

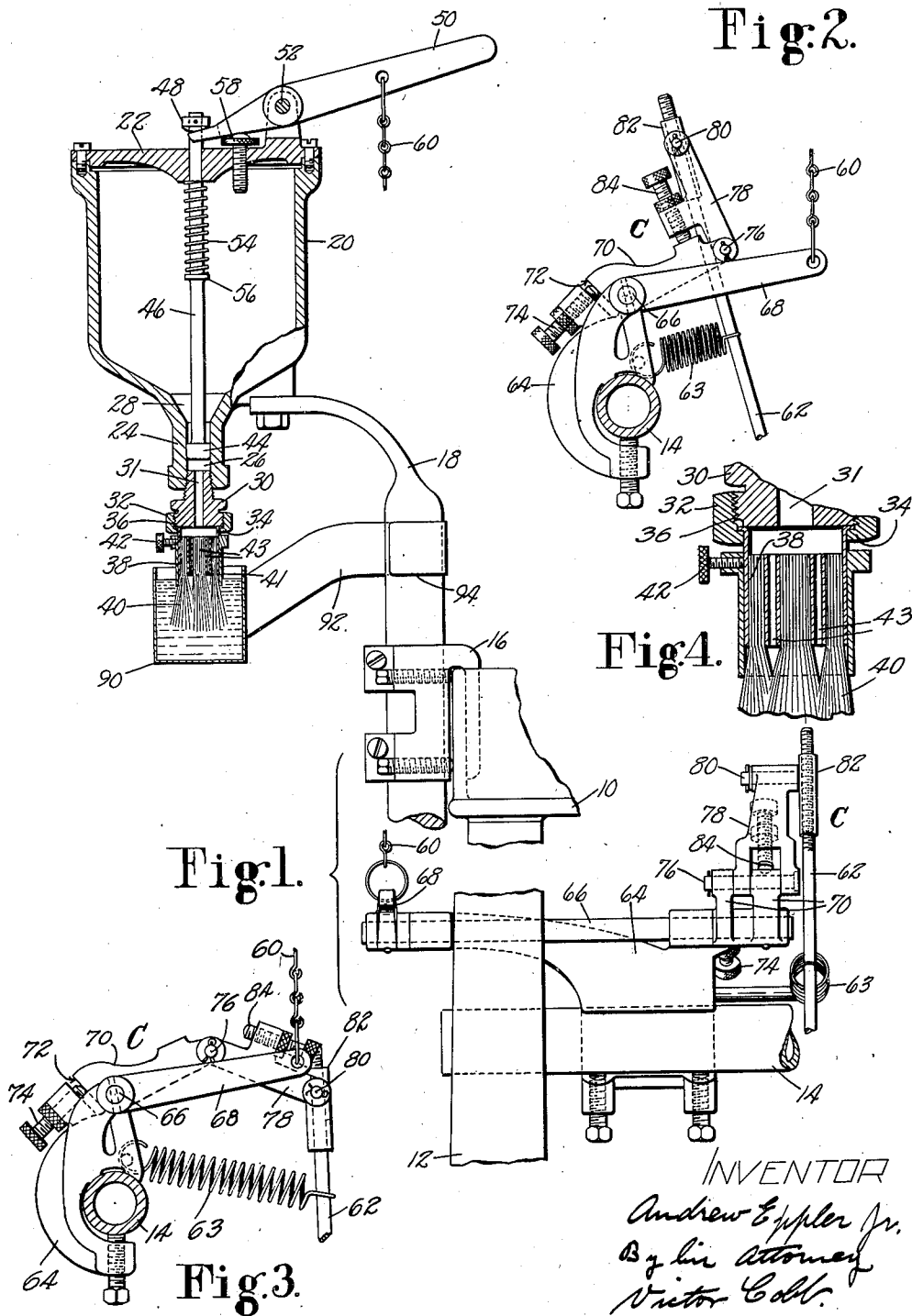
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A. EPPLER, JR

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APPARATUS FOR APPLYING ADHESIVE TO SHOE PARTS

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INVENTOR
 Andrew Eppler Jr.
 By his Attorney
 Victor Cobb.

