C. P. MOSHER.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 16, 1915.

1,222,443.

Patented Apr. 10, 1917.

4 SHEETS—SHEET 1.

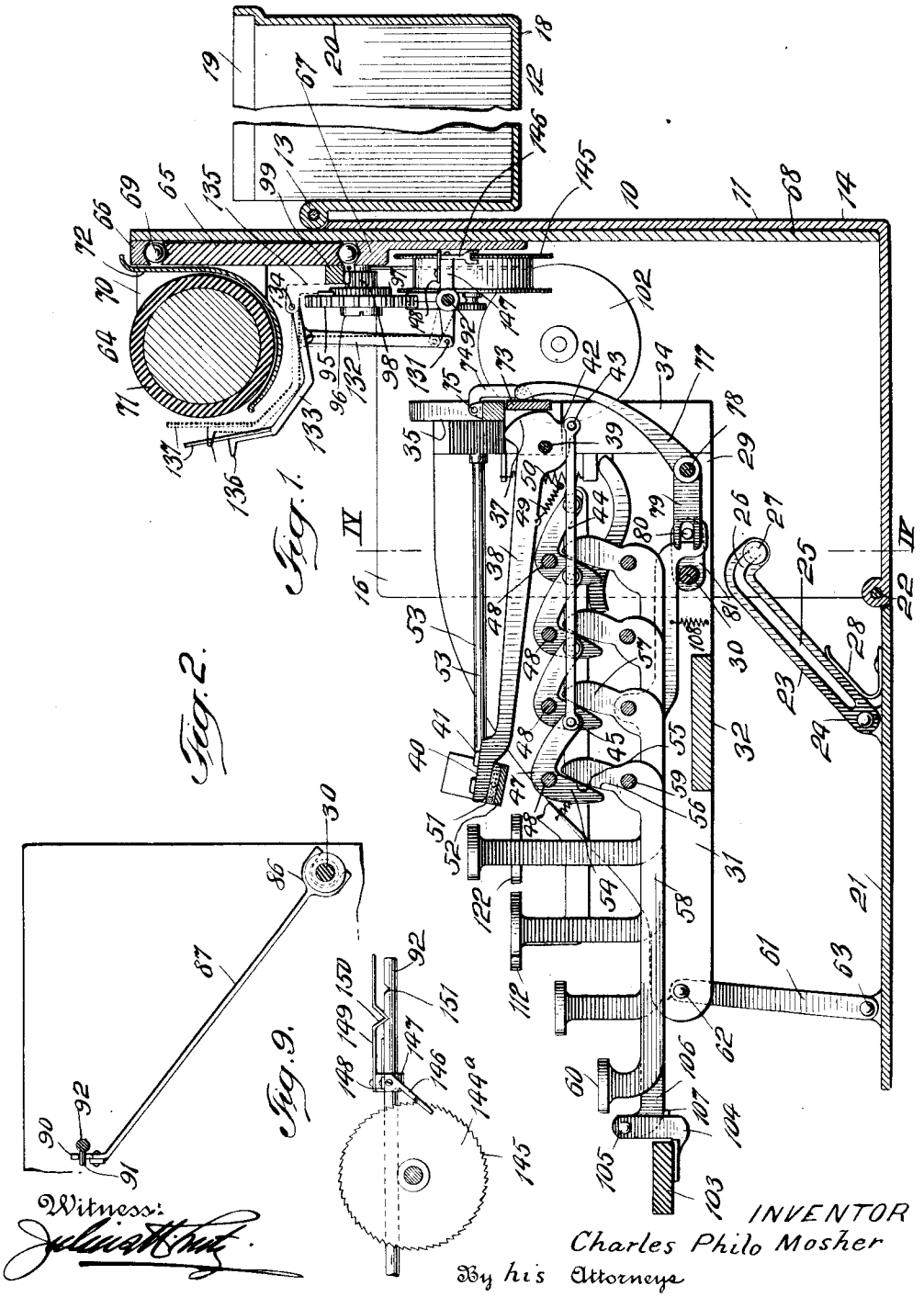


Fig. 1.

Fig. 2.

Fig. 9.

Witness:

INVENTOR

Charles Philo Mosher

By his Attorneys

Criswell & Criswell

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

C. P. MOSHER.

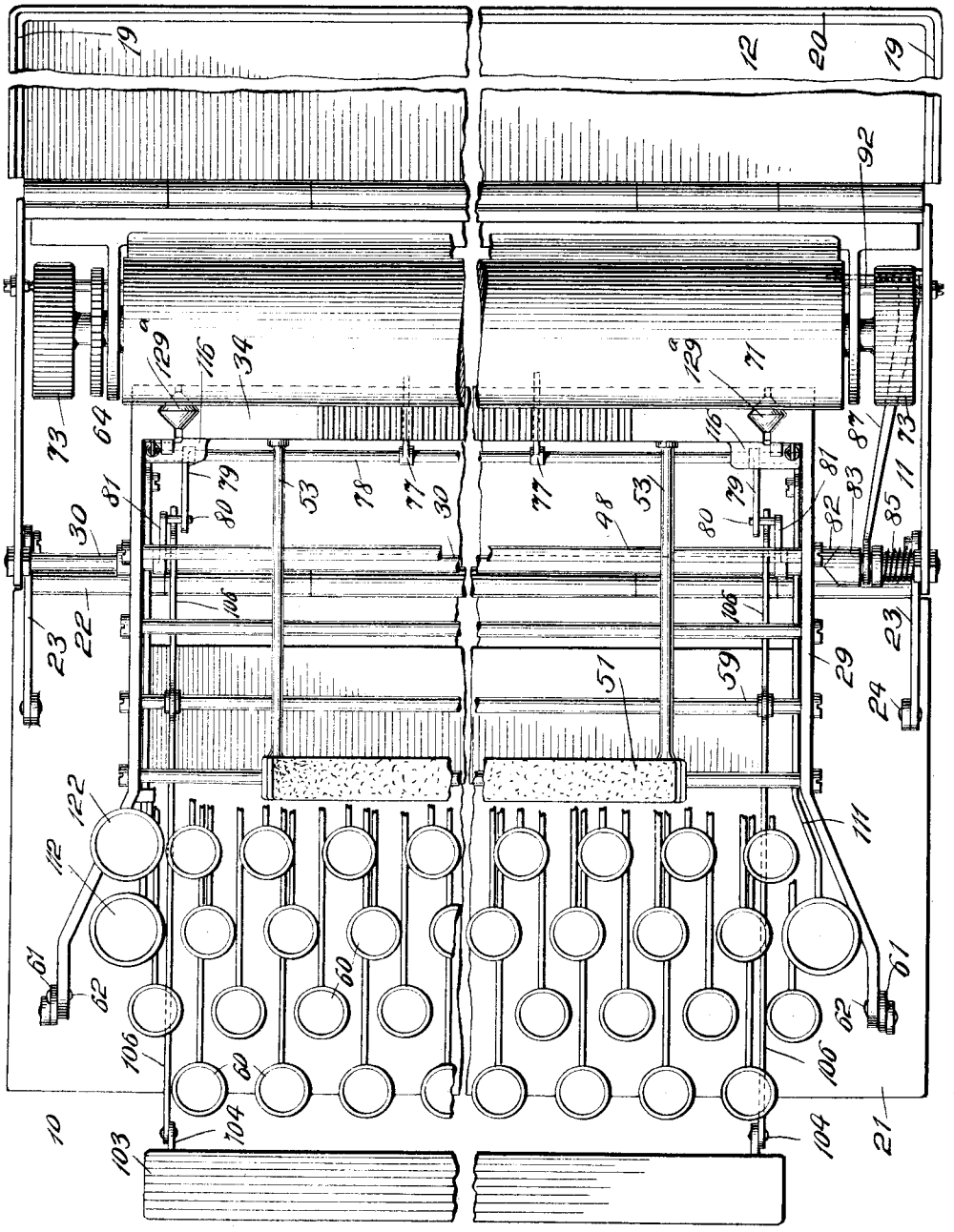
TYPE WRITING MACHINE.

