

Aug. 28, 1934.

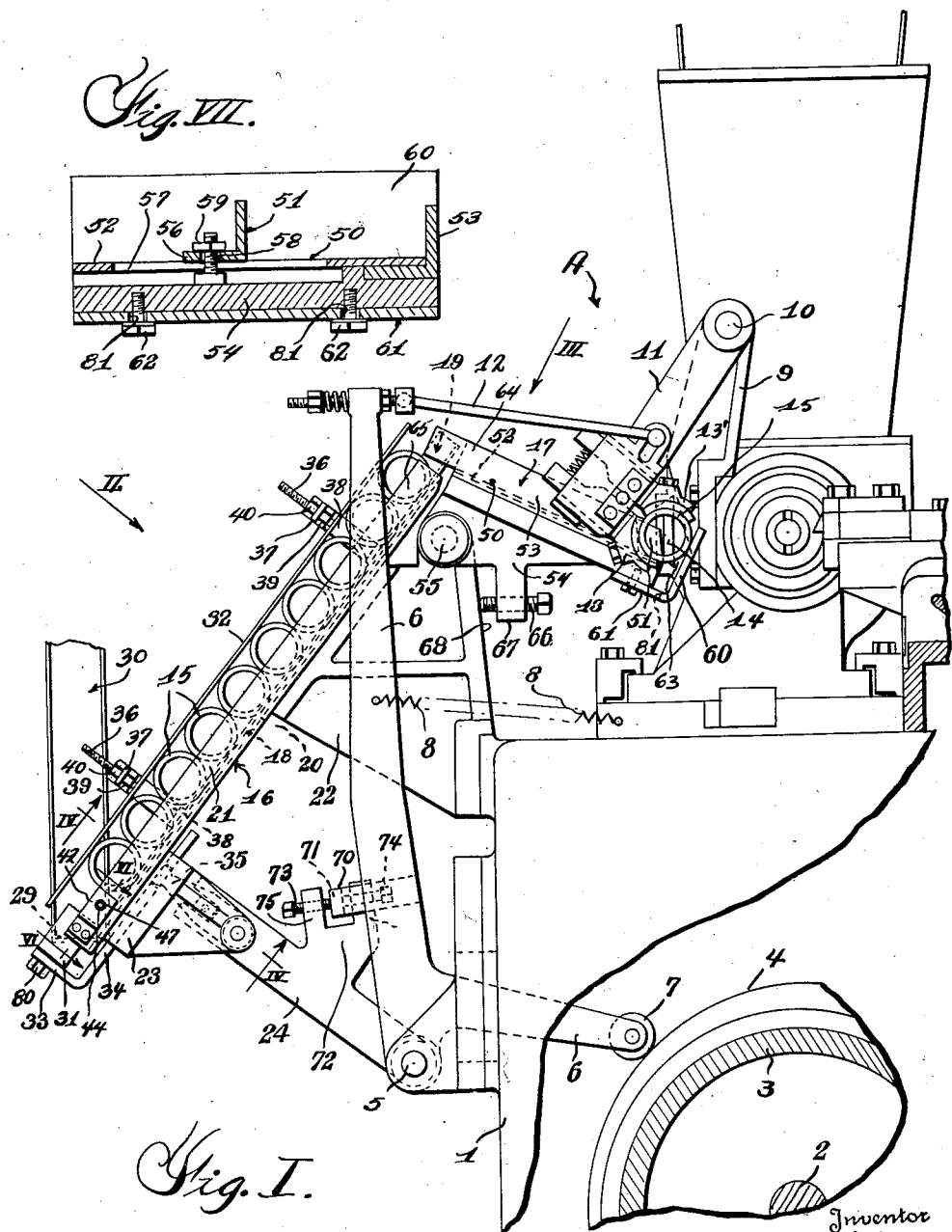
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WORK FEED ASSEMBLY

