

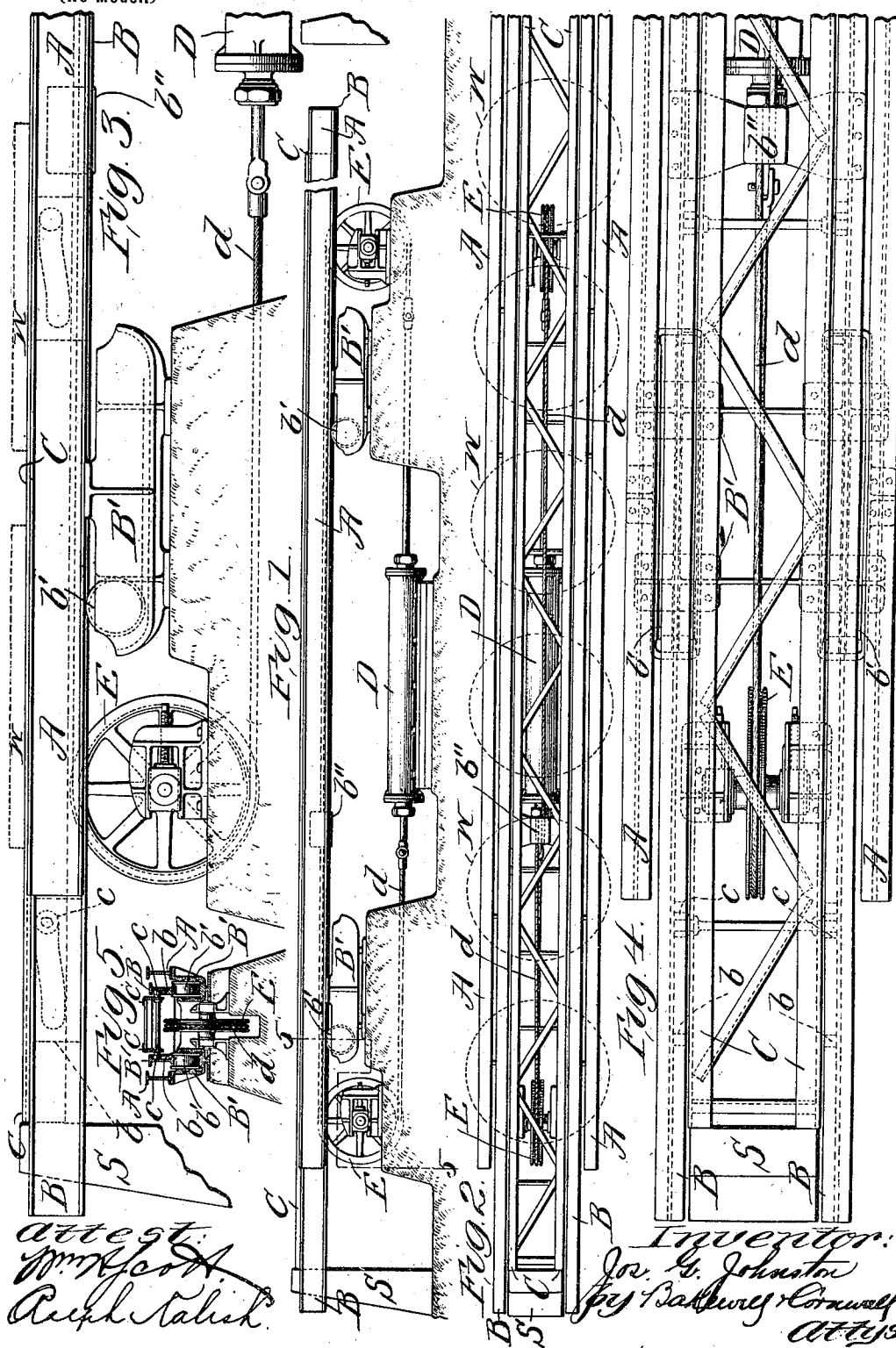
No. 665,227.

Patented Jan. 1, 1901.

J. G. JOHNSTON.
CONVEYER.

(Application filed July 9, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

JOSEPH G. JOHNSTON, OF DETROIT, MICHIGAN, ASSIGNOR TO THE AMERICAN
CAR AND FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 665,227, dated January 1, 1901.

