A. N. FAULKNER.

SCAFFOLD.

APPLICATION FILED NOV. 23, 1914.

1,164,587. Patented Dec. 14, 1915.

Fig. 1.

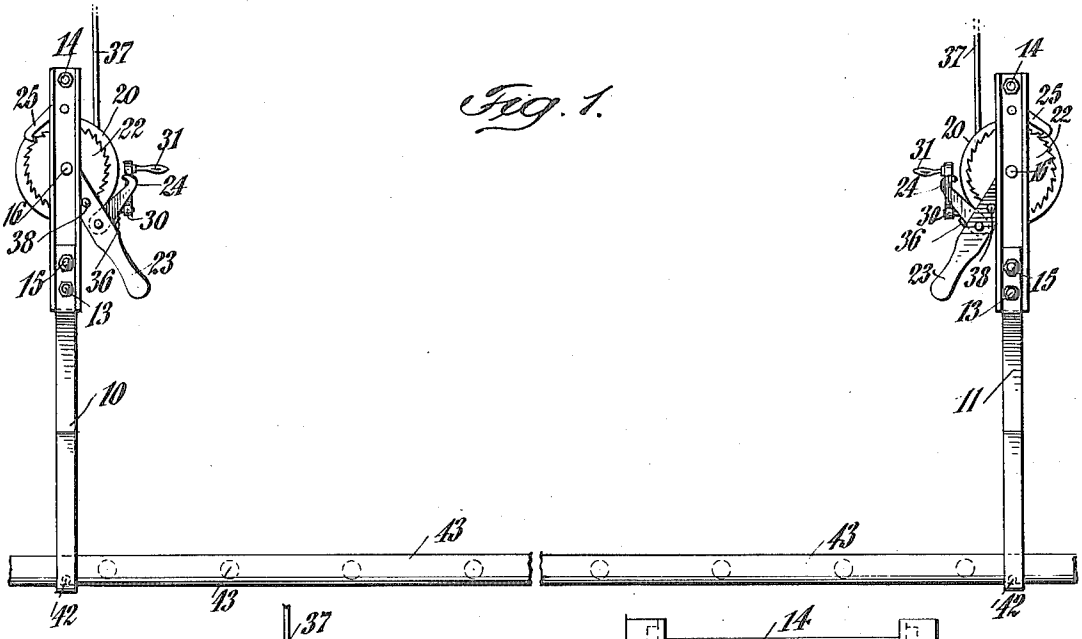


Fig. 2.

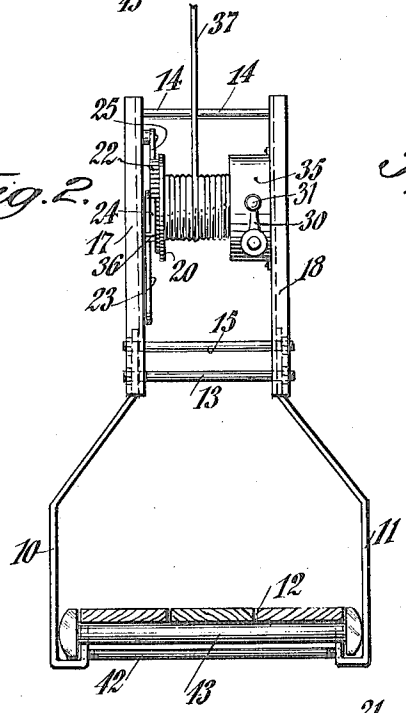


Fig. 3.

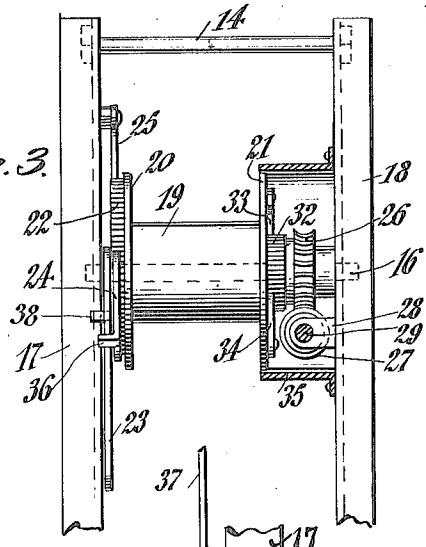


Fig. 4.

