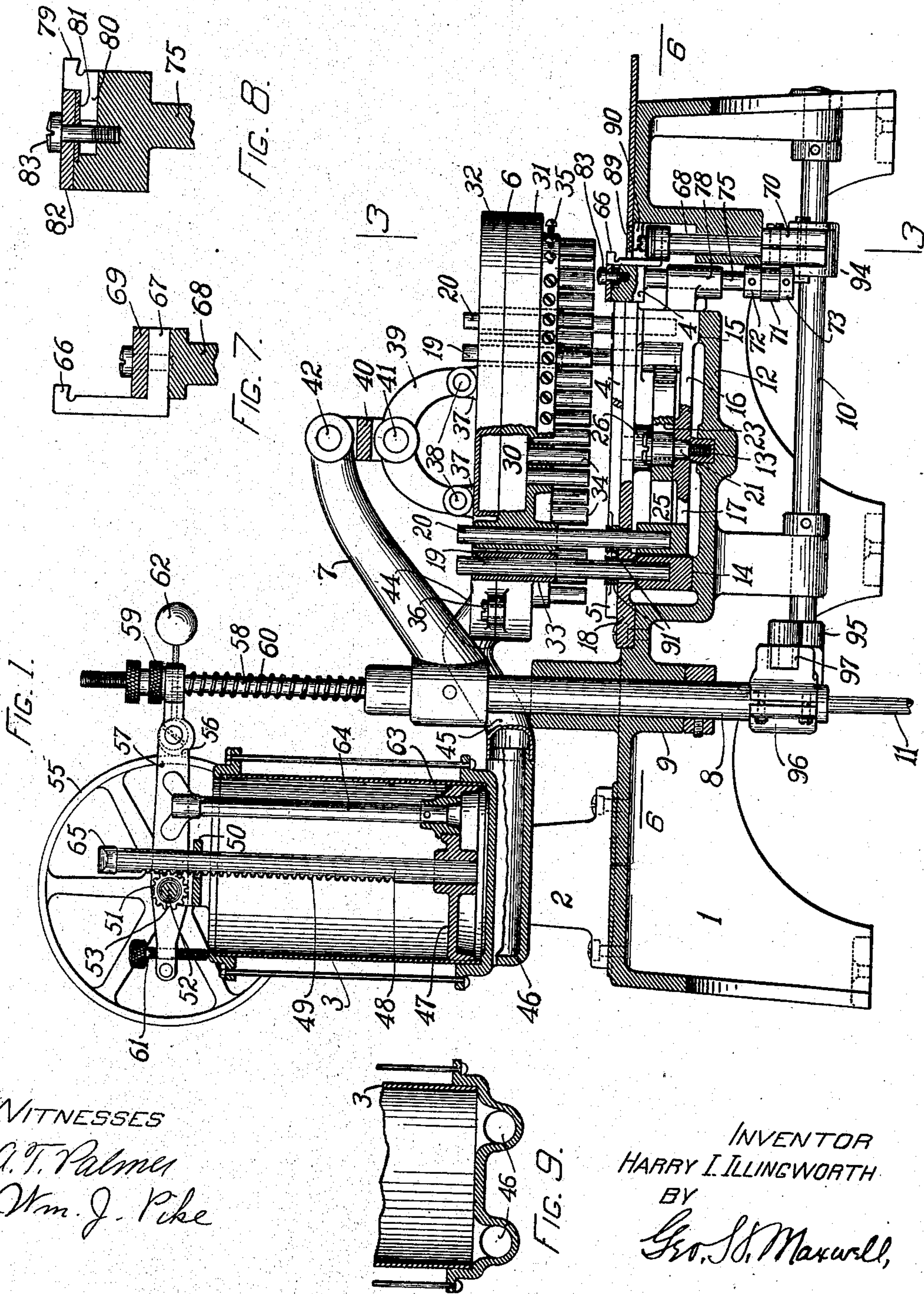


H. I. ILLINGWORTH.
MACHINE FOR SNIPPING AND CEMENTING SHOE UPPERS.
APPLICATION FILED SEPT. 4, 1906.

900,171.

