

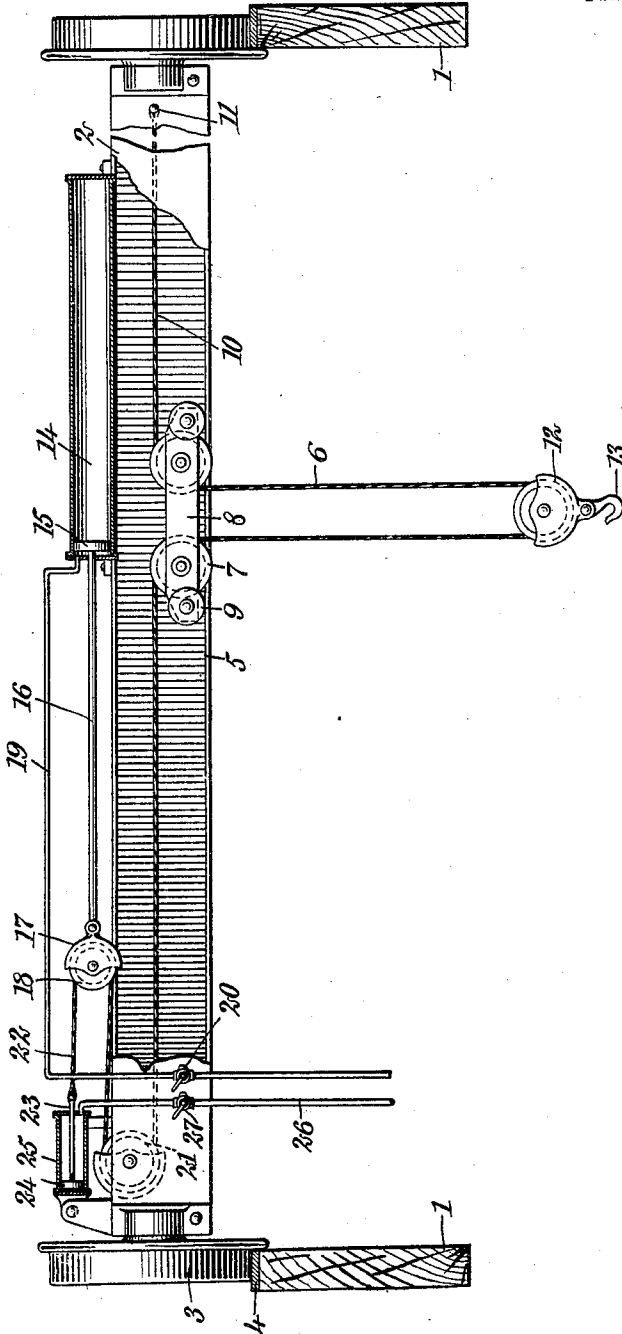
J. A. SUESS.  
CRANE.  
APPLICATION FILED DEC. 11, 1908.

922,208.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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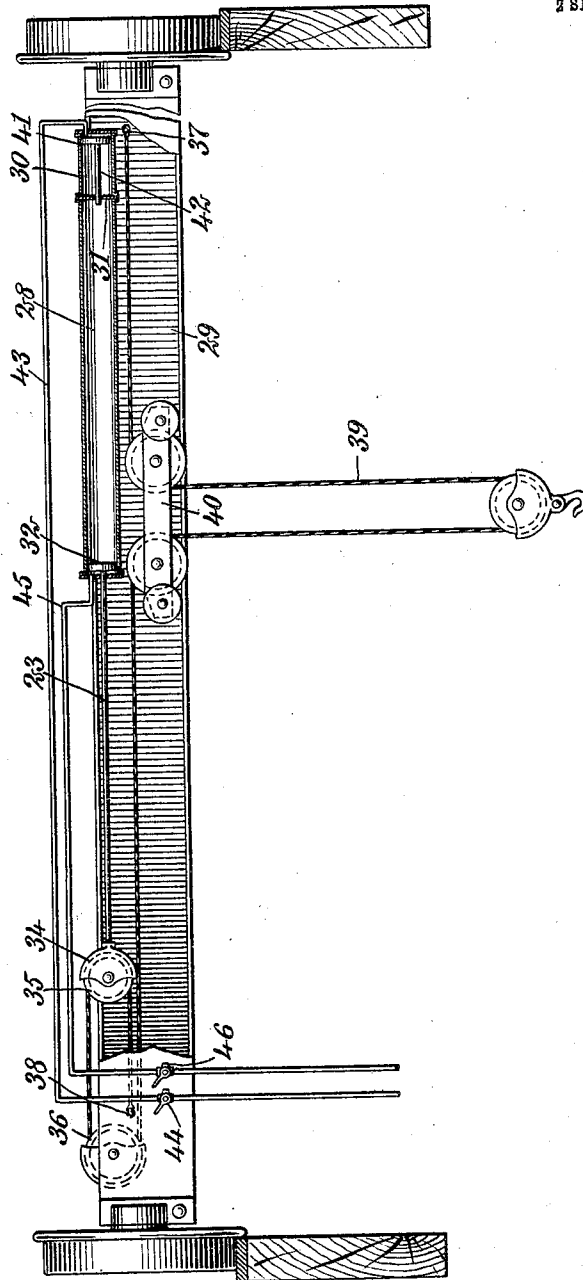
APPLICATION FILED DEC. 11, 1908.

