

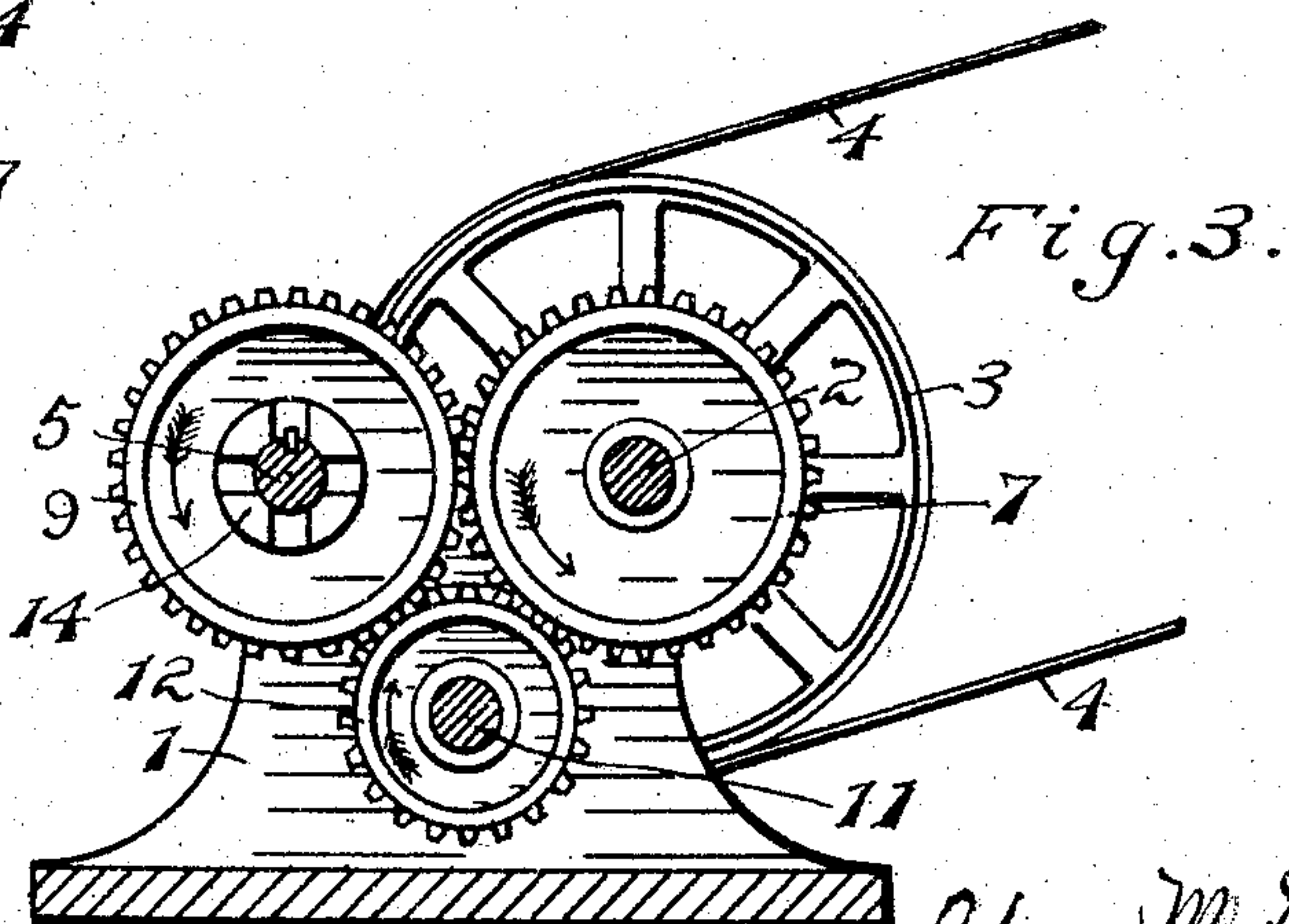
