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2,582,783

SHEET FEEDING MECHANISM FOR TYPEWRITERS OR LIKE MACHINES

Filed Sept. 29, 1950

2 SHEETS—SHEET 1

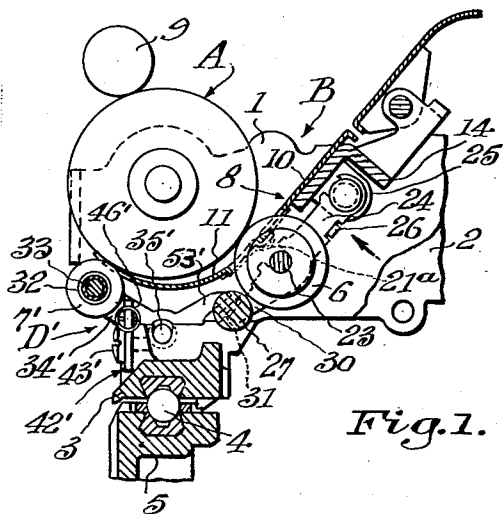


Fig. 1.

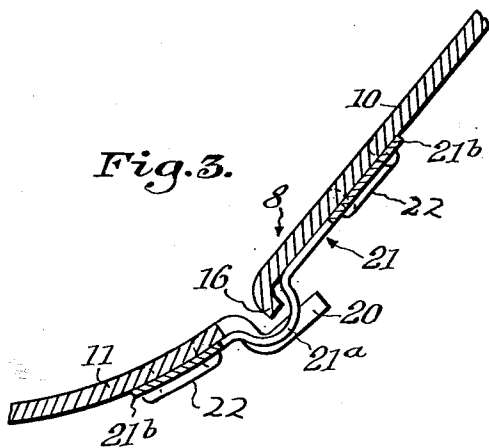


Fig. 3.

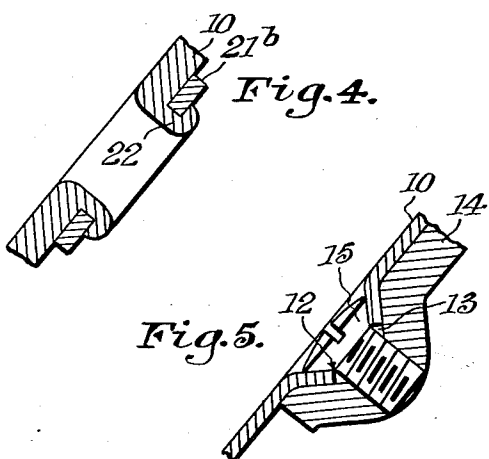


Fig. 4.

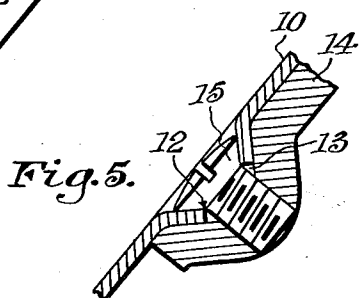
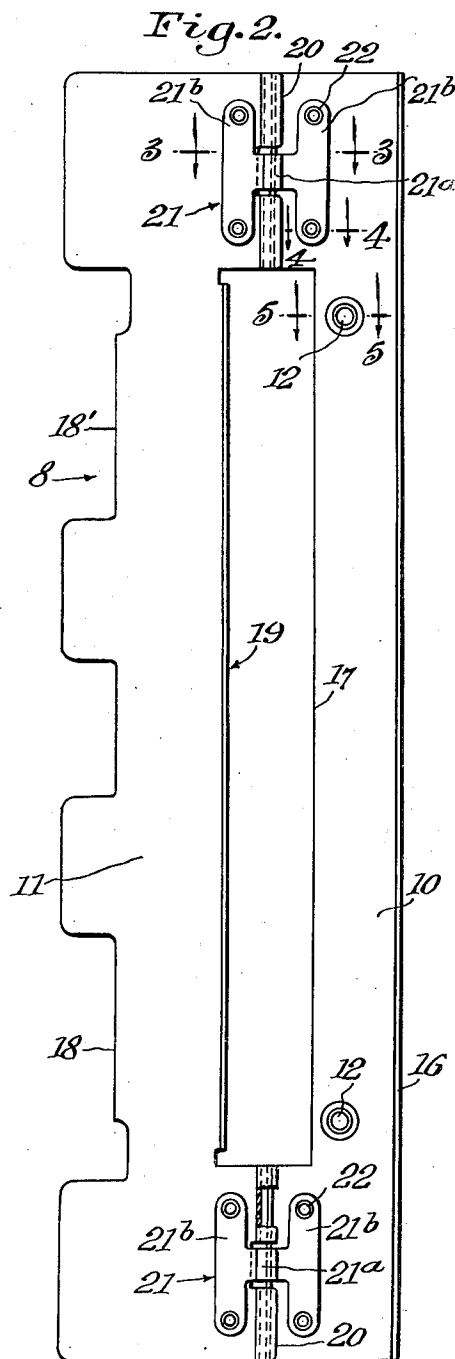


