

S. HOLLINGSWORTH.
NUMBERING MACHINE.
APPLICATION FILED MAR. 9, 1908.

984,372.

Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.

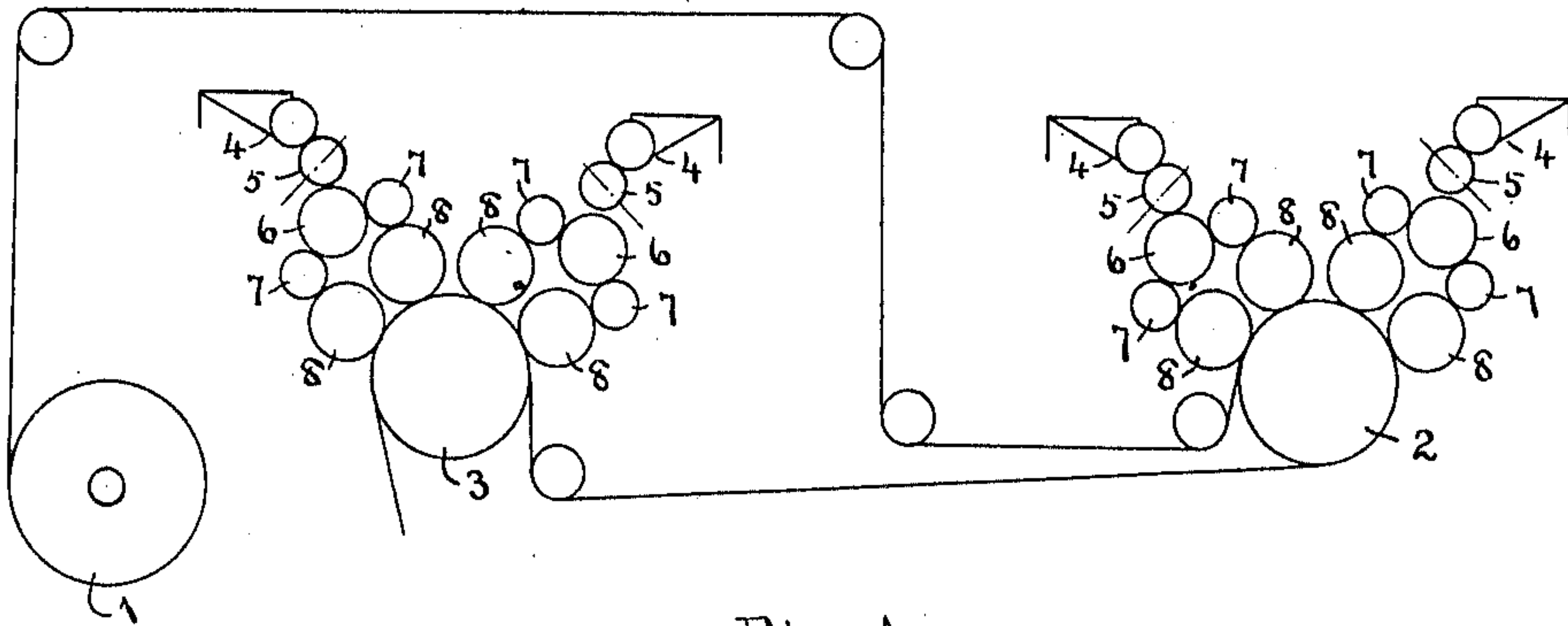


Fig. 1.

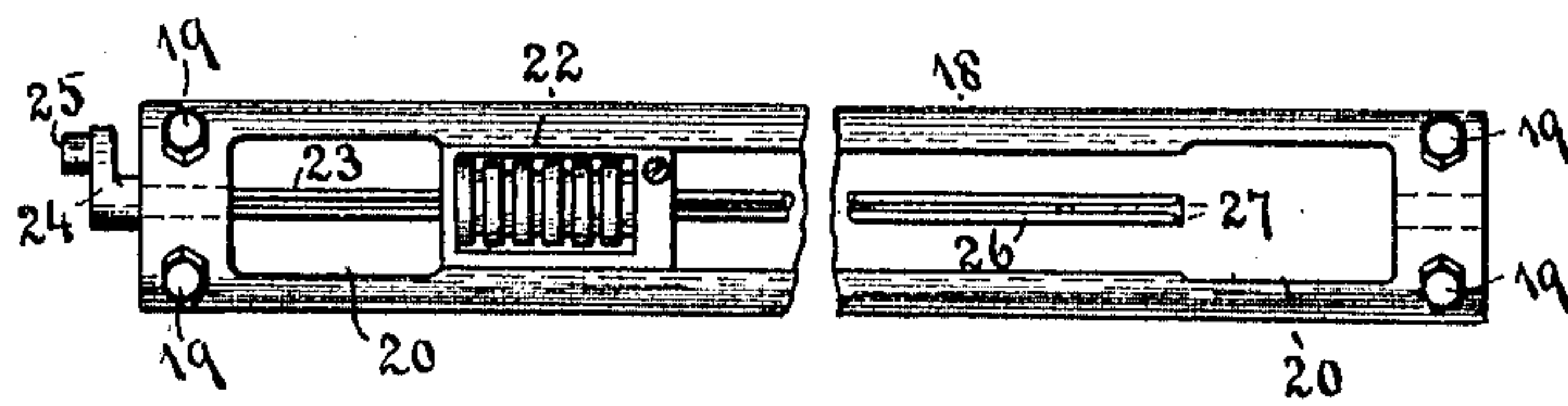


Fig. 2.