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APPARATUS FOR APPLYING ADHESIVE TO SHOE PARTS

Andrew Eppler, Jr., Lynn, Mass., assignor to United Shoe Machinery Corporation, Borough of Flemington, N. J., a corporation of New Jersey

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This invention relates to adhesive-applying apparatus, it being particularly concerned with an attachment for such machines as that which is the subject of Letters Patent of the United States No. 1,664,657, Bertrand, April 3, 1928, and which is employed for the preliminary securing of heels to the heel-seats of shoes by means including an adhesive, in preparation for nailing.

My invention has as an object the provision of an apparatus which will be convenient for use by the operator, which may be controlled as an incident to the operation of the machine to which it is attached and which will deliver predetermined charges of an adhesive during limited intervals of time. With this end in view, I combine with an extension from a receptacle for an adhesive, to which extension a brush is secured, a plunger normally closing a delivery-throat through the extension, together with means extending within the receptacle for entirely retracting the plunger to open the throat and thereafter moving said plunger in its throat-closing relation. This movement of the plunger will permit a definite amount of the adhesive to flow from the receptacle into the delivery-throat and then to be forced into the brush for application by movement of the work, as the cup of a heel, over said brush. By varying the extent of travel of the plunger, the quantity of adhesive admitted to the throat and that discharged may be varied. With the brush may co-operate means for controlling its form and the direction of presentation of its applying surface. When the plunger-movement of such an apparatus is controlled by a connection to an operator-actuated element at the machine which is to operate upon the coated shoe-parts, releasable means may be employed for connecting said element and the plunger. This is without regard as to whether or not a brush is the applying member receiving the adhesive and as to the manner of mounting such member upon the adhesive-receptacle. The release occurs during movement of the controlling element by the operator and renders the delivery of the adhesive independent of the time during which such element is actuated. This time of release, and the extent of plunger-movement which follows, is preferably variable by means included in the connecting means. In the form of the invention herein disclosed, the connecting means includes a lever the movement of which is communicated to the plunger, a link pivoted to the lever and a link pivoted to the lever-link and movable by the operator, relative movement be-

tween the links first actuating the plunger and thereafter releasing it from their control. The time of release may be altered by varying the normal angle between the links and the extent of movement of the plunger by an adjustable stop for the lever.

In the accompanying drawing appears a particular embodiment of the invention—

Fig. 1 illustrating my improved applying apparatus in vertical section and attached to the frame of a heel-attaching machine, this frame shown in broken front elevation;

Fig. 2 is a detail in side elevation of the releasable connections, looking from the left in Fig. 1;

Fig. 3, a similar view showing the elements after disconnection; and

Fig. 4, an enlarged central vertical section through the brush.

The character 10 designates the table of such a heel-attaching machine as that of the patent referred to above, 12 being one of its supporting side-frames and 14 a tie-rod between the side-frames. Secured to one edge of the table by a clamp 16 is a bracket 18, upon an upper outwardly curved portion of which is mounted a pot or receptacle 20 for the adhesive, for example, glue, which is to be used for coating the cups of heels to be attached by the associated machine. The pot is shown as cylindrical, having a cover 22 and terminating at its lower extremity in a reduced tubular extension 24. This extension furnishes a delivery-throat, this being cylindrical at 26 and tapered upwardly and outwardly at 28. Threaded into the lower extremity of the throat is the body 30 of a nozzle, in which is an axial passage 31, this nozzle being readily removable for cleaning. Threaded about the lower portion of the body 30 is a sleeve 32 provided with a flange 34 extending beneath the body, and furnishing with an opposite flange 36 a union by which the ferrule 38 of a brush 40 is fixed in place upon the pot. Surrounding the ferrule of the brush and extending down about its fibers is a sleeve 41, which may be adjusted vertically and fixed in place by a set-screw 42 threaded through a flange at its upper end. By raising or lowering the sleeve about the brush-fibers, the width of the lower extremities of these may be altered to adapt the brush for coating surfaces of different widths. Upon loosening the sleeve 32 of the union, the brush may be turned about its vertical axis and again secured by tightening the sleeve. When deflection of the fibers by the passage of work over them has