Application filed July 9, 1900. Serial No. 22,989. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH G. JOHNSTON, a citizen of the United States, residing at the city of Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Conveyers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view of my improved conveyer. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged elevational view of one end of said conveyer. Fig. 4 is a top plan view of the same; and Fig. 5 is a vertical, transverse sectional view of the same, taken on the line 5 5 of Fig. 1.

This invention relates to a new and useful improvement in conveyers, especially designed for use in connection with heavy bodies—such as castings, &c.—the object being to construct a device of the character described whereby the movable portion of the conveyer lifts the load to be carried, carries it forward a short distance, deposits it upon the stationary element, and then returns to its former or lifting position.

The invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates a stationary frame, preferably in the form of two parallel I-beams mounted upon some firm support. For purposes of distinction I will designate this as the "stationary" frame.

B indicates a traveling frame, preferably composed of parallel I-beams, which traveling frame has its upper edge below the plane of the stationary frame, and for purposes of distinction I will designate the same as the "traveling" frame, said frame having when the device is in operation a rectilinear reciprocatory movement.

C indicates a frame, which I will designate as the "lifting-frame," said frame being preferably composed of angle-irons and provided with lattice-work, said lifting-frame being

mounted in the traveling frame and designed to have a vertical movement relative thereto, so that the upper faces of this lifting-frame will project above the plane of the stationary frame in order to lift the load therefrom and carry the load longitudinally upon the movement of the traveling frame and by which a step-by-step movement is imparted to the articles conveyed.

The traveling frame B is supported upon suitable roller-bearings in the form of cylinders *b'*, mounted in suitable troughs *B'*, (see Fig. 3,) which troughs also afford a support for the stationary frame A.

b indicates blocks provided with cam-grooves, said blocks being arranged on the inner faces of the rails of the traveling frame, the cam-grooves therein preferably having inclined intermediate portions and horizontal ends.

c indicates rollers mounted on the ends of a suitable transversely-arranged shaft in the lifting-frame C, said rollers fitting in the cam-grooves of blocks *b*, and when the lifting-frame is held stationary and the traveling frame moved in the proper direction the lifting-frame is caused to ascend (to lift the weight from the stationary frame) or descend, (to deposit the weight upon the stationary frame,) as the case may be.

D indicates a cylinder preferably arranged underneath the device and intermediate the ends thereof, the piston-rod of said cylinder extending out each end thereof and having attached thereto a wire or other suitable cable *d*, passing around sheaves or pulleys E, arranged under the ends of the device, as shown in Fig. 1, said cable, with its piston-rod portion, being practically endless. Adjusting devices cooperate with the bearings of pulleys E for the purpose of taking up slack in the cable.

b'' indicates a bracket riveted or otherwise secured to the under faces of the traveling frame B, said bracket being provided with means of attachment or connection to the cable *d*.

In operation, supposing the parts were in the positions shown in Fig. 3, the weights, which are indicated by dotted lines and marked W,

are supported upon the lifting-frame, which is here shown in its highest position and the traveling frame at its extreme position to the left. Through suitable pipe connections with cylinder D (which are not shown, but which it will be stated are controlled by proper valves) the piston causes the cable connected to its rod to travel, and the traveling frame being attached to the cable will now move to the right, carrying with it the elevated lifting-frame and the weights. This movement is continued until the roller *b'* approaches the end of its containing-trough. Just before the roller reaches the end of its trough a stop-block in the path of the lifting-frame arrests the longitudinal movement of said lifting-frame, but permits the traveling frame to continue its movement. The continuation of movement of the traveling frame causes the rollers on the lifting-frame to pass from the horizontal ends at the top of the incline and onto said incline. About this time the pressure in cylinder D is reversed, so that the weight on the lifting-frame will not cause the same to drop quickly by reason of the inclinations on which it is mounted, but, on the contrary, deposit its load gently on the stationary frame, the cylinder acting as a cushion to effect this, and when the load has been deposited on the stationary frame the traveling frame is permitted to move onward a short distance, (it will be remembered that the lifting-frame is arrested against further movement to the right by the stop-block,) and this further movement of the traveling frame is employed to drop the lifting-frame a sufficient distance below the weights which it carried to afford a good clearance between the moving parts and the weights upon the return of said moving parts to their original position. This return of the traveling frame and the lowered lifting-frame from right to left is accomplished by a reversal of pressure in the cylinder D, and before the traveling frame completes its movement the lifting-frame comes in contact with a stop-block (shown at S in Fig. 3) to arrest the movement of said lifting-frame, the continued movement of the traveling frame causing the lifting-frame to ride up the inclinations of the blocks *b* to again lift the load from the stationary frames, the extreme rise of the lifting-frame terminating when the rollers occupy the horizontal portions at the upper ends of the cam-faces and being preferably coincident with the completion of movement of the traveling frame from right to left. The parts now occupy the positions shown in Fig. 3 and are in readiness to carry the load from left to right when pressure in cylinder D is reversed, said load being carried until the stop-block at the right-hand end of the device arrests the lifting-frame and the traveling frame is permitted to travel onward, so that the lifting-frame will again deposit its load on the stationary frame, as above described.