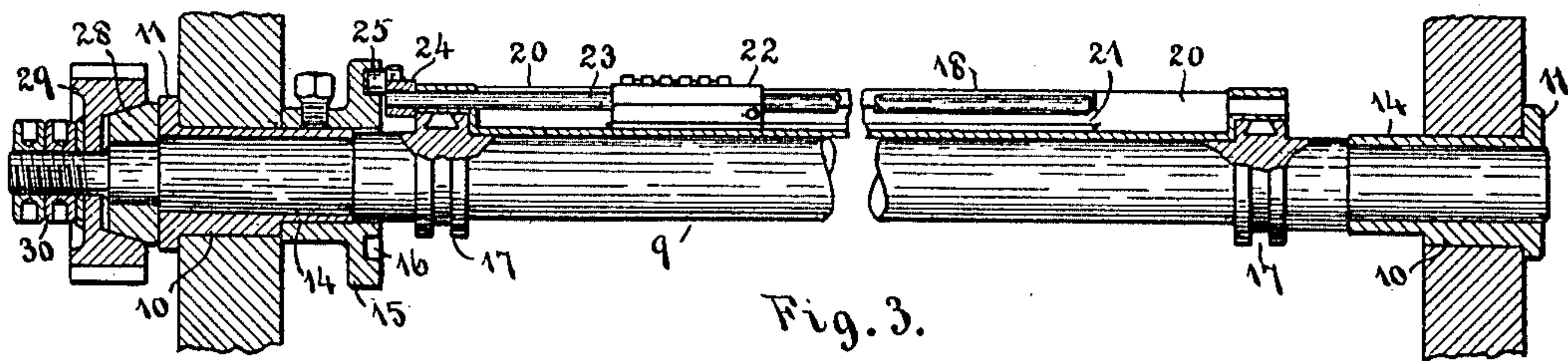


Fig. 3.

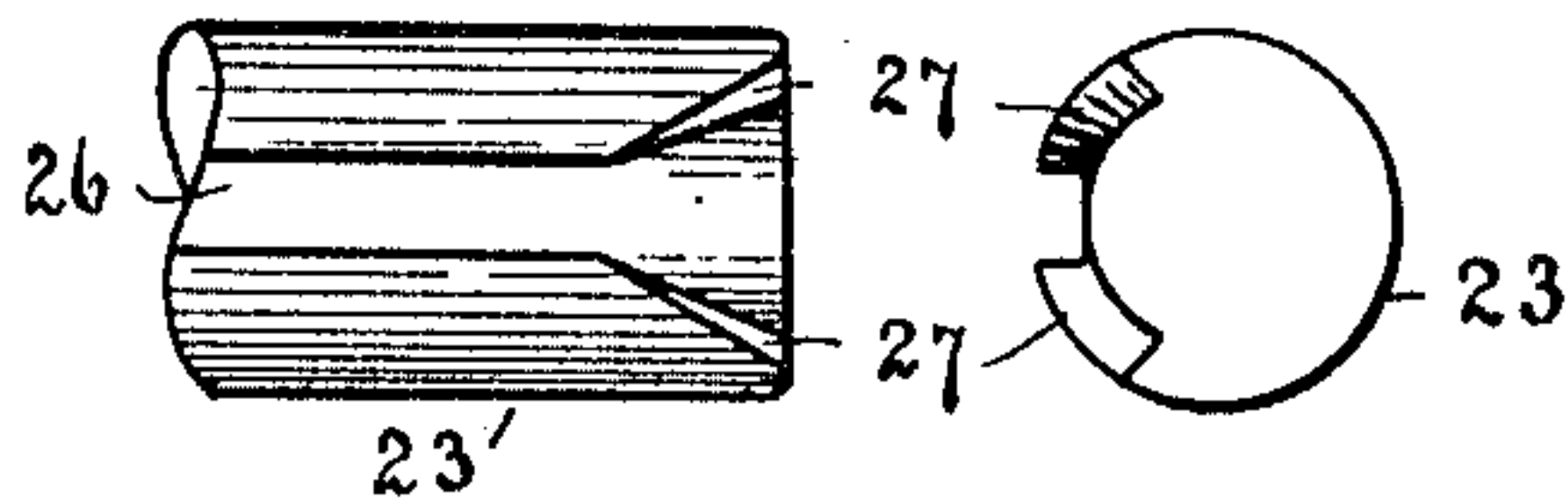


Fig. 4.

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2 SHEETS—SHEET 2.

