

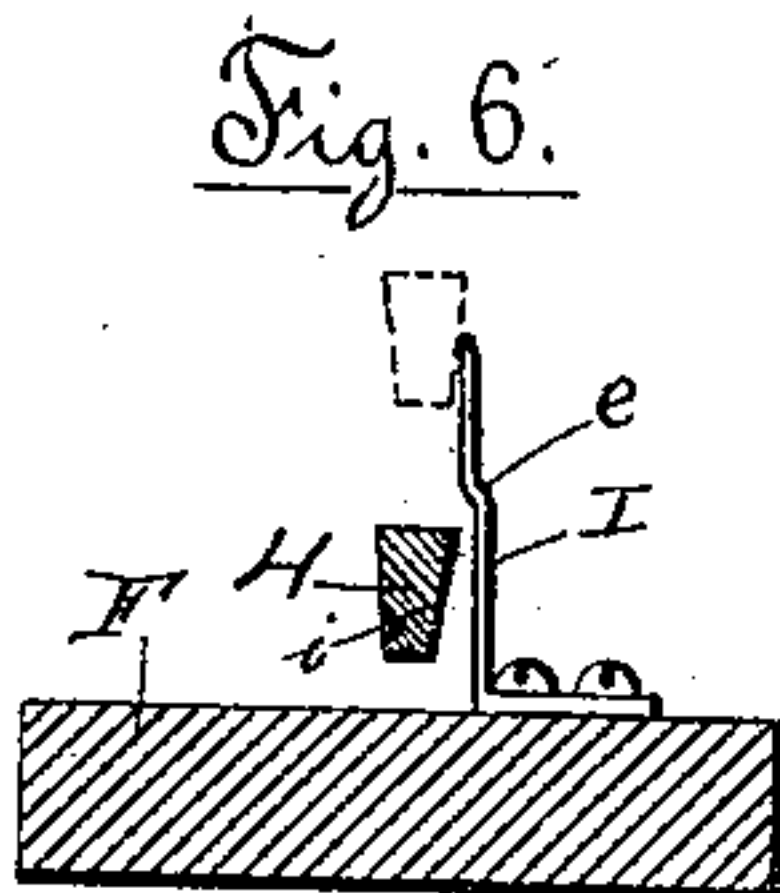
