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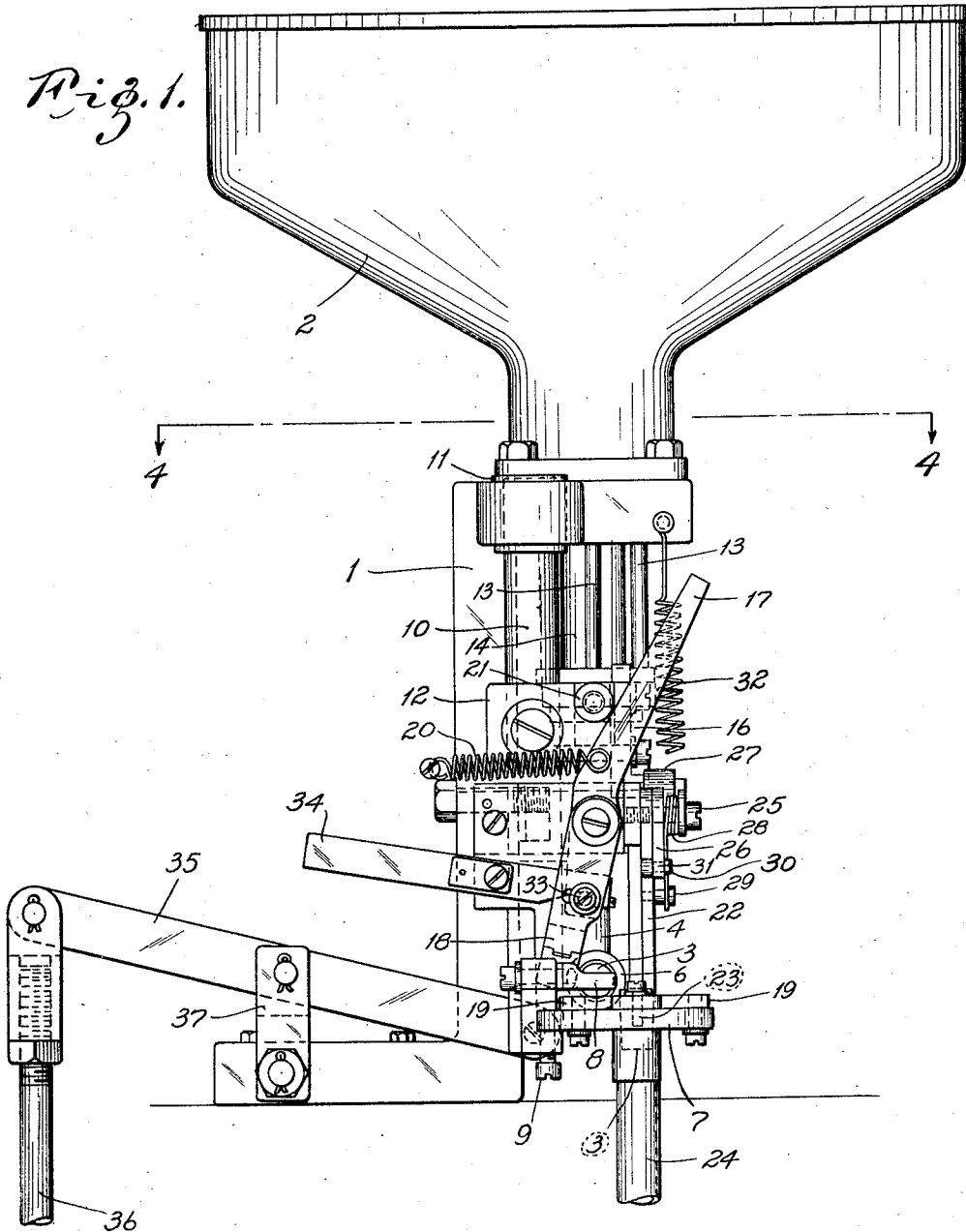
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1,732,283

