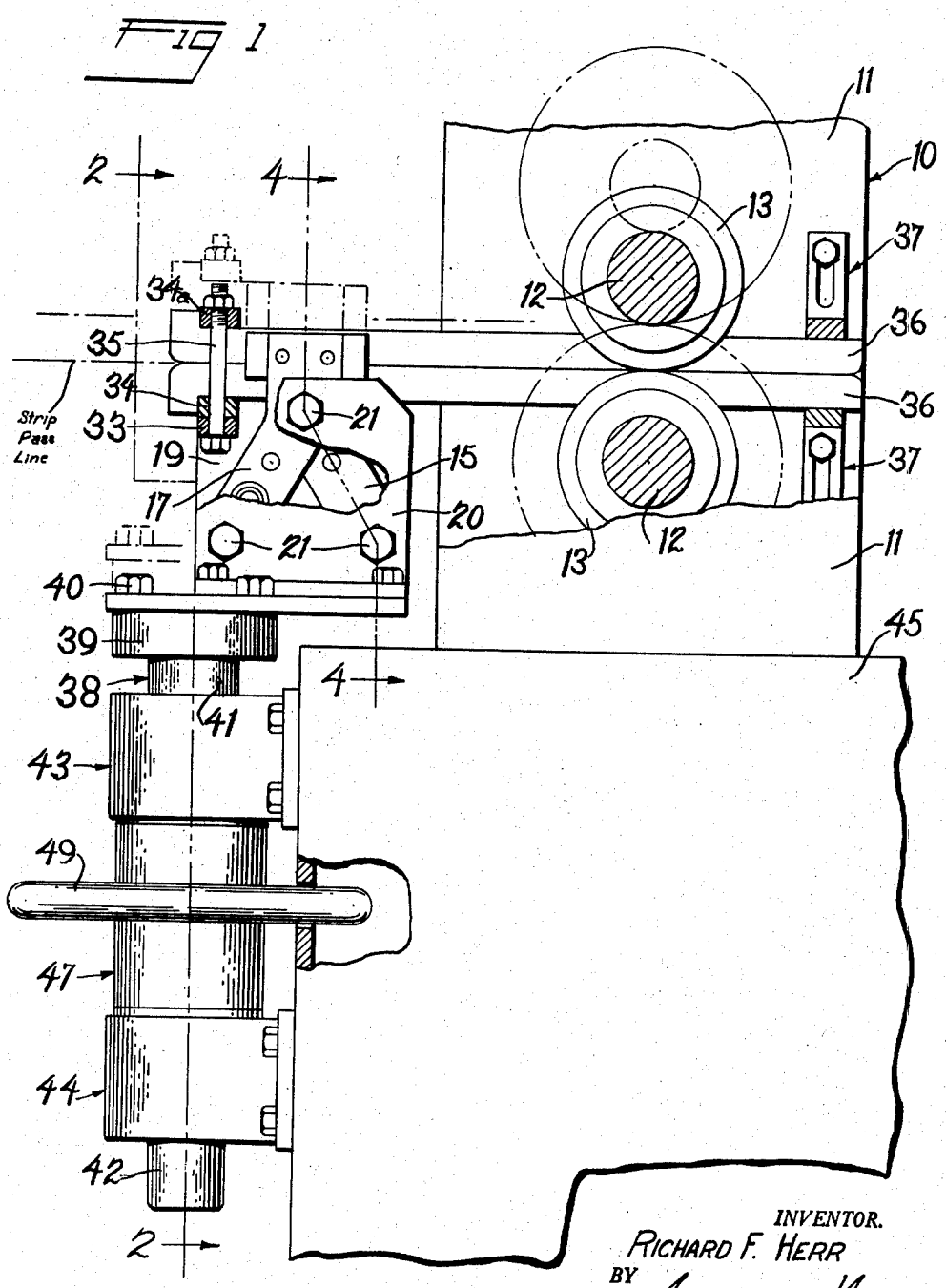
Jan. 13, 1959 R. F. HERR 2,868,540

GUIDE APPARATUS

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4 