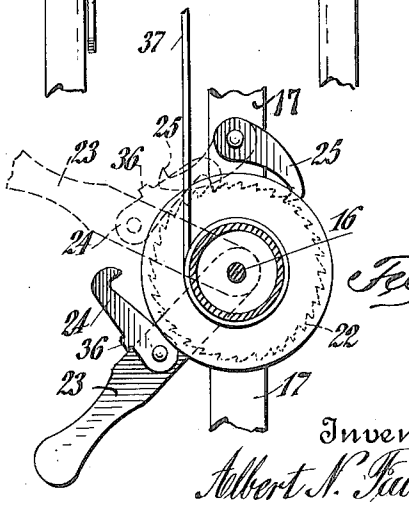
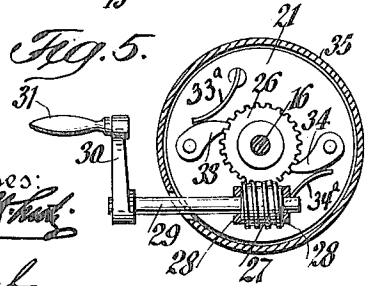


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SCAFFOLD.

1,164,587. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed November 23, 1914. Serial No. 873,529.

To all whom it may concern:

Be it known that I, ALBERT N. FAULKNER, a subject of the King of England, residing in New York, in the borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Scaffolds, of which the following is a specification.

The object of this invention is to provide a scaffold for the use of painters and other workers upon buildings, which shall be capable of ready elevation and lowering, as required by the work being done, and which shall be safe in use. As is well known, it is sometimes desirable to elevate these scaffolds with a considerable degree of rapidity, whereas, when lowering the same, the important elements are usually strength, reliability of control, and safety rather than speed. To accomplish these objects, there is provided, according to this invention, two means for controlling the rotation of the cable drum, one of these means being adapted to be used when elevating the platform, and the other when lowering the same, whereby the necessary rapidity of upward movement is obtained, and when lowering the platform, the desirable slow movement under a high degree of control is secured.

The invention is shown in the accompanying drawing, and will be more fully described hereinafter and finally pointed out in the claims.

In the drawing, Figure 1 is a front elevation of a scaffold embodying the invention; Fig. 2 is a side view of one of the hoisting mechanisms; Fig. 3 is a similar view showing a portion of the frame, and the hoisting mechanism on a larger scale; and, Figs. 4 and 5 are detail views of portions of the hoisting mechanism.

Similar numerals of reference indicate corresponding parts in all the figures.

Referring to the drawing, the scaffold comprises two hoisting mechanisms, and a floor extending between the frames, and supported thereby. Each hoisting mechanism comprises two upright bars 17, 18, of channel-steel or other suitable material, which are spaced apart parallel with each other, as shown in Figs. 2 and 3, and are connected by cross-rods 13, 14 and 15. From each bar, 17, 18, depends a hook, said hooks 10 and 11 being bolted or otherwise detachably secured to the bars by any suitable means, as for instance, secured on the outer projecting ends of the cross-rods 13, 15, as indicated in Fig. 2. Their upturned lower ends are spaced apart to receive the side rails of an ordinary ladder 43, which is thereby supported from the hoisting mechanisms, in horizontal position, and with the planks 12 laid thereon form the floor of the scaffold. The hooks may be connected at their lower ends by a cross-rod 42, so as to be reliably held the required distance apart to receive the ladder and support the same.

A shaft 16 is journaled at its ends in the upright members 17, 18, and carries loosely mounted thereon, the cable drum, which comprises the hub 19 and two end flanges 20 and 21. Secured to the flange 20 is a ratchet-wheel 22. A hand lever 23 is pivoted to the shaft 16, between said ratchet-wheel and the adjacent frame member 17, and carries a pawl 24 in position to engage the ratchet, said pawl, however, being normally out of engagement therewith, when the handle is not being operated, as shown in full lines in Fig. 4. A detent pawl 25 is pivoted to the frame member 17, and normally engages the ratchet 22. Between the opposite flange 21 and the adjacent frame member 18, there is fixed upon the shaft 16 a worm-wheel 26, which is engaged by a worm 27, mounted in brackets 28, extending from the member 18. To the outer end of the shaft 29 of the worm 27 is applied a crank 30, having a handle 31, whereby the worm may be readily operated. To the said shaft 16 is also applied, adjacent the flange 21, a ratchet-wheel 32, which is engaged by two pawls 33 and 34, pivoted to said flange 21, and spring actuated by springs 33^a and 34^a into constant engagement with said ratchet 32. A cylindrical housing 35 is secured to the frame member 18, and extends over the worm-wheel 26, worm 27 and ratchet-wheel 32, and thereby prevents entangling of loose parts therewith, and also protects the mechanism against interference from any outside source, thereby enabling an independently operated mechanism to be provided, which being intended only for the downward movement of the