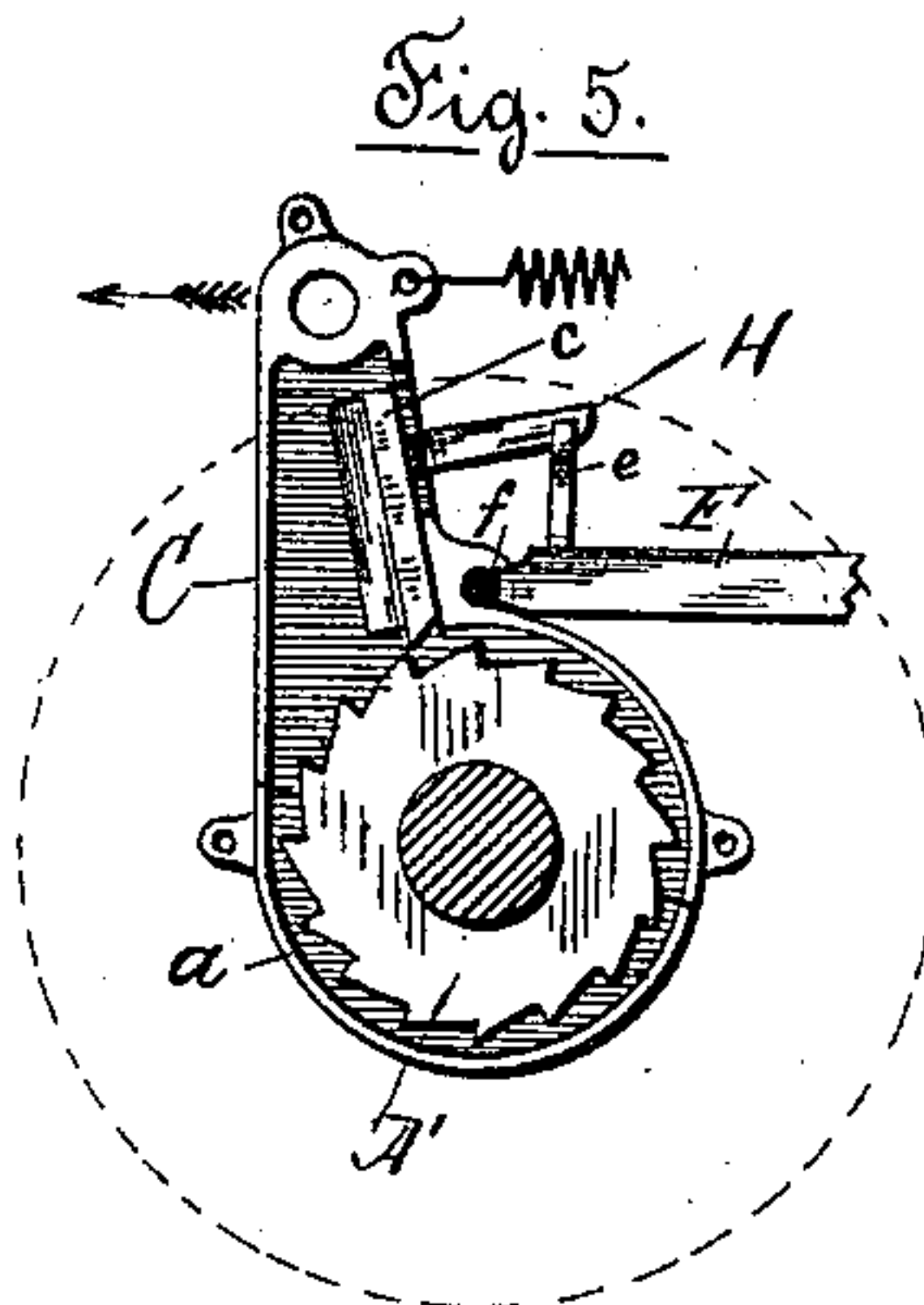
