

No. 781,124.

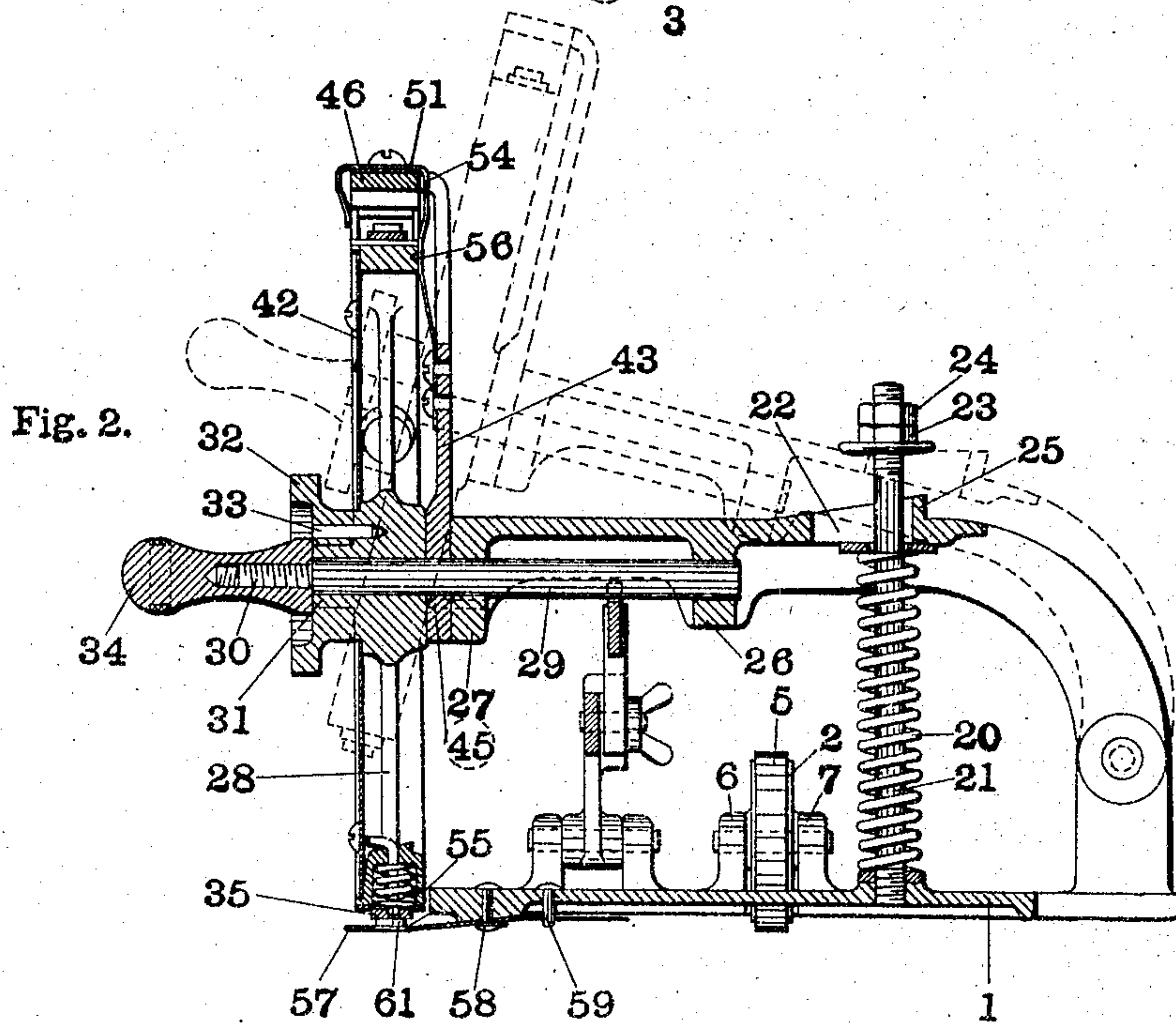
