

H. HILL.
TYPE CARRIER AND SELECTING MECHANISM.

APPLICATION FILED DEC. 16, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

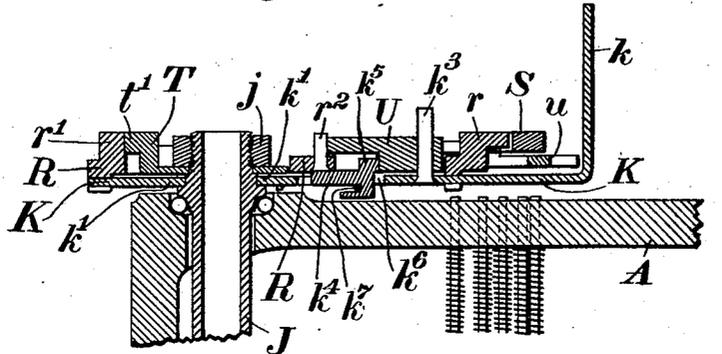


Fig. 2.

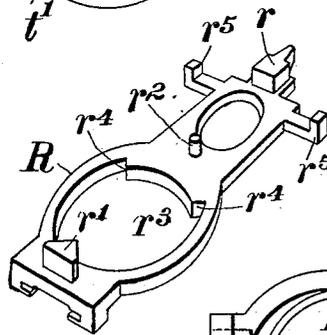
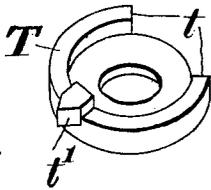


Fig. 3.

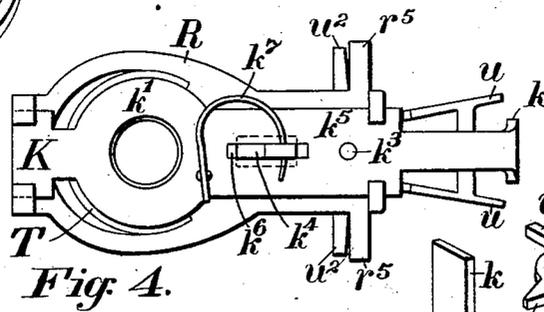
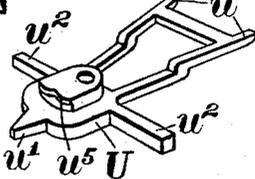


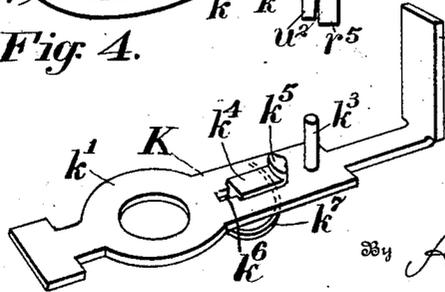
Fig. 4.

Fig. 5.



Witnesses
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Fig. 6.



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No. 728,711.

PATENTED MAY 19, 1903.

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3 SHEETS—SHEET 2.