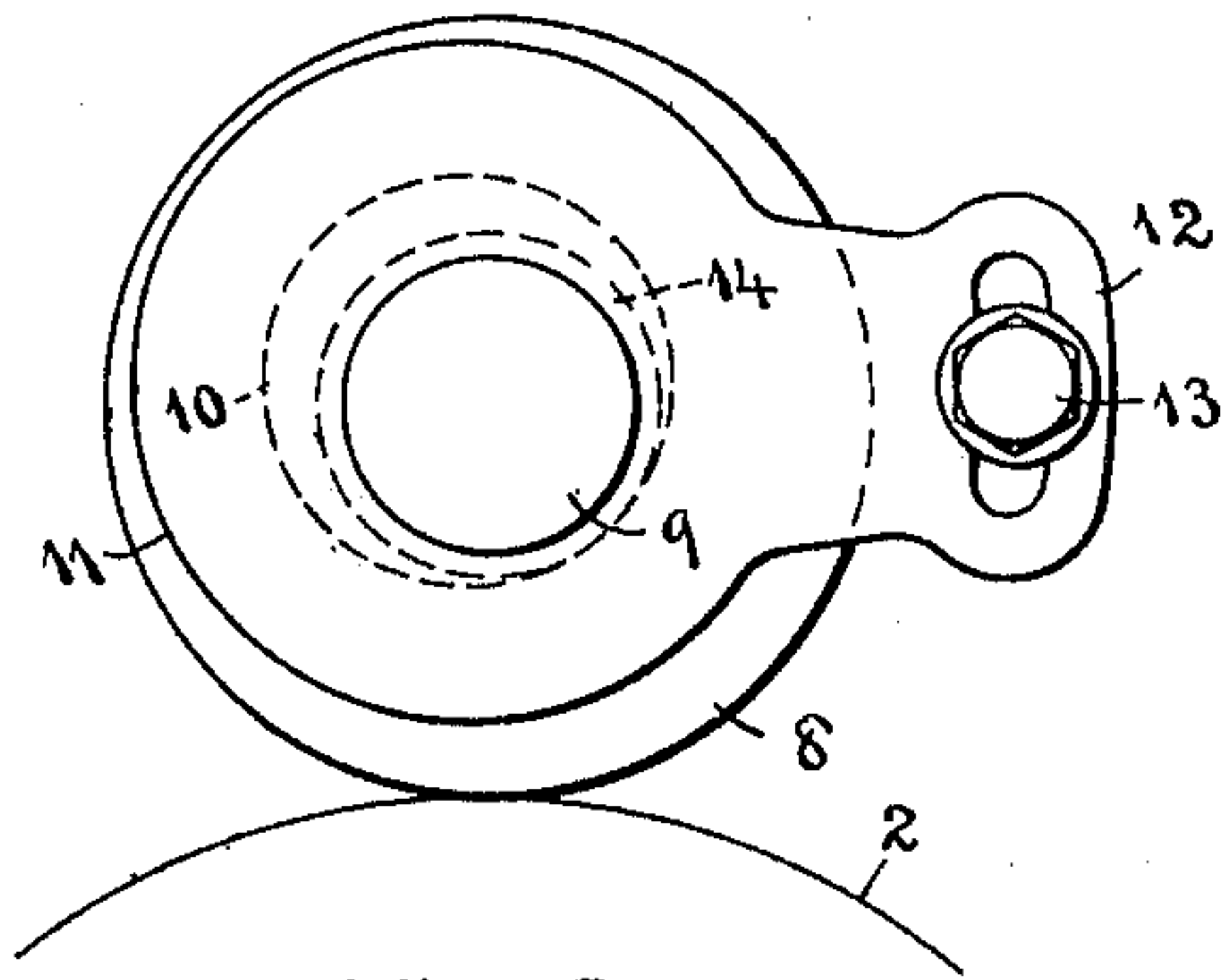


Fig. 5.

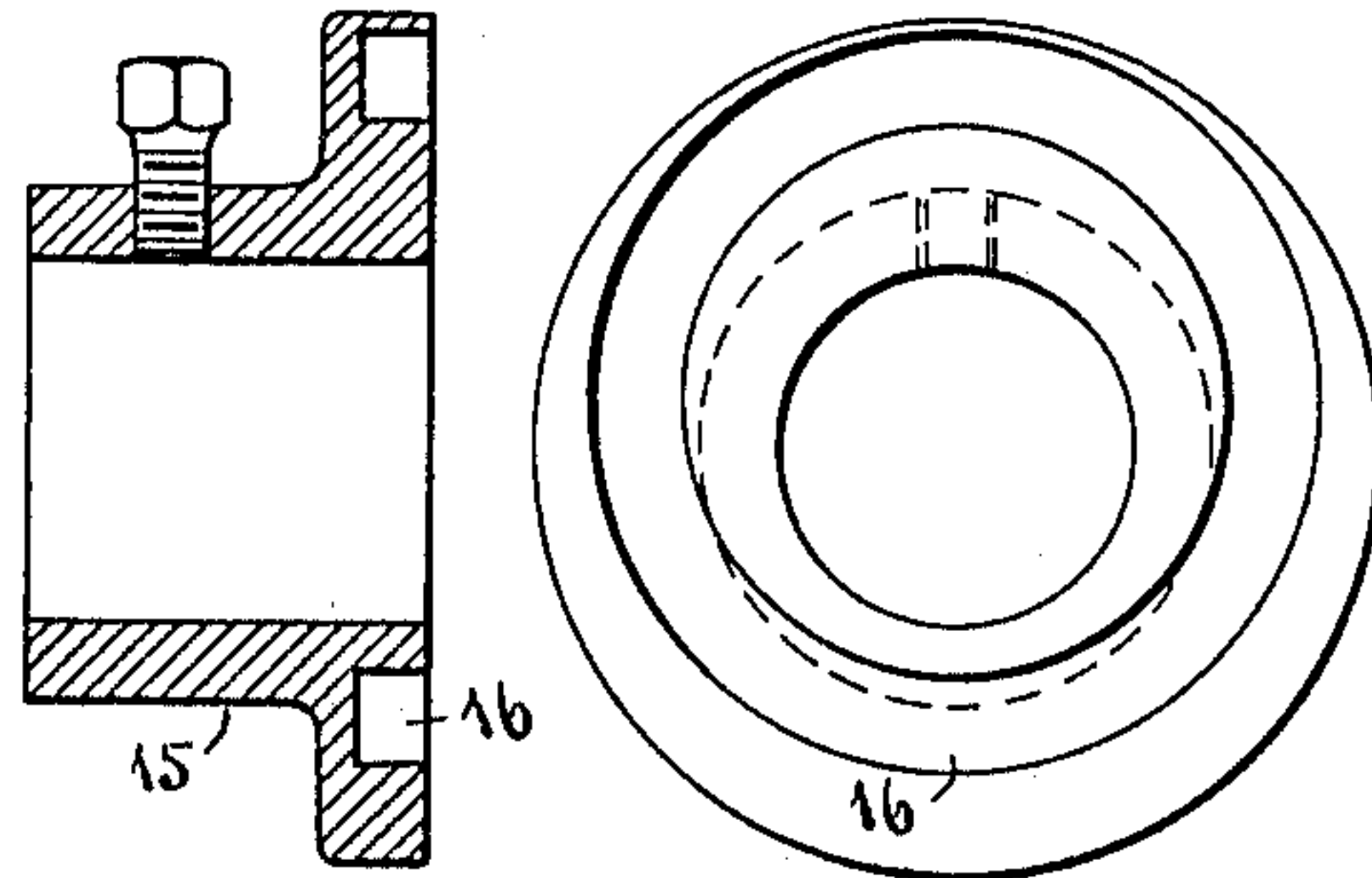


Fig. 6.