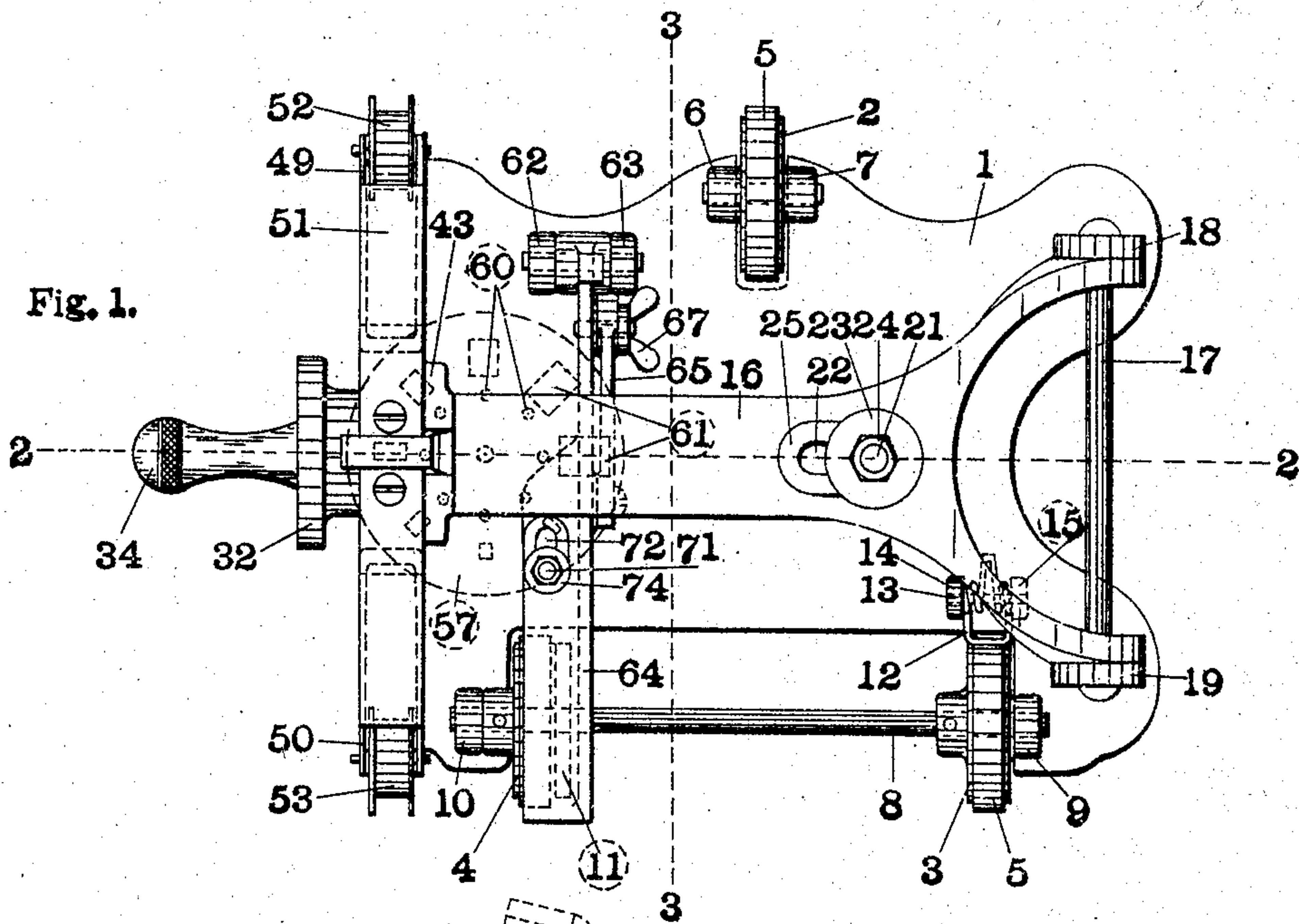
PATENTED JAN. 31, 1905.

