

(No Model.)

2 Sheets—Sheet 1.

J. R. MORGAN.
CHAIN BLOCK.

No. 484,038.

Patented Oct. 11, 1892.

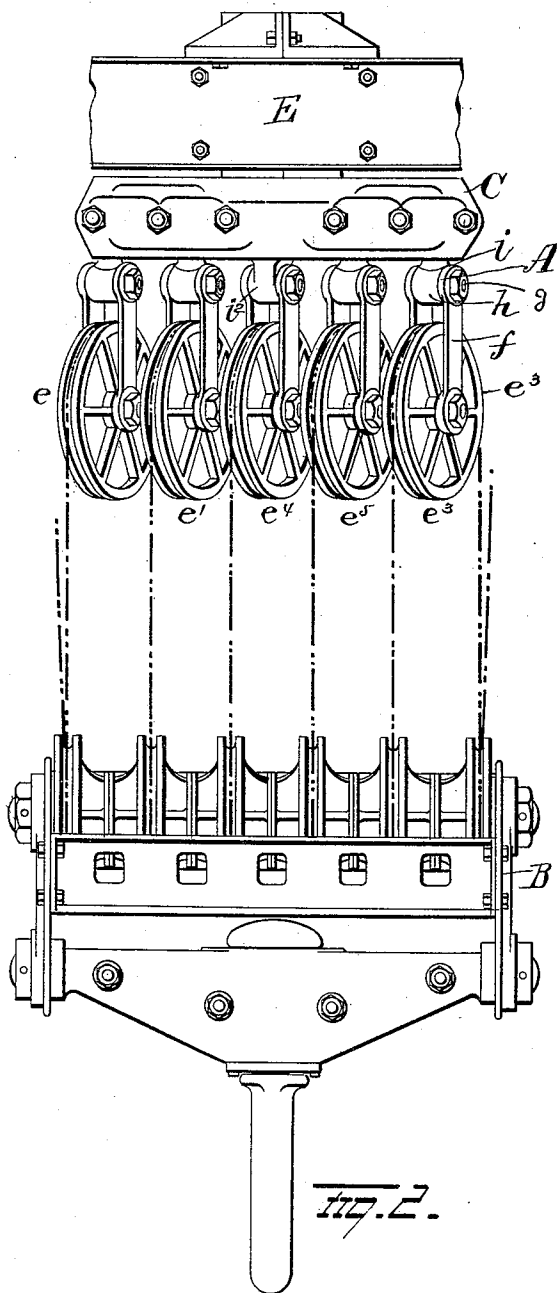


Fig. 2.

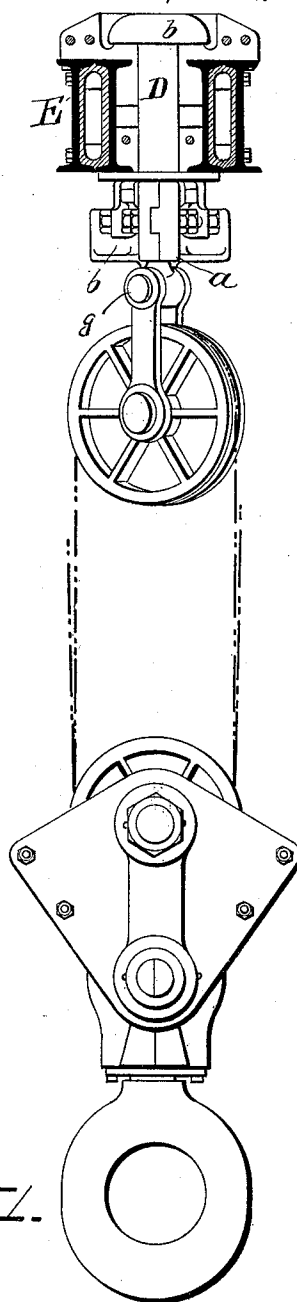


Fig. 1.

