F. B. JOHNSTON.

SCAFFOLD SUPPORTING MACHINE.

APPLICATION FILED JUNE 30, 1916.

1,352,455. Patented Sept. 14, 1920.

Fig: 1.

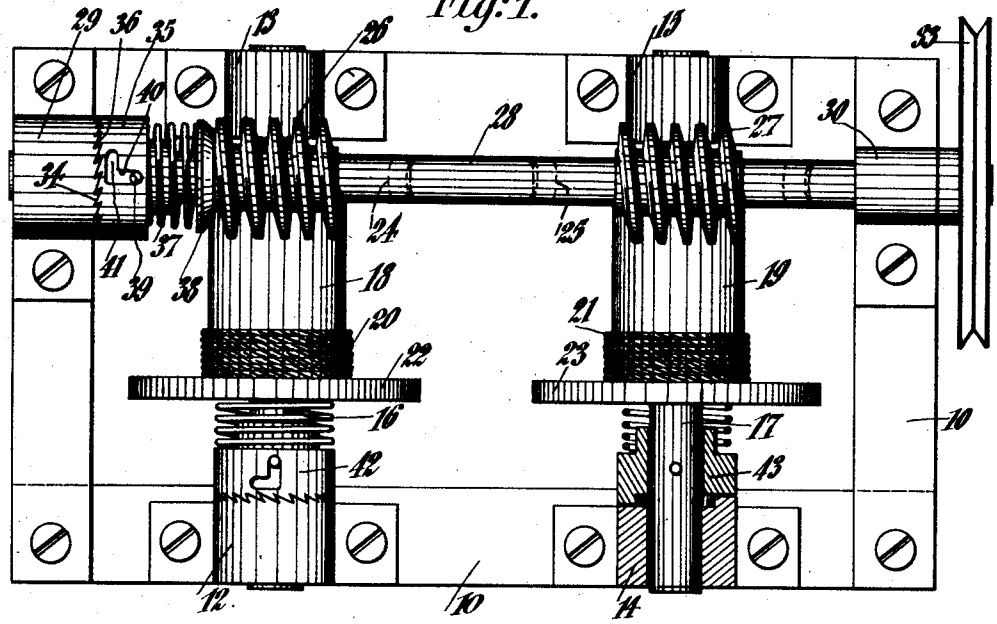
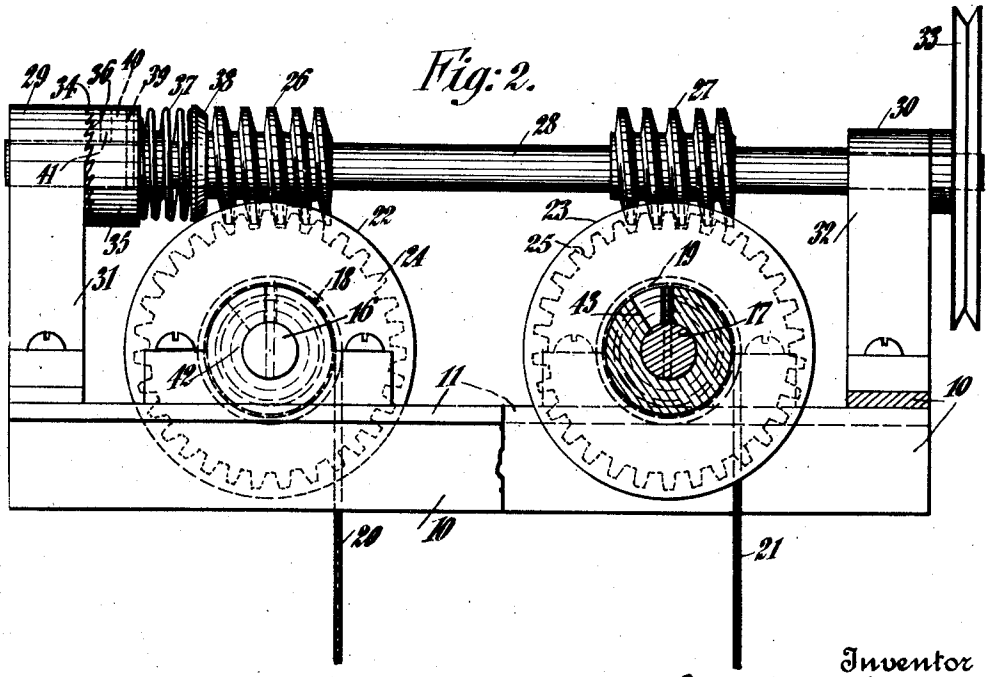


Fig: 2.



Inventor

Frank B. Johnston

By Attorney

C. P. Goepel

UNITED STATES PATENT OFFICE.

FRANK B. JOHNSTON, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN SAFETY DEVICE COMPANY, A CORPORATION OF NEW YORK.

SCAFFOLD-SUPPORTING MACHINE.

1,352,455. Specification of Letters Patent. Patented Sept. 14, 1920.

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To all whom it may concern:

Be it known that I, FRANK B. JOHNSTON, a citizen of the United States, and resident of New York city, borough of Manhattan, State of New York, have invented certain new and useful Improvements in Scaffold-Supporting Machines, of which the following is a specification.

