

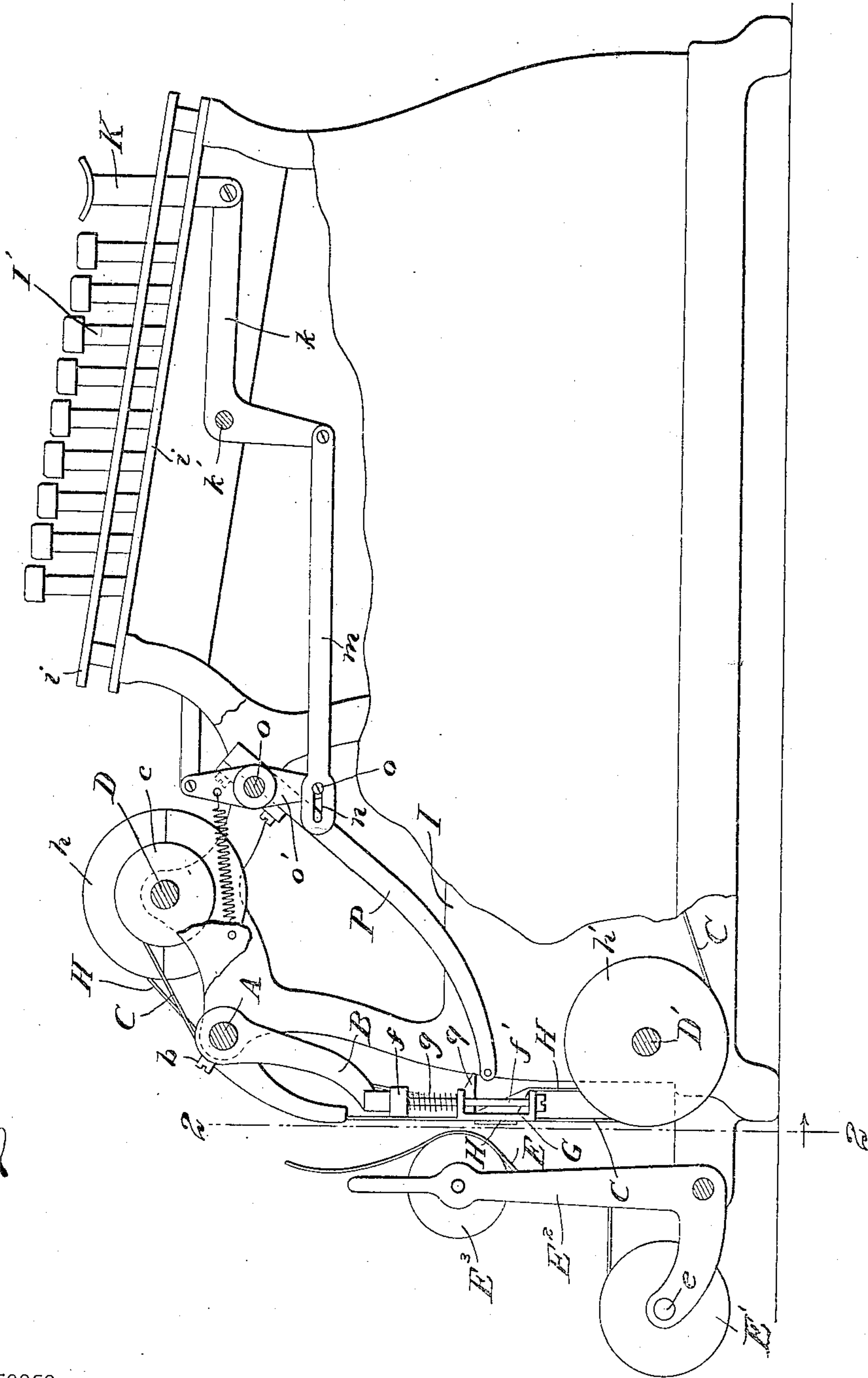
925,183.

J. D. HAYES.
CALCULATING MACHINE.
APPLICATION FILED MAY 9, 1906.

Patented June 15, 1909.

4 SHEETS—SHEET 1

Fig. 1.



WITNESSES:

