

(No Model.)

3 Sheets—Sheet 1.

L. WELSPIEL.
TYPE WRITING MACHINE.

No. 516,384.

Patented Mar. 13, 1894.

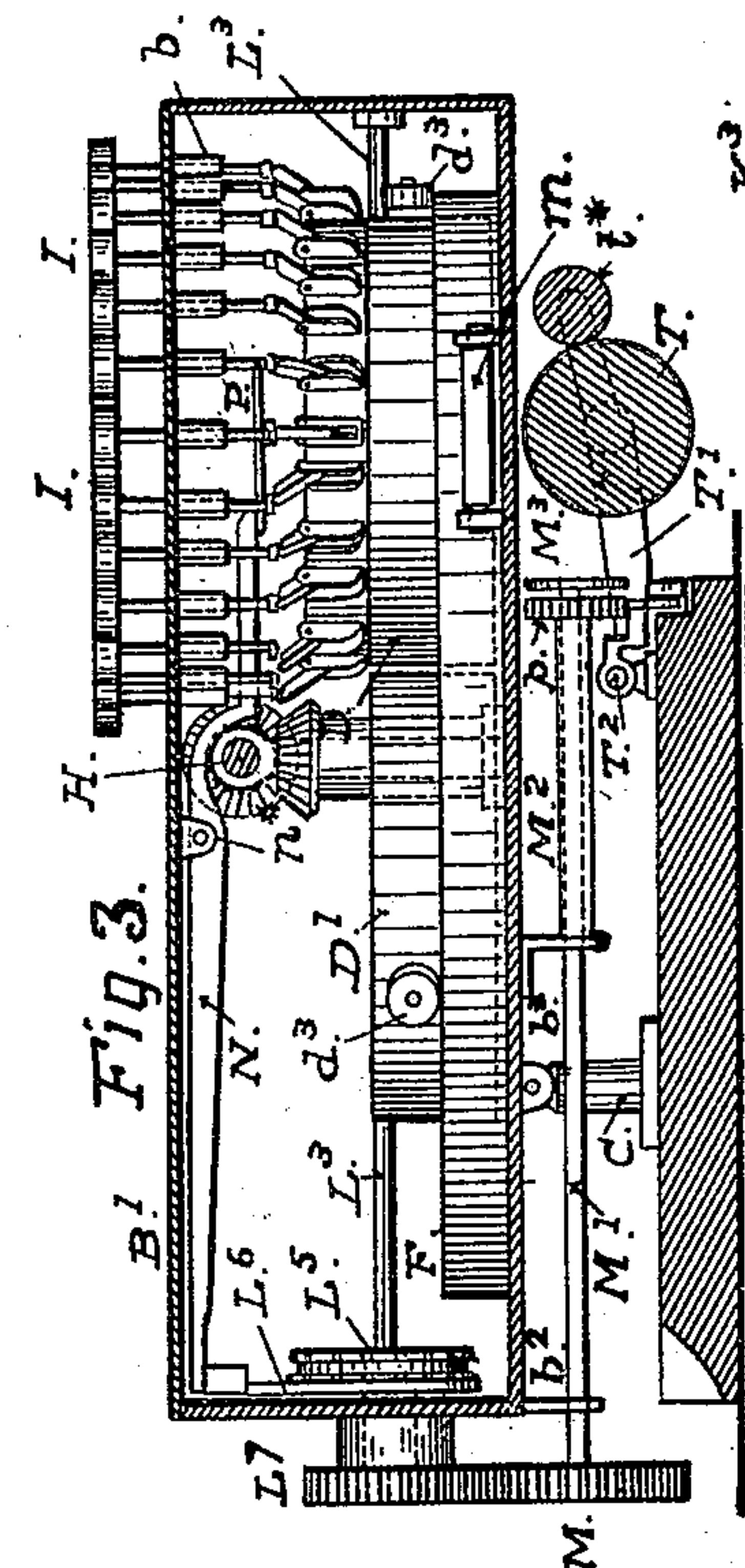


Fig. 1.

