April 15 , 1924. 1,490,691

R. BEYNON

MACHINE FOR TRIMMING RUBBER HEELS

Filed Jan. 16. 1922 2 Sheets-Sheet 1

Fig. 1

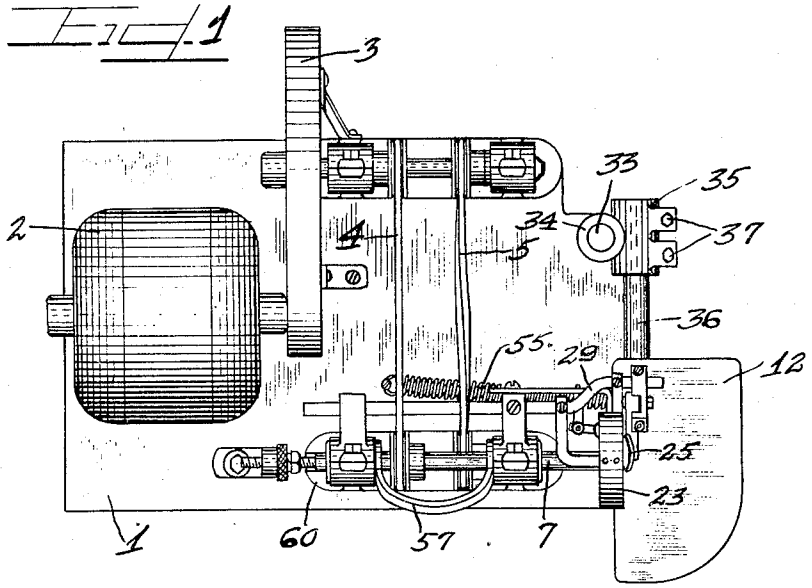

Fig. 3

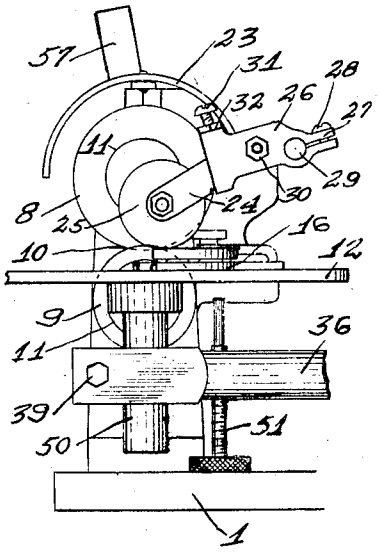

Fig. 2

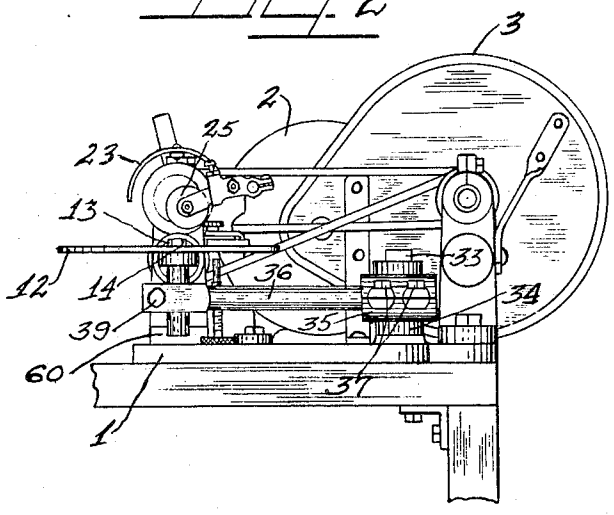

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FIG. 4

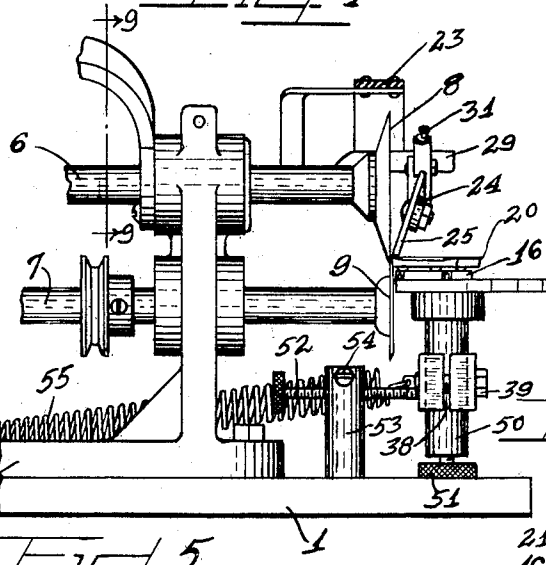


FIG. 5

FIG. 7

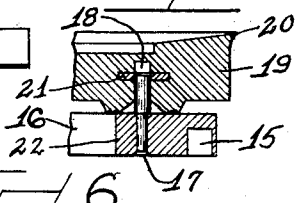


FIG. 6

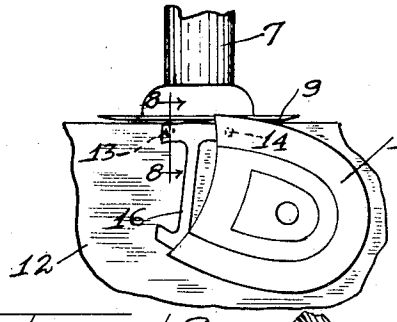


FIG. 9

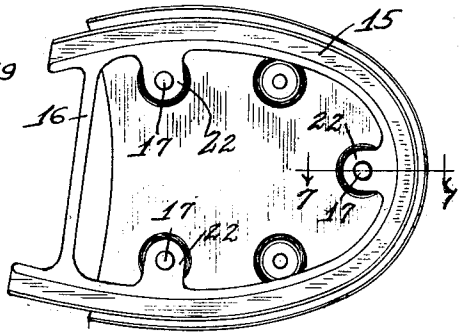
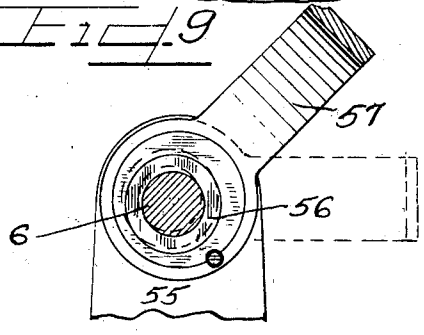
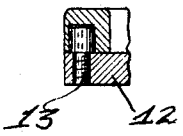


FIG. 8





Witnesses
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Patented Apr. 15, 1924. 1,490,691

UNITED STATES PATENT OFFICE.

REES BEYNON, OF CHICAGO, ILLINOIS, ASSIGNOR TO DRYDEN RUBBER COMPANY, A CORPORATION OF ILLINOIS.

MACHINE FOR TRIMMING RUBBER HEELS.

Application filed January 16, 1922. Serial No. 529,441.

To all whom it may concern:

Be it known that I, REES BEYNON, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Machine for Trimming Rubber Heels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

In the manufacture of vulcanized rubber articles, the article as it leaves the mold usually has one or more fins which must be trimmed away before the article is ready for sale. Machines have been prepared for doing this trimming, but they require considerable skill on the part of the operator and are somewhat dangerous.

It is an object of this invention to produce a machine for this purpose which shall avoid these disadvantages.

