

Feb. 3, 1959

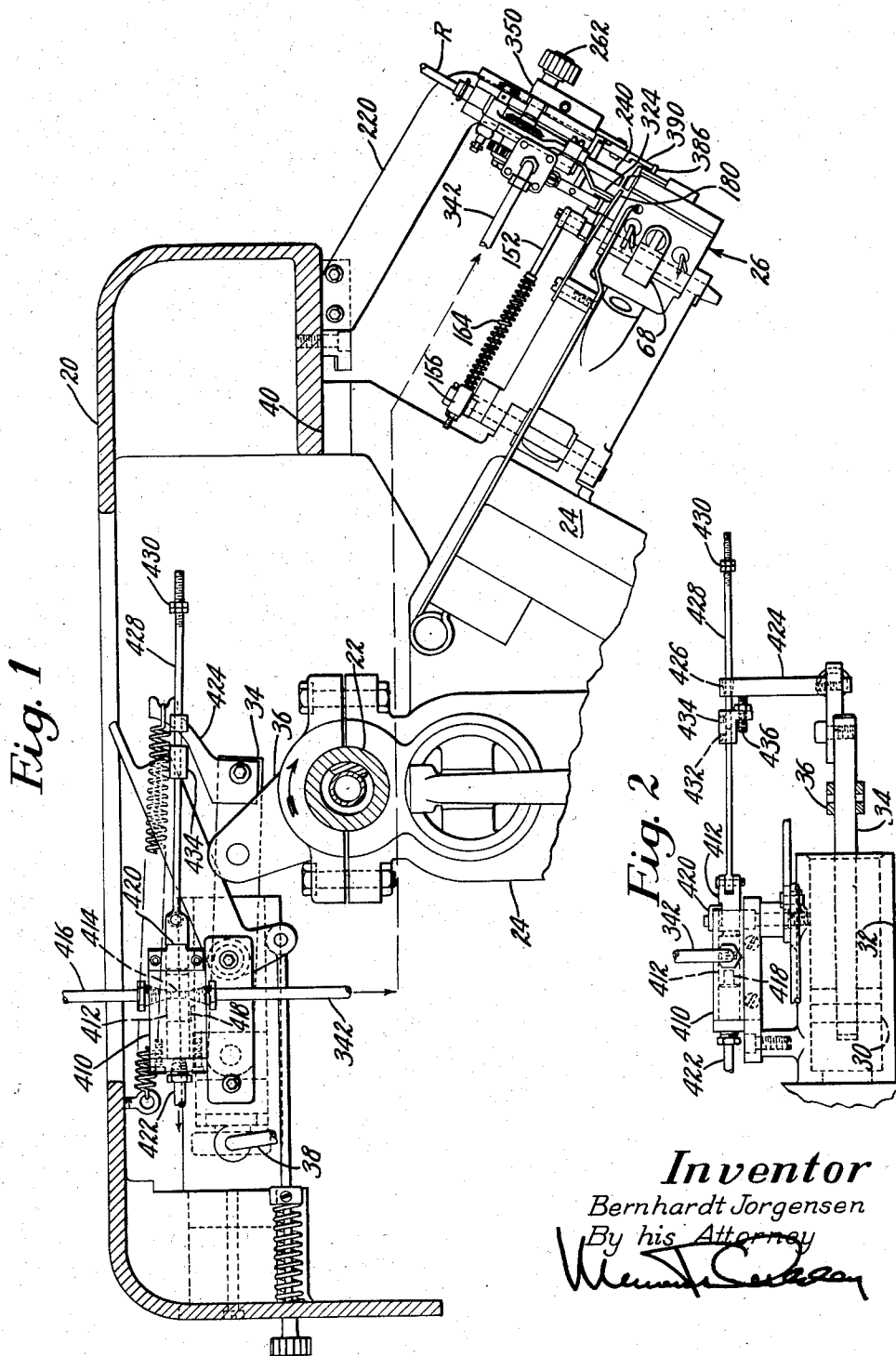
B. JORGENSEN

2,871,818

CEMENT HANDLING APPARATUS

Filed June 22, 1956

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2,871,818

CEMENT HANDLING APPARATUS

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Fig. 3

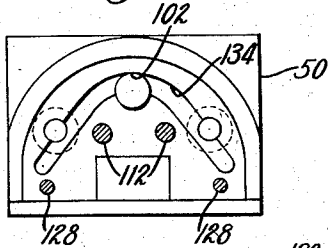


Fig. 4

