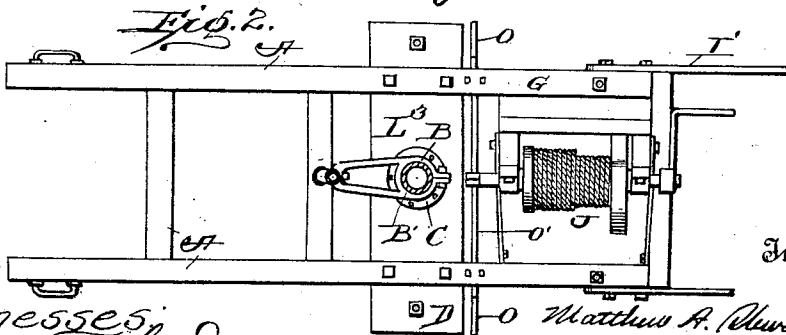
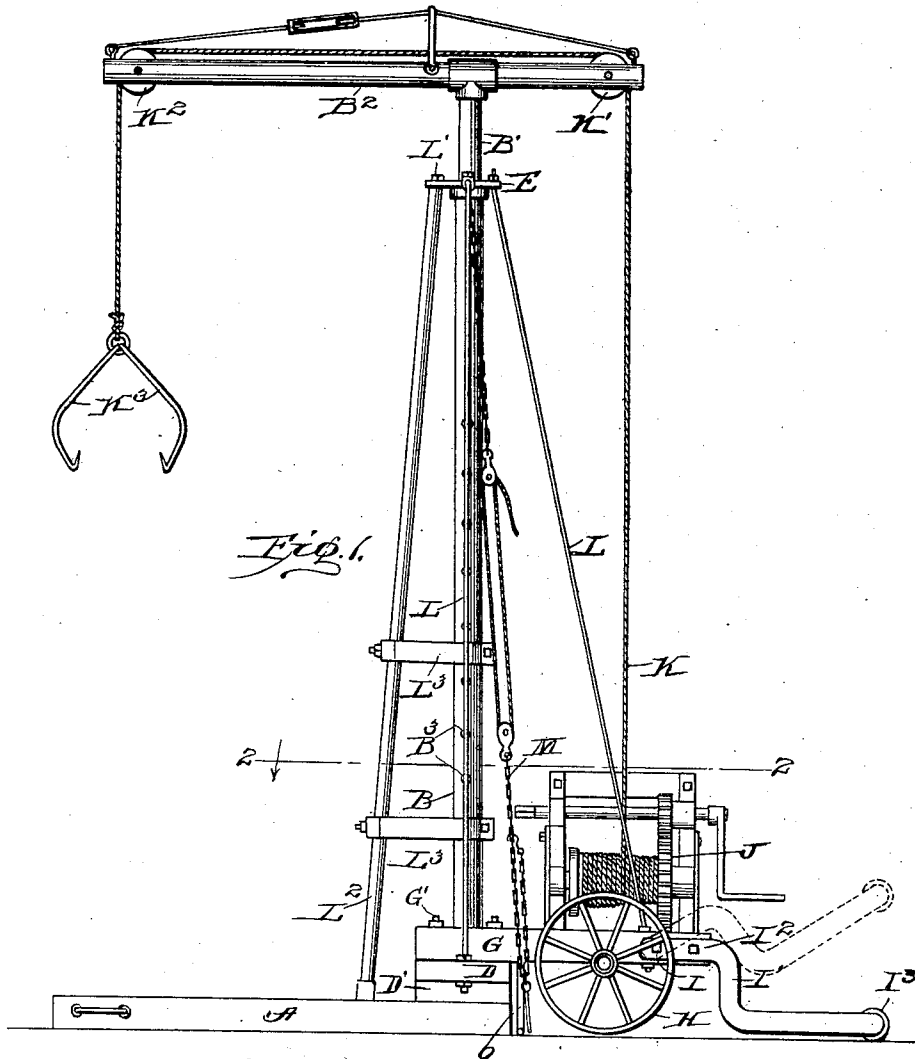


No. 859,146.

PATENTED JULY 2, 1907.

