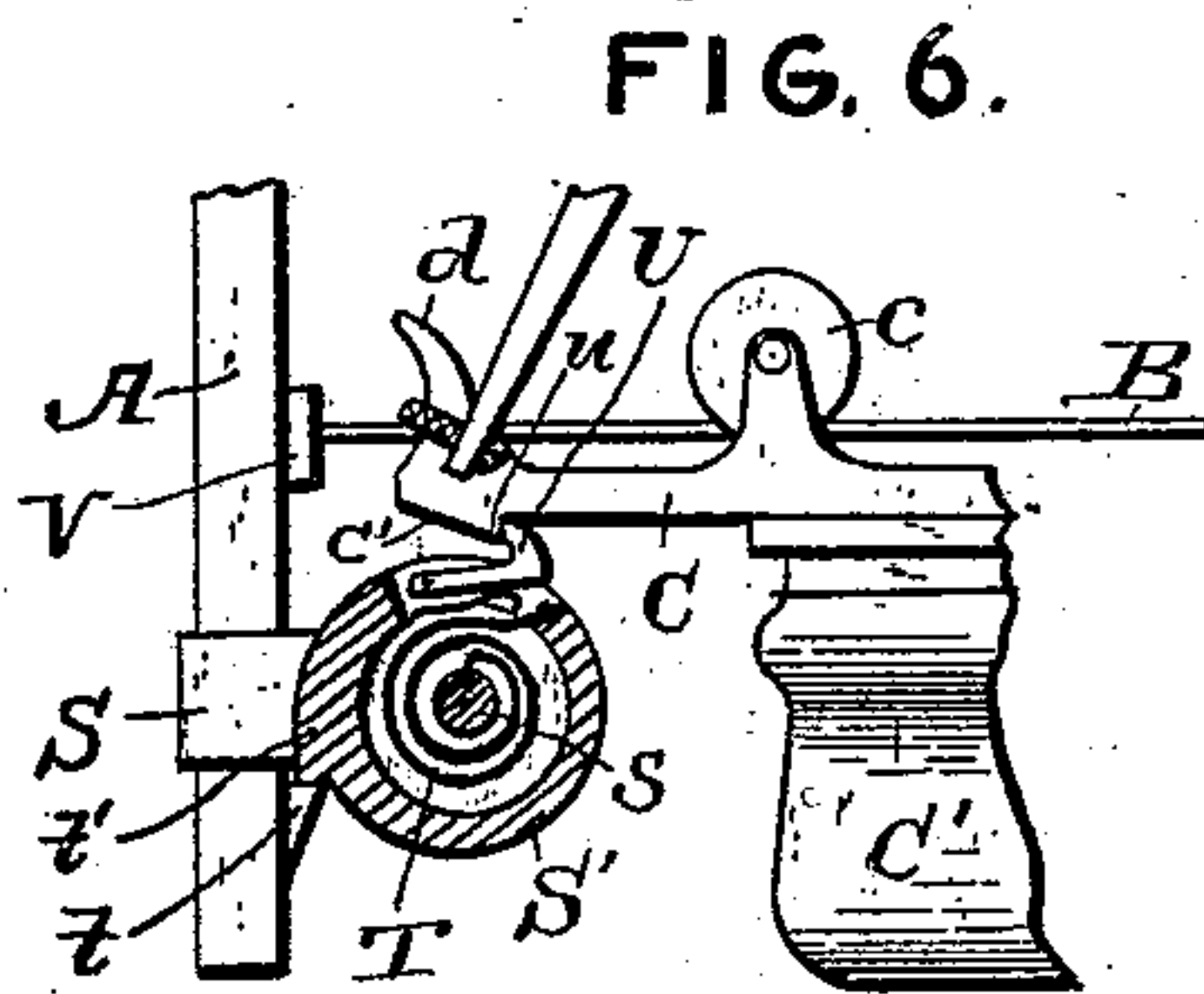
