July 7, 1942. R. F. HALL 2,289,011

SHEET FEEDING APPARATUS

Filed May 20, 1940 3 Sheets-Sheet 1

Fig. 1.

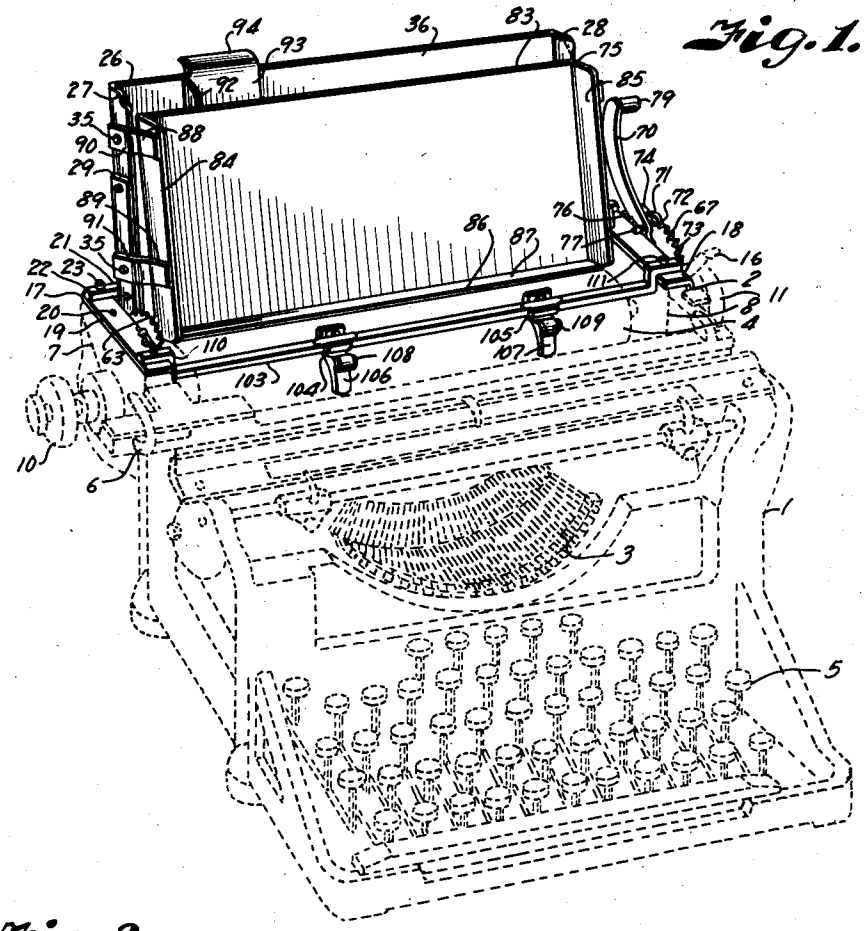
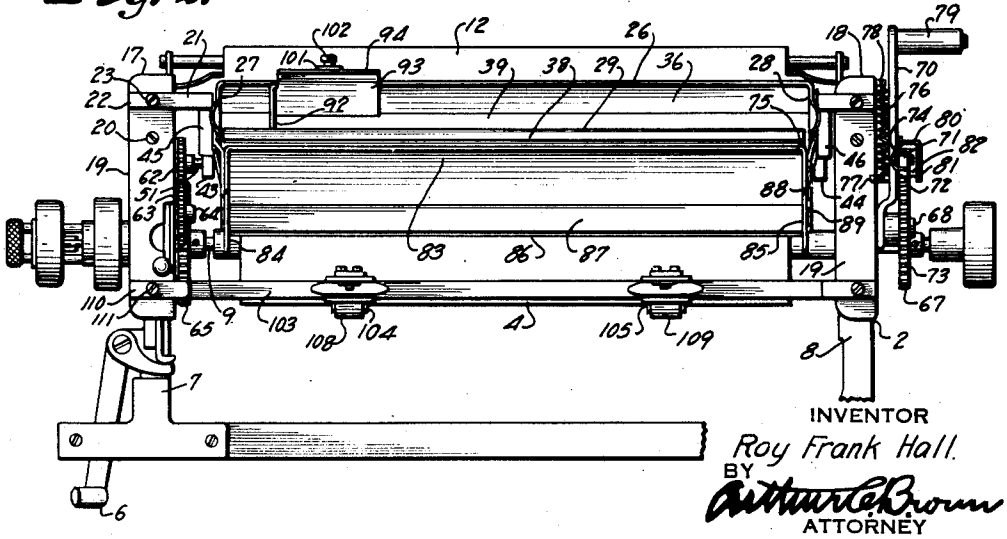


