

Aug. 25, 1959

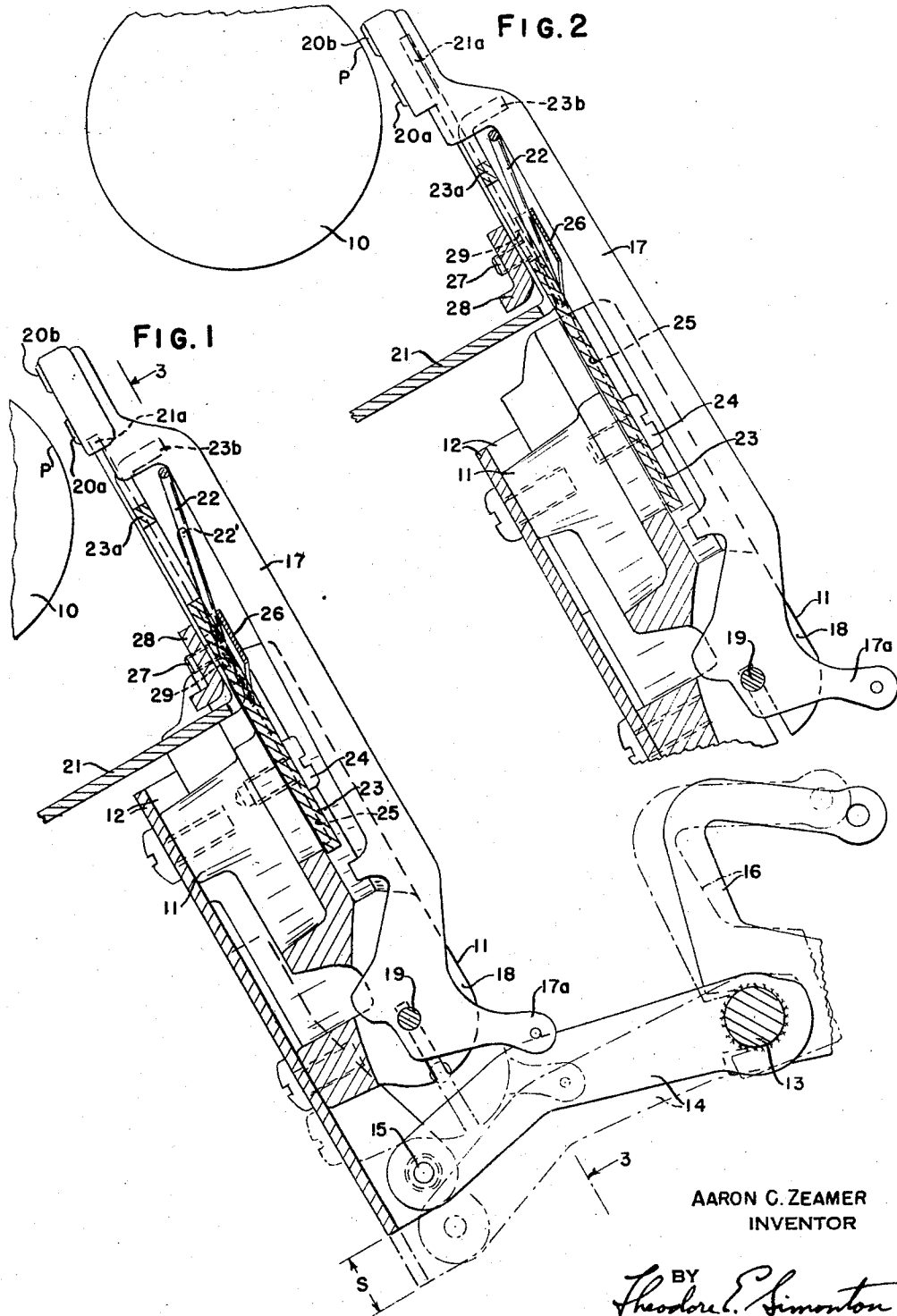
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2,901,080