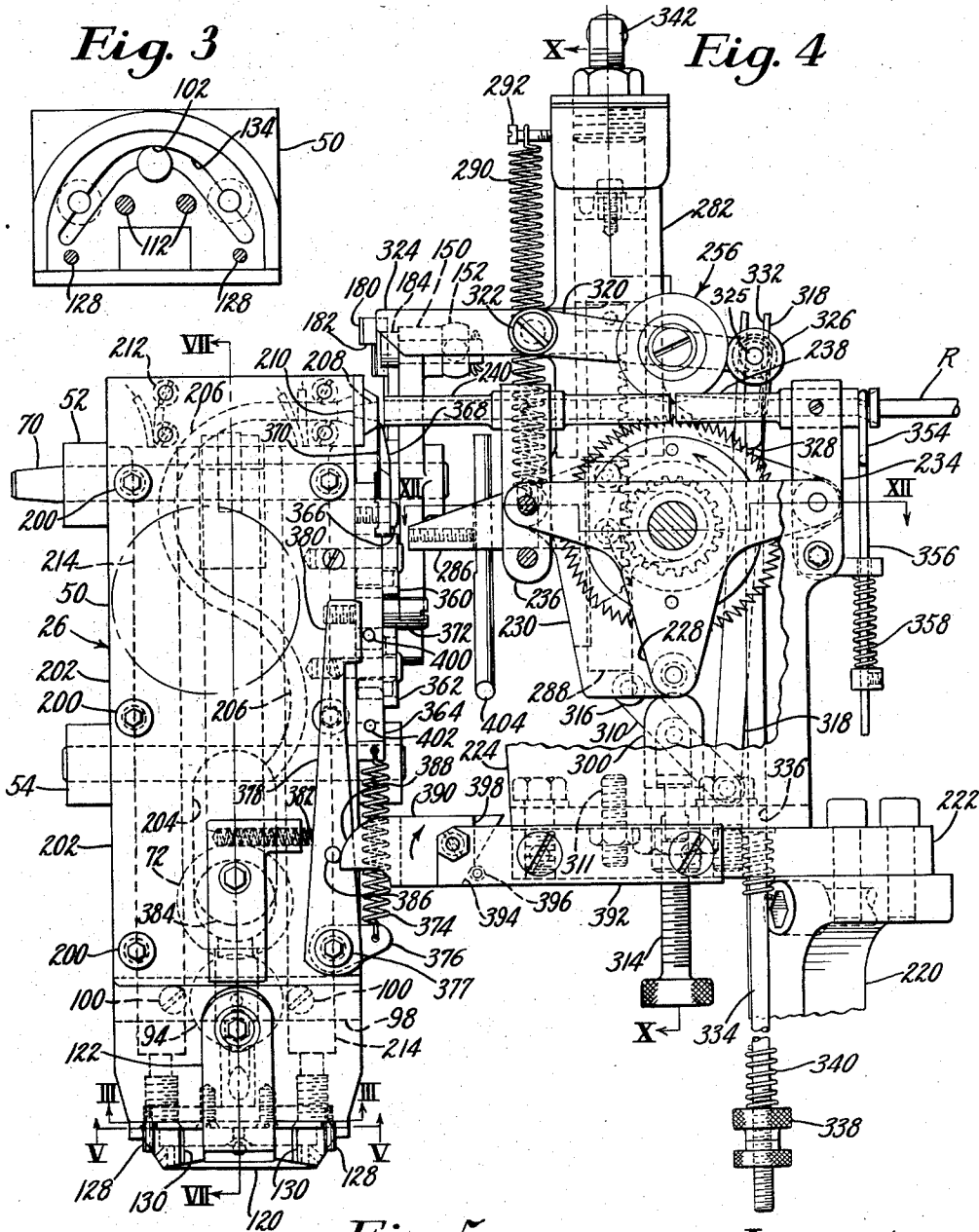
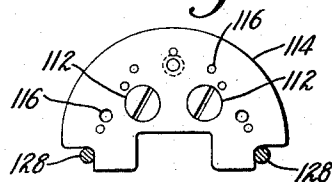


Fig. 5



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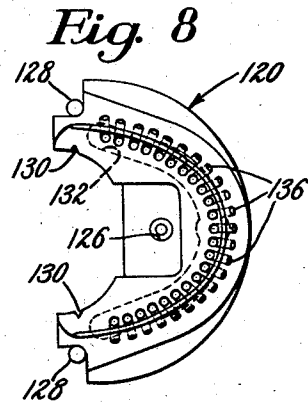
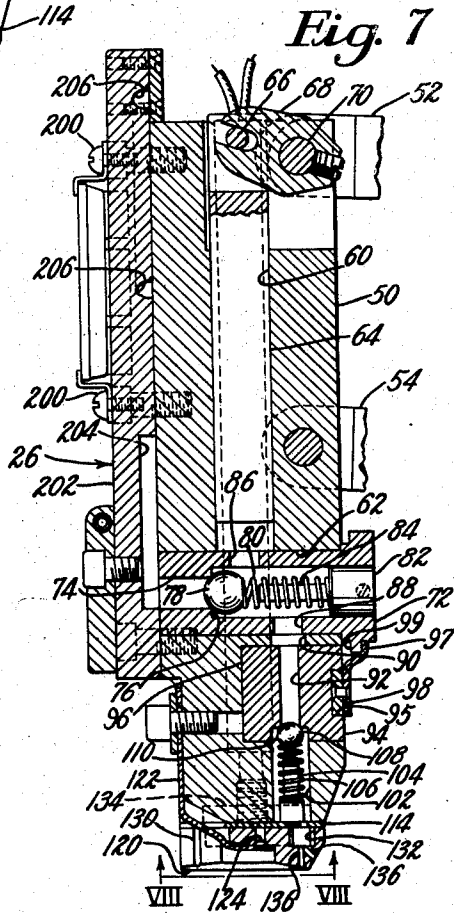
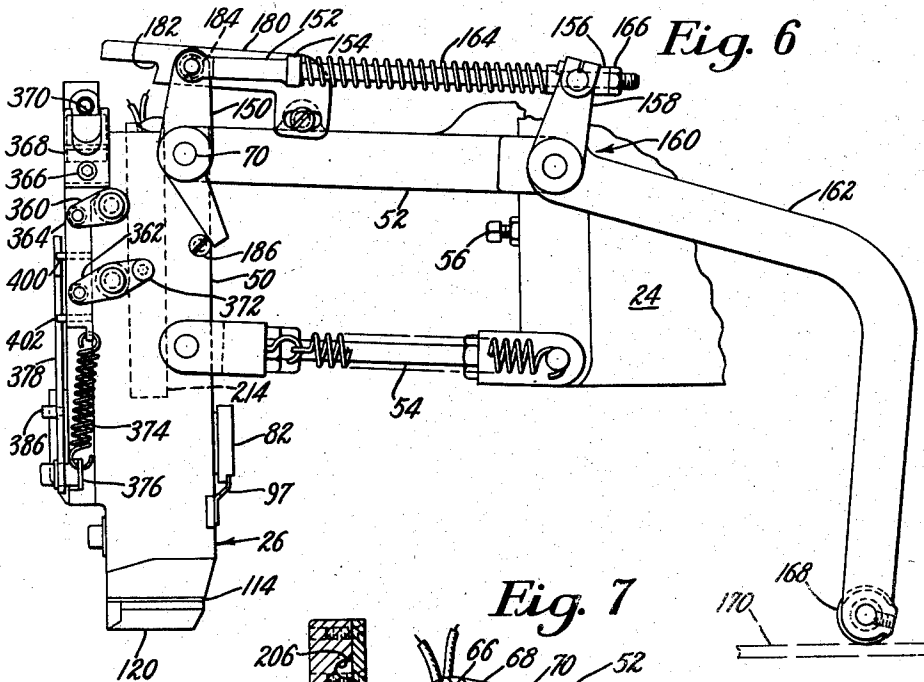
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B. JORGENSEN
CEMENT HANDLING APPARATUS