M. A. STEWART.
HOISTING APPARATUS.
APPLICATION FILED APR. 12, 1907.

2 SHEETS—SHEET 1.



Witnesses:
J. M. Fowler Jr.
R. Craig Greene

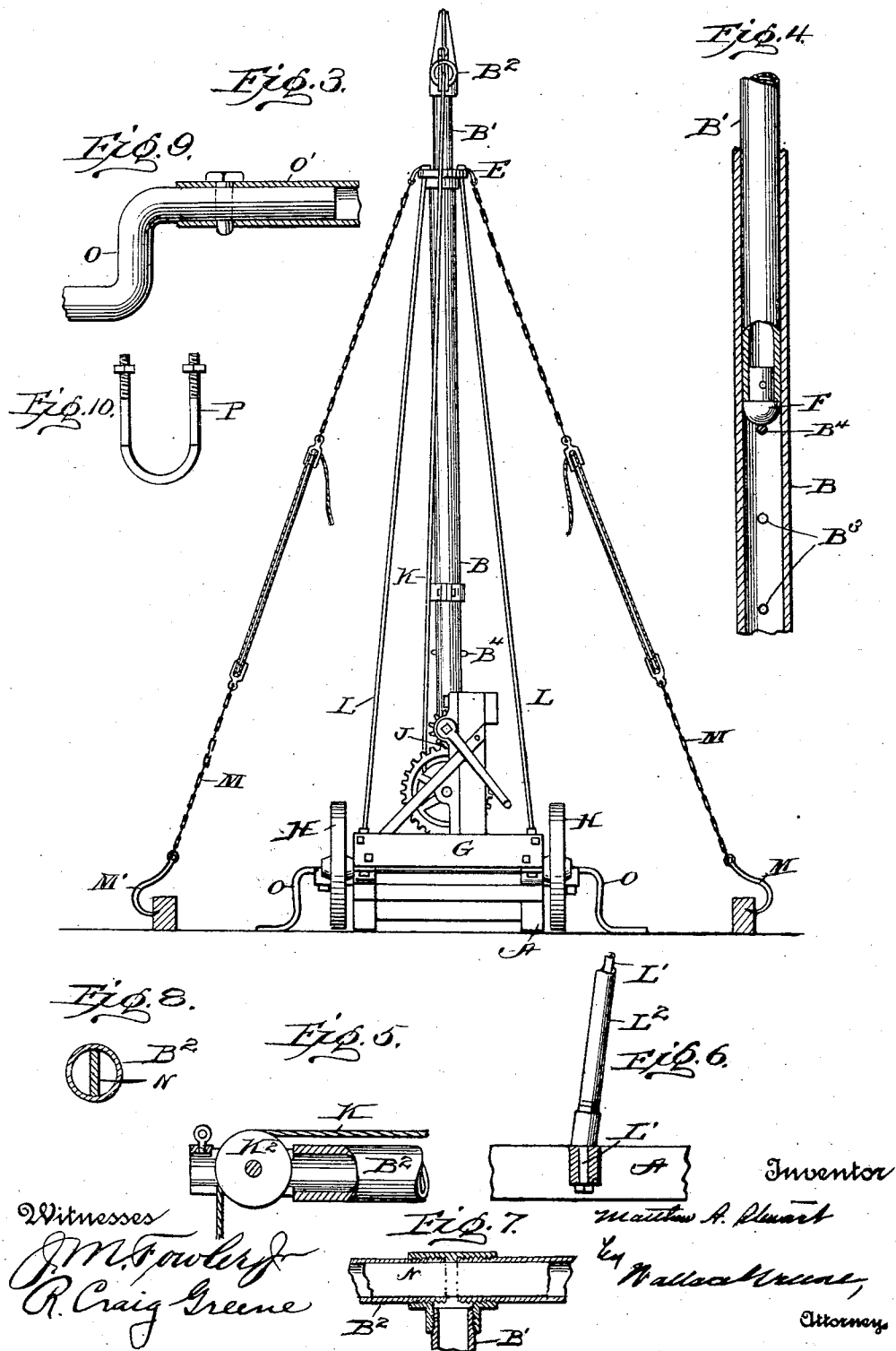
Inventor
Matthew A. Stewart
By Wallace & Greene,
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

MATTHEW A. STEWART, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE MATT. STEWART COMPANY, OF MEMPHIS, TENNESSEE, A CORPORATION OF MAINE.

