A. T. BROWN.

TYPE WRITING MACHINE.

APPLICATION FILED APR. 25, 1906.

1,023,808.

Patented Apr. 23 1912.

3 SHEETS—SHEET 1.

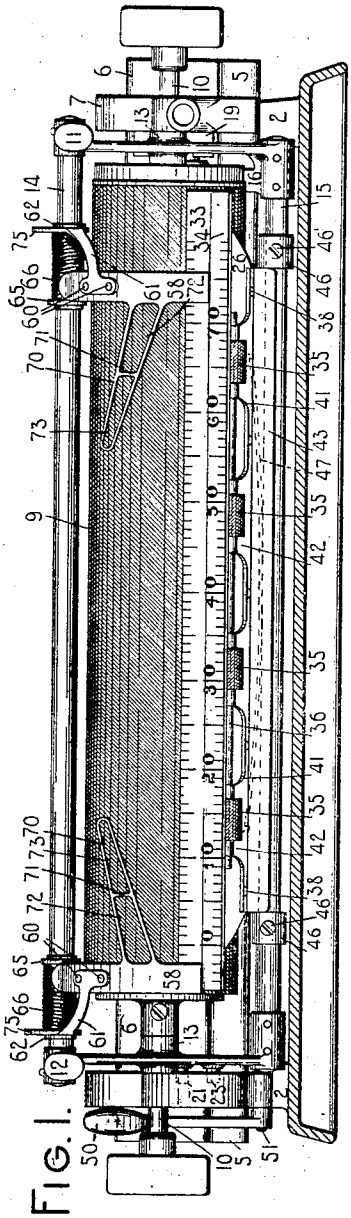

FIG. 1.

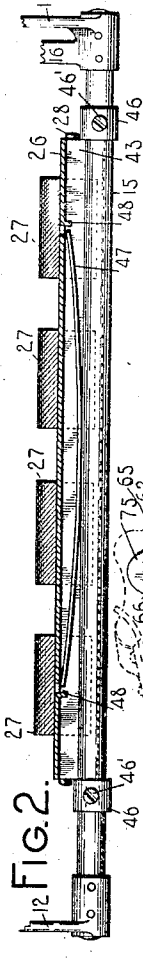

FIG. 2.

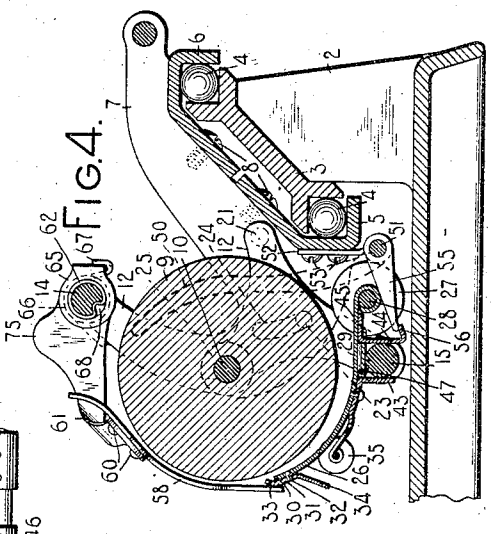

FIG. 4.

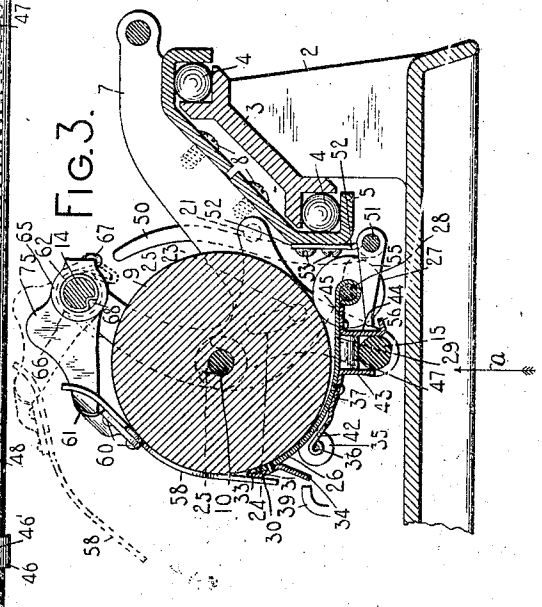

FIG. 3.

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3 SHEETS—SHEET 2.

FIG. 6.

