W. M. DONALDSON.

SCAFFOLD.

APPLICATION FILED MAR. 22, 1918.

1,328,500.

Patented Jan. 20, 1920.

5 SHEETS—SHEET 1.

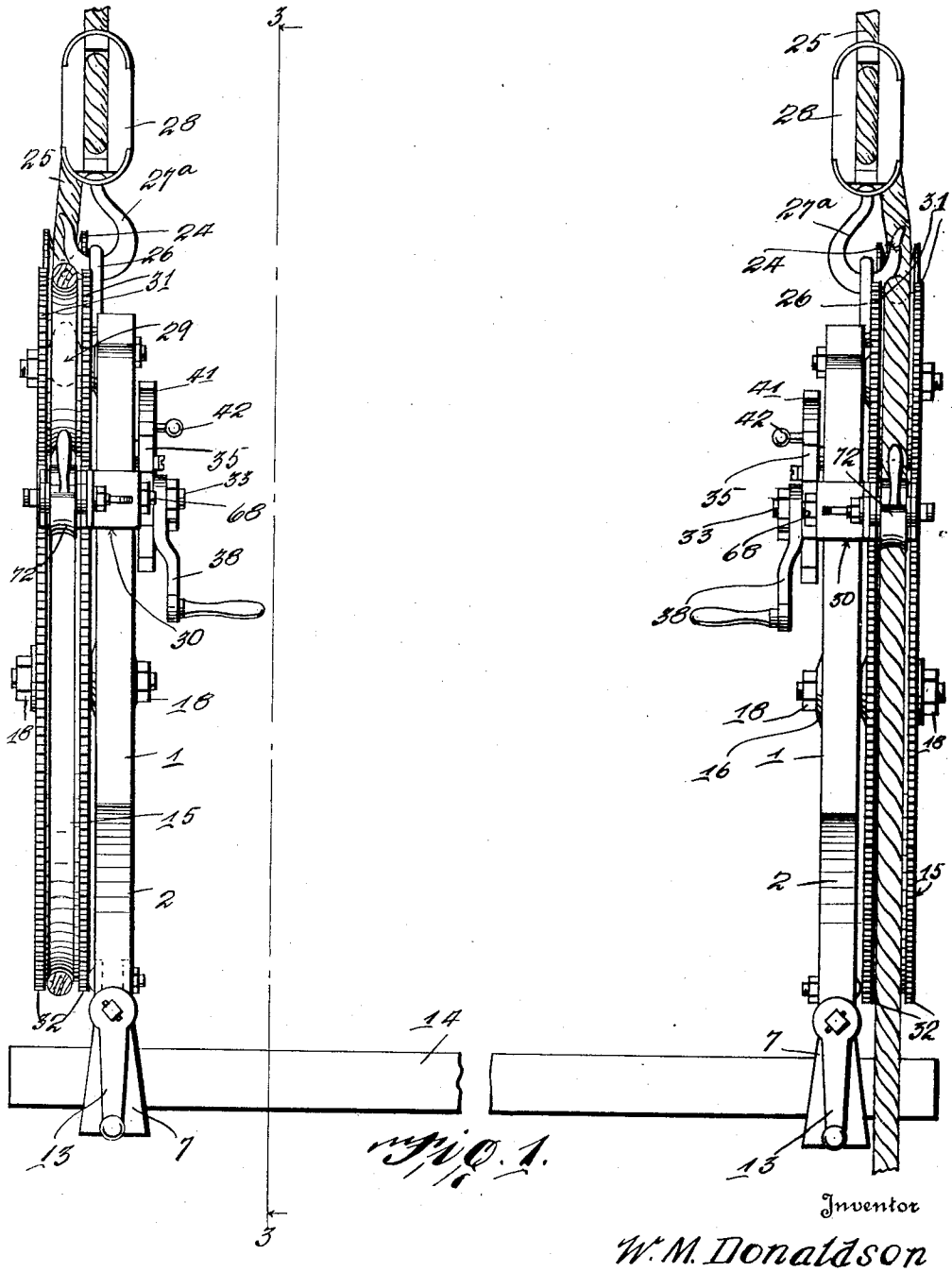


Fig. 1.

