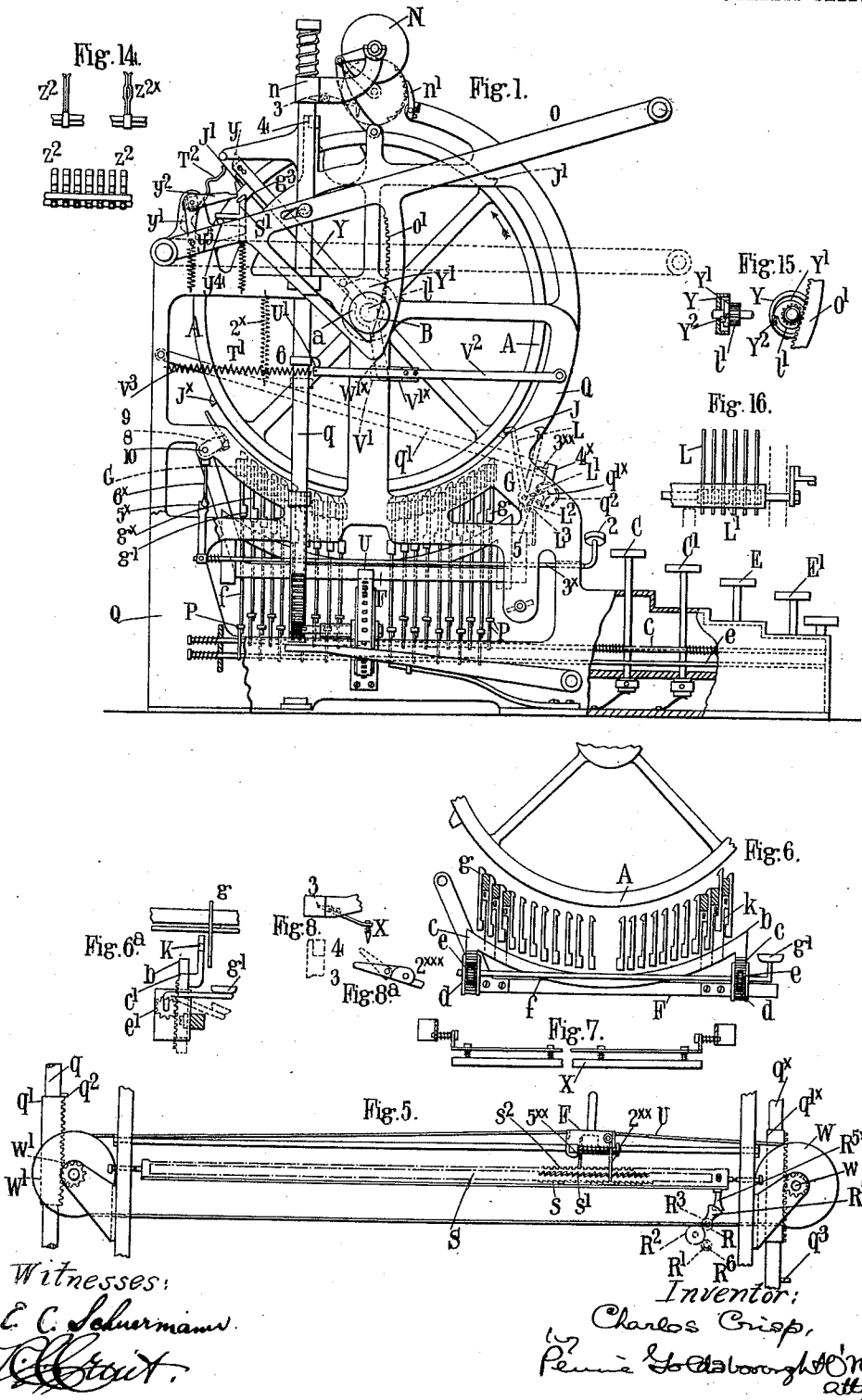


C. CRISP.
TYPE WRITING AND SIMILAR MACHINE.
APPLICATION FILED DEC. 24, 1909.

1,006,065.

Patented Oct. 17, 1911.