V. E. Nichols
R. A. Mooney.

INVENTOR

John Desmond Hayes

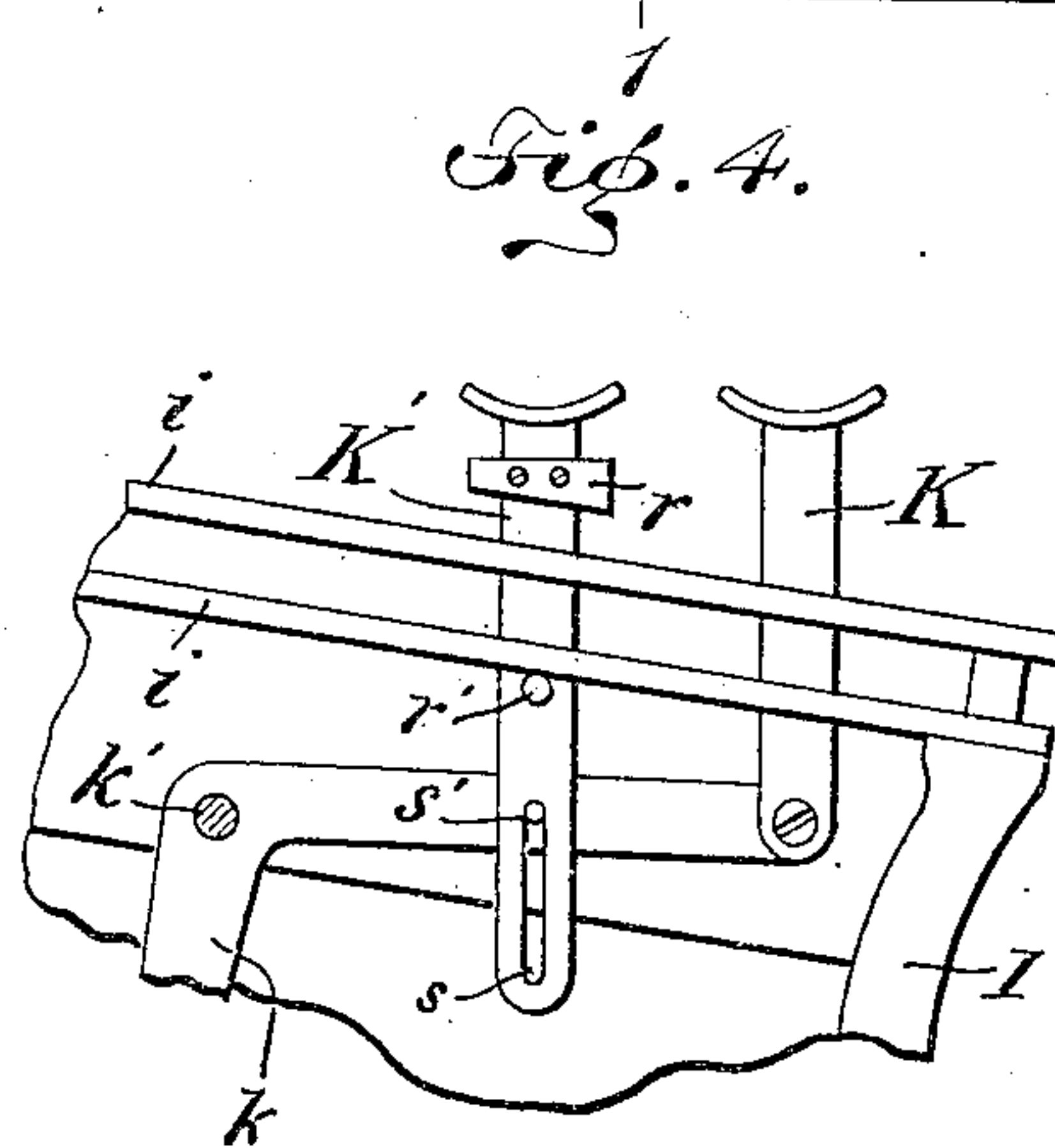
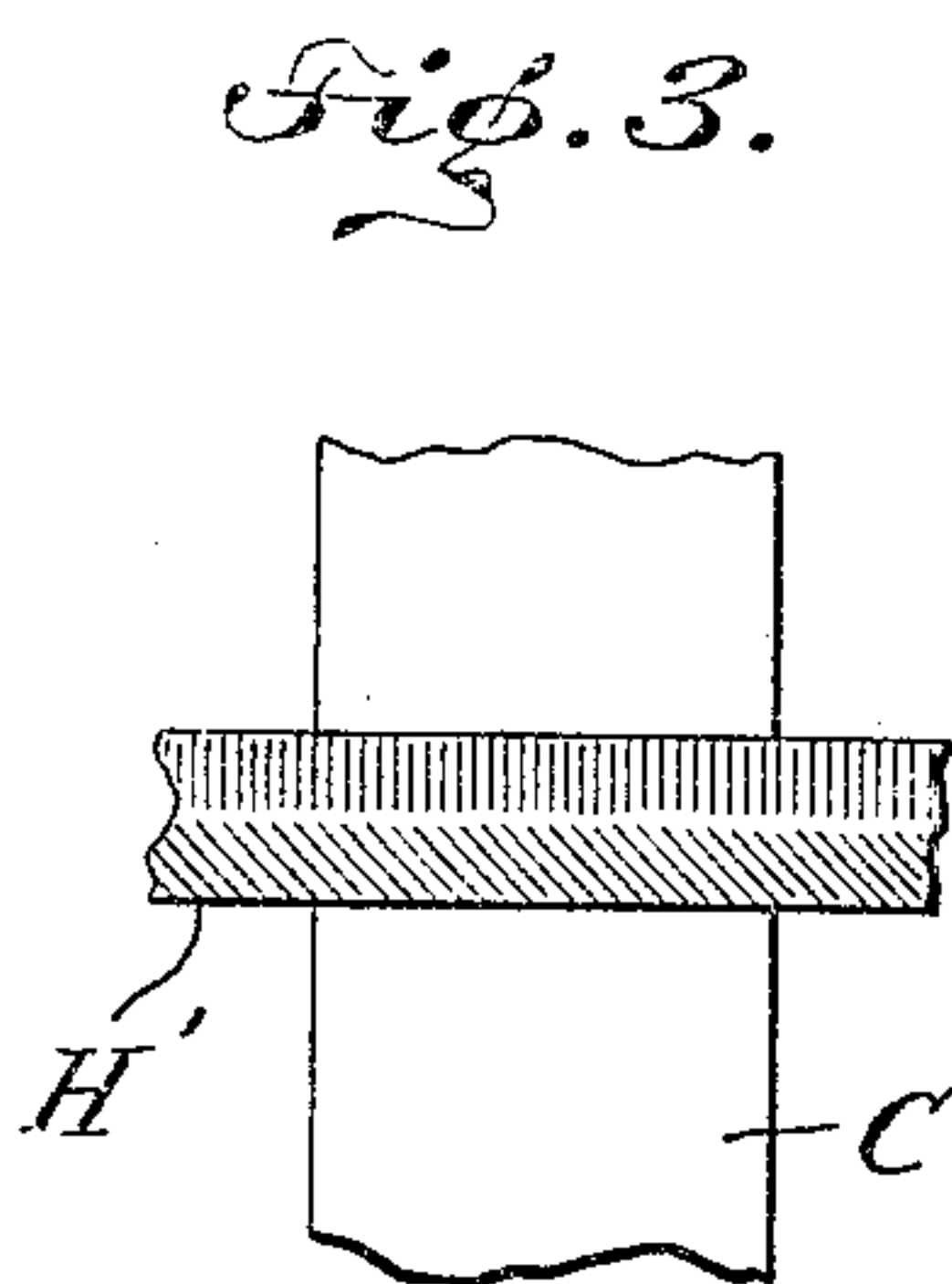
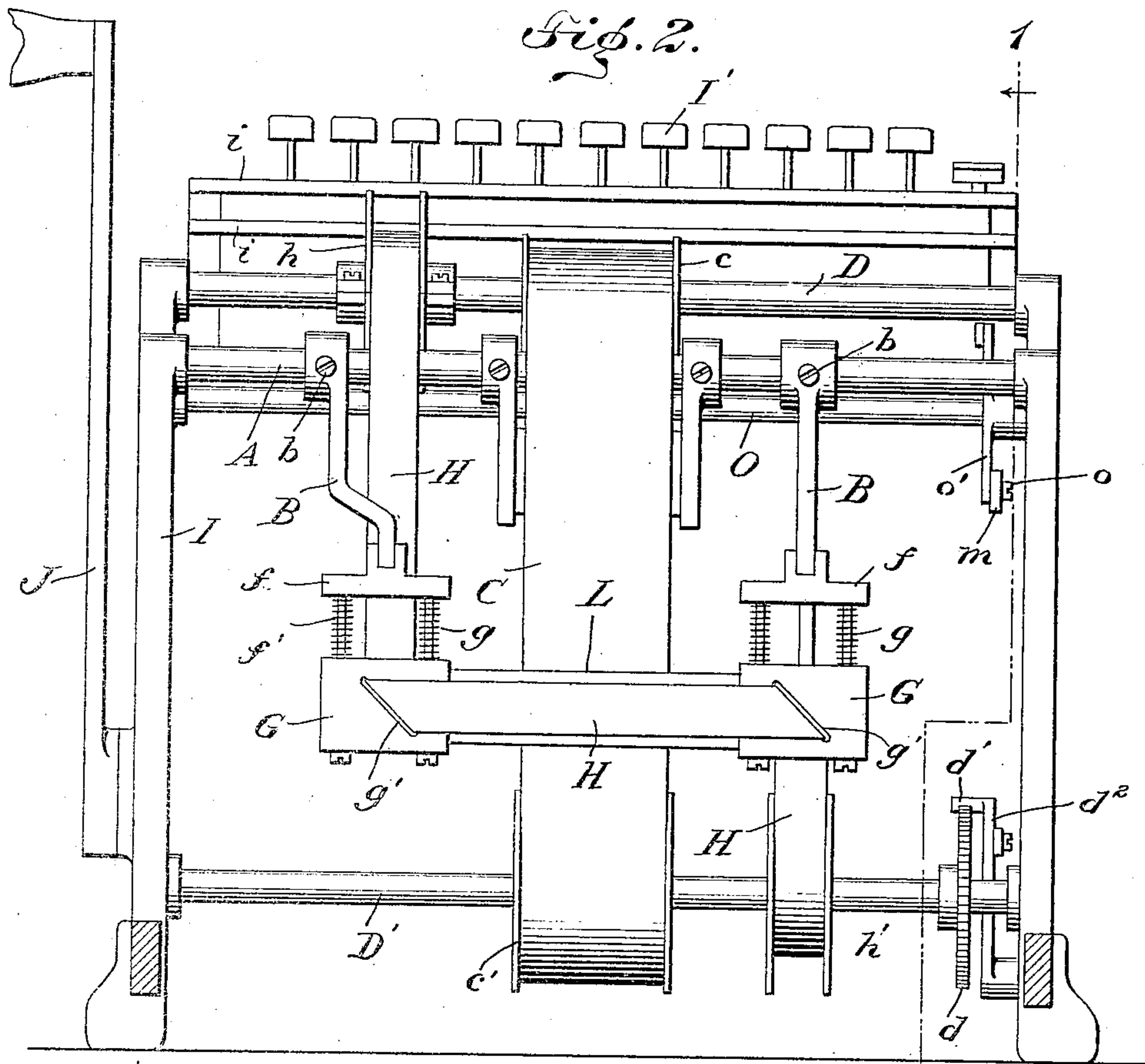
BY

