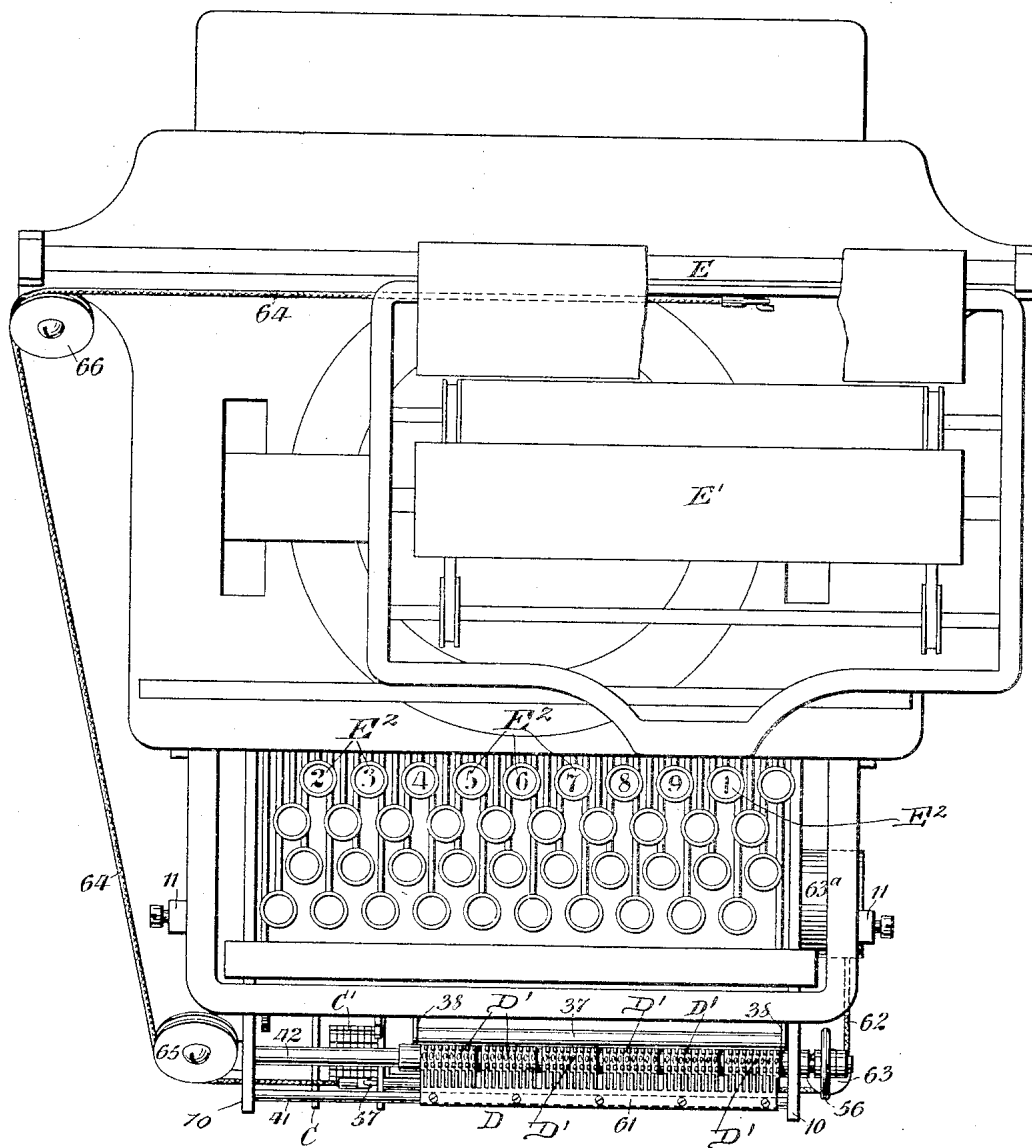


J. C. WOLFE.
TYPE WRITING AND ADDING MACHINE.

No. 578,303.

Patented Mar. 2, 1897.

Fig. 1.



