

(No Model.)

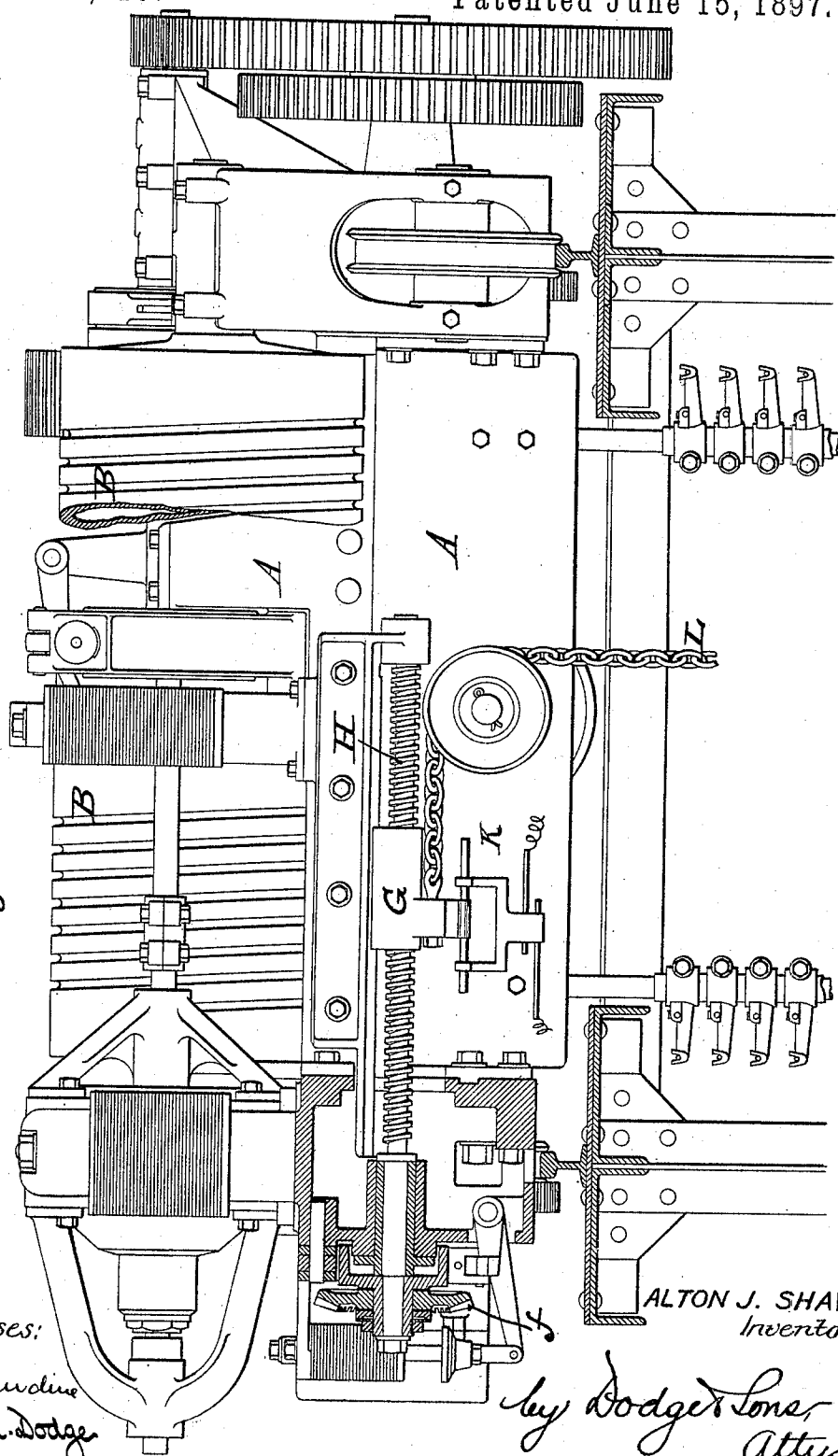
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A. J. SHAW.
HOISTING MACHINERY.

No. 584,420.

Patented June 15, 1897.

Fig. 1.



Witnesses:
C. C. Burdine
Horace A. Dodge

ALTON J. SHAW,
Inventor,

by Dodge & Sons
Attys.

(No Model.)