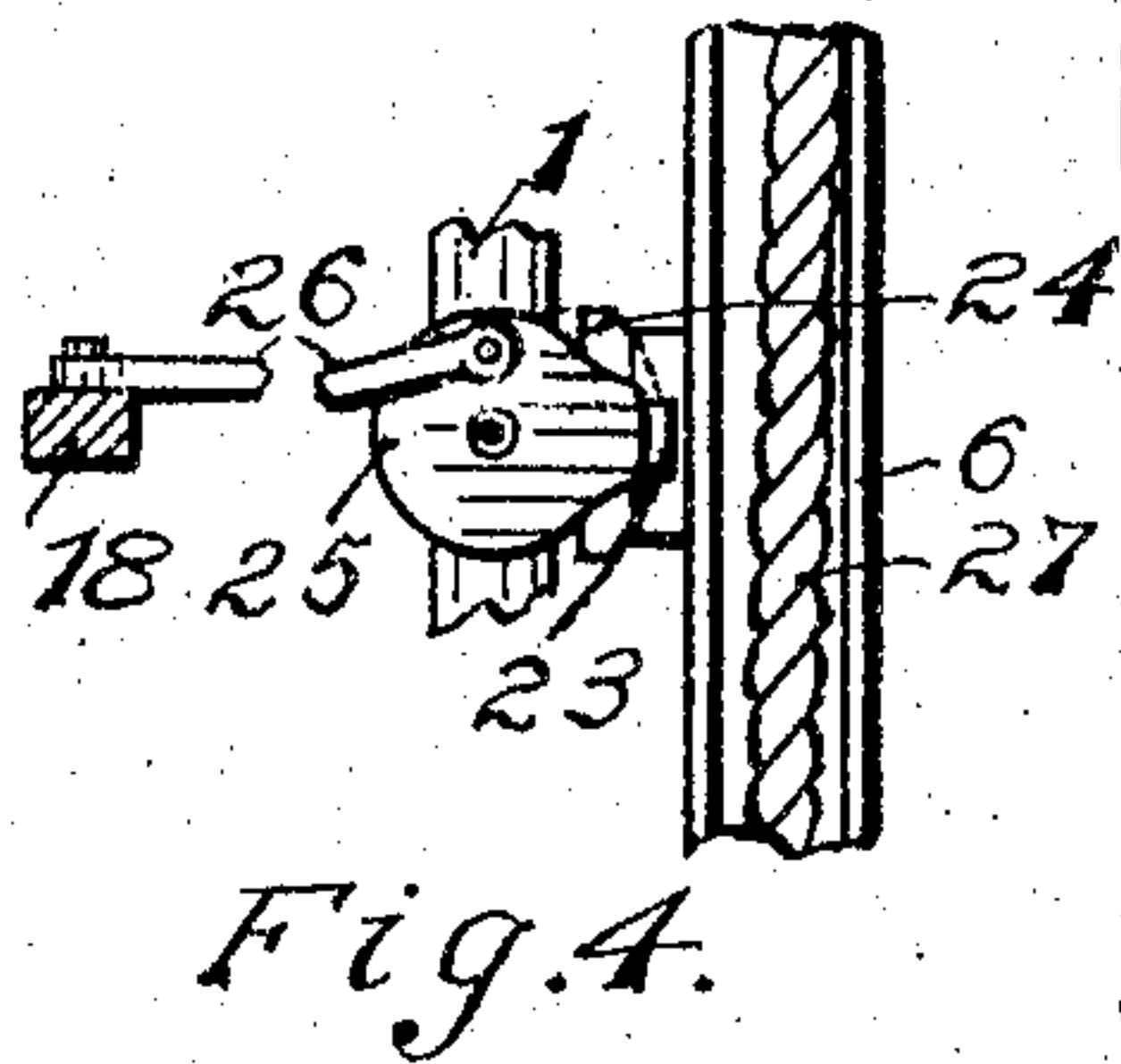
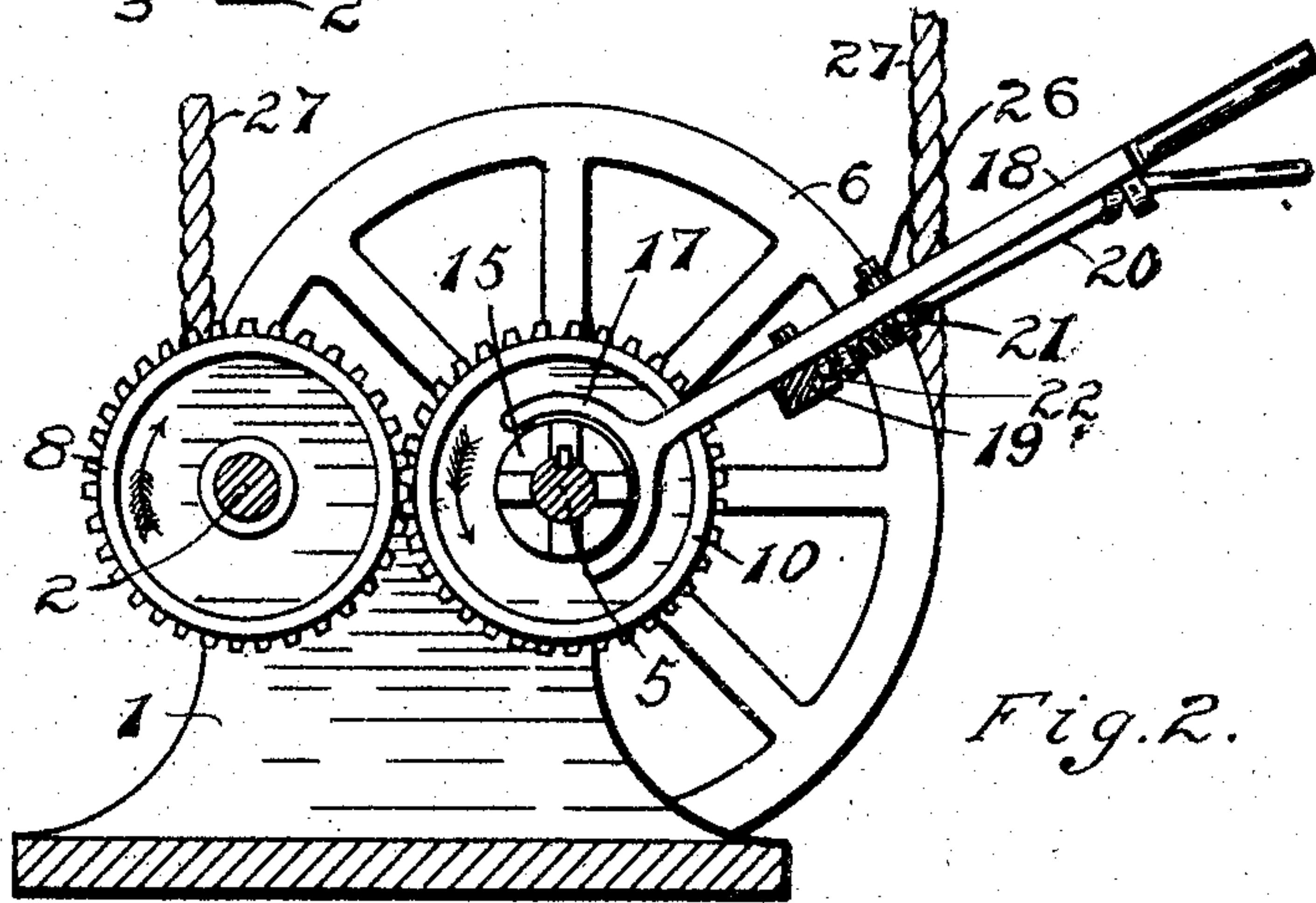