3 SHEETS—SHEET 1.

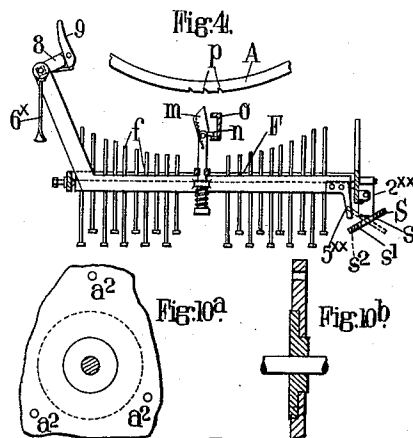
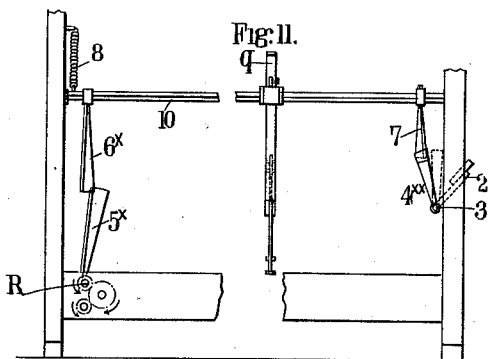
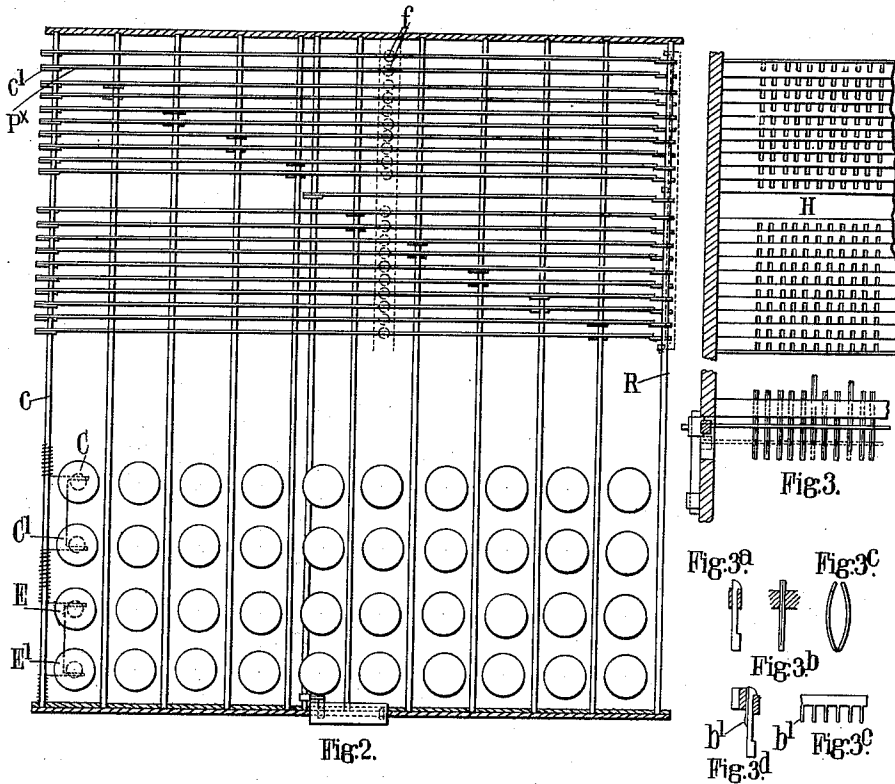


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3 SHEETS-SHEET 2.



Witnesses:
L. C. Schuermann.
C. Crisp.

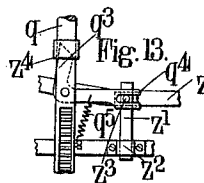
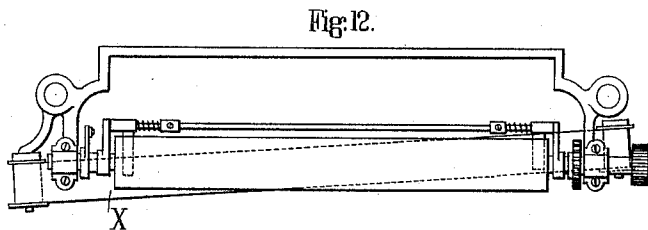
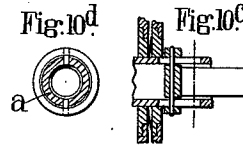
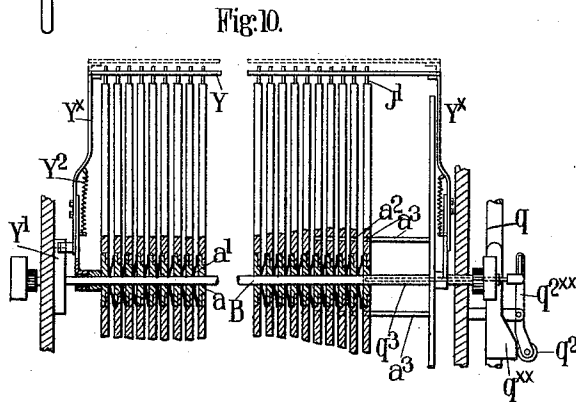
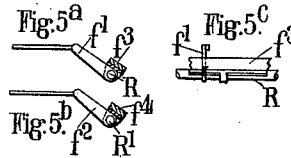
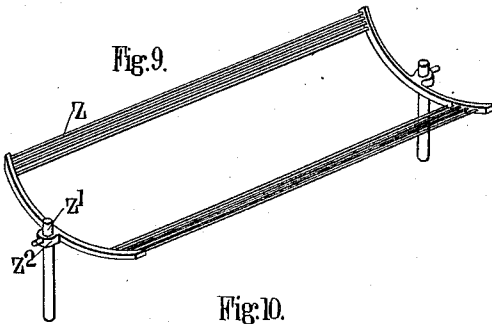
Inventor:
Charles Crisp,
by Pennell & Wright, Attys.

