

No. 682,137.

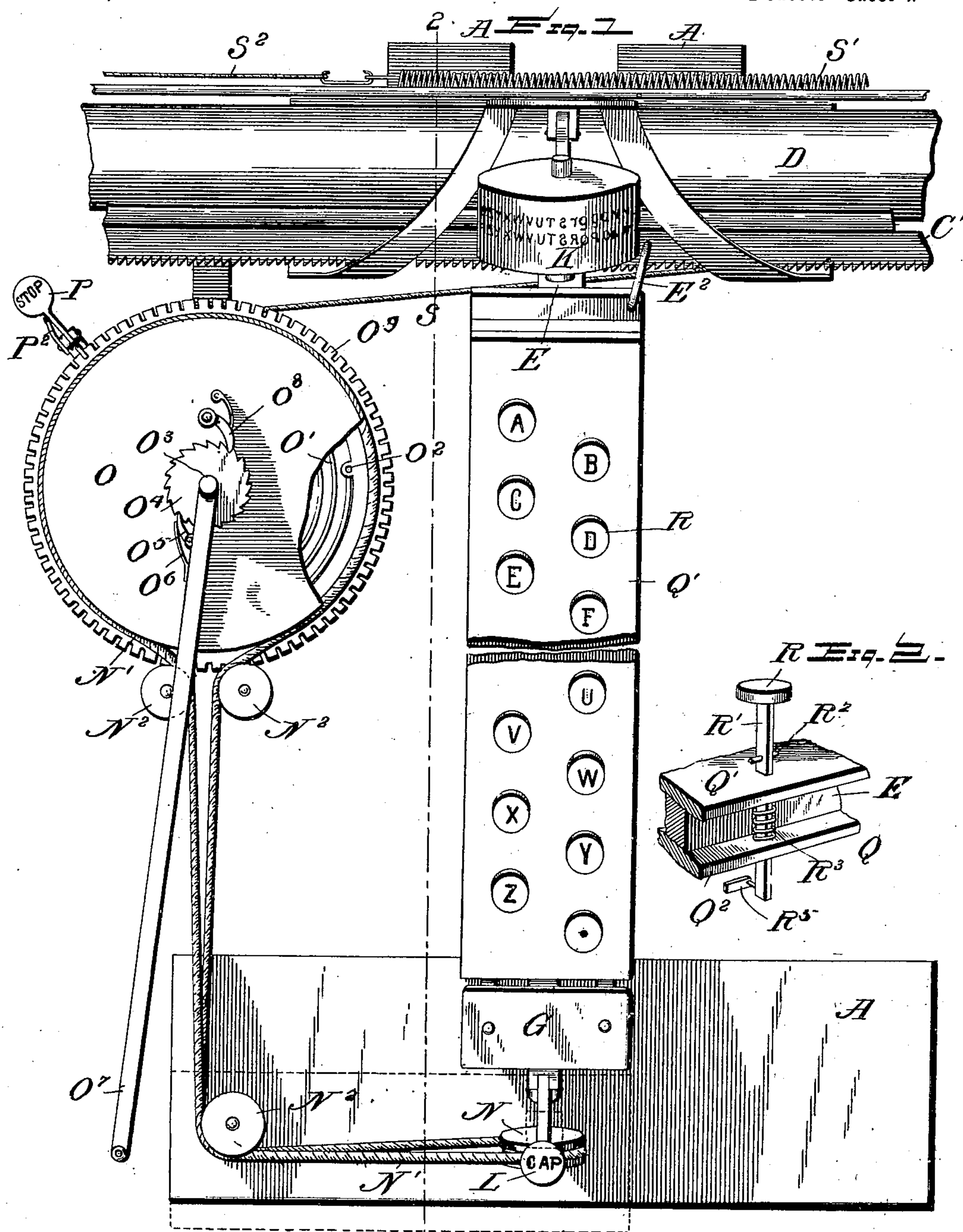
Patented Sept. 3, 1901.

