Dec. 3, 1929. O. SCHLICHTER 1,738,024

PAPER FEED FOR TYPEWRITERS

Filed May 24, 1927 3 Sheets-Sheet 1

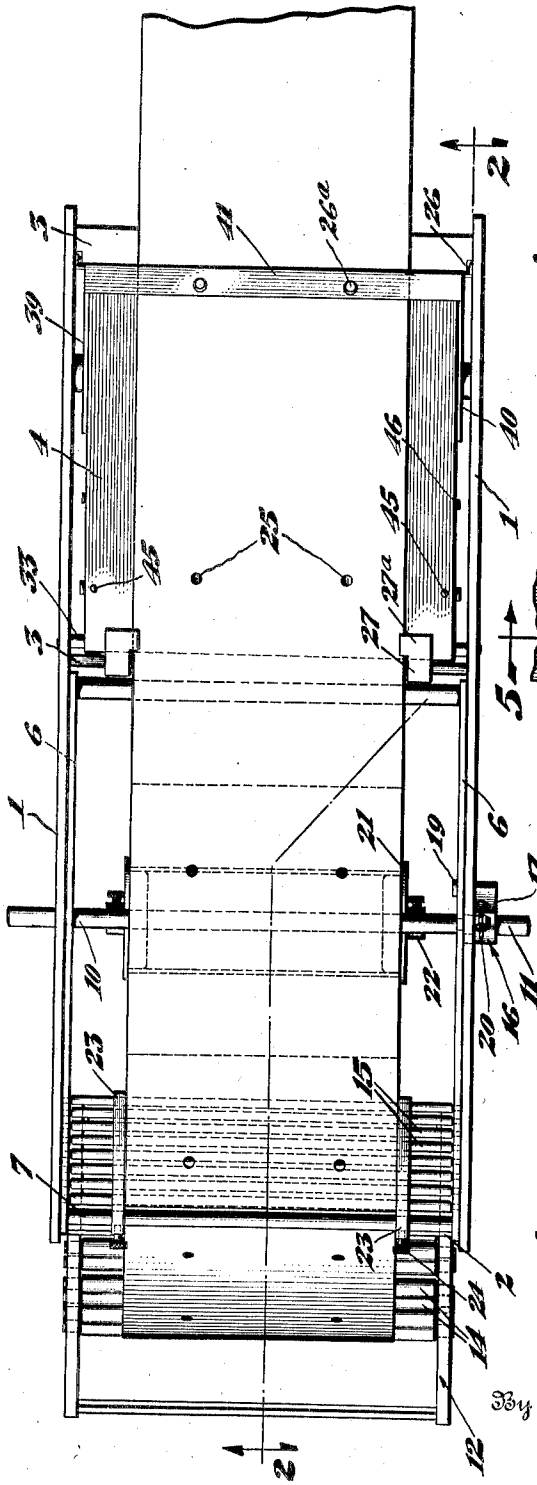


Fig. 1

