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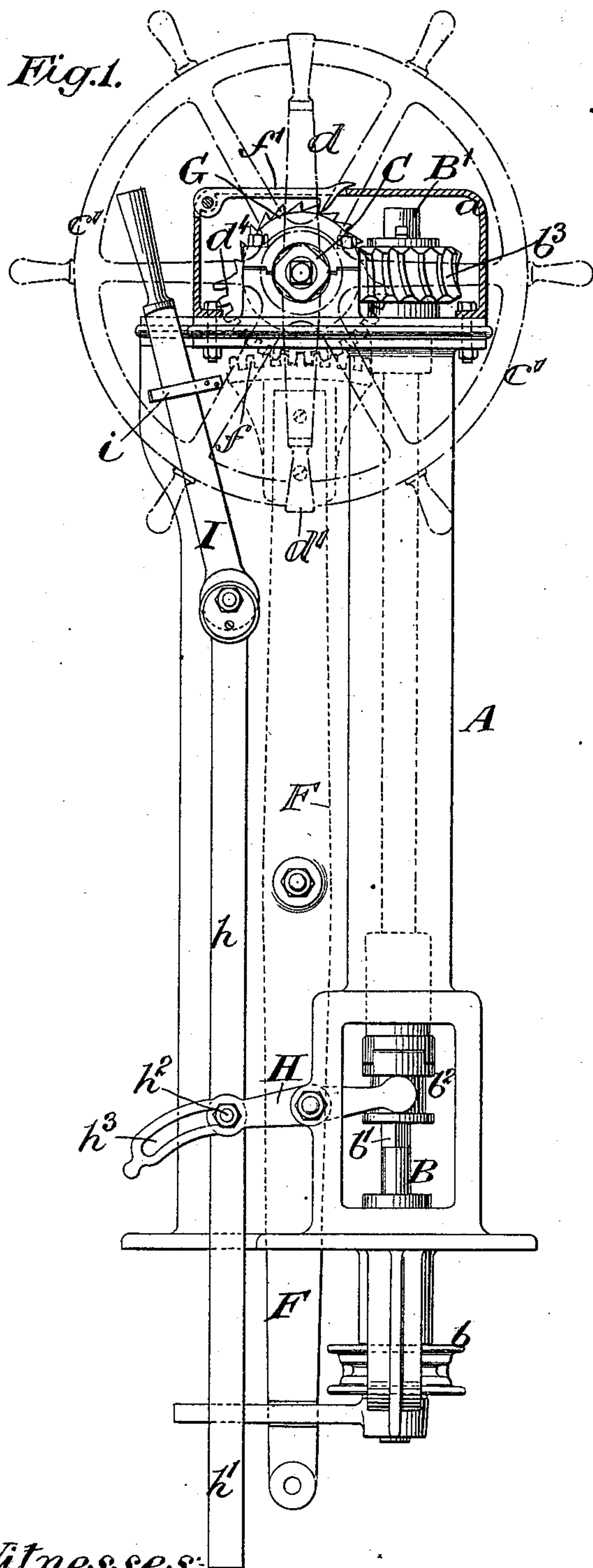
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J. JONSON.

