May 26, 1925. 1,539,344

R. M. ADAM

MAST HOIST

Filed June 21, 1923 2 Sheets-Sheet 1

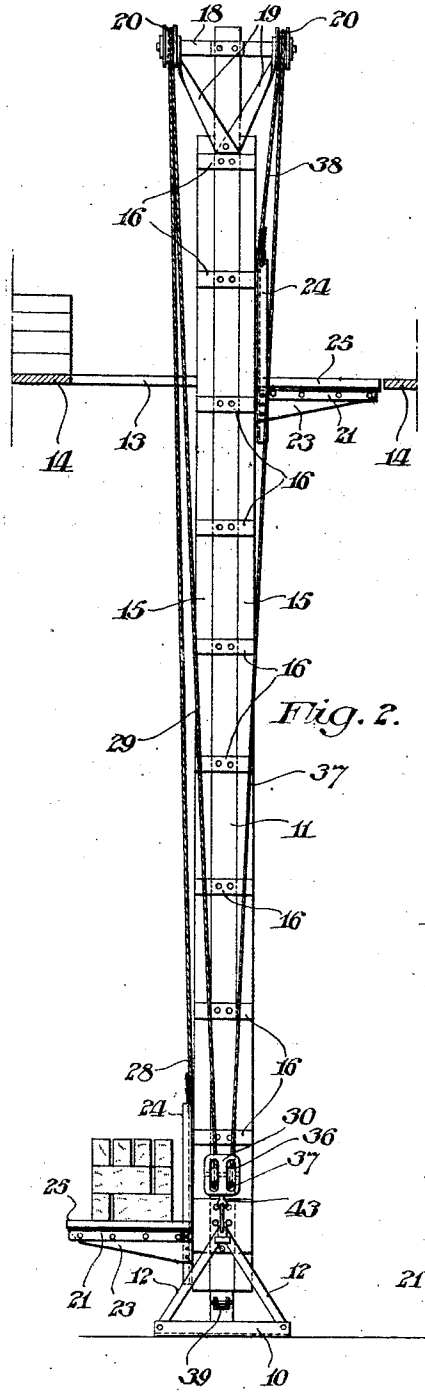


Fig. 2.

