

No. 652,856.

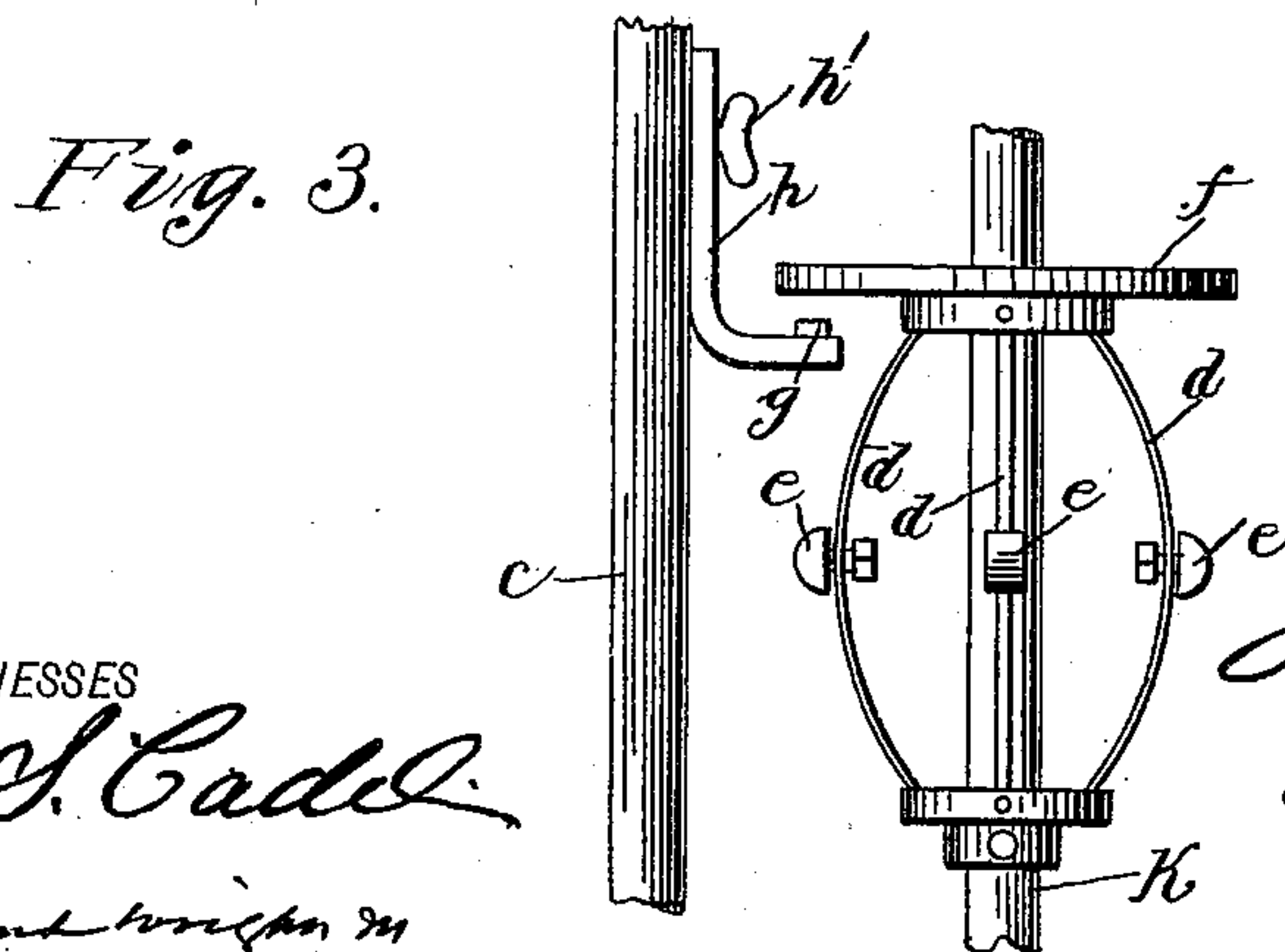