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5 Sheets-Sheet 3



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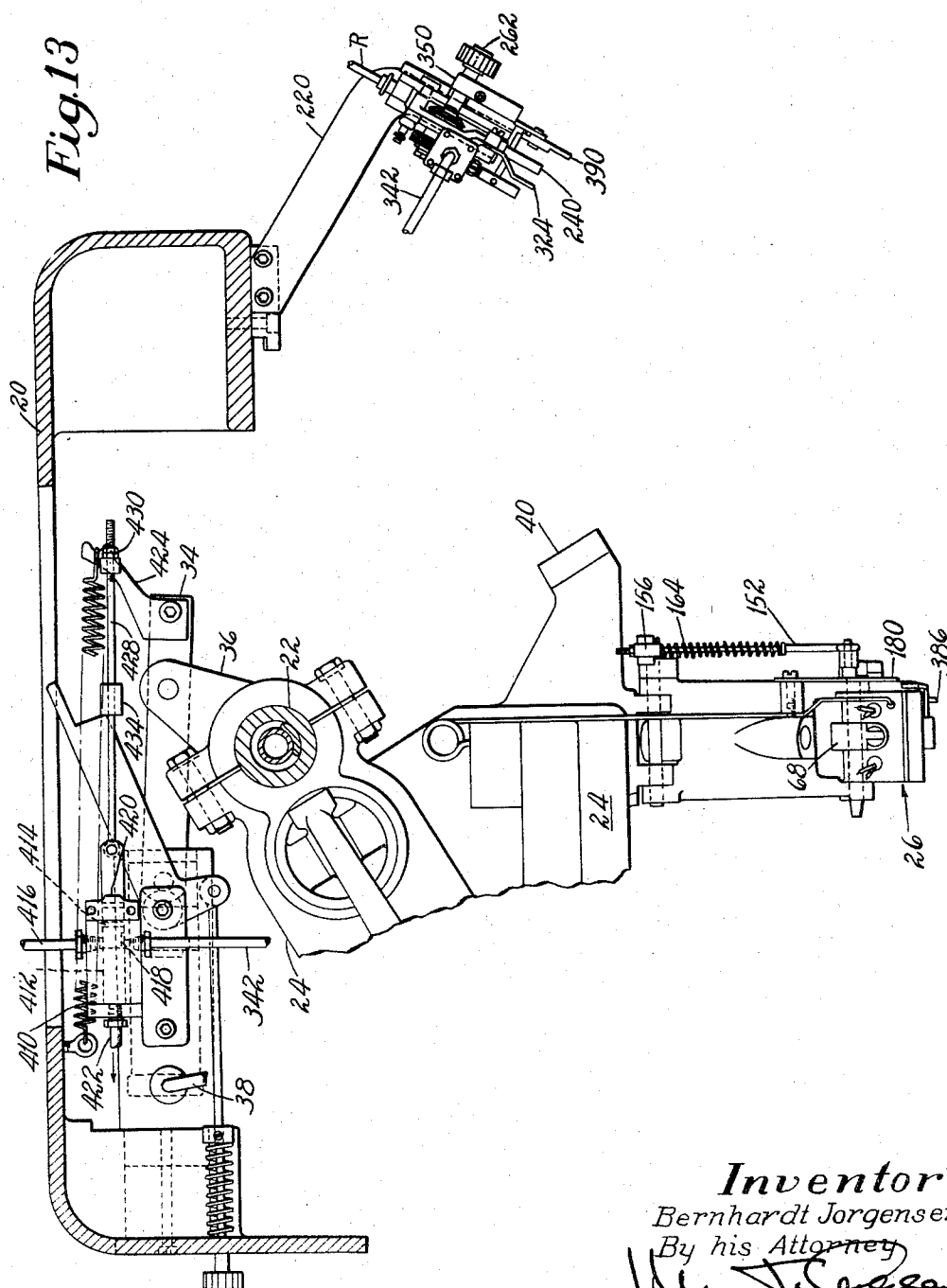
B. JORGENSEN

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CEMENT HANDLING APPARATUS

Filed June 22, 1956

5 Sheets-Sheet 5



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2,871,818

CEMENT HANDLING APPARATUS

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Application June 22, 1956, Serial No. 593,212

20 Claims. (Cl. 118—600)

This invention relates to novel and improved cement handling apparatus which is herein illustrated as applied to a toe lasting machine of the type illustrated in United States Letters Patent No. 2,324,509, granted July 20, 1943, on an application filed in my name. It will, of course, be understood that the cement handling apparatus of this invention is not limited in utility to application to a machine of the aforementioned type or to the exact mechanical construction shown.

