

1,127,487.

J. MOHR.
TYPE WRITER.
APPLICATION FILED JULY 13, 1912.

Patented Feb. 9, 1915.

4 SHEETS-SHEET 1.

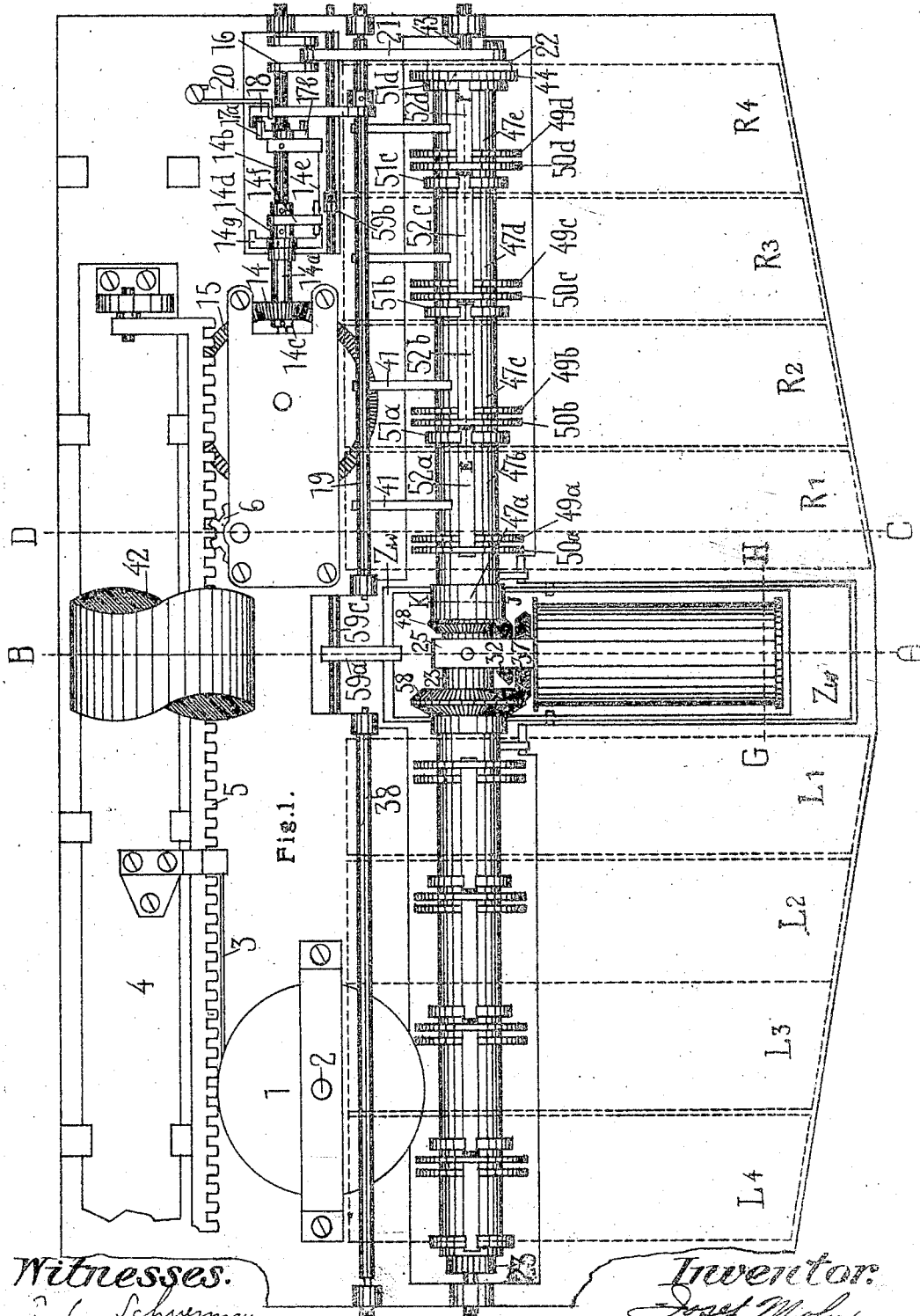


Fig. 1.

Witnesses.
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Inventor.
Josef Mohr
by
Kenna Goldsborough & Co.