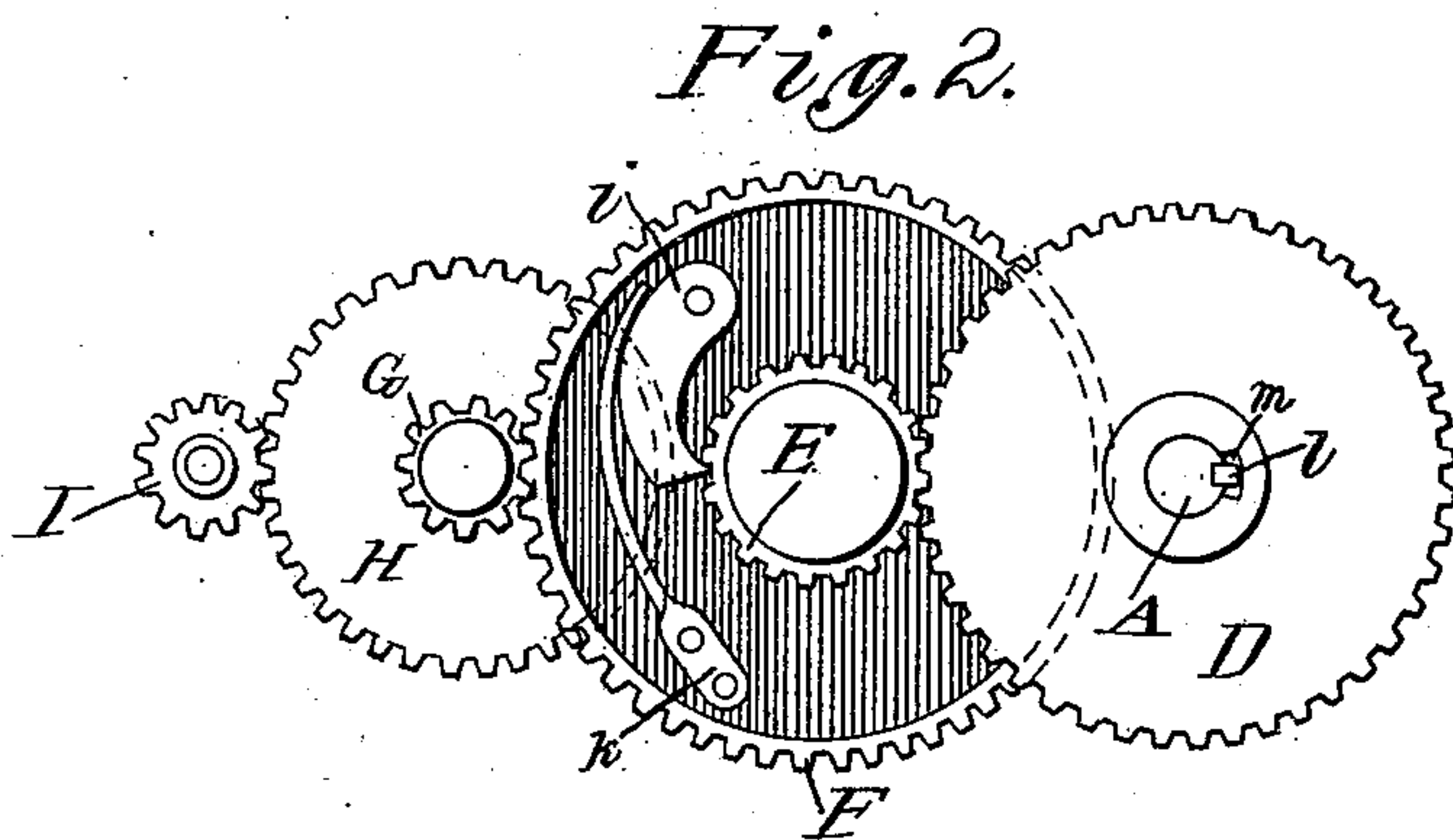