APPLICATION FILED OCT. 16, 1915.

1,222,443.

Patented Apr. 10, 1917.

4 SHEETS—SHEET 2.



Witness:

Fig. 3.

Inventor

Charles Philo Mosher

By his Attorneys

Criswell & Criswell

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

C. P. MOSHER.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 16, 1915.

1,222,443.

Patented Apr. 10, 1917.

4 SHEETS—SHEET 3.

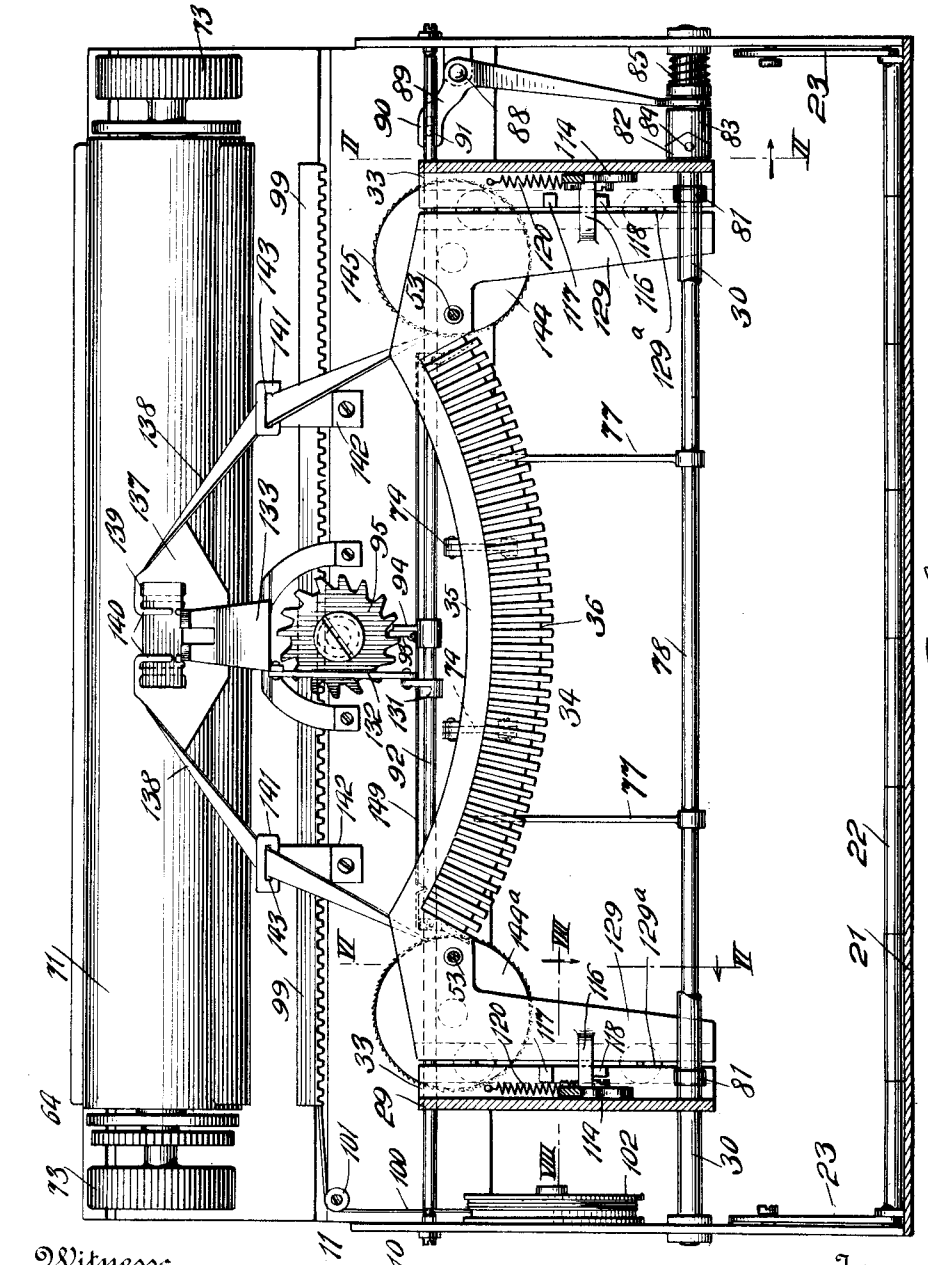


Fig. 4.

Witness:

Julius A. Smith.

Inventor

Charles Philo Mosher

By his Attorneys

Criswell & Criswell

THE NORRIS PETERS CO. PHOTO-LITHO. WASHINGTON, D. C.

C. P. MOSHER.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 16, 1915.

1,222,443.

Patented Apr. 10, 1917.

