J. BERTODO.

SCAFFOLD MACHINE.

APPLICATION FILED DEC. 14, 1914.

1,190,709.

Patented July 11, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

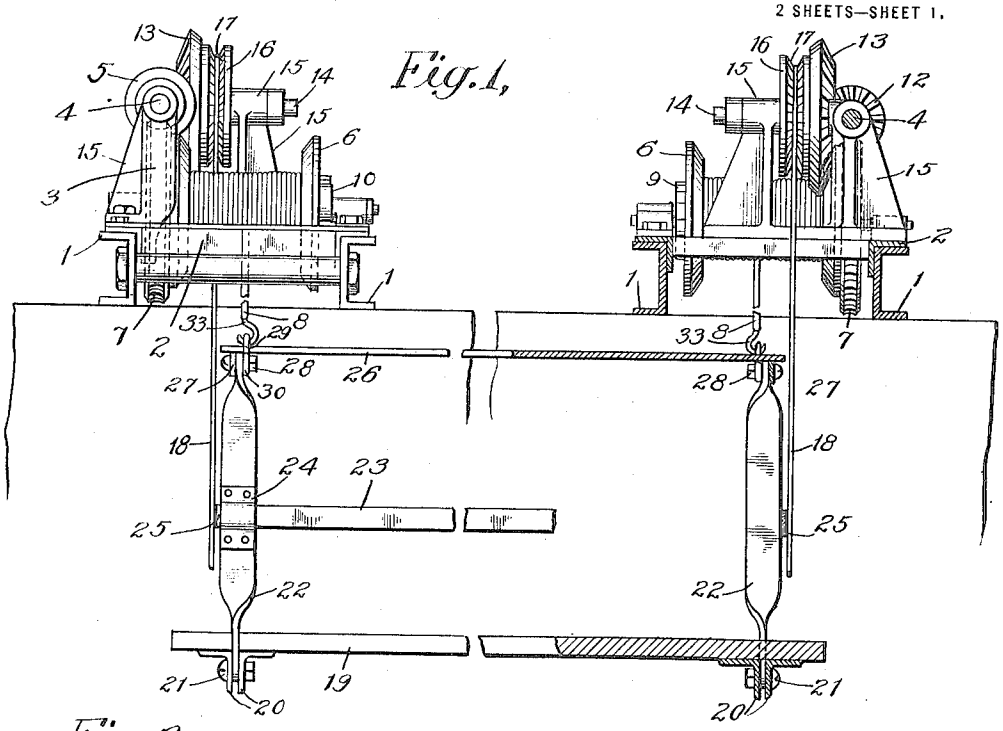
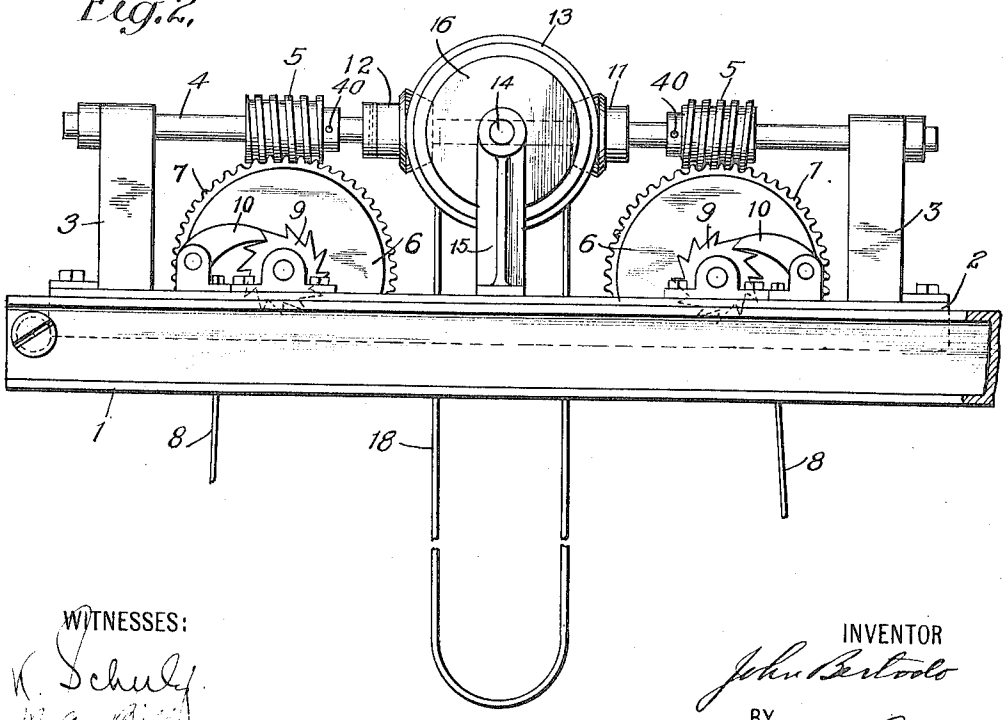


