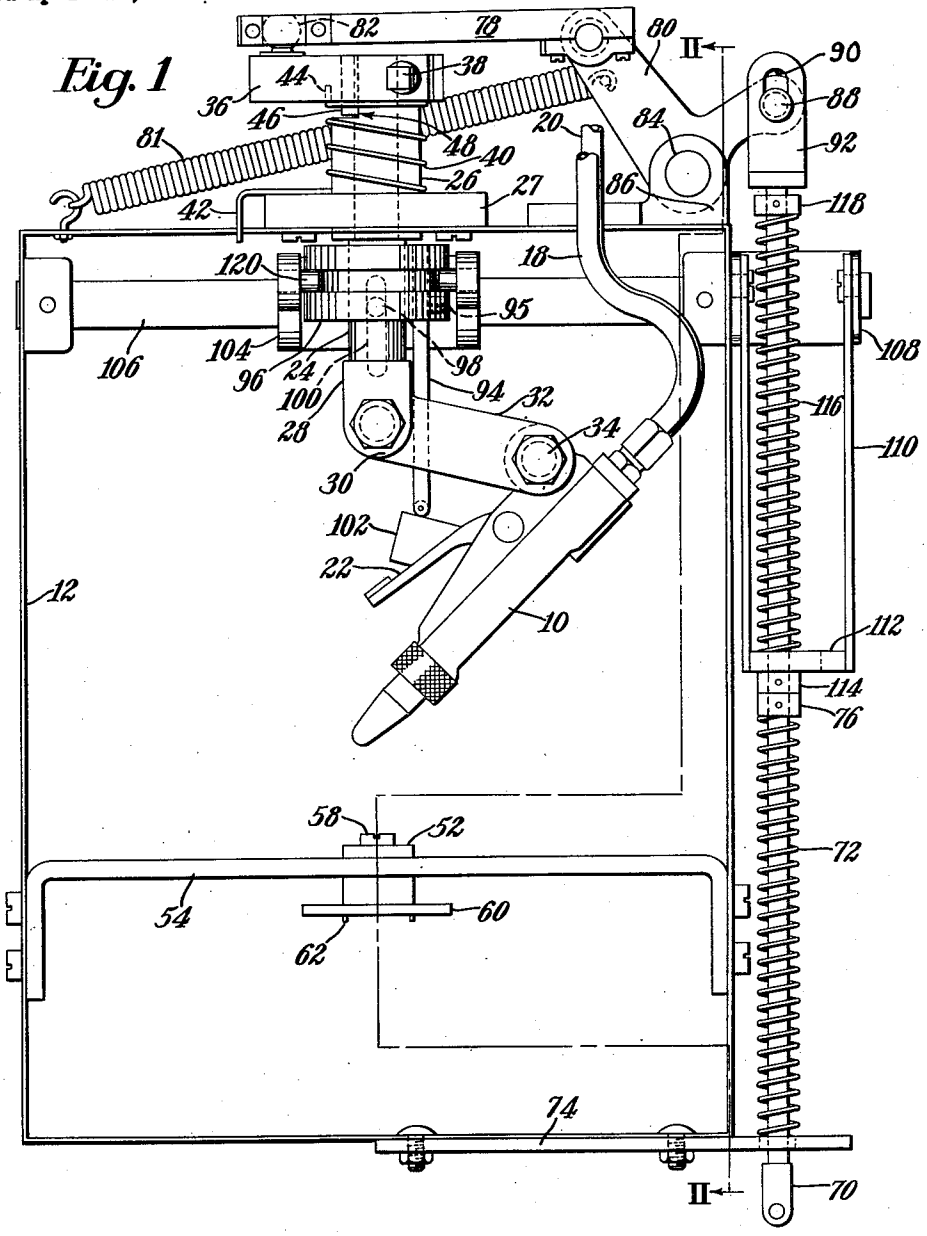
Dec. 4, 1956 N. V. GERMANY ET AL. 2,772,658

