Jan. 16, 1923. 1,442,075.

A. M. KNECHTEL.

SCAFFOLD HOIST.

FILED NOV. 9, 1921.

2 SHEETS—SHEET 1.

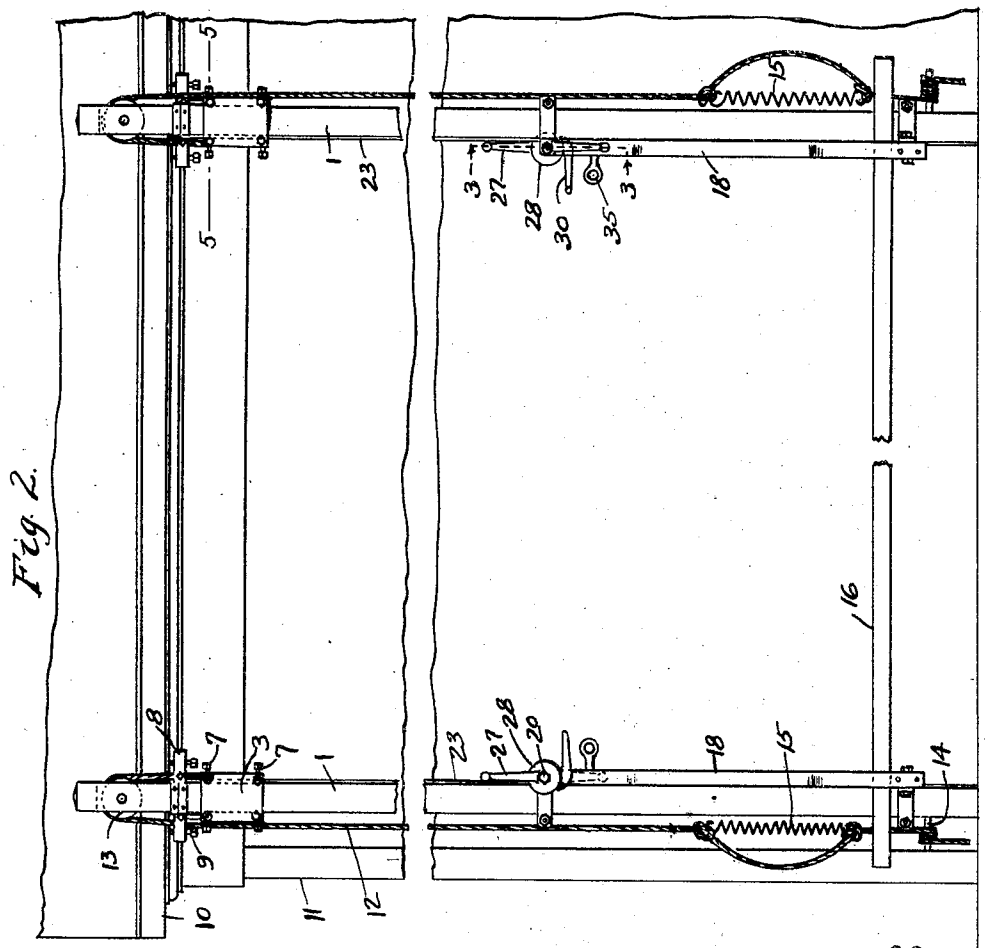


Fig. 2.

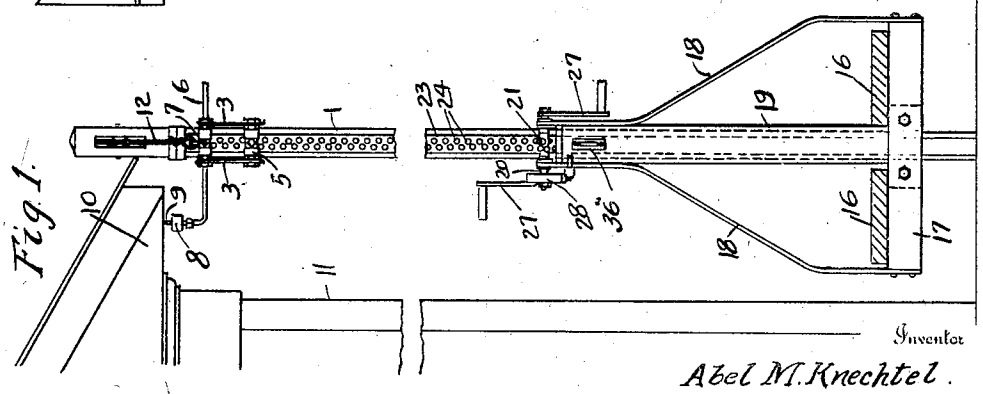


Fig. 1.