Griffith Bernhard
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4 SHEETS—SHEET 2.



WITNESSES:

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R. A. Mooney

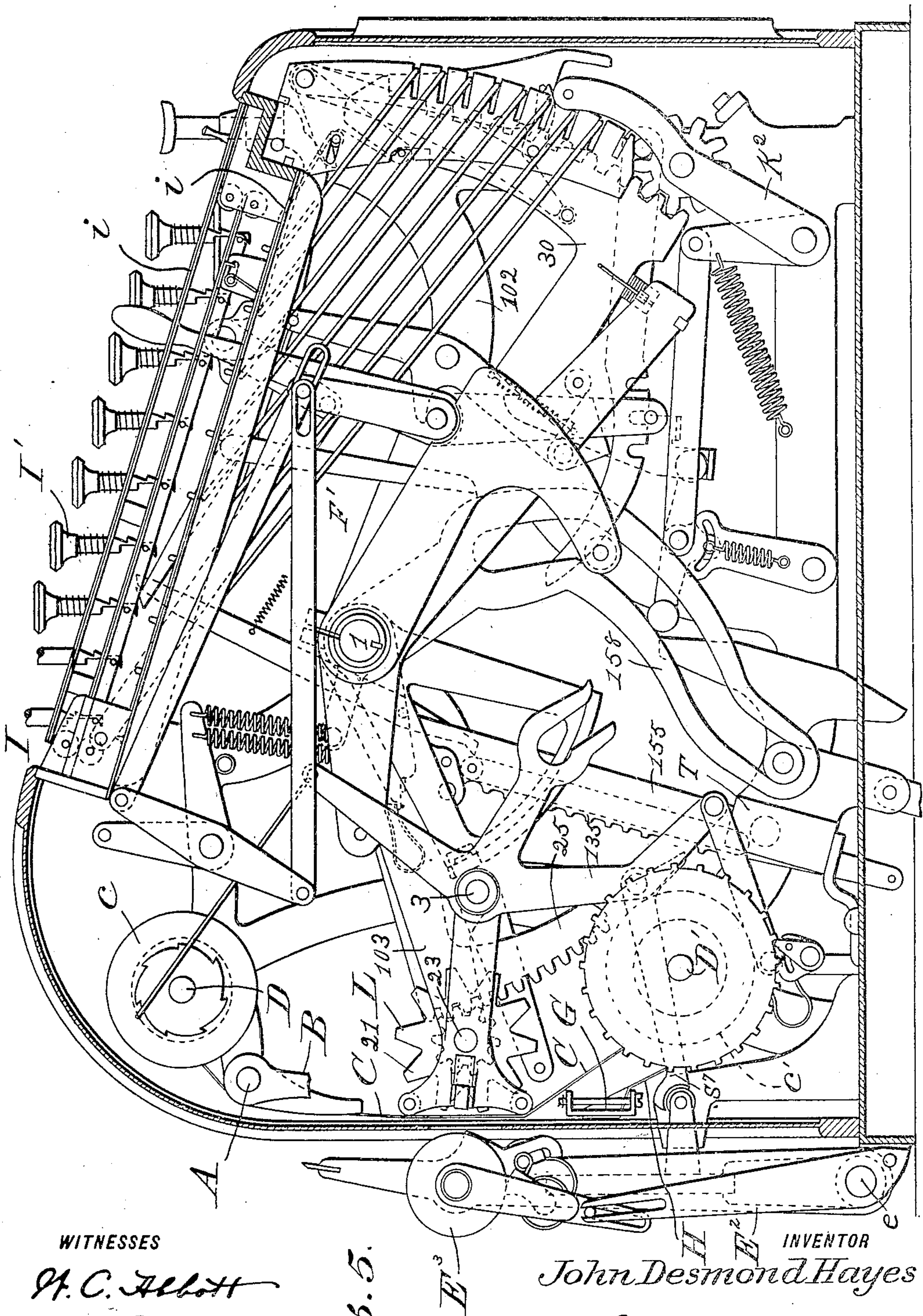
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925,183.