In the machine disclosed in the mentioned patent there is a cement applying device which is provided with a chamber for receiving cement, an applying nozzle, and means for forcing molten plastic cement from said chamber and out through the nozzle onto a work piece, i. e., the toe end of the insole of a shoe being lasted. This cement applying device is mounted for movement, during each automatic operating cycle of the machine, between a remote idle position and an operative position, adjacent to the toe end of the shoe and in which the cement forcing means is actuated to extrude cement from the mentioned chamber out through the nozzle and onto the insole. The cement applying device is provided with heating means for melting the cement which is placed therein in the form of pieces broken from a larger solid block and for obvious practical reasons must, of necessity, be of considerable size to provide a sufficient supply of molten cement to take care of a reasonably large number of shoes. This not only adds considerably to the mass of the parts which are effected by the movement of the cement applying device to and from its operative position but also involves the danger of the deterioration of the cement as a result of a continued exposure to high temperature. Moreover, a substantial amount of care and effort on the part of the operator of the toe lasting machine is required in replenishing the supply of cement in the device at relatively frequent intervals.

The principal object of this invention is to provide a novel and improved apparatus for handling cement in a machine of this general type wherein a cement applying device is moved to and from its operative position by means of which the aforementioned difficulties are wholly avoided. To this end, the herein illustrated apparatus comprises a cement applying device having a cement receiving chamber and which is movable between a loading position and an operative position, together with a cement handling mechanism, mounted in a location closely adjacent to the cement applying device when the latter is in its loading position and provided with means for feeding a variably predetermined quantity of cement into the cement receiving chamber of the cement applying device in response to movement of the device to its loading position. More particularly, the cement applying device is heated to melt solid cement introduced therein and there is associated with the cement receiving chamber of the cement applying device a passage leading thereinto, while the cement handling mechanism is provided with means for feeding a variably predetermined

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length of solid rod cement into said passage. In addition, and in accordance with another feature, means are provided for severing that portion of the rod which has been fed into the aforementioned passage from the remaining portion of the rod of cement. Preferably, and as herein illustrated, the rod severing means comprises a reciprocating knife which is adapted to be held in a position to close the passage leading into the cement receiving chamber of the cement applying device while the cement applying device is moved away from its leading position, during each automatic operating cycle of the machine.

The above and other objects and features of the invention will appear in the following detail description of the preferred embodiment which is illustrated in the accompanying drawings, and will be pointed out in the claims.

In the drawings,

Fig. 1 is a plan view of a portion of a toe lasting machine to which there is shown applied a cement handling mechanism embodying the features of this invention;

Fig. 2 is a view in front elevation of a part of the machine shown in Fig. 1;

Fig. 3 is a view in section substantially on line III—III of Fig. 4 and looking in the direction of the arrows;

Fig. 4 is a view in front elevation and at an enlarged scale of the cement handling mechanism which is shown associated with the lasting machine in Fig. 1;

Fig. 5 is a view in horizontal section substantially on line V—V of Fig. 4 and looking in the direction of the arrows;

Fig. 6 is a view in side elevation of a part of the cement handling mechanism illustrated in Fig. 4 of the drawings;

Fig. 7 is a view in vertical section substantially on lines VII—VII of Fig. 4 and looking in the direction of the arrows;

Fig. 8 is a view of the lower end of the portion of the cement applying device which is shown in Fig. 7 looking upwardly as indicated by the arrows VIII—VIII in Fig. 7 and at a slightly enlarged scale;

Fig. 9 is a view in section substantially on line IX—IX of Fig. 10 and looking in the direction of the arrows;

Fig. 10 is a view in section substantially on line X—X of Fig. 4 and looking in the direction of the arrows;

Fig. 11 is a view in end elevation of a portion of the cement handling mechanism shown in Fig. 4 as seen from the right-hand side of that figure;

Fig. 12 is a view in section substantially on line XII—XII of Fig. 4 and looking in the direction of the arrows; and

Fig. 13 is a view similar to Fig. 1 but showing the cement handling mechanism in its operating position.

Referring to these drawings, the lasting machine which is illustrated in Fig. 1, and to which the novel cement handling mechanism of this invention is shown as applied, is of the type disclosed in the above-mentioned patent to Jorgensen. Thus there is associated with a main frame construction, indicated generally by the reference character 20 and a portion of which appears in Fig. 1, a post member 22 which is mounted for angular swinging movement and axially reciprocating movements relatively to the frame. Secured to this post is an arm or carrier 24 on which are mounted an upper trimming mechanism, not shown, and a cement applying device indicated generally by the reference character 26. As will be understood by reference to the aforementioned Jorgensen patent, the trimming mechanism is operated to trim the inner layers of a multi-ply upper when the arm or carrier 24 is in the angular position in which it is shown in Fig. 1 and during

an initial stage in the operating cycle. Thereafter, during a later stage in the operating cycle, the carrier 24 is swung in a clockwise direction, see arrow in Fig. 1, to bring the cement applying device over the toe end of a shoe being lasted, whereupon the post is moved axially to bring a nozzle member which is associated with the cement applying device, and which will be referred to below, into engagement with the toe end of the insole of the shoe. For thus swinging the carrier 24 there is provided a piston 30 mounted within a cylinder 32, see Fig. 2, and having a piston rod 34 which is connected to an arm 36 fastened to the post 22. A conduit 38 leading from the cylinder 32 is connected to a pressure manifold associated with the toe lasting machine for supplying fluid under pressure to the cylinder at an appropriate point in the operating cycle. A spring, not shown, is arranged to return the carrier to the position in which it is shown in Fig. 1 and as determined by the engagement of a stop block 40 on the carrier with a portion of the frame 20, when the conduit 38 is connected to exhaust. It will be understood by reference to the mentioned Jorgensen patent that similar fluid pressure operated means is associated with the post for moving it axially to bring the trimming device, not shown, and the cement applying device into operative position relatively to the toe end of the shoe being lasted.