A. C. FERGUSON.
PORTABLE TYPE WRITER.

(Application filed Nov. 22, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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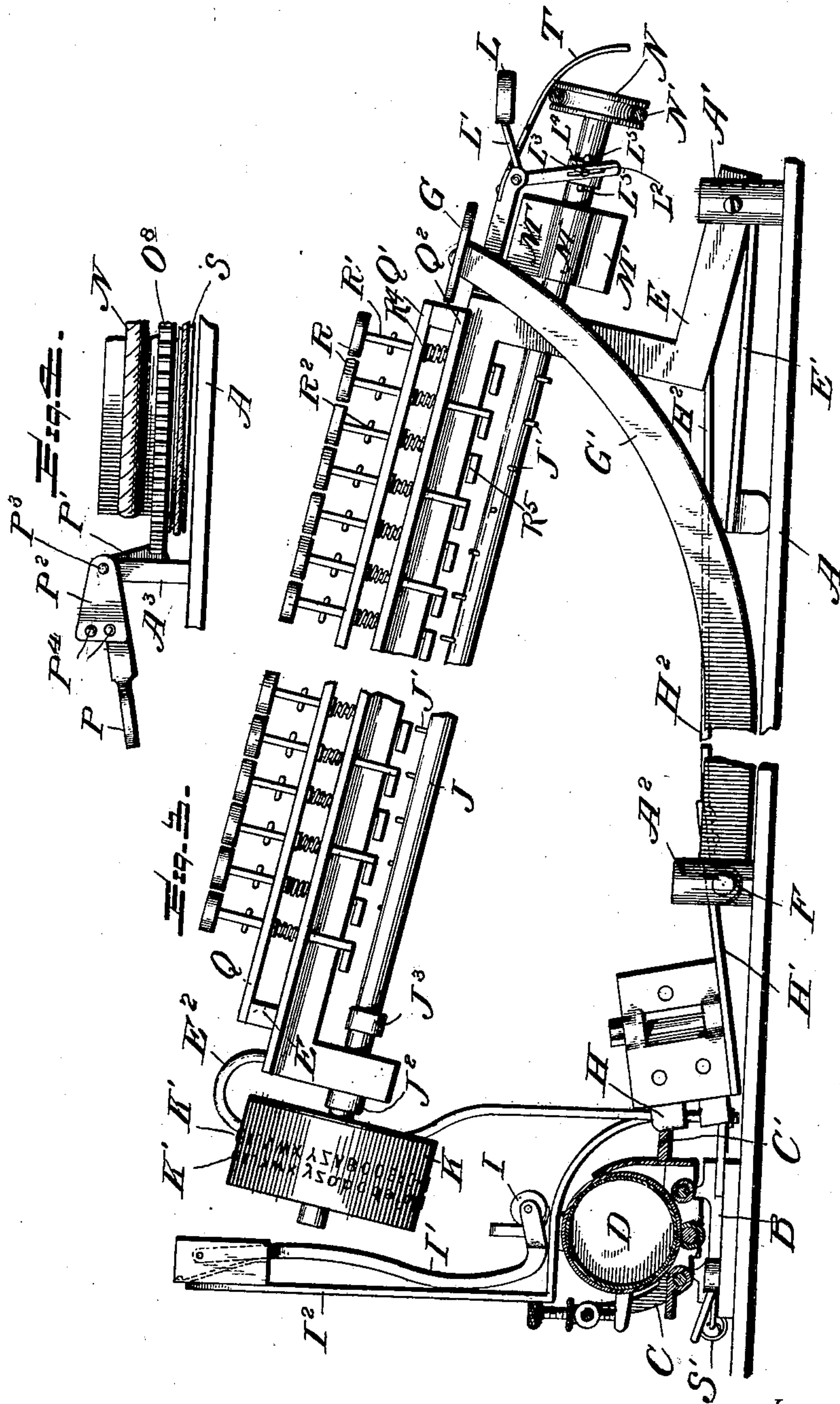
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UNITED STATES PATENT OFFICE.

ARTHUR C. FERGUSON, OF SARATOGA SPRINGS, NEW YORK.

PORTABLE TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 682,137, dated September 3, 1901.

