

No. 734,249.

PATENTED JULY 21, 1903.

E. WRIGHT.  
ELEVATOR MECHANISM.

APPLICATION FILED DEC. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

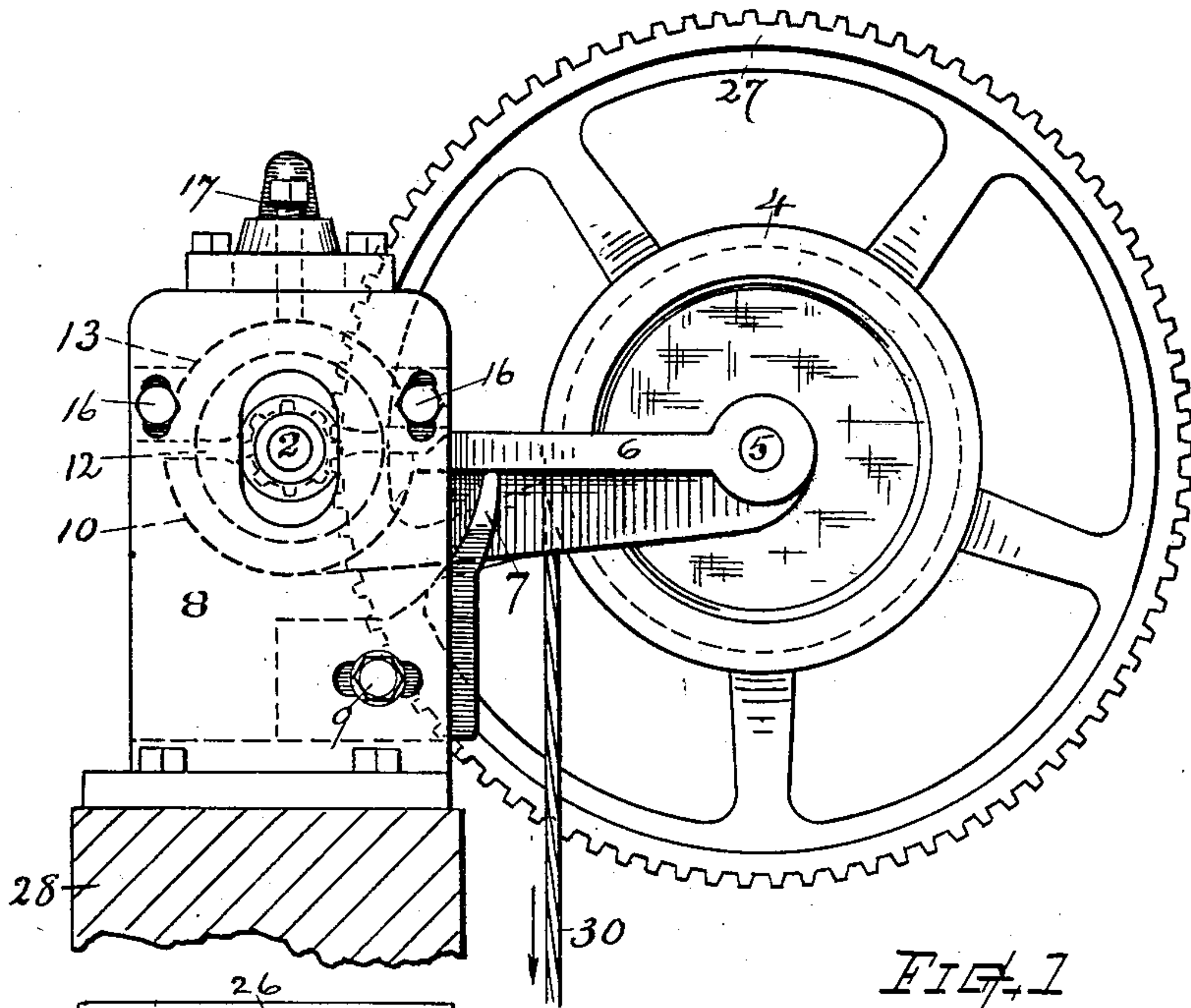


FIG. 1

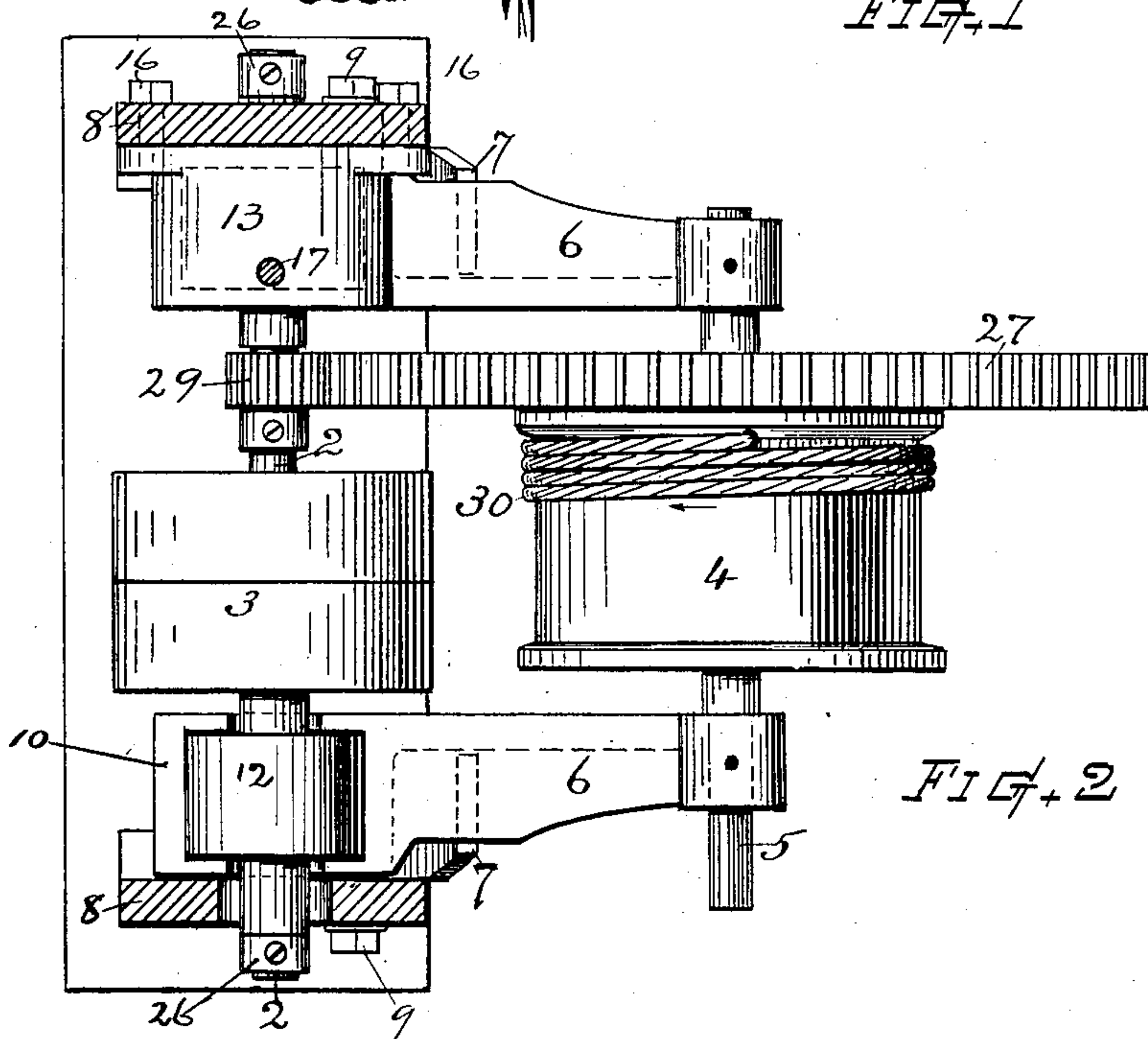


FIG. 2

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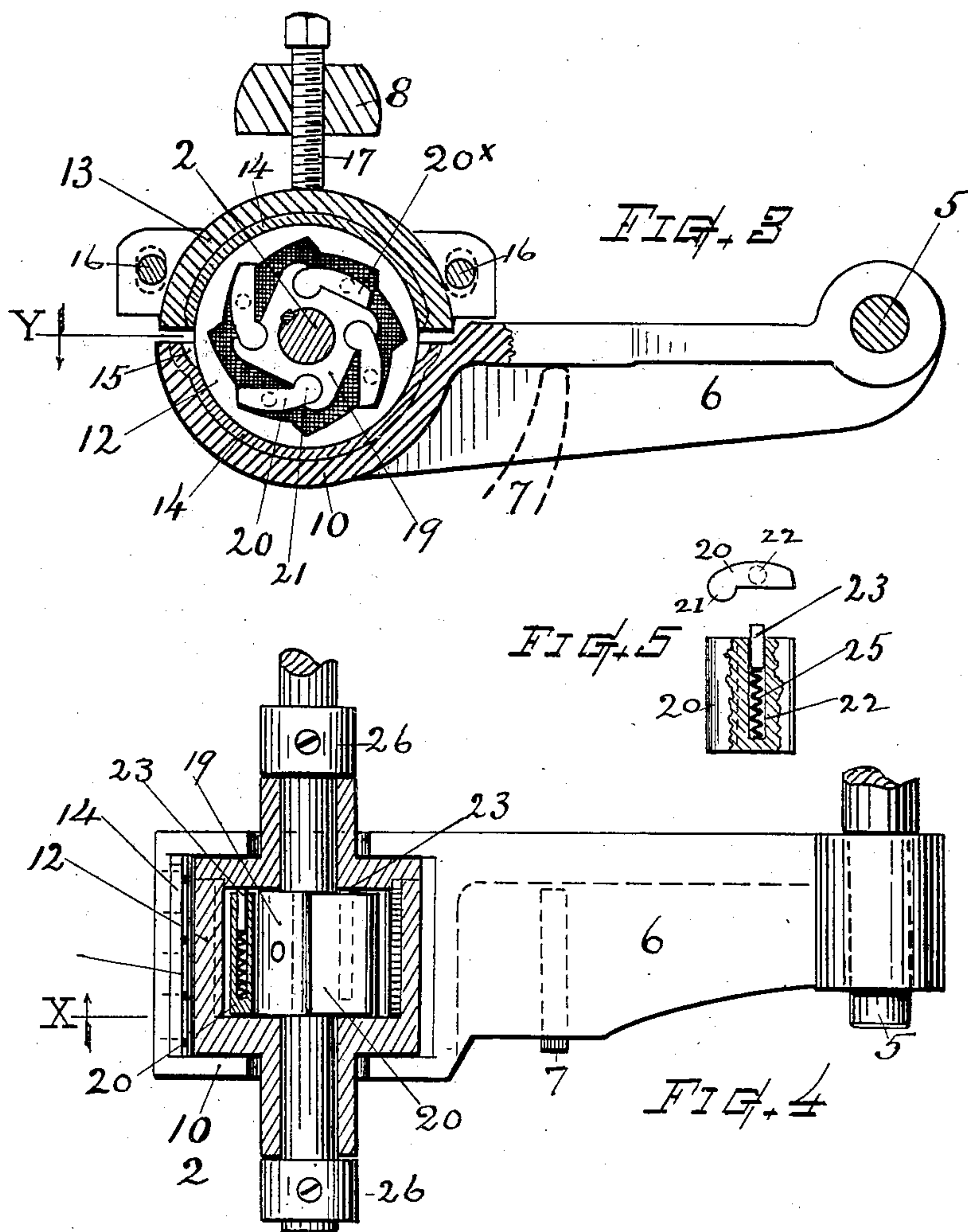
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2 SHEETS—SHEET 2.



Witnesses—  
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# UNITED STATES PATENT OFFICE.

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## ELEVATOR MECHANISM.

SPECIFICATION forming part of Letters Patent No. 734,249, dated July 21, 1903.

Application filed December 6, 1902. Serial No. 134,163. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD WRIGHT, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Elevator Mechanism, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of this invention is to provide a simple, inexpensive, and efficient elevator or lift mechanism in which the weight of the car and carried load will act to create a friction to hold the car or its winding-drum from running down or unassistedly descending, said friction being effective in proportional relation to the amount of the load at any degree of weight or time of action.

