

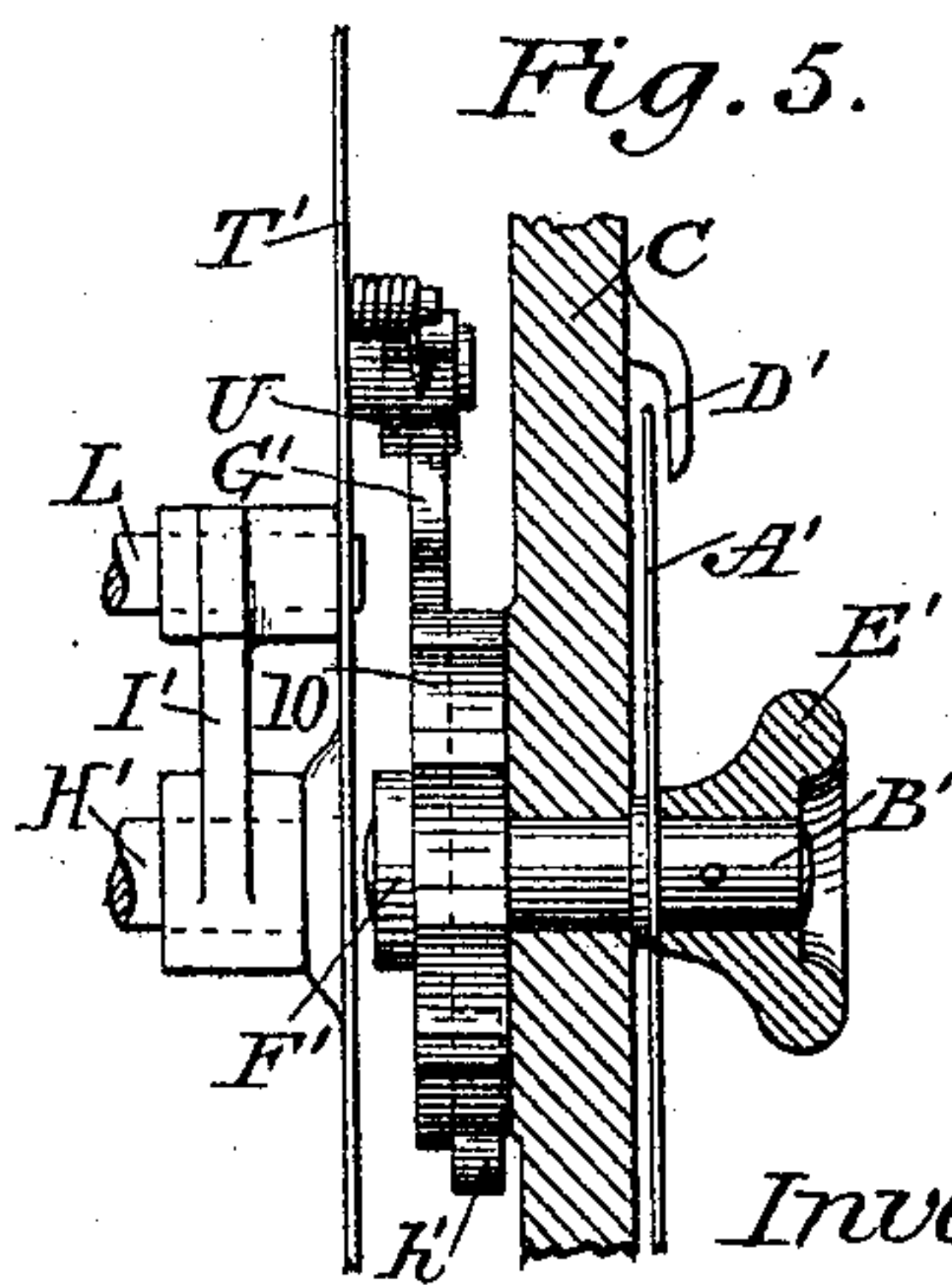
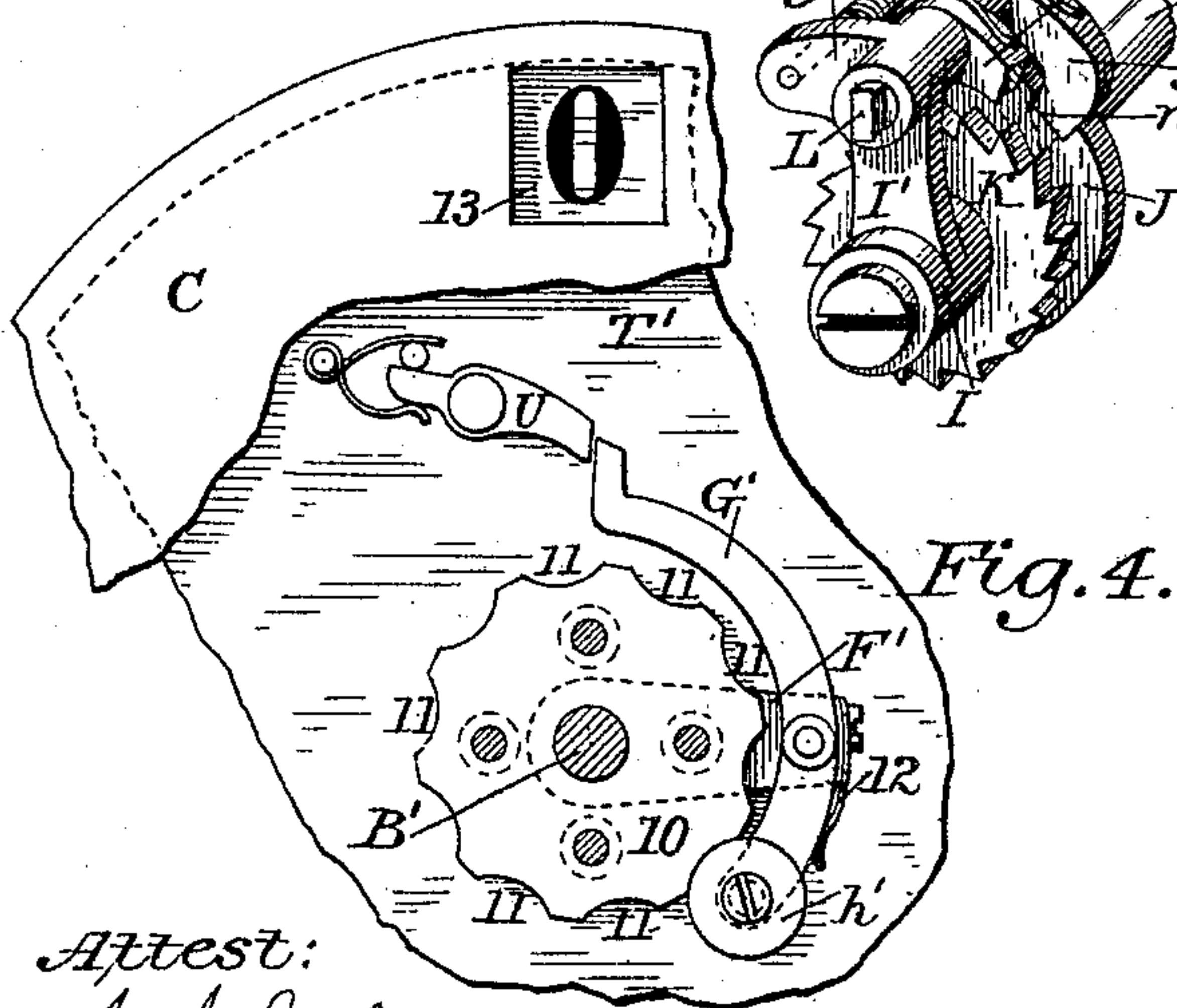
