

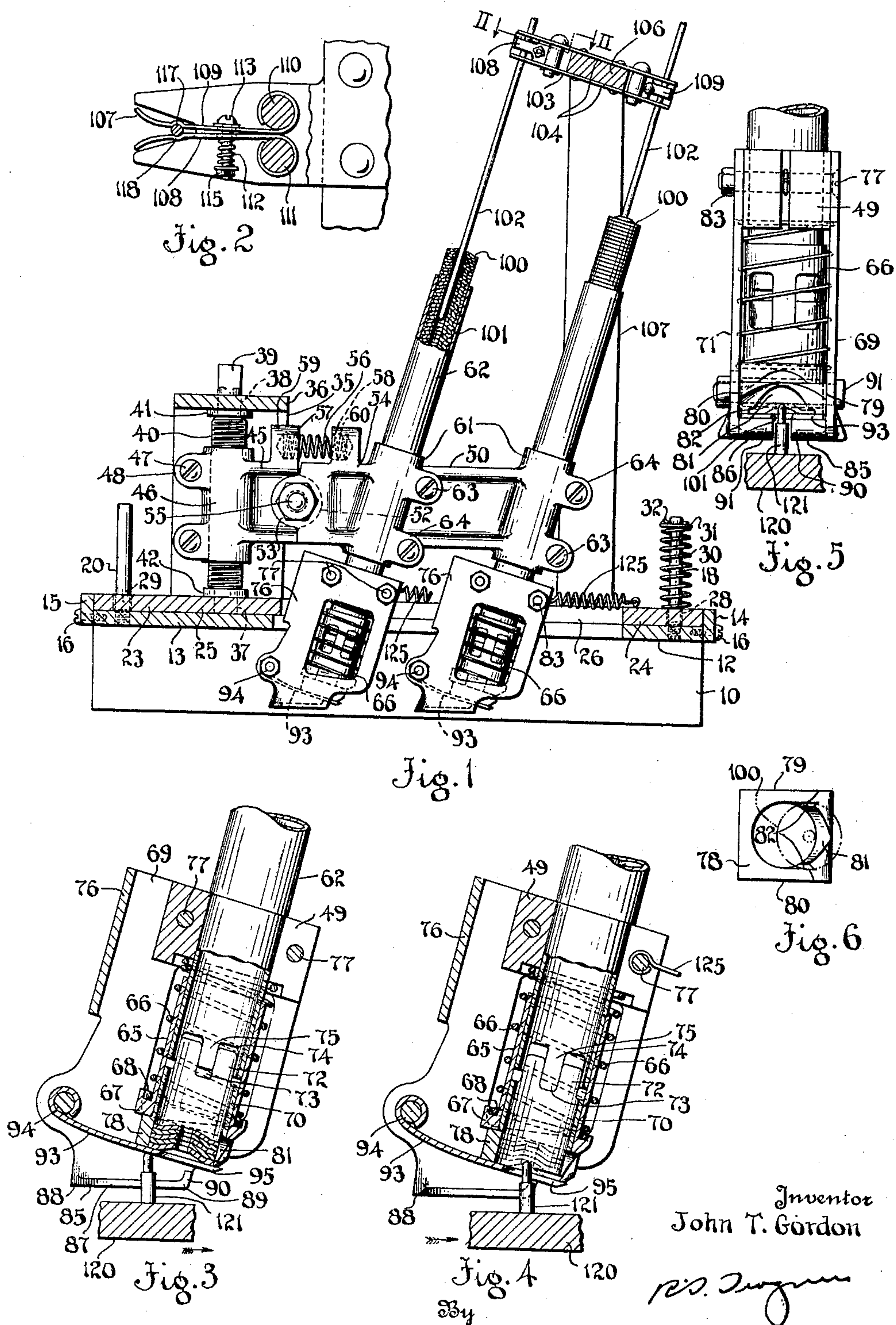
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HEEL WASHER DISTRIBUTING DEVICE

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## UNITED STATES PATENT OFFICE

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## HEEL WASHER DISTRIBUTING DEVICE

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This invention relates to the manufacture of rubber heels and like articles where nail-holding washers are employed, and it has particular relation to a device for distributing the washers to the pins of molds employed for vulcanizing such articles of manufacture.

The invention is an improvement over the heel washer distributor embodied in the patent to Shrock 1,584,477, issued May 11, 1926, and has for an object the provision of an improved device of the above noted character which will distribute the washers to the pins of heel molds in an efficient and uniform manner.

