

(No Model.)

H. L. ARNOLD.  
TYPE WRITING MACHINE.

No. 410,629.

Patented Sept. 10, 1889.

Fig. 1.

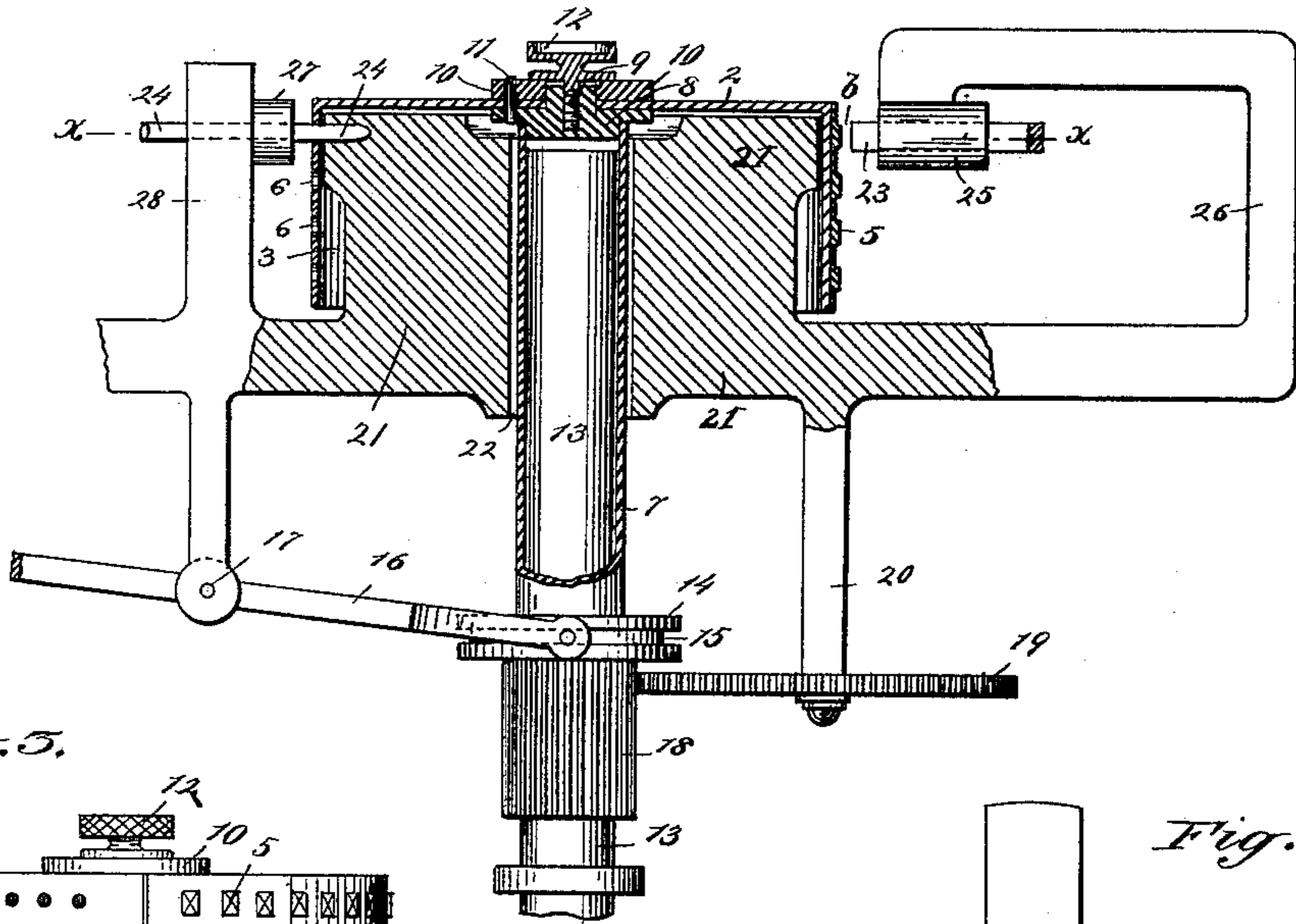


Fig. 3.