TYPEWRITER CASE SHIFT CONTROL OF TYPE IMPACT

Filed Sept. 30, 1957

2 Sheets-Sheet 1



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TYPEWRITER CASE SHIFT CONTROL OF TYPE IMPACT

Filed Sept. 30, 1957 **FIG. 3**

2 Sheets-Sheet 2

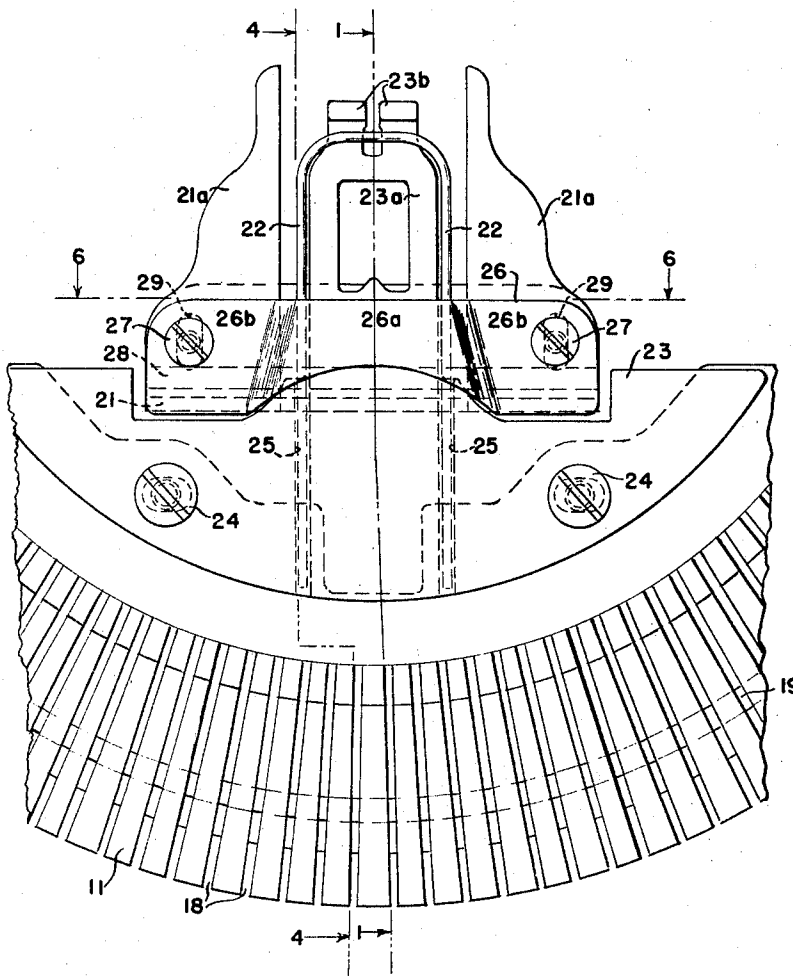


FIG. 4

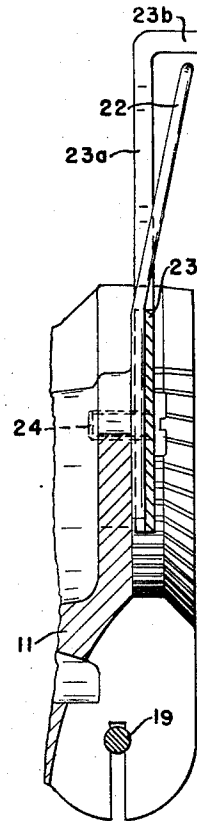


FIG. 5

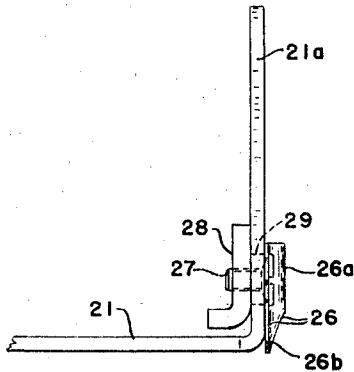
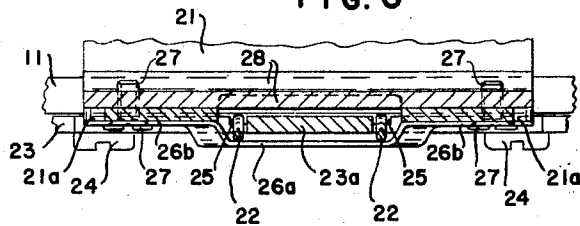


FIG. 6



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TYPEWRITER CASE SHIFT CONTROL OF TYPE IMPACT

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Application September 30, 1957, Serial No. 686,928

8 Claims. (Cl. 197—183)

This invention relates to typewriters having type bars bearing different case types and adapted for impact printing upon a platen backed work sheet, and more particularly to mechanism for impact control for obtaining uniform shade impressions from the upper and lower case types thereon having different printing areas.