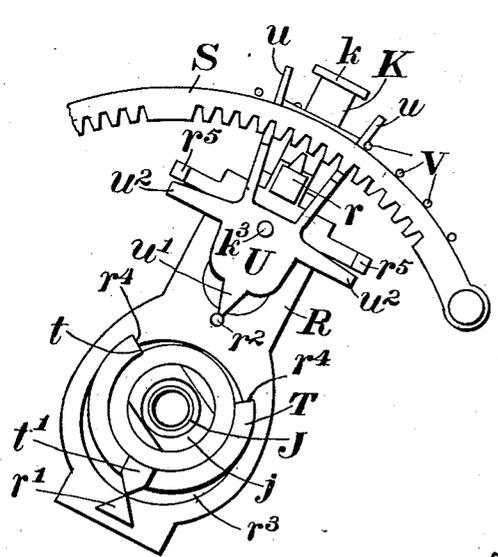
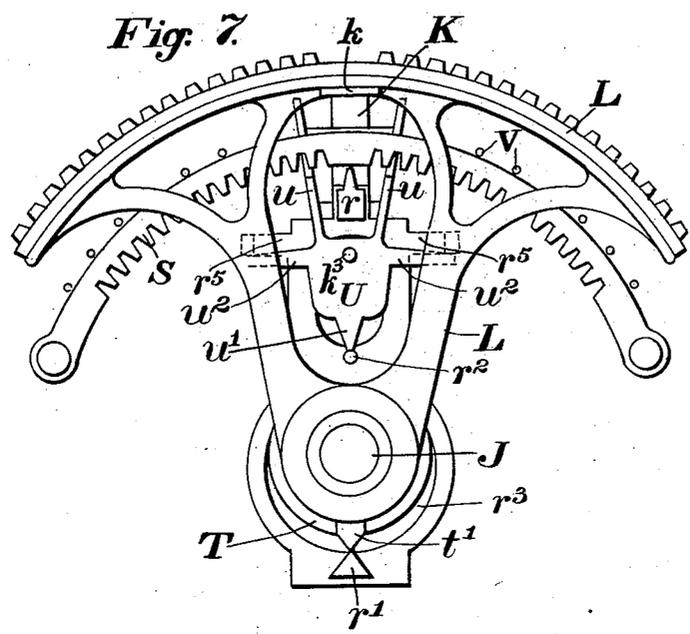


Fig. 8.

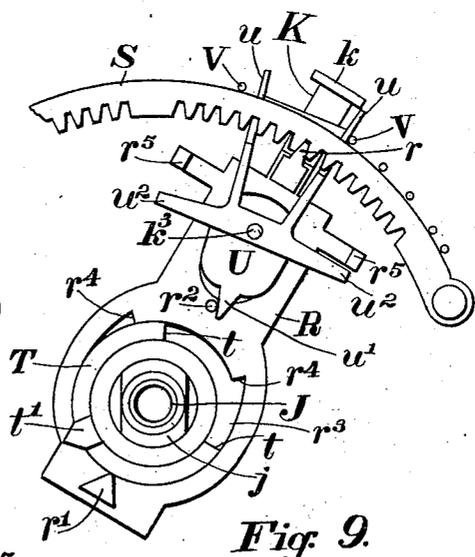


Fig. 9.

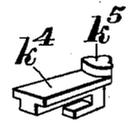


Fig. 10.

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3 SHEETS—SHEET 3.

Fig. 11.