4 SHEETS—SHEET 4.

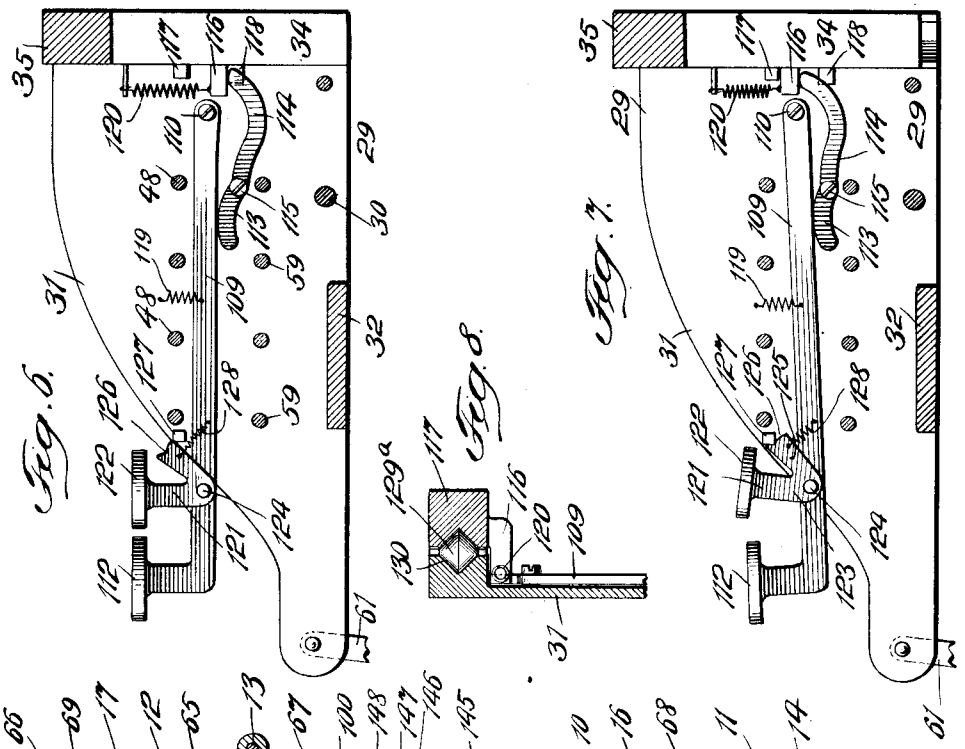


Fig. 6.

Fig. 7.

Fig. 8.

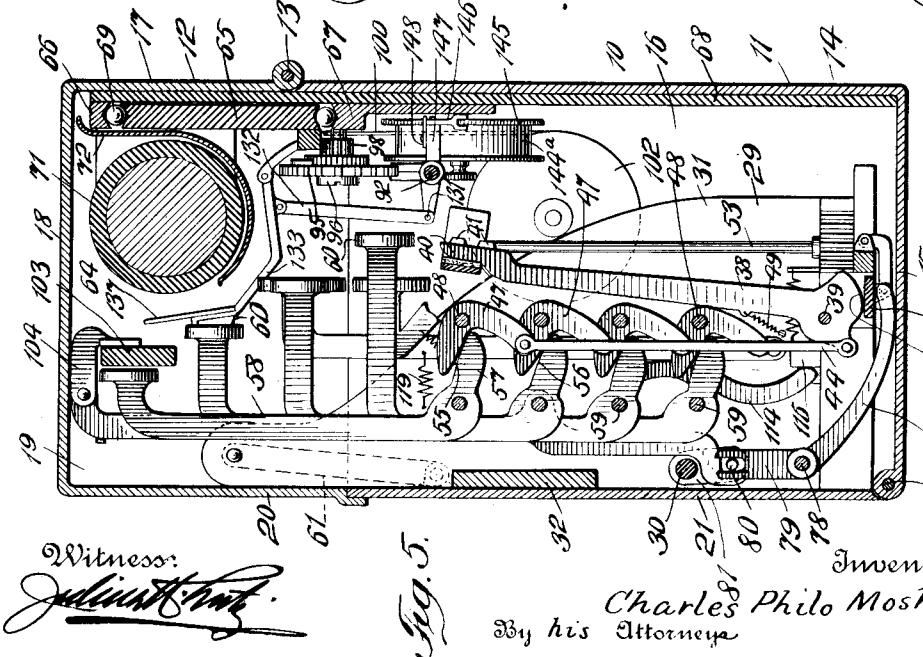


Fig. 5.

Witness:

Julius Hoffman

Inventor

Charles Philo Mosher

By his Attorneys

Criswell & Criswell

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES PHILO MOSHER, OF BROOKLYN, NEW YORK, ASSIGNOR TO CORONA TYPEWRITER COMPANY, INC., A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,222,443. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed October 16, 1915. Serial No. 56,242.

To all whom it may concern:

Be it known that I, CHARLES PHILO MOSHER, a citizen of the United States, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description.

This invention relates more particularly to a foldable visible or front strike typewriting machine in which the keyboard and platen carriage are brought into close relation when not in use for the purpose of making the machine compact and to adapt the same for transportation and other purposes.

One of the primary objects of the invention is to provide a typewriting machine in which an inclosing case forms the frame and support for the mechanism and parts of the typewriting machine and which is of such a construction that a standard or universal keyboard may be mounted on a part of the case so that it may be folded upward and rearward to make the machine compact and to inclose the mechanism within the case when not in use and in which the entire key action including the type-bars and operating keys may move outward and downward away from the platen to a normal operative position, thus dispensing with a separate and independent carrying case usually employed in foldable and other typewriters.

A further object of the invention is to provide a typewriting machine of a foldable character wherein the entire key action of the universal or standard keyboard, including the shift keys, the space means and the type-bars, may be folded so as to bring the keys of the keyboard in close relation to the platen carriage; and to provide a machine of such a character and of such a size that it may be carried in the pocket and still have substantially all the features and arrangement of keyboard of the larger standard office machine.

Another object of the invention is to provide simple and efficient means whereby the keyboard may be folded without destroying the operative connection between the keys and the different mechanisms operated by the keys.

Other objects of the invention are to provide a simple and efficient case forming a support for the parts of a typewriting machine and which is adapted to inclose entirely all of the typewriter mechanisms when the machine is in a folded compact condition ready for transportation purposes; to provide a typewriting machine in which the general arrangement and characteristics of the ordinary typewriter are maintained; and to provide a typewriting machine having a universal keyboard and simple means whereby the ribbon mechanism and the escapement mechanism may be operated without any disconnection whatever by the universal bar, the latter maintaining the same cooperative relation to the type-bars and key-operated levers both in the unfolded and folded position.

A further object of the invention is to provide a typewriter which is effective in operation, comprising comparatively few parts, and which may be readily made and assembled.

With these and other objects in view, the invention will be hereinafter more particularly described, with reference to the accompanying drawings, which form a part of this application, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a longitudinal section of one form of machine embodying the invention, showing a construction wherein a cover is hinged to a part of the case and adapted to inclose the upper part thereof when in a compact transporting condition.

Fig. 2 is a fragmentary vertical transverse section taken on the line II—II of Fig. 4, showing a part of the connection between the universal bar and the escapement dogs.

Fig. 3 is a plan view broken away centrally thereof so that both sides of the machine may be shown.

Fig. 4 is a vertical transverse section taken on the line IV—IV of Fig. 1, the type-bars and parts of the key action being removed.

Fig. 5 is a vertical transverse section showing the parts of the machine when folded and in a compact condition.

Fig. 6 is a fragmentary vertical transverse section taken on the line VI—VI of Fig. 4 showing one form of type basket shift.

Fig. 7 is a view similar to Fig. 6 except that the shift lever is in a different position.

Fig. 8 is a fragmentary sectional plan taken on the line VIII—VIII of Fig. 4; and

Fig. 9 is a fragmentary section showing a part of one means for moving the ribbon spools.

While the invention is shown as applied to a typewriter in which an inclosing case is employed it will be understood that the folding principle may be used in writing machines wherein the usual or any preferred form of frame or parts may be employed, and while special forms of mechanisms, as the key action, ribbon mechanism, escapement mechanism and other features are shown, such parts may be changed or dispensed with or others substituted without changing the nature or scope of the invention.

