F. A. COOK.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 26, 1908.

953,898.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

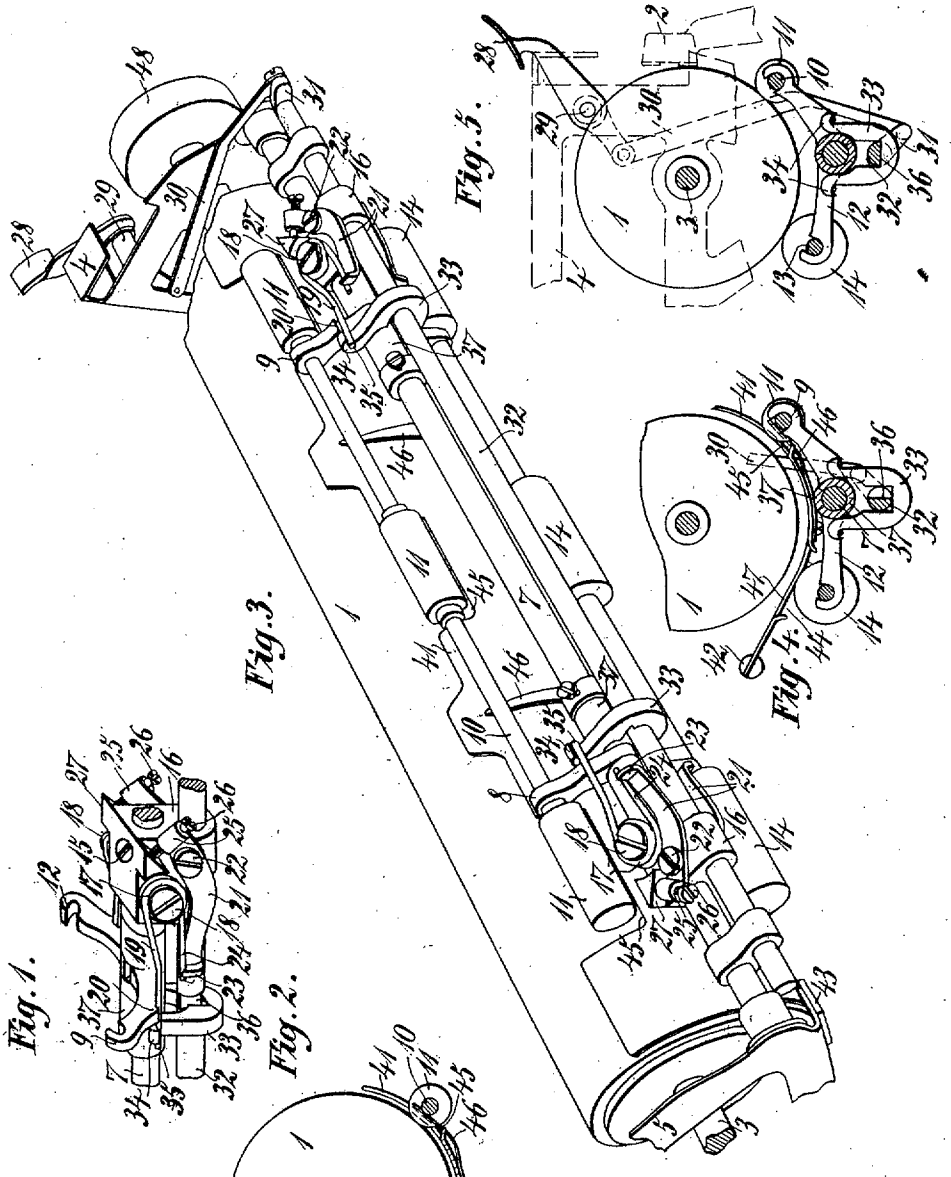

Fig. 1.

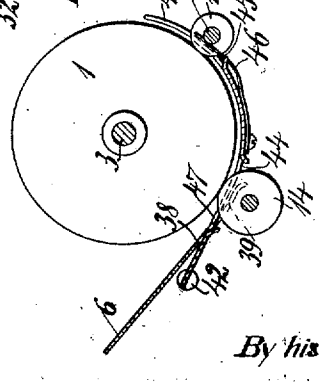

Fig. 2.

Fig. 3.

Fig. 5.

Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 6.