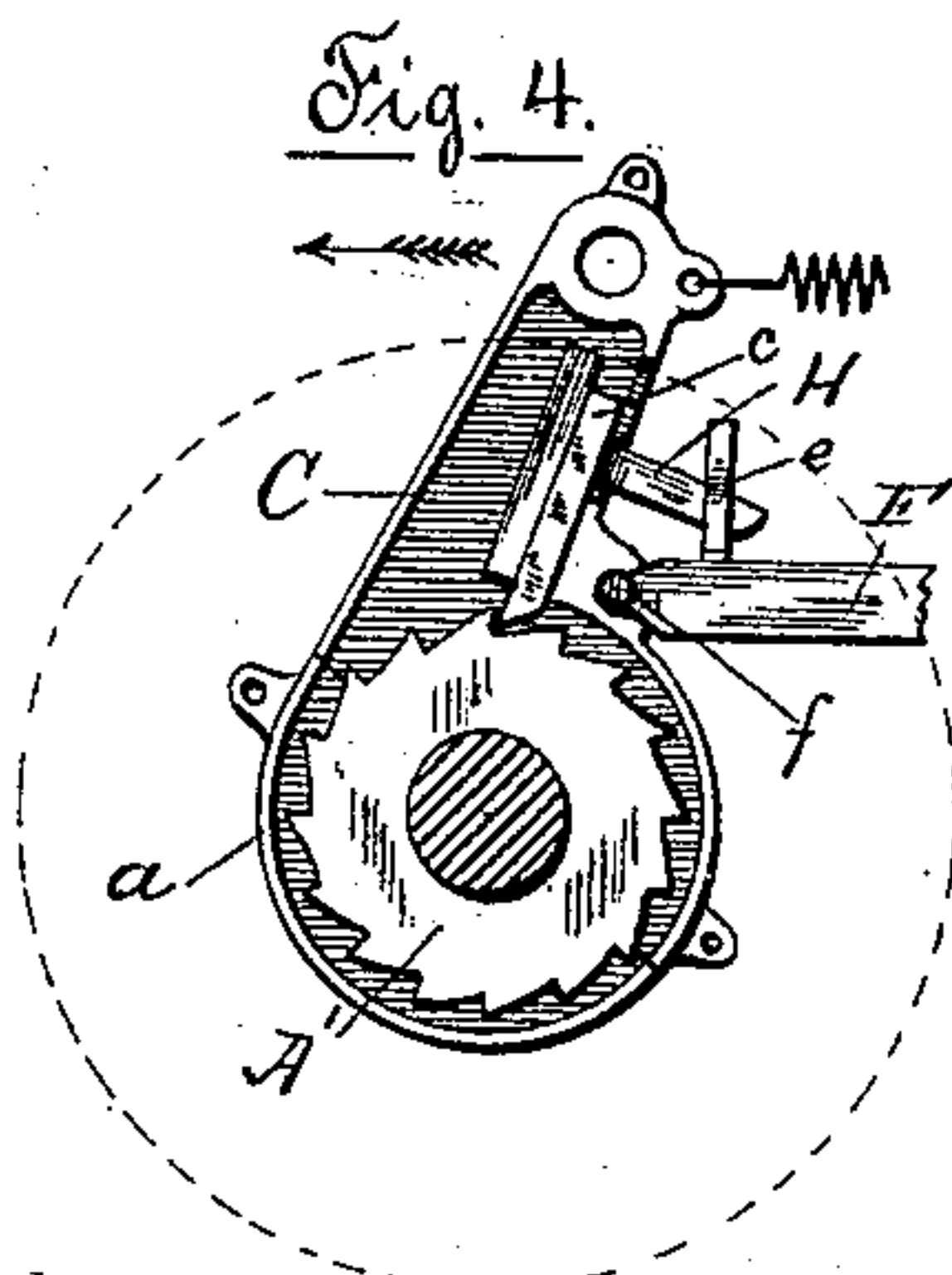
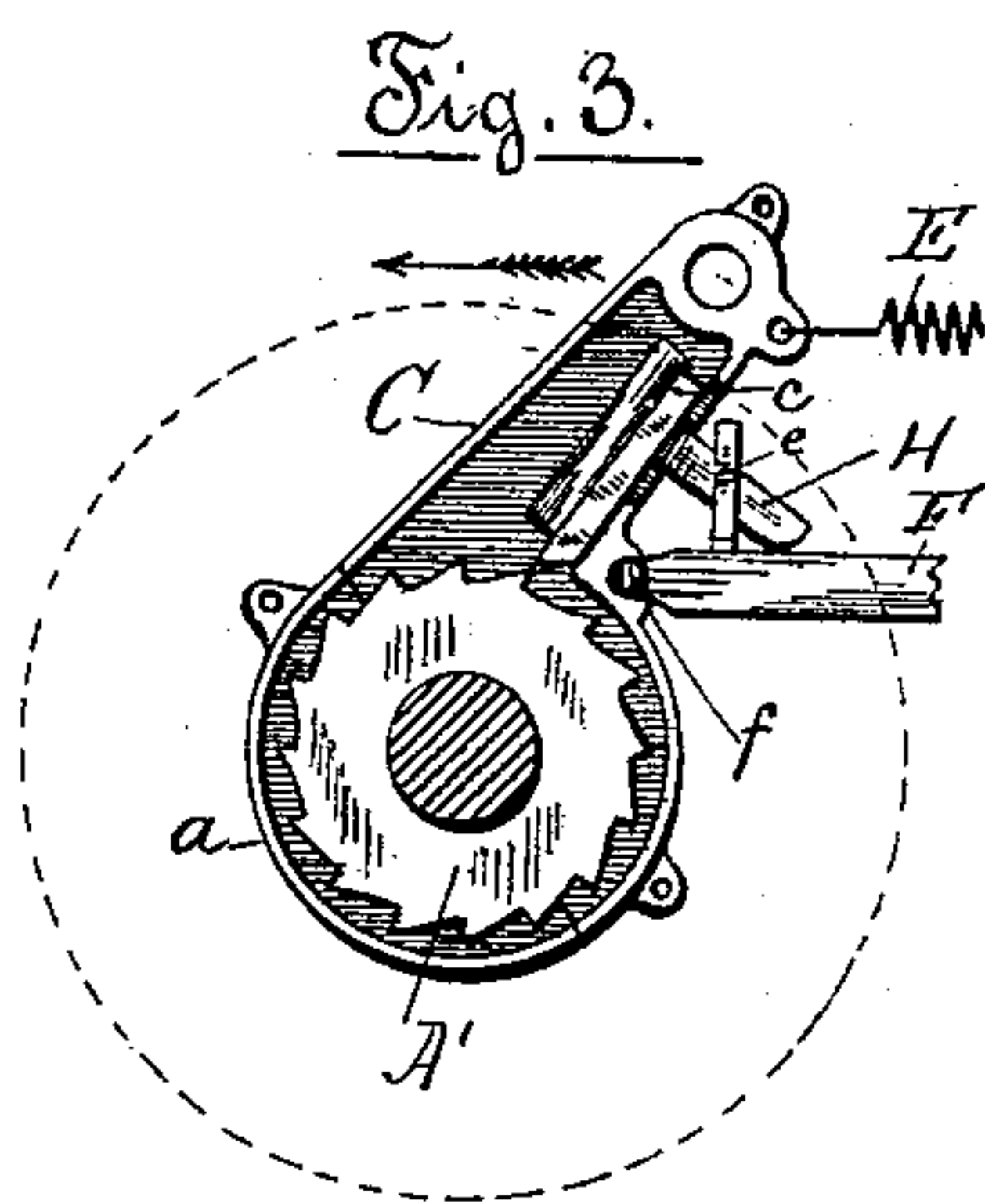
