(No Model.) 4 Sheets—Sheet 1.

J. R. MORGAN.

CHAIN BLOCK.

No. 483,161. Patented Sept. 27, 1892.

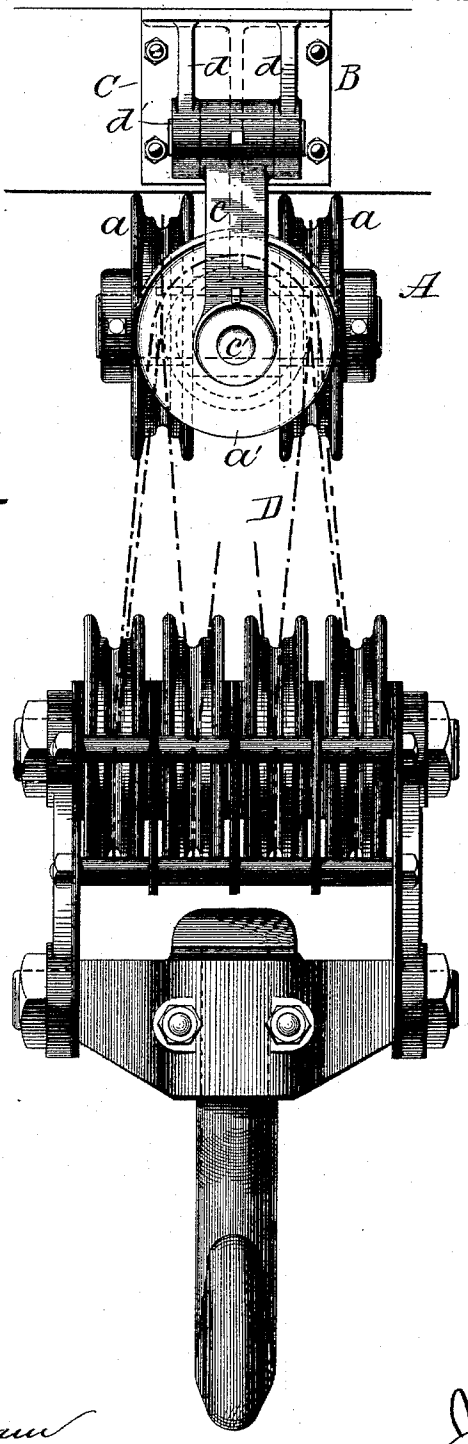


Fig. 1.

Witnesses
C. F. Nottingham
G. F. Downing

Inventor
John R. Morgan
By Wilkinson
Attorney

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(No Model.) 4 Sheets—Sheet 2.

J. R. MORGAN.

CHAIN BLOCK.

No. 483,161. Patented Sept. 27, 1892.

