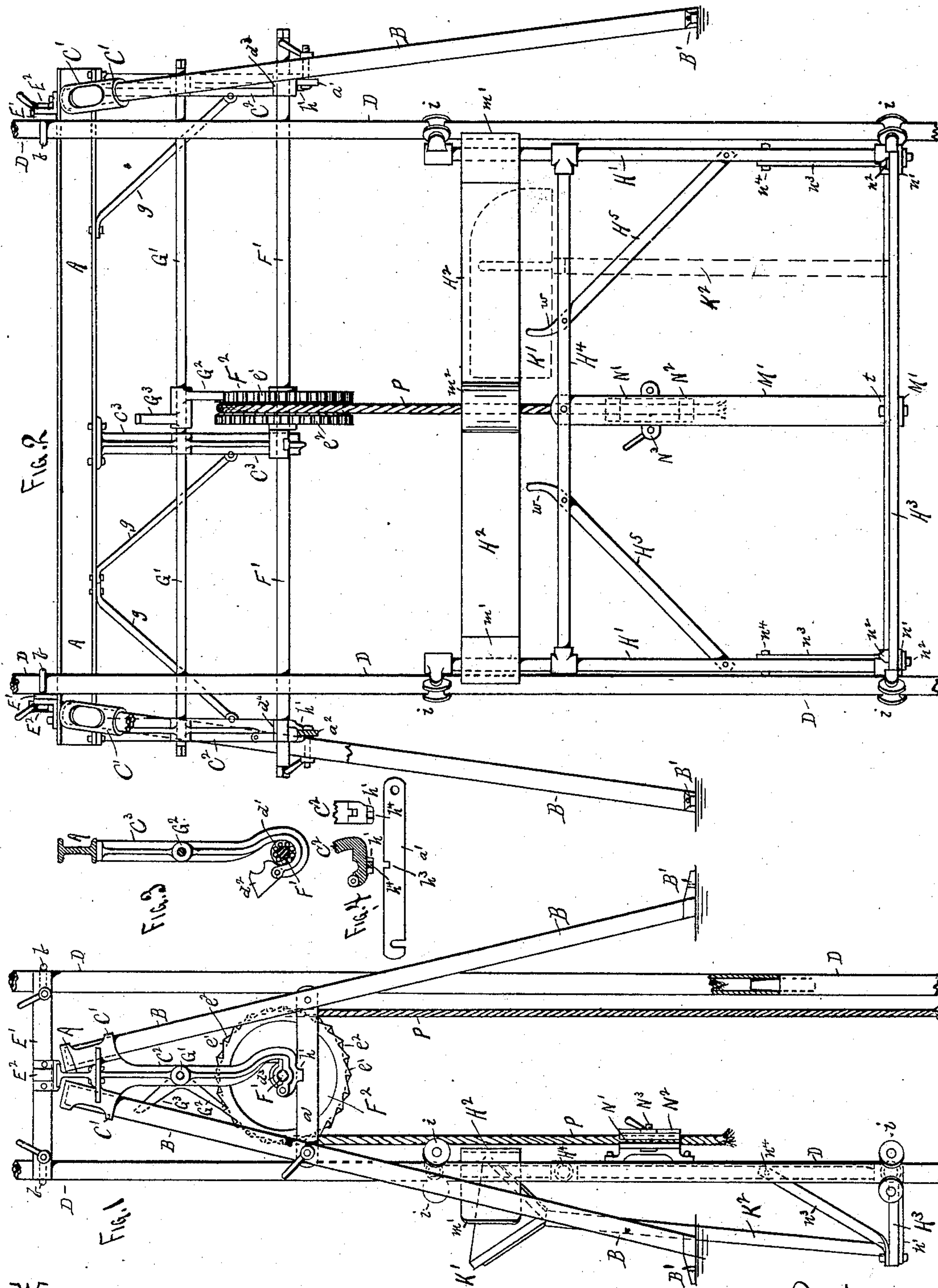


J. BOYD.
HOISTING MACHINE.

No. 366,299.