Patented Oct. 6, 1908.
4 SHEETS—SHEET 1



WITNESSES

A. T. Palmer

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HARRY I. ILLINGWORTH

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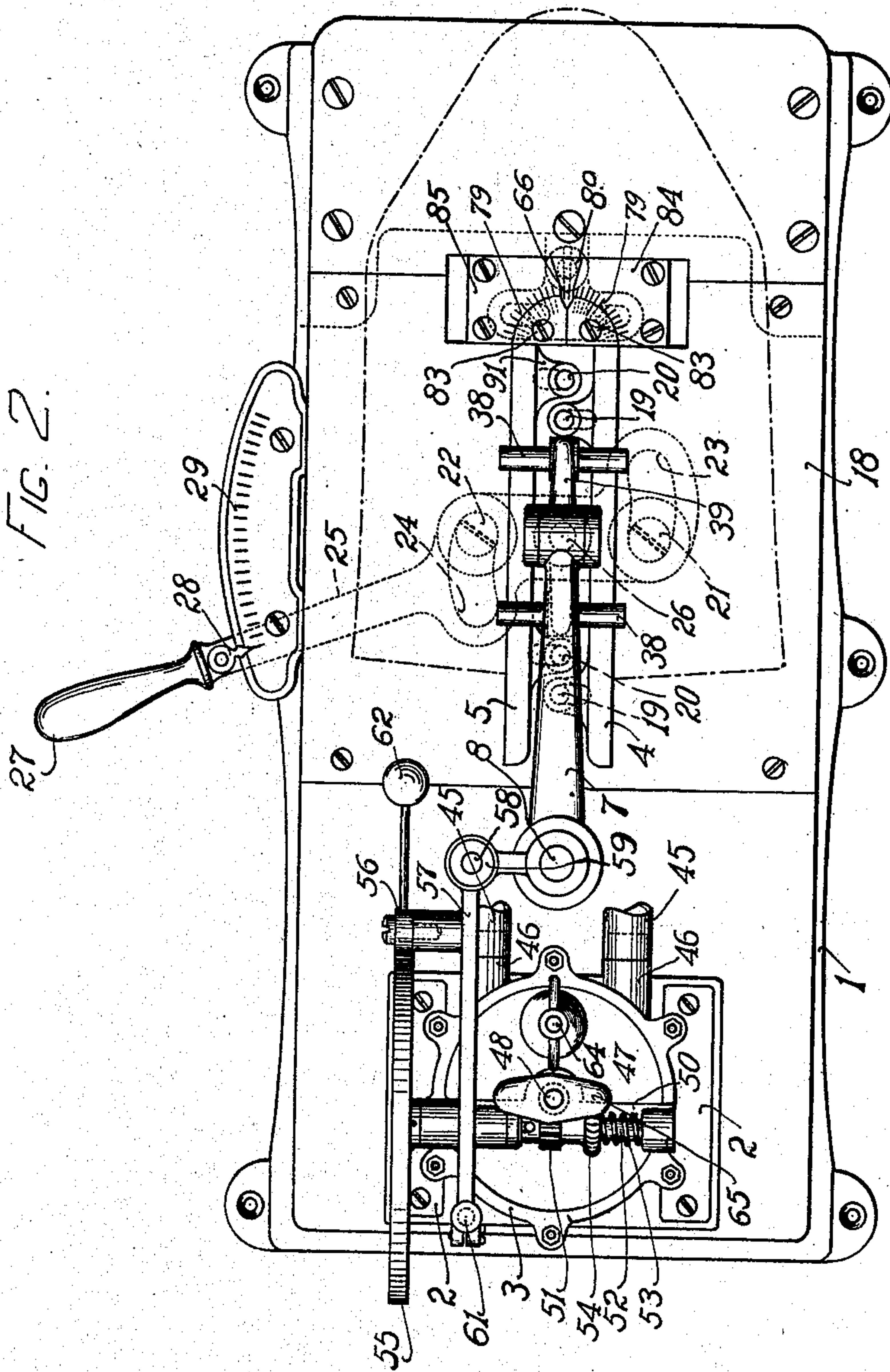
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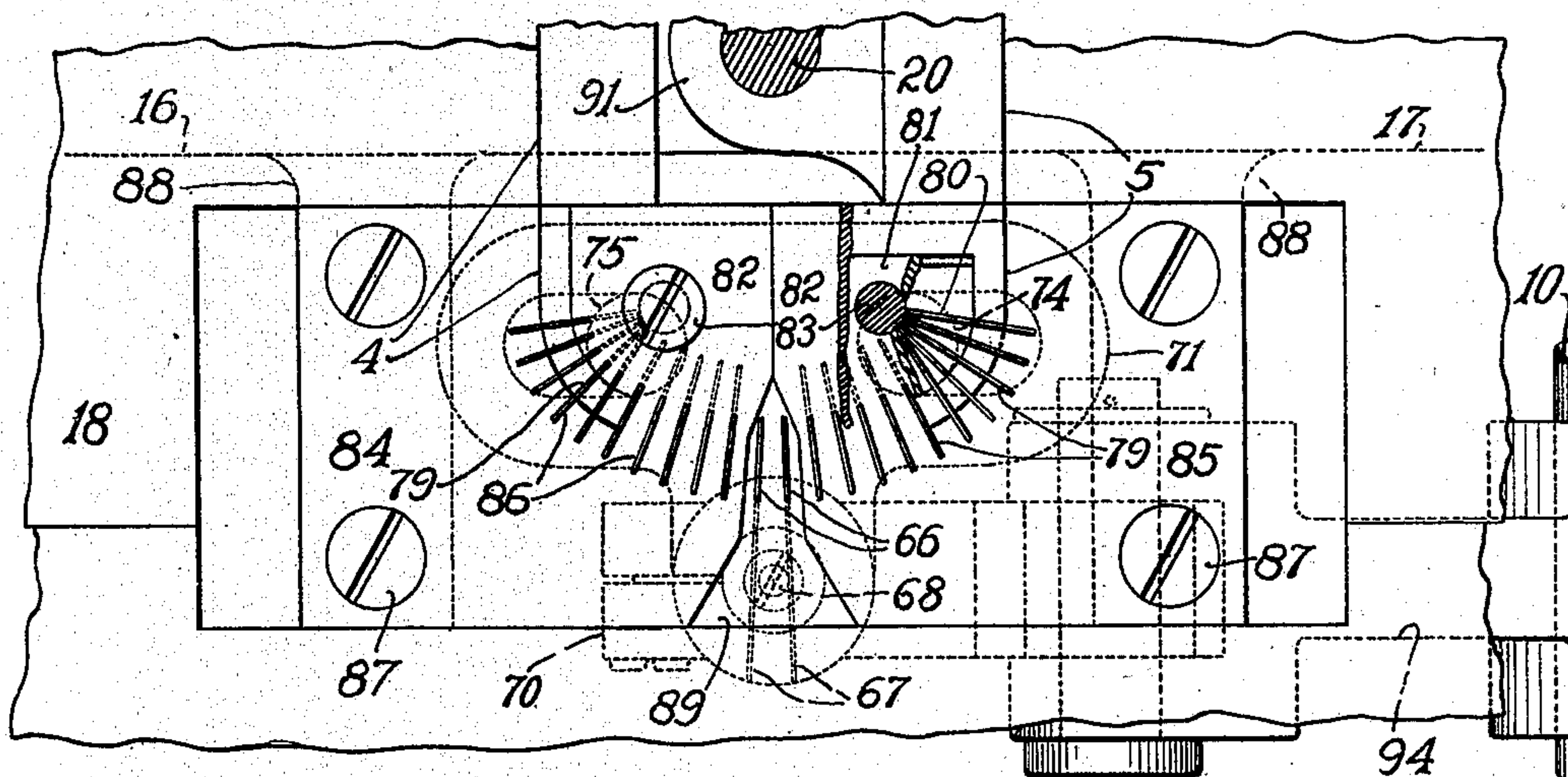