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

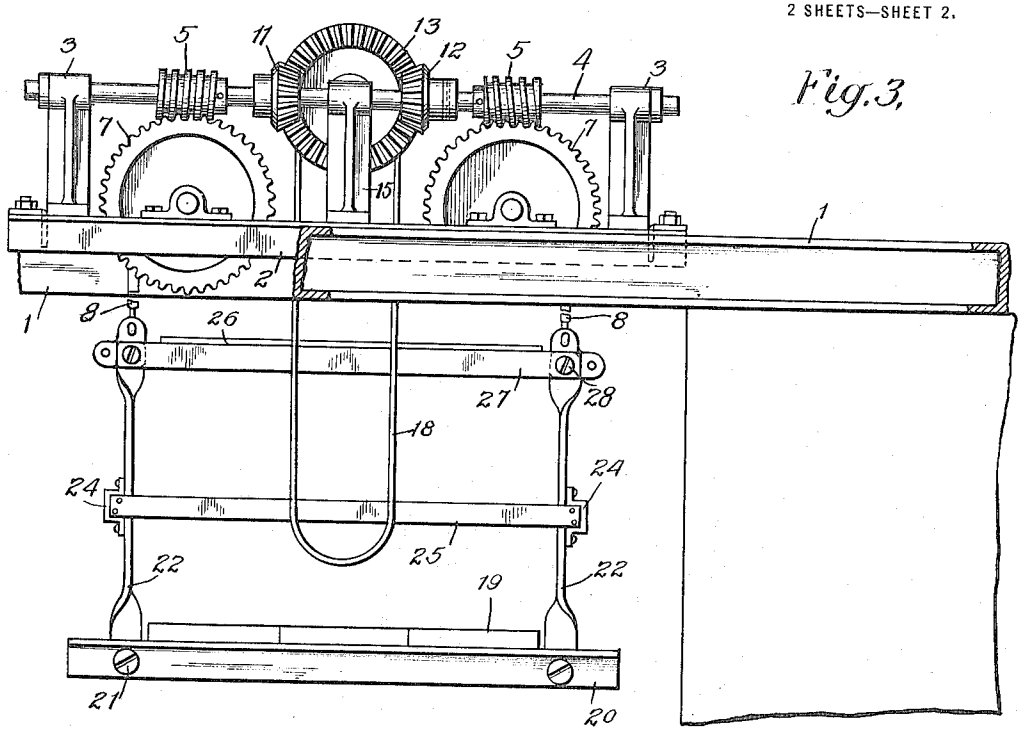


Fig. 4.

