

No. 849,920.

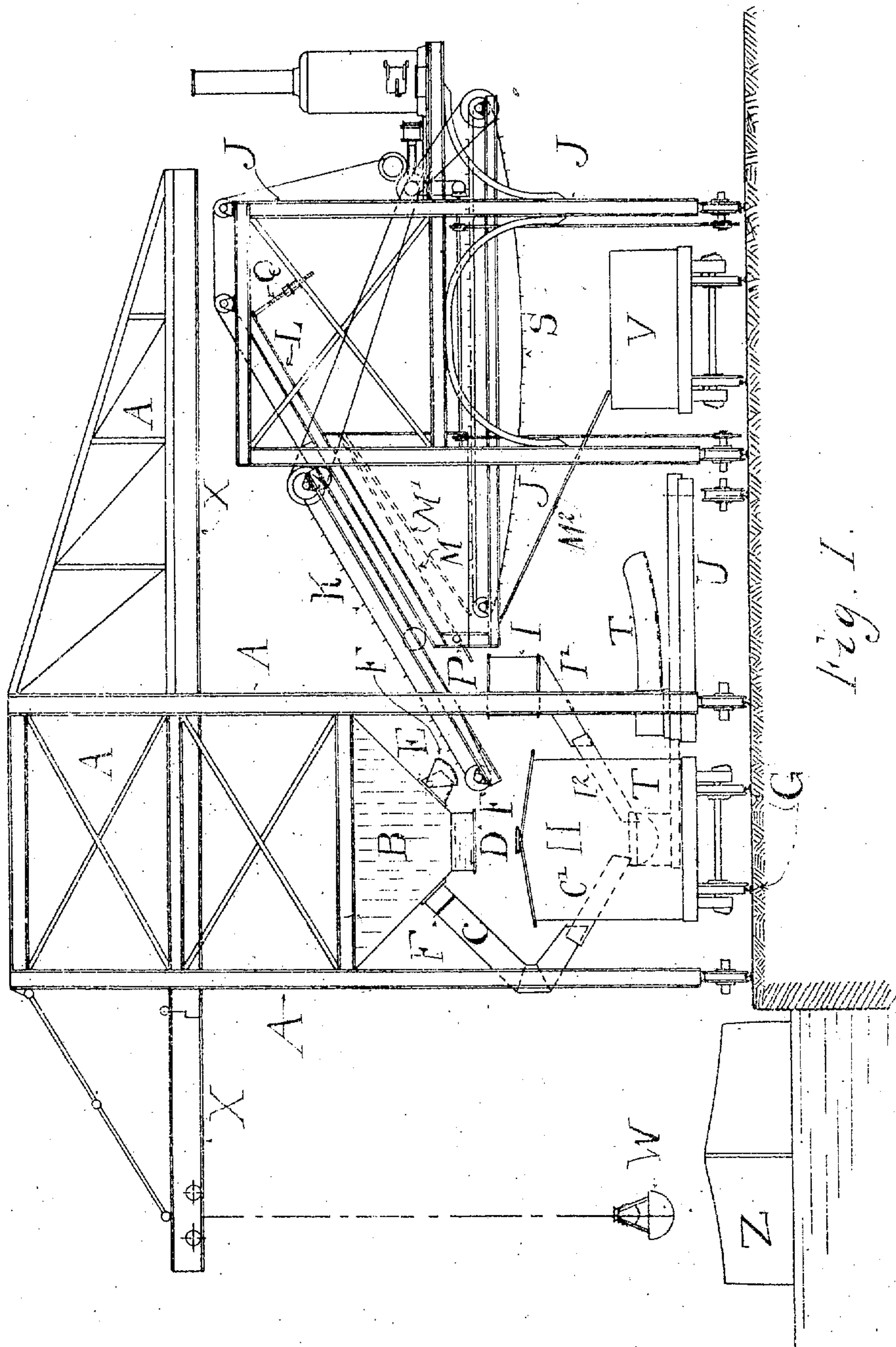
PATENTED APR. 9, 1907.

J. W. SEAVER & A. LESLIE.

UNLOADING, SCREENING, AND LOADING APPARATUS.

APPLICATION FILED JUNE 30, 1903.

