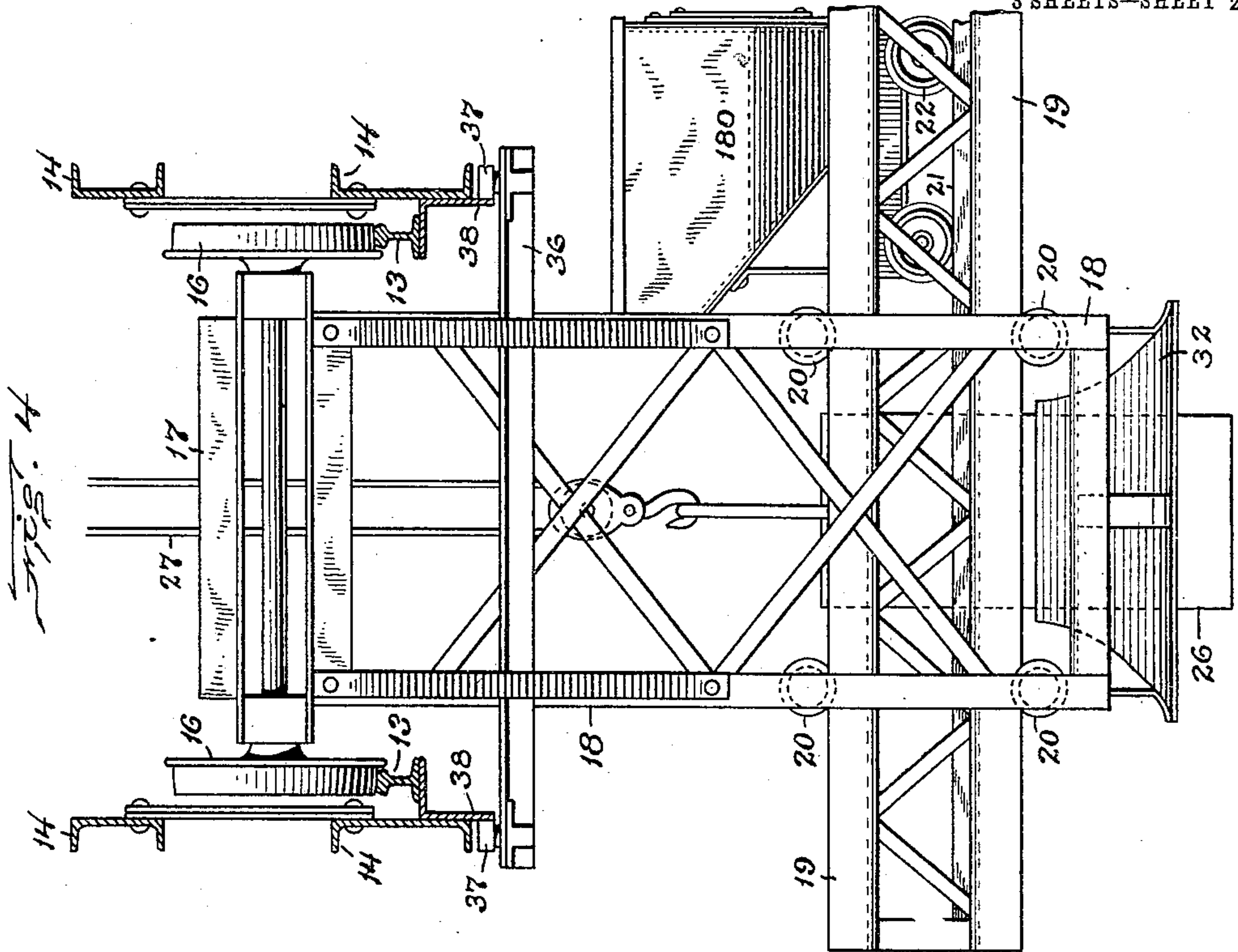
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