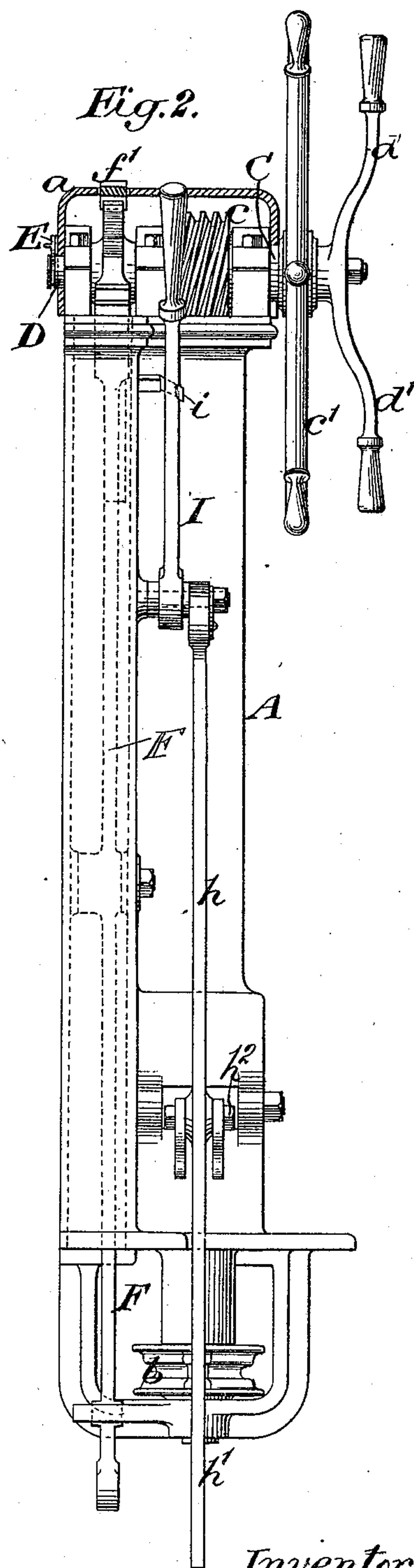
GRIP AND BRAKE OPERATING MECHANISM.

No. 570,023.

Patented Oct. 27, 1896.



Witnesses:
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H. B. Sward.



Inventor:
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by attorneys
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(No Model.)

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Fig. 3.