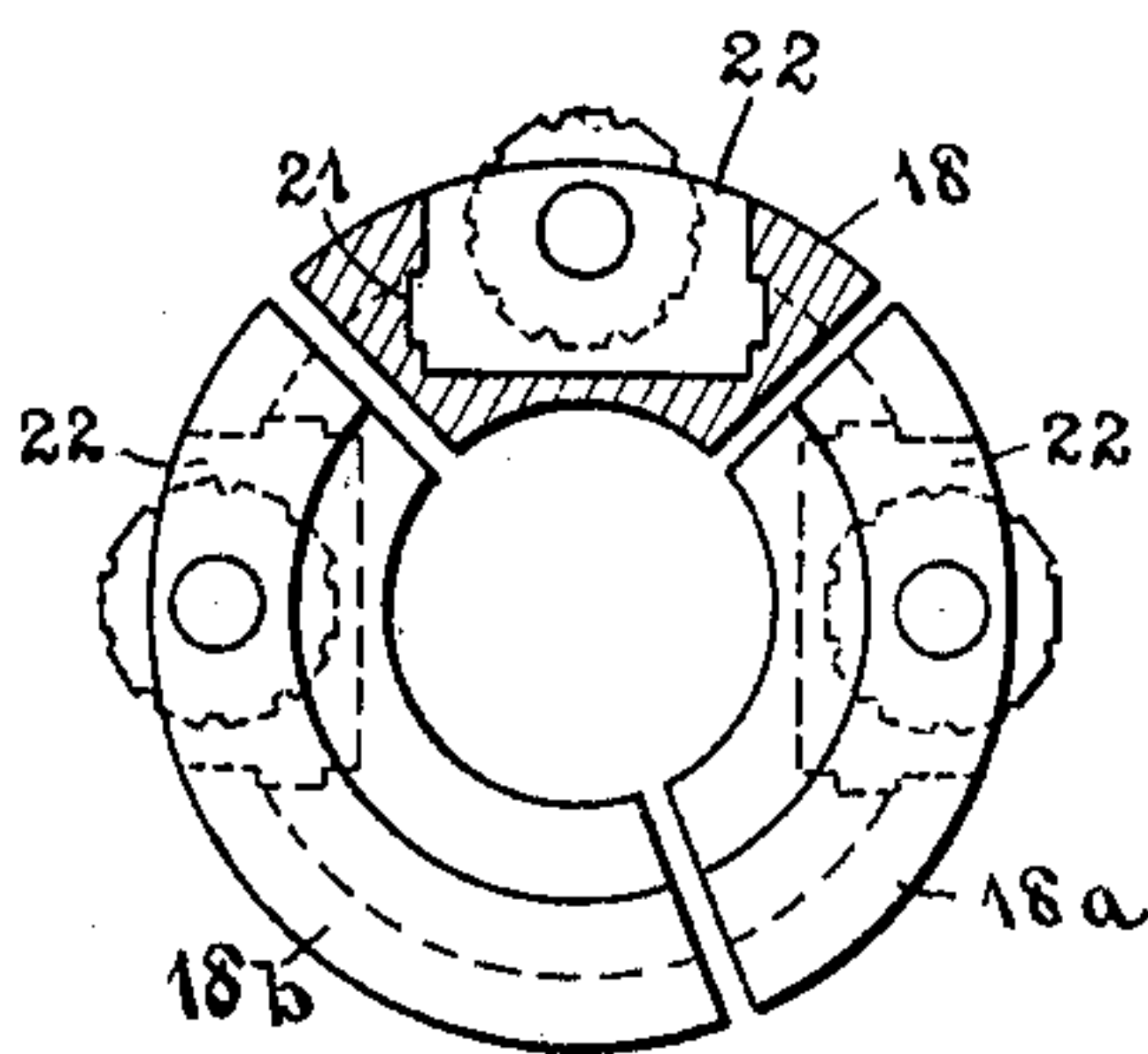


Fig. 7.