Fig. 2.



INVENTOR
Roy Frank Hall.
BY
Arthur L. Brown
ATTORNEY

July 7, 1942. R. F. HALL 2,289,011

SHEET FEEDING APPARATUS

Filed May 20, 1940 3 Sheets-Sheet 2

Fig. 3.

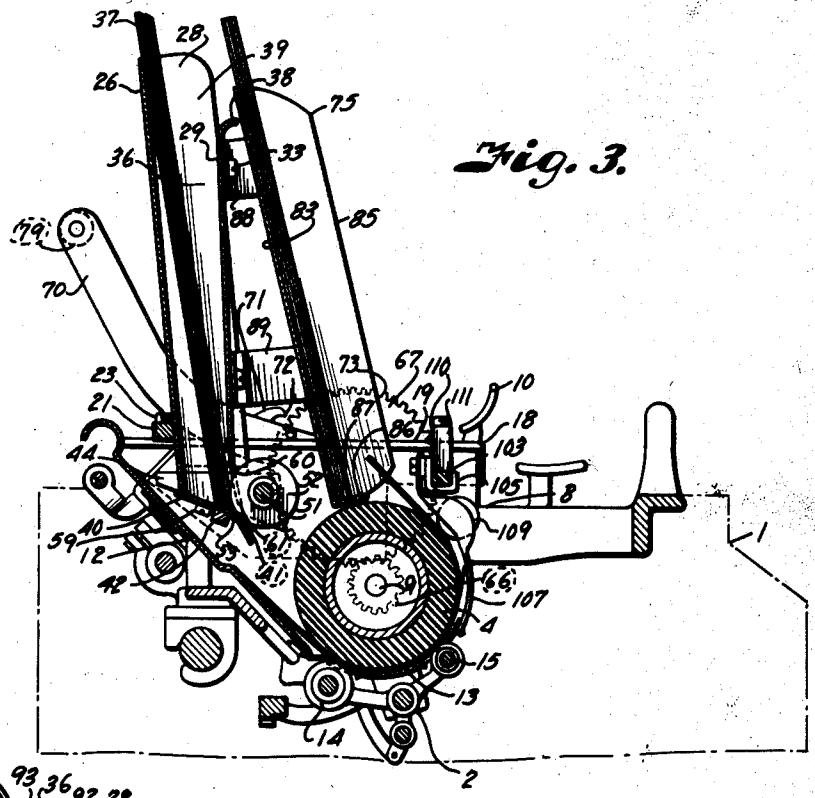


Fig. 4.

