No. 722,755. PATENTED MAR. 17, 1903.

A. L. ROBERTS.

CHAIN BLOCK FOR OVERHEAD CRANES AND DERRICKS.

APPLICATION FILED JUNE 14, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

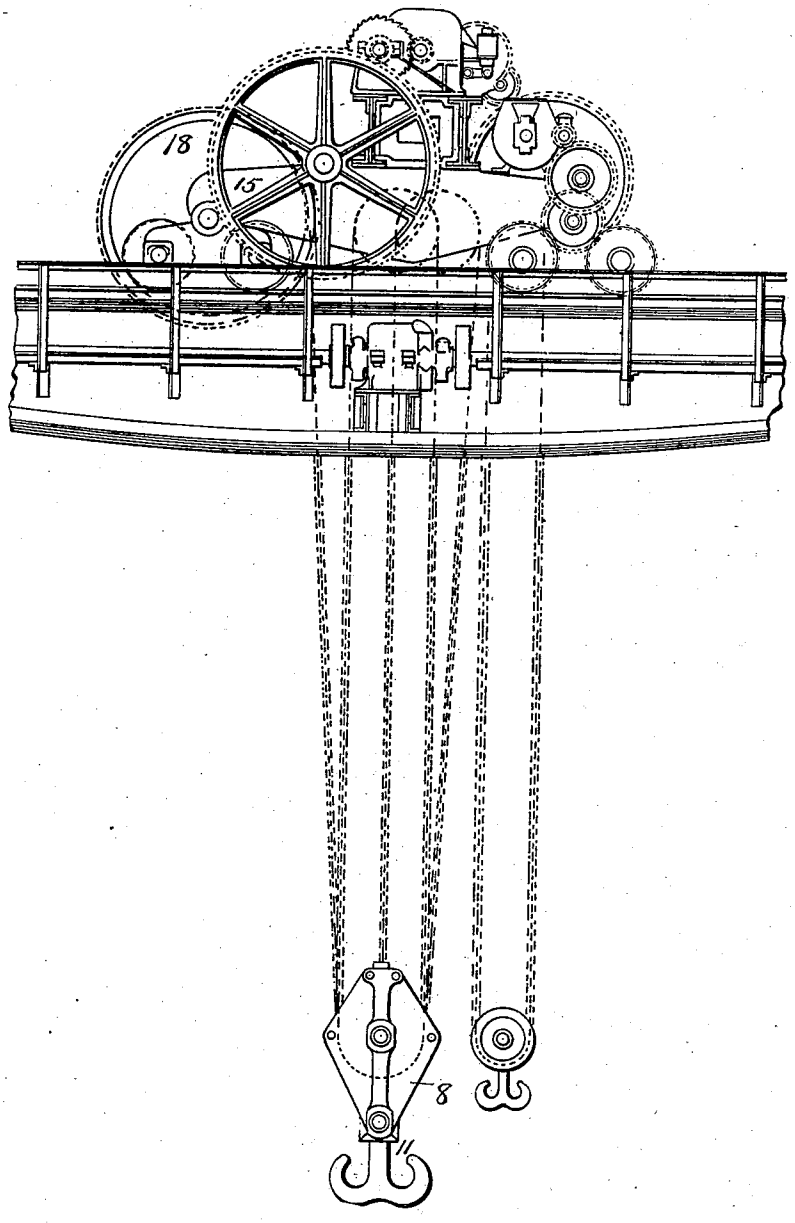


Fig. 1.

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NO MODEL. 4 SHEETS—SHEET 2.

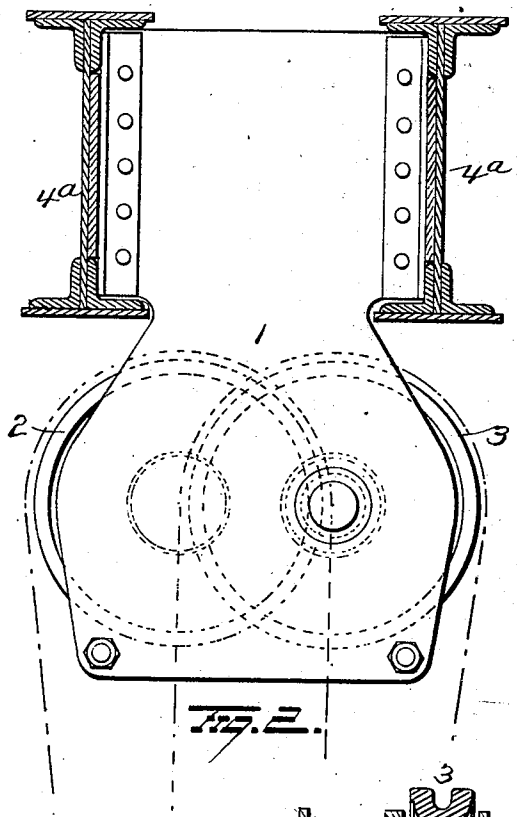


Fig. 2.