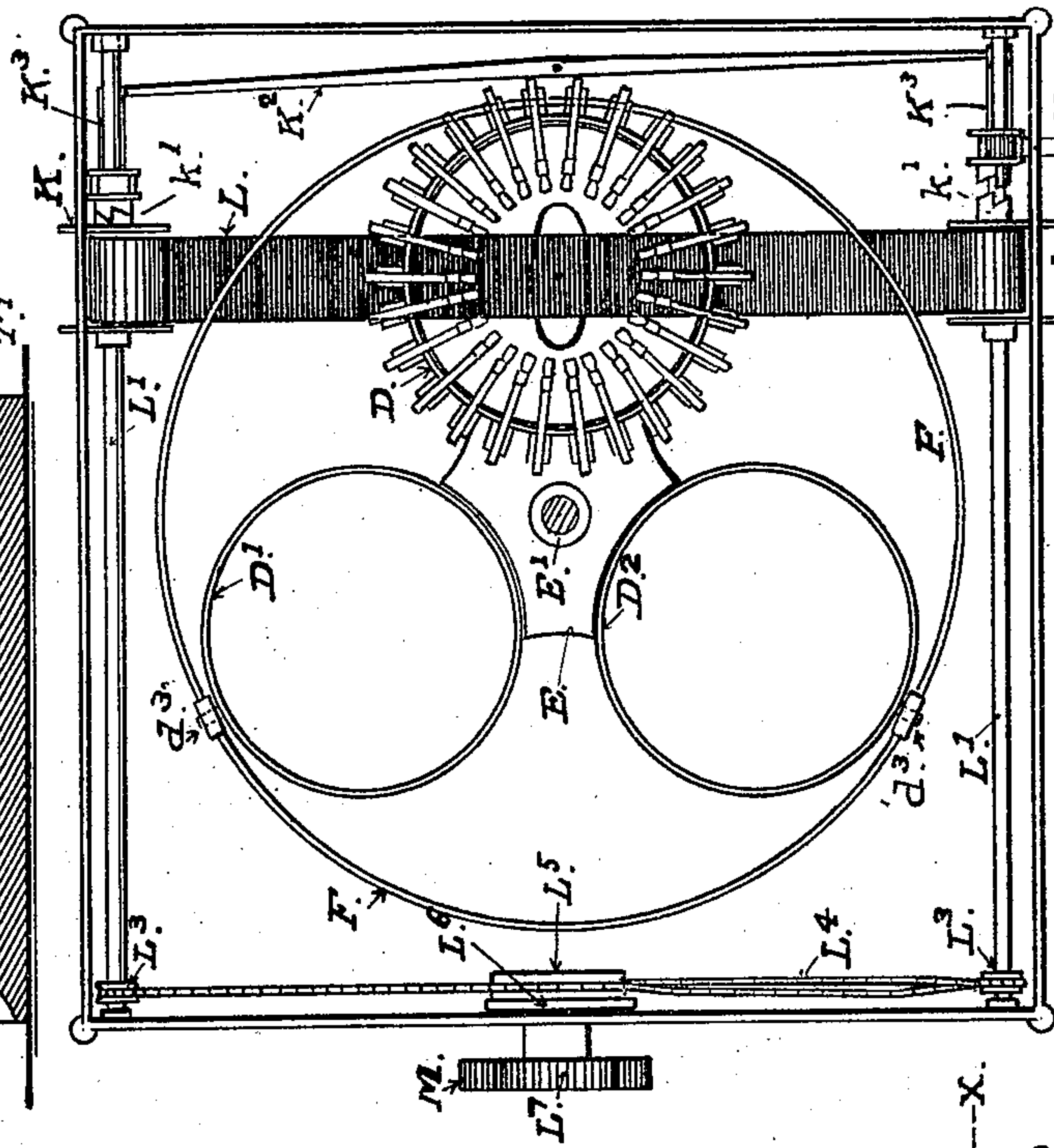


Fig. 2.