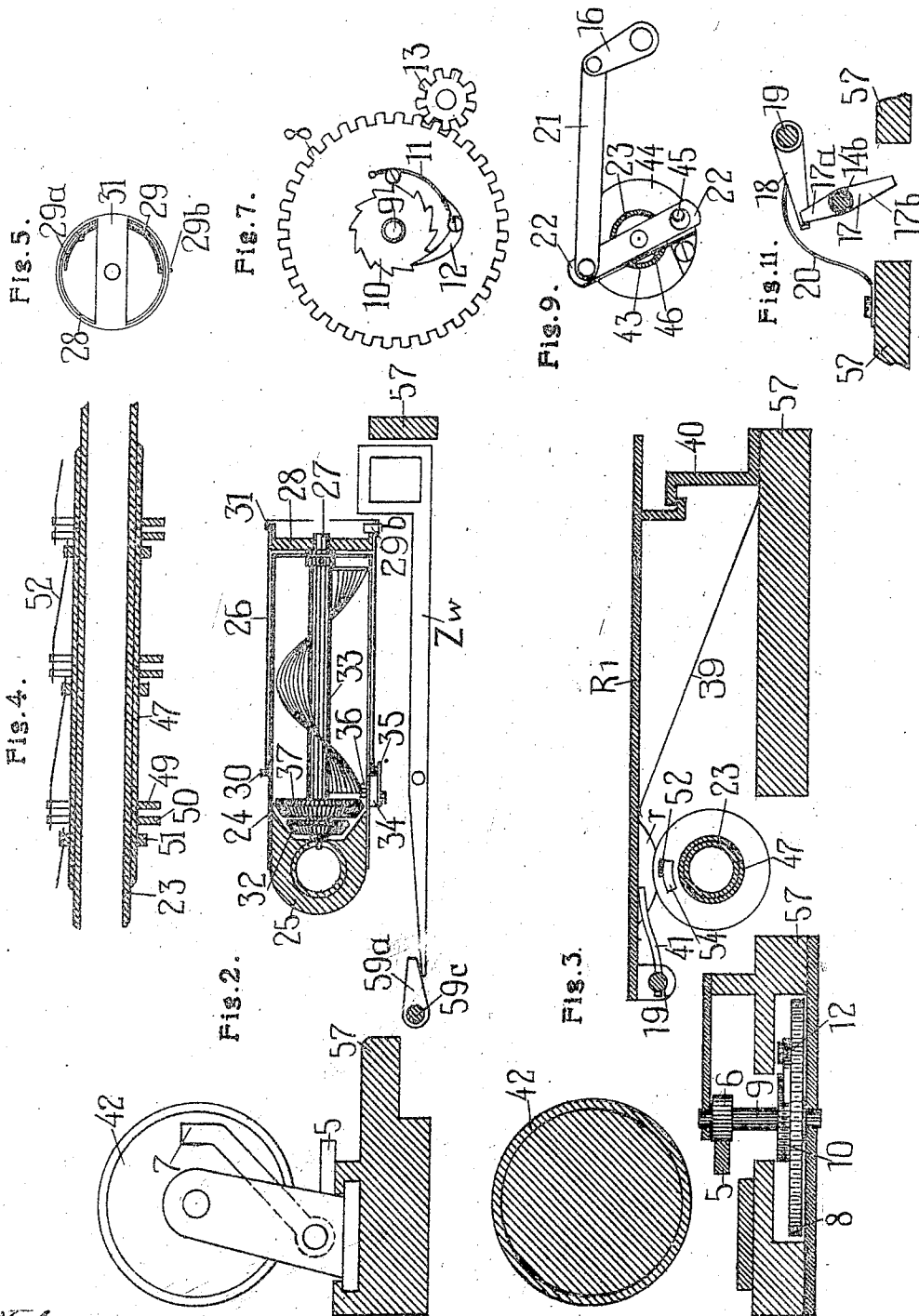
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4 SHEETS-SHEET 2.

1,127,487.



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4 SHEETS—SHEET 3.

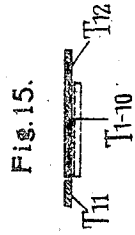
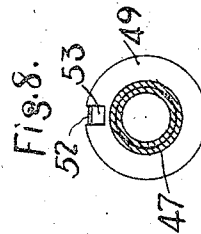
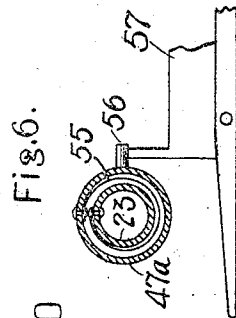


Fig. 15.



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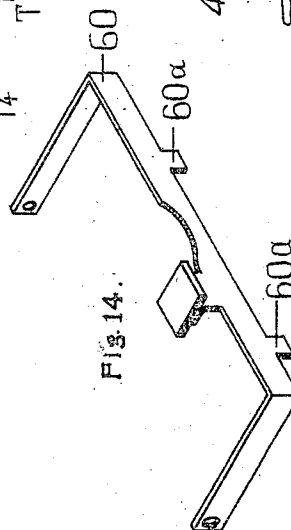


