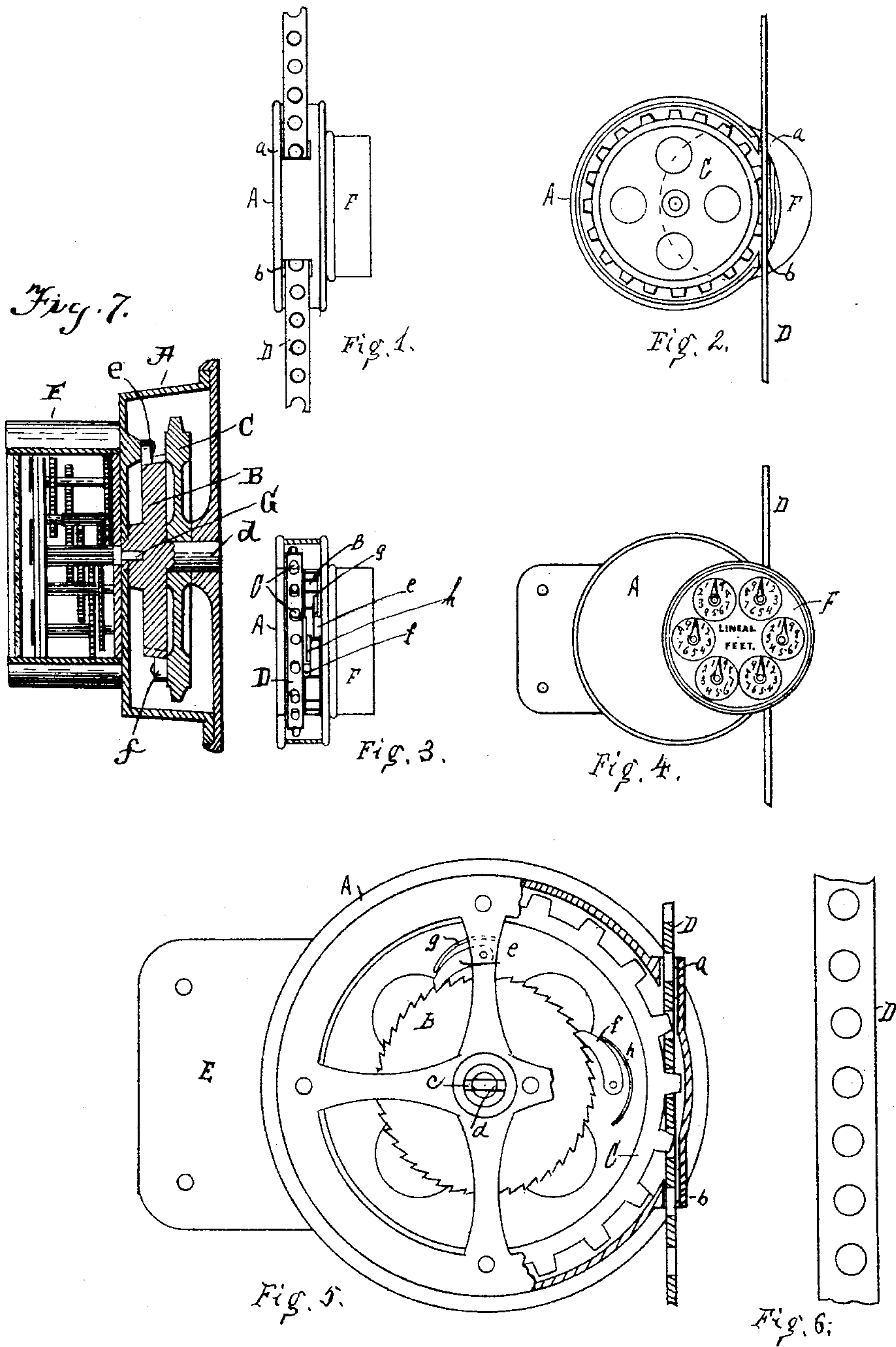


(No Model.)

P. D. CRULL.  
REGISTER ACTUATING MECHANISM.

No. 538,240.

Patented Apr. 30, 1895.



WITNESSES.

J. Richardson  
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# UNITED STATES PATENT OFFICE.

PETER D. CRULL, OF HAMILTON, OHIO, ASSIGNOR TO PHILIP G. BERRY,  
OF SAME PLACE.

## REGISTER-ACTUATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 538,240, dated April 30, 1895.

Application filed February 1, 1894. Serial No. 498,699. (No model.)

*To all whom it may concern:*

Be it known that I, PETER D. CRULL, of Hamilton, Ohio, have invented certain new and useful Improvements in Register-Actuating Mechanism, of which the following is a specification.

My invention relates to that class of actuating devices that are adapted to propel the registers of hydraulic elevators, and the object of my improvement is to prevent tampering that might falsify the count of the register, and to compensate for the lateral variations in the motion of the elevator cab due to excessive wear or careless fitting of the parts. These objects are attained in the following described manner, as illustrated in the accompanying drawings, in which—

Figure 1 illustrates an end elevation of the device with register attached, and shows a portion of the driving strap; Fig. 2, a rear view of its interior; Fig. 3, an edge view of its interior; Fig. 4, a front elevation; Fig. 5, a front view of its interior, and Fig. 6 a portion of the driving strap; and Fig. 7 is a sectional view of the device taken through the center of the case.