For a better understanding of the invention, reference may now be had to the accompanying drawing, forming a part of the specification, of which:

Fig. 1 is an elevational view partly cross-sectional of a heel washer distributing device constructed according to one form of the invention;

Fig. 2 is a fragmentary cross-sectional view, on a larger scale, taken substantially along the line II—II of Fig. 1, illustrating a device for securing a washer stringing wire in its operative position;

Figs. 3 and 4 are fragmentary views partly cross-sectional, of one of the heel washer distributing devices shown by Fig. 1, illustrating the manner in which a washer is disposed upon the pin of a heel mold;

Fig. 5 is a rear elevational view of the construction shown by Fig. 4; and

Fig. 6 is a plan view showing in detail the lower end surface of one of the washer distributing elements.

Referring to Fig. 1, a frame base 10 is provided, which comprises spaced upper plates 12 and 13 disposed respectively at the ends of the frame. The plates 12 and 13 are provided at their remote edges with guide bars 14 and 15, respectively, which are secured to the plates by screws 16. A pin 18 threaded at its lower end into the plate 12 projects upwardly from the latter while a similar pin 20 projects upwardly from the plate 13.

A second frame 23 substantially rectangular in shape and of such dimensions that it seats on the plates 12 and 13 between the

guide members 14 and 15 comprises a pair of plates 24 and 25 disposed respectively upon the plates 12 and 13, which are rigidly connected by a pair of frame members 26. The plates 24 and 25 have openings 28 and 29 respectively, which receive the pins 18 and 20, respectively. The plate 24 is urged downwardly against the plate 12 by a helical spring 30 encircling the pin 18 and abutting at its lower end the plate 24 and at its upper end a collar 31 retained upon the upper end of the pin by a cotter pin 32.

The frame 23 includes an upwardly projecting support 35 that is provided with an upper horizontally disposed portion 36. The plate 25 and the portion 36 are provided with openings 37 and 38, to receive end portions of a pin 39 that has an intermediate enlarged screw threaded portion 40, and at opposite ends of the screw threaded portion, collars 41 and 42 are provided for properly retaining the pin 39 in position. The upper end of the pin 39 is polygonal in shape to facilitate turning it by utilizing a suitable wrench. An arm 45 is provided with an integrally threaded bifurcated cylindrical portion 46 at one end which engages the threaded portion 40 of the pin 39 and the free ends of the bifurcated portion of the arm are provided with ears 48 adapted to be drawn together by screws 47. It is apparent that by loosening the screws 47, the pin 39 may be turned with respect to the bifurcated portion 46 of the arm 45 and, consequently, the arm 45 moved upwardly or downwardly depending upon the direction in which the pin 39 is turned. Also, it is apparent that by tightening the screws 47, the arm 45 is rigidly maintained in position with respect to the pin 39, although the pin is free to rotate in the openings 37 and 38. Other pins identical to the pin 39 may be rotatably mounted in the bar 25 and the plate 36 in spaced relation with respect to the pin 39, for receiving other similar arms such as indicated at 50.

The opposite end of the arm 45 is provided with a semi-circular lug 52 projecting from its end surface, which is disposed between a bifurcated portion 53 of an arm 54. A pin 55 projecting through the lug 52 and the bi-



furcated portion 53 pivotally connects the arm 45 to the arm 54. In order to permit limited pivotal movement of the arms 45 and 54, the end surface of the former above and below the pin 55 defines a straight angle or one equal to  $180^\circ$ , with respect to the pin, whereas the end surface of the arm 54 above and below the pin defines an oblique angle slightly less than  $180^\circ$ . Hence, the angular movement of the arms one with respect to the other is equal to the difference in degrees between the oblique angle and the straight angle.

The end surfaces of the arms 45 and 54 below the pin 55, normally are maintained in contact by a spring 56, having its ends seated in pockets 57 and 58 of lugs 59 and 60 respectively provided on the upper edges of the arms. It is apparent that the arm 54 can be moved about the pin 55 against the action of the spring 56 until the portions of the end surfaces of the arms 45 and 54 above the pin contact with each other.

The opposite end of the arm 54 is provided with a bifurcated cylindrical portion 61 which is adapted to receive a heel washer magazine 62. Screws 63 engaging ears 64 at the free ends of the bifurcated portion 61 serve to draw the bifurcated ends together and hence to secure rigidly the magazine 62 with respect to the bifurcated portion 61. It is apparent that by loosening the screws 63 the magazine 62 may be adjusted with respect to the arm 45.