deformed and widened the brush, this adjustment may be caused to present the fibers at a fresh angle and restore the brush to its original effective width. It also permits the removal and substitution of brushes. Delivery of the glue from the pot, through the throat and nozzle-passage to the fibers of the brush, is made by small tubes 43 inserted among the fibers within the ferrule.

To govern the flow of glue from the pot to the brush, a cylindrical plunger 44 fits the throat-portion 26. Extending upwardly from the plunger is a stem 46 guided in the cover 22. Outside the cover, the stem has a head 48, the rounded underside of which is engaged by a fork upon the inner end of a lever 50 fulcrumed at 52 upon the cover. While the bracket supporting the lever has been shown upon the cover, it might perfectly well be formed as a part of the body 20 of the receptacle, of which the cover may be considered as essentially a portion. A spring 54, interposed between the underside of the cover and a flange 56 upon the stem 46, holds the plunger normally down to close the throat-portion 26 and prevent the passage of glue from the pot into the nozzle. The extent of movement in this downward direction, and therefore the expelling effect of the plunger upon the glue below it in the nozzle above the brush, is determined by a stop-screw 58 threaded vertically into the cover and with which the inner arm of the lever 50 contacts. It will be seen that when the plunger is raised by the depression of the outer end of the lever, said plunger will be drawn from its closing relation to the throat in to the upper portion 28 thereof, allowing more or less glue to pass into the nozzle-space. Upon release of the lever, the spring 54 will be permitted to quickly lower the plunger into the nozzle-portion 26, ejecting the glue from the space into the brush-fibers.

In obtaining the successive charges of glue upon the brush 40 for application to the work-pieces operated upon by the machine, the frame of which is shown in the drawing, the lever 50 outside its fulcrum 52 is joined to the treadle of the machine through a chain or other flexible member 60, connections C and a treadle-rod or link 62. Because of the conventional character of the treadle, it has not been illustrated in the drawing. As is customary, it may consist of a lever fulcrumed near one extremity and having at its opposite end a pad adapted to receive pressure of the operator's foot. In proximity to the fulcrum, the treadle-rod 62 is connected. When the treadle is actuated by the operator the rod is drawn down through the series of elements just enumerated, to effect delivery of glue to the brush. While this is a convenient arrangement, it is to be understood that the rod 62 might equally well be joined to a hand-lever or actuated directly by the hand of the operator. Since the treadle may be held down by the operator for a considerable time, as for retaining clamping pressure upon the work, if the depression of the lever 50 were permitted to continue during this period, with the consequent elevation of the plunger 44, there might be an excessive flow of glue through the brush-fibers, gathering in an unduly large charge and perhaps dripping from the brush. This, I guard against by causing the connections C to release the lever 50 and plunger 44 from the control of the treadle-rod 62 after a definite downward movement of the rod and glue-delivering action

of the plunger. Clamped upon the tie-rod 14 of the machine-frame is a bracket 64, in which is rotatable a horizontal spindle 66 furnishing the fulcrum of a bell-crank-lever having spaced arms 68 and 70. To the arm 68 of the bell-crank-lever, the lever 50 is connected by the chain 60, so the force exerted upon the chain by the spring 54 through the lever 50 holds a surface 72 upon the arm 70 against a stop-screw 74, threaded through a lug upon the bracket 64. To the forward extremity of the arm 70 is pivoted at 76 a link 78, to which is swiveled at 80 an internally threaded sleeve 82. This sleeve receives the upper threaded end of the treadle-rod 62. A tension spring 63, connecting this rod and the bracket 64, holds the rod and link in their normal positions, the angle between the two elements being determined by a stop-screw 84 threaded through a projection upon the link and engaging the arm 70 of the bell-crank-lever.