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Patented May 18, 1909.

2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JACOB ALBERT SUESS, OF SHREVEPORT, LOUISIANA.

## CRANE.

No. 922,208.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed December 11, 1908. Serial No. 466,975.

*To all whom it may concern:*

Be it known that I, JACOB A. SUESS, a citizen of the United States, and a resident of Shreveport, in the parish of Caddo and State of Louisiana, have invented a new and Improved Crane, of which the following is a full, clear, and exact description.

This invention relates to cranes, and particularly to the type used in factories and shops for moving heavy objects about the shop.

The object of the invention is to produce a crane of simple construction which will operate to raise the load to a considerable height, and which includes an auxiliary lifting device which can be released independently of the main lifting device so as to enable the load to descend a short distance. In this way the convenience of the crane in raising and depositing objects in a shop or factory is greatly enhanced. The crane is especially useful in ice plants or ice factories for raising the cans and for moving them to the dump, and from the dump to the vaults.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation and partial section showing a crane constructed according to my invention; and Fig. 2 is a view similar to Fig. 1, and showing a modified construction of the invention.

Referring more particularly to the parts and especially to Fig. 1; 1, 1, represent the girders or track upon which the bridge 2 of the crane runs to and fro on suitable wheels 3 mounted at the ends of the bridge, the said wheels running upon flat bars or rails 4 laid on the girders, as shown. The bridge 2 is of box form, the lower side of the box forming a track 5, and having a central slot through which the fall 6 of the cable hangs downwardly. This fall or loop 6 hangs down over a pair of sheaves 7 which are mounted in a trolley 8, said trolley having wheels 9 which run upon the track 5, as shown. Beyond the trolley 8, one end of the cable 10 is attached to an anchor bolt 11 in the outer end of the crane. In the fall 6 a block 12 is hung, having a hook 13 for attachment

to any objects or article which is to be raised or moved. On the upper side of the bridge 2, a main cylinder 14 is mounted in a horizontal position. Within this cylinder a piston 15 is mounted, the rod 16 of which is provided with a sheave block 17 and a sheave 18, as shown. The piston 15 is adapted to be operated by compressed air or similar operating medium, admitted through a service pipe 19. This pipe 19 is connected with the inner end of the cylinder, that is, the end of the cylinder which is disposed near the middle of the bridge. A three-way valve 20 is provided for controlling the admission and exhaust of air from this cylinder. In the inner end of the bridge, that is, the left end as viewed in Fig. 1, a sheave 21 is mounted, and the cable 10 passes around this sheave 21 and then around the sheave 18, as shown. The end 22 of the cable is attached to the piston rod 23 of an auxiliary piston 24 working in an auxiliary cylinder 25, which cylinder is mounted on the upper side of the bridge in a longitudinal position. The inner end of the auxiliary cylinder 25 receives air or a similar operating medium, through a service pipe 26 which is provided with a three-way valve 27, as indicated. From this arrangement it should be noted that the working strokes of the pistons 15 and 24 are opposite, that is, the forward stroke of the piston 15 is toward the right, while the forward stroke of the piston 24 is toward the left. In these movements of the pistons they will take up the cable. When air is admitted through the valves 20 and 27 to both cylinders, the maximum amount of cable is taken up so that the block 12 moves to its highest possible position. When the crane is used in an ice factory, this is the movement which removes the can from the pit and raises it clear of the floor so that it can be moved to the dump. With both cylinders full of air, the crane and the load are then moved so as to bring the can over the point where it is to be placed. The air is then released from the auxiliary cylinder 25. This pays out enough of the cable to deposit the can at the dump, without necessitating the release of the air in the main cylinder. If it is desired to move a thawed can from the dump to the vault, the hook is then applied to this can and the auxiliary cylinder is refilled with air. This raises the thawed can clear of the floor so that it can be carried to the vault. Only when a can is to be

lowered into the pit or another can is to be removed from the pit, does it become necessary for the air in the main cylinder 14 to be released. In this way all of the raising and  
 5 lowering movements of the crane hook are brought about with a minimum air consumption, and a very desirable certainty and speed of operation.