An object of the invention is to provide an improved mechanism of the kind referred to.

Another object is to provide an efficient typewriter of the kind embodying upper and lower case types on common type bars, which, without the operator giving special operating attention, will produce uniform shade imprints from all types whether they be of lower case types or of upper case types of larger printing area.

A further object of the invention is to provide type impact control mechanism in a power driven machine in which the type bar operating mechanism includes an actuator driven positively during the first part of the operating stroke of the type bars and in which the type bars continue by momentum for the remainder of their stroke.

Other objects and advantages will become apparent from reading the following description and claims and the accompanying drawings, in which:

Figure 1 is a fragmentary longitudinal vertical mid-line sectional view of a portion of a typewriter embodying the present invention showing the parts in normal lower case printing position;

Figure 2 is a view similar to Figure 1 in which the parts are shown in upper case shifted position;

Figure 3 is a fragmentary view of the parts of Figure 1 as viewed in the direction of the arrows 3—3 thereof, the type bars being omitted;

Figure 4 is a sectional view of the case-shiftable parts of Figure 3 on the line 4—4 thereof;

Figure 5 is a side elevational view of the non-case-shiftable parts of Figure 3; and

Figure 6 is a sectional view on the line 6—6 of Figure 3.

In the drawings, the invention is shown as embodied in the "Smith-Corona" electric portable typewriter that is now on the market. This machine is based upon the known "Smith-Corona" key-operated portable typewriter shown and described in detail in H. A. Avery United States Patent 1,981,982, granted November 27, 1941, and the conventional parts of the electric machine are substantially similar to those of the key-operated machine shown in said Avery patent. Certain of the parts of the electric machine are shown in co-pending applications hereinafter referred to. While the present invention is particularly useful in connection with such an electric machine, it could, if desired, be incorporated in a key-operated machine such as that of the Avery patent.

A conventional platen is represented at 10 supported in the usual manner in a carriage, not shown, for transverse letter-spacing movement with respect to the frame.

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The case shiftable parts comprise the type bar segment 11 which is secured to a case shift frame 12, both of which are conventional. A rock shaft 13 extends across the machine and is journaled in the frame thereof and has two rearwardly projecting rock arms 14 which are pivotally secured at 15 to the two lower corners of the shift frame 12 in conventional manner. An upwardly and forwardly projecting operating lever 16 is also fixed to the rock shaft 13, the upper portion of lever 16 being connected to case shift mechanism, not shown, for selectively shifting the case shiftable parts from lower case to upper case printing position. A suitable manually-operated case shift mechanism is shown in H. A. Avery United States Patent No. 2,001,759, granted May 21, 1935, but I prefer to employ a power-operated case shift mechanism such as that of the co-pending application of Joseph P. Barkdoll, Serial No. 686,926, filed September 30, 1957.

The shift frame 12 is secured in the machine frame for movement in a substantially straight-line path toward and away from the platen 10 by the usual ball and roll-way arrangement, not shown, at the sides of the shift frame 12. Conventional upper and lower stops are also provided for limiting the case shift movement in either direction.

Type bars 17, only one being shown, are pivoted in guide slots 18 in the segment 11 on the fulcrum wire 19 and carry the type characters 20, the lower case character being denoted 20a, and the upper case character 20b. The type bars 17 have the usual heel 17a for connection with type bar operating mechanism which is not shown. This type bar mechanism could be as shown in the aforesaid Avery patent, but is preferably a power-operated mechanism such as shown in the co-pending application of Joseph P. Barkdoll, Serial No. 686,925, filed September 30, 1957.