Sheets-Sheet 1

Fig. 1



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4 Sheets-Sheet 2

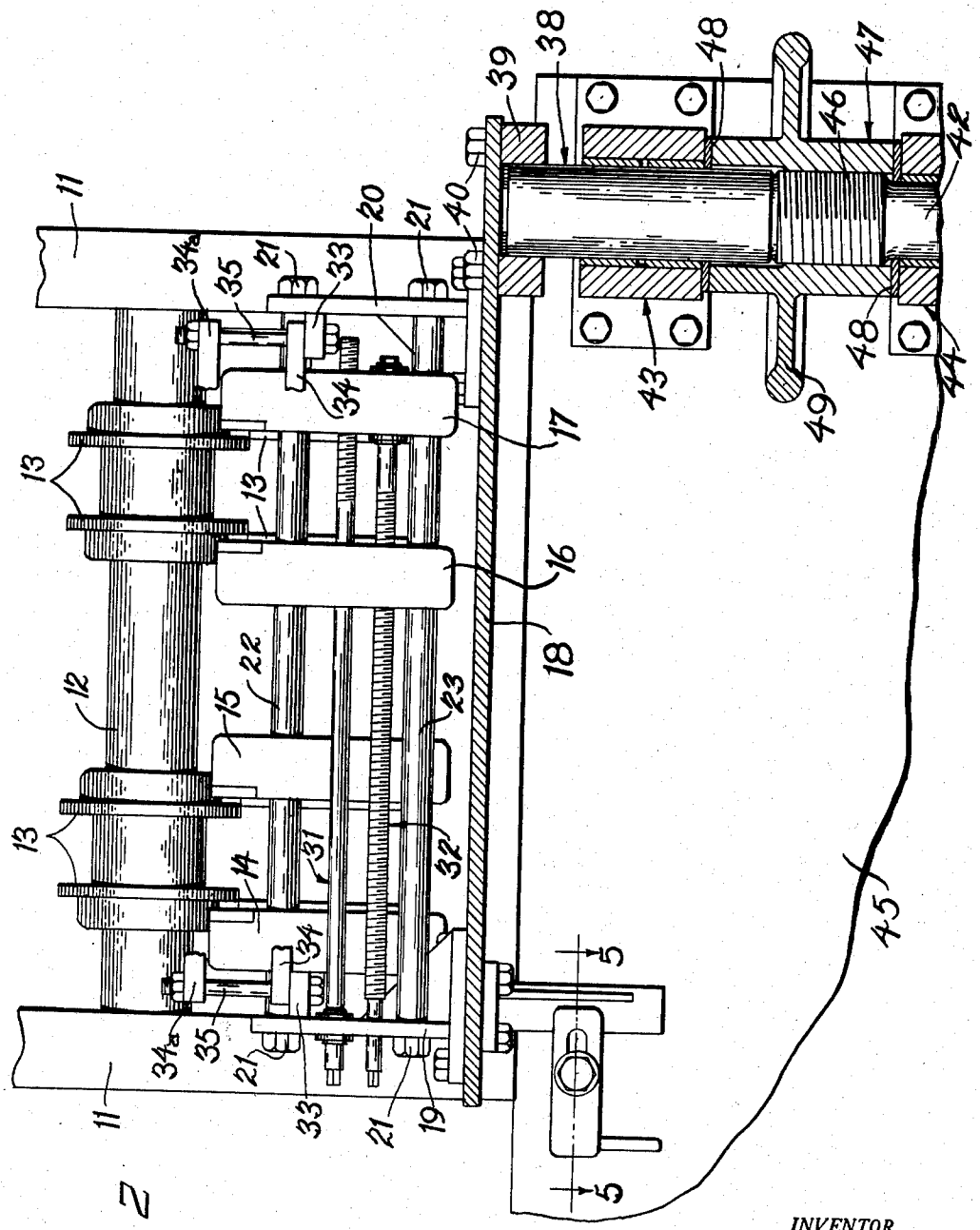


FIG. 2

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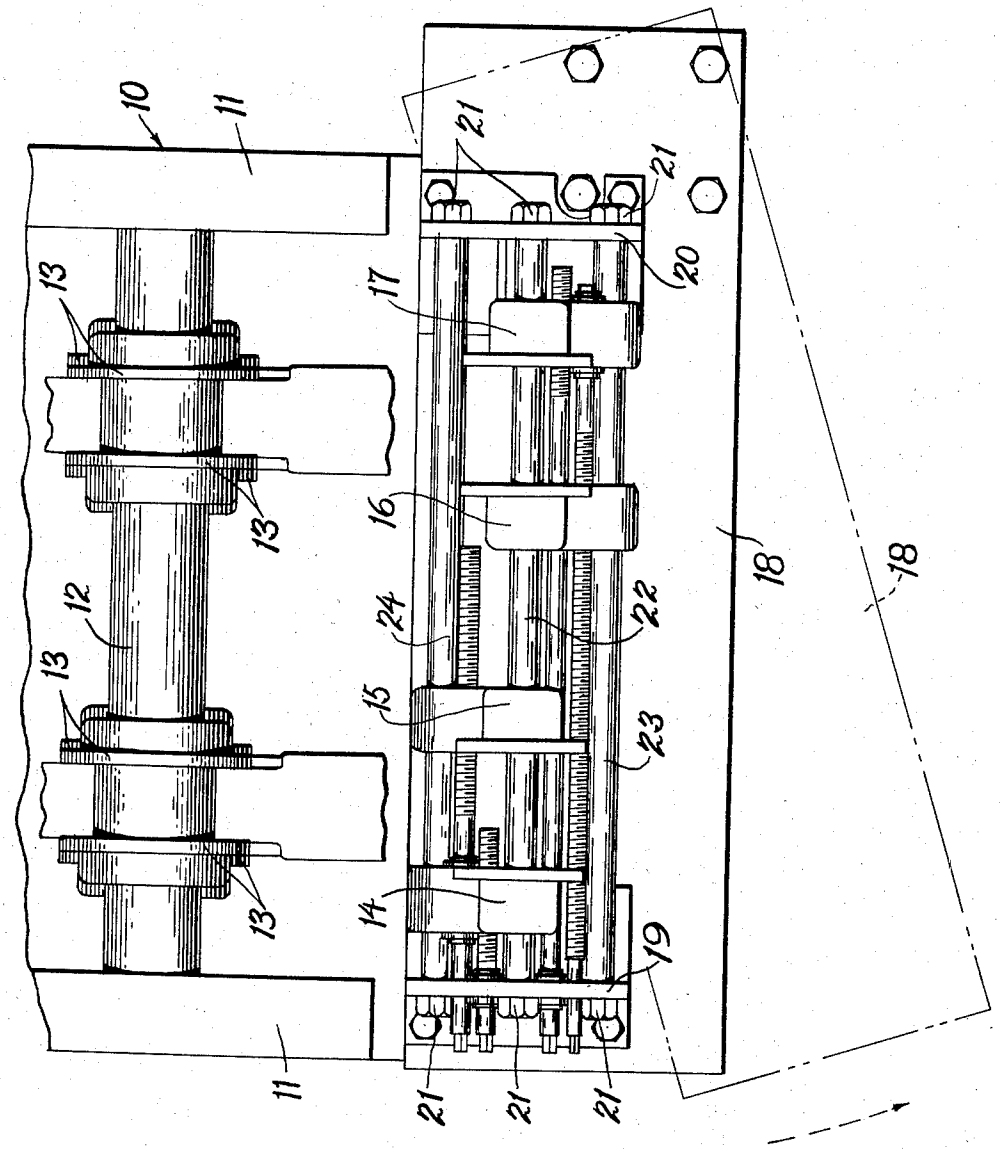