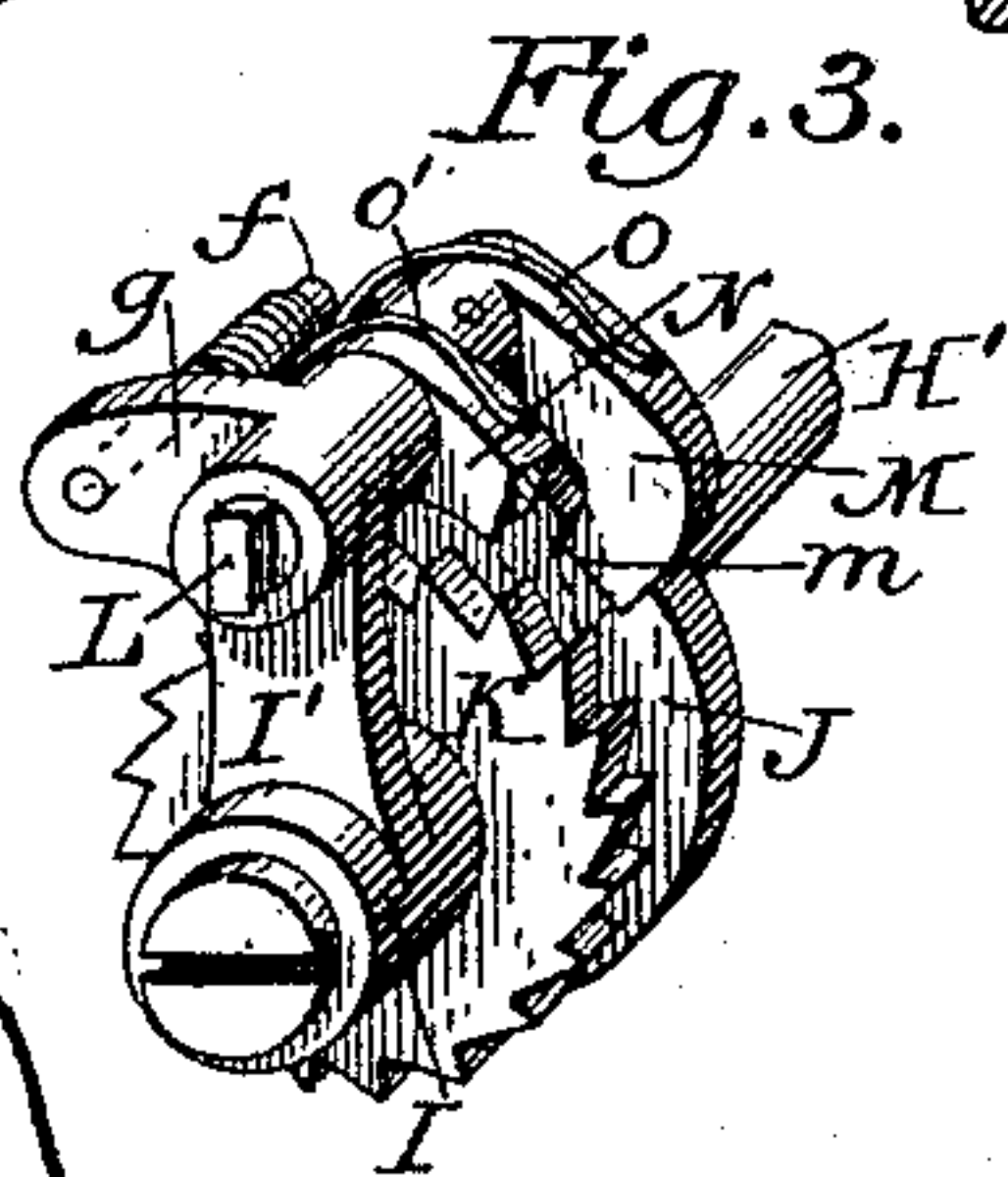
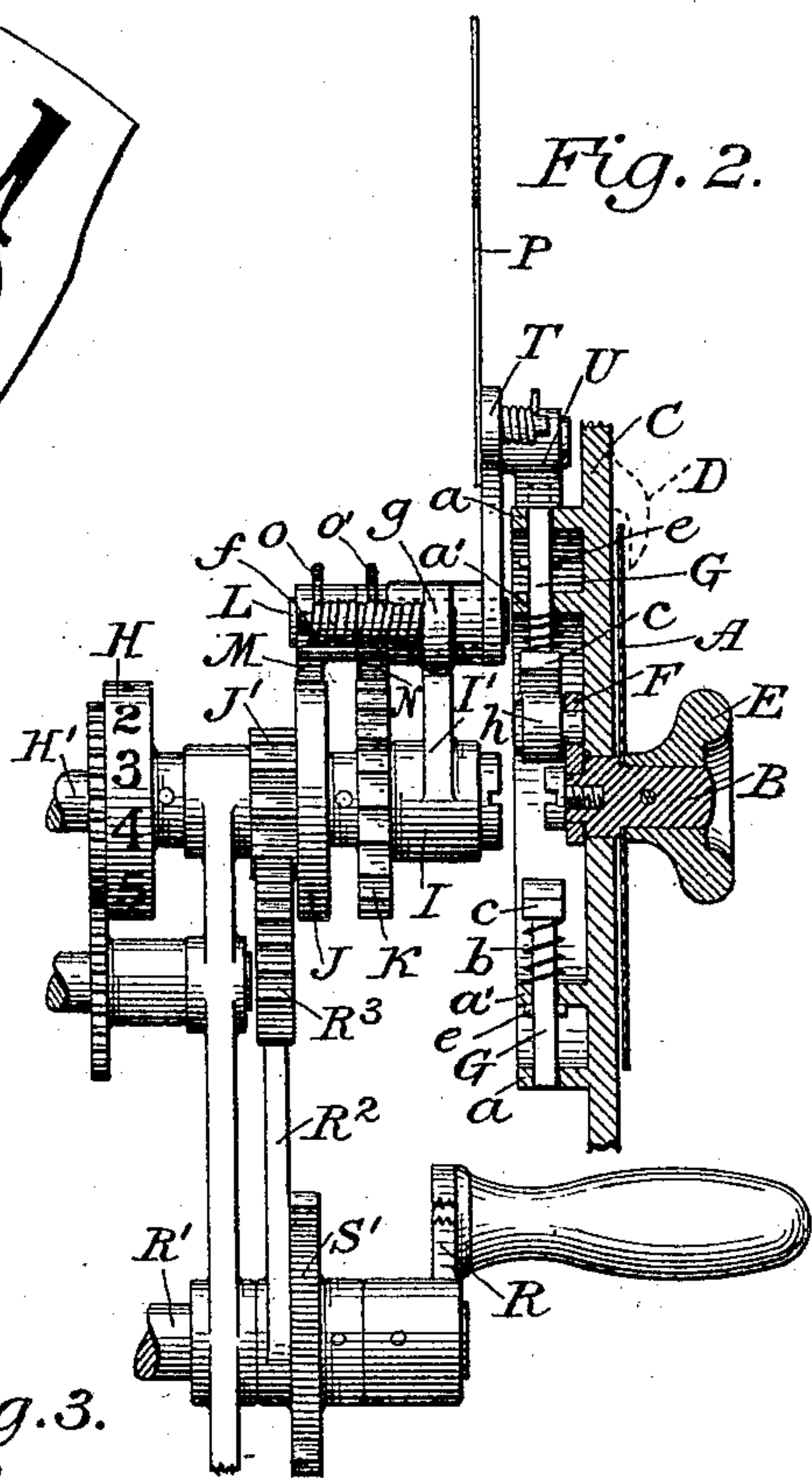