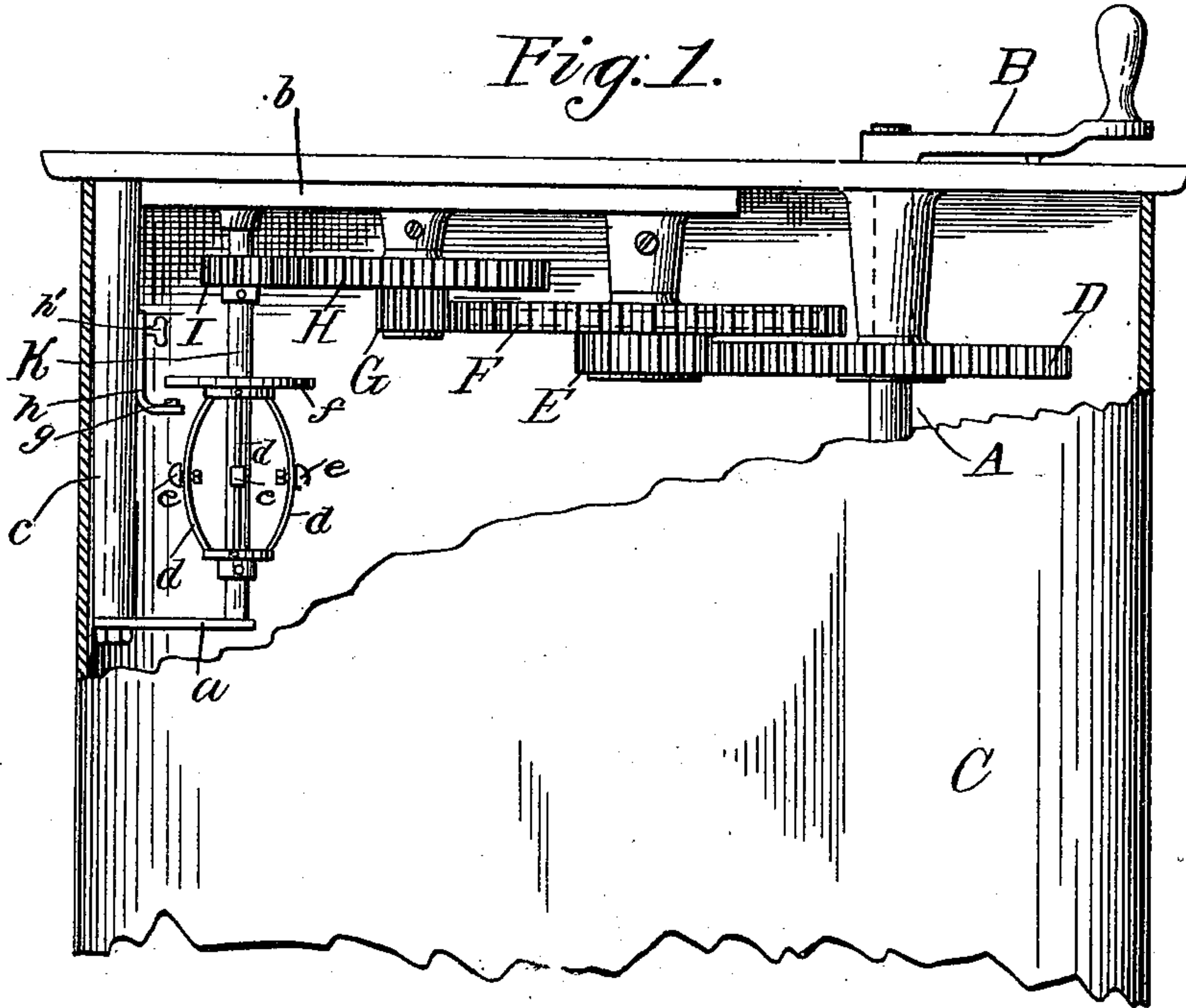
Patented July 3, 1900.