Application filed November 22, 1900. Serial No. 37,370. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR C. FERGUSON, a citizen of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Portable Type-Writers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to type-writers, and among the objects in view are the construction of a practical useful machine of comparatively diminutive size convenient for use upon the lap of the operator or upon an arm of a chair or other temporary, ordinary, not special, nor necessarily-required support; the simplification and reduction of the number of the mechanical parts to the greatest extent possible without deterioration of practical usefulness and the production of printed matter of clearness of impression and uniform appearance; the provision of a motive power for doing the work of selecting and bringing to the printing-point a desired character, which work has heretofore been done in this class of type-writers by the depression of a key by the operator, and a means for reserving the said motive power at the will of the operator and adapting one set of keys to, in connection with a shiftable imprinting member carrying both upper and lower case type, select its character of either case.

Other and further advantages of the invention will appear in the following description and the novel features thereof will be particularly pointed out in the appended claims.

Referring to the drawings, Figure 1 is a diagrammatic plan, on an enlarged scale, of some of the principal elements of a type-writer embodying my invention. Fig. 2 is a perspective of a portion of the keyboard and one of the keys mounted therein. Fig. 3 is a side elevation with parts, including the paper-carriage and adjuncts, in section on the line 2 2 of Fig. 1; and Fig. 4 is an enlarged view of a part of the motor and a stop-key or latch for reserving the motive power.

Like letters refer to like parts in all the figures of the drawings.

This invention is illustrated as applied to that type of machine in which the printing characters are arranged upon a wheel or its

equivalent, together with means for rotating the same so as to bring a desired character to the printing-point and in which the keys at the keyboard serve the function of selecting the desired printing character. It is apparent, however, that the invention may be readily applied to type-writers of any desired class by persons skilled in the art.

A represents a base upon which the track B for the paper-carriage C and platen D, together with their adjuncts, may be mounted.

E represents a frame which is pivoted at one end in standard A', projecting from the base A. A spring E' is secured to the frame E and rests at its free end on the base A, so that when the frame E and the parts carried thereby are depressed the spring E' returns said frame to its normal position, which is determined by a stop E², projecting from the base or any relatively fixed part to and over or above the frame, as clearly shown.

In standards A², projecting from the base, there is mounted a rock-shaft F, carrying arms G' of a spacer-bar G and also carrying the escapement-dogs H, which cooperate with the rack-bar C' in the usual manner and are carried by a plate H', extending from the dogs to the rock-shaft F, to which it is secured. A spring H² extends from the plate H' to a point beneath the frame E, said spring being sufficiently rigid to oscillate the escapement-dogs when the frame E is depressed. It will be seen that the escapement is operated by a depression of either the space-bar G or of the frame E.

I is the inking-roller, carried by an arm I', pivoted in the standard I², projecting upwardly from the base or any other relatively fixed part of the type-writer. Any other desired form of inking mechanism may be employed, as my invention in this instance does not include the same nor the details hereinbefore described, these being shown simply to illustrate one form and arrangement of details to constitute a complete machine, as my invention in this instance has reference to portions of a machine which will be now more particularly described.

Within the frame E is mounted a shaft J, having thereon a series of pins or projections J', in numbers equaling the number of printing characters in one set K' on the periphery

of the wheel K. This shaft is provided with collars J^2 J^3 , which permit a longitudinal movement of the shaft to bring either one of the two sets K' of printing characters over the printing-point. This movement of the shaft is produced by the key L, which is mounted upon a bell-crank lever pivoted to a relatively fixed part and having one of its arms slotted, as at L^2 , to ride a pin L^3 , projecting from a collar L^4 , loosely fitted on the shaft J and prevented from longitudinal movement thereon by pin L^5 , as clearly shown in Fig. 3. As the shaft J during the operation of printing is to be continuously rotated by a suitable motive power extraneous to the operator, I provide a device for regulating the rotation of the shaft. In this instance I have shown a fan-governor M, having blades M' , which in the rotation of the shaft are opposed by the surrounding atmosphere, so that by properly proportioning the area of the blades to the force exerted by the motor a regularity in the rotation of the type-wheel shaft is secured. A pulley N is secured to the end of the shaft for the operation of a belt N' , which extends from the pulley around suitable guide-pulleys N^2 upon the base of the machine to the motor O. (See Fig. 1.) In the movement of the shaft J the belt N' oscillates from the pulley N^2 as a center, and thus prevents the formation of slack therein.

