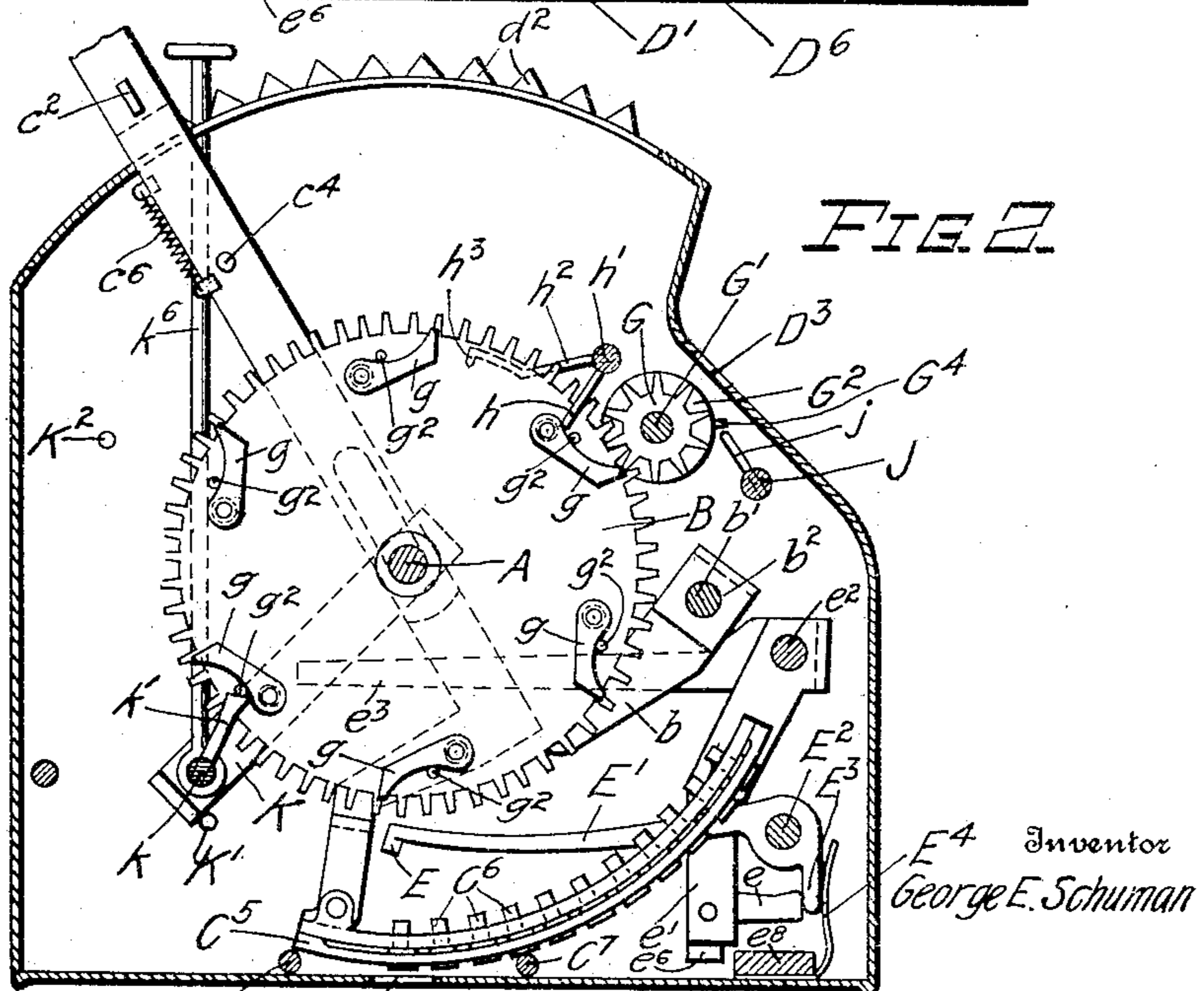
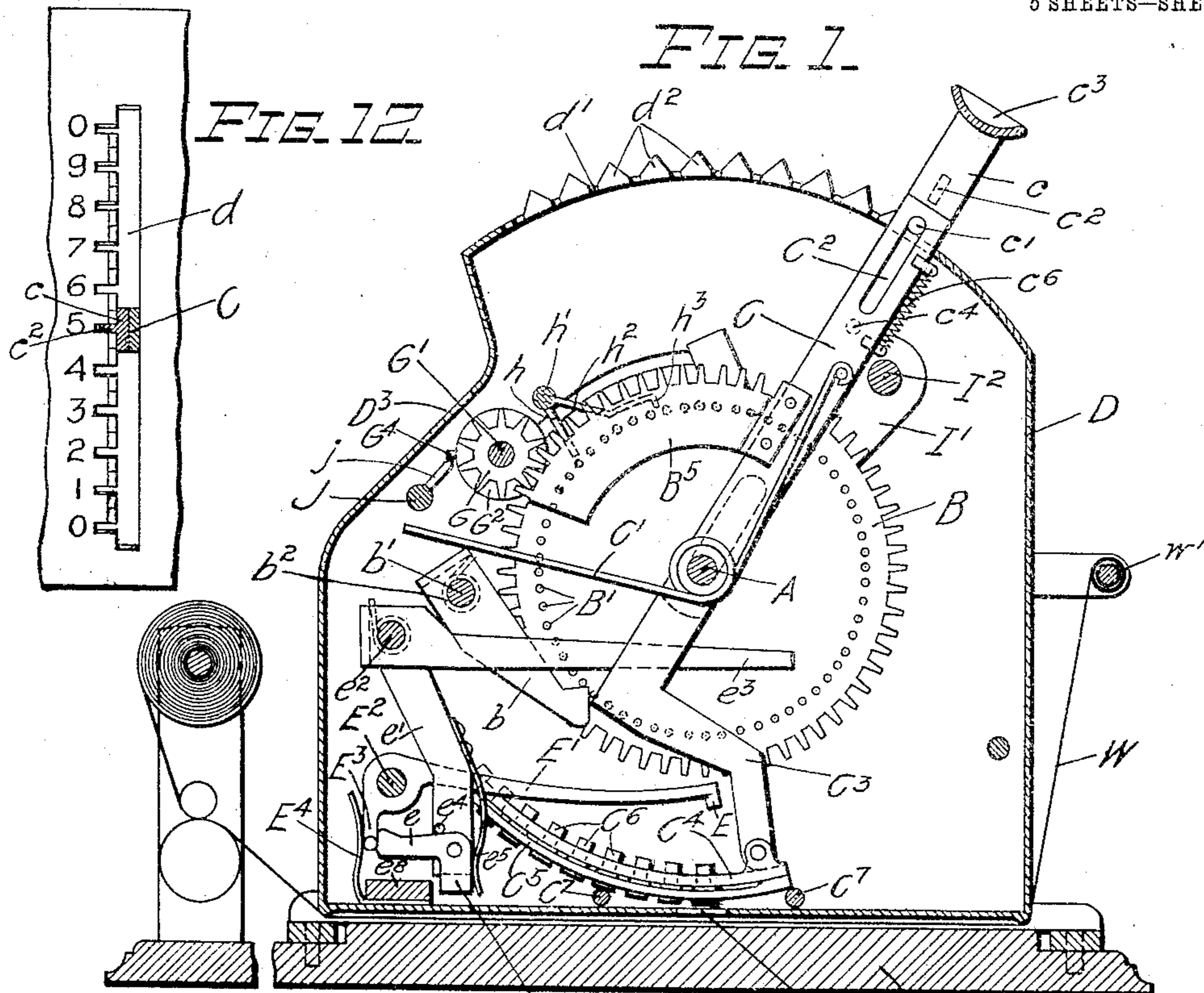


No. 781,368.

PATENTED JAN. 31, 1905.