It will be obvious that while I have de-

scribed the load as being lifted and carried from left to right a reversal in the inclination of the cams in the cam-blocks of the traveling frame would reverse the direction of movement of the load.

I will state that a traveling frame built in accordance with the accompanying drawings is designed to have a total length of one hundred and fifty-three feet. The cylinder D is designed to be operated by compressed air and in order to save cable is arranged under one end of the device. The rollers for supporting the traveling frames are arranged in troughs about sixteen feet apart throughout the length of the machine. The lifting-frame is designed to move about four feet longitudinally, so that at each complete operation of the device the load is carried a distance of four feet. I will further state that this traveling frame is primarily designed to carry heavy drags and chills and copes used in casting car-wheels and is employed for such purposes. This form of traveling frame forms one feature of an application executed by me of even date herewith, entitled "Molding plant," the same being filed July 9, 1900, and serially numbered 22,988.

I am aware that minor changes in the arrangement, construction, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. The combination with a stationary frame, of a rectilinear reciprocatory frame arranged in juxtaposition thereto, and a lifting-frame which is actuated by, and caused to reciprocate at an angle to, the movement of said rectilinear reciprocatory frame; substantially as described.

2. The combination with a stationary support for weights, of a frame traveling under said weights, and means on said traveler for lifting said weights, carrying them longitudinally their support, and depositing said weights on said support; substantially as described.

3. The combination with parallel beams forming a stationary frame, of parallel beams forming a traveling frame designed to move longitudinally the stationary frame, and a lifting-frame mounted upon the traveling frame, and movable at right angles to the direction of movement of said traveling frame; substantially as described.

4. The combination with a stationary frame, of a traveling frame moving longitudinally thereof, cam-blocks mounted on said traveling frame, and a lifting-frame mounted in said cam-blocks; substantially as described.

5. The combination with a stationary frame, of a traveling frame movable longitudinally thereof, troughs containing rollers for supporting said traveling frame, cam-blocks car-

ried by the traveling frame, and a lifting-track mounted in said cam-blocks; substantially as described.

5 6. The combination with a stationary frame or support, of a traveling frame movable longitudinally thereof, a cable for moving said traveling frame, a cylinder and piston for operating said cable, and a lifting-frame mounted upon the traveling frame; substantially as described.

10 7. The combination with a stationary frame or support, of a traveling frame movable longitudinally thereof and in juxtaposition thereto, means for moving said traveling frame, a lifting-frame carried by the traveling frame, and stop-blocks for arresting the longitudinal movement of the lifting-frame; substantially as described.

15 8. The combination with a stationary frame, of a traveling frame, a cable connected to said traveling frame for moving the same longitudinally the stationary frame, roller-bear-

ings for said traveling frame, troughs or ways in which said rollers are arranged, cam-blocks carried by the traveling frame, a lifting-frame mounted in said cam-blocks, and stop-blocks for arresting the longitudinal movement of the lifting-frame; substantially as described.

9. The combination with a stationary frame, of a traveling frame which has, when the device is in operation, a rectilinear reciprocatory movement, a lifting-frame, and means for cooperating with said lifting-frame to impart to the same a reciprocatory movement at an angle to the movement of said traveling frame; substantially as described.

30 In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 29th day of June, 1900.

JOSEPH G. JOHNSTON.

Witnesses:

A. F. ANNESLEY,
R. N. BAKER.