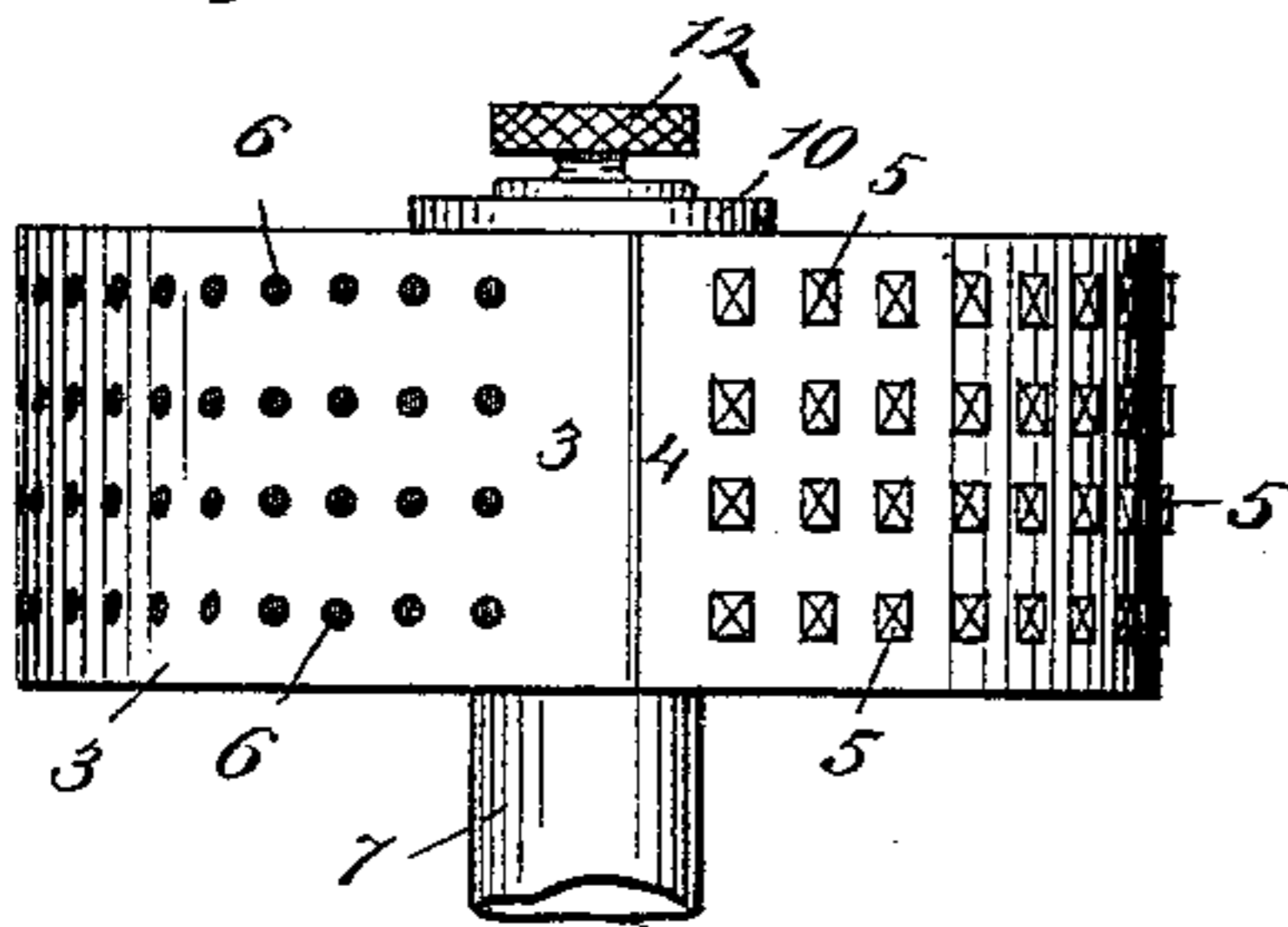


Fig. 4.

