

No. 768,431.

PATENTED AUG. 23, 1904.

H. C. DUNGAN.  
ADDING MACHINE.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

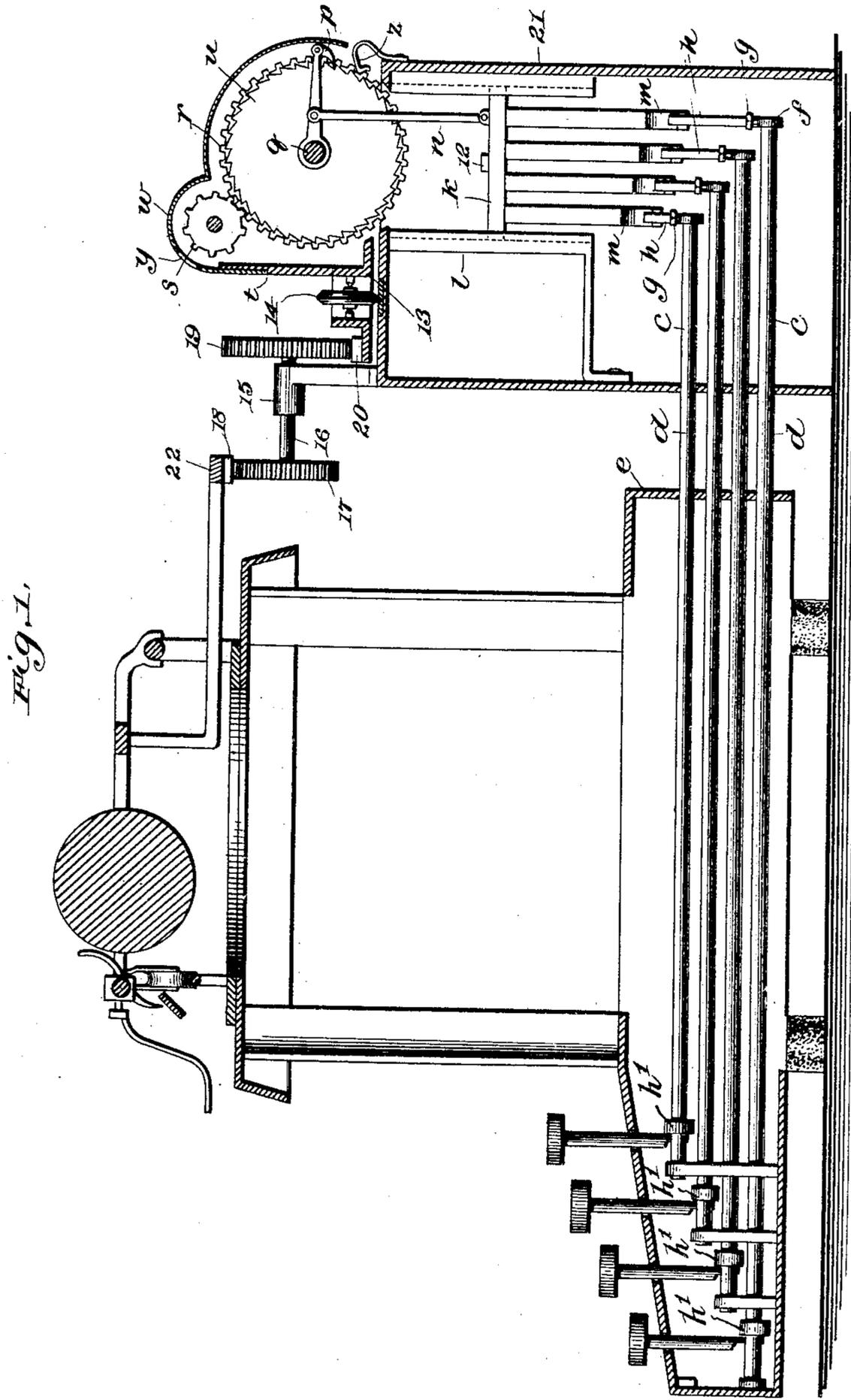


Fig. 1.