FIG 3

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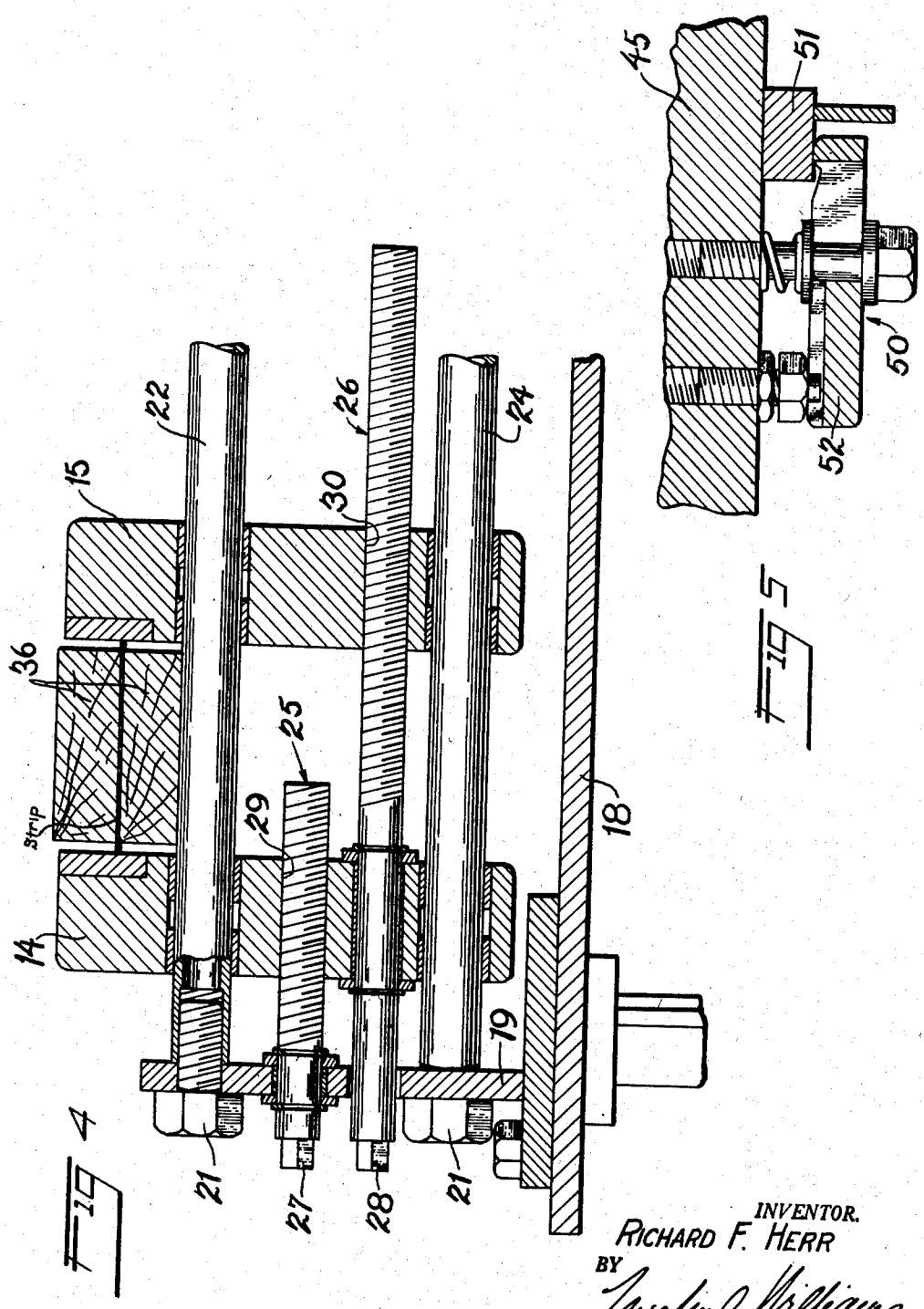


FIG 5

FIG 4

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GUIDE APPARATUS

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Application August 16, 1954, Serial No. 449,917

2 Claims. (Cl. 271—2.6)

The present invention relates to guide apparatus, more particularly to apparatus for guiding tenuous material, such as strip material, through a slitter or the like, and the principal object of my invention is to provide new and improved apparatus of the character described.

In prior art guide apparatus, particularly in apparatus employed with precision slitters, adjustment of such apparatus relative to the slitter knives has been a troublesome and time-consuming operation. This has been the case since the guide members between which the strip material passes must be spaced apart a precise distance depending upon the width of the material. Moreover, the guide members must also be precisely positioned relative to the slitter knives so that the strip will pass through such knives in manner that exactly the right amount of material will be slit from each side.

Additionally, prior art apparatus prevented easy access to the slitter arbors when it became necessary to regrind or change the slitter knives.

My invention provides apparatus which possesses none of the foregoing disadvantages of prior art apparatus while it possesses advantages later to become clear.

In the drawings accompanying this specification and forming a part of this application there is shown, for purpose of illustration, an embodiment which my invention may assume; and, in these drawings:

Figure 1 is a side elevational view of my invention as adapted for use with a conventional slitter which is fragmentarily shown, certain portions of the guide apparatus and the slitter being broken away to illustrate interior construction,

Figure 2 is a view, partially in section, generally corresponding to the line 2—2 of Figure 1,

Figure 3 is a top plan view of the invention, certain portions being removed in the interest of clarity,

Figure 4 is an enlarged fragmentary sectional view generally corresponding to the line 4—4 of Figure 1, and

Figure 5 is an enlarged, fragmentary sectional view generally corresponding to the line 5—5 of Figure 2.

