July 12, 1938. D. PARKS 2,123,313

PASTE APPLYING DEVICE

Filed July 22, 1935 2 Sheets-Sheet 1

FIG. 1.

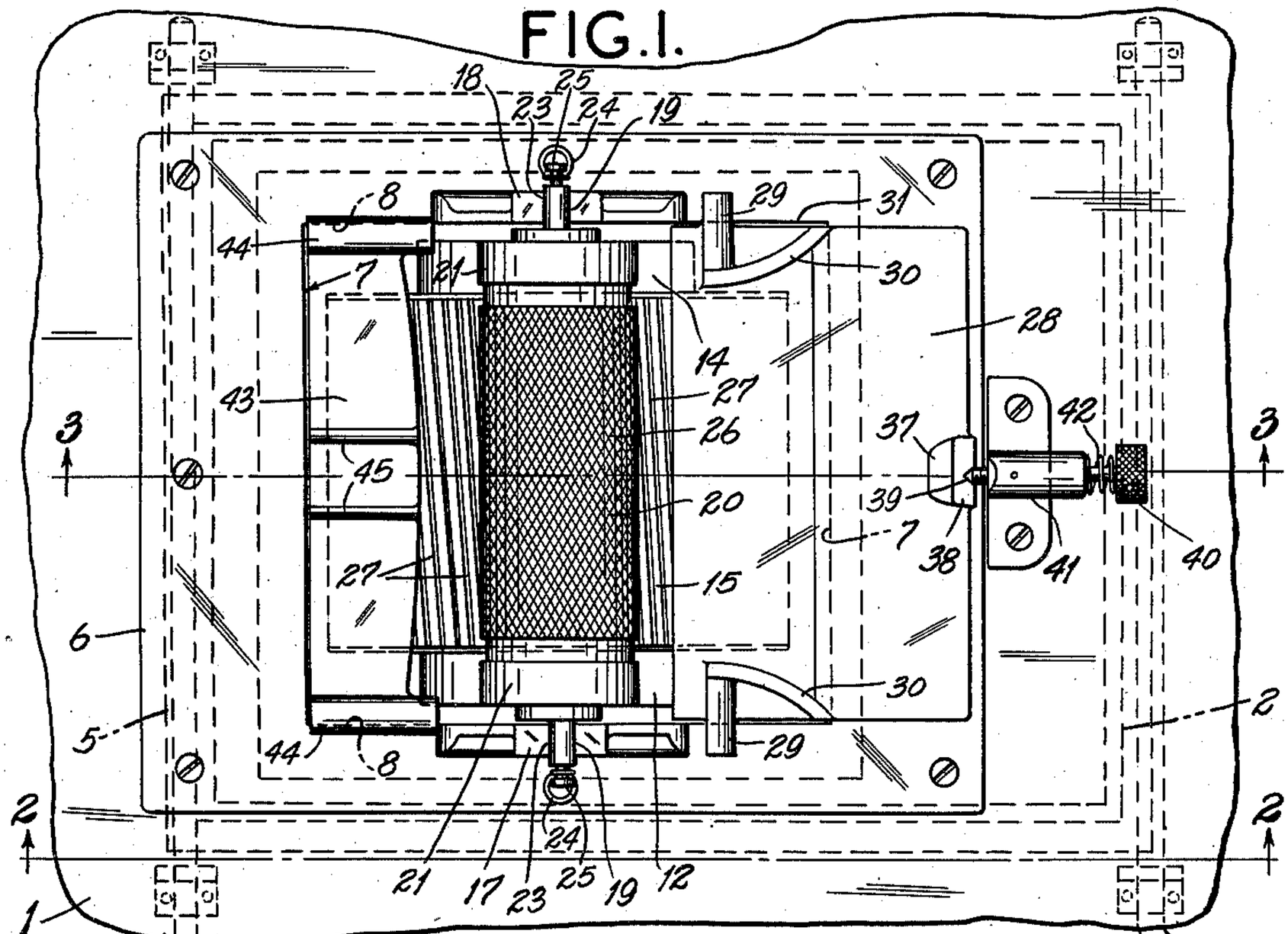

FIG. 2.

