

Oct. 25, 1949.

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2,485,708

SHOE SOLE SHANK TRIMMER

Filed Aug. 2, 1948

5 Sheets-Sheet 1

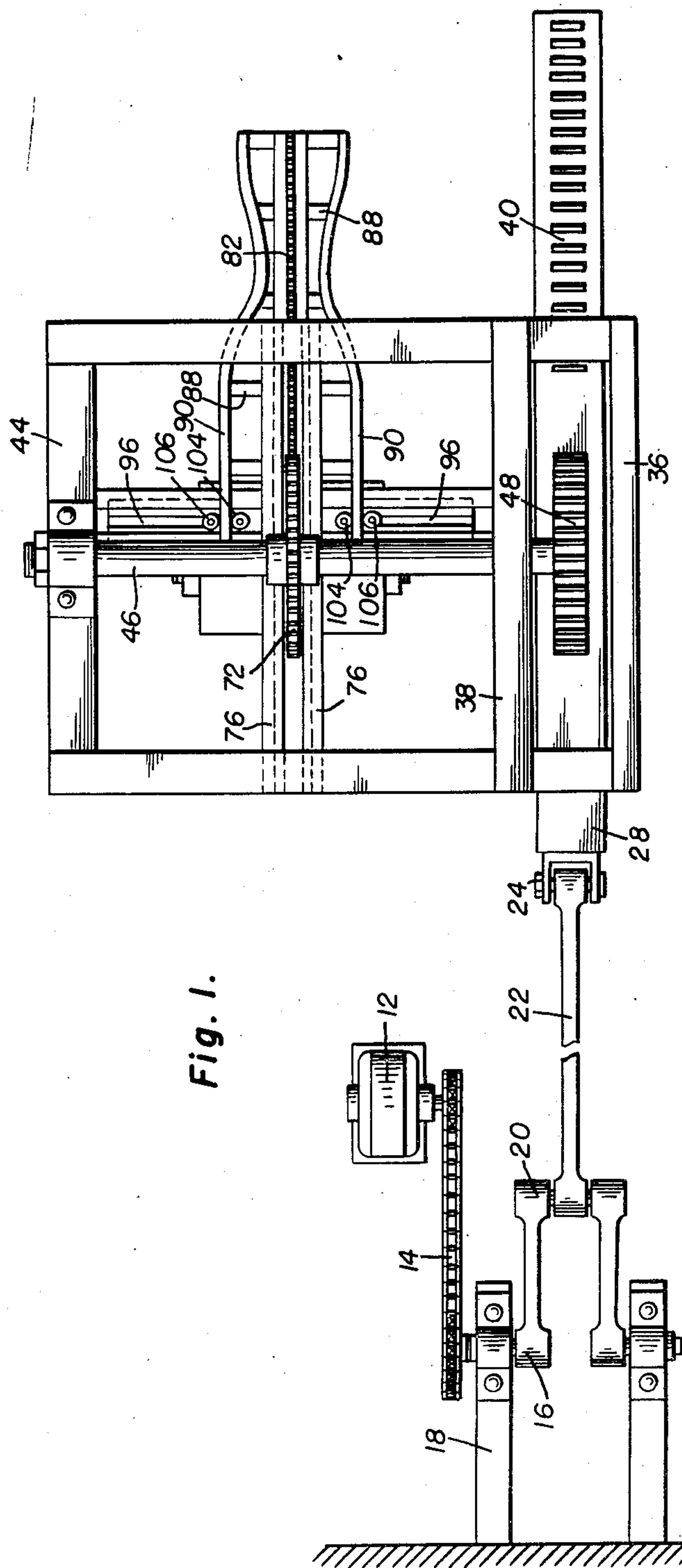


Fig. 1.