For purpose of illustration, and as best seen in Figures 1, 2 and 3, my invention is herein shown and described in combination with a conventional strip slitter 10 having a pair of spaced-apart housings 11 which rotatably support a pair of spaced-apart arbors 12 upon which the usual slitter knives 13 are adapted to be positioned. However, it is to be clearly understood that my invention may be advantageously used with apparatus other than slitters and with tenuous material other than strip material.

The slitter knives 13 are adapted to be assembled upon the respective arbors 12 by means such as the usual collars, spacers and the like and, in the present embodiment, the knives are so arranged that two lengths of strip material may be operated upon simultaneously. As is the usual construction, the lower arbor 12 is held for rotative movement only while the upper arbor is adjustable (vertically, in the position of parts shown) toward and away from the lower arbor in order that slitter knives of various diameters may be employed. Although not shown, the arbors 12, 12 may be rotated by means of any suitable power train.

Referring to Figure 1, the arbors 12, 12 are shown relatively close together since the slitter knives illustrated are of relatively small diameter. However, the upper arbor 12 will be positioned in the dot-dash line position when larger diameter knives (also shown by dot-dash lines) are employed.

In the present embodiment, one strip is adapted to be fed to the slitter 10 from a suitable device and between a pair of guide members 14, 15 positioned on the entrance side of the slitter and another strip is adapted to be fed between another pair of guide members 16, 17 positioned adjacent members 14, 15. Each pair of guide members has wear plates which are engageable with opposed marginal edges of a respective strip of material for obvious reasons.

The means provided for supporting the guide members 14, 15, 16 and 17 presently comprises a plate 18 mounted in a manner later to be described and having a pair of spaced-apart upstanding supports 19 and 20 secured thereto by any suitable means. A plurality of spaced-apart slide bars, herein shown to be three in number, are secured in parallel relation between the supports 19 and 20 by means of capscrews 21 which pass through respective apertures in the plates and which are threaded into the ends of the slide bars (see especially Figure 4). The slide bars are presently arranged in a triangular formation (see Figures 1 and 3) to provide an upper slide bar 22 and two lower slide bars 23, 24.

Each guide member 14, 15, 16 and 17 is apertured to pass the upper slide bar 22, suitable bushings being fixed in the apertures to reduce friction (see Figure 4). As shown in Figures 1 and 3, guide members 14, 15 each have a leg portion which is apertured to pass slide bar 24, whereas guide members 16, 17 have leg portions which are apertured to pass slide bar 23. Bushings are also preferably fixed in the apertures of the guide members to receive respective slide bars 23, 24 with a minimum of friction.

From the construction thus far described, it will be understood that each guide member 14, 15 is slideable along slide bars 22 and 24, whereas guide members 16, 17 are slideable along slide bars 22 and 23.

Means are provided for shifting the guide members along the slide bars and for holding such members in a desired predetermined position. At the present time, two adjusting screws are provided for the guide members 14, 15 and two other adjusting screws are provided for the guide members 16, 17.

As best shown in Figure 4, the adjusting screws for guide members 14, 15 comprise an upper screw rod 25 and a lower screw rod 26, the screw rods being positioned intermediate the slide bars 22, 24 and in parallel relation therewith. Both screw rods 25, 26 extend through support 19 and have respective end portions 27, 28 formed to provide wrench flats or the like. Screw rod 25 is journaled in support 19 and is held against axial movement relative thereto by means of suitable collars and snap rings. The right-hand portion of screw rod 25 is threaded and such portion extends through a complementary threaded aperture 29 formed in the guide member 14.

Screw rod 26 passes through and is journaled in guide member 14 and is held against axial movement relative thereto by means of suitable collars and snap rings. As previously mentioned, screw rod 26 also passes through support 19; however, in this case, support 19 is merely apertured to provide clearance for screw rod

26. The right-hand portion of screw rod 26 is threaded and such portion extends through a complementary threaded aperture 30 formed in guide member 15.