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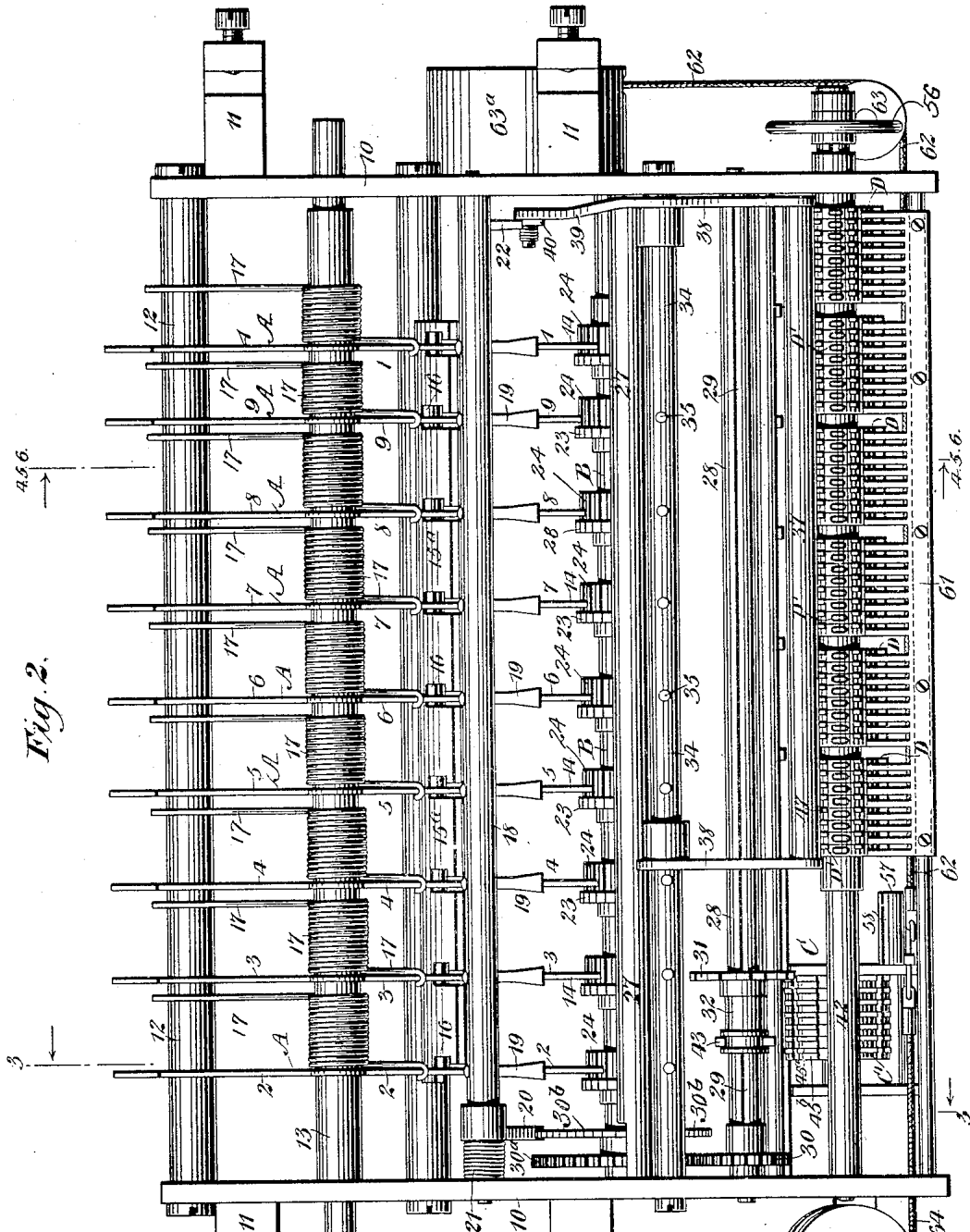


Fig. 2.

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Fig. 3.

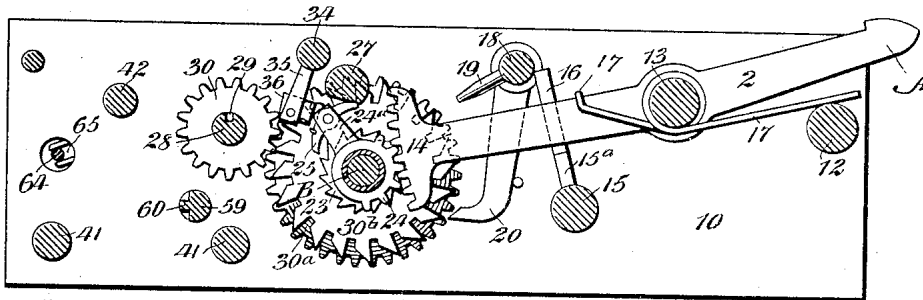


Fig. 4.

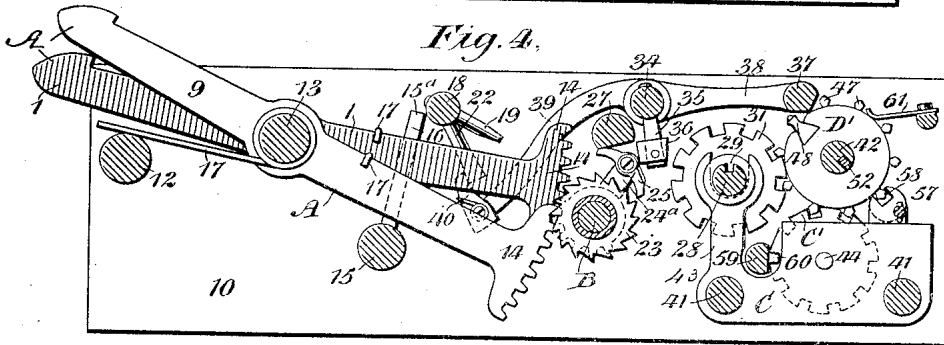


Fig. 5.

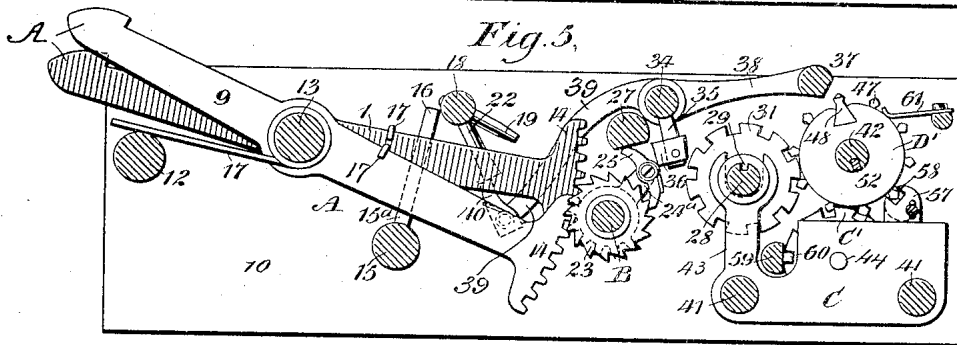
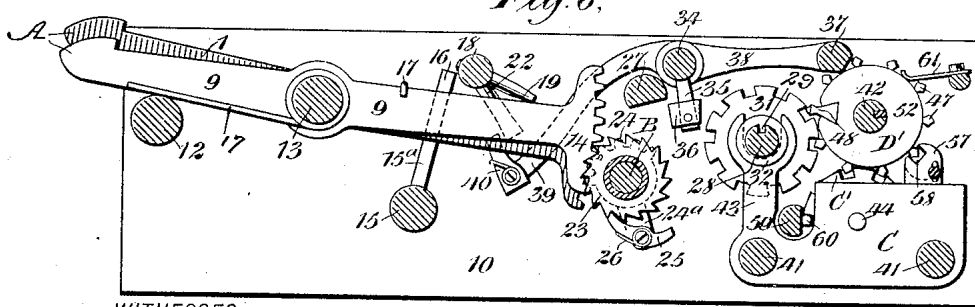


Fig. 6.