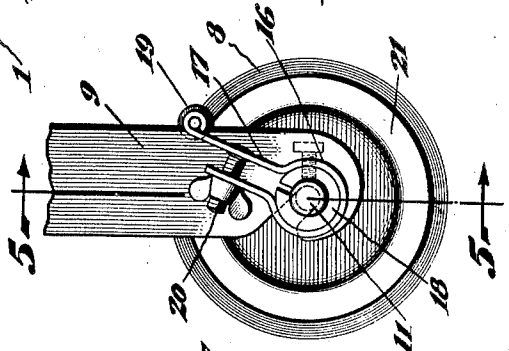


Fig. 4

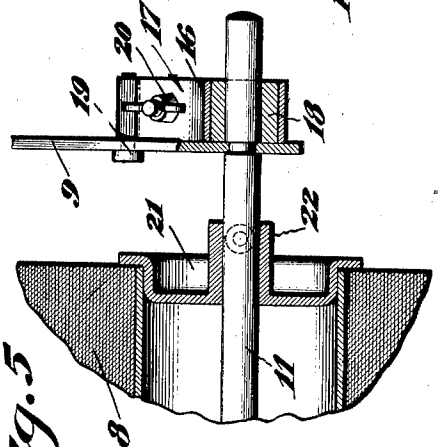


Fig. 5

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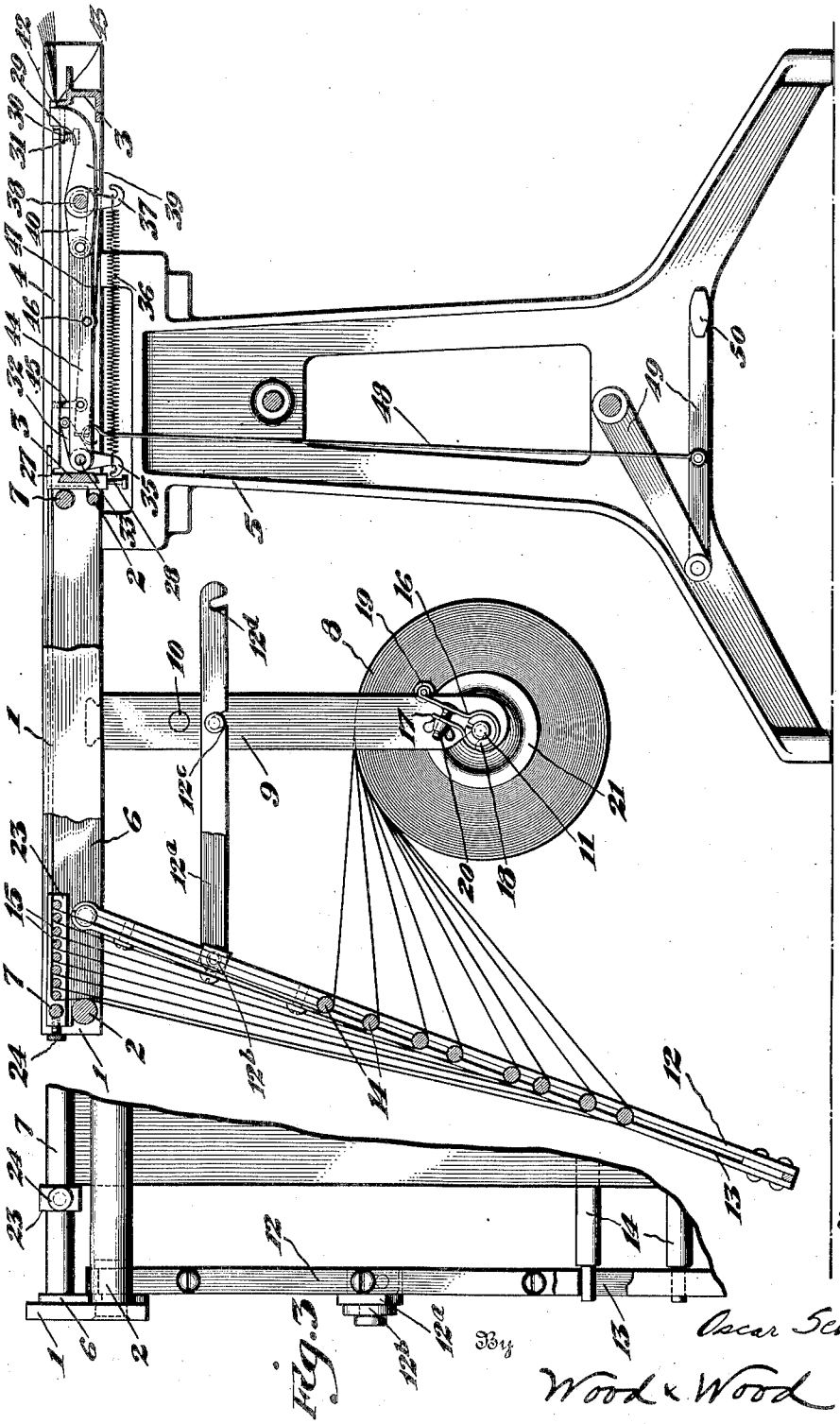