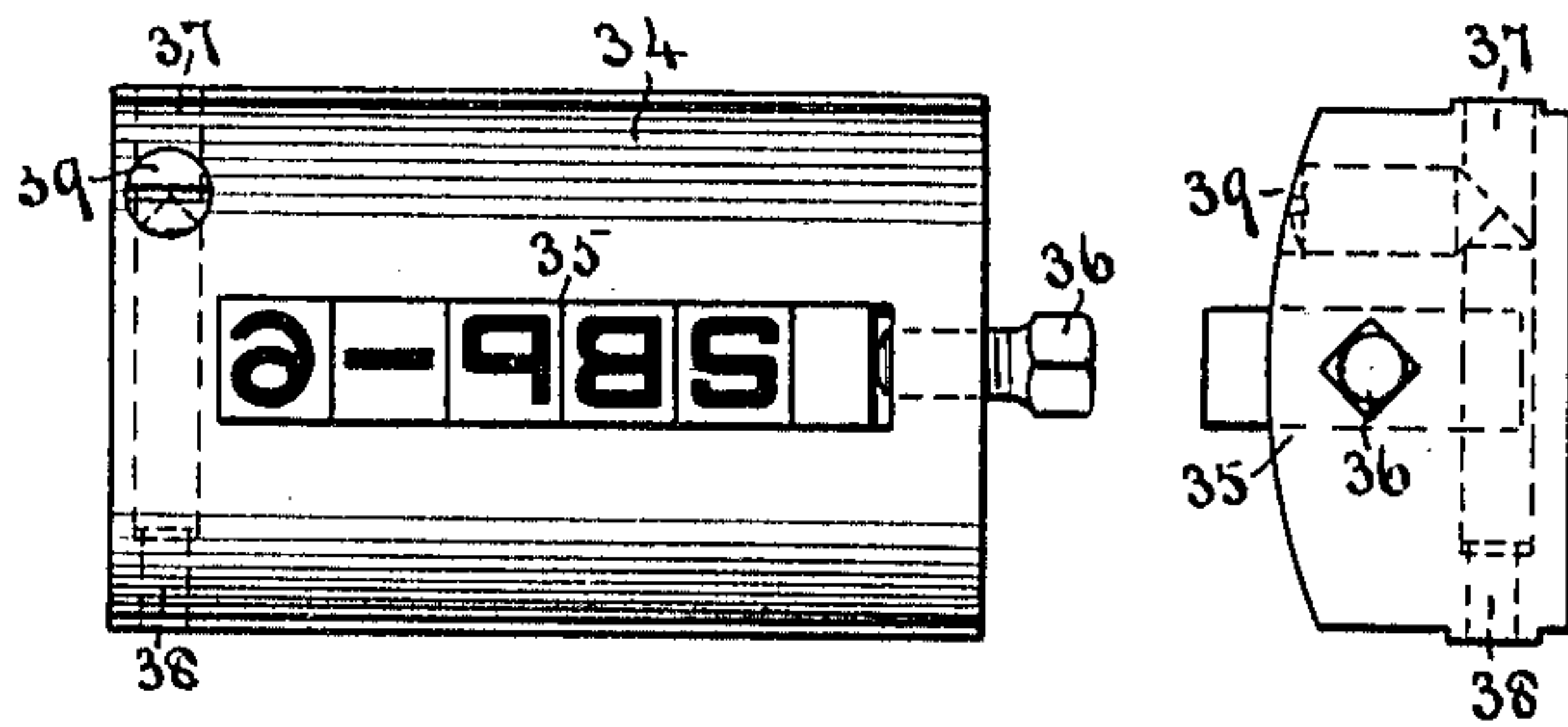


Fig. 8.

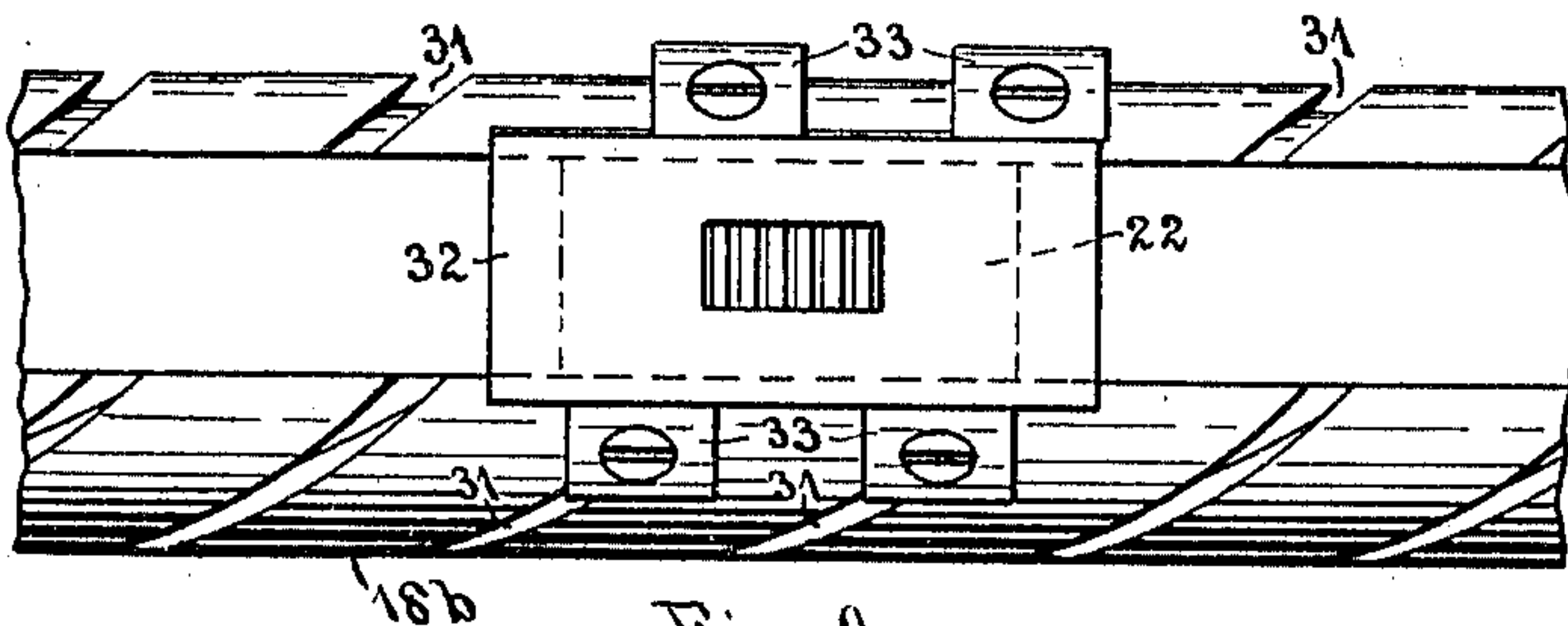


Fig. 9.