Referring now to Figs. 3-8, the cement applying device 26 comprises a casting 50 which is mounted on the carrier 24 by means including upper and lower links 52 and 54, which correspond in general to the links (930), (932) of the mentioned Jorgensen patent, this casting being yieldingly held in the initial position in which it is shown in Fig. 6 relatively to the carrier by means of a spring, not shown, but corresponding to the spring (944) of the Jorgensen patent, and as determined by a stop screw 56, corresponding to the stop screw (946) of the Jorgensen patent. The casting 50 is provided with a vertically extending cylindrical bore 60 which intersects at its lower end a transverse bore 62, Fig. 7. Slidable within the bore 60 is a piston 64 which is connected by means of a pin 66 to an arm 68, secured to a trunnion shaft 70. Fitted within the bore 62 is a bushing 72 having an axial bore 74 formed of two different diameters to provide a shoulder 76 against which a ball valve 78 is held yieldingly by means of a spring 80 bearing on a plug 82 and surrounding a guide rod 84 mounted in the mentioned plug. The bushing 72 has two radial ports 86, 88, the former being in register with the lower portion of the bore 60, while the latter is in register with a port 90 formed in the casting 50. The port 90, in turn, is in register with a bore 92 formed in a plug 94 which is held in place within a bore 96 by means of a keeper bar 98, secured at its opposite ends to the casting 50 by means of screws 100, 100, Fig. 4, this keeper bar extending through a groove 95 in the plug 94, as shown in Fig. 7. Secured to the keeper bar is a clip 97 which engages a rib 99 formed on the head of the bushing 72 to hold this bushing in place. Below the bore 96, the casting 50 is provided with another vertical bore 102 in which there is located a guide pin 104 and a spring 106 for holding a ball valve 103 yieldingly against a seat provided by a shoulder 110 in the bore 92.

Secured to the lower end of the casting 50 by means of screws 112, 112, Fig. 5, is a distributor plate 114 of the shape shown and through which there have been drilled a number of holes 116, 116 of various different sizes. The guide pin 104, referred to above, is mounted on this plate, see Fig. 7. For applying cement to the toe end of the bottom of the insole of a shoe being lasted, a horse-shoe-shaped nozzle 120, Fig. 8, is associated with the casting 50, and this nozzle is held in place on the lower end of the casting and against the lower side of the plate 114 by means of an L-shaped spring clip 122, Fig. 7, which carries at its lower end a button 124 adapted to engage a recess 126 formed in the nozzle, Fig. 8. Two guide pins 128, 128 are secured to the lower end of the casting 50 and serve to locate the nozzle in the manner

illustrated in Fig. 8. The nozzle is provided with two V-shaped notches 130, 130 adapted to receive the operating ends of the jaws of a pair of tongs, or similar tool, by means of which the nozzle may be removed from the casting 50 by urging it to the right, Fig. 7, in a manner which should be apparent.

On its upper side, the nozzle 120 is provided with a U-shaped groove 132 which lies directly below the holes 116 in the plate 114 and, above this plate, the lower end of the casting 50 is provided with a similar shaped groove 134 which intersects the lower portion of the previously mentioned bore 102, see Fig. 3. Leading from the groove 132 there are a number of relatively small passages 136, 136, Figs. 7 and 8, through which molten adhesive may be extruded by the action of the piston 64 onto the bottom of the toe end of the insole of the shoe generally in the same manner as is explained in the above-mentioned Jorgensen patent. To this end, the space within the cylindrical bore 60 beneath the casting 64 and within the bores 74, 90, 92 and the ports 86 and 88, is filled with molten cement in a manner to be explained below before the carrier is swung in a clockwise direction, Fig. 1, to locate the cement applying device over the toe end of the shoe in the machine.

Mounted on the shaft 70 is a lever 150 to the upper arm of which there is connected one end of a rod 152 having a shoulder 154 thereon. The other end of this rod is slidably mounted in a block 156 which is pivotally carried by one arm 158 of a bell-crank lever 160 having another arm 162. Interposed between the block 162 and the shoulder 154 is a compression spring 164 which urges the rod 152 to the left, Fig. 6, to the extent permitted by a check nut 166 on the right-hand end of the rod. At the lower end of the arm 162 of the bell-crank lever 160 there is a roller 168. When the carrier 24 is moved downwardly to bring the nozzle 120 into operative engagement with the toe end of the shoe in the machine, the roller 168 will strike a fixed plate 170, associated with the machine, and the piston 64 will be moved downwardly in a manner which will be apparent, thus forcing molten adhesive beneath the piston past the downwardly opening valve 108 and out through the passages 136, 136 in the nozzle, the valve 78 now being held against its seat by the pressure of the cement. Mounted on the rod 152 is a spring steel plate 180 having a notch 182 formed therein. This plate is so disposed that when the carrier 24 reaches its lowermost position and when the lever 150 has been rotated in a counterclockwise direction to actuate the piston 64, this plate will spring to the right, as viewed in Fig. 4, so that the notch 182 therein receives a roll 184 which is carried by the upper arm of the lever 150, thereby locking the piston 64 in its down position, for a purpose which will presently appear. As will be explained below, this plate is removed from its latching position at a later point in the operating cycle and after the carrier 24 has been moved upwardly and returned to the position shown in Fig. 1. Therefore, when the lever arm 150 is thus released with the carrier in an elevated position, the bell-crank lever 160 will be returned by gravity to the position in which it is shown in Fig. 6 and as determined by the engagement of the lower arm of the lever 150 with a stop pin 186.