The case shiftable parts are shown in full lines in Figure 1 in their normal lower case printing position and in their case-shifted, upper case printing position in Figure 2, the parts being spring-biased to lower case printing position by means not shown. The extent S of the case shift movement is indicated in Figure 1 by broken lines. It will be noted that in the typewriting machine shown, since the upper case character 20b is carried by type bar 17 at its outer end, the case shift from the normal lower case position to the shifted upper case position of the shifted parts is downward.

The above described parts constitute only the setting of the present invention, and are more fully described in the aforesaid patent and applications. The invention claimed herein will now be more particularly described.

A line indicator bracket 21 is secured to the frame of the typewriting machine by means not shown but which may conveniently be by screws into the usual transversely extending frame cross member which supports the carriage. Bracket 21 extends forwardly in the machine and then is bent upwardly in front of the platen 10, extending thence upwardly and rearwardly in a plane parallel with the plane of the segment and the plane of the case-shift movement. At this upward bend the bracket is divided into two transversely spaced, upwardly extending arms 21a which may conveniently serve as slides for the usual reciprocatory ribbon guide and whose upper ends serve as line indicators.

An inverted U-shaped, spring-wire repulser 22 is secured to the segment 11 by means of a clamping plate 23 pressed against the segment by the screws 24. The vertical legs of the repulser 22 are contained in grooves 25 in the rear surface of plate 23, the grooves being of slightly less depth than the diameter of the wire from which the repulser is made, so that the repulser is posi-

tioned laterally by the grooves and clamped in a vertically adjustable position to the segment by tightening the screws 24.

The clamping plate 23 has an upwardly extending narrow tongue 23a which extends upwardly and rearwardly between the arms 21a to a point forward of platen 10 where it terminates in two forwardly projecting ears 23b which serve as type bar guides in the usual manner. The grooves 25, extended, lie on either side of the tongue 23a and inside of the arms 21a, all substantially in the same plane. The repulser 22 is formed with a bend in each of the vertical legs, above and adjacent to the point where the legs project from the upper ends of the grooves 25, so that the upper portion of the repulser is inclined forward of the tongue 23a. The horizontal cross bar portion at the top of repulser 22 is therefore located in front of the type bar guide portion of the tongue 23a between the ears 23b in a position to intercept each of the type bars 17 before the type character 20a or 20b thereon reaches the strike point P on the platen 10, indicated in Figures 1 and 2, and to cushion the impact of said characters on the platen.

Resilient spring wire repulsers of this general type are known in the art but the particular above described arrangement permits the case shift control of the repulser action now to be described.

A repulser depressor yoke 26 is secured to the line indicator bracket 21 in front of the repulser 22. The depressor 26 has a forwardly offset portion 26a, best seen in Figure 6, which embraces and, preferably, contacts the repulser 22 when the parts are in normal lower case printing position. The flat end portions 26b of the depressor 26 are secured to arms 21a by the screws 27 which pass through holes in the depressor and arms 21a and are threaded through a nut 28 in back of the arms 21a. In order to obtain a degree of adjustment of the repulser action, these holes through the arms 21a may be slotted vertically as shown at 29 in Figure 3.

When the case shifted parts are in their upper, normal, lower case position as shown in full lines in Figure 1, a type bar 17 which has been actuated will be swung upward to the position shown. Upon reaching this position the type bar 17 will come in contact with the repulser 22 and will continue on opposed by the resilience of the repulser until the type character 20a reaches the strike point P on platen 10. In a similar manner, when the parts are in lowered, shifted, upper case printing position, as shown in Figure 2, type bar 17 will be swung up to the position shown when it first meets the repulser 22. Momentum will then carry the type bar onward, opposed by the resistance of the repulser, until the type character 20b reaches the strike point.

Comparison of Figures 1 and 2 will reveal that the type bar must travel farther against the resistance of the repulser in lower case normal position than when the parts are in upper case shifted position. Since the printing areas of the upper case types are always larger than those of the lower case types, uniform-shade impressions from the types can thus be obtained.