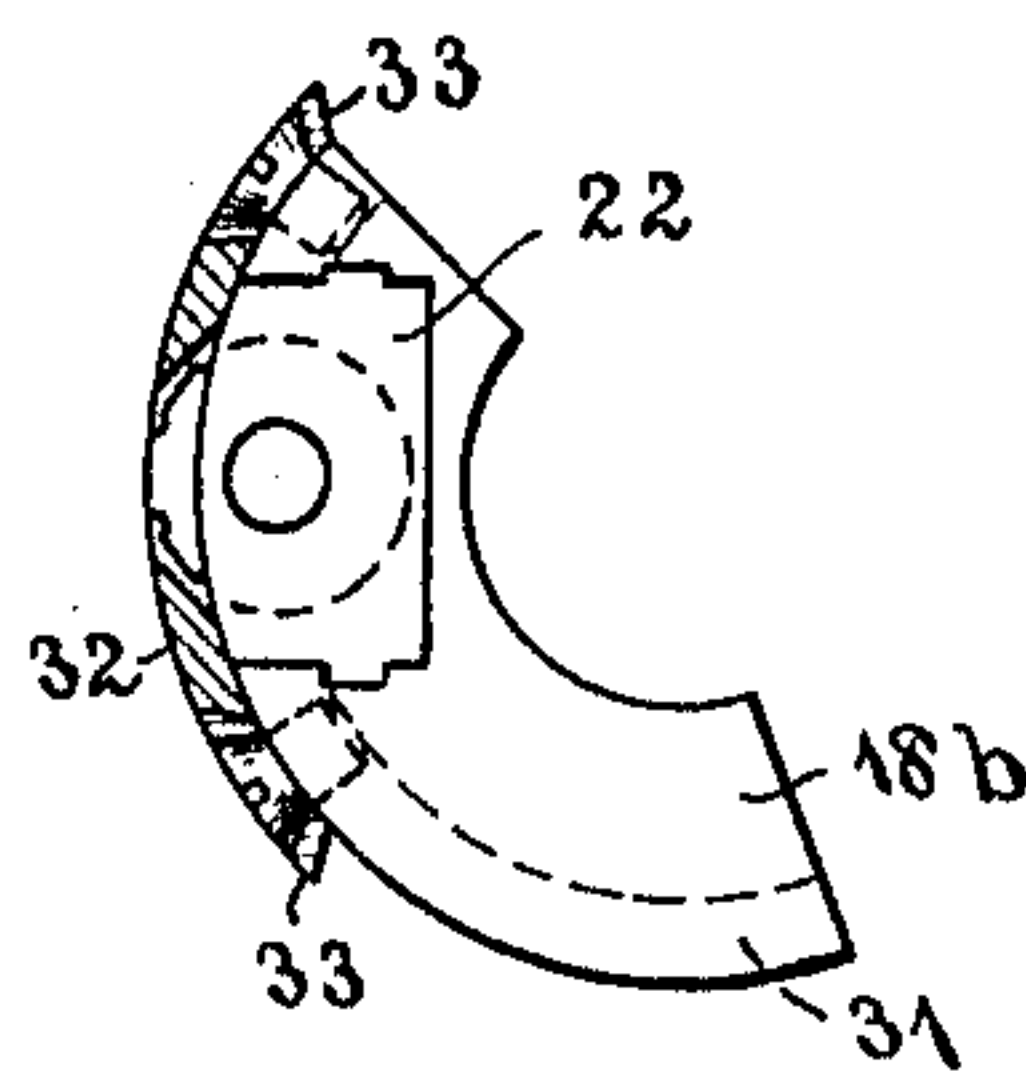


Fig. 10.



Fig. 11.

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UNITED STATES PATENT OFFICE.

SAMUEL HOLLINGSWORTH, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, OF ELMIRA, NEW YORK, A CORPORATION OF NEW YORK.

NUMBERING-MACHINE.

984,372.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed March 9, 1908. Serial No. 420,046.

To all whom it may concern:

Be it known that I, SAMUEL HOLLINGSWORTH, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a specification.

This invention relates to improvements in the numbering attachments for printing machines, and has to do more particularly with numbering attachments for machines employed in the printing of manifolding counter check books, wherein the original and copy leaves are required to have imprinted thereon, various numbers, either consecutive or repeating, or both, as well as other fixed data, such as department and clerk numbers or initials, which are to be changed from time to time in filling a given order, according to the varying requirements of different merchants, etc.

My object is to provide a series of compact numbering cylinders, so arranged as to print either on one side or both sides of the running web, in any position, as many of these numbers, initials, or other symbols, as may be required; and to repeat said numbers, etc., in as many localities on each leaf as may be required by the arrangement of the stubs and coupons, to meet any requirements imposed upon the manufacturer by the trade.

A further object is to improve the details of the construction of the numbering mechanism, whereby each numbering cylinder may have its parts rendered readily and quickly adjustable to meet requirements, and whereby the action of the consecutive numbering heads may be rendered positive and accurate at either high or low speeds.

I attain my objects by arranging the numbering cylinders and their operative parts in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view showing the arrangement of a pair of numbering machines, applied as an auxiliary to a printing machine, through which a web of paper is to be run in the course of manufacturing these counter check books; Fig. 2, a plan view of one of the numbering cylinder segments; Fig. 3, a transverse section through a portion of the numbering machine, showing the numbering cylinder shaft, the adjustable shaft bushings in the side-frames, and the

operating mechanism for actuating the numbering heads in the cylinder segments; Fig. 4, a plan and end view of a portion of one of the numbering head shafts; Fig. 5, an end view of one of the adjustable cylinder shaft bushings; Fig. 6, a section and end view of the numbering cam; Fig. 7, an end view showing the arrangement of the cylinder segments as applied to the cylinder shaft; Fig. 8, a plan and end view of a holder adapted to be set in the cylinder segments, and to contain fixed type for printing department and clerk numbers, initials, etc.; Figs. 9 and 10, a plan and end view, respectively, of one of the cylinder segments adapted to have a stereotype plate fastened thereupon, immediately over a numbering head, where the fixed matter is to be placed in close proximity to the consecutive numbers; and Fig. 11, a detail showing a cross section of the grooves formed on the cylinder segments to receive the attaching nuts for securing these plates in place.

Like numerals designate like parts in the several views.