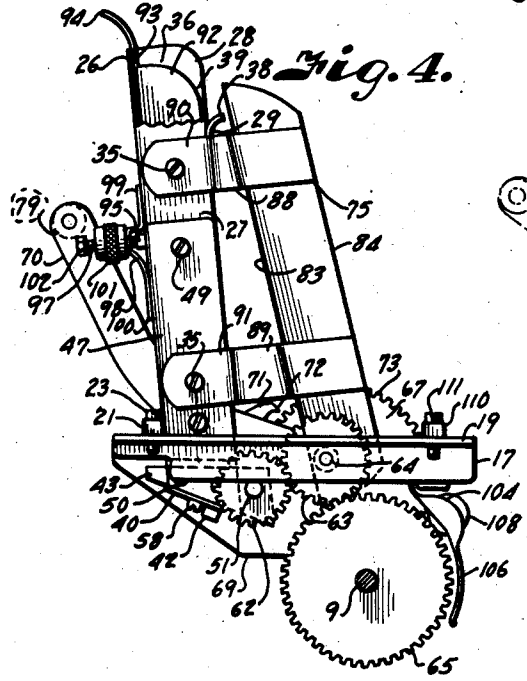
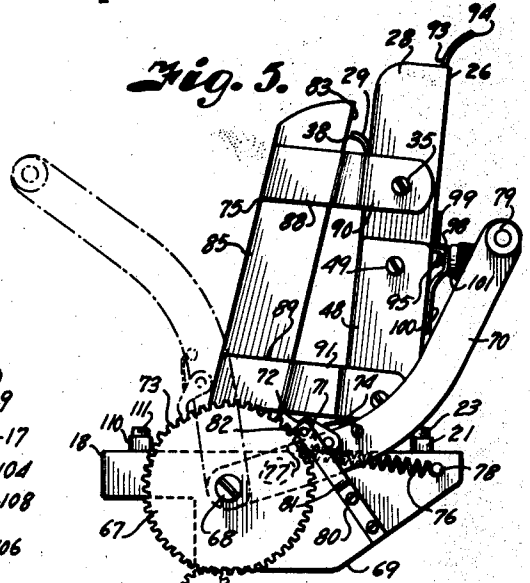


Fig. 5.



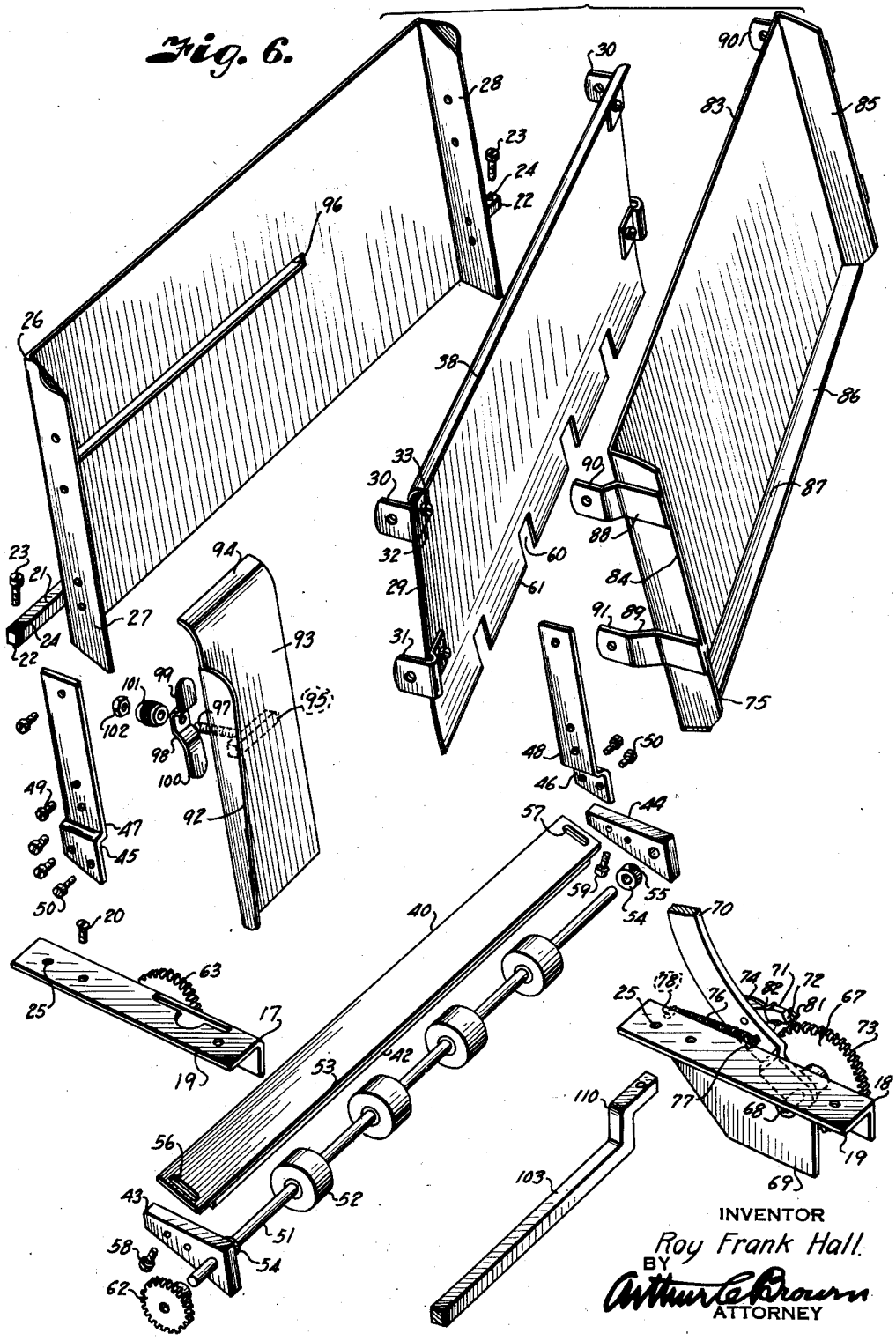
INVENTOR
Roy Frank Hall
BY
Arthur L. Brown
ATTORNEY