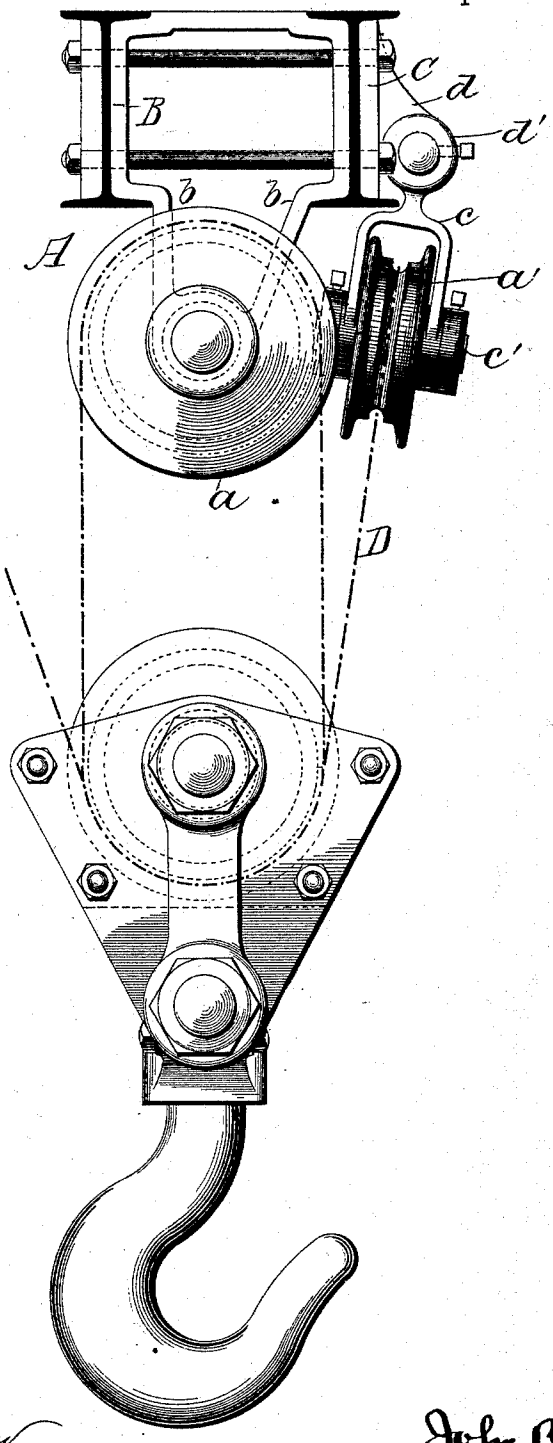


Fig. 2.

Witnesses
C. F. Kottinghaus
G. F. Downing

Inventor
John R. Morgan.
By H. A. Seymour.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

4 Sheets—Sheet 3.

J. R. MORGAN.

CHAIN BLOCK.

No. 483,161. Patented Sept. 27, 1892.

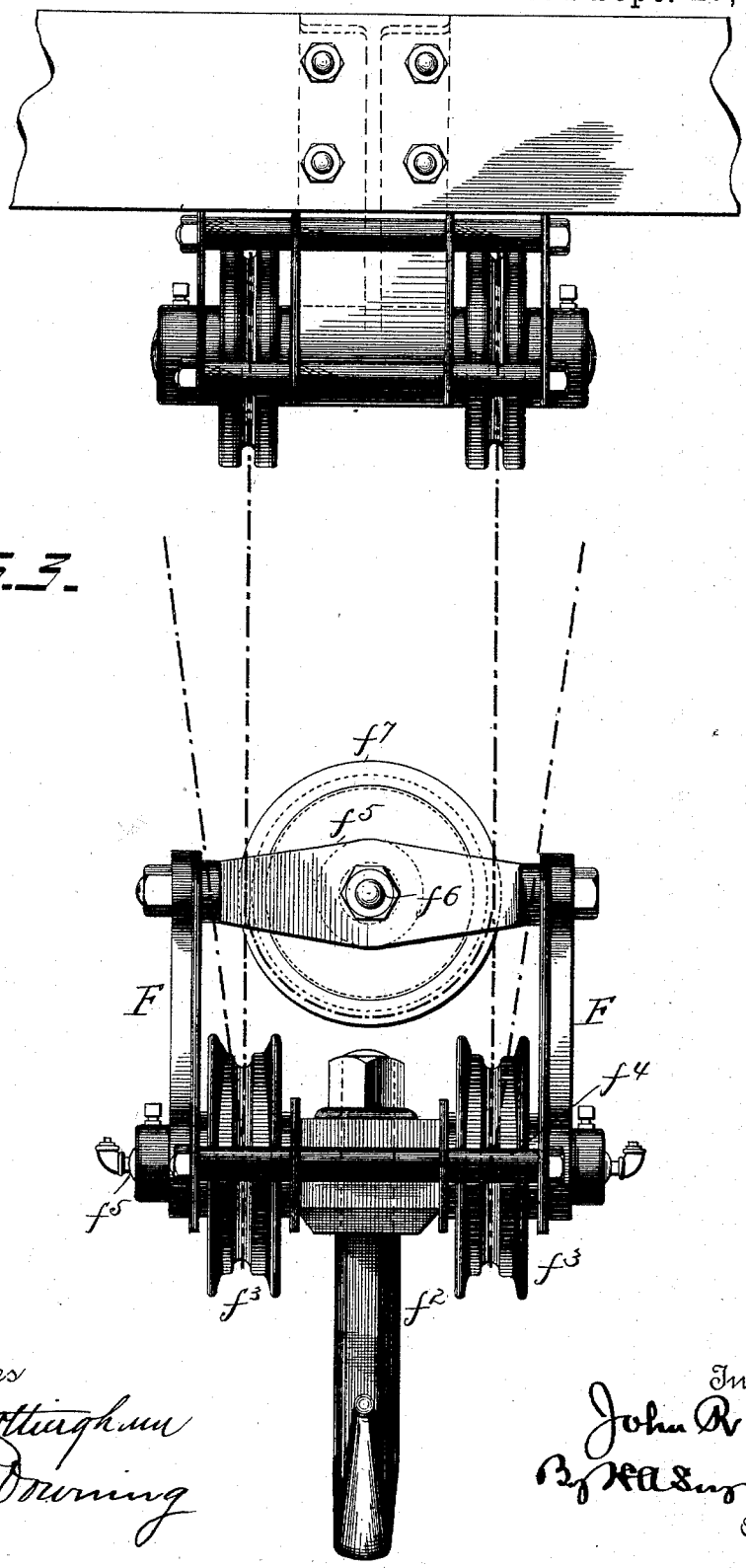


Fig. 3.