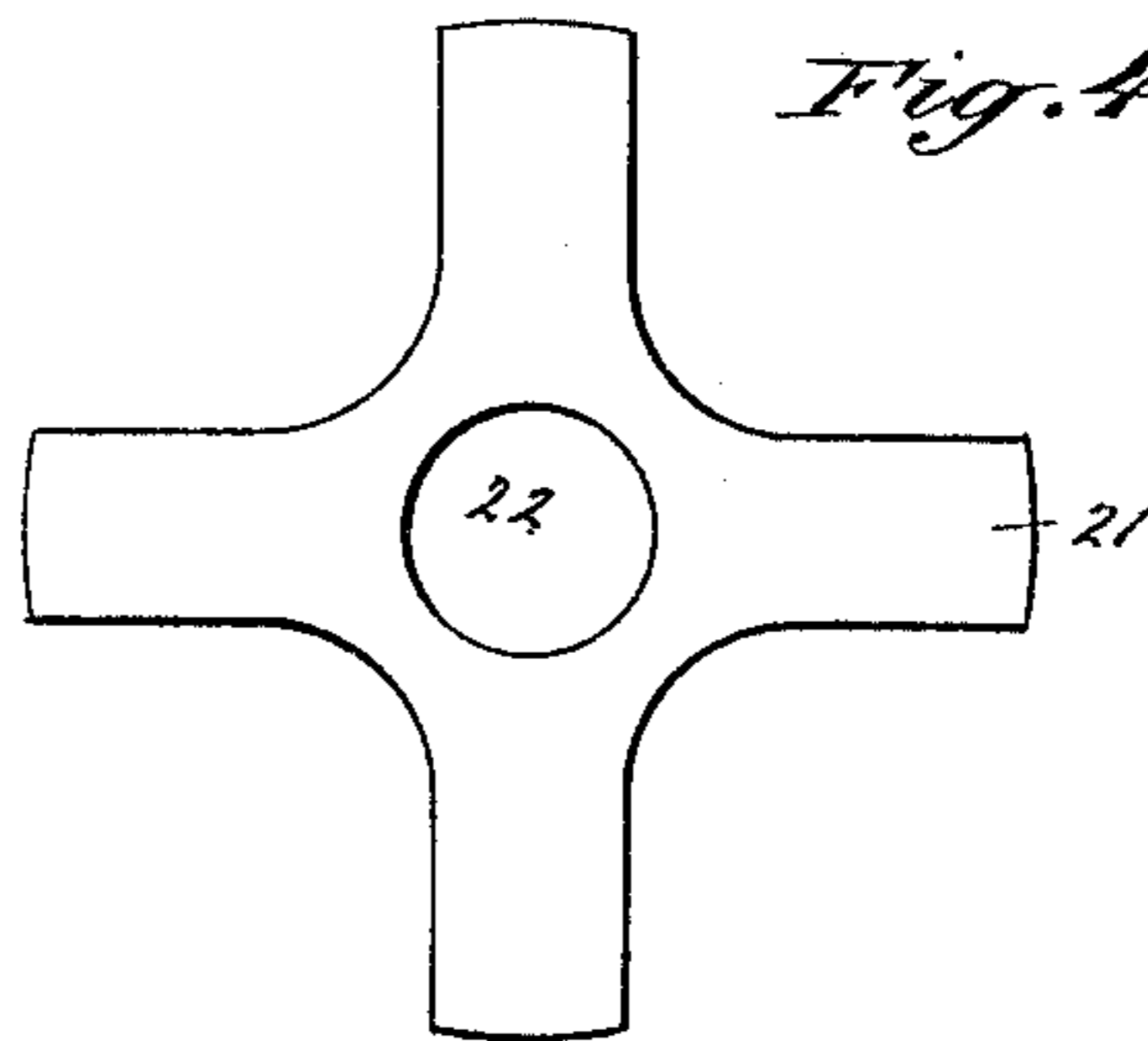


Fig. 2.