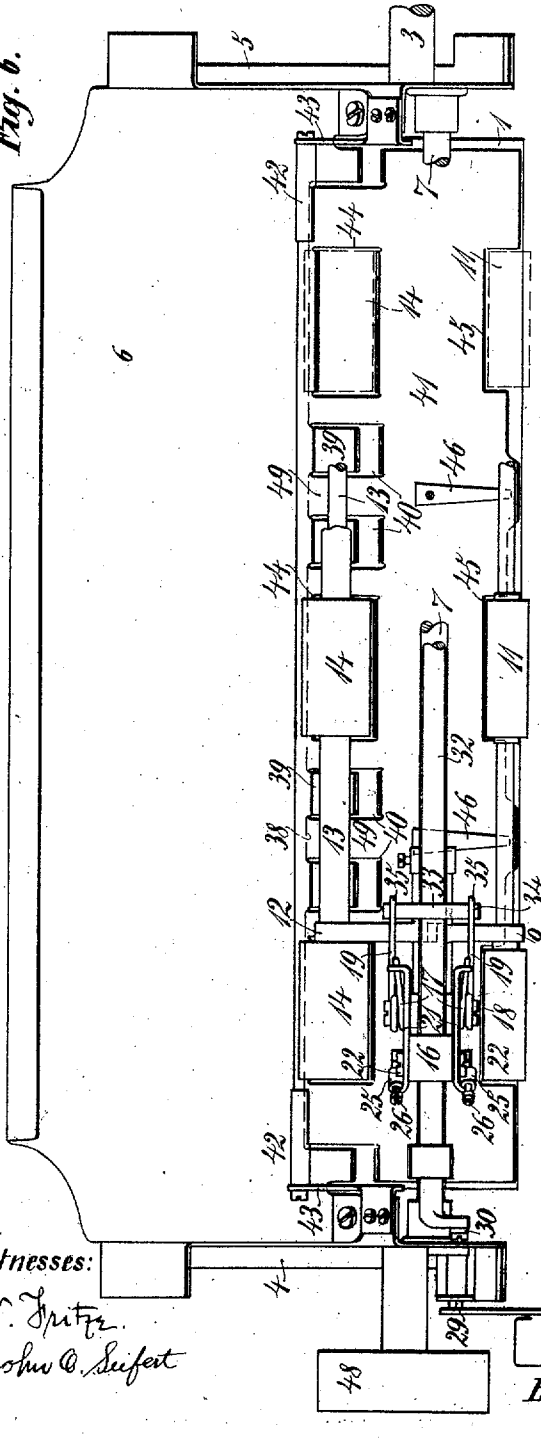


Fig. 8.

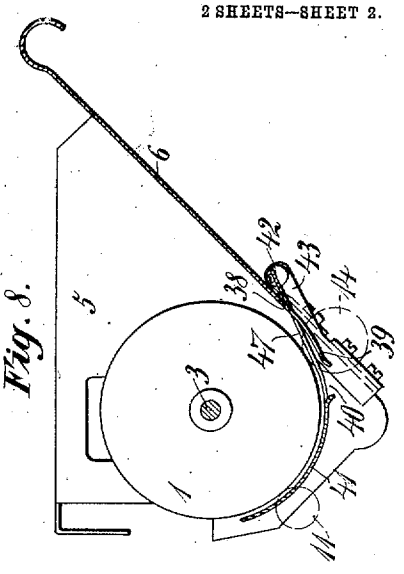
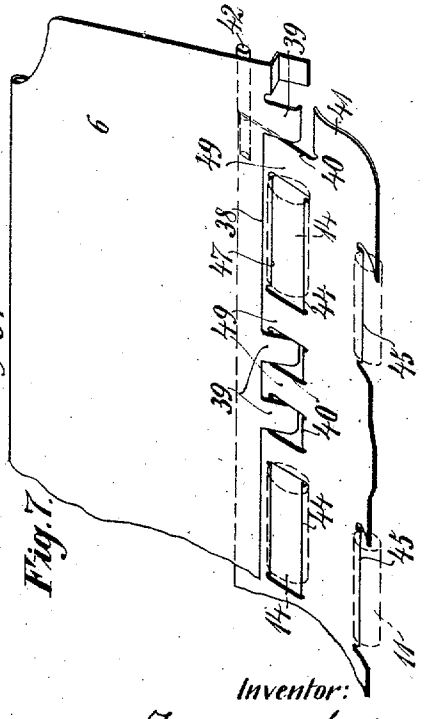


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK A. COOK, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

953,898. Specification of Letters Patent. Patented Apr. 5, 1910.