Witnesses
C. J. Nottingham
G. F. Downing

Inventor
John R. Morgan
By Wm. Wagner
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

4 Sheets—Sheet 4.

J. R. MORGAN.

CHAIN BLOCK.

No. 483,161. Patented Sept. 27, 1892.

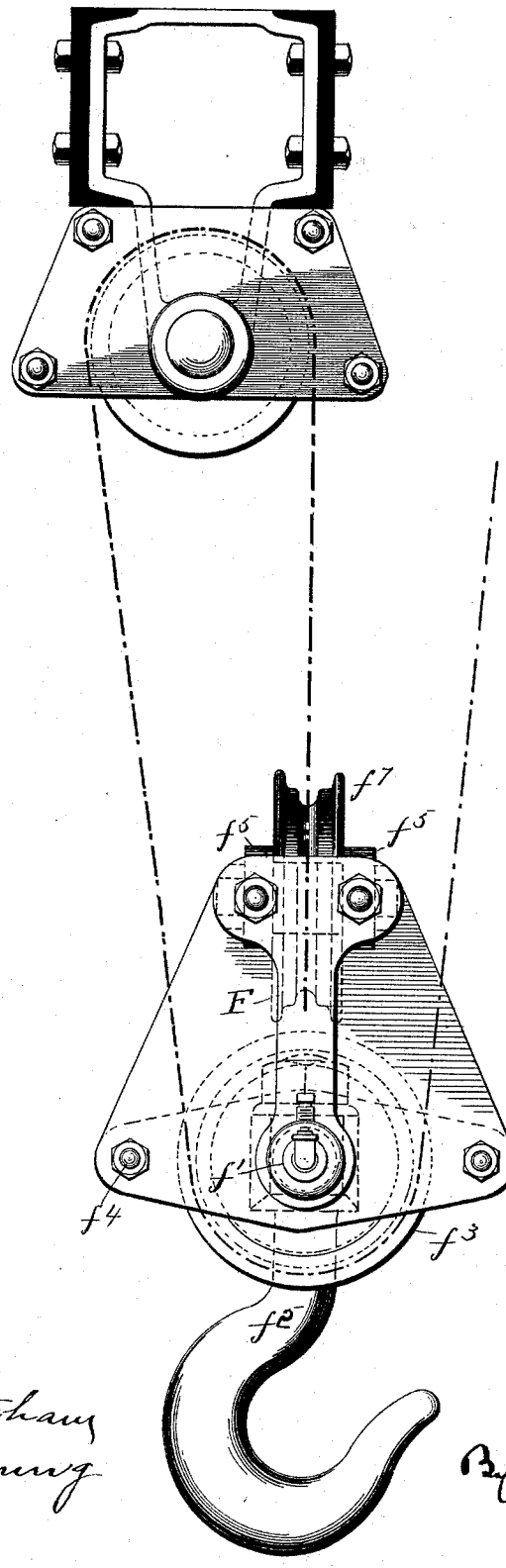


Fig. 4.

Witnesses
C. Nottingham
G. F. Downing

Inventor
John R. Morgan
By H. A. Seymour
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN R. MORGAN, OF ALLIANCE, OHIO, ASSIGNOR OF THREE-FOURTHS TO THOMAS R. MORGAN, SR., THOMAS R. MORGAN, JR., AND WILLIAM H. MORGAN, OF SAME PLACE.

CHAIN-BLOCK.

SPECIFICATION forming part of Letters Patent No. 483,161, dated September 27, 1892.

Application filed July 6, 1891. Serial No. 398,632. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. MORGAN, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Chain-Blocks; 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.

This invention relates to improvements in chain-blocks for overhead cranes or derricks. In chain-blocks as ordinarily constructed, where the chain is wound on a grooved drum or drums, the lower block, from which the weight is suspended, instead of moving upwardly in a direct line, is deflected laterally and in some instances is partly turned. It is impossible to employ such an arrangement of parts for lifting flasks or removing deep patterns from sand without breaking the mold or removing cylinder-heads and handling other parts where an absolutely-vertical lift is essential.

The object of this invention is to provide means for producing an absolutely-vertical lift of the lower block; and it consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 are views in elevation of one construction, and Figs. 3 and 4 are views in end and side elevation of a modified form.