G. E. SCHUMAN.
CALCULATING MACHINE.
APPLICATION FILED AUG. 31, 1904.

5 SHEETS—SHEET 1.



Witnesses
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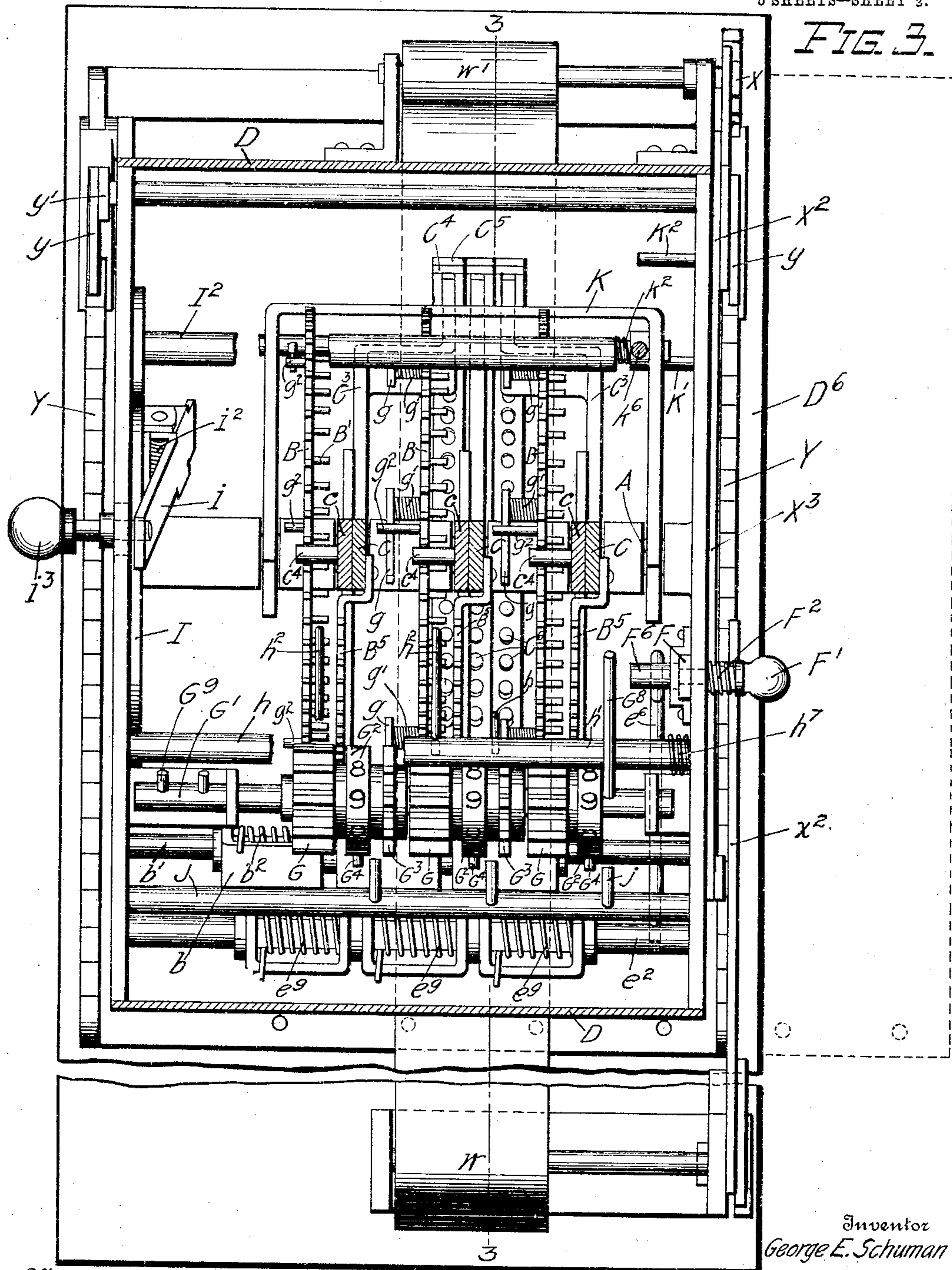
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5 SHEETS—SHEET 2.



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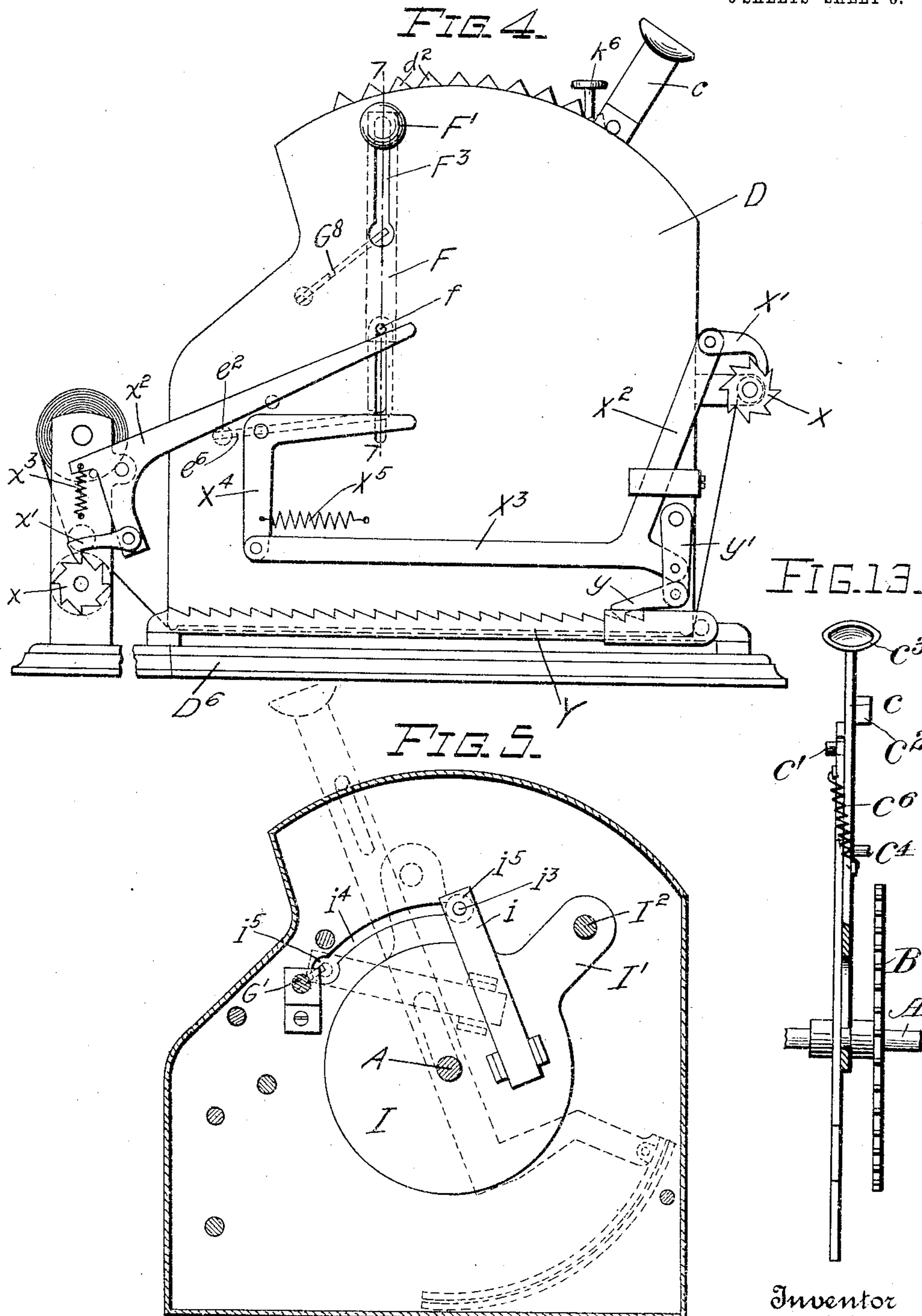
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5 SHEETS—SHEET 3.