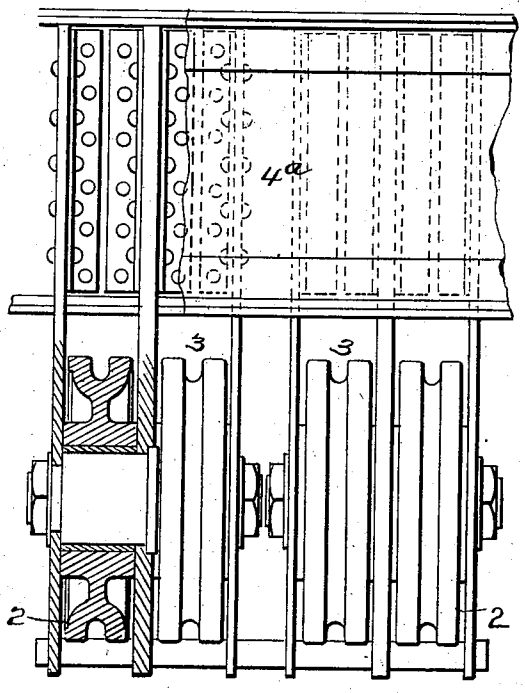


Fig. 3

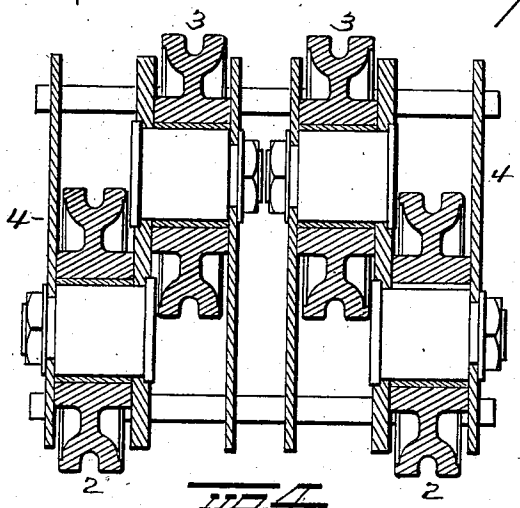


Fig. 4

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NO MODEL. 4 SHEETS—SHEET 3.

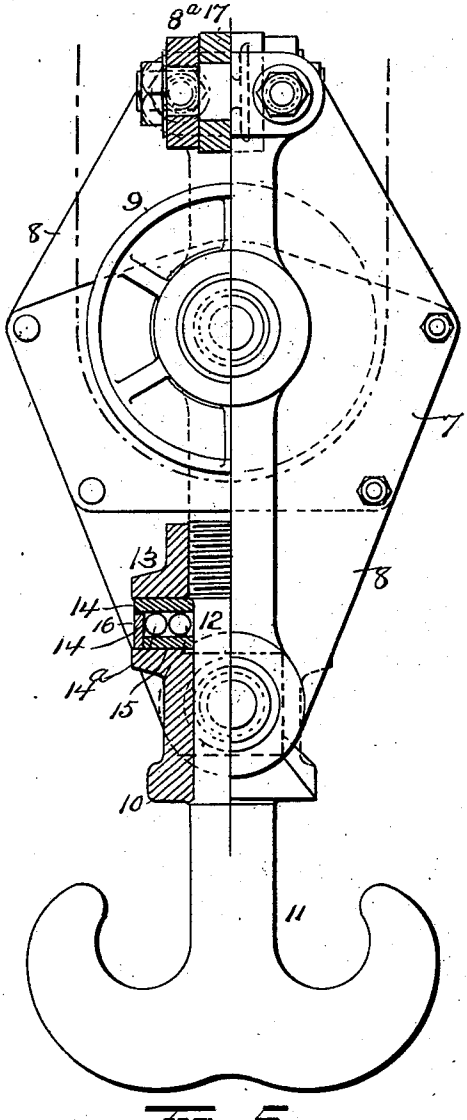


FIG. 5.