3 SHEETS—SHEET 1.



WITNESSES:

Titus H. Jones
Herman E. Meters

INVENTORS

John W. Seaver & Alexander Leslie,

BY

Howard H. Brown
ATTORNEYS

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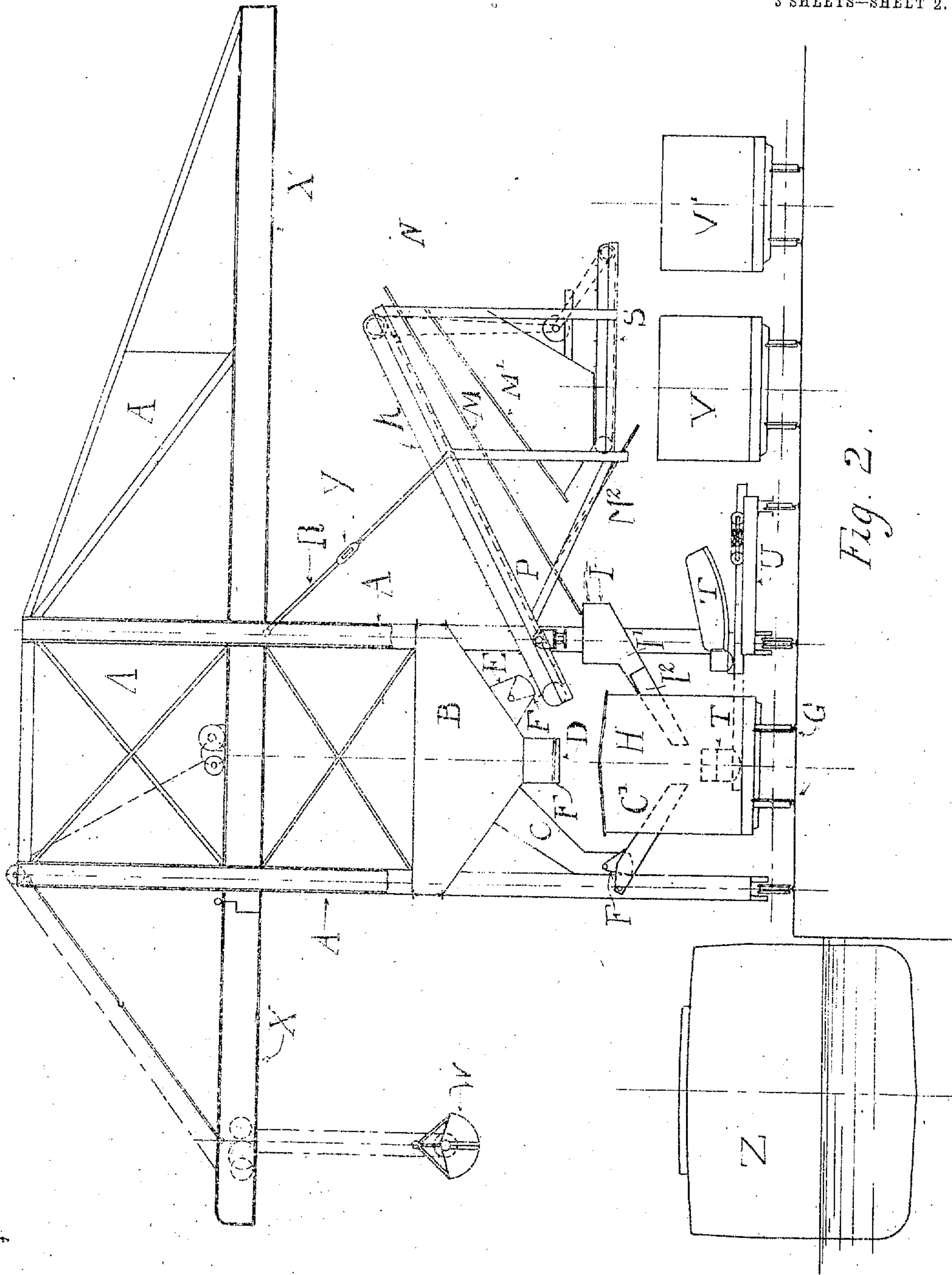


Fig. 2.