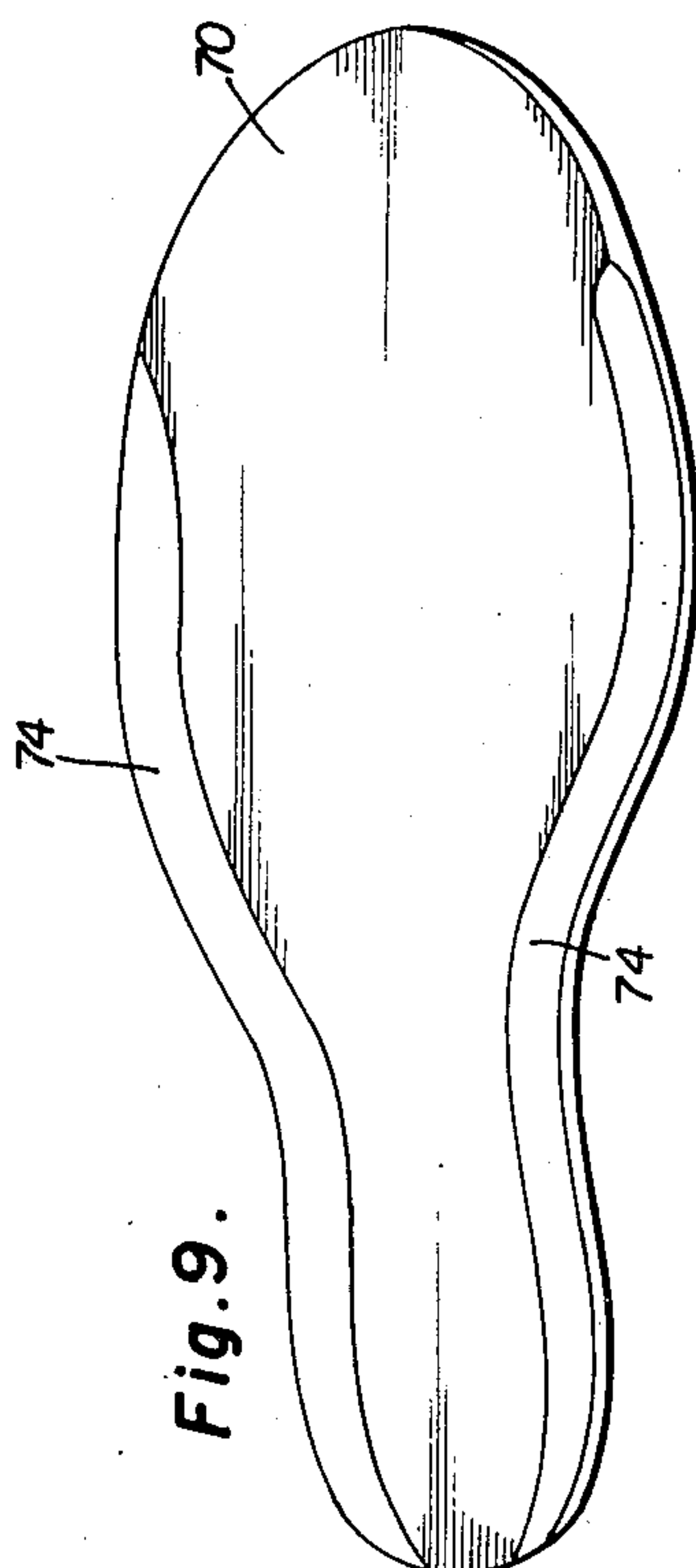


Fig. 9.