FEEDER FOR CONICAL ROLLS AND THE LIKE

Filed July 21, 1927

3 Sheets-Sheet 1



INVENTOR
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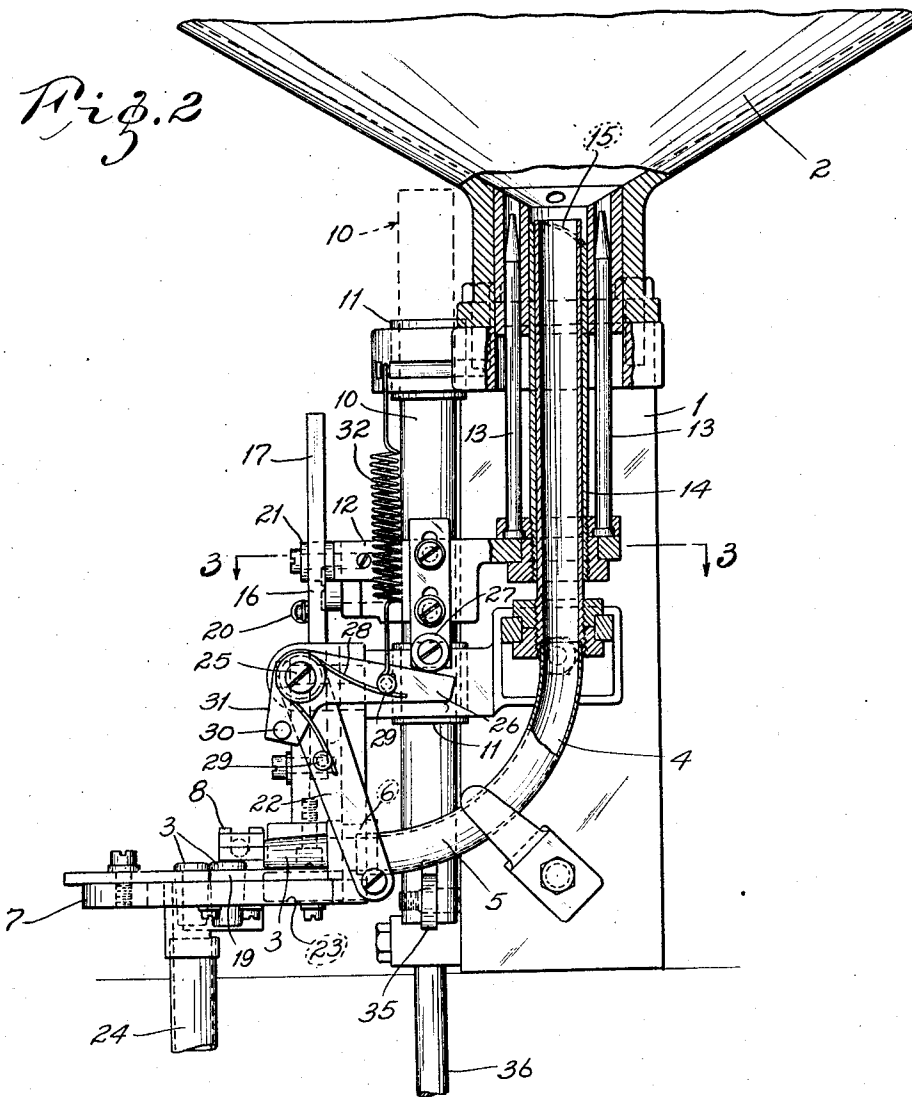
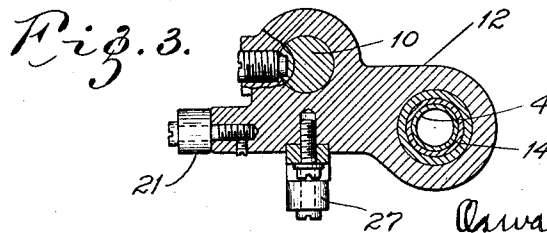
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FEEDER FOR CONICAL ROLLS AND THE LIKE

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3 Sheets-Sheet 2



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FEEDER FOR CONICAL ROLLS AND THE LIKE