Referring first to the general arrangement of the numbering machine, as shown diagrammatically in Fig. 1, the web of paper is started into the machine from a roll 1, suitably positioned upon the frame of the machine. From the roll the web is led over guide rolls, as indicated, to the first impression cylinder 2, where one side of the web receives the impressions from the numbering cylinders. Thence the web passes to the second impression cylinder 3, where the opposite side of the web is brought into contact with a second set of numbering cylinders. From cylinder 3 the web is conducted to the main printing machine, where it receives the proper headings, rulings, etc. The numbering cylinders 8 are shown arranged in pairs, two pairs to each impression cylinder, and each pair receives ink from a suitably located fountain 4, by way of the ductor rolls 5, the vibrator rolls 6, and the inking rolls 7, operated in any approved manner. Each of the numbering cylinders 8 comprises a shaft 9, mounted in bushings 10, set into the side-frames of the machine. These bushings are bored eccentrically to receive the ends of the shaft 9, and are provided on their outward side with flanges 11, provided with extensions 12, having curved slots through which pass set screws 13, to

hold the bushings in adjustment. By means of this arrangement, it will be understood, from an inspection of Fig. 5, that the shafts 9 may be moved toward or away from the impression cylinders, by turning the bushings in one direction or the other, thereby setting the numbering cylinders 8 so that the numbering heads, type, etc., carried thereby, will be properly distanced from the impression cylinders, to impart their impressions upon the running web.

The bushings 10 on the inside of the frame are provided with extensions 14, upon one of which, according to which side of the machine it may happen to be most convenient, is fastened a disk 15, provided with a cam raceway 16. This cam disk 15 is loosely mounted upon the extension 14 and fastened in proper adjustment by means of a set screw, as shown in Fig. 3.

The shaft 9 is provided adjacent each end with collars containing V-shaped grooves, in which are set sliding nuts adapted to receive set screws 19 in the ends of the cylinder segments 18; whereby said segments may be fastened in any circumferential adjustment around the shaft. These cylinder segments are arranged as shown in Figs. 2 and 3, being provided with longitudinal channels enlarged at each end at 20, for the insertion therein of the holders containing the numbering heads or fixed type; the side walls of the channels between these enlargements being provided with grooves 21, to receive tongues formed on the sides of these holders, one of the numbering heads being shown at 22. As shown herein, the numbering heads contain six numbering-wheels, so that consecutive numbers may run from 1 to 999,999, if desired; and the wheel operating mechanism will be of any approved make, wherein the pawl frame is actuated by means of an oscillating shaft through a tongue and groove connection. As several of these numbering mechanisms are on the market, and no claim thereto is contained herein, further description will not be necessary, except to say that the holders for these numbering heads must be made to fit the segment grooves and have means for locking them in position therein. The grooved shaft 23 for operating these heads is inserted through a bearing at one end or the other of the cylinder segment, according to the position of the cam disk 15, and is oscillated to the required extent by means of a lever 24, provided with a roller 25, which rides in the cam race 16. The shaft 23 does not extend completely through the segment, but only to the opposite enlargement 20, so that a numbering head and its holder may be set into the segment and slipped upon the shaft 23 without removing the segment from the shaft 9; and to facilitate the insertion of the numbering heads, I provide the end of the

groove 26 on the shaft with beveled enlargements at each side, at 27, (see Figs. 2 and 4). By means of these side bevels, no matter in what position the shaft may be set within its limits of oscillation, by reason of the position of the cylinder segment with relation to the cam 16, when a head is to be inserted in a segment, the tongue on the pawl frame in the head will be readily guided into the groove 26, when the head is slid into position upon the shaft. In other words, the angular measurement of the opening between these side bevels at the end of the shaft is made equal to or greater than the angle of oscillation of the shaft plus the thickness of the tongue on the pawl frame.

The shafts 9 are driven from the main gear train of the machine by means of a gear 29, loosely mounted thereon, and fastened by means of the lock nuts 30 to a conical collar 28, fastened to the shaft. By means of this adjustable connection between the gear 29 and the shaft, said shaft may be adjusted, after the cylinder segments have been positioned thereon, to bring the impression into proper position upon the running web of paper, when starting up the machine.

As will be noted from an inspection of Figs. 3 and 7, the cylinder segments are so constructed that they may be set close to the shafts 9, thereby producing a numbering cylinder of small diameter, and one or more of the segments may be attached to each shaft. These segments may be made of different circumferential widths, as illustrated at 18, 18^a, 18^b, in Fig. 7, wherein three numbering heads are shown positioned equidistant, with a long space between the numbering heads on segments 18^a and 18^b; such an arrangement being adapted to consecutively number a stub, entry sheet, and a coupon, on each leaf of a book, as the web passes through the machine. If required, four segments similar to the segment 18 might be fastened upon a shaft, instead of the three, as shown. Or, but one of the segments may be fastened thereon, as requirements may dictate.

Where the original leaf of a counter check book is to be attached to the duplicate, and folded over thereon, in manufacturing what are known as the paragon books, the leaves formed on the running web must be numbered alternately, first on one side and then on the other, requiring two sets of numbering and impression cylinders, as shown at 2 and 3 in Fig. 1; and the numbering heads must be so located in one or more of the numbering cylinders 8, as to permit the alternate blank spaces on the web to pass through, while the numbering heads are completing a revolution. Therefore, instead of being able to number consecutively a stub, entry sheet, and one or more cou-

pons, with one numbering cylinder, it will be necessary to employ more of the cylinders; and especially so where, in addition to the consecutive numbering, there is required to be printed a book number, and clerk and department numbers, or initials, which are to be changed with each given number of books. By reason, therefore, of my compact arrangement of the numbering cylinders, and the possibilities of adjustment of the numbering heads upon each cylinder, I am enabled to provide at least four of these numbering cylinders for each impression cylinder, and am thereby enabled to meet any possible requirement in the way of numbering and marking different portions of the leaves. Moreover, some merchants require certain of the numbers and other data to be printed in one color of ink, and other portions in another color. By supplying one pair of numbering cylinders with one color of ink, and the other pair with the other color, from the ink fountains 4, I am enabled to readily meet this requirement.