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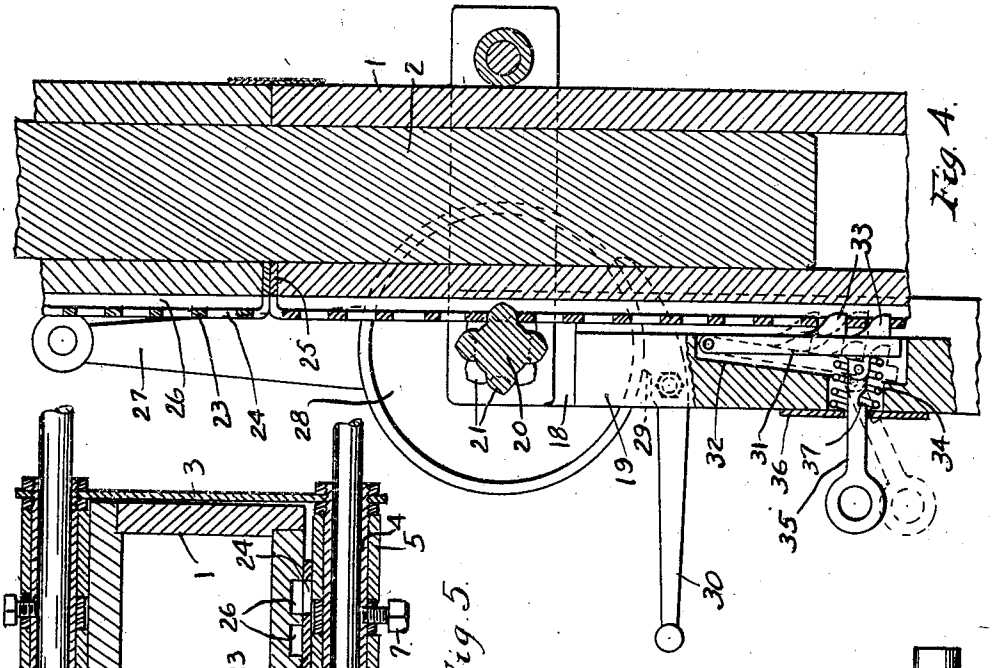


Fig. 4.

Fig. 5.