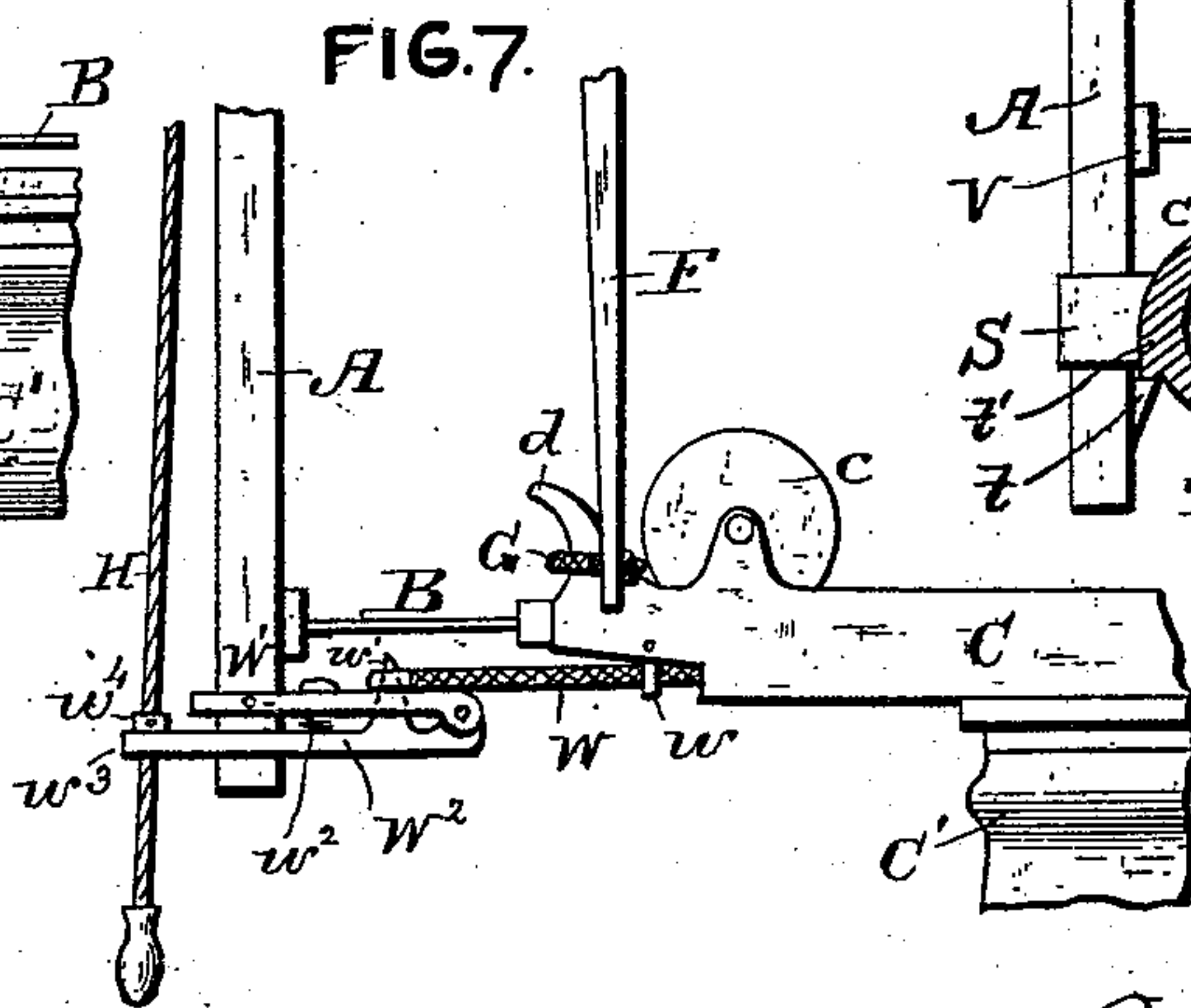
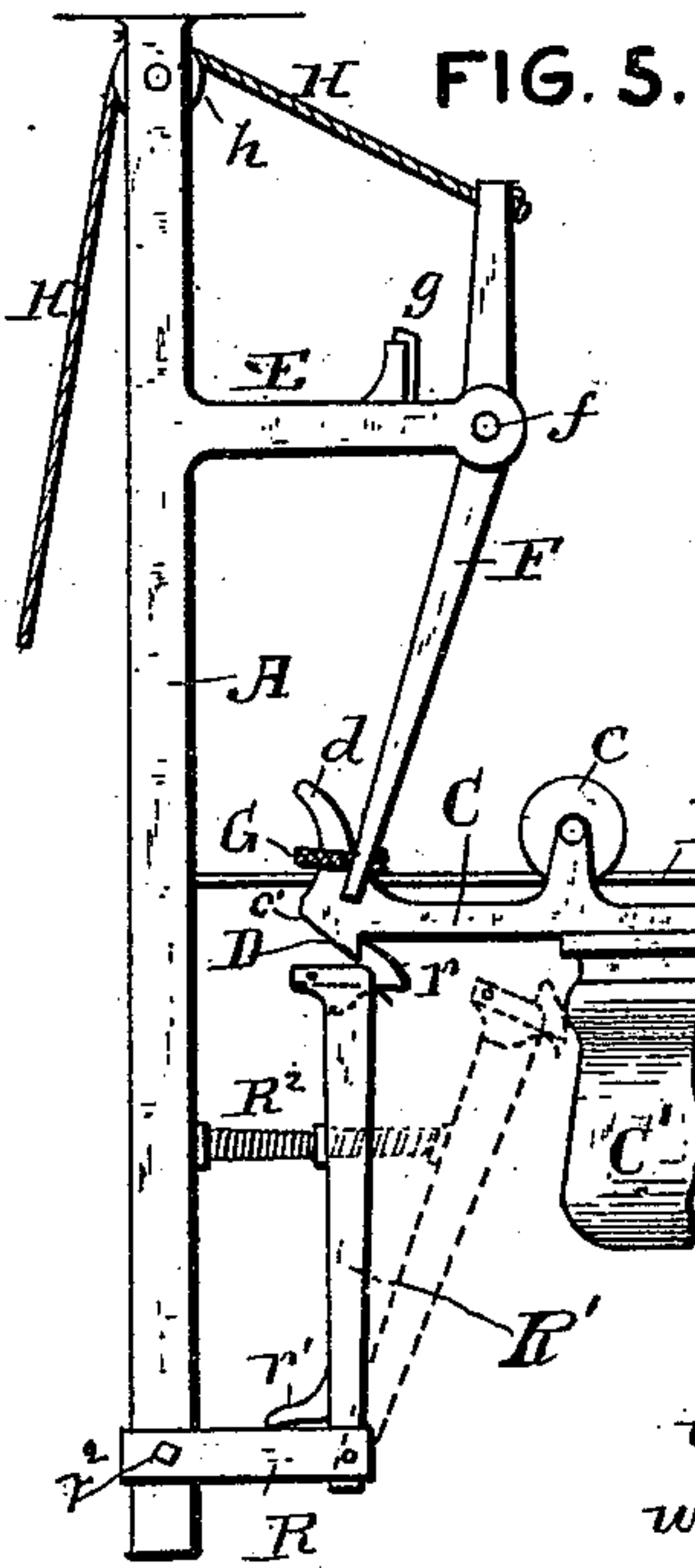