SPRAYING APPARATUS FOR CEMENT LASTING

Filed April 24, 1953 2 Sheets-Sheet 1

Fig. 1




*Inventors*

*Norman V. Germany*

*Stephen A. Makovski*

*By their Attorney*

Dec. 4, 1956 N. V. GERMANY ET AL 2,772,658

SPRAYING APPARATUS FOR CEMENT LASTING

Filed April 24, 1953 2 Sheets-Sheet 2

Fig. 2

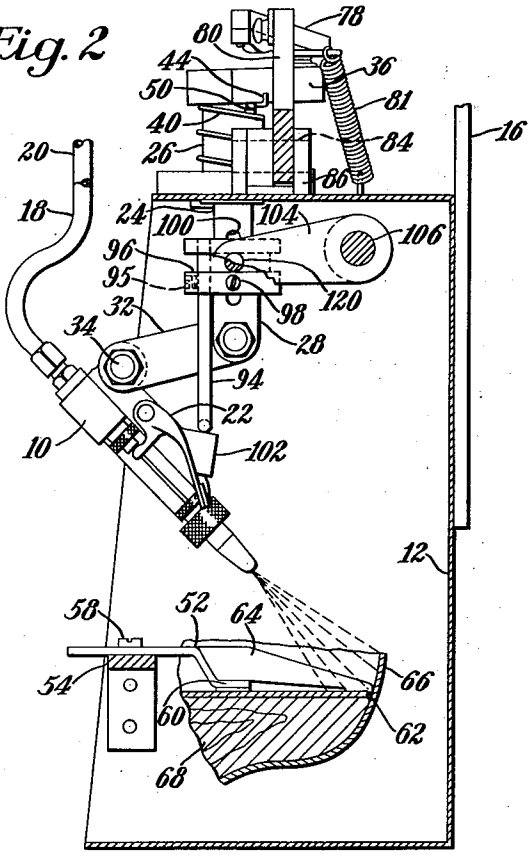
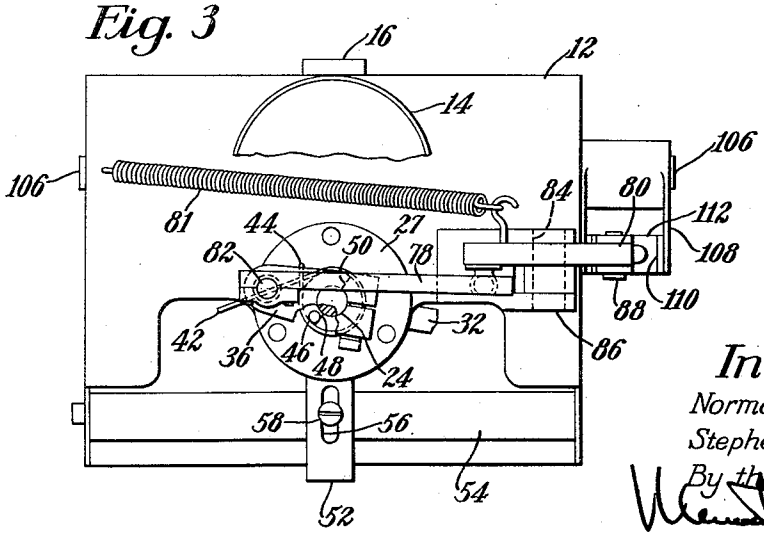



Fig. 3




Inventors
Norman V. Germany
Stephen A. Makovski
By their Attorney

United States Patent Office 2,772,658 Patented Dec. 4, 1956



2,772,658

# SPRAYING APPARATUS FOR CEMENT LASTING

Norman V. Germany and Stephen A. Makovski, Leicester, England, assignors to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application April 24, 1953, Serial No. 351,008

Claims priority, application Great Britain May 9, 1952

3 Claims. (Cl. 118—323)

This invention relates to a spraying apparatus particularly adapted for applying cement to the rounded end of the insole and the adjacent upstanding lasting allowance of the upper of an assembled shoe, to prepare the shoe for cement lasting.

When, in the manufacture of shoes, it is desired to secure the overlasted upper to the insole at a rounded end portion of a shoe by an adhesive such as latex it has been common to apply the adhesive by means of a spray gun. Usually the spray gun has been fixed in a downward, rearwardly directed position and the operator has manually supported the shoe and turned it to receive the spray. Time may be saved and a more perfect distribution of the coating material may, however, be obtained by supporting the shoe in a fixed position and mechanically moving the spray gun to traverse the area to be coated, and an object of the invention is to provide an improved apparatus for spraying the rounded ends of shoes prior to lasting and in which the path of movement of a movable spray gun is mechanically defined.

As herein illustrated in its application to the toe end of a shoe, the spray gun is supported upon a vertical spindle which may be turned to give the desired traversing movement of the spray, whenever an operator depresses a treadle, and returned to starting position. The apparatus also embodies a device for depressing the trigger of the spray gun and holding it in operative position during the traversing movement. Preferably this is carried out by the same treadle and involves the use of a rod slidably mounted on the spindle in such a position that it engages the trigger of the gun.

These and other features of the invention will best be understood from a consideration of the following specification taken in connection with the accompanying drawings in which

Fig. 1 is a front elevation of the spraying apparatus embodied in a booth;

Fig. 2 is a vertical section through the booth from front to back on the line II—II in Fig. 1 showing the spray gun in an intermediate position as it coats the extreme end of the toe portion; and

Fig. 3 is a plan view of the top of the apparatus with portions broken away.