The inclosing case 10 comprises a main supporting member or section 11 to which is hinged at the rear upper portion thereof a cover member or section 12 as at 13. The main member 11 comprises a rear wall 14, a bottom or base wall 15, and side wall 16, while the top or cover member 12 comprises a rear wall 17 adapted to form a continuation of the wall 14 of the member 11, a top wall 18, sides 19 and a front wall 20. The front wall 20 of the cover forms a continuation of a foldable case member 21 when in the position shown in Fig. 5, said member 21 being hinged at 22 to the base 15 and serving to form an inclosing front foldable member for said case and making with the other parts when in the position shown in Fig. 5 a substantially box-like regular package of such shape and size as will be convenient for carrying purposes or to place in a person's pocket.

The member 21 of the case is adapted to be folded downward and outward as shown in Fig. 1 and at the sides thereof may be provided with stays 23. The stays 23 may be pivoted as at 24 to lugs on the member 21 and may have slots lengthwise thereof as at 25, the upper ends of which slots are off-set, as at 26, and adapted to fit about the shanks or pins 27. The stays are normally forced in one direction by springs 28 so that the stays when the member 21 is in an open position will be locked, and by shifting the position of the stays with respect to the pins 27 the member 21 may be folded upwardly, though instead of the stays any other suitable means may be employed which will positively and rigidly hold the case member 21 in a fixed relative position with respect to the other part of the case when the latter is open to operate the machine. The case as a whole may be made of aluminum or any other metal or material and may be covered with leather or any other covering arranged to make the same attractive. The inclosing case may be variously constructed but substantially the form shown is a very satisfactory one and permits the entire mechanism of the typewriter to be entirely inclosed and protected while not in use.

A foldable frame, support, or member 29 is pivotally held on a rod 30 which extends between the sides 16 of the main member 11 of the casing 10. The support 29 is foldable upward and comprises side members 31 which may be joined together by a transversely extending bar 32. The side members 31 at their inner or rear ends are provided with guides 33 forming vertical supporting means for a type basket segment 34. The type basket segment 34 comprises a curved segmental portion 35 having slots 36 for the reception of pivoting ends 37 of the type-bars 38, the said type-bars being arranged in an arc of a circle and pivotally held to a pin or rod 39 in the usual or in any preferred way. The type-bars 38 have their heads or blocks 40 each provided with two type characters 41 representing the upper case and the lower case type, figures, etc., as in an ordinary typewriter having a single case shift. The type-bars are each provided with a lug 42 located at the rear of the pivot and below the same, to which is pivotally held, as at 43, one end of a link 44. The link 44 is pivoted at its other end, as at 45, to the inner end of the arm 46 of a supplemental substantially bell-crank shaped lever 47. There is a lever 47 for each type-bar, and each bell-crank lever is pivotally held to a supporting rod 48 located normally above the links 44. The rods 48 are arranged substantially horizontally when in a normal operative position and extend transversely of the machine between the sides 31 of the foldable support or member 29. These bell-crank levers 47 are arranged in banks or groups, and as arranged, the links connecting the respective banks of levers to the type-bars are of relatively different lengths, said type-bars and links being restored to their normal position by means of springs 49, one end of each of which is held to a type-bar and the other end to a transversely extending bar or rod 50 or to lugs provided for that purpose if preferred. These springs 49 keep the bell-crank levers and links and type-bars in their normal position so that the blocks 40 normally rest upon a cushion 51 extending transversely of the machine. The cushion 51 is supported by a plate 52, the latter being held to the outer ends of forwardly extending rods 53 when the parts are in their normal operative position, the rods at their inner ends being held to the type-bar segment. Each bell-

crank lever has one arm 54 provided with a cam edge 55 which is adapted to be engaged by a similar cam edge 56 on the end or tongue 57 of a key-operated lever 58. There are a number of key-operated levers 58, one for each type-bar 38 and supplemental lever 47, and these key-operated levers are pivotally held on rods 59. There are four rods 59. These rods 59 correspond in number to the number of rods 48, and are vertically disposed under said rods and extend transversely of the machine between the side members of the foldable support 29. The key-operated levers are thus arranged in groups or banks, and by reason of the location of the rods 59 each key 60 will require substantially the same force to depress the same, thus providing a substantially uniform touch to the machine and permitting a standard or universal keyboard to be employed wherein each key operates a distinct type for printing purposes at each depression. The ends or arms 57 of the key-operated levers 58 extend upwardly, and by reason of the action of the cam edges 56 engaging the cam edges 55 of the bell-crank levers 47, an accelerated movement is imparted to the type-bars which is slow at the initial part of the depression of each key and increases in speed as the depression increases. The links 44 have their ends arranged in a substantially horizontal position when in normal operative condition, and in practice it is desirable that the said links be disposed as near a direct line with respect to the supporting rods 48 as possible, so as to provide a substantially locking action for the links in order to prevent the type-bars from rebounding from their cushion after returning from a printing stroke.

The outer end of the foldable support 29 at each side thereof is connected by a link 61 to the foldable case member 21. Each link is pivoted at 62 to one of the side members 21 of the support 29 and at 63 to a lug on the case member 21, the distance between the pivots 62 and 63 corresponding to the distance between the center of the rod 30 and the hinge 22 to adapt the foldable support 29 when the latches or stays 23 are released to fold up and to assume the position shown in Fig. 5 wherein the keys 60 of the levers 58 are brought into close compact relation to a platen carriage 64.

The platen carriage 64 may be of the usual or of any preferred form. As shown it comprises a rear guide or base 65, the upper and lower edges of which are each provided with a raceway which is opposed to the raceway or track of transversely extending bars or members 66 and 67, both of which may be secured to a strengthening plate or member 68 and to the rear plate or wall 14 of the main casing member 11. Balls or other anti-friction devices 69 are provided in the raceways to adapt the bed and carriage to travel easily transversely of the machine. The carriage may have end plates 70 in which is mounted to rotate the usual platen or roll 71. The carriage may have the usual paper apron 72 and the usual finger knobs 73 for rotating the platen, and may also be provided with the usual or any preferred form of line-spacing means, paper fingers and other attachments usually employed in typewriting machines, but as such features form no part of the present invention, it is thought unnecessary to describe or show them in detail.

It will be evident that when the support 29 is folded so that the keys of the keyboard are moved toward the platen 71 as shown in Fig. 5, the entire support 29 is located within the sides 16 of the main casing member 11 so that the supporting case member 21 may form a partial closing of the case, said closing being completed when the cover member 12 is moved from the position shown in Fig. 2 to that shown in Fig. 5, a handle, not shown, being provided at the end of the case or other part thereof if desired for carrying purposes. It will be evident further that all parts mounted upon the foldable support 29 partake of the folding movement of the case member 21, so that not only the type basket including the type-bars but the entire key action partakes of such folding movement, and that all of these parts both in the folding and unfolding positions remain in the same operative relation and without and disconnection of any kind.