The motor comprises a cylindrical case containing a spring O' , one end of which is secured to the case, as at O^2 , and the other end is secured to a central spindle O^3 , upon which is mounted a ratchet O^4 , which is operated by a pawl O^5 , pressed by a spring O^6 , both mounted on a lever O^7 , one end of which is pivoted on the spindle O^3 and the other end of which projects to a point accessible to the operator. A detent O^8 is mounted upon the case of the motor and spring-pressed against the ratchet. Upon the periphery of the motor-case is mounted or arranged the belt N' . It is apparent that by winding the spring of the motor power will be provided which, through the medium of the belt, will rotate the type-wheel and its shaft. Now in order to reserve and economize the power of the motor during such intermissions as occur in the operation of printing I have provided a stop-key or latch P, which is adapted to throw or to be thrown into contact with the motor-case, so as to stop a rotation thereof when under the influence of the spring. By reference to Fig. 4 it will be seen that the stop-key comprises an angularly-shaped lever, one end P' of which is, by depressing the opposite end thereof, thrown into mesh with a series of slots or teeth O^9 , formed on the periphery of the motor-case. A spring P^2 is secured at the pivotal point P^3 of the stop-lever in the standard A^3 , projecting from the base A, and said spring has two struck-up indentations or projections P^4 , adapted to alternately enter a similar depression (not shown) formed in the edge of the stop key or lever, whereby said

lever is automatically maintained in contact with the motor-case or out of contact with the same when operated by the user for controlling the motor, as described.

Upon the top of the frame E is mounted the keyboard Q, which comprises an upper plate Q' and a lower plate Q^2 . These may be arranged wholly above the frame E or one above and the other below said frame, as shown by the modified form in Fig. 2. R represents one of the keys, and it comprises a head of usual construction bearing the character which is printed by the use of the key. In the stem R' of the key is a cross-pin R^2 , which limits the downward movement of the key, and between the plates of the keyboard there is a spring R^3 , which encircles the stem and bears at its upper end against a pin or washer R^4 , so as to normally hold the key in an elevated position. At the lower end of the stem the key is provided with a lateral extension R^5 , so that it may contact with a proper cooperating pin or projection J' of the type-wheel shaft J in either of its positions when printing lower-case or caps.

The power for moving the carriage during its step-by-step advancement may be provided by the motor O, in which case a cord S, (see Fig. 4,) extending to any desired point on the carriage C, is the preferable form, or said power may be provided by the usual well-known power-providing spring S' , Fig. 1, which by the cord S^2 , connected at a desirable point to the carriage, moves the latter during the operation of printing after the spring has been put under tension by drawing the carriage to the right in the ordinary well-known manner. A shield T, Fig. 3, and dotted line, Fig. 1, is provided to prevent contact of the hand of the operator with the pulleys and belt connecting the type-shaft with the motor.

The operation of the invention is clearly apparent from the foregoing description. When the operator desires to print, the stop-key is elevated, and the motor-spring having been wound up by the lever O^7 , which may be a simple crank, the motor, through the medium of the belt, rotates the type-shaft continuously, and the depression of a key at the keyboard stops the rotation of the shaft and of the type-wheel with the printing character of the wheel, which has been selected by the depression of the key, at the printing-point, and a further depression of the key and frame carrying the type-wheel brings the selected character upon the inking-wheel, which swings backward out of the way, and finally the selected character reaches the paper on the platen and the impression is made. Removal of pressure from the key permits the spring E' to return the frame, type-wheel, and the keyboard to their normal position. The distance of the type-wheel from the platen in Fig. 3 is greatly exaggerated for the purpose of clearness of illustration. In practice this distance is no greater than sufficient for the

interposition of a suitable inking mechanism, which may be any well-known form, such as an ink-ribbon.