Fig. 2

Fig. 3

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PAPER FEED FOR TYPEWRITERS

Filed May 24, 1927 3 Sheets-Sheet 3

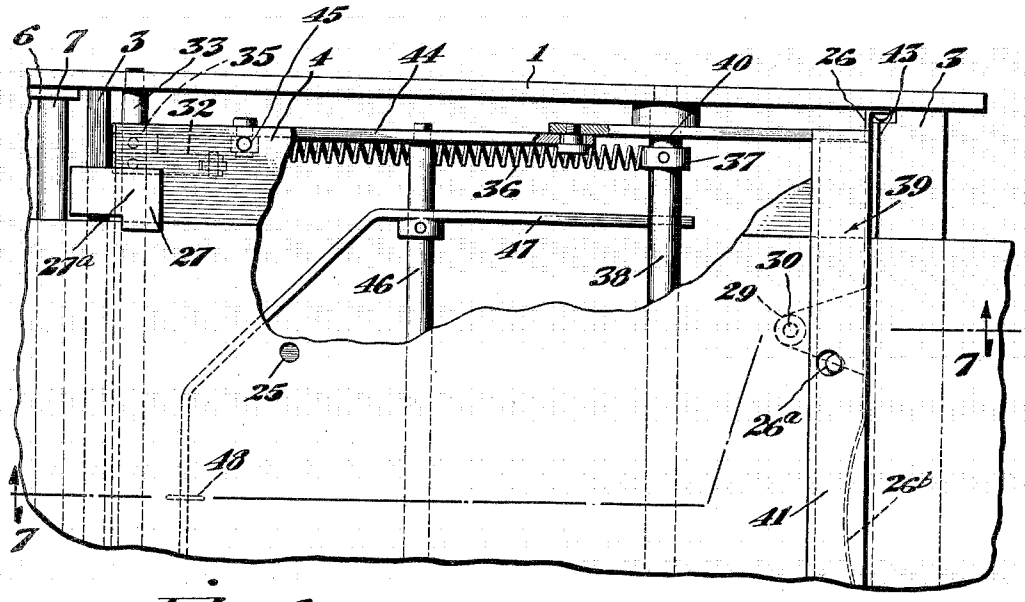


Fig. 6

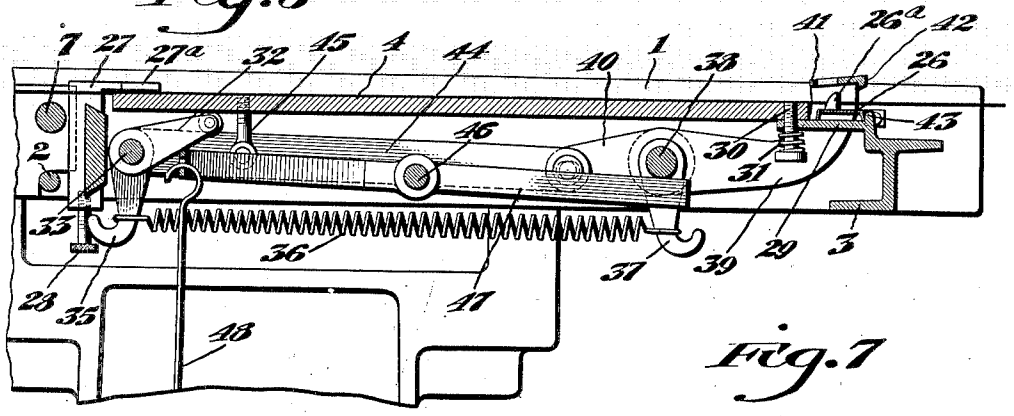


Fig. 7

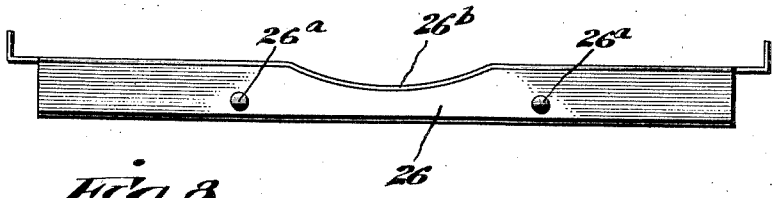


Fig. 8

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UNITED STATES PATENT OFFICE

OSCAR SCHLICHTER, OF HAMILTON, OHIO, ASSIGNOR TO KRAUTH & BENNINGHOFEN, OF HAMILTON, OHIO, A FIRM

PAPER FEED FOR TYPEWRITERS

Application filed May 24, 1927. Serial No. 193,919.

This invention relates to a device as an attachment for typewriting or billing machines for supporting a plurality of webs in a superposed arrangement upon a writing table or platen, and for aligning and maintaining the registry of the printed forms or form data on the several webs within the area of the writing table. The webs are fed from a single supply roll over floating gravity rollers to the platen, the rollers applying the necessary tension upon each individual web.