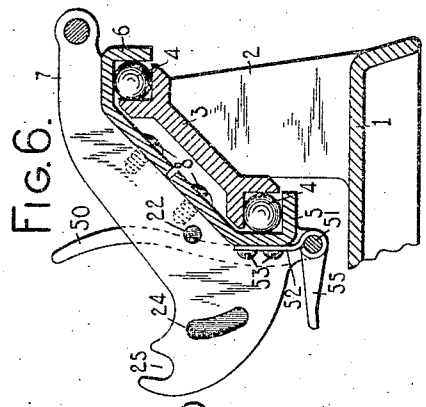


FIG. 5.

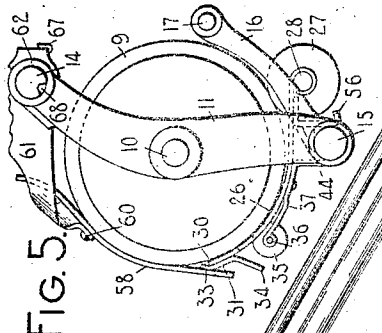


FIG. 7.

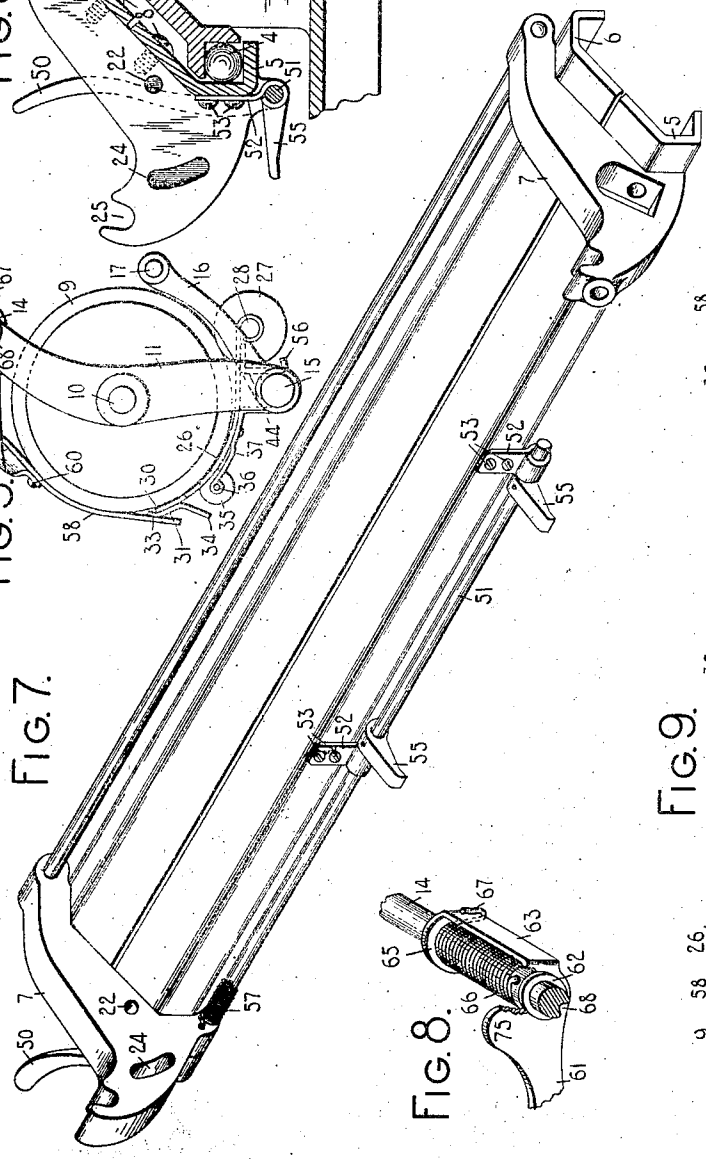
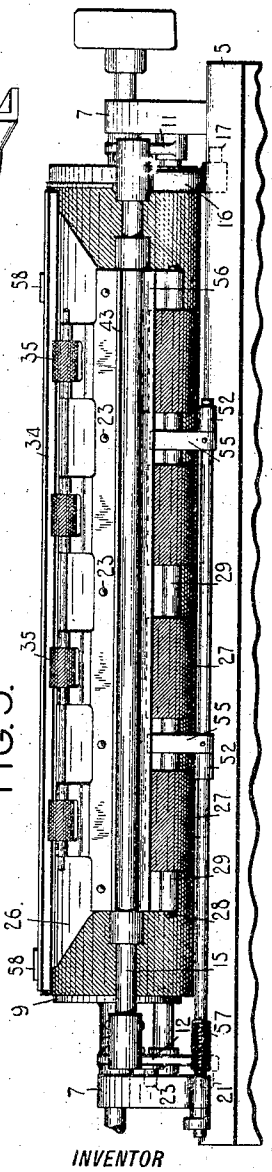


FIG. 8.

