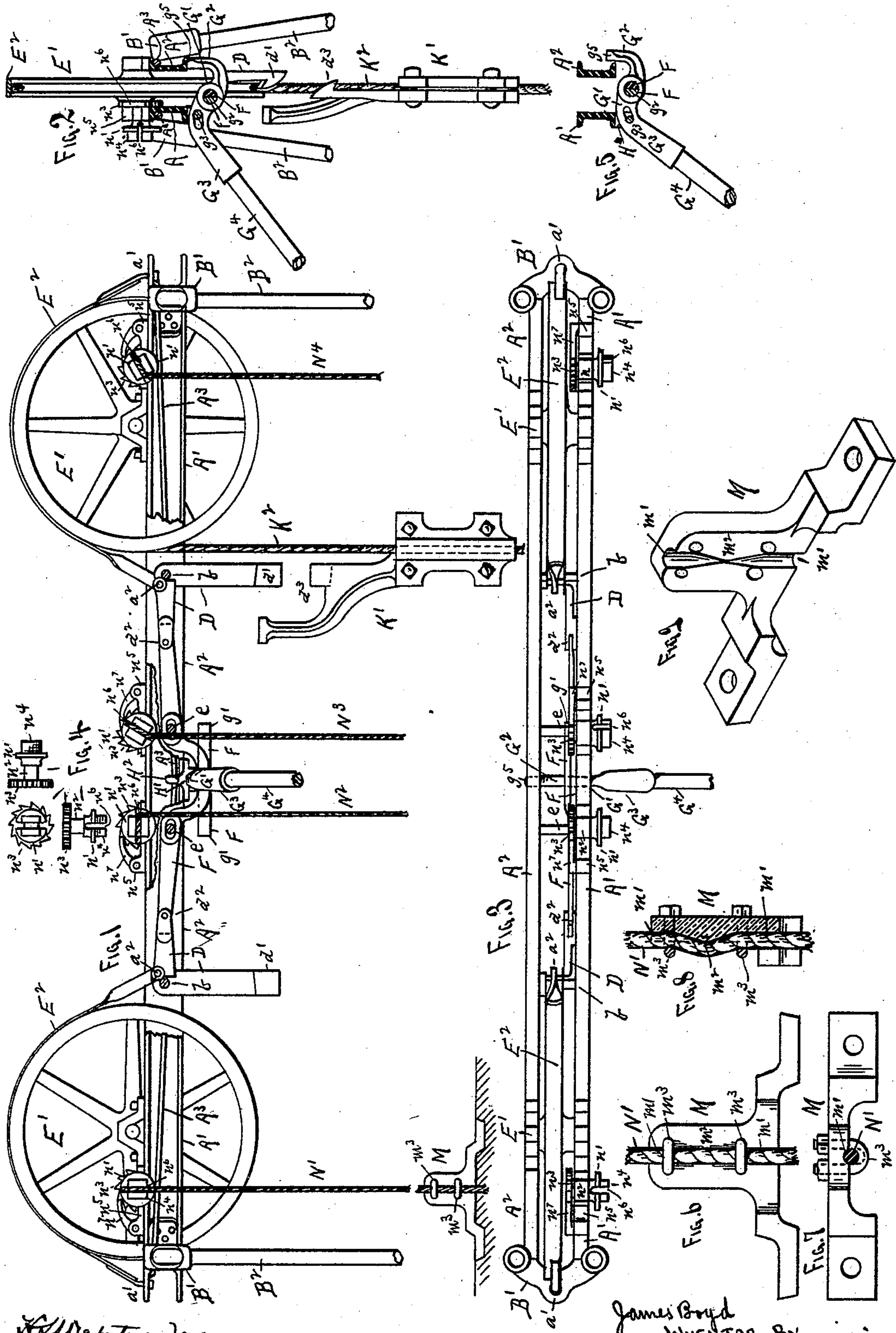


(No Model.)

J. BOYD.
HOISTING APPARATUS.

No. 441,742.

Patented Dec. 2, 1890.



WITNESSES.
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UNITED STATES PATENT OFFICE.

JAMES BOYD, OF ST. PAUL, MINNESOTA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 441,742, dated December 2, 1890.

Application filed April 28, 1890. Serial No. 349,772. (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 Apparatus, of which the following is a specification.

This invention relates to that class of hoisting apparatus employed in elevating the material in 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 a side elevation, partially in section, of the upper part of the frame of the apparatus, with my improvements attached thereto. Fig. 2 is an end elevation, and Fig. 3 is a plan view of the same. Fig. 4 represents the guide-cable tightening device detached. Fig. 5 is a cross-sectional view through the center of the frame, illustrating the construction of the combined brake and cage-releasing lever. Fig. 6 is a front view, Fig. 7 is a plan view, and Fig. 8 is a sectional side view, enlarged, of the clip for holding the guide-cables. Fig. 9 is a perspective view of the same.

The horse or frame portion consists of two channel-iron sides $A' A^2$, connected at their ends by castings B' , in which also the legs B^2 of gas-pipe are supported, as shown.

Journaled across the sides $A' A^2$ are two grooved cable wheels or sheaves E' , over which the cables for hoisting the "cages" run. These cages carry the material to be elevated, and are shown in Patents No. 271,681 and No. 308,340, granted to me February 6, 1883, and November 25, 1884; but, as they are not necessarily a part of the present invention, they are not shown.