Operation of screw rods 25, 26 in shifting guide members 14, 15 along the slide bars is as follows: When it is desired to effect movement of the guide members 14, 15 toward or away from each other to accommodate different widths of strip, screw rod 26 will be rotated by means of the wrench flats 28. Since member 14 is held in position by screw rod 25 and since screw rod 26 is held against axial movement relative to member 14, rotation of screw rod 26 will effect movement of member 15 toward or away from member 14.

When it is desirable to shift the strip in an edgewise direction in order to properly align it with the slitter knives, screw rod 25 will be rotated by means of the wrench flats 27. Since screw rod 25 is held against axial movement relative to support 19 and since screw rod 26 ties members 14 and 15 together, rotation of screw rod 25 will effect movement of both members 14, 15 along the slide bars to thereupon shift the strip in an edgewise direction.

Referring now to Figure 2, it will be seen that two adjusting screws are also employed for effecting shifting movement of guide members 16, 17. These screws are positioned intermediate slide bars 22, 23 and extend in parallel relation therewith. Each of these screws is similar to those heretofore described in that each extends beyond the support 19, the upper screw rod 31 being journaled in support 19 in manner similar to screw rod 25 and the lower screw rod 32 extended through an aperture in the support in manner similar to screw 26.

Screw rod 31 passes through a clearance aperture formed in guide member 16. The right-hand end of the screw rod 31 is threaded and such portion extends through a complementary threaded aperture formed in the guide member 17.

Screw rod 32 has its right-hand end journaled in member 17 and held against axial movement relative thereto by means similar to those heretofore disclosed, and screw rod 32 is threaded as shown and passes through a complementary threaded aperture formed in the member 16.

Rotation of adjusting screw rods 31, 32 will effect shifting of guide members 16, 17 in much the same manner as was disclosed with respect to guide members 14, 15. Rotation of screw rod 32 will effect movement of member 16 along slide bars 22, 23 toward and away from member 17 in order to accommodate various widths of strip, whereas rotation of screw rod 31 will effect movement of both members 16, 17 in unison to thereupon shift the strip in an edgewise direction.

When slitting strip material, particularly when such strip material is relatively thin, it is necessary to support the strip as it passes through the slitter to prevent buckling or twisting of the strip. Accordingly, it is the usual procedure to support the opposite sides of the strip by means of wooden blocks or strips positioned adjacent the slitter knives.

In the present embodiment, (see Figures 1 and 2) each support 19, 20 has an apertured lug 33 welded or otherwise secured thereto. A plate 34 is adapted to extend between the lugs 33 and is secured thereto by means of bolts 35. Another plate 34*a* is also adapted to be carried by the bolts 35, the plates 34, 34*a* being spaced apart and loosely holding therebetween respective ends of a pair of wooden strips 36 which extend between the slitter knives (see Figures 1 and 4). The other ends of the wooden strips 36 may be supported, if desired, by any suitable means. By way of example, such ends may be loosely held between bars 37 which extend between the slitter housings 11 and which are adjustably secured thereto by means of a suitable screw and slot arrangement.

From the foregoing, it will be clear that strips of material will be fed to the slitter between respective pairs of guide members 14, 15 and 16, 17. The respective members of each pair of guide members will be adjusted to accommodate strip width by manipulation of proper adjusting screws and the respective pairs of guide members then will be adjusted by manipulation of proper adjusting screws to so feed the respective strips to the knives that the desired amount of material will be slit from each side of a respective strip. It will be understood that since the guide members 14, 15, 16 and 17 are provided with separate adjustments for strip width and for positioning the strip and since all such adjustments may be made at support 19, these adjustments may be made quickly and easily.

Means are provided for adjusting the guide members vertically (in the position of parts shown in Figures 1 and 2) in order to accommodate the different positions of the pass line when different diameters of slitter knives are employed.

As most clearly shown in Figure 2, a shaft 38 extends downwardly from the plate 18 and is secured thereto by any suitable means. In the present embodiment, shaft 38 is welded to a collar 39 which is in turn secured to the plate 18 by means of capscrews 40. Shaft 38 has a pair of spaced-apart journal portions 41, 42 which are respectively rotatable in spaced-apart journal boxes 43, 44 suitably secured to the base 45 of the slitter 10. The portion of the shaft 38 intermediate the journal portions 41, 42 is threaded at 46 and an internally threaded sleeve 47 is threaded thereon. Thrust washers 48 or the like are positioned at each end of the sleeve and against a respective journal box 43, 44 and an intermediate portion of the sleeve has a radially enlarged portion 49 which forms a hand-wheel for a purpose to be disclosed.