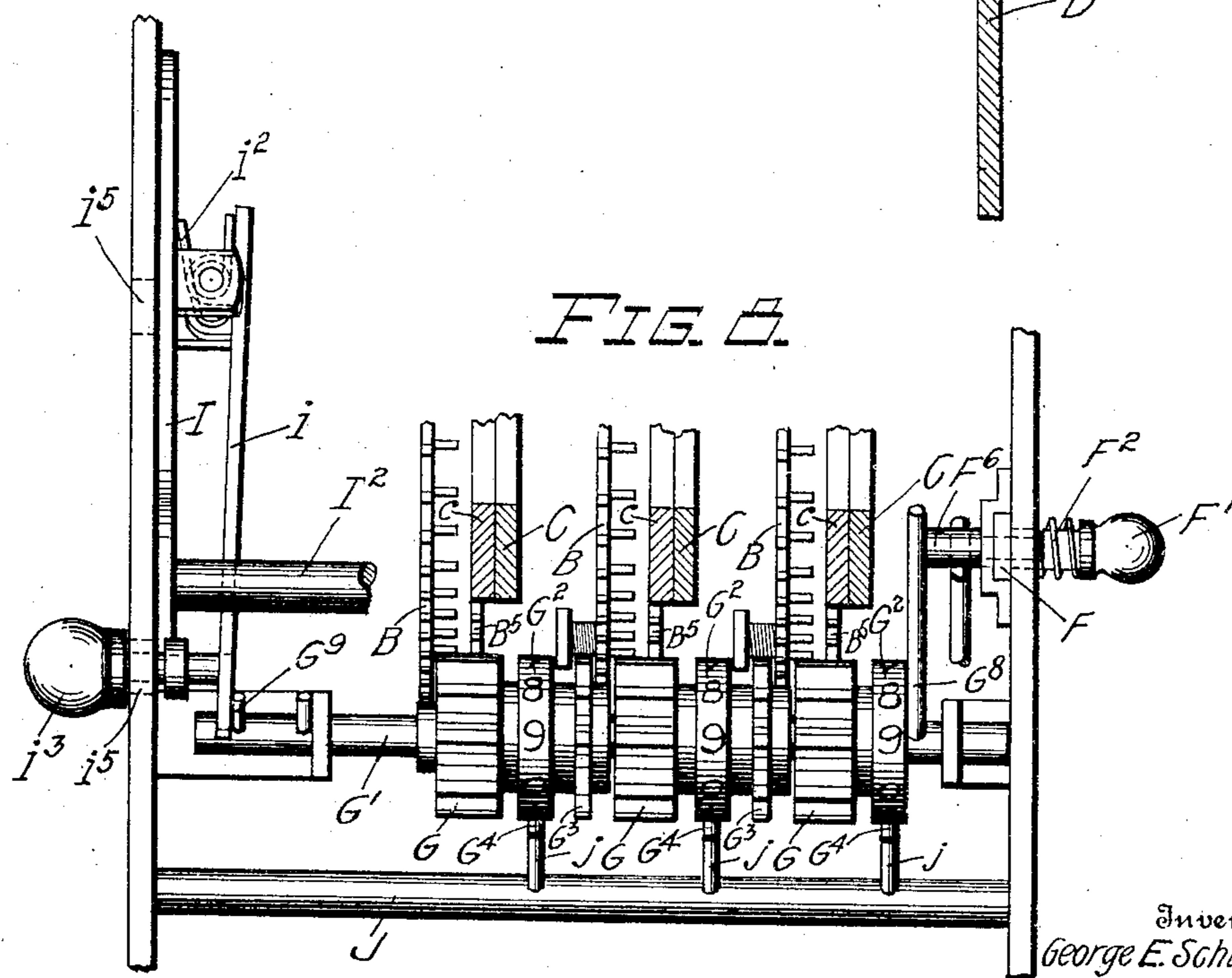
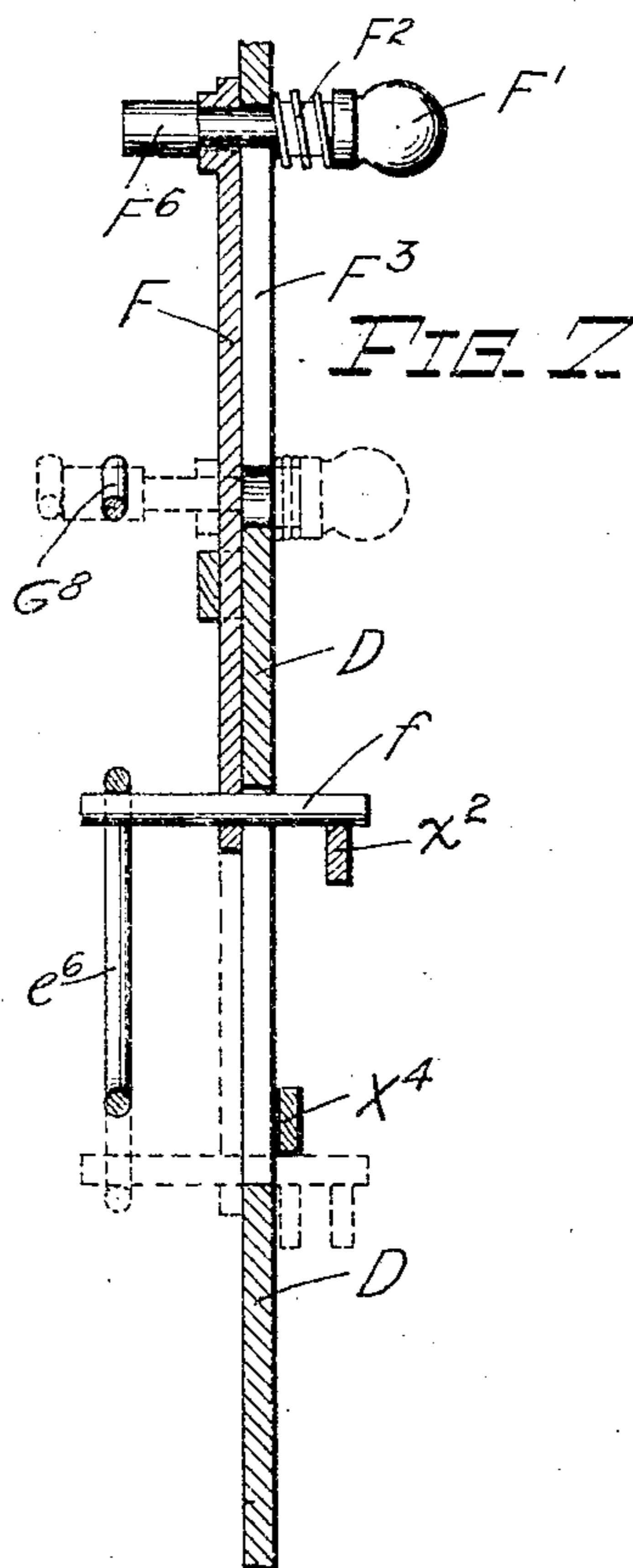
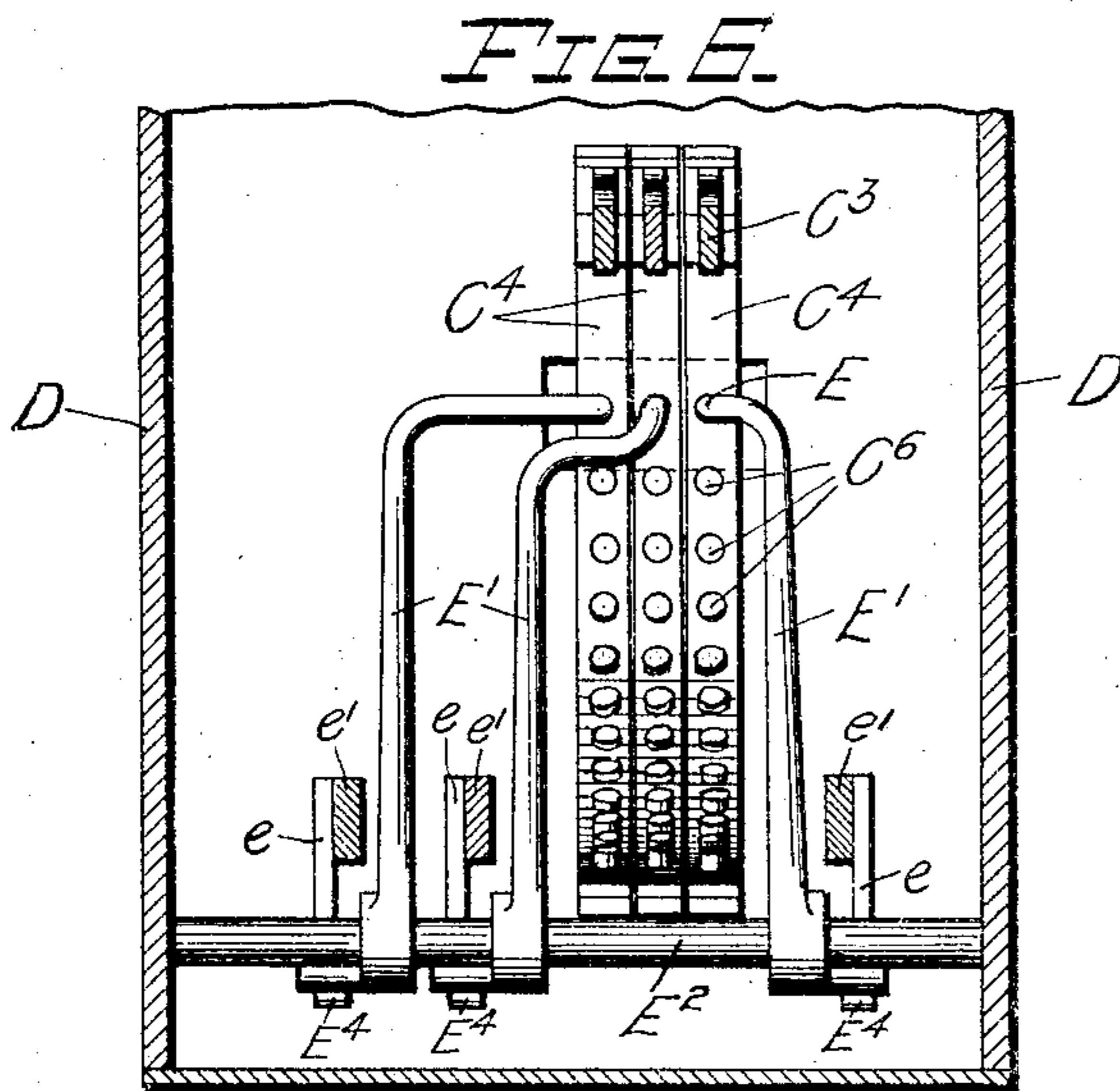
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5 SHEETS—SHEET 4.