In the drawings A represents a closed metal case, preferably cylindrical in form, and constructed with bosses on its side that contain slots *a* and *b* on a line extended tangentially through the case. Ratchet wheel B is journaled within the case with its front axis *c* projecting through the face of the case, and its rear axis stepped or journaled in the base of the case. The front of the axis is provided with a transverse slot *d* in which the main or first journal of the register is coupled by means of the flat projection G. Sprocket wheel C is loosely journaled on the rear axis of the ratchet wheel and within the case. Said wheels B and C may be each rotated independently of the other. Pawls *e* and *f* are located within the case and are actuated by the respective springs *g* and *h* to engage with the teeth on the ratchet wheel B. Pawl *e* is pivotally secured on the inner side of the face of the case and pawl *f* is pivotally secured on the face of the sprocket wheel C. Said pawls are permitted to pass each other without contact dur-

ing the rotation of the sprocket wheel as they move in different planes.

Driving strap D consists of a thin narrow band or strap of flexible metal, preferably steel. It is perforated throughout its length by a series of equidistant openings and is adapted to rotate the sprocket wheel by successively engaging the sprockets thereof in said openings. Said strap is admitted to engagement with the sprocket wheel through the slots in the case, and spans an elevator shaft vertically, under some tension in which position it is securely fastened by its ends to the walls or other appurtenances of the shaft. The smooth even surface of the strap permits the case to be reciprocated lengthwise thereon easily and smoothly while the size of the strap substantially fills the space of the slots and prevents the insertion of a wire or other instrument to the interior of the case, by which the pawls might be disengaged and the count of the register falsified.

The case A is fastened to the movable cab or platform of the elevator by means of flange E and in the line of the driving strap. As the cab is reciprocated up and down, the sprocket wheel is rotated by the driving strap in opposite directions respectively. During the rotation of the sprocket wheel C in one direction it actuates the ratchet wheel by means of the engagement of pawl *f* therewith. In the opposite direction of rotation the pawl *f* rides idly over the teeth and the ratchet wheel is retained motionless by the engagement therewith of pawl *e*.

Any of the well known forms of counters or registers may be coupled to the axis of the ratchet wheel and be actuated either by the upward or downward motion of the cab to indicate the distance of its travel.

The relative ratio of the parts of the register or of the actuating device may be such that the pointers of the register will count the distance traveled by the cab in lineal feet, from which may be computed the quantity of water, say in gallons, that has been consumed in its propulsion.

One form of register F is shown in the drawings as attached to the face of the case in such



position as to be operated by the axis of the ratchet wheel, whence motion is imparted through a train of gear wheels to the respective pointers on its face that move in such relation to each other as to indicate on the dials the number of rotations of the ratchet wheel or the distance in feet traveled by the cab. The ordinary rack and pinion device necessitates the cab to travel on its ways with such precision, to keep the pinion in engagement with the rack throughout its length, that it is easily deranged and its parts accessible to tampering.

The use of a cable or rope on a sheave is not sufficiently positive in its action, and is liable to slip and to falsify the count of the register.

A sprocket or other chain, owing to irregular surfaces, requires such width of slots for its passage as to admit the insertion of tampering instruments to the pawls.

The flexible metallic driving strap obviates these objections. It is positive in its action, occupies the entire space of the slots to the interior of the case, permits the case to reciprocate smoothly thereon, and is sufficiently flexible to accommodate itself to the lateral variations in the motion of the platform.

By making the parts as above described they can be made very cheaply as they can be cast with most of the holes and the slots *a* and *b* in them so as not to need further handling except to drill and tap the few holes required to hold the parts together.

In assembling the parts the register is secured to the face of the case, preferably so that it will project beyond the edge of the case over the slots through which the strap passes, thereby throwing the face of the register out from the elevator car so that it can be readily seen. The end of the shaft of the first register-wheel projects loosely through the central opening of the case and is provided with means for being detachably secured to the end of the axle of the ratchet wheel B. The ratchet wheel is then put in place with the pawl *g* in engagement therewith and the sprocket wheel C is placed on the rear axis with the pawl *f* in engagement with the ratchet wheel. The base of the case is then secured in place and the device is ready to be secured upon the car or other part to which it is to be applied by means of the flange E. As the parts are preferably secured together by means of screws which are inserted from the rear it is impossible to remove the register or gain access to its interior for changing or falsifying it except by taking

the entire device apart which is very difficult owing to the fact that the heads of the screws are toward the wall of the elevator shaft.

Having fully described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a case, one side of which is provided with slots, of a ratchet wheel journaled therein, the front axis of which projects loosely through the face of the case, a sprocket wheel journaled loosely upon the rear axis of the wheel, a pawl upon the face of the case and a pawl upon the sprocket wheel, each in engagement with the ratchet wheel and adapted to move in different planes, and a register detachably secured to the face of the case and to the axis of the ratchet wheel, substantially as set forth.

2. The combination, with a base, provided with a flange, of a substantially cylindrical case secured thereto, the wall of which is slotted at two points, in line with each other, a ratchet wheel journaled within the case, the front axis of which is slotted transversely, a sprocket wheel mounted loosely upon the rear axis of the ratchet wheel and having its periphery substantially in a line with the slots in the wall of the case, means for preventing the ratchet wheel moving except in one direction, a register upon the face of the case, the shaft of the first wheel of which is provided with a flat projection to fit within the slot of the axis of the ratchet wheel, substantially as set forth.

3. The combination, with a case of cylindrical form, the side or wall of which is provided with two slots extending from one edge substantially to the opposite edge, of a sprocket wheel journaled within the case, the periphery of which lies in a line between the two slots, a dial for registering the rotation of the sprocket wheel in one direction, and a flat strap through the slots, the edges of which are continuous or unbroken and the central portion is provided with perforations, the width and thickness of the strap being such as to substantially fill the slot, and the teeth upon the sprocket wheel being adapted to fit within the perforations of the strap, the portion of the case in front of the strap being continuous or unbroken, whereby access to the interior of the case therethrough is prevented, substantially as set forth.

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Witnesses:

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