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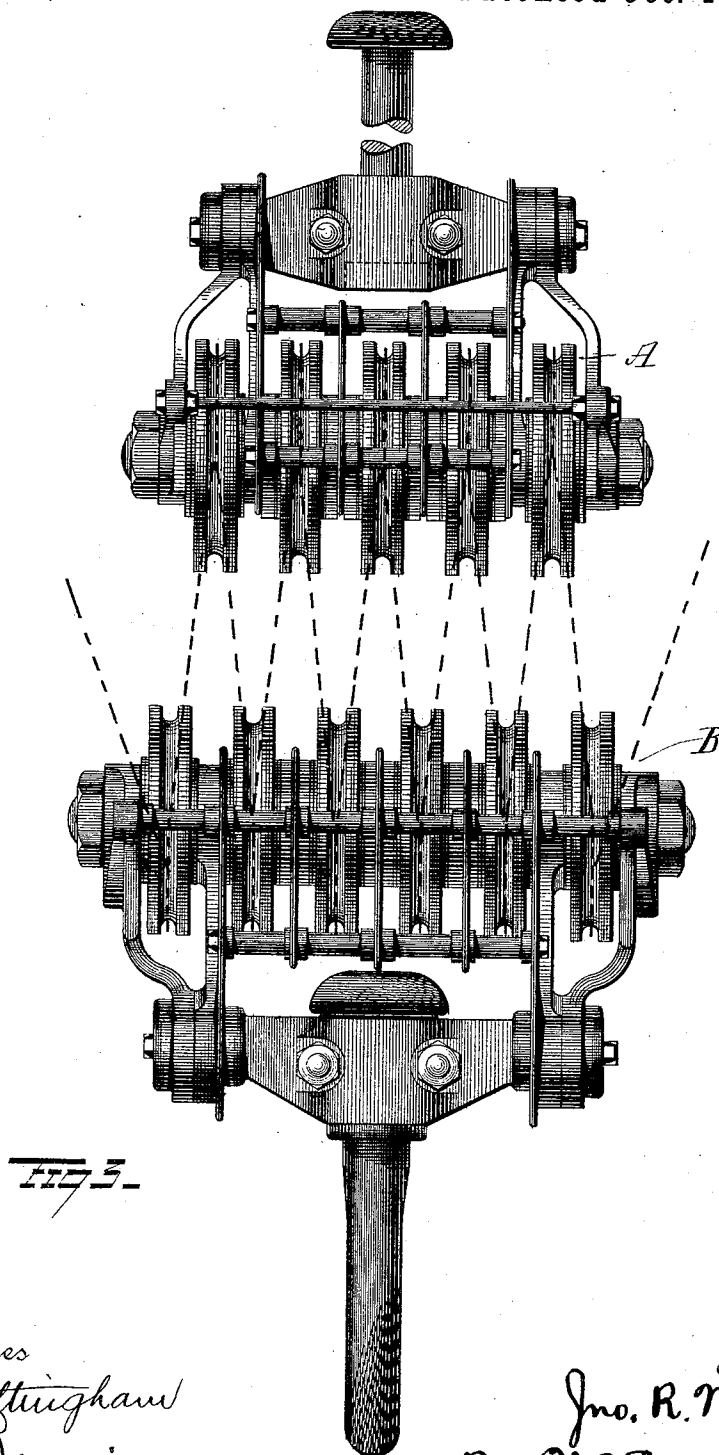
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2 Sheets—Sheet 2.

J. R. MORGAN.
CHAIN BLOCK.

No. 484,038.

Patented Oct. 11, 1892.



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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. 484,038, dated October 11, 1892.

Application filed June 29, 1891. Serial No. 397,947. (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
5 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.

10 My invention relates to an improvement in chain-blocks designed more particularly for use on overhead traveling cranes.

In traveling cranes and, in fact, all hoisting machinery designed for lifting heavy weights
15 an upper block swiveled to the crane or derrick or other support and a lower movable block carried by the hoisting-chains are employed. The number of sheaves in each block varies according to the weights to be
20 lifted; but in any event each block carries a series of sheaves on immovable bearings. In traveling cranes each end of the chain is made fast to a winding-drum and then passes downwardly to the outer sheaves on the lower
25 block, then over the outer sheaves of the upper block, and thence over the intermediate sheaves in the same order. Of course it is understood that the chain must be rove through the sheaves before it is made fast.
30 There is one more sheave on the lower block than on the upper, and when the blocks are rove, as stated, the sheaves on the upper block rest in planes passing between the sheaves on the lower blocks. Thus it will be seen
35 that the chains necessarily cross or pass at an angle from the sheaves on the upper block to the sheaves on the lower block, and as the angle increases as the blocks approach each other and as the sheaves are
40 necessarily widely separated it follows that as the blocks approach each other there is a tendency of the chains to ride out of the grooves in the sheaves, which greatly increases the friction and absolutely prevents
45 the lower block from being raised to the upper block.

