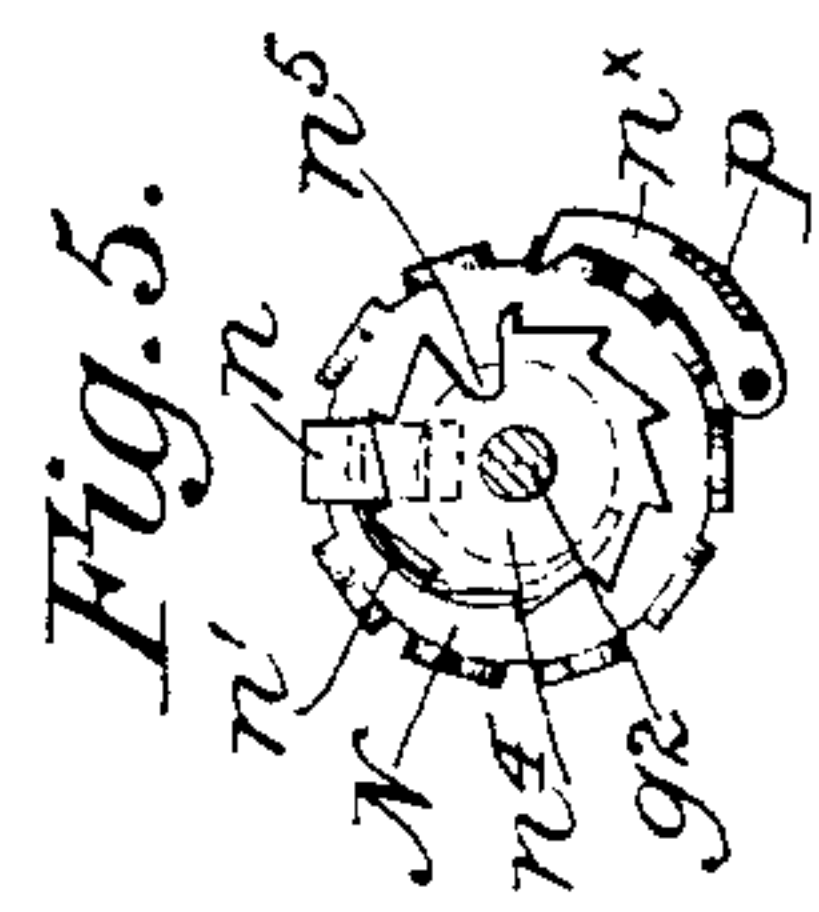
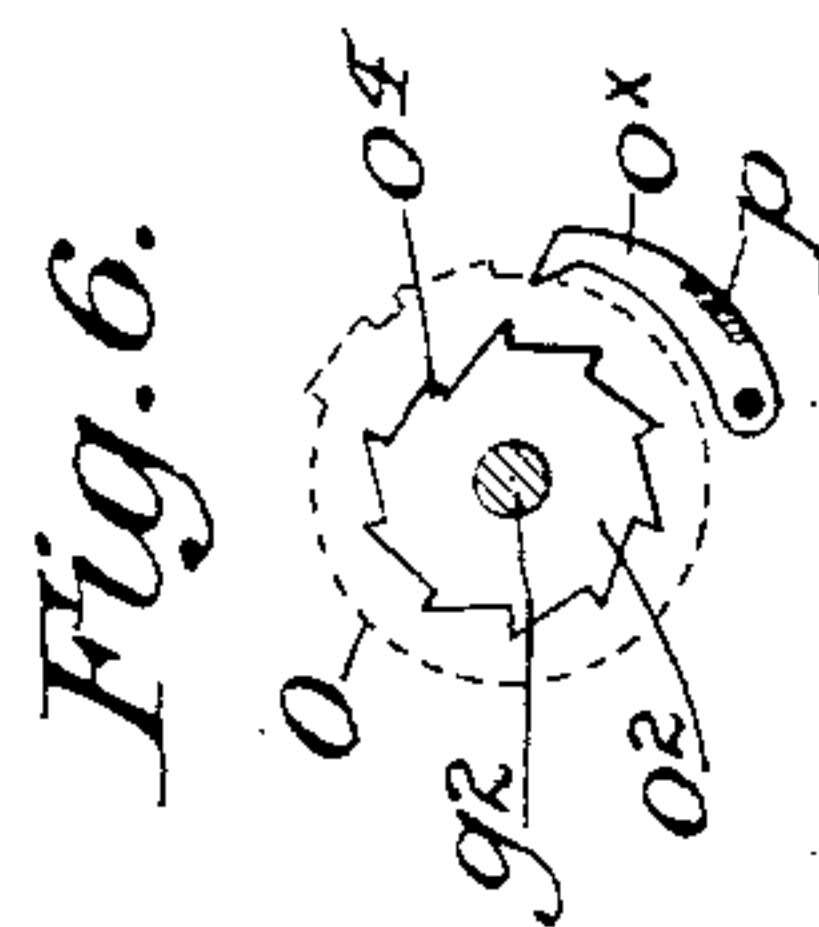
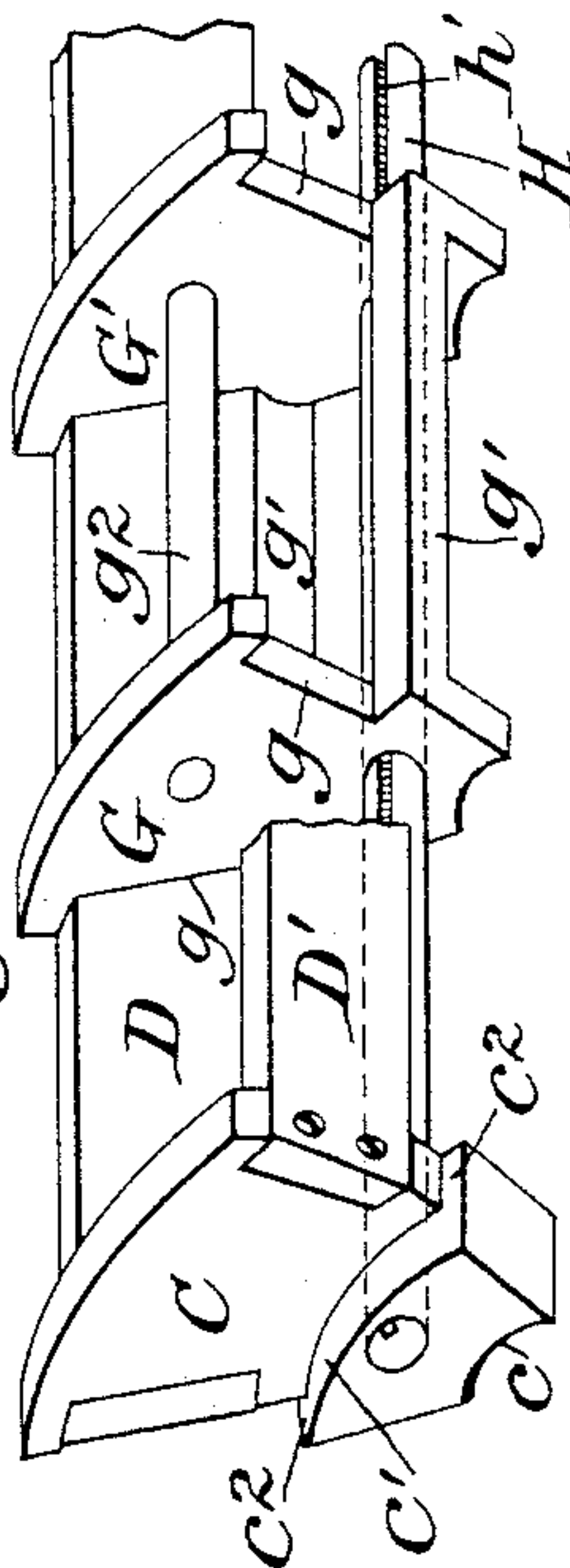
