

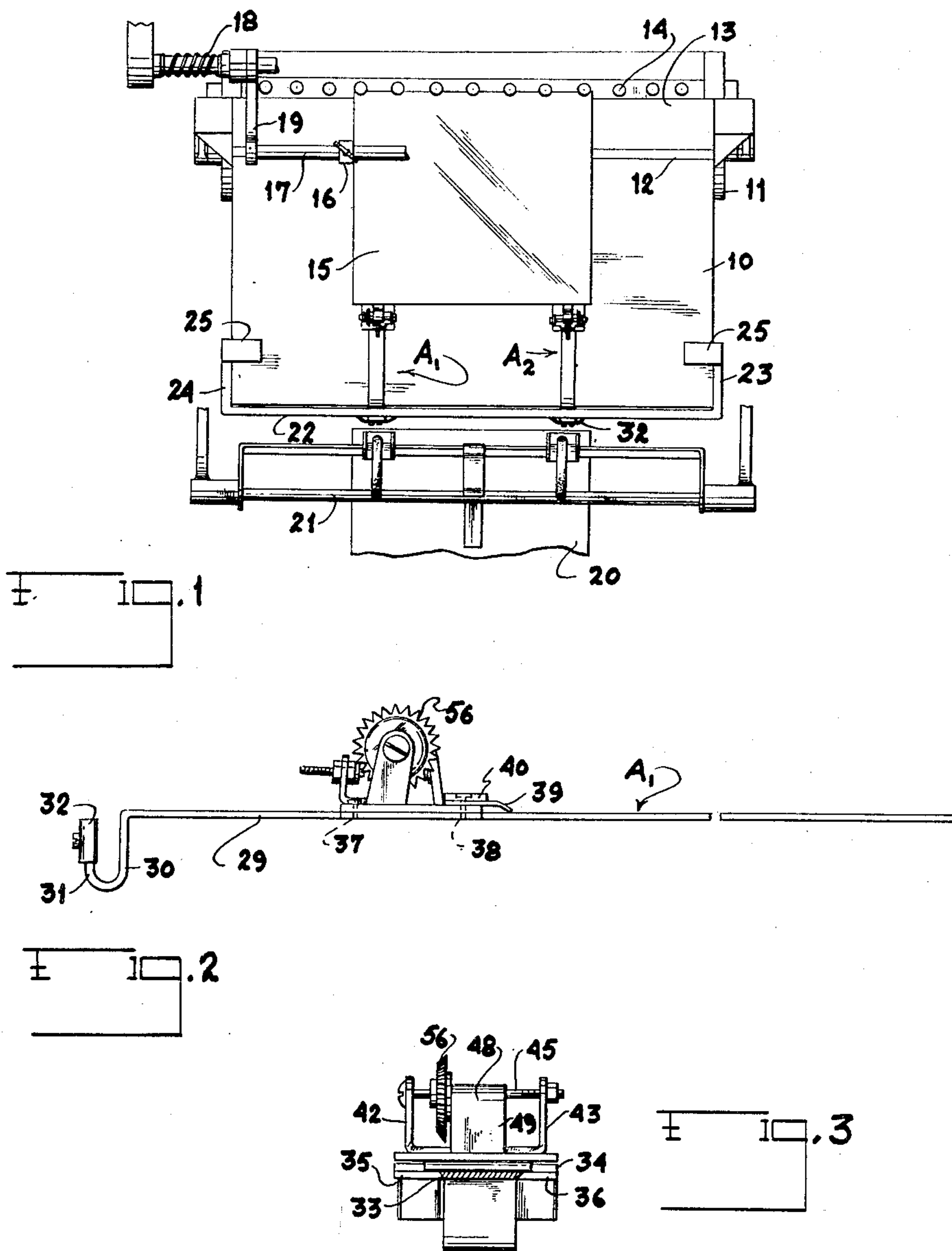
Nov. 17, 1953

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ADJUSTABLE TENSION BACKSTOP FOR MIEHLE
VERTICAL PRINTING PRESSES

2,659,599

Filed June 2, 1949

2 Sheets-Sheet 1



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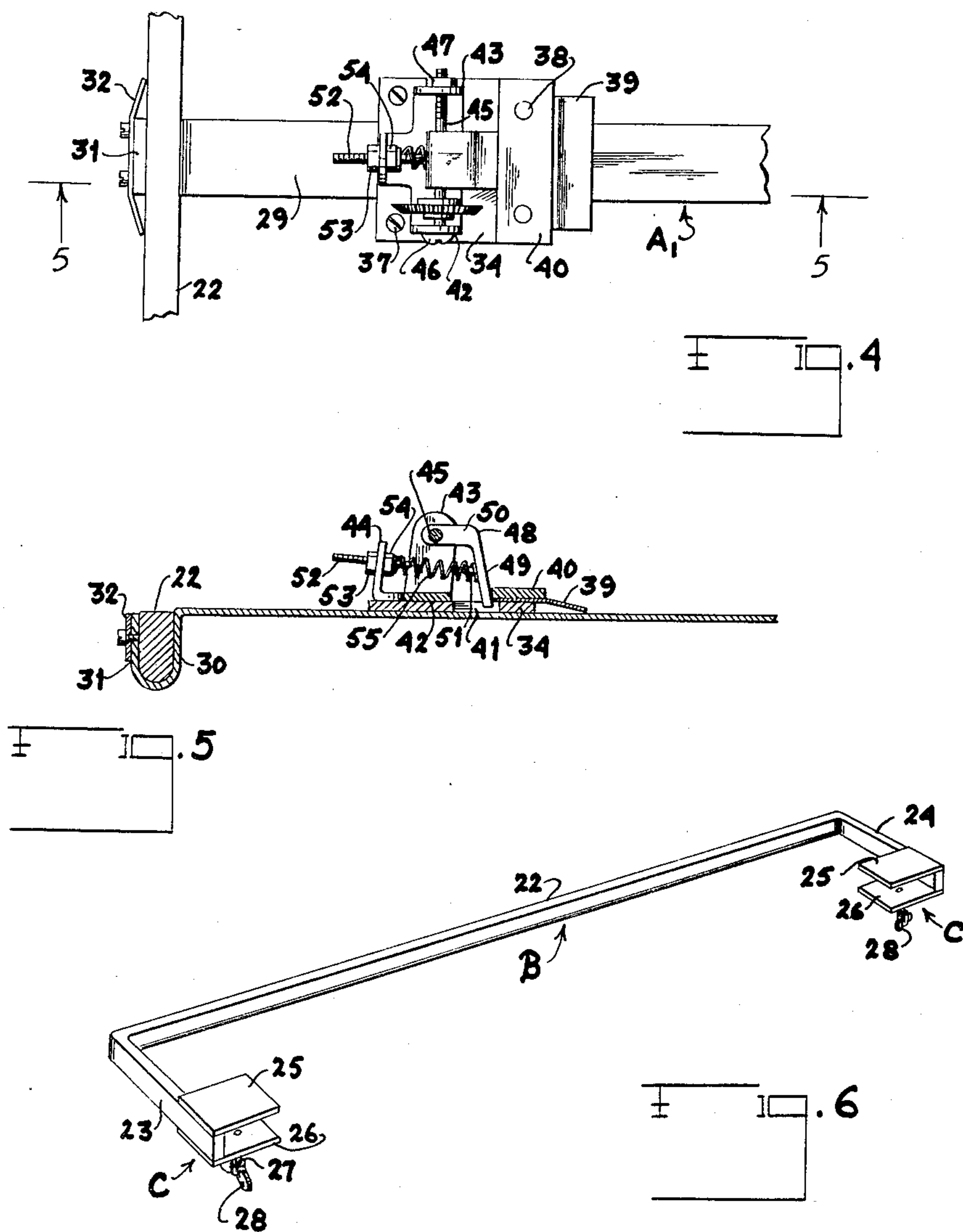
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UNITED STATES PATENT OFFICE

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ADJUSTABLE TENSION BACKSTOP FOR
MIEHLE VERTICAL PRINTING PRESSES

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Application June 2, 1949, Serial No. 96,762

4 Claims. (Cl. 271—60)

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The present invention relates to printing presses and is concerned primarily with a printing press that is known as a Miehle vertical.

A Miehle vertical printing press includes a feeder table which is mounted on the drum and which receives a sheet of paper from the stack on the supply table. The sheet is fed into the drum from its position on the feeder table.

At the present time the Miehle vertical printing presses are provided with a certain mechanism which is intended to accurately position a sheet on the feeder table. This mechanism comprises a row of clippers on the drum which reciprocate into opened and closed positions. In the open position they constitute a front stop for engaging the forward edge of the sheet. In their closed position they grip this forward edge and feed the sheet to the drum. A Miehle vertical also includes a side positioning element which moves in a direction normal to the front edge of the sheet with a yielding action and engages a side edge so as to accurately move the sheet side-wise into the desired position.

The positioning devices above described have proven generally satisfactory when a sheet is run through the press a single time, and a high degree of accuracy in the positioning thereof is not required. However, on certain occasions it is desirable to run the sheet through once, during which operation one color is printed thereon, and then make subsequent runs to print different colors. Obviously these colors should not overlap and if a good job is to be done, it means that the sheet must be positioned with a high degree of accuracy.