WITNESSES:

Titus H. Jones
Herman E. Matus

INVENTORS

John W. Seaver & Alexander Leslie,

BY

Howson & Howson
ATTORNEYS

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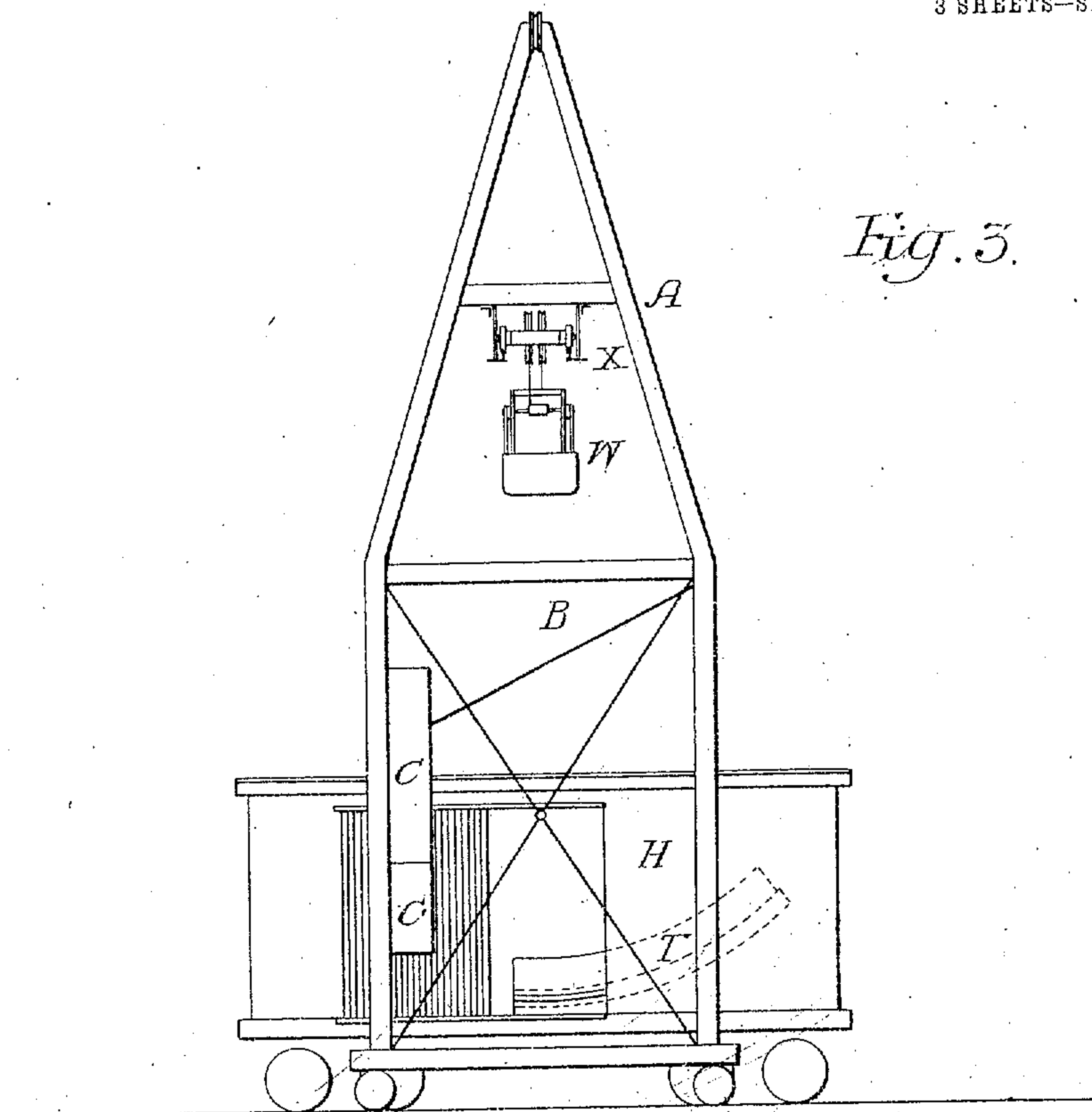


Fig. 3.