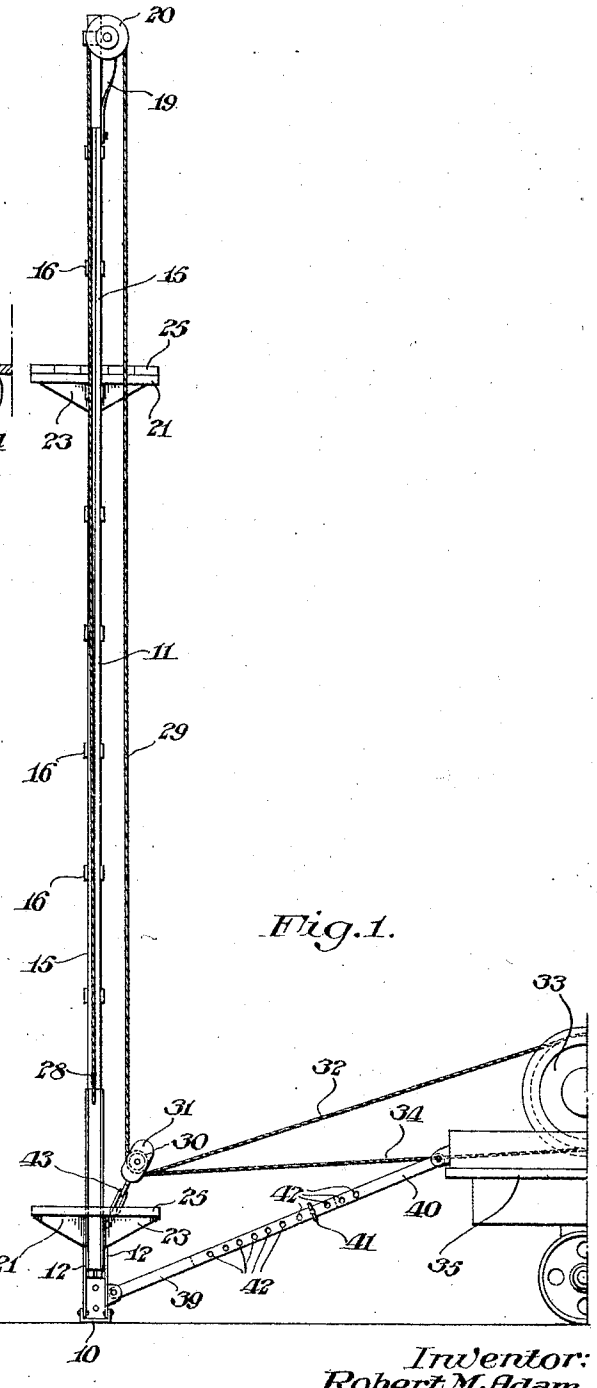


Fig. 1.

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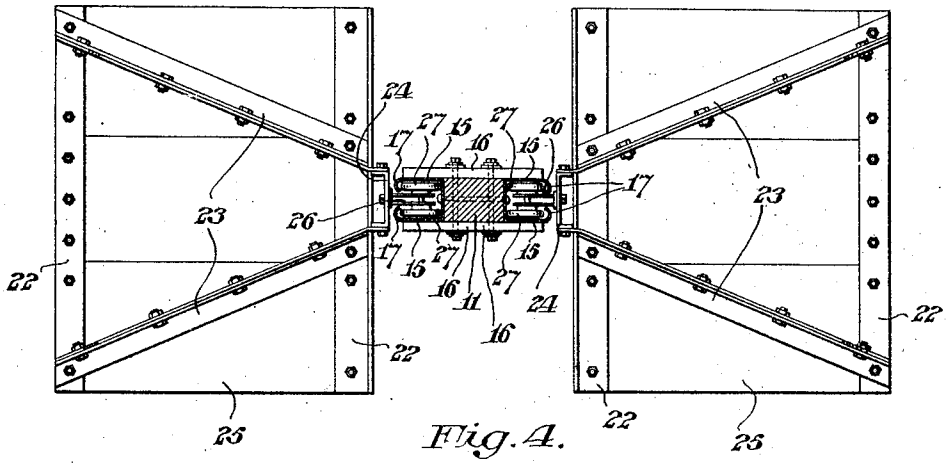


Fig. 4.