When it is desired to shift the plate 18 and the guide members carried thereby in a vertical direction, it is only necessary to rotate the sleeve 47 by means of the hand-wheel 49. This will raise or lower the shaft 38, depending upon the direction of rotation, and thus effect raising or lowering of the parts carried by the plate 18.

Shaft 38 also serves another function in that plate 18 and the parts carried thereby are rotatable about the axis of the shaft to provide for access to the slitter arbors. As shown in Figures 2 and 5, plate 18 and the parts carried thereby are normally held in position by means of a slide bolt assembly 50 which engages with a bracket 51 secured to the undersurface of plate 18.

When it is desired to rotate plate 18 about the axis of shaft 38 (as indicated in Figure 3) and assuming the wooden strips 36 have been removed, it is only necessary to slide bolt 52 of the assembly 50 to the left (see Figure 5) until it disengages from bracket 51 and to then grasp the plate and rotate it counterclockwise. With the plate 18 rotated in the neighborhood of ninety degrees, it will be a simple matter to gain access to the slitter knives.

In view of the foregoing it will be apparent to those skilled in the art that I have accomplished at least the principal object of my invention and it will also be apparent to those skilled in the art that the embodiment herein described may be variously changed and modified, without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described, hence it will be appreciated that the herein disclosed embodiment is illustrative only, and that my invention is not limited thereto.

I claim:

1. Apparatus for guiding longitudinal movement of tenuous material, comprising support means, slide means carried by said support means and extending transversely of the direction of movement of said material, a pair of spaced-apart guide members carried by said slide means and shiftable therealong toward and away from each other, said members slidably engaging respective transversely opposed portions of said material and said members normally being maintained in predetermined position

along said slide means to guide said material along a predetermined path of travel between said members, a first adjusting screw rotatably carried by one of said members and held against axial movement relative thereto, and a second adjusting screw rotatably carried by said support means and held against axial movement relative thereto, said first adjusting screw having threaded engagement with one of said members whereby rotation thereof effects relative movement of said members along said slide means toward and away from each other to accommodate material of various transverse sizes, said second adjusting screw also having threaded engagement with one of said members whereby rotation thereof effects movement of said members in unison in a direction laterally of the direction of movement of said material to effect lateral positioning of the latter.

2. Apparatus for guiding longitudinal movement of tenuous material, comprising support means, slide means including a pair of spaced-apart slide bars in coextensive relation and a third slide bar in spaced-apart, coextensive relation with said pair of bars and positioned intermediate said pair, but to one side thereof, two pair of spaced-apart guide members carried by said slide means and shiftable therealong, respective members of each pair of guide members slidably engaging respective transversely opposed portions of such tenuous material, one of said pair of members being slideable along the intermediately positioned slide bar and one of the other slide bars and the other pair of members being slideable along said intermediately positioned slide bar and the other of said slide bars, and adjusting screws for positioning said guide members along said slide means, each pair of guide members having a pair of adjusting screws

positioned intermediate the slide bars along which such pair of guide members is slideable, each pair of adjusting screws comprising a first adjusting screw rotatably carried by one of the members of a respective pair of guide members and said first screw being held against axial movement relative to such member, each pair of adjusting screws also comprising a second adjusting screw rotatably carried by said support means and held against axial movement relative thereto, respective said first adjusting screws having threaded engagement with one member of a respective pair of guide members whereby rotation of said first adjusting screws effects relative movement of the members of a respective pair of members along said slide means toward and away from each other to accommodate material of various transverse sizes, respective said second adjusting screws also having threaded engagement with one member of a respective pair of guide members whereby rotation of said second adjusting screws effects movement of the members of a respective pair of members in unison in a direction laterally of the direction of movement of said material to effect lateral positioning of the latter.

References Cited in the file of this patent

UNITED STATES PATENTS

289,179	Tregurtha	Nov. 27, 1883
1,515,382	Cheesman	Nov. 11, 1924
1,711,074	Wikle	Apr. 30, 1929
1,874,904	Crafts	Aug. 30, 1932
2,071,682	Buccicone	Feb. 23, 1937
2,233,895	Mestre	Mar. 4, 1941
2,499,562	Behrens	Mar. 7, 1950
2,548,590	Cook	Apr. 10, 1951