Filed May 16, 1932

2 Sheets-Sheet 1



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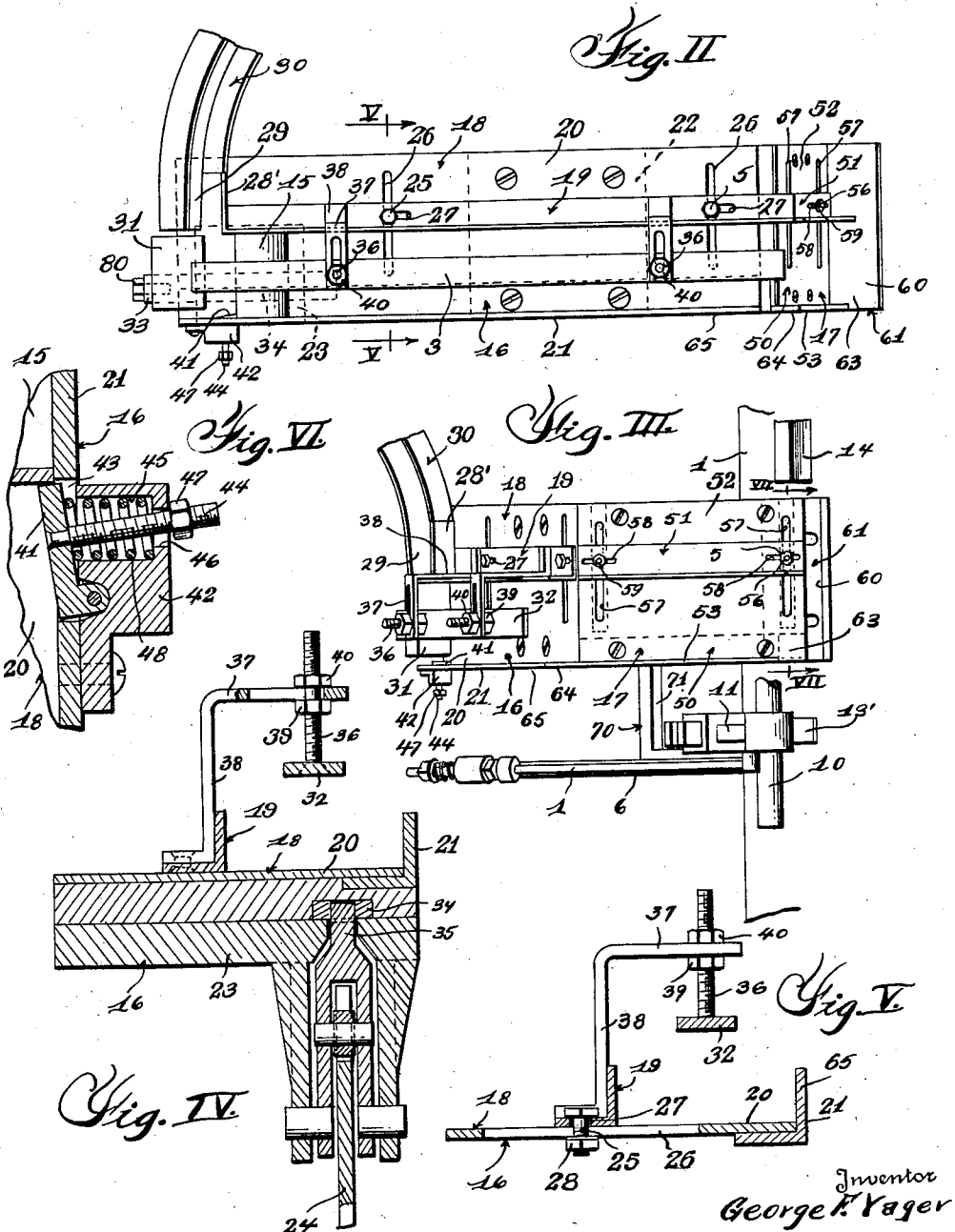
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WORK FEED ASSEMBLY

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Application May 16, 1932, Serial No. 611,699

19 Claims. (Cl. 29—60)

This invention relates generally to work feed assemblies and refers more particularly to those designed for use with metal working machines such as the turning machine illustrated in my application, Serial No. 565,616, filed September 28, 1931.

In the accompanying drawings:

Figure I is a fragmentary side elevation of a metal working machine with a work feed assembly embodying my invention applied thereto;

Figure II is a plan view of the work feed assembly looking in the direction of the arrow II appearing in Figure I;

Figure III is a diagrammatic view looking in the direction of arrow III appearing in Figure I;

Figure IV is a section on the line IV—IV of Figure I;

Figure V is a sectional view taken on the line V—V of Figure II;

Figure VI is a section on the line VI—VI of Figure I;

Figure VII is a section on the line VII—VII of Figure III.