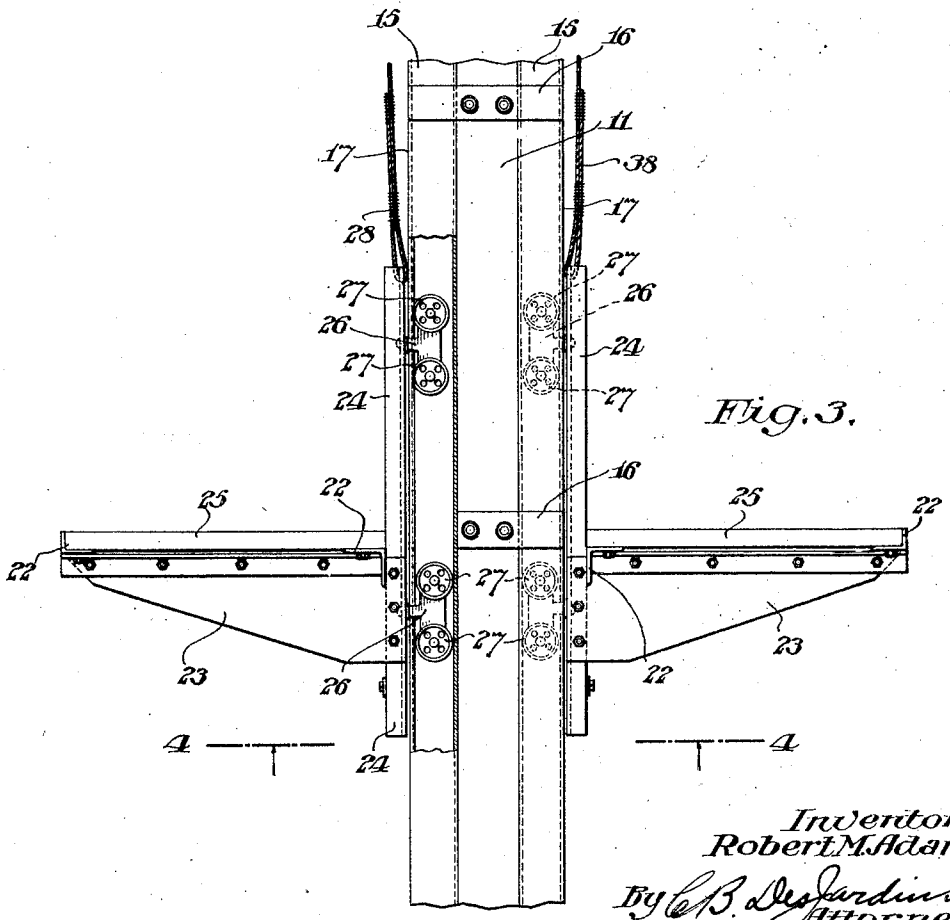


Fig. 3.

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UNITED STATES PATENT OFFICE.

ROBERT M. ADAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOHN H. McCLATCHY, OF PHILADELPHIA, PENNSYLVANIA.

MAST HOIST.

Application filed June 21, 1923. Serial No. 646,751.

To all whom it may concern:

Be it known that I, ROBERT M. ADAM, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Mast Hoists, of which I declare the following to be a full, clear, and exact description.

My invention relates to improvements in mast hoists and has to do, more particularly, with hoists or elevators for use in connection with building operations.

The principal object of my invention is to provide a mast hoist which is very cheap, simple and compact in construction, requires very few guys or braces, and can be quickly and easily erected or taken down and moved from one job to another.

A further object of my invention is to provide hoisting apparatus which can be adjusted very quickly and easily for lifting to different heights.

A further object of my invention is to provide a mast hoist in which the stresses and forces acting on the hoist tend to balance each other so that the resultant forces tending to deflect the mast from the vertical are reduced to a minimum.

Further objects, and objects relating to details and economies of operation and construction, will definitely appear from the detailed description to follow. In one instance, I accomplish the objects of my invention by the devices and means set forth in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure constituting a preferred embodiment of my invention is illustrated in the accompanying drawings, forming a part of this specification, in which:

Fig. 1 is a view in side elevation of a hoist embodying my invention.

Fig. 2 is a view of the hoist in front elevation looking from a point between the mast and the hoisting engine.

Fig. 3 is an enlarged view of a portion of the mast in front elevation, showing the platforms as they are about to pass each other, the side of one of the channel tracks being broken away to show the platform-supporting rollers, and

Fig. 4 is a transverse, sectional view taken on the line 4—4 of Fig. 3 and showing the lifting platforms in bottom plan view.

In the drawings, the same reference numerals refer to the same parts throughout the several views and the sectional view is taken looking in the direction of the arrows at the ends of the section line.

Referring to the numbered parts of the drawings, the vertical mast, 11, is stiffened and strengthened by the channel tracks, 15, secured to opposite sides thereof by the cross bars or cleats, 16. The foot of the mast seats in a channel member, 10, and is braced by the braces, 12. This forms the supporting base of the mast hoist. The upper portion of the mast may also be braced by braces, 13, fastened to the joists, 14, of the building or other structure in connection with which the hoist is used. At the top of the mast, a cross bar, 18, is fastened and braced by braces, 19, and the pulleys, 20, are journaled at the ends of this cross bar.

The tracks, 15, are of channel cross-section and the outer portions of the channel side walls are bent inwardly forming the guideways, 17, with an entrance slot between them. Each of the two lifting platforms, 21, consists of the floor, 25, supported by the bars, 22, and braces, 23, which are connected to the upright formed by the vertical channel bar, 24, extending at one side of the platform, with a channel opening toward the platform. This channel bar extends above and below the platform and the brackets, 26, are fastened to the base of said channel bar and pass through the entrance slot between the guideways, 17, into the channel-shaped track, 15. The rollers, 27, are journaled on the brackets, 26, and cooperate with the track, 15. In the present instance, there are four of these rollers journaled on each bracket, the rollers being arranged in pairs with a pair of rollers in line with each of the guideways, 17. In the hoisting apparatus illustrated, there are two of these brackets, 26, fastened to each channel bar, 24, and one of these brackets is located above the platform, 21, while the other is located below the platform. The result is that the weight of the platform, and the load carried by it, forces the rollers