With the now known devices, it is not possible to obtain this accuracy to the degree required due to the fact that there is a tendency for the sheets to rebound after engaging the front stop. With this condition in mind the present invention has in view as its foremost objective the provision of a backstop which is intended to be applied to the feeder table of a Miehle vertical printing press for accurately positioning a sheet thereon.

More in detail the invention has as an object the provision of a backstop of the type indicated which includes yieldable elements which are engaged by the rear edge of the sheet. These elements are held in position by yielding devices such as springs. An important object of the invention lies in the provision of a mechanism of adjusting the effective tension of these springs. With such an adjustment it is possible to apply exactly the right amount of tension to the sheet edge engaging elements to insure the sheets of being accurately positioned.

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Still another object of the invention is the provision of a backstop of the type indicated which is adapted to be applied to the feeder table of a Miehle vertical printing press in such a manner so as not to interfere with any of the operations of the press and which requires no alterations in the press construction. This object is achieved by providing a backstop of the type indicated which consists essentially of a support bar that fits along the rear edge of the feeder table and which is anchored thereto by clamps which engage the side edges of the table. Detachably secured to this support bar are a pair of arms which extend forwardly over the top face of the table and each of which carries a sheet edge engaging element that is spring biased under adjustable tension.

Various other more detailed objects and advantages of the invention such as arise in connection with carrying out the above noted ideas in a practical embodiment will, in part become apparent, and in part be hereinafter stated as the description of the invention proceeds.

The invention, therefore, comprises an adjustable tension backstop that is adapted for application to the feeder table of a Miehle vertical printing press. This backstop includes a pair of sheet edge engaging elements which are spring biased under adjustable tension.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawings wherein:

Figure 1 is a top plan view of the feeder table of a Miehle vertical printing press and the parts immediately associated therewith with an adjustable tension backstop device applied thereto in accordance with the precepts of this invention.

Figure 2 is a view in side elevation of one of the arms of the backstop.

Figure 3 is a view in front elevation of one of the sheet edge engaging elements with the arm shown in section.

Figure 4 is a top plan view of the mechanism shown in Figure 3.

Figure 5 is a detailed vertical section taken about on the plane represented by the line 5—5 of Figure 4; and

Figure 6 is an enlarged detailed perspective of the supporting bar.

Referring now to the drawings wherein like reference characters denote corresponding parts and first more particularly to Figure 1, a feeder table and certain associated mechanism with which this invention is concerned is therein illustrated.

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The table is shown at 10. It is mounted on a drum represented at 11. As the drum 11 moves vertically under the influence of the mechanism not illustrated, the table 10 moves with the drum and with an oscillating motion about its forward edge 12 as an axis. It will be noted that the drum 11 carries a table continuation at 13.

The drum 11 is provided with a row of clippers 14 which reciprocate inwardly and outwardly of the drum. When these clippers are in their open position, they function as a front stop against which the forward edge of a sheet designated 15 abuts as it is fed to the table 10 and continuation 13. When these clippers 14 are closed, they clip the forward edge of the sheet 15 and feed it to the drum. A side positioning member is indicated at 16 and is carried by an arm 17 which reciprocates laterally with its inward movement being of a yielding nature, this action being provided by the spring shown at 18 and the operative connections 19 which connect the arms 17, so that it is moved under the influence of the spring 18. When a sheet 15 is first delivered to the table 10, the side engaging element 16 is in its outermost position. As the sheet is positioned this element 16 moves inwardly under the yielding force provided by spring 18 and engages the side edge of the sheet 15 to move the latter in a direction normal to its front edge and thus accurately positions the sheet in this direction.

A source of supply of the sheets which are to be fed to the press for printing is represented by the stack at 20. This stack is normally carried on an adjustable table and is fed to the feeder table 10 by a vacuum pickup device represented generally at 21.

The adjustable tension backstop of this invention is intended to be applied to the rear edge of the table 10 so as to provide elements which engage the rear edge of the sheet 15 with a tension which accurately position this sheet. This backstop comprises essentially a main supporting bar which is arranged transversely of the feeder table 10 and which is referred to in its entirety by the reference character B, and a pair of inwardly extending arms A1 and A2 arranged in spaced side by side relation with respect to each other. Upon referring to Figure 6 it will be noted that the bar B comprises a main body portion or back 22 and a pair of side legs 23 and 24 which define a flattened out U formation. Carried by the free end of each of the legs 23 and 24 is a table clamp each of which is referred to in its entirety by the reference character C. Each of these clamps C comprises a top plate 25 that engages the upper face of the table 10 and a lower plate 26 which fits over the underface. A clamping screw 27 is mounted in the lower plate 26 and is provided with an operating member 28 which permits of its being tightened or released.

