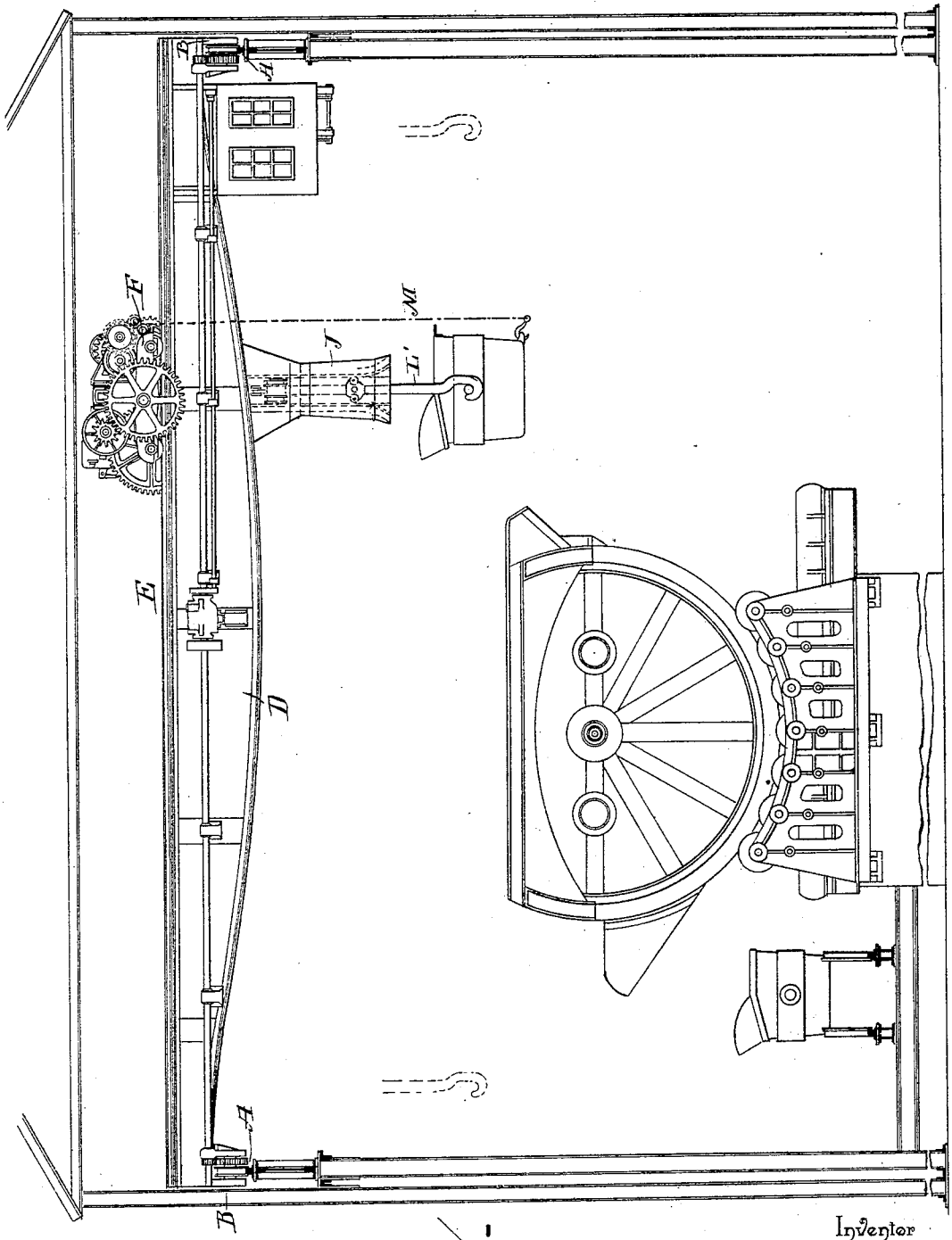
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W. H. MORGAN.

OVERHEAD TRAVELING CRANE.

No. 602,765. Patented Apr. 19, 1898.