Inventor

W. M. Donaldson

By E. E. Wooman & Co,

his Attorneys.

W. M. DONALDSON.

SCAFFOLD.

APPLICATION FILED MAR. 22, 1918.

1,328,500.

Patented Jan. 20, 1920.

5 SHEETS—SHEET 2.

Fig. 2.

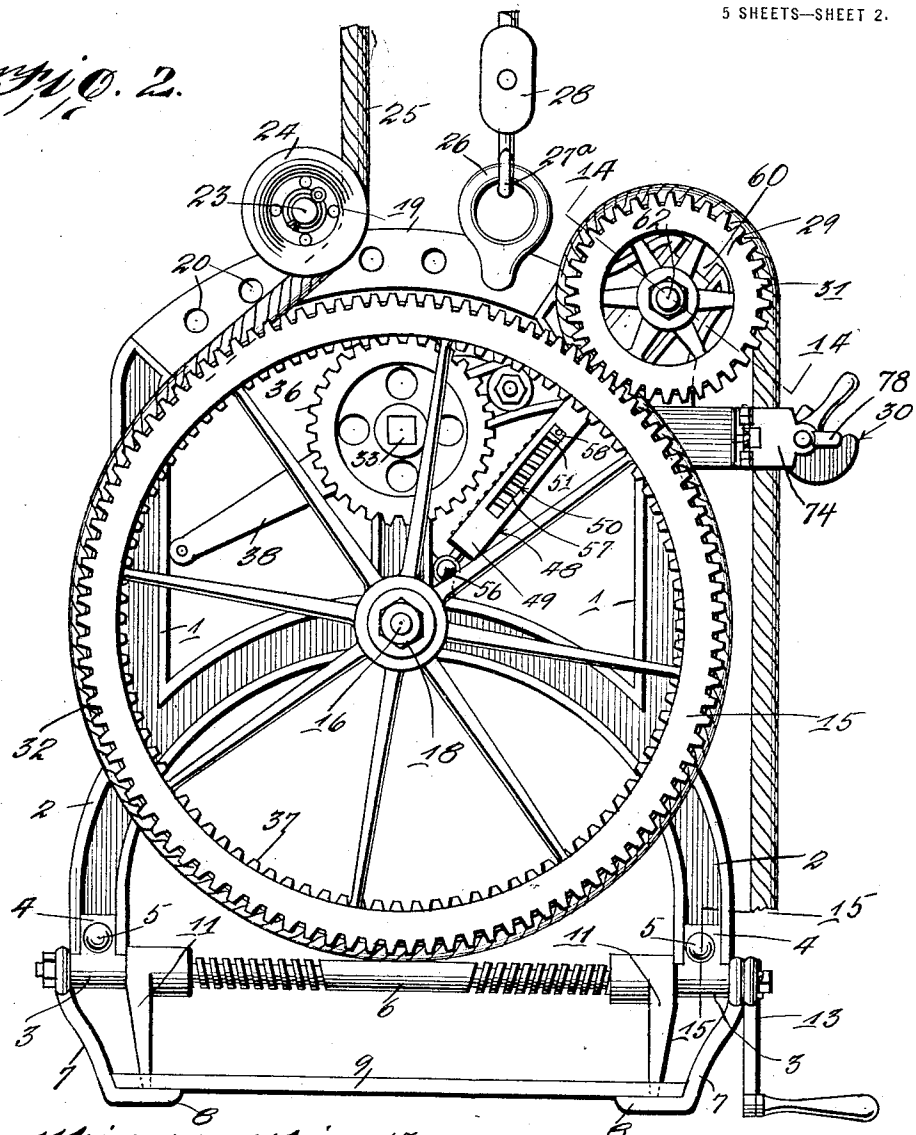


Fig. 13.

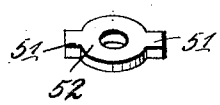


Fig. 15.