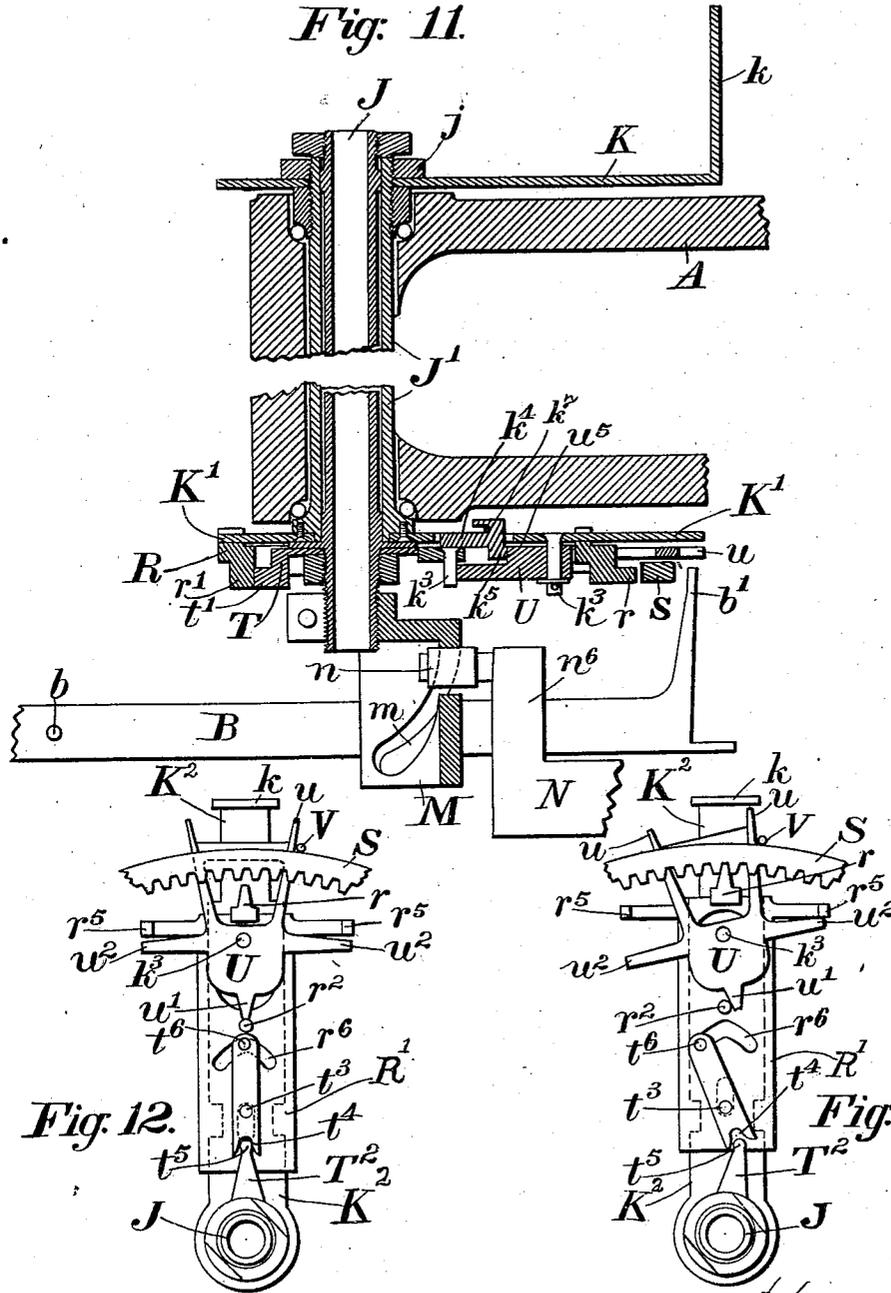


Fig. 12.

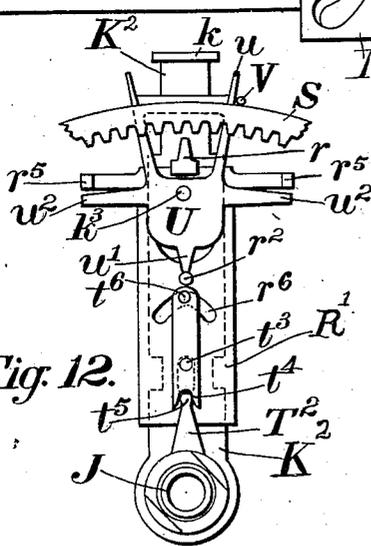
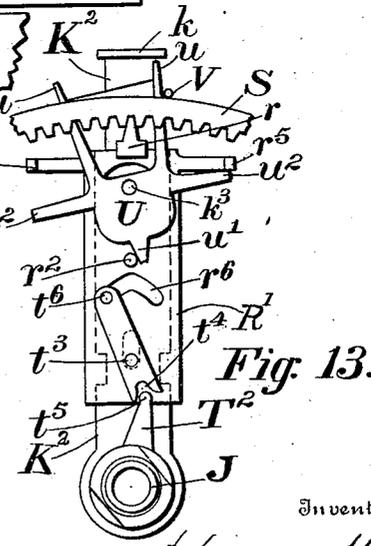


Fig. 13.



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By

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Attorneys

UNITED STATES PATENT OFFICE.

HERMANN HILL, OF SAVANNAH, GEORGIA, ASSIGNOR TO PRENDERGAST ELECTRIC TYPEWRITER COMPANY, A CORPORATION OF MAINE.

TYPE CARRIER AND SELECTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 728,711, dated May 19, 1903.