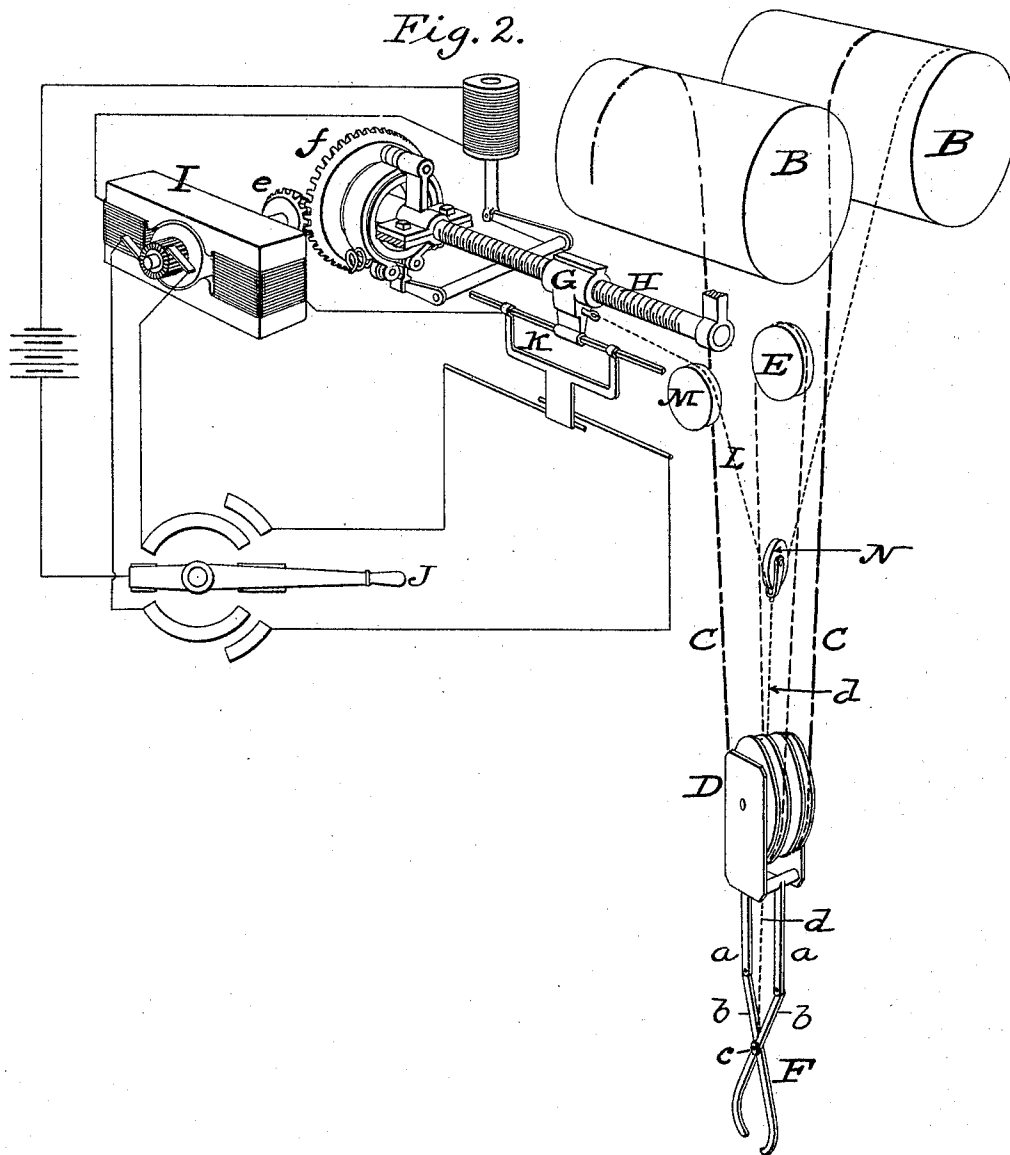
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A. J. SHAW.
HOISTING MACHINERY.

No. 584,420.

Patented June 15, 1897.

Fig. 2.



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UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF MUSKEGON, MICHIGAN, ASSIGNOR TO THE SHAW
ELECTRIC CRANE COMPANY, OF SAME PLACE.

HOISTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 584,420, dated June 15, 1897.

Application filed June 20, 1893. Serial No. 478,266. (No model.)

To all whom it may concern:

Be it known that I, ALTON J. SHAW, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Hoisting Machinery, of which the following is a specification.

My invention relates to hoisting machinery, and particularly to mechanism for actuating a trip, opening or closing tongs, tipping ladles, and the like.

The present invention is an improvement upon that set forth in an application filed in my name on the 11th day of February, 1893, Serial No. 461,865, the purpose being to simplify the construction and at the same time render the action more certain.