In the illustrated apparatus an air-operated spray gun **10** of a conventional type is mounted within a booth **12** to prevent surplus spray from being scattered through the room. Cement is supplied to the gun, from a receptacle **14** (Fig. 3) supported above the booth upon a standard **16**, by way of a flexible tube **18**. The gun is also provided with another tube **20** connected to a supply of compressed air and has a pivoted spring-returned trigger **22** for controlling the operation of the gun.

The gun is supported in the booth upon a rotatable spindle **24** which is journaled for turning movement about a vertical axis in a bearing block **26** having a base **27** secured to the top of the booth. At the lower end of this spindle is a cap **28** having ears **30** between which is clamped an arm **32** split at its outer end to receive a portion of the spray gun which is clamped to it by a bolt **34**. The outlet of the gun is near the axis of the spindle and the gun points down laterally of the axis of the spindle into the toe end of the work and is thus movable in a curved path.



On the upper end of the spindle **24** is an arm **36** secured to the spindle by a clamping bolt **38**. Associated with this arm is a spring **40** coiled around the bearing block **26** and having its lower end **42** in engagement with the top of the booth and its upper end **44** in engagement with the arm **36**. Turning movement of this arm and the spindle in an arc is limited by means of a stop pin **46** which is mounted in the arm and which swings through a part of a revolution until it contacts surfaces **48** and **50** (Fig. 3) provided by cutting away a portion of the upper end of the bearing block **26**.

It is intended that the work, a shoe ready to be lasted, shall be held manually but in a fixed position determined by a gage **52** carried on a cross bar **54** extending transversely of the booth and secured to the sides thereof at its ends. The near portion of the gage arm **52** is slotted at **56** (Fig. 3) and is clamped to the cross bar **54** in the desired position by a screw **58**. The gage also embodies downwardly and horizontally extending portions. The insole of an inverted unlasted shoe is brought up into contact with the horizontal portion **60** (Fig. 2) and is moved away from the operator into the booth until the toe end of the insole contacts downwardly extending lips **62** at the ends of wings **64** which are attached to the gage **52**. At this position, the axis of the substantially cylindrical portion of the upstanding upper will be near the axis of the gun support.

The initial position of the spray gun, as it is urged counterclockwise by the spring **40** until the pin **46** hits the stop surface **48**, is as shown in Fig. 1 so that then the spray would be directed against the left side of the upstanding upper **66** (Fig. 2) of the shoe on a last **68**. Then, as the spindle is turned clockwise until the pin **46** engages the stop surface **50**, the spray will be directed around the substantially cylindrical end portion of the shoe upper, being deposited partly upon the upstanding margin of the upper and partly upon the margin of the insole.

A treadle (not shown) connected to a treadle rod **70** (Fig. 1) is used to effect this turning movement and the treadle is normally held in a raised position by means of a spring **72** between a guiding bar **74** fastened to the bottom of the booth and a collar **76** on the rod.

It is desired to depress the trigger **22** and hold it and to turn the gun and its spindle through substantially 180°, then to release the treadle and allow the gun to return to its original position, thus giving two progressive coatings to the shoe. The turning movement is effected by a connection to the treadle rod comprising a link **78** and a bell crank lever **80**. A coil spring **81**, collapsed when the gun is in starting position, extends between the bell crank **80** and a hook on the top of the booth. The link **78** is pivotally connected to the bell crank and is joined to the arm **36** by means of a ball and socket connection such as that shown at **82**. The bell crank is pivoted at **84** in a bracket **86** which is mounted on the top of the booth and at its outer end it has a pin **88** passing through a slot **90** in a U-shaped member **92** attached to the top of the treadle rod. This provides a lost-motion connection to permit the spray gun to be started before the treadle causes it to oscillate.

The actuation of the spray gun trigger **22** is effected by a depending rod **94** secured by a setscrew **95** to a grooved collar **96** which is splined to the spindle by means of a pin **98** in the collar entering a groove **100** in the

spindle thus holding the rod in alinement with the trigger in any position of rotation. The lower end of the rod **94** engages a block **102** secured to the trigger **22**.

In order that the trigger may be actuated in any position of the gun-supporting spindle, a connection between the collar **96** and the treadle rod **70** is provided which includes a two-armed lever **104** secured to a cross shaft **106** which is journaled in the sides of the casing. The arms of the lever **104** are provided with pins **120** which enter the groove in the sliding collar **96** and thus cooperate with it in any position of rotation. The shaft **106** projects at the right side and has secured to it a two-armed lever **108** the arms of which are connected by links **110** to a block **112** apertured to permit the treadle rod to pass through it. This block rests upon a collar **114** attached to the rod and is held against the collar by a spring **116** compressed between the block **112** and a collar **118** on the rod.