It is a further object of this invention to produce a machine which will trim the fins from a molded article such as rubber heels more rapidly and less expensively than in the prior art.

It is a further object of this invention to utilize the drawing effect which cutting rollers have upon the rubber for causing the progress of the article between the cutters.

It is a further object of this invention to provide a means whereby the article will be automatically guided so that the fin will be neatly and quickly trimmed.

It is a further object of this invention to prepare a machine which by adjustment may be made to trim a fin located at any point in the article to be trimmed.

It is a further object of this invention to provide a pair of cutters and a roller contacting with the article to be trimmed adjacent to the cutters so that articles of plastic or semi-plastic rubber may be held to shape against the cutters and so will be properly trimmed.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a plan view of this machine.

Figure 2 is an end view looking from the right at Figure 1.

Figure 3 is a view upon an enlarged scale of the left hand part of Figure 2.

Figure 4 is a view also upon an enlarged scale of the parts shown in Figure 3 looking from the left of said figure.

Figure 5 is a plan view of a cutter and the heel in position to be cut.

Figure 6 is a bottom plan view of the heel and the carrier attached thereto.

Figure 7 is a section upon the line 7—7 of Figure 6.

Figure 8 is a section upon the line 8—8 of Figure 5.

Figure 9 is a section upon the line 9—9 of Figure 4.