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3 SHEETS—SHEET 3.



Witnesses:
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Inventor:
Charles Crisp,
by *[Signature]* Attorney.

UNITED STATES PATENT OFFICE.

CHARLES CRISP, OF LONDON, ENGLAND.

TYPE-WRITING AND SIMILAR MACHINE.

1,006,065.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed December 24, 1909. Serial No. 534,761.

To all whom it may concern:

Be it known that I, CHARLES CRISP, a subject of the King of Great Britain, residing at 17 Throgmorton avenue, in the city and county of London, England, have invented certain new and useful Improvements in and Relating to Type-Writing and Similar Machines, of which the following is a specification.

This invention relates to typewriting, and similar machines, in which a series of type or character bearing wheels, disks or the like are arranged side by side and adapted to be successively operated so as to bring the desired letters or characters into alinement with each other and thus form a complete line of the desired length or number of words ready for being impressed or printed on to the paper or other surface intended to receive the impression.

According to this invention the various type or character bearing wheels are adapted to be successively displaced angularly about the spindle or shaft upon which they are mounted, the extent of the angular movement depending upon the particular type or character thereon that is required to be brought into position at the printing point; the operating keys being arranged in such a manner as to regulate the degree of the angular movement so as to correspond with such characters.

The type or character wheels are normally held against angular or rotatory movement by means of suitable catches or equivalent devices adapted for operation in such a manner that each type wheel may rotate in either direction, the said wheels being so balanced that in the event of a catch being merely withdrawn from contact therewith, each type wheel will tend to rotate in the one direction. The said wheels may however, be arranged so as to overbalance and so rotate in the other direction so that the degree of rotation and consequently the particular letter, figure, character, etc., is determined by means of stops arranged to operate in a quadrant like member situated preferably beneath and concentric with the row of type wheels. To this end, the aforesaid stops are arranged in such a manner that, upon being operated, they are caused to come into contact with projections formed or provided on the type or character wheels. The type wheels are each arranged opposite to and

preferably above a quadrant shaped carrier for the stops so that there are as many quadrants as there are type wheels.

There are a suitable number of universal bars extending the entire length of the machine and each universal bar can be operated by two keys.

Mounted with a capability of intermittent transverse motion is a traveling lug or carriage containing a series of pins or stops having a vertical displacement, the number of pins being equal to the number of universal bars. This carriage travels and comes to rest under each type wheel in succession. As the carriage travels under the type wheels, the pins are displaced upwardly upon the depression of the keys, whereupon the said pins come into contact with and force upward the stop in the aforementioned quadrant shaped carriers which are permanently under each type wheel, the said stops being retained in their upward position by friction.

The pins in the traveling carriage are loose and return to their lowest position immediately they have acted upon the stops.

Provision is made for returning the traveling carriage and type wheels to their normal or zero position after printing by means of spring or like devices and suitable means are arranged for justifying the spacing and correcting.

In order that the said invention may be clearly understood and readily carried into effect, I will proceed to describe the same more fully with reference to the accompanying drawings in which:—

Figure 1 is a sectional elevation of a type-writer embodying the features of my present invention. Fig. 2 is a sectional plan illustrating the arrangement of the keys and universal bars. Fig. 3 is a sectional plan in detail of the quadrant shaped carrier which constitutes the bed in which the vertically displaceable stops are mounted. Figs. 3^a and 3^b show in detail side and front elevation respectively, one of the stops mounted in its bed; Fig. 3^c shows in elevation a stop for use in connection therewith. Fig. 3^d shows an alternative form of stop and Fig. 3^e the comb-like device detached from the bed. Fig. 4 is a detached view in elevation illustrating the traveling carriage with its pins and correcting device. Fig. 5 is a sectional elevation showing the arrangements