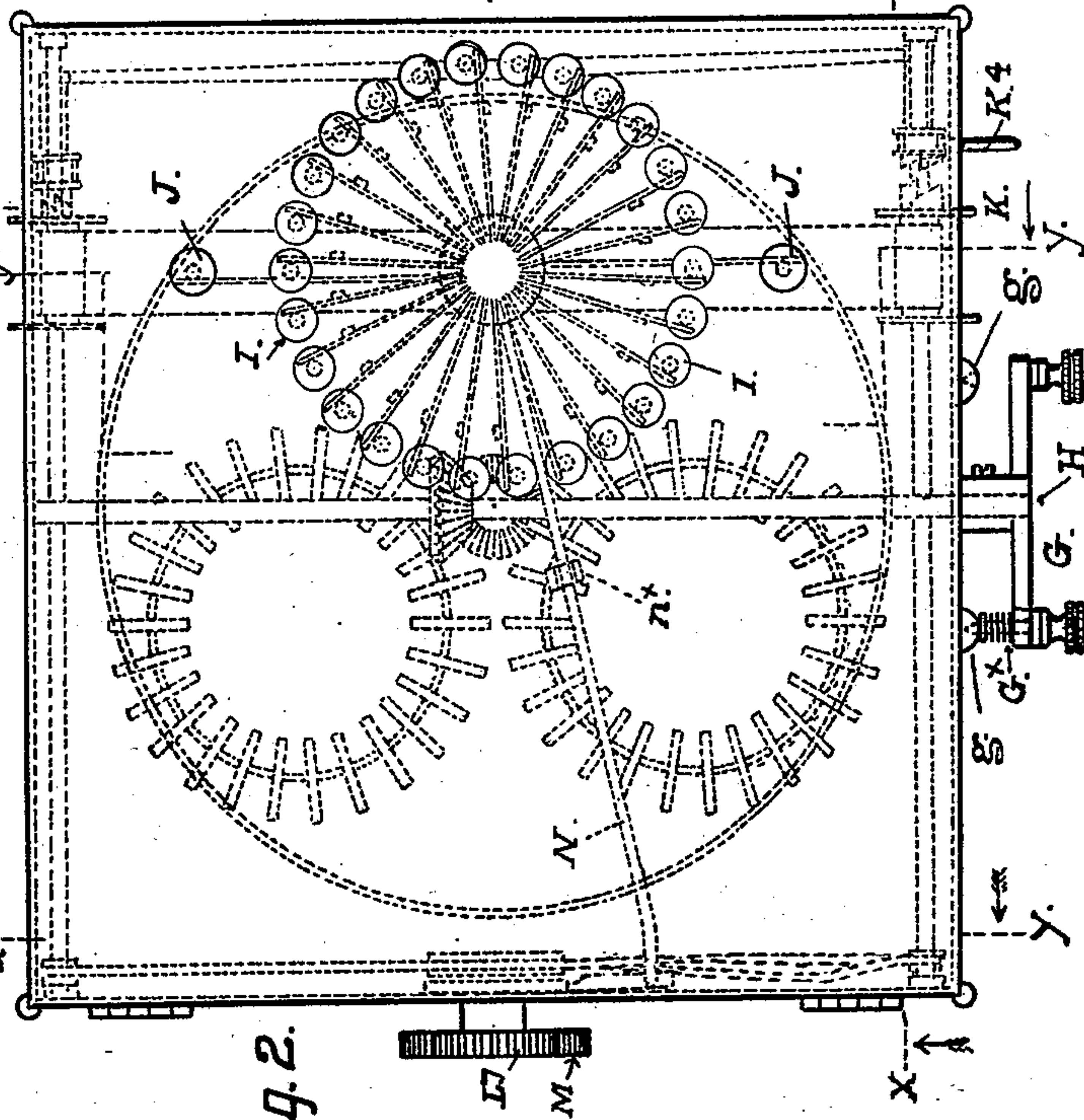
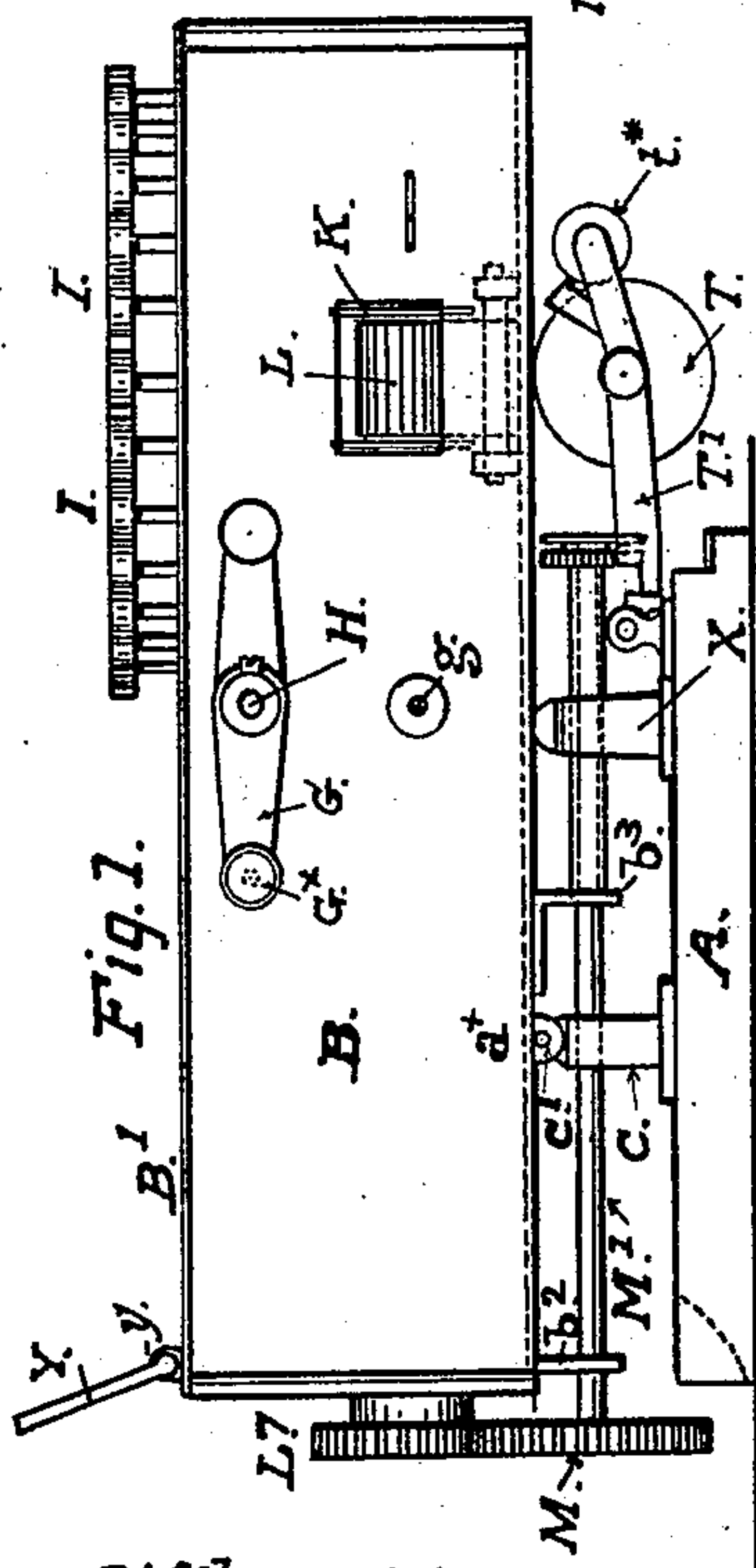


Fig. 3.