Referring now to the drawings, A is a turning machine similar to that illustrated in my application aforesaid and including a base or frame 1, a cam shaft 2 journaled in the frame, a drum 3 on the cam shaft, a cam 4 on the drum, a stub shaft 5 journaled in brackets upon the frame 1, a bell crank lever 6 pivoted upon the stub shaft 5, a roller 7 carried by the lever 6 and engaging the cam 4, a coil spring 8 terminally secured to said lever 6 and frame 1, a bracket 9 secured upon the frame, a stub shaft 10 journaled in the bracket 9, an arm 11 swingingly mounted on the stub shaft 10, a rod 12 terminally connected to the lever 6 and arm 11, cooperating jaws 13 and 13' respectively carried by the arm 11 at the lower free end thereof, and a plunger 14 slidably mounted in suitable brackets upon the frame 1 and movable toward and away from the jaws 13 and 13'.

In the present instance, however, the work such as bushings 15 may be supplied by the delivery chute of feeder mechanism such as that illustrated in my application, Serial No. 567,106, filed October 5, 1931, to the lower end of a slide 16 and are adapted to be moved automatically up the slide by mechanism operable by the lever 6 into a chute 17 from which they are adapted to be moved by the plunger 14 into the jaws 13 and 13'. As shown, the slide 16 is channel shaped and comprises two sections 18 and 19 respectively. The section 18 consists of a flat metal strip 20 and an angle iron 21 and is fixed to the bracket

22 on the frame 1 and to a bracket 23 pivotally connected to a lever 24 on the stub shaft 5, while the section 19 comprises an angle iron and is carried by and movable both transversely and longitudinally of the strip 20 of the section 18. Bolts 25 engaging transversely extending slots 26 in the strip 20 and longitudinally extending slots 27 in the angle section 19 and engaged by nuts 28 are used to hold the section 18 in adjusted position. The angle iron 21 extends the full length of the strip 20 and is provided at its lower end with a lateral flange 28' that is adapted to cooperate with the lower end 29 of a delivery chute 30 such as C of the feeder mechanism in my application, Serial No. 567,106, to guide the work from the delivery chute into the slide 16 to the angle iron 21. The plunger 31 at the lower end of the slide 16 is adapted to move the work 15 upwardly in the slide, while a strip 32 of metal above and substantially parallel to the strip 20 serves to retain and keep the work from buckling in the slide. As shown, the plunger 31 is movable between and longitudinally of the strips 20 and 32 and is carried by the lateral flange 33 of a bar 34 slidably mounted in the bracket 23 and actuatable by an arm 35 carried by the lever 24. The strip 32 is carried by the lower ends of bolts 36 adjustable vertically in the bases 37 of inverted L-shaped brackets 38 fixed to the bases of the angle bars 19. Nuts 39 and 40 respectively threadedly engage the bolts 36 above and below the bases 37 and serve to retain the bolts 36 and strip 32 in adjusted position. 41 is a latch member or detent pivoted in a bracket 42 secured to the angle iron 21 and movable through an opening 43 in said iron for preventing the bushings 15 once they have passed upwardly beyond the latch from moving backwards below the same. 44 is a bolt projecting rearwardly from the latch intermediate its ends and extending through a socket 45 and opening 46 in the bracket 42; 47 is a nut threadedly engaging the bolt 44 upon the outer side of the bracket 42; and 48 is a coil spring sleeved upon the bolt 44 within the socket 45 and normally maintaining the free end of the latch inwardly within the channel of the slide 16.

The chute 17 at the upper end of the slide 16 is also channel-shape and preferably comprises two sections 50 and 51 respectively. The section 50 consists of a flat metal strip 52 and an angle iron 53 and is fixed to a bracket 54 pivoted at 55 upon the bracket 22, while the section 51 comprises an angle iron and is carried by and movable both transversely and longitudinally of the

strip 52. Bolts 56 engage transversely extending slots 57 in the strip 52 and longitudinally extending slots 58 in the angle section 51 and are engaged by nuts 59 for holding the section 51 in adjusted position. The angle section 51 terminates short of the lower end of the strip 52 and cooperates with an upstanding flange 60 of an L-shaped bracket 61 secured by screws 62 to the bracket 54 to define a lateral opening 63 through which the bushings 15 may be discharged one at a time by the plunger 14. Preferably the side flange 64 of the angle iron 53 projects upwardly beyond the upper end of the strip 52 and cooperates with the flange 65 of the angle iron 21 to guide the bushings from the slide 16 into the chute 17. 66 is a bolt or set screw threadedly engaging a depending arm 67 of the bracket 54 and abutting the rear face 68 of the bracket 22 for controlling the elevation of the lower end of the chute 17.