Application filed December 16, 1902. Serial No. 135,388. (No model.)

To all whom it may concern:

Be it known that I, HERMANN HILL, a subject of the Emperor of Austria-Hungary, residing in the city of Savannah, county of Chatham, State of Georgia, have invented certain new and useful Improvements in Type Carrier and Selecting Mechanism, of which the following is a specification.

My invention relates to type-writing machines, and more especially to the type carrier and selecting mechanism adapted for use in type-writing machines of the kind disclosed and claimed in the application of John S. Harrison and myself, filed April 12, 1902, Serial No. 102,592; and my objects are to improve the type carrier and selecting mechanism of such a machine, wherein the movable element has a constant travel, while that of the type-carrier is variable, and to provide improved means governed by the movements of the key-levers or keys for selecting the character to be printed and positively stopping and holding the type-carrier in proper position for printing such character.

With these objects in view my invention consists in the novel construction and details thereof, as hereinafter described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical section of a part of a type-writing machine, showing my invention applied thereto. Figs. 2 to 6 are detail views of separate parts of the selecting mechanism. Figs. 7 to 9 are top plan views showing the parts of the selecting mechanism in different positions. Fig. 10 is a detail view of one of the parts. Fig. 11 is a vertical section of a modification, and Figs. 12 and 13 are plan views of a further modification.

Referring to the drawings, in which the same reference characters relate to the same or corresponding parts in all the views, I have shown my invention as applied to a motor-operated type-writing machine, such as an electrically-operated machine, in which A is a part of the frame, and N is a movable element, and in this instance it is one arm of a lever connected to some movable part or element of the machine, which is intermittently operated and governed by the movement of

the keys, not deemed necessary to show and describe herein, as the same may be of any approved type, preferably such as shown in my application for patent for type-carrier-driving mechanism filed concurrently herewith or as shown in the joint-application of John S. Harrison and myself above mentioned. The selecting mechanism is so constructed that although the lever-arm N has a constant travel, and consequently the shaft J, to which rotary motion is imparted through the medium of a cam M, having a slot $m m^2$, in which a roller n on the upward extension n^6 travels, a variable travel is imparted to the type-carrier arm K and the latter stopped and held in proper printing position on one side or the other of a normal position of rest until the printing of the character selected by the key operated, when the said arm is released and returns to its normal position of rest. A guide n^9 on the frame engages the beveled edges n^8 of the extension n^5 as the latter moves upward. The arm K has a collar k' , loosely mounted on the shaft J, the type carrier or wheel L being confined to the post k , and slidably mounted on the arm K is a plate R, having at its rear end a dog r , adapted to engage the teeth of a rack S, fixed on the frame, and at its front end a beveled projection or boss r' , with its point in line with the center of the shaft J, a pin or projection r^2 , and the dog r . This plate has an elongated opening r^3 , in the rear wall of which are formed two abutments r^4 , which in the normal position of rest, Fig. 3, engage and hold the ends t of an interrupted collar T, rigidly fixed on the shaft J and bearing at the front side a projection t' , correspondingly beveled to the projection r' and adapted to bear against the point of the same when the parts are in normal position of rest. The abutments r^4 and the interrupted ends t of the collar T are inclined alike and at such an angle that swinging movement of the plate R to one side when released will disengage them and permit the collar T to continue its rotary motion with the shaft J and positively move the plate R rearward by engagement with the rear wall of the opening r^3 and cause the dog r to lock into one of the teeth of the rack S, as shown in Fig. 9. To lock the collar T and plate R