HOISTING APPARATUS.

No. 859,146.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed April 12, 1907. Serial No. 367,814.

To all whom it may concern:

Be it known that I, MATTHEW A. STEWART, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hoisting Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to hoisting devices and its general object is to provide a compact portable device especially adapted for handling cotton bales in storage warehouses and elsewhere.

Bales of cotton weigh from seven hundred to a thousand pounds, and they are commonly piled in double tiers from the floor to the roof of one story buildings, varying in height among themselves and in different parts of the same building. Alleys perhaps three feet wide are customarily left between these double tiers, so that every bale can be readily reached. The bales are ordinarily covered more or less perfectly with rough sacking and are large approximately rectangular blocks bulging out on all faces and having rounded angles. They are usually handled and stored by unaided manual power, and to move such a block weighing half a ton and properly place it upon a pile, often fifteen feet from the floor, requires several laborers,—very commonly eight. Still further, as serious injuries may result if the bale be allowed to fall, the operation is carried on with great care and at a cost of much time, laborers of the class ordinarily obtainable for such work being perhaps inclined both to magnify the danger and to avoid rapid work.

To provide a light machine readily movable from place to place, operable by one or two men, small enough to work in the alleys, the width of which custom has fixed, strong enough to lift and swing into place any bale, and adjustable in height, to work in low or high buildings, or portions thereof, are among the objects of my invention.

In the accompanying drawings, Figure 1 is a side elevation of my apparatus, Fig. 2 is a section on the line 2—2, Fig. 1, Fig. 3 is a view looking from the right in Fig. 1, certain arms I', being omitted, Fig. 4 is an axial section showing a portion of two telescoping sections of a certain mast, Figs. 5, 6, 7, 8, 9, 10 are detail views hereinafter explained.

In these views, A represents a rectangular frame, of metal or wood, to rest upon the floor, and B is the main section of a vertical tubular telescopic mast, usually stock metal pipe, threaded at its lower end and screwed into a coupling plate C, here used as a base and bolted firmly upon the middle of a heavy plank D itself rigidly fixed to blocks D' upon the frame A near its end.

Upon the upper end of the mast is screwed, or otherwise fixed, an annular cap E, and within the mast slides freely a second tube or mast extension B' bearing at its upper end a horizontal tube or cross-bar B² which may be fixed to the tube B' by a common T union and which is preferably trussed, as shown, to enable it to resist great vertical strain upon its ends. The tube B² is preferably long enough to reach, when at its lowest point, nearly to the lower end of the mast B. In the lower end of the tube B' is fixed a shouldered plug F, Fig. 4, having its outer end rounded. The main mast section B is perforated horizontally at intervals, as shown at B³, to receive a heavy readily removable metal pin B⁴ upon which the rounded plug rests and turns with very slight friction. In the lowest position of the tube B' the coupling at the upper end of that tube nearly meets the cap upon the tube B, and in the highest position, the pin being placed in the upper perforation the telescoping is only sufficient for security and the length of the mast is nearly doubled. The inner tube and parts borne thereby may be raised in any suitable way, but practically it has been raised by pushing upward upon the trussed tube with any convenient implement, such as a forked rod. Upon the plank D is placed a second, rearwardly extending frame G which is secured to the frame A by bolts G' passing through both frames and the intermediate plank and blocks. On this frame G are mounted wheels H, preferably slightly above the floor, and to this second frame are pivoted, at I, arms I' which normally extend downward and rearward to rest upon the floor, in which position they are held by a removable pin or pins I².