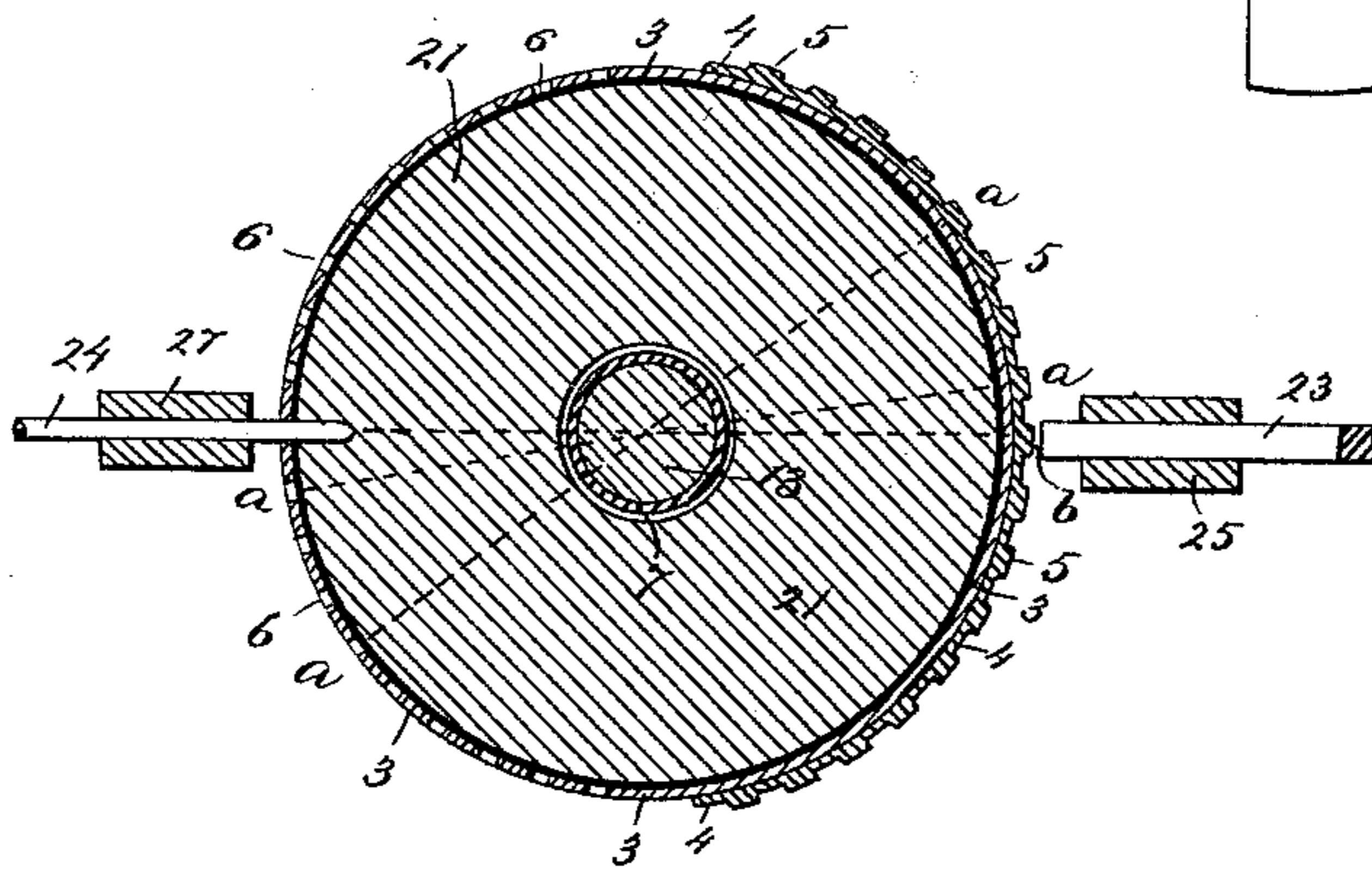