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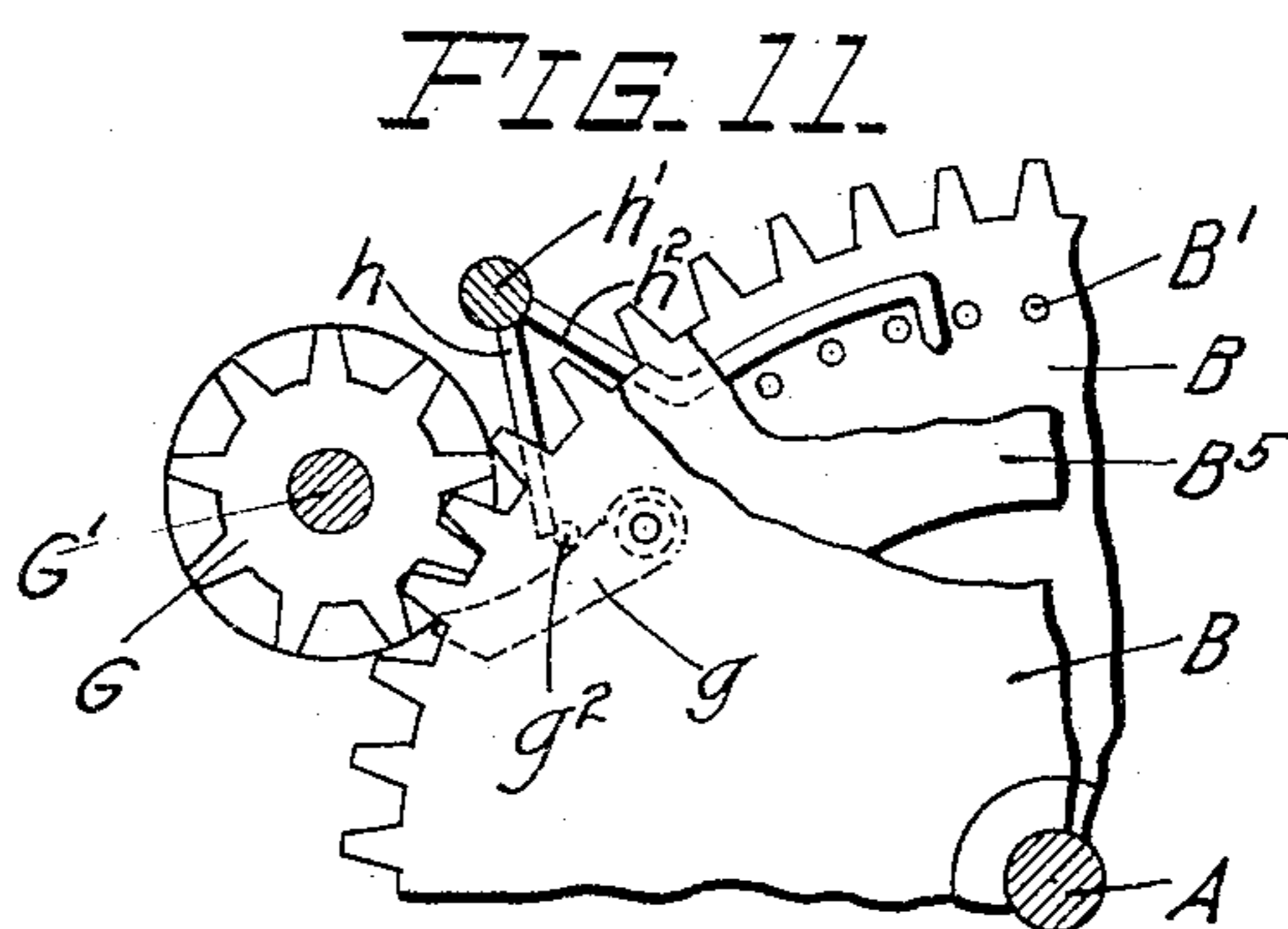
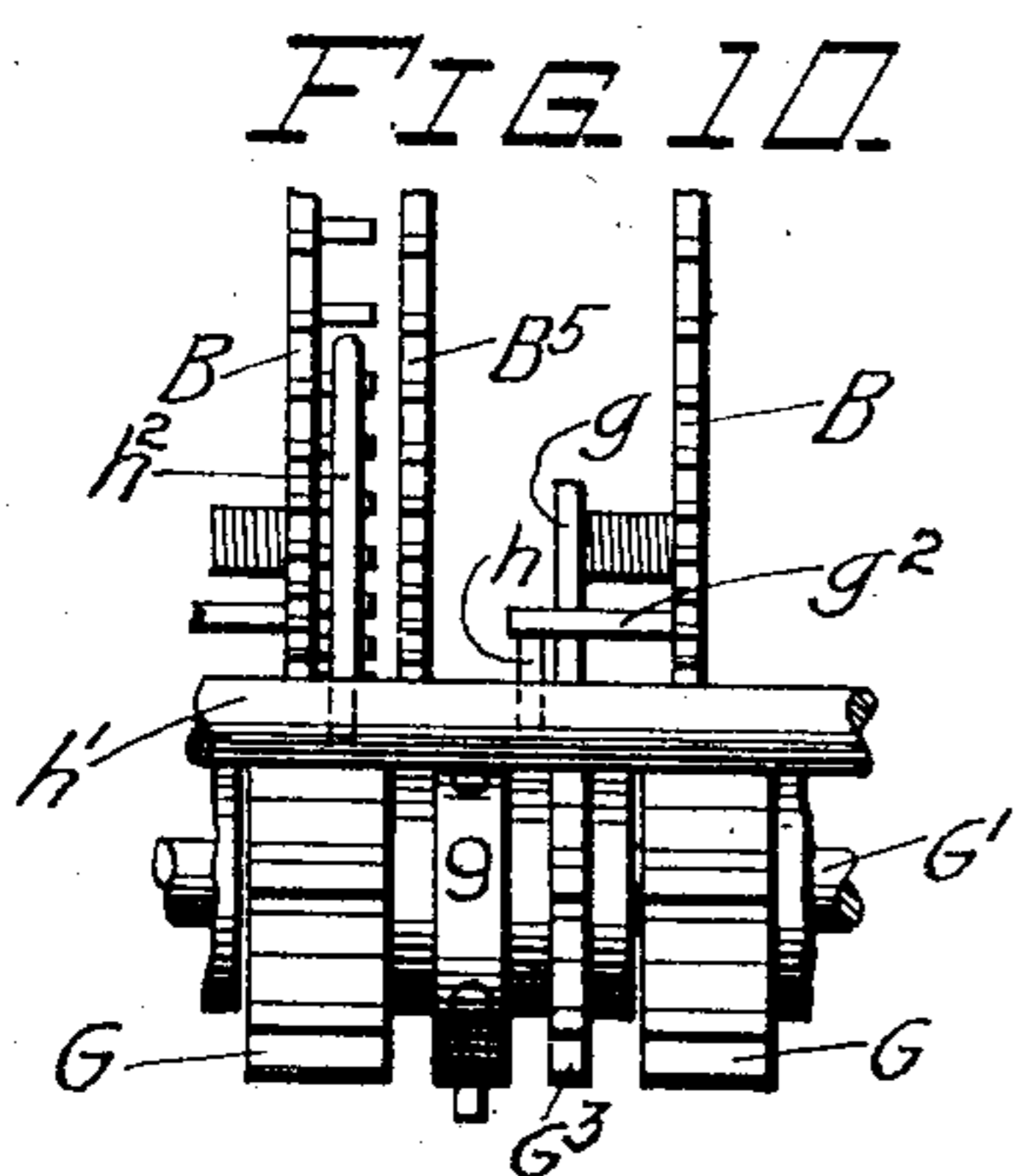
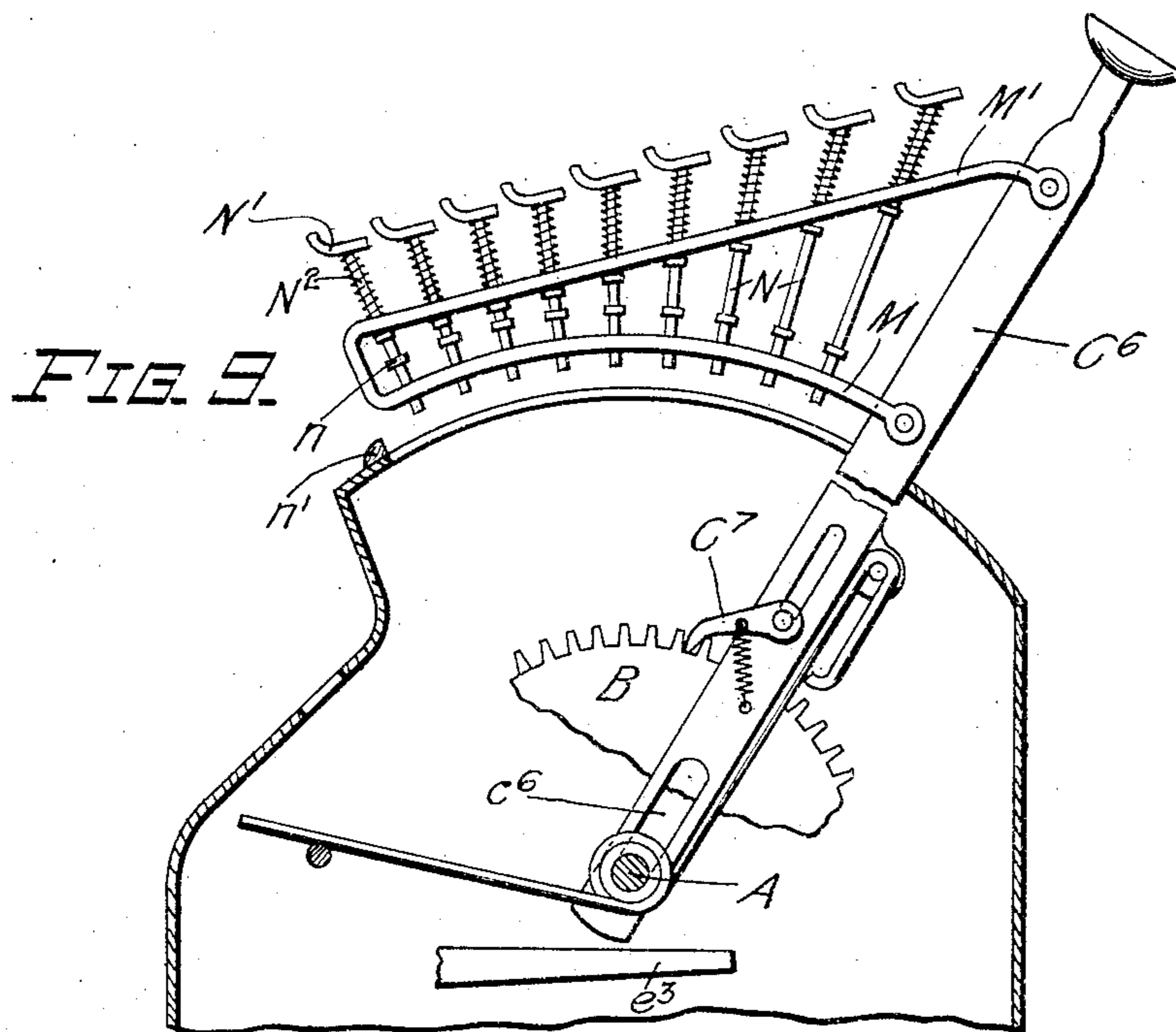
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APPLICATION FILED AUG. 31, 1904