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4 SHEETS—SHEET 3.



WITNESSES

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Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 6.

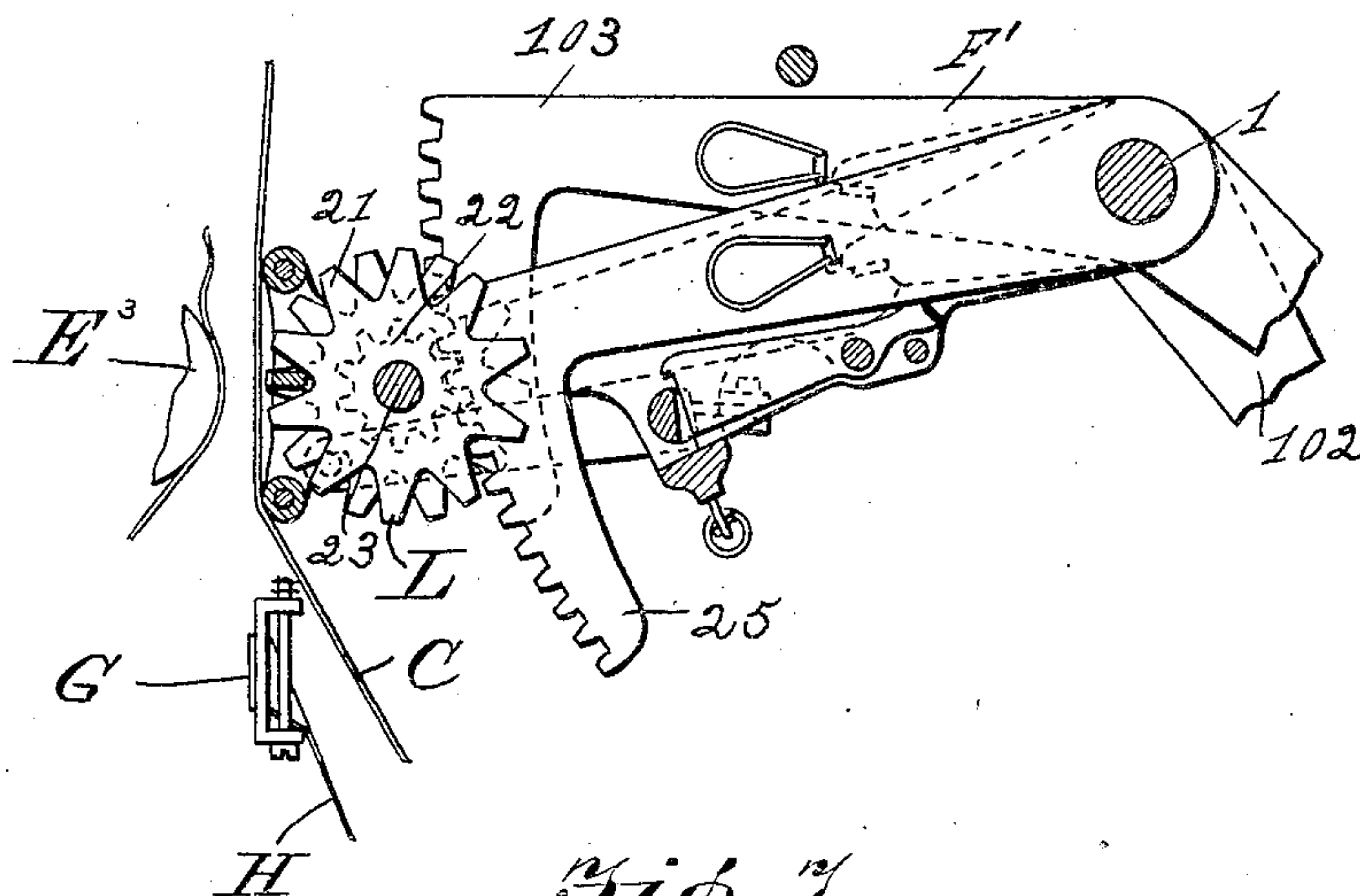
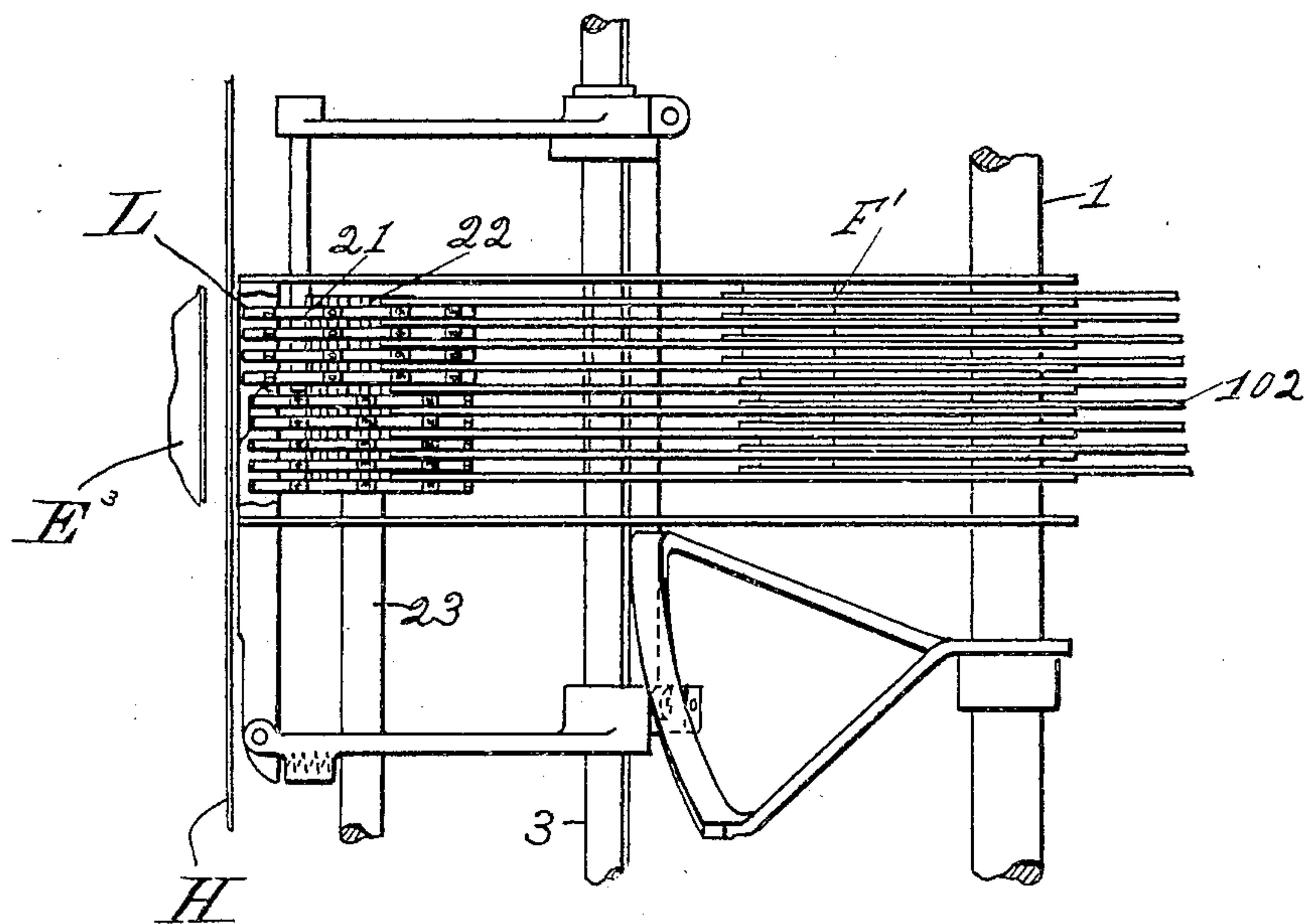


