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I. CALLES ET AL  
MACHINE FOR APPLYING SUBSTANCES  
ON IRREGULAR SHAPE ARTICLES

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2 Sheets-Sheet 1

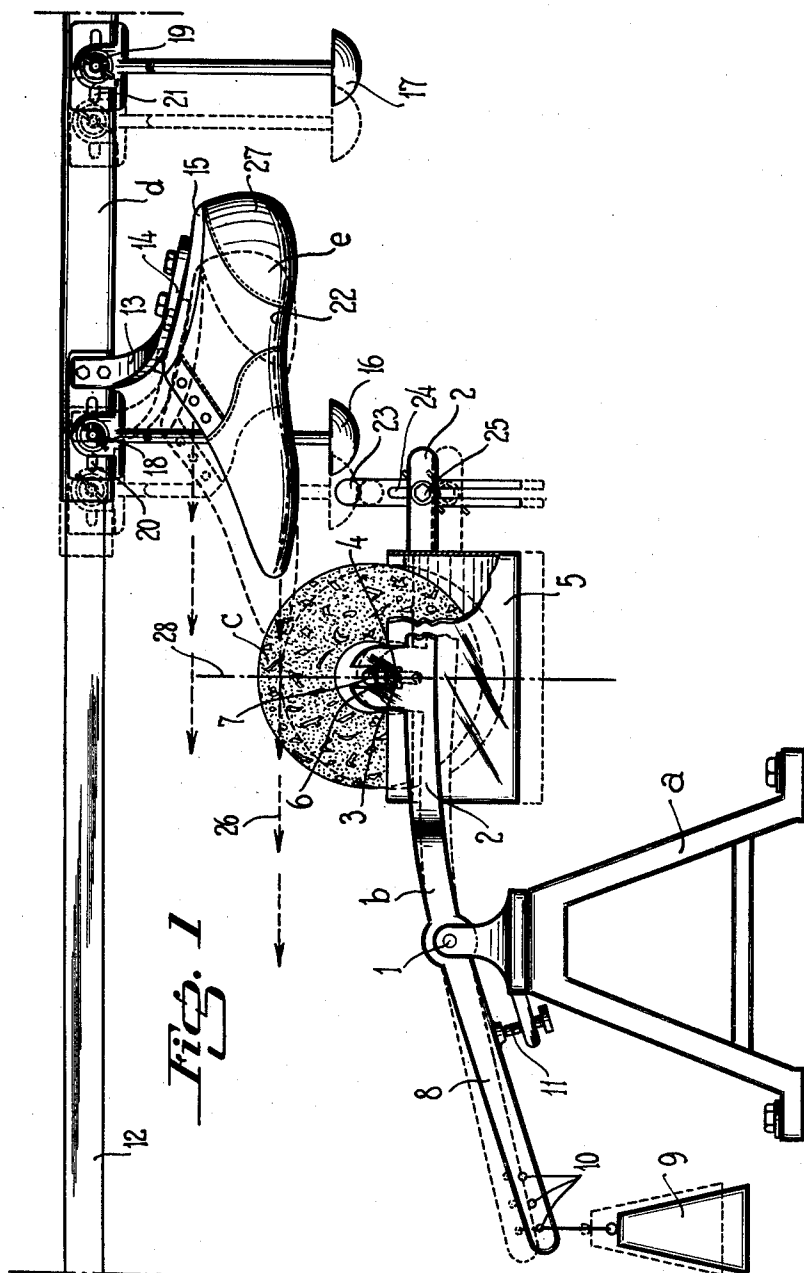


Fig. 1

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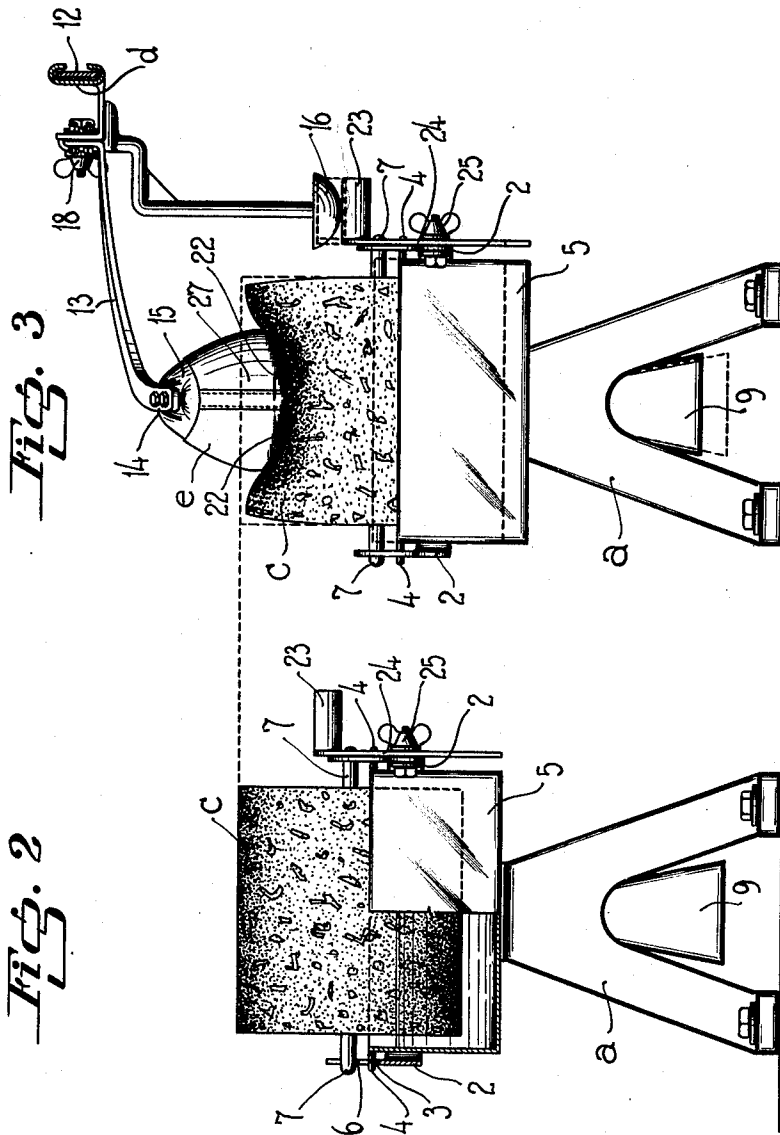
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## UNITED STATES PATENT OFFICE