In order that the movement of the plunger 31 will be in timed relation to the movement of the jaws 13 and 13' I have provided an adjustable connection between the levers 6 and 24 respectively. As shown, 70 is an L-shaped plate rigid with the lever 6 and having the base 71 of the L received within a bifurcated portion 72 of the lever 24, and 73 and 74 respectively are set screws or bolts threadedly engaging the furcations 75 and 76 respectively and engaging opposite sides of the base 71 of the L-shaped plate.

In use bushings 15 discharged into the slide 16, for instance, from a chute such as 30 of a feeder mechanism corresponding to that illustrated in my application, Serial No. 567,106, will be pushed one at a time by the plunger 31 upwardly in the slide 16 past the latch 41. Successive bushings will push those ahead so that they will move one at a time from the upper end of the slide 16 into the chute 17. The plunger 14 will remove the bushings from the lower end of the chute 17 into the jaws 13 and 13' which in turn will carry or transfer the bushings to the arbors (not shown) of the machine. Adjustment of the screws 73 and 74 will control the movement of the lever 24 and plunger 31 relative to the lever 6 and jaws 12 and 13, while adjustment of the bolt 66 relative to the depending portion 67 of the bracket 54 will regulate the position of the chute 17 relative to the plunger 14. The adjustment of the nuts 39 and 40 regulates the height of the strip 32 above the strip 20 of the slide, while the adjustment of the nut 47 on the bolt 44 regulates the position of the latch 41 relative to the angle iron 21. Since the plunger 31 is secured by screws 80 to the flange 33 of the slidable bar 34 it will be apparent that plungers of various sizes may be used according to the diameter of the bushings to be received within the slide 16. Furthermore, adjustment of the bolts 25 in the slots 26 and 27 and of the bolts 56 in the slots 57 and 58 can be made to take care of the bushings of various sizes. For example, the bolts 25 may be adjusted in the longitudinally extending slots 27 according to the diameter of the bushings to be received between the lateral flange 28 and the plunger 31, while the bolts 25 may be adjusted in the slots 26 according to the length of the bushings to travel longitudinally of the slide. Likewise adjustment of the bolts 56 in the longitudinally extending slots 58 may be made according to the diameter of the bushings to be discharged from between the flange 60 and angle iron 53 and adjustment of the bolts 56 in the slots 57 may be made according to the length of the bushings to travel longi-

tudinally of the chute. In addition, the screws 62 engaging the longitudinally extending slots 81 in the L-shaped member 61 enable the latter to be adjusted relative to the lower end of the chute 17 if desired.

Thus from the foregoing it will be apparent that I have provided an extremely efficient and practical means for feeding the work to the machine. The assembly is simple in construction, can be manufactured at a comparatively low cost and can be easily installed. Moreover the work is conducted automatically from the chute 30 to the jaws 12 and 13 so that the assembly requires practically no attention after the desired adjustments aforesaid have been made.

What I claim as my invention is:

1. A work feed assembly including a slide and a chute arranged substantially end to end and disposed at substantially right angles to each other, a bracket supporting both said slide and chute, and means for adjusting the chute relative to the slide including an element adjustable relative to the bracket.

2. The combination with a machine having a frame, a bracket carried thereby, a shaft journaled in the bracket, and a lever carried by the shaft, of a work slide, a plunger for moving work in the slide, and actuating means for the plunger including a lever carried by the shaft and adjustably connected to the lever aforesaid.

3. A work feed assembly including a slide of substantially channel configuration for the work, means for moving work longitudinally of the slide, and means yieldable to permit work to move in one direction in the slide but operable automatically to prevent the work from moving in the opposite direction once it is past said means.

4. A work feed assembly including a slide of substantially channel configuration for the work, and a spring actuated latch member in one side of the slide movable in said side to permit work to move in one direction in the slide but operable automatically once the work is therebeyond to prevent the work from moving back in the slide.

5. A work feed assembly including an upwardly inclined slide and a downwardly inclined chute for the work forming in effect an inverted V longitudinally of which the work may travel, one being adjustable about a fixed pivot relative to the other, and each being provided at its lower end with means whereby the work may move transversely thereof.