In the use of the apparatus, assuming that a shoe is being held in the position determined by the gage **52**, the initial portion of a depression of the treadle attached to the treadle rod **70**, the compression spring **116** acting against the block **112**, will be effective to start rotation of the shaft **106** and, through the rod **94** and the block **102**, to depress the trigger **22**. During this initial movement of the treadle the slots **90** at the top of the treadle rod allow a slight movement of the rod without moving the pin **88** and hence without moving the gun until after the trigger has been operated to start the gun.

Further downward movement of the treadle brings the upper ends of the slots **90** into contact with the pin **88** and, acting through the bell crank **80**, the link **78**, and the arm **36**, causes a turning movement of the gun **10** until the pin **46** engages the limiting surface **50**. During this further downward movement of the treadle the spring **72** yields since the block **112** is held up by the linkage connecting it to the fully depressed trigger actuating rod **94**. The treadle is then released and the gun is allowed to make its reverse traversing movement.

The operator should not delay at the turning point because of the possibility of the formation of a puddle of cement on that portion of the shoe at which the gun points when it is stopped by the surface **50**. The immediate return of the spray gun, in spite of the lost motion provided by the pin **88** and the slots **90**, is assured by the tension spring **81** interposed between the top of the booth and the upper arm of the bell crank **80**. This is aided by the spring **40** surrounding the spindle bearing **26**, that spring having been additionally tensioned during the first part of the rotative movement of the spray gun. As the spray gun finishes its return swing and the treadle rod is raised to its upper, starting, position by the action of the spring **72** the cement spray is cut off by the return of the block **112** to its initial position.

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

1. In combination, a spray booth, a spray gun, a support for said gun including a rotatable spindle mounted in said booth, means mounted in said booth for engagement with a work piece to position the same in fixed relation to the outlet end of said gun, manual means for rotating said spindle to move the gun in one direction through a limited curved path relatively to the work piece, means independent of said manual means for automatically rotating the spindle in the opposite direction upon release of said manual means, a trigger on the gun, means associated with the spindle and operated by said manual means to actuate the trigger in any position of the gun, said trigger actuating means being operative to maintain the trigger in actuated condition during rotation of the gun in both directions, and means associated with said manual means and effective to cause the trigger actuating means to operate the trigger prior to initiation of the rotation of the gun in said one direction and to release the trigger at the conclusion of the rotation of the gun in said opposite direction.



2. Apparatus for spraying cement onto an end portion of an unlasted shoe comprising, in combination, a spray booth, a spindle rotatably mounted in said booth, a spray gun carried by said spindle, a trigger on the gun, means slidable axially of the spindle to actuate said trigger, operator controlled means for operating said trigger actuating means and for rotating the spindle to move the spray gun in one direction in a predetermined arcuate path, a first connection between said operator controlled means and said slidable means constructed and arranged to insure actuation of said trigger in any position of rotation of said spindle, a second connection between said operator controlled means and the spindle, means independent of said operator controlled means for rotating the gun in the opposite direction in a predetermined arcuate path, stop means for limiting movement of the gun in either direction, and a lost motion provided in said second connection between said operator controlled means and the gun-carrying spindle and arranged to rotate said spindle and gun in said one direction after said trigger actuating means is moved by said first connection into engagement with the trigger and to permit said trigger actuating means to move out of engagement with the trigger at the end of the rotation of the gun in said opposite direction.

3. Apparatus for spraying cement onto the toe end of an unlasted shoe comprising, in combination, a spray booth, a spindle rotatably mounted in said booth, a spray gun carried by said spindle with the outlet of said gun located near the axis of said spindle and pointing down laterally of the axis of said spindle into the toe end of the shoe, a trigger on the gun, a rod slidable axially of the spindle to actuate said trigger, a treadle-actuated rod connected to said spindle and to said trigger actuating rod, means for holding said trigger actuating rod in engagement with said trigger in any position of rotation of the spray gun, a spring for rotating the gun in the opposite direction in a predetermined arcuate path independently of said treadle rod, stop means for limiting movement of the gun in either direction, and a lost motion connection between said treadle-actuated rod and the gun carrying spindle arranged to commence rotation of said spindle and gun in said one direction after movement of said trigger actuating rod into engagement with the trigger and to permit said trigger actuating rod to move out of engagement with the trigger at the end of the rotation of the gun in said opposite direction.


**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,857,218 | Sawyer et al. | May 10, 1932 |
| 1,861,686 | Cavanagh | June 7, 1932 |
| 1,953,376 | Uden | Apr. 3, 1934 |
| 2,095,200 | Thompson | Oct. 5, 1937 |
| 2,106,187 | Naugler | Jan. 25, 1938 |
| 2,281,169 | Pattison | Apr. 28, 1942 |
| 2,292,558 | Bell | Aug. 11, 1942 |
| 2,342,375 | Shurley | Feb. 22, 1944 |