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

GEORGE E. SCHUMAN, OF LOUISVILLE, KENTUCKY.

CALCULATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,368, dated January 31, 1905.

Application filed August 31, 1904. Serial No. 222,871.

To all whom it may concern:

Be it known that I, GEORGE E. SCHUMAN, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Calculating-Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in calculating-machines, and comprises novel mechanism for actuating the registering-wheels, novel mechanism for carrying over from a wheel of lower to a wheel of higher denomination, novel mechanism for resetting the numeral-disk to zero position, novel mechanism for printing the items as they are registered, and novel mechanism for printing the totals that have been attained by the machine.

The invention also comprises other novel details of construction and combination of parts, and I will refer to the following description of the machine illustrated in the drawings for detailed explanation thereof and to the claims following such description for a summary of the parts and features for which protection is desired.

In the drawings, Figure 1 is a vertical longitudinal section through the complete machine. Fig. 2 is a detail section in the same plane as and beside that of Fig. 1, but looking in the opposite direction. Fig. 3 is an enlarged horizontal sectional plan view. Fig. 4 is an exterior side elevation. Fig. 5 is a detail section showing the opposite inner side of the machine. Fig. 6 is a detail sectional view showing the arrangement of the type-hammers. Fig. 7 is a detail section, enlarged, on line 7 7, Fig. 4. Fig. 8 is a detail part section and part plan view showing parts in position for the totaling operation. Fig. 9 is a sectional detail showing a modification of the keyboard. Fig. 10 is an enlarged plan of the carry-over and braking devices. Fig. 11 is a side view of Fig. 10. Fig. 12 is a detail view showing one of the notched and numbered guide-slots for the adding-levers, and Fig. 13 is a detail view of the key-bar and lever.