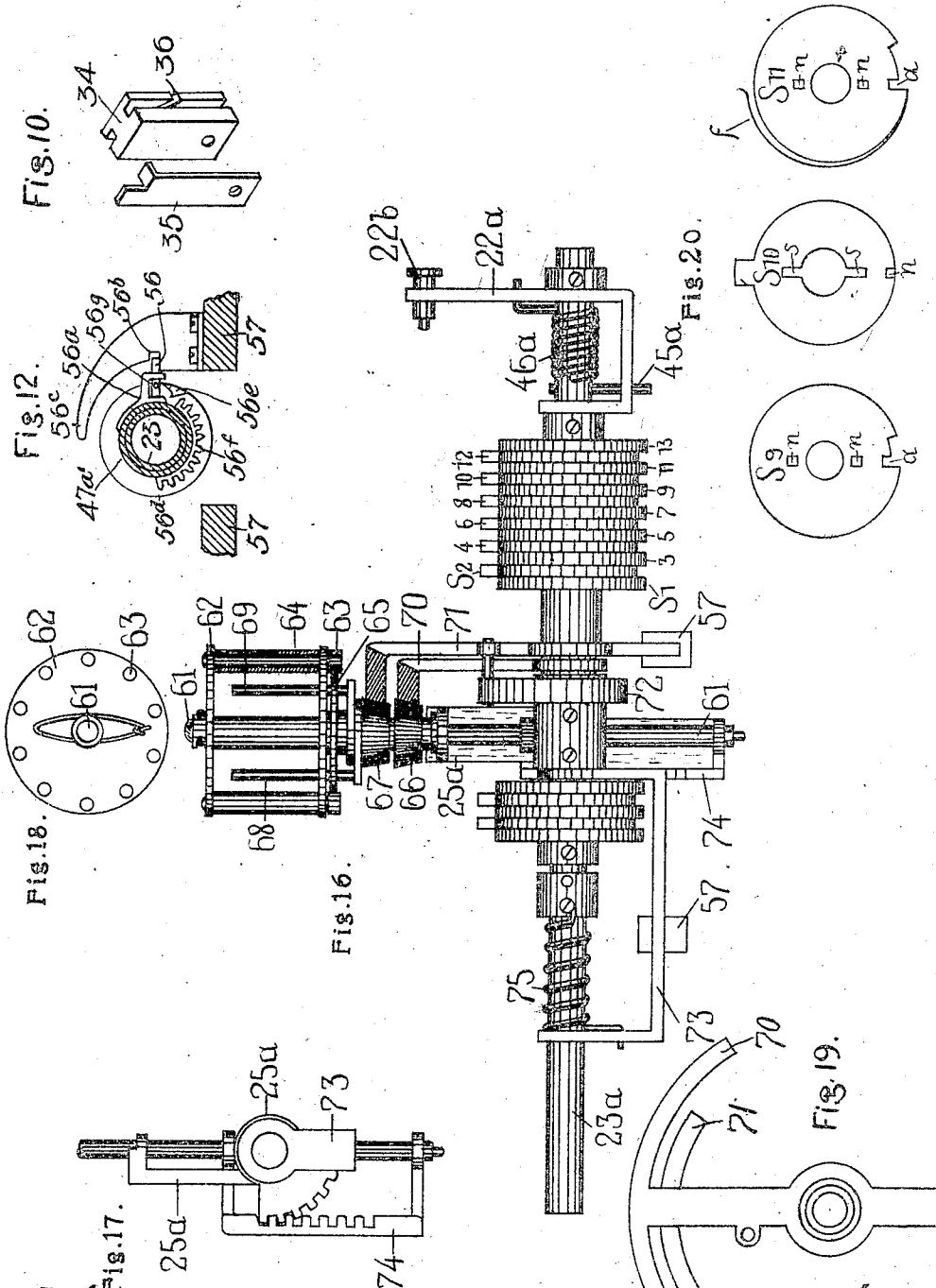
Fig. 14.

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4 SHEETS—SHEET 4.

1,127,487.



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UNITED STATES PATENT OFFICE.

JOSEF MOHR, OF ASCHAFFENBURG-ON-THE-MAIN, GERMANY.

TYPE-WRITER.

1,127,467.

Specification of Letters Patent.

Patented Feb. 9, 1915.

Application filed July 13, 1912. Serial No. 709,191.

To all whom it may concern:

Be it known that I, JOSEF MOHR, doctor of jurisprudence, a citizen of the German Empire, officer of state, and resident of Aschaffenburg-on-the-Main, in the Kingdom of Bavaria, Germany, with the post-office address Leinwanderstrasse 2, have invented new and useful Improvements in Type-Writers, of which the following is a specification.

In contradistinction to writing with a pen ordinary typewriters lend themselves far less easily to the setting down of ideas than for copying or writing from dictation, because it is not possible with them to write so mechanically and unconsciously as with the pen. The writing itself requires too much attention.

It is the object of the present invention to set aside this defect.