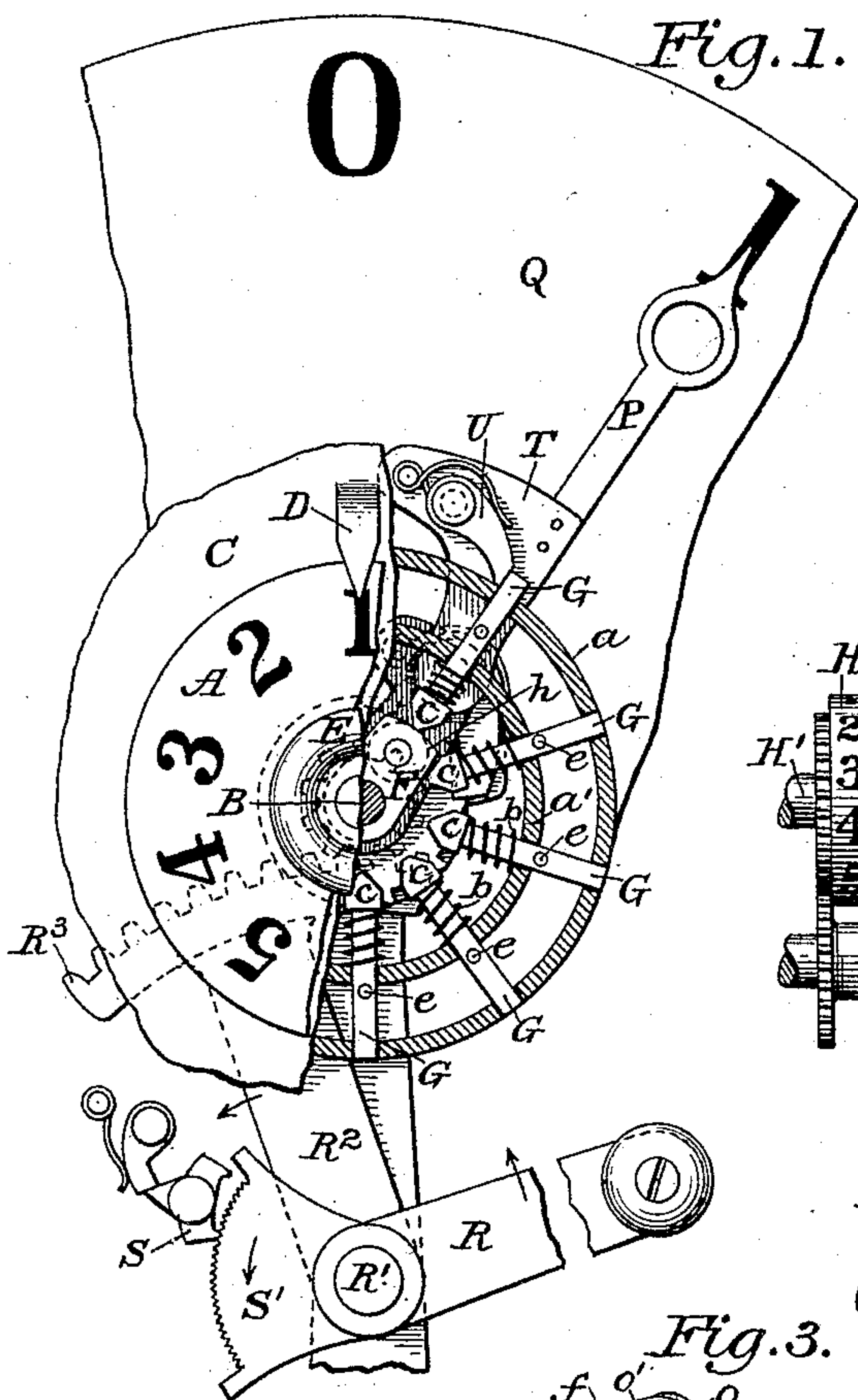
(No Model.)