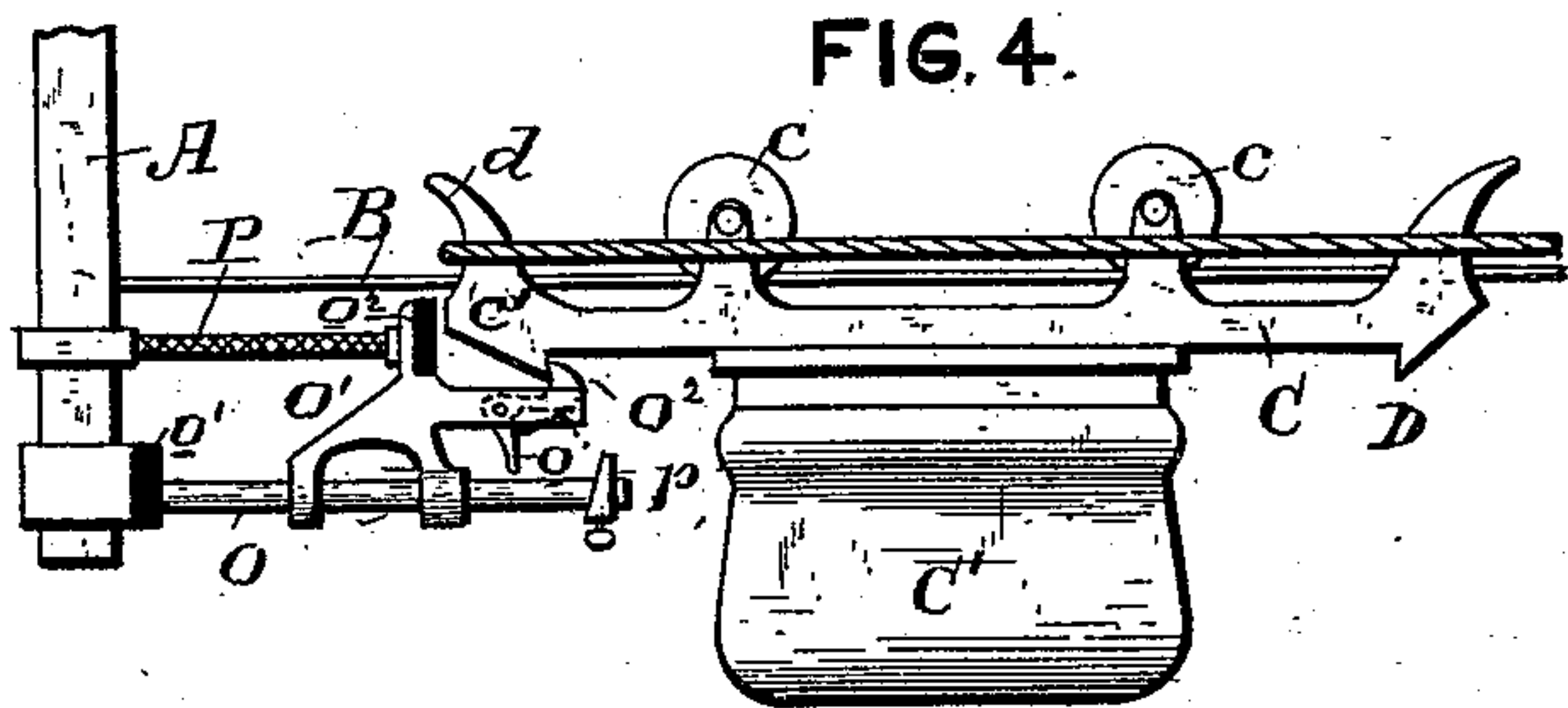