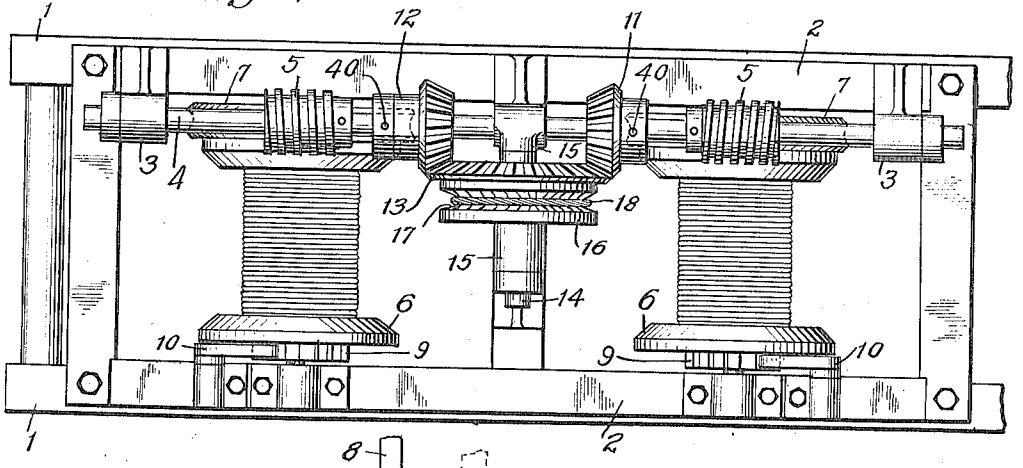
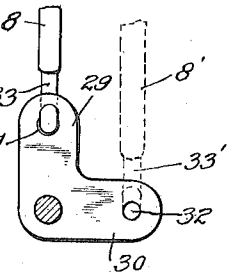


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN BERTODO, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN SAFETY DEVICE COMPANY, A CORPORATION OF NEW YORK.

SCAFFOLD-MACHINE.

1,190,709. Specification of Letters Patent. Patented July 11, 1916.

Application filed December 14, 1914. Serial No. 877,011.

To all whom it may concern:

Be it known that I, JOHN BERTODO, a citizen of the United States, residing at and whose post-office address is No. 524 East One Hundred and Thirty-sixth street, borough of Bronx, city, county, and State of New York, have invented certain new and useful Improvements in Scaffold-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to supporting devices for scaffolds adapted to be used by masons, painters and the like, and more especially to devices of this character which permit the scaffold to be raised or lowered as desired.

More particularly the object of the invention is to provide a device by means of which the raising and lowering of the scaffold may be controlled by persons standing on the platform between the front and back edges thereof, rendering it unnecessary for such persons to lean over the outer edge of the platform, whereby danger of their falling therefrom is avoided.

Another object of the invention is to provide means for permitting the transferring of the scaffold from one set of supporting devices to another set, while the scaffold remains in its operative position, if it is desired to raise or lower the scaffold to points above or below the points to which it can be raised or lowered by means of the first set.

In the accompanying drawings, showing an illustrative embodiment of the invention, and in which the same reference numerals refer to similar parts of the several figures, Figure 1 is a view showing the scaffold and the supporting devices in elevation, parts being broken away for the sake of clearness. Fig. 2 is a view in side elevation of one of the supporting devices, Fig. 3 is a view similar to Fig. 2, but showing the opposite side of the supporting device, and also showing the scaffold in end elevation, Fig. 4 is a plan view of one of the supporting devices, and Fig. 5 is a view, on an enlarged scale, of a detail.

As shown in Fig. 1, two scaffold supporting devices are employed, one at each end of the scaffold, and as both devices are similar in construction, but one of them will be described.

Referring to the drawing 1, 1, represent a pair of substantially parallel beams of any suitable cross-section, adapted to be secured to the structure of a building with their outer ends overhanging the wall in the usual manner, and having movably mounted on the overhanging end portions the scaffold supporting device. The device has a base 2 of any suitable construction, which rests upon the beams 1, 1, and which carries adjacent its ends, uprights 3, 3, in which is journaled a shaft 4, having secured thereto, intermediate its ends, a pair of oppositely pitched worms 5, 5.