Witnesses:  
George M. Anderson  
R. A. Boswell.

Inventor:  
H. C. Dungan,  
by  
G. M. Anderson  
his Attorney.

No. 768,431.

PATENTED AUG. 23, 1904.

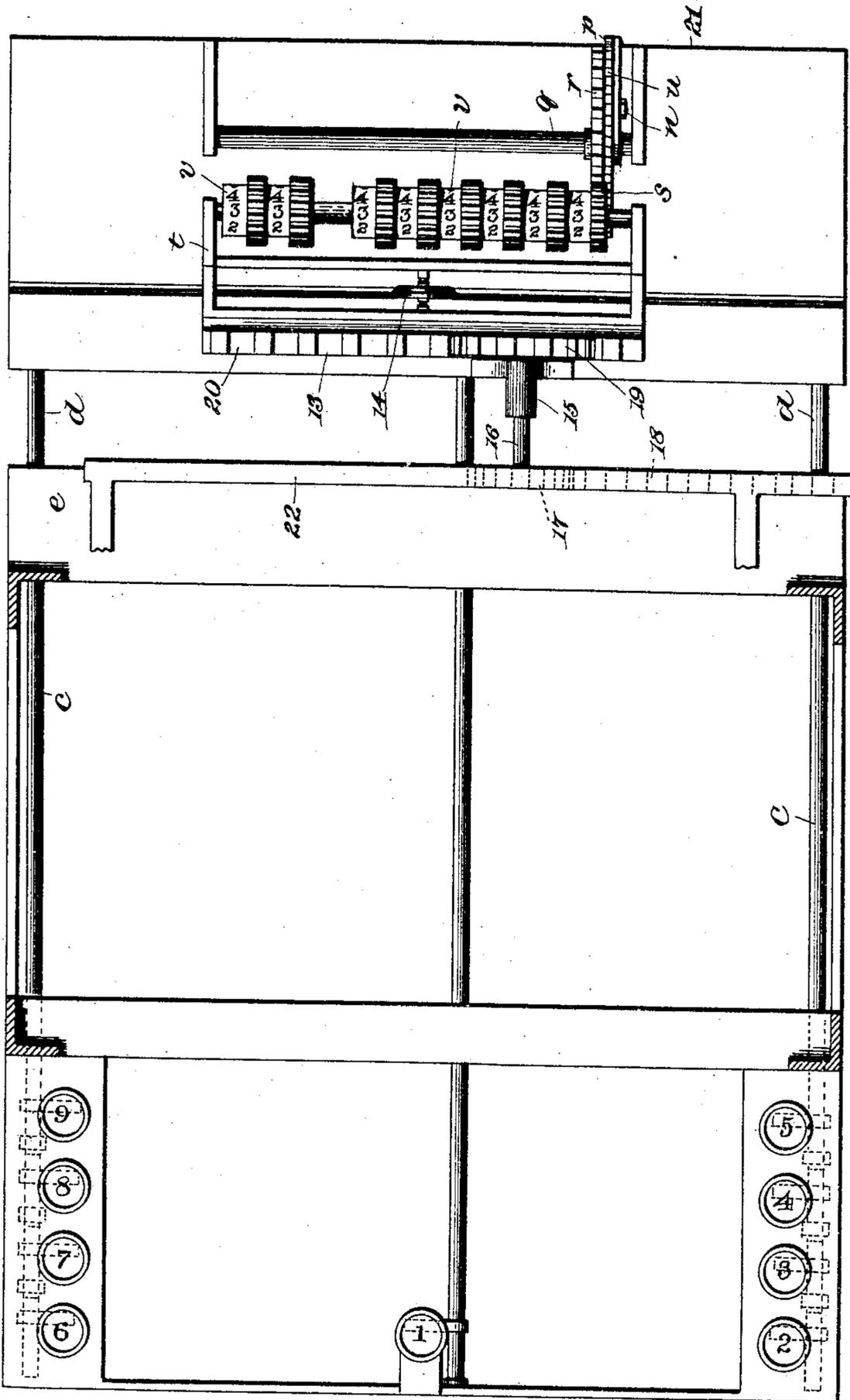
H. C. DUNGAN.  
ADDING MACHINE.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Geo. M. Chudron

R. A. Boswell

Inventor:

H. C. Dungan.

by

E. W. Chudron

his Attorney.