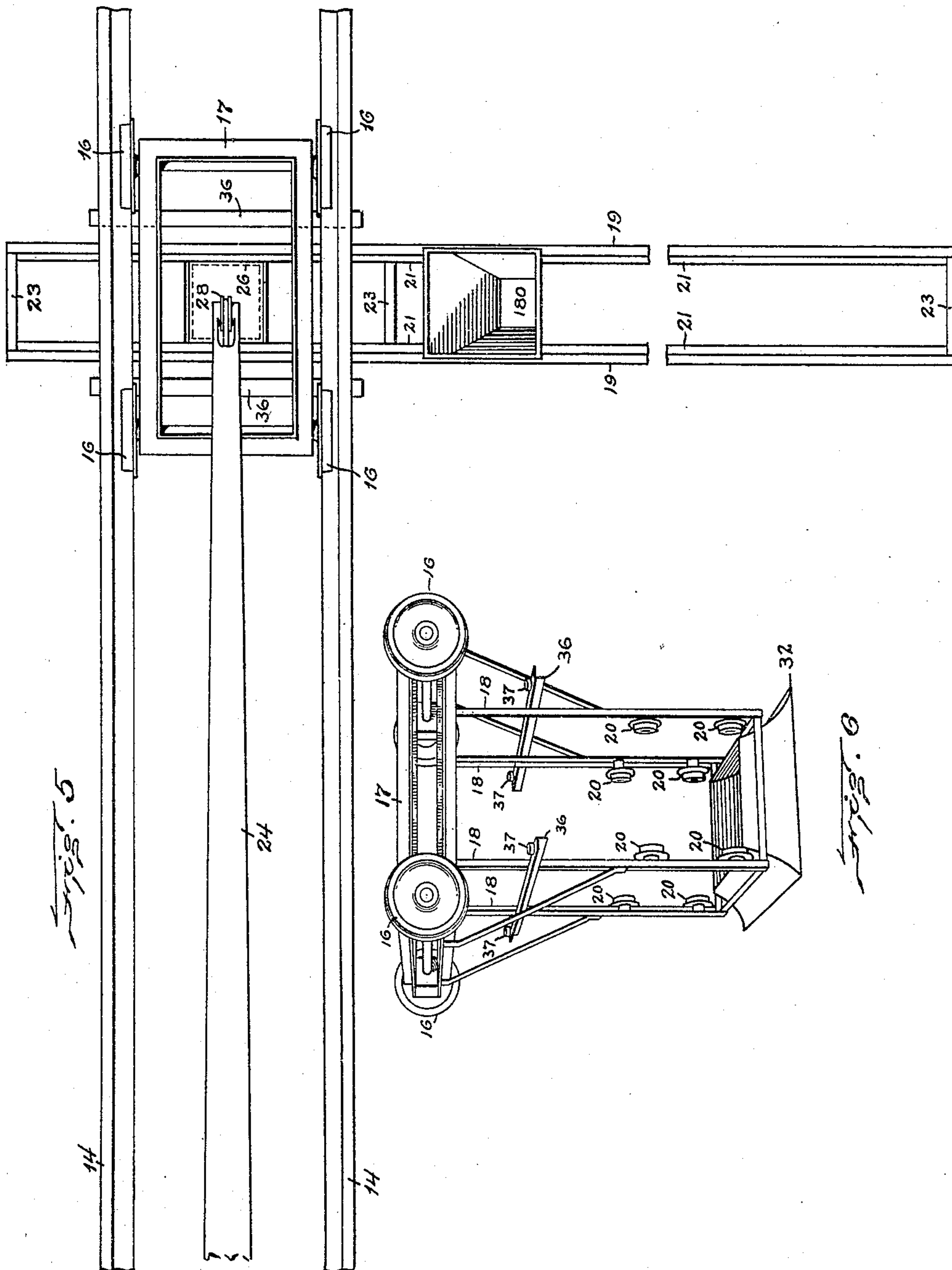
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# UNITED STATES PATENT OFFICE.