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN DESMOND HAYES, OF NEW YORK, N. Y.

CALCULATING-MACHINE.

No. 925,183.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed May 9, 1906. Serial No. 315,916.

To all whom it may concern:

Be it known that I, JOHN DESMOND HAYES, a citizen of the United States, residing at New York, borough of Brooklyn, in the
5 county of Kings and State of New York, have invented a certain new and useful Calculating-Machine, of which the following is a specification.

My invention relates to calculating machines of that class wherein memoranda of the sums to be added, sub-footings, totals, and other data are printed by the operation of printing mechanism so as to produce a permanent record.

15 In the operation of machines of this class it is a common practice for a book-keeper or accountant to list the individual sums by printing the several amounts in a column on a record sheet. It frequently happens
20 that it is desirable or necessary to obtain an addition of the sums listed before the operation of listing all the sums is completed, and the operator then proceeds to operate the machine so as to secure a sub-
25 footing, after which the work of listing the balance of the sums is proceeded with, and finally all the sums of the list are added together so as to secure the total. Ordinary
30 machines print the impressions of the individual sums, the sub-footings, and the total all in one and the same color, on a record sheet or tape, so that the sub-footings cannot be quickly distinguished from the sums of the list. This leads to mistakes on the
35 part of the accountant in comparing the checks with the individual sums of the list.

One object of my invention is to obtain a record wherein sub-footings and totals of the sums appear in a color contrasting with
40 that of the list of the sums themselves, thus eliminating the liability of mistakes on the part of the accountant in "checking off" or comparing the list of the sums with the checks, or other data.

45 A further object is to provide mechanism whereby impressions of the sums to be added, of the sub-footings, and of the totals, may be printed in different and contrasting colors by the aid of a multi-color ribbon or
50 of a plurality of ribbons.

Broadly stated, the invention consists of mechanism operating in conjunction with a printing mechanism whereby the sub-footings and the totals may be printed on a
55 record in one or more colors differing from

the color of the printed impressions of the individual sums.

In one embodiment of the invention I employ a ribbon of a different color from the record ribbon through which the print-
60 ing mechanism operates to make impressions on a record sheet or tape of the sums to be added, the aforesaid color ribbon being movable across the last named ribbon. With the said color ribbon is combined a guide
65 mechanism for holding it, normally, out of the path of the printing mechanism. Said guide mechanism is adapted to be operated, preferably, by the key, lever or other element which operates the adding mechanism
70 for the purpose of printing the sub-footing or the total of the column of figures, whereby the guide mechanism operates to shift the color ribbon into the path of the printing mechanism and thereby to print through
75 said color ribbon and secure an impression on the record of a sub-footing or the total in a different color from the printed impressions of the sums which are listed on the record.
80

In another embodiment of my invention, I contemplate the employment in an adding machine of standard construction which uses a single color ribbon, of a multi-color
85 ribbon, say of two contrasting colors, in connection with operating means whereby such multi-color ribbon may be operated to bring either of its color sections into the path of the printing mechanism. This enables an operator to use the machine in the usual way
90 for the purpose of securing a record of the sums to be listed in one color; or if desired, a multi-color ribbon may be shifted to one operating position so as to produce a record of the sub-footings in another color, and,
95 furthermore, the multi-color ribbon may be shifted to a still further operating position so as to secure a record of the totals in still another color, all three of said records being
100 in contrasting colors so as to be distinguished from each other at a glance.

In the drawings, Figure 1 is a side elevation, partly broken away, showing my invention in connection with one of the well known adding machines of the type known
105 as the Burrough's machine, said figure illustrating more particularly the parts comprising the invention and omitting practically all the operating devices of the Burrough's machine. Fig. 2 is a cross section on the
110

line 2—2 of Fig. 1, showing the new devices in rear elevation, substantially all the operating mechanisms of the Burrough's machine being omitted. Fig. 3 is a detail view showing a multi-color ink ribbon adapted for use in connection with the usual single color ink ribbon of the printing and registering mechanism of the ordinary machine, such multi-color ribbon being especially useful when it is desired to secure impressions of the "sub-footings" in one color and impressions of the "grand totals" in still another color, said impressions of the "sub-footings" and of the "grand totals" being in contrasting colors to impressions of the list of individual sums and to each other. Fig. 4 is a detail view in side elevation of a form of key-operated means for adjusting the multi-color ribbon shown in Fig. 3 to a number of positions whereby the different sections of said ribbon may be brought into alinement with the registering and printing mechanism of an ordinary adding machine. Fig. 5 is a vertical sectional elevation of a Burrough's adding machine disclosed in Patent No. 388,119, dated August 21, 1888, showing enough of my invention to illustrate its application to said machine. Fig. 6 is a detail sectional elevation of the registering and printing mechanism of said Burrough's machine with my invention in position for coöperation with said registering and printing mechanism. Fig. 7 is a detail plan view of the parts shown in Fig. 6 representing the old well known form of register wheels and certain operating devices associated therewith as fully disclosed in the aforesaid Burrough's patent.