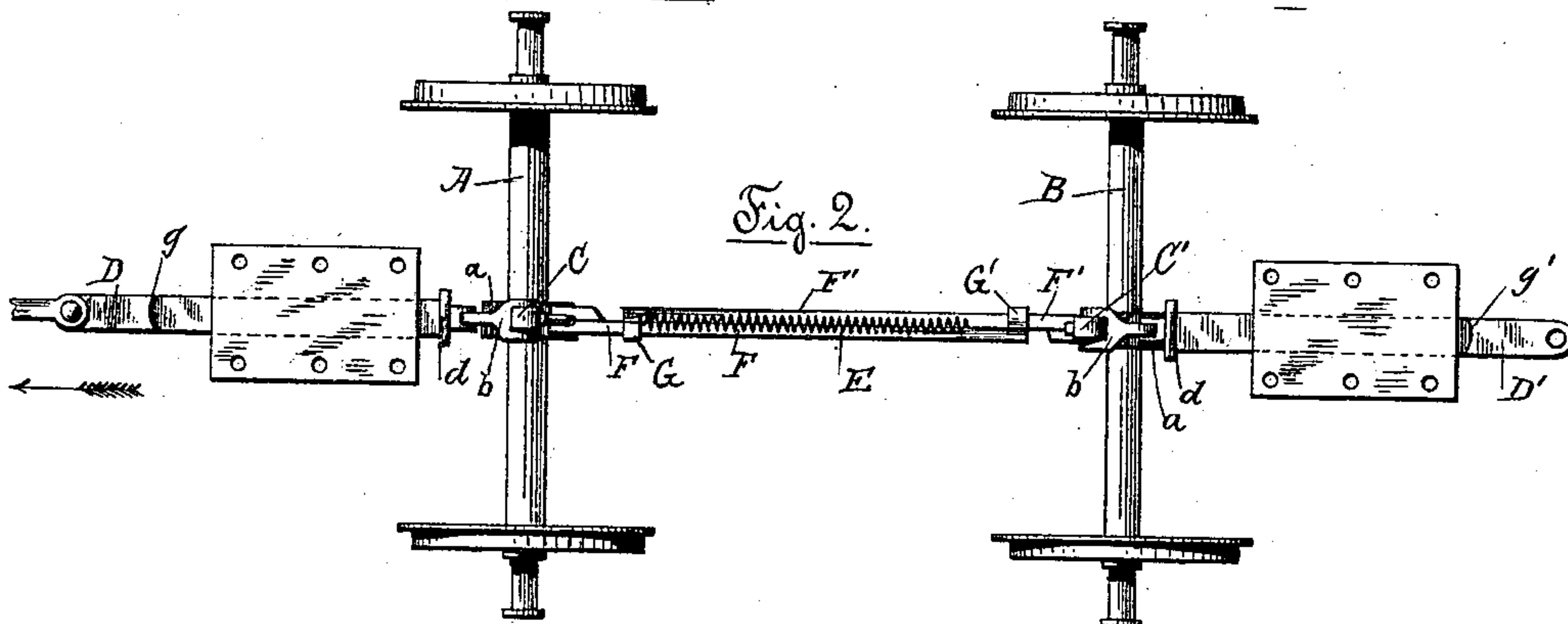