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

1. In a type-writing machine, a type-wheel shaft mounted in a frame pivoted at one end and provided with a pulley thereon, a motor directly connected with said pulley, and a key adapted in its movement to engage and stop the rotation of said shaft and afterward move said frame and shaft downward toward a platen; substantially as specified.

2. In a type-writer, a type-wheel shaft provided with a driving-pulley and mounted in a frame pivoted at one end, a motor connected with said pulley to continuously rotate said shaft, and keys mounted in said frame and adapted to engage projections on the shaft to stop the rotation of said shaft and to depress said frame and shaft; substantially as specified.

3. In a type-writer, a type-wheel shaft provided with a driving-pulley and mounted in a frame pivoted at one end, a governor mounted upon said shaft, and a motor operatively connected to said shaft; substantially as specified.

4. In a type-writer, a type-wheel, a rotatably and longitudinally movable shaft carrying said wheel at one end thereof and mounted in a frame pivoted at one end, a pulley mounted at the pivoted end to continuously drive the shaft, means for moving the shaft longitudinally, a motor connected with said pulley, and a key adapted in its continued movement to stop the rotation of said shaft and depress said frame and shaft; substantially as specified.

5. A type-writer comprising a type-wheel, a shaft carrying said wheel mounted in a frame pivoted at one end and provided with a series of projections positioned upon the shaft with relation to the location of the characters on the type-wheel, and a series of keys adapted to be moved into contact with said projections; substantially as specified.

6. In a type-writer a type-wheel and its shaft mounted in a pivoted frame, a series of projections upon such shaft, and a series of keys carried by said frame and adapted to contact with said projections; substantially as specified.

7. In a type-writer comprising a type-wheel having a plurality of sets of printing characters and mounted upon a shaft carried by a pivoted frame and having a single series of projections disposed with relation to the position of the printing characters in each set thereof, means for moving said shaft longitudinally, means for rotating said shaft, and a series of keys each of which is adapted to contact with one of said projections in either

position of the shaft; substantially as specified.

8. In a type-writer, a type-wheel and its shaft mounted in a frame pivoted at one end, a pulley mounted in a type-wheel shaft at the pivoted end of the frame, a motor, flexible connections between the motor and the type-wheel shaft whereby the type-wheel may be continuously rotated regardless of its position and that of the pivoted frame, and a key traveling in the path of a projection from said shaft and adapted to depress the frame and shaft and hold said shaft against rotation; substantially as specified.

9. In a type-writer the combination with the type-wheel and its shaft, of a pulley mounted on said shaft, a motor having projections upon a rotating part, a belt extending from the motor to said pulley, and a pivoted key to engage said projections for stopping the motor; substantially as specified.

10. The combination with the type-wheel shaft of the type-writer and with a pulley fixed thereon, of a motor comprising spring-barrel and spring, a connecting-belt, suitable guide-pulleys, a stop-key adapted to contact with spring-barrel, and means for automatically retaining the stop-keys in and out of contact with the barrel; substantially as specified.

11. In a type-writer the combination with the type-wheel shaft having a pulley thereon, of a motor operatively connected with said pulley and with the carriage of the type-writer; substantially as specified.

12. The combination with the paper-carriage and type-wheel shaft of a type-writer, of a spring-motor, connections between the same and the carriage and type-wheel shaft, and a pivoted lever having ratchet connections with said motor and accessible to the operator for winding the spring of the motor; substantially as specified.

13. In a type-writer a pivoted frame, a type-wheel and its shaft mounted in said frame, and a keyboard comprising plates arranged above and below said frame, and keys operatively mounted in said plates; substantially as specified.

14. In a type-writer a pivoted frame, a type-wheel and its shaft mounted in said frame, for longitudinal movement and for rotation, a collar mounted rotatively on the shaft and fixed against longitudinal movement thereon, and a key mounted on the frame and adapted to move said collar; substantially as specified.

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

ARTHUR C. FERGUSON.

Witnesses:

ALFRED T. GAGE,
E. B. STOCKING.