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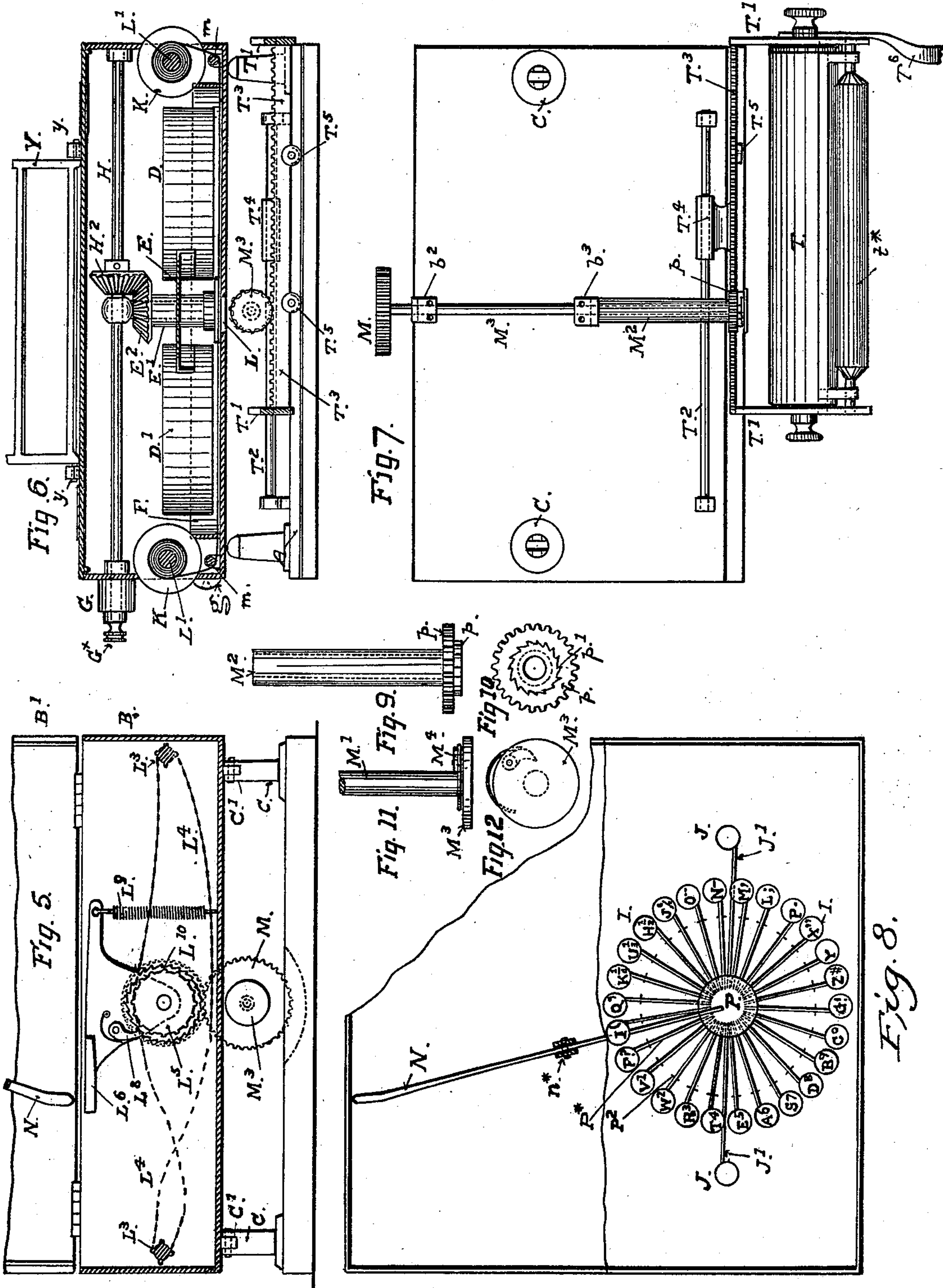
(No Model.)

3 Sheets—Sheet 2.

L. WELSPIEL.
TYPE WRITING MACHINE.

No. 516,384.

Patented Mar. 13, 1894.



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(No Model.)

3 Sheets—Sheet 3

L. WELSPIEL.
TYPE WRITING MACHINE.

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Fig. 13.