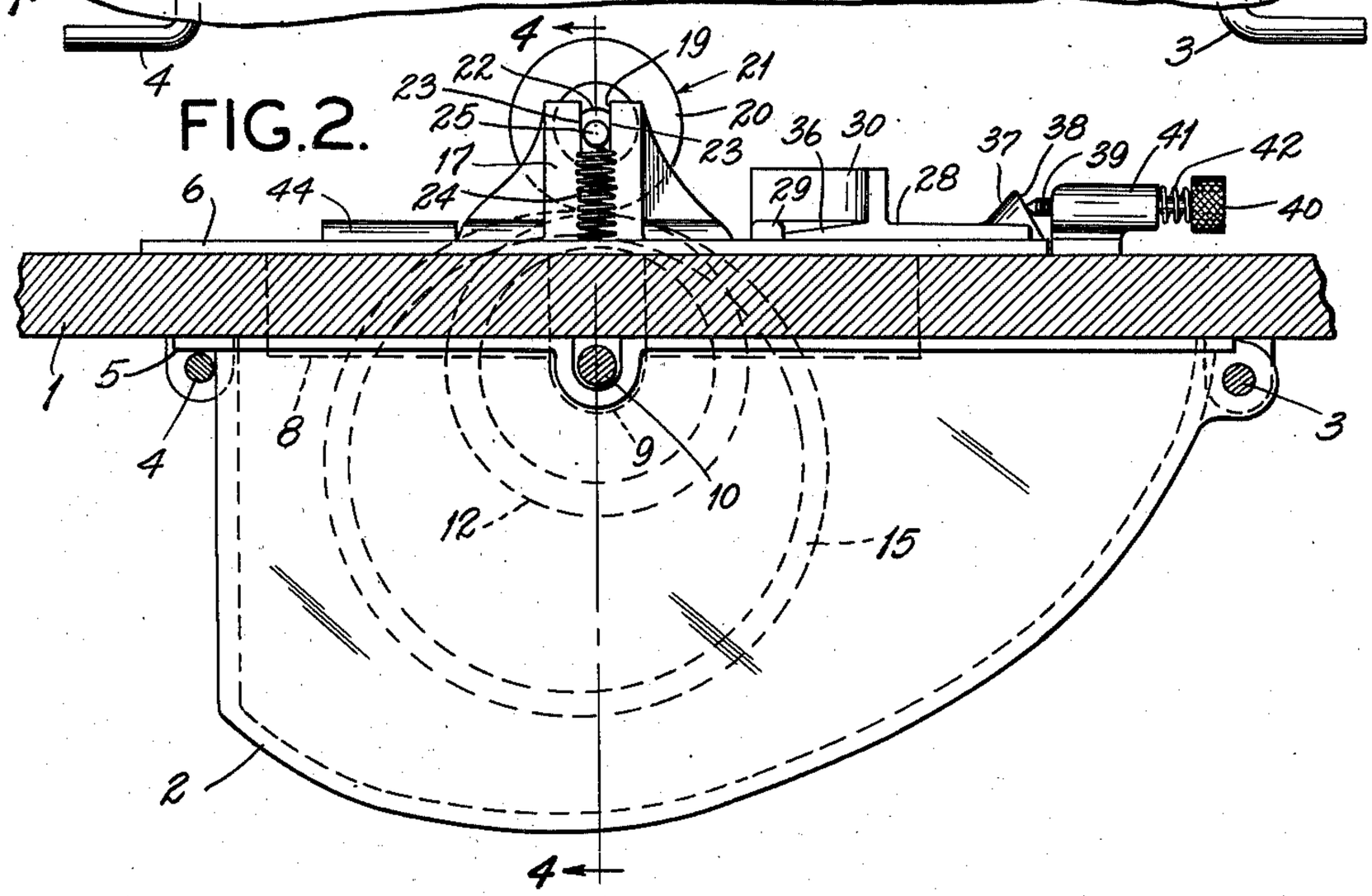

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FIG. 3