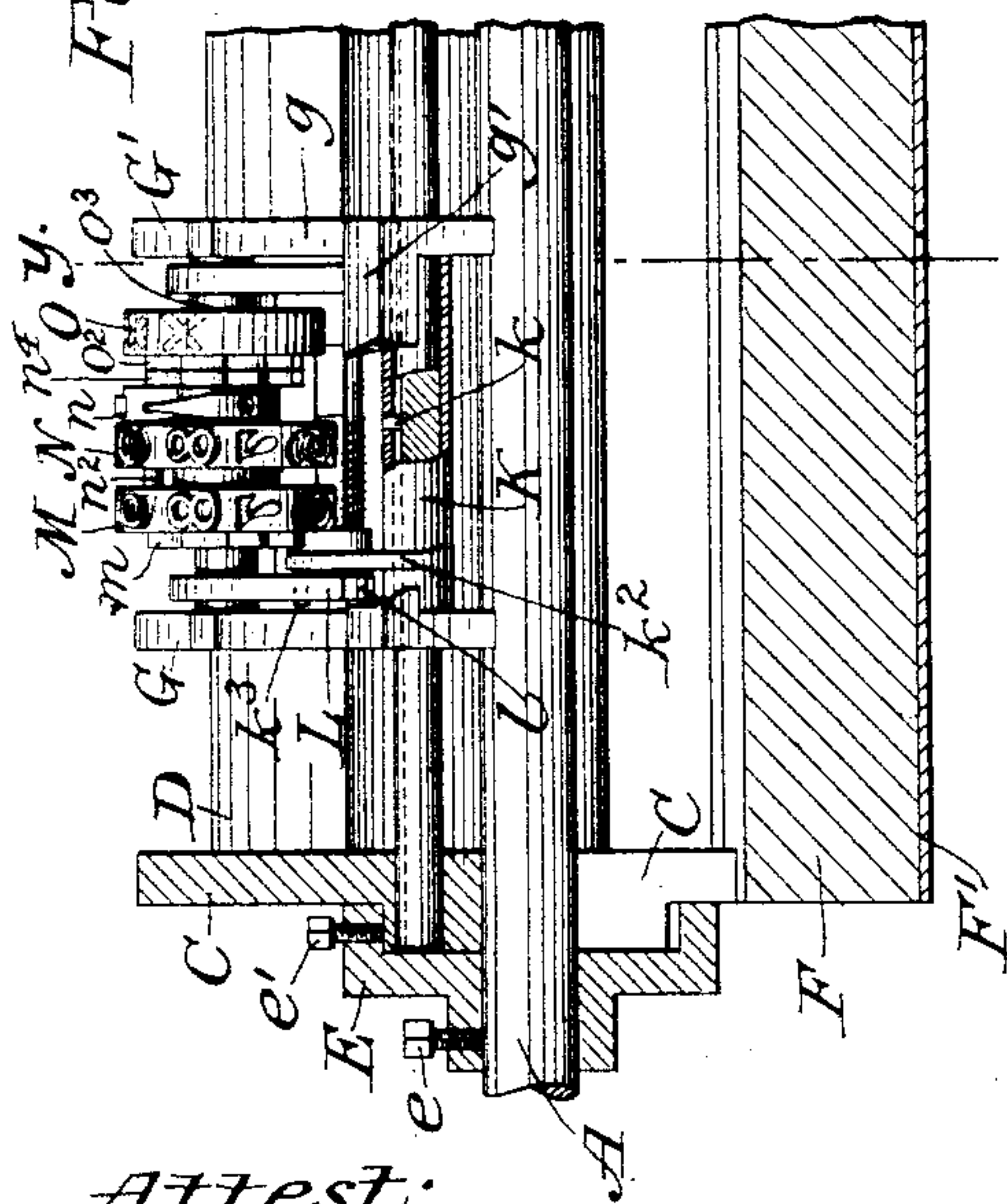
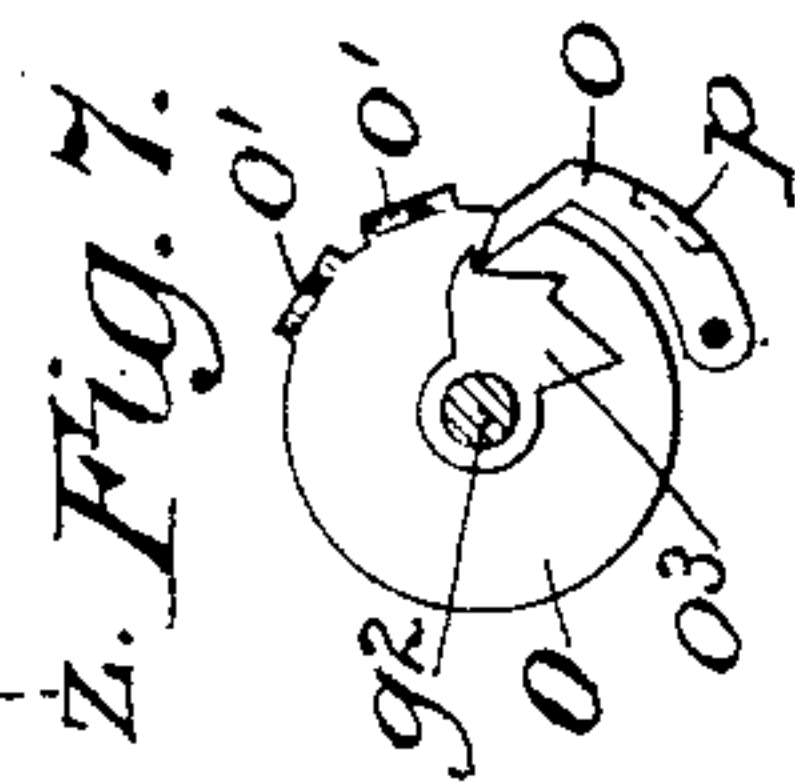