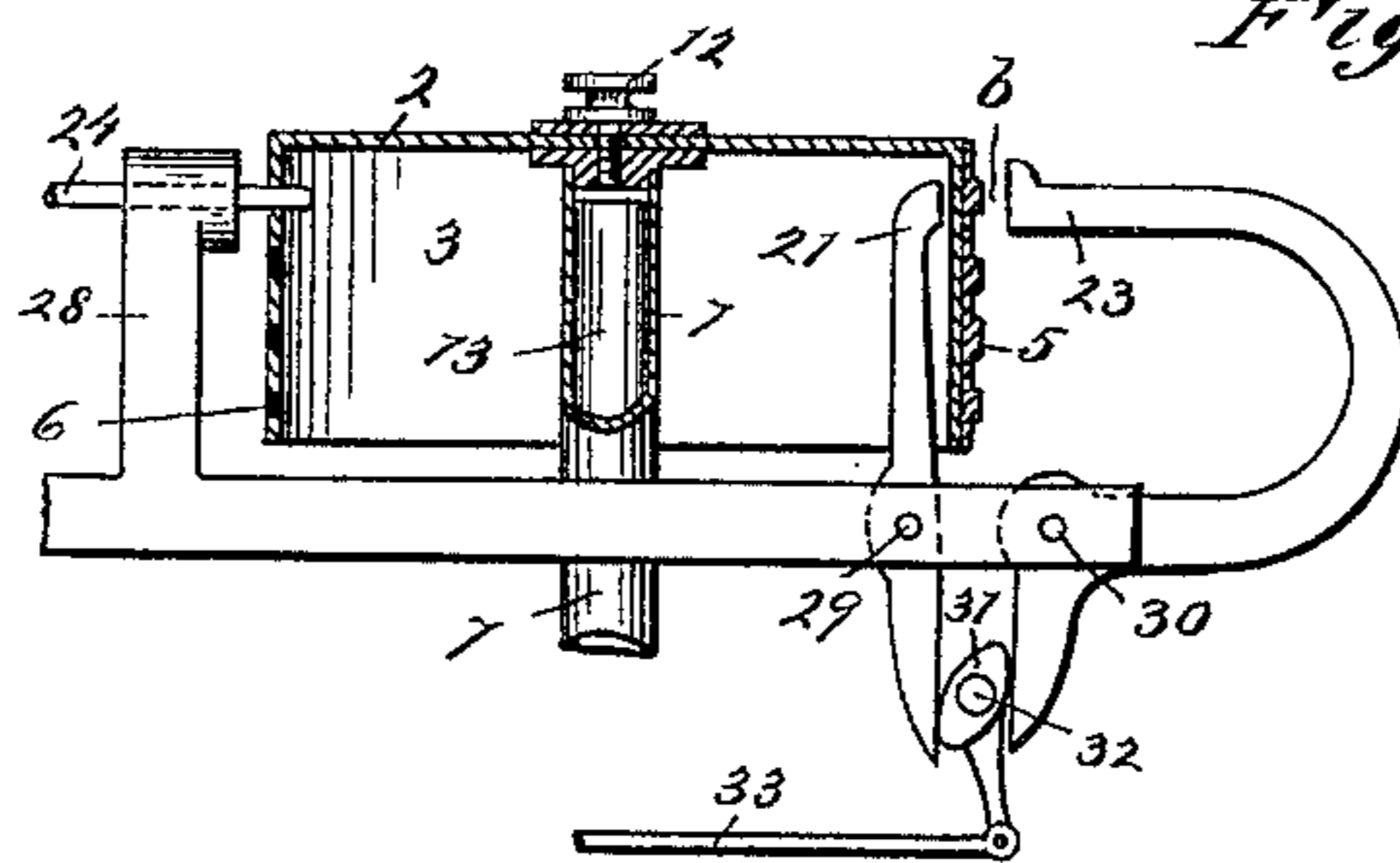