In the form of the invention shown in Fig. 2, I provide a main cylinder 28 which is mounted on the bridge 29 at the right, and on the end of this cylinder 28, an auxiliary cylinder 30 is provided, said cylinders being separated from each other by a common head  
 10 31. In the main cylinder 28 a piston 32 is mounted, the rod 33 whereof is provided with a block 34 and a sheave 35. In the end of the bridge 29 adjacent to this block, a sheave 36 is mounted. In this form of the invention both ends of the cable are fixed, one end 37 being fixed near the auxiliary cylinder 30 at the right end of the bridge, while the other end is fixed at 38 at the other end of the bridge. The cable passes in a loop around  
 25 the sheave 35, and in a loop around the sheave 36, the main run of the cable being arranged to hang with a fall 39 from a trolley 40. In the auxiliary cylinder 30 there is provided a piston 41, the rod 42 whereof passes through the head 31 and projects slightly on the interior of the cylinder 28. Air may be admitted to the right-hand end of the auxiliary cylinder through a service pipe 43, said service pipe being provided with a three-way  
 35 valve 44, as shown. It will be observed that the end of the auxiliary cylinder 30 at which the air is admitted, is remote from the cylinder 28. At the remote end of the main cylinder 28, air may be admitted through a service pipe 45, said pipe being provided with a three-way valve 46. In the operation of this form of the crane, the full lifting movement is given to the cable by the action of the cylinder 28 alone, air being admitted to the  
 45 left end of the cylinder by the valve 46. The full stroke of the piston is sufficient to raise the can clear of the pit. After the can has been moved to the dump, air is admitted to the auxiliary cylinder 30. This moves the piston 41 toward the left and the end of the rod 42 in this movement strikes the piston 32 and moves it back through a distance equal to the stroke of the auxiliary cylinder. This backward movement of the main piston pays  
 55 out sufficient cable to enable the can to come upon the floor so that the hook can be released. The manner of using this form of the crane is similar to that described in connection with the other form of the invention.  
 60 The short stroke which is sufficient to deposit or raise the load clear of the floor being obtained by means of the auxiliary cylinder, though it is not necessary to release the air

of the main cylinder except when a can is to be placed in the pit or pulled from the pit. 65

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

1. In a crane, in combination, a main cylinder having a relatively long stroke, an auxiliary cylinder having a relatively short stroke, lifting mechanism controlled by both of said cylinders, and means for independently controlling admission to said cylinders.

2. In a crane, in combination, a main cylinder having a relatively long stroke, an auxiliary cylinder having a relatively short stroke, a cable, means for taking up or paying out said cable through the medium of said cylinders, and means for admitting air  
 80 to said cylinders independently.

3. In a crane, in combination, a main cylinder having a relatively long stroke, an auxiliary cylinder having a relatively short stroke, a cable having a block and fall, means  
 85 for connecting said main cylinder with said cable to raise said block when an operating fluid is admitted to said main cylinder, means operated by said auxiliary cylinder to pay out said cable when an operating fluid is admitted to said auxiliary cylinder, and means  
 90 for admitting an operating fluid to said cylinders independently.

4. In a crane, in combination, a main cylinder having a relatively long stroke, a piston  
 95 reciprocating in said main cylinder, a cable connected with said piston and having a block and fall, an auxiliary cylinder connected with said cable, and means for independently admitting fluid to said cylinders. 100

5. In a crane, in combination, a main cylinder having a relatively long stroke, a piston reciprocating in said main cylinder, an auxiliary cylinder having a relatively short stroke, an auxiliary piston reciprocating in  
 105 said auxiliary cylinder, a sheave on said main piston, a cable connected with said auxiliary cylinder, passing around said sheave and having a block and fall, and means for admitting air to said auxiliary cylinder or to said main cylinder. 110

6. In a crane, in combination, a main cylinder, lifting mechanism actuated thereby, an auxiliary cylinder partially controlling said lifting mechanism and affording means  
 115 for lowering the load, and means for independently controlling the admission to said cylinders.

In testimony whereof I have signed my name to this specification in the presence of  
 120 two subscribing witnesses.

JACOB ALBERT SUESS.

Witnesses:

ROBERT S. MANDEL,  
 W. A. ADAMS.