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B. WELTE ET AL

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MEANS MOUNTING CURTAIN FOR COVERING WAYS OF MACHINE BEDS

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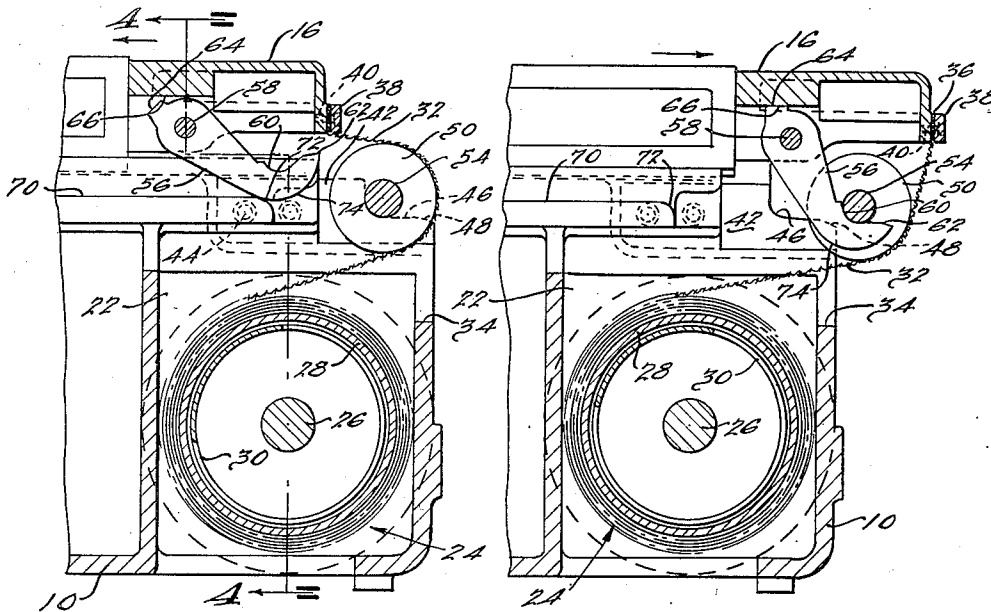


FIG. 1.

FIG. 2.

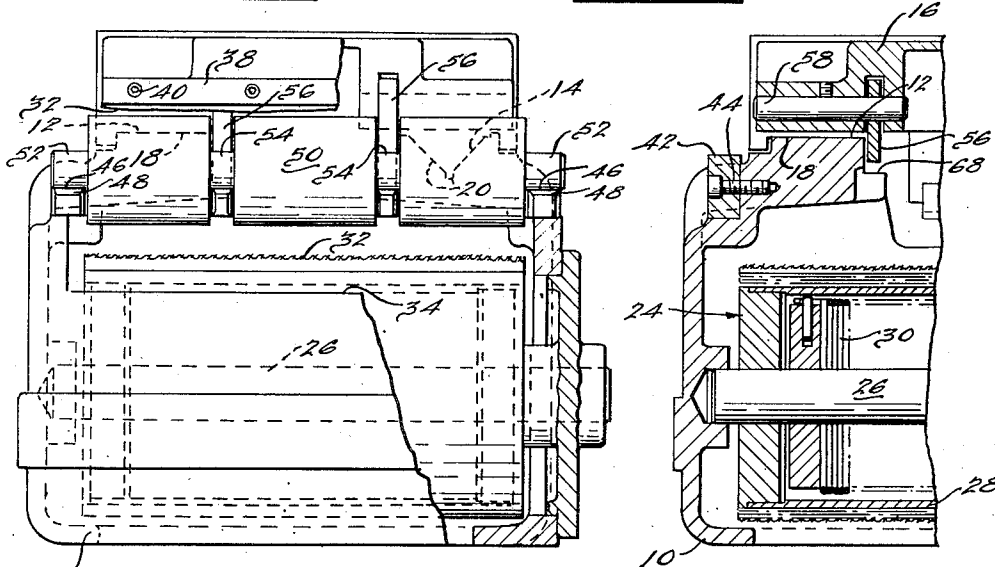


FIG. 3.