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MACHINE FOR APPLYING SUBSTANCES ON  
IRREGULAR SHAPE ARTICLESIsaac Calles and Jacobo Bucatinsky,  
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2 Claims. (Cl. 12-80)

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This invention relates to machines for applying substances on irregular articles, and more particularly to a coating device for providing cement or liquid for joining rubber soles to footwear in general.

The rubber industry has found an important field in the manufacture of footwear, and particularly of footwear vulcanized together with the uppers. This type of shoe, and particularly the type referred to as "Champion," is still made practically by hand, as after it is assembled on the last, brushes are used for applying the cement which should cover the sole portion and a portion of the sides, sufficient for adhering the welt as a side element and as an intermediary between the uppers and the sole.

This manual operation not only represents a considerable delay in the general process but also requires skilled labor, inasmuch as the stroke of the brush on the side should take place within a given limit so that it will correspond to the application of the welt.

Some manufacturers have attempted to make this a mechanical operation by the dipping method, i. e., by dipping the assembled upper into a receptacle containing liquid cement, up to the level corresponding to the limit of the welt. While having some advantages, however, this operation is incomplete due to the fact that the cement does not always adhere easily between the folds of the uppers, and due to the particular shape of the article, the level line cannot be obtained in certain zones and particularly at the zone of the cap, arch, etc. This requires a manual touch which renders the mechanical operation ineffective to a certain degree.

Taking into consideration the drawbacks mentioned above, this invention contemplates the use of a coating element constituted by a rubber sponge pad of such resiliency and softness that when impregnated with cement and on being pressed by the shoe being manufactured, the latter will receive the adhesive substance as a result of the shape of the sponge.

The machine is so combined that it will operate continuously. For this purpose, the machine comprises mainly a roller acting partly immersed in a feeding container, said roller being mounted in an oscillating manner but urged towards its raised position by means of a counterweight. The roller is thus in position for receiving the footwear guided along a given line at a level lower than that of the roller surface, so that it will press into the roller so as to cement the sides as well as the underside or sole portion. How-

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ever, since the cap portion could receive an excessive coating if it would suddenly strike the roller upon being directed in a secant line relative to the periphery of said roller, said oscillating mounting is provided with stops combined with shoes on the footwear-holder whereby it is possible to regulate the height of the roller in order that the initial contact with the footwear will be substantially tangential, whereupon it will be free under the action of the counterweight for the "inlaying" which will facilitate the cementing operation. The apparatus is thus conditioned automatically and a single passage at a certain speed will be sufficient to carry out the step of applying cement or other liquid substance in the manufacture of footwear.

In order that the invention may be more clearly understood and readily carried into practice, same has been illustrated by way of example and in a preferred embodiment in the accompanying drawings, wherein:

Fig. 1 is a side view of the machine, showing the roller-pad partly immersed in the liquid to be applied and which is charged by virtue of its own rotation upon receiving the work, as shown by the arrows;

Fig. 2 is an end view of part of the machine showing the roller-pad assembly when not in contact with a shoe;

Fig. 3 illustrates the manner in which the lower portion of a shoe is passed over the roller the resilient material of which is compressed and adapted against the sides, thereby applying the cement contained in the sponge pores.

The same reference characters are used to indicate like or corresponding parts or elements throughout the drawings.

As shown in the drawings, *a* indicates the supporting frame of the machine having a lever *b* mounted on a pin 1. The arm 2 of lever *b* has a fork portion the two arms of which carry a pair of bearings 3 in which are suspended the studs 4 of a container 5. Above said bearings 3 there is provided a further pair of bearings 6 adapted for receiving the studs 7 of a roller 8, formed by a spongy pad. The opposite arm 9 of lever *b* carries a counterweight 9 hanging from perforations 10 forming a scale for graduating the action thereof. Said counterweight 9 will hold the roller *c* in raised position, and as shown in Fig. 1, the movement of lever *b* due to the action of said counterweight 9 is limited by means of a stop 11 which is adjustable so as to define the maximum position capable of being assumed by

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roller *c*; this position is that shown in full lines in Fig. 1 and that corresponding to Fig. 2.