FIG. 9.



WITNESSES:

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3 SHEETS—SHEET 3.

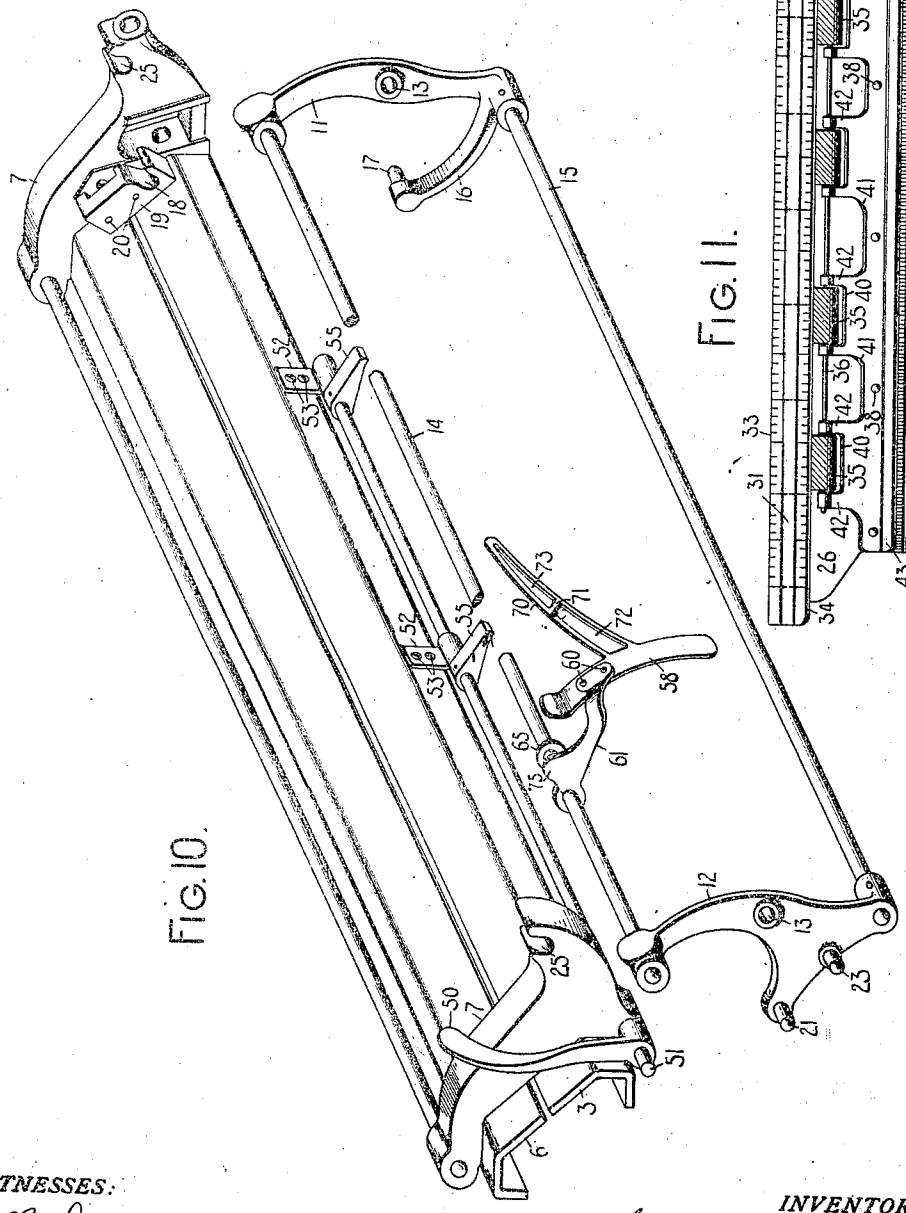

FIG. 10.