Application filed October 26, 1908. Serial No. 459,494.

To all whom it may concern:

Be it known that I, FRANK A. COOK, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to means for guiding paper around the platens of typewriting machines.

One of the objects of the invention is to provide simplified, improved, and inexpensive means for causing the usual system of pressure rolls to bear against the platen, particularly with a view to providing against weakening of the springs, regulating the tension of the springs with convenience, and to simplifying and improving the devices for releasing or dropping the pressure rolls from the platen. In carrying out this feature of the invention I support the usual forward and rear pressure roll axles by means of arms extending both forwardly and rearwardly from the fixed rod which usually extends along the under side of the platen and unites the ends of the platen frame in the well known Underwood machine. Upon said rod I mount collars, upon opposite sides of which I provide studs, around which are coiled springs, the free ends whereof bear against said roll-supporting arms to press the rolls against the platen. I also pivot upon the opposite sides of said collars a series of arms, one to bear against each spring to regulate its tension; each arm having an ear through which a screw is threaded to bear against a lug on the collar, whereby the arms may be set up to increase the tension of the springs individually as required.

Another object of the invention is to facilitate the introduction of paper into the bite of the rear pressure rolls and the platen. The paper shelf has usually a fixed relation to the platen and hence is placed at some distance from the rear side thereof, to permit the introduction of a thick sheaf of sheets, when required. The rear pressure rolls, however, are usually made of rather small diameter, owing to lack of room; and so it results that an unduly large proportion of each pressure roll projects up through or past the bottom of the paper shelf, and in consequence the sheets when introduced between the paper shelf and the platen, are apt to catch upon the top or crown of the roll, to the annoyance of the operator. To overcome this objection I provide a yielding deflector which extends upwardly from the rear pressure rolls for a short distance in front of the paper shelf and behind the platen, and guides the leading edge of the sheet downwardly and forwardly to the bite of the pressure roll and platen, so that said edge cannot catch upon the tops of the pressure rolls, but enters readily between the rolls and the platen without attention on the part of the operator, beyond dropping the sheet into the machine. This deflector is pivoted at its rear end behind the paper shelf and above the pressure rolls, and curves around the bottom and up in front of the platen to form a paper guide. It is yieldingly supported at its forward portion to accommodate thick sheaves or wads of paper. From the bottom of the paper shelf tongues project downwardly and forwardly through openings in the hinged yielding deflector, the line of intersection of the tongues and the deflector being some distance above the tops of said pressure rolls.

In the accompanying drawings, Figure 1 is a perspective view of the adjustable and releasable spring devices for pressing the roll arms toward the platen. Fig. 2 is a part-sectional elevation to illustrate the relation of the main paper shelf, the yielding guide-plate and the pressure rolls; the parts shown in normal positions. Fig. 3 is a perspective front bottom view of the platen frame of an Underwood typewriting machine with the present improvements applied thereto. Figs. 4 and 5 are part-sectional elevations of the pressure-roll releasing mechanism; Fig. 4 showing the rolls released and Fig. 5 showing them in normal positions. Fig. 6 is a bottom view of the platen frame, pressure rolls, guiding plate, etc. Fig. 7 is a front perspective view to illustrate the relation between the main paper shelf and the yielding guide plate which curves around the bottom of the platen. Fig. 8 is a part-sectional side elevation of the platen frame, paper shelf, guide plate, etc., showing the parts in normal positions.

The cylindrical platen is indicated as 1. Types 2 strike against its front side. It has

an axle 3 by which it is journaled in the ends 4, 5, of a platen frame. Said ends are connected by a rigid or fixed rear paper shelf 6, which inclines downwardly and forwardly to the under part of the platen. Also rigidly connecting said end is a rod 7; and hinged upon said rod are forwardly extending arms 8, 9, carrying an axle 10, the latter extending horizontally along the under side of the platen and carrying a series of pressure rolls 11. Extending rearwardly from the rod 7 are arms 12, carrying an axle 13, upon which are pressure rolls 14, running upon the under rear side of the platen, a little below the bottom of the paper shelf 6.

Secured upon the rod 7, by means of set screws 15 or otherwise, are collars 16 to carry pressure-roll wire springs 17, which are seen coiled around screw-studs 18 on opposite sides of said collars 16; the free ends 19 of said springs catching in notches 20 (Fig. 1) in the roll carrying arms 8, 9, 12, to cause the arms to press the rolls against the platen.