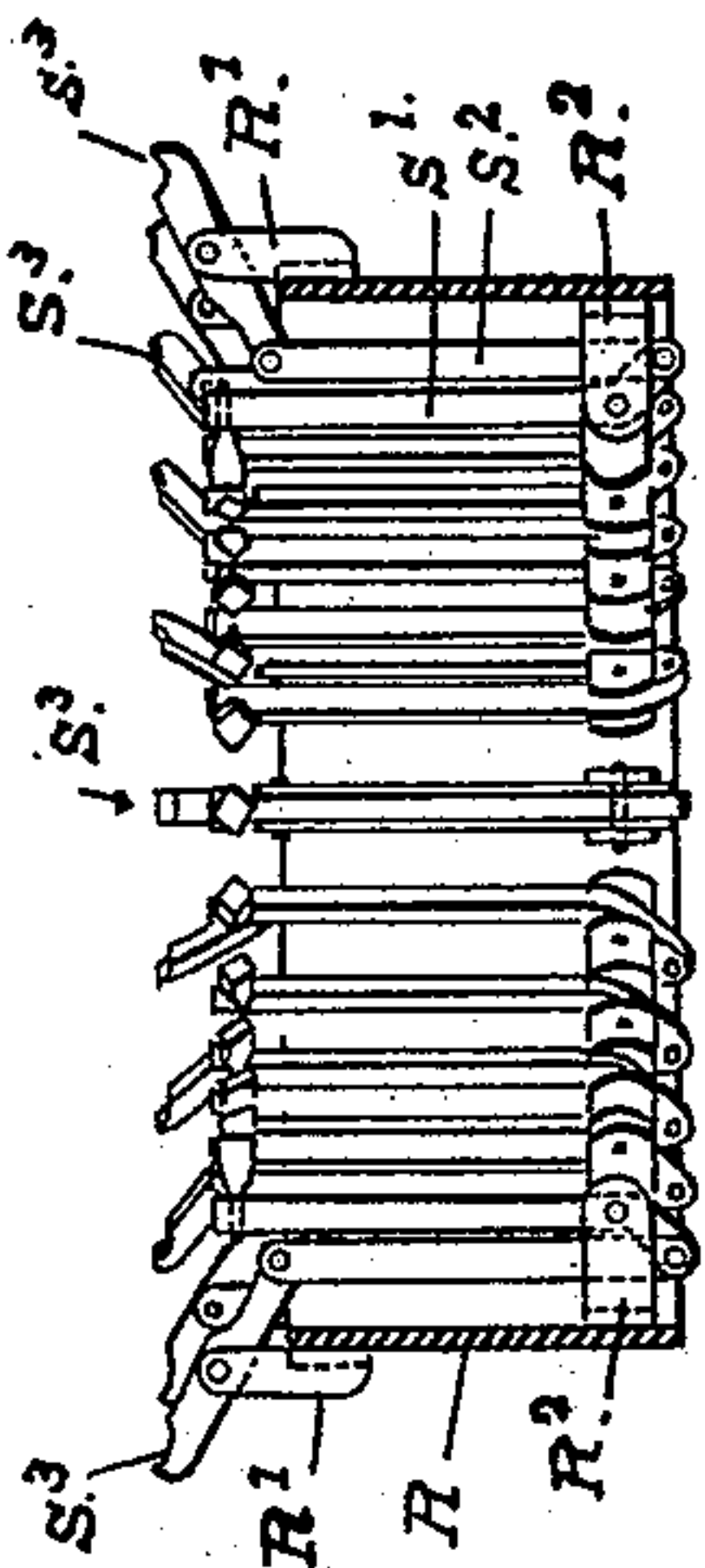


Fig. 14.

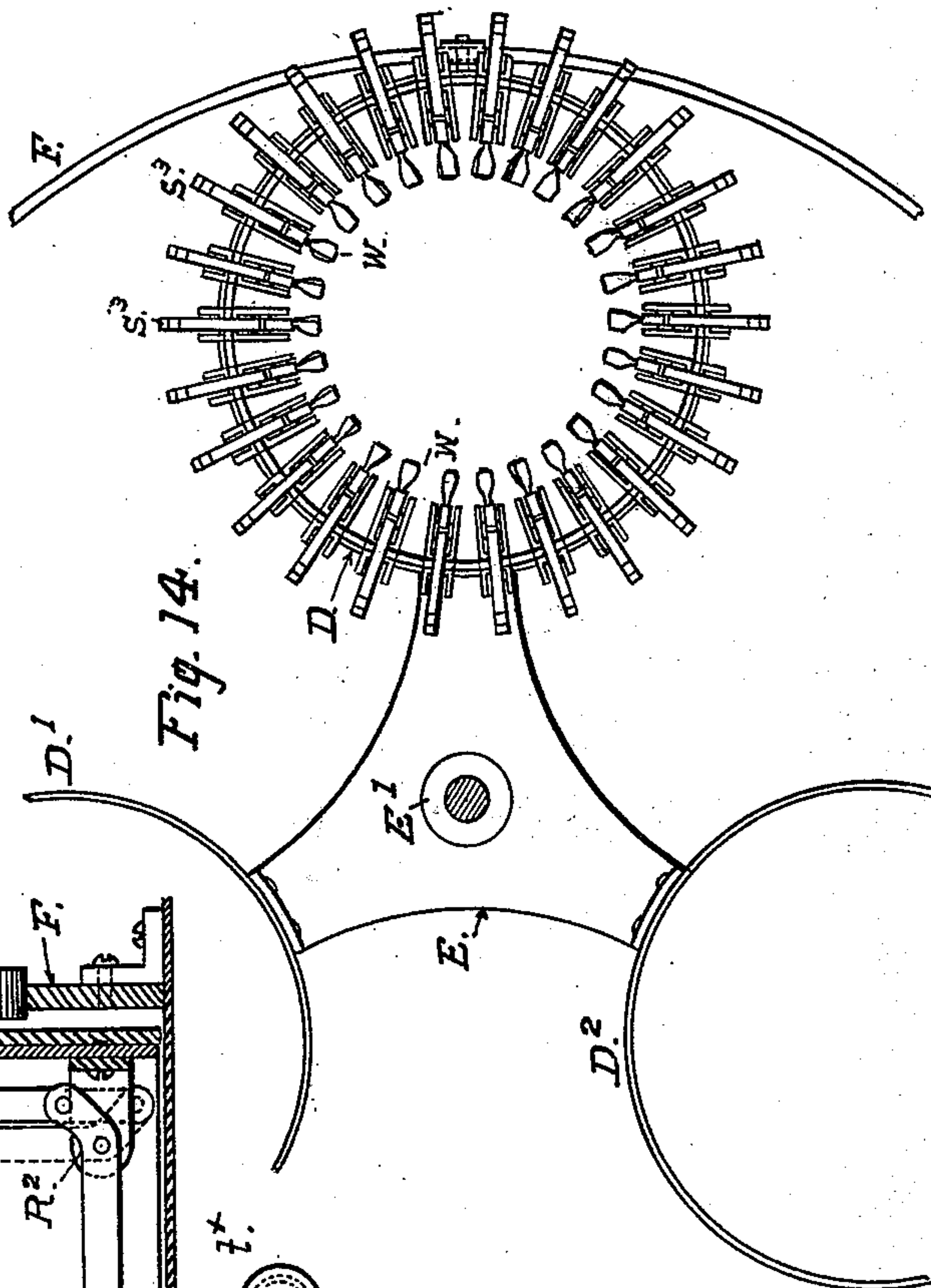
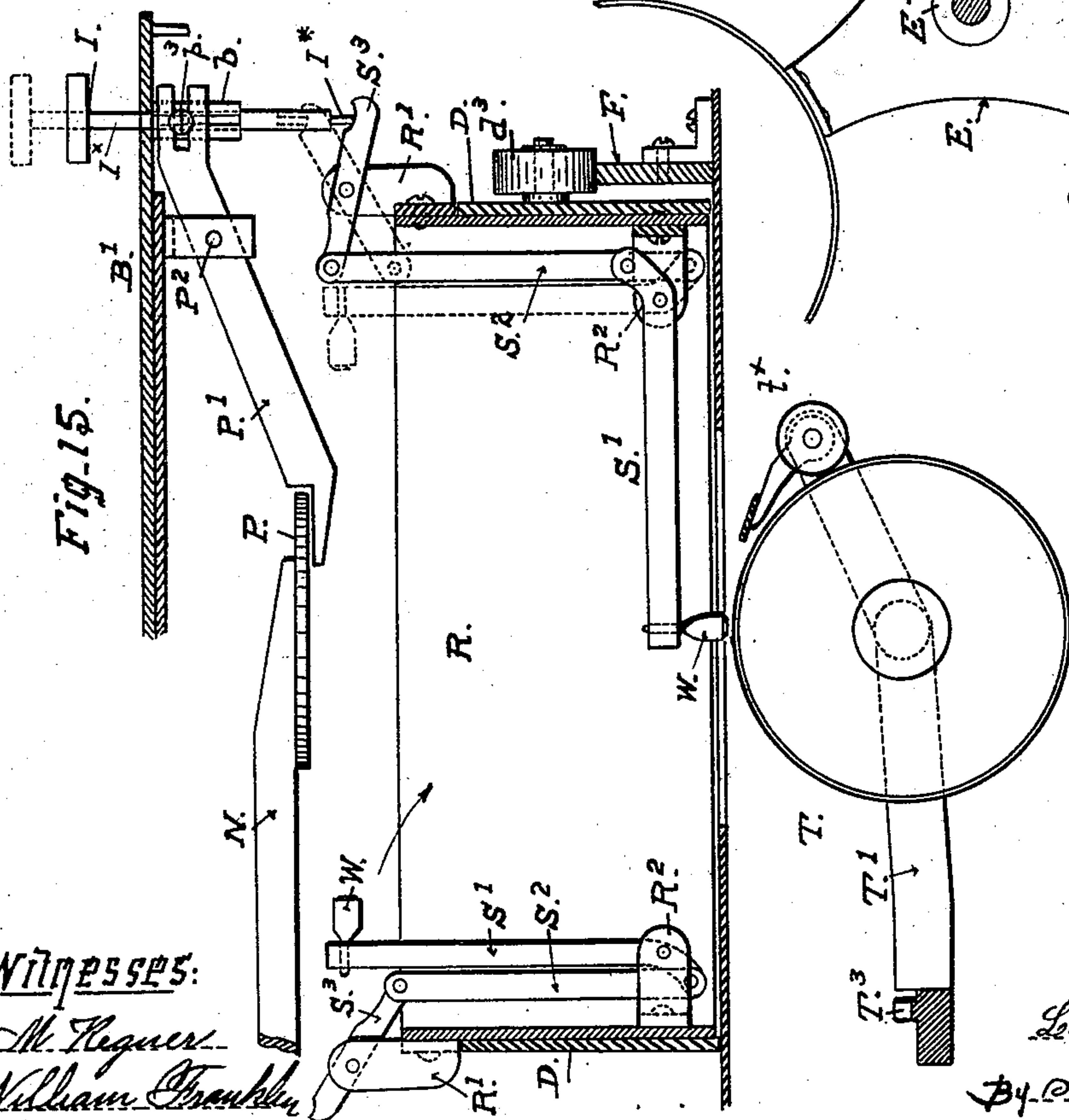