In the arrangement disclosed in the above-mentioned patent, the cement applying device has a chamber in which solid cement is melted and from which this molten cement is supplied to the cylinder bore of that device which corresponds to the cylinder bore 60 of the herein illustrated mechanism. For supplying molten adhesive to the cylindrical bore 60, the herein illustrated machine is provided with the mechanism about to be described. Secured to the casting 50 by means of screws 200 is a plate 202 which is cut away on one side to provide a recess 204 and an S-shaped passage 206, see Figs. 4 and 7, the recess 204 being in communication with the

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left-hand end of the bore 74 in the bushing 72. As will be seen in Fig. 4, the passage 206 is flared slightly at its upper end and is in register with a tapered inlet opening 208 which is formed in a member 210 secured to the upper end of the plate 202 by screws 212. Fitted within bores provided in the casting 50 are two electrical heating units 214, Fig. 4, for heating the casting to melt cement fed into the passage 206 and recess 204.

Secured to and extending outwardly from the frame 20 of the machine is a bracket 220, Fig. 1, carrying on its outer end a plate 222, Figs. 4 and 10. Mounted on this plate is an L-shaped support 224 to which there is secured, by means of screws 226, 226, a pair of housing members 228, 230, separated by spacer blocks 232, Fig. 10, 234 and 236, Fig. 12. The spacer blocks 234 and 236 are extended upwardly, Fig. 4, to support the guide tubes 238 and 240. These guide tubes are spaced apart slightly at their adjacent ends, see Fig. 9, and are provided, respectively, with passageways 242, 244 which are flared at their adjacent ends for a purpose which will presently appear. When the carrier 24 is in the position in which it is shown in Fig. 1, the casting 50 will be in the position in which it is shown in Fig. 4, and the left-hand end of the passageway 244 of the guide tube 240 will be directly in line with the tapered inlet opening 208 which is associated with the passage 206. Thus, if the leading end of a rod of cement, indicated by the reference character R and extending from a coil on a supply reel, not shown, is fed through the passageways 242, 244 and into the passage 206 through the inlet 208, its leading end will be progressively melted and this molten adhesive will be forced, by the incoming solid portion of the rod, out of the recess 204, past the ball valve 78, and into the cylinder bore 60 beneath the piston 64 in a manner which should be apparent.

Referring again to Fig. 9, the guide tubes 238, 240 are slotted, as indicated at 246 and 248, and projecting upwardly through the slots 248, 248 are the teeth 250 of a feed wheel 252. In a like manner, the V-shaped peripheral edge 254 of a presser wheel 256 projects through the slots 246, 246. The feed wheel 252 is secured to a hub 258 formed integrally on one end of a shaft 260 which is journaled in the housing member 228, Fig. 10, and which carries at its left-hand end a hand knob 262. Journaled in the other housing member 230 and in alignment with the shaft 260 is a shaft 264 which has formed on its left-hand end three arms 266 shaped at their outer portions to fit within a circular recess 268 in the hub 258. Between adjacent arms 266 are cam-like surfaces 270 with which there are associated clutch rollers 272 acted on by spring plungers 274, Fig. 9. Secured to the right-hand end of the shaft 264 is a pinion 276 which is in mesh with the teeth of a rack 278. At its upper end, this rack is connected to a piston 280 which is slidable within the bore of a cylinder 282 formed on the housing member 230. Secured by a screw 283 to the lower end of this rack, which is supported by a guide member 284 mounted on the housing member 230, Fig. 12, is an arm 286, see also Fig. 4, and a downwardly extending bar 288. A coil spring 290, stretched between a screw 292, Fig. 4, and a portion of the arm 286, Fig. 12, holds the piston 280 yieldingly in the elevated position in which it is shown in Figs. 4 and 10 and with the head of the screw 283 bearing against the lower end of the cylinder 282.

Mounted on the L-shaped support 224 is a guide block 300 having a hollow stem portion 302 and a pair of spaced side plates 304, Fig. 10, this block being held in place by means of a clamp nut 306 threaded onto the stem portion 302. Slidable between the side plates 304, 304 is a trunnion block 308 on which there is pivotally mounted a lever 310. The block 308 has a stem 312 which bears, at its lower end, on an adjusting screw 314. On one of its ends, the lever 310 carries a roll 316, while

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connected to the other end of this lever is a link 318. The presser wheel 256 is journaled on an arm 320 which is pivotally mounted on a stud screw 322 threaded into a laterally extending arm 324 which is associated with the cylinder 282, Fig. 4. Beyond the presser wheel 256 and at the end of the arm 320 there is journaled a shaft 325 to which there are secured a knurled knob 326 and a stop lug 328, Fig. 11. One end of this shaft is reduced in diameter, as indicated at 330, to receive the upper end of the rod 318 which is slotted at 332 to fit over the reduced diameter portion of the shaft. Connected to this shaft, by means of an eye in its upper end is a rod 334 which projects downwardly through a hole 336 in the bracket 224, Fig. 4. Interposed between the lower end of the L-shaped support 224 and stop nuts 338 threaded on the rod 334 is a compression spring 340 which tends to urge the presser wheel yieldingly into engagement with a rod of cement in the passageways 242, 244 of the guide tubes 238, 240 and thus to hold the rod of cement yieldingly against the teeth 250 of the feed wheel 252.