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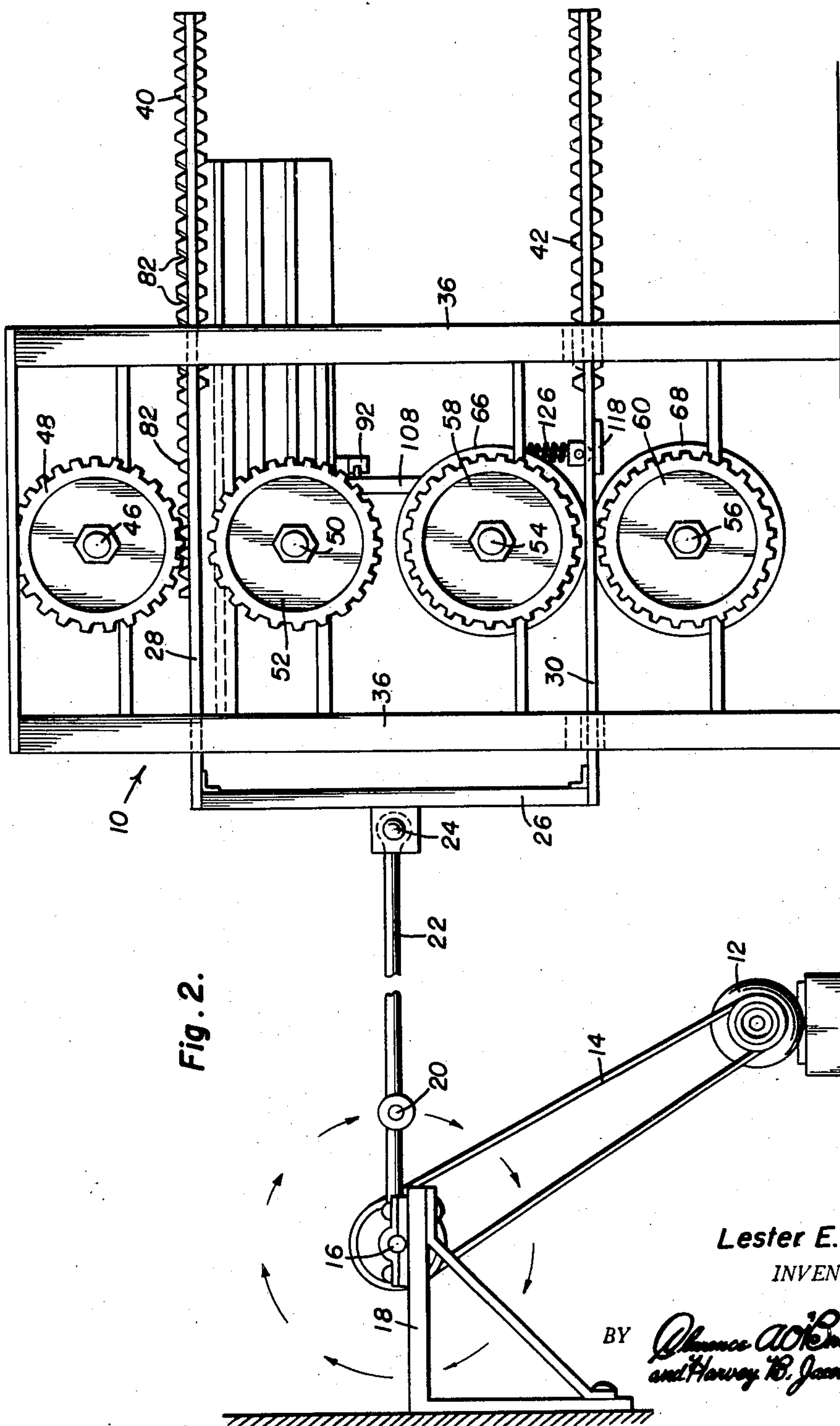
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