Pressure of the springs is regulated by arms 21, pivoted by shoulder screws 22 upon the opposite sides of the collars 16 below the studs 18, and having fingers 23 to catch under the lower ends 24 of said springs. On the other side of its shoulder screw 22, each arm is provided with an ear 25, through which is threaded a screw 26 to bear against a lug 27 formed upon the top of the collar. By turning any screw 26, its arm 21 may be caused to swing up, thereby causing the end 24 of the spring to press up more forcibly against the roll-carrying arm; and by reversing the screw, the pressure of the roll may be diminished. The tension of each spring may be adjusted independently of all of the others; and the adjusting screws 26 are conveniently placed near the ends of the platen frame where they are accessible, their heads being directed downwardly and outwardly for convenient operation by a screw driver.

By depressing a key 28 pivoted upon the platen frame at 29, the pressure rolls are dropped or released from the platen; said key 28 being connected by a link 30 to a crank 31 provided on the end of a rock-shaft 32, suitably mounted and extending along the platen just beneath the rod 7. Yokes 33, through which the rock shaft 32 passes are formed at their open upper ends with hooks or devices 34 to catch over extensions 35 on the spring ends 19, to pull the springs down and permit the rolls and roll-arms to drop to the Fig. 4 position. As seen at Fig. 5, the yokes are guided at their lower closed ends by the rock-shaft 32. At each yoke the shaft is formed with a flat or cut-away 36, the same being formed by recessing the rock-shaft, the bottoms of the yokes normally setting up into the recesses, so that the hooks 34 may exert no down pressure on the springs. When said key 28 is depressed and the shaft 32 is rocked, the yokes are cammed downwardly, out of said recesses, and bear up against the bottom periphery of the rock-shaft, as at Fig. 4, whereby they are mechanically held down against the tension of said springs. At this time the hooks 34 hold down the springs; the rolls dropping from the platen. At their open upper ends, the yokes are guided by the fixed rod 7, or by the hubs 37 of the roll carrying arms, which are hinged upon said rod.

It will be seen that the releasable pressure mechanism for the rolls is very compact, and may be cheaply constructed and applied to existing machines, without objectionable alteration therein; while the springs themselves may be of substantial length and hence not liable to set or weaken when put into use.

Along the bottom edge 38 of the paper shelf 6 are formed tongues 39, projecting forwardly and downwardly past the ends of the rear pressure rolls 14. Said tongues project down through openings 40 formed in a yielding paper-guiding plate 41, which is hinged in rear of the paper shelf, above the lower edge of the latter, on pintles 42 mounted in suitable brackets 43. The paper-guiding plate also has openings 44 up through which the pressure rolls 14 project; and at its front edge it is recessed at 45 to make room for the front pressure rolls 11. Yielding fingers 46 are fixed at their rear ends upon the bottom of the guide plate 41, and rest upon the axle 10 of the front pressure rolls 11. These fingers are very light, and yieldingly support the guiding plate at its front portion; and it will be understood when the release key 28 is depressed, the plate 41 drops with the pressure rolls, as seen at Fig. 4, to leave a clear opening for the insertion of paper around the bottom of the platen.

One of the principal functions of the yielding plate 41 is to prevent the leading edge of the sheet from catching on the top or crown of the pressure roll 14, that is, along the line thereof which is intersected by the paper shelf 6. The guide plate 41, it will be seen at Figs. 2 and 8, slopes forwardly and downwardly from said paper shelf 6 at a point well above the pressure roll, and leads almost into the bite of said roll against the platen, with the result that a sheet of paper dropped into the machine glances along that portion 47 of the guide plate which intervenes between the paper shelf 6 and the pressure roll, and then glances down along the incline of the pressure roll until arrested by contact with the platen, so that by turning the platen (by means of a knob 48) the sheet will be drawn between the pressure roll and the platen, and

fed forwardly around the latter. It will also be understood that if many sheets are inserted together, the plate 41 will yield to permit them to pass forwardly around the platen, said plate yielding independently of the pressure rolls. The plate guides a single sheet directly almost to the line of contact between the pressure roll and the platen, and for this purpose runs very close to the platen, without however preventing the introduction of a thick pile of sheets, because it can yield to accommodate said pile.

