March 3, 1931. E. T. BENNINGTON 1,794,826

OVERHEAD CARRIER

Filed July 6, 1925

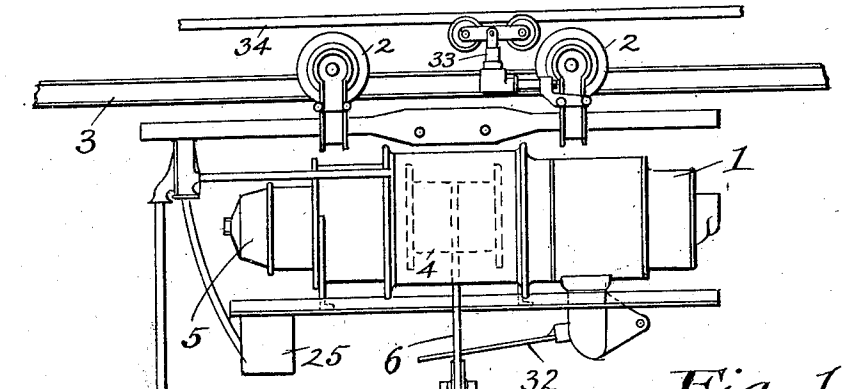


Fig. 1.

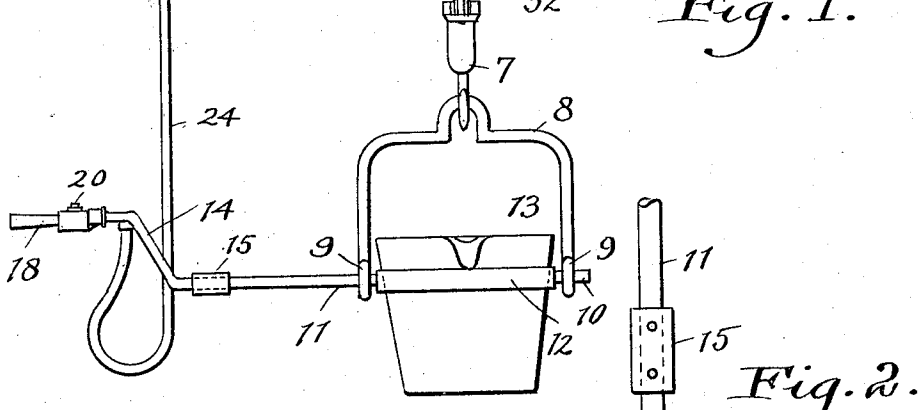


Fig. 2.

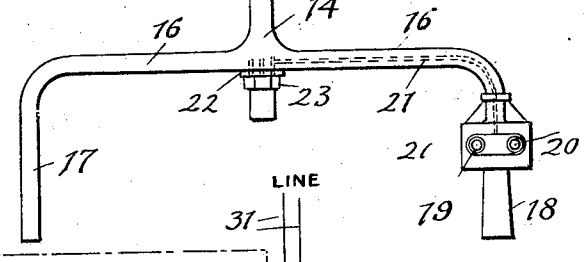
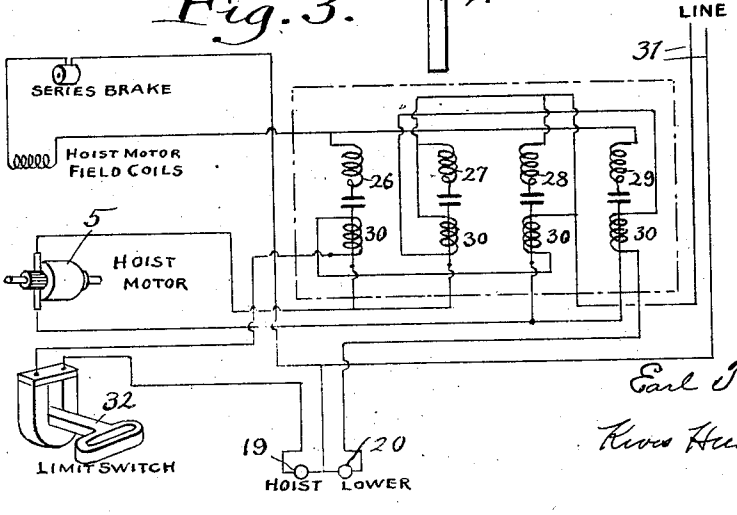


Fig. 3.



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UNITED STATES PATENT OFFICE

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OVERHEAD CARRIER

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This invention relates to overhead carriers of the type in which there is a hoist on the carrier and a loaded carrier member flexibly suspended from the hoist and provided with a handle so disposed that an operator walking along the ground may push against the load carrying member and through the flexible suspension means, move the entire apparatus along the track.

It is an object of the present invention to provide means, on the handle of a flexibly suspended load carrying member, for controlling the operation of the hoist motor to raise or lower the load without releasing the handle.