Fig. 5.



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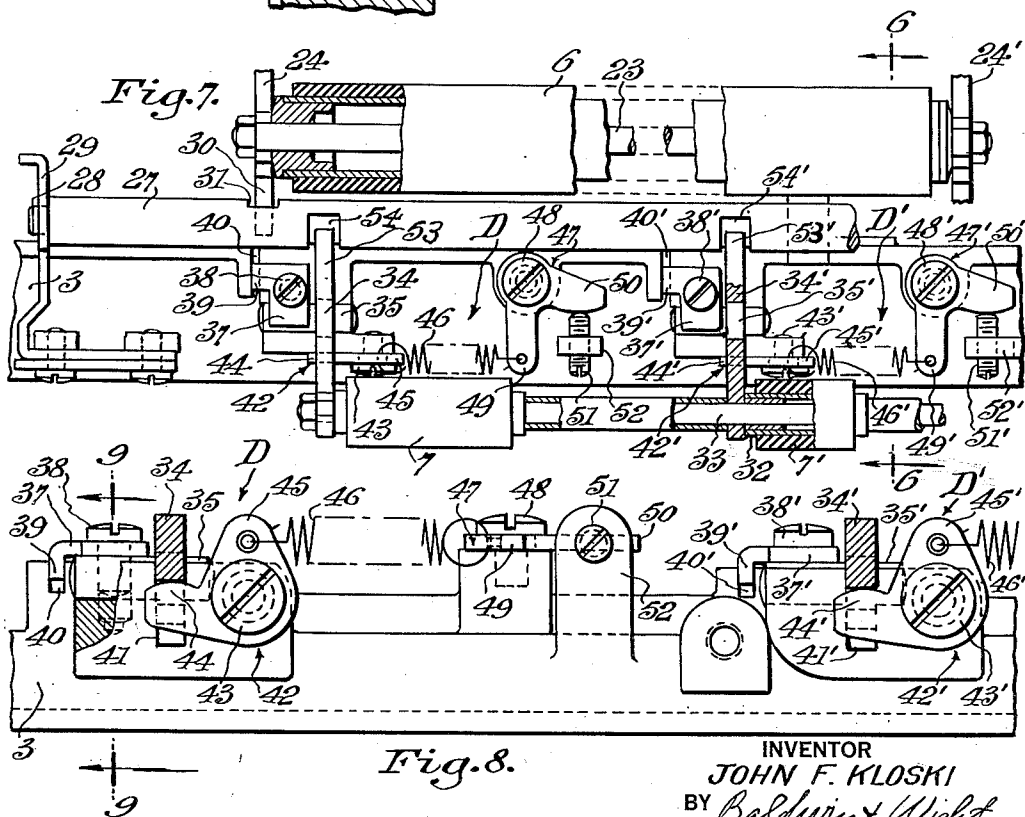
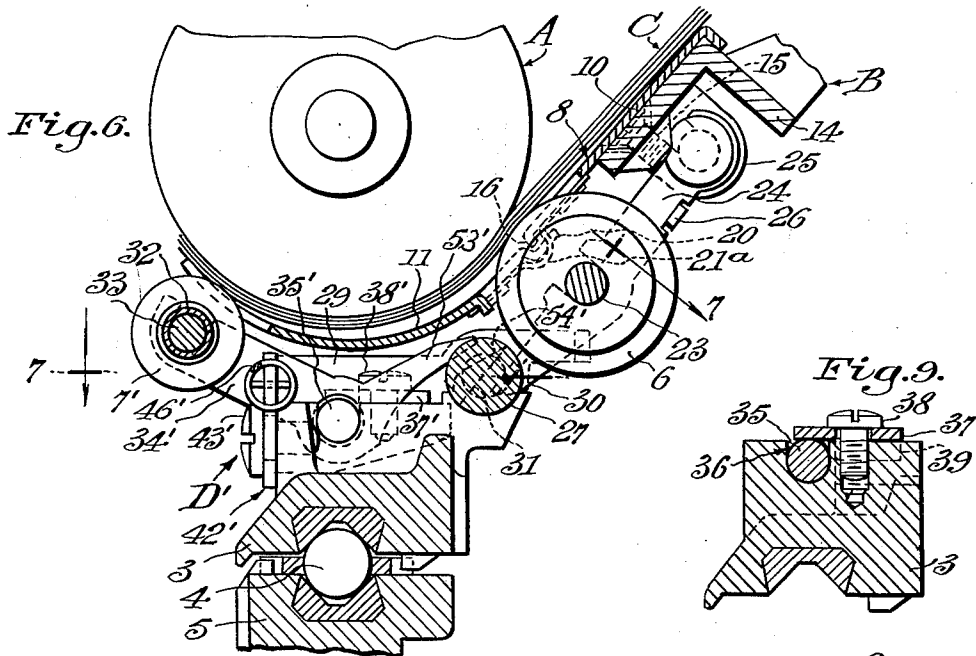
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SHEET FEEDING MECHANISM FOR TYPEWRITERS OR LIKE MACHINES

