July 17, 1934. E. W. MEDBERY 1,966,510

FEEDING MECHANISM

Filed June 9, 1932

FIG. 1

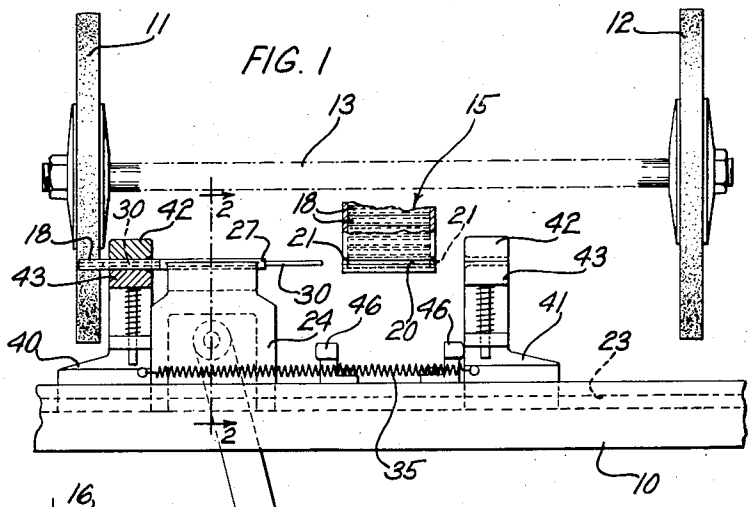


FIG. 2

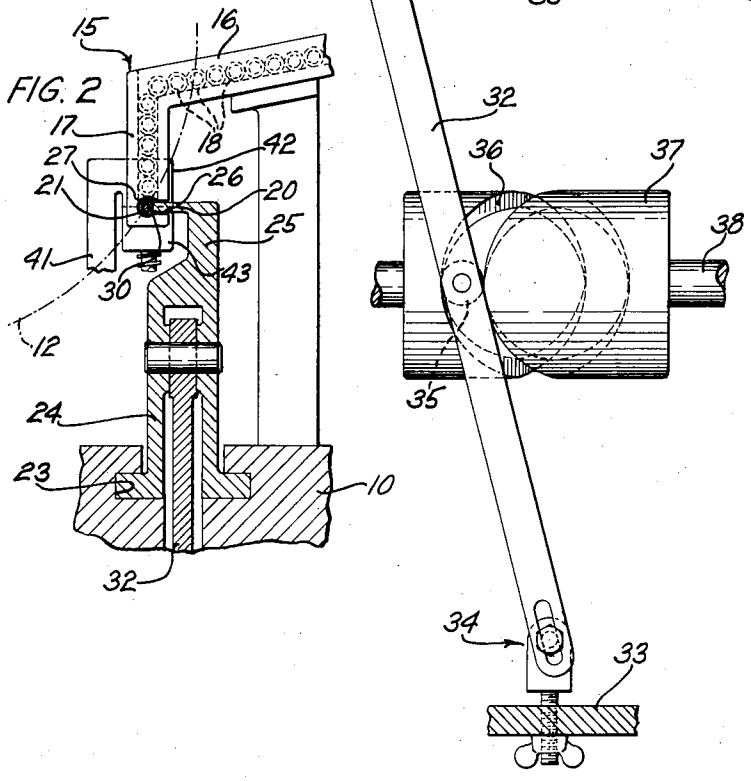


FIG. 3

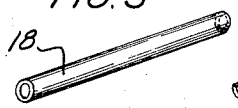
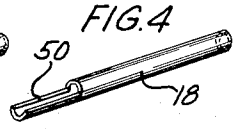


FIG. 4



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FEEDING MECHANISM

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Application June 9, 1932, Serial No. 616,221

4 Claims. (Cl. 51—215)

This invention relates to a feeding mechanism, and more particularly to a mechanism for feeding tubular articles.

An object of the invention is to provide a simple and efficient mechanism for transferring articles from a magazine or supply thereof to predetermined positions.

In accordance with one embodiment of the invention, a reciprocable arbor, during movement in either direction, enters the bore of the lowermost tubular article in a vertical magazine and then transfers the same alternately to two grinding wheels positioned on opposite sides of the magazine. If the bore of an article is undersize, the arbor fails to enter therein and the article is ejected.

Other features and advantages of the invention will become apparent from the following detailed description, reference being had to the accompanying drawing, in which

Fig. 1 is an elevational view, partly in section of a mechanism embodying the features of the invention;

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a perspective view of one of the tubular articles before being ground, and

Fig. 4 is a perspective view of the same after being ground.

Referring now to the drawing, the numeral 10 designates a horizontal supporting plate above which are disposed a pair of spaced grinding wheels 11 and 12 mounted upon a common shaft 13 which is supported and driven in any suitable manner (not shown). Fixed to the plate 10 and positioned midway between the grinding wheels 11 and 12 is a magazine 15 having an inclined trough-like portion 16 communicating at its lower or discharge end with a vertical portion 17, the vertical portion being designed to hold a single vertical row of tubular blanks 18 arranged one above the other with their axes parallel to the axes of the grinding wheels.

At its lower end, the vertical portion 17 of the magazine is provided with a horizontal slot 20 which extends across the front wall thereof and terminates at each end in a circular aperture 21 formed in each side of the magazine, the apertures 21 being in axial alignment with the lowermost blank in the magazine and of sufficient size to permit the lowermost blank to pass freely therethrough.