July 7, 1942. R. F. HALL 2,289,011

SHEET FEEDING APPARATUS

Filed May 20, 1940 3 Sheets-Sheet 3

Fig. 6.



INVENTOR

Roy Frank Hall

BY

Arthur C. Brown

ATTORNEY

Patented July 7, 1942

2,289,011

UNITED STATES PATENT OFFICE

2,289,011

SHEET FEEDING APPARATUS

Roy Frank Hall, Kansas City, Mo., assignor of one-half to Benjamin A. Babb, Kansas City, Mo.

Application May 20, 1940, Serial No. 336,239

2 Claims. (Cl. 197—130)

This invention relates to a sheet feeding apparatus for typewriters and similar machines adapted for writing entries on sheets, such as invoices, checks, envelopes, cards, and the like, and has for its principal object to provide automatic feed of the sheets from a stack into the typewriter in successive order and to deposit the sheets in a stack without handling thereof by the operator.

Other objects of the invention are to provide a feeding device operative automatically incidental to turning of the platen roller; to provide a separate and more rapid transfer of the sheets when only a few lines are to be written thereon; and to provide a simple, inexpensive mechanism that is adapted for ready attachment to a conventional typewriter.

In accomplishing these and other objects of the invention, as hereinafter pointed out, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a sheet feeding apparatus applied to a typewriter, the typewriter being shown in dotted lines.

Fig. 2 is a plan view of the sheet feeding apparatus.

Fig. 3 is a cross-sectional view of the platen carriage and the feeding apparatus carried thereby.

Fig. 4 is an end elevational view, the platen roller shaft being shown in section and the upper portion of the sheet retaining pocket being broken away to better illustrate the adjustable partition therein.

Fig. 5 is a similar view at the opposite end of the feeding mechanism.

Fig. 6 is a detail perspective view of the parts of the feeding mechanism shown in disassembled spaced relation to better illustrate the construction thereof.