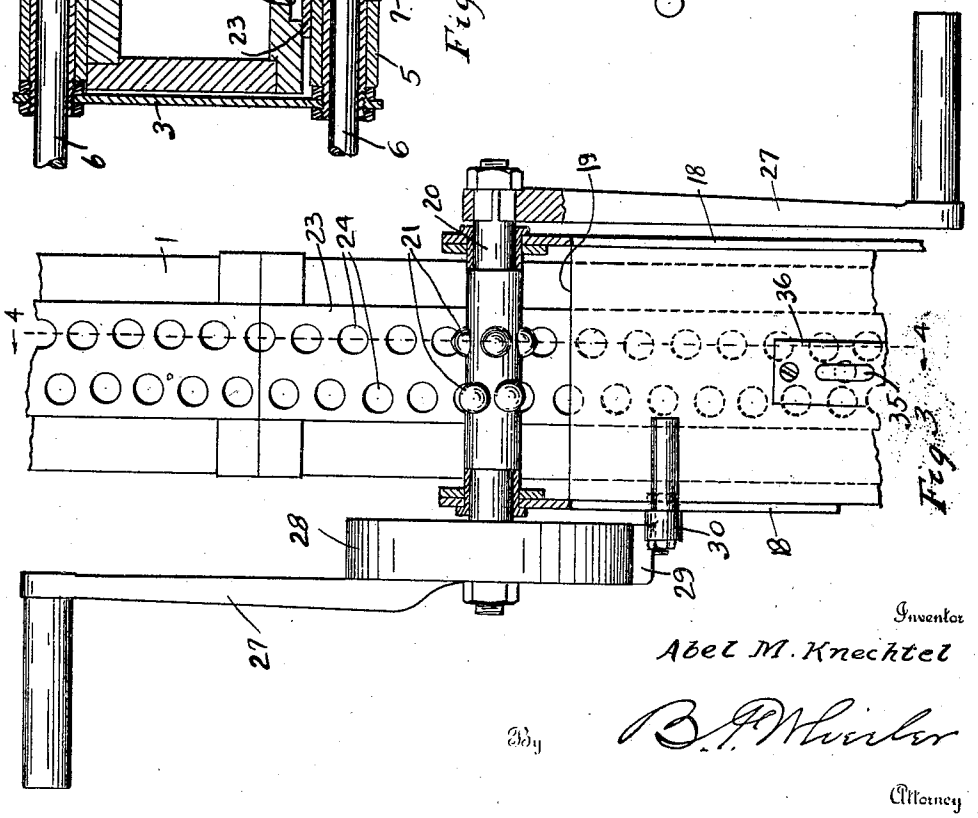


Fig. 3.

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Patented Jan. 16, 1923. 1,442,075

UNITED STATES PATENT OFFICE.

ABEL M. KNECHTEL, OF DETROIT, MICHIGAN.

SCAFFOLD HOIST.

Application filed November 9, 1921. Serial No. 513,943.

To all whom it may concern:

Be it known that I, ABEL M. KNECHTEL, a citizen of the Dominion of Canada, residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Scaffold Hoist, of which the following is a specification.

This invention relates to scaffolds such as are used by painters and other workmen upon buildings, and relates particularly to mechanisms for vertically adjusting such scaffolds.

It is an object of the invention to provide a scaffold adjusting mechanism operable by a workman upon the scaffold platform and requiring relatively small manual effort.

A further object is to provide an anchorage means for securing the top of a scaffolding to a building, which anchorage means may be very quickly operable from the foot of the scaffolding.

In attaining these and various other objects, the invention contemplates providing a pair of uprights, each carrying a special form of rack, and a platform extending between said uprights and guided by the same in a vertical travel effected by manually rotating pinions meshing with said racks. Said objects are further achieved by providing slides upon the upper ends of said uprights carrying spikes engageable with a cornice of the building to anchor the upper end of the scaffolding, said slides being controlled by ropes passing over suitable pulleys and thence extending to the ground.

A preferred embodiment of the invention is hereinafter described, and is illustrated in the accompanying drawings, wherein,

Fig. 1 is an end view of the improved scaffold showing also a portion of a building to which the upper end of the scaffold is anchored.

Fig. 2 is a side view of the same.

Fig. 3 is an enlarged view of a portion of Fig. 1, showing primarily the special type of rack and pinion and cranks for actuating the latter.

Fig. 4 is a vertical sectional view of the same, the section being taken on line 4—4 of Fig. 3.

Fig. 5 is a cross-section view of one of the anchorage slides which are mounted at the top of the scaffolding, the section being taken on line 5—5 of Fig. 2.

In these views the reference character 1 designates a pair of uprights, which are preferably made hollow to minimize the weight thereof. Said uprights are formed in sections of convenient length, and a suitable number of these sections may be joined to obtain the desired height. A preferred means for joining the sections is a filler block 2 extending equally into the abutting end portions, as is seen in Fig. 4. The upper portions of the uprights 1 are respectively embraced by slides, each comprising a pair of plates 3, and hollow bolts 4 connecting said plates, said bolts having rollers 5 mounted thereupon to bear upon the uprights. Within each bolt 4, a rod 6 is adjustably secured by a set screw 7, corresponding ends of said rods being upturned to carry a connecting bar 8. In the ends of the bars 8 there are engaged screws 9 having upwardly projecting pointed ends which are adapted to embed themselves in the cornice 10 of the building 11 when said slide is moved abruptly upward. Each of said slides is actuable vertically by a rope 12 which is extended to the lower portion of the corresponding upright after being carried over a pulley 13 journaled in the upright above said slide. The lower ends of the ropes 12 may be secured in any suitable manner, as for example, by attachment to pins 14 driven into the uprights. It is preferred to subject the ropes to spring tension, this being accomplished in a simple manner by extending a coiled spring 15 across a slack portion of each rope. By thus tensioning the ropes, any settling of the uprights 11 that may occur during use thereof is prevented from lowering the anchorage members 9 out of proper engagement with the cornice 10.