The mechanical use of the typewriter necessitates above everything else the elimination of sight and this again necessitates the shortest possible path for the fingers in striking the keys. For shortening this path the present invention provides two different means which, however, are in close relationship with each other, namely the automatic operation of the machine by means of a spring and the reduction of the number of keys, while retaining the usual arrangement of three series of main keys and two shift keys. As the keys for releasing the driving spring have only a very short stroke they may be arranged in one plane. The stepped arrangement of the keys, as known, is not necessary with machines which are electrically driven. It need not be explained that the same purpose may be achieved much more advantageously in a purely mechanical manner. The number of keys is diminished by providing only ten main keys in one row, and in front of and behind these two new shift keys which extend the whole row of the main keys in the form of rails and adapted to be depressed together with the latter by means of the same fingers; these shift keys may be conveniently termed "additional keys". In order to operate these additional keys it is only necessary to shift the finger beyond the front or rear end of the main keys. The fingers need not be raised from the keys because these are not struck but need only be pressed. The arrangement of the shift keys as additional keys necessitates no absolute movements of

the type carriers but only relative movements thereof. For the sake of unity of construction the main keys are similarly arranged.

The fundamental idea of the construction is as follows:—

The paper carriage moved by a spring drives by means of a toothed rack a transmission gear, which rocks by means of a crank a horizontal shaft situated in front of the paper carriage. An arm arranged on this shaft at right angles thereto carries a type cylinder, adapted to rotate and to move axially. This cylinder is pushed against the paper carriage by the rocking motion of the main shaft, the movement being checked by a stop which can be removed only by the rotation and axial movement of the type cylinder. As soon as the desired type has been brought into position the stop shares the oscillation of the main shaft by becoming automatically coupled therewith. In this manner the rotation and axial movement of the type cylinder are checked. The keys have only to unlock the alternate locking of the driving gear and to set the stop for the desired rotation and axial movement of the type cylinder. For the latter purpose several stops of various sizes are provided for the rotation and axial movement of the type cylinder, which stops can be shifted singly or in any combination by means of keys. These keys are actuated either directly by the fingers or through lever frames which extend over them and carry with them the desired types.

The details are further explained with reference to the accompanying drawings.

Figure 1 is a plan of the main parts of the machine. Fig. 2 is a section on line A—B of Fig. 1. Fig. 3 is a section on line C—D of Fig. 1. Fig. 4 is a section on line E—F of Fig. 1. Fig. 5 is a section on line G—H of Fig. 1. Fig. 6 is a section on line J—K of Fig. 1. Figs. 7 to 12 show views of various details. Fig. 13 is a plan showing the arrangement of the keys. Fig. 14 is a detail view of a lever frame. Fig. 15 is a section through the keys. Fig. 16 is a separate view of the type cylinder with the shifting devices therefor. Figs. 17 to 20 show detail views of the type cylinder.

The paper carriage 4 is drawn to the left by a spiral spring situated in the casing 1 and fixed on the one hand to axle 2 and on the other hand to the casing. The steel

band 3 transmits the pull of the spring. As the paper carriage moves the rack 5 turns the pinion 6. The rack and pinion can be disengaged by a bent lever 7 (Fig. 2). The pinion 6 is mounted on the rotary sleeve 9, as also is the ratchet wheel 10, which, when the paper carriage is drawn to the left by the spring drive, is coupled by the pawl 12, under action of the spring 11, (Fig. 7) with the toothed wheel 8 mounted on the same axle. The toothed wheel 8 engages a pinion 13, Fig. 7, on the spindle of which is mounted a beveled wheel 15 in gear with the bevel wheel 14 (Fig. 1). The spindle of 14 carries the crank 16 (Figs. 1 and 9) and the double ended arm 17 (Figs. 1 and 11), the ends of which are bent as at 17^a, 17^b. The bend 17^a lies nearer the axis than the hook 17^b. These hooked ends form with the pawl 18, mounted on the shaft 19 and under the influence of the spring 20, an alternate locking for the driving mechanism. The crank 16 is connected by the rod 21 (Figs. 1 and 9) with the lever arm 22, which in its turn is connected with the main shaft 23 in a manner presently to be described. On this main shaft 23 is fixed a projection 25 carrying a tube 24 (Figs. 1 and 2). On the tube 24 (Fig. 2) is the type roller 26 mounted to turn and slide axially thereon. In the projection 25 and the closed end of the tube 24 is journaled the shaft 27, which carries the roller shaped hammer head 28. Over this and the tube 24 is pushed the type roller. The hammer head is turned out on one face and in the recess thus formed is riveted the end 29^a of the spring 29 (Figs. 2 and 5), the other end 29^b is bent and passes through the wall of the recess and through a slot in the wall of the type roller situated between two columns of type. The type roller is in this manner moved with the hammer head when this is turned, but at the same time may be shifted longitudinally. The type roller has at the other end a closing ring 30 and at the hammer end a cover 31. On the shaft 27 is mounted a bevel wheel 32 (Figs. 1 and 2). Moreover there is journaled on the shaft a hollow shaft 33 (Fig. 2) which is provided with a screw thread. In a longitudinal slot of the tube 24 there is a small slide 34; the spring 35 fixed by a screw to this slide is bent over the closing ring 30. The slide has at its inner side a projection with a groove 36 in which the screwed thread of the shaft 33 engages. In Fig. 10 the slide is shown drawn to an enlarged scale. When the shaft 33 is turned the slide is moved and with it the type roller. Shaft 33 is rotated by means of the bevel wheel 37 mounted on it.