platform, is thus protected in all events, so as to be operative for the upward movement of the platform. A lug 36 on the pawl 24 limits the backward movement of the pawl in the position shown in full lines in Fig. 4, so that the pawl rests substantially perpendicular to the lever-arm 23 by reason of the weight of the pawl and the position of the pivot of the same. When it is desired to raise the scaffold, the operator swings the handle 23 into an upwardly-inclined position, as indicated in dotted lines in Fig. 4. When the lever-arm 23 is thus raised into upwardly-inclined position, the pawl is carried over its center of gravity, and automatically falls into engagement with the ratchet 22. Being so in engagement, the operator now bears downwardly upon the lever-arm 23, thereby moving downwardly said lever-arm from dotted position to full-line position with the pawl in engagement with the ratchet, whereby the drum is turned, and the cable 37 is wound thereon. This operation is rapidly and easily performed and repeated by the operator, and results in a speedy upward movement of the platform by the winding of the cable upon the drum. The detent pawl 25 retains the drum in any position to which it may be raised, and acts automatically to do this at each operation of the hand-lever 23. When the desired height is reached, the hand-lever is permitted to resume its inclined position, as shown in Fig. 4, in which position it is arrested by abutment of a stop pin 38 against the frame member 17. On the return movement of the handle 23 the pawl 24 falls into disengaged position, as shown in Fig. 4. During the rotation of the drum for winding the cable thereon, the pawls 33 and 34 play loosely over the ratchet 32. The shaft 16 is held against rotation by engagement with the worm-wheel. The ratchet 32 being thus also held against rotation, the pawls 33 and 34 engaging the same provide an additional safeguard against accident, as, in case of breakage of the detent pawl 25, these pawls 33 and 34 would sustain the scaffold by engagement with the ratchet 32. As a matter of fact, it is desirable to make the teeth of this ratchet and of the ratchet 22 of such sizes and so relatively arranged, that all the pawls, 25, 33, and 34 will at the same time engage their respective ratchets, and each pawl will sustain a portion of the load, instead of the entire load being carried by any one or two of them. This result is readily accomplished by the proper relative spacing of the teeth of the two ratchets, and their relative angular arrangement upon the shaft, whereby the engagement of each pawl with a tooth is accompanied by the engagement of every other pawl with a tooth, so that the load is divided between all the pawls.

For lowering the platform, the pawl 25 is brought out of engagement with the ratchet 22 and swung over upon its back, where it may rest upon the ratchet, as shown in dotted lines in Fig. 4, so as not to interfere with the rotation of the same. The operator then, by means of the handle 31, rotates the worm 27, so as to turn the worm-wheel 26 in unwinding direction of the cable, whereby the cable is paid off the drums to the desired extent with a slow movement, and under entire control, by reason of the worm and worm-wheel, which gives the operator an opportunity to readily arrest the downward movement of the platform at any point desired. When the platform has been lowered to the desired elevation, the pawl 25 may be again thrown in, and the scaffold remains securely supported as before.

The hoisting mechanism described provides a comparatively simple but reliable and safe means of obtaining the two speeds desired for the practical operation of painters' and other scaffolds. Being located above the platform-supporting frame, the mechanism is out of the way, and leaves the floor clear for the working material, while at the same time, the mechanism occupies a position more convenient for operation.

One embodiment of the invention has been described, but it is obvious that changes may be made therein without departing from the spirit of the invention, as set forth in the claims.

I claim:

1. A hoisting and lowering mechanism for scaffolds, comprising a drum, releasable means at one end of the said drum adapted to operate the drum in hoisting direction, releasable means for preventing backward movement of said drum, steady control and operating means at the other end of the drum, and means for engaging it with the drum to prevent or produce backward motion while automatically permitting the forward hoisting motion when the first-mentioned releasable means is in operation.

2. A hoisting and lowering mechanism for scaffolds, comprising a drum, releasable means at one end of the said drum adapted to operate the drum in hoisting direction, releasable means for preventing backward movement of said drum, a worm-actuated ratchet wheel at the other end of the said drum, and spring-pressed pawls on the said drum engaging the said ratchet to prevent or produce backward motion while automatically permitting the forward hoisting motion when the first-mentioned releasable means is in operation.

3. A hoisting and lowering mechanism for scaffolds, comprising a drum, comparatively rapidly operable means at one end of the said drum adapted to operate the drum in hoisting direction, steady control and oper-

ating means at the other end of the drum, and means for engaging it with the drum to prevent or produce backward motion while automatically permitting the forward hoisting motion when the hoisting means is in operation.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

ALBERT N. FAULKNER.

Witnesses:
Jos. BISBANO,
D. GORDON.