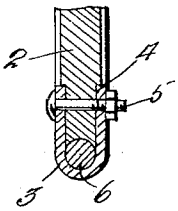
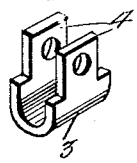


Fig. 16.



Inventor

W. M. Donaldson.

By E. G. Siggers & Co.,

his Attorneys.

W. M. DONALDSON.

SCAFFOLD.

APPLICATION FILED MAR. 22, 1918.

1,328,500.

Patented Jan. 20, 1920.

5 SHEETS—SHEET 3.

Fig. 3.

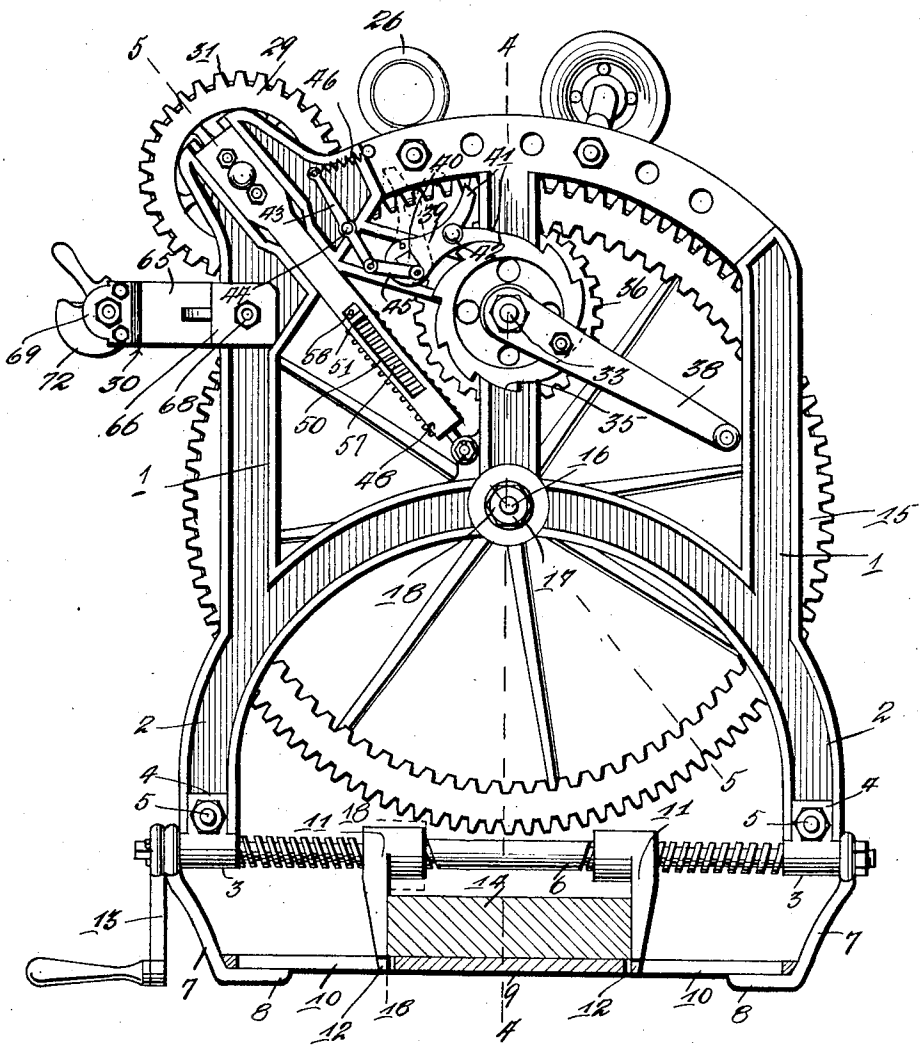


Fig. 16.

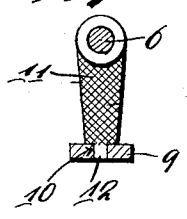
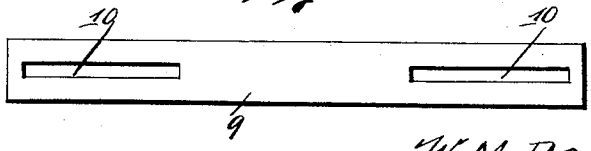


Fig. 17.