Patented July 12, 1887.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES BOYD, OF ST. PAUL, MINNESOTA.

HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 366,299, dated July 12, 1887.

Application filed May 2, 1887. Serial No. 236,880. (No model.)

To all whom it may concern:

Be it known that I, JAMES BOYD, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification.

This invention relates to that class of machines employed for elevating brick, mortar, and other building material during the process of the erection of buildings; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is an end elevation of the head-frame and one of the load-carrying platforms; and Fig. 2 is a front elevation, partially in section, of the same. Fig. 3 is a detached view of one of the "hangers" for supporting the elevating and reversing mechanism. Fig. 4 represents detached details of the cross-bars and hanger-connections.

A represents the head of the hoisting-frame, which is formed of a section of "girder" or "I" beam, and provided with four legs, B, of gas-piping, connected to the head A by sockets C', bolted to the head near its ends, as shown. These legs are set bracing outward in all directions from the head A, so as to stand firmly, and will also be provided with feet B', having holes by which they may be fastened to the joist or floors on which the frame stands. The legs B will also be supported by cross-tie bars or braces $a' a^2$, bolted across the legs, as shown.

D D represent the guides for the platforms, which will be formed of gas-piping and secured at their upper ends to the head A by cross-bars E', connected by clamps E² to the head, as shown. The cross-bars E' are connected to the guides D by clips b, so that they can be easily connected to and disconnected from the head when the machine is to be moved or set up in another location. The sockets C' are formed in one piece, with hangers C² for supporting the main elevating-shaft F' and the reversing-shaft G', the formation of these hangers being shown more clearly in Fig. 1.

From the center of the head A another hanger, C³, is suspended to support the cen-

ters of the shafts F' G' and prevent them from sagging. The central hanger, C³, is provided with anti-friction rollers d' , (see Fig. 3,) so that the strains exerted by the weight of the loads upon the platforms will be neutralized and not affect the action of the machine to so great an extent. The anti-friction rollers will be covered with a cap, d^2 , to protect them from the dust and dirt.

F² is a cable-sheave fast upon the center of the shaft F' and having ratchet-teeth $e' e^2$ formed upon both of its rims, the teeth on one rim being reversed from those on the other, so that they point in opposite directions.

The shaft G' is provided with two pawls, G² G³, the pawl G² adapted to engage with the right-hand set of ratchet-teeth e' , and the other pawl, G³, adapted to engage with the left-hand set of teeth e^2 , the pawls being so connected to the shaft G' that only one is in operation at the same time, their action and functions being hereinafter explained. The legs B and shafts F' G' are arranged to be disconnected from the head A and set up again at any other point or moved from floor to floor during the progress of the building, the clips b being connected by nuts having handles, so as to be easily removed, and the bolts for connecting the braces $a' a^2$ to the legs B being likewise secured by handled nuts for the same purpose.

The caps d^3 and d^4 , by which the shaft F' is held in the hangers C², are hinged to the frame of the hangers, so as to be easily turned over to release the shaft and permit it to be removed when the machine is to be taken down, or to admit of its replacement when the machine is to be set up again. The legs B are simply set up into the sockets C', the weight of the head and shafting and loads on the platforms being sufficient to hold it in place. The lower ends of the hangers C² have small lugs h' encircling the braces $a' a^2$, by which the hangers are supported and prevented from being moved laterally, and the braces $a' a^2$ will each be provided with a small notch, h^3 , (see Fig. 4,) into which fins or lugs h^4 on the hangers C², between the lugs h' , fit to prevent any side movement of the hangers, the hangers and head-frame being thus firmly united and prevented from displacement. Braces g

will also be placed between the head A and the hangers C² C³ to still further strengthen the frame.

