Jan. 23, 1934. D. A. SCARNEGIE 1,944,304

WORKHOLDER

Filed Oct. 7, 1929

Fig. 1.

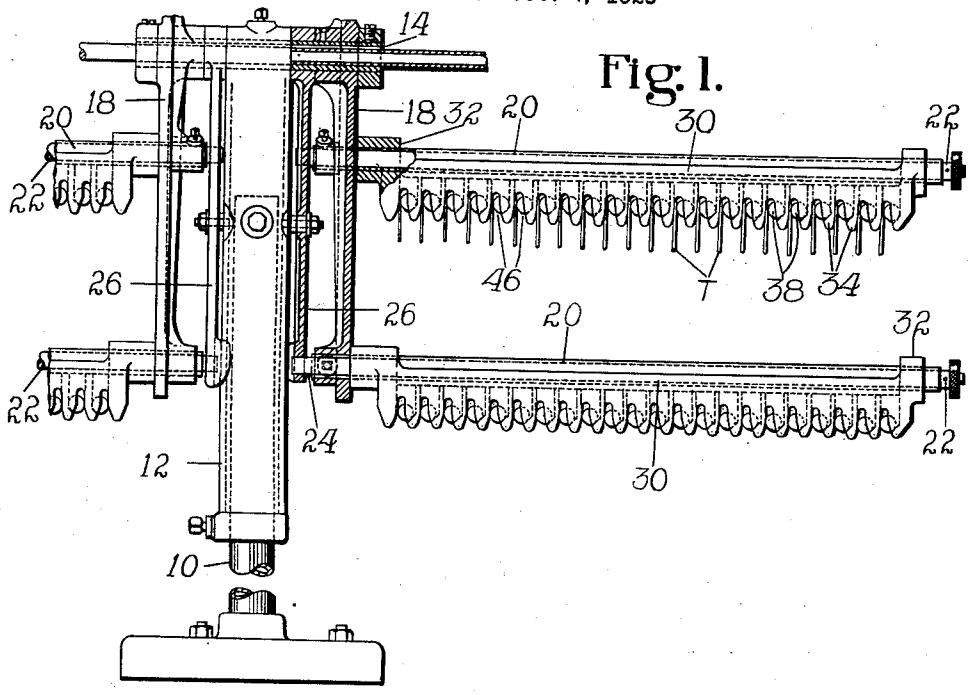


Fig. 2.

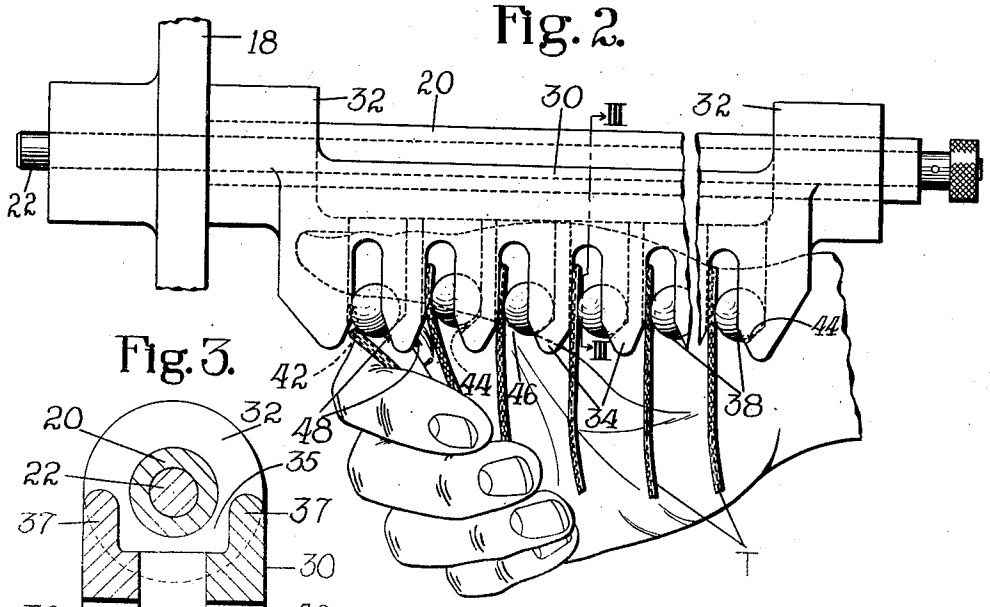


Fig. 3.