for causing the traveling carriage to move intermittently and also the means for returning the said carriage to its initial position. Figs. 5^a, 5^b and 5^c are views illustrating in plan, elevation and section respectively the parts imparting movement to the traveling carriage. Fig. 6 is a transverse section of the correcting device hereinafter more fully described. Fig. 6^a is a side elevation thereof. Fig. 7 is a sectional elevation of the alinement knife. Figs. 8 and 8^a show details of mechanism in connection with the alinement knife. Fig. 9 is a perspective view of the grid for resetting the stops. Fig. 10 is a transverse section of means of spacing and justifying the type of characters; Figs. 10^a, 10^b, 10^c, 10^d, showing in detail the manner of mounting the type wheels on the spindle. Fig. 11 is a rear view of the device for imparting a forward rotation to the type wheels. Fig. 12 is a plan, of the roller and ribbon carrying device. Fig. 13 is an elevation of a part of the grid employed for resetting the stops. Fig. 14 shows the units of the comb for engaging with the aforesaid projections on the type wheels. Fig. 15 is a detail view of mechanism for effecting the resetting of the type wheels. Fig. 16 is a view showing the hooked arms whereby the type wheels are retained in their normal position.

A indicates one of a series of type wheels having the requisite type or characters arranged upon its periphery; the said wheel is mounted with the capability of rotating in either direction upon a boss or disk *a* which is keyed to the shaft or spindle B (Fig. 1).

C C', E E' represent one set of keys operating the rods *c c* respectively.

F represents the traveling carriage carrying the pins *f*; in the initial position, the ends of these pins *f* rest respectively upon the universal bars P.

G is the quadrant shaped device whereby the stops *g* are carried. The stops are preferably in the form shown in Fig. 3^c so that when pushed upward by any of the pins *f* they are frictionally held in position in the bed H. The friction may however be applied by a comb-like device *b'* (Figs. 3^d and 3^e) mounted at the back of each row of stops in such a manner that each tooth of the comb puts friction on the respective stop with which it is in contact.

J J' are projections on the type wheels A, J' being longer projections than those indicated at J.

K is the overbalancing weight which is mounted laterally with respect to a vertical line drawn through the axis of the wheel and L is a hooked arm pivoted at L', whereby the wheel is maintained in a position in readiness for operation.

q' is a rod pivoted at the rear of the side frame. This rod *q'* is normally held up by

a spring 2^x. The front end of the rod comes over a projection 3^{xx} formed on a lever 4^x which is mounted on a spindle *q'*^x to which is also attached a cylinder *q*². This cylinder has a segmental strip cut out from it, lengthwise, and in the space thus formed projecting arms 5 on the arms L enter.

6 is a projection on the rod *q* and on the downstroke of the lever O this projection pushes down the rod *q'* which turns the cylinder *q*² through engaging with the lever 4^x, and the top face of the segmental opening in the cylinder comes against the arms 5 and withdraws all the levers L from engagement (to allow for the return of the traveling carriage), on the upstroke the under face of the segmental opening comes in contact with the other side of the arms 5 resetting all the lever catches L ready to hold the type wheels which are now settling after being collected by the collecting frame Y. The return movement of the cylinder *q*² is effected by means of a suitable spring which tends to keep said cylinder in the normal position.

N is a printing roller which is adapted to carry the paper or the like in any convenient or well known manner, and which is operated so as to be brought down upon the type by means of the lever O.

Q is the frame in which the parts are mounted.

Assuming the machine to be provided with two keys adapted to select and bring four type units into position, the operation is as follows:—The aforesaid projections J J' on the type wheel A are arranged preferably at equal intervals and are disposed so that a short projection appears diametrically opposite a long one. Upon the depression of a key lever, say, for instance that indicated at C, an angular motion is imparted to the rod *c* thereby causing the universal bar P^x (Fig. 2) by means of the link *c'* to rise, in turn causing one of the pins *f* to lift and push up one of the stops *g*. Upon releasing the key C pin *f* previously pushed up returns to its normal position, but the stop *g* remains in its upward position. At the same time the traveling carriage F moves one step to the right as will be hereinafter explained and in so doing the projection L³ on the carriage comes into contact with the lower part L² of the hooked arm L thereby causing the same to withdraw from engagement with the type wheel and allow the latter to rotate due to the action of the weight K. The stop *g* is forced into such a position that it projects into the path of the projection J^x, when the wheel rotates, so that assuming the pin *f* to be pushed up so as to cause the stop *g*^x to enter the path of the type wheel which normally rotates in the direction of the arrow, the said type wheel will go on rotating