Any suitable means may be provided as an escapement and letter-spacing means for the carriage 64, it being necessary, however, that provision be made whereby the folding principle involved will permit the operation of such escapement during the depression of the keys for the printing operation, the letter-spacing movement taking place immediately after such printing operation or substantially instantaneously therewith. As one escapement means and operating mechanism therefor, I provide a universal bar 73 which is suspended by arms 74 which are pivotally held at 75 on the type-bar segment 34. The universal bar 73 is adapted to be engaged by the rear cam end 76 of the type-bars 38. The purpose of the cam edge 76 of the type-bars is to start the universal bar gradually during the upward and rearward movement of the type-bars and to give the universal bar an accelerated movement without altering the uniform character of the touch of the keys and in order that no sudden jar on the keys may be apparent to the operator when the type-bars start to actuate said universal bar. At the rear of the universal bar are the upper ends of the arms 77. These upper ends of the arms rest

idly against the rear surface of the universal bar 73, and at their lower ends are held to a transversely extending rod 78, the latter being pivotally held at its ends in the sides of the support 29. Arms 79 project forwardly from the rod 78 and said arms have their forward ends slotted to engage pins 80 carried by the inner ends of arms 81, the latter being held to the transversely extending pivot rod 30 and serving, when the universal bar moves the arm 77, to rotate said pivot rod 30, the latter being rotatably held at its ends in the side members 16 of the main casing member 11.

The rod 30, Fig. 4, has a cam member 82 secured thereto near one end thereof adjacent to the outer surface of one of the sides of the support 29. and this cam member is adapted to engage a slidable coöperating cam member 83. The cam member 82 has a substantially V-shaped portion 84 fitting a correspondingly shaped recess in the slidable non-rotating cam member 83, the latter being movable on the rod 30 and normally forced inwardly by means of a spring 85, The sliding cam member 83 is provided with a groove which is engaged by the forked end 86 of a lever 87. The lever 87 is substantially bell-crank shaped and is pivoted at 88 to a lug on one of the sides 16 and has its upper arm 89 extending inward and provided with a slotted or forked end 90 which is adapted to engage a pin 91 extending outward from a rod 92, so that on each movement of the lever 87 as will be presently described, the said rod 92 by means of the pin 91 will be rocked on its pivot pins or screws located at the ends thereof.

On the rod 92 are two dogs 93 and 94 the former being the loose or limber dog and the latter the fixed dog and both dogs being adapted to rock back and forth with a partial rotary movement of the rod 92. The escapement dogs 93 and 94 are adapted to engage the teeth of an escapement wheel 95 the latter being loosely mounted on a headed stud 96. A ratchet wheel 97 at the rear of the escapement wheel 95 is engaged by the tooth of a pawl and movable with the ratchet wheel is a pinion 98. The pinion 98 is in mesh with the teeth of a carriage rack 99 the said rack being secured to the carriage bed 65. The carriage has a flexible connection 100 attached thereto which passes around a pulley 101 and then about a spring drum 102 by which the carriage is kept under tension in the usual manner tending normally to drive the carriage across the machine in the usual way.

When the keys 60 are depressed to force the type-bars to printing position the cam 76 of each type-bar will move the universal bar and this will rock the arms 77. The arms 77 will rock the shaft or rod 78 and move the arms 79 and this will rock the arms 81 on the pivot shaft 30 of the support 29. This rocking movement of the shaft 30 will rock the cam member 82 and move the cam member 83 along said rod 30 against the tension of the spring 85 so as to move the lever 87 on its pivot 88. This will rock the rod 92 and will move the dogs therewith so that the tension of the spring in the drum 102 will by the usual action of the dogs permit the carriage to escape and move a single space at each depression. The pawl 96 will permit the carriage to be moved backward in the usual way for starting a new line of writing without affecting any of the parts of the escapement mechanism and immediately the carriage is released the tension mechanism will again act through the escapement to permit the carriage to move across the machine a single space at every depression of a key 60.

In addition to the keys 60 forming a part of the keyboard and for letter spacing without printing a space-bar 103 is provided. This space-bar 103 is pivotally held to arms or brackets 104 which are pivoted at 105 to the ends of space arms or levers 106. The brackets 104 normally engage stops 107 so that on the depression of the bar 103 the space levers 106 will be operated by the pivotal brackets 104. The space-bar may be folded upward and over as shown in Fig. 5 to adapt the machine to be made more compact when in a folded and closed condition. The space levers 106 are pivoted to one of the transversely extended fulcrum rods 59 of the key-operated levers and at their inner ends are bent downward so as to engage under the pins 80, said levers being restored to their normal position by means of one or more springs 108. As the space-bar is operated the levers 106 will be moved on their pivots to force the inner ends upward and by their engagement with the pins 80 will move the arms 81 as well as the arms 79 and by moving the arms 81 will rotate the rod 30 and through the cam members 82 and 83 already described will operate the escapement mechanism for letter spacing between words without printing as is the case in the ordinary typewriter.

In the construction shown the type-basket is shifted for the different type carried by the type-bars, though instead of the type-basket being moved as a case shift the platen or platen carriage may be shifted as in some machines. As shown each type-bar has two type and consequently only one case shift is necessary, though this number of type may vary and the type-basket may have three different positions instead of two. A shift lever 109, Figs. 6 and 7, is pivoted at 110 to one of the sides 31 of the foldable support 29 and at the other side of the machine is a similar shift lever 111. The shift lever 109 at the forward end thereof is pro-

vided with a key 112 and intermediate its ends is adapted to engage the arm 113 of a lever 114. The lever 114 is pivoted at 115 and at its inner end is adapted to engage under a lug or projection 116 on the part 129 of the segment 34. This lug or stop 116 is positioned by the two stops 117 and 118 so that when the lug 116 engages the stop 117 the type-basket is in position to print upper case characters and when the lug 116 rests upon the stop 118, which is the normal position of the type-basket, it is then in position to print the lower case characters. The shift lever 111 at the other side of the foldable support 29 operates a lever similar to lever 114 so that the basket shift may be effected from either side of the machine. The levers 109 and 111 may each operate against the tension of a spring 119, there being springs 120 tending normally to counterbalance the weight of the type-basket in order to make the shift more easily accomplished.

On one of the shift levers 109 and 111, as 109 for example, is arranged a shift lock 121. This lock has a key 122 and a lever 123. The lever 123 is pivoted at 124 and has one arm as 125 notched as at 126 to engage a fixed stop or part 127 located on one of the sides 31 of the foldable support 29. The shift lock 121 is normally forced in one direction by means of a spring 128 so that when the shift lever 109 is forced downward the shift lock will automatically engage the stop or lug 127 and will hold the shift lever 109 in such position until released by the finger of the operator which can be easily accomplished, or the said lock may be held by the operator during the depression of the shift lever 109 so that the said lock will remain inoperative during the basket or case shift.

The segment with the parts 129 are suitably guided in the ends 33 of the foldable support and to adapt the basket to be shifted more easily anti-friction rolls 129[a] are arranged in a raceway 130 formed by opposed grooves in the parts 129 and in the ends 33 of the foldable support 29.

