No. 722,867. PATENTED MAR. 17, 1903.

G. MITCHELL.

MEANS FOR PREVENTING THE OVERWINDING OF HOIST CHAINS OF CRANES.

APPLICATION FILED JULY 3, 1902.

NO MODEL.

Fig. 1.

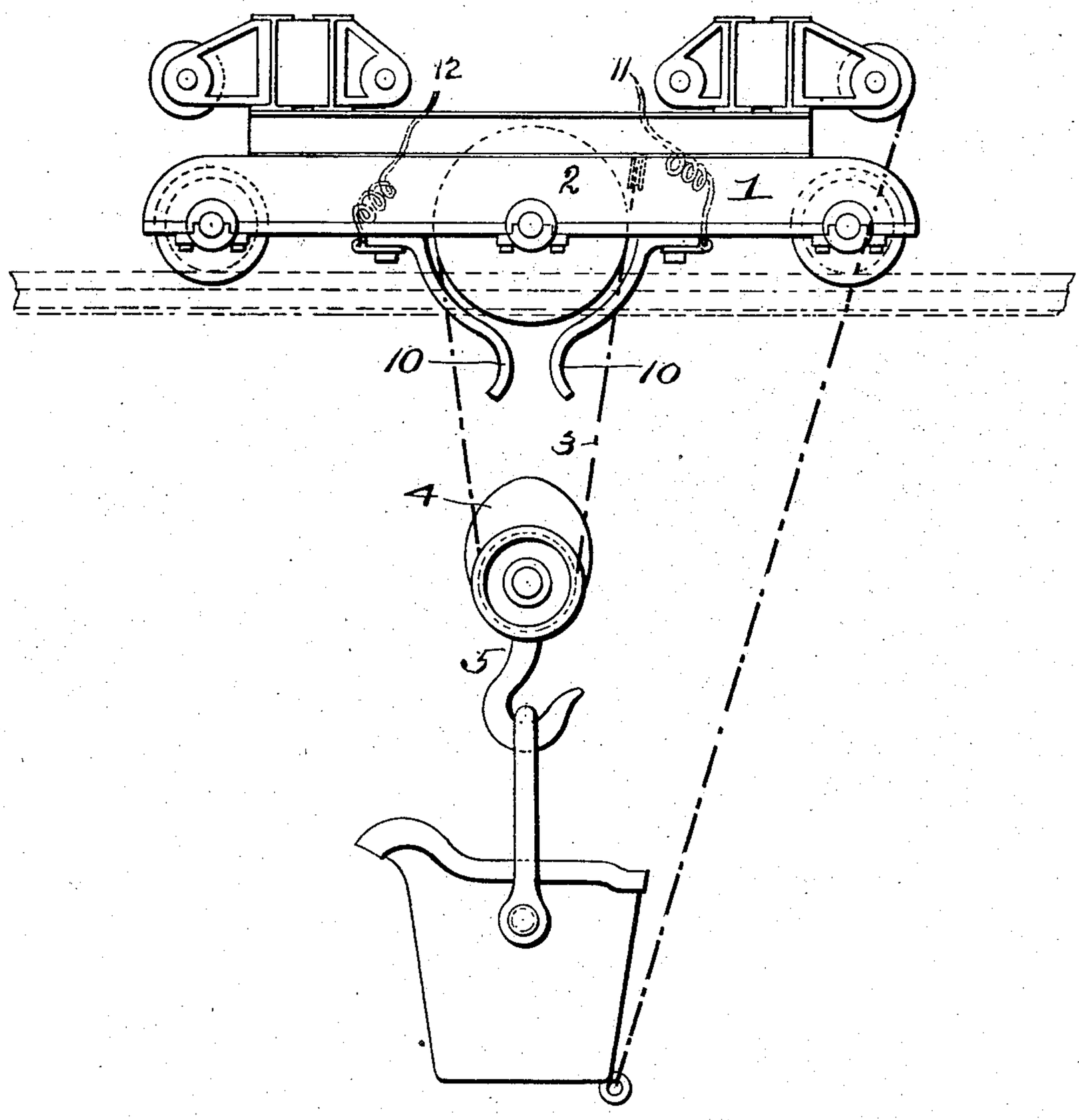
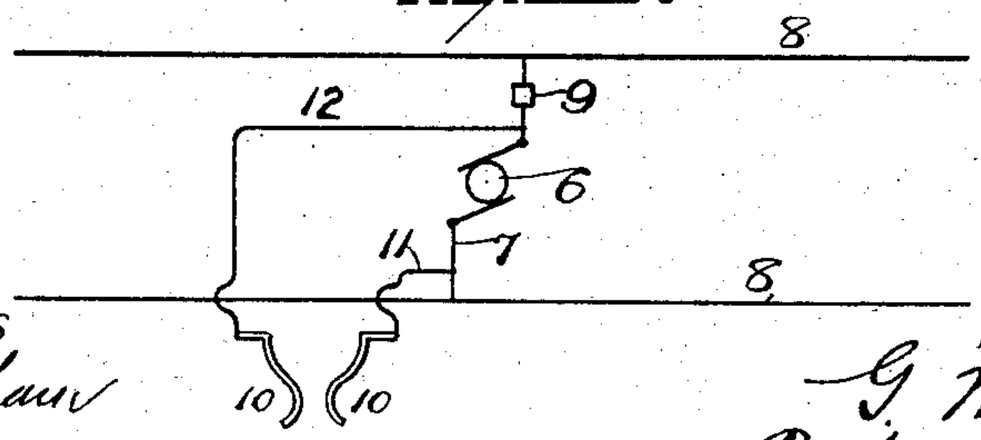