until the stop J comes into contact with the projected stop g^x whereby it will be arrested and be held in that position, a certain letter being thereby brought to the printing point. If the key C' be pressed, however, the fact of it having a thicker washer at its lower extremity than the key C will result in a shorter stroke and said key will thus impart less rotation to the rod c so that the stop g^x is not pushed up so far as in the previous case, and the projection J^x on the type wheel, when the latter rotates, clears the stop g^x , and so the type wheel rotates until it is arrested by one of the projections J' arriving in contact with the projected stop g^x . It will be thus understood that half the keys operate with a short stroke and half with a long stroke, so that each stop may be thrown upward in two different positions. This movement in conjunction with the mechanism for reversing the direction of rotation of the wheel, gives to each stop the capability of selecting four characters. The arrangement may also be such that other selections may be obtained by varying the number or lengths of the projections employed, and the movements imparted to the stops, the type wheel being adapted for movement in the one or the other direction; or the wheel may be adapted to operate in one direction only. This may be effected by constructing the projections on the type wheels of varying lengths, and by arranging the travel of the keys so as to give to the stops strokes of varying lengths corresponding to the varying lengths of the projections on the type wheels. It will be understood that the release of a key causes the traveling carriage to move on one step and this is effected by means of links f' (Figs. 5^a, 5^c) and f^2 (Fig. 5^b) which are connected to one end of the universal bars and loosely mounted upon the shafts R R', Fig. 5. Keyed to each of the shafts R R' is a strip of metal f^3 , f^4 along the whole length of which is fixed a strip of felt or other soft material. When the universal bars rise, the links f' and f^2 move angularly about the shafts R, R' and cause the strips of metal f^3 f^4 to impart an angular motion to the said shafts R R'. These shafts R R' carry toothed pinions R³, R⁴ which mesh with a toothed wheel R². The angular motion of shafts R, R' causes the twisted blade R⁵ keyed to the shaft R and set at an angle to its plane of motion, to impart a rocking movement to the rack S by engaging with the corresponding blade R^{5x} secured thereon.

In Fig. 4 the full line section of the rack S shows the latter in the normal position, and the dotted section in a rocked over position, which is the position chosen in Fig. 5. It will be observed that the rack S has three rows of teeth, two beveled rows s , s' cut therein, and half a tooth in advance

of each other and one row s^2 out on the inner outside face. 2^{xx} is a hinged double pawl which can engage with either row of inner teeth. When the inclined faced arms R⁵ and R^{5x} (Fig. 5), hereinbefore described, coöperate, the rack S is rocked over, and the inner row s of teeth with which the pawl 2^{xx} is in engagement (Fig. 4 full lines) leaves this side of the pawl, and the pawl moves forward the distance of one tooth engaging with the inner row s' . This movement takes place just after the catch 5^{xx} has engaged with one of the spaces of the row of teeth s^2 at the back of the rack (Fig. 4 dotted). While the rack is resuming its normal position the pawl 2^{xx} leaves the inner row s' and engages with one of the teeth of the row s one tooth in advance. Just before the rack has resumed its normal position the catch 5^{xx} comes out of engagement with the teeth s^2 at the back of the rack S thereby allowing the carriage F to travel forward under the action of the drum W. As explained above the carriage F is fed on by the rocking of the rack S and when the line of type has been set the rods q q^x are depressed by actuating the printing lever O. The rods q q^x are provided with toothed sleeves q' q'^x loosely mounted thereon which are actuated by projections q^2 q^3 respectively formed on the rods q , q^x . On the rods q , q^x being depressed the projection q^2 on the rod q' will engage with the sleeve q' (Fig. 5) and thereby rotate the drum W' in a counterclockwise direction owing to the teeth on said sleeve engaging with the pinion w' secured to said drum. The rotation of the drum W' will cause the band U to move in the corresponding direction and return the carriage F to its initial position. This movement of the band U will also rotate the drum W and in so doing will cause the sleeve q'^x on the rod q^x to descend owing to the rotation of the pinion w which engages with the teeth on the said sleeve. The drum W is provided with a torsion spring which on the upward movement of the rod q^x is wound up so as to be ready to actuate the carriage in the opposite direction during the subsequent operation of the machine. The movement of the traveling carriage one step onward causes the pins f to come under the next quadrant so that a fresh stop is raised and a fresh type wheel operated; as each key is pressed the series of type wheels or some of them are operated in sequence until the line of type or characters is complete. In order that when a type wheel is brought to rest by its stop it shall come to rest quickly and silently, the stops are formed as a split pin or equivalent frictional device so that the projections J J' are gradually brought to rest between the two portions of the stop. The positions of the parts of the device may be reversed,