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TYPE WRITING AND ADDING MACHINE.

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Fig. 7.

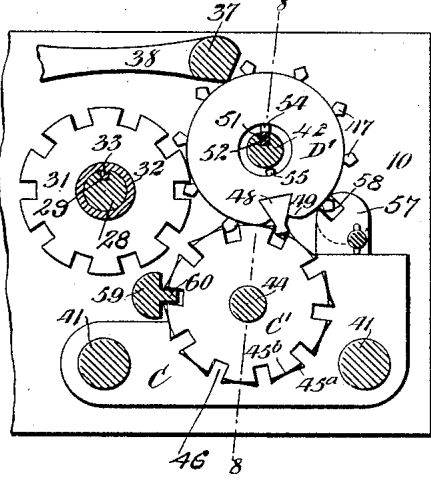


Fig. 8.

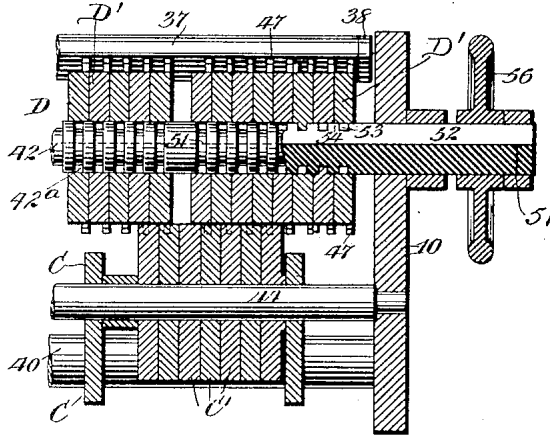


Fig. 10.

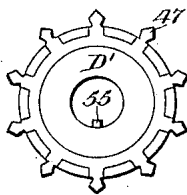


Fig. 9.

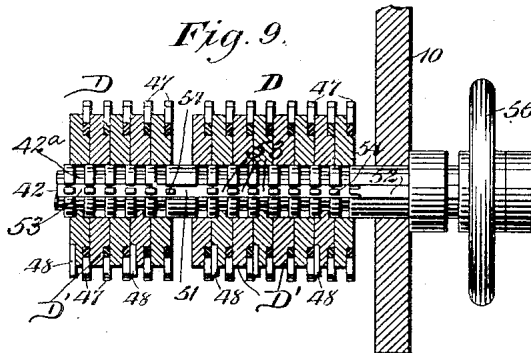


Fig. 11.

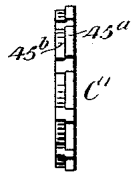
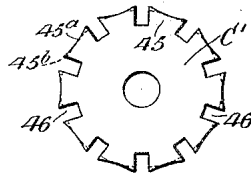


Fig. 12.



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(No Model.)

5 Sheets—Sheet 5.

J. C. WOLFE.
TYPE WRITING AND ADDING MACHINE.

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Fig. 13.

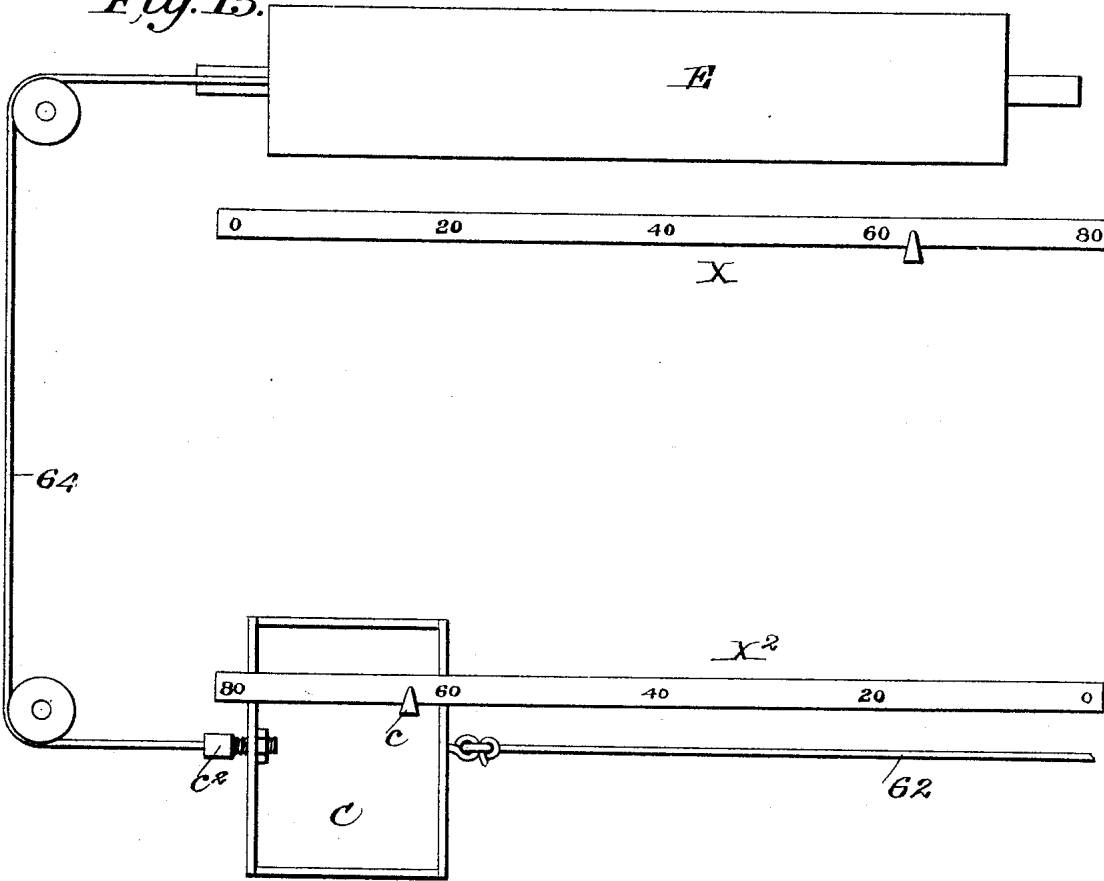
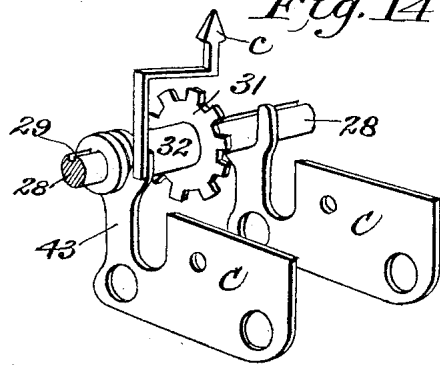