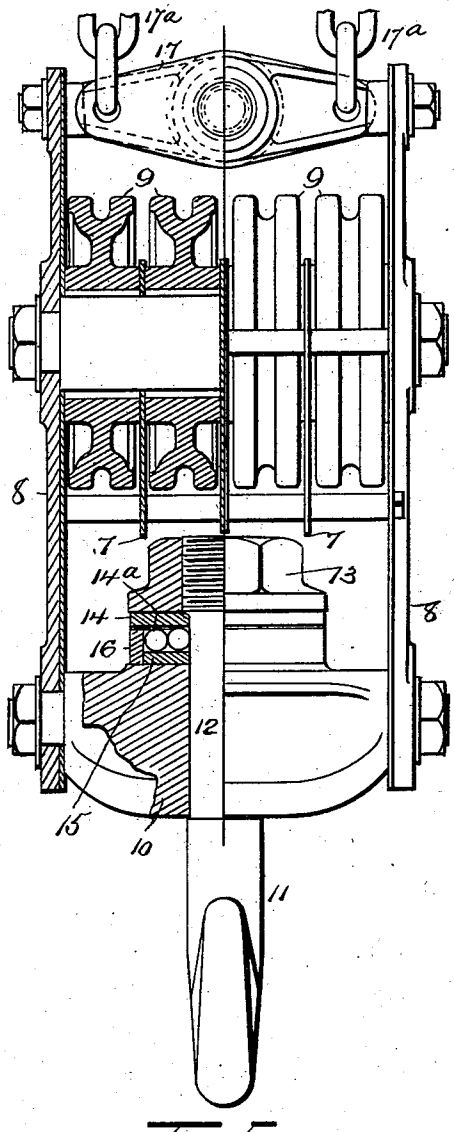


FIG. 6.

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No. 722,755. PATENTED MAR. 17, 1903.

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APPLICATION FILED JUNE 14, 1902.

NO MODEL. 4 SHEETS—SHEET 4.

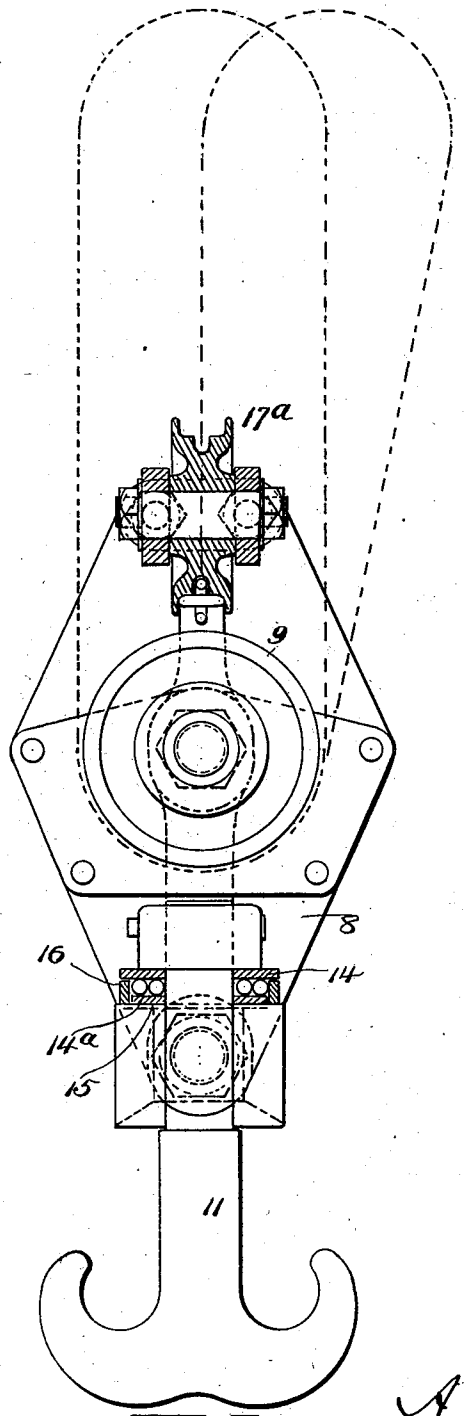


FIG. 7.

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UNITED STATES PATENT OFFICE.

ALVIN L. ROBERTS, OF ALLIANCE, OHIO, ASSIGNOR TO THE MORGAN ENGINEERING COMPANY, OF ALLIANCE, OHIO.

CHAIN-BLOCK FOR OVERHEAD CRANES AND DERRICKS.

SPECIFICATION forming part of Letters Patent No. 722,755, dated March 17, 1903.

Application filed June 14, 1902. Serial No. 111,730. (No model.)

To all whom it may concern:

Be it known that I, ALVIN L. ROBERTS, of Alliance, in the the county of Stark and State of Ohio, have invented certain new and useful Improvements in Chain-Blocks for Overhead Cranes and Derricks; 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 chain-blocks for overhead cranes and derricks, the object of the invention being to provide chain-blocks so constructed and arranged that the lower block, from which the weight is suspended, moves approximately in a direct vertical line, thus specially adapting the blocks for lifting flasks or removing large patterns from the sand without breaking the molds, for lowering jackets onto gun-tubes, and for handling all work where an absolutely vertical lift is essential.

My invention 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 an overhead trolley having my improved blocks applied thereto. Fig. 2 is a view in end elevation of the upper block. Fig. 3 is a view in front elevation, partly in section, of same. Fig. 4 is a view in plan, partly in section, of same. Fig. 5 is a view in end elevation of the lower block. Fig. 6 is a front elevation of the latter; and Fig. 7 is a view in elevation partly of a modification of the construction shown in Figs. 5 and 6.