2 Sheets—Sheet 1.

C. W. WEISS.
CASH REGISTER AND INDICATOR.

No. 443,025.

Patented Dec. 16, 1890.



Attest:
A. N. Jespersen.
E. M. Watson

Inventor:
Carl W. Weiss
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Atty.

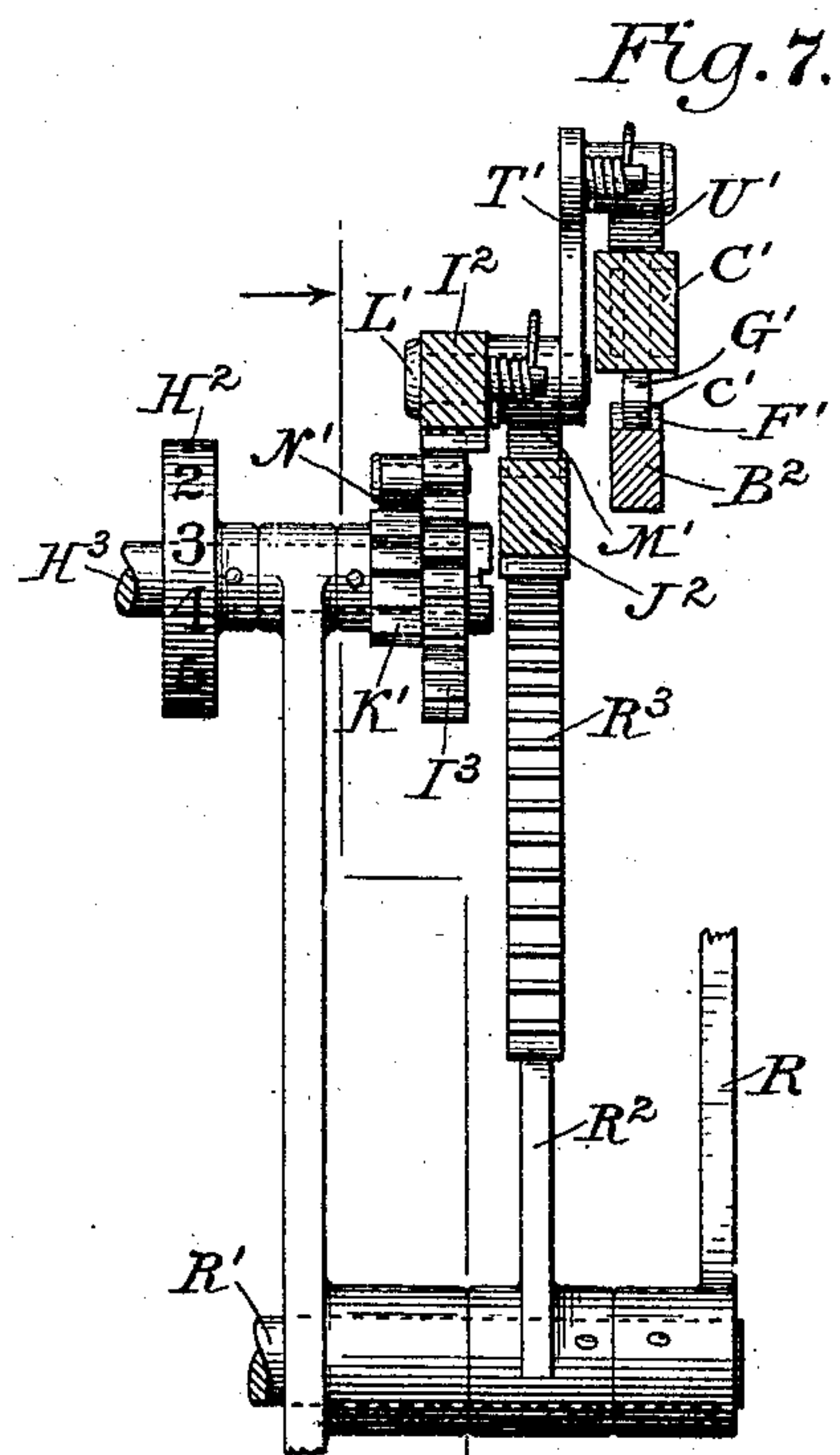
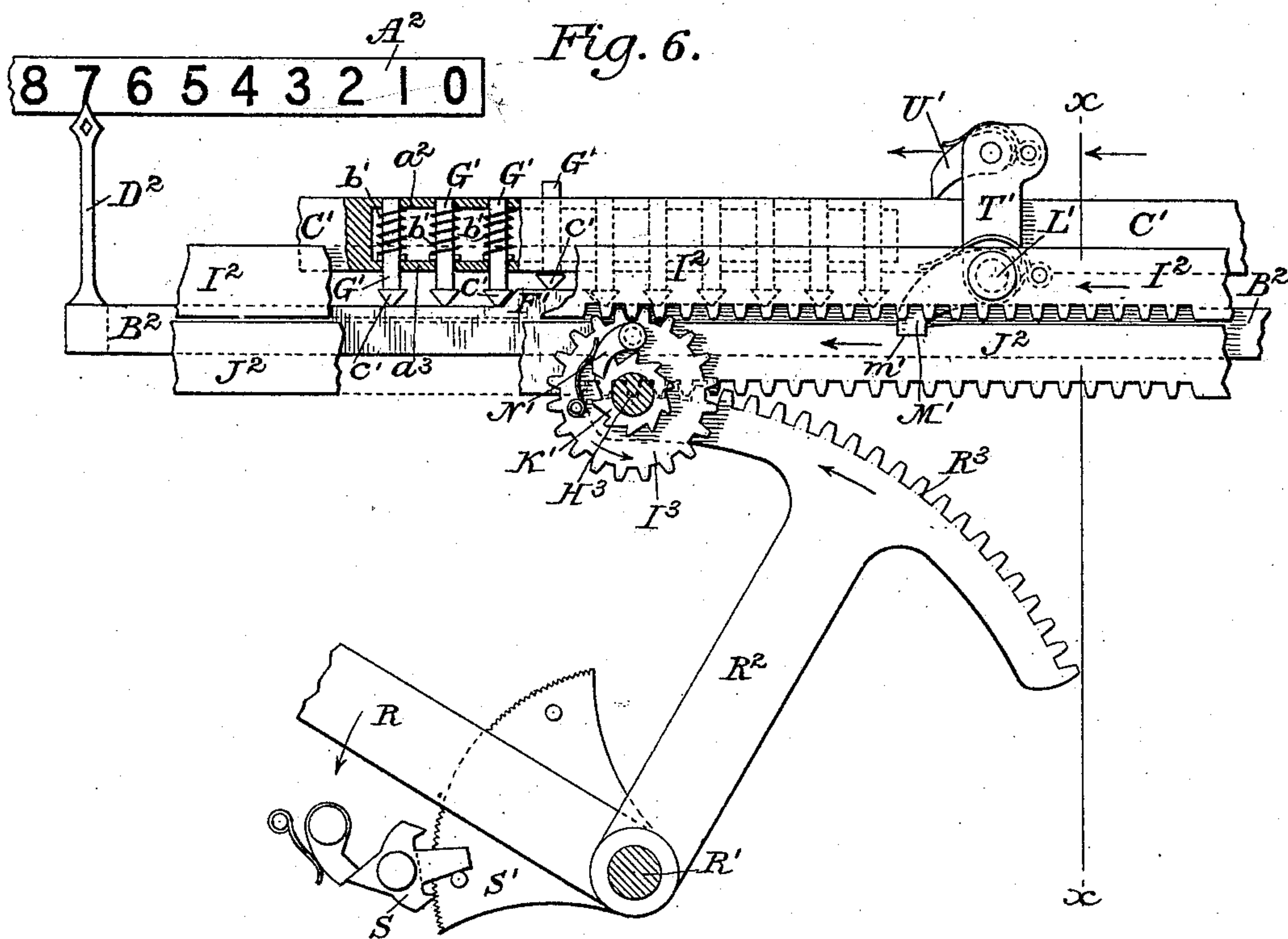
(No Model.)