Figure 1 discloses the manner in which the bar B is positioned on the table 10. The back 22 extends along the rear edge of the table 10 in a position slightly spaced therefrom. The legs 23 and 24 extend along the side edges and clamps C securely clamp the bar B in position through the medium of tightening of the clamping screws 27. The arms A1 and A2 and the mechanism carried thereby are substantially duplicates. Hence, only one of them is herein described in detail for the purpose of this specification. Upon referring to Figures 2, 4, and 5, the arm A1 is shown as comprising a long flat strap 29 which has integrally joined to one end thereof a U-shaped connecting member 30 presenting an outer leg 31

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which carries a leaf spring 32. When the arm A1 is positioned on the table 10, the underface of the strap 29 engages the top face of the table 10 and the U-shaped member 30 receives the back 22 of the bar B. The ends of the leaf spring 32 bear against the bar B to maintain the assembled relation.

Upon referring to Figure 3, it will be noted that the edges of the strap 29 are beveled as indicated at 33. A carrier plate 34 is positioned on the upper face of the strap 29. Secured to the underface of this carrier plate 34 and on opposite sides of the strap 29 are a pair of retaining members 35 and 36, each of which has an inner beveled edge complementary to the beveled edge 33. The carrier plate 34 is slidable along the strap 29 and is maintained in assembled relation thereon by the retainers 35 and 36. It will be noted that from Figures 2 and 4 that a pair of fastening members such as the screws shown at 37 anchor the retainers 35 and 36 to the carrier plate 34 at the rear edge. Another pair of fastening members 38 secure these retainers 35 and 36 to the carrier plate 34 at the forward edge. The latter fastening members also pass through a spring apron 39 and a backing plate 40.

As shown in Figure 5 the carrier plate 34 is formed with an opening or recess at 41 which is positioned substantially midway between the side edges thereof. Carried on the upper face of the carrier plate 34 just back of the opening 41 is a bracket 42 which includes a pair of upwardly extending side ears 42 and 43 and an upwardly extending rear ear 44. Extending between the side ears 42 and 43 is a shaft 45 which may take the form of a bolt having a head 46 at one end and a nut 47 at the other.

A sheet edge engaging member is designated 48 and is shown as being of an angular construction presenting a downwardly extending tab 49, the lower end of which projects into the opening 41. The member 48 has one end rotatably supported in the bracket 42 for movement about an axis transverse of the feeder table 10. The member 48 includes an upper arm 50 that swings about the shaft 45 as an axis. The back face of the tab 49 carries a pin 51. The ear 44 carries a screw stem 52 which is threaded therein with nuts 53 and 54 located on the opposite faces of the ear. An expansion coil spring or resilient means 55 has one end fitted over the pin 51 and its other end over the stem 52. This spring 55 normally urges the tab 49 forwardly and the tension thereof may be adjusted by adjusting the nuts 53 and 54 in an obvious manner. The carrier plate 34, bracket 42, shaft 45, sheet edge engaging member 48, stem 52, nuts 53 and 54, and spring 55 comprise the register means. The means secured to the bracket 42 for adjusting the resilient means 55 comprises the stem 52 and the nuts 53 and 54.

As sheets are fed to the feeder table 10 they must pass over the arms A1 and A2 and the mechanism carried thereby. To accommodate this action rollers shown at 56 are freely journaled on the shafts 45. The sheets 15 ride over these rollers and they may either have the serrated edges illustrated or be provided with smooth peripheries.

Operation

The manner in which the adjustable tension backstop above described operates is believed to be apparent from the description of the parts given. However, it may be briefly summarized by noting that the arms A1 and A2 are first prop-

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erly positioned relative to the side edges of the feeder table 10 so that each of the tabs 49 will engage the rear edge of the sheet 15. The position which these arms assume will of course depend upon the size of the sheet being handled.

The carrier plates 34 are now slid along the straps 29 of the arms A₁ and A₂ into positions determined by the distance between the front and rear edges of the sheet 15. These members should be positioned so that when a sheet 15 finally comes to rest its forward edge will be urged against the clippers 14 by the spring biased tabs 49 with just enough tension to insure an accurate positioning of the sheet. The required tension in the springs 55 is obtained by adjusting the nuts 53 and 54.