As shown on the drawings:

The machine has a base plate 1 and is driven by a motor 2 through reduction gearing enclosed in the gear case 3 and a pair of belts 4 and 5. These belts drive a pair of pulleys mounted on two shafts 6 and 7. One of the belts 5 is crossed so that one of the shafts 7 is driven in the opposite direction from the other shaft 6. The shafts carry at their working ends a pair of cutters 8 and 9 respectively. These cutting disks overlap as shown at 10. They present flat edges towards one another and beveled edges upon the faces away from one another, as is usual with cutting disks. They are fastened to the ends of the shafts 6 and 7 by any suitable means, indicated by the circles 11 in Figures 2 and 3. A table 12 is provided for supporting the work near the disks. A pair of pins 13 and 14 project upward from this table, as shown in dotted lines in Figure 5. These pins are usually made in the shape of screw studs, as may

be seen in Figure 8. It is the purpose of these pins to co-operate with a groove 15 in a metal carrier 16 to which the rubber heel to be trimmed is attached.

As shown in Figure 7, there are pins 17 projecting upwardly from the carrier 16 which are intended to enter holes 18 in the rubber heel 19 from which the fin 20 is to be trimmed. In many types of heels there is a disk 21 of metal embedded in the rubber and such a disk surrounding a hole 18 may be used to prevent the heel from moving relative to the carrier, as it might do if the pin 18 met only the yielding rubber. The carrier 16 is of a general horse-shoe shape, having inwardly projecting lugs 22 to support the pins 17 and a cross piece to reenforce its ends.

A guard 23 is supported over the cutters to prevent accident. Supported from the same bracket as this guard, or supported in any other desired manner is an arm 24 which carries a roller 25 which is intended to rest against the top of the rubber heel just behind the cutting point of the cutters. Any suitable provision for adjustment of the position of this roller may be made. In the form illustrated, this arm 24 is held in a stock 26, which, by means of a split end 27 and a screw 28 is secured upon and adjustable around a rod 29 by which the various guards and guides are supported. The distance that the arm 24 shall project out of the stock 26 is regulated by the set screw 30 and the pressure of the roller 25 against the top of the rubber heel is regulated by the screw 31 with its lock nut 32. The set screw 30 serves as a pivot for the motion of the arm 24 in response to the adjustment of the set screw 31.

Provision is also made for adjusting the position of the table 12. For this purpose, the table is supported from a post 33 which rises from the base plate 1. This post carries a sleeve 34 which can rotate about the post. Integral with and at right angles to the sleeve 34 is a split sleeve 35 which holds an arm 36. The arm may be slid in the sleeve 35 or may be rotated axially therein, and when its position has been determined it may be fixed therein by tightening the bolt 37. The outer end of the arm 36 is split as shown at 38 in Figure 4 and the split portions may be drawn towards one another by means of the bolt 39. These split portions serve to clamp a pillar 50 which carries the table 12. The table can thus be adjusted to its position by means of the several clamps just described. It will not, however, be fixed in this position because the sleeve 34 can both rotate about and slide upon the post 33.

Provision for the final adjustment of the table by controlling these last mentioned motions is afforded by screws with knurled heads. The screw 51, shown in Figures 3 and 4, passes through said arm 36 and regulates the height of the arm and its table 12, the head of the screw 51 resting against the base plate by gravity. The screw 52, shown in Figure 4, passes through a post 53 provided in the base plate for this purpose. The upper end of the post is split, and when the screw 52 is in its adjusted position it is fixed by tightening the screw 54. The screw 52 abuts against one of the flat faces of the split end of the arm 36 and so positions the table 12 by limiting its motion about the post 33. The arm 36 and the table 12 are held in position determined by the screw 52 by means of a spring 55, one end of which is secured to the arm 36 and the other end of which is secured to the base plate.

The shafts 6 and 7 are supported by uprights from a supplemental plate 60 which have a lower pair of bearings for the shaft 7 and an upper pair for the shaft 6. The upper pair of bearings are provided with eccentric bushings 56, as shown in Figure 9. By rotation of these bushings, the height of the shaft 6 and so the degree of overlap of the cutters 8 and 9 may be adjusted. In order that the shafts 6 and 7 may remain parallel during this adjustment, the two eccentric bushings are united by an arm 57.

In the operation of the machine, a rubber heel with a fin thereon is placed on a holder 16 with the pins 17 extending into the holes 18 in the heel. The heel and holder are then placed on the table 12 with the end of the groove 15 engaged over the pins 13 and 14. This brings the edge of the heel with the fin into place to be acted upon by the cutting disks 8 and 9. As these disks rotate they tend to drag the edge of the heel forward. The motion of the heel is guided by the pins 13 and 14 working in the slot 15, and the cutters 8 and 9 thus cause the edge of the heel to travel past them until the edge of the heel has been completely trimmed. At the end of this operation, the pins 13 and 14 are located in the other end of the slot 15 and either the momentum of the heel or the introduction of the next heel to be operated upon removes the holder with the first heel from the pins. The attendant then takes the heel with its holder off the table 12, and the heel is separated from the holder so that the holder can be used for another heel.