Fig. 5.



Attest:

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# UNITED STATES PATENT OFFICE.

HORACE L. ARNOLD, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE ARNOLD TYPE-WRITER COMPANY.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,629, dated September 10, 1889.

Application filed September 2, 1887. Serial No. 248,566. (No model.)

*To all whom it may concern:*

Be it known that I, HORACE L. ARNOLD, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to that class of machines wherein wheels and sections of wheels are formed or provided with type, and particularly to that species of machines in which the type bearer or carrier is adapted to be oscillated to the right or left of the printing-point of the machine, and to be elevated to bring any of the several circumferential rows of type in line with the printing-point, or in a plane coincident with that in which the printing-hammer or other impression-giving device is located or arranged, and to be arrested and held firmly against movement when the selected character has been brought to the printing-point and the impression is being performed. Previous to my invention the type bearers or carriers of such machines have been made in a variety of ways, and many different organizations of devices have been employed for accomplishing the several operations or results above referred to. Type-carriers have heretofore been constructed of metal, but were discarded for the reason that when made sufficiently strong to withstand the blow or force at the time of impression were found to possess so much weight as to make their momentum too great and the touch of the finger-keys too hard and tiresome.

One of the objects of my invention is to make a type-carrier of light weight and to provide a means whereby the printing from such carrier can be continued indefinitely without any liability of bending, breaking, distorting, or otherwise injuring the same.

To this end and object my invention consists, first, in combining with a type-carrier and movable impression device a rear or internal support or abutment to resist or oppose any force that might break the carrier or destroy the regularity of its shape.

My invention has for a further object the production of a type-carrier which is adapted to be positively arrested while the printing

is being effected; and to this end and object my invention consists, secondly, in a type-carrier of cylindrical form, provided on one side with type or printing-characters and on the opposite side with perforations arranged diametrically opposite to said type to receive a locking pin or bolt.

My invention further consists in certain features of construction and combinations of parts, all as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a vertical section of a portion of a type-writing machine involving my invention. Fig. 2 is a horizontal section taken at the line  $xx$  of Fig. 1. Fig. 3 is an elevation of the type-carrier and the sleeve to which it is connected. Fig. 4 is a modification of the type-carrier support or abutment. Fig. 5 is a vertical section of a portion of a type-writing machine, illustrating another modification of my improvement relating to the abutment.

In the several views the same parts will be found designated by the same numerals of reference.

The type carrier or bearer is preferably drawn or struck up of thin sheet-steel, after the fashion of making cartridge-shells, but may of course be otherwise constructed.

2 represents the head of the type-carrier, and 3 its body, which is cylindrical. Upon one side of the latter is secured, preferably by solder, a curved stereotyped plate 4, which contains all of the printing-characters desired for use in the machine. I have shown the type arranged in four rows or tiers circumferentially of the carrier, and while I prefer such an arrangement it will be understood that a greater or less number of rows may be employed. Upon the opposite side of the body of the carrier is formed or provided a like number of rows of perforations 6, each row containing the same number of perforations as its corresponding row on the other side of the carrier contains type, and each of said perforations being diametrically opposite to some one of said type, as indicated by the dotted lines  $aa$  at Fig. 2 of the drawings. The holes 6 are preferably provided by stamping or punching through the

stock of the carrier, as illustrated; but they may be provided in a separate piece, which may be secured to the carrier. Of course I greatly prefer the construction shown, as it enables me to produce a much cheaper and lighter carrier.

The carrier is attached to a hollow shaft or sleeve 7 by means of a plug or disk 8, that is formed with a boss 9, which projects through a central perforation in the head 2 of the carrier. A washer 10 is fitted over the boss 9, and is secured to the plug or disk 8 by means of a pin 11, which passes through coincident perforations in the washer and the disk. The disk is threaded to receive the shank of a binding-screw 12, which, together with the pin 11, affords a simple and efficient means for holding the carrier down upon the sleeve and against any axial movement independently thereof during the operation of the machine.

The sleeve 7 is fitted to slide freely longitudinally upon and oscillate or turn axially about a post or bearing 13, secured to the frame-work of the machine or cast integral therewith. At Fig. 1 I have shown means for elevating or sliding longitudinally the sleeve and means for turning it.

14 designates a collar upon the lower end of the sleeve, in the groove 15 of which are arranged studs which project inwardly from the bifurcated end of a lifting-lever 16, that is pivoted at 17 to the frame-work of the machine.

18 designates a pinion, which is fast on the lower end of the sleeve, and which engages with a spur-gear 19, mounted upon an arm or bracket 20, depending from the main frame of the machine.

The lever and the gear, through the intervention of suitable devices (not shown) connected with the finger-keys, are respectively adapted, as will be readily understood by those skilled in the art, to elevate and oscillate the type-sleeve and the carrier and type secured thereto, for the purpose of bringing the desired type to the printing-point of the machine, which point is designated by the letter *b*.

21 designates an anvil, support, or abutment, which is preferably cast with the frame-work of the machine, as shown at Figs. 1 and 2. In these views it is made cylindrical and provided centrally with an opening 22 for the accommodation of the sleeve and post or pillar. The body of the shell-like type-carrier fits about the periphery of the support or abutment, and is protected thereby against crushing or distortion under the blows of the printing-hammer or other impression device. The hammer or impression device I have herein designated by the numeral 23. It may be actuated by any well-known or suitable mechanism.