A further object is to provide a ladle holder flexibly suspended from the hoist of an overhead carrier and having a handle by which the entire apparatus may be pushed along the trackway and by means of which the ladle may be tilted to discharge its contents and to provide, on the handle, means for controlling the operation of the hoist so that the operator, without releasing the handle, may control the hoist to raise or lower the ladle holder.

With the above and other objects in view, the invention may be said to comprise the device as illustrated in the accompanying drawings hereinafter described and particularly set forth in the appended claims, together with such variations and modifications thereof as will be apparent to one skilled in the art to which the invention appertains.

Reference should be had to the accompanying drawings, forming a part of this specification, in which Fig. 1 is a side elevation of an overhead carrier embodying the invention; Fig. 2 is a plan view of the outer portion of the handle; and Fig. 3 is a wiring diagram, showing the motor circuits and controlling switches.

Referring to the accompanying drawings, the carrier 1, which is of a well-known type, is suspended from supporting wheels 2 which travel along a monorail track 3. The carrier 1 is provided with a hoist comprising a winding drum 4 adapted to be driven in either direction through suitable reduction gearing by a reversible electric motor 5. A cable 6 is wound on the drum 4 and has an end hanging down from the drum to which is attached a hook 7, to which a suitable load carrying member may be attached. As shown herein, a load carrying member is a ladle holder having a bail 8 which is hung upon the hook 7. The ends of the bail 8 are provided with eyes 9 which receive the trunnions 10 and 11 of a ladle receiving ring 12 which is adapted to support a ladle 13. The trunnion 11 is extended and has detachably secured thereto a handle 14 by means of which the ladle supporting ring 12 may be turned to tilt the ladle and discharge its contents and by means of which the entire apparatus may be pushed along the overhead track. The handle 14 is secured to the extended trunnion 11 by means of a detachable connection 15 and has a forked outer end consisting of a cross-bar 16 and rearwardly projecting hand-grips 17 and 18 at the ends of the cross-bar.

In order to enable the operator to control the up and down movements of the ladle holder as well as the lateral movements while retaining the grip upon the handle, a pair of motor controlling switches 19 and 20 are mounted upon the hand-grip 18 and the contacts of these switches are connected by suitable conductors 21, which extend within the handle to the central portion of the cross-bar 16, where they are connected with suitable contacts in a socket 22, which receives a plug 23 attached to a flexible cable 24 which is suspended from the rear end portion of the carrier 1. The flexible cable 24 is an insulated cable containing conductors attached to the contacts of the plug 23 and with suitable terminals on the carrier.

The hoist motor is preferably remote controlled through the medium of solenoid operated switches, the details of which are immaterial to my invention, the solenoid operated switches being preferably enclosed in a box 25 attached to the carrier 1. In Fig. 3, I have shown conventionally or diagrammatically, one form of electrical control for the motor. As shown in this figure, I utilize four remote control switches 26, 27, 28 and 29, which are closed by solenoids 30 which are adapted to be connected in the circuits with

line conductors 31 by means of the push buttons 19 and 20, on the handle. The wires, in this instance three in number, extend from the push buttons 19 and 20 to the control box 25. The push button 19 controls the switches 26 and 28 and the push button 20 controls the switches 27 and 29. When the push button 19 is closed, current passes from the line conductors 31 through the armature and field of the motor with the current passing through the armature in a direction such as to cause the motor to be driven in a direction to raise the load carrying member and when the push button 20 is operated to close the switches 27 and 29, the current again passes through the field and armature, but through the armature in the reverse direction to operate the motor to wind up the hoist cable and raise the load carrying member. A limit switch 32 is preferably employed to automatically stop the motor, as the hook 7 approaches the bottom of the carrier 1, this however, being an expedient common in the art. The current for operating the motor 5 is preferably supplied through a trolley 33, which engages with a conductor rail 34 which extends parallel with the track 3.

In the operation of the device, the operator grasps the hand-grips 17 and 18 and presses the push button switch 19 to cause the ladle to be lifted to a convenient height and then moves the entire apparatus to the point where the ladle is to be discharged by pushing against the handle. When the discharge point is reached, the ladle may be positioned at the proper height for pouring by operating the proper switch or the handle without releasing either hand-grip and when the ladle is in proper position, the ladle may be tipped by turning the handle. The handle 14 is made detachable from the trunnion 11 so that different sized ladle holders may be substituted without disturbing the motor controlling device. The plug 23 and socket 22 provide a detachable connection between the handle 14 and cable 24, so that the handle can be quickly detached from the cable or attached thereto.

Having thus described my invention, I claim:

1. In a device of the character described, a carrier adapted to travel along an overhead trackway, hoisting means on the carrier, a reversible electric motor on the carrier for operating the hoisting means, remote control switches on the carrier for controlling the operation of the motor, a molten metal ladle provided with a spout for pouring and having a handle for tilting the ladle, said ladle being flexibly suspended from the hoisting means, switches on said handle for controlling the remote control switches on the carrier, whereby the height of the ladle spout with reference to the mold can be maintained as desired while the metal is being poured, and flexible conductors extending from the handle to the carrier.

