

Feb. 21, 1956

R. H. SPRINK

2,735,317

PRODUCT DISPOSAL FOR MACHINE TOOLS

Filed March 23, 1953

FIG. 1

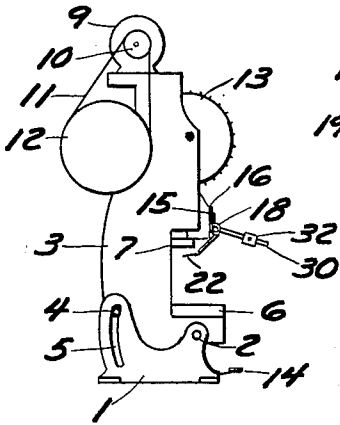


FIG. 2

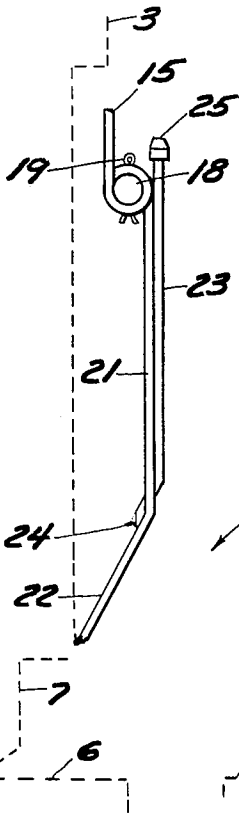
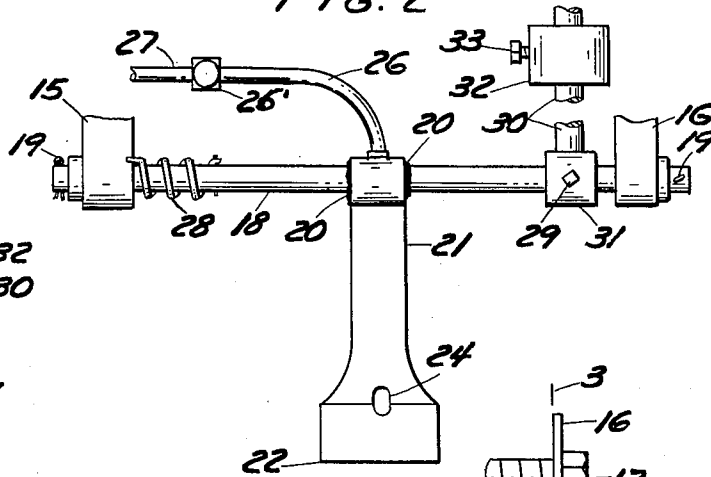


FIG. 3

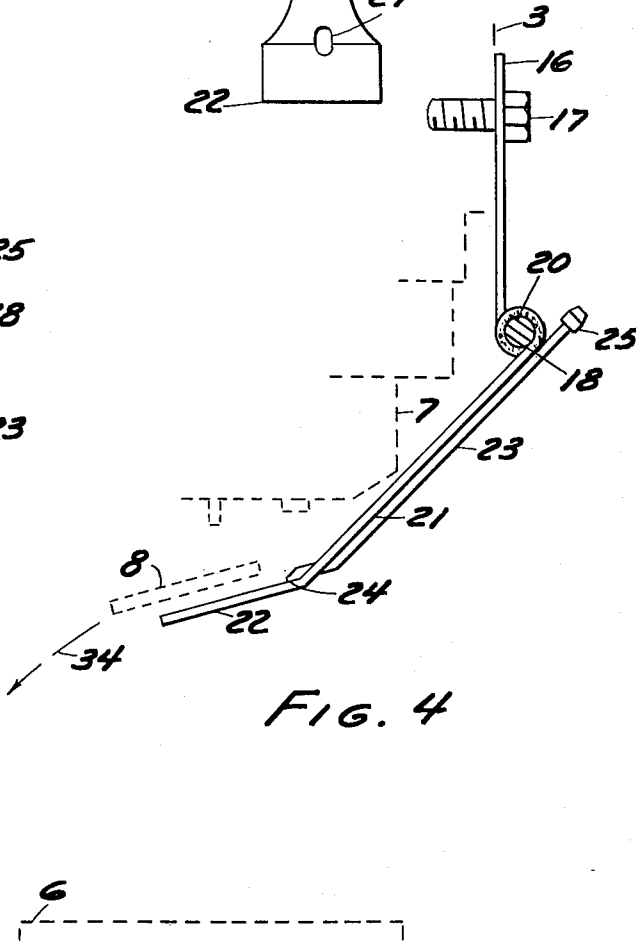


FIG. 4

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**PRODUCT DISPOSAL FOR MACHINE TOOLS**

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Application March 23, 1953, Serial No. 344,042

1 Claim. (Cl. 78—96)

This invention relates to directing machine-acted-upon articles clear of the work area for succeeding articles to be acted upon.