During the travel of the heel past the cutters the roller 25, contacting with the upper surface of the heel close to the point where the fin is being cut, presses the body of the heel between the roller and the holder 15. The somewhat flexible rubber is thus compressed slightly and so rendered

solid and firm enough to prevent its yielding either toward or away from the cutters. This insures that the fin will be trimmed uniformly along the whole edge.

When a lot of heels have been trimmed at their upper edges, removing the fin 20 illustrated in Figure 7, the same holders 16 may be used with the same lot of heels for removing the fin which may exist at the lower edge of the same heel. For this purpose, the screw 51 is adjusted until the height of the table 12 is such that the cutters will come opposite the lower edge of the heel. At the same time the shaft 36 is rotated slightly in the sleeve 35 so that the heel will be presented to the cutters at sufficient angle to insure that the cutter 8 will escape the side surface of the heel.

When it is desired to trim heels of a different form, a different set of holders 16 are provided, and the table 12 must be adjusted to suit the dimensions of the form of heels being trimmed. It is obvious that, with slight changes, the machine may be adapted to trim other articles besides heels.

I am aware that many other changes may be made and numerous details of construction varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted otherwise than necessitated by the prior art.

I claim as my invention:

1. In a device of the class described, a pair of rotary cutting disks, a table adjacent said disks, projections on said table, and a work holding guide supported by said table and having a groove for co-operating with said projections.

2. In a device of the class described, a pair of rotary cutting disks, a table adjacent said disks, projections on said table, and a work-holding guide having a groove cooperating with said table projections to direct said guide past the cutting point, said guide automatically discharging itself from engagement with said table projections upon the completion of its movement past the cutting point.

3. In a device of the class described, a pair of rotary cutting disks, a table adjacent said disks, projections on said table, a work holding guide having a groove for co-operating with said projections, and means for so adjusting said table that the work carried by the holder will be presented to said cutters at the point to be cut.

4. In a device of the class described, a holder of irregular shape, a table for supporting said holder, means on the table for guiding said holder, a pressure roller above said holder, and a cutting device adjacent said pressure roller.

5. In a device of the class described, a holder, a table for supporting said holder, means on the table for guiding said holder, a pressure roller above said holder, adjustable means for positioning said roller whereby its distance from the holder may be predetermined and maintained unchanged during each of a series of operations of a machine, and a cutting device adjacent said pressure roller.

6. In a device of the class described, a work holder having a groove in one face, pins projecting from the opposite face thereof for engaging the work, the outline of said work holder conforming to the work to be held and said groove conforming to said outline, whereby the holder may serve as a guide for operating upon the outline of the work, and a cutting device for trimming the edge of the work.

7. In a device of the class described, a pair of rotary cutters, a holder adapted to travel past the cutters, guiding means co-operating with said holder for shifting the same to control its motion past said cutters, and a table for supporting said holder.

8. In a device for trimming rubber heels, a pair of rotary cutters, a holder having the same outline as the rubber heel, means for securing the rubber heel on one face of said holder, and means cooperating with said holder for guiding the edge of the heel past the cutters, said cutters feeding said holder and heel past the cutting point.

9. In a device of the class described, a pair of rotary cutters, a holder having a groove therein of the same shape as the edge of a rubber heel, means upon one face of said holder for securing a rubber heel thereto, means co-operating with said groove for guiding said holder, said last named means being positioned so that when the holder is placed in co-operative relation therewith the edge of the rubber heel will be presented to the cutters, and means adjacent the cutters for compressing the rubber heel between the holder and said means.

10. In a device of the class described, a holder means for securing work to the holder, a groove in said holder so shaped that it is at a constant distance from the edge of said work, means for operating upon said work, and means co-operating with said groove for guiding the work past the operating means.

11. In a work table support, an upright post, a sleeve rotatably and slidably mounted on said post, means for supporting a table adjustably secured to said sleeve, and adjusting means for moving the last named means so as to move the sleeve relative to the post and change the position of the table accordingly.

12. In a device of the class described, a pair of cutters, a table supported near said cutters, means including clamping devices for adjusting the position of said table, screw-threaded means for further adjusting the position of said table in the same directions without loosening said clamping means, certain of said screw-threaded means operating against gravity, and a spring against which other of said screw-threaded means operate.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

REES BEYNON.

Witnesses:
CARLTON HILL,
JAMES M. O'BRIEN.