2. In a device of the character described, a carrier adapted to travel along an overhead trackway, hoisting means on the carrier, a reversible electric motor on the carrier for operating the hoisting means, remote control switches on the carrier for controlling the operation of the motor, a load carrying member having a handle, said load carrying member being flexibly suspended from the hoisting means, switches on the handle for controlling the remote control switches on the carrier whereby the height of the ladle spout with reference to the mold can be maintained as desired while the metal is being poured, flexible conductors suspended from the carrier and connected to the remote control switches, a plug to which the ends of the conductors are attached, a socket in the handle adapted to receive the plug, and conductors in the handle for connecting the contacts of the handle switches with said flexible conductors.

3. In a device of the character described, a carrier adapted to travel along an overhead trackway, hoisting means on the carrier, a reversible electric motor on the carrier for operating the hoisting means, a molten metal ladle holder flexibly suspended from the hoisting means, said ladle holder comprising a bail, a ladle receiving ring having trunnions journaled in the bail and a handle secured to one of said trunnions by which the entire apparatus may be moved along the trackway and by which the ladle may be tipped to discharge its contents, and means for controlling said motor to raise or lower the ladle holder into any desired position with reference to the mold while the metal is being poured including switches on said handle and flexible conductors connecting the carrier and handle.

4. In a device of the character described, a carrier adapted to travel along an overhead trackway, hoisting means on the carrier, a supporting member flexibly suspended from said hoisting means, a tiltable ladle holding member carried by the supporting member, a handle attached to the ladle holding member by means of which the same may be tilted and held in different tilted positions, and electrical means for controlling the hoisting means to raise or lower the ladle supporting member, said controlling means including circuit closing elements on the handle so positioned with respect to a hand grip portion thereof that the operator without releasing his grip on the handle may cause the ladle carrying member to be raised or lowered as the ladle is tilted whereby the spout of the ladle can be maintained in any desired position with reference to the mold while the metal is being poured.

5. In a device of the character described,

a carrier adapted to travel along an overhead trackway, hoisting means on the carrier, a supporting member flexibly suspended from said hoisting means, a tiltable ladle holding member carried by the supporting member, said ladle holding member having trunnions journaled in said supporting member, a handle attached to one of said trunnions, said handle having hand grip portions upon opposite sides of the axis of the trunnion, and electrical means for controlling the hoisting means to cause the same to raise or lower the supporting member to maintain the spout of the ladle at any desired height with reference to the mold while the metal is being poured, said controlling means including a pair of push button switches, each mounted upon a hand grip portion of the handle.

6. A ladle crane comprising a platform, an electric motor carried by the platform, vertically adjustable supporting means carried by the platform and depending therefrom, means connecting the motor to said supporting means for adjusting the same, a foundry ladle having a handle supported by said supporting means, and switch means for the motor carried by said handle.

7. In a supporting and control mechanism for a foundry ladle, a platform, an electric motor carried by the platform, vertically adjustable supporting means carried by the platform, means connecting the motor to said supporting means for adjusting the same, a foundry ladle having a handle supported by said supporting means, a grip at the end of said handle, switch means for the motor carried by said handle, and operating means for the switch means located adjacent to said grip.

8. In combination, a platform, an electric motor, vertically adjustable supporting means carried by the platform and depending therefrom, means connecting the motor to said supporting means for adjusting the same, a device having a handle supported by said supporting means, and switching means for the motor carried by said handle.

9. In combination, a platform, an electric motor, vertically adjustable supporting means carried by the platform and depending therefrom, means connecting the motor to said supporting means for adjusting the same, a device having a handle supported by said supporting means, a grip at the end of the handle, switch means for the motor carried by said handle, and operating means for the switch means located adjacent to said grip.

10. In a device of the character described, a freely movable carrier adapted to travel along an overhead trackway, hoisting means on said carrier, a ladle flexibly supported from said hoisting means, a handle associated with said ladle and adapted to tilt the latter during the pouring operation, and control means on the handle for actuating said hoisting means to raise and lower said ladle whereby the operator without releasing his grip on the handle is able to move the ladle bodily and to tilt it and through the control means on the handle to raise and lower said ladle.

11. In a device of the character described, a freely movable carrier adapted to travel along an overhead trackway, hoisting means on said carrier, a motor for actuating said hoisting means, a ladle supported for universal movement from said hoisting means, a handle associated with said ladle and adapted to tilt the same during the pouring operation, and control means on said handle for actuating said motor to thereby raise and lower said ladle.

In testimony whereof, I hereunto affix my signature.

EARL T. BENNINGTON.