This invention has utility when adopted as an accessory for power presses, and the like, wherein there is a lower bed and an upper relatively reciprocable head, one or both of which bed and head may have article shaping, blanking, or forming dies and in which the head as rising tends to carry the work-acted-upon upward from the bed with release means at the head for the work freely to drop. Under the invention herein, the thus-released article of work, has its fall directed away from the head and clear of the bed. As the head ascends, it is followed by a fending arm, which arm at descent position, is clear of the bed. In the rapid ascent of the head, the arm has a sort of tossing action for the article of work to be at once moved clear of the arm and projected aside from the working area of the machine tool or press.

Referring to the drawings:

Fig. 1 is a side elevation, diagrammatic, of a press type of machine tool, equipped with the work ejector of the invention herein;

Fig. 2 is a plan view, on an enlarged scale of the ejector accessory of Fig. 1;

Fig. 3 is a side view of the accessory at head descent position and thus clear of the work region; and

Fig. 4 is a view similar to Fig. 3, but with the head at ascent for the accessory paddle to receive and toss acted-upon work clear of the machine.

A machine tool base 1 has a pivot 2 for a riser frame 3 having locking bolt assembly means 4 at an arc slot 5 in the base 1 for thereby setting upright or giving an inclination for a bed 6 upward from which is a head 7 reciprocable toward and from the bed 6. The head or the bed or both thereof may carry dies or means for acting upon an article 8 of work introduced into the machine, as by placing on the table or bed 6, to be given a blank form, shaped, slitted, perforated, or other operation. A motor 9 on the frame 3 may be effective thru speed reduction belt gearing 10, 11, 12, and gearing 13, to effect reciprocation of the head 7 as guided in straight line operation toward and from the table or bed 6. Toward the right of the base 1 and in front is a treadle 14, thru which the operator may control the machine tool action.

On the front of the frame 3 on each side of the guide way for the head are brackets 15, 16 (Figs. 1, 2). These brackets extend to eyes or lower bearings for a rock shaft 18. The brackets 15, 16, are mounted by bolts 17 on the frame 3. Split keys 19 position the shaft 18 against axial shifting relatively to the brackets 15, 16. Medially of the shaft 18, welds 20 anchor an arm or paddle 21. The paddle 21 has a free end 22.

Along the back or normally underside of the arm 21 is a duct 23 having a discharge port 24 directed across the face of the offset 22. Remote from the offset 22, the duct 23 has a nipple or shouldered end 25 to which is connected a flexible duct 26 extending to a valve 26' for controlling pressure fluid, as compressed air, from a line 27.

A torsion spring 28 acting between the shaft 18 and the bracket 15, tends to crowd the arm 21 against the head 7. In lieu of, or in addition thereto, a set screw

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29 may angularly position radial arm 30 fixed with a collar 31 on the shaft 18 for the arm to be held in a fixed radial position on the shaft 18 more or less oppositely from the arm 21. Counterweighting action of the arm 30 is varied by a weight 32 shiftable therealong and so locked by a set screw 33.

Current practice with machine tools having a reciprocable head which may carry possibly some of the die structure, frequently includes spring thrown pins or projecting portions, coacting upon ascent of the head clear of the bed, to exert pressure upon the acted-upon work, normally tending to be lifted or follow upward the head in ascent clear of the bed. This automatic release of the acted-upon work, especially in high speed cycles for the press operation, makes important the clearing of the completed work against repeat action thereon by the tool, as well as leaving a clear way so that a following article of work to be acted upon may not have the previous item jammed therewith.

The position of rest for the fender arm 21, 22, is at interference position between the head 7 and the bed 6, as it is automatically swung under the head 7 to the extent that riding on the side of the head 7 permits such action, effected thru the torsion spring 28, or by the counterweight 32. However, this accessory is directed out of this interference position as the head descends, for it rides against the arm 21 and the spatula end 22 for such to be clear of the dies and the work therebetween, and the press operation. The counterweight, or spring, or both, may hold the fender arm snugly against the side of the head. As the head ascends, at the sought-for frequency for volume of work output, there is arm upswing of such momentum that a slight tossing action may be exerted upon the work item 8 to take descent travel course 34 clear of the bed 6. The air blast supply may be machine controlled for discharge only as arriving at the top of the upswing, or approaching such.

The torsion spring 28 is a compact action element for the accessory.

What is claimed and it is desired to secure by Letters Patent is:

In combination, a frame, an anvil on said frame, a ram mounted on said frame vertically movable to and from said anvil, bracket means on said frame, a rock shaft supported by said bracket means, a paddle pivotally supported at its upper end on said shaft, said paddle having an intermediate length extending downwardly past the bottom of said ram and having its lower end inwardly directed to be under said ram in the upward position thereof to catch any work piece that may be temporarily stuck to said ram and subsequently released, means biasing said paddle inwardly toward said ram to the aforesaid position, said paddle having its end under said ram and its length at an angle to the vertical with the lower portion thereof in the path of said ram so that upon downward movement said ram will engage said length and cam said paddle out of the way, and an air blast positioned to blow a work piece off of said paddle end before the ram cams the paddle out of the way, thusly preventing work piece from falling upon said anvil.

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