Opposite the hammer is arranged an index-pin or locking-bolt 24, which may be reciprocated by any suitable mechanism. This device serves the function of arresting the type-

carrier and holding it positively in true position during the time the printing is being effected. When the desired type shall have been brought to the printing-point, the pin 24 enters or engages with the hole 6 opposite the said type, and, preventing any vibration of the type past the impression-point, thus insures the equal or correct spacing of the printing-characters and assists in effecting greater perfection in the quality of the work performed. During the elevation or oscillation of the type-carrier the pin is of course withdrawn from the holes.

As will be understood, at each depression of a character finger-key the selected type is brought to the printing-point, the index-pin engaged with a hole in the type-carrier opposite such type, and the hammer or impression device caused to make the impression upon the paper being used, and at each release of the finger-key the index-pin is disengaged from said hole, the hammer or impression device retracted, and the type-carrier left free to return to a normal position, or be moved at once to convey some other printing-character to the locality at which the impression is to be made.

In the construction shown at Figs. 1 and 2 the abutment is provided with a depression or hole for the reception of the forward end of the index-pin when moved inwardly to check the vibration of the type-carrier.

The hammer or impression device reciprocates in a guide or bearing 25 in the free end of an arm or bracket 26, which may contain the paper-holder, (not shown,) as heretofore.

The index-pin, arranged in the same plane as the printing-hammer, slides back and forth in a guide or bearing 27, formed in an arm or bracket 28, projecting vertically from the main frame of the machine.

Instead of the form of abutment shown at Figs. 1 and 2, one like that illustrated at Fig. 4 may be employed. It may be cast integral with the frame-work, or may be secured thereto.

Another modification of abutment is shown at Fig. 5. This construction, in lieu of being stationary, as in the previous figures, is made movable and in the form of a lever, being pivoted at 29 in the frame-work. The impression device 23, instead of being arranged to slide, is pivoted at 30 to the frame-work, and is adapted to vibrate. The abutment and the hammer are each provided with depending arms, between which is arranged a cam 31 on a rock-shaft 32, which is actuated by a connecting-rod 33, impelled by any suitable devices in connection with the finger-keys. The abutment is located in rear of the type, and the movements of the parts are so timed in practice that either just before the hammer or impression device strikes or simultaneously therewith the abutment comes to a bearing against the type-carrier in rear of the type and supports the same against the blow or force of the impression device.

By either construction of abutment it will be seen that the type-carrier is prevented from being crushed, distorted, or otherwise injured by the blow or force of the hammer or impression device, and hence may be made extremely thin and light—a great desideratum in this kind of type-writing machines. In practice I make the type-carrier or shells of steel and of about one one-hundredth of an inch in thickness.

Without departing from the spirit of my invention so far as the abutment is concerned, the type-carrier may be constructed differently from that herein shown—as, for instance, in the form of a sector of a circle—the gist of this part of my invention resting in the employment of an abutment, either stationary or movable, to resist the force of the impression, and thus prevent any injury to the carrier which might destroy the alignment of the type thereon.

The device 25, which gives the impression, may be arranged to strike a blow, as in previously-patented machines, or may be arranged to effect the impression by pressure, as shown in a previously-filed application by me and in Fig. 5 of the drawings herein.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination of a shell-like type-carrier provided with type on one side and index-holes on the other,

an abutment, an impression device, and an index-pin, substantially as set forth.

2. In a type-writing machine, the combination of a sleeve adapted to slide and oscillate, a shell-like type-carrier secured thereto and provided on one side with type and on the other with index-holes, a bearing for said sleeve, an impression device, and an index-pin, substantially as set forth.

3. In a type-writing machine, the combination of a sleeve adapted to slide and oscillate, a shell-like type-carrier secured thereto, and provided with type on one side and index-holes on the other, a bearing for said sleeve, an abutment for said type-carrier, an impression device, and an index-pin, substantially as set forth.

4. In a type-writing machine, the combination of a curved type-carrier provided with a head or support at its top, a sleeve attached to said head or support, an abutment in rear of said carrier and beneath said head or support, a bearing for said sleeve, and an impression device, substantially as set forth.

Signed at New York city, in the county of New York and State of New York, this 1st day of September, A. D. 1887.

HORACE L. ARNOLD.

Witnesses:

JACOB FELBEL,  
THOS. B. CLIFFORD.