An object of the invention is to provide one or a plurality of floating or loosely journalled rollers for applying a gravity tension individually upon one or a plurality of webs of the paper fed from a supply roll to a printing platen for obtaining a uniform tension of the web lengths over a writing table or platen bringing and maintaining the printed forms of the several webs in alignment and registration, and permitting the webs to be manually withdrawn an appropriate degree beyond the writing table or platen when it is necessary to make corrections, and thereafter automatically retracted to their proper position upon the writing table.

Another object of my invention is to provide tension or braking means for retarding or witholding the web supply roll so as to prevent the same from overrunning as the web is withdrawn therefrom, and also to withhold the same against the pressure of tension rollers engaged upon the web between the roll and writing table.

Further advantages and features relate to the mechanism for engaging the webs at the writing table through apertures in the paper, and for depressing the writing table to release the web or webs thereon for manual withdrawal, all of which is more fully set forth in the description of the accompanying drawings, in which:

Figure 1 is a plan view of the web tension applying and aligning device.

Figure 2 is a sectional view taken on line 2—2, Figure 1, detailing the mechanism for applying uniform tension to the webs of paper as they are fed from the roll and showing the means for maintaining the webs taut upon the printing platen and for releasing the same for an appropriate feed thereof.

Figure 3 is a fragmentary end view showing a portion of the rack hung at the end of the device for slidably mounting the gravity rollers acting upon the respective webs of paper.

Figure 4 is a fragmentary view of a portion of the side of the machine showing the support for the paper roll and the friction device thereon for controlling the unwinding of the roll.

Figure 5 is a sectional view taken on line 5—5, Figure 4, further detailing the mechanism shown in Figure 4.

Figure 6 is a fragmentary plan view taken at the printing end of the device illustrating in detail the mechanism for releasing the webs and showing the mechanism in release position for advancing the webs.

Figure 7 is a sectional view taken on line 7—7, Figure 6, further detailing the mechanism shown in Figure 6.

Figure 8 is a detail plan view of the pin carrying plate which cooperates with apertures in the paper webs for controlling the feed, showing the plate removed from the mechanism.

The mechanism primarily provides a web support and platen as an attachment for Elliott Fisher type-writing or billing machines to register and align and maintain the registry in alignment of the forms or form data of a plurality of superposed webs disposed upon the platen in position to receive the typewriter impressions. The webs in plural number for convenience in merchandising and use are single roll wound termed "mani roll", the roll containing a requisite number of webs for typing an original and specific number of manifold copies and is suitably journalled within the machine and from which the webs pass over individual tension rolls as floating gravity rolls to and over a writing table so that each web of the mani roll, as the webs are engaged or sustained upon the platen, are held under a uniform or proper tension for aligning the forms of the several webs upon the writing table.

The tension means also serves to prevent

overrun of the roll as the webs are drawn forward over the table and hooked over or engaged with pins at the forward or delivery end of the platen. The webs can be conveniently drawn forward out of contact with the manifolding paper therebetween for making corrections after which the forms or webs slide back into the former position for engagement with the pins, so that the typing may be completed, the webs being provided with sets of apertures in definite relation to the preprinted forms and bear relative spacing to the form lengths and, therefore, provide indexes or points for initially bringing the forms into registry and alignment when disposed upon the writing table and also for engaging the webs upon the pins to hold the same against displacement.

The general structure of the machine is table-like, comprising, side frames 1—1 held together by means of cross rods 2—2 and the cross bars 3—3 at each end of the printing platen. A printing platen or writing table 4 is disposed between the side frames and at the discharge end of the machine, and movably mounted. This table-like structure formed by the side frames 1—1 and cross rods 2—2 is supported upon a pair of pedestal-like legs 5—5 and the legs are suitably reinforced by cross rods.

The frame work for supporting the roll of paper and the gravity device for applying tension to the webs of paper is mounted within the main frame and consists of side frames 6—6 bound together by tie rods 7—7, the side frames being notched on their lower sides so as to be engaged upon the tie rods of the main frame, and recessed within the main frame.

A roll of multi-web paper 8 is hung beneath the frame of the machine on depending brackets 9. The brackets 9 are dovetailed into the side frames 6—6 and bound together by a tie rod 10. Their lower ends are slotted to provide hooks engaging the respective ends of a shaft or spindle 11 supporting the roll 8 and rotatable therewith.

A U-shaped rack 12 is pivoted to the side frames 6—6 and is disposed at the feed side of the roll and toward the end of the device. The rack is of such length as to clear the floor beneath the machine and is rigidly maintained in position, slanting away from the roll by means of a pair of arms 12^a.