Fig. 2.



WITNESSES

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MEANS FOR PREVENTING THE OVERWINDING OF HOIST-CHAINS OF CRANES.

SPECIFICATION forming part of Letters Patent No. 722,867, dated March 17, 1903.

Application filed July 3, 1902. Serial No. 114,279. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MITCHELL, of Naco, in the county of Cochise and Territory of Arizona, have invented certain new and useful Improvements in Means for Preventing the Overwinding of the Hoist-Chains of Cranes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in hoisting apparatus, and more particularly to means for preventing the overwinding of the hoist-chains, the object being to provide means for cutting out the main hoist-motor when through negligence or any other cause the main chain-hoist block reaches the limit of its upward movement, thus preventing injury to the apparatus and possible danger to the workmen that would necessarily result from overwinding of the main hoist-chain.

With these ends in view my invention consists in a hoisting-drum, its motor, and a chain block or sheave combined with an electric circuit including the motor and means controlled by said sheave or block for automatically opening the motor-circuit when the sheave or block rises to a predetermined height.

My invention further consists in certain details in the construction, as will be more fully described, and pointed out in the claims.

While my improvement is designed for use on any type of hoisting apparatus wherein the hoisting-drum is actuated by an electric motor, it is particularly applicable for use on overhead traveling cranes.

In the accompanying drawings, Figure 1 is a view of an overhead trolley for a traveling crane embodying my invention; and Fig. 2 is a diagrammatic view of the motor, its circuit, and the contact-arms.

1 represents a trolley of any construction, carrying a winding-drum 2, to which the hoist-chain 3 is attached. This chain carries the pulley-block 4, to which the carrying-hook 5 is swiveled.

The motor 6, which operates the winding-drum 2, is preferably included in a multiple-arc circuit 7 between the main leads 8 8 from a suitable generator. In order to prevent the block or sheave 4 from rising high enough to engage the winding-drum, and thus endanger the apparatus, it is desirable that the motor 6 shall be stopped automatically before the sheave reaches the winding-drum, and in order to insure this I prefer to provide means whereby the motor-circuit shall be opened and the motor thus disabled. This can be readily accomplished by placing a fuse 9 in the multiple-arc branch in series with the motor, so that by short-circuiting the motor the multiple-arc motor-circuit will be opened by the blowing of the fuse. For the purpose of thus short-circuiting the motor when the block or sheave 4 rises to a predetermined height I provide the trolley 1 with contact-arms 10 10, normally separated, and connect them by suitable conductors 11 12 with the multiple-arc motor-circuit at respective sides of the motor, the conductor 12 being connected with the motor-circuit between the motor and the fuse-box, or said conductors may be connected directly with the motor-terminals. From this construction it will be seen that when the block or sheave 4 rises sufficiently high to enter between and electrically connect the contact-arms 10 10 the motor will be short-circuited and the consequent sudden rise of current in the multiple-arc motor-circuit will blow the fuse 9, and thus open the motor-circuit.

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

1. The combination with a winding-drum and a sheave to be raised thereby, of an electric motor for operating said drum, an electric circuit including the motor, and electrically-operated means controlled by said sheave for automatically opening the motor-circuit when the sheave rises to a predetermined height.

2. The combination with a winding-drum, and a sheave to be raised thereby, of an electric motor for operating the winding-drum, an electric circuit including said motor, a fuse in said circuit, and means controlled by the sheave for causing said fuse to be blown when the sheave rises to a predetermined height.

3. The combination with a winding-drum

and a sheave to be raised thereby, of an electric motor for operating said drum, a multiple-arc circuit including said motor, a fuse in series with the motor in said multiple-arc circuit, contact-arms arranged to receive the sheave between them, and conductors connecting said contact-arms with the multiple-arc circuit at respective sides of the motor.

4. The combination with a winding-drum and a device to be raised thereby, of an electric motor for operating the drum, an electric circuit including the motor, and electrically-operated means controlled by said device for automatically opening the motor-circuit when the device rises to a predetermined height.

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

GEORGE MITCHELL.

Witnesses:
S. G. NOTTINGHAM,
A. W. BRIGHT.