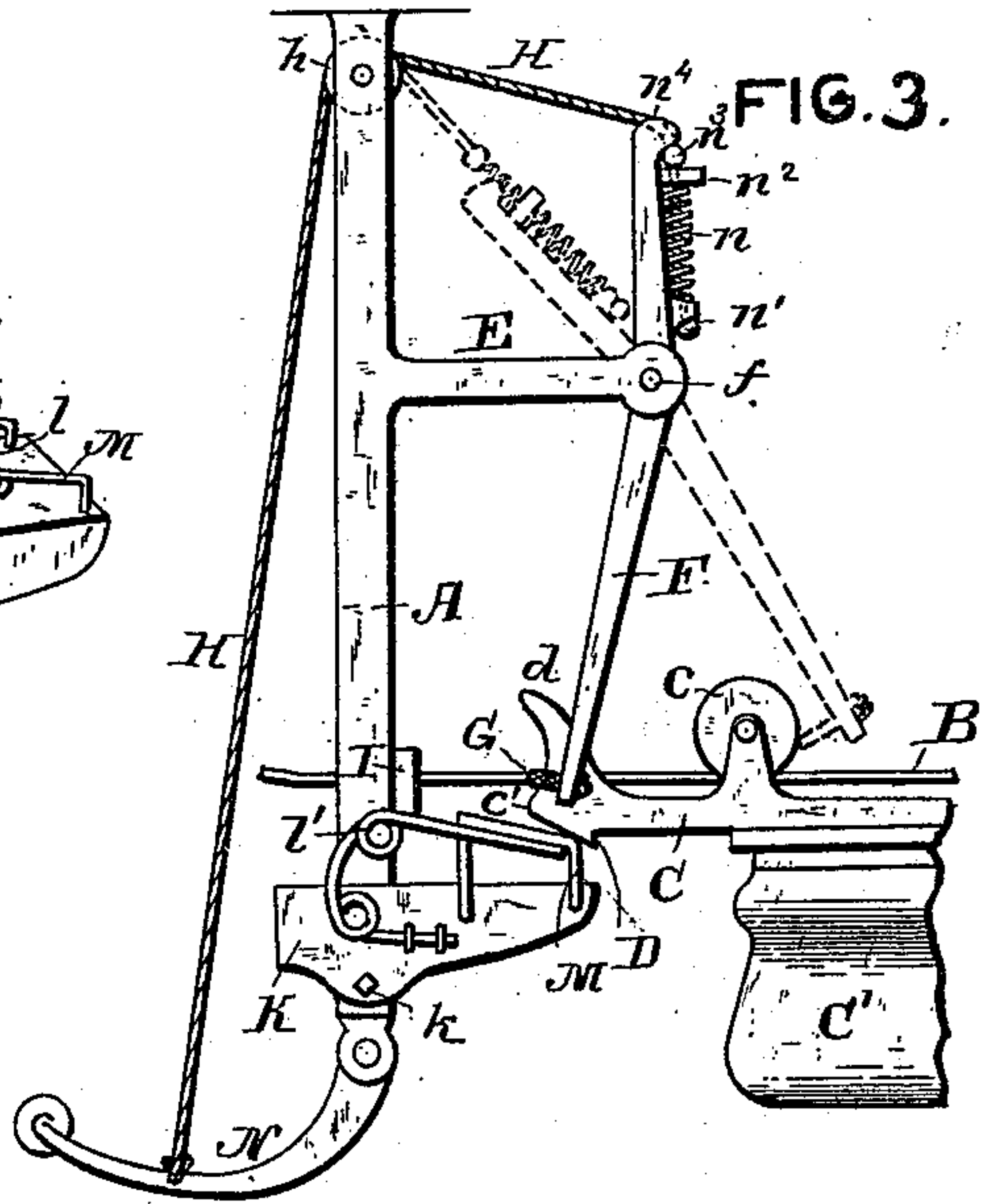
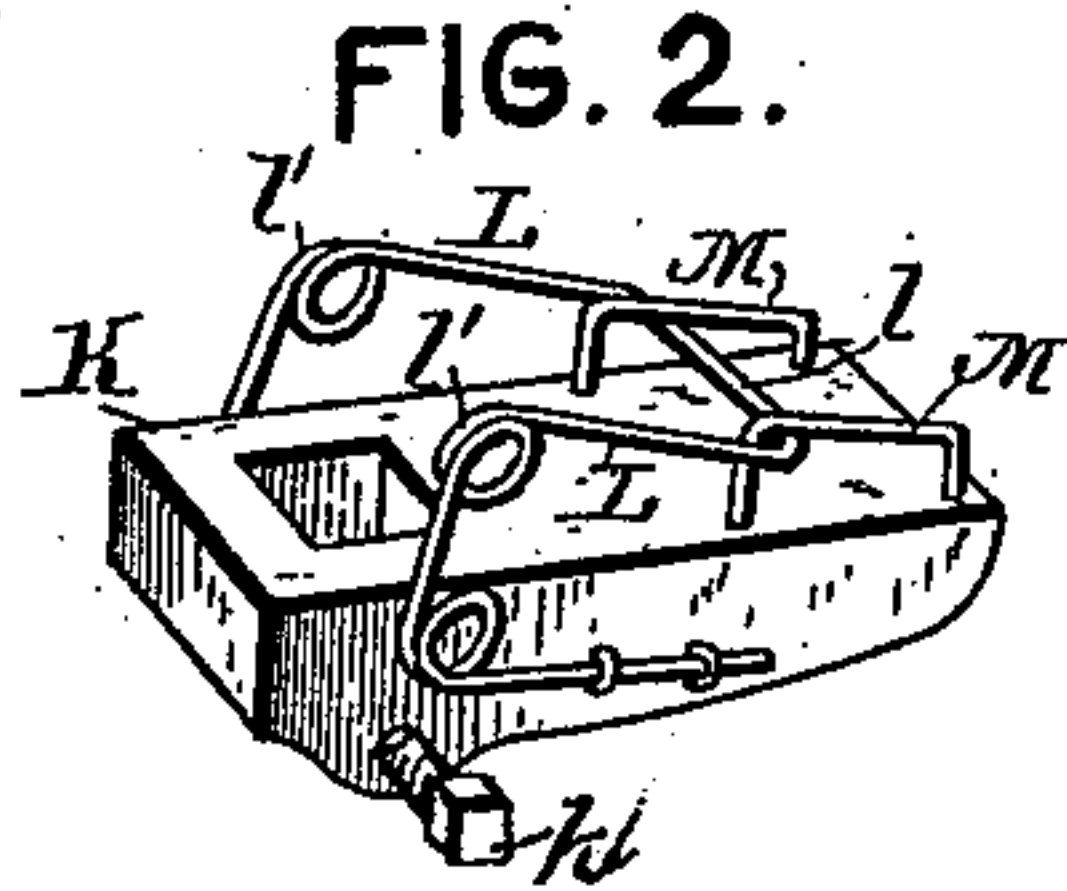