The object of the present invention is to provide means for maintaining the chains vertical, thereby avoiding all increase in friction and permitting the lower block to be

moved up to and in contact with, if necessary, the upper block.

With this object in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed
55 out in the claims.

In the accompanying drawings, Figure 1 is a view in end elevation of the two blocks with the chains therein. Fig. 2 is a view in front elevation of same, and Fig. 3 is a view in ele-
60 vation of the old form of block.

A represents the upper block, and B the lower block. The upper block consists of a head C, composed of two parts *a b*, securely bolted together at their ends and at points
65 between the sheave shanks or spindles. The head thus formed is provided centrally with a stem or pivot D, clearly shown in Fig. 1, which latter is provided with an enlarged head *c*, which rests on the seat *d*, carried on and supported by the girders E. The sheaves
70 *e, e', e², and e³* are supported on bearings secured to the lower ends of hangers *f*, which latter are supported on and secured at their upper ends to pivots *g*, which pass through the hubs *h* of the shanks *i*. The shanks *i* of the spindles supporting sheaves *e, e', e², and e³* are each provided with an enlarged head, which rest on seats formed on the two sections *a b* of the head C. The central sheave
80 *e⁴* is supported on hangers *f*, similar to the hangers supporting the other sheaves; but the hangers, instead of being secured to a swiveled support or spindle, are in the present instance secured to a projection *i²*, rigidly
85 secured to the head. It is evident, however, that this central sheave can be mounted on a movable or adjustable spindle, like the others, or all of the spindles or supports might be rigid, the sheaves, however, occupying positions substantially as shown in Fig. 2. The lower block is provided with a series of independent sheaves mounted on a rigid axle or bearing common to all and is provided with a depending ring or hook, to which the ob-
95 ject to be elevated is attached.

By examining Fig. 3 of the drawings it will be seen that the chains instead of passing in vertical lines from the upper to the lower sheaves, pass at an angle, or, in other words, 100

the chains after passing over a sheave on the upper block, instead of passing in vertical lines to the sheaves below, pass at an angle, or, in other words, diverge to the right and left.

5 As the blocks approach each other this divergence is more marked, and as a result the chains ride against the side walls of the groove and cause friction sufficient to prevent the blocks, when weighted, from approaching
10 closer than six or eight feet.

With my invention I mount the sheaves on adjustable bearings, so that they can assume automatically the positions shown; or, if desirable, I can adjust them to the position
15 shown and lock them. With the sheaves turned so that one vertical edge of each is approximately over one sheave in the lower block and the opposite vertical edge or side over the next sheave on the lower block the chains in
20 passing from the upper to the lower sheaves are in vertical planes, and hence there is no friction against the sides of the sheaves, no tendency whatever for the chains to ride off the sheaves, and no opposition whatever to
25 the blocks being drawn up into contact.

By this improvement a gain of from six to eight feet in the lift is secured, which enables me to employ the device in places
30 where the old apparatus could not be used and also enables me to lower the structure on which the traveling crane moves a distance equal to the space gained in the upward movement of the lower block.

It is evident that numerous slight changes
35 in the construction and relative arrangement of parts can be made without departing from the spirit of my invention. Hence I would have it understood that I do not confine myself to the exact construction shown and described, but consider myself at liberty to make
40 such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a hoisting-tackle, a lower block having a series of sheaves and an upper block having a series of independent sheaves, each of the latter being carried by an adjustable bearing or spindle, substantially as set forth. 45 50

2. The combination, with a lower block having a series of independently-revoluble sheaves, of an upper block having a series of adjustable sheaves arranged, substantially as shown, with relation to its block and to the
55 sheaves of the lower block.

3. The combination, with a lower block having a series of independently-revoluble sheaves mounted on a common axis, of an upper block having a series of independently-adjustable sheaves, each mounted on an independent
60 axis.

4. The combination, with a lower block having a series of independently-revoluble sheaves, of an upper block having a series of
65 sheaves mounted independent of each other, the devices supporting the sheaves being movably secured in the block, substantially as set forth.

5. The combination, with a lower block
70 having a series of independently-revoluble sheaves, of an upper block, a series of independent sheave-supporting devices, and a sheave for each sheave-supporting device, the said sheaves adapted to revolve on horizontal
75 axes and the said sheave-supporting devices having a movement on vertical axes, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 80

JOHN R. MORGAN.

Witnesses:

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