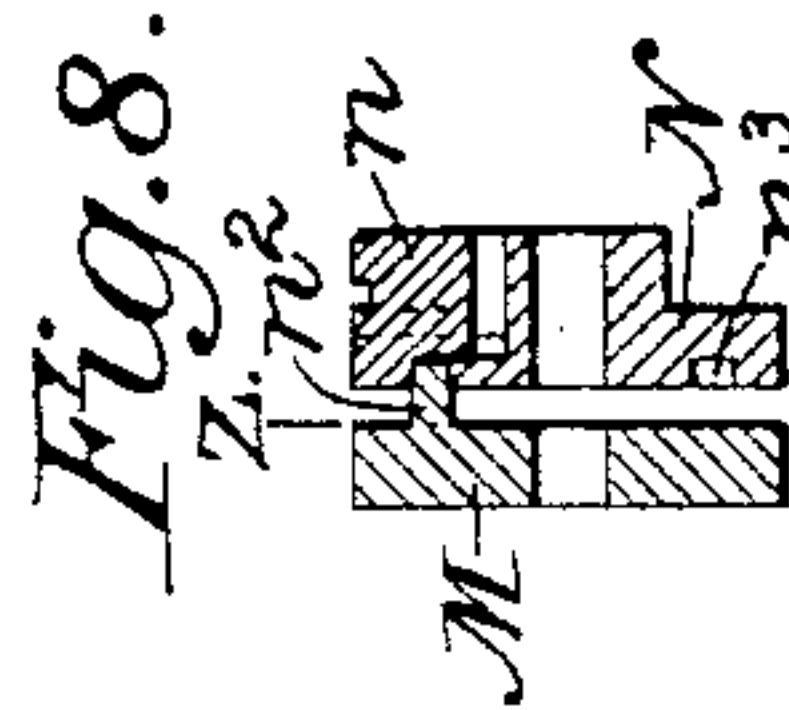
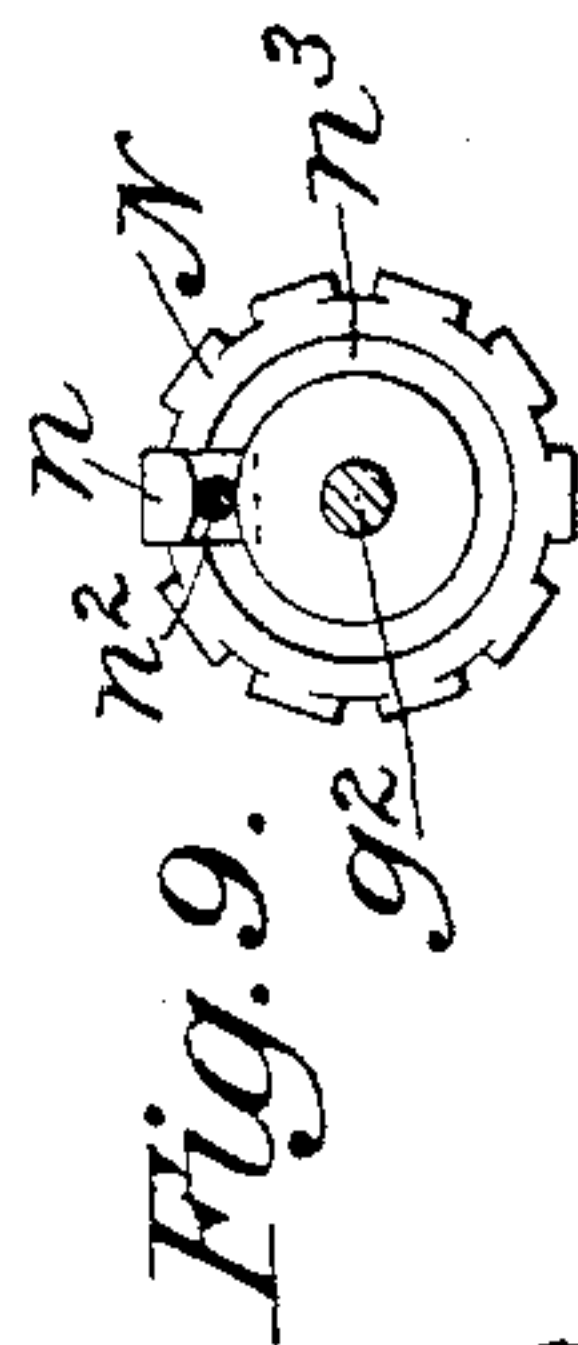
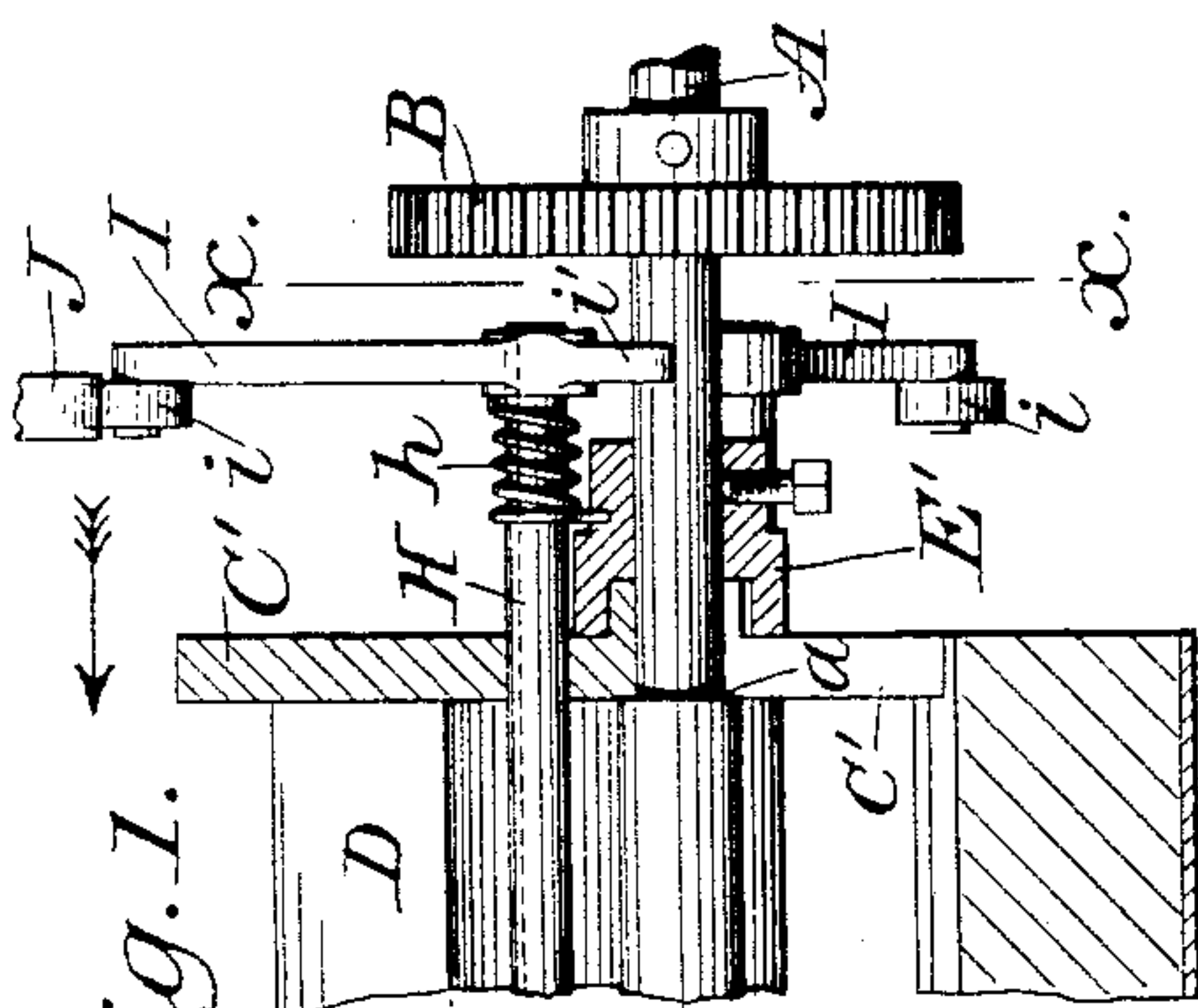