To this end my invention consists in a mechanism constructed, combined, and organized for operation substantially as explained in the following detailed description and illustrated in the drawings, wherein—

Figure 1 represents a side view of an elevator mechanism embodying my invention. Fig. 2 is a plan view of the same, some of the parts being shown in section. Fig. 3 is a fragmentary sectional view at line X on Fig. 4, showing the frictional and ratchet devices. Fig. 4 is a horizontal sectional view of the same at line Y on Fig. 3, and Fig. 5 shows in detail the construction of one of the noiseless-acting pawls.

Referring to the drawings, the numeral 2 indicates the operating-shaft, to which the motive power is applied in any suitable manner, in the present instance by tight and loose pulleys, which are arranged thereon, as at 3, for a driving-belt.

The numeral 4 indicates a winding-drum fixed on a shaft or axle 5, that is mounted to turn in bearings upon the ends of a pair of horizontal carrier bars, arms, or levers 6, that are supported and fulcrumed on brackets or supporters 7, attached to a suitable frame 8. Said fulcrum-brackets are preferably formed with an upwardly-projecting portion having a narrow bearing edge that engages beneath the web of the carrier-bar and supports the

same at an intermediate position in the length thereof. The bracket 7 is attached to the frame 8 by the bolt 9 and is best made adjustable in a direction longitudinal of the carrier bar or lever for varying the leverage thereof. The inner end of each carrier-bar is provided with a semicylindrical friction-box 10, that embraces a part of the exterior surface of a friction-cylinder 12, mounted on the operating-shaft and arranged to turn freely thereon. The cylinders 12 are provided internally with ratchet-teeth, as best shown in Fig. 3.

The two sets of carrier-bars, cylinders, and friction devices therefor being of similar construction a description of one will suffice for giving an understanding of both.

Connected with the housing-frame 8 there is a semicylindrical box 13, embracing the surface of the friction-cylinder 12 opposite to the box 10 of the carrier-lever 6. The interior faces of the boxes 10 and 13 are best provided with a lining 14, of leather or other suitable frictional material, that acts against the surface of the cylinder. A pocket or space 15 for lubricant is preferably provided across the upper edge of the friction-box 10.

The friction bearing-box 13 is attached to the frame by screws or bolts 16, which hold said box rigidly in position, but by means of slotted openings permit slight adjustment of the box, and a resistance member or screw 17, arranged through or carried by the cross-bar of the frame, impinges against the said box and assists in holding it against the upward pressure exerted by the carrier-bar leverage.

Within the cylinder 12 and fixed on the shaft 2 by a spline, key, or pin there is a hub 19, having a plurality of pawls 20 hingedly mounted thereon, which can swing outward to engage at their ends with the ratchets on the inner face of the cylinder. Said pawls are made of a width that approximately corresponds with the interior length of the cylinder and are formed with a hinging-head 21, (see Figs. 3 and 5,) that fits in a longitudinal recess in the hub. A recess or transverse hole 22 is formed in the pawl, within which I arrange an endwise-movable pin or stud 23 and a spring 25, that presses said pin outward, so that its end bears against the head



of the cylinder at the interior thereof, thereby rendering the action of the pawl sure and noiseless. Collars 26, arranged on the shaft, keep the cylinders in proper endwise relation thereon. Large openings are formed in the frame-housings for the play of the operating-shaft 2, which shaft is supported by the friction-boxes 10 and 13, as bearings together with the friction-cylinders 12. The friction-cylinders can be made of any suitable length, and the width of the pawls can be ample to give any desired amount of strength.

A large gear 27 is fixed on the winding-drum axle, which gear meshes with a pinion 29, fixed on the operating-shaft. The rope 30, that is wound upon the drum, extends to and is connected with the elevator car or platform, (not shown,) which, it will be understood, may be of any suitable kind and arranged in the usual or well-known manner to move up and down in a well or guideway, the weight of the car and its load, more or less, being exerted on the rope 30 in the direction indicated by the arrow on Fig. 1.

The described mechanism may be erected upon a beam 28 at the top of the elevator-way, or it may be otherwise placed and the rope carried to the elevator-car under and around suitable sheaves in any manner that will give the strain on the rope, in relation to the winding-drum and levers, in the direction indicated.