The cages or platform for carrying the loads to be elevated by this machine are formed of a gas or steam pipe frame, H', and adapted to run up and down between the guides D and supported in position between the guides by guide-rollers i. Two of these platforms will be employed to each machine, but as they are precisely alike only one is shown as being sufficient to illustrate the invention. Across the upper part of the frame A a plate, H², is secured to support the upper parts of the hods K' or other implements for containing the material to be elevated, the lower end of the handles K² of the hods resting upon a foot-board, H³, attached to the lower part of the frame H', as shown. One of the hods K' is shown in position in Fig. 1, and the outlines in dotted lines of the same is shown in Fig. 2 to illustrate how the hods are supported. The plate H² has projecting ends m' and a projecting central part, m², to form cavities for the hods and to prevent them from being thrown from side to side of the platform. The foot-board H³ is secured at its ends to the frame H' by bars n', connected at one end to the bottom of the frame, and running outward beneath the foot-board and secured thereto by bolts n², the same bolts also securing the lower ends of the braces n³, the upper ends of the braces being secured by bolts n⁴ to the frame H', as shown. At its center the foot-board is still further secured by a bar, M', bent at right angles, and secured beneath the foot-board by bolts t, and passing upward behind the frame and secured by its upper end to the cross-piece H⁴ of the frame H'. To the rear of this center bar, M', the clamp for securing the cable P for hoisting the platforms will be secured. This clamp consists of a base, N', having a half-round upright channel corresponding to a channel in a cap, N², secured to the base N' by a clamp-screw, N³, so that the cable when placed between the base and cap N' N² and the screw N³ set up the cable will be firmly clamped and held at any desired point.

The cable will be long enough to reach from one of the platforms upward over the sheave F² and down to the next platform when the building in which the machine is to be employed is completed; but in first using the machine (upon the second story of the building) the cable will be connected to the frames by the clamps at the proper point to enable one platform to be at the highest working point and the other at the lowest, and the surplus rope wound around the projecting ends w of the braces H⁵, which are formed curved, as shown, for that purpose. Then, as the building progresses the head-frame will be moved from story to story, the guides lengthened, and the cable correspondingly lengthened.

The operation is very simple and a detailed description will not be necessary to enable any person to fully understand it.

The head-frame will be properly set with the platforms and cable in position. If the load to be elevated is on the right-hand platform, as viewed from Fig. 1, the shaft G' will be turned so as to cause the pawl G² to engage with the ratchet-teeth e', as in Fig. 1, so that when the load is being elevated the pawl acts as a safety appliance to prevent the load running down if the crank on the shaft F' should for any reason be released. Then when the other platform is to be elevated, the other pawl, G³, will be thrown into contact with the ratchet-teeth e² to perform the same function for the other platform. The sheave F² will be provided with ribs to cause the cable to be held with greater power and to prevent slipping.

Having thus described my invention, what I claim as new is—

1. A hoisting-machine coupling, the head-frame consisting of the head A, having combined hangers and sockets C² C', removable legs B, which support said sockets, shaft F', carrying combined sheave and ratchet-wheel F² and supported in said hangers, and bars E', adapted to support the platform-guides D, all of said parts being detachably connected, whereby said head-frame is capable of being easily set up or taken down for transportation, substantially as and for the purpose set forth.

2. The combination, in a hoisting-machine, of head A, having combined sockets and hangers C' C² attached thereto, legs B, adapted to be set into said sockets to support said head, notched brace-bars a' a², connecting said legs and supporting the lower ends of said hangers by lugs h' h⁴, shaft F', journaled removably in said hangers and having combined sheave and ratchet-wheel F² attached thereto, and shaft G', journaled in said hangers and carrying pawls G² G³, adapted to alternately engage with the teeth of said ratchet-wheel to form a safety appliance in connection with said sheave, substantially as and for the purpose set forth.

3. In a hoisting-machine, the combination, with a head-frame having cross-bars E' and shaft F', supporting a combined sheave and ratchet-wheel, F², of the guides D, supported in an upright position by clamps connecting them to said cross-bars, platforms consisting of frames H', foot-boards H³, and hod-support H², and adapted to be alternately raised and lowered by cable P, connected to said platforms, and passing from one of said platforms to the other over said sheave, and a shaft, G', carrying pawls G² G³, adapted to engage alternately with the teeth of said ratchet-wheel, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES BOYD.

Witnesses:

C. N. WOODWARD,
H. S. WEBSTER.