together, and hence the type-carriage arm K to said shaft, a tappet U is pivotally supported by a pin k^3 on the arm K, a beveled projection or boss u' on said tappet being adapted to engage the pin r^2 on the plate R when the parts are in normal position, as shown in Figs. 7 and 8, thus bringing the center of the shaft J, the contact-points between the projections or bars t' and r' , and pin r^2 and boss u' in a straight line and with the abutments r^4 and the ends t in engagement, so that in such position the collar T and the plate R are rigidly locked together, thereby locking the type-carrier arm to the shaft. When, however, the tappet U is oscillated, so as to disengage its boss u' from the pin r^2 , further motion of the shaft J will cause the collar T to disengage its ends t from the abutments r^4 , and bearing against the rear wall of the opening r^3 will positively move the plate R and dog r to locking position, as in Fig. 9. To effect this release from the collar T, the tappet U is provided with a tappet-arm u on each side of the machine and extending in line with the stop-pins V, each lifted by a key-lever B, and as the shaft J is rotated one of the tappet-arms u contacts with the stop-pin V corresponding to the key operated, thereby stopping the said arm, and as the shaft continues to move the tappet is swung, so as to free its boss u' from the pin r^2 , thus permitting the above-described movement of the dog r , thereby positively locking and holding the type-carrier in printing position. When the printing is done, the shaft J moving back to normal position causes the beveled boss t' to engage the boss r' and positively draw the plate R back to locked position, Fig. 7, the lateral arms u^2 , beveled as shown, engaging the lateral arms r^5 on the sliding plate R, so that as the plate moves the tappet is rocked on its pivot, and this rocking motion as the plate is drawn back to locking position brings the tappet toward its central position. To insure the accurate centering of the straight-line bearing-points above noted, a sliding plate k^4 , carrying a dog k^5 , Figs. 4, 6, and 12, moves in a slot k^6 on the arm K, the nose of said dog being adapted to enter a curved recess w^5 on the under side of the tappet U as the plate R is pulled toward normal position by the boss t' on the collar T, a spring k^7 pressing the plate k^4 rearward and causing the extreme point of the nose of the dog to seat itself in the central depression of the recess w^5 . A jam-nut j confines the collar T to the shaft J, and suitable ball-bearings for the shaft are used as shown. It is obvious that the pins V may be dispensed with by placing the selecting mechanism above described at the lower end of the shaft J, so that the key-levers B, which are pivoted at b , may serve as stops for the arms u , the latter being normally above said levers, but engaged by arms b' thereon as the shaft J rotates and brings the arm u into contact with the key-lever, which has been elevated

by the operation of the selected key, as shown in Fig. 11.

The locking devices of the selecting mechanism may be modified to advantage, as shown in Figs. 12 and 13, where the arm T^2 , corresponding to the collar T, is the member or element which is fixed to the shaft J, the arm K^2 being loose on the shaft J, as before, with the plate R' slidably mounted thereon, the connection between the plate R' and the arm T^2 being effected by a lever fulcrumed at t^3 upon the arm K^2 and having a forked end t^4 engaging a projection or pin t^5 on the arm T^2 , while its other end carries a pin or roller t^6 , engaging a double-inclined slot r^6 in the plate R' , the other parts being substantially the same as in the previously-described construction and lettered alike. When the pins r^2 t^5 t^6 and the center of the shaft J are in line, the parts are locked to the shaft, as in Fig. 12; but when the tappet U is operated the parts are released, and the dog r engages a tooth of the rack S, as before.

Instead of placing the locking devices of the selecting mechanism at the upper end of the shaft they may, as above indicated, be advantageously located at the lower end thereof, as shown in Fig. 11, where the parts are the same and designated by the same reference characters as in the construction shown in Figs. 1 to 9, with the exception that the arm K' is added to the shaft J, such arm being loosely mounted on the shaft by means of a sleeve J' , to which the arm K is likewise connected, so that both move together, in which case the projections b' on the key-levers B serve the same purpose as the stop-pins V, and thus actuates the locking devices, as before. There is no change in the construction of the other parts nor in their relation to the arm K' except their location on the under side thereof instead of the upper side.

I claim as my invention—

1. In a type-writing machine having operating-keys, the combination with a rotary shaft, a type carrier or wheel mounted on said shaft having a differential movement with respect thereto and having a normal position of rest, mechanism controlled by the keys for imparting rotary motion to said shaft to cause the type carrier or wheel to move to a printing position, a selecting device interposed between said mechanism and the type carrier or wheel controlled by the movement of the keys for positively stopping and holding the carrier or wheel at printing position, substantially as described.