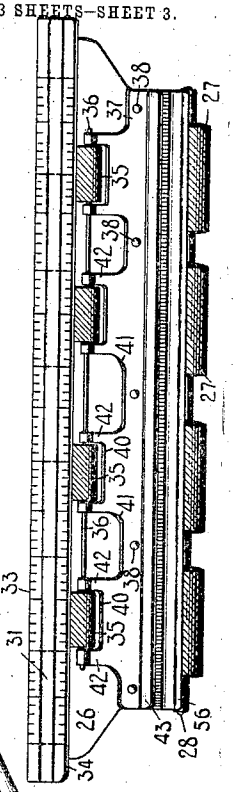

FIG. 11.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

1,023,808. Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed April 25, 1906. Serial No. 313,603.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and it has for its principal object to provide improved paper feeding devices for such machines.

My invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the upper part of a typewriting machine having my invention embodied therein. Fig. 2 is a fragmentary front view, partly in section, of some of the paper feed devices. Fig. 3 is a front to rear vertical sectional view showing the parts in normal position. Fig. 4 is a view similar to Fig. 3 but showing the paper feed devices in released position. Fig. 5 is a right-hand end view of the platen frame with the paper feed devices in position. Fig. 6 is a view similar to Fig. 3 but with the platen frame removed. Fig. 7 is an isometric view of the carriage with the platen frame removed. Fig. 8 is a fragmentary isometric view showing the manner in which the paper fingers are mounted. Fig. 9 is a view of the carriage and paper feed devices as seen from the bottom. Fig. 10 is an isometric view of the carriage and platen frame, the platen frame being removed from the carriage and the platen and most of the paper feed devices being omitted. Fig. 11 is a view of the paper apron and parts mounted thereon, detached from the machine, the parts being shown as they would appear when looking in about the direction of the arrow *a* in Fig. 4.

Most of the features of my invention are applicable to typewriting machines generally, but some of them are more particularly designed for use on a front-strike machine and I have accordingly shown my invention applied to a machine of this sort.

The machine shown in the drawings comprises a top plate 1 from which rise standards 2 that support a stationary carriage rail 3 having formed in its opposite edges race-ways in which run anti-friction balls or rollers 4 that coöperate with rails 5 and 6 forming parts of the carriage or carriage truck. The rail 3 is inclined downward toward the front of the machine and the body of the carriage is correspondingly inclined as indicated in the drawing. Said carriage has end pieces 7 which are secured to the rails 5 and 6 by screws 8. The platen 9 has a shaft 10 that is journaled in a platen frame, the construction of which is best shown in Fig. 10. Said platen frame comprises a right-hand end piece 11 and a left-hand end piece 12 in which end pieces the shaft 10 is journaled at 13. Said end pieces are connected together by a frame rod 14 that extends across the machine above the platen and a lower frame rod 15 situated beneath the platen, said frame rods being rigidly mounted in suitable hubs in the end pieces 11 and 12. The end piece 11 has projecting from the lower hub thereof an arm 16 that curves upwardly and rearwardly and that has projecting toward the right from the free end thereof a pivot pin 17 that is adapted to rest in a notch 18 formed in the upper edge of a block 19 that is secured by screws 20 to the inner face of the right-hand end piece 7. The left-hand end piece 12 of the platen frame has projecting toward the left therefrom a pivot pin 21 that is adapted to be seated in a hole 22 (Fig. 7) in the left-hand end piece 7 of the carriage, and the end piece 12 also has projecting therefrom a pin 23 that is adapted to play up and down in a slot 24 in the inner face of the end piece 7. The platen frame is adapted to be mounted on the carriage by inserting the pins 21 and 23 in the hole 22 and slot 24 respectively and by dropping the pin 17 into the notch 18. When the platen frame is in position the platen shaft 10 normally rests in notches 25 formed in the end pieces 7 for the purpose. When the platen frame is in position on the machine, said frame is adapted to be tilted backward and upward for the purpose of making erasures, the frame in this operation rocking about the pivot pins 17 and 21 and its motion being limited by the pin 23 contacting with the upper end of the slot 24. The platen frame is also adapted to be detached from the machine by lifting the pin 17 out of the notch 18 and withdrawing the pins 21 and 23 by longitudinal motion of the frame from the hole 22 and the slot 24.