Between the uprights 1 there is extended a scaffold platform comprising spaced planks 16 and a pair of cleats 17. Said planks project at their ends beyond said cleats and embrace the uprights 1, which are thus adapted to guide the platform in its vertical travel. To the ends of each cleat 17 there is secured a pair of upwardly extending convergent straps 18, the upper end portions of which are parallel and embrace a post 19, one end of which is centrally secured to each cleat 17. Said straps project sufficiently above the posts 19 to provide journal bearings for a pair of shafts 20, respectively extending transversely adjacent the opposed faces of the uprights. Upon each shaft there are rigidly secured two pinions 21, of a special

type, the teeth thereof being hemispherical. As shown, said pinions are formed integral with said shafts. To the opposed faces of the uprights, there are respectively secured vertically elongated metal plates 23 each formed with two rows of staggered perforations 24 for engagement by the pinions 21. The perforations 24 of each row register transversely with the centers between perforations of the adjacent row, and the teeth of the two pinions 21 are correspondingly relatively staggered. This engagement has the advantage that one or more teeth of each pair of pinions 21 are always engaged with the corresponding plate 23. The plates 23 may be formed in sections preferably co-extensive with the sections of the uprights 1, the ends of said plate sections being inturned as indicated at 25 to engage end faces of the upright sections. It is preferred to form channels 26 in the opposed faces of the uprights, registering respectively with the rows of perforations 24, and accommodating the end portions of the pinion teeth projecting through said perforations. 27 are crank arms mounted respectively upon the ends of each shaft 20, adapting the same to be rotated by a workman upon the scaffold. 28 is a brake wheel which is fast upon each shaft and is engageable by a brake shoe 29 manually controlled by an integral lever 30 to regulate rotation of the pinions 21 when the platform is being lowered. For holding the platform in any desired position of vertical adjustment there are provided two dogs 31, respectively located within recesses 32 in the posts, said dogs being pivoted at their upper ends and each having upon its lower portion a pair of teeth 33 for engaging adjacent perforations 24. Said dogs are each urged toward the adjacent perforated plate 23 by a coiled spring 34, and are each furthermore provided with a pivotal latch handle 35 passing loosely through a plate 36 secured to the inner face of the corresponding post 19. By first pulling out upon the latch handle and then depressing said handle to the position shown in dash lines in Fig. 4, a notch 37 of said latch handle may be engaged with an edge of the plate 36 to hold the dog disengaged from the corresponding plate 23.

Considering now the operation of the described invention, the first step in erecting the scaffolding is to assemble the sections forming each of the hollow uprights 1. This may be very quickly accomplished, since it is necessary only to insert the filler blocks 2 in the abutting end portions of the sections. The scaffold 16 is now disposed in its position of use adjacent the building 11 and the uprights 1 are placed on end, passing respectively through the ends of the platform. The upper ends of the scaffold are now anchored to the building by means of the slides 3. Said slides are first lowered, by means of the ropes 12, some distance below the eaves of the building. By suddenly jerking upon the ropes the slides are now raised with considerable force so as to firmly embed the sharp spikes 9 into the cornice. Thus the upper ends of the uprights are securely anchored. After anchoring the lower extremities of the uprights by any suitable means, the platform 16 may be adjusted to any desired elevation by turning the cranks 27. The dogs 31 will offer no resistance to raising of the platform, owing to the upper edges of the teeth of said dogs being beveled. Said dogs, however, will act automatically to maintain the platform in any position of use. In lowering the platform, a brake control lever 30 may be grasped by one hand of a workman while with the other hand the latch handle 35 is moved to its release position, shown in dash lines in Fig. 4. By regulating the braking pressure the platform may be lowered at such speed as may best suit the operator. It will be evident that the described scaffold may be operated to best advantage by two men positioned respectively at each end of the platform.

The primary advantages secured by the invention are a very considerable saving of time both in erecting and taking down a scaffold, and the elimination of block and tackle control means, requiring considerable time to install and subject to a much greater danger of accidents than the described apparatus.

What I claim is:

1. In a device of the character described, the combination with a scaffolding upright, of a slidable member freely movable longitudinally of said upright, a pulley mounted in the upright above said slidable member, a flexible member secured to the slidable member passing over the pulley and extending to the lower portion of the upright, and an anchorage member carried by the slidable member and engageable with a building through raising of the slidable member by said flexible member.

2. In a device of the character described, the combination with a scaffolding upright, of a slidable member embracing the upright, movable longitudinally thereof, a laterally projecting rod carried by said slidable member, an upwardly projecting anchorage member at one end of said rod, and means for raising said slidable member from the lower portion of the scaffold.

In testimony whereof I sign this specification.

ABEL M. KNECHTEL.