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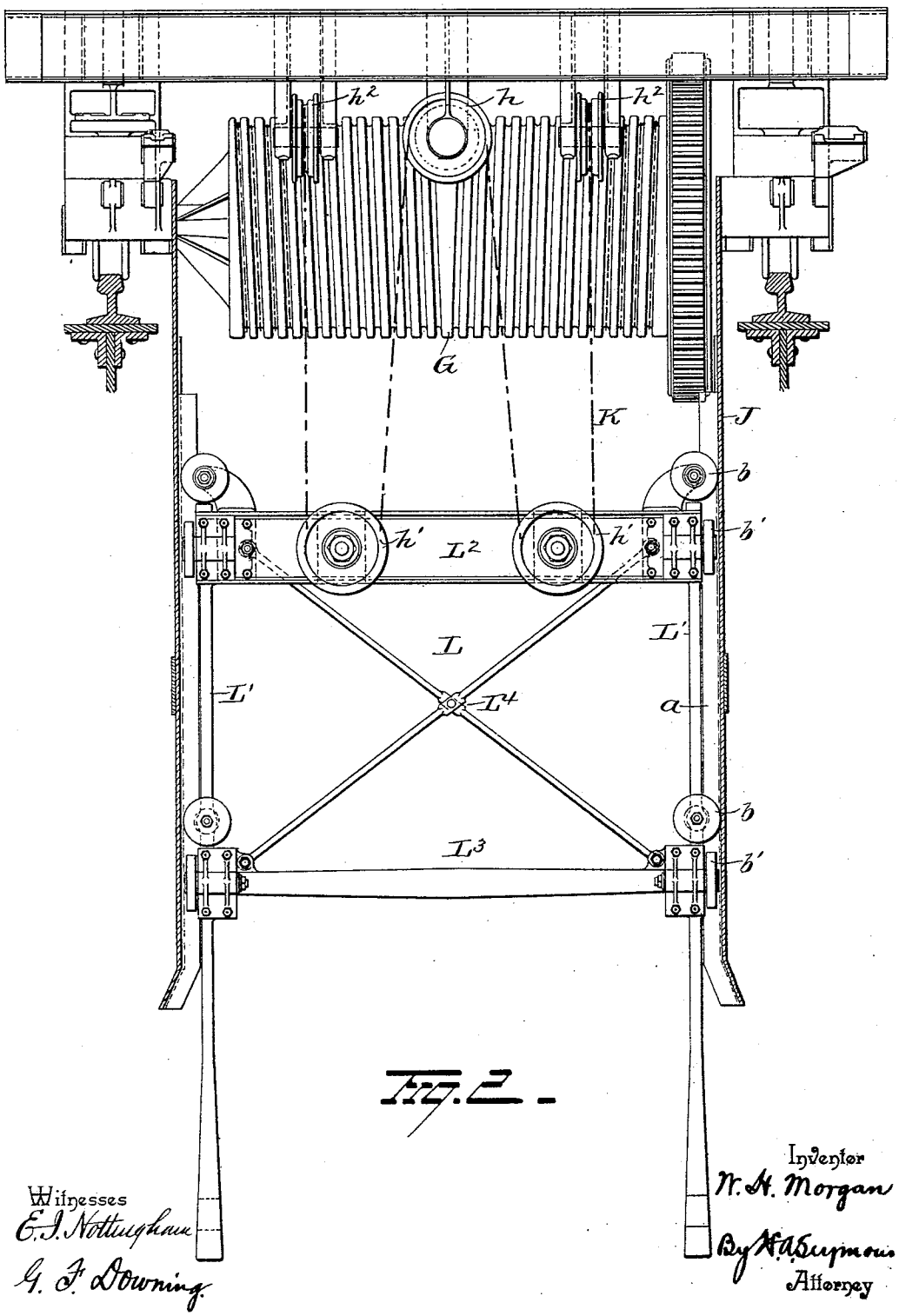


Fig. 2.