Each of the sheaves E' is provided with a brake-strap E^2 , each strap being fastened by one end at a' to the end castings B' , and with the other ends pivoted at a^2 to crank-levers D , the latter being in turn pivoted at their "elbows" b between the sides $A' A^2$ of the frame. One arm of each of these crank-levers D projects downward, and is provided with a barbed or inclined catch d' , while the other end of each is pivoted at d^2 to levers F , the latter being in turn pivoted at e between

the sides $A' A^2$, and with their free ends g' lying alongside each other and within a slot g^2 in a lever G' , as shown. This lever G' is pivoted at g^3 by a bracket H' upon the lower side of the side piece A' , and with an arm G^2 , projecting from one end, and with a socket G^3 on the other end, in which the handle G^4 is secured. The pivot g^3 passes through a slot in the lever G' , so that the lever may be held back with the point g^5 of the arm G^2 in contact with the under side of the side piece A^2 , as in Fig. 2, or pushed backward until the point g^5 is clear of the side piece A^2 , as in Fig. 5. By this means the lever G' is utilized to perform two functions—viz., to throw the hooked ends d' of the crank-arms D to one side to disengage them from the corresponding hooks d^3 on the castings K' , by which the cables K^2 are connected to the cages, and thus release the cages when they are required to descend, and, second, to throw the brake-straps into action, and thus serve as a brake-lever. When the point g^5 of the lever G' is in position against the lower side of the side piece A^2 , the handle G^4 can be actuated only by being moved upward, which action will disengage the hooks d' from the hooks d^3 , but will not affect the brake-straps; but if the brakes are to be set the lever G' will be pushed backward until the point g^5 is clear of the side A^2 , as in Fig. 5, when the lever G' is free to be drawn downward, which action will cause the brake-straps to be drawn downward upon the sheaves E' , and thus "brake" the cages and regulate their motion.

The side pieces $A' A^2$ are each provided with a truss-rod A^3 , arranged with their ends held in the end castings B' and with their centers supported by a hook H^2 on the bracket H' or by any other suitable means to assist in carrying the strains and to prevent the sagging of the "horse" or frame.

$N' N^2 N^3 N^4$ represent the guide-cables between which the cages run up and down, and are held by their lower ends in clips M . (See Fig. 1.) One face of this clip is formed with a half-round groove m' , this groove being smaller at its center m^2 than at the ends, and with "U-bolts" m^3 —one on each side of the central shallow part m^2 of the groove m' —so that when the cable is clamped fast to the clip by the U-bolts the shallow portion will cause it

to assume an angular or curved form, as shown at m^4 in Fig. 8, and thus increase the holding-power of the clip.

Journalled upon top of the side A' at points
5 corresponding to the guide-cables $N' N^2 N^3 N^4$
are small drums formed with disks n' , shanks
 n^2 , ratchets n^3 , and square or other irregular
shaped nuts n^4 , the nuts and disks having
10 slots or grooves n^6 formed through them for
the reception of the cables. The shanks n^2
are secured to the side A' by cap n^5 , and the
same cap also has a pawl n^7 , adapted to engage
with the ratchet n^3 . By these simple devices
15 the guide-cables may be tightened to as great
an extent as desired by simply inserting them
through the slots n^6 and turning the drum by
a wrench placed upon the nuts n^4 , the pawl
acting upon the ratchets and holding the ten-
20 sion when obtained, the unused portion of
the cables lying across the face of the horse
or frame and being coiled up out of the way.

The guide-cables $N' N^2 N^3 N^4$ are neces-
sarily as long as the highest building in which
the machine is to be employed, the surplus
25 of the cables being coiled upon or near the
horse, and as the horse is moved from story
to story as the building progresses the cables
must be released and grasped at a higher point;
hence it will be readily seen that a very im-
30 portant advantage of this form of tightening
and holding drum is the facility with which
the guide-cables can be grasped and held at
any point.

It is only necessary, as before stated, to in-
35 sert the cables into the slots n^6 of the drum,
wind it one-half a turn around the drum, and
then revolve the drum by the wrench to
tighten and firmly hold the cable.

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

1. In a hoisting apparatus of the class de-
scribed, a horse or frame adapted to support
the cable-sheaves E' , brake-straps E^2 , bearing
45 upon said sheaves, crank-levers pivoted to
said horse or frame and having hooks on their

lower ends adapted to engage with corre-
sponding hooks on the cages containing the
material to be elevated, and connected to said
brake-straps, and means whereby the move-
ment of said crank-levers will release said 50
cages and set said brakes, substantially as
and for the purpose set forth.

2. In a hoisting apparatus of the class de-
scribed, a horse or frame adapted to support
the cable-sheaves E' , brake-straps E^2 , bearing 55
against said sheaves, crank-levers D , pivoted
to said horse or frame and having hooks on
their lower ends adapted to engage with cor-
responding hooks on the cages containing the
material to be elevated, and connected to said 60
brake-straps, levers F , pivoted to said horse
or frame and also to said crank-arms, and a
lever G' , pivoted to said horse or frame and
also to said levers F , and provided with arm
 G^2 , whereby when said lever G' is moved in 65
one direction said cages will be released and
when moved in the opposite direction said
brakes will be set, substantially as and for
the purpose set forth.

3. In a hoisting-machine of the class de- 70
scribed, a horse or frame carrying the hoisting-
cables by which the cages are raised and low-
ered, and guide-cables for said cages, in com-
bination with devices for tightening and hold-
ing the said cables, consisting of the drums 75
having the disks n' , provided with slots n^6 ,
through which the cables are adapted to be
passed and wound around said drums, and
with ratchet n^3 , and adapted to be held in
place by pawl n^7 , whereby said cables may 80
be held at any point in their lengths, sub-
stantially 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.