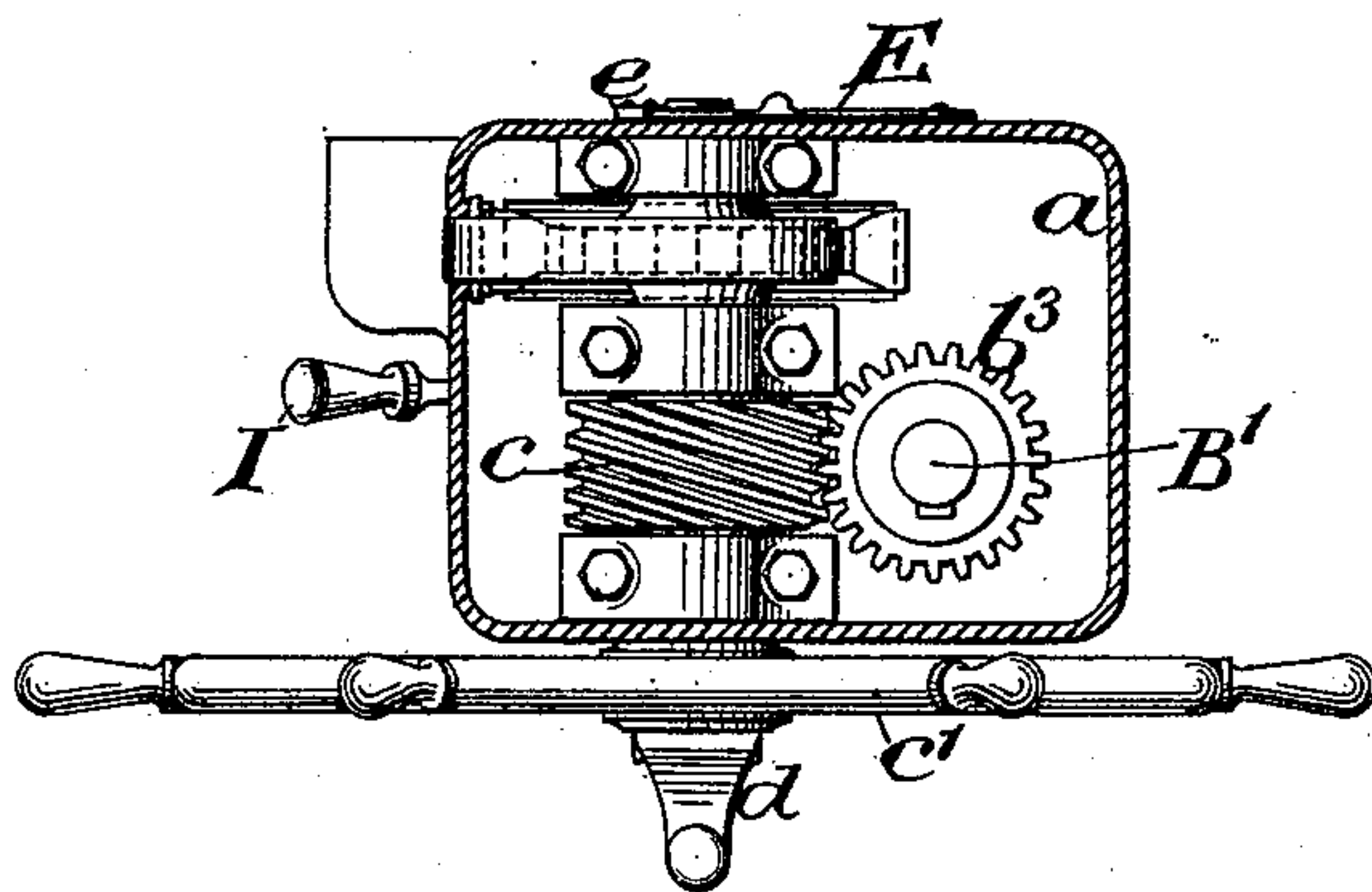


Fig. 4.