FIG. 5.

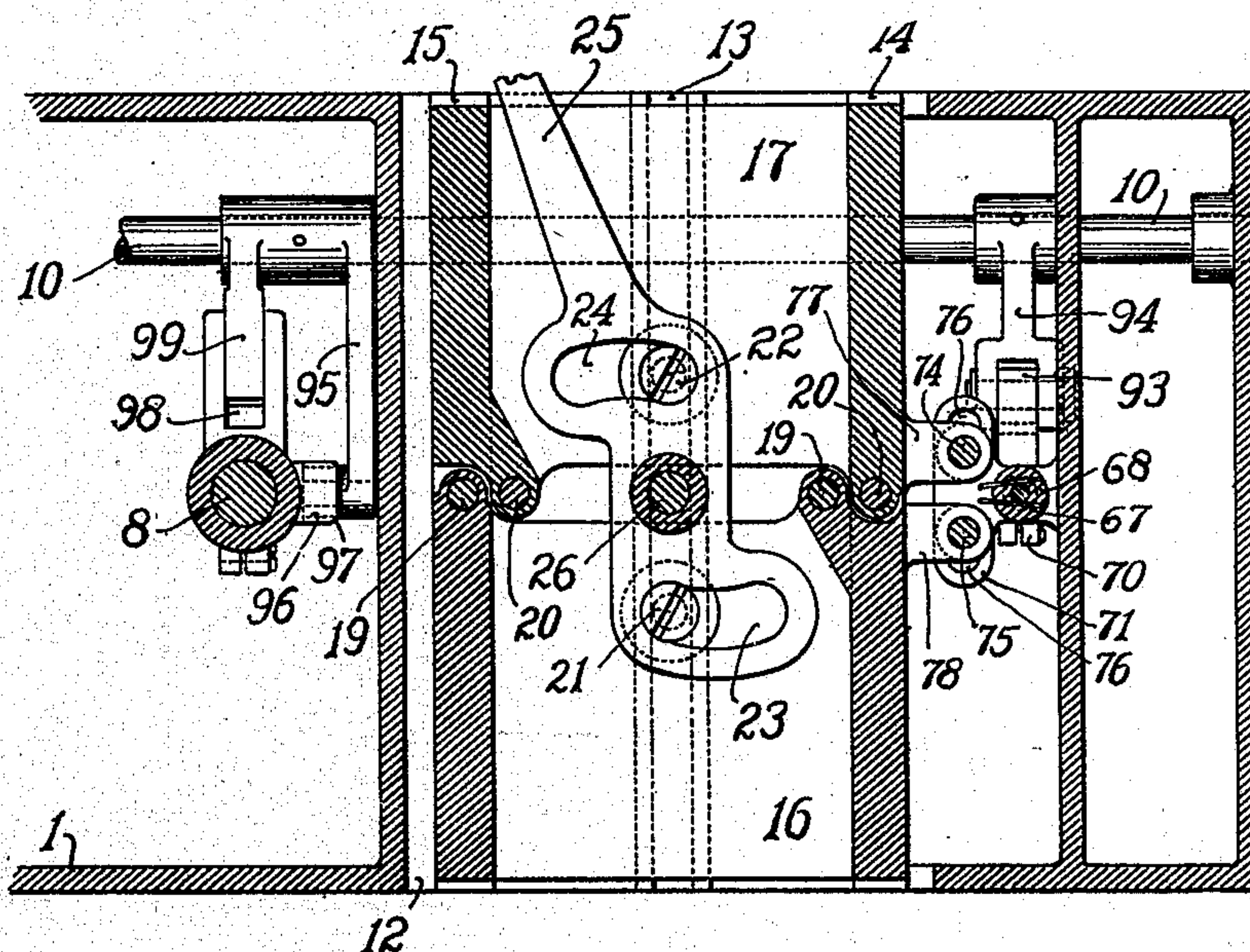


FIG. 6

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HARRY I. ILLINGWORTH, OF SWAMPSCOTT, MASSACHUSETTS.

MACHINE FOR SNIPPING AND CEMENTING SHOE-UPPERS.

No. 900,171.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed September 4, 1906. Serial No. 333,100.

To all whom it may concern:

Be it known that I, HARRY I. ILLINGWORTH, a citizen of the United States, and a resident of Swampscott, in the county of Essex and State of Massachusetts, have invented an Improvement in Machines for Snipping and Cementing Shoe-Uppers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a machine for applying cement to curved edges such as shoe uppers and the like and snipping them at the curvature for preparing said leather pieces for folding.

The usual custom is to carefully brush the skived surfaces of leather pieces with rubber cement, allow the cement to dry, and then snip and fold the leather pieces. This is objectionable in many ways, is wasteful of the cement, lacks neatness because of the stringy character of the cement, is slow, expensive, tends to daub the snipping and folding apparatus and it is apt to spread the cement beyond the skived surface to which the cement should be confined.

Accordingly my apparatus includes means for snipping the curved edge just prior to the application thereto of the cement, and means for applying the cement in a limited amount at the precise point which it is desired to cement, said applying means being automatic and including mechanism for preventing the application of any more cement than is required.

My mechanism is adjustable to conform to different sizes of uppers and preferably contains an adjustable gage for regulating the position of the vamp, an adjustable series of cement depositors preferably in the form of tubes, for depositing a series of globules or small daubs or smears along the entire length of the skived surface, an automatic delivery apparatus for supplying exactly the amount of cement required, an expansible or adjustable snipper conformable to the different widths of uppers, and mechanism for causing the snipper and cementer to contact with the leather dissimultaneously, although preferably moved in unison.

The further constructional details and advantages of my invention will be pointed out more at length in the course of the following description, reference being had to

the accompanying drawings, in which I have illustrated my invention as adapted to operate on shoe vamps or uppers, although it will be understood that it may readily be changed to operate on various other shoe parts which it is usual to cement as a preliminary step to the stitching operation.

