

J. HADFIELD.
 MACHINE FOR MAKING FINGER OOTS AND THE LIKE.
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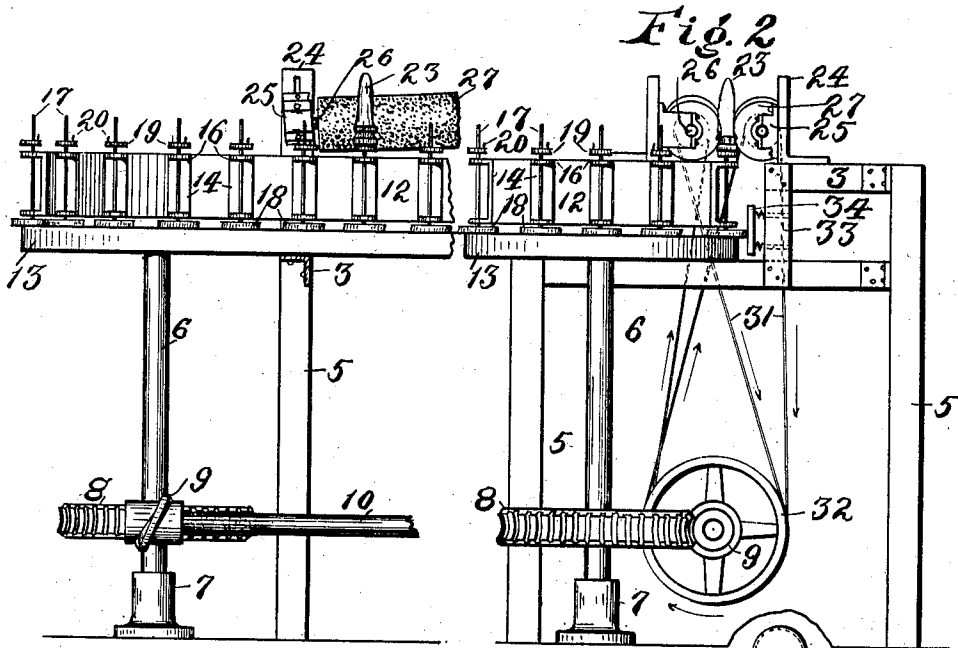


Fig. 1

Fig. 4

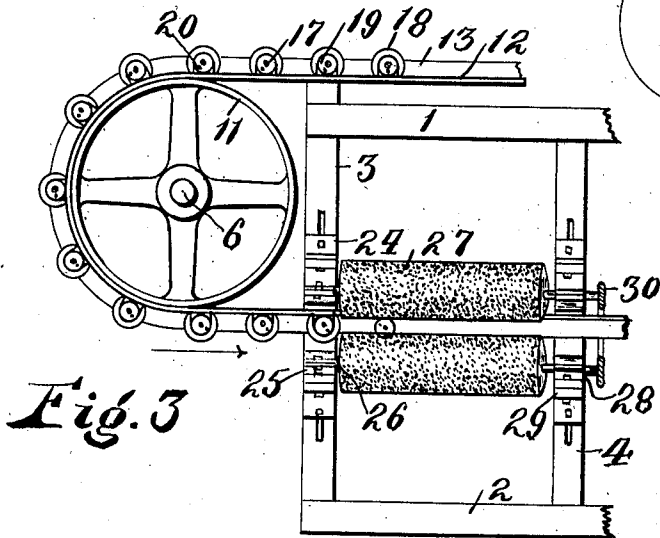
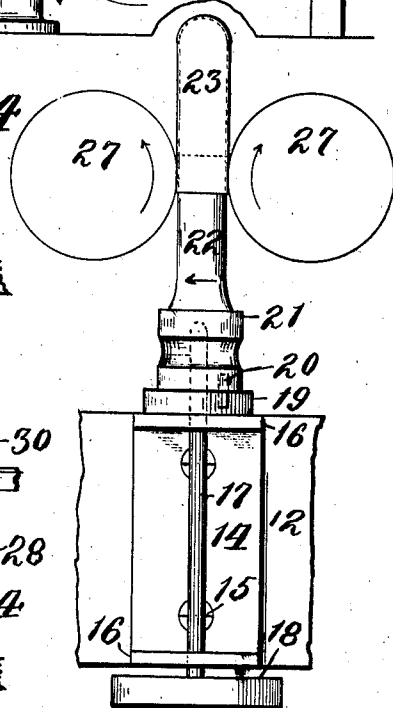


Fig. 3



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING FINGER-COTS AND THE LIKE.