The arms 12^a, one at each side of the rack, are pivoted thereto as at 12^b and extend to the brackets 9. Two pairs of slots 12^c and 12^d are provided in the arms and adapted to engage over pins on the bracket 9. One pair of these slots, namely, 12^c maintains the rack in service position and the other pair 12^d are for sustaining it out from below the machine during loading of the roll.

The rack is fabricated of stampings to provide opposingly related slots 13 in its side arms in which a plurality of horizontally disposed rollers 14 are slidably mounted. The rollers have reduced end portions engaging the slots, the shoulders formed thereby preventing longitudinal displacement of the rollers. The number of rollers 14 corresponds to the number of webs of paper in the roll. The side arms of the rack are formed of pairs of flat pieces spaced apart by the lower cross piece and spacer plates at the top to provide the slots 13 and formed at the top to encircle the pivot studs.

Immediately above the rack a series of horizontally disposed guide rollers 15 are mounted in the side frames 6—6, and arranged so that as the webs of paper are brought up from below the machine and each one engaged over a respective gravity roller 14 thence upwardly over a respective guide roller 15 to and over the printing platen with the ends of the webs engaged upon pins to hold the same against retraction.

The gravity rollers 14 float upon the webs to apply the necessary tension for unwinding from the roll and hold the same taut upon the platen. The inclination of the rack 12 in relation to the series of rollers 15 keeps the webs of paper spaced apart from the supply roll to the rollers 15 so that a uniform or determined tension is applied to each individual web contained in the mani roll. This action of the gravity rollers is against the mechanism maintaining the webs upon the platen at the discharge end of the machine and against the action of a friction device 16 controlling the unwinding of the roll at the supply or roll end.

The friction device 16 is mounted and acts upon the outer end of the rotating axle shaft 11 of the roll and comprises a clip 17 engaged about a shoe or split bushing 18 of friction material in direct engagement with the axle and a set screw 19 at one end of the clip engaging the edge of the depending bracket to prevent rotation of the clip. (See Figures 4 and 5). The adjustment of the friction device is through a clamp screw 20 for drawing the clip tightly about the shoe. The roll of paper is mounted upon cup-shaped disks 21 adjustably mounted on the shaft 11 and set in place by set screws engaging through the hubs 22.

It can readily be seen that as the device is put into operation and the gravity rollers hung upon their respective webs of paper, the friction device can then be set or adjusted so as to evenly balance the gravity action of the rollers and to thereby allow them to space the paper webs apart and tautly maintain each web for a uniform feed of the webs, as they are drawn forward and to maintain the proper tension when the webs are sustained upon the platen.

The webs of paper are guided at the point where they pass the rollers 15 by means of a pair of guides 23 at the opposite sides of the

web. These guides 23 are slidable upon the tie rods 7 for suitable adjustment and are secured in the proper guiding relation to the webs of paper by means of set screws 24, the series of rollers 15 passing loosely through the guides.

The webs of paper are each provided with spaced pairs of apertures 25. A pin carrying plate 26 formed of a piece of stamped metal is secured to the side frames 1—1 by means of screws engaging through side wings of the plate and is disposed between the side frames at the discharge end of the platen 4. The pins 26[a] of the plate extend above the top face of the platen and are adapted to cooperate with a pair of apertures 25 for intercepting the webs and withhold the same against withdrawal, registering and aligning the preprinted forms of the webs disposed upon the platen, and also to anchor the forward ends of the webs under the tension of the rollers 14. The pins are rounded on the sides toward the platen so as to allow the paper webs to slide easily over the same during feed.

The side of the plate 26 toward the tearing point for the web is notched centrally thereof as at 26[b] to provide a finger clearance to grasp the ends of the webs. The webs are further guided onto the platen by means of guides 27 slidably mounted on the cross bar 3 at the forward end of the platen and set in adjusted position by means of set screws 28. These guides 27 have extensions 27[a] overhanging the margin of the paper webs and the platen so as to engage the webs between the extensions and the platen.