Since the upper portion of the repulser 22 is inclined forward from the plane of shift, and since the repulser is secured to the segment 11 while the depressor 26 is secured to the bracket 21 which is fixed in the frame of the machine, it will be apparent that downward shifting of segment 11 to the upper case position will cam the repulser 22 backward and thus decrease its resistance or cushioning effect. The case shifted parts, including the repulser 22, are shifted downward a distance S for upper case printing, and the repulser 22 will be moved not only downward but rearward nearer to the tongue 23a as indicated in broken lines at 22' in Figure 1.

It will be apparent that the repulser action may be regulated in anumber of ways. The general level of the repulser action is, of course, dependent upon the

gage and stiffness of the spring wire used in the repulser 22, and also upon the angle of bending between the upper and lower ends of the repulser, which angle is best shown in Figure 4. The operating inclination of the repulser 22 in lower case printing when first struck by a type bar, as shown in Figure 1, may be additionally regulated (1) by bending the upper end of the repulser 22, (2) by loosening the screws 27 and vertically adjusting the depressor 26, and (3) by loosening the screws 24 and vertically adjusting the repulser 22. Such regulation controls not only the repulser action in lower case printing but also that in upper case printing. In particular, moving the depressor 26 upward increases its rearward camming action upon the repulser 22 during the case shift movement S, and hence decreases the upper case repulser action markedly.

In the above-mentioned "Smith-Corona" electric portable, it has been found to be desirable to eliminate all repulser action in the upper case position, while retaining substantial repulser action in the lower case position. This can be accomplished very simply by making the foregoing adjustments in such manner that, in the upper case shifted position, the depressor 26 cams the repulser 22 so far back toward the tongue 23a that the repulser does not come into contact with the type bars in their course toward the platen.

While there is herein described, and in the drawings shown, an illustrative embodiment of the invention, it is to be understood that the invention is not limited thereto, but may comprehend other constructions, arrangement of parts, details and features without departing from the spirit of the invention. I desire to be limited, therefore, only by the scope of the appended claims.

I claim:

1. In a typewriting machine having a frame, a platen, type bars each having an upper and lower case character thereon and being pivotally mounted for impact strike upon a common point on said platen, and case shift means for changing the relative position of said platen and type bars in said frame to selectively bring said upper or lower case characters to said strike point; case shift controlled mechanism for impact control of said type bars, comprising a resilient repulser member adjacent said strike point and a depressor member embracing said repulser member, one of said members being secured to said frame and the other member being adapted to be moved by said case shift means, said repulser member being adapted to engage said type bars upon their approach to said strike point at a point removed from said platen for lower case printing and being deflected by said depressor member upon operation of said case shift means to a point closer to said platen for upper case printing.

2. In a typewriting machine having a frame, a platen, a plurality of type bars, each having thereon a lower case character and an upper case character, said characters being of different printing areas and being adapted selectively to print at a strike point on a work sheet positioned against said platen, means mounting said type bars for printing movement relative to said platen, case shifting means for effecting relative shifting between said type bar mounting means and said platen for selecting which of said case characters is to print, and mechanism for selectively moving said type bars to print at said striking point; case shift controlled mechanism for impact control of said type bars comprising a resilient repulser member positioned for lower case printing to engage said type bars at a point in their movement toward said platen before said bars strike at said strike point, and a depressor member embracing said repulser member, one of said members being fixed in said frame and the other member being movably secured for shifting with said case shifting means whereby said repulser member is deflected toward said platen in upper case shifted position.

3. In a typewriting machine having a frame, a paper holding platen, type bars each bearing more than one

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impression creating character thereon, means mounting said type bars for printing movement relative to said platen, case shifting means for effecting relative shifting in a substantially straight line path between said type bar mounting means and said platen for selecting which of said characters is to print, and mechanism for selectively impelling said type bars in their course toward said platen; case shift controlled mechanism for effecting uniform type impressions comprising a resilient repulser member adapted to contact said type bars in their course toward said platen to cushion the impact of said characters on said platen, said repulser member having a portion inclined with respect to said straight line shift path, and a depressor member adapted to contact the inclined portion of said repulser member upon operation of said case shifting means, one of said members being stationary in said frame and the other member being adapted to be moved by said case shift means, whereby the effective cushioning of the type bar impact by said repulser member is varied by operation of said case shifting means.