Fig. 15.



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UNITED STATES PATENT OFFICE.

LEONIE WELSPIEL, OF SAN FRANCISCO, CALIFORNIA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 516,384, dated March 13, 1894.

Application filed April 20, 1893. Serial No. 471,155. (No model.)

To all whom it may concern:

Be it known that I, LEONIE WELSPIEL, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The object of my invention is mainly to simplify the construction of type-writing machines and reduce the cost of manufacture and also to enable the operator to print "upper" and "lower case" type, script and other styles of type, numerals and punctuation marks and other characters with one set of twenty-six keys without loss of time and without making any material change in the operating mechanism.

To attain this end my invention consists in three type-baskets each of which is contained in a separate holder and are moved from a common pivoted center to cause each basket to come into line with the keys as desired. Each basket contains twenty-six characters or letters for example one basket having the capitals or "upper case," one the "lower case" letters, another script-type and another numerals, the one basket being removed from its holder and another basket substituted for it where the machine is changed from one style of printing to another style. Ordinarily my machine will carry three baskets one of capital-letters, another of small letters or "lower case" and a third of numerals and punctuation marks and other characters, yet other baskets carrying other characters may be employed. Twenty-six keys only are employed and these are arranged on the top of the machine in a circle. The same set of keys is used for all the baskets, any one of which is brought into line under the keys by simply turning a shaft within easy reach of the operator. The spool-shafts are moved in an automatic manner by the action of the keys and the spools are provided with clutch-couplings which are thrown into and out of gear in changing the ribbon from one spool to the other.

My invention consists furthermore in certain details of construction and operation which will be hereinafter fully described and pointed out in the claims.

The accompanying drawings which form

part of this specification will be referred to by letters and like letters of reference wherever they occur indicate corresponding parts in all of the figures.

Figure 1 represents the machine in side view. Fig. 2 is a plan with some of the principal parts inside indicated by dotted lines. Fig. 3 is a vertical section taken on about the line $x x$ Fig. 2. Fig. 4 is a top view with the hinged top removed and some of the parts omitted. Fig. 5 is a vertical cross-section taken on the line $x y$ Fig. 2. Fig. 6 is a vertical cross-section taken on about the line $y y$ Fig. 2. Fig. 7 is a top view of the base and the paper-carriage. Fig. 8 is a top-view of the keys and spacing-levers. Figs. 9, 10, 11 and 12 are views in detail of parts of the paper-carriage feed. Fig. 13 is a cross-section of one of the type-baskets. Fig. 14 is a top view of the revolving type-basket carriers with one of the type-baskets in place. Fig. 15 is a vertical section on a larger scale of a type-basket and parts of the key mechanism and spacing mechanism.