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2 SHEETS--SHEET 2



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SHEET FEEDING MECHANISM FOR TYPE-
WRITERS OR LIKE MACHINESJohn F. Kloski, Hartford, Conn., assignor to Royal
Typewriter Company, Inc., New York, N. Y., a
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Application September 29, 1950, Serial No. 187,588

12 Claims. (Cl. 197—138)

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This invention relates to sheet feeding mechanism for typewriters and like machines and more particularly to improved pressure roll adjusting mechanism, and paper pan construction, and to a co-ordinated combination of such constructions.

Conventional typewriters of the kind including a rotatable sheet feeding cylindrical platen customarily include a paper pan extending under and circumferentially with respect to the platen for guiding and holding work sheet material against the platen, and pressure rolls engaging the work sheets for pressing them against the platen. While many such prior constructions have been generally satisfactory in operation, specific difficulties sometimes are encountered with respect to creeping of the work sheets lengthwise of the platen with consequent wrinkling due to the slack in the work sheets between the feed pressure rollers, sometimes even causing the work sheets to tear and to become misaligned with the platen.

An object of the present invention is to provide an improved construction of pressure roll adjusting mechanism and paper pan, so co-ordinated with each other and with the sheet feeding platen as to eliminate or reduce such difficulties to a minimum.

Another object of the invention is to provide an improved pressure roll adjusting mechanism.

A further object of the invention is to provide an improved paper pan construction.

Other objects of the invention will become apparent from a reading of the following description, the appended claims and the accompanying drawings in which:

Figure 1 is a vertical sectional view, fore and aft of a typewriter carriage, with some parts shown in elevation, certain conventional parts, not necessary to illustrate in order to convey an understanding of the invention, being omitted;

Figure 2 is a developed or flattened or unfolded view of a paper pan construction;

Figure 3 is a fragmentary detailed section on the line 3—3 of Figure 2, drawn on an enlarged scale;

Figure 4 is a fragmentary detailed sectional view on the line 4—4 of Figure 2, drawn on a more enlarged scale;

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 2, also drawn on an enlarged scale, and showing the attachment of a paper pan to a part of a carriage frame cross bar;

Figure 6 is a view similar to Figure 1, but drawn on an enlarged scale, and in section on the line 6—6 of Figure 7, showing work sheet mate-

rial operatively associated with a paper pan, feed and pressure roll equipment, and cylindrical platen;

Figure 7 is a section on the irregular line 7—7 of Figure 6, drawn on a reduced scale, and showing some parts in elevation;

Figure 8 is a view partly in front elevation and partly in vertical section of the structure shown in Figure 7 with some parts omitted, drawn on an enlarged scale as compared to Figure 7; and

Figure 9 is a detailed sectional view on the line 9—9 of Figure 8.