No. 768,431.

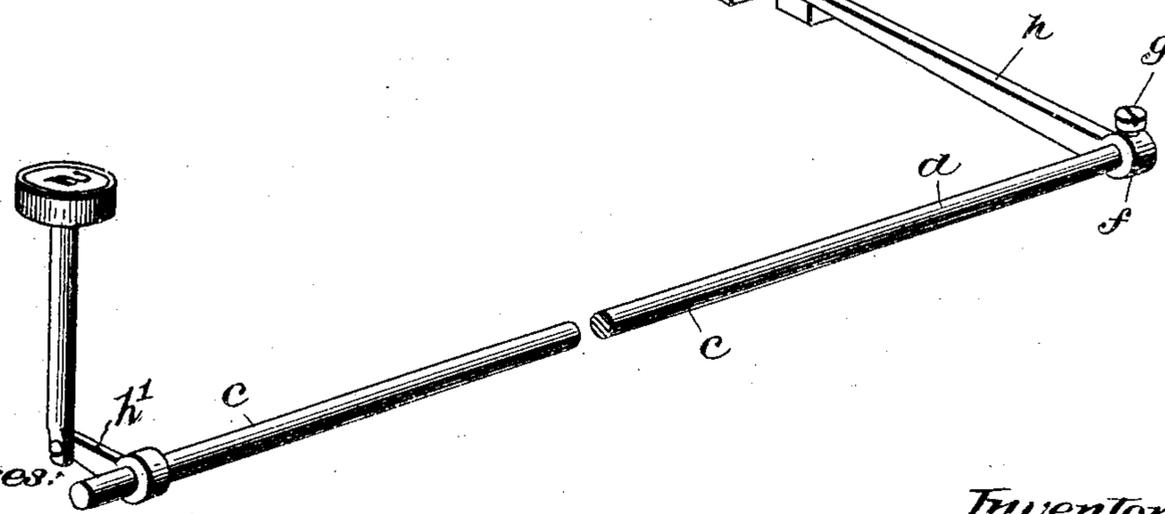
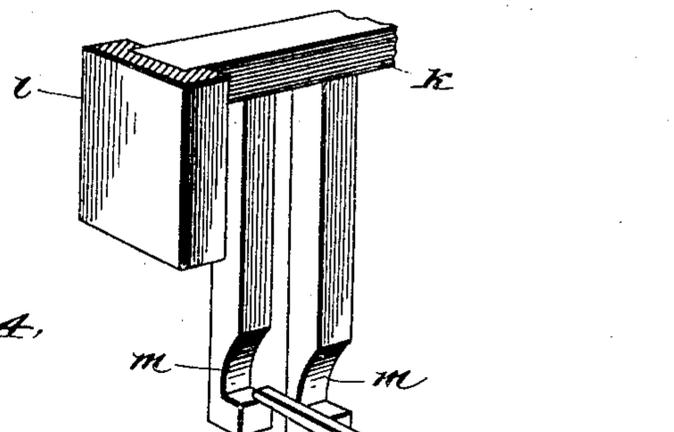