In Figs. 1 and 2, A represents the upper block, consisting of two sheaves *a*, sufficiently separated to rest each approximately in a line passing between its corresponding pair of sheaves on the lower block. These sheaves *a* are mounted on a bearing secured to the hanger *b*, which latter is secured to the girders B and rests between and separates the sheaves *a*. To the outer side of one of the girders B is secured a plate C, having two ribs *d* thereon, each having an opening thereon for the reception of the axle *d'*, to which the hanger *c* is secured. This axle of hanger *c* is free to vibrate or move in its bearings, or, if desired, the axle *d'* might be rigid in its bearings and the hanger *c* loosely mounted on same. In any event the hanger has a swinging movement toward and away from sheaves *a*. Mounted or secured in the lower bifurcated end of hanger *c* is the axle *c'*, carrying the sheave *a'*. The sheave *a'* is located at right angles to the sheaves *a* and in close proximity to same, and is adapted to receive the hoisting-chain D. The hoisting-chain is first passed through sheave *a'* and thence down to the outer sheaves of the lower block, one end passing under one sheave and the other end under the other sheave. From thence the ends are passed over sheaves *a* and then down and under the two inner sheaves of the lower block, and from thence up to the drum, which is provided with right and left grooves.

From the above it will be seen that when the drum is turned for winding the ends of the chain are wound thereon, and as the chain is wound up the lower block is elevated. The sheaves in the lower block and the sheaves *a* of the upper block necessarily turn with the movements of the chain; but as sheave *a* supports the center of the chain and as the chain winds evenly at both ends it follows that there is little or no movement of the chain on sheave *a*, the latter being practically stationary. The chain is, however, free to move to equalize the strain or take-up for any elongation of the chain on either side thereof. By locating it at right angles and practically in plane with the other sheaves of the block it operates to prevent the lower block from being drawn in the direction of movement of the chains leading to the drum, and also prevents rotation of the lower block, and as the chain ends are wound on a drum with right and left grooves it follows that there is no tendency to lateral movement.

I have shown and described an upper block with three sheaves and a lower block with four sheaves; but I could get practically the same result by using a single sheave *a* on the upper block and two sheaves on the lower block or by adding two sheaves *a* to the upper block and two to the lower block.

In Figs. 3 and 4 I have disclosed a construction wherein the sheave carrying the center of the chain is located on the lower and not on the upper block, as shown in Figs. 1 and 2. In this construction the upper block is provided with two parallel sheaves and the lower block with three sheaves, two of them being parallel and the third at right angles and directly above them, with its axis in a vertical line, in which the hook rises. The lower block F consists, essentially, of two side plates *f*, substantially triangular in shape, carrying at its lower edge a stationary axle *f'*, enlarged at its center for the support of the hook f^2 and rounded near its ends to form bearings for the sheaves f^3. The plates are suitably braced near their corners by tie-rods f^4 and are connected near their upper ends by the bars f^5, which latter carry the axle f^6 of the upper sheave f^7. This upper sheave is directly above and located at right angles to the lower sheaves, and its axis is in the vertical line in which the hook f^2 rises. The chain is first rove through the sheave f^7. The ends of the chain are then passed over the sheaves on the upper block, then downwardly under the lower sheaves on the lower block, and from thence up to the drum to which the two ends of the chain are secured. With this construction, also, the upper or right-angled sheave is practically stationary and simply turns to equalize strain on the chain.

By means of the blocks above described all tendency to lateral and rotary movement is overcome, and the hook rises in a vertical line, and consequently is particularly adapted for withdrawing large or deep patterns from the sand, moving flasks, cylinder-heads, placing heated and expanded jackets on tubes, and handling other devices or parts where an absolutely-vertical lift is required.

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

1. The combination of a hoisting-block consisting of a series of sheaves and a single sheave at right angles thereto, the said latter sheave adapted to remain practically stationary on its axis during the operation of hoisting, a second block, and a chain, the center of which is carried by the right-angled sheave, the ends of said chain being rove through the other sheaves in the two blocks, substantially as set forth.

2. The combination, with a hoisting-block consisting of a series of sheaves and a single sheave at right angles thereto and in a plane above said first-mentioned sheaves, the said single sheave adapted to remain practically stationary on its axle during the operation of hoisting, of a second block having a series of sheaves and a chain, the center of which is carried by the right-angled sheave, the ends of said chain being rove through the other sheaves on the two blocks, substantially as set forth.

3. The combination, with a hoisting-block consisting of a series of sheaves, a single sheave adapted to remain practically stationary on its axle during the operation of hoisting, and a hook, of a second block having a series of sheaves and a chain, the center of which is carried by the single sheave, the ends of said chain being rove through the other sheaves in the two blocks, substantially as set forth.

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

JOHN R. MORGAN.

Witnesses:
THOMAS R. MORGAN, Sr.,
FRANK E. DUSSEL.