INVENTOR.
Daniel A. Scarnegie
By his Attorney
Nelson W. Howard

Patented Jan. 23, 1934

1,944,304

UNITED STATES PATENT OFFICE

1,944,304

WORKHOLDER

Daniel A. Scarnegie, Lynn, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application October 7, 1929. Serial No. 398,040

7 Claims. (Cl. 211—163)

My invention relates to means for temporarily supporting work-pieces, it being of special utility in connection with the holding of cemented or similarly coated portions of shoes while they are becoming sufficiently dry to permit them to be handled.

An object of my invention is to support the pieces, separateley from one another and in a manner which will prevent their accidental displacement, by means economical to construct and which receives the pieces and frees them readily upon presentation and withdrawal by the operator. This end I attain by a holder member, any number of which may co-operate for the retention of series of work-pieces, each holder including, as herein illustrated, a cast-metal bar having side walls, between which is a channel open at the outer side, together with a series of integral projections arranged along the bar. Between these projections are recesses opening into the channel to receive work-retaining balls, each movable between said side walls of its recess down an inclined wall and toward an opposite vertical wall, against which it clamps the work. The balls are conveniently introduced into their respective recesses by way of the channel, and are there movably retained between the walls. At each end of the channel a suspending eye is preferably formed upon the bar. The work-pieces may be inserted, with little effort on the part of the operator, between the ball and the vertical wall, and there held by the weight of the ball and released by pulling said pieces down past it. I have herein shown a recessed bar as free to turn about a spindle extending from a support, which, as illustrated, is rotatable upon a standard. A series of holding bars may be thus mounted, thereby being arranged for successive presentation to an operator, each bar so depending from its spindle that it remains always in the proper work-holding relation. Each recess in the thus-supported bars has co-operating with its walls, for retention of the work, a ball or member. Said recess preferably opens from a channel, in which the corresponding spindle lies and thus closes the recess against the escape of the balls or other retaining members. The recess is shown as having the vertical wall previously mentioned at the side toward the standard, and, at its opposite side, the downwardly and inwardly inclined wall, over which the work-retaining ball is urged by gravity. Because of this relation, the entire series of engaged pieces of work upon a bar may be gathered readily by a single movement of the operator's hand, starting adjacent to the standard and, by pressure against said pieces, forcing the balls one by one away from the vertical walls up the inclines. The pieces are thus successively freed by a sweep of the hand, which is not interfered with by the possibility of contact with the standard or elements associated therewith.

In the accompanying drawing,

Fig. 1 illustrates a specific embodiment of the invention in broken side elevation;

Fig. 2 is an enlarged detail, in broken elevation, of one of the bars; and

Fig. 3 is a vertical transverse section on the line III—III of Fig. 2.

I have chosen to show my invention in connection with a rotary rack, in which coated work is transferred between operators' positions in connection with its drying. This, however, is but one of several uses to which it may be put. About a vertical standard 10, a sleeve 12 is arranged to turn and has fixed at its upper extremity a horizontal spindle 14. At each side of the sleeve a wheel 18 is mounted to turn about the spindle, the lower portions only of the two wheels appearing in Fig. 1 of the drawing. Projecting horizontally about the periphery of each wheel, and away from the companion wheel, are spindles 20 for carrying the work, these spindles being of any desired number. They may be tubular, each containing a latching-rod 22, which, at its inner end, may engage a depression 24 in a member 26 carried by the sleeve 12. This latch will retain the wheel in a position convenient for the operator to apply pieces to or remove them from the corresponding spindle. Rotation of the sleeve about the standard presents the work upon either wheel to either of two operators, who are located at opposite sides of the rack.

To hold upon the rack articles which are of such size and form that they cannot be applied directly to the spindles 20, I place upon each of these a bar 30, which may have a body of cast metal, conveniently hung by eyes 32 at its extremities, these receiving the spindle. Depending from each bar is a series of integral projections 34, between which are recesses 36 opening through the top of the bar from a channel 35 formed between side walls 37, 37 and extending from one of the eyes 32 to the other. The recesses are arranged to contain retaining members, shown in the form of balls 38. These balls are preferably of steel, sandblasted or otherwise roughened to increase their hold upon the work. They may readily be placed in position by being directed by the side walls of the channel 35 into their respective recesses. Side walls 40, 40 of said recesses limit the movement of the balls laterally of the bars. Shown as at the inner side of each recess, considered longitudinally of the bar, is a substantially vertical wall 42, and at the opposite side, or upon the succeeding projection, is a wall 44 inclined downwardly and toward its companion so they converge. The diameter of the balls is such that they contact simultaneously with the surfaces 42 and 44, being urged down

the former and against the latter by gravity. At the bottom of each recess is an open space 46, between the projections 34, there being at each side of this space, upon the ends of the projections, oppositely inclined guide-surfaces 48, 48, which direct the work into the grasping throat formed between each ball and the co-operating surface of the wall 42. When the bars are in place upon the rack, the balls 38 are positively retained against displacement from the recesses 36 because the latter are closed by the spindles 20, which lie along the channels 35.