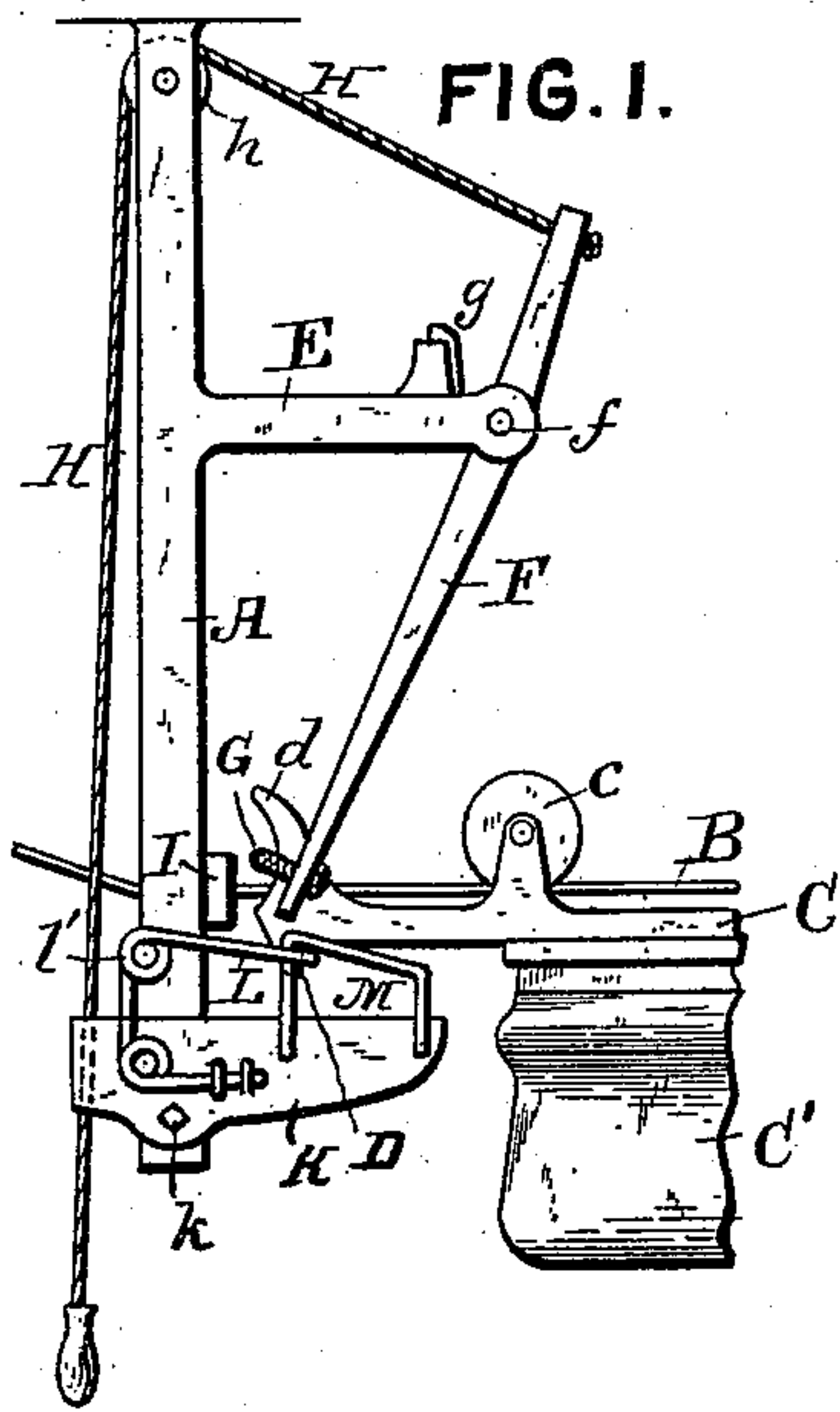