1,097,017.

Specification of Letters Patent.

Patented May 19, 1914.

Application filed January 27, 1912. Serial No. 673,892.

To all whom it may concern:

Be it known that I, JOHN HADFIELD, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Machines for Making Finger-Cots and the like, of which the following is a specification.

This invention relates to machines for making finger-cots and the like and the object thereof is to provide an improved machine for forming ring-beads on the open ends of the finger-cots, stripping the finger-cots from the forms on which they are made, and cleaning the forms after the stripping operation to prepare them for reuse.

Briefly, finger-cots and analogous articles have heretofore been made by placing a plurality of forms on a board and forming the body of the finger-cots by repeated dippings in a siccative solution of rubber followed by an immersion in a curing or vulcanizing solution after which the open ends of the finger-cots are rolled up to provide a ring or strengthening-bead around the open ends thereof after which the finger-cots are stripped from the forms and the forms must then be thoroughly cleaned for reuse. These operations, as far as I know, have heretofore been accomplished by hand which is a tedious method, involving a considerable expense and a considerable amount of time, and hence, the primary object of this invention is to provide mechanism by which the forming of the beads, stripping the cots from the forms and cleaning the forms for reuse, is quickly and cheaply accomplished by means to be now more fully described.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts constituting the invention to be hereinafter specifically described and illustrated in the accompanying drawings which form a part hereof wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings in which similar reference numerals indicate like parts in the different figures, Figure 1, is a view in side elevation of the mechanism at one end of a machine embodying this invention; Fig. 2, is a view

in end elevation looking from the left of Fig. 1; Fig. 3, is a plan of that portion of the machine shown in Figs. 1 and 2; and, Fig. 4, is an enlarged detail of a form showing a finger-cot thereon and the mechanism for forming beads, stripping the cots therefrom, and burnishing or cleaning the forms thereafter, and also showing the mechanism for supporting the form.

The device ordinarily embodies a frame consisting of horizontal longitudinal members 1 and 2, connected at intervals by a number of cross-bars two of which are shown and designated by the reference numerals 3 and 4. The horizontal portion of the frame is supported by legs 5. At one end of the frame is a vertical shaft 6 suitably mounted in a step 7 and provided with a worm-wheel 8 which is engaged by a worm 9 mounted on a driving shaft 10. The driving-shaft 10 may be revolved by any mechanical instrumentality for imparting motion thereto. Mounted on the upper end of the shaft 6 is a wide-faced pulley 11 around which extends a belt 12, the opposite end of which passes around an idler-pulley on a similar shaft; but these last two are not shown in the drawings as their purpose, function and construction are obvious and their illustration not thought to be necessary to the proper understanding of this invention. Supported by the cross-bars which extend between the longitudinal members 1 and 2 is a supporting track 13 positioned below and conforming in contour to the belt 12. Secured to the outer lateral face of the belt 12 is a series of form-holding members each of which embodies a vertically-extending plate 14 secured to the belt by hold-fast devices 15 and having the upper and lower ends 16 of the plate bent laterally and provided with apertures to constitute bearings for a rotatable pin 17 which is mounted therein. The lower end of the pin is provided with a large fixed roll 18 for a purpose to be later described. The upper end of the pin above the lateral member 16 is provided with a fixed collar 19 having projecting upwardly therefrom a dowel-pin 20. The pin 17 projects upwardly beyond the collar 19 and the members 18 and 19 secure the pin in position and revolve therewith.

The forms which are to be mounted on the pin 19 each comprise a base portion 21 provided with a central aperture to receive the

pin 17 and also with an aperture to receive the dowel-pin 20 so that when the form is mounted on the pin 17 and supported by the collar 19 the dowel-pin connecting the base 21 and the collar 19 will cause each form to rotate in unison with its respective pin. Extending upwardly from the base portion 21 is a tubular member preferably formed of glass in the usual manner and shaped to give the desired conformation to the article to be made on the form. The form 22 is shown provided with a dipped and dried coating of siccative rubber 23 and in a condition to have the ring-bead formed on the open end thereof by mechanism now to be described.