Fig. 14.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JACOB C. WOLFE, OF NEW YORK, N. Y.

TYPE-WRITING AND ADDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 578,303, dated March 2, 1897.

Application filed May 16, 1895. Renewed June 27, 1896. Serial No. 597,261. (No model.)

To all whom it may concern:

Be it known that I, JACOB C. WOLFE, of New York city, in the county and State of New York, have invented a new and useful
5 Improvement in Type-Writing and Adding Machines, of which the following is a full, clear, and exact description.

My invention relates to an attachment for type-writing machines; and it has for its object to provide a device capable of being applied to any type-writing machine and which will be simple, durable, and economic in its construction, and, furthermore, to provide a device adapted, when desired, to be acted
15 upon by the numeral-keys of the type-writer, the device carrying an adding mechanism operating in such manner that, as the figures in a column or in a line are printed by the machine, the sum-total of such figures will
20 appear upon the adding mechanism, having been added simultaneously with the printing of the figures, one figure after the other; and another object of this invention is to provide an attachment of the above character which
25 when not in use may remain as a fixture on the machine and not interfere in the least with the ordinary working thereof, being brought into action when required in an expeditious and convenient manner.

30 The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying
35 drawings, forming a part of this specification, in which the same characters of reference indicate the same or corresponding parts in all the figures.

40 Figure 1 is a plan view of a type-writing machine of the Remington type, illustrating the application of the attachment thereto. Fig. 2 is a plan view of the attachment removed from the machine. Fig. 3 is a transverse section taken substantially on the line
45 3 3 of Fig. 2. Figs. 4, 5, and 6 are sections taken on the lines 4, 5, and 6 of Fig. 2, illustrating different positions of the mechanisms. Fig. 7 is an enlarged transverse sectional view through the forward portion of the attachment, illustrating in end view the adding-
50 wheels, the carrying-wheels adapted to carry over the addition from one of the numbering-

wheels to the other, as occasion may require, and likewise an end view of the transmitting-wheel. Fig. 8 is a section taken substantially
55 on the line 8 8 of Fig. 7. Fig. 9 is a sectional view through the adding-wheels, the said section being substantially the same as that shown in Fig. 8, but illustrates the second position of the device employed for bringing
60 the zeros of all of the adding-wheels in registry or in position to start the operation of the attachment. Fig. 10 is a side elevation of one of the adding-wheels. Fig. 11 is an edge view of one of the carrying-wheels. Fig. 12 is a
65 side elevation of the same. Fig. 13 is a diagrammatic view, and Fig. 14 is a perspective view, of the carriage of the tens-carrying wheels.

In carrying out the invention the frame of
70 the attachment may be said to consist, practically, of two side plates 10 of any desired dimensions, each being provided with clamps 11 or their equivalents, adapted to receive the side base portion of the machine to which the
75 attachment is to be applied, and a connecting-bar 12, which is located at the upper rear portion of the frame.

In front of the connecting-bar 12, and preferably slightly above the same, a shifting
80 shaft 13 is journaled in the frame, and this shaft is adapted, preferably, to have end movement to a predetermined extent.

85 Preferably nine actuating-levers A are mounted loosely on the shifting shaft 13, and these levers extend forward and rearward from the shaft, their rear ends being carried over the connecting-bar 12, and the rear portions of these levers are adapted to be engaged by the numeral-keys E² of the type-
90 writer E¹ and pressed down by said keys when they are operated upon, this action taking place when the shifting shaft 13 is placed in position to bring said levers in registry or
95 alinement with the numeral-key levers.

Each actuating-lever A at its forward end is provided with a rack 14 or a segmental toothed extension vertically disposed, as shown in Figs. 3, 4, 5, and 6. Each lever is adapted to have a different throw, and the
100 throw of the said levers is limited by the connecting-bar 12. The levers are preferably arranged as shown in Fig. 2, being designated therein respectively as 2, 3, 4, 5, 6, 7, 8, 9, and

1, commencing on the left with 2 and terminating on the right with 1. The lever 1 has the least amount of throw and the lever 9 the greatest amount, being adapted to cause
 5 nine-tenths of a complete rotation of the adding-wheel, while the full movement of the lever 1 will move the said wheel the distance of
 10 "9," the "0" being placed between these two numbers.