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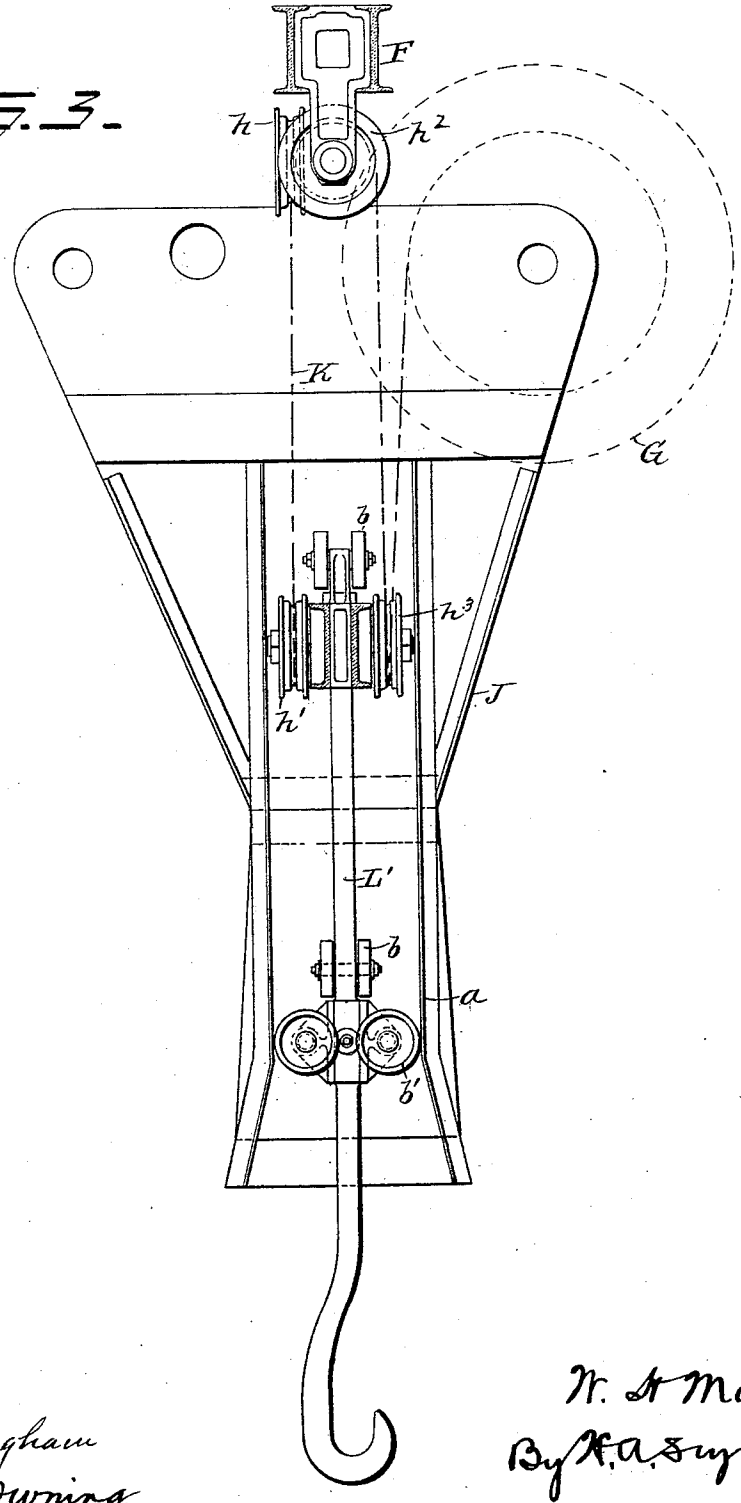
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FIG. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY MORGAN, OF ALLIANCE, OHIO.

OVERHEAD TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 602,765, dated April 19, 1898.

Application filed May 20, 1897. Serial No. 637,425. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY MORGAN, a resident of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Overhead Traveling 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 overhead traveling cranes, and is designed more particularly as an improvement on the crane disclosed in my application, Serial No. 559,243, filed July 15, 1896.

In my application above referred to I have disclosed a trolley having guides depending from the trolley outside of the bridge-girders, so as to leave the space between the girders free for the travel of an auxiliary trolley carrying a tilting chain and chain-actuating mechanism.

My present invention consists in a trolley having depending guides, the latter located between and adjacent to the inner faces of the bridge-girders and also carrying a tilting-chain-winding drum and mechanism for actuating the tilting chain.

My invention further consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a crane embodying my improvements. Fig. 2 is a view in end elevation of the trolley, showing the depending guides in section; and Fig. 3 is a view in elevation of one of the guides, showing also a section of the trolley and a portion of the ladle-bail.

A represents an elevated trackway running lengthwise the shop, on which the bridge travels. This bridge is composed of end carriages B and two girders D. Secured to the upper surfaces of the girders D are the rails E, constituting the trackway on which the trolley F runs. This trolley F is propelled lengthwise the bridge in the usual manner by an electric motor and suitable gearing and is provided with a hoisting-drum G, running transversely of the trolley and mounted in bearings and actuated by an electric motor and suitable gearing.