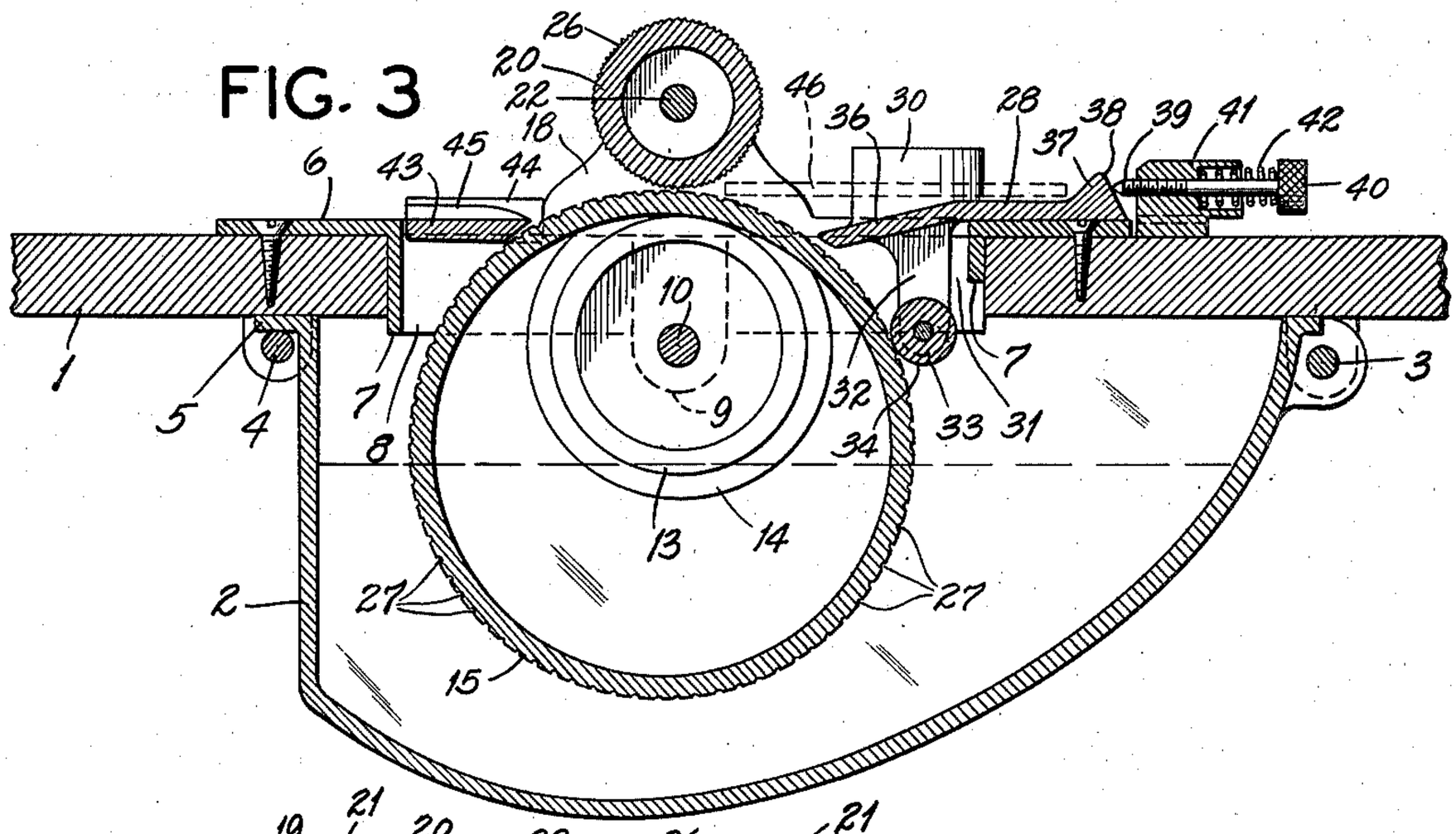


FIG4

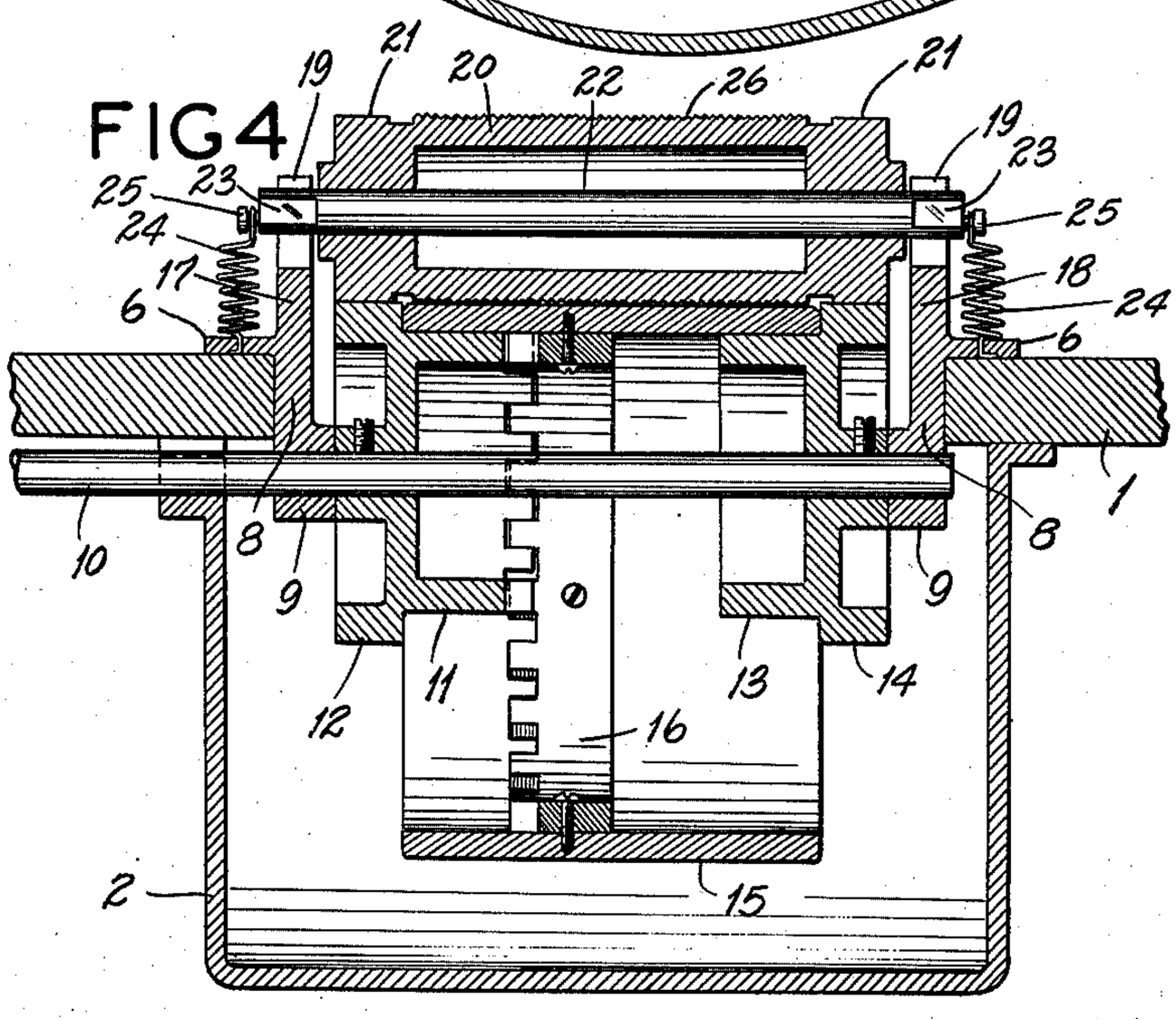


FIG.5.

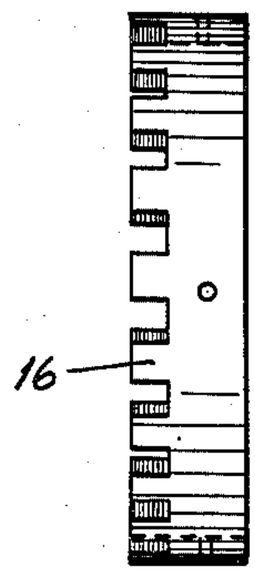