2. In a type-writing machine having operating-keys, the combination with a rotary shaft, a type carrier or wheel mounted on said shaft and having a normal position of rest, mechanism controlled by the keys for imparting rotary motion to said shaft to cause the type carrier or wheel to move to a printing position, a selecting device interposed between said mechanism and the type carrier

or wheel controlled by the movement of the keys for positively stopping and holding the carrier or wheel at printing position, and means for releasing said carrier or wheel to permit it to return to its normal position at the completion of the printing operation, substantially as described.

3. In a type-writing machine, the combination of a type carrier or wheel having a variable travel, of operating mechanism having a constant travel for imparting motion to said carrier to move it to printing position, and selecting mechanism controlled by said operating mechanism for positively stopping and holding said carrier or wheel in different positions determined by the character selected for printing, substantially as described.

4. In a type-writing machine having key-levers, the combination with a type carrier or wheel having a variable travel from a normal position of rest, operating mechanism having a constant travel controlled by said key-levers, and selecting mechanism controlled by said keys operating mechanism for positively stopping and holding said carrier or wheel in different positions determined by the characters selected for printing in the operation of said key-levers, substantially as described.

5. In a type-writing machine having operating-keys, the combination of a type carrier or wheel having a variable travel from a normal position of rest, a movable element with constant travel, mechanism interposed between the movable element and the type carrier or wheel for imparting movement thereto, and selecting mechanism interposed between said mechanism and the type carrier or wheel for positively stopping and holding the latter in a printing position determined by the key which is operated and for releasing the said carrier or wheel upon the completion of the printing operation to permit it to return to normal position, substantially as described.

6. In a type-writing machine having operating-keys, the combination of a type carrier or wheel having a variable travel from a normal position of rest, a rotary shaft on which said carrier is mounted, means for holding said type carrier or wheel rigid with the shaft in the said-normal position, mechanism interposed between the keys and the shaft for imparting rotary motion thereto controlled by the movement of the said keys, selecting mechanism controlled by the movement of the keys interposed between the type-carrier and the shaft consisting of means for releasing the said carrier from the shaft in different positions, and means for stopping and holding the said carrier in such positions during printing, substantially as described.

7. In a type-writing machine having operating-keys, the combination of a type carrier or wheel having a variable travel from a normal position of rest, a rotary shaft on which said carrier is mounted, means for holding said type carrier or wheel rigid with the shaft

in the said normal position, mechanism interposed between the keys and the shaft for imparting rotary motion thereto controlled by the movement of the said keys, selecting mechanism controlled by the movement of the keys interposed between the type-carrier and the shaft consisting of means for releasing the said carrier from the shaft in different positions, means for stopping and holding the said carrier in such positions during printing, and means for releasing said carrier from printing position to permit it to return to normal position, substantially as described.

8. In a type-writing machine having operating-keys, the combination with a rotary shaft, of a type-carrier mounted thereon, means for locking the carrier to the shaft in its normal position of rest, mechanism controlled by the keys for imparting rotary motion to the shaft to move the type-carrier to printing position, selecting mechanism interposed between the shaft and the carrier controlled by the keys for releasing the carrier from the shaft and positively stopping and holding said carrier in printing position determined by the key operated, and means for releasing said carrier from printing position to permit it to return to normal position and for causing said locking means to lock the carrier to the shaft when it resumes its normal position of rest, substantially as described.

9. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an arm loosely mounted on the shaft, a plate slidably mounted on said arm having a projection thereon in line with the center of the shaft and carrying a dog or pawl, a fixed rack with which said dog is adapted to engage, a projection rigid and moving with the shaft, a tappet fulcrumed on the arm adapted to hold the sliding plate with its projection and the rigid projection on the shaft in alignment and contact to lock the arm to the shaft, arms on the tappet, and stop devices controlled by the key-levers adapted to engage the tappet-arms to cause the said tappet to release the arm from the shaft and permit it to move so as to cause its dog to lock into the rack, substantially as described.

10. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an arm loosely mounted thereon, a plate slidably mounted on said arm, a rigid projection on the shaft in line with its center, projections on the plate also in line with said center, one of which is adapted to engage the projection on the shaft when the projections are all in line, and a tappet device adapted to hold said plate with all of said projections in line, and devices between said tappet and the keys adapted to release the same from engagement, with means on the shaft for positively moving the plate and causing the same to be locked in printing position, substantially as described.

11. In a type-writing machine having op-

erating-keys, the combination with a rotary shaft, of an arm loosely mounted thereon, a plate slidably mounted on said arm provided with a dog, a rack with which said dog is adapted to engage, a fixed element on the shaft, a tappet device interposed between the arm and the sliding plate and adapted to lock the latter to the fixed element of the shaft, devices interposed between the keys and the tappet adapted to cause the latter to release the sliding plate from the shaft, and means between the fixed element and the sliding plate for positively moving the latter so as to cause its dog to engage the rack, substantially as described.

12. In a type-writing machine having operating-keys, the combination with a rotary shaft, of a selecting mechanism for stopping and holding the type-carrier in printing position comprising an arm loosely mounted on the shaft and with which the type-carrier is connected, a member fixed on the shaft, a member slidably mounted on said arm and having a locking-dog thereon, and mechanism interposed between the slidable member and the fixed member of the shaft for locking the two together when the type-carrier is in normal position of rest, and means controlled by the keys for releasing the two and causing the sliding member to move its dog into locking position, substantially as described.

13. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an arm loosely mounted on the shaft, a plate slidably mounted on said arm, devices for locking said plate to the shaft in the normal position of rest, arms extending from said plate, a tappet provided with lateral arms adapted to be engaged by said arms on the plate when the tappet is oscillated and devices on the tappet for holding the plate in locked position on the arm of the shaft, thereby locking the two together, whereby when the plate is moved to locking position its lateral arms will engage the lateral arms of the tappet to restore it to locking position, substantially as described.

14. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an arm loosely mounted on the shaft, a plate slidably mounted on said arm, devices for locking said plate to the shaft in the normal position of rest, arms extending from said plate, a tappet provided with lateral arms adapted to be engaged by said arms on the plate when the tappet is oscillated, devices on the tappet for holding the plate in locked

position on the arm of the shaft, thereby locking the two together, whereby when the plate is moved to locking position its lateral arms will engage the lateral arms of the tappet to restore it to locking position, and a dog on the loosely-mounted arm for engaging and centering said tappet when swinging toward its normal locking position, substantially as described.

15. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an arm loosely mounted on the shaft, a plate slidably mounted on said arm, devices for locking said plate to the shaft in the normal position of rest, arms extending from said plate, a tappet provided with lateral arms adapted to be engaged by said arms on the plate when the tappet is oscillated, devices on the tappet for holding the plate in locked position on the arm of the shaft, thereby locking the two together, whereby when the plate is moved to locking position its lateral arms will engage the lateral arms of the tappet to restore it to locking position, a dog slidably mounted on the loosely-mounted arm, and a recess on the tappet adapted to be engaged by the dog as the tappet is rocked toward locking position, substantially as described.

16. In a type-writing machine having operating-keys, the combination with a rotary shaft, of an interrupted collar fixed to the shaft having a beveled projection thereon in line with the axis of the shaft, an arm loosely mounted on the shaft, a plate having an elongated opening encircling the shaft slidably mounted on said arm and provided with a correspondingly-beveled projection, the point of which is adapted to engage the point of the projection on the collar, abutments in the elongated opening against which the ends of the collar bear when the two projections are in line with the axis of the shaft, devices interposed between the sliding plate and the arm controlled by the keys for disengaging the said projections and the collar to impart sliding movement to the plate, and a rack with which the end of the plate engages as it is moved forward by the collar in its continued rotary movement with the shaft, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN HILL.

Witnesses:

WALTER R. BEACH,
HUBERT HOWSON.