Inventor

W. M. Donaldson

By F. G. Crooman & Co.,

his Attorneys.

W. M. DONALDSON.

SCAFFOLD.

APPLICATION FILED MAR. 22, 1918.

1,328,500.

Patented Jan. 20, 1920.

5 SHEETS—SHEET 4.

Fig. 4.

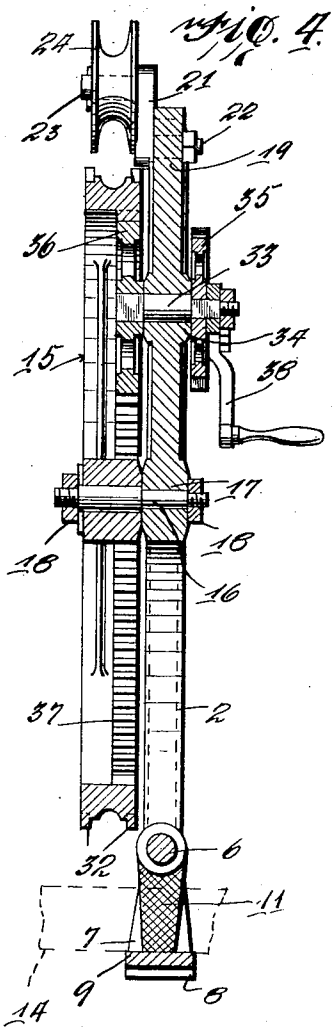


Fig. 5.

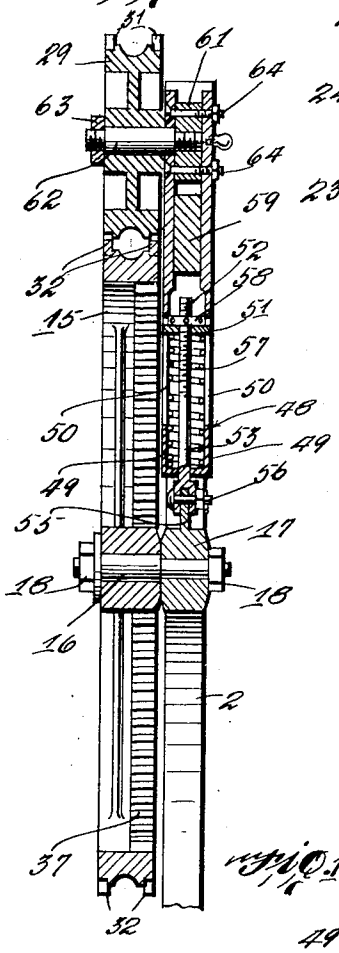


Fig. 19.

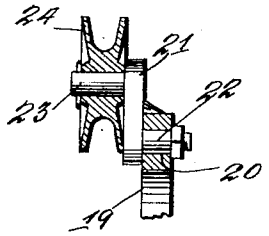


Fig. 20.

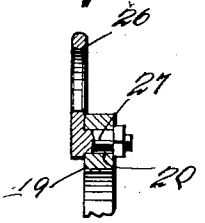


Fig. 10.

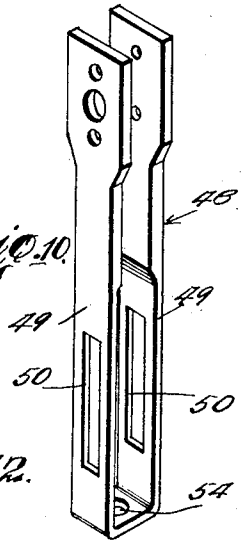


Fig. 14.

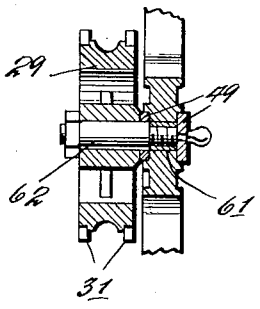


Fig. 11.