J. H. MCGURTY:

SPEED GOVERNOR FOR ELECTRICAL CONTROLLERS.

(Application filed Mar. 31, 1900.)

(No Model.)



WITNESSES

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SPEED-GOVERNOR FOR ELECTRICAL CONTROLLERS.

SPECIFICATION forming part of Letters Patent No. 652,856, dated July 3, 1900.

Application filed March 31, 1900. Serial No. 10,885. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MCGURTY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Speed-Governors for Electrical Controllers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to speed-governors primarily intended for use in connection with electrical controllers such as are employed on trolley-cars and other vehicles, one form of which is illustrated in my Patent No. 640,688 of January 2, 1900; but my improvements are applicable in connection with other similar apparatus, as will be apparent from their nature and advantages.

The objects of this invention are principally to simplify and improve the means employed for preventing too great rapidity of movement of the controller-shaft, to render the resistance to such movement instantaneous and effective, and to simplify the connections between the speed-governor and the controller-shaft.

A subordinate object is the provision of means which will permit the initial movement of the controller-shaft (to make the first contact) with the same facility as if the speed-governor were not connected with the controller.

To accomplish these objects and to secure other and further advantages in the matters of construction, operation, and use, my improvements involve certain new and useful arrangements or combinations of parts and peculiar features of invention, as will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a view in elevation of a fragment of the upper part of an electrical controller-box of any of the ordinary forms such as are used upon street-cars, a portion of the walls being broken out and showing my improved speed-governor arranged for operation in connection with the controller-shaft. Fig. 2 is a plan view of the under side of the train of gears, illustrating

a connection between the controller-shaft and one gear, such as will permit the requisite initial movement of the shaft before the governor can be brought into action. Fig. 3 is an elevation on a scale somewhat larger than that of Fig. 1, illustrating in detail the friction-producing appliance separated from the train of gears and from the box.

In all the figures like letters of reference wherever they occur indicate corresponding parts.

A represents the controller-shaft, the same being supplied with a crank or handle B on the outside of the box C. As the controller may be of any variety now in use, its particular construction is not shown herein. Its purpose is to control the passage of the electric current to the motor. As these controllers are ordinarily equipped the current is by them frequently turned on too rapidly, causing the car to jump and giving rise to other disadvantages, as now well understood. To obviate these, the movements of shaft A are automatically governed in such a way as to make the too-rapid introduction of the current impossible, and for this purpose a train of gears is connected with the shaft A and with a friction-producing appliance.

D is a gear mounted on shaft A, but loosely, as will be hereinafter explained, and coupled therewith, so as to receive its movement therefrom.

E is a pinion or smaller gear meshing with gear D and turning a gear F, which engages a pinion G, the latter turning still another gear H.

Gear H engages a pinion I on shaft K—that is, on the revoluble shaft of the friction-producing appliance.

By the gears and pinions so far described a slow turning of shaft A will produce a rapid revolution of shaft K, as will be apparent. The shaft K is suitably sustained at bottom, as by an arm *a*, and at top in a plate *b*, which is applied to some convenient part of the controller-box, the arm *a* being sustained by a leg, as *c*, attached to or forming part of said plate.

On shaft K and turning therewith are a number of springs *d d*, three being selected for illustration, secured at bottom to the shaft, so as to revolve therewith. On each of these

springs is a weight, as *e*, which being rapidly
 revolved will cause the springs to bend out-
 ward at their central parts, and the springs
 being connected in a suitable manner at
 5 top will draw the connection down on the
 shaft. Applied upon or connected with the
 tops of the springs is a friction-disk *f* of suit-
 able construction, and operating in conjunc-
 tion with this disk is a pad or point of leather or
 10 rubber or other material, as *g*, sustained upon
 an arm *h*. This arm is made adjustable on leg
c, so that the pad will contact with disk *f* at
 the desired point of downward travel of the
 latter. For this purpose arm *h* is supplied
 15 with a suitable set-screw, as *h'*, and being ad-
 justed and set the arm holds the pad in an
 unyielding position. As soon as the springs
 are moved the disk *f* descends and is brought
 in contact with the pad, producing friction
 20 sufficient to prevent the possibility of shaft
 A being turned more rapidly than is desirable.
 This particular arrangement and mounting
 of the friction-producing appliance is com-
 pact and convenient; but the disk might be
 25 mounted below the springs instead of above
 them, as shown, and the shaft K might be
 otherwise supported.