The printing platen 4 is movably supported in the following manner:

The cross bar 3 at the discharge end of the machine has lugs 29 extending forward under the platen. These lugs are traversed by screws 30 threaded into the platen and springs 31 are interposed between the lugs 29 and the downwardly disposed heads of the screws 30. This provides the flexible connection at the discharge end of the platen. The lugs further provide a support for the pin plate. The forward end of the platen is supported or held against the extensions of the guides 27, securing the margin of the paper, by means of spring urged levers 32, pinned on a rack shaft 33 extending between the frames 1—1. The end of the lever 32 is provided with a roller to provide easy movement against the platen. Hook levers 35 are also pinned to the shaft 33 and have their hooks extending downwardly and engaged by the ends of the coil springs 36. The opposite ends of the respective coil springs 36 are attached to hook levers 37, these levers in turn being pinned to a second rock shaft 38 disposed toward the discharge end of the machine and journalled in the side frames 1—1. The rock shaft 38 pivotally supports the lifting knife 39. The lifting knife 39 comprises the arms 40 mounted on the rock shaft and pinned thereto and the knife blade 41 disposed above the pin plate.

The action of the coil springs which are under tension is to force the roller carrying lever against the platen and to hold the knife blade 41 down against the cross bar 3. The knife is provided with a bead 42 at the outer end thereof and on its lower side, this bead being adjacent a bead 43 on the rib 3 and pinching the webs under the action of the springs so that the paper may be torn at this point.

In order to swing the platen downwardly at its rear end and to raise the knife so as to release the paper at its respective held points a series of levers are provided as follows:

A pair of longitudinally disposed levers 44 are pivotally attached to the rock shaft 33 at one end and have slotted connection to the ends of the knife arms. the knife arms being fulcrumed intermediate of their length on the rock shaft 38. Links 45 are pivotally attached to the longitudinally disposed levers 44 and are screwed into the platen for connecting the levers and platen. A pivot rod 46 is journalled intermediate of the longitudinally disposed levers and carries a U-shaped element 47. This U-shaped element is pivoted on the rod 46 intermediate its side arms and the outer ends thereof are engaged under the rock shaft 38. The links 45 are attached to the levers 44 intermediate their pivoted ends and the rod 46.

The yoke end has attached thereto a control wire 48. The control wire extends downwardly toward the floor and is attached to one of a pair of swinging levers 49 pivoted to a cross bar of the legs. The lever to which the wire is attached at its lower end is provided with a treadle portion 50 for foot operation.

When it is desirable to release the webs from confinement under the knife and against the extensions of the guides, so that they may be fed forward to position a successive set of forms upon the platen, the operator moves the control wire for operating the U-shaped lever, conveying a swinging movement to the levers 44, thereby pulling the swinging end of the platen 4 downward through the connecting links 45 and swinging the knife blade upward due to the connection at the ends of the fulcrumed knife arms. The knife blade is provided with a pair of apertures adapted to clear the aligning pins when the knife is in set position. When the knife is raised the operator raises the webs up against the knife and it is then clear of the pins and can be drawn out of the machine. After the webs are free of the aligning pins the operator may release the treadle and withdraw the webs over the pins until a successive set of apertures in the webs are reached and engaged with the pins. The

paper then may be torn at the point of knife engagement.

When the aligning pins are in engagement with the pair of apertures the webs are positively held in position across the face of the printing platen.

Having described my invention, I claim:

1. A device of the character disclosed, combining a platen for supporting a plurality of webs of paper in superposed relation for manifolding, means for securing the webs upon the platen against displacement, the webs being continuous from the platen to a single multi web supply roll, a pivoted rack depending from the platen and adjustable to an inclined position, and a plurality of rollers having journal ends engaged in elongated slots in said rack, the rollers in superposed arrangement in said rack slots, one for each web, each bearing upon a web in floating suspension for applying a gravity tension thereupon, the inclination of the rack relatively offsetting the rollers for separating the webs between the platen and supply roll.

2. A device of the character disclosed, combining a frame, a platen mounted in said frame for supporting a plurality of webs of paper in superposed relation for manifolding, means for securing the webs upon the platen against displacement, means depending from the frame for journalling a roll of multi web paper, a journal carrying a plurality of idler rollers in superposed and offset relation, and an idler roller for each web engaging the web and applying tension under gravity to the web between the supply roll and platen.

3. A device of the character disclosed, combining a platen for supporting a plurality of webs of paper in superposed relation for manifolding, a journal for supporting a multi web wound roll, a spindle for said roll carried by said journal, a split bushing engaged about said spindle, and means for compressively engaging said bushing for applying a friction pressure to said bushing and spindle, retarding the web unwound from the roll.

In witness whereof, I hereunto subscribe my name.

OSCAR SCHLICHTER.