FIG. 4.

INVENTOR.

Benedict Welte,
Olney J. Abbott, Jr.

BY

Harnest, Disney & Pierce,
ATTORNEYS

UNITED STATES PATENT OFFICE

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MEANS MOUNTING CURTAIN FOR COVERING
WAYS OF MACHINE BEDS

Benedict Welte, Lake Orion, and Olney J. Abbott,
Jr., Detroit, Mich., assignors to Colonial Broach
Company, Warren Township, Mich., a corpora-
tion of Delaware

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The present invention relates to an improved means for covering the ways of a machine bed or table.

It is an object of the present invention to provide a curtain and an improved means for mounting the curtain so that upon movement of a slide along the ways of a machine bed or table between one position in which the slide overhangs one end of the ways and another position in which the slide is spaced from the adjacent end of the ways, the ways will at all times be covered either by the slide or by the curtain.

A further object of the present invention is to provide an improved means for automatically maintaining the ways of a machine bed covered in all positions of the slide, which means includes a curtain and a roller element alternately rotatably supported on the machine bed and carried by the slide, and over which said curtain is trained.

Another object of the invention is to provide an improved means for covering the ways of a machine bed during movement of a slide away from one end of the ways which means is also effective, upon movement of the slide in the opposite direction to a position in which the bearing surfaces of the slide overhang the ways of the machine bed, to support the curtain in spaced relation to the bearing surfaces of the slide.

It is also an object of the invention to provide an improved curtain mounting for a curtain adapted to cover the ways of a machine bed upon movement of a slide away from one end of the ways, which mounting includes a roller extending transversely of the ways which roller is alternately supported on the machine bed and carried by arms pivotally mounted on the slide and having stop means engaging the slide to limit pivotal movement of the arms in response to the weight of the roller.

Other and more detailed objects of the invention will become apparent from a consideration of the following specification, the appended claims and the accompanying drawing, wherein:

Figure 1 is a broken longitudinal sectional view showing an embodiment of the invention and illustrating the relative position of the parts when the roller is supported on the machine bed;

Fig. 2 is a broken longitudinal sectional view similar to Figure 1, illustrating the position of the parts when the roller is supported on the arms pivotally carried by the slide;

Fig. 3 is a broken end elevational view showing the parts in the relative positions illustrated in Fig. 2; and,

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Fig. 4 is a broken transverse sectional view of the structure illustrated in Fig. 1, taken along the line 4—4 thereof.

Referring to the drawing, a machine bed or table member 10 has a pair of laterally spaced longitudinally extending ways 12 and 14 upon which is supported a slide 16 having bearing surfaces 18 and 20 engaging the ways 12 and 14 respectively. It will be appreciated that the ways 12 and 14 and the co-operating bearing surfaces 18 and 20 may be of any suitable shape. In the preferred embodiment illustrated, the way 12 and the co-operating bearing surface 18 are finished horizontally extending plane surfaces and the way 14 and the co-operating bearing surface 20 are V-shaped.

The table 10 has a curtain chamber 22 at one end thereof extending transversely of the ways 12 and 14 below and adjacent the right hand end thereof, as viewed in Figs. 1 and 2. A curtain roll generally indicated at 24 is mounted within the curtain chamber 22 and is of a conventional construction including a stationary shaft 26, an outer cylinder 28 and a spring 30 having one end anchored to the shaft 26 and the other end connected to the curtain cylinder 28. The spring 30 is preloaded to resiliently urge the curtain cylinder 28 in a counterclockwise direction, as viewed in Figs. 1 and 2. A curtain strip 32, of any suitable material, is rolled upon the cylinder 28 with its inner end secured thereto, and its outer end portion extends from the chamber 22 through an opening 34 extending transversely of the table 10 and has its outer end 36 secured to the adjacent or right hand end of the slide 16, as viewed in Figs. 1 and 2, the end 36 being securely held in place by a transversely extending bar 38 secured to the end wall of the slide 16 by screws 40.

