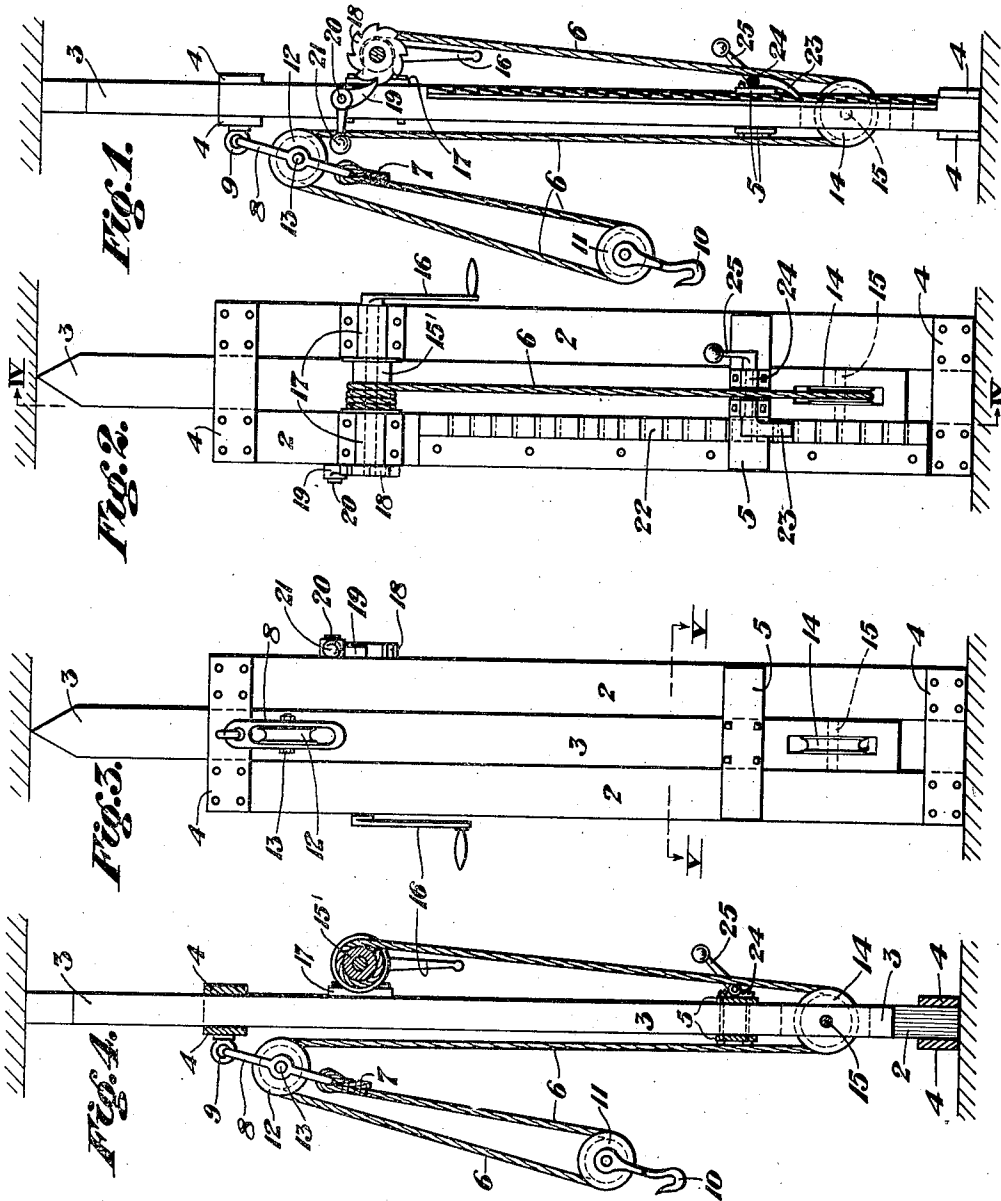


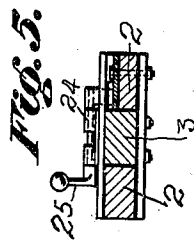
E. E. EMORY.
ADJUSTABLE LIFTING MECHANISM.
APPLICATION FILED SEPT. 27, 1919.

1,352,884.

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE LIFTING MECHANISM.

1,352,884.

Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed September 27, 1919. Serial No. 326,912.

To all whom it may concern:

Be it known that I, ELMER E. EMORY, a citizen of the United States, residing at Canonsburg, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Adjustable Lifting Mechanism, of which the following is a specification.

My invention consists of an improvement in adjustable lifting mechanism and is particularly designed for the purpose of providing means for raising a weight or body in a restricted space, as for instance, in replacing a coal car on the tracks in a coal mine. It has for its object to provide an adjustable standard or supporting frame capable of being rigidly set between the floor and ceiling of a room in a mine, and provided with a suitable windlass, pulleys, cable, etc., as hereinafter described, whereby to apply lifting power to the car.

One preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Figure 1 is a view of the device in side elevation as adjusted to the work in view;

Fig. 2 is a view in rear elevation;

Fig. 3 is a view in front elevation;

Fig. 4 is a vertical sectional view indicated by the line IV—IV of Fig. 2; and

Fig. 5 is a cross section on the line V—V of Fig. 3.