It will be observed that the portions 49 of the yielding guide plate which intervene between or alternate with the recesses 44 constitute a set of yielding fingers or tongues to guide the sheets into the bite of the pressure rolls 14 of the platen, said yielding fingers 49 intersecting the paper shelf at a point well above said pressure rolls for the purpose stated, and preferably interdigitated with the fingers or tongues 39 which project downwardly from the bottom of the paper shelf.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, one spring for each arm, yokes embracing said rod and having hooks or means to engage said springs, and a key-operated rock-shaft mounted upon said platen frame and having cams to engage within said yokes to cause them to pull said springs away from said arms.

2. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, adjustment arms mounted on said rod to engage said springs to regulate their tension, and means to set said regulating arms.

3. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, adjustment arms mounted on said rod to engage said springs to regulate their tension, and means to set said regulating arms; said regulating arms mounted upon opposite sides of collars secured to said rod.

4. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, adjustment arms mounted on said rod to engage said springs to regulate their tension, and means to set said regulating arms; said regulating arms mounted upon opposite sides of collars secured to said rod, and each of said collars having abutments against which said regulating means bear.

5. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, adjustment arms mounted on said rod to engage said springs to regulate their tension, and means to set said regulating arms; said regulating arms mounted upon opposite sides of collars secured to said rod, and each of said collars having abutments against which said regulating means bear; said regulating means consisting of screws threaded through ears formed on said arms.

6. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, adjustment arms mounted on said rod to engage said springs to regulate their tension, and means to set said regulating arms, said regulating arms mounted upon opposite sides of collars secured to said rod, and said springs coiled around studs secured upon said collars.

7. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of supporting arms extending to said rolls, springs bearing against said arms, yokes embracing a rod and having hooks or means to engage said springs, and a key-operated rock-shaft mounted upon said platen frame and having cams to engage within said yokes to cause them to pull said springs away from said arms.

8. In a typewriting machine, the combination with a platen and forward and rear rolls running thereon, of a rod fixed to the platen frame between said rolls, supporting arms extending from said rod to said rolls, springs mounted upon said rod and bearing against said arms, yokes embracing said rod and having hooks or means to engage said springs, and a key-operated rock-shaft mounted upon said platen frame and having cams to engage within said yokes to cause them to pull said springs away from said

arms, said yokes being guided at their open ends upon said rod and at their joined ends upon said rock-shaft.

9. The combination with a revoluble platen, of a platen frame having a paper shelf in rear of the platen, tongues at intervals along the bottom of said paper shelf extending downwardly therefrom, a hinged paper-guiding plate curving forwardly beneath said platen, said paper guiding plate having cut-aways through which said tongues project, and a series of pressure rolls rising through openings in said paper-guiding plate at the portion thereof which is located between said tongues and the platen.

10. The combination with a revoluble platen, of a platen frame having a paper shelf in rear of the platen, tongues at intervals along the bottom of said paper shelf extending downwardly therefrom, a hinged paper-guiding plate curving forwardly beneath said platen, said paper guiding plate having cut-aways through which said tongues project, a series of pressure rolls rising through openings in said paper-guiding plate at the portion thereof which is located between said tongues and the platen, a second series of pressure rolls provided to run upon the under front side of the platen, and a key having means to drop all of said pressure rolls together with said guiding plate from the bottom of the platen.

11. The combination with a revoluble platen, of a platen frame having a paper shelf in rear of the platen, tongues at intervals along the bottom of said paper shelf extending downwardly therefrom, a hinged paper-guiding plate curving forwardly beneath said platen, said paper guiding plate having cut-aways through which said tongues project, a series of pressure rolls rising through openings in said paper-guiding plate at the portion thereof which is located between said tongues and the platen, a second series of pressure rolls provided to run upon the under front side of the platen, and a key having means to drop all of said pressure rolls together with said guiding plate from the bottom of the platen; said guiding plate having spring fingers whereby its forward portion is supported upon axles of the forward pressure rolls.

12. The combination with a revoluble platen, of a platen frame having a paper shelf inclining forwardly and downwardly behind the platen to the bottom thereof, paper-guiding tongues at intervals along the bottom of said paper shelf extending downwardly and forwardly therefrom, a paper guiding plate hinged in rear of said paper shelf and curving forwardly beneath and up around the front of said platen and supported yieldingly at its forward portion, said paper guiding plate having cut-aways down through which said tongues project, and a series of pressure rolls rising through openings in said paper guiding plate at the portion thereof which is located between said tongues and the platen, so that said plate may serve as a yielding deflector to guide the sheets away from the paper shelf and into the bite of the pressure rolls and platen.