At its opposite sides, the table 10 carries bearing plates 42 secured in place by means of screws 44. These bearing plates 42 have the upper right hand portions shaped to define generally L-shaped bearing portions 46, the right hand end portions 48 of which slope downwardly for a purpose hereafter described. A roller 50 extends transversely of the ways 12 and 14 and is provided with axially disposed outwardly extending trunnions 52 adapted to be received in the L-shaped bearings 46 of the plates 42 to rotatably support the roller 50 on the table 10. It will be appreciated that when the roller 50 is supported in this manner, the L-shaped bearings 46 limit movement of the roller 50 toward the ways 12 and 14. The roller 50 is also provided with a

pair of annular grooves defining short shaft portions 54 spaced longitudinally thereof and disposed intermediate the ways 12 and 14. A pair of arms 56 are pivotally mounted on the slide 16 by pivot pins 58. At their outer ends, that is, the ends remote from the pivot pins 58, the arms 56 are provided with L-shaped bearing surfaces 60 similar to the bearing surfaces 46 on the plates 42 and the outer end portions of which are downwardly turned as indicated at 62. Adjacent the pivot pins 58, the arms 56 are provided with abutments 64 adapted to engage co-operating abutments 66 on the slide 16 to limit pivotal movement of the arms 56 in a clockwise direction, as viewed in Figs. 1 and 2 when the arms 56 are in the position illustrated in Fig. 2 in which position the L-shaped bearings 60 of the arms 56 are adapted to engage and rotatably support the shaft portions 54. The above mentioned downwardly turned portions 62 of the bearing surfaces 60 are provided to insure that during movement of the slide 16 to the right, the bearings 60 will move under the shaft portions 54 of the roller 50. Similarly, the downwardly turned end portions 48 of the bearings 46 function to insure that upon movement of the slide 16 from the position illustrated in Fig. 2, to the position illustrated in Fig. 1, the trunnions 52 of the roller 50 will move into the L-shaped bearings 46.

Intermediate the ways 12 and 14, and in vertical alignment with the arms 56, the machine bed 10 is provided with upwardly facing shoulders 68 and 70 adapted to engage and support the outer end of the arms 56 during movement of the slide 16 beyond the position illustrated in Fig. 1, in a direction indicated by the arrow. The right hand end portions of these shoulders, as viewed in Figs. 1 and 2, are rounded as indicated at 72 to provide a smooth surface for the initial engagement of the shoulder with the arm 56, as the slide 16 moves from the position illustrated in Fig. 2 to the position illustrated in Fig. 1. It will be noted that the outer ends of the arms 56 at the opposite sides thereof from the L-shaped bearings 60 are curved as indicated at 74 to provide a smooth sliding engagement with the shoulders 68 and 70.

It will be appreciated that upon movement of the slide 16 from the position illustrated in Fig. 1 to the position illustrated in Fig. 2, the weight of the arms 56 will cause them to pivot in a clockwise direction about the pivot pin 58 as permitted by the rounded end portions 72 of the shoulders 68 and 70 to the limiting position above described and determined by the engagement of the stops 64 with the co-operating stop portions 66 of the slide 16. Upon continued movement of the slide 16, after the arms 56 have assumed this limiting pivotal position, the bearings 60 will move under the shaft portions 54 and carry the roller 50 from the bearings 46 of the plates 42 carried by the machine bed 10. By virtue of this construction in which the roller 50 is picked up and carried by arms mounted on the slide, it is possible to provide a construction in which the curtain 32 may be supported in spaced relation above an otherwise exposed portion of the ways 12 and 14 when the slide 16 is moved to its extreme position to the left, as viewed in Figs. 1 and 2, without interference between the portions of the slide 16 upon which the bearing surfaces 18 and 20 are formed and the curtain roller 50 when the slide 16 is moved to its extreme position in the opposite direction.