In using my improved holder, an operator, who may be engaged in cementing such pieces as tongues of shoes, shown at T, is positioned for convenient access to a particular bar 30 carried by one of the wheels 18. As the coating is applied to each piece, it is inserted in an unoccupied holder, being directed by the surfaces 48 against the ball 38 of the chosen holder. Contact of the work with the ball forces this up its inclined wall 44, producing a space between said ball and the vertical wall 42 which the piece enters. Then, upon cessation of the upward movement, the ball descends by gravity over the incline, its weight forcing it against the piece and said piece against the wall 42 for retention. In this action, the spherical form of the ball allows it to adjust itself to irregularities of the work and effectively grasp it. The desired number of coated pieces is supplied to one side of the rack, the wheel being shifted from time to time to bring empty bars before the operator. In this movement the bars rotate about the spindles 20, being maintained by their weight with the work-receiving spaces 46 down. If, for any reason, a bar should become inverted on its spindle, the latter will so close the outer sides of the recesses that the balls cannot escape. The coating of pieces having become at least partially set, the position of the wheels is reversed by turning the sleeve 12 about its supporting standard, thus presenting the coated work to a second operator, who is to take it from the rack. This is effected by simply drawing a piece down, there being applied a force greater than the weight of the piece, which causes the contacting ball to yield along its inclined wall 44. Instead of separating the work piece by piece from the bar, the entire contents thereof may be removed by the operator carrying one hand along the series of pieces just below the projections, starting at the end toward the standard 10 and sleeve 12 and moving toward the other hand held at the opposite outer extremity. This, in the manner illustrated in Fig. 2, forces the balls successively up the inclines, the lateral pressure more directly acting to this end than a downward pull. At the same time, each piece is carried against that adjacent to it, so when the disengaging hand approaches the outer extremity of the bar, the entire series of pieces has been released and gathered between it and the waiting hand, without interference resulting from contact with the sleeve.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A work-holder comprising a cast-metal bar having side walls separated by a channel open at one side, said bar being provided with a series of integral projections between which are recesses opening into the channel and each having side walls and between these a substantially vertical wall upon one projection and an opposite wall upon an adjacent projection downwardly inclined toward the vertical wall, and a work-retaining ball movable in each recess, said ball being of such diameter as to enter the recess by way of the channel and be retained by the recess-walls.

2. A work-holder comprising a cast-metal bar having side walls separated by a channel open at one side, said bar being provided with a series of integral projections between which are recesses opening into the channel and each having side walls and between these a substantially vertical wall upon one projection and an opposite wall upon an adjacent projection downwardly inclined toward the vertical wall, together with a suspending eye formed on the bar at each end of the channel, and a work-retaining ball movable in each recess, said ball being of such diameter as to enter the recess by way of the channel and be retained by the recess-walls.

3. In combination, a rotatable support, a spindle projecting from the support, a bar free to turn about the spindle, there being a series of recesses in the bar for which the spindle furnishes a closure, and a member carried loosely in each recess and co-operating with the walls thereof to retain work upon the bar.

4. In combination, a rotatable support, spindles projecting from the support, a bar provided with eyes to receive a spindle and by which it is suspended, there being a series of projections at the side of the bar opposite the eyes and having at their adjacent sides substantially vertical and inclined walls, respectively, and work-retaining balls movable between the projections down the inclined walls toward the vertical walls.

5. In combination, a standard, a support movable upon the standard, horizontal spindles projecting from the support in a direction away from the standard, a bar free to turn about each spindle, there being a series of projections at the under side of each bar with a recess between each pair of adjacent projections, each recess having at its side toward the standard a substantially vertical wall and at the opposite side a downwardly and inwardly inclined wall, and work-retaining balls movable in the recesses upon the inclined walls toward and from the vertical walls.

6. In combination, a rotatable support, a spindle projecting from the support, a bar having a channel within which the spindle lies, said bar being free to turn about the spindle, there being a series of recesses in the bar, and a member carried loosely in each recess and co-operating with the walls thereof under the influence of gravity to retain work upon the bar.

7. In combination, a rotatable support, a spindle projecting from the support, a bar free to turn about the spindle, there being a series of recesses in the bar, and a member movable in each recess and co-operating with the walls thereof under the influence of gravity to retain work upon the bar, the recesses being closed by the spindle against displacement of the work-retaining members therefrom.

DANIEL A. SCARNEGIE.