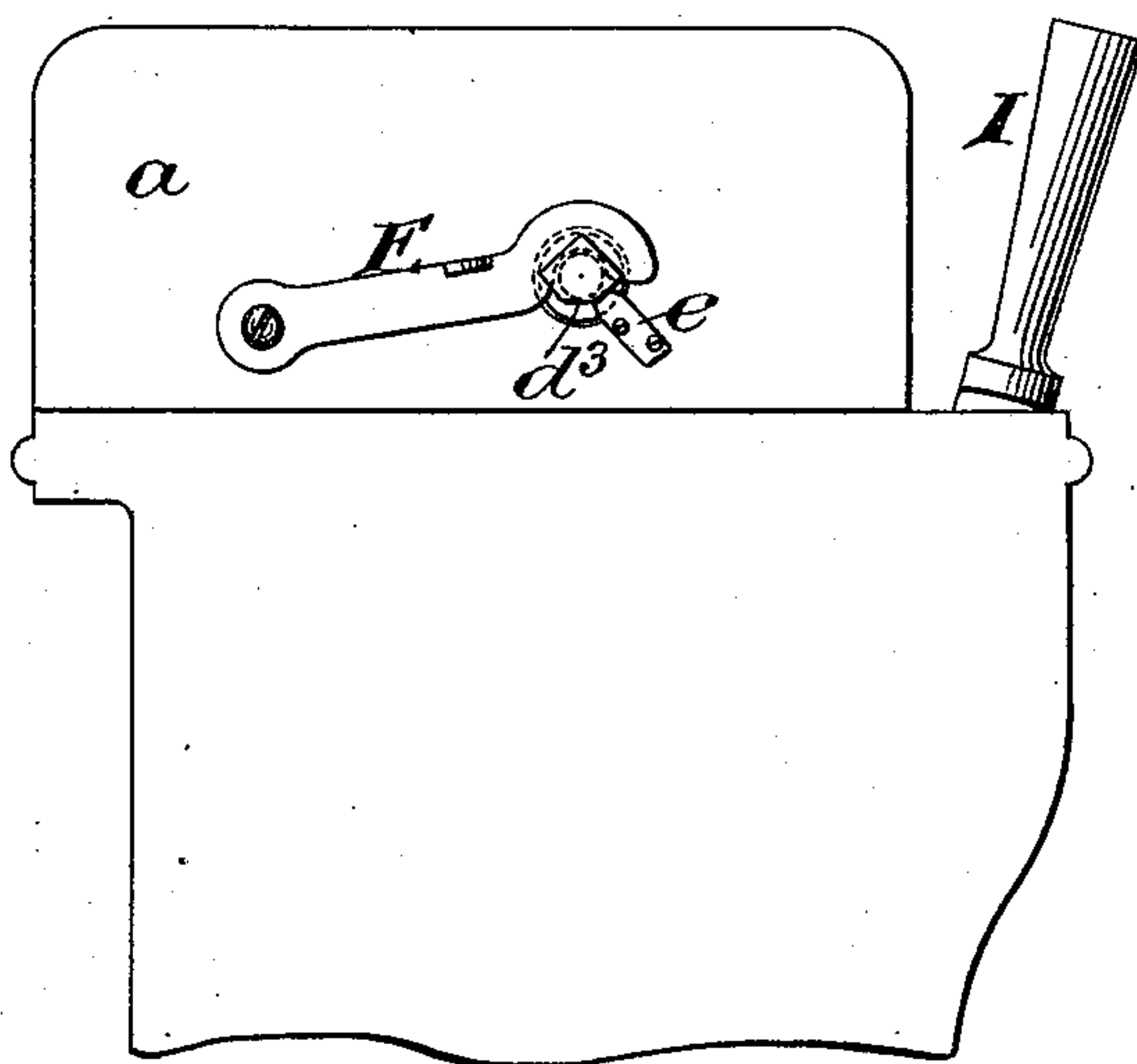
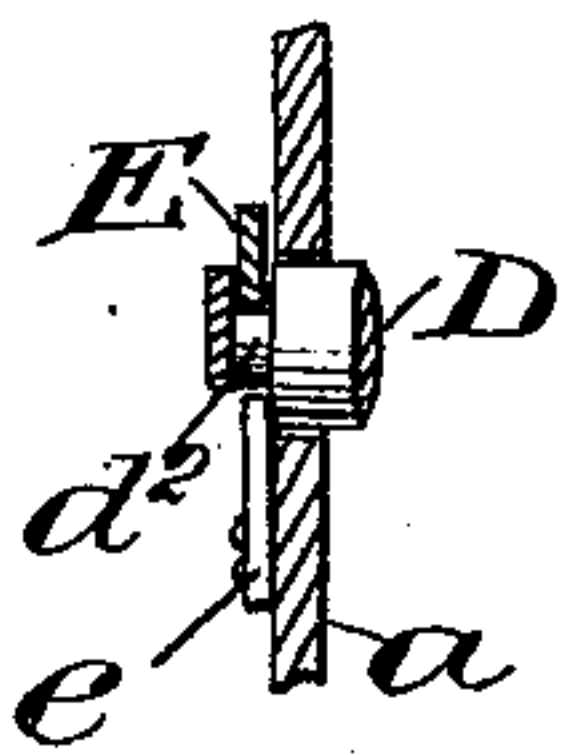


Fig. 5.



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(No Model.)