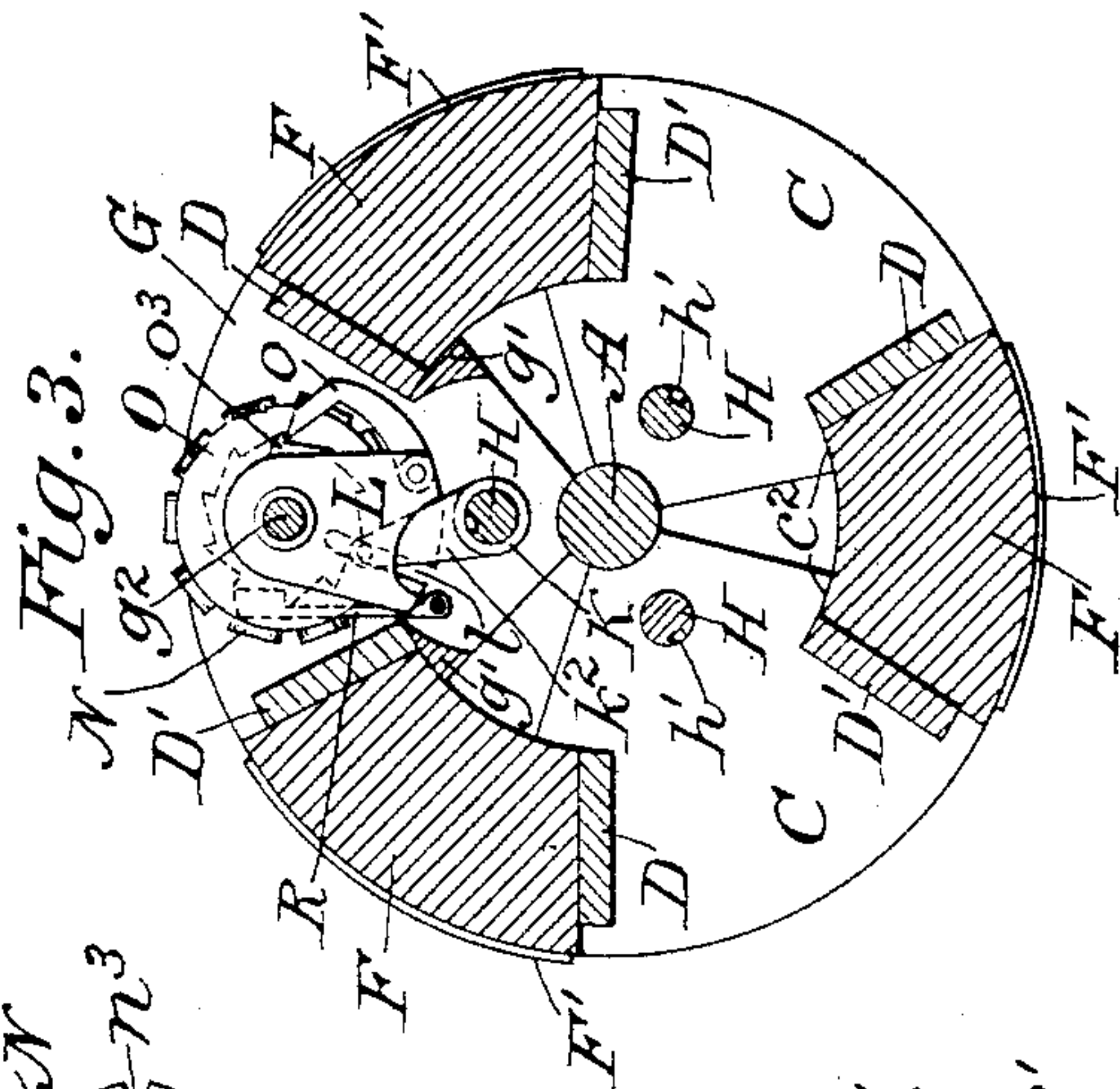
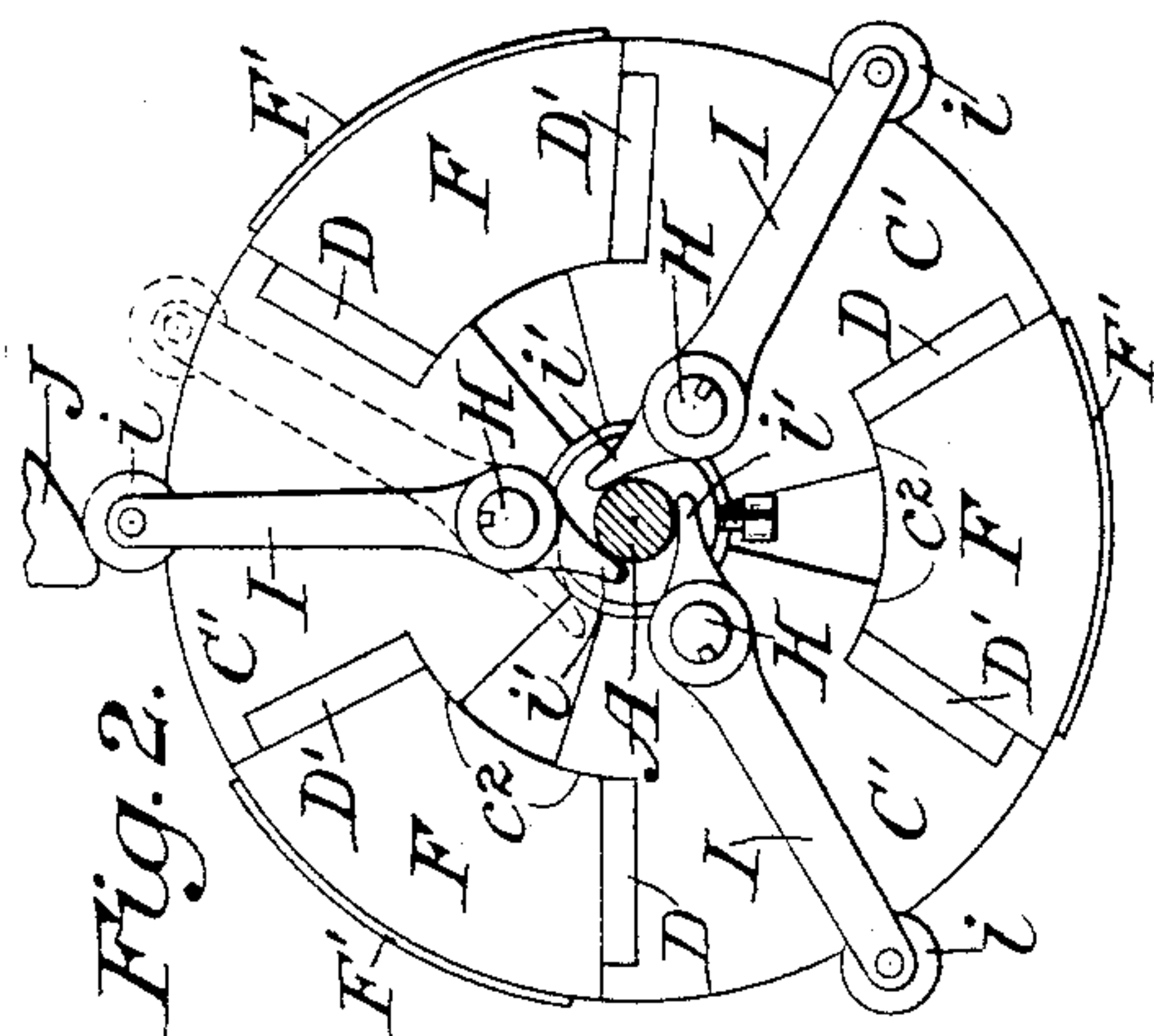