The invention may be embodied in typewriters or like machines of different constructions. For the purposes of illustration it is shown as being incorporated in a standard or office typewriter having some of the conventional parts customarily included in the Royal Standard typewriter. Among the known parts shown is a cylindrical platen A journaled by suitable bearings (not shown) on end plates 1 and 2 of a carriage frame generally designated B. The carriage frame B includes a carriage rail 3, adapted to be supported by and to roll on balls 4 which in turn are supported by and roll on a rail 5, supported on a stationary main frame. As in other typewriters of the kind referred to, for example as shown in the patent to Utz No. 1,428,569, a feed roll 6, pressure rolls 7 and 7', and a paper pan generally designated 8 are provided for guiding and assisting in the feeding of work sheet material C into operative relation to the platen A. A plurality of top sheet positioning rolls, one of which is shown at 9 in Figure 1, may be carried on a bail (not shown) for holding work sheets against the front of the platen. As so far described, the illustrated construction is conventional. The invention resides in the improved construction of the paper pan 8, an improved construction for adjusting the pressure rolls 7 and 7', and the correlative arrangement of these improved constructions with respect to each other and with respect to the conventional parts.

The paper pan construction 8 comprises, generally, two relatively rigid pan sections 10 and 11 which are resiliently or flexibly connected together along a joint extending parallel to the platen axis, and, in the form shown, somewhat below and to the rear of this axis. The rear section 10 is generally of flat plate-like form, and has spaced apertures 12, the walls of which are depressed to form conical projections adapted to fit in depressions 13 formed in a cross bar 14 secured to the carriage end plates in the usual manner. Screws 15, passing through the apertures

12 and having threaded connection with the cross bar 14, secure the rear pan section 10 to the carriage frame cross bar 14. The pan section 10 is formed with a front or lower edge lip 16 and is cut out or recessed longitudinally and centrally as at 17.

The front pan section 11 is curved to lie circumferentially adjacent and under the platen A. The front edge of the section 11 is recessed at 18, 18' to accommodate the pressure rolls 7 and 7', respectively. A rear edge recess 19 formed in the front pan section 11 registers with the recess 17 in the pan section 10 to accommodate the pressure roll 6. As shown most clearly in Figure 3, the pan section 11 is formed with offset edge extension portions 20 which overlap the space in the joint between the pan sections 10 and 11.

Although the pan sections 10 and 11 are, themselves, relatively rigid, they are so connected at their joint that the front pan section 11 can yield or flex bodily about the joint. In accordance with the invention, the connection between the pan sections comprises spring leaves generally designated 21, one preferably being at each end of the pan structure, and each including a bowed, resilient part 21^a spanning the space between the sections 10 and 11 at their joint, and end tab or attaching parts 21^b. The tab parts 21^b are apertured to receive material of the pan parts which is swedged or deformed as shown at 22 in Figure 4 so as to provide, in effect, rivets unitary with the pan sections and securing the latter firmly to the connecting device 21.

The pan structure thus formed, and comprising the sections 10 and 11, and the connectors 21, is unitary but is intermediately flexible along a joint extending parallel to the platen axis, the arrangement being such that, although the upper or rear section 10 is fixed to the frame cross bar 14, the front or bottom section 11 can flex substantially bodily about its joint so that its position relative to the platen may be varied in accordance with the thickness of the work sheet material between the pan structure and the platen, and so as to exert variable pressures on the work sheet material, the pressure in each case being that most conducive to effecting straight feeding of the work sheet material without buckling, shifting, or cramping of the sheets. Because of the unitary construction of the paper pan, and the particular characteristics of the spring leaf connectors 21, involving no pivots or other parts subject to wear or binding, the flexing characteristics of the pan structure will remain constant.