The levers R' to R⁴ (Figs. 1 and 3) are journaled on the shaft 19 and are pressed by springs 39, Fig. 3, against stops 40. Keys L' to L⁴ are journaled on the shaft 38 and

may be pressed by similar springs against stops like those shown in Fig. 3 for keys R' to R⁴. The keys are shown in Fig. 1 in dotted lines and may be regarded as transparent. The levers R' to R⁴ move with them through pins 41 (Figs. 1 and 3) the shaft 19 and therewith the pawl 18 when they are depressed. In this manner the end 17^a of the arm 17 is unlocked (Figs. 1 and 11) whereupon the crank performs half a revolution and the type cylinder is struck against the paper roller 42. However, before the type cylinder comes in contact with the paper roller, the pawl 18 engages the other end 17^b of the arm 17. In this manner the paper carriage is brought to rest. The lever 22 is adapted to turn on the journal 43 (Figs. 1 and 9) of the shaft 23. The disk 44 mounted on the latter has a pin 45 which lies in a recess of the lever 22, which therefore has a small play. The spring 46 presses the lever against the pin 45. This device permits the type roller, in consequence of its momentum, to strike the paper when the carriage is at rest and lifts the roller from the paper again. When the keys R'—R⁴ return to the position of rest the second end 17^b of arm 17 is liberated again, whereupon the driving gear and the paper carriage continue to move until they are again locked by the end 17^a of the arm 17. At the same time the further rotation of the crank brings the type roller back into the normal position.

On the type cylinder the characters are arranged in rows and columns, for instance in 9 rows and 10 columns. The type cylinder is rotated in the following manner:—Under the keys R'—R⁴ there are five sleeves 47^a—47^e mounted on the shaft 23. The extreme right hand sleeve 47^e is fixed to the shaft 23, the rest are rotatable thereon. The extreme left sleeve 47^a carries the bevel wheel 48 which engages the bevel wheel 32 (Figs. 1 and 2) mounted on the shaft 27. On the sleeves are riveted disks 49^a—49^d and 50^a—50^d. Furthermore rings 51^a to 51^d are threaded on the sleeves and in these rings are riveted flat springs 52^a—52^d. Disks 49^a—49^d have slots 53 (Fig. 8) which serve for guiding the springs 52. The disks 50^a—50^d have slots (Fig. 3) into which springs 52 extend. These slots have at their upper parts separate recesses into which the springs enter. In this position of the springs the sleeves are coupled together. If, however, the springs are depressed out of these recesses into the larger portions of the slots by pressure of the keys R'—R⁴ through the intermediary of the projections *r* (Fig. 3), the sleeves may be rotated relatively to each other through an angle corresponding with the size of the slots. The rotation of a sleeve relatively to its neighbor is transmitted through the bevel wheel 48 to

the type cylinder. The slots in the disks 50^a—50^c are so proportioned that by pressure on the key R' it is possible to turn the type cylinder through the angle represented by a column by pressure on key R² through two columns; by pressure on key R³ through four columns and by pressure on key R⁴ through eight columns. When several keys are simultaneously depressed the type cylinder can be turned through an angle amounting to the sum of the angles corresponding with the several keys. By means of these four keys, therefore, which may be regarded as releasing keys, the type cylinder can be shifted in position up to fifteen columns; for only ten columns, slots in the proportion of 1:2::3:4 would suffice. Other proportions would of course be possible.

The rotation of the sleeves when released and therewith the rotation of the type roller is due to the spiral spring 55 (Fig. 6) which is put under tension by the crank 16. A stop pin 58 on the casing of this spring (Fig. 6) strikes against the base plate 57 and the return movement of the shaft 23 brings the spring locks 52 again into engagement with the recesses. When the type roller swings forward the stop 56 remains, in consequence of the tension of spring 55, against the base plate until the play of the uncoupled sleeve is exhausted, whereupon the spring casing accompanies the type cylinder in its further oscillation. The stop 56 is only necessary for keeping springs 52 engaged. When the sleeves 47 are coupled they need no longer rest against the base plate. The alternate locking can also be adjusted so that the locking in the normal position only occurs when the stop pin 56 is separated from the stop on the base plate through a certain angle in consequence of the further rotation of the crank 16. The spring 55 after unlocking the springs 52 only rotates the type roller and is not capable of rotating therewith the shaft 23. In this manner in every case unequal blows on the type roller are excluded. The friction of the projections R of the keys on the springs 52 insures that the unlocked sleeves do not turn with the shaft 23 until they are engaged by other sleeves.