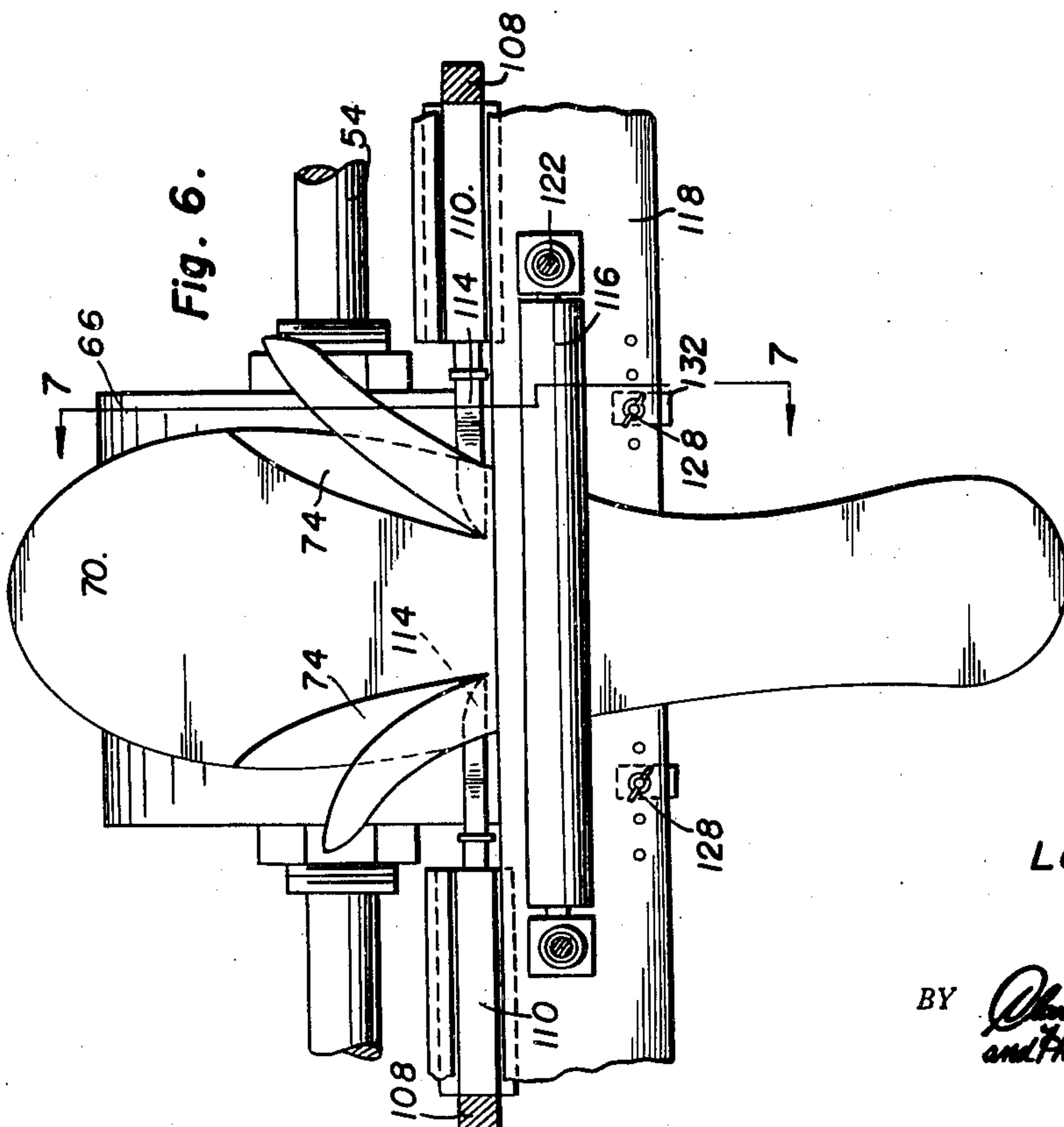
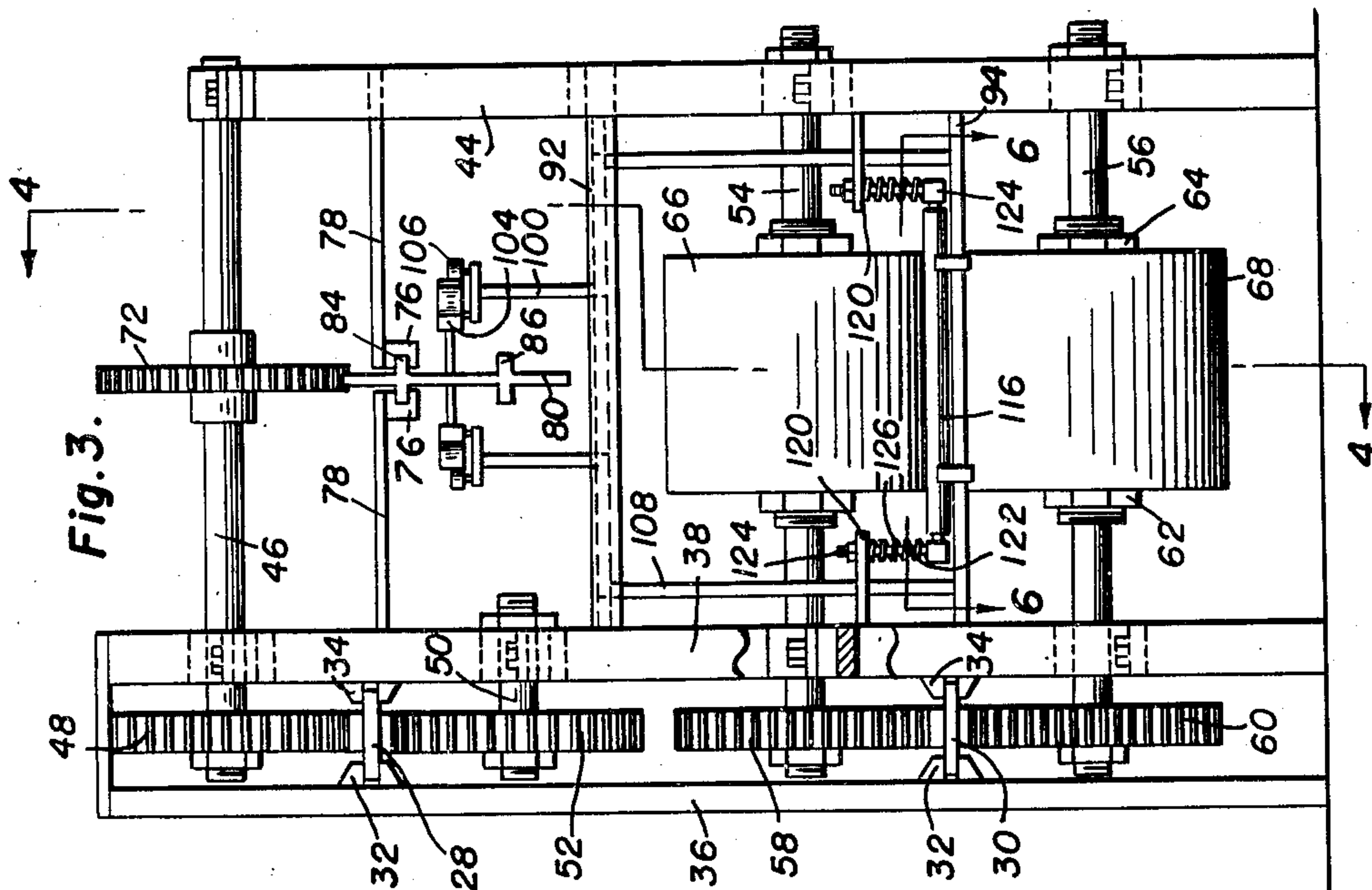
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SHOE SOLE SHANK TRIMMER

