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MILLING MACHINE

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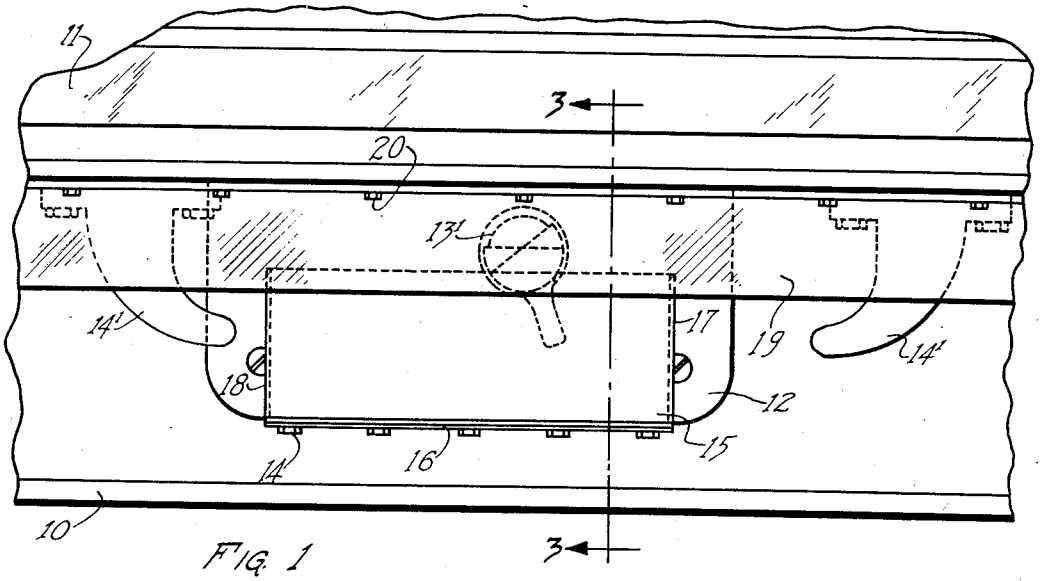


FIG. 1

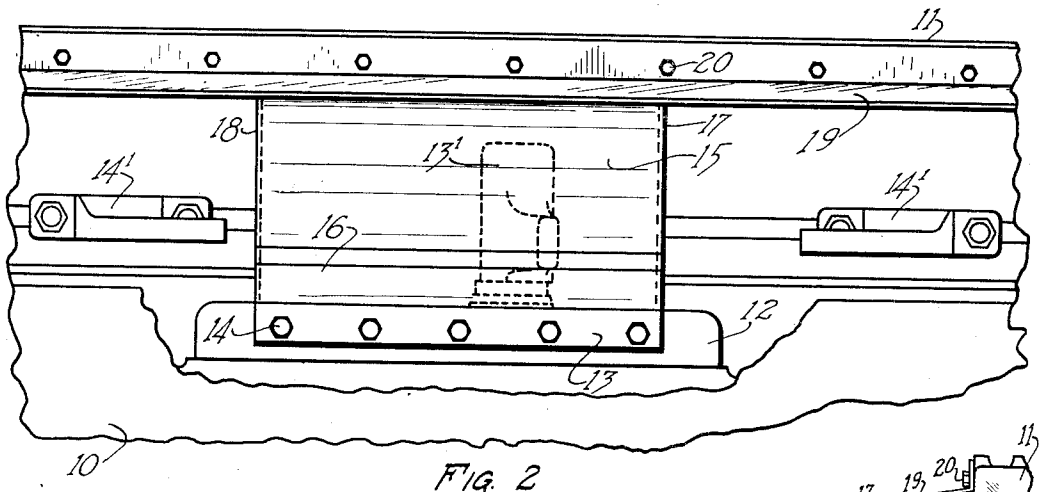


FIG. 2

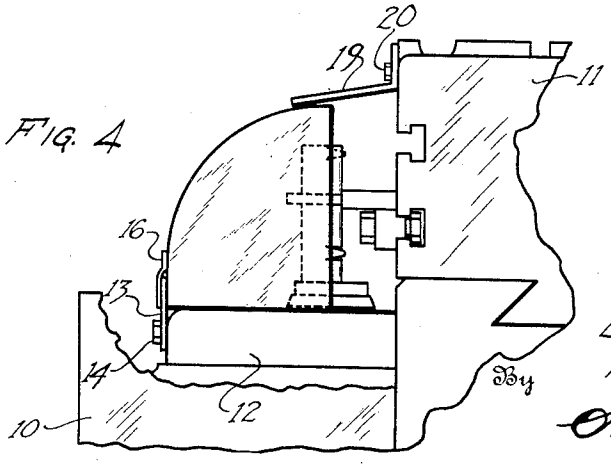


FIG. 4

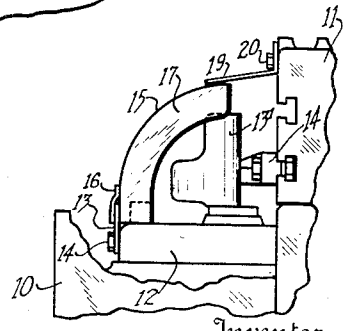


FIG. 3

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MILLING MACHINE

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3 Claims. (Cl. 90—11)

This invention relates to milling machines and more particularly to a chip guard for the tripping mechanism.