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## COAL-HANDLING APPARATUS.

No. 929,993.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed August 14, 1908. Serial No. 448,491.

*To all whom it may concern:*

Be it known that I, ALFRED CHAMBERS STEWART, of Reading, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Coal-Handling Apparatus, of which the following is a specification.

This invention relates to apparatus for transferring coal from one point to another, and is embodied in an apparatus comprising a hull, a transferring device such as a scoop or bucket which is vertically movable into and out of the storage space in the hull, and is adapted to remove coal therefrom; means for shifting the path of the transferring device lengthwise of the hull so that it may enter and remove coal from different parts of the hull, a car which is movable crosswise of the hull and above the deck of the same, and means for supporting and guiding the car in a path extending crosswise of the hull and projecting from either side of the same, the said guiding means being adapted to shift the path of the car lengthwise of the hull to correspond with changes in the position of the path of the transferring device, the car being movable into the path of the transferring device to receive coal from the latter, and the whole arrangement being such that coal elevated from any part of the hull between the bow and stern may be moved outboard and delivered at either side of the hull and at a point corresponding with the path in which the transferring device moves.

The invention is also embodied in an apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, and elevated above the same, said rails being separated by an unobstructed space; a carrier adapted to run on said track and extending downwardly between the rails thereof into said unobstructed space, said carrier being movable lengthwise of the hull; a movable track frame extending crosswise of the fixed track below the latter, and movable on the carrier crosswise of the hull, and a car movable on the said track rail, the track frame constituting a transverse path for the car, which path extends crosswise of the hull and is movable lengthwise of the hull, and is also movable endwise so that it may project from either side

of the hull, the apparatus being adapted to be used either for removing coal from the hull and delivering it to a vessel at either side of the hull, or for transferring coal from a receptacle at one side of the hull to another receptacle at the opposite side, or for loading coal from an adjacent receptacle into the storage space of the hull.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a side elevation of an apparatus embodying my invention. Fig. 2 represents an end elevation of the same in position to deliver coal to an adjacent vessel. Fig. 3 represents an enlargement of a portion of Fig. 1. Fig. 4 represents a section on line 4—4 of Fig. 3, and an elevation of the parts shown in Fig. 3 at the left of said line. Fig. 5 represents a top plan view of portions of the apparatus. Fig. 6 represents a perspective view of the carrier by itself.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12 represents a hull or vessel adapted to contain and transport coal, the hull being here shown as of the ordinary coal barge or lighter type. The deck of the barge may be provided with a series of hatchways extending lengthwise of the hull, as usual.

Elevated above the deck, and extending lengthwise of the hull is a fixed track composed, in this embodiment of the invention, of rails 13, 13 supported by a suitable framework which includes longitudinal members 14, and towers or end frames 15, said framework being of any suitable construction adapted to adequately support the rails 13 and provide between said rails an unobstructed space in which the carrier, hereinafter described, may run upon the rails 13 lengthwise of the hull, the rails 13 and the unobstructed space between them extending continuously over that portion of the hull which is occupied by the hatchways.

The carrier above referred to is a structure provided with wheels 16 adapted to run upon the track rails 13, the said structure comprising an upper frame 17, on which the wheels are mounted, and frame members 18 depending from the top frame 17 and rigidly attached thereto, the said members 18 extending downwardly through the space be-



tween the track rails 13 and below the latter. The construction of the carrier, as a whole, may be variously modified, its chief characteristic being its adaptability to move lengthwise in the space between the rails 13 of the fixed track, and its adaptation to guide a movable track frame 19 which extends crosswise of the fixed track and the hull, and is adapted to guide and support a car 180, the latter being movable on the track frame 19 crosswise of the hull and through the carrier which, as shown in Figs. 3, 4 and 6, is formed to constitute a transverse passage through which the track frame 19 extends.

The frame members 18 of the carrier are provided with means such as guide rollers 20 for engaging the track 19, and guiding the same horizontally crosswise of the hull. The track frame 19 is provided with longitudinal track rails 21 to support the wheels 22 with which the car 180 is provided. The construction of the track frame 19 is preferably such that the space between the rails 21, 21 is unobstructed excepting at the ends of the track frame, and at one or more intermediate points, the track frame being composed of parallel side members designated by the reference numeral 19 in Figs. 3, 4, and 5, and cross members 23 connecting the side members, as shown in Fig. 5, the said members constituting a frame surrounding a plurality of unobstructed spaces through either of which the transferring device or bucket, hereinafter described, is adapted to pass. The transverse members 23 are relied on to prevent the spreading of the rails 21, and they are spaced far enough apart to permit the transferring device, hereinafter described, to pass freely through the track frame 19 at a number of points.

The apparatus comprising the fixed longitudinal track, the carrier, the transverse track frame 19 movable crosswise of the carrier and of the hull, and the car movable upon said track frame, are adapted for use independently of the said transferring device, and may be used for transferring coal from a receptacle at one side of the hull 12 to another receptacle at the opposite side of the hull, the track frame 19 being extensible from either side of the hull. When the apparatus is thus used, the track frame and carrier may be moved along the fixed track rails 13 to shift the path of the car 180 from point to point, as may be desired.

When the apparatus is to be used for transferring coal in the storage space in the hull 12 to a receptacle located beside the hull, means are employed for elevating the coal from the hull and discharging it into the car 180, the car when loaded being moved along the track frame 19 to the point of delivery, which may be at either side of the hull. The means for elevating the coal from

the hull and delivering it to the car comprises, in this embodiment of my invention, a boom 24 which is jointed at 25 to a support on the hull, and is inclined upwardly from said support, its upper end portion passing through the space between the fixed track rails 13.

26 represents a transferring device which may be a scoop, bucket, or any other suitable means for collecting a charge of coal in the hull and elevating the same in a vertical path, said device being supported by a rope or chain 27 which passes over a pulley 28 on the upper end of the boom, and downwardly along the boom to a drum 29, which may be rotated by power supplied by an engine 30. The boom is adapted to be supported at different inclinations by a suitable guy rope, or combination of ropes 31, which may be controlled by the engine 30. The transferring device 26, depending from the upper end of the boom, is movable in a vertical path toward and from the hull. This path may be shifted lengthwise of the hull by varying the inclination of the boom, the latter being freely movable in the unobstructed space between the track rails 13. When it is desired to move coal from one of the end hatches, the boom is depressed until the path of the transferring device coincides with said hatch. After the coal has been removed from the vicinity of the end hatch referred to, the path of the transferring device may be brought into alignment with the next hatch by raising the boom, and so on until the entire cargo has been removed.