The rotation and axial movements of the type roller may also be achieved without use of the spring 55 by the device shown in Fig. 12. The sleeve 47^a is here split into two parts. On the front part, 47^{a1}, which lies nearest to the reader in the drawing and carries the bevel wheel 48 is also mounted the pin 56, adjustable in the projection 56^a. It is pressed outward by a spring, not shown, so that in the normal position it engages in the slot 56^b of the projection 56^c screwed on to the base plate 57 and projecting upward in the form of a nose. The second part of the sleeve, which is covered by 47^{a2} in the

drawing, carries the disk 56^d with a toothed projection 56^e. Between the two parts of the sleeve mounted on the shaft 23, fast thereto, is the toothed segment 56^f. Through the pin 56, and extending at right angles thereto is the pin 56^g, which projects as far as the disk 56.

This device operates as follows:—The bevel wheel 48 is kept in position by the pin 56 and forms the stop which effects the rotation of the type roller. As soon as the unlocked sleeves of the row have turned, the part of the sleeve pin 47^{a1} turns. The tooth 56^e thereby removes by action of the pin 56^g the pin 56 out of the slot 56^b and simultaneously into the space between the two teeth of the segment 56^f directly beneath it. The bevel wheel 48 is now coupled with the shaft 23 and takes part in the rotation of the shaft 23 without a further rotating of the type roller. The cam shaped projection of the stop 56^c, against which the pin 56 slides, presses the pin 56^g, since at its upper part it gradually comes closer to the shaft 23, until the pin is completely in the space between two teeth and maintains the coupling during the whole rotation of the shaft. When the shaft 23 returns, the parts are automatically brought back to their normal position.

The axial movement of the type roller is caused by the rotation of the bevel wheel 58 Fig. 1 engaging with the bevel wheel 37, Fig. 2. The stops which become gradually larger in arithmetical progression or in some other system, are brought into action by the keys L' to L⁴.

The bevel wheel 14, Fig. 1, is mounted on the sleeve 14^a which can rotate on the shaft 14^b between the collars 14^c and 14^d pinned to the shaft. The shaft 14^b carries the spring 14^e, which is guided in a slot of the arm 14^f also mounted on this shaft. Besides this arm there is mounted on the sleeve 14^a, a double armed lever 14^g having its ends bent and at unequal distances from the center. In the position of rest the longer arm of the lever pushes against the spring 14^e which is reinforced at its front end; if, however, this spring has been moved toward the part 14^b by pressure on the space key Z^w, Figs. 2 and 6, through the intermediary of the bent transmission lever 59 a—b—c, (the rod 59^c connecting the lever arms 59^a which are horizontal and 59^b which is vertical extends beneath the base plate 57); the bevel wheel 14 performs half a revolution until the shorter end of the lever 14^g is engaged, and in the return stroke of the spring 14^e into its normal position the bevel wheel performs another half revolution until it now engages the longer end of the lever. The carriage is thus moved through one space interval without movement of the type roller.

As remarked in the introduction, the levers

R and L may be actuated directly by the fingers, so that a single key or a combination of keys may correspond with these separate types. This would be the ideal key board, because each finger would remain resting on its key and the choice of the keys is merely a question of brain work without the assistance of the eyes. As however, the operation of this key board may appear too difficult, there is shown in Fig. 13 an arrangement of keys which approximates to the ideal without deviating too far from the usual key board.

The frame levers 60^a to 60¹⁴ are journaled on the shafts 19 and 38, each of which levers carries a key. Fig. 14 shows one of these frame levers with its key in perspective. The levers R and L rotate or shift axially the type roller to an extent corresponding with their index number. The keys T¹ to T¹⁰ bring the first ten types into the printing position since they are provided with corresponding projections 60^a for the levers R or for the necessary combination of levers. The key T¹¹ moves the lever L¹, the key T¹² moves the lever L². With these twelve keys the thirty characters of the first, second and third row of type may be brought into position. For the types numbers 11 to 20 the additional key T¹¹ and for the types numbers 21 to 30 the additional key T¹² is simultaneously depressed with the corresponding key T¹ to T¹⁰. The key T¹³ moves the lever L³, the key T¹⁴ moves the lever L⁴, and the key Z^w directs the space shifting. The types may be arranged in the usual manner and the characters may be inscribed on the keys. There are however, by this arrangement additional keys T¹¹ and T¹² substituted for twenty keys and the fingers can almost always remain resting on their keys. The keys T¹³, T¹⁴, and Z^w are depressed by the thumbs, the rest of the fingers remain always on the main row of keys T¹—T¹⁰. All the keys may be arranged in one plane as their strokes need amount only to 2 to 3 millimeters, compare Fig. 15. This short stroke is only obtainable by the automatic positioning of the type roller and the automatic imprinting of the types so that this simplified arrangement of keys is not dependent merely on the construction of the shift keys as additional keys to other additional keys and to the main keys, but on this automatic operation of the machine. With longer strokes the main keys can not be depressed by themselves without involving an uncomfortable position of the fingers which would hinder rapid writing as will be apparent from Fig. 15.