Any suitable mechanism may be employed to feed a ribbon lengthwise of the platen and as means to vibrate the ribbon so as to move the same to cover and uncover the printing point or to adapt the ribbon to have a plurality of fields or zones or to remain inactive for stenciling purposes. As shown the rod 92 has an arm 131 projecting outward therefrom which is connected to one end of a link 132. The link 132 connects to an outwardly extending arm 133 which is pivoted at 134 to a bracket 135 which may have downwardly extending arms secured to a plate forming a part of the carriage track 67. The arm 133 forms a part of a ribbon vibrator and at a portion thereof may have outwardly extending lips 136 forming type guides. A plate 137 may be secured to or formed integral with the arm 133 and this plate forms a ribbon holder through which the ribbon 138 is threaded. The plate or holder 137 has openings 139 and is provided with spaced parts 140 forming suitable guides for the ribbon at the printing point, said parts 140 being spaced apart far enough to permit the type to print against the platen. The ribbon extends beyond the sides of the ribbon vibrator and may be guided in the ends 141 of brackets 142, said ends having slots 143 for the ribbon to pass through. The ends of the ribbon are passed about spools 144 and 144[a]. These spools are mounted to rotate on a fixed part of the casing and are adapted to be readily removed to permit a new ribbon to replace an old one. The ribbon spools may each be provided with a ratchet or toothed portion 145 formed on the spool or separate therefrom as preferred, and adapted to engage the teeth of each spool is a pawl or dog 146. Each pawl 146 is pivotally held at one end to an arm 147, the latter being held to the rod 92, a spring 148 being arranged on each of said arms and adapted normally to force the pawl into an engaging position. The arms 147 are adapted to slide along the rod 92 and said arms for both spools are connected by a transversely extending bar 149 having one or more projecting portions 150 adapted to engage notches 151 in said rod. The arms 147 are so positioned that only one pawl is engaged with the teeth of one of the spools at a time so that by shifting the bar 149 lengthwise of the rod 92 one pawl is disengaged from its ratchet spool while the other is made to engage its ratchet spool, thus the ribbon may be made to travel toward either side of the machine. The rod 92 is thus operated through the lever 87 and its connection with the key action as previously described and by the rocking movement of said rod 92 the ribbon is moved lengthwise and also vibrated to cover or uncover the printing point, the position of the ribbon in Fig. 4 being over the printing point, and in Fig. 1 below the printing point.

From the foregoing it will be manifest that a simple and efficient and compact typewriter is provided whereby the entire key action including the type-bars, the space bar, the shift mechanism, and universal bar are adapted to fold without destroying the coöperative relation between the key action and the escapement mechanism and wherein the keys are brought into compact relation to the platen; that all of the mechanism is adapted to be inclosed within the carrying case so as to be entirely protected; that said machine while very compact employs a uni-

versal or standard keyboard having a single case shift with the same arrangement of keys and type-bars as in the ordinary large office typewriter; that simple means is provided whereby the folding principle is carried into effect; and that said folding principle permits simple and efficient mechanism to be incorporated in the machine.

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

1. In a visible typewriting machine in which the type-bars are each operated by a separate key-operated lever and have an upward and rearward movement, a platen carriage, a case forming a support for the platen carriage and comprising a main section, a top section, a member hinged to the main case section, and a support for a universal keyboard including type-bar operating key levers and spacing and platen shift levers, type-bars carried by said keyboard support, said keyboard support being connected to said hinged member and adapted to fold upward and rearward to place the keyboard keys in close relation to the platen carriage to make the machine more compact and adapted to be inclosed within the top section of the case when the latter is in its transporting condition.

2. In a visible typewriting machine in which the type-bars are each operated by a separate key-operated means, a case forming a support for the platen carriage and comprising a main section, a keyboard member hinged to the main case section, and a foldable support for a universal keyboard including type-bar operating keys, and spacing and platen shift levers, type-bars carried by said support, said keyboard support being adapted to fold upward and rearward to place the keys in close relation to the platen carriage to make the machine more compact and adapted to be inclosed within the case when the latter is in its transporting condition.

3. In a visible typewriting machine in which the type-bars are each operated by separate key-operated levers, a case forming a support for the platen carriage and comprising a main member, and a supporting keyboard member pivotally held to the main member and forming a support for a universal keyboard including type-bar operating key levers and spacing and platen shift levers, type-bars carried by said supporting keyboard member, said keyboard being adapted to be brought into close relation to the platen carriage to make the machine compact and to be entirely inclosed within the case.

4. In a visible typewriting machine in which the type-bars are each operated by separate key-operated means and have an upward and rearward movement, a case forming a support for the platen carriage and comprising a main section, a top section, and a foldable keyboard member pivoted to the main case section and forming a support for key-operated levers and type-bars said type-bars and key-operated levers being maintained in their same operative relation in both the folded and unfolded position of the keyboard member.

5. In a visible typewriting machine in which the type-bars are each connected to and operated by separate key-operated means and have an upward and rearward movement, a case forming a support for the platen carriage and comprising a main member, a front member hinged to the main member, and a foldable supporting keyboard member held to the main member and connected to the front hinged member and forming a support for a standard keyboard including type-bar operating key levers and spacing and platen shift levers, type-bars carried by said foldable supporting keyboard member, said foldable support being adapted to move the keys of the key levers into close relation to the platen carriage to make the machine more compact and adapted to be inclosed within the case when the latter is in its transporting condition.

6. In a visible typewriting machine in which the type-bars have an upward and rearward movement, a case comprising a main section, a hinged front section and a top section hinged to the main section, a platen carriage movable in the main section, and a foldable support for a universal keyboard adapted to fold upward and rearward within the inclosure formed by the main section and in close relation to a platen carriage.

7. In a visible typewriting machine having type-bars each operated by separate key-operated means, an inclosing supporting case comprising a plurality of members foldable in respect to each other and adapted when open to be in a normal working position with one of the members horizontally extended and when closed to be compact, a part of said case serving as a support for a platen carriage, and said horizontally extended member serving as a support for a standard keyboard and type-bars which are foldable therewith.

8. In a visible typewriting machine having type-bars each operated by separate key-operated means, an inclosing supporting case comprising a plurality of members foldable in respect to each other and adapted when open to be in a normal working position with one of the members horizontally extended and when closed to be compact, said case serving as a permanent support for a platen carriage and a standard keyboard and type-bars mounted as a unit and which are movable together with said horizontally ex-

tended member, said keyboard being adapted to be brought into close relation to the platen carriage when the parts are not in use.

9. In a visible typewriting machine having a platen carriage and key-operated type-bars, a case comprising a cover, a main member, a support pivoted to the main section and forming a support for a universal keyboard and adapted to be moved upward and rearward into the main member, and means connected to the support and adapted to close a portion of the main member and to move with and relatively to the keyboard supporting member.