The feed roller 6 is journaled on a shaft 23 carried by arms 24, 24', pivotally mounted respectively on ears on the cross bar 14, one ear being shown at 25 in Figures 1 and 6. Springs, one of which is shown at 26 in Figures 1 and 6, bear against the rear edges of the arms 24, 24' so as to urge the arms clockwise, as viewed in Figures 1 and 6, and press the feed roller 6 against the work sheet material C extending under the platen A. To enable the feed roll 6 to be released, that is moved away from the platen against the urge of the springs 26, to facilitate insertion of work sheets, a shaft 27 is rockably mounted at 28 in bracket 29 carried by the carriage rail 3 as shown in Figure 7, and is similarly mounted at its opposite end, not shown. Each arm 24, 24' is extended downwardly and forwardly beyond the shaft 23 to provide finger parts 30 which are received in recesses 31 formed

in the shaft 27. Normally, when the parts are in the positions shown in Figures 1, 6 and 7, the flat bottoms of the recesses 31 are aligned with the arm finger extensions 30, and are spaced from the fingers so as to enable the arms 24 and 24' to be urged clockwise by the springs 26 without being restrained by the shaft 27. When it is desired to move the feed roll 6 rearwardly, the shaft 27 is rocked by any suitable mechanism so as to cause the bottoms of the recesses 31 to press against the fingers 30, and thereby rock the arms 24 and 24' counterclockwise against the urge of the springs 26. The mechanism for rocking the shaft 27 may be of any suitable kind, for example such as the mechanism shown in the patents to Hess Nos. 1,100,301 and 1,270,292; or in the patent to Schwartz No. 1,270,979.

The front pressure rolls 7, 7' are journaled by self-oiling bearings 32 on a shaft 33 carried by spaced arms 34, 34', rockable respectively on short shafts 35 and 35', secured to the carriage rail 3. In the form shown, the shaft 35 fits in a recess 36 formed in the carriage rail 3, and is held in place by a retaining plate 37 secured to the rail 3 by a screw 38. The retaining plate 37 is formed with a flange 39 which projects into a slot 40 in the carriage rail 3, the plate 37 being thus accurately positioned on the rail 3. The shaft 35' is mounted in a recess similar to the recess 36 in the rail 3, and is held in place by a plate 37' secured to the rail 3 by a screw 38', the plate 37' having a flange 39' extending into a slot 40' in the carriage rail. The carriage rail 3 is formed with transversely extending slots 41 and 41' traversed by the shafts 35 and 35' respectively, and in which the arms 34 and 34' are mounted, the sides of the slots 41 and 41' providing lateral support for the arms 34 and 34'.

In accordance with the invention, separate and independently adjustable mechanisms D, D' of improved construction are provided for urging the arms 34 and 34' to rock clockwise as viewed in Figures 1 and 6, so as to cause the rolls 7 and 7' to press against work sheet material extending under and in front of the platen A. The mechanism D comprises a two-armed lever 42 mounted to rock on a pivot screw 43, the axis of which is transverse to the platen axis. One arm 44 of the two-armed lever 42 is formed with a rounded edge which projects under and is in contact with the arm 34 supporting the shaft 33. The other arm 45 of the lever 42 is apertured for connection to one end of a spring 46, the other end of which is connected to a spring anchor 47 in the form of a two-armed lever pivoted on a screw 48 to rock about an axis transverse to the axis of the screw 43. As shown in Figure 7, one arm 49 of the arm spring anchor lever 47 is apertured for connection to the spring 46, and the other arm 50 of the lever 47 is formed with a rounded edge which is engaged by the end of an adjusting screw 51 which has threaded connection with an ear 52 extending upwardly from the carriage rail 3.

In order to increase the tendency of the spring 43 to rock the associated arm 34 so as to cause the roll 7 to press against the work sheet material with increased force, the adjusting screw 51 is turned to rock the spring anchor lever 47 counterclockwise as viewed in Figure 7, thereby imposing additional loading or tension on the spring 46. This causes the two-armed lever 42 to press upwardly against the arm 34 so as to cause the roll 7 to exert increased pressure on the work

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sheet material. Conversely, in order to reduce the pressure exerted by the roll 7, the screw 51 is backed off so as to permit the spring anchor lever 47 to be rocked clockwise as viewed in Figure 7, thus reducing the loading on the spring 48.

The separate adjusting means D' is similar to the mechanism described above so that a detailed description of the mechanism D' will not be necessary. Corresponding parts of the mechanisms D and D' are designated by corresponding reference numerals with the exception that those designating parts of the mechanism D' are primed. Thus the mechanism D' has a two-armed lever 42' corresponding to the two-armed lever 42 of the mechanism D; the mechanism D' has a spring 46' corresponding to the spring 46 of the mechanism D, and so on.