The initial position of the rack ends of the actuating-levers A is controlled through the medium of a plate 15^a, which is preferably
 15 secured to a cross-bar 15, connecting the sides of the frame near their lower edges, and said plate is provided with a number of right-angled slots 16, (see Fig. 2,) the number corresponding to the number of actuating-levers,
 20 as each lever is adapted to move in one of the said slots. When the levers are in the straight portions of the slots 16, they may be operated, and will then be beneath the numeral-keys of the type-writer; but when the shifting shaft
 25 13 is moved to bring the actuating-levers wholly within the horizontal portions of these slots the levers are locked and will at the same time be carried out of registry or alignment with the numeral-keys of the type-writer.
 30

The actuating-levers A are securely held in their initial position—that is, in engagement with the base of the slots 16—by means of springs 17, which have bearing upon the levers in advance of their fulcrum and upon the connecting-bar 12 or adjacent support, as best shown in Fig. 3.

In advance of the guide-plate 15^a a shaft 18, which may be termed the "locking-shaft,"
 40 is journaled in the upper portion of the frame a predetermined distance above the actuating-levers. This shaft is fitted with a number of forwardly-extending arms or pins 19, corresponding in number to the number of
 45 actuating-levers and in position to the operative position of said levers, so that when the shifting shaft 13 is moved to bring the actuating-levers under the influence of the keys E² of the type-writer E' an arm or pin 19 will
 50 be over each of the said levers. The locking-shaft 18 is further provided at one of its ends with a detent 20, (see Figs. 2 and 3,) said detent being usually located at the left-hand end of the shaft and adapted to engage the
 55 ratchet-wheel 30^b, as hereinafter set forth, and the detent is held at a slightly rearward inclination by a spring 21, which normally holds the shaft turned to keep the detent 20 out of engagement with the wheel 30^b, the said position being shown in Fig. 3. At the opposite
 60 end of the locking-shaft 18 a single pin 22 is made to extend in a downward direction. (See Figs. 2, 4, 5, and 6.)

A power-transmitting shaft B is journaled
 65 in the frame in front of the rack-segments of the actuating-levers A, and upon this shaft, at one side of, yet adjacent to, the rack-seg-

ments of each actuating-lever, a ratchet-wheel 23 is securely mounted, and next to each ratchet-wheel a segmental pinion 24 is
 70 loosely mounted on the power-transmitting shaft, and each pinion is provided with an upwardly and forwardly extending arm 24^a. The pinions 24 are in mesh with the teeth of the rack-segments of the actuating-levers A.
 75 At the upper end of each arm 24^a of each pinion 24 a dog 25 is journaled, extending beyond both sides of the arm, and the outer surface of each dog is more or less convex, and the dogs have normally a downward tension
 80 applied to their lower ends by means of springs 26, the said ends being adapted for engagement with the ratchet-wheels 23; but normally all of the dogs are held out of engagement with their ratchet-wheels by the
 85 upper ends of the dogs being brought into engagement with the beveled under face of a stop-bar 27, extending from side to side of the frame, (see Figs. 4 and 5,) the said dogs being carried to that position by the actuating-levers when returned by their springs to
 90 their normal position.

In Figs. 4 and 5 the extremes in the throws of the actuating-levers are clearly illustrated, and it will be observed that the lever 1 en-
 95 gages with its pinion with one or two of its lowermost teeth while in its normal position, and that the lever 9 engages with its pinion with its uppermost teeth, and the distance that the lever 1 may be pressed downward
 100 will permit but a few of its teeth to operate, while the distance that the lever 9 may be carried down will admit of all of its teeth being brought into operation.

The driven shaft 28 is journaled in the
 105 frame in advance of the power-transmitting shaft B and, is provided with a longitudinal groove or slot 29, together with a small gear 30, which is fastened on said shaft and meshes with a larger gear 30^a, fast on the power-
 110 transmitting shaft B, (see Figs. 2 and 3,) this gearing being usually placed adjacent to the left-hand side of the frame, as shown in Fig. 2.

Owing to the fact that all of the dogs 25 are held out of engagement with the ratchet-
 115 wheels 23 on the power-transmitting shaft B, none of the dogs will act except that brought into operation by the particular actuating-lever that may be operated upon. Under this construction the machine operates with a minimum of wear and in a comparatively noiseless
 120 manner, and as each actuating-lever A is depressed and its rack-segment has finished its complete throw the lever, by engagement with a pin 19, horizontally projected from the
 125 locking-shaft 18, will carry the detent 20 into engagement with the ratchet-wheel 30^b on the power-transmitting shaft B, preventing the shaft from turning farther, thus rendering its movement positive and reliable, the
 130 release of the transmitting-shaft B being accomplished at the return of the lever by the spring 21 on the locking-shaft 18.

The driven shaft 28 is provided with a trans-

mitting-wheel 31, held to slide thereon, (see Figs. 2 and 7.) the said transmitting-wheel being provided with a hub 32, having a key or spline 33 entering and sliding in the slot 29 in said driven shaft 28, as shown in Fig. 7, and the transmitting-wheel is provided with ten teeth, as shown in the same figure.