It is obvious that by increasing the number of levers 60, the number of keys may be increased, i. e., the keys T¹¹ and T¹² may each be replaced by ten individual keys. It will also be understood that for unlocking

the coupling gear, levers in the form of frames may be used and such frame levers may be selected by levers in the form of key levers. The employment of a second system of levers to automatically select the keys provided with the proper characters permits of any desired arrangement of the keys.

A very advantageous and modified form of type roller with remarkably small dimensions, is produced by composing it of several small type cylinders rotatable about a common center and arranged in a circle, the various characters being arranged on these rollers in annular zones and longitudinal divisions. The character to be imprinted is thus brought into position by rotating and axially shifting the compound type roller and also by rotating the individual type rollers. Figs. 16 to 20 show such a modification of the type-wheel and the operating means therefor.

Fig. 16 shows the whole arrangement in front elevation. Fig. 17 shows the arrangement for shifting the whole of the type rollers as seen from the left; Fig. 18 shows the type roller in plan; Fig. 19 shows the toothed segments which serve for rotating the whole type cylinder and the individual rollers, seen from the right; Fig. 20 shows the separate parts of the shifting device for positioning the type rollers.

On the horizontal main shaft 23^a, journaled in front of the paper carriage is mounted the carrier 25^a in which the pin 61 is mounted so as to slide. On this pin a bobbin 62 can rotate but is prevented from shifting by a wire clamp. In the end plate of this bobbin are journaled ten driving wheels 63 only two of which are shown in Fig. 16, one in elevation and one in section. Between the end plates, sleeves 64 are mounted on the shafts driven by wheels 10 and rotate with the shaft by friction. Each of these sleeves carries on its periphery nine types in three annular zones, and three longitudinal divisions separated from each other by angles of 120°. In one of these divisions three small characters are arranged, in the second corresponding large characters are arranged, and in the third certain numbers and signs are arranged. For driving the whole of these ten small type rollers the spur wheel 65 engages with the wheel 63, the wheel 65 is journaled on a tubular projection of the bobbin 62 and is held in position by a ring sprung thereon. In a certain position of this spur wheel there are on the outer side of the bobbin thirty small characters for which are substituted, by turning the individual rollers through 120°, the corresponding large characters and by a further rotation through 120° the numbers and signs. The characters may be so arranged that the small characters are in the upper

annular zones, the large characters being in the middle zones and the numbers and signs in the lower zone. A diameter and length of 15 millimeters each suffice for the bobbin. The individual small type rollers have a diameter of about 4 millimeters, they may also be prismatic in form. If the driving wheel 63 and the common spur wheel 65 are arranged between the end plates of the bobbin, the type roller together with its gear can be made in one piece of steel. The whole type roller may be removed from the pin 61 by suitable rotation of the wire clamp which holds it in place.

On pin 61 turns the bevel wheel 66, which at its lower part has a boss with a turned-out ring. Over this ring engages a bracket on the carrier 25^a by which the wheel is prevented from axial movement. At its upper part the wheel has a tubular boss on which rotates the bevel wheel 67. This is provided with an arm which carries the pin 68. On the upper end of the tubular boss of the bevel wheel 66 is also mounted an arm having a pin 69, the latter extends through a perforation in the lower end plate of the bobbin 62 and when the bevel wheel 66 rotates the pin carries the bobbin with it. The pin 68 extends through a perforation in the toothed wheel 65 and when the bevel wheel 67 rotates, carries the toothed wheel with it. The pin 68 has such play in the end plate of the bobbin that the small type rollers may rotate through an angle of 240°; a like play is provided for the pin 69 in the toothed wheel 65.

With the bevel wheels 66 and 67 engage the toothed segments 70 and 71 which are shown partly in section in Fig. 16 so as not to obscure other parts of the drawing. The segment 70 has a tubular boss which is forced on the shaft 23^a and 71 in like manner is mounted on the same tubular boss. These segments are shown in Fig. 17 as seen from the right.

On the shaft 23^a or in the tubular boss of the toothed segments 70 and 71 is mounted the coupling gear consisting of the disks S¹ to S¹² by means of which the angle of rotation of the toothed segments 70 and 71 is determined. The disk S¹² is connected with the shaft 23^a, the disk S⁸ with the tubular boss of the toothed segment 70 and the disk S¹ with the tubular boss of the toothed segment 71. The disks 2, 4, 6, 8, 10, 12 are formed as slides. In their normal position they couple the disks 1, 3, 5, 7, 9, 11 and 13 together while the latter, after the coupling is unlocked are rotatable through a certain angle relatively to each other.