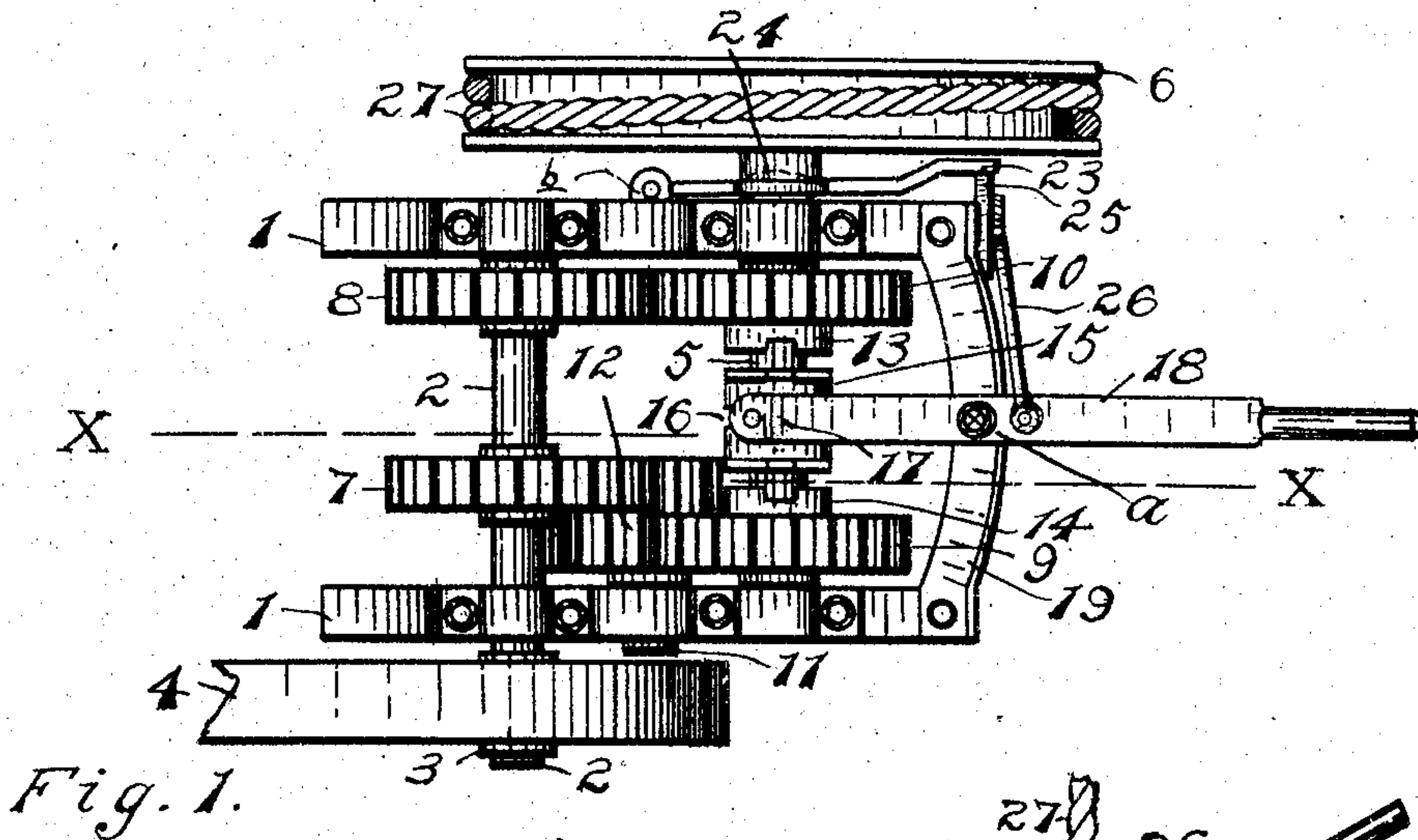
No. 780,733.