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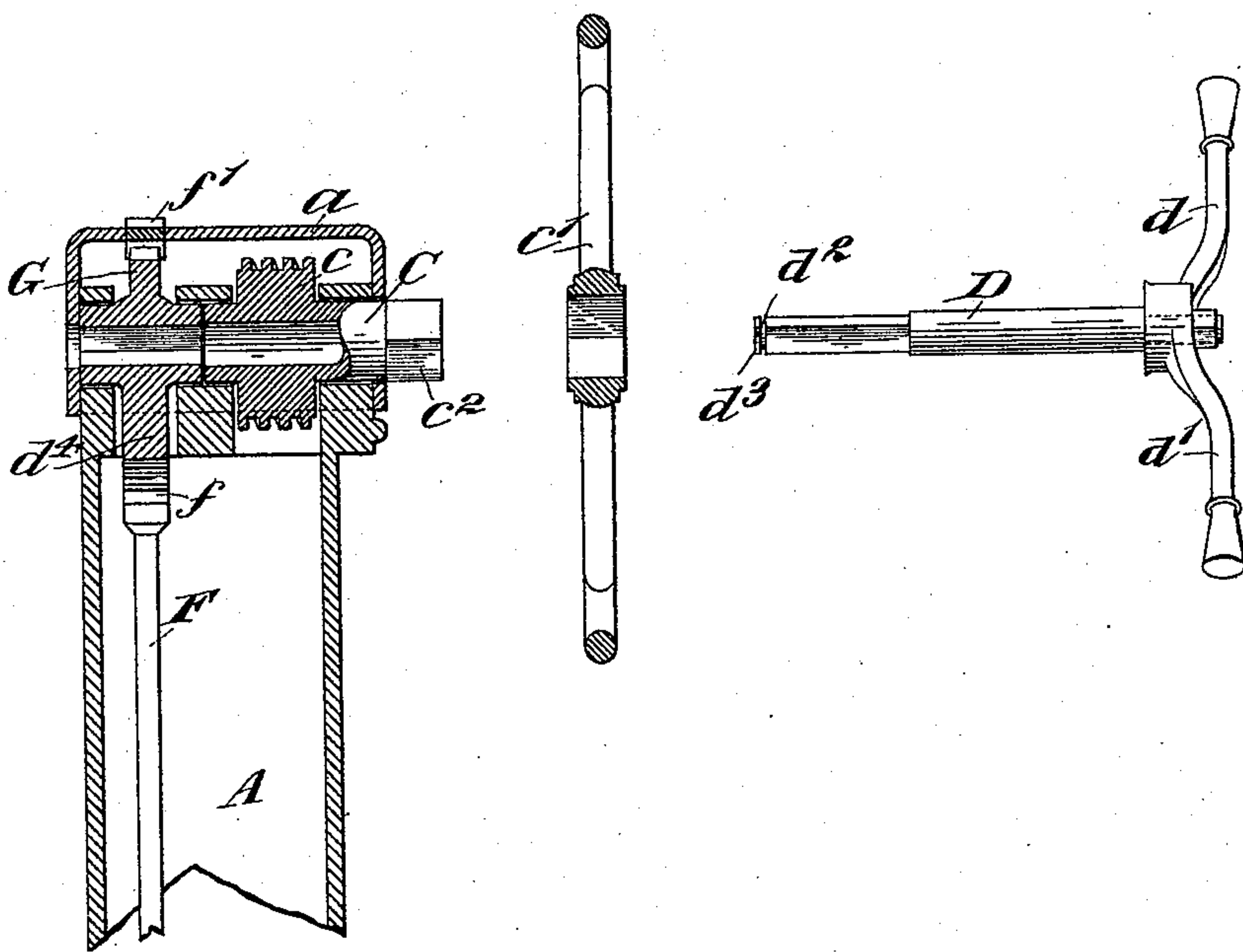
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Fig. 6.



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UNITED STATES PATENT OFFICE.

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GRIP AND BRAKE OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 570,023, dated October 27, 1896.

Application filed November 7, 1895. Serial No. 568,159. (No model.)

To all whom it may concern:

Be it known that I, JULIUS JONSON, of the city and county of New York, in the State of New York, have invented a new and useful
5 Improvement in Grip and Brake Operating Mechanisms for Cable-Railways, of which the following is a specification.