With the arrangement which has so far been described, when the piston 280 is moved downwardly, by fluid under pressure admitted to the cylinder 282 through a conduit 342, the feed wheel 256 will be driven in the direction of the arrow in Fig. 9 by the action of the roller clutch in a manner which will be apparent. As the piston descends, the bar 288 contacts the roll 316 and swings the lever 310 in a counterclockwise direction, Fig. 4, thus elevating the link 318. When the bottom of the slot 332 engages the shaft 325, Fig. 11, the continued downward movement of the piston will lift the presser wheel 256 away from the rod of cement thereby permitting that portion of the rod which is within the flared portions of the passageways 242, 244 to spring upwardly and away from the teeth 250 of the feed wheel 252 and terminating the feeding movement of the rod of cement by the feed wheel. As will be apparent, by adjusting the block 308 vertically, by means of the adjusting screw 314, the length of rod of cement which is fed along and into the passage 206 of the cement applying device 26 may be varied. As will soon be pointed out, the remaining idle portion of the downward stroke of the piston 280, which occurs after the feeding of the rod has been terminated and which is limited by a stop screw 311, Fig. 4, is utilized for another purpose. The piston 280 is returned to its uppermost position by the spring 290 when the conduit 342 is connected to exhaust. As the piston moves upwardly, the roller clutch automatically releases the feed wheel which is held against reverse rotation by means of a friction brake comprising an arm 350, mounted on the bracket 224, Fig. 12, and having a slotted upper end adapted to be clamped onto the shaft 260 by a screw 352. For stabilizing the movement of the rod of cement as it is fed along by the feed wheel, a drag brake is provided, see Figs. 4 and 11. This brake comprises a loop 354 formed in a piece of wire 356 and urged downwardly by a coil spring 358.

Mounted for vertical movement on the casting 50 by means of two links 360, 362 is a knife carrier 364 having secured to its upper end, by means of a screw 366, a knife holder 368 in which there is received a knife blade 370 (Figs. 4 and 6). The link 362 is extended to serve also as an operating lever and carries a stud 372. A coil spring 374 stretched between the lower end of the knife carrier and an arm 376, secured to the cement applying device 26 by means of a screw 377, tends to hold the carrier 364 yieldingly in its lowermost position. Pivotally mounted on a portion of the screw 377 is a latch arm 378 having an enlarged head portion 380 and adapted for use in holding the carrier 364 in an elevated position. A compression spring 382 held in an abutment 384 secured to the plate 202, tends to swing the latch arm 378 in a clockwise direction thereby holding a pin 386 carried by the latch arm in contact with the curved outer end 388 of a stop member 390. This stop member is pivotally

mounted on a bar 392, secured to the above-mentioned plate 222, and is provided with a stop surface 394 adapted to limit swinging movement of the stop member, in a counterclockwise direction, by engagement with a screw 396. The stop member is cut away as indicated at 398, Fig. 4, in order to permit swinging movement thereof in a clockwise direction. Mounted on the knife carrier 364 are two pins 400, 402, and secured to the arm 286, referred to above, is an L-shaped rod 404, Fig. 12, the functions of which will presently appear.

The conduit 342, which is connected at one of its ends to the cylinder 282, see Figs. 4 and 10, has its other end connected to a valve body 410, Figs. 1 and 2, which contains a valve plunger 412. This valve body is supported on the cylinder 32, to which reference has been made above, see especially Fig. 2. The valve plunger 412 is provided with an annular groove 414 by means of which the conduit 342 is placed in communication with another conduit 416 when the valve plunger is in the position in which it is shown in Figs. 1 and 2. The conduit 416 is connected to a source of fluid under pressure, not shown, which is available at all times when the toe lasting machine is in use. On one side, the valve plunger is formed with an axially extending groove 418 the right-hand end of which is adapted to be brought into communication with the conduit 342 when the valve plunger is moved to the right to the extent permitted by a stop plate 420. At its left-hand end the valve body 410 is connected to a third conduit 422 which leads to exhaust. Mounted on the piston rod 34 is an upstanding arm 424 provided at its upper end with an opening 426 through which there extends a rod 428, connected at one end to the valve plunger. Threaded on the other end of this rod are stop nuts 430, while adjustably secured to the rod, by means of screws 432 and on the right-hand side of the arm 424, is a block 434 through which there is threaded an abutment screw 436.

It will be understood, by reference to the Jorgensen patent mentioned above, that during an automatic operating cycle of the toe lasting machine with which the novel cement handling mechanism of this invention is herein illustrated as associated, the arm or carrier 24 goes through the following sequence of movements: vertically downward to bring the trimming mechanism, carried by the arm but not shown, into operative position; vertically upward to its original heightwise position; clockwise swinging to locate the cement applying device 26 directly over the toe end of the shoe being lasted; vertically downward to bring the nozzle 120 of the cement applying device into contact with the bottom of the toe end of the insole of the shoe being lasted, during the latter portion of which downward movement the piston 64 is operated to extrude molten cement out through the passages 136, 136 formed in the nozzle 120; vertically upward to the original heightwise position, and finally counterclockwise swinging movement back to the position shown in the drawings.