It will now be appreciated that in all positions of the slide 16, a portion of the curtain 32 intermediate its outer end 36, which is secured to the slide 16, and the portion wound about the cylinder 28, is in contact with a portion of the outer surface of the roller 50. It will be appreciated that the tension in the curtain 32, produced by the winding action of the spring 30, acts to continuously urge the roller 50 to the left as viewed in Figs. 1 and 2 and prevent its removal from the bearings upon which it is supported except by the positive action of the engagement of the other set of bearings with the roller 50 during movement of the slide 16.

While only one specific embodiment of the invention has been illustrated and described in detail, it will be readily appreciated by those skilled in the art that numerous modifications and changes may be made without departing from the spirit of the present invention.

What is claimed is:

1. In combination, a machine bed having ways in the upper surface thereof, a slide mounted on said ways for movement longitudinally thereof between a first position in which it overhangs one end of said ways and a second position in which said slide is moved from over a portion of said ways adjacent said one end, and means for automatically covering any portion of said ways adjacent one end thereof which is not covered by said slide, said means comprising a curtain roll rotatably mounted on said machine bed and having spring means resiliently urging it in one direction, a curtain strip having its inner end secured to said curtain roll and its outer end secured to the adjacent end of said slide, a roller extending transversely of said machine bed beyond said one end of said ways, means on said machine bed for rotatably supporting said roller so disposed that when said curtain strip is trained over said roller intermediate said curtain roll and said slide, the portion of said strip intermediate said roller and said slide extends in spaced relation to the adjacent portion of said ways, means on said slide adapted to remove said roller from said means on said machine bed and support said roller during movement of said slide to said first position, said means on said machine bed being adapted to remove said roller from said means on said slide during movement of said slide to said second position, said curtain strip passing in contact with a part of said roller intermediate said curtain roll and said slide.

2. The combination as defined in claim 1 wherein said slide includes bearing surfaces engaging said ways and wherein said means on said slide is adapted to support said roller so disposed that when said slide is in said first position the portion of said curtain strip intermediate said roller and said slide extends in spaced relation to said bearing surfaces of said slide.

3. The combination of claim 1 wherein said means on said machine bed is adapted to provide vertical support for said roller and includes shoulder means for limiting movement of said roller toward said ways.

4. The combination of claim 1 wherein said slide includes bearing surfaces engaging said ways and said means on said slide includes means for providing vertical support for said roller and shoulder means adapted to limit movement of

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said roller toward said bearing surfaces on said slide.

5. The combination of claim 1 wherein said means on said slide includes arms pivotally connected to said slide and having bearing portions adapted to remove said roller from said means on said machine bed and carry said roller with said slide during a part of the movement of said slide to said first position.

6. The combination of claim 1 wherein said means on said slide includes arms pivotally connected to said slide and having bearing portions adapted to remove said roller from said means on said machine bed and carry said roller with said slide during a part of the movement of said slide to said first position, said arms having stop means for engaging said slide to limit pivotal movement of said arms in one direction in response to the weight of said roller.

7. The combination of claim 1 wherein said roller has a plurality of annular grooves spaced intermediate said ways and said means on said slide includes arms pivotally connected to said slide and having bearing portions adapted to extend into said grooves to remove said roller from said means on said machine bed and carry said roller with said slide during a part of the movement of said slide to said first position.

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8. The combination of claim 1 wherein said roller has axially disposed trunnions extending outwardly from the opposite ends thereof adapted to engage said means on said machine bed.

9. The combination of claim 1 wherein said roller has axially disposed trunnions extending outwardly from the opposite ends thereof adapted to engage said means on said machine bed, said roller has a plurality of annular grooves spaced intermediate said ways and said means on said slide includes arms pivotally connected to said slide and having bearing portions adapted to extend into said grooves to remove said roller from said means on said machine bed and carry said roller with said slide during a part of the movement of said slide to said first position.

BENEDICT WELTE.

OLNEY J. ABBOTT, Jr.

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