10. In a visible typewriting machine having a platen carriage and key-operated levers, a case comprising a top section and a main section adapted when open to be in normal working position and when closed to be compact, and a support held to the main section and forming a support for a universal keyboard and adapted to be moved entirely within the main section, said keyboard comprising keys, spacing and platen shift levers.

11. In a visible typewriting machine in which there is a platen carriage and type-bars movable to a printing position, a case having main and top sections, a keyboard support independent of the case sections and carried by the main section and adapted to be moved for the purpose of making the machine more compact when not in use, said keyboard support serving as a support for a universal keyboard having means whereby a connection may be made between the same and the parts operated thereby and to be folded with said support.

12. In a visible typewriting machine in which there is a platen carriage and type-bars movable upward and rearward to a printing point and operated by separate key-operated means, a case comprising main and top sections, a keyboard support pivotally held to the main section between the ends thereof and adapted to be moved for the purpose of making the machine more compact when not in use, said keyboard support serving as a support for a universal keyboard and type-bars and having means whereby a positive connection may be made between the same and the parts operated thereby and to be foldable with said support.

13. In a visible typewriting machine, the combination of a platen carriage, a support comprising a plurality of sections hinged together to fold and unfold, a platen carriage mounted on one of the sections, type-bars, links connected to the type-bars, and keys operatively connected to the links and mounted with said links and type-bars on another section to fold therewith.

14. In a typewriting machine, the combination of a platen carriage, a support comprising a plurality of sections held together to fold and unfold and to form a complete inclosing case when folded, said platen carriage being mounted on one of said sections, and keys and type-bars operatively connected together as a unit and mounted on another one of the sections to fold therewith.

15. In a typewriting machine, the combination of a platen carriage, a support comprising a plurality of relatively foldable members constructed to form a complete inclosing case when folded, said platen carriage being mounted on one member, key-operated levers mounted on another member, and type-bars maintained in normal operative relation to the key-operated levers and mounted on the same member as the key-operated levers and foldable therewith.

16. In a visible typewriting machine, the combination of a platen carriage, a support comprising a plurality of relatively foldable members, a platen carriage mounted on one member, key-operated levers mounted on another member, and type-bars one for each lever maintained in normal operative relation to the key-operated levers and having an upward and rearward movement, said key-operated levers and type-bars being mounted on one of the foldable support members, and links and auxiliary levers forming an operative connection between the type-bars and the key-operated levers.

17. In a visible typewriting machine, the combination of a platen carriage, a two-part support comprising a main member and a front member hinged to the main member to fold upward and on to the same, type-bars mounted on the front member, key-levers also mounted on the front member, and means forming a connection between the type-bars and key-levers and permitting the type-bars and key-levers to fold with the front member.

18. In a typewriting machine, the combination of a platen carriage, a support having a main member, a front member hinged to the main member to fold upward and against the same, and a foldable support connected to the front member, type-bars mounted on the support, key-levers also mounted on said support, and means forming a connection between the type-bars and key-levers.

19. In a typewriting machine, the combination of a foldable support, embodying a main and a folding section constructed to form a complete inclosing case when folded, a platen carriage mounted on said main section, keys and type-bars mounted on the folding section and maintained in the same coöperative relation in any position of said section, and means forming a connection between each type-bar and one of the keys.

20. In a typewriting machine, the combination of a support having relatively fold-

able members, a platen carriage mounted on one member, type-bars mounted on another member, keys, and means forming a connection between each type-bar and one of the keys, said type-bars being foldable with the keys.

21. In a visible typewriting machine, the combination of a foldable support, a platen carriage, type-bars having an upward and rearward movement, a universal keyboard having a key-lever for each type-bar and movable with the type-bars to a substantially vertical position while folding, and means forming a connection between the type-bars and the key-levers.

22. In a typewriting machine, the combination of a support having a foldable member, a platen carriage mounted on said support, type-bars mounted on said foldable member, and a universal keyboard also mounted on the foldable member and having a key-lever for each type-bar and being movable toward the platen carriage so as to be positioned substantially vertically with respect to said platen carriage.

23. In a typewriting machine, the combination of a support, a platen carriage, type-bars, a universal keyboard having a key-lever for each type-bar and foldable therewith into compact relation to the platen carriage when not in use, and a link forming a part of a connection between each type-bar and its coöperating key-lever and foldable with both said type-bar and key lever.

24. In a visible typewriting machine, the combination of a support, a platen, type-bars, a key-operated lever for each type-bar, and means forming a connection between the type-bars and key-levers and movable with said key-levers and type-bars into compact relation to another part of the machine when not in use to make the machine compact.

25. In a visible writing machine, a main casing, a number of type-bars, a key-lever for each type-bar, and a common folding supporting means for said type-bars and key levers whereby the type-bars and key-levers may be both folded into said main casing to make the machine compact.

26. In a visible writing machine, a platen carriage, a number of type-bars, a universal keyboard foldable with the type-bars and including type-bar operating levers, spacing and platen shift levers, and an operative connection between each type-bar operating lever and its respective type-bar.

27. In a visible writing machine, a platen carriage, a number of type-bars, a key-lever for each type-bar, and a link forming a part of a connection between each type-bar and key-lever and foldable with the type-bars and key-levers toward the platen carriage.

28. In a typewriting machine, the combination of a case having a main member provided with a rear wall, a platen carriage movable along said rear wall, a front member hinged to the forward lower edge of the main member and adapted to fold upwardly partly to close the front of said main member, locking means for holding the front folding member in an open position, a support pivotally held to the main member and connected at its forward edge to the front folding member, type-bars pivotally held to said support, a universal keyboard the keys of which are operatively connected to the type-bars also mounted on the pivoted support and adapted when the foldable member of the case is moved upward to move the keys of the keyboard to a more compact relation to the platen carriage, together with a cover hinged to the main case member and adapted with the main member and the foldable member of the case to inclose entirely the foldable support and the keyboard within the case.

29. In a typewriting machine, the combination of a main member provided with a rear wall, a platen carriage movable along said rear wall, a front member hinged to the forward lower edge of the main member and adapted to fold upwardly partly to close the front of the main member, locking means for holding the front folding member in an open position, a foldable support pivotally held to the main member and connected at its forward edge to the front folding member, type-bars pivotally held to said support, and a universal keyboard the keys of which are operatively connected to the type-bars also mounted on the pivoted support and adapted when support is moved to move the keys of the keyboard to a more compact relation to the platen carriage.

30. In a typewriting machine, the combination of a case having a main member provided with a rear wall, a platen carriage movable along said rear wall, a front member hinged to the forward lower edge of the main member and adapted to fold upwardly to partly close the front of said main member, a foldable support held to the main member and connected at its forward portion to the front folding member, type-bars, and a universal keyboard the keys of which are operatively connected to the type-bars also mounted on said foldable support and adapted when the folded member of the case is moved upward to move the keys of the keyboard to a more compact relation to the platen carriage, and a cover hinged to the main case member and adapted to inclose the upper portion of the case.