A. J. BRADLEY.

DRAFTSMAN'S PRINTING MACHINE.

APPLICATION FILED NOV. 10, 1903.

2 SHEETS—SHEET 1.



Witnesses.

U. Braun
Fred P. Reiner

Inventor:

By *Chas. H. Case*
Attorneys.

No. 781,124.

PATENTED JAN. 31, 1905.

A. J. BRADLEY.
DRAFTSMAN'S PRINTING MACHINE.

APPLICATION FILED NOV. 10, 1903.

2 SHEETS—SHEET 2.

Fig. 3.

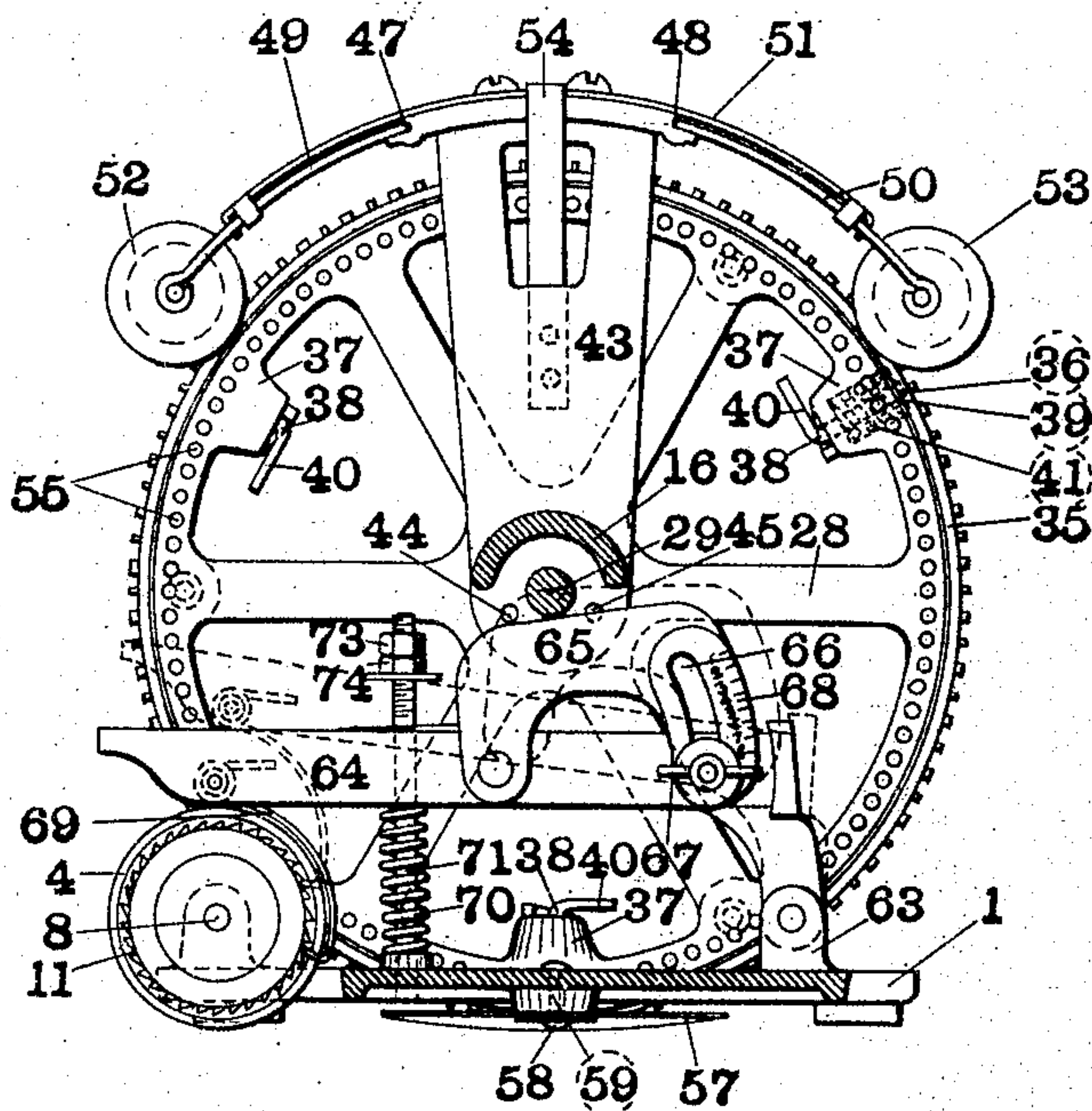
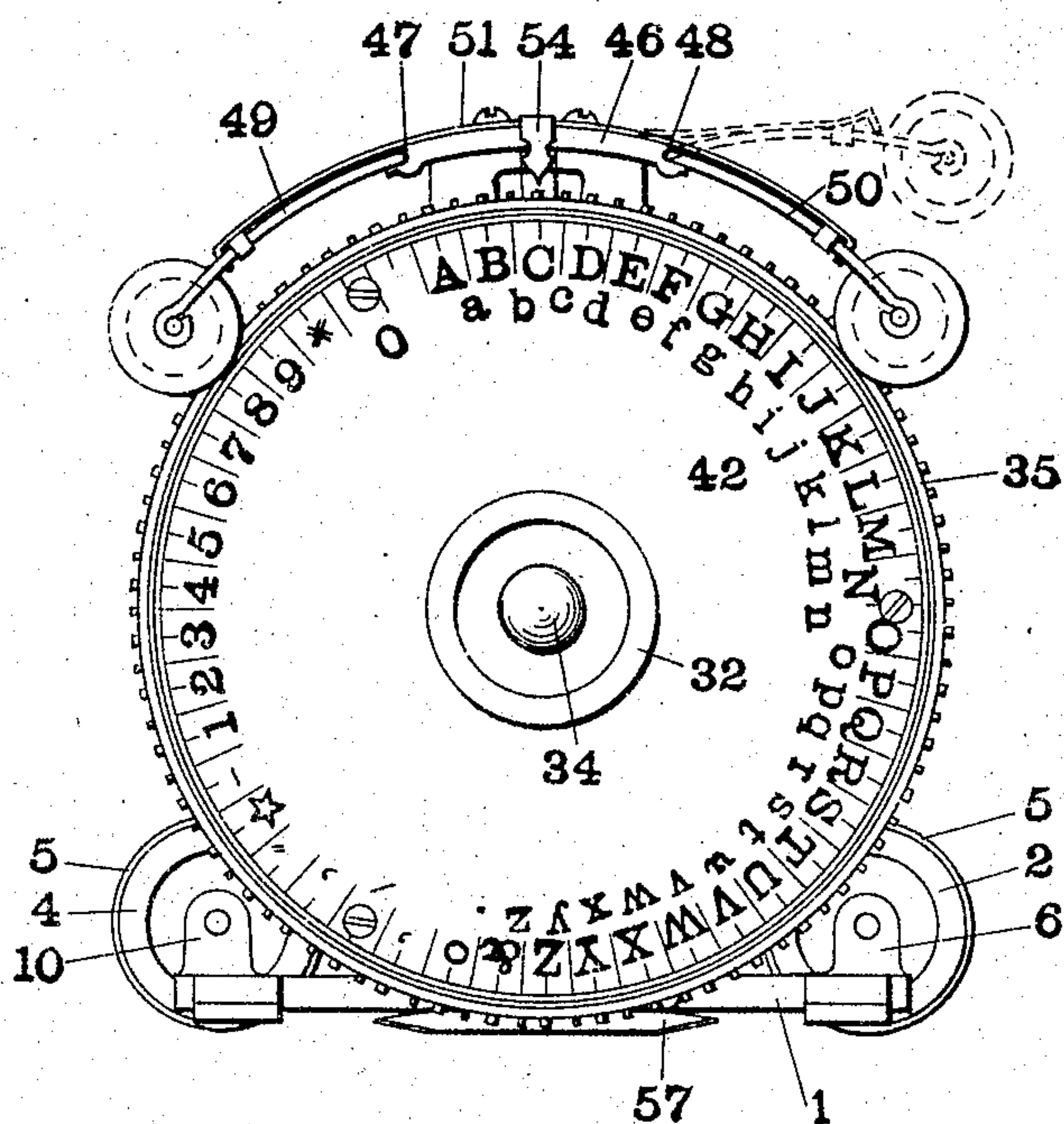