2 Sheets—Sheet 2.

C. W. WEISS.
CASH REGISTER AND INDICATOR.

No. 443,025.

Patented Dec. 16, 1890.



Attest:
A. N. Jesbera.
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UNITED STATES PATENT OFFICE.

CARL W. WEISS, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE KRUSE
CASH REGISTER COMPANY, OF NEW YORK.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 443,025, dated December 16, 1890.

Application filed August 6, 1890. Serial No. 361,206. (No model.)

To all whom it may concern:

Be it known that I, CARL W. WEISS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and
5 useful Improvements in Adding and Registering Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, making a
10 part of this specification.

My invention relates to that class of indicating, adding, and registering machines in which the driving mechanism and the adding
15 mechanism are connected or disconnected by means of devices brought into play by the adjustment of the device indicating the number to be added.

It has for its object to simplify the same
20 and to increase the efficiency thereof; and it consists in the novel combination and arrangement of parts to attain the desired result, substantially as is hereinafter described and claimed.

25 In the accompanying drawings, Figure 1 is a front elevation, partly in section, of a portion of the stop-indicator, indicating-dial, and operating-crank of a machine embodying my invention, the casing not being shown and the
30 front plate being partly broken away to disclose the adjustable stops and the operating-crank. Fig. 2 is a side elevation of the mechanism shown in Fig. 1, looking to the right, with the casing in section. Fig. 3 is a detail
35 in perspective of the clutch mechanism by which the adding mechanism is automatically coupled with and uncoupled from the driving mechanism. Fig. 4 is a detail in elevation illustrating a modification in the form
40 and construction of the stop device. Fig. 5 is a side elevation of the same with the casing in section. Fig. 6 is a detail in elevation, partly broken away, illustrating a modification of my invention, Fig. 7 being a trans-
45 verse section thereof in line *xx* of Fig. 6.

Similar letters and figures indicate like parts in all of the figures.

In working out my invention the necessary
50 indication, first, of the number to be added or registered, and, second, of the same number after it has been added or registered, may

be produced either by means of a dial bearing the numbers and which is free to revolve under a fixed pointer or by means of a pointer revolving over a fixed dial bearing the num-
55 bers.

In the accompanying drawings, A represents a dial bearing upon its face figures corresponding with the series of numbers in connection with which the machine is to be used.
60 This dial is secured upon a central pivot B, mounted to turn in the front plate C of the case of the machine so as to revolve with said pivot B, under a pointer D, fixed to the casing to overhang the circular rim of the dial.
65 The outer end of the pivot B is fitted with a knob E, by which it may be readily turned, and upon its inner end is made fast a radial arm F, carrying upon its outer end a friction-roller *h*. By rotating the pivot B the friction-
70 roller *h* is brought successively into contact with the inner ends of a series of radial rods or stops G G G, corresponding in number with the figures on the dial A, and which are
75 mounted at equal distances apart to have longitudinal play parallel with the face of the dial in two concentric flanges *a a'*, projecting inward from the front plate C of the casing about the pivot B as a center. The inner
80 end of each rod G is beveled or formed with a beveled head *c*, whereby when the friction-roller *h* is brought into contact therewith from either direction it will pass under the end of the rod and force the rod outwardly
85 so that its outer end shall project beyond the outer concentric flange *a*, through which it plays. Each rod is encircled by a spiral spring *b*, bearing against one of the concentric flanges, and operating automatically to carry the rod inward when free, its inward
90 movement being limited by a transverse pin *e*. The rods G G are so disposed with reference to the pointer D as that when any one number on the dial is brought under said
95 pointer the friction-roller *h* shall be carried under the rod corresponding with said number, and having forced it outward will hold it in its outward position until another move is made with the dial.