2 Sheets—Sheet 1.

No. 541,180.

Patented June 18, 1895.



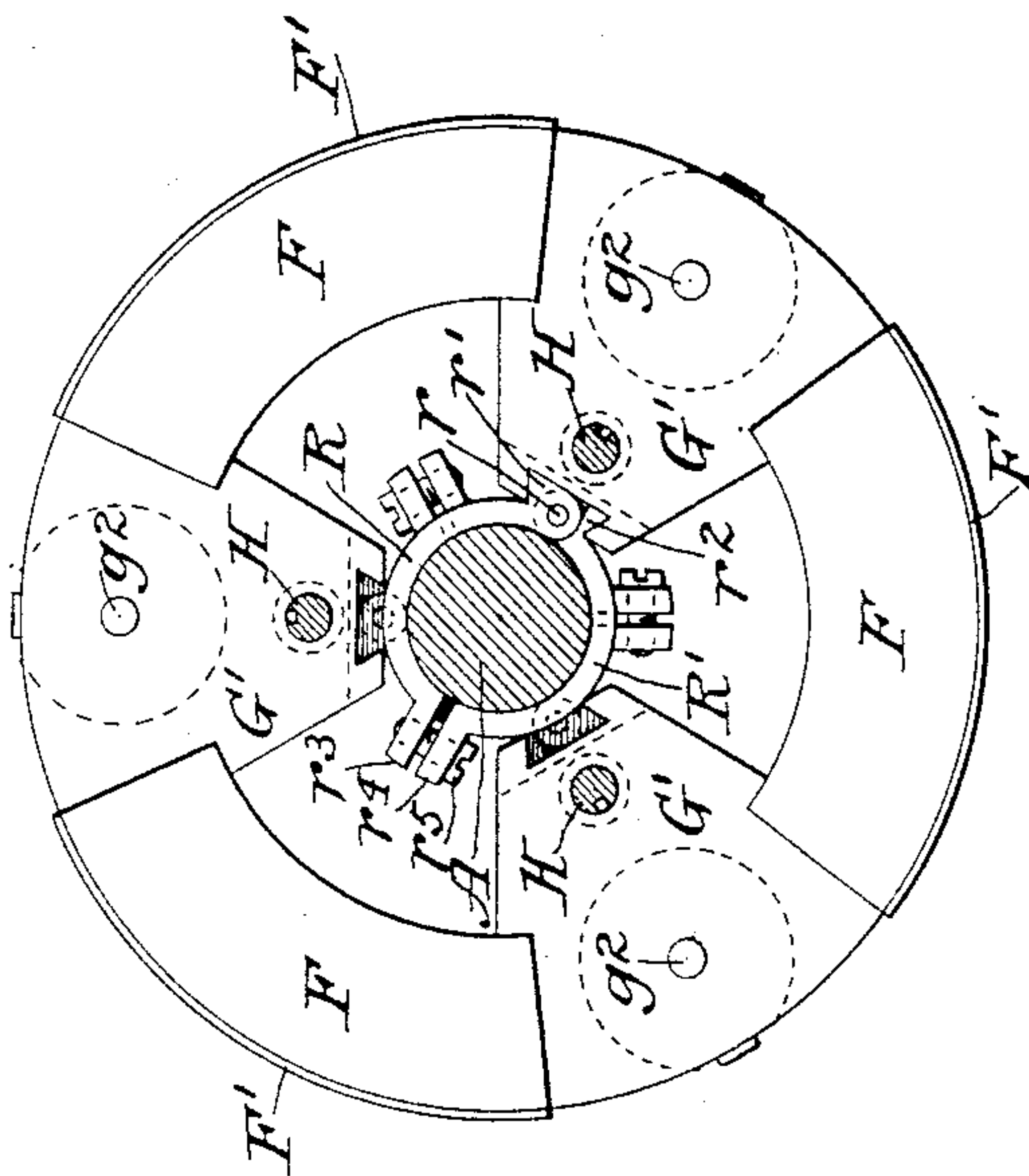
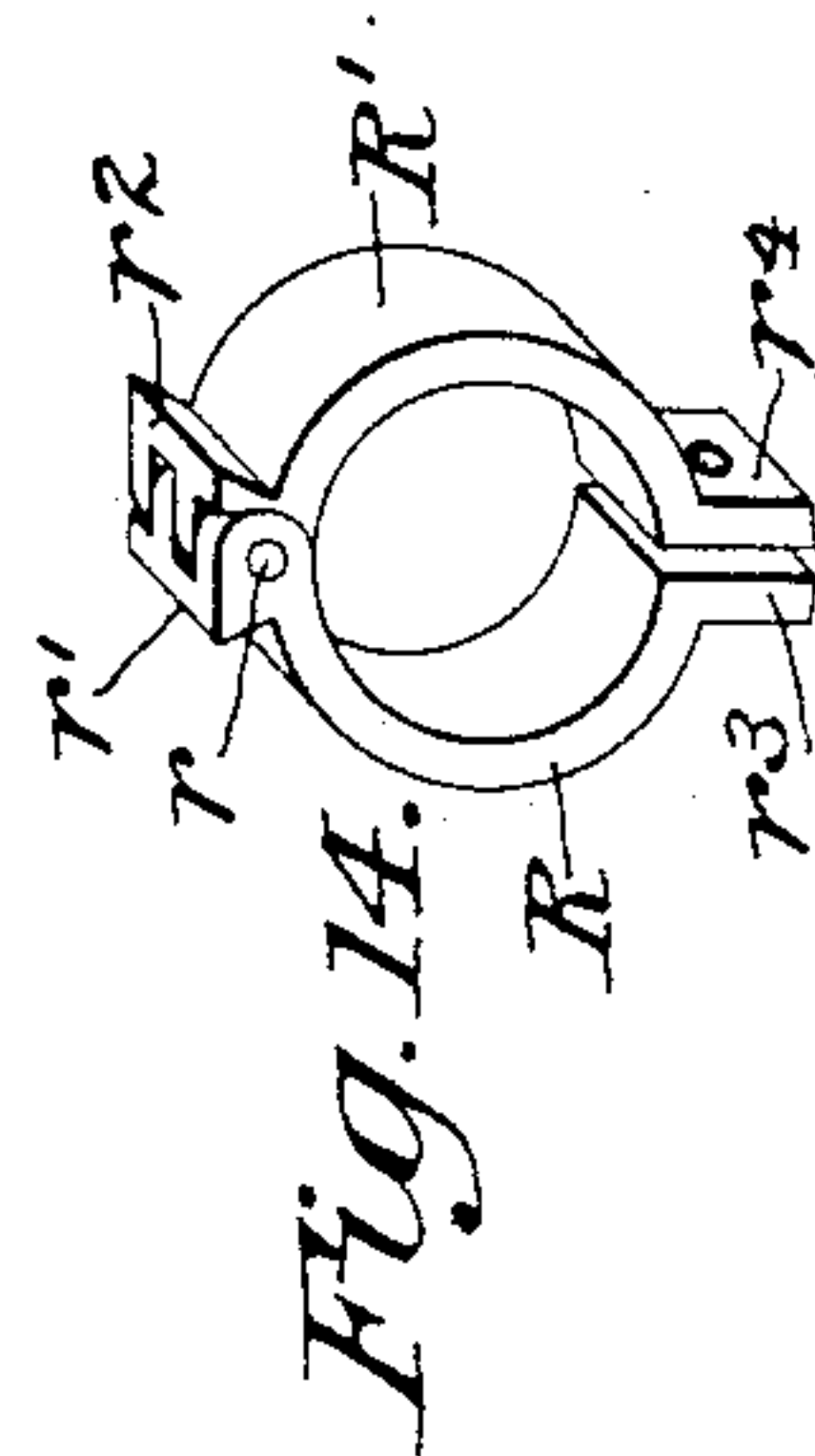
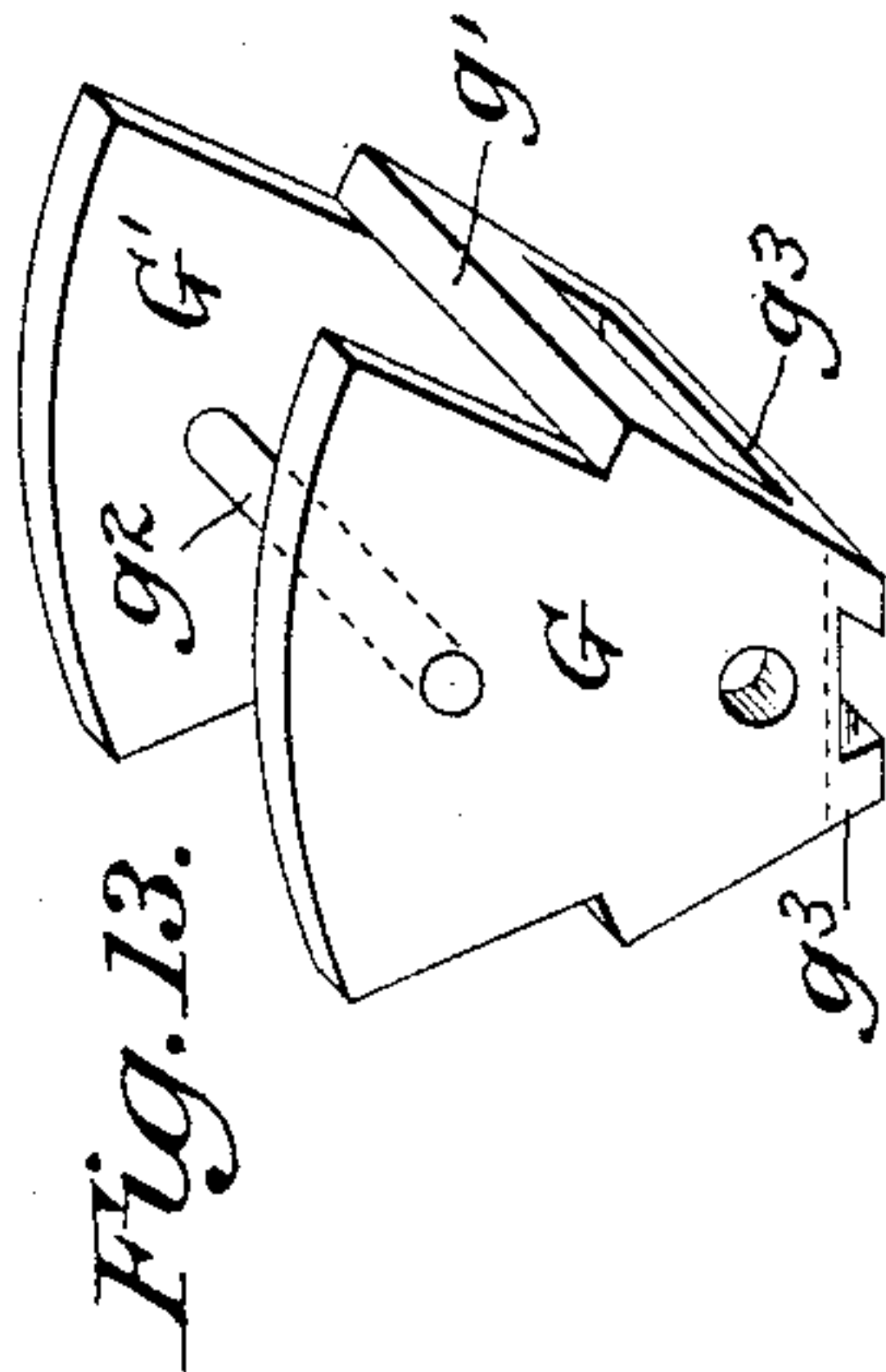
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2 Sheets—Sheet 2.

No. 541,180.

Patented June 18, 1895.



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UNITED STATES PATENT OFFICE.

JAMES H. REINHARDT, OF NEWARK, NEW JERSEY, AND FRANK SANDERS, OF BROOKLYN, NEW YORK, ASSIGNORS TO JOSEPH WETTER, OF BROOKLYN, NEW YORK.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,180, dated June 19, 1895.

Application filed July 10, 1894. Serial No. 517,061. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. REINHARDT, of Newark, in the county of Essex and State of New Jersey, and FRANK SANDERS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Numbering-Machines; and we do hereby declare that the following is a full and exact description thereof, reference
10 being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to machines for printing numbers or other distinguishing characters upon a series of tickets or labels or other like objects, and particularly to machines of this general description which are adapted for printing and numbering the successive tickets of a strip from which the tickets are
20 to be torn or cut off.

One object of the invention is to produce a machine which will permit the numbering-head to be placed wherever required and which can be readily adapted for printing
25 tickets of different lengths or widths.