In the drawings, Figure 1 is a view in side elevation partly broken away and sectioned, showing my cementing machine in position to receive a vamp or shoe upper to be folded; Fig. 2 is a top plan view thereof, the cement depositing portion of the apparatus being omitted and a shoe upper being indicated in place in dotted lines; Fig. 3 is a vertical sectional view on the line 3—3 Fig. 1; Fig. 4 is a top plan view of the cement applying portion of the apparatus; Fig. 5 is an enlarged fragmentary top plan view of the snipping end of the machine, the cementer being removed; Fig. 6 is a horizontal sectional view on the line 6—6 Fig. 1; Figs. 7 and 8 are vertical sectional views showing respectively the long snipper knife and the short snipper knife and adjacent parts; Fig. 9 is a sectional elevation of the cement tank.

On a suitable frame or base 1 is mounted at the rear on a standard 2 a cement tank 3 and at the front of the machine is a gage composed of two parts 4, 5, and a cementer 6 supported and operated by an arm 7 secured to the shaft 8, vertically movable in a bearing 9 and operated by a rock shaft 10 and foot lever not shown, connected thereto by a rod 11.

Viewing more particularly Figs. 1, 3 and 6, a transverse depression in the bed is formed by a bed piece 12 and is provided with a central grooved way 13 and opposite surface ways 14, 15, on which rest opposite guide frames 16, 17, above which is secured a bed plate 18 flush with the top of the frame, slotted to permit lateral movement of vertical guide posts 19, 20 in opposite pairs. These posts serve to guide the cementer both vertically and laterally. For the latter purpose the frames 16, 17, are provided with studs 21, 22 respectively, engaged by the cam grooves 23, 24 of an adjusting lever 25 centrally pivoted at 26 so that as the lever is swung to the right, Fig. 6, the frames are separated and as it is swung back to the left they are brought together. They are shown in the drawings as brought together, and are

separated from that position for larger or wider throats of vamps. The adjusting lever 25 is provided with a handle 27 and a dog 28 arranged to engage a notched sector 5 29 whose graduations indicate the different sizes to which the machine may be set. The guide rods 19, 20 are moved apart by the shifting of the handle from the position shown in Fig. 2, and, as said guide rods are arranged 10 out of transverse alinement with each other, as clearly shown in Figs. 2 and 6, the gage parts 4, 5 and all the coöperating parts of the machine may thereby be brought close together for the smallest size of vamp which 15 it is desired to cement with my machine.

The cement applier comprises preferably a chamber 30 which extends bodily over the entire surface to be cemented, and is composed of a lower casting 31 and an upper 20 casting 32, the lower casting having bearings 33 for the rods 19, 20, said bearings extending up through the upper casting as clearly shown in Fig. 1, so as to make a tight and convenient joint, and the bottom of the casting 31 is provided with a series of closely 25 spaced tubes 34 removably secured therein by screws 35 and arranged in a line following the curvature or exact direction of the skived surface which is to be cemented, as is plainly shown in Fig. 4. The two castings 30 are clamped tightly together by any suitable means, as by screws 36, and from the upper side of the cement chamber project ears 37 in which are loosely mounted short rods or stub 35 shafts 38 shown clearly in Fig. 2, fixedly secured at their middle portion by a yoke 39 and an H-shaped link 40, see Figs. 1 and 3, pivoted at 41 to said yoke and at 42 to the 40 arm 7 before mentioned. Thus it will be seen that as the arm 7 is raised the cementer is guided accurately on the four guide rods 19, 20 and is readily lifted in balanced position by the yoke 39 and pivoted link 40. It slides freely up and down on said rods, which 45 cause it to descend with the utmost accuracy on the leather, and also it is freely adjusted laterally with the utmost nicety by the cam lever adjustment which separates said rods 19, 20 or brings them together. The cement 50 is delivered to the cement chambers by pipes 43, 44, connected by a flexible section 45 with passages 46 from the tank 3.

The shape of the cement chamber and the arrangement of the cement applier in two 55 separate parts, as shown clearly in Fig. 4, permits the delivery tubes or nipples to come close together at the forward end, so as to make a continuous cement application, and also permits them to be arranged in any de- 60 sired curvature, either parallel or flaring, being herein shown as flaring at their rear ends. I have provided means for controlling the cement delivery simultaneously for all the tubes, said controlling mechanism 65 being arranged air tight above the cement,