The train of adding and registering wheels
100 for the machine, of which the units-wheel H is alone shown in the drawings, (see Fig. 2,)

is mounted upon a shaft H', whose axis is preferably made to coincide with that of the pivot B for the stop-indicator dial A, as shown in Fig. 2, and whose outer end is extended into close proximity to the front plate of the case. The units-wheel H is pinned to said shaft. A hub I and a disk J, having a lateral pinion J' formed integral therewith or rigidly secured thereto, are journaled to revolve freely and independently upon said outer end of the shaft, and a ratchet-wheel K, of a diameter corresponding with that of the disk J, is mounted upon the shaft and pinned thereto intermediate the disk and hub.

15 An arm I' is made to extend radially from the hub I and furnishes a bearing for a transverse rod L, (see Fig. 3,) pivoted in the outer end of the arm to extend parallel with the shaft H' over the ratchet-wheel K and disk J. To this rod L is made fast a dog or clutch device M, in position to rest upon the periphery of the disk J and to drop into a single notch *m* in said periphery, (see Fig. 3,) while upon the same rod a pawl N is loosely pivoted to engage the teeth of the ratchet-wheel K, the said teeth being so inclined as that when the pawl is revolved about the wheel in one direction it will glide freely over them; but in a reverse movement the pawl will engage the same and carry the wheel with it. Both the clutch-dog M and pawl N are actuated by springs *o o'*, attached to a fixed pin *f*, extending parallel with a pivoted rod L from an offset *g* in the end of the arm I', as shown in Fig. 3.

35 A pointer P is made fast to the inner end of the rod L, so that it will revolve with the arm I', carrying said rod about the shaft H' as a center, and so far as the spring *o*, governing the dog M, fixed to the rod L, will permit, this pointer admits of an independent vibration upon said rod as a pivotal center. A dial Q is mounted under the pointer, (see Fig. 1,) said dial having figures thereon corresponding with the revolving dial A of the stop-indicator, and the pointer is made to describe a complete circle back and forth over the dial by means of a crank R upon a rock-shaft R', carrying an arm R², fitted at its outer end with a toothed segment R³, gearing with the lateral pinion J' on the disk J. The movement of the crank R is so limited and its gear with the pinion J' so adjusted as that in making a complete stroke to the right or the left it will produce a single complete revolution of the pinion. A reverse movement of the crank after it has commenced to move in either direction before it has completed its stroke in that direction is prevented in the customary manner by a double-acting spring-actuated detent S, (see Fig. 1,) engaging a toothed segment S', fitted on the crank. The revolution of the pinion J' and its disk J will, by reason of the engagement of the dog M, fixed upon the rod L, carried by the arm I', to which the pointer P is attached, produce a corresponding revolution of the pointer, and by means of the engage-

ment of the pawl N, likewise carried by the rod L, with the ratchet-wheel K the shaft H' and adding mechanism II will be made to revolve in unison with the pointer in its forward movement so long as the dog M remains in engagement with the disk J.

A carrier T is fixed to the arm I', carrying the pointer P, so as to travel with it, and upon this carrier is pivoted a detent U in position to overhang and ride upon the outer concentric flange *a*, through which the radial stops G G play. The detent U is so inclined as that when the pointer P is making a reverse or backward movement the pawl will ride freely over the end of either of the stops which may be projecting out through the flange *a*; but when the pointer is traveling forward the engagement of the pawl with the stop will produce a lock, and thereby arrest the further movement of the pointer. When this occurs, the continued strain of the driving mechanism upon the arm I', carrying the pointer P, will cause the pointer and its pivot-pin L to turn upon the axis of said pin, and thereby operate to lift the clutch-dog M, in opposition to the stress of its spring *o*, out of the notch *m* in the driving-disk J, thereby leaving said disk and the crank R, which actuates it, free to continue their movement independently of the pointer until the stroke of the crank is completed. Upon the return-stroke the dog M will so soon as it reaches the notch *m* automatically drop into it, thereby recoupling the pointer and disk, so that the pointer will be carried back by the movement of the disk under the action of the crank to its first position.

In the operation of the machine the stop-indicator A is turned by means of its knob E until the figure representing the number to be added and registered by the machine is brought into register with the pointer D. This movement of the indicator A will operate by means of the arm F and friction-roller *h*, revolving with it, to force that one of the stops G which corresponds with the figure indicated outward, so that its outer end shall project beyond the concentric flange *a*. The crank R is now to be turned backward to the end of its stroke, so as to carry the pointer P of the main indicating-dial Q back to the zero-point. In this first or backward movement of the crank the disk J, geared to the crank in manner as described, will turn independently of the clutch-dog M, which will ride free over the periphery of the disk J until the detent reaches the notch *m* in the disk, whereupon by dropping into said notch it will become coupled to the disk, and during the remainder of the backward stroke of the crank it will be carried with the disk, and will thereby operate to turn the pointer P and also the pawl N of the ratchet-wheel K; but since when moving in this direction the pawl N does not engage the ratchet-wheel said wheel and its shaft H', actuating the adding mechanism, will not be moved. In its

backward movement the detent U, carried with the pointer P, will when it reaches the projecting stop G slip freely over it. When the return or forward stroke of the crank is made, the engagement of the dog M with the disk J will couple the pointer P with the crank and pawl N, so that as the pointer moves forward from the zero-point over the dial the pawl N, in engagement with the ratchet-wheel K, will simultaneously move the adding mechanism in unison therewith. So soon, however, as the detent U, carried by the pointer, reaches the stop G it will as it continues to move forward engage said stop, and thereby arrest the further forward movement of the pointer at a point opposite the figure on the dial Q corresponding with that indicated on the dial of the stop-indicator A. When the pointer is thus arrested, its vibration upon the pivot-pin L as its axis will, by causing said pin to turn, uncouple the clutch-dog M from the driving-disk J, and thereby arrest the further movement of the detent N under the influence of said disk, leaving the latter free to move forward independently until the return-stroke of the crank is completed, and preventing any further movement of the adding mechanism. The adding mechanism will thus be actuated only as the pointer P moves from zero to the figure corresponding with the number first selected and indicated by the stop-indicator, and which it was desired to add and register, while the pointer P will remain at the figure last registered to indicate the same until a new number is added.