Fig. 4.



Witnesses.

G. Braune
Fred T. Reiser.

Inventor:

By

A. J. Bradley
Carr & Carr
Attorneys.

UNITED STATES PATENT OFFICE.

ANDREW J. BRADLEY, OF NEW YORK, N. Y.

DRAFTSMAN'S PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,124, dated January 31, 1905.

Application filed November 10, 1903. Serial No. 180,501.

To all whom it may concern:

Be it known that I, ANDREW J. BRADLEY, a citizen of the United States, and a resident of the city of New York, county of New York, and State of New York, have invented a new and useful Improvement in Draftsmen's Printing-Machines, of which the following is a specification.

My invention relates to type-printing machines, and especially to type-printing machines for the use of draftsmen in lettering sheets, blue-prints, maps, and the like. Its principal objects are to simplify the construction of such machines, to provide for the use of a variety of kinds of type, to readily change the type, to change the feed of the machine to correspond with the type in use, and other objects hereinafter more fully appearing.

My invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a plan view of my machine. Fig. 2 is a longitudinal sectional view on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1, and Fig. 4 is a front view.

The mechanism of my improved printing-machine is carried by a base 1, mounted upon rollers 2 3 4. Each roller is preferably provided with a tire 5, of rubber or frictional material, which will not readily slip upon paper, so that motion of the machine over the surface can only occur by rotation of the rollers. The roller 2 is journaled in bearings 6 7 upon one side of the base. The rollers 3 4 are mounted upon a common axle 8, which is journaled in bearings 9 10 upon the opposite side of the base. The rollers 3 4 being of the same diameter and rigidly connected, successive positions of the base will be parallel and the type will necessarily be moved in a straight line.

A ratchet-wheel 11 is rigidly secured to the roller 4 upon the end of the axle 8 toward the front of the base. Means hereinafter described, comprising a pawl, operate upon the ratchet to propel or feed the machine over

the surface upon which it rests. A spring-brake bears upon the opposite roller to prevent rotation of the rollers upon the downward movement of the pawl. The brake consists of a wire spring 12 coiled about a pin 13 in ears 14 15 on the base and having a bearing upon the base at one end and upon the roller at the other. The spring bears on the roller in such manner that forward movement of the latter occurs against the normal pressure of the spring, while rearward movement causes the spring to bind.

A type-wheel-carrying arm 16, having downwardly-extending bifurcations at its rear end, is pivoted upon a rod 17, mounted in ears 18 19 upon the base 1. The arm is normally held in its uppermost position (indicated in dotted lines in Fig. 2) by a spring 20, surrounding a rod 21, mounted in the base. The said rod passes through a slot 22 in the arm and is screw-threaded at its upper end. In engagement with the screw-threaded end of the rod is a flanged nut 23, which limits the upper movement of the arm and is held in a given adjustment by a set-nut 24. A flange 25 on the arm 16 surrounds the slot 22 and is so beveled that when the arm is inclined, as in its uppermost position, it will bear squarely on the flanged nut 23. Downwardly-extending lugs 26 27, intermediate of the ends of the arm 16 and upon the extreme front end thereof, respectively, provide bearings for the type-carrying members.