I will first describe my invention as illustrated, mainly, in Figs. 1 and 2, and in a modified form in Figs. 3 and 4, after which the application of the invention to a Burrough's machine of the aforesaid patent will be briefly referred to in connection with Figs. 1, 2, 5, 6 and 7, in order that a sufficient disclosure will be given in this specification for others skilled in the art to construct and use the invention.

My invention as shown in Figs. 1 and 2 embodies a plurality of hangers which are spaced relatively to each other and support the guides, G, G, for an ink ribbon, H, or H' (the latter being shown in Fig. 3). Said hangers, B, B, are supported within the casing or frame of the adding machine and in fixed positions therein; it being preferred to place said hangers on a cross rod, A, and to hold said hangers rigidly on said cross rod by clamping screws, b.

As shown in Fig. 2, each hanger, B, is provided at its lower portion with a foot-piece, f, and rigidly attached to this foot-piece are depending guide rods, f', two of said rods being preferably employed on the foot-piece of each hanger. Each ribbon

guide, G, is, preferably, a single flat plate which is slidably fitted on rods, f', of one hanger. Said ribbon guides are adapted to slide freely up and down on said guides of the hangers, and normally said ribbon guides are pressed toward the lower ends of said hangers by coiled springs, g, the latter being held in place by fitting them loosely on rods, f'. Guides, G, are provided with slots, g', and through these slots passes an ink ribbon, H, the latter being independent of record ribbon, C, presently referred to, and being movable across one face or side of such record ribbon. Ribbon, H, is adapted to be coiled on a spool, h, which is made fast with shaft, D, the latter carrying one spool, c, of record ribbon, C. Said ribbon, H, passes from spool, h, through a slot, g', of one ribbon guide, G, thence across record ribbon, C, thence through slot, g', of other ribbon guide, G, and to another spool, h', which is fixed to shaft, D', adapted to carry spool, c', of record ribbon, C, as shown in Fig. 2. Shaft, D', is shown in Fig. 2 as having a feed ratchet, d, adapted to be engaged by a pawl, d', on a feed lever, d², so that shafts, D, D', are adapted to be operated in a manner well understood by those familiar with the Burrough's adding machine, for the purpose of imparting movement to record ribbon, C, and of reversing the direction of movement automatically of said record ribbon when the latter reaches the limit of its movement in one direction. The ribbon, H, of my invention is intended to be of the same length as the record ribbon, C, and by placing the spools, h, h', of ribbon, H, on shafts, D, D', which operate said record ribbon, C, I am enabled to automatically feed ribbon, H, and, also, to reverse the direction of movement of ribbon, H, simultaneously with the reversal of movement of the record ribbon, as will be readily understood. Normally, guides, G, G, and ribbon, H, are depressed by springs, g, g, below the printing position, or out of line with the numeral wheels of the register and printing mechanism of the machine. Under these conditions, the numeral wheels operate against inked record ribbon, C, to print a list of sums in the color of record ribbon, C, on a tape, of paper or other material, passing in rear of impression roll, E³, see Figs. 1 and 3. For the purpose of bringing ribbon, H, of my invention into position for securing an impression on the tape, which impression will differ in color from those of ribbon, C, and correspond to the color of ribbon, H, means are employed for operating ribbon guides, G, G, so as to lift them, and ribbon, H, to the required position so that ribbon, H, will be in line with the numeral wheels of the register and printing mechanism.

The ribbon lifting mechanism is inde-

pendent of all the other operating mechanisms of the adding machine, that is, it is manipulated or adjusted by hand for the purpose, merely, of bringing ribbon, H, into operative position. One embodiment of such means consists of a key, K, mounted for sliding movement in the usual key board *i, i*, the lower end of said key being pivoted to a long arm of an elbow lever, *l*, the latter being pivoted at *l'*. To the other arm of said elbow lever, *l*, is pivoted a link, *m*, the other end of which has a slot, *n*, through which slot passes a pin, *o*, adapted to connect said end of link, *m*, with an arm, *o'*, of a rock shaft, O. This rock shaft is provided with tappet arms, P, which extend downwardly and rearwardly toward the ribbon guides, G, and the free ends of said tappet arms are adapted to engage with lugs, *q*, which are provided on said ribbon guides, G. The depression of the key, K, operates lever, *l*, link, *m*, and shaft, O, for the purpose of raising tappet arms, P, and these tappet arms operate simultaneously on guides, G, so as to lift said guides and ribbon, H, against the tension of springs, *y*, whereby ribbon, H, is lifted into the path of numeral wheels on the register and printing mechanism, so that said mechanism will cooperate with record ribbon, C, color ribbon, H, and impression roll, E³, for the purpose of printing a total of the sums to be added on the record sheet or tape, E, such totals being in a different color from the list of the individual sums which are printed, also, on the record sheet or tape. When the pressure on key, K, is removed, springs, *y*, press ribbon guides, G, downwardly, thus moving ribbon, H, out of the path of the register and printing mechanism.

My invention is not restricted to a single color ribbon, such as H, because I may employ a multi-color ribbon, similar to ribbon, H', substantially as shown in Fig. 3. Said ribbon, H', may be wide enough to have only two colors, as shown, or, if desired, I may use a wider ribbon so that it may contain more than two colors. According to this embodiment of the invention, the wide ribbon, H', is adapted to pass through guides the same as slotted guides, G, shown in Fig. 2. Said ribbon, H', is adapted to occupy three positions, in one of which it is out of the path of the register and printing mechanism; in the second position, the ribbon is arranged for one of its color sections to lie in the path of said register and printing mechanism, while in the third position of said ribbon, H', the other color section thereof is in the path of the register and printing mechanism, whereby ribbon, H', is adapted to print on the record sheet or tape, E, impressions of the sub-footings and of the totals in different colors from each other and in contrasting colors to the impressions

of the sums which are printed by the machine with the aid of record ribbon, C, alone.