In front of and slightly above the stop-bar 27 an alining-shaft 34 is journaled in the frame. This alining-shaft is provided with a series of trip-fingers 35, projected downward from its under face, the trip-fingers 35 corresponding in number to the number of actuating-levers A, and each trip-finger has pivoted thereto a shoe 36, capable of being moved upwardly at its rear end, but which cannot be moved in a downwardly direction at said end, being stopped by a flange passing from the shoe across the forward face of the finger to which the shoe is applied, as shown in Fig. 4. The alining-shaft 34 carries an alining-bar 37, the said alining-bar being attached to the alining-shaft by means of two arms 38, (best shown in Fig. 2,) the alining-bar being in advance of the said shaft, and preferably at the right-hand end of the alining-shaft 34 an elevating-arm 39 (see Figs. 2, 4, 5, and 6) is projected downward from the right-hand arm 38 of the alining-bar. The elevating or lifting arm 39 is curved downwardly and rearwardly and at its lower extremity is provided with a spring-controlled latch-arm 40, adapted for engagement with the pin 22, extending downward from the right-hand end of the locking-shaft 18, as clearly shown in Figs. 2, 4, 5, and 6.

In the forward bottom portion of the frame two cross-bars 41 are secured, being in horizontal alinement, and these cross-bars are adapted to support a carriage C, comprising two plates apertured to receive the said bars and having sliding movement thereon, as shown in Figs. 2, 4, 5, 6, and 7, and above and between the cross-bars 41 a third cross-bar 42 is secured in the frame.

The carriage C is provided with an upwardly-extending arm 43 at its rear end, (see Figs. 4, 5, and 6,) which arm is made to grip in the fashion of a clutch the sleeve 32 of the transmitting-wheel 31. A shaft 44 is journaled longitudinally in the carriage at or near its center, and upon this shaft a predetermined number of tens-carrying wheels C' are loosely mounted, being held in close contact with each other by means of sleeves or other spacing devices. The tens-carrying wheels are of peculiar construction, and one of them is shown in detail in Figs. 11 and 12. Each tens-carrying wheel is provided with ten teeth 45, and the spaces 46 between the teeth extend through from side to side of the wheel. The peripheral surface of each tens-carrying wheel, however, is in two planes, one plane or section 45^a being concaved at each tooth, and the lower plane or section 45^b is convexed at each tooth, as shown in positive lines in

Fig. 11 and in dotted lines in Fig. 12, for the purpose hereinafter set forth.

Any desired number of adding-heads D are mounted upon the upper cross-bar 42 of the frame, according to the number of columns to be added—that is to say, there is an adding-head for each column. Each adding-head consists of a group of wheels D', placed in close contact with each other, and upon the periphery of each adding-wheel, as heretofore stated, numbers are produced at regular intervals apart, ranging from "1" to "9," a "0" intervening between these two numbers, and, furthermore, each of the adding-wheels is provided with teeth 47, projected at one side beyond the periphery, and these teeth are placed between the numbers and are usually given a somewhat pointed shape, as clearly shown in Figs. 7 and 10, while upon the opposite side of the adding-wheel, at a predetermined point, a single tooth 48 is located, and the periphery of the wheel at each side of this tooth is depressed, as shown at 49 in Fig. 7.

Each of the tens-carrying wheels C' is in peripheral contact with two of the adding-wheels. One adding-wheel at the side to which the ten teeth are secured travels upon the convexed section or plane 45^b of the tens-carrying wheel, the teeth 47 of the adding-wheel entering the spaces 46 of the tens-carrying wheel, while the next adding-wheel will have its face carrying the single tooth 48 placed in contact with the face of its adjoining wheel having the multiple teeth attached, and the peripheral surface of the wheel presenting the single tooth will travel upon the concaved or higher plane surface 45^a of the tens-carrying wheel, and in operation, the grouping of the adding-wheels and tens-carrying wheels being carried out as above set forth, when the adding-wheel having its single tooth presented to the carrying-wheel C' has been rotated sufficiently to present the digit "9" to be read the next movement of this wheel will bring its single tooth into a space between the teeth of the tens-carrying wheel C' and rotate that wheel one point, and the tens-carrying wheel in its turn will communicate the same movement to the next adding-wheel whose multiple teeth are in mesh with it, thus carrying over the tens to the next wheel, causing the registry to be "10." The tens-carrying wheels actuate the adding-wheels only when a number is to be carried over from one wheel to another. Otherwise the adding-wheels are moved directly from the actuating-levers by the transmitting-wheel 31, meshing with the teeth of any one of the wheels.

The alining-bar 37 is elevated in a manner to be hereinafter described just prior to the action of each actuating-lever, permitting the adding-wheels to turn. At other times the alining-bar rests across all of the adding-heads D, between the teeth of the several

wheels D', as shown in Fig. 2, preserving the said teeth in proper alinement and preventing the possibility of the said wheels moving.

It is desirable and necessary at times to
 5 bring all of the adding-wheels in a position to present the ciphers thereon to be read. In fact, this is the initial position of the adding-wheels. This action may be accomplished in several ways, the preferred one being shown
 10 in Figs. 8 and 9, which consists in producing a longitudinal groove 51 in the cross-bar or shaft 42, on which the adding-heads are held to revolve, and inserting a key 52 in this groove, so that it will be flush with the outer
 15 surface of the said cross-bar. This cross-bar is loosely mounted. The key 52 is provided with a number of transverse channels 53, producing series of teeth 54, one of the said teeth being within the hub portion of each adding-
 20 wheel, and within the hub of each of said wheels a spur 55 is located, as shown in Fig. 10. The shaft or cross-bar 42 is provided with a series of circumferential grooves 42^a, an adding-wheel being over each of said grooves,
 25 the spurs of the said wheel moving loosely in said grooves. It is therefore evident that when the channels in the key coincide with the circumferential grooves in the shaft 42 the adding-wheels may turn freely; but when
 30 the key is pushed by hand or otherwise in such manner as to bring the teeth 54 in the grooves 42^a of the shaft 42 said teeth will intercept the spurs 55 of all the adding-wheels, and by turning the shaft through the medium
 35 of a hand-wheel 56 attached to it and the key all the adding-wheels will be so moved as to bring the "0" in each wheel in position to be read, the teeth of the key gathering the spurs of all the adding-wheels in the same line.
 40 In order to insure the proper alinement of the teeth in the adding-wheels when the carriage C is carried beneath them, a locking-bar 57 is usually placed on the right-hand side of the carriage C at the front, in which a
 45 channel 58 (see Figs. 4, 5, and 6) is made to receive the teeth of the said adding-wheels, the purpose of this locking-bar being to hold stationary all of the wheels not to be actively engaged. It is necessary also that the tens-
 50 carrying wheels C' should be kept in proper alinement while in transit to and from the adding-heads. To that end a guide-bar 59 is secured in the frame, passing through the rear portion of the carriage, and this guide-
 55 bar is fitted with a rib 60 longitudinally thereof, adapted to enter the spaces 46 between the teeth of the tens-carrying wheels C', it being understood that in rear of each of the adding-heads this rib is omitted to permit the
 60 tens-carrying wheels to rotate freely. It is further desirable that when the alining-bar 37 is lifted from the adding-heads only the adding wheel or wheels to be operated should be moved, as there is a possibility of an ad-
 65 joining wheel moving by frictional engagement. Therefore a retarding device 61 (see