on the lower bracket into contact with the base of the channel-shaped track, 15, while the rollers on the upper bracket are forced into contact with the guideways, 17. One end of a hoisting cable is fastened to the upper end of each channel bar, 24. Referring to Fig. 2, one end of the cable is fastened, at 28, to the upper end of the channel bar, 24, forming a part of the lifting platform shown, at the left of the figure, in the lower position. This cable passes upwardly and around the left-hand pulley, 20, and, thence, down and around the pulley, 30, carried by the block, 31, which is fastened, at 43, to the mast near the foot thereof. From this pulley, 30, the cable passes, at 32, to the drum, 33, of the hoisting engine, 35, which is indicated at the right of Fig. 1 and which may be of any suitable type. After passing around the drum, the cable passes, at 34, to the pulley, 36, in the block, 31, and, thence, upwardly, at 37, to the right-hand pulley, 20, and over said pulley down to the upper end of the right-hand channel bar, 24, to which the end of the stretch, 38, of the cable is fastened.

The hoisting engine, 35, is movable and may be positioned and fixed in adjusted position at any desired distance from the foot of the mast, 11. Varying the distance between the drum, 33, and the foot of the mast will vary the length of the stretches, 32 and 34, of the cable and, therefore, change the height to which a platform is raised when the other platform is lowered to the ground. The position of the hoisting engine is determined with respect to the mast by a strut interposed between said engine and the mast and which may be adjustable in length. I have shown such an adjustable strut consisting of the channels, 39 and 40, the former being connected to the foot of the mast while the latter is connected to the hoisting engine. These channels telescope or slide one within the other and may be fixed in any one of a number of positions of relative adjustment by a pin, 41, passed through aligned holes of a series of holes, 42, formed in the sides of the telescoping channels.

The operation of this apparatus should be entirely clear from the description of the parts thereof. In Fig. 2, a load is shown on the platform, 21, which is in the lowered position. The hoisting engine, 35, is started and operated in a direction such as to wind the stretch of cable, 32, on the drum, 33. This raises the loaded platform and, at the same time, the stretch of cable, 34, is paid out and the other platform is lowered to the ground. When the hoisting engine is operated in the reverse direction, the second platform is lifted and the first is lowered once more to the ground. The distance between the positions of the two platforms as shown in Fig. 2 may be called the normal lift of the apparatus and, as already stated, this lift may be changed by altering the position of the hoisting engine by means of the adjustable strut between the foot of the mast and said hoisting engine. This affords a convenient means for changing the lift of the hoist as the building goes up.

Due to the construction of the track, 15, and the arrangement of the roller-carrying brackets, 26, above and below the platform, the lifting platform is adequately guided and supported so that it may be lifted a considerable height very quickly. This permits me to get quick, high lifts with this apparatus without danger of the platforms binding or sticking. The arrangement of the tracks on opposite sides of the mast, with the two platforms guided thereby and alternately raised and lowered, tends to counterbalance the forces acting on the mast so as to give it greater stability. Consequently, the elaborate system of braces and guys usually employed is unnecessary and this apparatus can be erected very quickly and easily and can be taken down and moved to and erected on another job very conveniently. This renders my apparatus particularly effective for use in connection with the construction of dwelling houses and building operations of that character.

I am aware that the hoisting apparatus illustrated in the accompanying drawings may be changed considerably, without departing from the spirit of my invention, and, therefore, I wish to claim my invention broadly, as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. An apparatus of the class described comprising a mast, a pair of tracks fastened to opposite sides of the mast, each track being adapted to take thrust in two opposite directions, lifting platforms guided by said tracks, a hoisting cable connected to said platforms, guide pulleys for said cable, and a rotatable hoisting drum around which said cable is wound.

2. An apparatus of the class described comprising a vertical mast, a pair of channel-shaped tracks fastened to opposide sides of said mast, each track being adapted to take thrust in two opposite directions, lifting platforms carrying rollers working in said tracks, a hoisting cable connected to said platforms, guide pulleys for said cable, and a rotatable hoisting drum around which said cable is wound.