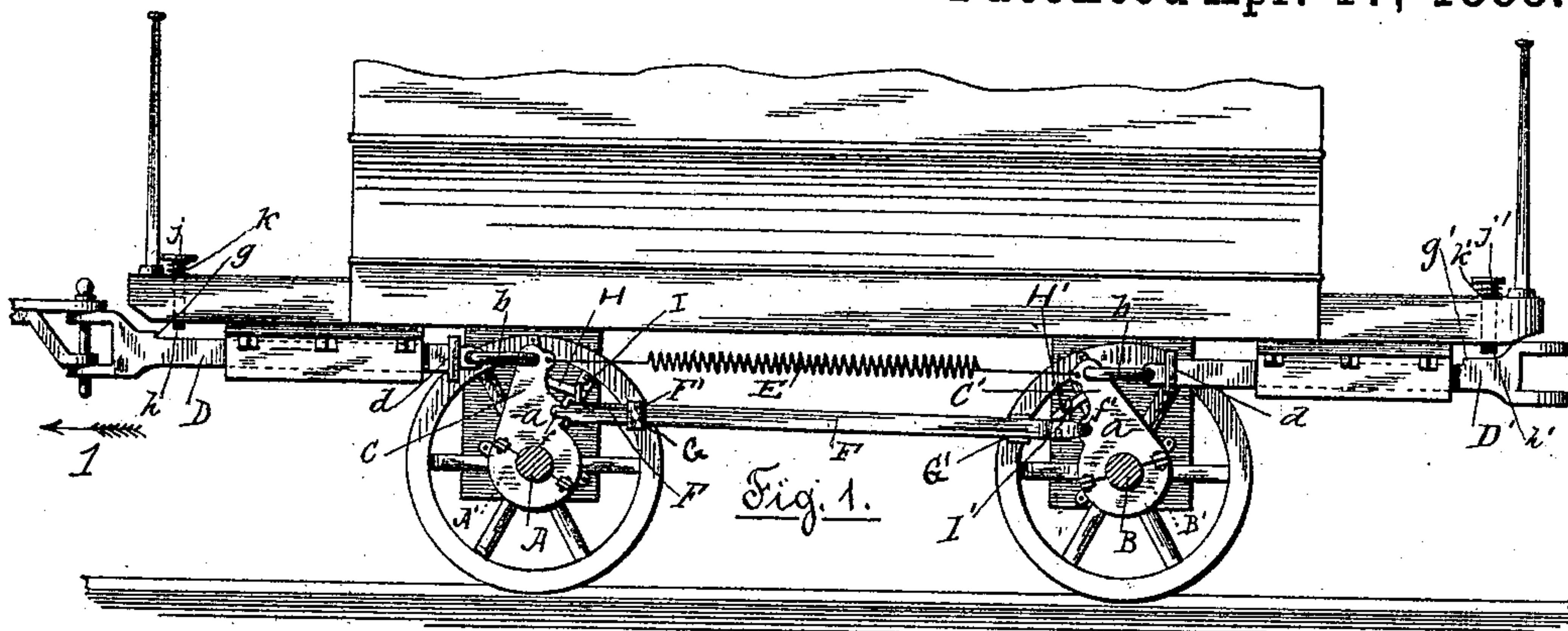
(No Model.)