A type-wheel or spider 28 is mounted upon an axle 29, which is journaled in the bearings 26 27. The front end 30 of the axle is reduced in section and screw-threaded, while the front side of the hub of the wheel 28 has a reduced extension 31. Upon the latter is a knurled collar 32, which is secured against rotation with respect to the wheel 28 by a pin 33, extending into the hub. A handle 34 is mounted upon the screw-threaded end 30 of the axle and slightly overlaps the knurled collar 32, and thus secures it in position. By this construction the wheel may be readily rotated.

A type-tire 35, of any suitable material, but preferably of metal, is removably secured to the rim of the wheel 28. Upon its periphery are the type. Upon the inner surface it

is provided with recesses 36, by means of which it is secured in position. Upon the inside of the rim of the wheel are counterbored lugs 37, having inclined inner surfaces or
 5 cams. Projecting through these bars 37 are pins 38, having collars 39 near their outer ends and laterally-extending arms 40 near their inner ends overlying the cam-surfaces. Springs 41 bear upon the said collars 39 and
 10 the base of the larger part of the counterborings and tend to move the pins radially outwardly. The pins 38 project beyond the rim just enough to engage the recesses 36 on the type-tire when the laterally-extending
 15 arms 40 engage the lowermost portions of the cams. To remove a type-tire, it is only necessary to turn the pins about until the laterally-extending arms engage the highest portions of the cams, when the pins will be with-
 20 drawn from the recesses 36 and the type-tire will be free to be removed. A set of type-tires having characters of different sizes or different styles is provided. By the arrangement described the tires are readily inter-
 25 changeable.

Upon the front of the type-wheel 28 is an index-plate 42, made of any suitable material and provided with the same series of characters as the type-tire. The cooperating indi-
 30 cator being at the top of the wheel, while the printing-point is at the bottom, it is obvious that it is necessary to place the index-plate so that its characters are one hundred and eighty degrees from the same character on the type-
 35 tire.

A frame member 43 is secured to the front end of the type-wheel-carrying arm 16 intermediate of the lug 27 and the type-wheel 28. It is secured in position by the axle 29
 40 of the type-wheel and pins 44 45 passing through the frame member and the lug 27. At its upper end the frame member has a forwardly-extending portion 46, provided with grooves 47 48. In these grooves substan-
 45 tially U-shaped ink-roller frames 49 50 are mounted. A leaf-spring 51 is secured to the top of the forwardly-extending portion 46 and bears upon the frames 49 50 to hold the rollers 52 53 carried thereby in contact with the type.
 50 The ink-rollers 52 53 may be of any usual construction and are rotatably mounted in the frames 49 50. When it is desired to remove an ink-roller frame, the free end may be raised, as indicated in dotted lines in Fig. 4,
 55 by which means the spring is raised from the groove sufficiently to permit the frame to be removed therefrom.

An indicator 54 is mounted upon the frame member. It is made of spring metal and ex-
 60 tends upwardly and then forwardly over the top of the frame member and terminates in a downwardly-extending point near the under plate.

In order to insure the proper setting of the
 65 type-wheel, the rear face of the rim is provided

with a series of conical recesses 55, one for each character on the type-tire. Upon the indicator is a conical projection 56 in position to engage the said recesses successively. By
 70 this means the proper setting of the wheel is insured and it is secured in position during the downward printing movement of the wheel.

To prevent the imprint of more than one character at a time, a shield 57 is provided. It is preferably circular in shape and made
 75 of flexible material, preferably celluloid. A rivet 58 rotatably secures it in position, and it may be secured in any given adjustment by a pin 59 extending through the base and engag-
 80 ing any one of the holes 60. Openings 61 of various sizes, corresponding to the different sizes of type to be used on the machine, are provided in the shield. For any particular
 type-tire a particular opening is turned to the front. When the type-tire is changed, the
 85 shield should be adjusted to correspond.