The devices for controlling the paper comprise a paper apron 26 that lies beneath the platen between said platen and the lower frame rod 15 of the platen frame. The rear edge of this paper apron is cut away to accommodate one or more rear paper feed rollers 27 which are rotatably mounted on a rod 28 supported by the paper apron 26, the rearwardly projecting parts 29 of which are folded about said rod as indicated, for example, in Fig. 4. There may, of course, be only one of these rear feed rollers if desired, but I prefer to employ a plurality of short rollers strung along the rod 28 as shown, for example, in Fig. 9, four such rollers being shown in the present case. The forward edge 30 of the paper apron stands a little below the writing line, which in the present machine is on the front face of the platen. Said forward edge or forward edge portion of the paper apron is adapted to contact with the paper and thus constitutes a platen plate which keeps the paper smooth and straight just below the line of writing. I prefer to have this forward part of the paper apron carry a platen scale and also a carriage scale. One or both of these scales may be engraved on the apron itself, but I prefer to make said scales on the front face of a scale plate 31 that is secured to the forward part of the apron 26 by any suitable means, as for example, by rivets 32. The scale plate 31 has its upper part 33 bent over the extreme upper edge 30 of the paper apron toward the platen, thus bringing the front face of this part of the scale plate into a plane approximately at right angles to the line of sight of the operator. This part of the scale plate has the platen scale engraved thereon. The carriage scale is engraved on the lower part 34 of the scale plate which is bent toward the front of the machine, as shown for example in Fig. 4, thus bringing the forward surface of this lower part of the scale plate into a plane approximately at right angles to the line of sight of the operator. The middle part of the scale plate between the upper part 33 and the lower part 34 is inclined downward toward the back of the machine so as to bring the lower edge of the scale plate substantially directly under the upper part thereof, notwithstanding the fact that the lower part of the scale plate is inclined upward and toward the back of the machine. A fixed pointer 39 (Fig. 3), mounted in any suitable manner, coöperates with the carriage scale 34.

The paper apron 26 has mounted thereon a forward feed roller or forward feed rollers 35. In the present instance I have shown four short feed rollers 35 though it will be obvious that the number and length of said rollers may be varied. The feed rollers 35 are mounted on a rod 36 which in turn is mounted on a plate 37 that is secured by rivets 38 to the under side of the paper apron. The forward edge of said plate 37 is cut away as shown at 40 to receive the feed rollers 35 and between each two consecutive rollers there is also a deeper cutaway 41, thus leaving two forwardly projecting arms 42 for each roller 35, one at each end of the roller. The forward ends of these arms 42 are bent around the rod 36, thus retaining said rod in position. Suitable openings are formed in the paper apron 26, through which the rollers 35 project far enough to touch the platen or the paper thereon. I prefer to bend the forward part of the plate 37 a little out from the apron 26, as shown in Figs. 3 and 4. The construction is such that each of the rollers 35 may be adjusted toward or from the platen by bending the arms 42 corresponding to that particular roller.

The rollers 35 project but slightly through the paper apron 26 and it is desirable, therefore, that said rollers be adjusted to project to about the right extent. This adjustment becomes more important, however, in view of the fact that parts mounted on the paper apron contact with the paper at three points, namely, at the rear feed rollers 27, at the forward edge 30 of the paper apron and at the forward feed rollers 35. If said forward feed rollers project a little too far through the paper apron they will lift the forward edge 30 which serves as a platen plate off the paper, whereas if said rollers do not project far enough through the paper apron the pressure of the spring 47 will come almost entirely on the forward edge 30 of the paper apron and there will be but little pressure on the rollers. It is desirable that most of the pressure be on the rollers 35 rather than on the platen plate. It therefore becomes important to adjust the position of these rollers with some degree of nicety. The means which I have devised for this purpose, namely, the shaping of the forward part of the plate 37 in such fashion that the rollers may be adjusted by bending this plate, or the arms projecting from it toward the front of the machine, is effective and extremely simple.

The rear part 43 of the plate 37 is bent off approximately at right angles to the apron 26, this part of said plate thus constituting a flange that lies in front of the frame rod 15 and prevents motion of the paper apron toward the back of the machine. Motion of said paper apron toward the front of the machine is prevented by another angle plate 44 that is fastened by rivets 45 to the paper apron 26 and that extends downward back of the bar 15 and parallel to the flange 43. The paper apron thus has parts, namely, the flange 43 and the angle plate 44, which straddle the frame bar 15. Motion of the apron to the right or left

is prevented by collars 46 on the rod 15, said collars engaging the ends of the parts 43 and 44. These collars may be secured in position by any suitable means, as by set screws 46'.

I have provided spring means acting on the paper apron between the rear feed rollers 27 and the forward feed rollers 35 and pressing said apron and feed rollers toward the platen. Said spring means may be of any suitable construction and may be applied to the paper apron in any one of a variety of ways, but I prefer to use the single semi-elliptical leaf spring 47 best shown in Fig. 2. This spring lies on top of the bar 15 and is bowed up at its ends which press upward against the under side of the apron 26. The spring is held against displacement toward the front or back by the flange 43 and the plate 44 and displacement of the spring endwise is prevented by small lugs or ears 48 struck down from the paper apron 26 as shown in Fig. 2.