J. M. LINSCOTT.

CAR STARTER.

No. 381,393.

Patented Apr. 17, 1888.



Witnesses.

Chas. F. Schmeltz,

H. M. Fowler.

Inventor

John W. Linscott,

By His Attorney

Refus Bennett Fowler.



# UNITED STATES PATENT OFFICE.

JOHN M. LINSKOTT, OF WORCESTER, MASSACHUSETTS.

## CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 381,393, dated April 17, 1888.

Application filed December 5, 1887. Serial No. 257,055. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. LINSKOTT, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Car-Starters, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, and in which—

Figure 1 is a side view of a portion of a street-railway car with the wheels on one side removed in order to disclose the apparatus for aiding in starting the car. Fig. 2 is a top view of the car-starting mechanism, the body of the car having been removed. Figs. 3, 4, and 5 are enlarged views of the car-starting device as applied to one of the axles and representing the same in three positions, Fig. 3 showing the starting device in its normal position when the car is at rest. Fig. 4 shows the starting device in the position of starting the car, and Fig. 5 its position when the car is running with the pawl removed from the ratchet-wheel, the car-starting mechanism being shown in all three figures in vertical sectional view. Fig. 6 is a detached view of the spring for holding the pawl out of engagement with the ratchet-wheel while the car is running.

Similar letters refer to similar parts in the several views.

My invention relates to a mechanical device applicable to street-railway cars and other similar vehicles, whereby the inertia of the car when in a state of rest is overcome, so that no more power shall be required to start a car than is needed to maintain it in motion after it has once been started; and my present invention consists in certain modifications and improvements in the car-starting mechanism which was made the subject of Letters Patent No. 367,531, granted to me on the 2d day of August, 1887, as hereinafter described and claimed.

To each of the car-axles A B, I attach ratchet-wheels A' B', which are inclosed in a shell or case, *a a*, to protect them from dirt or other extraneous substances. From the upper side of the shell or case arms C C' project, to the upper end of which the draw-bars D D' are attached by the links *b b*. Within the arms C are ways in which the pawls *c c* have a ver-

tical sliding motion to engage the teeth of the ratchet-wheels A' B'. The upper ends of the arms C C' are connected by a spiral spring, E, which holds both arms C C' when in their normal position in the position of the arm C', Fig. 1; but when the car is being drawn by one of the draw-bars that arm to which it is attached is moved around its axle, with its pawl engaging the teeth of the ratchet, thereby rotating the axle itself a short distance and starting the car, bringing the arm into the position shown in Fig. 5, or until the shoulder *d* on the draw-bar is brought against the end of the ways in which the draw-bars are held.

To the arms C C', I hinge the tongues F F', hinged at *f f'* and provided at their free ends with the sleeves G G', each of the sleeves being attached to one of the tongues and inclosing the other tongue. From the rear side of the sliding pawls wings H H' project, passing through slots in the case *a a*, with their ends resting upon the tongues F F' when the arms C C' are in their normal position, or in the position of C', Fig. 1, and of C, Fig. 3, so that the pawls are raised from their engagement with their ratchet-wheels. As the arms C C' are moved forward by the draft upon the draw-bars, the wings H H' are lifted from the tongues F F', allowing the pawls to fall by their own gravity into the teeth of the ratchet-wheels and cause the axle to be rotated until the power is applied to the car at the shoulder *d*, as described. Whenever the draft is removed from the draw-bar, the spiral spring E will return the arms C C' to their normal position, and by bringing the wings H H' against the tongues F F' will raise the pawls *c c* from out the teeth of the ratchet-wheels.