The mechanism for feeding the machine over the surface upon which the printing is to be done will now be described.

In ears 62 63 on the base a compound spac-
 90 ing-bar is pivoted. Said bar consists of a primary bar 64 and a secondary bar 65, adjustable relatively thereto. The secondary bar 65 is substantially U-shaped. One arm is pivoted near the middle of the primary bar.
 95 The other arm has a slot 66, which is engaged by a set-screw 67 in the primary bar, and the connecting portion lies in the path of the axle 29 of the type-wheel 28, which, so far as this function is concerned, may be regarded as a
 100 part of the type-wheel-carrying arm 16. By this adjustability the spacing-bar may be arranged to be engaged sooner or later by the type-wheel-carrying arm, and thus be de-
 105 pressed more or less. The slotted arm is provided with graduations 68, indicating the proper adjustment for the various sizes of type to be used. A spring-pawl 69 is carried by
 the free end of the primary bar 64 in position to engage the ratchet-wheel 11. The
 110 pawl is arranged to slip over the teeth of the ratchet-wheel on the downward stroke and to engage them on the upward stroke. The amount of rotation hence depends upon the
 115 length of the downward movement of the pawl, which, as indicated above, depends upon the adjustment of the secondary bar upon the primary bar. The spacing-bar is normally
 held up by a spring 70, surrounding a rod 71, mounted on the base, extending through a
 120 slot 72 in the primary bar and carrying nuts 74 on its upper end to limit the upward movement of the bar.

The operation of the machine is as follows: When placed upon the paper and before op-
 125 eration, the parts are in the position indicated by the dotted lines in Figs. 2 and 3. The index-plate is then held at such an angle to the vertical that it is almost squarely facing the operator. By means of the handle 34 or
 130

knurled collar 32 the wheel is rotated until the desired character on the index-plate is opposite the indicator. Then the desired character on the type-tire is in position to print. Pressure is then exerted downwardly upon the handle, and the type-wheel is moved downwardly to impress the character upon the paper, as indicated in Fig. 2. In its downward movement the type-wheel-carrying arm engages the spring-bar and carries the pawl 69 down to its lowermost position, thus setting the spacing mechanism to feed the machine forward to the proper position for the next letter. The impression being made, pressure is discontinued, and the spring 20 will raise the type-carrying arm and parts carried thereby. The spring 70 will raise the spacing-bar, and with it the pawl 69, thus rotating the rollers 3 4 and moving the base to the proper position for the next letter.

Since the adjustment of the feed is accomplished by adjustment of the stroke of the pawl 69, obviously the feed may be adjusted by means of the nuts 73 74 on the rod 71. These nuts may be raised or lowered so as to change the limit of the upward movement of the spacing-bar, and thus modify the length of the stroke of the pawl. With this construction the spacing-bar need not be made adjustable.

Obviously the machine chosen for illustration of my invention is capable of considerable modification without departing from the spirit thereof, and therefore I do not wish to be limited to the specific form hereinbefore described.

What I claim is—

1. A printing-machine comprising a movable base, an arm pivoted thereon, a type-carrier pivotally mounted on said arm and adjustable feed mechanism for said base arranged to be set by said arm on its printing stroke.

2. A printing-machine comprising a base, a feed-roller therefor, a type-carrier pivotally mounted on said base, and adjustable mechanism to actuate said feed-roller operatively connected to said type-carrier.

3. A printing-machine comprising a movable base, an arm pivoted thereon, a rotatable type-carrier on said arm, and feed mechanism for said base comprising a pivoted lever arranged to be engaged by said arm.

4. A printing-machine comprising a movable base, an arm pivoted thereon, a rotatable type-carrier on said arm, and feed mechanism for said base comprising a pivoted spacing-bar adjustable in width and arranged to be engaged by said arm.