As will be seen in Fig. 2, when the spring 54 is holding the throat-portion 26 closed by the plunger 44 and the lever-arm 70 is against the stop 74, the rod 62 will lie at a certain angle to the link 78 determined by the position of the stop-screw 84, this being at the left of the pivot 76 between the link and lever. As the rod 62 is lowered by the treadle, depressed by the operator, the link 78 and the lever 68, 70 swing clockwise as a unit about the fulcrum 66. This draws down the chain 60, so the lever 50 elevates the plunger 44 into the throat-portion 28 to open the portion 26. Glue thereupon flows from the pot into the throat and nozzle. This continues until the rod 62 crosses the pivotal connection 76, whereupon the force exerted by the treadle upon the link 78 carries the screw 84 away from the lever-arm 70. Further depression of the treadle allows the toggle, formed by the link 78 and the lever-arm 70, to break upwardly under the influence of the spring 54 after the effect of the spring 63 has been overcome (Fig. 3). This disconnects the treadle-rod 62 from the plunger-actuating lever 50 and its connecting chain 60 as far as effective operation is concerned, control of the plunger by the treadle being wholly lost until the treadle-rod has again returned across the pivot 76. Upon this disconnection, the spring 54 abruptly forces the plunger back into the throat-portion 26 to expel the glue from the throat and nozzle-space, through the tubes 43 into the brush-fibers. The applying surface furnished by the lower extremities of the fibers is now charged with the glue and the operator may draw over this and coat the cup of the heel, which is to be acted upon during the succeeding operation of the attaching machine supplied. When the treadle is raised by its spring, the rod 62, under the influence of the spring 63, restores the elements of the connections C to their normal relation ready to again actuate the plunger upon the next treadle-depression. By adjustment of the screw 74, the initial position of the plunger in the throat-portion 26 will be altered and, therefore, the extent to which said plunger will be lifted into the throat-portion 28. This, especially because of the taper of the portion 28, alters the area of the opening through which glue is admitted to the nozzle, and consequently the amount delivered for each brush-charge. A similar effect upon the quantity of the charge may be produced by adjustment of the screw 58, which limits the downward stroke of the plunger. This last manner of control is of particular utility

if the releasing connections C are to be omitted, and the resistance of flow of the glue, through and the resistance to flow of the glue, through fibers, depended upon to prevent an excessive delivery to the applying surface when the treadle is depressed and the plunger held elevated. By a change in the angle between the rod 62 and the link 73 through adjustment of the screw 84, that interval may be changed which occurs between the initiation of treadle-depression and the release of the plunger by the breaking of the connections. When the use of the apparatus is to be discontinued for a substantial length of time, the glue may be prevented from hardening in the brush by raising about it a cup or container 90, in which is water or other liquid. The cup is shown as carried upon an arm 92, having a spring-portion 94 embracing an upright cylindrical portion of the bracket 18. This spring-portion may be slid or turned upon the bracket to place the container into or out of active relation to the brush. If movement of the plunger 44 is interfered with by hardening of the glue between it and the throat, it may readily be freed by striking the upper end of the stem 45. Access to the throat and to the passage 31 may be had by the simple removal of the nozzle-body 30. There is no valve or other inaccessible, movable element which may become clogged.

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

1. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat to normally close it, and means extending within the receptacle for entirely retracting the plunger from the portion within which it fits to open the throat and thereafter for moving said plunger into its throat-closing relation to force a charge of the adhesive into the brush.

2. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat to normally close it, means extending within the receptacle for entirely retracting the plunger from the portion within which it fits to open the throat and thereafter for moving said plunger into its throat-closing relation to force a charge of the adhesive into the brush, and means arranged to vary the extent of travel of the plunger.

3. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat tapering from the receptacle to a cylindrical portion, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat to normally close the cylindrical portion, and means extending within the receptacle for retracting the plunger into the tapered portion to open the throat and thereafter move said plunger in the cylindrical portion to force a charge of the adhesive into the brush.

4. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat tapering from the receptacle to a cylindrical portion, a

brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat to normally close the cylindrical portion, means extending within the receptacle for retracting the plunger into the tapered portion to open the throat and thereafter move said plunger in the cylindrical portion to force a charge of the adhesive into the brush, and means arranged to vary the extent of retraction of the plunger into the tapered portion of the throat.

5. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat to normally close it, a stem extending from the plunger above the receptacle, a spring co-operating with the stem to maintain the throat normally closed by the plunger, a lever fulcrumed upon the receptacle and engaging the stem to raise it, and a stop variable in position upon the receptacle and with which the lever contacts.

6. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a nozzle terminating the throat, a brush to which the nozzle delivers, a union joining the brush to the nozzle and by which the angular position of said brush about the longitudinal axis of the throat may be varied, and a sleeve surrounding the brush and variable in position longitudinally thereof.

7. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a member actuated by the operator to move the plunger, and means connecting the operator-actuated member and the plunger and releasable to disconnect said member and plunger during movement by the operator.

8. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a member actuated by the operator to move the plunger, means connecting the operator-actuated member and the plunger and releasable to disconnect said member and plunger during movement by the operator, and means arranged to vary the time of release of the connecting means.

9. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, means arranged to vary the extent of movement of the plunger, a member actuated by the operator to move the plunger, means connecting the operator-actuated member and the plunger and releasable to disconnect said member and plunger during movement by the operator, and means arranged to vary the time of release of the connecting means.

10. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a lever movement of which is communicated to the plunger, a link pivoted to the lever, and a link pivoted to the lever-link and being movable by the operator,

relative movement between the links first actuating the plunger and thereafter releasing said plunger from their control.

11. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a member actuated by the operator to move the plunger, means connecting the operator-actuated member and the plunger and releasable to disconnect said member and plunger during movement by the operator, and means arranged to vary the normal angle between the links.

12. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a lever movement of which is communicated to the plunger, a link pivoted to the lever, a stop-screw determining the extent of movement of the lever, and a link pivoted to the lever-link and being movable by the operator, relative movement between the links first actuating the plunger and thereafter releasing said plunger from their control.

13. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle, a nozzle delivering from the receptacle, a plunger co-operating with the nozzle to control the flow of adhesive therethrough, a lever to which the plunger is connected, a stop for the lever, a spring urging the lever against the stop, a link pivoted to the lever, and a link pivoted to the lever-link and being movable by the operator, relative movement between the links first actuating the plunger and thereafter releasing said plunger from their control.

14. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat, a stem extending from the plunger above the receptacle, a spring co-operating with the stem to maintain the throat normally closed by the plunger, a lever fulcrumed upon the receptacle and engaging the stem to raise it, a second lever connected to the first, a link pivoted to the second lever, and a link pivoted to the lever-link and being movable by the operator, relative movement between the links first actuating the levers and thereafter releasing them from control.

15. In an apparatus for applying an adhesive to shoe-parts, an adhesive-receptacle having an extension furnishing a delivery-throat, a brush secured to the extension and to which the adhesive is delivered from the receptacle, a plunger fitting the throat, a stem extending from the plunger above the receptacle, a spring co-operating with the stem to maintain the throat normally closed by the plunger, a lever fulcrumed upon the receptacle and engaging the stem to raise it, a variable stop for said lever, a second lever connected to the first, a link pivoted to the second lever, a link pivoted to the lever-link and being movable by the operator, relative movement between the links first actuating the receptacle-lever and thereafter releasing it from control, and means arranged to vary the normal angle between the links.

ANDREW EPPLER, JR.

CERTIFICATE OF CORRECTION.

Patent No. 2,245,657.

June 17, 1941.

ANDREW EPPLER, JR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 2, for "of flow of" read --to flow of--; line 3, for the words "and the resistance to flow of the glue, through" read --the contracted tubes and between the brush- --; same page, second column, line 19, claim 5, for "steam" read --stem--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of July, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.