On the main shaft A are pivotally mounted

the registering-wheels B, of which three are shown—respectively, units, tens, and hundreds—arranged from right to left. Of course any number of these wheels may be used as is desired, so that the capacity of the machine is practically unlimited, enough wheels being shown, however, to clearly illustrate the invention.

Each wheel preferably contains a multiple of ten teeth. In the example shown each wheel has sixty teeth, and consequently for each sixth rotation of the wheel ten will be counted and at each sixth of a rotation of a registering-wheel of lower denomination a wheel of higher denomination will be advanced one tooth, as hereinafter explained.

Pivoted on the shaft A beside each wheel B is an oscillating lever C, which is normally retracted by means of a spring C', and attached to and beside the upper arm of said lever is a vertically-movable bar c, the lower end of which is slotted around the shaft A, so that it can be guided thereby, and the bar c has a pin c' engaging a guiding-slot C² in the upper part of lever C, as shown, the part c forming practically an extensible portion of the lever C and projects through a guide-slot d in the top of the casing D of the machine. This slot d is of such length that the movement of the lever through the slot would suffice to impart one-sixth of a revolution to the wheel B. On the side of this slot d are eleven notches d', between which are the beveled lugs d², which are adapted to direct the lug c² on the side of the bar c into the desired notch. The bar c is provided with a finger-piece c³, by which it can be handled, and it may be brought over the desired notch and then depressed, so as to force lug c² into a desired notch d'. The object of having the part c depressible is to accomplish the printing before the shifting of the registering-wheel or lever occurs, the printing mechanism being brought into proper position by the radial movement of the lever C and the printing operation effected by depression of the bar c, as hereinafter explained.

The notches d' may be numbered, respectively, from "0" to "9," followed by a "0," the numbers extending from front to rear in the order named, (see Fig. 12,) and it will be under-

stood that by positioning the lever opposite the desired number before depressing it the amount to be registered on any given wheel is determined. The rearmost "0" position
5 is used for a purpose hereinafter explained.

The wheels B are kept from momentum movement and also properly positioned by means of the beveled-tooth dog *b*, loosely mounted on a shaft *b'*, suitably journaled in
10 the casing and adapted to engage projecting pins *B'* on the sides of the registering-wheels B, as shown in the drawings, (see Fig. 1,) the dogs *b* being pressed against the pins by springs *b''*, as shown. The lower end of lever
15 C is bent rearwardly, as indicated at *C''* in the drawings, and depends below the wheels B, and to it is pivotally attached an arc-shape type-carrier *C'*, which may be of any suitable construction, but is preferably constructed as
20 follows: To the under side of this type-carrier is attached a rubber type-band *C''*, having on its lower face a series of numbers, "0" to "9," inclusive, followed by "0." Above each numeral of the band and passing through
25 an aperture in the carrier *C'* is a push-button *C'''*, which is adapted to be struck by a hammer E on the end of a lever *E'*, which is pivoted on a shaft *E''* in the casing and is provided with a short depending arm *E'''*, acted
30 upon by a spring *E''''*, so as to normally hold the hammer E in uplifted position, as shown in full lines, Fig. 1. This hammer may be forcibly depressed at the proper time so as to strike the push-button thereunder by the fol-
35 lowing means: A dog *e* is pivoted on the lower end of an arm *e'* of a bent lever pivoted on a shaft *e''*, journaled above the shaft *E''*. This lever *e'* has a horizontally inwardly projecting arm *e'''*, which projects inwardly
40 under the shaft A and close to and beneath the lower end of the bar *c* of the related registering-wheel B, so that when bar *c* is pushed downward it engages lever *e'''* and depresses the latter, swinging arm *e'* outward and caus-
45 ing dog *e* to engage arm *E'''* of the lever *E'* and throw the hammer E forcibly down against the push-button *C'''* thereunder, which push-button projects the type on the rubber band through an opening *D'* in the bottom of
50 the casing against a web of paper W, which is fed thereunder, thereby imprinting the proper numeral on said web.

The type may be inked in any desired manner. I have merely indicated two inking-
55 rollers *C''''* in the drawings on opposite sides of the opening *D'*. These rollers may be supplied with ink in any desired manner.

The dog *e* is pressed upwardly against a stop *e''''* by means of a spring *e''''''*, as shown, and
60 this dog has a depending lug *e''''''*, which is adapted to strike a stop *e''''''''* in the bottom of the casing after it has completed the downstroke of the hammer E, which stop causes the dog to oscillate on its pivot and pass below the arm
65 *E'''* of the lever *E'*, which is then immediately

swung back so as to raise the hammer out of the way by means of the spring *E''''*, as shown. The dog can return to its normal position under the arm *E'''* and resume its operative position.
70

It will be noted that the proper type is brought into position over the opening *D'* before the bar *c* is depressed and that the depression of this bar accomplishes the printing as described.
75

Immediately following the printing a pin *c''* on bar *c* engages one of the notches of the registering-wheel, and then by pulling the arm and lever forward the registering-wheel is turned the desired number of teeth. Upon
80 the release of the pressure on the bar *c* the lever is thrown back to normal position by the spring *C''*, and the bar *c* is thrown upward into normal position by means of a spring *c''''*, connected to the upper bar and the lever
85 C, as indicated in the drawings. The paper web W, as shown in Fig. 1, may be led in from a reel *w* at one end of the machine, passed under the opening *D'*, and wound upon take-up reel *w'* at the rear end of the machine.
90 On the shaft of roll *w* is a ratchet *x*, (see Fig. 4,) engaged by a pawl *x'* on the short arm of a lever *x''*, the long arm of which extends forward and is adapted to be engaged by a pin *f'* on a vertically-movable bar F, Fig. 7,
95 which has a button *F'* on its upper end, by which it can be depressed, and when this bar F is depressed the pawl is moved back to engage a new tooth of the ratchet, and when the bar is raised a spring *x'''* throws the lever
100 forward and causes the dog to return the ratchet *x'* one tooth. On the roll *w'* is a ratchet X, which is engaged by a dog X' on an arm X'' of a reciprocating bar X''', which is pivoted at its forward end to the lower end
105 of a bell-crank lever X'', the other arm of which projects into the path of the pin *f'*, so as to be operated after the lever *x''* has been depressed. The lever X'' is retracted by a spring X'''.
110

In some instances it may be desirable to have the machine move laterally over the surface upon which the record is to be printed—as, for instance, if tabulating in a book. For this purpose the machine can be moved over
115 the base-plate *D''*, as indicated in the drawings. Attached to this base-plate at each side of the machine is a ratcheted bar Y, (see Fig. 4,) which is adapted to be engaged by a pawl *y*, pivoted to the lower end of a link *y'*, pivotally
120 attached to the side of the machine-casing, and said link *y'* is also pivotally connected to the bar X''', so that when the lever X'' is oscillated by the depression of the bar F, as above described, the pawls will be advanced
125 one notch over the ratchet Y, and then when the lever is released the spring X'' will cause the machine to move forward one notch.

The button *F'* may be attached to the bar F, so that it may be moved laterally there-
130

with; but it is normally held by a spring F^2 and traverses the slot F^3 in the side of the casing. The lower end of this slot is enlarged, so that when the bar has been fully depressed the button F' may be pushed inward, causing its stem F^4 to engage and reposition the carry-over wheels, as hereinafter explained.