The carrier is adjusted to correspond with the path of the transferring device, so that the latter passes through the space or passage inclosed by the carrier frame. The lower end of the carrier frame is preferably provided with a flaring guide 32 which guides the transferring device in its upward movement into the space inclosed by the carrier frame, so that liability of injurious contact or engagement between the transferring device and the carrier frame is prevented. The unobstructed spaces between the rails 21 of the movable track frame permit the transferring device to pass upwardly between said rails, whatever may be the adjustment of the movable track frame.

In the operation of the apparatus, when it is used to transfer coal from the hull 12 to a receptacle, such as a vessel 33 located beside the hull 12, the movable track frame is extended laterally to engage the hull 33, and rest on a suitable part thereof, the transferring device being then operated to raise charges of coal through the carrier to a point above the movable track frame. The car 180 is then moved into the space inclosed by the carrier frame and to a point under the transferring device, and the



charge contained in the latter is then dumped into the car, after which the car is moved outwardly on the track rails 21 to the point of delivery. Inasmuch as the space between the rails 13 must be left unobstructed practically from end to end, I have provided the carrier with means for preventing the spreading of said rails, said means being here shown as including horizontal bars 36 affixed to the vertical members 18 of the carrier frame, and rollers 37 mounted on said bars and bearing on the outer sides of flanges 38 affixed to the members which support the fixed track rails 13.

I claim:

1. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, and elevated above the same, said rails being separated by an unobstructed space, a carrier adapted to run on said track and extending downwardly between the rails into said space, a movable track frame extending crosswise of the fixed track below the latter, and movable on the carrier crosswise of the hull, and a car movable on the said track frame.

2. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, and elevated above the same, said rails being separated by an unobstructed space, a carrier adapted to run on said track and extending downwardly between the rails into said space, a movable track frame extending crosswise of the fixed track below the latter, and movable on the carrier crosswise of the hull, a car movable on the said track frame, and means for elevating coal through said space and delivering it to said car.

3. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, and elevated above the same, said rails being separated by an unobstructed space, a carrier adapted to run on said track and extending downwardly between the rails into said space, a movable track frame extending crosswise of the fixed track below the latter, and movable on the carrier crosswise of the hull, a car movable on the said track frame, a boom jointed to the hull and extending therefrom through said space, means for supporting the boom at different inclinations, and means carried by the boom for elevating coal from the hull and delivering it to said car.

4. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, elevated above the same and separated by an unobstructed space, a carrier movable in said space upon said track and formed to inclose an unobstructed vertical passage, a track frame movably engaged with the carrier and having track rails which extend crosswise of the fixed track, and are separated by un-

obstructed spaces which intersect the passage through the carrier; a car movable on the rails of the movable track frame, a coal transferring device which is movable through the space between the rails of the fixed and movable tracks, and through the passage inclosed by the carrier, and means for operating said transferring device, the car being movable into the path of the transferring device to receive coal from the latter.

5. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, elevated above the same and separated by an unobstructed space, a carrier movable in said space upon said track and formed to inclose an unobstructed vertical passage, a track frame movably engaged with the carrier and having track rails which extend crosswise of the fixed track, and are separated by unobstructed spaces which intersect the passage through the carrier; a car movable on the rails of the movable track frame, a coal transferring device which is movable through the space between the rails of the fixed and movable tracks, and through the passage inclosed by the carrier, and means for operating said transferring device, the carrier being provided at its lower portion with means for guiding the transferring device into said passage.

6. A coal handling apparatus comprising a hull, a transferring device, means carried by the hull for moving the transferring device in a vertical path toward and from the hull, said means having provisions for shifting said path lengthwise of the hull, a car, and means carried by the hull for supporting and guiding the car in a path extending crosswise of the hull, said guiding means being adapted to shift the path of the car lengthwise of the hull to correspond with changes in the position of the path of the transferring device, the car being movable into the path of the transferring device to receive coal from the latter.

7. A coal handling apparatus comprising a hull, a fixed track composed of rails extending lengthwise of the hull, and elevated above the same, said rails being separated by an unobstructed space, a carrier adapted to run on said tracks and extending downwardly between the rails into said space, a movable track frame extending crosswise of the fixed track below the latter, and movable on the carrier crosswise of the hull, and a car movable on the said track frame, the carrier being provided with means for preventing the spreading of the fixed track.

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

ALFRED CHAMBERS STEWART.

Witnesses:

CHARLES F. BROWN,  
J. MILLER STEWART.