forcing the cement forward by a positive feed and preventing its feeding by gravity or unduly in any way by the tight fit of a pistonlike controlling head 47 carried at the lower end of a vertical shaft 48 provided 70 with a rack 49 guided in a transverse plate 50 and engaged by a fine toothed pinion 51 rotated by a transverse shaft 52 and normally held in engagement with said rack by a spring 53 and provided with a hand hold 75 54 by which it may be retracted when desired, see Fig. 2. The shaft 52 at its farther end carries a friction ratchet wheel 55 whose smooth periphery is engaged by an eccentric hub or pawl 56 carried by a lever 57 pivot- 80 ally mounted on said shaft 52 and operated by the raising and lowering of the reduced upper end of the shaft 58, being held in adjustable position by a nut 59 threaded on the outer end of the shaft 58 and a spring 60. 85 the amplitude of movement of said lever 57 being regulated by a threaded post 61 carried at its extreme rear end, see Fig. 1. The eccentric dog 56 is normally held in biting engagement with the rim of the wheel 55 by 90 a weight 62, so that the lever 57 is always free to move upwardly without rotating the wheel 55, but the moment the lever 57 begins to move downwardly the weight 62 causes the pawl or dog 56 to bite or pinch 95 against the rim of the wheel 55 which constitutes, with the pawl, a friction pawl and ratchet mechanism, and thereby positively rotates the shaft 52 and pinion 51, causing the tight piston head 47 in the cement tank 100 to move downwardly exactly the distance required. When the cement has become practically exhausted and a fresh supply is needed, a valve 63 operated by an upwardly 105 extending handle 64 is opened in the head 47 to relieve the suction or air pressure, so that the latter may be quickly raised, and the pinion 51 is then slid laterally against the pressure of the spring 53 out of engagement 110 with its rack, and thereupon the operator grasps a transverse head or handle 65 at the upper end of the latter and pulls the piston head quickly, straight up to the top of the tank, thereupon letting go of the pinion, which 115 instantly meshes with the rack and holds the parts in place while the tank is being filled through the valve opening and then the valve 63 is secured back in place and the machine is again ready to operate.

The snipper mechanism is operated simul- 120 taneously with the cement applier, by the same means, and is best shown in Figs. 1-3, 5, 7 and 8. It comprises a central group of cutter knives, herein shown as consisting of two knives 66, having their cutting edges 125 extending forwardly at their top ends and having L-shaped projections 67 at their lower ends mounted in grooves in the upper end of a post or knife carrier 68 and held down by clamping plates 69, said post being clamped 130

to a casting 70 having an ear or horizontal flange 71 extending rearwardly between collars 72, 73, on vertical knife carriers 74, 75, said flange being slotted at 76 to permit lateral movement of said carriers 74, 75, which are journaled in brackets 77, 78 projecting respectively from the front sides of the slide frames 16, 17, which carry the opposite sides or portions of the cement applier.

At their upper ends the knife carriers 74, 75 are provided with a series of knives 79 projecting in range with the cutting ends of the long knives 66, said knives 79 having their shanks 80 engaged by a plate 81 retained in clamping position by a cap 82 and screw 83. Below the cutting ends of the knives 66 and 79, the machine is provided with steel plates 84, 85, slotted at 86 in exact alinement with the knives, so that when the leather is slid into position against the gages 4, 5, it will be snipped or slitted evenly and neatly, exactly as required. The snippers or cutting knives are depressed ahead of the cement applier, and after cutting, remain beneath the leather while the cement is being applied, as will be readily understood viewing Fig. 1. I provide a central group of knives 66 and laterally adjustable side groups of knives 79, so as to prevent having a wide uncut gap at the middle, as would be the case if I only had two groups. The lateral adjustment for different sizes is accomplished by moving the side groups away from the central group, which leaves a slight gap, but the adjustment is thus divided between two groups and hence is less than would otherwise be the case, and in fact becomes a practicably negligible quantity. The slotted plates 84, 85 are fastened by screws 87 to projections 88 which extend forward from the frames 16 and 17. A central stationary plate 89 is provided with slots to correspond to the two stationary knives 66, being fast on a stationary ledge or arm 90 of the main frame of the machine.

The gage members 4, 5, have ears 91 surrounding the gage rods 19, 20, so that they are simultaneously adjusted by the movement of said rods. It will be understood that I have herein shown merely the preferred embodiment of my invention, and its application to the particular part of a shoe called the upper or vamp, but my invention may be embodied in various other modified constructions, and its range of usefulness is not limited to any particular part of the shoe. The clamping casting 70 of the snipper mechanism is bifurcated at 92 to receive a roll or cross head 93 carried at the end of an arm 94 fast on the rock shaft 10, which serves to raise and lower the snipping mechanism, and the cement applier is simultaneously raised and lowered by an arm 95 engaging a socket piece or casting 96 at 97 as clearly shown in Figs. 1 and 6. Also I provide at the front side of the casting 96 pro-

jecting arms which form a guideway 98 between them for receiving a flat direction arm 99, projecting from the rock shaft 10, which serves to hold the cement applier in accurate alinement and prevents any possible lateral swinging movement thereof, which would tend to cause the same to bind against the adjusting posts 19, 20. The direction arm 24 gives smoothness and precision of movement.