The upper surface of the plate 10 is provided with a dove-tail groove or slideway 23 within which is reciprocably mounted a carrier or slide 24. An arm 25 extends upwardly from the slide 24 and its upper portion 26 is bent horizontally toward the magazine 15 and terminates in a tubular bearing portion 27 disposed in coaxial alignment with the lowermost blank in the magazine and of substantially the same diameter. An arbor 30 is secured within the bearing portion 27 and extends beyond each end thereof a distance somewhat less than the length of a tubular blank 18. The diameter of the arbor is slightly less than the normal inside diameter of the blank. Also, the thickness of the horizontal portion 26 of the arbor supporting arm is slightly less than the width of the slot 20 of the magazine.

The arbor carrying slide 24 is pivoted to one end of an actuating arm 32 which is adjustably pivoted at its opposite end to a fixed support 33, as indicated at 34. Intermediate its ends, the arm 32 carries a roller 35 which rides in a cam groove 36 of a drum type cam 37 fixed to a shaft 38 which is driven in any suitable manner (not shown).

A pair of clamps 40 and 41 are reciprocably mounted in the slideway 23 on opposite sides of the arbor carrying slide 24. Each of these clamps comprises a fixed jaw 42 and a spring pressed jaw 43, the two jaws having cooperating grooves for receiving and clamping a tubular blank therebetween. The clamps 40 and 41 are interconnected by a tension spring 45 which tends to move the clamps toward each other, such movement being limited by stops or abutments 46 fixed to the supporting plate 10.

The operation of the above described mechanism is as follows: The grinding wheels 11 and 12 are driven from any suitable source of power, such as an electric motor (not shown, which may be connected directly to the shaft 13. Likewise, the cam shaft 38 carrying the cam 39 is power driven at the desired speed. Through the rotation of the cam 37 an oscillatory movement is imparted to the actuating arm 32 which, in turn, imparts a reciprocatory movement to the arbor carrying slide 24. During the movement of the arbor carrying slide from the left to the right (Fig. 1), the right hand end of the arbor 30 enters the bore of the lowermost tubular blank in the magazine. After the bearing portion 27 of the slide engages the end of the blank, the blank is carried by the arbor through the aperture 21 in the right side of the magazine and is inserted between the jaws of the clamp 41. After the slide 24 engages the clamp 41, the clamp is moved to the right by further movement of the slide. During the last portion of the movement

of the slide to the right, the right hand end of the blank engages the rotating grinding wheel 12 and as a result a notch 50 (Fig. 4) is ground at one end of the blank.

The above operation is repeated during the return movement of the slide to the left, except that the left hand portion of the arbor 30 enters the lowermost blank in the magazine and transfers it from the magazine into the clamp 40 which carries it to the grinding wheel 11. It will be understood that the tubular arbor carrying portion 27 and its supporting arm 26 are constructed and arranged to pass freely through the apertures 21 in the side walls of the magazine and the interconnecting slot 20 in the front wall of the magazine. The return movements of the clamps 40 and 41 are effected by the spring 45, which movements are limited by the abutments 46, as described above. The finished articles are ejected from the clamps 40 and 41 by the insertion of the next succeeding blanks therein.

If the bore of the lowermost blank in the magazine is undersize, the arbor 30 fails to enter therein and as a result, the defective blank is ejected from the magazine by the arbor, but is not inserted in either of the clamps 40 and 41.

An important feature of the invention resides in the construction and operation of the reciprocable arbor 30, whereby during its movement in either direction it transfers a blank from the magazine and inserts it into one or the other of the clamps 40 and 41. Another feature of the invention is the additional function of the arbor in ejecting blanks having undersize bores. The mechanism is substantially fully automatic in its operation, it only being necessary that a supply of blanks be maintained within the magazine. This is accomplished in the embodiment of the invention herein illustrated and described by placing the blanks upon the inclined portion of the magazine and allowing them to roll into the lower vertical portion of the magazine.

Although the invention is herein illustrated and described in conjunction with an apparatus for grinding a section from tubular articles, such as rubber or fibre tubes, it should be understood that the novel features of the invention are capable of other applications within the scope of the appended claims.

What is claimed is:

1. In an article feeding mechanism, a magazine for containing a supply of articles and having discharge openings on opposite sides thereof and in alinement with each other, article receiving and holding clamps positioned on opposite sides of the magazine and in alinement with said discharge apertures, a reciprocable member movable in a straight line through said openings and effective during its movement in either direction for transferring an article from the magazine into one or another of said clamps, and means for reciprocating the member.

2. In a mechanism for feeding tubular articles, a magazine for containing a supply of articles arranged in a vertical row with their axes parallel, a reciprocable arbor disposed coaxial with the lowermost article in the magazine and movable axially thereof, said arbor having reduced portions at opposite ends thereof receivable within the bore of the article, and means for reciprocating the arbor to alternately insert opposite end portions of the arbor within the bore of successive articles at the lowermost position in the magazine and for thereafter removing said articles from the magazine.

3. In combination with a pair of spaced grinding wheels, a magazine for containing a supply of articles, article receiving and holding clamps positioned on opposite sides of the magazine and movable toward and away from said grinding wheels, a reciprocable member positioned between said clamps and effective during movement in either direction for transferring an article from the magazine into one or another of said clamps, and means for reciprocating the member and thereby the clamps to move the articles contained within the clamps toward the grinding wheels.

4. In combination with a pair of spaced grinding wheels, a pair of spaced article receiving and holding clamps, one for each grinding wheel, positioned between said grinding wheels and movable toward and away from each other, a spring interconnecting said clamps for normally moving them toward each other, stops for limiting said movement, a magazine for containing a supply of articles positioned between said clamps, a reciprocable member for transferring articles from said magazine alternately into said clamps and for moving said clamps toward the respective grinding wheels, and means for reciprocating the member.

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