6. A work feed assembly including a substantially channel shaped member for receiving and guiding the work, and means throughout the length of said member for preventing the work from buckling up in the member while moving longitudinally thereof including another member extending longitudinally of and adjustable vertically relative to the base of the channel member.

7. A work feed assembly including a strip for supporting the work, means associated with the strip for guiding the work, means throughout the length of the first mentioned strip for preventing the work buckling up while being guided including a strip extending longitudinally of and adjustable vertically relative to the strip aforesaid, and means for moving said work longitudinally of said first mentioned strip, including a reciprocating plunger movable between said strips.

8. A work feed assembly including an upwardly inclined slide and a downwardly inclined chute for the work arranged end to end and forming in

effect an inverted V, and a common support for the slide and chute including a bracket attachable to the frame of a machine.

9. A work feed assembly comprising an upwardly inclined slide and a downwardly inclined chute having adjacent ends thereof uppermost and forming in effect an inverted V longitudinally of which the work may travel, the remote ends of said parts being provided with means whereby the work may move transversely thereof, and a common support for said slide and chute including a bracket attachable to a frame of a machine.

10. A work feed assembly comprising an upwardly inclined slide and a downwardly inclined chute having adjacent ends thereof uppermost and forming in effect an inverted V longitudinally of which the work may travel, the remote ends of said parts being provided with means whereby the work may move transversely thereof, and means for effecting the longitudinal movement aforesaid of the work, including a plunger movable longitudinally of the slide at the lower end thereof.

11. A work feed assembly comprising an upwardly inclined slide having means at its lower end for receiving work, and means for moving the work longitudinally of the slide including a plunger movable longitudinally of the slide below the work receiving means, a bracket rigid with the slide, and actuating means for the plunger including a member slidable in said bracket.

12. A work feed assembly comprising an upwardly inclined slide having means at its lower end for receiving work, and means for moving the work longitudinally of the slide including a plunger movable longitudinally of the slide below the work receiving means, a bracket rigid with the slide, and actuating means for the plunger including a reciprocating member carried by the bracket, a lever pivotally connected to the bracket, and an arm carried by the lever and having a slotted engagement with said reciprocating member.

13. A work feed assembly including an upwardly inclined slide provided in one side adjacent its lower end with means for receiving the work, a bracket fixed to said slide, and means for moving work longitudinally of the slide, including a member slidably engaging the bracket, and a plunger carried by the member and movable longitudinally of said slide.

14. A work feed assembly including a bracket attachable to a frame of a machine, an upwardly inclined slide fixed to said bracket and having means in one side adjacent its lower end for receiving the work, a bracket pivoted on the bracket aforesaid, and a downwardly inclined chute fixed to the last mentioned bracket and having its upper end opposite the upper end of the slide so as to receive work therefrom, said chute being provided at its lower end with means whereby the work may be moved transversely thereof to be discharged therefrom.

15. A work feed assembly including a bracket attachable to a frame of a machine, an inclined slide carried by said bracket and having means at its lower end for receiving the work, a bracket carried by the bracket aforesaid, a chute for the work carried by the last mentioned bracket and having an end thereof opposite an end of the slide so as to receive work therefrom, said chute being provided with means whereby the work may be discharged therefrom, and means associated with the brackets for adjusting and detachably holding the chute in various adjusted positions relative to the slide.

16. A work feed assembly including a lever, a bracket connected to the lever, a work chute connected to the bracket, and means for moving work in the chute including means slidable in the bracket and operatively connected to the lever.

17. A work feed assembly including a work chute, a plunger for moving work longitudinally of said chute, a bracket connected to the chute, and actuating means for the plunger including a reciprocating member carried by the bracket, a lever pivotally connected to the bracket, and a driving connection between the lever and reciprocating member.

18. A work feed assembly including a work chute, a plunger for moving work longitudinally of said chute, a bracket connected to the chute, and actuating means for the plunger including a pivotally mounted lever, a member connected to the plunger and movable on the bracket, and an element carried by the lever and engaging said member.

19. A work feed assembly including a work chute, a plunger for moving the work longitudinally of said chute, and actuating means for the plunger including a pivotally mounted lever, and a reciprocating member connected to the plunger and operatively connected to the lever.

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