The device comprises a main framework composed of outer standards 2—2 adapted to be set upon the floor of the mine, with an intervening adjustable standard or strut 3, the upper end of which is preferably pointed so as to bear with binding engagement against the ceiling of the room, as clearly indicated. The vertically adjustable member 3 is guided between the outer members 2—2 by means of connecting cross plates 4—4 securely bolted to the outer members, above and below, fixedly bracing them apart and providing the intervening space for free upward and downward movement of standard 3. One or more additional braces 5 may be provided as desired, but secured to and movable with the central post 3, their free ends sliding over the front and back faces of standards 2.

The device is so designed that the middle adjustable standard 3 may be thrust upwardly and the outer standards 2 downwardly at the same time upon the exertion of the lifting strain effected through the

cable 6, which is the working element for exerting tensional pull on the car or other body to be lifted. One end of the cable 6 is secured as at 7 to the end of a frame or clevis 8, the other end of which is pivotally connected as at 9 with a suitable ring or eye projecting from any suitable portion of the stationary frame, as one of the cross bars 4 at the top. A lifting hook or other similar element 10 is provided with a supporting sheave or pulley 11, around which the cable 6 passes, as clearly shown in Figs. 1 and 4, and then upwardly around a similar sheave 12 which is rotatably mounted in the middle bearing portion of clevis 8 at 13.

A similar sheave 14 is pivoted at 15 in a suitable clearance opening in the lower end of adjustable standard 3, and cable 6 passes downwardly around such sheave, and then upwardly, and is secured to the winding drum or shaft 15' provided with the actuating crank 16. Such shaft and crank are mounted in suitable bearings 17 extending outwardly from the rear face of upright members 2, and shaft 15 is provided at any suitable point with a locking ratchet wheel 18 adapted to be engaged by a pawl 19 pivoted at 20, and preferably provided with a counterweighted disengaging handle 21. By these means, when tension is exerted on the cable by winding shaft 15', it will be automatically locked against reverse movement by the ratchet and pulley, which may be easily disengaged for lowering in the usual way.

For the purpose of holding the vertically adjustable strut member 3 against collapse as it is raised, I provide a toothed rack bar 22 secured in a rabbet flush with the outer face of post 3 and extending upwardly along a portion of the face of one of the stationary members 2. A pawl 23 is pivotally mounted in bearing 24 on the vertically adjustable member 3, preferably on one of the guiding cross pieces 5 and having a counterweighted lever 25 for engagement. By this means the vertically adjustable strut 3 may be thrust tightly up against the ceiling of the room and pressure exerted in both directions to such member and the outer post members 2, upon connection of hook 10 with any resisting element. The frame having thus been fixedly set, and hook 10 then engaged with the object to be lifted, as a mine car, further operation of crank 16 will effect the desired pulling strain until the car is

lifted and replaced on the track. Thereupon, the framework may be collapsed and removed to another point of operation, or laid aside until needed.

5 The construction of the device is comparatively simple, composed of few parts, and it is easily and cheaply made. It is self-contained and provides for an ample range of movement both as to the adjustable member 3 and the movement of the lifting sheave 11 and its hook 10. These parts may be thrust inwardly or outwardly from the vertical position to any desired degree, and in this manner the device is capable of application to the work in view within a wide range of operation.

The invention is of great utility in connection with the lifting and replacement of mine cars or of any similar work having in view the provision of a substantially adjustable supporting or foundation frame, together with the attached parts in the manner above described.

The device may be changed or varied by the skilled mechanic in various details, size or construction of the different parts, but all such changes are to be considered as within the scope of the following claims.

What I claim is:

30 1. Lifting mechanism of the class described consisting of a pair of outer parallel standards spaced apart and having at top and bottom cross connecting guiding braces, an intervening relatively movable standard 35 having a sheave wheel at its lower portion, a sheave wheel having a supporting clevis secured to the upper cross brace, a winding shaft mounted in bearings on the outer standards, a cable wound thereon, passing 40 around the lower and upper sheave wheels and secured to the clevis with a depending loop, and a lifting sheave having a hook mounted in said loop.

2. Lifting mechanism consisting of a ver-

tical two-part supporting standard, an intervening vertically adjustable standard co- 45 acting therewith provided with a lower sheave wheel, an upper winding crank mounted on the two-part supporting standards, a supplemental supporting and guid- 50 ing sheave and mechanism connecting it to the upper portion of the supporting standard, and a tension exerting cable connected with the winding shaft and passed around said lower and upper sheaves, and provided 55 with a terminal lifting device.

3. In combination, a vertically adjustable framework composed of outer standards and a vertically adjustable inner standard, guiding means therefor, a winding shaft pro- 60 vided with a crank and a locking ratchet mounted on the outer standards, a sheave wheel connected with the upper portion of the outer standard, a sheave wheel in the lower portion of the adjustable inner stan- 65 dard, and a cable connected with the winding shaft and trained around said sheave wheels provided with a terminal sheave and a lifting hook.

4. In combination, a vertically adjustable 70 framework composed of outer standards and a vertically adjustable inner standard, guiding means therefor, a winding shaft provided with a crank and a locking ratchet 75 mounted on the outer standards, a sheave wheel connected with the upper portion of the outer standard, a sheave wheel in the lower portion of the adjustable inner standard, a cable connected with the winding shaft and trained around said sheave wheels 80 provided with a terminal sheave and a lifting hook, a supporting toothed ratchet bar mounted on one of the outer standards, and a locking ratchet therefor mounted on the vertically adjustable standard. 85

In testimony whereof I hereunto affix my signature.

ELMER E. EMORY.