The employment of multi-color ribbon, H', necessitates the provision of means in conjunction with spring-depressed ribbon guides, G, G, for lifting said guides and ribbon, H', to two or more different positions depending upon the number of color sections of said ribbon. As shown in Fig. 3, ribbon, H', has two color sections, and in Fig. 4 there is represented one embodiment of a key and its associated parts whereby lever, *l*, and tappet arms, P, may be operated so as to lift guides, G, G, and ribbon, H', to two different positions, whereby elevation of ribbon, H', to one position brings one color section thereof into the plane of the register and printing mechanism, whereas the elevation of said ribbon, H', to its highest or second position brings the other color section thereof into similar alinement with the register and printing mechanism. With said elbow lever, *l*, is associated the key, K, heretofore described, and in addition thereto I employ the key, K', the travel of which is limited by stops, *r, r'*, the latter being attached to the stem of said key, K', and cooperating with plates, *i, i*, of the key board in a manner to arrest the movement of key, K', within certain limits. The stem of key, K', is provided with a slot, *s*, in which operates a stud, *s'*, fixed to long arm of elbow lever, *l*. Said keys, or either of them, are operated by hand separately from the other parts of the adding machine, and said keys serve to give variable movement to the ribbon-shifting guides, G, G. The depression of key, K', is arrested by stop *r*, and said key acts on stud, *s*, for moving lever, *l*, and the ribbon guide mechanism a limited distance, whereby ribbon H' is raised just far enough to bring one color section thereof into the printing plane of the register and printing mechanism. The other key, K, however, may depress the long arm of lever, *l*, to a greater extent, and thus the ribbon shifting mechanism is operated for raising ribbon, H', to its second position, whereby the other color section thereof is brought opposite to the numeral wheels of the register and printing devices. When lever, *l*, is pressed down by the depression of key, K, stud, *s'*, travels idly in slot, *s*, and key, K', is at rest.

As thus far described, the invention embraces the employment of two ribbons, one of which may be a multi-color ribbon, said ribbons being arranged for movement one across the other. This brings the ribbons in contact at the intersection of their paths, and the color of one ribbon is thus liable to be "smeared" off, or be transferred, to the other ribbon. To overcome this, it is proposed to employ means for separating the ribbons at their point of intersection, and

this is accomplished by a suitable separating sheet, L, see Fig. 2. This sheet lies between the ribbons, C, H, or C, H', and it is made of any material impervious to ink and which permits the printing mechanism to coöperate with said ribbons and the impression roll for securing the printed impressions on the record sheet. I may employ a thin sheet of rubber as the separating sheet, and support or carry the same on the ribbon guides, G, G', although other materials than rubber may be used, and other means for supporting and operating the separating sheet may be adopted.

For the purpose of showing my invention applied to an ordinary adding machine, I have illustrated in Figs. 5, 6 and 7, some of the operating parts of the Burrough's machine embraced in Patent No. 388,119 heretofore mentioned.

As shown and described in said patent, a register and printing mechanism, L, is employed in conjunction with means for actuating the same in order to adjust the numeral wheels according to the operation of appropriate keys, indicated at I', said keys operating in an appropriate key board, i, i'. As shown in Figs. 6 and 7 the register, L, comprises numeral wheels, 21, having radial arms, the ends of which are provided with numerals adapted to serve as printing faces. Said wheels are carried on shaft, 23, and each wheel is provided with a gear, 22. With said gear, 22, of each numeral wheel meshes a rack, 25, on a rear section, 103, of a two-part rocking lever, F', the front section, 102, of said lever, F', being provided with a curved rack, 30. The two sections 102, 103, of each lever, F, are hung on shaft, 1, of the machine, and they are so combined or related that said sections are adapted to operate conjointly under certain conditions, whereas under other conditions, the sections are capable of limited independent movements in the manner and for the purposes specified in said patent. Coöperating with said rocking levers, F', are four main devices, viz. first, a "retainer" which holds the front section, 102, of said lever normally in a given position; second, devices operated by the keys which release the lever to permit its automatic operation to register a number; third, a "regulator" which determines the extent of the lever's movement in accordance with the figure to be brought into position by the register; and, fourth, a "carrying device", which automatically imparts an additional movement to the next actuating mechanism when the addition of numbers requires it. Furthermore, the machine is equipped with a frame, E², which carries the impression roll, E³, and this frame is hung on a shaft, c, so that the frame may be rocked under the action of a spring, thereby carrying the paper against the inked ribbon, C.

Said frame is adapted to be pressed outwardly by an arm, S', connected with lever, 135, when said lever swings with shaft, 3, see Figs. 5 and 1. Ribbon, C, is coiled on spool, c, of shaft, D, said ribbon leading downwardly between wheels, 21, of register, L, and impression roll, E³, and the other part of ribbon is adapted to be coiled on spool, c', of shaft, D'. The several mechanisms are operated automatically from a device termed a "driver", T, adapted to reciprocate on an inclined guide rod, 155, said driver being operated by the hand or foot of the operator, and the driver being connected operatively with cam arms, 158, attached to rock shaft, 1, and also connected with a train of devices for operating frame, K², forming an element of the "carrying devices".

As all the aforesaid mechanisms, and their mode of operation, are fully set forth in the aforesaid patent, and as said old form of machine forms no part of the present invention, I do not consider it necessary to fully illustrate and describe the construction and operation of such machine, more particularly as the same will be apparent by an examination of said patent.

When my invention is used in conjunction with the machine of said patent, the hangers, B, B, are mounted on a cross rod, A, of the machine, or on a special cross rod provided for the purpose, in order that hangers, B, and guides, G, may be positioned at the respective sides of record ribbon, C. Spools, h, h', are placed on shafts, D, D', which operate spools, c, c', of record ribbon, C, and ribbon H, or H', is led from one spool, c, through slots, g', of guides, G, and thence to other spool, c', or vice versa, whereby ribbon, H, or H', is adapted to cross ribbon, C, see Fig. 2. When ribbon, H, is used, key, K, is provided at one side of key board, i, i', and lever, k, shaft, o, link, m, and tappet arms, P, are properly installed substantially as shown in Fig. 1.

In the operation of the machine of Fig. 1, the parts are manipulated or worked in the manner set forth in the aforesaid patent when it is desired to add the sums and to print or list the same on the sheet or tape passing between the register, L, and impression roll, E³, said list being printed in a color corresponding to the color of the record ribbon, C. When the total or footing of the sums is to be obtained, my devices are adjusted as follows:—key, K, of Fig. 1 is depressed for the purpose of operating elbow lever, k, shaft, O, and tappet arms, P, so as to raise guides, G, whereby ribbon, H, is placed between register, L, and roll, E³. Now when the machine is operated, roll, E³, is pressed inward so that the printed impression of the footing or total will be made on the tape or sheet by register L, acting on the ribbon, H, whereby the list of sums is obtained in one

color and the footing or total is obtained in a different color. When key, K, is released, the parts return to normal positions and ribbon, H, is depressed to the position of Figs. 1, 2 and 5. The operation of the machine in the usual way may now be resumed without hindrance from the mechanism associated with color ribbon, H.