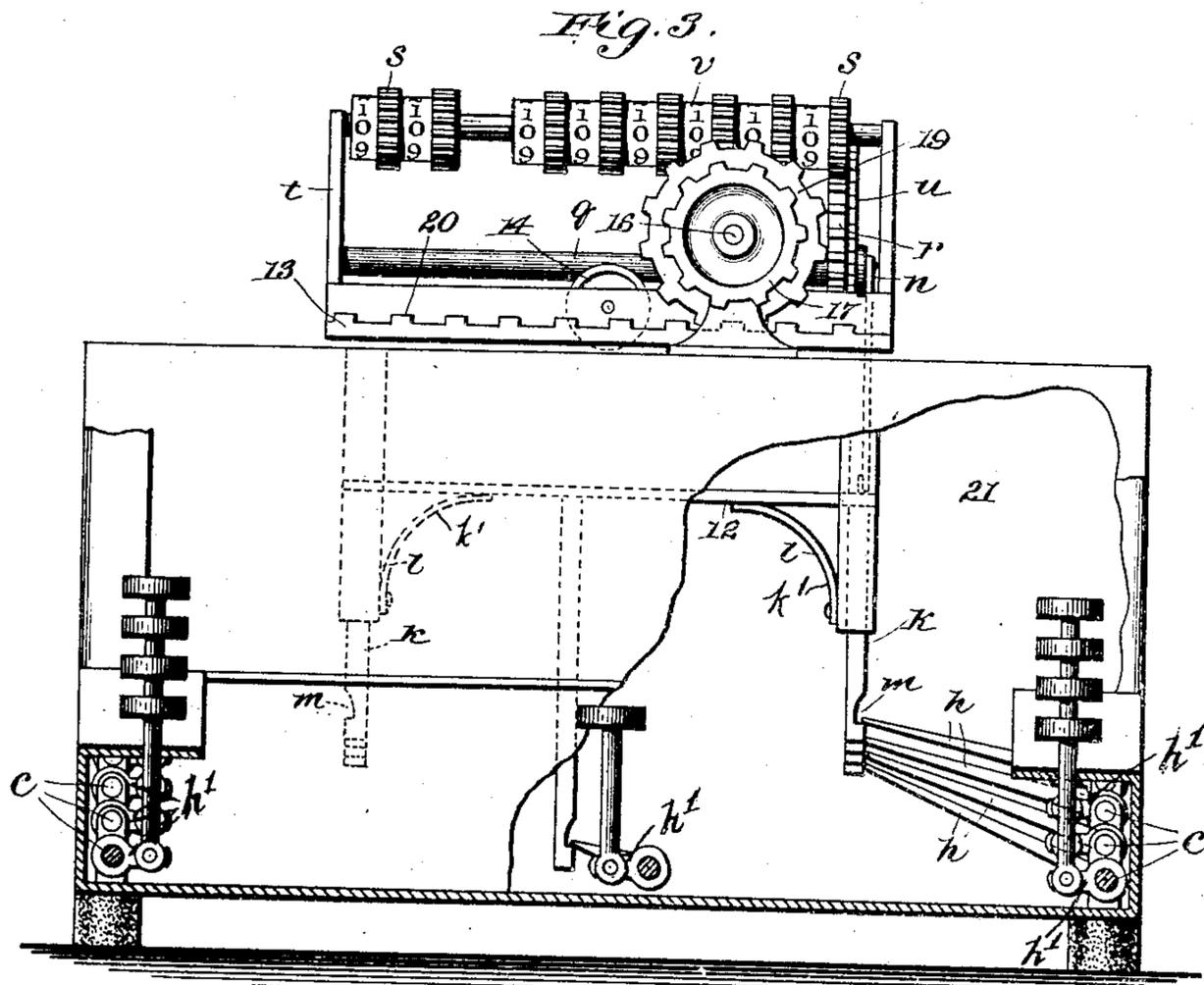
PATENTED AUG. 23, 1904.