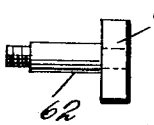
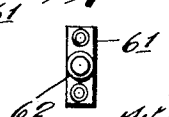


Fig. 12.



Inventor

W. M. Donaldson

By E. G. Crooman & Co.

his Attorneys.

W. M. DONALDSON.

SCAFFOLD.

APPLICATION FILED MAR. 22, 1918.

1,328,500.

Patented Jan. 20, 1920.

5 SHEETS—SHEET 5.

Fig. 6.

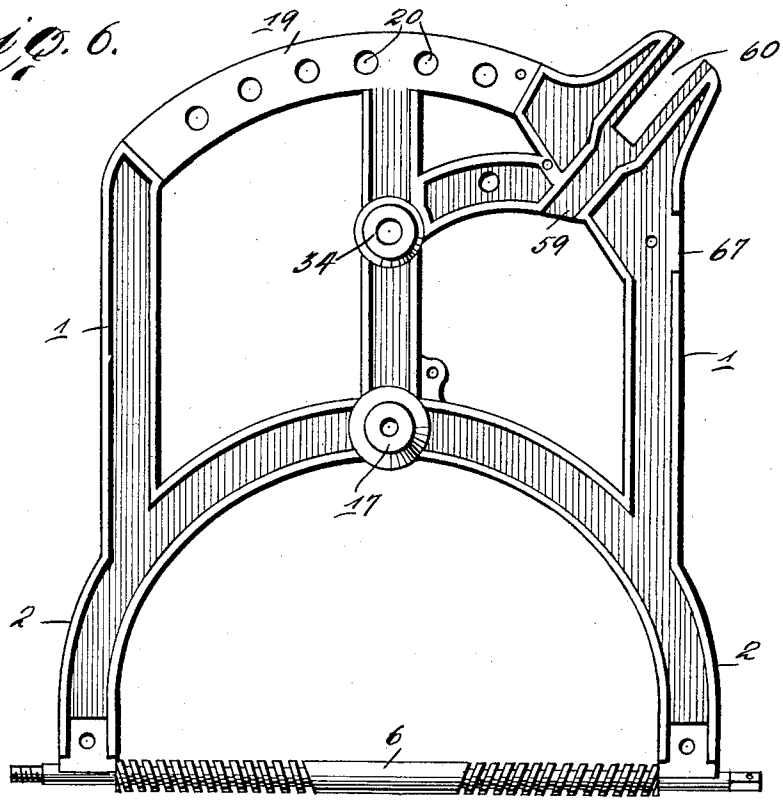


Fig. 7.

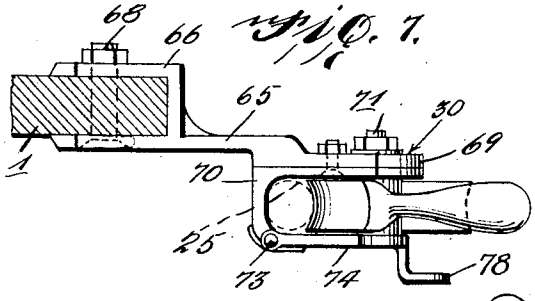


Fig. 9.

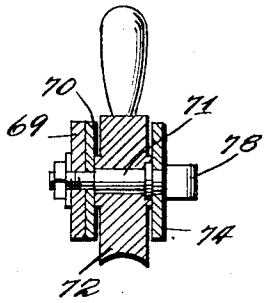
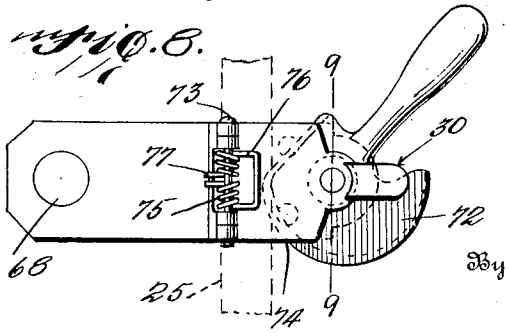


Fig. 8.