i. e. the split portion may be on the type wheel and the unsplit portion formed by the stop. Assuming now that a line has been completed it is necessary to space the type wheels according to requirements and this is effected by means of the springs a' Fig. 10, disposed between each disk a . The last few of the series of disks have three holes a^2 in them, as shown in Fig. 10^a adapted to receive three corresponding pins a^3 . Thus if any of the wheels have not been operated, they may slide freely from left to right as required, presenting a blank at the printing point. The last wheel operated however occupies a position in which the holes in the disk a do not register with the pins a^3 and the lateral movement of the wheels is arrested at that particular wheel or disk, thereby insuring an even margin. The spacing is effected by the movement of the printing lever O which upon being depressed carries the rod q with it, the cam q^{xx} causing the roller q^{2x} on the spring controlled lever q^{2xx} to relatively ride upward and thence inward on the incline; the rod q^3 thereupon withdraws and allows the last wheel or disk to slide along the rods a^3 and shaft B . The printing operation takes place by pressing the lever O downward, this action first of all causes a knife-like or bladed device to descend on to the type wheels into grooves provided therein for the purpose, lightly engaging them so as to maintain the wheels in their correct position for printing. Referring to Figs. 1, 7, 8 and 8^a this is effected by a knife X , which comes between the type characters before and during printing and is instantly released at the beginning of the upward movement. This action is effected as follows:—Mounted between the platen supports (Figs. 1, 7 and 8) is a spring controlled knife X . One of the arms 2^{xxx} carrying the knife is extended into a pawl 3 (Fig. 8^a). On the frame Q a projection 4 is arranged. Upon the downstroke (of the rod q) the pawl 3 slips over the projection 4 (see Figs. 1 and 8) and the knife readily aligns the type wheels by engaging in the notches formed on their peripheries, but on the commencement of the upstroke the tail pawl 3 which is now beneath the projection 4 is held down, which has the immediate effect of throwing the knife X upward and leaving the wheels free for the collecting frame. Before the completion of the upstroke the tail pawl 3 passes above the projection 4. The printing roller is pulled down on to the type wheels by means of the rod q pertaining to the frame Q , the said rod carrying the brackets n whereby the roller N is supported. As soon as a line is printed the roller N rises but in so doing it makes a rotatory movement, the space of one tooth, as shown in dotted lines in Fig. 1; the said

roller carrying at each end a ratchet device which engages with the pawl n' carried by the frame Q . In rising the ratchet device is caught by the pawl n' and can only escape therefrom by rotating on its axis. As soon as the printing is effected, it is necessary to return the type wheels to their initial position in readiness for printing a fresh line, to be subsequently completed as hereinbefore described.

It is obvious that after a line has been set ready for printing the projections J' pertaining to each wheel will be in various positions about the latter, a collector Y is therefore provided having a small pinion l' at one end, see Fig. 1. When the printing lever O is depressed the rack O' causes the said pinion to rotate idly owing to the action of the snail cam Y' , Fig. 15, and pawl Y^2 , but when the lever O returns to its normal position, the pinion l' is locked in such a manner that it causes the collector Y to rotate around its axis in the direction of the arrow, Fig. 1. The front part of the collector is provided with a comb like device Z^2 Fig. 14 the teeth of which consist preferably of a number of split pins constructed in the manner shown in said figure, or in the form of bent or waved spring metal z^{2x} .

The operation of the collector is as follows:—When a line has been printed by the depression of the lever O the collecting device is actuated on the return movement of said lever. At the beginning of its rotation the collecting device Y drops to the bottom of the snail cam Y' under the influence of the spring Y^2 (Fig. 10) and as it rotates its outer bevel y comes against a lever y' (Fig. 1). This has on its spindle the catching lever y^2 and the comb device T^2 which may consist of a number of teeth similar to those described in connection with the collector. When the end y of the collector comes against the lever y' the horizontal arm y^2 is lowered and catches under the hook y^3 of the pawl S' thus holding down the comb device T^2 . In the course of the rotation of the collector the comb like device Z^2 (which when at rest is clear of the pins J') engages with the pins J' and carries the type wheels round, the pins wedging themselves between the adjacent faces of the split pins whereby they are held or where the teeth are in the form of the bent or waved spring metal Z^{2x} engaging with the face of such teeth and coming to rest in the recess provided by the waved form of the teeth. Toward the end of the upstroke the sides Y^x of the collector Y are expanded by means of the cam Y' and in expanding release the pins J' which are caught by the comb device T^2 which has been brought into position to receive them in the manner already described. When all the wheels are set to zero, or their normal

position, and when the catches L and the comb device T² are holding the wheels, a projection y⁴ on the lever O comes under a horizontal arm y⁵ of the pawl S' giving it an upward push, sufficient to release the hook y³ from the horizontal arm y². This causes the comb device T² to spring to the position shown on the drawings when the pins on the wheels can pass by, to their various set positions. The first downward movement of the rod q depresses the arm V' which is normally kept in position by the spring V³ thus freeing the arm W', which carries the flat spring V' between which and the arm V' the blade W'^x is wedged. Until the arm V' is depressed the collecting frame Y cannot rotate.