FIG.6.

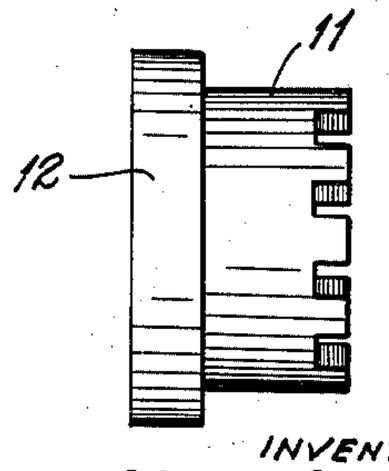
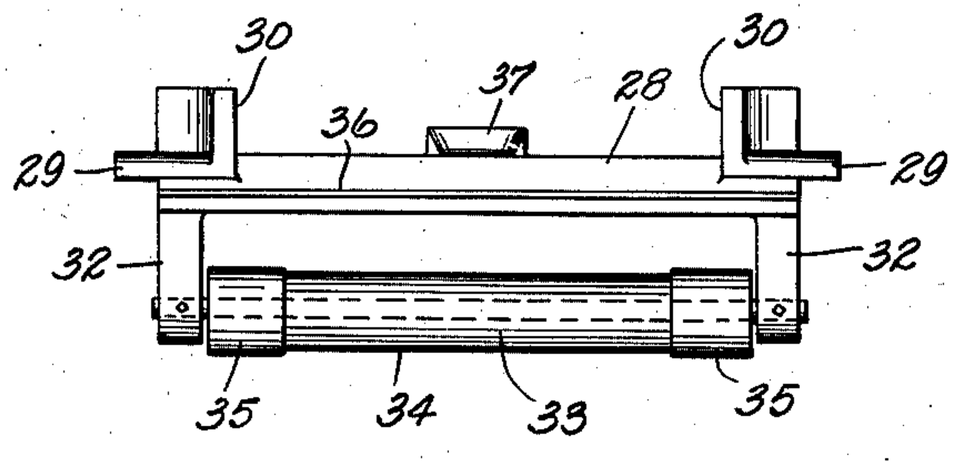


FIG.7.