The operation is as follows: When the load is being lifted or elevated, all of the pawls fall inward against the hub, as indicated by the position of the pawl 20<sup>x</sup> in Fig. 3, thus allowing the cylinder 12 to stand non-rotative within the friction-boxes, while the pawls pass by rotation of the shaft noiselessly around within the ratcheted interior, being kept in proper relation and quiet by reason of the action of their spring-pressed pins or studs 23 against the cylinder-heads. When the car or load is descending, then the pawls throw outward and lock the friction-cylinder to the shaft 2, so that said cylinder must rotate within the friction-boxes 10 and 13, between the frictional surfaces of which the cylinder is gripped with a force proportional to the amount of load carried by the elevating-rope, the friction always being of such degree that it requires the application of some amount of motor-power to the operating-shaft to effect the descending movement of the elevator. Hence the mechanism will stand idle at any position and with any amount of load thereon without running down by the weight exerted on the rope.

What I claim, and desire to secure by Letters Patent, is—

1. In an elevator or lift mechanism, in combination, substantially as described, a supporting-frame having fulcrum-brackets, an operating-shaft carrying a pinion, means for applying power to said shaft, friction-cylinders mounted on said shaft, a winding-drum and rope, a winding-drum axle having a gear

that meshes with said pinion, carrier bars or levers fulcrumed on said brackets and provided with journal-bearings for the drum-axle and friction-boxes that embrace said cylinders, stationary friction-boxes fixed to the frame and embracing said cylinders in opposition to the carrier-bars, pawl-hinging hubs fixed to the shaft within the cylinders, and noiseless pawls supported on said hubs and adapted for engaging ratchets on the interior of the cylinders, for the purposes set forth.

2. In combination with the operating-shaft, the loosely-rotatable internally-ratcheted friction-cylinder mounted thereon, a hub fixed on said shaft within said cylinder, a plurality of pawls hingedly mounted on said hub, their width approximately the length of the interior of said cylinder, laterally-impinging spring-pressed friction-studs arranged in said pawls, friction grip devices embracing the exterior of said cylinder, and means for bringing the weight of the elevator-car and load upon said friction-grip.

3. In an elevator mechanism of the character described, the combination with the operating-shaft friction devices, winding-drum, drum-axle, and carrier-bars having the drum-axle bearings and friction-boxes thereon, of the friction-brackets attached to the frame, and means for effecting adjustment of said brackets for varying the leverage of the carrier-bars.

4. In an elevator mechanism of the character described, the combination with the winding-drum, drum-axle, fulcrum-supported carrier-bars provided with the drum-axle bearings and friction-boxes at their respective ends, and the operating-shaft provided with friction-cylinders supported in the friction-boxes on said carrier-bars; of the opposed stationary friction boxes or bearers attached to the frame-housings and respectively overlying said friction-cylinders, means for effecting adjustment of said friction-boxes on the frame, and a resistance screw or member carried upon the frame above each box and impinging against said friction-box in opposition to the pressure of the carrier-bar.

5. In a mechanism of the character described, in combination with the operating-shaft, the internally-ratcheted friction-cylinder loosely mounted thereon, the fulcrum-supported carrier-bar, and friction-boxes embracing the exterior surface of said friction-cylinder; of the pawl-hinging hub fixed on said shaft within said friction-cylinder, the swinging pawl or pawls hinged to said hub and adapted for engaging the cylinder-ratchets, said pawls individually provided with a transverse hole, and a presser-spring and endwise-movable pin arranged in said hole, said pin projecting against the cylinder-head, for the purpose set forth.

6. In a mechanism of the character described, the combination, with the operating-shaft having the friction-cylinders and noiseless ratchet devices thereon, the winding-



drum, drum-axle, and gears connecting said shaft and drum-axle; of the fulcrum-supported carrier-bars having friction-boxes thereon, and the opposite friction-boxes fixed on the 5 frame, said friction-boxes each provided with a semicylindric lining of leather or suitable material that acts against the exterior surface of said friction-cylinders, substantially as set forth.

10 7. In a mechanism of the character described, in combination, with the operating-shaft, the friction-cylinder, the stationary friction-box, the elevating or lifting appli-

ances and winding-axle; of a fulcrum-supported carrier-bar having a friction-box pro- 15 vided with a semicylindric lining for embracing said friction-cylinder, and a transverse pocket or lubricant-space across the end thereof, substantially as set forth.

Witness my hand this 1st day of December, 20 1902.

EDWARD WRIGHT.

Witnesses:

CHAS. H. BURLEIGH,  
AARON F. STOWE.