5. A printing-machine comprising a movable base, an arm pivoted thereon, a rotatable type-carrier on said arm, and feed mechanism for said base comprising a pivoted primary bar, and an angularly-adjustable secondary bar pivoted on said primary bar and arranged to be engaged by said arm.

6. A printing-machine comprising a base, a feed-roller therefor, an arm pivoted on said base, a rotatable type-carrier on said arm and actuating mechanism for said feed-roller comprising a pivoted lever arranged to be engaged by said arm.

7. A printing-machine comprising a base, a feed-roller therefor, an arm pivoted on said base, a rotatable type-carrier on said arm and actuating mechanism for said feed-roller, comprising a pivoted bar adjustable in width and arranged to be engaged by said arm.

8. A printing-machine comprising a base, a feed-roller therefor, an arm pivoted on said base, a rotatable type-carrier on said arm and actuating mechanism for said feed-roller comprising a pivoted primary bar, and a secondary angularly-adjustable bar pivoted on said primary bar and arranged to be engaged by said arm.

9. A printing-machine comprising a movable base, a type-carrier pivotally mounted thereon, a tire removably mounted on said type-carrier and provided with type and adjustable feed mechanism for said base operatively connected to said type-carrier.

10. A printing-machine comprising a movable base, a type-carrier pivotally mounted thereon, a tire removably mounted on said type-carrier and provided with type and a shield adjustably mounted on said base having a plurality of openings of different sizes.

11. A printing-machine comprising a movable base, a type-carrier pivotally mounted thereon, a tire removably mounted on said type-carrier and provided with type, a shield pivotally mounted on said base and provided with a plurality of openings of different sizes, and feed mechanism for said base.

12. A printing-machine comprising a movable base, a type-carrier pivotally mounted thereon, feed mechanism for said base operatively connected to said type-carrier, and a brake for said feed mechanism arranged to interpose a greater resistance to rearward than forward movement of said base.

13. A printing-machine comprising a base, rollers therefor, a brake continuously engaging one of said rollers and arranged to interpose a greater resistance to rearward than to forward movement of said base, a type-carrier pivotally mounted on said base, and actuating mechanism for said base operatively connected to said type-carrier.

14. A printing-machine comprising a base, an arm pivotally mounted thereon, a rotatable type-wheel on said arm provided with type and having a series of recesses registering with the individual type characters, an indicator-plate on said type-wheel and a spring-detent having a projection arranged to engage said recesses successively and having a forwardly and downwardly projecting portion arranged to cooperate with said indicator-plate.

15. A printing-machine comprising a base,
an arm pivotally mounted thereon, a rotatable type-carrier on said arm having type on its periphery, a frame member on said arm
5 having a portion extending over said type-carrier and provided with grooves, ink-roller frames mounted in said grooves, ink-rollers in said frames and a spring extending over
10 in said grooves and to press said ink-rollers against said type.

16. A printing-machine comprising a base, feed-rollers therefor, a ratchet-wheel rigidly connected to said rollers, a type-wheel-carrying arm pivoted on said base, an adjustable
15 stop to limit the upward movement of said arm, a spring normally holding said arm against said stop, a spacing-bar carrying a pawl to engage said ratchet and arranged to
20 be engaged by said arm, a stop to limit the

upward movement of said spacing-bar and a spring to normally hold said bar in engagement with said stop.

17. A type member for a printing-machine comprising a wheel, an inwardly-extending
25 counterbored lug having a cam-surface upon the rim thereof, a radially-spring-pressed pin in said lug having an arm engaging said cam-surface, and a tire provided with type on its periphery and having a recess to be engaged
30 by said pin to removably secure said tire upon said wheel.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of November, 35
1903.

ANDREW J. BRADLEY.

Witnesses:

JAMES L. PRYOR, Jr.,

JULIUS F. HOLBROOK.