Upon the frame G is mounted a windlass J parallel to the frames A, G, so that it may be operated by one standing in the rear of the machine and not at the side thereof, where there is no room when the machine stands in one of the alleys before mentioned, and so that the cable may wind perfectly no matter how the cross-bar may swing. From the windlass a cable K passes over a pulley K' mounted in the rear end of the trussed tube, and thence over a pulley K² mounted in a slot in the front end of the same tube. The end of the cable depends from this pulley and is provided with suitable grappling hooks K³ for engaging the bale to be lifted. The tube B² is cut away near the lower side of the pulley K² (Fig. 5) so that the cable may not be abraded when swung, in any direction, from a vertical position. The mast B is provided with guy rods L extending from its cap to the frames A, G, and that rod L' upon the side opposite the windlass is inclosed in a heavy tube L² which forms a strut to aid

in resisting the pull of a bale suspended from the pulley K². This strut is held against lateral yielding, under impact of a bale, for example, by stays L³ detachably but rigidly connecting it to the mast B at intervals.

In addition to the permanently fixed guys already mentioned, the mast B is provided with a guy rope M on each side, each carrying a hook M' to engage a bale of those already packed in the stored mass, a timber N upon which such bales usually rest, or any convenient fixed body. These guys are adjusted in length by devices without novelty.

The distance from the axis of the mast to the pulley K² is usually less than the distance from that axis to the corresponding end of the frame A, so that the derrick cannot be upset by any bale no matter how heavy. It might, however, be overturned in the opposite direction by some chance, and for this reason the arms I' are provided. When moving the apparatus a short distance along a smooth floor they need not be raised, especially if provided with rollers I³, as shown, but when the derrick is to be moved further or over a rougher surface, the pin or pins I² are withdrawn and the arms are swung upward out of the way. Obviously, the only force tending to draw the top of the mast to one side when a bale is raised by the windlass is due to the slight irregularity in the length of the two arms of the cross-bar B². If the frame A be lifted, as by seizing its outer end, the wheels are thrown down upon the floor and the center of gravity of the remainder of the structure is swung to the right (Fig. 1) until the whole is balanced on the wheels, when the structure may be readily wheeled from place to place. Usually the tube B² is brought to its lowest point when this is to be done, and as the whole apparatus has no great weight one man may readily move it about, although for safety a second man may steady the mast. In use, the machine being placed in position and securely held by the lateral adjustable guy ropes, the tube B' is set at the desired height, and bales being lifted sufficiently are rapidly swung into place in succession.

To give greater stability in a direction transverse to the frame, I provide adjustable bent steel tubes O, Figs. 2, 9, to rest upon the floor, and secure them in the end portions, respectively, of a tube O' clamped to the frame members G by clips P, shown in Fig. 10.

The bar B² may be stiffened vertically and strengthened by fixing within it a diametrical steel web N, Figs. 7, 8.

What I claim is:

1. In apparatus of the class described, the combination with a suitable frame to rest directly upon a floor, of a mast and weight carrying devices normally supported by said frame, and wheels connected with the frame upon one side and receiving the entire weight of the apparatus when the mast is properly tilted by raising said frame.

2. The combination with the narrow frame, of a rigid mast and weight supporting devices carried thereby, wheels at one end of said frame to receive the entire weight of the apparatus when the mast is properly inclined by raising the frame, and means for at will extending the frame beyond the wheels to prevent such inclination.

3. The combination with the narrow frame of a mast rigidly fixed to the frame, a cross-bar fixed between its ends to the top of the mast, and normally parallel to the axis of the frame, a windlass mounted upon the frame with its axis in the vertical plane of said axis of the frame, and a cable wound by the windlass and passing therefrom to one end of said cross bar, thence to the other end and thence to the weight to be raised.

4. The combination with the frame normally resting upon the floor and provided at one end with the wheels normally bearing no weight, of the telescopic mast secured to the frame, the cross bar at the top of the mast, the rearwardly extending adjustable bars upon the frame, and the lateral guy ropes secured to the main section of the mast and provided with the terminal hooks, substantially as set forth.

5. A derrick mast comprising a tubular main section diametrically perforated at short intervals, a rod adapted to be inserted in any of the perforations, and a second mast section sliding within the first and having a rounded lower end to rest and turn upon the said rod.

In testimony whereof I affix my signature in presence of two witnesses.

MATTHEW A. STEWART.

Witnesses:

WILLIAM T. CHURCH,
FREDERICK K. DENNY.