From the foregoing description the operation of my machine will be readily understood. The operator simply places the leather piece which is to be snipped and cemented, in proper position against the gages 4, 5 and then depresses the foot lever, which rocks the shaft 10 and thereby causes the simultaneous downward movement of the snippers and cement or paste applier. As the snipper is nearer the leather than the paste applier it cuts and passes through the edge of the leather first, and just as it reaches its lower position beneath the leather the opposite series of tubes of the paste applier lightly touch the leather and leave a series of smears or globules of cement along the skived surface of the leather exactly where they are required. Just as the cement applier comes in contact with the leather the operator pulls the work slightly away, meanwhile causing the rock shaft to rock in the opposite direction so as to raise the cement applier slightly, the result being that the cement deposits are dragged into a continuous line as desired, as the work is being removed. The operator quickly becomes skilled in the feeding and removing movement of the work as above outlined, so that the work progresses rapidly, the cement is dragged into a continuous line, and the snipping and cementing proceed rapidly. All the parts move up and down together under the action of the foot lever or other actuating power, the snippers moving in unison with the cement applier, and performing their cutting operation simultaneously with the application of the cement. If a larger pattern is to be operated upon, the operator swings the hand lever 27 over to the right Fig. 2 to the extent indicated by the graduated sector 29 for that size. This movement acts through the cams 23, 24 of the adjusting lever 25 to separate the posts 19, 20 and thereby simultaneously adjust the gages, the side members of the snippers, the corresponding portions 84, 85 of the table, and the two parts of the cement applier. The cement delivery tubes are always in exactly the correct relation to the gages, and the same is true of the snippers because of the simultaneous adjustment of all the parts. Moreover, this adjustment is exceedingly simple, being accomplished by a single movement of the hand lever 27. As already explained, the cement delivery is

under absolute control, by reason of the air-tight arrangement of the cement tank which regulates the gravity flow or feed of the cement. If enough cement is not being delivered, the amplitude of movement of the friction pawl 56 is increased by raising the adjusting screw 61, and if desired, the nut 59 is correspondingly adjusted.

Having described my invention, what I claim as new and desire to secure by Letters Patent is,

1. A machine of the kind described, comprising gaging means to position the work, a cement applicer to cement the edges of the work, and snipping mechanism combined with operating mechanism constructed and arranged to move said snippers through the work and retain them in said position until after the cementing of the work.

2. A machine of the kind described, comprising gaging means to position the work, a cement applicer to apply cement to said work, snipping means to snip said work, and power operating mechanism for said parts, constructed and arranged to actuate the cement applicer and the snipping means simultaneously, said parts and their operating mechanism being so constructed and arranged as to cause the snipping and cementing to take place dissimultaneously at the same place on the work and the snipping means to be moved through and away from the surface to be cemented before the cementing of said surface.

3. A machine of the kind described, comprising means for supporting the work to be cemented, a cement applicer having a chamber for holding a body of cement, a plurality of delivery passages extending from said chamber to deliver cement simultaneously along the line to be cemented, and means for bodily raising and lowering said cement applicer.

4. A machine of the kind described, comprising a cement applicer formed in two parts, each part consisting of a chamber to hold a body of cement in bulk, and a series of delivery portions leading from said chamber, and adjusting means for accurately moving said two parts toward and from each other to suit different articles to be cemented.

5. A machine of the kind described, comprising a cement applicer formed in two parts, having separate cement holding chambers and delivery portions, and means for accurately adjusting said parts toward and from each other to suit different articles to be cemented, said adjusting means being constructed and arranged to permit the cement delivery portions of said two parts to be brought close together for delivering closely adjacent lines of cement.

6. A machine of the kind described, comprising a cement applicer having two inde-

pendent parts and means for adjusting them in parallelism to each other to suit different articles to be cemented.

7. A machine of the kind described, comprising a cement applicer consisting of two separate parts, each composed of a body having a cement holding chamber and a series of delivery tubes opening into the bottom of said chamber, and means for adjusting said two parts toward and from each other.

8. A machine of the kind described, comprising a gage consisting of opposite parts, a cement applicer consisting of opposite parts, and means for adjusting said cement applicer on said gage, said adjusting means including mechanism for maintaining the parts of the gage and cement applicer in the same relative position at all times.

9. A machine of the kind described, comprising a cement applicer, gage and snipper, all laterally expansible, and means for simultaneously expanding said three parts.