H. C. DUNGAN.  
ADDING MACHINE.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:  
 George M. Anderson  
 R. A. Boswell

Inventor:  
 H. C. Dungan,  
 by  
 E. W. Anderson  
 his Attorney.

# UNITED STATES PATENT OFFICE.

HARRY C. DUNGAN, OF JACKSON, OHIO.

## ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 768,431, dated August 23, 1904.

Application filed April 21, 1903. Serial No. 153,682. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY C. DUNGAN, a citizen of the United States, and a resident of Jackson, in the county of Jackson and State of Ohio, have made a certain new and useful Invention in Adding-Machines; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a vertical section through the type-writer and its attachment. Fig. 2 is a plan view of the invention as applied with cover removed and parts broken away. Fig. 3 is a front view of the invention as applied with parts in section and broken away. Fig. 4 is a detail perspective view illustrating the operation of the slide  $k$  and its connections.

The invention relates to adding-machines chiefly designed as "attachments" to typewriters; and it consists in the novel construction and combinations of devices, as hereinafter set forth.

In the accompanying drawings, illustrating the invention applied to a machine of the Remington type, the construction shown is designed to be used in connection with a typewriter having vertically-aligned rotary shafts to which are connected by crank-arms the keys of the machine and the type-bar connections.

The shafts  $c$ , which are operated for the numerals "1," "2," "3," "4," "5," "6," "7," "8," and "9," have rearward extensions  $d$  through the back part of the frame  $e$  of the typewriter, and each of these extensions is provided with a laterally-extending adjustable crank-arm  $h$ . Each of these arms  $h$  is provided with a sleeve-bearing  $f$ , whereby it is connected to the journal, and a set-screw  $g$  in said sleeve-bearing serves to hold the arm securely in position after the adjustment of the arm. The crank extensions may vary in length for convenience in attaching the crank-arms  $h$ , and these arms are of various lengths

to suit the positions of the rotary shafts  $c$  in the type-writer frame in their relation to the slide  $k$ , which moves in a fixed guideway  $l$ , which forms a part of the back of the attachment-frame 21. The slide  $k$  is provided with notches  $m$  in its lower portion, these notches being abruptly shouldered at their lower ends and being gradually cut out above such shoulders to accommodate the movements of the arms  $h$  when they are put in motion by the operation of the numeral-keys. When a numeral-key is struck, the rotary shaft corresponding thereto and having a crank-arm connection  $h'$  therewith turns, and its arm  $h$ , engaging the notch  $m$  of the slide  $k$ , draws the latter downward a distance which is proportionate to the number of the key which is struck, the slide  $k$  being returned to normal position by spring  $k'$ . To the slide  $k$  is connected a rod  $n$ , which is attached to a pawl-lever  $p$ , which is journaled on a shaft  $q$ , carrying a large toothed wheel  $r$ , lying in a plane extending longitudinally of the machine, and which is loose on said shaft and is designed to move that one of a series of toothed wheels  $s$  which is at the time in engagement therewith. The series of toothed wheels  $s$  is laterally movable with reference to the large toothed wheel  $r$ , and to this end these toothed wheels  $s$  are mounted in a movable frame  $t$ , the motion of which is governed by the motion of the type-writer carriage. To the large toothed wheel is attached a ratchet-wheel  $u$ , which is fixed on the shaft  $q$  and is provided with teeth corresponding to the teeth of said large toothed wheel. When a numeral-key is operated, drawing down the slide  $k$ , the pawl-lever  $p$  connected thereto turns the large wheel  $r$  a distance proportionate to the number of said numeral-key, and said large wheel turns the corresponding toothed wheel  $s$  of the series sufficiently to move the indicator-disk  $v$ , which is attached thereto, the proper distance to effect the addition of the number in the general indication, which is effected by the series of indicator-disks in their incasement  $w$ , which is provided with a sight-slot  $y$ . A spring-de-

tent  $z$  serves to hold the large toothed wheel in the position to which it has been turned by the operation of the pawl-lever. When the numeral-key is released, the slide  $k$  is raised to normal position by the spring  $k'$ .

In ordinary machines of the character indicated the numeral-keys are located laterally in banks of four on each side, with the exception of the numeral-key 1, which is toward the middle of the arrangement. It is designed, therefore, to provide a slide  $k$  on each side of the attachment-frame and to connect these slides by a transverse bar 12, to which is connected the arm  $h$  of the extension  $d$  of the rotary shaft corresponding to this prime-numeral.