3. An apparatus of the class described comprising a mast, a channel-shaped track fastened to the side of the mast, the side walls of said channel being bent inwardly forming outer guideways with an entrance

slot between them, a lifting platform, a bracket carried by said platform and extending through said entrance slot into the channel, rollers carried by said bracket in line with said guideways, a hoisting cable connected to said platform, and means for actuating said cable.

4. An apparatus of the class described comprising a mast, a channel fastened to the side of the mast and forming a track, the side walls of said channel being bent inwardly forming outer guideways with an entrance slot between them, a lifting platform, an upright connected thereto, brackets carried by said upright and extending through said entrance slot into the channel, rollers carried by said brackets in line with the guideways, and adapted to roll upon either said guideways or the base of said channel, a hoisting cable connected to said platform, and means for actuating said cable.

5. An apparatus of the class described comprising a mast, a channel forming a track and having its base abutting and secured to the side of said mast, the side walls of said channel being bent inwardly forming outer guideways with an entrance slot between them, a lifting platform including a floor and an upright connected thereto and extending above and below said floor, a pair of brackets carried by said upright and extending through said entrance slot into the channel, one of said brackets being located above and the other below the level of the floor, rollers carried by said brackets in line with said guideways and adapted to roll either upon said guideways or the base of the channel, a hoisting cable connected to said upright, and means for actuating said cable.

6. An apparatus of the class described comprising a mast, a cross bar secured to the top of the mast, pulleys journaled at the ends of said cross bar, channels fastened to opposite sides of the mast and forming tracks, adapted to take thrust in two opposite directions lifting platforms provided with guide means working in said channels, a hoisting cable having its ends fastened to said platforms and passing over said pulleys, and means for actuating said cable.

7. An apparatus of the class described comprising a mast, a pair of upper pulleys mounted at the top of said mast, a pair of lower pulleys mounted at the foot of said mast, channels fastened to opposite sides of said mast and forming tracks, adapted to take thrust in two opposite directions lifting platforms provided with a guide means working in said channels, a rotatable hoisting drum, and a hoisting cable having its ends fastened to said platforms, passing therefrom up and around the upper pulleys, thence down and around the lower pulleys and thence around the drum.

8. An apparatus of the class described comprising a mast, a pair of upper pulleys at the top of the mast, a pair of lower pulleys at the foot of the mast, channels fastened to the opposite sides of said mast and forming tracks, the sides of said channels being bent inwardly forming outer guideways with an entrance slot between them, a pair of lifting platforms each provided with an upright, a pair of brackets carried by each upright and extending through the entrance slot into the corresponding channel, rollers carried by said brackets in line with the guideways and adapted to roll upon either said guideways or the base of the channel, a rotatable hoisting drum, and a cable having its central portion wound around said drum and its ends connected to said platforms, said cable passing over said upper and lower pulleys.

9. An apparatus of the class described comprising a mast, tracks fastened to opposite sides of the mast, lifting platforms guided by said tracks, guide pulleys carried by said mast, a movable hoisting engine including a rotatable drum, a cable having its central portion wound on said drum and its ends fastened to said platforms, said cable passing over said guide pulleys, and a strut for fixing the hoisting engine at a predetermined distance from the foot of said mast to determine the normal lift of the apparatus.

10. An apparatus of the class described comprising a mast, tracks fastened to opposite sides of the mast, lifting platforms guided by said tracks, guide pulleys carried by said mast, a movable hoisting engine including a rotatable drum, a cable having its central portion wound on said drum and its ends fastened to said platforms, said cable passing over said guide pulleys, and a strut extending between the hoisting engine and the foot of the mast and adjustable in length to vary the normal lift of the apparatus.

11. An apparatus of the class described comprising a mast, tracks fastened to opposite sides of the mast, lifting platforms, guided by said tracks, guide pulleys carried by said mast, a movable hoisting engine including a rotatable drum, a cable having its central portion wound on said drum and its ends fastened to said platforms, said cable passing over said guide pulleys, and means for fixing the hoisting engine at a predetermined distance from the foot of said mast to determine the normal lift of the apparatus.

In testimony whereof, I affix my signature.

ROBERT M. ADAM.