In Fig. 8 I have shown a fixed type holder of the same form as the holders for the numbering heads, thereby adapting it to be inserted in a cylinder segment, from which the shaft 23 has been removed. This fixed type holder consists of the block 34, having a groove 35 in its face, adapted to receive the type, said type being fastened therein by means of the set screw 36. These holders are fastened in position in the cylinder segments by means of a conical ended bolt 38 and beveled plug 37, which are positioned in a transverse bore, through the tongued portion of the holder, said bolt being projected against the walls of the grooves 21 in the cylinder segments by means of the conically pointed set screw 39. The holders for the numbering heads will also be provided with this locking attachment, so that they may be fastened in any required longitudinal adjustment on the cylinder segment.

Where department or clerk numbers or initials, or other matters, are to be printed in repetition close to the consecutive numbers or changeable type, I provide means for attaching small stereotype plates, as 32, (see Figs. 9 and 10), to the cylinder segments directly over the type holders containing the numbering heads or changeable fixed type, said plates being provided with slots through which the numbering wheels or type project. These stereotype plates are held in place, according to the adjustment of the numbering heads, by means of bevel edged blocks, 33, fastened by countersunk screws to nuts inserted in the V-shaped grooves 31, which are formed spirally in the face of the cylinder segments. This spiral form of locking groove is preferred, as it forms a more secure hold for

the lock nuts against the line of travel of the cylinders. These stereotype plates may be made larger or smaller according to the matter to be carried thereon, and according to the size of the cylinder segment; whether it be the larger segment 18^b, as shown in Figs. 9 and 10, or one of the smaller segments 18^a or 18 shown in Fig. 7. As it is customary to run off several different orders for these counter check books, and the like, side by side upon a single web of paper; as, for instance, four; the numbering cylinders must be of sufficient length to carry the required numbering heads, etc., suitably disposed across the web. The facility for adjustment attained by my construction of the cylinders enables me to meet all requirements, even where the numbers, etc., for different orders cannot be run in on the same alinement across the web; one segment on a cylinder, in such case, being employed to carry the numbering heads or fixed type for one order, while one or more segments are employed for the other orders.

Having thus described the several parts of my numbering machine, their manner of operation and mode of adjustment; and without confining myself strictly to the details of construction herein illustrated, what I claim as my invention and desire to secure by Letters Patent is—

1. A numbering cylinder comprising a shaft, one or more cylinder segments adapted to be removably fastened and circumferentially adjustable upon the shaft, means permitting the insertion and fastening of one or more numbering heads in a segment while on the shaft and means carried by a segment and actuated by the rotation of the shaft for imparting motion to the numbering heads.

2. The combination, with a shaft, of a cylinder segment having a longitudinal channel, a numbering head, means permitting the insertion of the head in said channel and for fastening it in longitudinal adjustment therein while the segment is on the shaft, a grooved shaft journaled in the segment and adapted to be placed in operating engagement with the mechanism of the numbering head, and means for oscillating said shaft when the cylinder shaft is rotated.

3. A numbering cylinder provided with a longitudinal channel, a numbering head, means permitting the insertion of the head in said channel and for fastening it in longitudinal adjustment therein, a grooved shaft in said channel adapted to operatively engage the mechanism of the head, said shaft terminating at the point provided for the insertion of the head in the channel, and means actuated by the rotation of the cylinder for oscillating the shaft.

4. A numbering cylinder provided with a longitudinal channel, a numbering head hav-

ing a holder adapted to be inserted in said channel and fastened therein, said channel having an opening at one end for the insertion of the holder therein, a grooved shaft
5 in said channel terminating at said opening and adapted to operatively engage the mechanism of the head when the head is inserted in the channel, and means actuated by the rotation of the cylinder for oscillating the
10 shaft.

5. A numbering cylinder provided with a shaft, the ends of which are journaled in eccentric bushings, an impression cylinder, means for adjusting the bushings to move
15 the numbering cylinder to or from the impression cylinder, a bearing projecting from one of said bushings concentric with the shaft, and a cam disk adjustably mounted upon said bearing for actuating the numbering mechanisms when the numbering cylinder is rotated.
20

6. The combination, with a shaft, of a cylinder segment adapted to be fastened thereon, a longitudinal channel in the segment
25 provided with grooves along the side walls thereof, a type holder provided with tongues at opposite sides to engage said grooves, an enlargement of the channel at one end for inserting the holder in the channel, and
30 means for locking the holder in longitudinal adjustment in the channel.

7. The combination, with a shaft, of a cylinder segment adapted to be fastened thereon, said segment being provided with a lon-

gitudinal channel adapted to receive a type holder, and having a plurality of transverse grooves in its peripheral face adapted to receive locking nuts whereby a type plate may be fastened thereon over the type holders. 35

8. A cylinder provided with one or more outwardly open longitudinal channels, each adapted to have inserted therein one or more type holders, said cylinder being also provided with a plurality of circumferential grooves adapted to receive locking nuts
40 whereby one or more type plates may be fastened thereon over the type holders. 45

9. In a numbering machine, a grooved shaft provided at one end with means for oscillating it when the machine is in motion, and having its other end left free to receive
50 a numbering head, the groove at said free end having both of its sides outwardly beveled, the angular measurement of the opening between said bevels at the end of the shaft being made equal to or greater than
55 the angle of oscillation of the shaft, plus the thickness of the tongue on the pawl frame of the numbering head, whereby a numbering head may be slipped upon the shaft regardless of the position of the shaft. 60

In testimony whereof I have affixed my signature, in presence of two witnesses.

SAMUEL HOLLINGSWORTH.

Witnesses:

WILLIAM RUDDY,

HENRY EGGERDING.