It will be perceived that I have provided a floating paper apron, not positively held in any particular position and capable of universal motion except that it is prevented by the parts secured thereto that straddle the bar 15 from movement in a plane substantially tangent to the platen, this plane in the present instance being horizontal. Either the forward or the rear part of the apron may be depressed away from the platen independently of the other and one end of said apron may be moved away from the platen independently of the other or farther than the other. It will be perceived that by placing one of the feed rollers nearer to the spring 47 than the other, one of said feed rollers may be caused to press more forcibly against the platen than the other. I prefer to cause the rear feed rollers 27 to press more forcibly against the platen than the forward feed rollers 35 and I have accordingly placed said rear feed rollers closer to the spring than the forward feed rollers.

So far as I am aware it is broadly new to mount two feed rollers, or two sets of feed rollers, such as rear and forward feed rollers, on the same rigid member and to press both sets of feed rollers toward the platen by the same spring means applied to said member between the sets of rollers. It will also be perceived that the platen plate consists merely of the forward part of this member and that the same spring that presses the feed rollers toward the platen also holds the platen plate up to the platen. This entire arrangement of a single rigid member which in itself constitutes a paper apron and on which are mounted both the rear and the forward feed rollers, the platen plate and the platen and carriage scales, all of these parts being controlled by a single spring, is extremely convenient and simple and is a marked improvement over anything of the sort with which I am acquainted.

The scales may be adjusted to the right or left hand to bring the carriage scale 34 into proper relation with the pointer 39 by adjusting the position of the paper apron as a whole. This is done by moving the collars 46 and securing them in their adjusted positions by tightening the set screws 46'.

I have provided a releasing device for the paper feed devices which releasing device is adapted to move the paper apron and all of the parts mounted thereon bodily away from the platen against the tension of the spring 47 to the position shown in Fig. 4. As has been explained above, the platen frame and the paper feed devices are readily detachable from the carriage. It sometimes happens that the machine is used for heavy work where a plurality of sheets of paper are in use with carbon sheets in between and it is necessary to interrupt this work in order, for example, to write a letter or telegram. In such a case, if the operator is provided with an extra platen and platen frame, the first platen may be quickly removed from the machine with the work in it and a new platen frame be inserted and the letter may be written without disturbing the papers in the first platen frame. In machines in which the platen frame is detachable and which have been used in this way heretofore, the paper releasing devices were mounted on the platen frame and when said platen frame was laid down on the table or handled while it was detached from the machine, these paper releasing devices have been inadvertently operated with the result that the papers in the detached platen frame have become disarranged. In order to obviate this difficulty and for other reasons I prefer to mount the releasing devices on the carriage truck so that when the platen frame is removed from the machine the releasing devices will remain in position on the machine.

The releasing devices for the paper feed devices comprise a handle 50, said handle consisting of an arm rigidly mounted on the end of a rock shaft 51, one end of which passes through and has a bearing in one of the end pieces 7. The rock shaft 51 lies just below the forward edge of the carriage rail 5 and it is journaled in two brackets 52 that are secured by screws 53 to a substantially vertical part of the front face of said rail. Two arms 55 are rigidly mounted on the shaft 51 and project toward the front of the machine beneath the folded rear edge portion 29 of the paper apron. The forward ends of the arms 55 stand above a rearwardly bent flange 56 of the plate 44. As best shown in Fig. 7 the shaft 51 is pro-

vided with a returning spring 57 that is coiled about the shaft and is fastened at one end to the shaft and at the other end to the end piece 7. The spring 57 tends to move the handle 50 toward the back of the machine and the motion of said handle under the impulse of the spring is limited by the carriage rail 5. When the handle 50 is pulled toward the front of the machine toward the position indicated in Fig. 4, the forward ends of the arms 55 move downward until they contact with the flange 56, after which said flange and the rear part of the paper apron are carried down, turning about the forward part of the paper apron as a pivot, until the folded part 29 of the paper apron contacts with the upper edges of the arms 55. As the paper apron is now in contact with the arm 55 at two points, one below said arm and the other above it, said apron can no longer turn about its forward edge as a pivot but is moved bodily downward away from the platen, its motion being substantially in the nature of a turning about the axis of the shaft 51. The result is that the entire paper apron and all of the parts mounted thereon are moved bodily away from the platen as shown in Fig. 4, the spring 47 being straightened out on top of the bar 15. The feed rolls are moved away from the platen successively, the rear roll first and then the forward roll; and they are moved substantially the same distance from the platen.