31. In a typewriting machine, the combination of a frame forming a part of an inclosing case and having relatively movable members adapted to provide a box-like case, a platen carriage movable transversely of the frame, a foldable member pivotally held

to said frame independently of said movable members, and a universal keyboard mounted on said foldable member and adapted to be moved into compact relation to the platen carriage and within said case.

32. In a typewriting machine, the combination of a frame member, a platen carriage movable transversely of the frame member, a foldable member pivotally held to said frame, type, and a universal keyboard operatively connected to move the type and mounted with the type on said foldable member and adapted to be moved from an open position to a folded one and into compact relation to another part of the machine.

33. In a typewriting machine, the combination of relatively movable members, a platen carriage movable transversely of one of the members, type, and a universal keyboard operatively connected to the type and mounted with the type on another member and adapted to be moved from an open position to a folded one and into compact relation to another part of the machine.

34. In a typewriting machine, the combination of relatively movable members, a platen carriage movable transversely of one of the members, a foldable support pivotally held to another member, type, and a universal keyboard operatively connected to the type and mounted with said type on said foldable support and adapted to be moved into compact relation to the platen carriage.

35. In a typewriting machine, the combination of two relatively movable members, a platen carriage movable on one of said members, ribbon mechanism, escapement mechanism, both of which are mounted on the same member as the platen carriage, type-bars, key-operated levers operatively connected to the type-bars, spacing means, and case shifting means all mounted on the other member, and means operatively connecting the key-operated levers with the escapement mechanism while said foldable member is in a folded and unfolded position.

36. In a typewriting machine, the combination of relatively movable members, a platen carriage movable on one of said members, ribbon mechanism, escapement mechanism, both of which are mounted on the same member as the platen carriage, type-bars, key-operated levers operatively connected to the type-bars, spacing levers and case shifting means all mounted on another member, and means operatively connecting the key-operated levers to the escapement mechanism.

37. In a typewriting machine, the combination of a normally stationary member, a platen carriage movable along said stationary member, a rod extending transversely of said stationary member, a foldable member pivotally held on said rod, a type-bar segment movable on said foldable member, type-bars having an upward and rearward stroke pivotally held to said segment, key-operated levers operatively connected to said type-bars and forming a part of a universal keyboard and mounted to fold with said foldable member so as to position the keys in a more compact relation to the platen carriage when not in use, and means whereby the foldable member may be inclosed within the stationary member.

38. In a typewriting machine, the combination of a normally stationary member, a platen carriage movable along said stationary member, a rod extending transversely of said stationary member, a foldable member held to said rod, a type-bar segment on said foldable member, type-bars having an upward and rearward stroke pivotally held to said segment, key-operated levers operatively connected to said type-bars and forming a part of the universal keyboard and mounted to fold with said foldable member so as to position the keys in a more compact relation to another part of the machine when not in use, and means whereby the foldable member may be inclosed within the stationary member.

39. In a typewriting machine, the combination of a stationary member, a platen carriage adapted to move transversely of said stationary member, a rod extending transversely of said stationary member, a foldable support pivotally held to said rod and having an inner part with side frame members, said frame members being connected by a transversely extending bar, type-bars, a universal keyboard mounted on said foldable support or member and operatively connected to the type-bars, and means whereby the foldable member may be locked in its unfolded position.

40. In a typewriting machine, the combination of two relatively movable members, a platen carriage mounted to travel on one of said members, type-bars, key-operated levers operatively connected to the type-bars both of which are mounted upon the other member, and means whereby the type-bars may be moved bodily toward the platen carriage to make the machine more compact than when in use.

41. In a typewriting machine, the combination of a stationary frame member, a movable frame member connected to said main member so as to be capable of being extended to a working position and to be brought closer to the main member for compactness, the stationary member carrying the platen and the other member carrying the type-bars and the individual keys for operating the type-bars, each key being positively connected to its type-bar, said connections being such that the connection is maintained between each key and its type-bar both in

the extended position and in the compacted position.

42. In a machine having type-bars each operated by separate key-operated means, an inclosing supporting case comprising a plurality of members adapted when open to be in extended working position and when closed to be compact, a stationary part of said case serving as a support for a platen and a movable part as a support for a keyboard and type-bars, connection being maintained between each of the type-bars and its key in both the extended and compacted position of the keyboard.

43. In a machine having type bars each operated by separate key operated means, an inclosing supporting case comprising a plurality of members adapted when open to be in an extended working position and when closed to be compact, a part of said case serving as a support for a platen, and another part for a standard keyboard and type bars, operative connection being maintained between each of the type bars and its key in both the extended and compacted position of the keyboard.

44. In a typewriting machine, the combination of two supporting members, one stationary and the other movable, connected together so as to be extended to a working position and to be brought closer together for compactness, the stationary member carrying the platen and the other member carrying the type bars and the individual keys for operating the type bars, each key being positively connected to its type bar, and the connections being such that operative relation is maintained between each key and its type bar in both the extended position and the compacted position.

45. In a typewriting machine in which the type-bars are each operated by a separate key lever and have a rearward movement, a platen, and a case comprising a main section forming a support for the platen, a top section hinged to the main section, a front member hinged to the main section, a keyboard including key levers, type-bars, a support for said keyboard and type-bars supported on said main member and said front member when the parts are extended, said keyboard support being movable into and out of the area of the base of the main member.

46. In a typewriting machine, the combination of supporting means, a platen mounted to travel transversely of the machine on said supporting means, a foldable support, type-bars, key-operated levers, and connections between the key-operated levers and the type-bars mounted upon said foldable support and adapted to be moved with the type-bars and levers and support to a folded position so as to place the keys of the key-operated levers in close relation to the platen.

47. In a typewriting machine, the combination of supporting means, a platen mounted to travel transversely of the machine on said supporting means, a foldable support, type mounted on said support, and key-operated levers operatively connected to the type and mounted with the type upon said foldable support and adapted to be moved to a folded position to place the keys of the key-operated levers in closer relation to the platen when in a compact position than when in their normal operative position.

48. In a typewriting machine, the combination of a platen carriage, a foldable supporting member, key-operated levers, type-bars operatively connected to the key-operated levers and foldable with the latter to place the keys of the key-operated levers in close relation to the platen carriage.

49. In a typewriting machine, the combination of a platen, an upwardly foldable supporting member, key-operated levers, type-bars operatively connected to the key-operated levers and foldable with the latter and the supporting member to place the keys of the key-operated levers in close relation to the platen.

50. In a typewriting machine, the combination of a platen carriage, a foldable supporting member, key-operated levers mounted on said foldable member, type-bars operatively connected to the key-operated levers and foldable with the latter to place the keys of the key-operated levers in close relation to the platen carriage and said levers in a substantially vertical position.

51. In a typewriting machine, the combination of a platen carriage, an upwardly foldable support, key-operated levers mounted on said support, type-bars operatively connected to the key-operated levers and foldable with the latter to place the key-operated levers and type-bars in a substantially vertical and compact position.

This specification signed this seventh day of October, A. D. 1915.

CHARLES PHILO MOSHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."