As best shown by Figs. 3, 4 and 5, the lower end of the magazine 62 projects through a bifurcated block 49 having a cylindrical opening provided between the bifurcated ends thereof. This block is disposed between legs 69 and 71 of a U-shape frame 76, and is retained between such legs by bolts 77 projecting through opposite ends of the block 49, through the legs 69 and 71 of the frame 76, and having nuts 83 threaded on the ends thereof. A sleeve 65 telescopically receives the lower end of the magazine 62, and is urged towards the lower end of the magazine, by a helical spring 66 encircling the sleeve. This spring abuts at its upper end the block 49 and at its lower end a flange 67 integral with the lower end of the sleeve and which has a groove 68 for receiving the lower convolution of the spring. A second sleeve 70 which is shorter than the sleeve 65 is disposed partially within the lower portion of the latter sleeve, and is of such dimensions, that it tightly engages such sleeve and in effect acts as an integral part thereof. Insofar as the operation of the sleeve 65 and 70 is concerned, they might be integral, but it is easier to manufacture them separately and thereafter rigidly associate them together. The upper end of the sleeve 70 is provided with alternating projections 72 and recesses 73 which cooperate respectively with com-

plementary openings 74 and projections 75 formed in the lower end of the magazine 62 for permitting relative movement of the magazine and sleeves, while preventing lateral movement of heel washers disposed on the lower end of the magazine.

As shown best by Fig. 3, the lower end of the sleeve 70 is enlarged to provide a rectangular portion 78, the sides of which as indicated at 79 and 80 slidably engage the legs 69 and 71 of the frame 76 (Fig. 5). The rear wall of the rectangular portion 78 is recessed as indicated at 81, and such recess at its lower edge is enlarged to provide a groove 82, which is open to the lower end of the sleeve.

The lower ends of the legs 69 and 71 of the frame 76 are turned in toward each other as indicated at 85 and 86 and the adjacent edges of such inturned portions are convergently directed to provide a guideway 87 having a relatively large entrance 88, which gradually tapers into a portion 89, below the sleeve 70, which has parallel sides. The ends of the inturned portions 85 and 86 opposite the enlarged portion 88 of the guideway formed between them, are turned upwardly as indicated at 90 and 91 to provide seats for a shoe 93 which is pivotally mounted upon a bolt 94 projecting through the legs 69 and 71 of the frame 76. The free end of the shoe 93 supports the sleeve 70. Also, the shoe 93 is provided with an elongate opening 95 in its free end, which is aligned with the center of the sleeve 70 and the portion 89 of the guideway 87 formed between the inturned edges 85 and 86 of the frame 76.

The magazine 62 is adapted to receive concave heel washers 100 having their convex surfaces uppermost, and which are provided with centrally located nail-receiving openings 101. Initially, these washers are arranged upon a wire 102 and the lower end of the latter is moved downwardly into the magazine 62 until its lower end is adjacent the shoe 93. Then the washers are permitted to move along the wire until the lower end of the column rests upon the shoe and the wire then is moved upwardly until its lower end is disposed only a short distance in the magazine. Then the upper end of the wire is fastened in a clamping device 103. As best shown by Figs. 1 and 2, the clamping device 103 comprises a pair of vertically spaced plates 104 which are secured intermediate their ends on opposite sides of a bar 106 extending laterally from and secured to an upright support 105 that is secured at its lower end to the base 10. The free ends of the plates 104 are provided with V-shape recesses 107. Elongate metal elements 108 and 109 having one end looped respectively about the pins 110 and 111 projecting through the plates 104, extend between the latter, into positions of alignment with the recesses 107. Adja-



cent the pins 110 and 111 the elements 108 and 109 are resiliently urged together by a spring 112 disposed upon a bolt 113 projecting through openings in the elements. The head of the bolt 113 engages the outer side of the element 109 while the spring 112 is disposed on the opposite end of the bolt and engages the outer side of the element 108 and a nut 115 threaded upon the outer end of the bolt. The end portions of the elements 108 and 109 defining the recess 107 are provided with adjacent arcuate recesses 117 and 118 which are adapted to retain the wire 102 in position in alignment with the axis of the magazine 62. It is to be understood that as many clamping devices 103 as desired may be mounted upon the bar 106 for clamping other washer receiving wires employed.