The projecting stops g are returned to their original position by means of the grid device Z (Fig. 9) through which the stops pass and in which they can move freely. The stops are operated by this grid, when moving downward by the lower shoulders g' shown on the stops in Fig. 1. This grid is provided with a rod Z' which is fixed to it. The rod Z' is free to move up and down in the socket Z² (Fig. 13). Pivoted to the rod q is an arm q³ the forked end q⁴ of which engages with a projection Z³ on the rod Z'. On the downward movement of the rod q the arm q³ and the grid device Z move downward in one piece until the arm q³ passes the projection Z⁴ (Fig. 13) mounted on the frame Q (Fig. 1). On the arm q³ passing the said projection Z⁴ the perpendicular part of the arm q³ swings outward and the downward movement of the grid Z ceases. This allows the rod q to further descend so as to allow the necessary length of stroke to be given to the other movements which require it, while the grid having done its work remains stationary. On the upward movement of the rod q the spring q⁵ pulls the arm q³ into the perpendicular again thus preventing it from fouling the projection Z⁴.

The change key mechanism is shown in Figs. 1 and 11, and consists of a key 2, rod 3^x, twisted arms or blades 4^{xx} and 5^x, twisted rocking dogs or blades 6^x and 7, spring 8 and pawl 9. In utilizing the change mechanism it will be remembered that the type wheel instead of falling in the direction of the arrow is caused to rotate in the other direction by a jerk or kick being imparted thereto. In the normal position of the change key 2, the arm 4^{xx} is in contact with the rocking dog 7 thereby keeping the arm 5^x out of contact with the rocking dog 6^x. Upon depressing the key 2 however the rocking dog 6^x is brought into contact with the arm 5^x by the influence of the spring 8. If while the change key is depressed any one of the ordinary operating keys is struck,

the rod R to which the arm 5^x is attached will be rotated and will engage with the rocking dog 6^x thereby imparting motion to the square shaft 10 causing the pawl 9 to move forward under the stop J^x. The pawl 9 by kicking against J^x causes the wheel A to rotate in the opposite direction when it is arrested by the stops as before described. The necessary kicking motion is obtained by the contact of the arm 5^x, with the rocking dog 6^x which is so bent that the arm 5^x is suddenly released from contact when the arm is at its limit of motion.

The traveling carriage F (Figs. 6 and 6^a) has connected thereto a second movable frame b provided with racked guide rods c. These rods slide in guides d fixed to the carriage: mounted between the guide plates are pinions e on a common spindle f which at one end is bent at right angles and provided with a button to form a shift key g'. The frame b carries for each of the split setting pins g an upright hooked arm k. Now when a line of type has been set and a mistake is observed, it is only necessary to bring the traveling carriage back to the position of the error and depress the key g'. This action draws down the frame b (by means of the pinions e and racked rods c) bringing with it a row of hooked upright arms k, one for every split pin g in the row. It is therefore assured that the pin g raised in error (whichever one it may be) is set back to its normal position and the tripping pawl m (Fig. 4) where it is shown in the lower position, rises with the frame b and its tail n engaged with the top ledge of the transverse bar o (Fig. 4) causing the nose of the pawl to come into engagement with one of the notches p formed in the freed wheel A and give said wheel a kick sending it back to its zero or unset position where it engages with the comb like device T² Fig. 1, which has been previously depressed by hand to receive the projection J' on the wheel. On the wheel being released from the comb like device it can be set by depressing the right key (c or c', e or e') into the required position bringing the correct unit of type on to the type line to replace the discovered incorrect one.

It will be understood that the pawl 9 moves with the traveling carriage F and comes to rest under each of the projections J^x as the carriage moves forward.

In order to obtain clear printing the inking or carbon ribbon X (Fig. 12) is arranged in such a position that a new surface is presented to each type character, and for this purpose the inking or carbon ribbon travels in a transverse direction, i. e. a direction not parallel with the direction of the printing line.

All the movements are more or less silent and the individual hammering of the type

on the platen roller incidental to typewriters as ordinarily constructed and worked is entirely dispensed with.

Although in the above description the invention is referred to as applied to a typewriting machine, it will be readily apparent that, by modifications which will in no way change the nature of the invention it can be employed with other apparatus so as to produce matrices in flong, plastic or semi plastic material from which castings may be obtained in metal, or other effects obtained for the purpose of reproduction, such as stencils perforated paper or other devices well known in the art.

The invention may also be employed in connection with electric telegraph and similar appliances, the keys being depressed by electrical means such as magnets or the like.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a typewriter or similar machine the combination of a plurality of type-bearing members, a plurality of type keys, means for imparting angular motion to each of said type bearing members in succession when a corresponding number of type-keys are depressed a change key mechanism for reversing the direction of motion of said type bearing members, means for arresting the movement of said members when the type or characters corresponding to the depressed keys are in the printing position, a printing roller and means for bringing said printing roller into contact with the type wheels for effecting the printing operation.