Said Patent No. 388,119, describes the construction and operation of mechanism associated with rocking levers, F', (F) and register, L, (E), whereby a total of the footing may be indicated on and printed by the register, and in addition thereto, the register may retain the total, termed a "sub-total", in order that other numbers may be added on or by the register, for the purpose of securing a "grand total". It is desirable in this connection, first, to secure a printed impression in one color of the list of sums, second, a printed impression in another color of the "sub-total" or sub footings of the aforesaid list, and, third, a printed impression in still another color of the "grand total" of the sums. My multi-color ribbon, H', operating in conjunction with record ribbon, C, and shifted by mechanism such as shown in Figs. 1 and 4, provides means whereby these several impressions in different and contrasting colors may be obtained easily and quickly. To explain:—The adding machine is operated in the usual manner to secure printed impressions in one color on the tape by aid of ribbon, C, of the list of sums to be added, ribbon, H', being out of the path of register, L. For securing a printed impression on the tape in one color of the added sums key, K', of Fig. 4 is depressed, and guides, G, are raised a certain distance, thus lifting ribbon, H', into position for one of its color sections to be opposite the printing surface of register, L, whereby the machine is operated to add the sums and to print the added sums in one color on the tape, such printed impression corresponding in color to said color section of ribbon, H', and being of a different color from the impressions of the list of sums. Pressure being removed from key, K', guides, G, and ribbon, H', are pressed downwardly by springs, g, and the operation of the machine may be resumed in order to continue listing the sums on the tape. Now when the total of all the sums is to be taken, the operator depresses key, K, and ribbon guides, G, and ribbon, H', are moved to their highest positions, thus bringing the other section of multi-color ribbon, H', into position between register, L, and roll, E'. The operation of the machine to print the "grand total" causes the impression to be taken from said color section of ribbon, H', and thus the printed impression of the "grand total" is obtained in a color differing from those of the individual sums and the sub totals. By releasing key, K, the

ribbon, H', guides, G, and other parts are returned to normal positions, and the operation of the machine may be resumed in the usual manner.

Although for the sake of explanation I have shown and described my invention in connection with a particular form of adding mechanism, it is to be distinctly understood that the invention is not restricted to its use in conjunction with said adding mechanism. For example, my new devices may be used in connection with the adding mechanism of Burrough's patent No. 504,963, September 12, 1893, or with any other appropriate form of adding machine.

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

1. In an adding machine, mechanism for printing totals or footings of sums, and ribbons of contrasting colors arranged to intersect and adapted to cooperate with said printing mechanism whereby records of individual sums, and totals or footings of such sums, may be obtained in contrasting colors.

2. In an adding machine, mechanism for printing totals or footings of sums, and ribbons of contrasting colors movable in intersecting paths and adapted to cooperate with said printing mechanism for securing records of individual sums, and of totals or footings of such sums, in contrasting colors.

3. In an adding machine, mechanism for printing totals or footings of sums, and ribbons of contrasting totals movable in intersecting paths, one of said ribbons being a multi-color ribbon, and both of the ribbons adapted to cooperate with said printing mechanism for securing records of individual sums, and of totals or footings of such sums, in contrasting colors.

4. In an adding machine, mechanism for printing totals or footings of sums, and two ribbons crossing one another, and means for separating said ribbons from contact, said ribbons cooperating with said printing mechanism whereby records in contrasting colors may be obtained of individual sums and of totals of such sums.

5. In an adding machine, mechanism for printing sums and for adding and printing totals or footings of said sums, two ribbons of contrasting colors movable in intersecting paths, and means for shifting one of said ribbons relative to the printing mechanism, said ribbons cooperating with said printing mechanism for securing impressions or records of individual sums and of totals thereof in contrasting colors.

6. In an adding machine, mechanism for printing totals or footings of sums, and two ribbons of contrasting colors, one of which is a multi-color ribbon, and means for shifting the multi-color ribbon relative to said

printing mechanism, said ribbons being adapted to cooperate with the printing mechanism in such manner that an impression may be obtained from one of said ribbons or from either section of the multi-color ribbon.

7. In an adding machine, mechanism for printing totals or footings of sums, and two ribbons of contrasting colors movable in intersecting paths, and means associated with the printing mechanism for shifting one of said ribbons relative to the printing mechanism, whereby said ribbons are adapted to cooperate with the printing mechanism for producing totals or footings in contrasting colors to individual sums.

8. In an adding machine, printing mechanism including a ribbon of one color adapted to produce a record or impression of individual sums, a differently colored ribbon adapted to produce a record of totals of sums in a different color, and means for shifting the second named ribbon independently of and relatively to the first named ribbon.

9. In an adding machine, mechanism for printing individual sums and of footings thereof, ribbon mechanism for securing in one color records of individual sums, an independent ribbon of contrasting color to the aforesaid ribbon, and means for shifting the independent ribbon relative to the first named ribbon for securing a record of totals or footings in a color different from the color impressions of the individual sums.

10. In an adding machine, mechanism for printing individual sums, ribbon mechanism in cooperative relation to said printing mechanism for securing in one color records of individual sums, an independent ribbon contrasting in color to the aforesaid ribbon mechanism, said independent ribbon and a ribbon of the aforesaid ribbon mechanism being movable in intersecting paths, and means for shifting said independent ribbon into cooperative relation to said printing mechanism and thereby secure records of totals of footings in a color different from the record of the individual sums.

11. In an adding machine, mechanism for

printing individual sums and of footings thereof, ribbon mechanism for securing records in one color of individual sums, ribbon guide mechanism, an independent color ribbon confined by said guide mechanism and held normally thereby out of the printing line of said printing mechanism, and means for shifting the guide mechanism and the ribbon.

12. In an adding machine, mechanism for printing individual sums and of footings thereof, a ribbon adapted to secure a record of individual sums in one color, suitable hangers, ribbon guides movable on the hangers, another ribbon directed by said guides across the path of a printing line of said printing mechanism, and means for shifting the guide mechanism and the second named ribbon, whereby a record of the footings or totals of the individual sums may be obtained by the aid of the second named ribbon, such records of the individual sums and the totals thereof being in contrasting color.

13. In an adding machine, mechanism for printing sums and footings of such sums, two intersecting ribbons of contrasting colors, whereby the sums and the footings may be obtained in different colors, and means for shifting one of said ribbons relative to the other.

14. In an adding machine, means for printing individual sums and footings of such sums, a plurality of intersecting ribbons, one of which is adapted to secure impressions of the individual sums in one color and the other ribbon is adapted to secure impressions of the footings in another color, means for retaining one ribbon out of the printing line of said printing mechanism, and means for shifting one of the ribbons relative to the printing mechanism.

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

JOHN DESMOND HAYES.

Witnesses:

JAS. H. GRIFFIN,
H. I. BERNHARD.