A further object is to provide for the operation of the machine in such a manner that successive series of tickets or labels may be printed upon a continuous strip of paper
30 or other material with a proper space between the successive series without requiring the machine to be stopped or special feeding devices to be provided for feeding forward the strip at intervals.

Machines which embody the several features of the invention will be described in detail hereinafter and such features will be pointed out particularly in the claims.

In the drawings, Figure 1 is a central longitudinal section through a rotary machine which embodies the improvements, some of the co-operating parts, such as the platen or impression-cylinder and the inking devices, being omitted. Fig. 2 is an end view of the machine looking in the direction of the arrow
40 on Fig. 1, the central shaft being in section on the line xx of Fig. 1. Fig. 3 is a section on the line yy of Fig. 1, also looking in the direction of the arrow on said figure. Fig. 4
50 is a detail view showing in side elevation the ratchet-wheel secured to the units numbering-

wheel of the numbering-head, a part of the pawl-frame of the numbering-head being also shown and the units-wheel being indicated by a dotted line. Figs. 5, 6, and 7 are similar
55 views showing, respectively, the tens-wheel and its appurtenances, the ten-toothed ratchet-wheel secured to one side of the canceling-wheel, and the canceling-wheel with its mutilated ratchet-wheel. Fig. 8 is a detail view
60 in longitudinal section through the units-wheel and the tens-wheel to illustrate the operation of the movable type-block in the tens-wheel. Fig. 9 is a side view of the tens-wheel with its movable block, the actuating-
65 pin carried by the units-wheel being represented in section on the line zz of Fig. 8. Fig. 10 is a detail view of the frame supporting the numbering-heads. Fig. 11 is a partial side elevation of a rotary machine, showing
70 a different arrangement of the devices for securing the numbering-heads adjustably in position. Fig. 12 is a transverse section of the same. Fig. 13 is a detail view in perspective of one of the numbering-head frames or
75 casings shown in Fig. 11. Fig. 14 is a detail view in perspective of one of the split rings shown in Fig. 11.

The mechanism embodying the improvements is represented as supported upon or
80 with relation to a shaft A (see Figs. 1, 2 and 3) to which rotary movement is imparted through any suitable means, which may be represented by the gear B. The numbering heads or other printing devices are not im-
85 movably fixed to said shaft but are so supported thereon as to be removable readily whenever those in use are to be replaced by others, and furthermore are so supported as to be adjustable not only longitudinally upon
90 said shaft but also around said shaft so that, if necessary, any one numbering head may be placed exactly in the required position, that two or more numbering heads may be disposed longitudinally upon said shaft as re-
95 quired and that two or more numbering heads may also be disposed in the same line about said shaft. For these purposes supporting devices are provided which may be secured in adjusted position about the shaft
100 A and by which the numbering heads may be secured thereto and at the same time made

adjustable longitudinally. As shown in Figs. 1, 2, 3 and 10, each separate device is composed of one or more blocks C, C', and longitudinal bars D, D', which are secured to said block or blocks. Each block C or C' rests upon the shaft A, having a seat c for that purpose, and is held in place by a flanged ring or collar E which is secured to the shaft, as by a set screw e , and engages a shoulder c' which is formed on the face of the block C or C', a set screw e' being preferably tapped through the flange of the ring or collar E to bear upon said shoulder c' and thereby retain the frame firmly in position. The ring or collar E' co-operates with the block C' in the same way, but the block C' preferably abuts against a shoulder a on the shaft A for the purpose of determining the proper position of the frame. The blocks C, C', are preferably provided with offsets c^2 , c^3 to form seats for a piece of furniture F which may be placed adjacent to the numbering head for the purpose of supporting an electrotypes F'. As represented in Figs. 2 and 3 of the drawings three frames are shown in position about the shaft A with a corresponding number of blocks F, F', but it will be obvious that any number of frames may be secured in position according to the nature of the work to be done and the length of the tickets or labels to be printed.

One or more numbering heads are mounted between the bars D, D', of the supporting frame and may be moved longitudinally therein. The end pieces G and G' of the frame or casing of each numbering head are notched, as at g , to engage the bars D or D' and are preferably united by a bar g' , which also forms a seat for a block F, and by the shaft g^2 on which the wheels of the numbering head are mounted. Means are preferably provided whereby the several numbering wheels supported in a single frame may be actuated together. For this purpose a shaft H is mounted in suitable bearings in the blocks C, C', and passes through apertures in the end pieces G and G'. At one end said shaft has fixed thereto an arm I (see Figs. 1 and 2) which bears at its extremity a roller i . As the shaft A rotates the roller i strikes a fixed projection J and is thereby caused to rock the shaft H sufficiently to actuate the numbering head, the shaft H being returned to its initial position after each operation by a spring h and the movement of the shaft being limited by a toe i' which is adapted to contact with the shaft A. Between the end pieces G and G' of each numbering head the shaft H is encircled by a hub K which may be moved longitudinally upon the shaft H but is caused to oscillate therewith by suitable means, as by a pin k in said hub and a slot h' in the shaft. The hub K has an arm k^2 through which the necessary movement is imparted to the pawl frame L of the numbering head, a pin k^3 in said arm engaging a slot l in one of the cheek pieces of said swinging pawl frame which, as usual, may be mounted on the shaft g^2 .

In the machine represented in the drawings the numbering head is shown as adapted to print from 1 to 100, or vice versa, and then to begin again with the same series of numbers. It will be understood, however, that so far as concerns that portion of the invention already described the numbering head might be of any ordinary construction and that, furthermore, so far as the invention relates to the construction of the numbering head itself, the number of numbering wheels might be varied as well as the particular arrangement shown. In the machine represented the units wheel M (Figs. 1, 4 and 8) bears on its periphery the figures from 0 to 9 inclusive and has fixed on one side thereof a ten-toothed ratchet wheel m , one of the notches m' , in said wheel being considerably deeper than the rest, as is usual in numbering heads of this description to permit the engagement of the next pawl with the ratchet wheel of the tens wheel at the proper time. The tens wheel N (Figs. 1, 5 and 8) bears upon its periphery the figures from 1 to 9 inclusive and is provided, in the usual manner, with a radially movable type block n which in the present case bears the 1 and 0. The block n is normally held from the plane of print by a spring n' and is thrust outward to the plane of print at the proper time by a pin n^2 which is fixed to the units wheel M and, traveling in a groove n^3 in the proximate face of the tens wheel N, engages an overhanging edge of the type block n and thrusts said block outwardly. Fixed to the wheel N to rotate therewith is a ten-toothed ratchet-wheel n^4 which is substantially of the same diameter as the ratchet wheel before referred to, and has one deep notch n^5 for a purpose to be referred to. Adjacent to the tens wheel and its appurtenances a third or supplementary wheel O (Figs. 1, 3, 6 and 7) is mounted upon the shaft g^2 and, in the present case, has upon its periphery two characters o' , o' which serve as hereinafter described, to distinguish certain of the labels or tickets from another which bears the same number. Upon the side of the wheel O toward the wheel N is fixed a ten-toothed ratchet wheel o^2 which is substantially of the same diameter as the ratchet wheel m and n^4 but has one low tooth o^4 . Upon the other side of said wheel O is fixed a mutilated ratchet wheel o^3 which in the present case has three teeth the first of which is one step behind the low tooth o^4 of the wheel o^2 . The number of the teeth of the mutilated ratchet wheel o^3 will vary according to the length of the strip which it is desired shall intervene between the end of one series of tickets or labels and the beginning of the next series, as will hereinafter more clearly appear. The several pawls m^x , n^x , o^x and o , which co-operate with the respective ratchet wheels m , n^4 , o^2 , and o^3 , as is usually the case, are formed on one plate or are united to move as one by a bar p , but the pawls are not all of the same length. The pawl m^x is of such a length relative to the ratchet wheel m that