Inventor

W. M. Donaldson

By E. G. Crooman & Co.,

his Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM M. DONALDSON, OF PORTLAND, OREGON.

SCAFFOLD.

1,328,500. Specification of Letters Patent. Patented Jan. 20, 1920.

Application filed March 22, 1918. Serial No. 224,033.

To all whom it may concern:

Be it known that I, WILLIAM M. DONALDSON, a citizen of the United States of America, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Scaffolds, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in a scaffold, and has for its principal object the simplification of the structure of a manually-operated apparatus that may be used for painting buildings, sign placing, brick and stone laying, etc.

Another object of the invention is the constructing of a hoisting apparatus that is provided with a simple and efficient platform device, a tensioning device and a locking pawl device.

With these and other objects in view this invention consists of certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings:—

Figure 1 is a view in end elevation of a pair of hoists employed in the construction of my apparatus.

Fig. 2 is a view in side elevation of the outside of the left hand hoist.

Fig. 3 is a view in side elevation of the inside of the left hand hoist, on line 3—3 of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a vertical sectional view of one of the hoists taken on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary vertical sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is a view in side elevation of the frame of the hoist.

Fig. 7 is a top plan view of the cam locking device.

Fig. 8 is a view in side elevation of the cam locking device.

Fig. 9 is a sectional view taken on line 9—9 of Fig. 8.

Fig. 10 is a perspective view of the yoke of the tension device.

Fig. 11 is a view in side elevation of a bolt and a filler block thereon of the tension device.

Fig. 12 is a side view of the filler block of the tension device, per Fig. 11.

Fig. 13 is a perspective view of a washer of the tension device.

Fig. 14 is a fragmentary sectional view taken on line 14—14 of Fig. 2.

Fig. 15 is a sectional view taken on line 15—15 of Fig. 2.

Fig. 16 is a perspective view of one of the clips of the platform device.

Fig. 17 is a top plan view of the stirrup bar of the platform device.

Fig. 18 is a sectional view taken on line 18—18 of Fig. 3.

Fig. 19 is a fragmentary view of a section of the frame, a sectional view of the guide pulley and a view in elvation of the bracket and stub-shaft for the pulley.

Fig. 20 is a sectional view of the frame and hook-ring.

This apparatus comprises preferably two hoists, and since each hoist is similarly constructed it will only be necessary to specifically describe one of the hoists.

Referring to the drawings by numerals, 1, designates the frame, 2 the legs thereof; to the lower end of each leg is secured a clip 3 by means of the lips 4, and the retaining bolt 5. Journaled in the clips is a right and left hand threaded bar 6. Upon the outer ends of the bar 6 are positioned stirrups 7, each stirrup 7 being provided with a horizontal foot 8. Resting upon the feet 8 is stirrup bar 9. The stirrup bar 9 is provided near its ends with elongated apertures 10. Jaws 11 are mounted upon the threaded portions of bar 6, and each jaw is provided at its lower end with a depending lip 12 slidably mounted in a slot 10 of the stirrup bar 9. A crank 13 is fastened to one end of the bar 9, and between the jaws 11, Fig. 3, is placed a plank 14, constituting a platform. When the crank 13 is rotated in one direction the jaws 11 are brought together by reason of the right and left handed threaded structure of the bar 6, clamping the plank or platform 14 securely and retaining said platform upon the stirrup bar or plate 9. It will be obvious that by rotating the crank in an opposite direction jaws 11 will be moved apart, releasing the platform, when said platform may be removed from the stirrup bar or plate 9.

The primary pulley or belt wheel 15 is journaled upon a bolt 16, constituting a shaft, and said bolt 16 is carried by the bearing 17 of the frame 1. Suitable securing

means, as nuts 18 are positioned upon the bolt 16 for fastening the primary wheel against accidental displacement off the frame 1.