PATENTED JAN. 24, 1905.

A. M. SMITH.


REVERSE MECHANISM FOR HOISTING DEVICES.

APPLICATION FILED OCT. 15, 1903. RENEWED NOV. 2, 1904.



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ADAM M. SMITH, OF DIXON, ILLINOIS, ASSIGNOR OF ONE-HALF TO ADAM S. DUNLAP, OF DIXON, ILLINOIS.

REVERSE MECHANISM FOR HOISTING DEVICES.

SPECIFICATION forming part of Letters Patent No. 780,733, dated January 24, 1905.

Application filed October 15, 1903. Renewed November 2, 1904. Serial No. 231,112.

To all whom it may concern:

Be it known that I, ADAM M. SMITH, a citizen of the United States, residing at Dixon, in the county of Lee and State of Illinois, have
 5 invented certain new and useful Improvements in Reverse Mechanisms for Hoisting Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as
 10 it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention has reference to reverse mechanism for hoisting devices, and relates specially to that class of such devices wherein
 15 two elevators are alternately raised and lowered by the use of one cable.

By the use of my invention it is possible to
 20 have the power applied continuously and in the same direction, as is desirable in machines of this class, such power being applied to the operating-cable of the hoisting device in either direction at will by means of said invention,
 25 as will more fully appear in the following specification thereof.

In the drawings, Figure 1 is a plan view of my device. Fig. 2 is a vertical section thereof in the line *xx* of Fig. 1 looking in the direction of the operating-cable. Fig. 3 is a
 30 similar view looking in the contrary direction. Fig. 4 is a detail showing the brake-operating mechanism.

1 is the frame of the machine, in which is
 35 journaled the main shaft 2, having on one end a pulley 3, suitably operated by a belt 4. Journaled in the frame 1, parallel with the shaft 2 and in the same horizontal plane therewith, is a shaft 5, on the outer end of which
 40 is fixed the cable-pulley 6. On the shaft 2 are fixed two similar gear-wheels 7 and 8, and on the shaft 5 are loosely supported two similar gear-wheels 9 and 10, the wheel 10 meshing with the wheel 8 on the shaft 2. On a short shaft 11 in
 45 the frame 1 is loosely supported a broad gear-wheel 12, meshing at all times with both of the wheels 7 and 9. It will be seen that by this construction by the operation of the shaft 2 all of said gear-wheels will be caused to rotate,

but the wheels 9 and 10 in opposite directions. 50
 The inner faces of the wheels 9 and 10 are provided with clutches 13 and 14, adapted to independently engage a double clutch 15, feathered on the shaft 5, so as to move longitudinally thereof. The clutch 15 is provided with
 55 an annular groove 16, engaged by pins in a yoke 17 on the end of a lever 18, fulcrumed, as at *a*, on a cross-piece 19, secured on the frame 1. On the under side of the lever 18 is a rod 20, having at its lower end a spring-actuated catch 21, engaging a recess 22 in the cross-piece 19. When thus engaged, the
 60 clutch 16 is held centrally of the gears 9 and 10, and neither of such gears is in contact therewith. By releasing the catch and operating the lever 18 the clutch 15 can be thrown
 65 into engagement with one or other of the wheels 9 and 10, as desired, whereby the shaft 5 is caused to rotate in one or the other direction. 70