Rotatably supported on the base 2 are the winding drums 6, 6, provided with toothed wheels 7, 7, engaging the worms 5, 5, and having attached thereto the scaffold supporting ropes 8, 8, which are adapted to be operatively connected to the scaffold at the front and back thereof. In order to prevent rotation of the winding drums in the reverse or unwinding direction they are provided with ratchet wheels 9, 9, which are normally engaged by pawls 10, 10, pivotally supported upon the base 2.

Positioned between the worms 5, 5, are the oppositely disposed bevel pinions 11 and 12, the pinion 11 being fixed to the shaft 4 and the pinion 12 being loosely mounted thereon, and meshing with these pinions is a bevel gear 13 secured to a shaft 14, which is journaled in uprights 15, 15, on the base 2, and upon which is fixed a pulley 16 provided with a circumferential groove 17 which is preferably roughened or jagged and with which the upper end of a rope loop 18 engages.

From the above description it will be understood that by pulling upon the rope 18 the pulley 16 and the bevel gear 13 will be rotated, and through the medium of the intermeshing fixed bevel gear 11, the worms 5 and the toothed wheels 7, the drums 6 will be rotated, thereby winding the ropes 8 upon the drums and raising the scaffold to the desired height in which position it will be held by reason of the fact that the pawls 10 engage the ratchet wheels 9 and prevent reverse rotation of the winding drums.

As the pulley 16 is positioned between the winding drums, it will be evident that the rope loop 18 will hang down between the

vertical planes passing through the axes of the winding drums in such a position that it may be grasped by a person standing on the scaffold without his having to lean over the edge of the platform thereof, thus avoiding danger of falling therefrom while endeavoring to raise or lower the scaffold.

It will, of course, be understood that it is necessary to operate the rope loops 18 at both ends of the scaffold when the latter is to be raised.

The scaffold may be lowered by disengaging the pawls 10 from the ratchet wheels 9, thus permitting the drums 6 to rotate in the reverse or unwinding direction, the speed of the descent of the scaffold being controlled from the scaffold by means of the rope loops 18.

The scaffold, which may be of any suitable construction, is shown as being provided with a platform 19 carried upon transverse supporting members adjacent the ends thereof and which consist of a pair of angle irons 20 secured to one another in substantial parallelism by bolts 21. Extending between the ends of the angle irons at each end of the transverse supporting member and held in position by the bolts 21, is the lower end of a flat strap 22, the central portion of which is twisted to lie in a plane at right angles to the plane of the ends thereof.

In order to protect the workmen from falling, the scaffold is provided at the back thereof, and at a suitable height from the platform, with a longitudinally extending rail 23 which is supported by having its ends seated in pockets formed by stirrups 24 secured to the central portions of the straps 22 which are attached to the rear ends of the transverse supporting members. End rails 25 are also provided which may be nailed or otherwise secured to the ends of the longitudinal rail 23 and to the flat straps at the front of the scaffold.

To protect the workmen from being struck, by falling articles, the scaffold is provided with a suitable roofing 26 which is supported on transverse bars 27 secured to the upper ends of the flat straps 22 by bolts 28.

In order to enable the scaffold to be readily transferred from the supporting ropes of one set of scaffold supporting devices to the supporting ropes of another set of such devices, bell cranks are provided which are pivotally connected to the upper ends of each of the flat straps 22, preferably by being mounted upon the bolts 28. Each bell crank comprises arms 29 and 30 having holes 31 and 32 extending therethrough adjacent their outer ends, which holes are adapted to receive hooks 33 secured to the supporting ropes 8.

If the hooks 33, attached to the ropes by which the scaffold is supported, engage the holes 31 in the arms 29 of the bell cranks, each of such arms will, of course, assume a vertical position and each of the other arms 30 will assume a horizontal position, as indicated in full lines in Fig. 5, in view of the fact that the bell cranks are pivoted upon the bolts 28.