From an inspection of Fig. 3 it will be evident that if the platen frame be tilted back about the pivot pins 17 and 21 until the pin 23 reaches the top of the slot 24, the flange 56 will be moved out from under the ends of the arms 55 and the releasing device will be disconnected from or inoperative on the paper feed devices. Furthermore, when the platen frame is removed from the machine the paper feed devices are entirely disconnected from their releasing devices so that there is practically no danger of said paper feed devices being disturbed by the handling of the platen frame; moreover in case the user of the machine is provided with a plurality of platens the one releasing device serves for all of said platens.

I have provided a pair of paper fingers mounted on the upper frame rod 14 of the platen frame for coöperation with the paper; especially with the margins thereof above the platen scale 33. Each of said paper fingers comprises an up and down extending strip 58 of sheet metal, the middle of which is curved to conform to the curvature of the platen and the lower part of which extends downward just in front of the scale plate 31. Near its upper end each of the strips 58 is secured by rivets 60 to the end of an arm 61 that is pivoted on a sleeve 62 slidably mounted on the frame rod 14. Each of the arms 61 is bent and curved from the strip 58 toward the end of the platen, as shown in the drawings, so that said arms do not interfere with the edges of the paper, the margins of which lie under the strip 58. Each of the sleeves 62 is somewhat elongated and the arm 61 is pivoted on the outer end of said sleeve, said arm being bent off back of the sleeve parallel with the bar 14 forming a yoke bar 63, the inner end of which is bent toward the front of the machine as shown at 65, the part 65 having an opening through which the sleeve 62 passes so that the arm is pivoted on the sleeve at two points spaced apart. The ends of the sleeve are upset to prevent longitudinal displacement of the arm pivoted thereon. A spring 66, coiled about the sleeve 62, is connected at one end to said sleeve and at its opposite end 67 is bent up under the yoke bar 63, the tension of the spring being exerted to press the paper finger toward the platen. In order to prevent the sleeve 62 from turning under the impulse of the spring 66, the bar 14 is formed with a longitudinal groove 68 into which the sleeve is bent, thus forming a spline. The construction is such that the sleeve and paper finger may be slid longitudinally of the bar 14 in order to cause the paper fingers to coöperate properly with sheets of paper of different widths, but the sleeve cannot turn on the bar.

Each of the paper fingers comprises an arm 70 projecting from the strip 58 toward the middle of the platen. This arm is somewhat inclined upward and it is bent to conform to the curvature of the platen. The arms 70 extend out over the written part of the paper and as these arms have been constructed heretofore they have interfered with the visibleness of the written matter. In order to obviate this objection to these arms, while retaining all of the advantages thereof, I have cut out the sheet metal of which the arms are made, leaving the arms of the skeleton form shown in the drawings. In the particular instance here shown, the arm 70 is integral with the strip 58 and it consists only of two slender strips of metal connected at the end of the arm and also connected near the middle of the arm by a slender tie 71. Almost the entire middle part of the arm is cut away leaving two openings 72 and 73 through which the writing may be read. The skeleton framework of which this arm consists is so slender that the written matter can ordinarily be read without moving either the paper or the paper fingers. It will be obvious that these skeleton arms might be constructed in other ways than that here shown.

The paper fingers may be lifted off of the platen by hand to the position shown in

broken lines in Fig. 3, the arms 61 turning on the sleeve 62 against the tension of the spring 66. To facilitate this and other manipulation of the paper fingers, each of the arms 61 has a projecting part 75 adapted to serve as a handle.

When the paper apron 26 is moved away from the platen by the releasing devices to the position shown in Fig. 4, the scale plate 31 presses forward on the strips 58 of the paper fingers and lifts said paper fingers slightly off of the platen as indicated in said Fig. 4.

Various changes may be made in the details of construction and arrangement without departing from my invention.

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

1. In a typewriting machine, the combination of a roller platen, a paper finger pressed against said platen and consisting of a band of sheet metal extending up and down and curved to fit the curvature of the platen, and an arm formed integral with said band and extending at an angle therefrom toward the middle of the machine, said arm consisting of two narrow strips connected at their outer ends and also connected at an intermediate point by a cross strip, all of said strips being integral with one another and with said band and said strips being so narrow as to permit of reading through said projecting arm.