Referring more in detail to the drawings:

1 designates a conventional form of typewriter including a carriage 2 shiftable to position the impression of the type 3 on a sheet carried by the platen roller 4 forming a part of the carriage. The type 3 is moved to printing contact by manipulation of the keys 5 which also effects shift of the carriage from the right to the left as the writing progresses. At the end of a line the carriage is returned by a ratchet lever 6 which simultaneously advances the platen according to the desired spacing of the lines. The carriage also includes a frame having end members 7 and 8 in which the platen shaft 9 is journalled. The ends of the platen shaft project from the frame and carry knobs 10 and 11 by which the platen may be selectively rotated to feed the paper sheets independently of the lever 6. The carriage also includes a paper rest 12 for guiding a sheet between the platen roller and a substantially arcuate paper guide 13 when pressing rollers 14 and 15 are released incidental to manipulation of the key 16 as in conventional practice.

The typewriter parts above described are all conventional and specifically form no part of the present invention, but are illustrated in that they are associated with the sheet feeding apparatus now to be described.

Mounted on the respective ends of the carriage are angle-shaped brackets 17 and 18 having flanges 19 overlapping the ends of the carriage and secured thereto by fastening devices such as screws 20. Connecting the rear of the brackets is a bar 21 having ends 22 overlapping the flanges 19 and secured thereto by fastening devices 23 extending through openings 24 in the bar and into threaded openings 25 of the flanges. Secured to the bar and extending substantially parallel with the paper rest 12 is a back plate 26 having forwardly flanged ends 27 and 28 which are spaced inwardly from the brackets 17 and 18. The plate thus described is suitably attached to the bar 21 at a slight rearward inclination and spaced rearwardly from the platen roller 4 with the lower edge spaced above the paper rest 12 and located substantially in a horizontal plane tangentially with the platen roller 4.

Cooperating with the plate 26 is a front plate 29 of sufficient length to bridge the space between the flanges 27 and 28, the ends thereof being secured to the flanges by substantially angle-shaped brackets 30 and 31. The angle brackets have arms 32 overlapping the front face of the plate 29 and are secured thereto by fastening devices 33. The other arms 34 overlap the inner faces of the flanges 27 and 28 and are secured thereto by fastening devices 35.

The plates thus described cooperate to form a pocket 36 of sufficient size to retain a stack of sheets as indicated at 37, Fig. 3. The back plate is of sufficient height to suitably support the sheets to prevent drooping thereof in a rearward direction but the front plate preferably terminates at a lower elevation in a forwardly directed lip 38 to facilitate insertion of the sheets through the opening 39 at the top of the pocket. The lower portion of the front plate is inclined slightly in the direction of the platen roller and

cooperates with a bottom plate 40 to form a slot-like throat or opening 41 through which the sheets are individually discharged into the space between the rest 12 and the platen roller 4.

The lower ends of the flanges 27 and 28 are inclined in a forward direction so that the plate 40 when butted thereagainst inclines downwardly in the direction of the platen roller to effect splaying of the lower edge of the stack by gravity movement of the sheets toward the opening 41, as clearly shown in Fig. 3. The front edge of the plate is reinforced by a bar 42 extending along the under side thereof as shown in Figs. 3, 4 and 6. The plate is secured by blocks 43 and 44 which are retained between the outer faces of the flanges 27 and 28 and the offset ends 45 and 46 of brackets 47 and 48 fixed to the flanges by fastening devices such as screws 49. The blocks 43 and 44 are secured in rigid position by fastening devices 50 extending through openings in the offset and into threaded openings in the blocks. The front ends of the blocks project forwardly from the plate 40 and form journals rotatably mounting a shaft 51 carrying a plurality of preferably resilient feed rollers 52 cooperating with the front edge 53 of the plate 40 to feed individual sheets onto the paper rest 12. The shaft is retained from longitudinal movement relative to the plate 40 by collars 54 affixed thereon by set screws 55 and engaging the inner faces of the blocks. In order to adjustably position the front edge 53 of the plate 40 with respect to the rollers 52 for different thicknesses of paper and to compensate for wear of the rollers, the ends of the plate 40 are provided with slots 56 and 57 through which fastening devices 58 and 59 extend in securing the plate to the blocks. To accommodate the rollers 52, the front plate 29 has a series of notches 60 in the lower edge 61 thereof as shown in Fig. 6.