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SHOE SOLE SHANK TRIMMER

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Fig. 4.

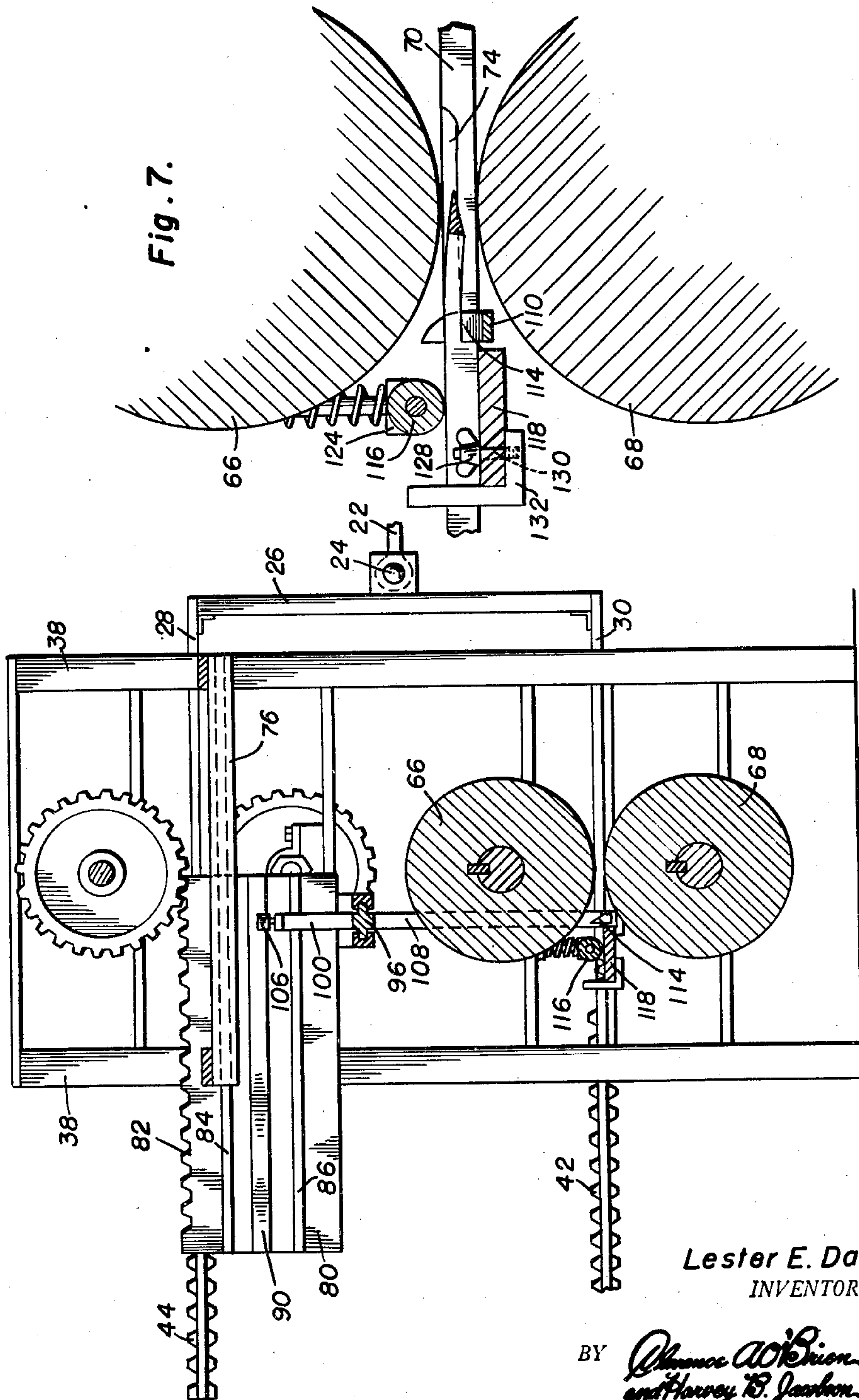


Fig. 7.

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SHOE SOLE SHANK TRIMMER

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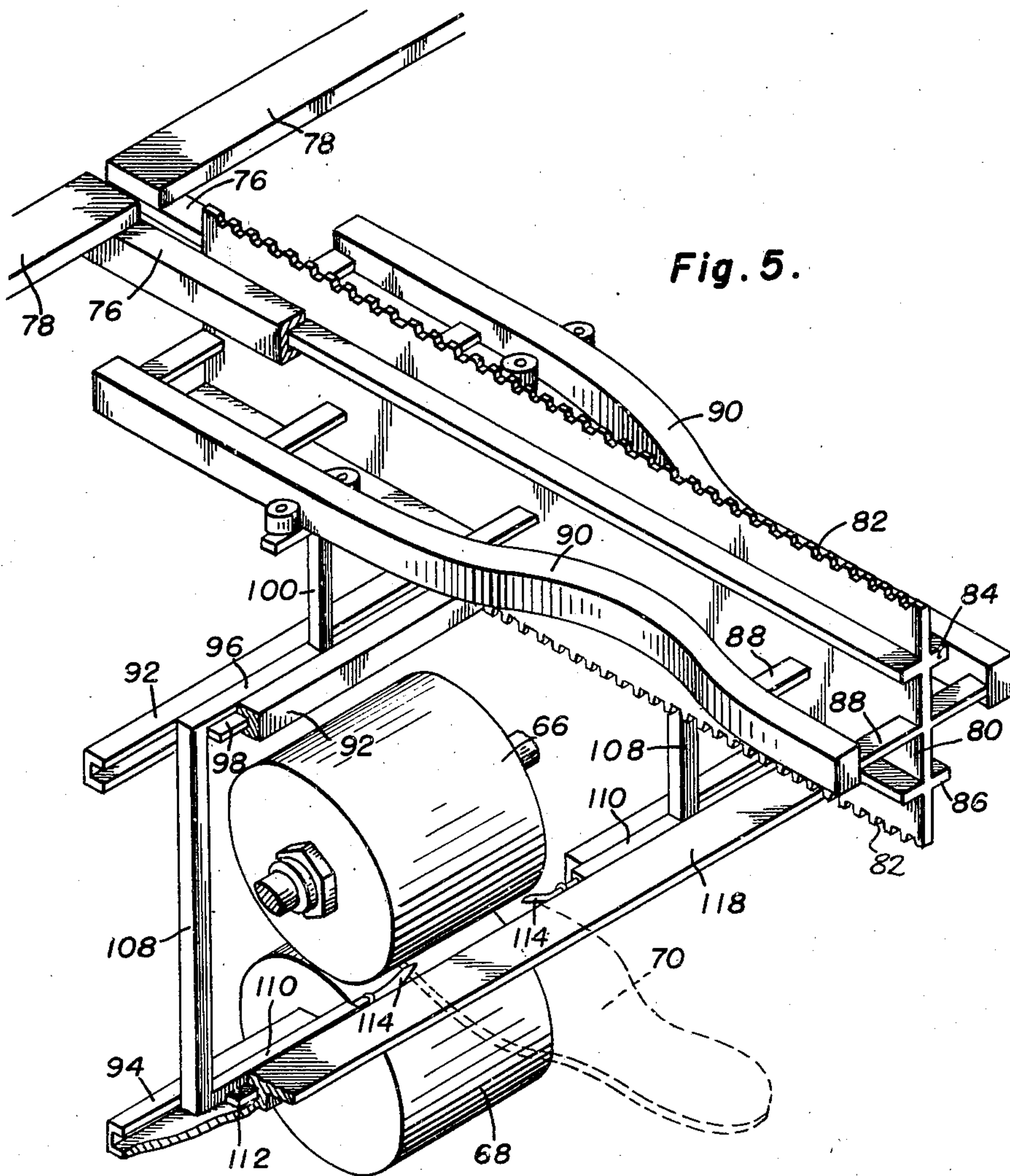


Fig. 5.