4. In a typewriting machine having a frame, a platen, type bars having upper and lower case characters thereon, a segment in which said type bars are pivotally carried for impact engagement with a common strike point on said platen and case shift mechanism for moving said segment with respect to said platen in said frame to selectively adapt said upper or lower case characters for movement with said type bars to engage said strike point; case shift controlled mechanism for changing the impact with which said upper and lower case characters respectively strike said platen comprising a resilient repulser member carried on said segment and positioned for lower case printing to engage said type bars at a point removed from said strike point, a bracket secured to said frame near said strike point, and a repulser depressor secured to said bracket and engaging said repulser member whereby said repulser member is drawn through said depressor by operation of said case shift mechanism to position said repulser member nearer said platen for increasing the impact of said type bars for upper case printing.

5. In a typewriting machine having a frame, a platen, a plurality of type bars, each having thereon a lower case character and an upper case character, said characters being of different printing areas and being adapted to selectively print at a common strike point on a work sheet positioned against said platen, a type bar segment for pivotally supporting said type bars, case shifting means for shifting said segment with respect to said platen, and mechanism for selectively swinging said type bars toward said platen to print at said strike point; case shift controlled mechanism for impression control of said type bars comprising a resilient repulser member secured to said segment and adapted to engage with said type bars in their movement toward said platen at a point adjacent to but removed from said strike point, and a depressor member embracing said repulser member and secured to said frame, whereby said repulser member is deflected by said depressor member in case shifted position to engage said type bars at a point less remote from said strike point in upper case shifted position.

6. In a typewriting machine having a frame, a platen, a plurality of type bars each having thereon an upper case character and a lower case character, said characters being of different printing areas, a type bar segment in which said type bars are pivotally supported, means

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for selectively operating said type bars for swinging of said characters to print at a common impact point on a work sheet positioned against said platen, said lower case characters being normally adapted to print at said strike point, and case shifting means for effecting a substantially straight line shifting of said segment away from said platen for upper case typing; case shift controlled mechanism for impression control of said type bars comprising a spring wire repulser secured to said segment and adapted to normally engage said type bars adjacent said strike point and a repulser depressor secured to said frame in engagement with said repulser, the portion of said repulser engaged by said depressor being inclined with respect to said straight line shift path whereby said repulser engages said type bars closer to said strike point in case shifted position.

7. In a typewriting machine having a frame, a platen, a plurality of type bars each having thereon an upper case character and a lower case character, said characters being of different printing areas, a type bar segment in which said type bars are pivotally supported, means for selectively operating said type bars for swinging of said characters to print at a common impact point on a work sheet positioned against said platen, said lower case characters being normally adapted to print at said strike point, and case shifting means for effecting a substantially straight line shifting of said segment away from said platen for upper case typing; case shift controlled mechanism for impression control of said type bars comprising a resilient repulser member secured to said segment and having one portion adjacent said strike point adapted to intercept said type bars to effect impact reduction of said character at said strike point, and another portion inclined with respect to said straight line shift path, and a depressor member secured to said frame, normally in engagement with said inclined repulser portion and thereby adapted to deflect said repulser member upon case shifting of said segment for a lessened impact reduction by said repulser member for said upper case characters.

8. In a typewriting machine having a frame, a platen, type bars, each having upper case and lower case characters thereon of unequal printing area, a segment in which said type bars are pivotally carried for impact printing at said platen, mechanism for shifting said segment downwardly in a substantially straight line path for upper case printing, and means for selectively propelling said type bars in an upward and rearward course to print at said platen; case shift controlled mechanism for effecting uniform type impressions comprising a substantially inverted U-shaped spring wire repulser secured to said segment and a depressor yoke secured to said frame and extending across in front of said repulser, both legs of said repulser being inclined forward with respect to said shift path and being in contact with said yoke, and the upper cross bar portion of said repulser being engageable by said type bars in their course toward said platen to cushion their impact thereon, whereby the downward shift of said segment decreases the cushioning effect of said repulser on said type bars in upper case printing.

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