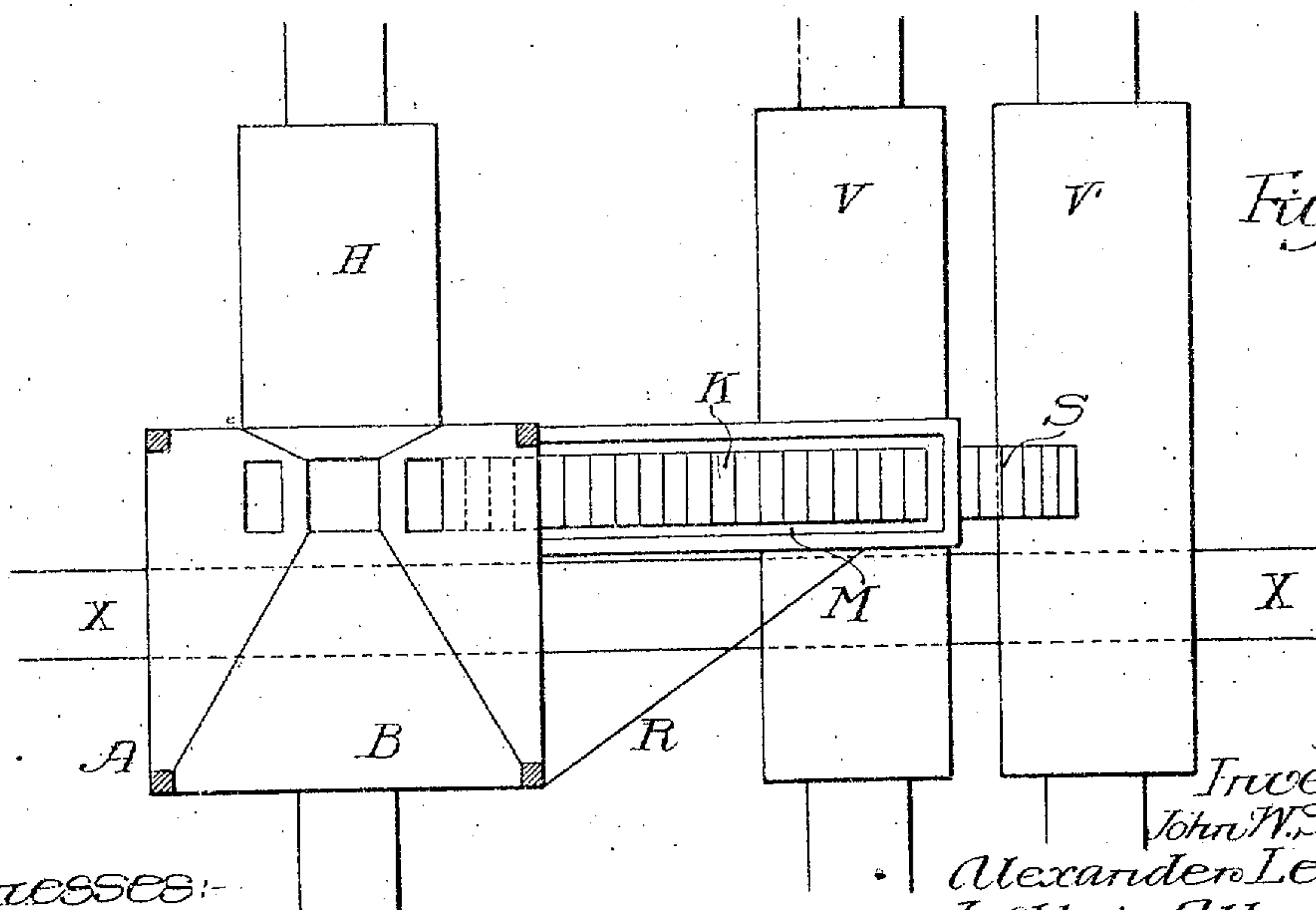


Fig. 4.

Witnesses:
Tetis H. Iroux.
Augustine B. Cappel.

Inventors
John W. Seaver.
Alexander Leslie.
By their Attorneys
Howson & Howson.

UNITED STATES PATENT OFFICE.

JOHN WRIGHT SEAVER, OF CLEVELAND, OHIO, AND ALEXANDER LESLIE, OF WALKERVILLE, ONTARIO, CANADA, ASSIGNORS TO WELLMAN-SEEVER-MORGAN COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

UNLOADING, SCREENING, AND LOADING APPARATUS.

No. 849,920.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed June 30, 1903. Serial No. 163,797.

To all whom it may concern.

Be it known that we, JOHN WRIGHT SEAVER, a citizen of the United States, and a resident of Cleveland, Ohio, and ALEXANDER LESLIE, a subject of the King of Great Britain and Ireland, and a resident of Walkerville, Ontario, Canada, have invented certain Improvements in Unloading, Screening, and Loading Apparatus, of which the following is a specification.