As a modification of the stop mechanism, a single-stop lever, as G', Figs. 4 and 5, may be used in place of a series of stops G G G. This lever is curved in semicircular form to partially encircle the pivot B', and is pivoted at about one-third its length to an arm F', projecting radially from the pivot B', so that its ends may swing to and from the pivot B' over the periphery of a fixed wheel 10, whose center coincides with the axis of the pivot B'. The periphery of this wheel 10 is notched at regular intervals, the notches 11 11 11 being made to correspond in number with the figures on the dial A', Fig. 5, and the shorter arm of the curved lever G' is fitted with a friction-roller h', adapted to ride upon the periphery of the wheel and to rest in its several notches 11 11 11, its contact with the wheel being enforced and maintained by a spring 12. The opposite longer arm of the lever is so shaped and adjusted as that when the friction-roller h' drops into one of the stop-notches 11 11 of the wheel the end of said longer arm will be swung out into position to engage the pawl U, carried by the carrier-plate T' in the main indicating mechanism, said carrier-plate being illustrated in Fig. 4 as a revolving dial T', whose figures are brought appropriately to view through a sight-opening 13 in the face-plate C, and which operates as an equivalent for a pointer P, attached to carrier-plate I, to move over a

stationary dial Q, as shown in Fig. 1. By turning the indicator-knob E' the stop-lever G' is carried about the fixed wheel 10, and when the figure on the dial corresponding with the number to be added is brought in register with the pointer D' the friction-roller h' will drop into a notch corresponding with said figure, the notches being so adjusted as that when the roller enters only one of them the outer end of the lever will be swung out into position to arrest the dial T', when the figure corresponding with that indicated on the stop-indicator dial A' is brought to view at the sight-opening 13.

In the modification of the invention illustrated in Figs. 6 and 7 a stationary longitudinal dial or indicating-strip A², bearing upon its face figures corresponding with the series of numbers in connection with which the machine is to be used, is substituted for the dial A of Fig. 1, and a pointer D² is mounted upon a parallel sliding bar B² to move over the indicator. Upon the upper side of this sliding indicator-bar, which corresponds substantially with the rotating shaft B of Fig. 1, is formed an offset F', inclined or beveled at each end. The bar is carried under a series of vertically-disposed spring-actuated stop-pins G' G', corresponding with the numbers on the indicator, and which are mounted in a suitable longitudinal frame C', extending parallel with the indicator-bar and above it. The lower end of each stop is formed with a beveled head c'. The spiral springs b' b' for the stops are interposed between the two parallel longitudinal plates a² and a³ of the frame. The indicator A² is so adjusted with reference to the stops as that when the pointer D² is in register with either number on the indicator the offset F' on the indicator-bar B² will pass under the lower end c' of the stop corresponding with the number indicated, and will bear it up, so that the upper end of the stop shall project above the top plate a² of the frame. The spindle H² for the adding and registering mechanism, and to which the units-wheel H² (see Fig. 7) is made fast, is mounted at a right angle with the indicator-bar B², and is fitted with a ratchet-wheel K', also made fast thereto. A pinion I² is mounted to turn loosely upon the spindle H², adjacent to the ratchet-wheel K', and is geared to a toothed bar I², mounted to slide freely parallel with the indicator-bar B², so that the movement thereof will produce a revolution of the pinion. A spring-actuated pawl N' is pivoted to the side of the loose pinion I² to engage the ratchet-wheel K' in such manner as that it will slide freely over the teeth of the pinion when the pinion is revolved backward, but will as the pinion is turned forward engage the ratchet and cause it to turn in unison therewith. Hence a movement in one direction of the toothed bar I² will produce a rotation of the spindle H² and of the units-wheel fast thereto, while the return movement of the bar will

allow the wheel to stand idle. A third longitudinally-sliding bar J^2 is mounted between the indicator-bar B^2 and the bar I^2 , actuating the adding mechanism, parallel with said bars and in position to support upon its upper end the free end of a dog M' , pivoted to the side of the bar I^2 . This detent is free to engage a single notch m' in the upper side of the bar J^2 when brought in register with said notch, and otherwise will slide freely upon the bar. The notch and detent are invariably brought into registry when both of the bars I^2 and J^2 are carried to the full end of their outer movement, or movement from the indicator, and so long as the detent remains in the notch the two bars will be coupled thereby to move in unison. The rocking pin L' , upon which the dog M' oscillates and to which it is secured, is fitted with a radial arm or carrier T' , also secured thereto, and which projects vertically upward to afford a bearing for a lateral spring-actuated detent U' , pivoted thereto in position to extend over and rest and slide freely upon the upper plate a^2 of the stop-frame C' . Hence in the reciprocating movements of the bar I^2 the detent U' will be carried back and forth in unison therewith over and upon the stop-frame C' in position to contact with either of the stops G' , whose end may be projecting above the frame. In moving outward or away from the indicator the detent U' will be lifted free over the stop; but in moving inward it will engage and be arrested by the stop. When this occurs, the resistance of the stop will cause the carrier-arm T' and its pivot-pin L' to rock, and thereby swing the attached dog M' out of its engagement with the bar J^2 , which will be thereby uncoupled from the bar J^2 and left free to continue its movement independently thereof. The bar J^2 is actuated back and forth by means of the toothed segment R^3 , engaging a rack on the lower edge of the bar, said segment being operated by the crank-arm R and controlled by a double-acting detent S , in a manner as hereinbefore described.