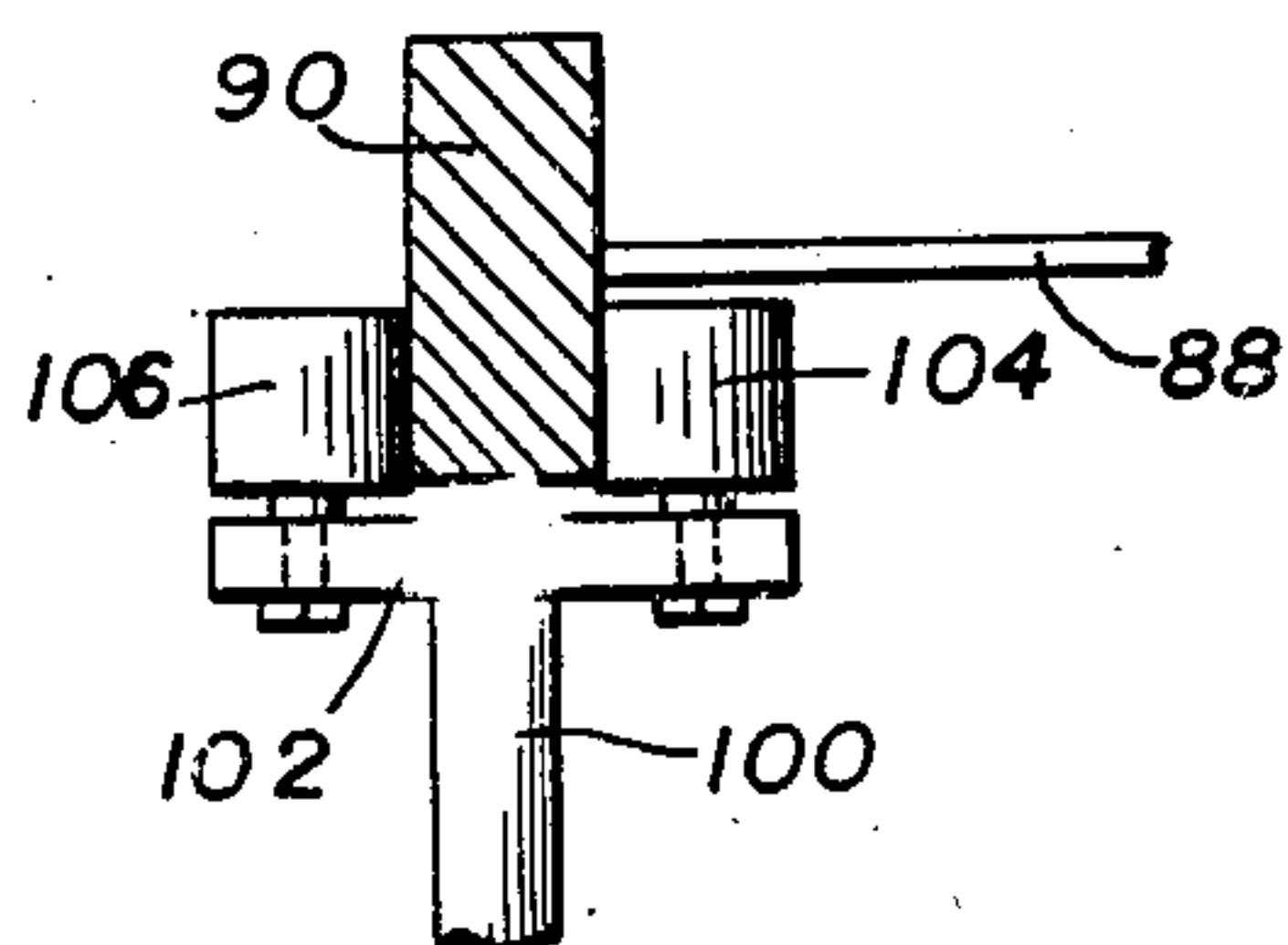


Fig. 8.

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UNITED STATES PATENT OFFICE

2,485,708

SHOE SOLE SHANK TRIMMER

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Application August 2, 1948, Serial No. 42,088

8 Claims. (Cl. 12—17)

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This invention comprises novel and useful improvements in a shoe sole shank trimmer and more specifically pertains to an apparatus for automatically beveling or trimming the edges of shoe soles in accordance with various interchangeable sole patterns, in an improved manner.

The principal object of this invention is to provide an apparatus which will automatically bevel or trim the edges of shoe soles in conformity with various predetermined patterns, and which apparatus may be readily adapted to trim various sizes of shoe soles by interchangeable patterns and which is capable of selectively trimming right or left soles by merely reversing the pattern in its holder.

An important feature of the invention resides in an apparatus having a pair of sole trimming knives which are automatically and simultaneously moved toward and from each other as a shoe sole is passed therebetween, to bevel or trim the sole in a predetermined pattern.

A very important feature of the invention comprehends the provision of an improved means for controlling the operation of the shoe sole shank trimming knives by means of a pattern which controls the movement of the knives accurately and positively.

A further important feature of the invention resides in the provision of an apparatus as set forth in the foregoing paragraphs wherein an improved means is provided for mounting the pattern, for guiding the same during its longitudinal movement for controlling the trimming knives and for enabling the pattern to be reversed to selectively trim right or left hand soles.

A still further important feature of the invention resides in the provision of an apparatus in conformity with the above-mentioned features wherein an improved means is provided for supporting the shoe soles during their passage between the trimming knives.