The shaft 51 projects through the block 43 and carries a gear 62 which meshes with an idle gear 63 rotatably supported on a stud 64 carried by the angle bracket 17. The idle gear 63 in turn meshes with a gear 65 on the platen shaft so that the rollers 52 are rotated simultaneously with the platen. The relative pitch diameters of the gears 62 and 65 are such as to give the same peripheral speed to the rollers 52 as effected by the platen 4 whereby the sheets are fed freely into printing position.

I have also provided an independent and faster ratchet feed of the platen and feed rollers. This is effected at the opposite side of the machine by providing the platen roller with a pinion 66 which meshes with the teeth of a ratchet wheel 67 rotatably supported on a stud 68 carried by the depending flange 69 of the bracket 18. The ratchet wheel 67 is rotated in an anticlockwise direction, Fig. 5, by a ratchet lever 70 pivoted on the stud 68 and carrying a pawl 71 having a tooth 72 engageable with the teeth 73 of the wheel 67 under action of a spring 74 so that when the ratchet lever is swung in a forward or anticlockwise direction, Fig. 5, the ratchet wheel 67 rotates the pinion 66 at a faster speed than the speed of the platen effected by the hand operation of one of the knobs 10 or 11. The ratchet lever has sufficient stroke so that one pull of the lever is sufficient to completely transfer one sheet from the platen roll to a stack support or container 75 carried above the platen, as later described. After actuation of the ratchet lever, it is returned to its original position by a spring 76 having one end fixed to a stud 77 on the lever and its opposite end to a stud 78 on the angle bracket 18 as shown in Figs. 5 and 6.

To facilitate operation of the lever, it is preferably provided with a laterally extending handle 79. In at least one position the ratchet lever is retained against a stop 80 fixed to the angle bracket and having an offset end 81 forming a guard. When in retractive position the pawl of the latch lever is raised from clicking position with the teeth of the ratchet wheel by a pin 82 carried by the end 81 of the stop 80 in the path of the pawl just at the point where the ratchet lever engages the stop. Upon forward movement of the ratchet lever, the pawl leaves the pin so that it immediately drops into engagement with one of the ratchet wheel teeth to start rotation of the platen, and rotation of the rollers 52 through the gears 62, 63 and 65, previously described.

The container 75 for the typewritten sheets includes a plate 83 arranged above the platen and having forwardly extending flanged ends 84 and 85 and a forwardly extending lower edge flange 86 forming a ledge 87 contacting the periphery of the platen to form a support for the sheets delivered therefrom. The plate 83 is preferably positioned at a slightly greater angle than the plates forming the container or pocket 36 previously described so that the sheets fall readily into position. The plate 83 is retained in position by pairs of arms 88 and 89 fixed to the flanges and having offset ends 90 and 91 attached to the flanges 27 and 28 by means of the fastening devices 35.

In order to provide for sheets of less width than the pocket, the pocket carries a partition 92 fixed to the edge of a plate 93 that is slidable on the plate 26. The upper edge of the plate 93 projects above the plate 26 and curves rearwardly, as at 94, so as to facilitate insertion of the sheets in the pocket. The plate 93 is slidably retained in position by a lug 95 movable through a slot 96 in the plate 26. Carried by the lug is a threaded stud 97 mounting a clip 98 having ends 99 and 100 pressing against the rear side of the plate 26 when a knurled thumb nut 101 is threaded thereagainst. The knurled nut 101 is retained on the stud 97 by a stop nut 102 fixed to the outer end thereof.

In order to direct the paper sheets onto the rest and to support them against the platen roller, the front of the brackets 17 and 18 are connected by a bar 103 carrying slides 104 and 105. These slides have fingers 106 and 107 cooperating with the curvature of the platen to form paper guides and are provided with paper pressing rollers 108 and 109 to press the paper against the platen and divert the upper edges of the sheets toward the container 75. The ends 110 of the bar 103 are offset upwardly so that the guide carrying portion of the bar is in desired position relatively to the platen and the offset ends are secured to the angle-shaped brackets by fastening devices 111.