My invention relates to an improvement in grip and brake operating mechanisms for cable-railways in which provision is made for
10 releasing the grip with great facility and promptly operating the brake and for preventing any liability of the brake being left set when the operating-wheels are transferred
15 from one end to the other of the car.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the machine in front
20 elevation, the casing for inclosing the worm-gear being shown in section. Fig. 2 is a view in side elevation, the casing being shown in section. Fig. 3 is a top plan view, the casing being shown in section. Fig. 4 is a partial
25 rear view. Fig. 5 is a sectional view in detail, upon an enlarged scale, of the rear end of the brake-operating shaft and its fastenings; and Fig. 6 is a partial vertical central
30 section from front to rear through the machine, the grip-shaft-operating wheel and the brake-shaft and its operating-handles being shown removed therefrom.

The standard for supporting the operating parts is denoted by A, and is surmounted by
35 a cap or casing *a* for inclosing the operating parts in the immediate vicinity of the operating-shaft.

A vertical shaft for winding up and unwinding the connection which closes and opens the
40 grip is formed in sections, the lower section B, provided with a winding-pulley *b*, being mounted in the base of the standard and provided with an annular portion *b'*, on which a clutch *b²* slides for the purpose of locking the
45 shaft-section B and releasing it from the upper shaft-section B', journaled in the upper portion of the standard A.

The upper portion B' is provided with a worm-wheel *b³*, which engages a worm *c*, carried by a hollow horizontal grip-operating
50 shaft C, mounted in suitable bearings at the head of the standard and forming a bearing for a removable brake-operating shaft D, which extends centrally through the shaft C. The shaft C is provided with a removable
55 shaft-operating wheel *c'*, which wheel in the present instance engages a squared portion *c²* on the end of the said shaft C. The brake-operating shaft D is provided with a pair of oppositely-disposed handles *d d'*, which han-
60 dles are securely fastened to the said brake-operating shaft.

The handles for operating the brake-shaft are intended, when the parts are assembled, to occupy a position in front of and in prox-
65 imity to the grip-wheel *c'*, as clearly shown in Figs. 1 and 2, so that the hand of the operator at the moment of operating the grip-wheel *c'* will be in position to grasp one or the other of the handles *d d'* of the brake the
70 moment the wheel *c'* is released.

The brake-operating shaft D is removably secured in position by means of a latch E, pivoted to the rear of the casing *a* and adapted
75 at its free end to rest, under the influence of gravity, in the annular groove *d²*, formed in the rear projecting end of the shaft D. (See Fig. 5.) When locked in position, the shaft D with the handles *d d'* thereon also lock the grip-operating wheel *c'* in position on its
80 shaft, and when the latch E is thrown back and the shaft D released the wheel *c'* may be removed simultaneously with the removal of the shaft D for adjustment on the standard at the opposite end of the car. There is,
85 however, one position only in the rotary movement of the shaft D in which it can be withdrawn from its operative position, and that is when it is rotated into a position which will release the brake. This I provide for in
90 the present instance by fixing a stop *e* to the rear of the casing *a* with its end bracket within the annular groove *d²* in the end of the shaft and cutting away the wall to the

rear of the groove d^2 , as shown at d^3 , Fig. 4, for a short distance, so that no matter whether the latch E be removed or not the shaft will still be held against longitudinal displacement by the stop e until the shaft is turned in a position to bring the cut-away portion of the shaft d^3 opposite the end of the stop. This cut-away portion is so located with respect to the brake attachment that when the shaft D is turned to bring the cut-away portion d^3 opposite the stop e , and hence permit the removal of the shaft D, it will leave the brake released.

The particular connection between the shaft D and the brake-operating lever F is made by a toothed segment d^4 , carried by the shaft D in engagement with a curved rack f at the upper end of the brake-operating lever F.

The brake-operating shaft D is preferably connected to the segment d^4 in the following manner: A portion of the shaft D is squared, which squared portion corresponds to a squared portion in the segment d^4 , so that the turning of the shaft D when in position will rock the segment.