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3 Sheets-Sheet 3

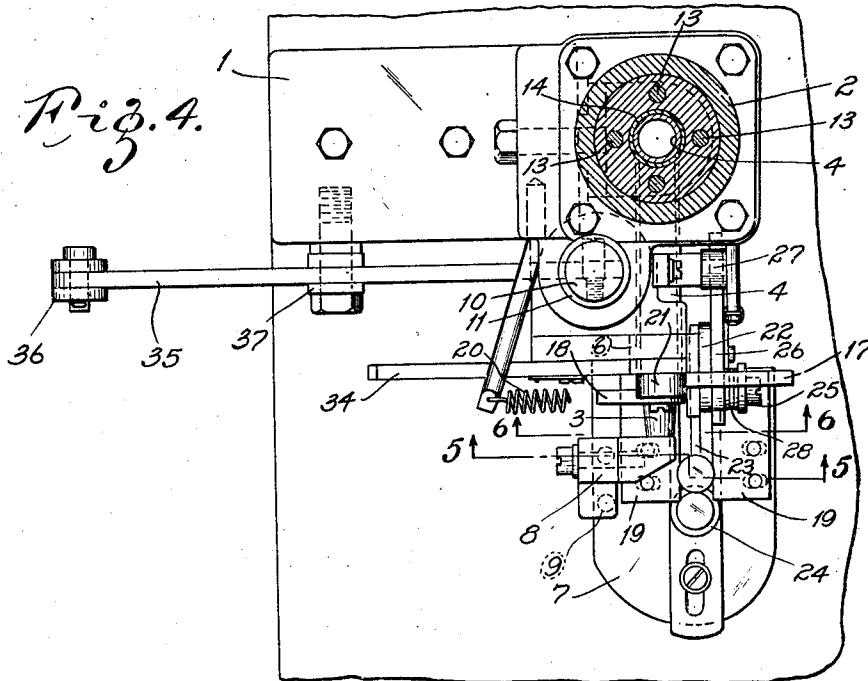


Fig. 7.



Fig. 5.

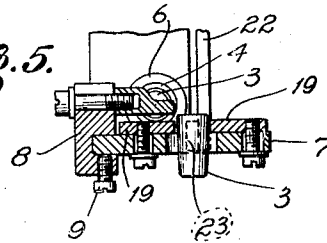
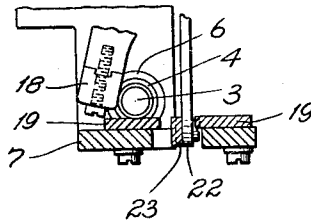


Fig. 6.



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UNITED STATES PATENT OFFICE

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FEEDER FOR CONICAL ROLLS AND THE LIKE

Application filed July 21, 1927. Serial No. 207,373.

My invention relates to automatic devices for feeding work to machines, such as automatic grinding machines, lathes and screw machines. It is particularly applicable to feeding conical rolls, such as are used in roller bearings, to a grinding machine, a gaging machine or other machine for performing some work thereon.

The invention has for its principal object a machine that will sort out rolls received from a hopper or other container and feed the rolls properly (that is with the small ends of all rolls in the same direction) to the machine, that is simple and accurate in operation and that is provided with adequate safety devices to prevent injury to the machine.

The invention consists principally in a reciprocable tube adapted to project into a mass of rolls in a hopper, a device for positioning each roll with its smaller end downward and a device for feeding the rolls to the machine. The invention further consists in the feeder and in the parts and combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification and wherein like reference characters indicate like parts wherever they occur.

Fig. 1 is an elevation of a feeder embodying my invention,

Fig. 2 is a part elevation, part vertical sectional view thereof;

Fig. 3 is a cross-section on the line 3—3 in Fig. 2;

Fig. 4 is a cross-section on the line 4—4 in Fig. 1;

Figs. 5 and 6 are cross-sections on the lines 5—5 and 6—6 respectively in Fig. 4, and

Fig. 7 is a detail of the upper end of a tube for agitating rolls in the hopper.

Mounted on a frame 1 is a hopper 2 having an inclined bottom opening into a central outlet through which rolls 3 may pass to an outlet tube 4. The lower end 5 of said tube is curved and may be a separate section of coiled wire tubing whose lower end terminates in a bushing 6 mounted on a

horizontal plate 7. Secured to said plate 7 and spaced away from the end of the bushing 6 substantially the length of a roll 3 is a stop member 8. Said stop member 8 may be secured to the plate 7 as by a screw 9 and may be moved toward or away from the end of the tube to accommodate different sizes of rolls.

Mounted on a vertical rod 10 that is reciprocable in bushings 11 secured to the frame 1 is a crosshead 12. Mounted on said crosshead 12 are a plurality of pins 13 and a sleeve 14 that surrounds the tube 4. The upper end 15 of said agitator sleeve 14 is cut into spiral form. The agitator sleeve 14 and the agitator pins 13 stir up the rolls 3 and cause them to drop into the central outlet tube 4.

A lever 16 having an inclined upper arm 17 is pivotally secured to a portion of the frame 1. The lower end portion 18 of said lever 16 is adapted to engage a roll 3 resting on said plate 7 at the end of said tube 4 and move said roll sidewise so that it falls into the space between guide members 19 mounted on said plate. Said guide members 19 are spaced apart somewhat less than the greatest diameter of a roll; so that a roll fed to said guide members cannot fall therebetween, but is suspended therefrom with its small end downward, regardless of the position of the roll as it leaves the feed tube 4.