Figure 1 is an end elevation of a trolley such as is used upon bridge-cranes and provided with my improvement, portions being sectioned to show parts which would otherwise be hidden from view. Fig. 2 is a diagrammatic view illustrating the relation of the trip actuating or controlling mechanism to other parts of the apparatus.

Before describing the improvement it is proper to state that the invention is wholly independent of the means for moving the trolley and for actuating the hoisting drum or drums, and while peculiarly adapted for use in connection with an electric motor for actuating it the device may be driven by motors of other kinds. Inasmuch, however, as the fullest benefits of the device are realized only in connection with an electromotor I have illustrated and shall describe it in that relation.

Referring now to the drawings, A indicates the framework of a trolley, or it may be any other framework or support provided with hoisting apparatus.

B indicates a hoisting-drum, of which there may be but one or two, as shown in the drawings. These drums will be rotated and controlled in any convenient way, manually or by power, as deemed expedient, and will be furnished with any suitable tackle and gripping device or carrier.

I have illustrated in Fig. 2 as a common and efficient arrangement a chain C, the two

ends of which wind simultaneously and equally on or off the two drums B B, while the intermediate portion falls in two loops, which pass about the pulleys of a running-block D and over an idler-pulley E above. From the block D is suspended any convenient carrier F, as tongs, ladle, scoop, or the like, tongs being represented. The tongs shown are suspended by links *a a*, jointed to the upper arms of their crossed levers *b*, and are designed to be opened by an upward pull upon the pivot-pin *c*. To effect this pull, I employ a traveling block or nut G, which is internally threaded to receive a threaded shaft or screw H, which receives motion from any convenient source, an electromotor I being indicated in the drawings and preferred in practice, suitable connection being made between the motor and shaft or screw H, bevel-gearing *e f* being shown.

The motor is controlled primarily by a manual reversing-switch J, by which the current can be caused to flow in either direction through the armature or entirely cut off at will, and it is further controlled by an automatic switch K, one part of which is carried by or forms part of the nut or block G, as in the application mentioned.

The switch mechanism constitutes no part of the present invention, but is illustrated and referred to for the purpose of better explaining the advantages of the construction to which the invention does pertain.

In the event of the nut or block G being carried too far the circuit is thereby interrupted at the switch K, the motor ceases to operate, and the block or nut consequently comes to rest.

L indicates a chain, cable, or flexible band of suitable strength, one end of which is made fast to block or nut G, from which it passes over a pulley M, beneath a second running-block N, and finally to one of the hoisting-drums B, upon which it is arranged to wind simultaneously and equally with the hoisting chain or cable.

Running-block N connects by a chain or band *d*, of any suitable character, with the pivot-pin *c* of tongs F or with the trip of whatever carrier is employed.

The particular manner of running or arranging the hoisting and trip chains or cables is merely illustrative and may be varied, the only essential being that one end of the trip-chain be connected with the take-up nut or block G and that the other end be arranged to wind on and off the hoisting-drum simultaneously and equally with the hoisting-chain.

Under the arrangement shown and described power applied to the hoisting-drums causes the hoisting chain or cable C and the trip chain or cable L to be wound or unwound and the running-blocks D and N to rise and fall in unison, and consequently without affecting the tongs or the trip device. If, however, block G be moved in a direction to draw upon the trip chain or cable L, it will pull upward upon pivot-pin c of the tongs (or such other trip device as may be employed) and will cause the opening of the tongs or actuation of the trip. By thus connecting the trip-chain directly to the block G, I am enabled to dispense with the auxiliary drum and with intermediate gearing between shaft or screw H and said drum required under the former construction and arrangement. Block G has one face flattened to bear against the main

framework and prevent rotation with the screw-shaft, as shown.

No broad claim is made herein to a take-up acting upon one end of a trip-chain the other end of which winds upon the hoisting-drum, as that is embodied and claimed in another application filed in my name on the 17th day of February, 1893, Serial No. 462,713.

Having thus described my invention, what I claim is—

In combination with a hoisting apparatus substantially such as described and shown, an electric motor I, a screw-shaft H driven by said motor; a block or nut G threaded to fit the screw-shaft; a trip chain or cable d connected with the carrier-trip and having one end arranged to wind upon the hoisting-drum and the other end attached to nut G, conductors supplying the electric motor I, and a switch J included in the motor-circuit, one part of said switch being attached to and movable with the nut G.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ALTON J. SHAW.

Witnesses:

THOMAS C. AKIN,
JOHN M. WING.