A represents the base which supports the case B and to which the latter is connected by the posts and hinges C C'; on this base is mounted also the paper-carriage.

Within the case B are three circular type-basket carriers D D' D², each carrying a small anti-friction roller d^3 traveling on the edge of a surrounding track or steadying band F to hold the whole truly horizontal and even at all times. The three basket-containers or carriers, at the center of said circular track F, are connected by a plate E to a collar or sleeve E' rotating upon a stationary-post fixed on the bottom of the case. The sleeve E' has on the upper end a bevel-gear E². The horizontal shaft H above carries a bevel-gear H² and when rotated it causes the three annular carriers D D' D² to revolve around their axes. This shaft H is turned by a crank G keyed to the end of the shaft outside the case, and is locked in position by the crank-handle which consists of a spring-pin G^x with a pointed end that takes into the recessed lugs or stops $g g$ on the case. By turning the crank either forward or backward one of the type-baskets in the carriers is brought into position for action under the keys.

I I are keys twenty-six in number arranged in a circle on the upper face of the hinged lid or top B', and J J at the right and left are spacing-keys.

- 5 K K are two spools on which the inking-ribbon L is wound. The ribbon passes under rollers *m* that turn it horizontally and guide it close to the bottom of the case under that type-basket which is in position for work.
- 10 The ribbon L is fed along intermittently and after every stroke of the keys by means of the two shafts L' L', the sprocket-wheel L³, the crossed chain-belt L⁴ and the sprocket-wheel L⁵ connected with the ratchet-wheel L¹⁰ of the
- 15 letter-spacing mechanism. The spools K are loose on their shafts, but are coupled to them by clutches *k' k'* splined on the shaft L', and the clutches are connected together by the rocking-lever K² and the rods K³. A short switch-
- 20 ing-lever *k*⁴ projecting through the case at one side has a forked end engaging the sliding part of the clutch *k'* at that side of the case and by pressing that lever *k*⁴ over in one direction it throws one clutch into the ribbon-
- 25 spool at one side and disengages the clutch at the opposite side from the other ribbon-spool, as the two sliding parts of these clutches are connected by the rocking-lever K².

- The upright rods or spindles I^x of the keys
- 30 I work through long tubular bearings *b b* fixed to the under side of the top B' and the lower end of each rod I^x rests upon the outer end of a short rocker-arm S³ that is a part of the actuating mechanism of each type-bar.
- 35 Each type-bar S' carrying on its outer end a type W is pivoted near the inner end in a bracket-piece R² secured to the inner side of the circular basket R near the bottom and is connected to the rocker S³ above by a long
- 40 link S². The rocker S³ is pivoted in a bracket R' on the outside of the basket and the outer ends of all the rockers stand outward radially all around the rim of the basket. The foot of the rod I^x is flattened or ends in a thin flat
- 45 blade to sit across the outer end of the rocker and rest in the notched end of it. Ordinarily the weight of the parts connected to the rod I^x will throw up the key after each stroke, but if necessary a spiral-spring can be placed
- 50 around the rod under the head of the key. The two positions of a key, its type-bar and connecting parts are shown in Fig. 15 by full and dotted lines.

- The letter-spacing mechanism is composed
- 55 of the long lever N pivoted at *n*^x on the under side of the top B' and carrying on the outer end a circular-plate P, and the levers P', each pivoted in a hanger P² and connected to the rod or spindle I^x of the key by a slot
- 60 and pin *p*³. The pin *p*³ is fixed in the side of the rod and plays in a slot in the bearing *b* while the inner end of the lever P' is properly shaped to sit closely to the bottom of the plate P. By this means the stroke of
- 65 every key elevates the front end P of the lever N and depresses the rear end which sits against a rocking-plate L⁶ at the rear end of

the machine and through the medium of that part turns the gear L⁷ by which the carriage feed-shaft M' is moved. The plate L⁶ carries 70 a pawl L⁸ engaging the ratchet-wheel L¹⁰ and is drawn back after each stroke by a spring L⁹. The gear L⁷ is fast on the shaft of the ratchet-wheel and the shaft M' of the carriage-feed is geared into the wheel L⁷ by a 75 gear M.

T is the paper-roller or cylinder and T' T³ T⁴ the carriage.

T² is a guide-bar on which the tubular collar T⁴ is fitted to slide smoothly, and T³ is the 80 rack-bar with which the gear *p* engages to move the carriage. The rack bar carries anti-friction rollers T⁵ traveling upon the base near its edge and further supporting the carriage. The gear *p* is not fixed directly on the 85 shaft M' but is mounted on the end of a sleeve M² fitted loosely on the shaft and is connected by a ratchet-wheel *p'* on the face of the gear with a spring-actuated pawl M⁴ mounted on the inner face of a disk M³ on 90 the end of the shaft M'. This connection leaves the carriage free to be run back by hand after every line without disconnecting the rack from the gear. The roller T is provided with the usual finger-lever T⁶ and mech- 95 anism not shown to turn the roller for line-spacing and the carriage is supported and guided both by the guide-bar T² at the back and by rollers T⁵ on the front of the rack T³.