These, together with various ancillary features and objects of the invention which will later become apparent as the following description proceeds, are attained by this device, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a top plan view of a preferred apparatus for effecting the purposes and principles of the invention;

Figure 2 is a side elevational view of the apparatus shown in Figure 1, taken from the lower end of that figure;

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Figure 3 is an end elevational view of Figures 1 and 2, taken from the right end of the same;

Figure 4 is a vertical longitudinal sectional view taken substantially upon the plane of the broken section line 4—4 of Figure 3;

Figure 5 is a fragmentary perspective view of a portion of the apparatus, illustrating the cooperative relation between the pattern guide, the pattern slidably mounted therein, the trimming knives, the trimming knife actuating means, the feed rollers, and a shoe blank supported for passage therebetween;

Figure 6 is a horizontal sectional detail view taken substantially upon the plane of the section line 6—6 of Figure 3 and illustrating in particular the manner in which the knives trim the shoe sole as the latter passes through the rollers of the apparatus;

Figure 7 is a vertical sectional detail view upon an enlarged scale disclosing the shoe sole support and hold-down roller for guiding the shoe sole between the feed rollers, and indicating the relative position of the trimming knives;

Figure 8 is a fragmentary detail view illustrating the manner of connecting the knife actuating means to the pattern cams; and

Figure 9 is a perspective view of a shoe sole having its shank trimmed as a result of the operation of this apparatus.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, attention is directed first to Figures 1 and 2, wherein the numeral 10 designates generally and in its entirety the apparatus forming the subject of this invention, and which is adapted to be operated by an electric motor or other suitable source of power indicated at 12, and which is connected as by a belt drive 14 with a crankshaft 16 journaled and supported upon any suitable supporting means such as a bracket 18. Journaled upon the crank throw 20 of the crankshaft 16, is a connecting rod 22 whose other end is pivotally connected as at 24 to a cross-head 26 having upper and lower actuating arms 28 and 30.

As will be best seen by reference to Figure 3, the arms 28 and 30 are preferably in the form of flat plates or strips whose side edges are slidably received in channeled guides 32 and 34, carried by frame standards 36 and 38 forming a part of the stationary frame work of the apparatus 10.

The upper and lower surfaces of the arms 28 and 30 are provided with rack teeth 40 and 42

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for operating the mechanism in a manner to be set forth hereinafter.

In addition to the standards 36 and 38, the stationary framework of the device includes other parallel standards 44. As will be more clearly apparent from Figures 2 and 3, a driving shaft 46 is journaled between the standards 33 and 44 at the upper end thereof, and is provided with a gear 48 which is constantly in mesh with the upper teeth 40 of the upper arm or rack bar 28, whereby reciprocation of the bar 28 in its guides 32 and 34 will cause rotation of the shaft 46. Carried by a cantilever type of shaft 50, is a gear 52 which meshes with the undersurface of the rack bar teeth 40, and serves to guide or support the bar during its reciprocation. The gear 52 thus serves to assist or supplement the guides 32 and 34 during sliding movement of the rack bar therethrough.

A further pair of vertically spaced parallel axles or shafts 54 and 56 are journaled in the standards 38 and 44, and between the standards 36 and 38 are provided with driven gears 58 and 60, respectively, which are constantly in mesh with the upper and lower teeth 42 of the lower arm 30 forming a rack bar for actuating the shafts 54 and 56 simultaneously in opposite directions.

It will thus be apparent that the axles 54 and 56 are rotated in opposite direction simultaneously with each other and with actuation of the axle 46 upon each reciprocation of the cross-head 26 by means of the connecting rod 22.

Fixedly secured to the shafts 54 and 56 as by means of adjusting nuts 62 and 64, are a pair of feed rollers 66 and 68 of any suitable construction. By means of the nuts 62 and 64, the rollers may be positioned in an axially adjustable manner, and non-rotatably secured to the shafts 54 and 56 as desired. The rollers 66 and 68 constitute a feed means for drawing or feeding shoe soles, such as that indicated at 70 in Figure 9 and as further shown in Figures 5, 6 and 7, therebetween for a purpose which will later become apparent.

Mounted upon the upper shaft 46 intermediate its ends and secured in any desired manner thereto, is a gear 72 for imparting a reciprocating movement to the pattern controlling the operation of the trimming knives.

Attention is next directed more particularly to Figures 6 and 9. When a shoe sole 70 has been cut to the approximate size and shape desired for a particular size of shoe, it is necessary to bevel or trim the edges of the same, as shown at 74. In accordance with this invention, the shoe sole is drawn through the feed rollers 66 and 68, toe first, and passed between trimming knives which bevel or trim the soles to form the beveled portion 74 during passage of the sole therebetween. In the apparatus forming the subject of this invention, the knives are moved inwardly and outwardly with respect to each other as the shoe sole passes therebetween, to thus vary the width of the cut in accordance with a predetermined proportion, under the control of the interchangeable patterns governing or controlling the action and movement of the knives.

A pair of longitudinally extending, U-shaped channel members 76 constituting guideways are mounted upon transversely disposed supporting plates or beams 78 carried by the frame members 38 and 44, as shown clearly in Figure 3. It is contemplated that series of shoe sole trimming patterns may be selectively inserted in the guideway

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76 for longitudinal sliding movement therein, it being understood that one such pattern is provided for each size of shoe sole. The pattern may conveniently consist of a vertically disposed flat plate 80 which may be notched upon its upper and lower edges as at 82, these notches constituting teeth which are engageable by the gear teeth 72, whereby the pattern 80 is longitudinally reciprocated as the gear 72 is actuated by the connecting rod 22.