Associated with said supporting frame *a* there is provided a guide 12 along which a carriage *d* is arranged to slide, moved by any suitable means. Said carriage *d* carries a support 13 to which the last 15 for the footwear *e* being manufactured is secured by means of a fitting 14.

Said carriage *d* carries a set of shoes 16 and 17 which by means of screws 18 and 19 are arranged in guides 20 and 21 with the required relative spacing depending on the dimensions of the footwear *e*, as said shoes 16 are intended to regulate the position of roller *c* with respect to the sole portion of footwear *e*, so that the cap and heel portions will not receive more cement than that corresponding to the limit line indicated at 22.

For this purpose, the shoes 16 and 17 register with a stop 23 which by means of a guide 24 is secured by a thumb screw 25 to the arm 2 of lever *b*. This stop 23 is vertically adjustable and serves for determining the extent of the downward movement of roller *c*, so that the footwear *e* will engage same in a more tangential manner than that corresponding to the secant line indicated in Fig. 1. Such downward movement is caused by shoes 16 and 17. Shoe 16 will cause the temporary lowering of roller *c* at the time the cap portion arrives thereat, while shoe 17 will lower said roller at the time the sole portion or underside has completed the passage thereover.

Said roller *c* is formed by a highly resilient and soft rubber pad, so as to be capable of conforming to the shape of the sides when the footwear *e* is passed over the periphery thereof. Following the secant line indicated by the reference numeral 26, the footwear firmly mounted on the carriage *d* is caused to overcome the material of roller *c* by compression. Thus, said roller *c* impregnated with cement or other liquid contained in container 5 will "stamp" the cement onto the underside and sides of footwear *e*, so that the liquid will be evenly applied both to the sole portion and to the sides up to the line 22.

Inasmuch as said container 5 is hanging by stud 4 from the forked end of arm 2, it will be able to assume any position without losing its verticality, whereby the liquid will be properly contained therein. The level of the liquid in container 5 should be sufficient for the roller *c* to remain partly immersed, so as to impregnate same for transfer to the footwear *e*.

#### Operation

With a suitable amount of liquid cement in container 5 and with stops 11 and 22 properly adjusted, the machine will be ready to operate with a given footwear of a certain size, for which purpose the position of shoes 16 and 17 is adjusted relative to the cap and heel of the footwear.

As is customary, the uppers 27 are assembled against an insole on the last 15 which is fixed to support 13 of carriage *d* by means of fitting or mount member 14.

When the carriage *d* is moved forward in the direction of the arrows and the cap portion of the footwear is about to engage said roller *c*, the shoe 16 will act on stop 23 and cause a slight downward movement of arm 2 of lever *b*, whereby the roller *c* will move downwardly as shown in dotted lines in Fig. 1, sufficiently for the lower portion of the footwear to enter tangentially relative to the maximum circle of roller *c*, and

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inasmuch as shoe 16 has a given length proportional to the size of roller *c*, when the forward end of the footwear *e* reaches the plane indicated by the reference numeral 28, said stop 23 will be released from shoe 16, leaving the lever *b* free so that through the action of counterweight 9 it will tend to assume the position shown in full lines in Fig. 1. Thus, the pad formed by roller *c* will press against the underside of the footwear and also against the lower portion of the sides, up to the line 22, as the carriage *d* continues to move forward. Upon reaching the rear portion of the footwear, just before the latter leaves the roller *c*, the shoe 17 will strike stop 23 causing the downward movement of the entire lever *b* and roller *c*, so that there will be no irregularity in the application of cement at the heel or rear portion of the footwear.

After the welt has been applied and fixed, the footwear may be passed through a similar apparatus charged with a suitable solvent for refreshing the cement and facilitating the immediate adhesion of the sole, which should also be fixed ready for the vulcanizing step.

It should be understood that while the machine has been described and illustrated in connection with the manufacture of footwear, it is also applicable to other irregular shaped articles requiring the application of any liquid or semi-liquid substance.

It is evident that in carrying the invention into practice, several modifications, changes and alterations will occur to those skilled in the art, without departing from the scope of the invention as clearly set forth in the appended claims.

We claim:

1. A machine for applying substances on irregular shape articles, which comprises a roller formed by a pad associated with a liquid feeding container, said roller together with said container being mounted on the forked end of a lever having a fulcrum and provided with a counterweight heavier than the assembly of said roller and container, said lever having a limiting stop determining the maximum raised position of said roller.

2. A machine for applying substances on irregular shape articles, which comprises a roller formed by a resilient pad associated with a liquid feeding container and mounted on the forked end of a lever provided with a counterweight heavier than the assembly of said roller and said container, said lever having at least one stop, a carriage, shoes carried by said carriage in the path of said stop, said carriage having means for supporting said article and being movable on a guide parallel to a line passing as a secant line by said roller.

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