(No Model.)

J. R. HAIGHT.  
STORE SERVICE APPARATUS.

No. 447,178.

Patented Feb. 24, 1891.



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# UNITED STATES PATENT OFFICE.

JAMES R. HAIGHT, OF ADRIAN, MICHIGAN.

## STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 447,178, dated February 24, 1891.

Application filed September 25, 1889. Serial No. 324,993. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES R. HAIGHT, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Store-Service Apparatus; 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 relates to improvements in store-service apparatus, and more particularly to that class of apparatus in which the carriage for conveying the articles or cash is mounted upon a track-wire or way and is propelled from one station to another by suitable propelling devices.

My said invention consists in so arranging a propelling-lever that the carriage will be propelled by the direct action of said lever, and, further, in providing the apparatus with a retarding-spring which will hold and follow the carriage against the action of the propelling-lever until the tension of the retarding-spring is overcome, when it will automatically release the carriage and permit the lever to propel the same.

My said invention further consists in certain novelty in the details of the construction, arrangement, and combination of the various parts of the same, all of which I will now proceed to point out and describe, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a store-service apparatus embodying the preferred form of my said invention. Fig. 2 is a detail in perspective illustrating the preferred form of the retarding device. Fig. 3 is a side elevation of a modification of the invention; and Figs. 4, 5, and 6 are side elevations of still further modifications of my said invention, more particularly of the spring retarding device, Fig. 6 being partly in section. Fig. 7 is a side elevation of another modification.

Referring to said drawings, A represents a standard or support secured to the ceiling, as illustrated in the drawings, but which may be secured to the floor or counter of the store or apartment in which the apparatus is arranged.

B is a way or track-wire extending from the standard A to the next station.

C is a carriage mounted and traveling upon the way or track-wire and provided with two or more rollers *c*, which rest on said way. Suspended from the carriage is a box or receptacle C' for the articles to be transported. The ends of the carriage are beveled at *c'*, and are provided on the under side of each end with hooks D and on the upper side of said ends with outwardly-curved fingers or projections *d*.

E is an arm secured to the standard at a suitable point above the way and projecting out over said way. To the outer end of said arm is pivoted or fulcrumed a propelling-lever F by a suitable pintle *f* passing through the end of the arm and lever. The lower free end of the long arm of the lever is provided with a loop G, which is adapted to engage the upwardly-projecting fingers *d* on the carriage. To the upper end of the lever is secured an operating-cord H, which passes over a pulley *h*, secured to the standard above the arm E, and extends down within convenient reach of the operator. The pulley over which the operating-cord passes is so located that when the propelling-lever is at the end of its stroke said cord will be substantially in a line with the lever. The lower free end of the lever has its maximum rapidity of movement at the end of its stroke, and the force exerted by the operator is applied directly from the lever to the carriage.