Between the frame 1 and the cable-pulley 6 is interposed a lever 23, pivoted to the frame, as at *b*. Supported in such lever so as to encircle the shaft 5 is a collar 24, having its
 75 outer face convexed to correspond with a concave depression in the inner face of the hub of the wheel 6. (Shown in dotted lines.)

25 is a cam secured on the frame 1 and connected with the lever 18 by means of a rod 26. The free end of the lever 23 is in contact with the periphery of the cam 25, which is of such conformation that when the lever
 80 18 is centrally locked the collar 24 is forced into contact with the hub of the wheel 6, such wheel being held from movement by the friction thereof. When the lever 18 is thrown to either side, it causes a movement of the cam 25, bringing opposite the end of the lever 23 an offset in the edge of the cam, which permits a release of the collar 24 and wheel 6. 90

27 represents a small section of a cable, one end of which runs upwardly over a pulley and is secured to one elevator and the other end of which extends similarly over another pulley to another elevator. (Not shown.) When one of
 95 the elevators is loaded and ready to be hoisted, the clutch 15 is thrown into engagement with the proper gear on the shaft 5 and the elevator

ascends. At the same time the other elevator descends, and when it reaches the ground the clutch 15 is disengaged. When the elevators are again ready to be moved, the clutch is
 5 thrown into engagement with the other gear on the shaft 5 and the movement of such shaft and of the cable 27 is reversed. It will be seen that by this means the movement of the shaft 5 can be repeatedly reversed and
 10 the elevators repeatedly raised and lowered. When a loaded elevator is raised to the desired height and the clutch 15 locked in central position, as shown in Fig. 1, there is danger of such loaded elevator again descending to
 15 the bottom. It is to prevent any such contingency that I provide the brake device above set forth, which, as has been heretofore stated, is in operation whenever the clutch is so centrally located and out of engagement
 20 with the gears.

I do not wish to be understood as limiting the use of my device to the particular mechanism herein set forth, as the same may be found to be specially adapted to use in con-
 25 nection with other devices wherein a reversal of the mechanism is to be desired or necessary.

What I claim as my invention, and desire to secure by Letters Patent of the United States,
 30 is—

1. In mechanism of the class named, the combination of the shaft 5; the pulley 6, fixed thereon; the clutch 15, secured on the shaft 5 so as to move longitudinally thereof; the suit-
 35 ably-mounted lever 18, engaging the clutch 15; the lever 23, having a collar 24, adapted to engage the hub of the wheel 6; the cam 25, secured on the frame 1, and engaged by the lever 23; the rod 26, connecting such cam with
 40 the lever 18, and means for reversing the direction of rotation of the shaft 5 in conjunc-

tion with the operation of the clutch 15, substantially as described.

2. In mechanism of the class named, the combination of the rotary shaft 5; the hoisting- 45 pulley 6, fixed thereon; the clutch-gears 9 and 10, spaced apart on the shaft 5, and adapted to rotate freely thereon; the clutch 15, normally out of engagement with the gears 9 and 10; the lever 23, adapted to engage the pulley 50 6; the cam 25, holding the lever 23 normally in engagement with the pulley 6; means for rotating the gears 9 and 10 in contrary directions, and means for causing the clutch 15 to engage one or other of the gears 9 and 10, 55 and simultaneously operate the cam 25 to release the lever 23 from contact with the pulley 6, substantially as shown.

3. In mechanism of the class named, the combination of the rotary shaft 5; the pulley 6, 60 fixed thereon; the clutch 15, secured on the shaft 5, so as to move longitudinally thereof; the suitably-mounted lever 18, engaging the clutch 15; the lever 23, adapted to engage the pulley 6; the cam 25, secured to the frame, 65 and engaging the lever 23; the rod 26, connecting such cam with the lever 18; means for reversing the direction of rotation of the shaft 5 in conjunction with the operation of the clutch 15; and means for locking the lever 18 70 in position to hold the clutch 15 from engagement with the mechanism for actuating the shaft 5, and coincidently therewith hold the lever 23 in contact with the pulley 6, substantially as set forth. 75

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

ADAM M. SMITH.

Witnesses:

W. H. SMITH,
 W. P. PALMER.