The operation of the above-described heel washer distributing device is as follows:

The plate 120 of a heel mold having a plurality of pins 121 projecting upwardly therefrom, is moved beneath the washer distributing devices in a direction indicated by the arrows in Figs. 3 and 4. In applying a washer upon one of the pins 121 the latter is moved into the guideway 87 and, owing to the fact that such guideway is relatively large at the entrance side thereof, it is apparent that pins 121 not exactly in alignment with the guideway may be provided with washers, because the arms 54 and 50 to which the washer distributing devices are secured, are free to swing about the axes of the pins 39. However, the arms 54 and 50 normally are maintained in positions parallel with respect to the base 10 by springs 125 secured to one of the bolts 77 on the frame 76, and to the plate 24 forming part of the frame 23. As the pin 121 moves through the guideway 87, its upper end first engages the shoe 93 and moves the shoe about the pivot 94, and, consequently, moves the sleeves 70 and 65 upwardly against the action of the spring 66. Likewise, the column of washers will be moved upwardly with the sleeves. When the pin reaches the recess 95 in the shoe 93, the shoe, the aforesaid sleeves, and the column of washers move downwardly to a position limited by the engagement of the shoe with the upturned portions 90 and 91. It is apparent that as the pin 121 moves into the recess 95, the central opening in the washer at the lower end of the column thereof engages the pin. Further movement of the pin, as particularly shown by Fig. 4, causes movement of the lower washer through the recess 82 until it is free of the enlarged portion 78 of the sleeve 70. It is apparent that when the washer thus is moved from the lower end of the column of washers, the succeeding washer moves downwardly until it rests upon the shoe 93.

Should for any reason one of the lower washers not be in a position to pass freely from the recess 82, the frame 49, magazine

62, and arm 54 as an entity will pivot slightly about the pin 55 against the action of the spring 56. The amount the aforesaid parts are permitted to move about the pin is such that the washer can be moved upwardly sufficiently to allow the pin 121 on the heel mold to move past it without being stopped thereby. Hence, a continual movement of the mold is provided for, which is desirable in certain methods of manufacture.

From the foregoing description it is apparent that the device provided by the invention provides an efficient means for distributing washers to heel molds, and that it practically insures the distribution of but one washer to each pin of the mold, because the sleeves 65 and 70 move coaxially with respect to the magazine 62 notwithstanding the fact that the shoe 93 moves about a pivot point 94. Also, it is apparent the legs 69 and 71 of the frame 76, prevent turning of the aforesaid sleeves. Actual use of the heel washer distributing apparatus embodied in this invention indicates that practically in every instance only one washer is distributed to each pin of the heel mold.

Although only one form of the invention has been illustrated and described in detail, it will be apparent to those skilled in the art that the invention is not so limited but that various modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

What I claim is:

1. A device for distributing washers to the pins of heel molds, comprising a magazine for receiving a column of washers adapted to be moved with respect to a heel plate having pins for receiving washers, and an escapement device at the lower end of the magazine including a sleeve telescopically slidable on the lower end of the magazine.
2. A device for distributing washers to the pins of heel molds, comprising a magazine for receiving a column of washers adapted to be moved with respect to a heel plate having pins for receiving washers, an escapement device at the lower end of the magazine including a sleeve telescopically associated with the lower end of the magazine, and resilient means normally urging the sleeve toward the lower end of the magazine.
3. A device for distributing washers to the pins of heel molds, comprising a magazine for receiving a column of washers, adapted to be moved with respect to a heel plate having pins for receiving washers, an escapement device at the lower end of the magazine including a sleeve telescopically associated with the lower end of the magazine, said escapement device also including a plurality of teeth and recesses adapted to cooperate with complementary recesses and teeth in the lower end of the walls of the magazine for pre-



venting washers from moving laterally while passing from the magazine into the sleeve, the arrangement being such that the washers are at all times held in alignment with each other.

5 4. A device for distributing washers to the pins of heel molds, comprising a magazine for receiving a column of washers adapted to be moved with respect to a heel plate having  
10 pins for receiving washers, an escapement device at the lower end of the magazine, said device including a sleeve telescopically receiving the lower end of the magazine, and axially slidable thereon.

15 5. A device for supplying washers to the pins of heel molds comprising an arm pivotally movable both horizontally and vertically and means supported by the arm for distributing the washers.

20 6. A device for supplying washers to the pins of heel molds comprising an arm pivotally movable in a vertical direction, and means carried by the arm for distributing the washers.

25 7. A device for supplying washers to the pins of heel molds comprising an arm pivotally mounted for movement in a horizontal plane, a portion of the arm also being mounted for pivotal movement in a vertical plane,  
30 and means supported by said portion of the arm for distributing the washers.

8. A device for supplying washers to the pins of heel molds comprising an arm pivotally movable both horizontally and vertically,  
35 ly, means supported by the arm for distributing the washers, and resilient means for normally maintaining the arm in a predetermined position.

In witness whereof, I have hereunto signed  
40 my name.

Signed at Akron, in the county of Summit and State of Ohio, U. S. A., this 7th day of April, 1930.

JOHN T. GORDON.

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