The forms after being dipped in a suitable solution to provide the body-portion of the finger-cots will be placed one at a time upon the pins 17 and will travel supported by the belt 12 in the direction of the arrow shown in Fig. 3. During their movement the pins will be alined horizontally and supported by the rolls 18 which rest on and travel over the track 13. Horizontally adjustably mounted on the cross-bar 3 are a pair of upright standards 24 on each of which is vertically adjustably mounted a journal-bearing 25 in each of which is rotatably mounted the end of a shaft 26 of a roll 27, the opposite end portions of these shafts being mounted in journal-boxes 28 vertically adjustably mounted in standards 29 which are in turn horizontally adjustably mounted on the cross-bar 4. The extreme ends of the shafts 26 are provided with grooved pulleys or sheaves 30 to receive belts 31 which pass around a double-grooved pulley 32 fixedly mounted on the shaft 10 so that as the shaft 10 is revolved the rolls 27 will revolve in opposite directions and with uniform speed.

In practice, it has been found that the best results are obtained by inclining the rolls 27 as shown in Fig. 1, that is to say, the rear ends will be raised higher than the forward ends and these rolls will be so positioned on opposite sides of the belt that the forms after leaving the pulley 11 will pass between the standards 24, the standards 29 and the rolls 27, and the function of these rolls is to perform the various operations of providing the open end of the finger-cots with a ring or strengthening-bead and afterward stripping the finger-cots from the forms and afterward polishing and cleaning the forms for reuse. In order to accomplish this function I have discovered that the rolls designed to roll the open ends of the finger-cots for providing strengthening-beads thereon should be made of yieldable rubber, such as sponge rubber, and should be revolved in the directions shown in Fig. 4, and also the rolls should be inclined and positioned so that as the finger-cots pass between

the rolls the lower or forward ends of the rolls will engage them at the edges of their open mouths and as they are carried forward by the belt toward the higher ends of the rolls the material surrounding their open or mouth-portions will be rolled up into even, smooth rolls or beads. In order to accomplish this effectively there is mounted on a pair of bars 33, suitably placed in the frame, a resilient strip of material 34, interposed in the path of travel of the rolls 18, which engage and cause them to revolve on their vertical axles, the pins 17, revolving the forms 22 which are carried thereon during the operation of rolling up the ring beads thereon so that as the rolls 27 engage the open ends of the finger-cots while moving in the direction of the arrow in Fig. 3 and they are simultaneously rotated on their own axes in the direction of the arrow shown on the form 22 in Fig. 4. The result of these two simultaneous operations is the rolling up of perfectly even and accurately made beads and each and all of the finger-cots are so formed as to make all the finger-cots of equal length.

After the beads have been perfectly formed on the finger-cots by the roller 27 they further are subjected to rolls having stiff bristles on their outer surfaces, but otherwise shaped approximately similar to the rolls 27, and as the cots are passed between this second set of rolls in precisely the same manner as has been described with reference to the rolls 27, the flexible brushes engage the lower open ends of the finger-cots, while revolving on their axes, in the same manner as the bead-forming rolls previously engaged them and these bristle-covered rolls serve to strip the finger cots from the forms with great rapidity, this operation being rendered easier by the fact that the stripping rolls may be run at a relatively high speed. After the cots have been stripped from the forms the latter are passed between two rolls similar to the stripping rolls which serve to burnish and thoroughly clean the outside of the glass forms on which the cots are made and in this connection it may be stated that the cleaning rolls will ordinarily be inclined at a more acute angle than are the bead-forming rolls so that the bristles of the rolls will have an opportunity to engage all portions of the forms which are to be subjected to reuse. Of course, the inclination of the bead-forming rolls will only be sufficient to roll up the necessary portions to form the beads, whereas the cleaning rolls will of necessity be pitched or inclined sufficiently to engage all the portions of the forms. It will of course, be apparent that the cleaning rolls may be revolved in either direction so long as the bristles thereon engage all portions of the forms to prepare them for reuse.

I claim:

1. A machine for making open ended finger cots and the like comprising a conveyer constituting a form-bearing member, means for rotating said forms during the movement of said conveyer, inclined parallel rotary rubbing members positioned adjacent to the path of said conveyer and engaging opposite sides of the articles on said forms near their open ends for rolling up the material of said cots into a bead-forming roll during their movement past said members and their rotation on their own axes.

2. A machine for making open ended finger-cots and the like comprising a conveyer constituting a form-bearing member, a plurality of forms rotatably mounted on said conveyer, rotary supports for said forms, a fixed resilient strip of material engaging the

said supports during the movement of said conveyer past said strip for rotating said forms, parallel inclined rotary rubbing members upwardly inclined in the direction of movement of the conveyer and positioned adjacent to the path of said conveyer and engaging opposite sides of the articles on said forms near their open ends for rolling up the material of said cots into bead-forming rolls during their movement past said members and their rotation about their respective axes.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN HADFIELD.

Witnesses:

C. E. HUMPHREY,
A. I. McCLINTOCK.