The arrangement of the coupling gear is shown in Fig. 20 in which the disks 9, 10 and 11 are shown as seen from the left. As shown, the slide has slots *s* by means of

which it is guided along the projection *n* of the disk next to it on the right hand side. Moreover it has a projection *n* which engages in a notch *a* in the periphery of the disk lying next to it on the left hand. The spiral spring *f*, the lower end of which is fixed in the disk lying on the right hand side of the slide, while the upper end is fixed in the slide, holds the projection *n* of the slide in the recess *a*. By pressure on the slide from above, the projection *n* is brought out of engagement with the recess and the disk lying on the left hand side of the slide can turn through an angle which corresponds with the size of the notch *a*. The disks S may be made together with the projection *n* in one operation out of steel plate.

The spiral spring 72, which engages at its inner end the carrier 25^a and with its outer end the toothed segment 71 turns the latter in the direction of the reader. When the coupling S² is unlocked the individual small type rollers are turned through 120°. When the coupling S² is unlocked there is a rotation through 240°. Thereafter the toothed segment 70 is also turned and the whole type roller rotates as soon as the further coupling gears are unlocked. The notch *a* may be for example so proportioned that in unlocking the couplings S¹, S², S¹⁰, S¹², the first, second, third and fourth of the small type rollers are respectively brought into position. By simultaneously unlocking the several couplings the angles corresponding with them are added together and the positions of the rollers correspond with the total angle.

The axial shifting of the type rollers is produced by means of the coupling gear arranged on the left hand side of the main shaft, this gear having the same arrangement as that on the right hand side. With the disk which lies nearest to the axis of the roller is connected the stirrup 73 which engages in a toothed portion of the stirrup 74 which carries with it the pin 61. The helical spring 75 corresponds with the spiral spring 72. The toothed segment 71 and the stirrup 73 rest against the stops 57 when the shaft 23^a is turned to the left when seen from the right. In this manner the two springs are put under tension and the coupling gears are unlocked and return the rows in succession to their normal positions. The springs 72 and 76 are fixed at the one end to rings which turn on the shaft 23^a and can be fixed thereon.

The crank rod which pushes the type cylinder against the paper carriage is fixed to the stirrup 22^a by means of the screw 22^b. Through the shaft 23^a is stuck the pin 45^a which has a small play in the stirrup 22^a. The helical spring 46^a presses the stirrup 22^a against this pin. After the crank has

been locked the shaft in consequence of its momentum can turn through an angle corresponding with the play of the pin 45^a.

Having thus described my invention and the best means I know of carrying the same into practical effect, I claim:—

1. A typewriter comprising a paper carriage, a spring adapted to move the said paper carriage, a toothed rack carried by the said paper carriage, a transmission gear driven by the said toothed rack, a shaft mounted in front of the said paper carriage, an oscillating crank drive connecting the said shaft with the said transmission gear, a vertical projecting arm on the said shaft, a type roller carried by the said arm, a shifting device connected with the said type roller and keys actuating the said shifting device and lying in a common plane.
2. In a typewriter, a type roller, a main shaft, sleeve on each end of the said main shaft, the outer sleeves being fixed to the shaft while the remaining are free on the shaft type keys, and disconnectible coupling whereby the said sleeves are connected with each other in such a manner that when one or other of the coupling locks is unlocked the said sleeves can be rotated relatively to each other through different angles, toothed gear wheels mounted on the sleeves next to the type roller and adapted to operate the latter, an oscillating crank drive adapted to turn the said sleeves on the main shaft, a spring repeatedly wound up by the said crank drive and adapted to hold the said sleeves on the said shaft or to turn them in opposite direction thereto until the main shaft has been turned through the angle corresponding with the uncoupled sleeve, whereupon all the sleeves share the further rotation of the main shaft by being automatically coupled therewith.
3. In a typewriter, a type roller comprising characters in annular zones and longitudinal divisions mounted on individual small cylinders, which are arranged in a circle around a common axle, driving mechanism for rotating each of the small type cylinders separately enabling thus the characters to reach the desired position and means for rotating and shifting the whole of the compound type roller through the intermediary of shifting devices or coupling locks mounted on the main shaft and operated by the keys, the main shaft being capable to turn against the paper roller for printing the characters.
4. In a typewriter, the combination of a paper carriage, a movable element with which the type is associated, common operating means to actuate the paper carriage and said element, a space key, and connections whereby the actuation of the space key disconnects the operating means from said element and permits said means to shift the carriage without actuating said element.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this third day of July, 1912.

DR. JOSEF MOHR.

Witnesses:

JEAN GRUND,
CARL GRUND.