*g* is a bumper or concussion spring secured to the arm E back of the fulcrum of the lever, and is adapted to engage said lever and check its vibrations when the carriage is propelled and the operating-cord released.

I is a bumper formed of rubber or any suitable spring material, with which the carriage engages when returned to the station.

K is an adjustable block mounted on the standard below the way and capable of being moved up or down upon said standard. Said block is provided with a set-screw *k* or other desired means for securing the same as adjusted. Secured to the block K is a retarding-spring L, consisting in the present instance, as shown in Figs. 1, 2, and 3, of a continuous piece of spring-wire bent to form a



substantially rectangular loop or catch  $l$ , extending across the block under the way. The side arms of said spring are coiled upon themselves at  $l'$  and their ends are secured to the said block K. This retarding-spring engages the hooks D on the ends of the car and holds the car at the station and follows the car in its outward movement until released, as hereinafter described. Secured to the block K are inclined guards M, extending over the loop or catch portion of the spring. As the retarding-spring is drawn forward by the action of the propelling-lever, it engages with the inclined or cam-surfaced guards, and is released from the hooks on said carriage, permitting said carriage to be propelled, the block K thus forming a part of the adjustable releasing mechanism and, as before stated, a support for the spring retarding device.

So far I have described the preferred embodiment of my said invention. It will of course be understood that each station is provided with an apparatus similar to that above described.

The operation of the same is follows: It will be assumed that the hook D on the end of the car next to the station is in engagement with the catch or loop of the retarding-spring. To propel said carriage the operator pulls upon the operating-cord. This moves the lower end of the propelling-lever out from the station and draws the carriage against the tension of the retarding-spring, and as it is drawn forward the inclined guards engage with said catch and forces it from the hook and releases the carriage. The entire force which the operator has applied to overcome the tension of the retarding-spring is suddenly applied to the carriage, the lever moving rapidly through the remainder of its stroke, increasing toward the finish and giving the carriage sufficient impetus to carry it to the next station. The block to which the retarding-spring is secured being adjustable to or from the way, the exact point at which the carriage is released may be regulated to determine the tension at which the retarding-spring will release said carriage. The farther the block is from the track-wire or way the sooner the carriage is released, and vice versa, thus enabling the retarding-spring catch to be adjusted to determine the degree of power necessary to overcome the tension of the spring and correspondingly increasing or lessening the power necessary to be applied to the propelling-lever.

The inclined guards I have described with this particular form of my invention may be dispensed with and the inner faces of the hooks beveled outward, so that as the spring is drawn forward it will slide off said hooks.

In Fig. 3 I show a modification of my invention in which the general construction is the same as above described; but to the lower end of the standard I pivot an operating-lever N, to which the operating-cord is attached. This increases the stroke of the operator. In

this form of the invention the upper end of the operating-cord is secured to a rubber or coiled spring  $n$ , the free end of which is attached to a lug  $n'$  on the outer side of the propelling-lever. Said spring passes through a guard  $n^2$ , secured to the upper part of the lever, and is provided with a button or knob  $n^3$ , which engages a beveled projection  $n^4$  on the end of said lever. During the stroke of the lever the button remains in engagement with the knob  $n^4$  and the spring has no effect. At the end of the stroke the button slips off said knob, as shown in dotted lines, Fig. 3, and the spring then acts to check the vibrations of said lever.

While the mechanism I have described embodies the preferred form of the retarding device, I have devised several modifications of the same, which I will now proceed to describe.

In Fig. 4 I illustrate one of said modifications. To the lower end of the standard is secured an arm O, projecting from said standard under the track-wire and parallel with the same. O' is a catch-block mounted and sliding upon the arm O and provided with a spring-actuated catch O<sup>2</sup>, pivoted in its outer end, which is adapted to engage the hook on the end of the carriage and hold the same. o is a projection on the under side of the pivoted catch, which is adapted to engage the tripping device hereinafter described to release the carriage. P is a retarding-spring secured at one end to the catch-block and at its other end to the standard. p is an adjustable tripper and stop secured to the outer part of the arm O. The propelling-lever may be used with this construction or a propelling-cord may be used. As the carriage is moved forward by the propelling device the catch-block moves with the same against the tension of the retarding-spring until the projection on the pivoted catch engages the tripper, which disengages the catch from the hook and releases the carriage. By adjusting the tripper to or from the standard the catch will release the carriage when the retarding-spring is under any desired tension, thus regulating the force of the stroke of the operating-lever. o' is a bumper-spring secured to the standard, with which the catch-block engages, and o<sup>2</sup> a bumper-spring on the catch-block with which the carriage engages.