Figs. 4, 5, and 6) is employed in the nature of a spring-comb, which is secured to the front portion of the frame, the teeth or tines of the comb extending over the wheels between the
 70 teeth thereof.

The carriage C is actuated directly from the carriage E of the type-writer E'. This uni-
 75 son of motion may be secured in various ways, the preferred way being illustrated in the drawings, which consists in attaching a cord
 or tape 62 (see Figs. 1 and 2) to, for exam-
 80 ple, the right-hand side of the carriage C, passing the same over a pulley 63 at the right-hand side of the frame, from whence this cord
 or tape may be conveyed to any form of take-
 up device, as, for example, a spring-drum 63^a,
 85 or a weight or its equivalent. A second cord or tape 64 is likewise attached to the carriage C, and is led therefrom in an opposite direc-
 90 tion from the tape 62, being likewise passed over a guide-wheel 65 or the equivalent thereof, and over other guides 66, if necessary, to a suitable attachment to the carriage E of the type-writer, as is fully illustrated in Fig. 1
 of the drawings. It will be understood that any desired number of adding-heads may be employed, and that any one of the heads may be brought into action, as required.

In the complete operation of the machine
 95 a numeral-scale X², representing the position of the members of the adding-heads, will be used auxiliary to the ordinary guide-scale X for the carriage of the type-writer, as shown
 100 in Fig. 13, so that the carriage may be slid to any point desired on the adding attachment necessary to bring the transmitting-wheel 31 in engagement with the teeth of any desired member of any particular adding-head. The carriage C of the tens-carrying wheels C' is
 105 provided with a pointer c for the said scale X², as best shown in Fig. 13. By reason of the cord attachment 64, connecting the carriage with one end of the type-writer carriage, the said cord will give more or less, and conse-
 110 quently the carriage C would not in some instances or at certain times move directly with the carriage of the type-writer. The scale X² will indicate any discrepancy, and by attaching the cord 64 to the carriage C by means
 115 of the adjustable collar or block c² the slack of the said cord may be taken up or paid out until the two scales register the same. The actuating-levers A having been carried beneath the numeral-keys E² of the type-writer
 120 E', as the various numeral-keys are struck to print the figures, motion is transferred from the numeral-keys to the actuating-levers and from the said levers to the power-transmitting shaft B of the attachment, as has heretofore
 125 been set forth. At each depression of each actuating-lever the alining-bar 37 will be lifted from the adding-heads, and the member of the head with which the transmitting-wheel 31 is in mesh will be rotated a number
 130 of points corresponding to the numeral on the type-writer key depressed; and, as has

been fully stated, when the count on one of the members or wheels of the adding-head has reached "9" motion will be communicated through the tens-carrying-over wheel C' beneath it in the carriage to the next adding-wheel, completing the registry; and the moment that the actuating-lever operated is released the alining-bar will be brought down into engagement with the adding-heads, alining or straightening out the teeth therein, and the carriage will be ready to assist in the next register or addition of the next figure to be printed. In this manner, after a full column of figures has been printed, either in a horizontal line or vertically disposed, immediately after the last figure has been transferred to the paper the aggregate or total sum of the column may be read at the top portion of the adding-head upon which the addition was made.

It will be understood that the tens-carrying-over wheels for each adding-head may be placed on stationary supports and the transmitting-wheel 31 only have movement to and from them and said heads.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the frame, the carriage, and the keys of a type-writer, of a frame secured to the type-writer frame, adding-wheels mounted in the frame, means for operating the said wheels from the keys of the type-writer, a movable support connected with the carriage of the type-writer and tens-carrying wheels mounted in the said support, substantially as described.

2. The combination with the frame, the carriage, and the keys of a type-writer, of a frame secured to the frame of the type-writer, adding-wheels mounted in the frame, means for operating the said wheels from the keys of the type-writer, a carriage mounted in the frame and connected with the operating mechanism of the adding-wheels and with the type-writer carriage, and tens-carrying wheels mounted in the said carriage, substantially as described.

3. The combination with the frame, the carriage, and the keys of a type-writer, of a frame secured to the type-writer frame, adding-wheels mounted in the frame, means for operating the wheels from the keys of the type-writer, a carriage carrying the transmitting-wheel of the operating mechanism and connected with the type-writer carriage, and tens-carrying wheels mounted in the said carriage, substantially as described.