10. A machine of the kind described, comprising a snipper for snipping a curved edge, consisting of a central stationary part and adjustable side portions, whereby a central gap is avoided when the parts are laterally expanded or adjusted and co-extensive cement-applying means.

11. A machine of the kind described, comprising a bed plate, a bed piece beneath said plate provided with transverse ways, opposite guide plates adjustable on said ways, a cement applicer above said bed plate, consisting of two opposite parts, guide posts extending from said opposite guide frames to said opposite parts of the cement applicer, and means for moving said frames and guide posts toward and from each other for adjusting said cement applicer.

12. A machine of the kind described, comprising a bed plate, a bed piece beneath said plate provided with transverse ways, opposite guide plates adjustable on said ways, a gage above said bed plate consisting of two opposite parts, a cement applicer above said gage also consisting of two opposite parts, guide posts extending from said opposite guide frames in engagement with the opposite parts of said gage and the opposite parts of said cement applicer, and means for moving said frames and guide posts toward and from each other for simultaneously adjusting said gage and said cement applicer.

13. A machine of the kind described, comprising a source of cement supply, a series of delivery tubes for simultaneously delivering cement to the work, a connecting tube from said source of supply, an enlarged cement-receiving chamber located between said delivery tubes and said connecting tube, said chamber having free communication therewith and having greatly enlarged lateral area over that of the connecting tube, and positive superposed feeding mechanism

in said source of cement supply arranged to maintain an air-tight space in the upper portion of said source above the body of cement, the lower portion thereof and said chamber and delivery tubes being arranged below the feeding mechanism to permit the cement to deliver by downward movement.

14. A machine of the kind described, comprising a cement applier having a cement receiving chamber and a series of delivery tubes extending therefrom, combined with a cement tank, a piston head fitting therein above the cement, and operating mechanism connected to said cement applier and to said piston head and constructed and arranged to operate the same to feed and apply the cement simultaneously intermittingly whereby a predetermined amount of cement is forced to the chamber of said cement applier at each operation thereof.

15. A machine of the kind described, comprising a cement applier, operating means to raise and lower the same, a cement tank for delivering cement to said cement applier, a tightly fitting piston head for forcing cement to said applier, rack and pinion mechanism for positively feeding said piston head forward in said tank, and a reciprocating, step-by-step mechanism for actuating said rack and pinion mechanism and itself operated by said operating means.

16. A machine of the kind described, comprising a cement applier, a cement tank for supplying cement to said applier, a piston head movable in said tank, a rack extending upwardly from said piston head, a transverse shaft adjacent said rack and pinion mounted on said shaft and normally engaging said rack, a wheel fast on said shaft, a dog movably supported to engage said wheel for rotating said shaft and pinion, and operating means for actuating said dog provided with connections to simultaneously actuate said cement applier.

17. A machine of the kind described, comprising a cement applier, a cement tank for supplying cement to said applier, a piston head movable in said tank, a rack extending upwardly from said piston head, a transverse shaft adjacent said rack and pinion mounted on said shaft and normally engaging said rack, a wheel fast on said shaft, a dog movably supported to engage said wheel for rotating said shaft and pinion, and operating means for actuating said dog pro-

vided with connections to simultaneously actuate said cement applier, said pinion being laterally shiftable on its shaft out of engagement with said rack for permitting the piston head to be quickly reciprocated when the cement has become substantially exhausted.

18. A machine of the kind described, comprising a cement applier, a cement tank for supplying cement to said applier, a piston head movable in said tank, a rack extending upwardly from said piston head, a transverse shaft adjacent said rack and pinion mounted on said shaft and normally engaging said rack, a wheel fast on said shaft, a dog movably supported to engage said wheel for rotating said shaft and pinion, operating means for actuating said dog provided with connections to simultaneously actuate said cement applier, and means for regulating the extent of feeding movement of said piston head according to the requirements of said cement applier.

19. A machine of the kind described, comprising means to first snip the edge of a leather piece, mechanism movable vertically over the same spot to thereafter apply cement to the snipped leather piece without movement of the leather, and operating mechanism for the aforesaid parts.

20. A machine of the kind described, comprising means permitting the work to lie stationary, snipping mechanism, and separate cement-applying means constructed and operating to apply the cement directly to the part which has been snipped without movement of the work.

21. A machine of the kind described, comprising cement applying means, snipping mechanism, means for holding the leather piece in position to receive both the snipping and the cementing in the same place, and operating means to move said snipping mechanism and said cement applying means to apply the cement and do the snipping in the same place without movement of the work.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HARRY I. ILLINGWORTH.

Witnesses:

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A. K. PUTNAM.