13. The combination with forward and rear pressure-roll axles supported by means of arms extending both forwardly and rearwardly from a fixed rod which extends along the under side of a platen and unites the ends of a platen frame, of collars upon said rod and having upon their opposite sides studs, around which are coiled springs, the free ends whereof bear against said roll-supporting arms to press the rolls against the platen.

14. The combination with forward and rear pressure-roll axles supported by means of arms extending both forwardly and rearwardly from a fixed rod which extends along the under side of a platen and unites the ends of a platen frame, of collars upon said rod and having upon their opposite sides studs, around which are coiled springs, the free ends whereof bear against said roll-supporting arms to press the rolls against the platen, and a series of arms pivoted upon the opposite sides of said collars, one to bear against each spring to regulate its tension; each arm having an ear through which a screw is threaded to bear against a lug on the collar, whereby the arms may be set up to increase the tension of the springs individually as required.

15. The combination with a paper shelf, a platen, a pressure roll, and means for supporting said roll, of a deflector which extends upwardly from the pressure roll for a short distance in front of the paper shelf and behind the platen and is mounted to yield independently of said roll, to guide the leading edge of the sheet downwardly and forwardly to the bite of the pressure roll and platen, so that said edge cannot catch upon the top of the pressure roll, but may enter readily between the roll and the platen without attention on the part of the operator.

16. The combination with a paper shelf, a platen, a pressure roll, and means for supporting said roll, of a yielding deflector which extends upwardly from the pressure roll for a short distance in front of the paper shelf and behind the platen, to guide the leading edge of the sheet downwardly and forwardly to the bite of the pressure roll and platen, so that said edge cannot catch upon the top of the pressure roll, but may enter readily between the roll and the platen without attention on the part of the operator, said deflector intersecting said paper shelf and pivoted at its rear end behind the paper shelf and above the pressure roll, and

curving around the bottom of the platen to form a paper guide, and being yieldingly supported at its forward position to enable it to yield independently of said pressure roll.

17. The combination with a paper shelf, a platen, a pressure roll and means for supporting said roll, of a yielding deflector which extends upwardly from the pressure roll for a short distance in front of the paper shelf and behind the platen, to guide the leading edge of the sheet downwardly and forwardly to the bite of the pressure roll and platen, so that said edge cannot catch upon the top of the pressure roll, but may enter readily between the roll and the platen without attention on the part of the operator, said deflector pivoted at its rear end behind the paper shelf and above the pressure roll, and curving around the bottom of the platen to form a paper guide, and being yieldingly supported at its forward portion, and paper-guiding tongues projecting downwardly and forwardly from the bottom of the paper shelf through openings in the hinged yielding deflector, the line of intersection of the tongues and the deflector being well above the top of said pressure roll.

18. The combination with a revoluble platen, a platen frame having a fixed paper shelf extending downwardly and rearwardly back of the platen, a series of pressure rolls extending along the under rear side of the platen, and means for supporting said rolls, of fingers leading forwardly and downwardly from the lower portion of the paper shelf between said pressure rolls, and constructed to yield independently of the rolls, to guide the sheets forwardly from the paper shelf into the bite of the pressure rolls and platen.

19. The combination with a revoluble platen, a platen frame having a fixed paper shelf extending downwardly and rearwardly back of the platen, a series of pressure rolls extending along the under rear side of the platen, and means for supporting said rolls, of fingers leading forwardly and downwardly from the lower portion of the paper shelf between said pressure rolls, and constructed to yield independently of the rolls, to guide the sheets forwardly from the paper shelf into the bite of the pressure rolls and platen, said yielding fingers intersecting the paper shelf at a point well above said pressure rolls, so that paper cannot catch on the top of the rolls.

20. The combination with a revoluble platen, a platen frame having a fixed paper shelf extending downwardly and rearwardly back of the platen, and a series of pressure rolls extending along the under rear side of the platen, of yielding fingers leading forwardly and downwardly from the lower portion of the paper shelf between said pressure rolls, to guide the sheets forwardly from the paper shelf into the bite of the pressure rolls and platen, said yielding fingers being interdigitated with fingers or tongues which project downwardly from the bottom of the paper shelf.

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