2. In a typewriter or similar machine the combination of a plurality of type bearing members, a plurality of type keys, means for retaining said members in the inoperative position, means for releasing and imparting angular movement to said type bearing members when the type keys are depressed, a change key mechanism for reversing the direction of motion of said type bearing members, a printing roller and means for bringing said printing roller into contact with the type wheels for effecting the printing operation.

3. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, means for retaining said members in the inoperative position, means for releasing and imparting angular motion to each of said type bearing members when a type key is depressed, a change key mechanism for reversing the direction of motion of said type bearing members, means for arresting the movement of the type bearing member when the type or character corresponding to the depressed key is in the printing position, and a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing.

4. In a typewriter or similar machine, the combination of a plurality of type-bearing members, a plurality of type keys, means for retaining said type bearing members in the inoperative position, a weight arranged on the periphery of each of said type bearing members and adapted to impart angular motion to said member when a type key is depressed, a change key mechanism for reversing the direction of motion of said type bearing members, means for arresting the movement of said type bearing members when the type or character corresponding to the depressed key is in the printing position, and a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing.

5. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, means for retaining said type bearing members in the inoperative position, a weight arranged on the periphery of each of said members and adapted to impart angular motion thereto when a type key is depressed, projections on said type bearing members, a quadrant-like member situated beneath the type bearing members, stops in said quadrant shaped member which are adapted to engage with the projections formed on said type bearing members, and a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing.

6. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, projections on said type bearing members, a quadrant like member situated beneath said members, stops in said quadrant shaped member, a plurality of universal bars extending the entire length of the machine and adapted to be operated by said type keys, a traveling carriage, means for imparting an intermittent transverse motion thereto, a plurality of stops in said traveling carriage, means for vertically displacing said stops so as to engage with and raise the stops in the said quadrant like member and arrest the type bearing members in the printing position, and a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing.

7. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, a change key, for retaining said members in the inoperative position, means for releasing and imparting angular movement to each of said type bearing members when the type and change keys are depressed, a quadrant-like member situated beneath the type bearing members, stops in said quadrant shaped member, a plurality of universal bars extending the entire length of the machine and

adapted to be operated by said type keys, a traveling carriage, means for imparting an intermittent transverse motion thereto, a plurality of stops in said traveling carriage, means for vertically displacing said stops so as to engage with and raise the stops in the quadrant-like member and arrest the type bearing members in the printing position, and a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing.

8. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, projections on said type bearing members, a quadrant-like member situated beneath said members, stops in said quadrant shaped member, a plurality of universal bars extending the entire length of the machine and adapted to be operated by said type keys, a traveling carriage, means for imparting an intermittent transverse motion thereto, a plurality of stops in said traveling carriage, means for vertically displacing said stops so as to engage with and raise the stops in the said quadrant-like member and arrest the type bearing members in the printing position, means for justifying the spacing and correcting the type, a printing roller which is adapted to be brought into engagement with said type bearing members to effect the printing and means for returning the traveling carriage and type wheels to their normal position after printing.

9. In a typewriter or similar machine, the combination of a plurality of type bearing members, a plurality of type keys, a change key, means for retaining said members in the inoperative position, means for releasing and imparting angular movement to said type bearing members when the type and change keys are depressed, a quadrant-like member situated beneath the type bearing members, stops in said quadrant shaped member, a plurality of universal bars extending the entire length of the machine

and adapted to be operated by said type keys, a traveling carriage, means for imparting an intermittent transverse motion thereto, a plurality of stops in said traveling carriage, means for vertically displacing said stops so as to engage with and raise the stops in the quadrant-like member and arrest the type bearing members in the printing position, means for justifying the spacing and correcting the type, a printing roller, means for moving said roller into contact with the type bearing members and means for returning the traveling carriage and type wheels to their normal position after printing.

10. In a typewriter or similar machine the combination of a plurality of type wheels, a plurality of type keys, weights arranged on the peripheries of said type wheels and adapted to impart angular motion thereto when the type keys are depressed, projections on said type wheels, a quadrant-like member situated beneath the type wheels, stops in said quadrant shaped member, a plurality of universal bars extending the entire length of the machine and adapted to be operated by said type keys, a traveling carriage, means for imparting an intermittent transverse motion thereto, a plurality of stops in said traveling carriage, means for vertically displacing said stops so as to engage with and raise the stops in the quadrant-like member and arrest the type wheels in the printing position, means for justifying the spacing and correcting the type, a printing roller, a lever for depressing said roller to engage with the type wheels and a blade device operatively connected to said lever and adapted to aline the type wheels before the printing is effected.

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

CHARLES CRISP.

Witnesses:

T. L. RAND,
R. WILLIAMS.