1 represents the upper block, consisting of a series of four sheaves 2 and 3, each independently journaled in the plates 4, rigidly secured to the lifting-beam 4^a of the trolley 5. The plates 4 are secured between and to the girders forming the lifting-beam and are spaced apart, as shown, sufficiently to receive the sheaves between them. These sheaves are arranged as shown in Figs. 2, 3, and 4—that is to say, the two sheaves 2 are arranged with their axes in the same plane, while the intermediate sheaves 3 are arranged in the same horizontal plane as the sheaves 2, but to one side of the latter, so that the chain or chains passing over sheaves 3 on the side adjacent to the sheaves 2 are approximately in the vertical planes of the axes of said latter sheaves, and as the sheaves 2 and 3 are of the same diameter it follows that the chains passing over the sides of sheaves 2 adjacent to sheaves 3 also rest in the vertical planes of the axes of sheaves 3.

The lower block 7 consists of two side plates 8, suitably tied together and carrying the four sheaves 9 and carry at a point below the latter the swiveled cross-head 10, carrying the hook 11. The stem 12 of the hook 11 passes up through the cross-head 10 and is secured at its upper end to nut 13, which latter carries a hardened-steel plate 14, which rests on the antifriction-balls 14^a. The cross-head 10 also has a similar plate 15, on which the balls 14^a rest and move, and the latter are retained in place between the two plates by the ring 16.

The sheaves 9 on the lower block 7 are journaled in a common axis, and mounted in a plane above the sheaves 9 is the pivoted arm 17. This arm is centrally pivoted between two cross-bars 8^a, carried by the plates 8, its axis being at right angles to the axis of the sheaves 9 and is connected at its ends to the ends of two chains 17^a. These chains 17^a, which are the main hoisting-chains of the crane, are each secured at one end to the main hoisting-drum 18 of the crane, the chains being secured at one end to the hoisting-drum, near the ends of the latter, so that as the chains are wound on the drum they approach the center. The two chains pass from the hoisting-drum downwardly under the outer sheaves 9 of the lower block and from thence upwardly to the outer sheaves 2 of the upper block. The chains after passing over these outer sheaves pass downwardly to the inner sheaves of the lower block and from thence upwardly at an angle to the inner sheaves 3 of the upper block and from thence downwardly in the vertical plane of the center of the lifting-beam to the pivoted lever 17, to which the free ends of the chain are secured. Instead, however, of employing a pivoted lever to compensate for wear or inequalities in strain or length of the hoisting-chains, I may use a pulley or sheave, and in such instance the hoisting-chain in-

stead of being in two parts would be continuous, its two ends being secured to the hoisting-drum, as explained.

With either construction when the hoisting-drum is rotated the chains (or chain, as the case may be,) are wound thereon and the lower block elevated, and as the lower block is suspended at a point below the vertical center of the lifting-beam and is supported by outwardly-diverging members of the chain it moves approximately in a vertical line, therefore specially adapting it for withdrawing large or deep patterns, moving flasks, placing heated and expanded jackets on tubes, and other work when an absolutely vertical movement of the hoisting-block is absolutely essential. In addition to giving a vertical lift to the load the arrangement evenly distributes the load over the lifting-beam 4^a of the trolley.

It is evident that changes in the construction and relative arrangement of the several parts might be made without avoiding my invention, and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described; but,

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

1. The combination with a lifting-beam and a hoisting-block secured thereto, the said block comprising overlapping parallel sheaves arranged in two series, the axis of the latter being in different vertical planes, of a chain and a second block carried by said chain.

2. In a trolley, the combination with a hoisting-block having two series of parallel sheaves, the axes of the sheaves of said series being in different vertical planes, of a hoisting-drum and chain, and a lower block carried by the chain.

3. In a trolley, the combination with a hoisting-block having two series of parallel sheaves, the axes of the sheaves of said block being in different vertical planes, of a hoisting-drum, two chains thereon, and a second block carried by the chains and provided with a rocking arm, the free ends of the two chains being secured to said rocking arm.

4. In a trolley, the combination with a lifting-beam, a series of plates rigidly secured thereto and two series of parallel sheaves between said plates, the axes of the said series of sheaves being in different vertical planes, of a hoisting-drum, a chain secured thereto, and a second block carried on the chain.

5. In a trolley, the combination with a lifting-beam, a block carried thereby, the said block having two series of sheaves located in different vertical planes, and a hoisting-drum, of a second block having a rocking arm, chains secured to the drum and rocking arm and passing around the sheaves of the block, and a swiveled hook carried by said second block.

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

ALVIN L. ROBERTS.

Witnesses:
DAVID FORDING,
C. L. TAYLOR.