In order that the pressure rolls 7 and 7' may be retracted so as to permit work sheets to be inserted between the rolls 7 and 7' and the platen A, the arms 34 and 34' are formed with extensions 53 and 53' which normally extend freely into slots 54 and 54' formed in the shaft 27. When the shaft 27 is rocked for releasing or retracting the feed roll 6, the bottoms of the slots 54 and 54' will press against the arm extensions 53 and 53' to rock the arms 34 and 34' counterclockwise as viewed in Figures 1 and 6, thereby moving the rolls 7 and 7' away from the platen.

By adjusting or varying the pressures exerted by the rolls 7 and 7' and by co-ordinating this adjustment with the pressure exerted by the section 11 of the paper pan construction, it is possible to cause the work sheet material to hug the platen A so evenly that the difficulties due to distortion and wrinkling of work sheet material usually encountered in using prior machines, are largely eliminated.

The construction disclosed embodies the invention in its preferred form but it is intended that the disclosure be illustrative rather than definitive of the invention. The invention is defined in the appended claims.

I claim:

1. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support pivotally mounted on said frame to rock about an axis parallel to the platen axis and journaled said pressure roll with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; and adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame to rock about an axis transverse to the axis of rocking of said support and having one of its arms extending adjacent to and in contact with a part of said support, a coil spring connected at one of its ends to the other arm of said lever and urging said lever to rock to cause said one of said arms to bear against said part of said support, a spring anchor movably mounted on said frame and to which the other end of said spring is connected, and a device for changing the position of said anchor on said frame with respect to said lever for thereby varying the loading of said spring.

2. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support pivotally mounted on said frame to rock about an axis parallel to the platen axis and journaled said pressure roll with its axis parallel to the platen axis and for movement

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relatively toward said platen for pressing work sheet material against said platen; and adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame to rock about an axis transverse to the axis of rocking of said support and having one of its arms extending adjacent to and in contact with a part of said support, a coil spring connected at one of its ends to the other arm of said lever and urging said lever to rock to cause said one of said arms to bear against said part of said support, a spring anchor lever pivotally mounted on said frame and to which the other end of said spring is connected, and a device for rocking said anchor lever about its pivot to vary the loading of said spring.

3. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support pivotally mounted on said frame to rock about an axis parallel to the platen axis and journaled said pressure roll with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; and adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame to rock about an axis transverse to the axis of rocking of said support and having one of its arms extending adjacent to and in contact with a part of said support, a coil spring connected at one of its ends to the other arm of said lever and urging said lever to rock to cause said one of said arms to bear against said part of said support, a two-armed spring anchor lever pivotally mounted on said frame and to one arm of which said spring is connected, and an adjusting screw mounted on said frame, engaging the other arm of said anchor lever, and being rotatable for rocking said anchor lever to vary the loading of its spring.

4. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support pivotally mounted on said frame to rock about an axis parallel to the platen axis and journaled said pressure roll with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; and adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame to rock about an axis transverse to the axis of rocking of said support and having one of its arms formed with a rounded edge extending adjacent to and in contact with a part of said support, a coil spring connected at one of its ends to the other arm of said lever and urging said lever to rock to cause said rounded edge thereof to bear against said part of said support, a two-armed spring anchor lever pivotally mounted on said frame and to one arm of which said spring is connected, an ear on said frame, and an adjusting screw having threaded connection with said ear, bearing against the other arm of said anchor lever, and being rotatable in said ear for rocking said anchor lever to vary the loading of its spring.

5. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a rockable support comprising two arms spaced from each other in the direction of longitudinal extent of the

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platen, and a shaft carried by said arms and extending parallel to the platen axis; a pair of pressure rolls journaled on said shaft in mutually axially spaced relation; means mounting said arms on said frame to rock about an axis parallel to the platen axis for causing said rolls to press work sheet material against said platen; and separately adjustable means operable respectively on said support arms for urging each of said arms to rock said shaft toward said platen, each of said adjustable means comprising a two-armed lever pivoted on said frame to rock about an axis transverse to the axis of rocking of the associated support arm, one arm of said two-armed lever being formed with a rounded edge extending adjacent to and in contact with an edge of the associated support arm, a coil spring connected at one of its ends to the other arm of said two-armed lever and urging said lever to rock to cause said rounded edge thereof to bear against said edge of said support arm, a two-armed spring anchor lever pivotally mounted on said frame and to one arm of which said spring is connected, an ear on said frame, and an adjusting screw having threaded connection with said ear, bearing against the other arm of said anchor lever, and being rotatable in said ear for rocking said anchor lever to vary the loading of its spring.