The friction-producing appliance, con-
 structed substantially as above explained, op-
 30 erates instantaneously to oppose its resist-
 ance to the movement of the train of gears,
 and increase in this movement is likewise op-
 posed by corresponding increase in resistance
 more rapidly than is possible with fan-blades,
 35 which must revolve quite a little in the air
 before resistance can be generated by them.
 Moreover, the train of gears in this form of
 speed-governor need not be as long or contain
 so many elements as is necessary with the
 40 fan-blades.

Pinion E and gear F are coupled by a pawl
i, operated upon by a light spring *k*, the pawl
 being carried by the gear and arranged to en-
 45 gage the teeth of the pinion when the latter
 is revolved in one direction, but to permit the
 teeth to pass without obstruction when re-
 volved in the opposite direction. This is to
 enable shaft A to be freely turned without
 disturbing the train of gears when it is de-
 50 sired to "shut off" or "turn off" the cur-
 rent, but to insure the movement of the train
 when the shaft is turned in the opposite di-
 rection.

It has been found desirable to enable the
 55 shaft A to be turned a slight distance with-
 out connection with the train of gears, so that
 the initial admission of the current may be
 made instantaneously and without resist-
 ance, same as if no speed-governor had been
 60 applied. To accomplish this, the connection
 between shaft A and gear D is made such

that the gear will not commence to revolve
 until the shaft has reached a certain point.
 The shaft being supplied with a key, as *l*, and
 the gear being recessed, as at *m*, it is plain 65
 that the gear (otherwise loosely mounted on
 the shaft) cannot turn until the key strikes
 against the wall of the recess. The recess is
 wide enough in comparison with the key to
 permit all the initial unimpeded travel that 70
 may be desired. This particular form of con-
 nection between the gear and shaft may be
 modified in various ways to accomplish the
 same result.

The pawl *i* and spring *k* are shown as lo- 75
 cated in a depression formed in the under side
 of gear F; but this is not always essential.

The speed-governor being constructed and
 applied substantially in accordance with the
 foregoing explanations will be found to ad- 80
 mirably answer all the purposes or objects of
 the invention hereinbefore alluded to.

Having now fully described my invention,
 what I claim as new therein, and desire to se- 85
 cure by Letters Patent, is—

1. In a speed-governor for electrical con-
 trollers, the combination with the controller-
 shaft, of a friction-producing appliance and
 a train of gears connecting the two, said ap-
 90 pliance involving a number of springs with
 attached weights, arranged to operate sub-
 stantially as shown and described.

2. In a speed-governor for electrical con-
 trollers, the combination of the controller-
 shaft, a train of gears, a governor-shaft, 95
 weighted springs applied on said governor-
 shaft, a friction-disk connected with said
 springs, and a friction-pad for contact with
 the disk, substantially as shown and de-
 scribed. 100

3. In a speed-governor for electrical con-
 trollers, the combination with the friction-
 disk operated by the weighted springs and
 driven by the controller-shaft, of the pad for
 contact with said disk, the pad being mount- 105
 ed on an adjustable arm, substantially as
 shown and described.

4. In a speed-governor for electrical con-
 trollers, the combination with the controller-
 shaft, of the gear-wheel mounted on said shaft 110
 for communicating movement to the gov-
 ernor, the connection between said gear and
 shaft being substantially as described, to per-
 mit the shaft to be turned a trifle without
 disturbing the gear, for the purposes and ob- 115
 jects named.

In testimony whereof I have affixed my sig-
 nature in presence of two witnesses.

JAMES H. MCGURTY.

Witnesses:

C. SEDGWICK,
WORTH OSGOOD.