As a sheet 15 is fed from the stack 20 it passes over the rollers 56. This is very important in backing up sheets printed on the other side and preventing the making of a streak on the back side of the printing. The forward edge of the sheet engages the clippers 14 and the rear edge comes to rest against the tabs 49, and due to the biasing of the latter under tension, the sheet 15 is accurately held in position. At the same time the member 16 comes in from the side to achieve the position of the sheet in a direction normal to the front and rear edges.

While a preferred specific embodiment of the invention is hereinbefore set forth, it is to be clearly understood that the invention is not to be limited to the exact constructions, mechanisms, and devices illustrated and described, because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

What is claimed is:

1. In a backstop positioned on one end of a table and adapted to accurately position a sheet of paper on said table against a stop located at the other end of said table, a main supporting bar arranged transversely of said table adjacent to and spaced from said one end thereof and adjustably mounted thereon, means for fixedly holding said main supporting bar in an adjusted position with respect to said table, a pair of arms arranged in spaced side by side relation with respect to each other positioned on said table and having one of their adjacent ends secured to said main supporting bar and having their other adjacent ends projecting toward said other end of said table, and a register means slidably mounted on each of said arms and adapted to engage said sheet of paper to accurately position said sheet of paper against said stop, said register means comprising a carrier plate slidably positioned on the adjacent one of said arms, said carrier plate being provided with an opening therein, a bracket positioned on said carrier plate adjacent said opening and secured to said carrier plate, a sheet edge engaging member having one end rotatably supported in said bracket for movement about an axis transverse of said table and having its other end projecting into said opening, resilient means having one end bearing against said bracket and having its other end bearing against said sheet edge engaging member and urging the latter against said sheet of paper and toward said other end of said table, and means secured to said bracket for adjusting said resilient means.

2. In a backstop positioned on one end of a table and adapted to accurately position a sheet of paper on said table against a stop located at the other end of said table, a main supporting bar arranged transversely of said table adjacent

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to and spaced from said one end thereof and adjustably mounted thereon, means for fixedly holding said main supporting bar in an adjusted position, a pair of arms arranged in spaced side by side relation with respect to each other positioned on said table and having one of their adjacent ends secured to said main supporting bar and having their other adjacent ends projecting toward said other end of said table, and a register means slidably mounted on each of said arms and adapted to engage said sheet of paper to accurately position said sheet of paper against said stop, said register means comprising a carrier plate slidably positioned on the adjacent one of said arms, said carrier plate being provided with an opening therein, a bracket positioned on said carrier plate adjacent said opening and secured to said carrier plate, a sheet edge engaging member having one end rotatably supported in said bracket for movement about an axis transverse of said table and having its other end projecting into said opening, resilient means having one end bearing against said bracket and having its other end bearing against said sheet edge engaging member and urging the latter against said sheet of paper and toward said other end of said table, means secured to said bracket for adjusting said resilient means, said means comprising an externally threaded stem projecting through said bracket and into one end of said resilient means, a first nut positioned on said stem and interposed between said resilient means and one face of said bracket, and a second nut positioned on said stem and bearing against the other face of said bracket.

3. In a register means positioned adjacent to and spaced from one end of a table for sliding movement thereon and adapted to accurately position a sheet of paper on said table against a stop located at the other end of said table, a carrier plate fixedly positioned on said table and adjustable relative thereto, said carrier plate being provided with an opening therein, a bracket positioned on said carrier plate adjacent said opening and secured to said carrier plate, a sheet edge engaging member having one end rotatably supported in said bracket for movement about an axis transverse of said table and having its other end projecting into said opening, resilient means having one end bearing against said bracket and having its other end bearing against said sheet edge engaging member and urging the latter against said sheet of paper and toward said other end of said table, and means secured to said bracket for adjusting said resilient means.

4. In a register means positioned adjacent to and spaced from one end of a table for sliding movement thereon and adapted to accurately position a sheet of paper on said table against a stop located at the other end of said table, a carrier plate fixedly positioned on said table and adjustable relative thereto, said carrier plate being provided with an opening therein, a bracket positioned on said carrier plate adjacent said opening and secured to said carrier plate, a sheet edge engaging member having one end rotatably supported in said bracket for movement about an axis transverse of said table and having its other end projecting into said opening, resilient means having one end bearing against said bracket and having its other end bearing against said sheet edge engaging member and urging the latter against said sheet of paper and toward said other end of said table, means secured to said bracket for adjusting said resilient means, said means

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comprising an externally threaded stem projecting through said bracket and into one end of said resilient means, a first nut positioned on said stem and interposed between said resilient means and one face of said bracket, and a second nut positioned on said stem and bearing against the other face of said bracket.

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