March 16, 1943. C. W. POTTER 2,314,243 SHEET MAGAZINE AND FEEDING DEVICE FOR TYPWRITING MACHINES
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1. Sheet
2. Sheet
3. Sheet
4. Sheet
5. Sheet

[Diagram of sheet magazine and feeding device for typewriting machines]
This invention relates to a sheet magazine and feeding device for typewriting machines whereby single sheets or unit sets of sheets may be supplied quickly and with little effort to a typewriting machine in proper position to enter into feeding engagement with the platen roll.

In carrying on many kinds of businesses, large numbers of printed forms are filled out in succession by typing, as, for example, invoices, orders, requisitions, and the like, such forms being customarily typed in multiple to provide desired numbers of carbon copies. Originally, in order to fill out a printed form, a desired number of single-sheet forms would be picked up by the operator, interleaved with transfer sheets, shaken together into approximate registry, and inserted in the typewriting machine. To get away from this laborious and time consuming practice, printed forms have been provided in continuous multiple strips with transverse lines of perforations or scoring to facilitate tearing the individual forms from the strips as desired. Various devices have been put into use for associating suitable transfer sheets with the continuous strips in such a manner as to make carbon copies of the matter typed on the forms. Such devices require considerable skill and care in manipulation. Furthermore, as the supports for the supply of forms in such devices are stationary, the movement of the carriage through which the strips of forms are threaded tend to twist or distort the portions of the strips between the carriage and the supply and to disturb the lateral registration of the superposed strips where they entered the carriage.

More recently it has been sought to avoid the objectionable features of the continuous superposed strips of forms by providing unit sets of forms, each set consisting of the requisite number of single forms superposed upon one another and interleaved with transfer sheets, the forms and sheets being all joined together at the top to provide a single leading edge to be inserted in a typewriting machine. Unit sets of forms of this kind are supplied under various names such as “snap-outs,” “speedy sets,” and the like. They are convenient, the registration of the several forms in the sets is assured, and after being typed the forms are easily separated from each other and from the interleaved transfer sheets.

According to the present invention, a novel mechanism is provided for facilitating the handling of unit sets of forms and the like and for guiding such sets into correct operative engagement with the platen roll of the typewriting machine. To this end, a suitable receptacle or supply magazine is mounted on the carriage of the machine so as to support a supply of unit sets above and behind the platen roll so that individual unit sets may be fed by gravity into feeding engagement with the platen roll. The receptacle may be in the form of an inclined rack with means at the bottom edge for retaining a pile of unit sets in place thereon, the rack being provided with side flanges engaging the side edges of the sheet on the rack so as to keep such unit sets properly aligned and to guide the unit sets into proper position with respect to the platen roll. While the invention is designed primarily for unit sets of forms or the like, it is also effective with single sheets or any unit presenting a single leading edge for entry into the space between the platen roll and the paper table. For brevity, such units are hereinafter referred to as “sheets.” It being understood that a “sheet” may be a single sheet or a plurality of superposed sheets arranged together in such a manner as to present a single leading edge. A feeding device is provided whereby the top sheet of the pile may be quickly and easily discharged from the rack into feeding engagement with the platen roll.

For a more complete understanding of the invention, reference may be had to the following description thereof, and to the drawings of which Figure 1 is a perspective view of a typewriting machine on which an embodiment of the invention is mounted.

Figure 2 is a perspective view of a multiple sheet having a single leading edge so as to be suitable for use in the mechanism shown in Figure 1.

Figure 3 is a front elevation, partly in section, of a typewriter carriage having an embodiment of the invention mounted thereon.

Figure 4 is a sectional view on the line 4—4 of Figure 3.

Figure 5 is a sectional view on the line 5—5 of Figure 3, this figure being shown on a larger scale.

Figures 6 and 7 are fragmentary sectional views similar to Figure 5 but showing parts in different positions of operation.

Figure 8 is a fragmentary sectional view on the line 8—8 of Figure 3.

In Figure 1 a conventional typewriting machine is indicated at 10, this machine having the customary main frame 12, set on keys 14, and carriage 16 which travels from side to side of the machine in the usual manner. Mounted on
the carriage is the customary platen roll 18 by which the paper in the machine is fed forward from line to line and upon which the paper bears as the typing is done. Back of the platen roll 18 is the usual paper table 20 which extends down under the roll as at 22, suitable guide rollers 24 being carried thereby to press the paper sheets into firm engagement with the roll 18.

In accordance with the invention, an inclined rack or platform 30 is supported by brackets 32 on the carriage 16 at an angle of inclination materially steeper than the angle of repose for paper sheets or unit sets piled upon one another. This rack 30 is preferably provided with side flanges 34 and 36 to act as side edge guides for a supply of sheets 40 supported thereon, the side edge guides serving to prevent skew engagement of the sheets with the platen roll and thus to prevent sideways creeping of the sheets in the machine. These sheets may be single sheets, or, as indicated in Figure 2, they may be unit sets such as "snap-outs" and the like made up with a single leading edge 42. Figure 2 illustrates a unit set consisting of three record leaves having transfer sheets 44 between successive leaves. These leaves and the transfer sheets are bound together at the leading edge 42 of the multiple sheet so that they can be handled as a single unit, the top or leading marginal portion of the unit set being scored or perforated so that, after the unit set has been removed from the machine, the record leaves can readily be separated from the transfer sheets and from each other by a quick motion. A supply of sheets such as unit sets is placed on the rack 30 and is supported thereon by an unobstructing flange 45 extending from the hook 50 into the lower end of the rack. This flange may be relatively short, as indicated in Figure 3, or may extend the entire length of the lower end of the rack. In order to prevent the top sheets from sliding off the pile and sliding down past the flange 45, a guide element 50 is hinged to the upper edge of the flange 46 and is pressed lightly against the topmost sheet by gravity. The guide element 50 is preferably of thin sheet metal but may be made in other forms and materials desired and may also be mounted otherwise than as shown, the important feature being that it rests lightly against the lower margin of the topmost sheet of the supply pile.