The present invention relates to improvements in scaffold supporting machines, and particularly such machines as are used in the erection of tall buildings. In order to possess the greatest efficiency, such machines must operate with a maximum degree of safety, and it is with this object in view that the present invention is designed. To this end it is proposed to provide a scaffold supporting machine which will be positive in operation, having no lost motion, provided with means which will non-yieldably prevent back movement, and will be to a high degree fool-proof.

With these and other objects in view, my invention is shown in the accompanying drawings, and will be hereinafter more fully described with reference thereto, and finally pointed out in the claims.

In the accompanying drawings:

Figure 1 is a top plan view partly in section of my improved scaffold supporting machine, and

Fig. 2 is a side view thereof, partly in section.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, a frame 10 is provided which is mounted upon outriggers secured to the steel frame work of the building by means of the outriggers engaging beneath the side flanges 11 of the frame in the usual manner. Upon the side rails of the frame 10 there are provided journal-bearings 12, 13, 14 and 15 in which are supported the shafts 16 and 17 of the drums 18 and 19, upon which the cables 20, 21 supporting the scaffolds are wound. The said drums are provided at one end respectively with flanges 22, 23 and at the other end with worm gears 24, 25 which mesh respectively with worms 26, 27 of worm shaft 28, which is supported in bearings 29 and 30 of standards 31 and 32 at each end of the frame. To one end of the worm shaft there is secured a grooved wheel 33, over which is passed an endless cable, which is of sufficient length to extend downwardly within reach of the workmen on the scaffold. The worms may if desired be respectively right and left hand worms, in which case the cables 20, 21 would extend downwardly from the outer sides of each drum.

At the end of the shaft 28, there is provided a locking device to prevent backward movement of the shaft, which in addition to locking devices for each of the drums 18 and 19 as hereinafter referred to, prevents absolutely any lost motion or yield between the parts, which might result in the falling of the scaffold with the consequent disastrous effects. Ratchet teeth 34 are provided on the face of the bearing 29, the said teeth extending forwardly, the rear face of the teeth being preferably slightly rearwardly inclined. A sleeve 35 is slidably mounted on the shaft adjacent the said bearing, and is provided with teeth 36 interlocking with the teeth of the bearing, and held in engagement therewith by a spring 37 disposed between the said sleeve and a flange 38 of the shaft. The sleeve is non-rotatably keyed to the shaft by means of a pin 39 entering a slot 40 thereof. This slot is slightly longer than the depth of the teeth, and at its forward end is provided with a short circumferential slot 41. By manually forcing the sleeve rearwardly against the force of the spring 37, the slot 41 may be turned into engagement with the pin 39 and the sleeve thereby disengaged from the teeth of the bearing, for purposes of lowering or adjusting the scaffold.

The locking devices 42 and 43 of the drums are similar in construction to the locking device of the shaft 28, and operate in a like manner.

When the scaffold is to be raised, the operating cable is pulled at the proper side and the worms are turned to rotate the drums, the sleeves of the locking devices being successively forced into and out of engagement with the ratchet teeth of the bearings. Any accidental attempt to pull the wrong side of the cable, will have no effect whatever on the worm shaft, in that the parts will remain in their proper positions and any danger which might result from the yielding of the parts due to such

accidental pulling of the cable, will be entirely avoided. When the scaffold is to be lowered the locking devices are made inoperative, as above pointed out, and the machine may then operate in a reverse manner.

I have illustrated a preferred and satisfactory form of my invention, but it is obvious that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

I claim:

1. In a scaffold supporting machine, a frame, winding means supported thereby, locking means adapted to prevent rotation of said winding means in one direction, means for making said locking means inoperative to permit rotation of said winding means in either direction, suspension means adapted to be wound and unwound from said winding means, gear means in fixed relation with said winding means, an operating shaft supported on said frame and geared to said gear means, means operating to turn said shaft in either direction for raising or lowering the scaffold, the engagement of said gear means of said winding means, and said shaft, adapted through the locking of said winding means against rotation in one direction to prevent rotation of said shaft in one direction, locking means on said operating shaft adapted to prevent rotation in the other direction, said operating shaft being thereby normally locked against rotation in both directions, and means for making said last-mentioned locking means inoperative to permit rotation in the direction unopposed by said locking means of said winding means, said locking means of said winding means adapted to be made inoperative to permit rotation in the other direction.

2. In a scaffold supporting machine, a frame, a winding drum supported thereby, locking means adapted to prevent rotation of said winding drum in one direction, means for making said locking means inoperative to permit rotation of said winding drum in either direction, suspension means adapted to be wound and unwound from said winding drum, a worm gear in fixed relation with said winding means, an operating shaft supported by said frame and provided with a worm geared to said worm gear, and operating to turn said shaft in either direction for raising or lowering the scaffold, the engagement of said worm and worm gear adapted through the locking of said winding drum against rotation in one direction to prevent rotation of said shaft in one direction, locking means on said operating shaft adapted to prevent rotation in the other direction, said operating shaft being thereby normally locked against rotation in both directions, and means for making said last-mentioned locking means inoperative to permit rotation in the direction unopposed by said locking means of said winding drum, said locking means of said winding drum adapted to be made inoperative to permit rotation of said shaft in the other direction.

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

FRANK B. JOHNSTON.

Witnesses:
D. LEWIS MATTERN,
A. Y. COUGAN.