2. In a typewriting machine, the combination of paper feed devices and releasing means for said paper feed devices, said paper feed devices and said releasing means being operatively disconnectible the one from the other.

3. In a typewriting machine, the combination of a carriage truck, a platen frame mounted on said truck and movable on said truck, paper feed devices mounted on said platen frame, and releasing devices for said paper feed devices mounted on said truck.

4. In a typewriting machine, the combination of a carriage truck, a platen frame detachably mounted on said truck, paper feed devices carried by said platen frame, and releasing devices for said paper feed devices mounted on said truck, the construction being such that when said platen frame is detached from said truck, said paper feed devices are disconnected from their releasing devices.

5. In a typewriting machine, the combination of a carriage truck, a platen frame mounted on said truck and movable on said truck, paper feed devices mounted on said platen frame, and releasing devices for said paper feed devices mounted on said truck and operative on said feed devices when said platen frame is in one position and inoperative on said feed devices when said platen frame is in another position.

6. In a typewriting machine, the combination of a platen, a platen frame, a member having a part straddling a part of said platen frame, spring means pressing said member toward the platen, and paper feed devices mounted on said member on either side of said part of the platen frame.

7. In a typewriting machine, the combination of a platen, a platen frame, a paper apron having a part that straddles a part of said platen frame, a feed roll mounted on said paper apron to the rear of said straddling part, a feed roll mounted on said paper apron forward of said straddling part, and spring means pressing said paper apron toward the platen.

8. In a typewriting machine, the combination of a platen, a platen frame having a rod or bar extending longitudinally thereof, a paper apron lying between said platen and said bar and having projections that straddle said bar, a spring compressed between said apron and said bar, paper feed devices mounted on said apron forward of said bar, and paper feed devices mounted on said apron back of said bar.

9. In a typewriting machine, the combination of a carriage; a paper apron mounted on said carriage and carrying a scale; a fixed pointer coöperating with said scale; and means for adjusting the paper apron relatively to the carriage in order to bring the scale into proper relation with the pointer.

10. In a typewriting machine, the combination with the platen, of a paper apron; a plate mounted on said paper apron; a feed roller mounted on said plate and projecting through said paper apron, said plate being adapted to be bent in order to adjust the feed roller.

11. In a typewriting machine, the combination with the platen, of a member carrying a feed roll at its rear part and a platen plate at its forward part; and a feed roller mounted on said member intermediate said rear feed roller and said platen plate by sheet metal arms that can be bent to adjust said feed roller.

12. In a typewriting machine, the combination with the platen, of a paper apron, the forward part of which is adapted to serve as a platen plate; a feed roller mounted on the rear part of said paper apron; and an intermediate feed roller projecting through said paper apron and mounted thereon by means of sheet metal arms that can be bent to adjust said feed roller.

13. In a typewriting machine, the combination with the platen, of a member carrying forward and rear paper feed devices; spring means pressing said member toward said platen; and a releasing device comprising a rock shaft having arms extending beneath the rear edge of said member and adapted to contact with another part of said

member from above, whereby when said shaft is rocked said member is moved bodily away from said platen.

14. In a typewriting machine, the combination of a carriage truck; a platen frame detachably mounted on said carriage truck; a platen carried by said platen frame; paper feed devices carried by said platen frame; spring means pressing said paper feed devices toward said platen; and a releasing device comprising a rocking member mounted on said truck and having arms adapted when said rocking member is rocked to engage said paper feed devices and move them away from the platen, the construction being such that when said platen frame is removed from the machine said paper feed devices are out of operative relation to their releasing device.

15. In a typewriting machine, the combination with the platen, of a paper apron, the forward part of which serves as a platen plate; feed rolls mounted on said paper apron; spring means pressing said paper apron toward the platen; a paper finger; and a paper feed releasing device adapted to move said paper apron away from the platen, said paper apron moving said paper finger away from the platen.

16. In a visible writing machine, a rotatable platen, front and rear feed rolls below the axis of the platen, a frame in which they are mounted, spring acting means serving normally to maintain the rolls in contact with the platen and means for bodily depressing the roll carrying frame to thereby move both the rear and front rolls successively substantially corresponding distances away from their normal points of contact with the face of the platen.

Signed at Syracuse, in the county of Onondaga and State of New York this 23rd day of April A. D. 1906.

ALEXANDER T. BROWN.

Witnesses:
S. DAVIS,
R. ARONSON.