At or near a level with the type-writer carriage 22 is provided in rear of said carriage on the attachment-frame a small carriage 13, which is designed to run on ball-bearings or on rollers, as at 14. This carriage is provided with the indicator, which is similar in so far as regards its toothed wheels and indicator-disks to those of ordinary numbering-machines, consisting of eight disks, more or less, each provided with the usual peripheral numbering "0," "1," "2," "3," "4," "5," "6," "7," "8," and "9," adapted to show through the sight-slot of the incasement. These disks are provided with carrying-teeth or projections in the usual manner in such wise that when one of said disks is turned through a complete revolution it will move the wheel to its left one-tenth of its revolutions or the distance from one of its peripheral numbers to the next.

The indicator-carriage 13 is connected to the type-writer carriage 22 by an arrangement of racks and pinions, as follows: The frame of the attachment is provided with a journal-bearing 15, through which extends a shaft 16, carrying at one end a pinion 17, engaging a rack 18, attached to the type-writer carriage, and at its other end a pinion 19, engaging a rack 20, attached to the indicator-carriage. Usually the latter pinion is of larger diameter than the type-writer pinion in order that the spacing in the motion of the indicator-carriage shall be on a larger scale. The rack of the type-writer carriage is short and is arranged near its end in order that it shall not engage its pinion until it has neared its end of its writing-line. When, however, it is near such end, it engages the pinion and moves the indicator-carriage.

To each disk of the indicator is attached a toothed wheel  $s$  of the series hereinbefore referred to, these wheels having teeth of proper size to engage the large toothed wheel  $r$ .

When the type-writer carriage has moved the indicator-carriage to a point where one of the toothed wheels  $s$  of the indicator engages the large toothed wheel  $r$ , then if any num-

ber be struck the rotary shaft of such number through the extension-arm, slide, and pawl-lever, will cause the large toothed wheel  $r$  to rotate a distance proportionate to the number which is struck, and such large toothed wheel will in turn move the indicator-wheel with which it is then in engagement a corresponding number of teeth, registering that number or adding such number to any previous number already registered, and when the type-writer key is released the type-writer carriage in moving forward one space will carry the indicator-carriage and its indicator forward a proportionate distance, so that the toothed wheel of the next indicator-disk will engage the large toothed wheel  $r$  in readiness for the next number to be added.

In the series of indicator-disks an interval equivalent to the space which is occupied by one of the numbered disks is provided between the second and third wheels from the right of the series in order to allow for the period or point interval between the whole numbers and the decimals, the devices for carrying between such wheels being, however, upon the same principle as that between the other wheels of the series.

The machine will be found useful in making invoices, stock-numbering, and similar work, as prices and amounts may be written and numbers used in the body of the writing without conflicting with the work of the adding attachment, which does not come into operation until the carriage of the type-writer has moved a sufficient distance from right to left to connect with the small pinion 17. When that point is reached, however, if a figure be struck it will register the number on the adding-indicator.

The connections may be readily varied for type-writers of different constructions.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In an adding-machine, the combination of a longitudinal spur-wheel, transversely-movable indicating-wheels having spur-wheels upon the shaft thereof and adapted to be moved successively into engagement with said longitudinal spur-wheel, a vertically-reciprocatory carriage having an operating connection with said longitudinal spur-wheel, the depending notched arms of said carriage, vertically-alined lateral rotary shafts and a central rotary shaft having cranks engaging said notched arms, the vertical longitudinal banks of number-keys at each side of the machine and a central number-key having crank connections with said rotary shafts, and means for returning the carriage to raised position, substantially as specified.

2. In an adding-machine, the combination of a stationary spur-wheel, transversely-mov-

able indicating-wheels adapted to be moved successively in engagement with said stationary wheel, a vertically-reciprocatory carriage having an operating connection with said stationary wheel, the depending notched arms of said carriage, rotary shafts having cranks engaging said notched arms, the number-keys having crank connections with said rotary

shafts, and means for returning the carriage to raised position, substantially as specified. 10

In testimony whereof I affix my signature in presence of two witnesses.

HARRY C. DUNGAN.

Witnesses:

C. A. SLOAN,  
JOSEPH MCGHEE.