In modern machine tools which have been designed for high production, the amount of material removed in the form of chips per unit of time has increased and, due to the automatic or semi-automatic operation of such machines, the operator's time is mostly consumed in loading and unloading work pieces therefrom, whereupon the quantity of chips removed more or less pile up on the machine and it has been found that they have a tendency to interfere with the proper operation of the control mechanism of such machines. It is therefore one of the principal objects of this invention to provide a chip guard for the control mechanism of a machine tool having a reciprocating table which is adapted to cooperate with the table to prevent any interference with the control mechanism thereof.

Other objects and advantages of the present invention should be readily apparent by reference to the following specifications, considered in conjunction with the accompanying drawing illustrative of one embodiment thereof, but it is to be understood that any modifications may be made in the specific structural details hereinafter disclosed, within the scope of the appended claims without departing from or exceeding the spirit of the invention.

Referring to the drawing, in which like reference numerals indicate like parts:

Figure 1 is a plan view of a machine tool showing one embodiment of the invention.

Figure 2 is an elevation of the parts shown in Figure 1, and

Figure 3 is a vertical section on the line 3—3 of Figure 1.

Figure 4 is an end elevation showing a modified form of the invention.

The reference numeral 10 indicates the bed of the machine, upon which is slidably mounted the work table 11. The bed 10 has a raised boss 12 in which is pivotally mounted the trip control member 13' which is adapted to co-operate with dogs such as 14' mounted on the longitudinal edge of the table 11 to control the movement thereof. The boss 12 of the bed has the vertical flange 13 attached thereto as by bolts 14. A chip guard 15 which has a curved back is removably positioned over the trip plunger 13'. The guard 15 has a longitudinal strip 16 attached adjacent its lower edge, forming a longitudinal slot by means of which it may be held in position by engagement with the flange 13. The guard 15 has formed integral therewith at each end, the flange portions 17 and 18.

The table 11 has attached to its longitudinal edge the sloping flange 19 which extends the full length of the table and is attached thereto as by means of the bolts 20. The flange 19 it will be noted overlaps the top of the guard 15 so that chips or other material falling from the table 11 onto the flange 19 will slide off onto the back of the guard 15. The back of the guard however is curved so that loose material such as falling chips will not collect thereon but will be precipitated therefrom to the edge of the machine and thus be prevented from interfering with the control member. The member 19 also projects far enough from the table 11 to prevent chips from falling or piling up in the way of dogs 14'. Although the guard 15 extends only a short distance on each side of the trip member 13 it will be noted that the flange 19 extends the full length of the table and due to the overlapping of the parts the table may be moved or reciprocated to any position without exposing the member 13'. It will also be noted that the guard 15 has its end portions cut away sufficiently to allow passage of the trip dogs attached to the table.

In Figure 3 the guard is shown as cut away sufficiently to permit passage of the dogs such as 14' shown in Figures 1 and 2 while in Figure 4 the guard is shown as not cut away as the type of dog there used does not require it. In order to remove the guard it is merely tipped forward to clear the flange 13 and then pulled out, there being sufficient clearance of the parts to permit this.

What is claimed is:

1. A milling machine having a bed, a work table reciprocably mounted on the bed, means to control the rate and direction of movement of the table including a control plunger rotatably mounted in the bed adjacent a side face of the table, control dogs carried by the side face and adjustably positioned therealong for co-operation with the plunger determining the length of table movement, a sloping flange projecting from the dog carrying face of the table and extending the full length thereof to overlie said plunger and dogs in all adjustable positions thereof, a guard member extending from the plunger support at the side thereof opposite to the table into telescoping relation with the table flange whereby work chips falling from the table will be conducted past the control parts without interfering with the actuation of the plunger by said dogs, one of the protecting members being detachably connected to

its support for ready removal to permit adjustment of the control parts.

2. A milling machine having a bed, a work table reciprocably mounted on the bed, means to control the power movement of the table, including a control member support, a control member mounted therein, control dogs carried by a side face of the table for coacting with said member to determine the automatic movements of the table, a sloping flange carried by the top edge of the dog carrying side of the table, and extending the full length thereof, said flange projecting from the table in overlying relation to the plunger and dogs, a second flange carried by the control member support on the side of the control member opposite to the table, a chip guard detachably connected to the second named flange and circumscribing the control plunger into overlapping relation with the first named flange whereby falling work chips will precipitate therefrom without interfering with the actuation of the control member by the control dogs, and means for readily removing the chip guard to expose the parts for adjustment purposes.

3. In a milling machine having a bed and a table reciprocably mounted upon the bed, a control plunger support projecting beyond a side of the table and below the plane of the top thereof, a control plunger mounted on said support, control dogs carried by the table for cooperation with said plunger to determine automatically table movement, means to prevent work chips falling from the table from interfering with the actuation of the plunger by said dogs, including a flange sloping from the top edge of the table in overlying relation to the dogs and plunger, said flange extending the full length of the table to thereby cover the dogs in all positions of adjustment thereof, a housing enclosing said plunger including a wall extending from the front of the plunger support upward and inward over the plunger toward the table in overlapping relation to the sloping flange whereby falling work chips will be precipitated therefrom, said housing having end walls with relieved portions forming a passageway for the control dogs into and out of the housing, and means to removably mount the housing in position, including a flange projecting from the plunger support and a groove formed in the lower edge of the housing fitting said flange.

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