As the cement applying device is thus returned to the position in which it is shown in the drawings, the arm 424 engages the screw 436 and moves the valve body 412 to the position shown in Figs. 1 and 2 thereby admitting fluid under pressure to the cylinder 282 and causing the piston 280 to be forced downwardly. As a result of an initial portion of this downward movement of the mentioned piston, the rod of cement R will be fed along through the guide tubes 238, 240 and into the passage 206 in the heated cement applying device through the inlet opening 208, the linear length of the rod of cement thus introduced into the passage 206 depending upon the particular vertical adjustment of the trunnion block 308, as has been explained above. Shortly after the feeding of the rod of cement has been terminated, and during the continued downward movement of the mentioned piston, the arm 286 strikes the stud 372 and elevates the knife carrier 364 thereby causing the knife 370 to sever the end of

the rod of cement which has been projected into the passage 206 from the remaining portion of the rod. Eventually the L-shaped rod 404 will swing the stop member 390 in the direction of the arrow, Fig. 4, thus releasing the latch arm 378 for swinging movement to bring its enlarged head portion 380 beneath the pin 400, such swinging movement of the latch arm being limited by engagement thereof with the pin 402, the downward movement of the piston 280 finally being terminated by the engagement of the lever 310 with the stop screw 311. The knife 370 is thus held in its elevated position so as to serve as a closure for the inlet 208 during movement of the cement applying device to and from its operative position.

Now, as the arm or carrier 24 is subsequently swung in a clockwise direction to bring the cement applying device over the toe end of the shoe being lasted, the arm 424 ultimately engages the stop screw 436 and shifts the valve plunger to the right, Figs. 1 and 2, thereby connecting the conduit 342 to the exhaust conduit 422, through the groove 418. The piston 280 is now returned by spring 290 to the position shown in Fig. 4, together with other parts which are operated thereby and, as the L-shaped rod 404 is elevated the stop member 390 will swing back under the influence of gravity to its operative position as shown in Fig. 4. The knife carrier 364 and the knife 370, however, are still held in their uppermost position by the latch arm 378 until the cement applying device is fully returned to its original position as shown in Fig. 4, after the application of cement to the toe end of the shoe being lasted, whereupon the latch 378 is released by the stop member 390, and the carrier 364 and knife 370 are moved downwardly by the spring 374 to expose the inlet opening 208. Also, when the cement applying device 26 is being returned to its original position, the arm 324 will strike the plate 180 and remove it from latching position, Fig. 4, thus releasing the piston 64 for elevation in response to downward swinging movement of the arm 162, under the influence of gravity, Fig. 6, which is now permitted. As will be apparent, such elevation of the piston 64 will occur substantially at the same time the piston 280 is being operated to feed a fresh charge of cement into the passage 206. Hence, not only is the feeding of the rod of cement R facilitated but, at the same time, entry of air into the passage 206 is effectively avoided.

With the cement handling apparatus which has just been described, the cement applying device can be considerably reduced in size inasmuch as it need only be large enough to provide a chamber for receiving a relatively small quantity of cement, e. g., the space in passage 206, recess 204, cylinder 60, ports 86 and 88, and bores 92 and 102. This, of course, tends to reduce the weight of the parts which are carried by the post 22 and which are moved angularly and axially therewith during the operation of the machine. Also, inasmuch as only a relatively small amount of the cement is melted at any one time, and this just immediately before the molten cement is extruded through the nozzle and onto the work piece, all danger of deterioration of the cement from a continued exposure to high temperature is avoided. This makes it possible to utilize cements in rod form of specific compositions adapted particularly for special working conditions and which could not otherwise be used. Moreover, since the rod cement is provided in a reel containing a coil of considerable size, replenishment of the cement supply is required only at relatively infrequent intervals and this procedure is much simplified inasmuch as all the operator has to do is to replace the empty reel with a full one and then introduce the leading end of the new coil of rod cement into the tube 238 and hold it there and against the trailing end of the preceding rod until the new rod is picked up by the feed wheel during the next cycle of operation thereof.

Having thus described my invention, what I claim as

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15. Cement handling apparatus comprising a heated cement applying device having a cement receiving chamber with a passage leading therinto and mounted for movement between a loading position in which cement is introduced into said chamber and an operative position in which cement is delivered from said chamber, means for moving said device, and a cement handling mechanism mounted in a location closely adjacent to said device when the device is in loading position, said cement handling mechanism having means for feeding a variably predetermined length of solid rod of cement into the passage leading into the chamber in said device, and

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19. Cement handling apparatus comprising a heated cement applying device having a cement receiving chamber with a passage leading therinto and mounted for movement between a loading position in which cement is introduced into said chamber and an operative position in which cement is delivered from said chamber, means for moving said device, and a cement handling mechanism mounted in a location closely adjacent to said device when the device is in loading position, said cement handling mechanism having means for feeding a variably predetermined length of solid rod of cement into the passage leading into the chamber in said device, a reciprocating knife for severing that portion of the rod of cement fed into the passage from the remaining portion of the rod, and means for holding said knife in a position to close said passage while the cement applying device is moved away from said loading position.

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20. Cement handling apparatus comprising a heated cement applying device having a cement receiving chamber with a passage leading thereto and mounted for movement between a loading position in which cement is introduced into said chamber and an operative position in which cement is delivered from said chamber, means for moving said device, and a cement handling mechanism mounted in a location closely adjacent to said device when the device is in loading position, said cement handling mechanism having means for feeding a 10 variably predetermined length of solid rod of cement into the passage leading into the chamber in said device

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in response to movement of the device to loading position, a reciprocating knife for severing that portion of the rod of cement fed into the passage from the remaining portion of the rod, and means for holding said knife in a position to close said passage while the cement applying device is moved away from said loading position.

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