For the sake of simplicity of illustration, the teeth 82 have been illustrated only upon the upper edge of the pattern plate 80, except that in Figure 5 the teeth are shown on both the upper and lower edges, it being understood that the teeth may be provided and will preferably be provided upon both upper and lower edges in order that the pattern plate may be reversed or inserted in the guideway 76 in an inverted position.

The pattern plate 80 is provided with upper and lower laterally extending supporting flanges 84 and 86 which are selectively received in the guideways 76 to reciprocatingly support the pattern therein. Obviously, in reversing the pattern it is merely necessary to remove the same from the guides, from the position shown in Figure 5, to reverse the pattern and reinsert the same in the guides with the flanges 86 being now received in the channel member 76.

The pattern plate 80 has a plurality of laterally extending spars or ribs 88 to which are integrally secured cams 90 having a predetermined contour proportioned for the particular shoe sole for which the pattern is designed.

Disposed transversely between the frame members 38 and 44, and below the previously mentioned pattern construction, is a pair of parallel, channel-shaped upper guideways 92 and lower guideways 94 which are likewise of channel-shaped construction. A pair of slides 96 having laterally extending guide flanges 98 are slidably received in the upper guides 92 for movement transverse the pattern, and these slides are provided at their inner ends with upwardly extending members 100, see Figure 8, having a head portion 102 on each, upon which head portions are journaled guide rollers 104 and 106 which embrace the cam rib 90 of the pattern. The rollers 104 and 106 thus positively move the slides 96 toward and from each other, as the cam rib 90 of the pattern reciprocates longitudinally of the device, and it will be noted that the two slides 96 are thus moved in unison and in accordance with the curvature of the cam ribs 90.

Depending from the other end of the slides 96 are integral members 108 whose lower extremities are returned as at 110 in parallelism to the slides 96, and are likewise provided with lateral flanges 112 which are received in the guideways 94. Secured to the inner extremities of the members 110 are trimming knives 114 of any suitable construction and type, and so positioned that as the shoe sole 70 is drawn through the feed roller 66 and 68, see Figures 5-7, the knives 114 moving towards and from each other trim the sole 70 as at 74 to the desired contour.

It should be here noted that the dimensions of the rack bars 28 and 30 are so proportioned and chosen as to operate the lateral movement of the knives in properly cammed relation to the movement of the shoe sole 70 through the feed rollers. Further, the stroke of the connecting rod 22 is so proportioned to the dimensions of the rack bars that there is a period of idleness or dwell at each

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end of the stroke of the rack bars to give the operator time to position or remove a shoe sole from the device.

To assist in guiding the shoe sole and steady the same as the sole is fed into the feed roller 66 and 68, there is provided a resilient hold-down roller 116 which operates with an adjustable support bracket 118 to frictionally grip the shoe sole prior to the engagement of the latter with the feed rollers. For this purpose, a pair of support arms 120 is secured to the frames 38 and 44, and extend inwardly therefrom, and from the inner extremities of these arms depend screw-threaded rods 122 provided with adjusting nuts 124 upon their screw-threaded upper extremities, these rods extending through suitable apertures in the supports 120. The lower ends of these rods 122 carry bearing members 124 which journal the ends of the hold-down roller 116. Compression springs 126 surround the rods 122 and serve to yieldingly urge the hold-down roller towards the supporting shelf 118. The latter is secured as by a wing nut 128 and bolt 130 to L-shaped supporting brackets 132 suitably carried by the frame of the apparatus. The shelf 118 is positioned to conveniently support the shoe sole just prior to the engagement of the latter with the feed roller 66 and 68, and the hold-down roller 116 yieldingly clamps the shoe sole to the supporting shelf 118, to steady and hold the shoe sole flat as the same engages the feed rolls, and as the sole is being engaged by the trimming knives.

From the foregoing it will be readily seen that there has been provided an apparatus for simultaneously feeding the shoe sole through the feed rollers, while in cammed relation to this feeding movement operating the trimming knives for trimming the shank of the shoe sole according to a predetermined pattern.

Further, it will be seen that by changing this pattern, the machine at once is automatically adjusted for trimming different sizes of shoe soles. Further, by merely reversing the pattern in its holding guides, it is obvious that the same pattern may be selectively employed to trim right or left soles as desired.

From the foregoing, the manner of constructing and operating the device and the manifold ad-

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vantages arising therefrom will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a shoe sole trimmer, a pair of feed rolls for moving a shoe sole longitudinally, a pair of transversely movable knives on opposite sides of the longitudinal path of movement of a shoe sole, a movable pattern for controlling the movement of said knives and actuating means for moving said pattern and for operating said feed rolls.

2. The combination of claim 1, wherein said actuating means reciprocates said pattern longitudinally of the path of movement of a shoe sole.

3. The combination of claim 2, including longitudinal guides for slidably supporting said pattern, said pattern being receivable in said guides for selectively trimming right and left soles.

4. The combination of claim 1, including oppositely and laterally disposed cam surfaces on said pattern, each cam surface positively controlling the transverse movement of a knife.

5. The combination of claim 1, including members carrying said knives, guideways for said members, slides disposed parallel to said members and a connection between each of said slides and said pattern.

6. The combination of claim 1, including a sole supporting shelf adjacent said feed rolls and a hold down roll over said shelf.

7. The combination of claim 6, including resilient means urging said hold down roll towards said shelf for clamping a shoe sole therebetween.

8. The combination of claim 1, wherein said actuating means including a rack and gear drive for reciprocating said pattern and oscillating said feed rolls.

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No references cited.