4. The combination with the frame, the carriage, and the keys of a type-writer, of a frame secured to the type-writer frame, adding-wheels mounted in the frame, a carriage in the frame adjacent to the adding-wheels and connected with the type-writer carriage, tens-carrying wheels mounted in the said carriage, actuating-levers operated by the type-writer keys, and intermediate mechanism between

the actuating-levers and the adding-wheels for operating the latter, substantially as described.

5. The combination with the frame, the carriage, and the keys of a type-writer, of a frame secured to the type-writer frame, toothed adding-wheels mounted in the frame, a carriage in the frame adjacent to the adding-wheels, and connected with the type-writer carriage, tens-carrying wheels in the said carriage, a toothed transmitting-wheel carried by the carriage, actuating-levers operated by the keys of the type-writer, and intermediate mechanism between the actuating-levers and the transmitting-wheel, substantially as described.

6. In an adding attachment for typewriters, the combination with a supporting-frame, of toothed adding-wheels mounted in the frame, a sliding carriage, tens-carrying wheels mounted in the carriage, means for operating the adding-wheels, and a locking-bar carried by the carriage and engaging the teeth of the adding-wheels to hold them stationary, substantially as described.

7. In an adding attachment for typewriters, the combination with a supporting-frame, of adding-wheels mounted in the frame and provided with teeth, a sliding carriage, tens-carrying wheels mounted in the carriage, a locking-bar secured to the carriage and grooved to receive the teeth of the adding-wheels, a toothed transmitting-wheel movable with the carriage and meshing with the teeth of the adding-wheels, and means for operating the transmitting-wheel, substantially as described.

8. In an adding attachment for typewriters, the combination with a frame, adding-wheels therein, and means for operating the said wheels, of a sliding carriage, tens-carrying wheels mounted in the carriage and provided with teeth, and a guide-bar secured in the frame and provided with a rib adapted to enter the space between the teeth of the tens-wheels to hold the said wheels in alignment, substantially as described.

9. In an adding attachment for typewriters, the combination with adding-wheels provided with teeth, actuating-levers, and means for operating the adding-wheels from the actuating-levers, of a pivoted alining-bar engaging the adding-wheels between the teeth thereof and provided with a forwardly-projecting arm having a projection thereon, and a locking-shaft operated by the actuating-levers and provided with a projection for engaging the projection of the alining-bar, substantially as described.

10. In an adding attachment for typewriters, the combination with adding-wheels, actuating-levers, and means for operating the adding-wheels from the actuating-levers, of a pivoted alining-bar engaging the adding-wheels, and provided with a forwardly-projecting arm carrying a latch, a locking-shaft

provided with a pin with which the latch of the alining-arm engages, substantially as described.

11. In an adding attachment for type-writers, the combination with adding-wheels, actuating-levers, and means for operating the wheels from the actuating-levers, of a pivoted alining-bar engaging the adding-wheels and provided with a forwardly-projecting arm, a latch on said arm of the alining-bar, and a locking-shaft provided with a number of pins corresponding in number to the actuating-levers, and with a pin for engaging the latch of the arm of the alining-bar, substantially as described.

12. In an adding attachment for type-writers, the combination with adding-wheels, actuating-levers, and means for operating the adding-wheels from the actuating-levers, of a spring-actuated lock-shaft above the actuating-levers and provided with pins, one above each actuating-lever, and with a detent at one end, and a ratchet-wheel on the power-transmitting shaft of the operating mechanism, substantially as and for the purpose set forth.

13. In an adding attachment for type-writers, the combination with adding-wheels, actuating-levers, and means for operating the adding-wheels from the actuating-levers, of an alining-bar engaging the adding-wheels, a lock-shaft above the actuating-levers and operated thereby, means for operating the alining-bar from the lock-shaft, and a pawl-and-ratchet mechanism between the lock-shaft and the power-transmitting shaft of the operating mechanism, substantially as described.

14. In an adding attachment for type-writers, the combination with an actuating-lever having a toothed segment, of a power-transmitting shaft, a ratchet-wheel secured to the shaft, a pinion loose on the said shaft and provided with an arm, a double spring-actuated pawl pivoted on the arm of the pinion, and a stop-bar above the power-transmitting shaft and with which the pawl engages, substantially as and for the purpose specified.

15. In an adding attachment for type-

writers, the combination with a series of actuating-levers having toothed segments, of a power-transmitting shaft, ratchet-wheels secured to the shaft, pinions loose on the said shaft and each provided with an arm, a double spring-actuated pawl carried by the arm of each pinion, a stop-bar above the power-transmitting shaft and with which the pawls engage, a shaft above and in front of the stop-bar and provided with trip-fingers, and shoes pivoted on the trip-fingers, substantially as described.

16. In an adding attachment for type-writers, the combination of a shaft having endwise movement, actuating-levers mounted upon the shaft and movable therewith, and a plate having right-angled slots through which the actuating-levers project, whereby provision is made for moving the said levers out of registry or alinement with the keys of the type-writer and locking the same, substantially as described.

17. In an adding attachment for type-writers, the combination with a longitudinally-grooved shaft or rod provided with annular grooves, of adding-wheels mounted on the shaft or rod and each provided with a spur projecting into the hub, and a key fitting in the longitudinal groove of the shaft or rod and provided with teeth, substantially as and for the purpose set forth.

18. In an adding attachment for type-writers, the combination with a supporting-frame, a driven shaft mounted in the frame, and a transmitting toothed wheel mounted to slide on the said shaft, of a carriage provided with an arm engaging the hub of the transmitting-wheel, tens-carrying wheels mounted in the carriage and having teeth in two planes, one plane being concave and the other convex at the teeth, and adding-wheels mounted in the frame and provided with a plurality of teeth on one side and a single tooth on the opposite side, substantially as described.

JACOB C. WOLFE.

Witnesses:

J. FRED ACKER,
C. SEDGWICK.