The upper portion 19 of the frame 1 is provided with a plurality of apertures 20. In one of these apertures 20 there is mounted the guide wheel bracket 21, this bracket being provided with a short extension 22, Fig. 19, projecting through an aperture 20, and with a stub shaft 23 carrying the guide pulley 24. This guide pulley 24 and this bracket 21 can be moved along the upper portion 19 of frame 1 and placed in any desired aperture 20 for engaging the cable or belting 25, Fig. 2.

The hook-ring 26 is provided with an extension 27, which extension 27 is also positioned in one of the apertures 20. This hook-ring can be moved along the portion 19 of the frame 1 and also placed in any desired aperture 20 of said portion 19. To the hook-ring 26 is detachably secured the hook 27^a of the block 28, to which block 28 one end of the cable or belting 25 is secured, the opposite end of the cable or belting 25 is passed down under the guide pulley 24 and around the primary pulley 15 and surrounds the auxiliary pulley 29 and thence passes through the cam locking device 30.

The auxiliary pulley wheel 29 is provided with gear teeth 31 meshing with gear teeth 32 on the primary pulley wheel 15, so that when movement is imparted to primary wheel 15 similar movement will also be imparted to the auxiliary pulley wheel 29.

A shaft 33 is positioned in the hub-portion 34 of frame 1, and secured to this shaft at one side of the frame 1, is a ratchet wheel 35; and secured to shaft 33 on the opposite side of the frame is also a gear wheel 36. The gear wheel 36 is provided with gear teeth meshing with the gear teeth 37 formed around the inner face of primary pulley 15. A crank arm 38 is secured to shaft 33, so that when crank arm 38 is manually-operated, for rotating shaft 33, similar movement will be imparted to ratchet wheel 35 and gear wheel 36.

When the operator rotates the cranks 38, Fig. 1, in one direction the hoists will be moved vertically in one direction, and when side cranks are rotated in the opposite direction the hoist will be moved in an opposite direction to the first direction of movement, these movements being the ordinary method of raising and lowering the apparatus.

To prevent the crank 38 from an accidental movement I have provided a pawl locking device comprising (see Fig. 3) a pawl 39 pivotally mounted at 40 on the frame. This pawl 39 is provided with a pair of teeth 41 one of which teeth normally engages the ratchet teeth upon the ratchet wheel 35. A grip 42 is attached to the pawl 39 enabling the operator to readily raise the pawl 39 out of engagement with ratchet wheel 35. A lever 43 is pivotally mounted at 44 upon the frame and a link 45 connects the lever 43 with the pawl 39. A tension spring 46 is fastened at one end to the upper end of lever 43 and at its opposite end to the frame 1. The function of this lever 43, link 45 and spring 46 is to retain the pawl 39 temporarily from engaging the ratchet wheel 35 while adjustment of the hoist is being obtained for lowering or raising the apparatus. After the desired position is secured, for the apparatus, the operator can quickly grip the grips 42 of the pawls to cause the same to engage the ratchet wheel for locking said wheel against rotation.

A tension device is provided comprising an auxiliary pulley wheel 29, and yoke 48. The yoke 48 is provided with side arms 49, in each of which side arms is an elongated guide aperture 50, in which aperture 50 a lip 51 of washer 52 works. A bolt 53, Fig. 5, extends through aperture 54 formed in the bottom of the yoke, said bolt being bifurcated at its lower end and straddling the extension 55 formed on the bearing 17; a fastening device 56 secures the bifurcated end of the bolt to the extension 55. The washer 52 is slidably mounted upon the bolt 53, and between the washer and the lower end of the yoke, is positioned the coiled spring 57. A retaining nut 58 is mounted upon the threaded portions of bolt 53, the nut engaging the sliding washer 51. By adjusting the nut 58 upon the bolt 53 the pressure of the spring 57 can be governed. The yoke 48 of the tension device straddles the frame at 59, and in slot 60 of the frame, Fig. 6, is positioned a filler block 61; the filler block 61 working vertically in slot 60. The shaft 62, carrying the auxiliary pulley wheel 29 extends through the filler block 61, and said shaft, filler block and auxiliary wheel are secured together by forming threads upon the shaft 62, threading the shaft into the filler block at one end and placing an ordinary nut 63 upon the other end. Bolts 64 are passed through the upper end of the yoke and the filler block for securely fastening the same in position.