When the typist is ready to insert a fresh sheet in the machine, a feeding device is manipulated to release from the rock the topmost sheet in the pile. To this end, a feeding finger 52 is pivotally mounted between a pair of crank arms 54, the latter being mounted on a shaft 56 which extends across the rack and is journaled in the side flanges 34 and 36, the shaft 56 being spaced above the rack so as not to interfere with the sheets supported thereon. The finger 52 is pivoted at its lower end as at 58 to the crank arms 54, the upper end of the finger 52 being provided with a friction element 60 which may be a tip of springed rubber or other friction material adapted to enseve a paper surface without slipping. The cranks 54 extend forward and downward from the shaft 56 so that the pivots 58 are below the shaft, and the finger 52 being considered as a linear hole than the arms 54 extends upward beyond the shaft 56 and projects against it as indicated in Figure 5. A suitable spring 62 is provided to bear against pins 64 and 66 mounted on the finger 52 and crank arms 54 respectively, the spring 62 serving to press the finger 52 against the shaft 56 when the parts are in their normal position as illustrated in Figure 5. At one end of the shaft 56 is a finger-knob 70 by which the shaft may be rocked about its axis. Any other suitable means such as a crank and treadle connection (not shown) may be employed to rock the shaft 56. The finger-knob 70 is provided with a hub portion 72 on which is a radially projecting pin 74. In Figure 8, this pin is adapted to engage one or another of a pair of stop elements 76 and 78 mounted on the side flange 34 so as to limit the angle of rotation of the shaft 56. The pin 74 and stop elements 76 and 78 are so related that the shaft 56 is in one of its limiting positions as indicated in Figure 5, that is, approximately parallel to the plane of the rack 30. If the shaft 56 is rotated in a counter-clockwise direction, as seen in Figures 5 and 6 inclusive, by manipulation of the knob 70 until the pin 74 hits the stop 76, the crank arms 54 move the finger 52 into a position where the tip 60 engages the topmost sheet of the supply pile and thereupon pushes this top sheet upward against the position indicated in Figure 6 wherein the lower or forward edge of the top sheet is clear of the guide member 50 which then is caused by gravity to bear upon the sheet immediately below the top sheet. The knob 70 is then rocked to its original position as indicated in Figure 7. This causes movement of the finger 52 in the opposite direction, the tip 60 then starting a downward movement of the top sheet 40, and then releasing this sheet so that it can slip down into feeding engagement with the platen roll by gravity. In order to make sure that the sheet thus discharged from the rack will enter the space between the platen roll and the adjacent paper table 20, a stationary deflector or guiding element 80 may be mounted above the platen roll. This deflector may consist of a strip of metal bent so that it has a curved portion 82 disposed above the platen roll as indicated in Figures 5 and 6 inclusive. This deflector, as well as the feeding device and the guide plate 50 are preferably placed midway between the ends of the platen roll as shown in Figure 3. As the topmost sheet 40 slips down into feeding engagement with the platen roll, its side edges continue to be guided by the flanges 34 and 36 so that all manipulation of the paper sheets by the operator is thus obviated.

In order to accommodate sheets of different widths, the side flange 36 may be laterally adjustable toward and from the flange 34. To this end, the flange 36 may be mounted on an extension strip 82 having a pair of rivets 84 slidable in suitable slots 86 in the rack 30.

It is evident that various modifications and changes may be made in the embodiments of the invention herein shown and described without departing from the spirit or scope thereof as defined in the following claims.

1. In a typewriting machine having a carriage and a platen roll supported thereon, an inclined rack mounted on said carriage above and behind said platen roll, said rack having an upturned flange along its lower edge to support a supply of sheets on the rack, said flange hinged to said flange and adapted to rest on the top sheet of said supply, a pusher movably mounted adjacent to said rack and operable to engage the top sheet frictionally and to slide it upwards.
until its lower edge is clear of said guide plate, and means for operating said pusher.

2. An attachment for a typewriting machine, comprising a rack having a flange at its lower edge, a pair of brackets secured to said rack and attachable to a typewriting machine carriage to support the rack in an inclined position, a guide plate hinged to said flange and arranged to overlap the adjacent marginal portion of the rack, side flanges on the rack, a shaft journaled in both said side flanges and spaced above said rack, an operating handle on one end of said shaft, a crank arm secured to said shaft between said side flanges, a friction tip pivotally attached to said crank arm, and a friction tip on the free end of said finger adapted to engage and push upward a sheet on said rack when said operating handle is turned.

3. An attachment for a typewriting machine, comprising an inclined rack having side flanges, means at the lower end of said rack for holding a supply of paper sheets on the rack, and a pusher device for pushing the topmost sheet of said supply away from the lower end of the rack to clear said holding means, said pusher device comprising a shaft journaled in said side flanges and spaced above the rack, a crank arm projecting from said shaft mid-way between said side flanges and normally extending downward from the shaft, a finger disposed across said shaft, the lower end of said finger being pivoted to said crank arm, a friction element on the upper end of said finger adapted to engage and push upward the topmost sheet on said rack when said shaft is rocked, spring means pressing said finger toward said rack, and a pair of stop elements for said shaft to stop rocking movement of the shaft in one direction when the friction tip of the finger is clear of the sheet supply on the rack and in the other direction when the friction tip has engaged and pushed the top sheet upward a predetermined distance.

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