The carry-over devices.—Beside and meshing with each registering-wheel is a small ten-tooth pinion G , loosely journaled on the shaft G' and mounted in the casing. These pinions G are made quite wide for a purpose hereinafter explained, and they are rigidly connected to a numeral-disk G^2 , which lies opposite sight-opening D^3 in the casing. (See Figs. 1, 8, 10, and 11.) Attached to the gear G and numeral-disk G^2 of the "tens-wheel" and the wheels of higher denomination is the small ten-tooth pinion G^3 , which is adapted to be engaged by a pawl g on a registering-wheel of lower denomination whenever the latter moves ten teeth. In the construction shown each registering-disk has six such pawls, (see Fig. 2,) as it has sixty teeth. The pawls g are thrown outwardly into position to engage the gear G^3 by spring g' and are limited in their upward movement by stop-pins g^2 , as shown. These pins at the moment the dog engages the gear G^3 contact with pins h on a rock-shaft h' , to which is attached an arm h^2 , that projects over the series of pins B' on the registering-wheel B , which is actuated by the gear G^3 , and has a tooth h^3 which the moment the gear g^3 causes such disk to move one notch enters between pins B' and locks the wheel, thus preventing any momentum movement of the registering-wheels during the carry-over operation. As shown in the drawings, there is no gear G^3 for the units registering-wheel, as there is nothing to carry over to said units registering-wheel. The latter, however, operates the gear g^3 for the "tens" registering-wheel, and the latter registering-wheel operates the gear g^3 for the "hundreds" registering-wheel, and so on, according to the number of registering-wheels employed. The stops h^2 are so timed as to act the moment after the dog begins to turn the pinion G^3 and are thrown out of position the instant the pawl has turned the pinion one tooth and are normally held out of position to engage the pins B' by means of a spring h^7 on shaft h' .

The totaling devices.—If it be desired at any time to print the total of amounts which is registered on the machine, the mechanism and operation is as follows, (see Figs. 3, 5, and 8:) Pivoted on the shaft A at one side of the machine is a disk I , from which projects a radial arm I' , carrying a horizontal bar I^2 , which lies in rear of all the levers C and above the registering-wheels. To this disk I is pivoted a lever i , which is normally pressed outward by a spring i^2 and has attached to it a button i^3 , the shank of which plays through a guide-slot i^4 , this slot being curved on an

arc concentric to the shaft A and having enlargements i^5 at its ends to permit the button to enter and to recede from the casing. The normal position of these parts are, as indicated in Fig. 1, with the bar I^2 out of the way of the levers and the button i^3 projected out of the casing through the enlargement i^5 at the upper or rear end of the slot. By grasping this button and pulling it forward bar i^2 engages the several levers C and swings them forward, but does not impart any rotary motion to the registering-wheels B , as pins c^4 are not engaged therewith. When the button i^3 is pulled to the forward part of the slot, it is pushed inward, as indicated in Fig. 8, and engages a pin or collar G^9 on the shaft G' , carrying the carry-over gears and numeral-disks, and this shaft G' is moved laterally with these devices, so as to cause gears G to move laterally out of engagement with the respective registering-wheels B and into engagement with segments B^5 , which are attached to the levers C and have teeth coincident with the teeth of the related wheels B . The button i^3 is then released, whereupon the springs controlling the levers C throw them backward, and the segments B^5 , then meshing with the gears G , rotate the latter and the connected numeral-disks backward until the numeral-disks are arrested by engagement of pins G^4 on their peripheries with stops j on a bar J , secured in the casing, the stops being so positioned relative to the numeral-disks that they are out of the way of the pins G^4 when the gears G^3 are in engagement with the registering-wheels, but are in the path of the pins G^4 when the registering-wheels and numeral-disks are moved to the right, as above described. When the pins G^4 strike the stops j , they arrest the movement of the segments in mesh therewith, and consequently of the levers C , and this stops the printing-plates with the numerals corresponding to the numerals which had appeared at the sight-opening in printing position. The operator then depresses bar F by means of the button F' , and the pin f on the bar F as it reaches the lower end of its stroke strikes an arm or rod e^6 , projecting from the shaft e^2 , and operates the latter in precisely the same manner that the bar e would have done through the lever e^3 , and this causes the several hammers E to descend and make an impression from the proper type upon the paper through the opening D' , thus printing the total. The object of the second or rearmost "naught" or cipher above referred to is as follows: This cipher is printed when "0" appears in any item by simply pressing down the related key bar or lever as the corresponding "0" on the related type-bar is in position to print when the key-lever is in normal retracted position. In printing the total, however, the keys are all brought forward first, and the levers that are to print ciphers are held in the forward position until the print-

ing is effected, because the pins G^4 on the corresponding numeral-disks prevent the return of the levers. Hence the second "naughts" must be used on the type-carrier to obtain the correct printing action. After the bar F is fully depressed the button F' is pushed inward, whereupon its stem F^6 engages an arm G^8 on the shaft G' and pushes the latter back to original position, disengaging the gears G from the segments B^5 and moving them into engagement with the respective registering-wheels, as at first. The segments B^5 are located close to their relative registering-wheels, and the gears G are made wide enough to engage a segment before disengaging the gear, and vice versa.

Resetting device.—In order to reset the registering-wheels so that the numeral-disk will show zero at the sight-opening D^3 , the following device is employed, (see Fig. 2:) A bail K is hung on the shaft A and extends across and below the registering-wheels, and this bail carries a rock-shaft k , to which is connected a series of projecting pins k' , that are so located as to engage with any superimposed pins g^2 on the adjacent registering-wheels B when the bail is swung upward. The pins k' are held in normal position relative to the bail by means of springs k^2 , which will allow the pins to go backward, but holds them normally in position to engage the pins g^2 if the bail is swung upward. The bail is limited in its motions by a stop K' below and a second stop K^2 above, the extent of motion of the bail being in the example shown about sixty degrees. The bail may be lifted when desired by means of a pull-rod k^6 , which extends to the outer side of the casing into convenient position to be reached by the operator's hand. When the bail is lifted, the pins k' will engage the pins g^2 , as stated, and will turn the registering-disks and the engaged numeral-disks until the latter stop at the zero-point. The inner ends of the pins move in an arc concentric with the axis A , and consequently will engage any pin which happens to be between the extreme positions of the bail.

In Fig. 9 I have illustrated a modification in which the extent of movement of each lever C is determined by individual finger-keys, each properly numbered, so that the operator has simply to depress the properly-numbered key and move the lever therewith instead of having to gage the movement of the lever by numbered slots. In this construction the lever C and bar c are substituted by a lever C^6 , which is guided by the shaft A and can play longitudinally by reason of a slot c^6 around the shaft. This lever carries a spring-actuated pawl C^7 , engaging the registering-wheel B and having a slot and pin connecting with the lever, so as to allow the latter to reciprocate. To the projecting upper end of the lever is attached a guide-frame composed of a lower curved bar M and top inclined bar M' . In

these bars are guided and supported vertically-movable key-stems N , which have numbered keys N' on their upper ends and are upheld by springs N^2 . The downward movement of the stems may be limited by stops n .

On the casing in front of the key-stems when in normal position is a stop n' , with which the lower end of any depressed stem will contact when the lever is moved forward. When any number is to be registered, the correspondingly-numbered key-stem is depressed and pulled forward until its movement is arrested by the stop n' , and thus the desired and proper amount of movement is given the registering-wheels by the pawl C^7 .

Operation: The operation of the various parts have been set forth in the detail description thereof, but may be briefly recapitulated as follows: To add a number, say, in the units-column, the finger-piece c^3 is grasped and lever C pulled forward until the lug c^2 is over the notch d' corresponding in number to the figure to be added. The bar c is then depressed, so as to carry the lug c^2 through said notch. In doing this the corresponding numeral has been brought up to the printing-point, and as the finger-piece is depressed the bar c actuates the lever c^3 , and the latter through the described connections operates the proper type-hammer E , and the number is printed. The lever C is then pulled forward toward the front of the machine and in so doing moves the corresponding registering-wheel and indicating numeral-disk accordingly. When the finger-piece is released, the bar c springs upward, lug c^2 passing through the foremost notch and above the lugs d^2 , and the lever C flies back and is ready for another operation. Every time the registering-disk makes ten notches the pawl or dog g^2 thereon engages the gear G^3 on the numeral-disk of the next highest denomination and moves the latter and through it its related registering-wheel one notch.

The manner of resetting the numeral-disks to zero and for printing the totals and for feeding paper or traveling the machine have been sufficiently described above.