In Fig. 5 I show a further modification of the retarding device. In this an arm R is adjustably attached to the standard by means of the set-screw  $r^2$  and projects out under the way. To the arm R is pivoted an arm R', which extends up under the way and is provided with a pivoted spring-actuated catch  $r$ , which engages the hook on the carriage to hold the same at the station. R<sup>2</sup> is a retarding-spring secured at one end to the standard and at its other end to the pivoted arm R'.  $r'$  is a stop which limits the backward movement of the pivoted arm. The propelling device is the



same as that heretofore described. In operation, when the carriage is moved away from the station by the operating-lever the pivoted arm is carried with it, as shown in dotted lines, against the tension of the spring until the hook escapes from the catch. Said retarding-spring may be of rubber or other suitable spring material.

In Fig. 6 I show a still further modification of the retarding device, the parts being shown in cross-section. In this form of the device an arm S is attached to the standard under the way and is provided with a pintle s, projecting substantially at right angles from said arm and located under the way. On the pintle is mounted a hollow cylinder S'. T is a coiled spring located within the cylinder and having one end attached to said cylinder and its other end attached to the pintle. t is a stop on the standard, which engages a stop t' on the cylinder to limit the movement of the same. U is a pivoted spring-actuated catch, located in a recess u, formed in the periphery of the cylinder, and is adapted to engage the hook on the carriage. In operation, when the carriage is moved away from the station the cylinder is turned against the tension of the spring until the catch releases the carriage. V is a bumper with which the carriage engages when returned to the station.

In Fig. 7 another modification of the invention is shown, in which is seen a retarding-spring W, consisting of a stiff rubber or coiled-wire loop attached to the underside of and projecting beyond the ends of the carriage. w is an adjustable support secured to the carriage and passing around the retarding-spring, by means of which said spring may be adjusted at the desired angle. W' is an arm secured to and projecting from the standard under the way or track-wire. W<sup>2</sup> is an arm pivoted to the outer end of the arm W' and provided with a hook or catch w', which passes through an aperture in the arm W'. Said catch is adapted to engage the loop of the retarding-spring to hold the carriage. w<sup>2</sup> is a spring connecting the arms W and W', and is arranged to retain the catch in position to engage the retarding-spring. When the carriage reaches the station and the loop of the retarding-spring strikes the beveled outer face of the catch, it forces said catch partially down, and also possesses sufficient flexibility to slide over said beveled face until said catch enters the loop, when it is returned to its normal position by the action of the spring w<sup>2</sup>, and the carriage is thus held at the station. The operating-cord passes through an aperture w<sup>3</sup> in the free end of the pivoted arm W<sup>2</sup>. To release the carriage, I provide an adjustable button or stop on said operating-cord, which, as the cord is drawn down, engages the end of the pivoted arm, draws the same down, and detaches the spring-actuated catch from the retarding-spring and releases the

carriage. The stop being adjustable, it may be set to release the carriage when the retarding-spring is under the desired tension.

It is obvious that various other forms of retarding-springs may be employed, and I do not wish to be understood as limiting myself to the particular constructions herein shown and described; but

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

1. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, and a suitable propelling device, of a retarding-spring engaging the carriage and adapted to follow and retard its outward movement when acted upon by the propelling device, and adjustable mechanism for releasing the carriage when a predetermined propelling-power has been exerted, substantially as shown and described.

2. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, a pivoted propelling-lever engaging with said carriage, an operating-cord connected directly thereto, and a guide-pulley arranged to cause the lever and cord to assume substantially a straight line, of a retarding device engaging the carriage and adapted to follow and retard its outward movement when acted upon by the propelling-lever, and mechanism for releasing the carriage when a predetermined propelling-power has been exerted, substantially as shown and described.

3. In a store-service apparatus, the combination, with a way, a carriage traveling thereon, a pivoted propelling-lever provided with an operating-cord and engaging with the carriage, and a concussion-spring adapted to engage the propelling-lever, of a retarding-spring provided with a catch engaging the carriage and adapted to follow and retard its movement when operated upon by the propelling-lever, and mechanism for releasing the carriage when said retarding-spring is under a predetermined tension, all constructed, arranged, and operating substantially as shown and described.

4. In a store-service apparatus, the combination, with a standard, a way, a carriage traveling thereon and provided with hooks at its ends, an arm projecting from the standard, and a propelling-lever pivoted to said arm and provided with an operating-cord and adapted to engage with the carriage, of an adjustable block secured to the standard, a retarding-spring L, secured to said block and having the catch portion l adapted to engage the hook on the carriage, and the inclined guards M, extending over the catch portion of the retarding-spring, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

5. The combination of a standard or station-post having a projecting arm, a lever



pivoted to the arm and provided on its lower free end with a loop adapted to engage the carriage, a pulling or operating cord connected directly to the upper end of the lever, and a  
5 guide-pulley mounted in the standard or station-post, over which the pulling or operating cord passes, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES R. HAIGHT.

Witnesses:

R. B. ROBBINS,  
A. E. BARAGAR.