In operation, the tension device can be raised in the slot 60 of the frame, for relieving the tension on the cable or belting 25, but the ordinary tendency of the tension device is to retain the auxiliary wheel 29 and the primary wheel 15 in mesh.

When placing the cable or belting 25 around the apparatus it is desirable to slidably lift the tension device upwardly to permit the cable to be inserted between the primary wheel 15 and the auxiliary wheel 29. Each of the wheels 15 and 29 is pro-

vided in their grooved faces with rubber belting permanently secured thereto for increasing the frictional resistance upon the cable 25 and thereby preventing the cable from slipping, consequently, increasing the efficiency of my apparatus.

After the cable 25 is passed around the auxiliary wheel 29, it is then extended downwardly through the cam locking device 30, now to be specifically described. This cam locking device 30 comprises a frame, said frame having a central body portion 65, which body portion is provided with a substantially U-shaped end 66. This end 66 engages the frame 1 at 67, Fig. 6. A bolt 68 securely fastens the U-shaped portion of the cam locking device to the frame, thereby holding the entire device in an operative position upon the frame. The outer end 69 of the frame 65 carries the plate 70, Fig. 7. This plate 70 and the outer end 69 of the frame have a bolt 71 extending therethrough. Upon the bolt 71 is mounted the cam device 72. Pivotally mounted at 73 is a hinged gate-plate 74; upon the pivot bolt 73, is mounted a spring 75, Fig. 8, which spring is provided with a looped end 76 bearing against the outer face of the gate-plate 74, and said spring 75 is also provided with extended ends 77, that engage the rigid part of the plate 70, Figs. 7 and 8; by this construction and arrangement of the spring 75 the tendency of the gate-plate is always to be closed upon the outer end of the bolt 71. A grip 78 is formed upon the gate-plate, helping to swing the gate-plate quickly outward upon its pivot 73 for permitting the cable 25 to be positioned inside of the cam locking device as shown clearly by means of the dotted lines, Figs 7 and 8. When the cam 72 is swung upon its pivot for causing the cam surface to engage the cable 25, accidental slipping of the cable when the hoists are positioned will be prevented; the operator of the hoists can easily release the cam device, as is obvious, thereby permitting a free running of the cable within these devices when so desired, for adjusting the hoists to the predetermined position.

From the foregoing description it will be obvious that I have provided a right and a left handed hoist, suspended upon which is a suitable platform or plank 14, and by rotating the cranks 38, after releasing the pawl devices, the hoisting apparatus can be raised or lowered, and if through an accident the hoists begin to travel downwardly upon the cables 25, the cam devices can be operated for preventing an accident.

What I claim is:—

1. In a scaffold, the combination of a pair of hoists including frames, means carried by said hoists for raising and lowering the same, each frame provided with stirrups, a stirrup plate carried by said stirrups, a bar provided with right and left handed threaded portions, mounted upon said frame contiguous to said stirrups, jaws upon said right and left handed threaded portions, means formed upon said jaws and said stirrup plate for slidably retaining the same together, and means for rotating said bar for causing said jaws to move relative to each other.

2. In a scaffold, the combination with a plurality of frames, and means for raising and lowering said frames, of clips attached to each of said frames, a right and left handed threaded bar positioned upon said clips of each frame, a pair of stirrups provided with horizontal feet, carried by said bar, a stirrup plate provided with elongated apertures near its ends, resting upon the feet of said stirrups, jaws threaded upon the threaded portions of said bar, each jaw provided with a depending lip extending into one of the elongated apertures of the stirrup plate, and means for rotating said bar for moving the jaws longitudinally thereof as well as longitudinally of the stirrup plate.

In testimony whereof I hereunto affix my signature.

WILLIAM M. DONALDSON.