If the scaffold has been raised to its highest point in connection with the set of devices by which it is supported, and it is desired to raise the scaffold further, it is merely necessary to place a second set of scaffold supporting devices above the first set, and to engage the hooks 33′ attached to the ropes 8′ of the second set with the holes 32 in the arms 30 of the bell cranks as indicated in dotted lines in Fig. 5. By then actuating the rope loops of the second set of supporting devices, the drums thereof will be rotated to wind up the supporting ropes 8′ and the bell cranks will be rotated about their pivotal points of support until each of the arms 30 assumes a vertical position and each of the arms 29 assumes a horizontal position, at which time the hooks 33 attached to the ropes 8 of the first set of scaffold supporting devices may be disengaged from the holes 31 in the arms 29, leaving the scaffold supported entirely by the second set of supporting devices. In a similar manner the scaffold could be transferred from one set of supporting devices to a lower set if necessary.

It sometimes happens that, because of uneven winding of the ropes on the drums, uneven stretching of the individual ropes, or other cause, the platform will not hang level. I make provision whereby, in such case, the four winding drums may be individually adjusted to level the platform. To this end I provide for temporarily disconnecting the individual worms 5 from the shaft 4 to permit the necessary adjustment, by turning the released drum. As shown in the drawings, each worm 5 is detachably secured to its shaft 4 as by a pin or pins 40, or other appropriate locking device. By freeing the worm from its shaft, it may be backed off out of engagement with its wheel 5, and after the drum has been turned to effect the required adjustment, the worm may be brought back into place and secured there.

What I claim is:

1. In a scaffold supporting device, in combination, a support, a pair of winding drums thereon, ropes attached to said drums and adapted to be attached to a scaffold at the front and back thereof, worm wheels connected to said drums, a shaft provided with worms engaging said worm wheels, said worms being detachably connected to said shaft, and means for rotating said shaft.

2. In a scaffold supporting device, in combination, a support, a pair of winding drums thereon, ropes attached to said drums and adapted to be attached to a scaffold at the front and back thereof, worm wheels connected to said drums, a shaft provided with worms engaging said worm wheels, said worms being detachably connected to said shaft, a bevel pinion fixed to said shaft between said worms, a bevel gear meshing with said pinion, a pulley operatively connected to said bevel gear, and a rope engaging said pulley for rotating the same, said rope depending from said pulley whereby said pulley may be rotated to actuate said gearing by a person standing on the scaffold between the front and back thereof.

3. In a scaffold supporting device, in combination, a pair of supports, a pair of winding drums on each support, ropes attached to said drums and adapted to be attached to a scaffold at the four corners thereof, worm wheels connected to said drums, two shafts provided with worms engaging said worm wheels, said worms being detachably connected to said shafts, a bevel pinion fixed to each of said shafts between said worms, a bevel gear meshing with each pinion, a pulley operatively connected to each of said gears, and a rope engaging each pulley for rotating the same, said ropes depending from said pulleys whereby said pulleys may be rotated to actuate said gearing by a person standing on the scaffold between the front and back thereof.

4. In a scaffold supporting device, a support, a pair of drums mounted thereon, ropes attached to said drums and adapted to be attached to the scaffold at the front and back thereof, and means for rotating said drums comprising an actuating loop depending between said drums and ropes and lying in a plane substantially at right angles to the longitudinal axis of the scaffold, the plane of the loop being inward of the vertical plane passing through the outer ends of the drums.

5. In a scaffold supporting device, a support, a pair of drums mounted thereon, ropes attached to said drums and adapted to be attached to the scaffold at the front and back thereof, and means for rotating said drums comprising an actuating loop depending between said drums and ropes and lying in a plane substantially at right angles to the longitudinal axis of the scaffold.

6. In a scaffold supporting device, a support, a pair of winding drums thereon, ropes attached to said drum and adapted to be attached to a scaffold at the front and back thereof, worm wheels connected to said drums, a shaft provided with worms engaging said worm wheels, removable pins for detachably connecting said worms to said shaft, and means for rotating said shaft.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN BERTODO.

Witnesses:
KENNETH PENNIE,
M. A. BILL.