The object of our invention is to construct apparatus for the convenient, quick, and economical unloading of coal or other granular material from vessels or other carriers, the screening of the same, when such screening is desired, and the loading of the material into either open or box cars. This object we attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of one form of apparatus embodying our invention. Fig. 2 is a similar view of another form of said apparatus; and Figs. 3 and 4 are respectively an end elevation and a plan of the apparatus shown in Fig. 2, these views being to some extent diagrammatic in order to more clearly bring out the features which it is desired to illustrate.

Referring, in the first instance, to Fig. 1, A represents a cantaliver-crane of the traveling gauntree type, the vertical legs or posts of this crane being mounted upon rails laid parallel with the pier side or dock-head. The trussed horizontal member X of this crane has a traveling trolley, from which is suspended a grab-bucket W or other receptacle for receiving the contents of the vessel Z or other carrier whose cargo is to be unloaded, said bucket being capable of being raised and lowered so that it can descend into the hold of the vessel, receive its load, elevate the same, and traverse it to any part of the structure X.

Suitably supported in an elevated position upon the crane A is a hopper B, which has three outlets C, D, and E, the outlet D being a vertical outlet leading from the bottom of the hopper, the outlet E being an inclined spout extending from one side of the hopper, and the outlet F being an elbow-spout extending from the other side of the hopper, each

of these outlets being provided with a suitable regulating gate or valve F.

Between the rails which support the crane A is a track G for railway-cars H, which may be of varying types—such as hopper, gondola, or box cars—the elbow-pipe C providing for the flow of material from the hopper B into and through a side door of such box-car and the delivery end of such elbow-pipe C having an extension-chute C' for directing the material into the distributing spout or chute T of a car-loader U, which is mounted to travel alongside of or parallel with the crane, so that material from the hopper B can be discharged into any desired portion of the interior of the box-car H, the sliding chute C' of the elbow-pipe C being retracted when it is desired to move either car or crane relatively to each other.

In loading hopper or gondola cars, which are open at the top, the outlet D is employed, as the granular material can in this case flow directly downward from the hopper into the car.

When it is desired to screen the material after it is unloaded and before being reloaded, we employ, in connection with the crane A and its hopper B, means for carrying the material to said screens and for directing the various grades of material which result from the screening operation to different receptacles or points of discharge.

In the construction shown in Fig. 1, J represents a traveling gauntree-crane mounted upon rails parallel with those which carry the crane A, this crane J having mounted upon it an inclined elevating-conveyer K, which can receive material from the spout E of the hopper B, said elevator being movably mounted upon inclined rails L of the crane J, so that it can be lowered to receive material from the spout or raised so that its lower end will not project between the upright posts of the crane A, and hence will not interfere with longitudinal movement of either crane relative to the other.

Beneath the upper portion of the elevating-conveyer K are a pair of inclined screens M M', located one above the other, the head of the uppermost screen receiving the material delivered from the head of the conveyer K, so that said material will flow by gravity

down said uppermost screen M, all portions of material below a certain size passing through said upper screen and falling onto the lower screen M', which effects a still further separation, the material which passes through the screen M' being deposited upon a horizontal conveyer S, which delivers the same at one side of the crane J. The material discharged from the uppermost screen M falls into a hopper I, having an inclined spout I', with sliding end chute I², so that said material can be delivered into a box-car or into the chute T of the loading device U for distribution within said car. The material which is delivered by the lower screen M' falls upon a directing chute or platform M² and is thereby directed into a car V, running on a track inside of that which carries the crane J.

The structure comprising the inclined rails L and the casing which carries the screens M M' is pivoted at P to a projecting portion of the crane structure J, and the upper ends of the rails L are provided with adjustable screw connections Q, extending to some fixed portion of the crane J, so that they can be adjusted in order to vary the angle of the conveyer K and screens M M', as may be desired.

The capacity of the bin B and hopper I should be such that material can be delivered to and stored in either of said receptacles, while outflow from the same is cut off during a period long enough to permit of the shifting into place of the successive cars H which have to be loaded, so that the operation of the unloading and screening devices can be carried on continuously.