The type-basket in each carrier ring (D D' 100 or D²) is removable so that any desired style of type can be used and several different styles of type can be furnished with each machine. Ordinarily one type-basket will contain capitals, another small or lower case 105 letters and the third basket numerals, punctuation and other characters. These three baskets are revolved around the center-post by the shaft H to throw the one that contains the desired set of letters or characters into 110 position under the keys.

The case B is turned back upon the hinged supports C C to insert the paper in the carriage and also to examine the writing from 115 time to time, and afterward the case is brought down upon the paper carrying roller T into position for work. The stops X X in front of the hinges C support the case at the front when turned down. The paper is inserted between the printing-roller T and the small 120 roller *t*^x from the front.

Y is a copy-holder hinged on the top of the case B at the back to support the copy in position in front of the operator. This frame is attached to the case by slip-hinges *y y* so 125 that it can readily be removed, and is folded down upon the case or is taken off when not in use.

Having thus described my invention, what I claim, and desire to secure by Letters Pat- 130 ent, is—

1. The combination with the base having longitudinal guides, the paper roller carriage moving thereon and having a rack bar, a

transverse shaft, a gear engaging said rack bar, and pawl and ratchet connections between said shaft and gear for turning the latter in one direction only, of a rocking plate 5 turned in one direction at each depression of a key, a spring for returning it to normal position, a spring pawl on said plate, a ratchet wheel with which said pawl engages, gearing between this ratchet and said transverse 10 shaft, a sprocket wheel connected with said ratchet wheel, and connections substantially as described between this sprocket wheel and the ribbon moving mechanism, as and for the purpose set forth.

15 2. In a type-writing machine the combination with a right and left hand spool shaft each having sprockets at one end, of the endless crossed chain engaging these sprockets, an intermediate sprocket connecting with 20 a center spur-wheel, a rock lever with half clutches splined on the spool shafts, spools mounted loosely on the spool shafts and also furnished with half clutches to couple with the clutches of the rock-lever, and a lug or 25 switch lever at the side of the case for working the rock-shaft as described.

3. In a type writing machine, the combination with a suitable base, and a pivot rising therefrom, of a plate mounted on said pivot 30 and carrying holders, a series of annular type baskets interchangeably supported by said holders, a crank-shaft, and connections between said shaft and plate for turning the latter, as and for the purpose set forth.

35 4. In a type writing machine, the combination with a suitable holding case, a series of annular type-baskets mounted in holders, and a centrally disposed plate connecting the holders and having a concentric collar mount- 40 ed on a pivot, of a bevel gear on said collar, a horizontal shaft having a bevel gear meshing therewith, and a crank-handle on said shaft outside the case, as and for the purpose set forth.

45 5. In a type writing machine, the combination with a suitable holding case, a series of annular type-baskets mounted in holders, and a centrally disposed plate connecting the holders and having a concentric collar mount- 50 ed on a pivot, of a bevel gear on said collar, a horizontal shaft having a bevel gear meshing therewith, a crank on said shaft outside the case, a spring-actuated crank-handle in said crank having a pointed inner end, and 55 recessed lugs on the case with which said end engages, as and for the purpose set forth.

6. In a type writing machine, the combination with a suitable base, of a series of interchangeable annular type-baskets, suitable 60 holders therefor mounted on a central pivot, a crank-shaft, a crank-handle for said shaft slidable parallel therewith and provided with a yielding pin, and a series of recessed lugs with which said pin is adapted to engage, all 65 substantially as described.

7. In a type-writing machine in combination

with a suitable holding case and cover, of a circular bank of keys operating in the cover of the case and engaging the key-levers of the type-baskets, a disk-plate with which the 70 keys connect by means of short pivoted arms a long arm fixed to the disk-plate engaging with the projecting arm of a cam-plate having a retractive spring and a dog and actuating the toothed gear-sprocket and sprocket- 75 chain in the lower end of the case, as described.

8. In a type writing machine, the combination with a suitable holding case and cover, a series of type-baskets within said case, and 80 means for bringing any desired basket into position, of a circular bank of keys operating in the cover of the case and engaging the key-levers of the basket beneath them, a disk-plate with which the keys connect by means 85 of short pivoted arms, a long arm fixed to the disk-plate, and connections between said long arm and the letterspacing mechanism, as and for the purpose set forth.

9. The combination with a series of inter- 90 changeable type-baskets having the usual pivoted levers, of the basket containers provided with anti-friction rollers and an outer steadying band upon which said rollers travel, as and for the purpose set forth, as described. 95

10. In a type writing machine, the combination with the case having a cover, a bank of keys with their spindles mounted through said cover, means for holding said keys nor- 100 mally raised, and connections between them and the letterspacing mechanism, of a track, a series of type-baskets supported thereby, means for moving the desired basket under the bank of keys, and in each basket for each 105 type bar a rocker pivotally connected at its inner end with the type bar, centrally supported by the edge of the basket, and having a notched outer end adapted to stand under the spindle of its key, as and for the purpose set forth. 110

11. In a type writing machine, the combination with the case having a cover, tubular slotted bearings depending from said cover, a bank of keys with their spindles sliding in said bearings, a pin in the side of each spin- 115 dle moving in said slot, and type-baskets adapted to be brought at will under the bank of keys, of a lever for each key centrally pivoted beneath the cover and having a forked outer end engaging said pin, a concentric 120 plate beneath which the inner ends of said levers stand, a long arm fixed to said plate, and connections between this arm and the letter spacing mechanism, as and for the purpose set forth. 125

In testimony that I claim the foregoing I have hereunto set my hand and seal.

LEONIE WELSPIEL. [L. S.]

Witnesses:

C. W. M. SMITH,
E. M. MORGAN.