Depending from the sides of the trolley are the guides J. These guides are secured to the trolley-frame and are triangular in shape in elevation, as shown in Fig. 3, at their upper ends, so as to embrace the two axles carrying the flanged track-wheels and the shaft carrying the hoisting-drum. These guides, which depend between the bridge-girders, adjacent to the inner faces of the girders, are each provided on their inner faces with the vertical side flanges *a*, the lower ends of which latter, together with the lower ends of the frames or bodies of the guides, diverge downwardly, forming flaring mouths which readily receive the rollers *b* and *b'* on the ladle-bail as the latter is drawn upwardly between the guides. These guides are preferably made of sheet metal suitably braced, and hence take up but little of the space between the bridge-girders.

The hoisting-chain K is passed over the pulley *h*, carried by the trolley, down under the pulleys *h'*, secured to the top of the ladle bail or frame, then up over pulleys h^2 on the trolley, then down to the pulleys h^3 on the ladle-frame, and up to the drum, its two ends being secured to the drum.

The bail or frame L can be of any desired construction, but the bail shown has been found in practice to be very effective. It consists primarily of two side arms L', each provided with a hooked lower end to engage the trunnions of the ladle, and two cross-bars L^2 and L^3, the upper one, L^2, being preferably constructed of angle-bars. These cross-bars connecting the side arms are braced, as at L^4, forming a bail sufficiently rigid to prevent any separation of the side arms L'. The frame or bail thus formed is provided with the rollers *b*, which bear against the guide J, and with the rollers *b'*, which bear against the side flanges *a*. Hence the bail can move upwardly between and in contact with the guides with but little friction.

In a ladle-crane such as I have shown it is desirable to support the ladle by flexible devices, so that when the ladle is lowered it can be readily moved, turned, and handled and which will yield if the crane should acciden-

tally carry it against a rigid obstruction of any character while being transported from one part of the mill to another. When, however, the ladle is in an elevated position for discharging its contents into a converter, it is essential that its bail be held rigid and immovable, so as to absolutely prevent the bail from swinging while the ladle is being tilted. With the guides as above described all swinging of the bail is absolutely prevented the instant the lower antifriction-rollers *b'* enter between the side flanges of the guides.

For tilting the ladle and for ordinary hoisting I have employed the auxiliary chain M. This chain is secured on a drum carried by the trolley, the drum being actuated either by an independent motor and gearing or by the motor employed for actuating the main hoist.

It is evident that numerous slight changes might be resorted to in the relative arrangement of parts herein described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not confine myself to the exact construction of parts herein shown; but,

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

1. In an overhead traveling crane, the combination with a bridge and a traveling trolley thereon, of a hoisting-chain carried by the trolley and carrying a ladle, a guide depending from the trolley between the bridge-girders, and a ladle bail or frame adapted to enter said guide and lock the bail against movement.

2. In an overhead traveling crane, the combination with a bridge and a traveling trolley thereon, the trolley having a flexible hoisting device, of guides depending from the trolley between the bridge-girders, a ladle having a bail or frame and devices carried by the bail and adapted to rest in the guides when the ladle is in its elevated position, substantially as set forth.

3. In an overhead traveling crane, the combination with a bridge and a trolley thereon, the trolley having a main hoisting-drum and an auxiliary hoisting-drum, and a chain on each drum, of guides depending from the trolley between the bridge-girders, a ladle bail or frame carried by the chain on the main hoisting-drum and antifriction-rollers mounted on the ladle bail or frame and adapted to engage the guides.

4. In an overhead traveling crane, the combination with a bridge and a traveling trolley thereon, of a main hoisting-chain and means for actuating same, an auxiliary or tilting chain and means for actuating same, guides depending from the trolley and resting adjacent to the inner faces of the bridge-girders and a bail or frame carried by the main hoisting-chain and adapted to be engaged by the guides when in an elevated position, substantially as set forth.

5. In an overhead traveling crane, the combination with a bridge, a traveling trolley thereon and guides depending from the trolley between the bridge-girders, of a main hoisting drum and chain, carried by the trolley, a ladle-bail comprising connected side arm, and cross-bars, suspended from said hoisting-chain, antifriction-rollers on said bail or frame, and independent chain carried by said trolley for tilting the ladle, substantially as set forth.

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

WILLIAM HENRY MORGAN.

Witnesses:
W. G. HILDEBRAN,
JOHN H. LLOYD.