The only difference between the structure shown in Fig. 1 and that shown in Fig. 2 is that instead of the screening and conveying devices K, M M', and S being mounted upon a separate crane J they are carried by a frame N, pivoted to the main crane at P and supported by means of one or more rods R, each provided with a screw-turnbuckle Y, whereby said frame N can be raised or lowered, so as to vary the angle of the conveyer K and screens M M'. In this embodiment of our invention also the conveyer S is adapted to deliver into a car V, run alongside of the car V, and the bucket W can, if desired, deliver its load at a point outside of the car V, it being understood that the conveying and screening devices in either case are located laterally out of line with the runways for the bucket-carrying trolley, as shown in Figs. 3 and 4, so that said bucket can pass the conveying and screening devices when it is desired to deliver its load independently of the latter.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. The combination of a crane, having un-

loading devices thereon, a screen mounted adjacent to said crane, and an elevating-conveyer for receiving the unloaded material and delivering the same to the head of the screen, substantially as specified.

2. The combination of a crane, having unloading devices thereon, a screen, mounted adjacent to said crane, an elevating-conveyer for receiving the unloaded material and delivering the same to the head of the screen, and means for simultaneously changing the angle of both the elevating-conveyer and the screen, substantially as specified.

3. The combination of a crane, having unloading devices thereon, a screen, mounted adjacent to said crane, an elevating-conveyer for receiving the unloaded material and delivering the same to the head of the screen, means for simultaneously changing the angle of both the elevating-conveyer and the screen, and a second conveyer for receiving the material which passes through the screen, substantially as specified.

4. The combination of a crane having unloading devices thereon, a railway-track adjacent to said crane, a car-loader adjacent to said track and mounted upon the crane structure, with means for directing the unloaded material to the distributing-chute of said car-loader, substantially as specified.

5. The combination of a crane having unloading devices thereon, a railway-track adjacent to said crane, a car-loader carried by the crane structure adjacent to said track, and means for directing the unloaded material either to the distributing-chute of the car-loader or directly into the car, substantially as specified.

6. The combination of a crane, having a hopper thereon, an unloading device constructed to discharge into said hopper, and an elbow-pipe on the hopper for discharging through the side door on a car run beneath the hopper, substantially as specified.

7. The combination of a crane, having a hopper thereon, an unloading device constructed to discharge into said hopper, an elbow-pipe extending from said hopper, and a movable discharge or delivery chute operating in conjunction with said elbow-pipe, whereby the contents of the hopper can be directed through the side door of a car run beneath the same, the chute being withdrawn to permit movement of the car or crane, substantially as specified.

8. The combination of a crane, having a hopper mounted thereon, an unloading device discharging into said hopper, a vertical spout and an elbow-spout, through either of which the contents of the hopper can be discharged into a car run beneath the hopper, substantially as specified.

9. The combination of a crane, having a hopper mounted thereon, an unloading device discharging into said hopper, and an ele-

vating-conveyer mounted adjacent to the crane, said hopper having vertical, inclined and elbow discharge-spouts, whereby its contents can be directed onto the elevator or directly into an open-top or box car run in beneath the hopper, substantially as specified.

10. The combination of a crane having unloading devices thereon, a second crane adjacent to the first crane, a duplex screen mounted on said second crane for receiving the unloaded material, means for directing the tailings from each screen into separate receptacles, and a conveyer for delivering the material passing through the second section of the screen to a third receptacle or point of deposit, substantially as described.

11. The combination of a crane, having unloading devices thereon, with a subordinate crane having screening devices thereon and also carrying an elevating-conveyer for receiving the unloaded material and delivering the same to the head of the screen, substantially as specified.

12. The combination of a crane, having unloading devices thereon, with a subordinate crane having screening devices thereon and also carrying an elevating-conveyer for receiving the unloaded material and delivering the same to the head of the screen, and means for moving said conveyer inwardly and outwardly on said subordinate crane, substantially as specified.

13. The combination of a crane, having

unloading devices thereon, a subordinate crane carrying screening devices, and movable independently of the first crane and a conveyer for receiving the material passing through said screen, substantially as specified.

14. The combination of a crane, having unloading devices thereon, a subordinate crane carrying screening devices, and movable independently of the first crane an elevating-conveyer for carrying the unloaded material to the screen, and a conveyer for receiving the material passing through said screen, substantially as specified.

15. The combination of a crane having thereon a traveling trolley with unloading devices suspended therefrom, a screen mounted adjacent to said crane out of the path of said unloading device, and means for conveying the unloaded material to said screen, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN WRIGHT SEAVER.
ALEXANDER LESLIE.

Witnesses to signature of John Wright Seaver:

C. W. COMSTOCK,
W. O. JONES.

Witnesses to signature of Alexander Leslie:

FRANK BUTLER,
JAS. MAHONEY.