In the operation of this modification of my invention the pointer D^2 is moved to the figure on the indicator-strip A^2 corresponding to the number to be added. This movement will by carrying the offset F' under the stop-pin G' corresponding with said number force the pin outward on the frame C' . The crank-arm R is then to be swung back and forth a full stroke in each direction. As it is moved back the toothed bar J^2 will be moved outward to its full extent. In the outward movement of the bar it will slide independently until the notch m' is brought into register with the dog M' , resting upon its upper face, whereupon the engagement of the dog with said notch will couple the bar J^2 to the bar I^2 and carry the latter and the detent U' , attached thereto, with it to the full end of its outward stroke. As the bar I^2 thus moves outward it causes the pinion I^3 to revolve; but since the pawl on said pinion will when

moving in that direction ride idly over the ratchet-wheel K' it will not move the adding mechanism. So soon, however, as the crank-arm begins its return-stroke the pawl N' will be brought into active engagement with the ratchet-wheel K' , so that the adding mechanism will be actuated by said return movement until the detent U' , sliding on the stop-frame C' , strikes the projected stop-pin, and thereby causes, in manner as described, the dog M' to swing out of engagement with the actuating-bar J^2 , leaving the crank-arm and the bar J^2 , actuated by it, to complete their return or inward stroke independently of the bar I^2 , which, with the adding mechanism geared thereto, will come to a standstill. Thus the distance traversed by the bar I^2 upon its inward or return movement from its zero or initial point to the number with which the projected stop corresponds will determine the extent of movement of the adding mechanism at each movement of the crank and will correspond with the number indicated and to be added.

I claim as my invention—

1. The combination, in an adding or registering machine, of an indicator, one or more movable stops actuated by the indicator to be carried into an active position corresponding with the number indicated, a reciprocating detent-carrier, a detent pivoted to the carrier in manner to be tripped by contact with the stop when moving forward and to engage it and be arrested thereby when moving backward, a driving mechanism for the reciprocating carrier, a dog or clutch device coupled mediately with the detent and left free to engage the driving mechanism when the detent is moving forward and be disengaged therefrom when it engages the stop, and adding mechanism brought into gear with the detent-carrier to be actuated thereby when the latter is moving forward, substantially in the manner and for the purpose herein set forth.

2. The combination, with the adding or registering mechanism in an adding or registering machine, of a reciprocating detent-carrier automatically geared to said mechanism to actuate it when traveling forward and automatically uncoupled therefrom to move independently thereof when moving backward, a tripping-detent pivoted upon said carrier, one or more adjustable stops disposed to intersect when adjusted the path of travel of the detent, an indicator actuating the stop or stops to adjust the same in correspondence with a number indicated, driving mechanism actuating the reciprocating detent-carrier, and an interposed clutch device governed by said detent, whereby when the stop is adjusted in correspondence with the number indicated the detent will in moving backward independently of the adding mechanism strike the stop and trip freely over it, but in moving forward in engagement with the adding mechanism will upon striking the stop be

arrested thereby and be thereby disengaged from the driving mechanism, substantially in the manner and for the purpose herein set forth.

5 3. The combination, in an adding or registering machine, of an adding or registering mechanism, a reciprocating operating device which when moving in one direction is made
10 to actuate said mechanism, an adjustable stop admitting of being carried into position to arrest the movement of the operating device when it is actuating the adding or registering mechanism, a driving mechanism having limited movement and which positively
15 actuates the operating device in both directions and is adapted to be automatically disengaged therefrom to complete independently its forward movement when the latter is arrested by the stop and to re-engage it automatically upon its return movement, and an
20 indicator actuating the stop to carry it into position to arrest the operating device for the adding or registering mechanism, all substantially in the manner and for the purpose
25 herein set forth.

4. The combination, in an indicating, adding, and registering machine, with an indicating device and a series of adjustable stops corresponding with the figures on the indicator and severally moved each into an active
30 position by the movement of the indicator to a corresponding figure, of an adding mechanism, an intervening reciprocating detent-carrier limited in its movements, engaging mechanism by which the detent-carrier is automatically geared to the adding mechanism when moving in one direction and released therefrom during its reverse movement, a
40 tripping-detent pivoted upon said carrier to contact with each stop moved into active position by the indicator and which will slip over the same when moving independently of the adding mechanism and will in its reverse movement engage the same to be arrested thereby, a driving mechanism to impart a positive movement to the detent-carrier first in one direction and then in the other, and an intermediate clutch device which is uncoupled when the movement of
50 the detent-carrier is arrested to permit the driving mechanism to complete its full movement and is coupled again upon its return, substantially in the manner and for the purpose herein set forth.

55 5. The combination, in a registering and indicating machine, of a dial bearing a series of figures, a pointer moving back and forth over the figures on the dial, a driving mechanism whose movement is limited to correspond with that of the pointer, a clutch device coupling the driving mechanism and

pointer and adapted to be automatically uncoupled by a continued movement of said mechanism after the movement of the pointer is arrested, a tripping-detent carried with the
65 pointer, a series of adjustable stops corresponding with the figures on the dial and severally adapted to arrest the movement of the pointer by contact with the detent, and an indicating device actuating said stops and
70 having figures to correspond with those on the indicator-dial, and which operates when set at any one figure to adjust the stop corresponding therewith in position to arrest the detent, all substantially in the manner and
75 for the purpose herein set forth.

6. The combination, in an indicating and registering machine, of an indicator or stop-setting device mounted to revolve upon a central spindle, a series of adjustable stops
80 mounted concentrically about said spindle and corresponding with the figures of the indicator, and which are severally adjusted by its movements, a registering mechanism revolving upon an axis coincident with that of
85 the indicator, a pivoted detent carried by the registering mechanism to engage the adjusted stop and thereby arrest said mechanism, driving mechanism actuating the registering mechanism, and an interposed clutch or coupling device automatically uncoupled when
90 the movement of the registering mechanism is arrested by the adjusted stop and recoupled upon its return, substantially in the manner and for the purpose herein set forth.

7. The combination, in an adding and registering machine, of an indicator revoluble on a central axis, a series of adjustable stop-pins mounted radially about said axis, springs normally retracting said pins toward the axis,
100 a cam revolving with the indicator to engage and force out successively said stop-pins, a reciprocating detent-carrier revoluble independently about the axis of the indicator, a spring-actuated detent pivoted upon said carrier in position to strike the several stop-pins when projected and disposed when moving forward to trip over and pass the projecting pin and in moving backward to engage it and be arrested thereby, and adding mechanism
105 gearing automatically with the detent-carrier when it moves backward and freed therefrom when it moves forward, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my
115 name to this specification in the presence of two subscribing witnesses.

CARL W. WEISS.

Witnesses:

A. N. JESBERA,
E. M. WATSON.