6. In a typewriting or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; and means for supporting work sheets and guiding them into engagement with said platen, comprising a first relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, and a plurality of relatively resilient spring leaves, each spanning the space between said edges of said pan sections, and being secured to both of said pan sections, said leaves thereby resiliently mounting said second pan section for bodily movement towards and from said platen.

7. In a typewriting or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; and means for supporting work sheets and guiding them into engagement with said platen comprising a first relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, and a plurality of relatively resilient spring leaves connecting said pan sections together to form a flexible unitary paper pan structure, each of said leaves having a bowed central portion spanning the space between said edges of said sections, and end tab portions secured to the respective pan sections.

8. In a typewriting or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; and means for supporting work sheets and guiding them into engagement with said platen, comprising a first

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relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, a plurality of relatively resilient spring leaves connecting said pan sections together to form a flexible unitary paper pan structure, each of said leaves having a bowed central portion spanning the space between said edges of said sections, and end tab portions secured to the respective pan sections, and an edge extension portion on one of said pan sections offset from said one of said sections in a direction away from said platen, and projecting across the space between the adjacent edges of said sections, and overlapping the other of said sections on the side thereof remote from said platen.

9. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support movably mounted on said frame and journaled with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame and having one of its arms in contact with said support, a coil spring connected at one of its ends to the other arm of said lever, a spring anchor movably mounted on said frame and to which the other end of said spring is connected, and a device for changing the position of said anchor on said frame with respect to said lever for thereby varying the loading of said spring; and means for supporting work sheets and guiding them into engagement with said platen, comprising a first relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, and a plurality of relatively resilient spring leaves, each spanning the space between said edges of said pan sections, and being secured to both of said pan sections, said leaves thereby resiliently mounting said second pan section for bodily movement towards and from said platen.

10. In a typewriter or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; a pressure roll; a support movably mounted on said frame and journaled with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame and having one of its arms in contact with said support, a coil spring connected at one of its ends to the other arm of said lever, a spring anchor movably mounted on said frame and to which the other end of said spring is connected, and a device for changing the position of said

anchor on said frame with respect to said lever for thereby varying the loading of said spring; a substantially rigid paper pan member curved to lie circumferentially adjacent said platen for supporting work sheets and guiding them into engagement with said platen; and resilient means mounting said pan member for movements toward and from said platen and urging said pan member towards said platen.

11. In a typewriting or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; means for supporting work sheets and guiding them into engagement with said platen, comprising a first relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, and a plurality of relatively resilient spring leaves, each spanning the space between said edges of said pan sections, and being secured to both of said pan sections, said leaves thereby resiliently mounting said second pan section for bodily movement towards and from said platen; a pressure roll; and means resiliently urging said pressure roll toward said platen for pressing work sheets against said platen.

12. In a typewriting or like machine, a frame; a cylindrical platen journaled on said frame for rotary paper feeding movements; means for supporting work sheets and guiding them into engagement with said platen, comprising a first relatively rigid paper pan section, means mounting said pan section on said frame relatively remotely with respect to said platen so that an edge

of said pan section extends parallel to the platen axis, a second relatively rigid paper pan section having a part curved to lie circumferentially adjacent said platen and having an edge extending parallel to and adjacent to but spaced from said edge of said first paper pan section, and a plurality of relatively resilient spring leaves, each spanning the space between said edges of said pan sections, and being secured to both of said pan sections, said leaves thereby resiliently mounting said second pan section for bodily movement towards and from said platen; a pressure roll; a support movably mounted on said frame and journaled said pressure roll with its axis parallel to the platen axis and for movement relatively toward said platen for pressing work sheet material against said platen; and adjustable means for urging said roll toward said platen to exert selected different pressures thereagainst, including a two-armed lever pivoted on said frame and having one of its arms in contact with said support, a coil spring connected at one of its ends to the other arm of said lever, a spring anchor movably mounted on said frame and to which the other end of said spring is connected, and a device for changing the position of said anchor on said frame with respect to said lever for thereby varying the loading of said spring.

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The following references are of record in the file of this patent:

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