The brake may be held on by means of a gravity-pawl f' , pivoted to the casing a in position to swing into engagement with a ratchet-toothed wheel G, carried by the shaft D. It is, however, the ordinary practice when the car is in motion to throw the pawl f' out of engagement with the ratchet and depend upon the operator for putting the brake on and off at such intervals as it may be determined. The toothed wheel G is shown in the present instance as forming a part of the segment d^4 .

In order to provide for the prompt release of the grip without the necessity of giving the wheel c' one or more turns in a reverse direction, I have provided a clutch-operating lever H, fulcrumed on the standard A and connected by a bar h with the short arm of an operating-lever I, the handle of which is within convenient reach of the operator as he stands at the wheel. The operating-lever I is normally in a position to hold the clutch b^2 locked to the upper section of the shaft B' by means of a spring-catch i ; but whenever it is desired to release the grip without touching the wheel c' the lever I may be thrown to the left, as is observed, Fig. 1, by a sudden impulse of the hand, thereby lifting on one arm of the lever H and causing the other arm to slide the clutch b^2 out of engagement with the upper section B' and thereby permit the lower shaft-section B to unwind at pleasure and release the grip, while the brake may be immediately put on by operating the shaft D.

In order to further insure the release of the grip at times when its release is imperative, as, for example, in approaching a switch, I project the connecting-bar h downwardly, as shown at h' , into position to engage a bevel-

faced abutment near the rails, (not shown,) the effect of which will be to crowd the bar H off to one side, thereby sliding the connection h^2 , which connects the bar h with the clutch-operating lever H, along the curved slot h^3 in the projected end of the lever H, and thereby rocking the lever H in a direction to slide the clutch b^2 out of engagement with the upper shaft-section B'.

I have found the worm-gear for operating the grip very effective and satisfactory, as it readily retains its position without any locking device; but because of the considerable rotation of the wheel c' required to open the grip I have found it desirable to overcome the necessary delay whenever occasion might demand it, as in operating a car in a densely-crowded city, and this I have effectually accomplished by means of what I am pleased to term my "emergency-lever I," hereinabove described.

What I claim is—

1. A grip-operating worm, a divided shaft one part of the shaft provided with a worm-wheel to engage the worm and the other part adapted to be connected with the grip, and means for locking the parts of the shaft to and releasing them from each other, substantially as set forth.

2. A divided shaft, a clutch for connecting the parts of the shaft to and releasing them from each other, an operating-shaft, worm-gear connecting the operating-shaft with the divided shaft and a clutch-operating lever arranged to be operated by hand and by means independently of the gripman, to move the clutch and release the parts of the divided shaft substantially as set forth.

3. In combination, a grip-operating shaft, a removable operating-wheel therefor, a removable brake-operating shaft extending through the grip-operating shaft and means for holding both the brake-operating shaft and the grip-operating wheel in removable adjustment, substantially as set forth.

4. In combination, a grip-operating wheel, a brake-operating shaft mounted concentric therewith, and a latch for holding both the brake-operating shaft and the grip-operating wheel in removable adjustment, substantially as set forth.

5. The combination with the brake-operating shaft mounted in removable adjustment in a longitudinal direction, of means for holding it against unintentional displacement, the shaft and its support being provided the one with a stop and the other with a cut-away portion corresponding to the stop, the said stop and cut-away portion being arranged to register and permit the removal of the shaft only when the latter is in a predetermined rotary adjustment, substantially as set forth.

6. The combination with the divided grip-shaft, means for operating it and the clutch for locking its parts to and releasing them from each other, of the clutch-operating lever,

the connecting-bar having a slotted engagement therewith and means for operating the bar, substantially as set forth.

7. In combination, the worm-shaft, its operating-wheel removably secured thereto, the
5 brake-shaft extending through the worm-shaft, the grip-shaft provided with a worm-

wheel, the brake-lever and segmental gear connecting the brake-lever with the brake-shaft, substantially as set forth.

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Witnesses:

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