In using the apparatus constructed and assembled as described, the edge of the plate 40 is adjusted into substantial contact with the rollers so that only one sheet is passed at a time. A stack of sheets 37 is inserted through the open top 39 of the pocket 36 so that the lower edges thereof rest upon the inclined plate 40. The partition 92 is then adjusted by loosening the knurled nut 101 and sliding the plate 93 so that the flange 92 thereon cooperates with the flange 28 to support the sheets in stacked position

whereby they will all be delivered into the typewriter at the same relative position on the platen. The sheets will move by gravity down the inclined plate 40 so that the foremost sheets contact the periphery of the feed rollers 52. Upon actuation of the ratchet lever 70, the platen is rotated to effect rotation of the feed rollers through the gears 62, 63 and 65, whereby the first of the sheets in the pocket is moved through the slotted opening 41 under propelling influence of the resilient rollers 52 and is directed by the support 12 into the space between the platen roller and the pressing rollers 14 and 15. Continued movement of the platen carries the sheet into typewriting position as shown in Fig. 3. After the entries have been made thereon the platen may be advanced either by manipulating one of the knobs 10 or 11 or by operating the ratchet lever 70 so that the typewritten sheet is delivered into the supporting rest or container 75. Simultaneously a succeeding sheet is delivered into the machine in the manner as above described.

Attention is directed to the fact that the pressing rollers 108 and 109 divert the upper edge of the succeeding sheet against the bottom of a preceding sheet, so that the preceding sheets are moved thereby onto the ledge 87.

From the foregoing it is obvious that I have provided a feeding attachment which is of simple, inexpensive construction and well adapted for the feed of single sheets and the like into a typewriter or other machine of similar character.

What I claim and desire to secure by Letters Patent is:

1. A sheet feeding attachment of the character described, including a sheet feeding container comprising a back plate, forwardly extending side plates associated with the back plate, a front plate engaged with said side plates, and a bottom plate extending forwardly relative to the back plate, the front edge of said bottom plate being spaced from the front plate and cooperating therewith to form a sheet discharging throat, and a separate sheet receiving container connected with and arranged in front of the sheet feeding container in spaced relation thereto and comprising a base plate, and forwardly extending side and bottom plates associated with said base plate, said sheet receiving container having a substantially open front, whereby printed matter on sheets applied thereto is readily observable, said containers diverging at their lower ends and being arranged at different inclinations relative to a platen, the throat of said sheet feeding container being arranged approximately tangentially of the platen at a rear and lower portion thereof for facilitating smoothly feeding sheets around the platen, the base plate of the sheet receiving container being arranged approximately chordally of the platen at an upper portion thereof to facilitate removing said sheets from the platen and applying same to the receiving container, means for feeding sheets from the sheet container to the platen, and means for guiding sheets from the platen toward the sheet receiving container.

2. A sheet feeding attachment of the character described, including a sheet feeding container comprising a back plate, forwardly extending side plates associated with the back plate, a front plate engaged with said side plates, and a bottom plate extending forwardly relative to the back plate, the front edge of said bottom plate being spaced from the front plate and cooperating therewith to form a sheet discharging throat, and a separate sheet receiving container connected with and arranged in front of the sheet feeding container in spaced relation thereto and comprising a base plate, and forwardly extending side and bottom plates associated with said base plate, said containers diverging at their lower ends and being arranged at different inclinations relative to a platen, the throat of said sheet feeding container being arranged approximately tangentially of the platen at a rear and lower portion thereof for facilitating smoothly feeding sheets around the platen, the base plate of the sheet receiving container being arranged approximately chordally of the platen at an upper portion thereof to facilitate removing said sheets from the platen and applying same to the receiving container, means for feeding sheets from the sheet container to the platen, and means for guiding sheets from the platen toward the sheet receiving container.

ROY FRANK HALL.