Upon the tongues F F' are placed the short blade-springs I I', attached to the tongues and extending upward by the side of the wings H H'. The blade-springs are bent at *e e* to bring their free ends in the path of the wings as they are raised from the tongues by the forward motion of the arms C C'. The sides of the wings H H' are beveled, as shown at *i* in Fig. 6, and as the wings assume their highest position, as seen in Fig. 5, the free ends of the blade-springs are brought to rest against the beveled side of the wings. The rotation of the ratchet-wheels by the continued running motion of the car will raise the pawl as the teeth of the ratchet-



wheel passes beneath it, and the blade-spring resting against the side of the wing will hold the pawl from falling into the teeth of the ratchet-wheel, and thereby prevent the clicking noise which would be caused by the teeth passing beneath the end of the pawl.

Upon the upper sides of the draw-bars *D D'* are shoulders *g g'*, and in the platforms of the car are the sliding dogs *h h'*, provided with the foot-plates *j j'* and having the springs *k k'*, by which the dogs are raised from engagement with the shoulders *g g'* of the draw-bars *D D'*. The shoulders *g g'* are so placed upon the draw-bars that as the draw-bars are held by the dogs *h h'* the arm attached to the draw-bar is prevented from being drawn back by the tension of the spiral spring *E* into its normal position and the wing attached to the pawl prevented from coming in contact with the tongue and raising the pawl from its engagement with the ratchet-wheel. The car is thus dogged against any reverse motion, and the car is thereby held upon a hillside of descending grade from running back, while at the same time the arm and draw-bar held by the dogs are allowed to be carried back by means of the spiral spring *E* far enough to allow the axle to be turned and the car started by a forward movement of the draw-bar.

The construction and arrangement of the two car-starting devices connected with the two axles of the car are the same and only one is employed at any time in the operation of starting the car. A starting device is, however, applied to each of the axles, working in opposite directions and attached to each of the draw-bars at opposite ends of the car in order that the car may be started by means of the draft being applied to either end of the car.

In Fig. 1 of the drawings the car is represented in the action of being started in the direction of the arrow 1 by means of the draw-bar *D*, the arm *C'* being in its normal position, while the arm *C* is being moved forward with its pawl in engagement with its ratchet-wheel, as seen in Fig. 4. When the draft is applied to the draw-bar *D'*, the action of the arm *C'* in starting the car is precisely the same as that already described, and shown in the drawings.

What I claim as of my present invention, and desire to secure by Letters Patent, is—

1. In a car-starting device, the combination,

with a ratchet-wheel attached to the axle of the car and a pivoted pawl-carrying arm or lever connected with the draw-bar of the car, by which the axle is rotated, of a draw-bar provided with a single shoulder and a dog arranged to engage said shoulder and thereby prevent the entire reverse movement of the draw-bar and connected pawl-carrying arm or lever for the purpose of maintaining the pawl in engagement with its ratchet-wheel, substantially as described.

2. In a car-starting device, the combination, with a draw-bar provided with a shoulder and a dog arranged to engage said shoulder, by which the reverse movement of the draw-bar is prevented, of a pivoted pawl-carrying arm or lever, a ratchet-wheel attached to the axle of the car, a pawl provided with a wing extending from the side of the pawl, and a tongue hinged to said arm or lever in the path of said wing, whereby the pawl is lifted out of engagement with said ratchet-wheel, substantially as described.

3. In a car-starting device, the combination of ratchet-wheels attached to the car-axles, pivoted pawl-carrying levers working in opposite directions and connected with the draw-bars of the car, and a spring connecting said pawl-carrying arms or levers, substantially as described.

4. In a car-starting device, the combination, with ratchet-wheels attached to the car-axles and pivoted arms or levers, as described, of pawls sliding in ways in said pivoted levers, wings attached to said pawls, and tongues hinged to said pawl-carrying levers or arms, with their free ends connected by sliding sleeves, substantially as described.

5. In a car-starting device, the combination, with ratchet-wheels attached to the car-axles, pivoted pawl-carrying levers or arms, pawls carried in said arms or levers and provided with wings, and tongues hinged to said pivoted arms or levers, of a blade-spring attached to said hinged tongues, with their free ends arranged to rest against said wings and hold the pawls from engaging their respective ratchet-wheels, substantially as described.

JOHN M. LINS COTT.

Witnesses:

RUFUS B. FOWLER,  
H. M. FOWLER.