A spring 20 is secured to the upper arm of said positioning lever 16 and to the frame 1, said spring pulling on the upper arm 17 of the lever 16 and tending to force the lower arm past the end of the feed tube 4 to move a roll to the guide members 19. A cam roller 21 secured to the crosshead 12 rides on said upper arm 17 of the positioning lever 16. Thus as the crosshead 12 moves downward, the lower end 18 of the positioning lever 16 is moved clear of the end of the feed tube 4 to permit a roll to pass out onto the plate 7 where it is stopped by the stop member 8, the end 18 of the lever 16 preventing the roll from rolling to one side. As the crosshead moves up, the spring 20 is free to pull the positioning lever 16

in the direction to feed a roll 3 into the space between the guide members 19.

Pivotaly secured to a portion of the frame 1 is a lever 22 to whose lower end is secured a projecting contact finger 23 that is adapted to extend into the space between said guide members 19, thereby pushing rolls along said guide members and causing the endmost roll to drop into a tube 24 that leads to the machine where work is to be done on the roll.

Secured to the pivot pin 25 of said lever 22 is an arm 26 whose outer end is adapted to be engaged by a cam roller 27 on said crosshead 12. A spring 28 extending between pins 29 on said contact arm 26 and said feed lever 22 tends to spread said members apart, the movement being limited by a pin 30 on a projecting portion 31 of said arm 26 engaging said lever 22. Normally the contact arm 26 and the feed lever 22 move together as a unit when said arm 26 is engaged by the cam roller 27; but the spring connection between the two levers is a safety device which permits the arm 26 to continue its movement even if something prevents the feed lever 22 from completing its stroke. A spring 32 secured to said contact arm 26 and to a portion of the frame 1 holds the contact arm 26 in engagement with said cam roller 27.

The positioning lever 16 is provided with a pin 33 that may be engaged by the end of a latch lever 34 secured to the frame, in case it is desired to prevent the positioning lever from moving.

The crosshead 12 may be driven in various ways. The drawing illustrates a rocker arm 35 that is pivotaly secured to the crosshead rod 10 at one end, to a crank 36 at the other end and at its middle to a link 37 that is pivotaly secured to the frame. Thus as said crank is operated, the crosshead supporting rod and the cross head are moved up and down.

The operation of the device may be summarized as follows:

A supply of rolls is kept in the tube 4 and in the tube 24 that delivers to the machine by the agitator sleeve 14 and pins 13 constantly stirring the rolls in the hopper 2 and causing them to drop into the tube 4. The endmost roll passes from the tube 4 and bushing 6 onto the plate 7 where it abuts against the stop member 8. The lower end 18 of the positioning lever 16 prevents the roll 3 from rolling off the side of the plate 7. As the crosshead 12 moves up, the spring 20 pulls on the upper end of the positioning lever 16 causing the lower end 18 to swing past the end of the bushing and feed tube 4 to push a roll onto the guide members, the roll dropping smaller end down into the space between said guides. The end 18 of the lever 16 prevents another roll from sliding out of the end of the bushing 6. The body of the roll drops between the

guide members, leaving the roll suspended by its upper portion between the guide members.

As the crosshead 12 moves down, the cam roller 21 engages the upper end of the positioning lever 16, causing the lower end 18 to be swung back clear of the end of the tube 4 and permitting another roll 3 to pass from the end of the feed tube 4 onto the plate 7.

Likewise, as the crosshead moves down, the cam roller 27 engages the contact arm 26 swinging it and the feed lever 22 and causing the contact member 23 on the end of the feed lever 22 to push rolls between the guide members, causing the endmost roll to drop into the tube 24 leading to the machine that is to work on the roll.

The feeder above described has numerous advantages. It automatically and accurately positions the rolls properly and feeds them to the machine. It is simple and easy to operate, it takes up very little room on the machine and is provided with safety devices that prevent injury to the parts in case of any clogging or jamming. Obviously numerous changes may be made without departing from my invention and I do not wish to be limited to the precise construction shown.

What I claim is:

1. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, fixed horizontally extending guides adjacent to said stop, said guides being spaced apart somewhat less than the largest diameter of said rolls, a vertically reciprocable crosshead, means actuated by said crosshead to move a roll from said stop into the space between said guides and separate means actuated by said crosshead for moving rolls along the space between said guides for delivery to the machine.

2. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, guides adjacent to said stop, said guides being spaced apart somewhat less than the largest diameter of said rolls, a vertically reciprocable crosshead, means thereon for projecting into said hopper to agitate rolls therein, means actuated by said crosshead to move a roll from said stop into the space between said guides and means actuated by said crosshead for moving rolls along the space between said guides for delivery to the machine.

3. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, fixed horizontally extending guides adjacent to said stop, said guides being spaced apart

somewhat less than the largest diameter of said rolls, a delivery tube to receive rolls from said guides, a vertically reciprocable crosshead, means actuated by said crosshead to move a roll from said stop into the space between said guides and separate means actuated by said crosshead for moving rolls resting between said guides into said delivery tube.

4. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, guides adjacent to said stop, said guides being spaced apart somewhat less than the largest diameter of said rolls, a delivery tube to receive rolls from said guides, a vertically reciprocable crosshead, means thereon for projecting into said hopper to agitate rolls therein, means actuated by said crosshead to move a roll from said stop into the space between said guides and means actuated by said crosshead for moving rolls resting between said guides into said delivery tube.

5. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, guides adjacent to said stop, said guides being spaced apart somewhat less than the largest diameter of said rolls, a delivery tube to receive rolls from said guides, a vertically reciprocable crosshead, an agitator sleeve on said crosshead projecting into said hopper on the upward stroke of said crosshead to agitate rolls therein, the upper end of said tube being disposed in said agitator sleeve, means actuated by said crosshead to move a roll from said stop into the space between said guides, and means actuated by said crosshead for moving rolls into said delivery tube.

6. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a stop for rolls at the lower end of said tube, guides adjacent to said stop, said guides being spaced apart somewhat less than the largest diameter of said rolls, a delivery tube to receive rolls from said guides, a vertically reciprocable crosshead, an agitator sleeve on said crosshead projecting into said hopper on the upward stroke of said crosshead to agitate rolls therein, the upper end of said tube being disposed in said agitator sleeve, agitator pins secured to said crosshead in a circular series around said agitator sleeve and likewise adapted to agitate rolls in said hopper, means actuated by said crosshead to move a roll from said stop into the space between said guides, and means actuated by said crosshead for moving rolls into said delivery tube.

7. A feed device for feeding conical rolls and the like to a machine, comprising a hop-

per adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a horizontal plate at the lower end of said tube, an adjustable stop adapted and arranged to be engaged by a roll passing from said tube onto said plate, guides adjacent to said plate and spaced apart somewhat less than the largest diameter of said rolls, a lever pivoted so that its lower end swings transversely of the lower end of said tube, a spring tending to move said lower end transversely of said tube, a vertically reciprocable crosshead, a roller on said crosshead adapted to engage the upper end of said lever to swing the lever so that the lower end thereof is moved away from said spaced guides against the force of said spring, a second pivoted lever having a projection extending into the space between said guides, a roller on said crosshead adapted to engage an arm of said second lever and a spring connected to said lever to hold it in retracted position whereby a roll leaving said tube is moved sidewise into the space between said guides by the movement of said first lever and is fed along the space between said guides by the movement of said second lever for delivery to the machine.

8. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a horizontal plate at the lower end of said tube, an adjustable stop adapted and arranged to be engaged by a roll passing from said tube onto said plate, guides adjacent to said plate and spaced apart somewhat less than the largest diameter of said rolls, a lever pivoted so that its lower end swings transversely of the lower end of said tube, a spring tending to move said lower end transversely of said tube, a latch for engaging said lever to prevent it from being moved by said spring, a vertically reciprocable crosshead, a roller on said crosshead adapted to engage the upper end of said lever to swing the lever so that the lower end thereof is moved away from said spaced guides against the force of said spring, a second pivoted lever having a projection extending into the space between said guides, a roller on said crosshead adapted to engage an arm of said second lever and a spring connected to said lever to hold it in retracted position whereby a roll leaving said tube is moved sidewise into the space between said guides by the movement of said first lever and is fed along the space between said guides by the movement of said second lever for delivery to the machine.

9. A feed device for feeding conical rolls and the like to a machine, comprising a hopper adapted to contain rolls, a tube connected to said hopper to receive rolls therefrom, a horizontal plate at the lower end of said tube, an adjustable stop adapted and arranged to be engaged by a roll passing from said tube

onto said plate, guides adjacent to said plate
and spaced apart somewhat less than the
largest diameter of said rolls, a lever pivoted
so that its lower end swings transversely of
the lower end of said tube, a spring tending to
5 move said lower end transversely of said tube,
a vertically reciprocable crosshead, a roller
on said crosshead adapted to engage the upper
end of said lever to swing the lever so that
10 the lower end thereof is moved away from
said spaced guides against the force of said
spring, a second pivoted lever having a pro-
jection extending into the space between
said guides, an arm yieldably connected to
15 said second lever and a roller on said cross-
head adapted to engage said arm whereby
a roll leaving said tube is moved sidewise
into the space between said guides by the
movement of said first lever and is fed along
20 between said guides by the movement of said
second lever for delivery to the machine.

Signed at Canton, Ohio, this 14th day of
July, 1927.

OSWALD SCHLAUPITZ.

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