when in engagement with said wheel m it will hold the pawls n^x and o^x , which may be of equal length, from engagement with their respective ratchet wheels. The pawl o is of such a length relative to the mutilated ratchet wheel o^3 that when in engagement with the teeth thereof it will hold all of the other pawls out of engagement with their respective ratchet wheels. The radius of the tooth o^4 of the ratchet wheel o^2 is such that it can be engaged by its pawl only when both pawls m^x and n^x enter simultaneously the deep notches m' and n^5 . The ratchet wheels m , n^4 and o^2 are engaged by hold pawls in the usual manner, one of said pawls being shown at R in Fig. 3.

The mode of assembling the machines and securing them in proper position upon the shaft A will be clearly understood without further description herein. It will be obvious that the machines might be secured by suitable means upon a cylinder of any diameter or even upon a flat bed-plate, the frames being readily adapted to presses of any size by simply reducing the length of the longitudinal bars and of the shaft H. It will also be understood that each rotation of the shaft A the units wheel M of each numbering head will be advanced one step, except as described below and that the tens wheel N will be advanced one step at each rotation of the units wheel M, the movable type block n being brought out to the plane of print at the proper time to print 100 in the usual manner. It will also be obvious that ordinarily the supplementary wheel O will be advanced step by step with the tens wheel N through the engagement of the pawl o^x , with the ratchet wheel o^2 . Such movement of the wheel O with the wheel N does not take place until (in the particular arrangement represented) the number 70 has been printed, but the wheel O stands still during the printing of all numbers from 71 to 99 because the pawl o^x is held from engagement with the low tooth o^4 by reason of the bearing of the pawl m^x on the wheel m or of the pawl n^x on the wheel n^4 . The shifting of the wheels M and N to bring 100 to the line of print is effected by the engagement of the pawls m^x and n^x with the deep notches m' and n^5 respectively. Consequently the pawl o^x is at the same time permitted to engage the low tooth o^4 and to advance the wheel O one step. Up to this time the teeth of the mutilated ratchet wheel o^3 have not been in position to be engaged by the pawl o , but on the next movement of the pawl frame after 100 has been printed the pawl o engages the first tooth of the mutilated ratchet wheel o^3 and brings the first of the canceling characters o' to the line of print. At the same time and through the connection of the pawls, all of the other pawls are lifted from engagement with their respective ratchet wheels and no movement of the units and tens wheels takes place. The second move-

ment of the pawl frame in a similar manner brings the second canceling character to the line of print while the units and tens wheels remain stationary. It thus happens that after the ticket numbered 100 has been properly printed two or more tickets are printed with the number 100 and with the canceling character in addition. These two canceled tickets afford a sufficient length of strip between two successive series of tickets to effect a proper engagement of each series when separated from the rest, with the spindle of the reel on which such single strip is wound. At the next movement of the pawl frame the figure 1 of the units wheel is brought to the line of print and the movable block n is released to retire its characters from the plane of print. It is obvious that the supplementary wheel O should complete a rotation at the same time with the tens wheel N in order that the canceling figure may be brought to the line of print at the proper moment, and it will also be obvious from the foregoing description that the supplementary wheel moves three steps while the tens wheel is stationary. In order therefore that the supplementary wheel may remain stationary during three advances of the tens wheel the low tooth o^4 is provided on the ratchet wheel o^2 so that the tens wheel may be advanced step by step at the proper time and that the pawl o^x may be held out of engagement with the ratchet o^2 during three advances of said tens wheel, thereby bringing the tens wheel and the canceling wheel again into the same relative position.

In Figs. 11, 12, 13 and 14 it is intended to represent a modified arrangement of the devices for securing the numbering-heads in position while permitting the adjustment thereof either circumferentially or longitudinally. In this arrangement the frame or casing of each numbering-head may be substantially the same as shown in Figs. 1, 2, 3 and 10, the end-pieces G and G' being united by a bar or plate g^3 which forms a seat for a piece of furniture F and by the fixed shaft g^2 on which the wheels M, N, &c., are mounted. Likewise, the actuating shaft H passes through apertures in said end-pieces, may have at one end or the other an arm I, and between the end-pieces of each casing is encircled by a hub K which may be moved longitudinally on the shaft but oscillates therewith to transmit movement to the pawl-frame L. The shaft H may be additionally supported, if necessary, by a block C² which is held in position, with capacity for circumferential adjustment, by a flanged collar E² with set screws e^2 , e^2 .

Each frame or casing is adapted to be engaged by a collar consisting of two parts R and R' which are hinged together at r the ends adjacent to the hinge being provided with outwardly projecting claws or lugs r' and r^2 . The other extremities of the two parts are adapted to be drawn together for the purpose of clamping the collar upon the

shaft, being preferably formed with ears r^3 , r^4 , to receive a screw r^5 . Before applying the ring to the shaft it is opened sufficiently for the purpose, thereby drawing the claws or lugs r' and r^2 together to permit them to enter between the converging plates g^3 of the frame or casing. The ring is then applied to the shaft and closed, causing the claws r' and r^2 to separate and engage the numbering-head firmly. By tightening the screw r^5 the ring may be clamped in any desired position upon the shaft. As indicated in Fig. 11 the rings may be of such width as to permit two or more numbering heads to be set in the same circumferential line.

We claim as our invention—

1. The combination with a central shaft, of a frame composed of blocks and longitudinal bars, a numbering head having a frame notched to engage said bars, and a flanged collar secured to said shaft and adapted to engage one of said blocks, substantially as shown and described.

2. The combination with a central shaft of frames to receive numbering heads, said frames being composed of blocks and longitudinal bars, and said blocks having offsets to support furniture between adjacent frames, and flanged collars secured on said shaft and

adapted to engage said blocks, substantially as shown and described.

3. In a numbering machine, the combination of a numbering wheel, a ratchet wheel secured to said numbering wheel and having a deep notch, a supplementary wheel having printing characters, a full ratchet wheel secured to said supplementary wheel and having a low tooth, a mutilated ratchet wheel also secured to said supplementary wheel, a pawl frame and three several pawls connected to move together, the pawl in engagement with the mutilated ratchet wheel holding the remaining pawls out of engagement with their ratchet wheels and the pawl for engagement with the second named ratchet being held out of engagement with the low tooth of the second named ratchet wheel, except when the pawl for the first named ratchet wheel is in the deep notch thereof, substantially as shown and described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES H. REINHARDT.
FRANK SANDERS.

Witnesses:

A. N. JESBERA,
A. WIDDER.