I do not restrict myself to the particular mechanism for feeding the paper herein shown and described, nor do I consider it necessary to have the machine equipped with both paper-feeding mechanisms and with the machine-feeding devices described. Furthermore, I do not restrict myself to the specific construction and arrangement of parts shown in the drawings, as when their nature and operative relation is understood their form may be changed without altering their functions or avoiding the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. In a calculating-machine, the combination of a registering-wheel, an oscillating lever

pivoted beside the wheel, a depressible key attached to said lever and adapted to engage the wheel when depressed and to oscillate with the lever in turning the wheel.

2. In a calculating-machine, the combination of a registering-wheel, an oscillating lever pivoted beside the wheel, a key-bar attached to said lever and adapted to engage the wheel when depressed, and a guide-slot for said lever, whereby the extent of movement of the registering-wheel may be determined.

3. In combination, a registering-wheel, an oscillating lever pivoted beside the same, a key-bar attached to the upper end of the lever, a guide-slot for said key-bar whereby the movement of the lever is determined, printing mechanism and means actuated by the depression of said key-bar to take an impression before the registering-wheel is actuated.

4. In combination, a registering-wheel, an oscillating lever pivoted beside the same, a type-carrier attached to the lower end of said lever, a key-bar attached to the upper end of the lever, and mechanism actuated by the depression of said key-bar to take an impression before the registering-wheel is actuated.

5. In combination, a registering-wheel, an oscillating lever beside the same, a type-segment pivotally connected to the lower end of said lever, a relatively stationary type-hammer adapted to cause an impression, an oscillating lever and dog for actuating said type-hammer, and means whereby said hammer is actuated during the movement of the first-mentioned lever.

6. In combination, a registering-wheel, an oscillating lever beside the same, a type-segment pivotally connected to the lower end of said lever, a relatively stationary type-hammer adapted to cause an impression, an oscillating lever and dog for actuating said type-hammer, a key-bar attached to the upper end of the first-mentioned lever and adapted to engage the registering-wheel when depressed, and means whereby said key-bar actuates the printing mechanism before the registering-wheel is shifted.

7. In combination, a plurality of registering-wheels, an oscillating lever beside each wheel adapted to actuate the same, a type segment or bar attached to the lower end of each lever, mechanism for taking an impression from the segment, means for determining the extent of movement of the lever, and means for carrying over from a registering-wheel of lower denomination to a higher one, substantially as described.

8. In combination, a plurality of registering-wheels each having a multiple of ten teeth, carry-over dogs thereon, wheels of lower denomination having a number of dogs corresponding to the number of multiples of ten in the teeth thereof, an oscillating key-controlled lever beside each wheel adapted to actuate

the latter, a gear beside each disk of higher denomination meshing therewith, and a pinion relatively fixed to said gear and adapted to be engaged by a dog on a wheel of lower denomination to carry over, substantially as described.

9. In combination, a plurality of registering-wheels each having a multiple of ten teeth, carry-over dogs thereon, wheels of lower denomination having a number of dogs corresponding to the number of multiples of ten in the teeth thereof, an oscillating key-controlled lever beside each wheel adapted to actuate the latter, a gear beside each disk of higher denomination meshing therewith, and a pinion relatively fixed to said gear and adapted to be engaged by a dog on a wheel of lower denomination to carry over; with means to prevent momentum movement of the wheel of higher denomination after the carry-over operation is effected, substantially as described.

10. In combination, a plurality of registering-wheels each having a multiple of ten teeth, dogs on said wheels corresponding to the number of multiples of ten in the teeth thereof, an oscillating key-controlled lever beside each wheel adapted to actuate the latter, a gear beside each disk of higher denomination meshing therewith, and a pinion relatively fixed to said gear and adapted to be engaged by a dog on a wheel of lower denomination to carry over; with a rock-shaft beside the wheels, a pin on said shaft adapted to be engaged by the wheel of lower denomination at the moment of the carry-over operation, and a stop-arm on said shaft adapted to engage the wheel of higher denomination and prevent momentum movement thereof after the carry-over operation is effected, substantially as described.

11. In combination, a registering-wheel, a lever for actuating the same, a segment attached to said lever beside the disk, a numeral-disk beside the wheel, a gear attached to said numeral-disk and adapted to mesh with the wheel or segment, and means for shifting said gear into mesh with the segment, or with the wheel, substantially as described.

12. The combination of a registering-wheel, an oscillating lever and connections for actuating said wheel, a segment attached to said lever beside the wheel, a numeral-disk beside the wheel, a gear attached to said disk said gear being adapted to mesh with either the segment or wheel, means for throwing the lever and segment forward without actuating the wheel, means for then shifting the gear into mesh with the segment, and means for then allowing the segment to return the gear and disk to zero position, substantially as described.

13. The combination of a registering-wheel, an oscillating lever and connections for actuating said wheel, a segment attached to said lever beside the wheel, a numeral-disk beside the wheel, a gear attached to said disk, said

gear being adapted to mesh with either the segment or wheel, means for throwing the lever and segment forward without actuating the wheel, means for then shifting the gear into mesh with the segment, and means for then allowing the segment to return the gear and disk to zero position; with printing mechanism, and means for taking an impression from printing mechanism after the segment has returned the numeral-disk to zero position, substantially as described.

14. The combination of a registering-wheel, an oscillating lever and connections for actuating said wheel, a segment attached to said lever beside the wheel, a numeral-disk beside the wheel, a gear attached to said disk, said gear being adapted to mesh with either the segment or wheel, means for throwing the lever and segment forward without actuating the wheel, means for then shifting the gear into mesh with the segment, and means for then allowing the segment to return the gear and disk to zero position; with type-carriers connected to said levers, and means for taking an impression from said carrier after the segment has returned the numeral-disk to zero position, and means for thereafter returning the gears into mesh with the wheels and allowing the levers to return to normal position, substantially as described.

15. The combination in a calculating-machine, of a relatively fixed ratchet beside the machine-frame and mechanism adapted to engage said ratchet and move the entire machine bodily forward, for the purpose and substantially as described.

16. The combination with the adding and printing mechanism of a calculating-machine, ratchets beside the casing, oscillating pawls pivoted to said machine-casing and engaging said ratchets, means for actuating said pawls so as to move the casing forward, substantially as described.

17. In an adding-machine, the combination of a plurality of registering-wheels, an oscillating lever beside each wheel, a type bar or segment attached to the lower end of said lever, a finger-bar attached to the upper end of said lever adapted to engage the wheel when depressed, and mechanism controlled by said

bar for taking an impression from the type on the said segment, substantially as described.

18. In an adding-machine, the combination of a plurality of registering-wheels, an oscillating lever beside each wheel, a finger-bar attached to the upper end of said lever adapted to engage the wheel when depressed, a notched guide for limiting and determining the extent of movement of said lever, and means for carrying over from one registering-wheel to the next; substantially as described.

19. In an adding-machine, the combination of a plurality of registering-wheels, an oscillating lever beside each wheel, a type bar or segment attached to the lower end of said lever, a finger-bar attached to the upper end of said lever adapted to engage the wheel when depressed, a notched guide for limiting and determining the extent of movement of said lever, mechanism controlled by said bar for taking an impression from the type on the said segment, and means for carrying over from one registering-wheel to the next, substantially as described.

20. In combination, a registering-wheel having a multiple of ten teeth in its periphery, an oscillating key-controlled lever beside the wheel adapted to actuate it, an indicating-disk geared to said registering-wheel, a series of pins or lugs on said wheel, and means to reset the numeral-disks to zero position, substantially as described.

21. In combination, a registering-wheel having a multiple of ten teeth in its periphery, an oscillating key-controlled lever beside the wheel adapted to actuate it, an indicating-disk geared to said registering-wheel, a series of pins or lugs on said wheel, an oscillating bail, pins carried by the bail adapted to engage the pins on the wheel and reset the numeral-disks to zero position, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE E. SCHUMAN.

In presence of—

J. C. ROBERT,

ED. R. ROTHWEILER.