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Patented July 12, 1938 2,123,313

UNITED STATES PATENT OFFICE

2,123,313

PASTE APPLYING DEVICE

Dennis Parks, St. Louis, Mo.

Application July 22, 1935, Serial No. 32,582

16 Claims. (Cl. 91—51)

This invention has for its general object to provide a novel construction of paste applying device intended more particularly for use in the heel building art and which will obviate certain disadvantages incident to the operation of devices of this character now in general use.

In the art of heel building, the lifts to be assembled into the heels are first liberally supplied with paste, usually on both sides, and paste applying devices are mounted on the heel-building machine within easy reach of the operator engaged in assembling the lifts. The conventional paste applying device consists of a container for the paste, a relatively large roller partially submerged in the paste and continuously rotated, by a belt or other form of drive from a source of power, and a smaller roller, mounted directly above the large roller, and held in frictional engagement therewith either by gravity or by spring pressure.

As the larger roller is rotated, the smaller roller is simultaneously rotated by frictional contact therewith, and has paste continuously applied to its surface. The operator inserts the lifts one at a time between these rollers and the friction between the rollers causes each lift to be engaged and carried through between the rollers, and to have paste applied to both sides thereof. As each lift is delivered from between the rollers, it is placed in a suitable heel forming device, and when a suitable number of pasted lifts are assembled, they are subjected to pressure to cause firm adherence to each other.

It is the common experience of those operating these paste applying devices, however, that they do not apply the paste uniformly to the lifts. This is due to the fact that as the rollers rotate in frictional engagement with each other the paste is, as it were, squeezed back, more or less of it is prevented from passing between the rollers. As a result a certain quantity of paste builds up on the entrance side of the paste applier, which is contemplated in the operation of these devices. The trouble is, however, that pastes vary in quality, some pastes being relatively thin, and others relatively thick. And even the same paste will change in consistency, becoming thicker the longer it is kept in the container. As a result, with a thick paste a greater accumulation will build up on the entrance side of the device than is desirable, and too much of it will go through with the lift. On the other hand, with a thin paste, too little paste will accumulate, with the result that the upper roller will not get enough paste, and many of the lifts will be insufficiently pasted.

To overcome this inequality in the application of paste to the lifts, I so mount the lower roller that it is suspended in the paste and is circumferentially, instead of axially, rotated; and I provide means for shifting, or bodily moving, the lower roller to adjust its position relative to the upper roller, and thereby increase or decrease the amount of paste to be carried through between the rollers; and, finally, I so mount the rollers that their opposed surfaces are normally out of contact with each other, so that by decreasing the distance between the rollers in the manner stated, the squeezing action on the paste may be increased to cause a greater amount of paste to be built up and maintained on the entrance side of the device.

The distinguishing feature of the invention consists in the construction, mounting and operation of the large paste roller which, as stated, is suspended instead of being axially mounted. To this end, I employ a hollow cylindrical roller open at each end and support the same from its upper side on relatively small rollers or ring members, which extend into the open ends of the large hollow paste roller so that the latter rests upon and is suspended from these ring members, and frictionally engages the same at its interior end portions. Both ring members are positively driven, and one ring member also acts as a pinion to positively drive the paste roller. This paste roller therefore constitutes a floating member, and, having no fixed axis of rotation, it is susceptible of bodily movement about its points of suspension, to vary its relation to the upper paste roller, while still maintaining frictional contact with the same.

A further important feature of the invention resides in the novel means employed for adjusting the lower paste roller relative to the upper roller. To this end I employ a relatively small roller having slightly enlarged end portions which normally engage the outer side of the lower roller near the ends thereof, and adjustable means are provided for moving this small roller outward, or toward the left in Figure 3, to cause the lower roller to be brought nearer the upper paste roller or for moving it inward, to permit the large paste roller to swing away from the upper paste roller.

In addition to its function for adjusting the position of the large paste roller relative to the upper paste roller, this small roller acts in the nature of a wiper to prevent an excessive amount of paste being carried up by the large roller, and

thereby securing uniformity in the amount of paste which is maintained in the entrance crotch between the rollers.

The invention is illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view of my improved paste applying device;

Figure 2 is a view in end elevation with a table in which the device is mounted being shown in section;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a detail view of a ring gear secured on the inner side of the large paste roller;

Figure 6 is a similar view of an operating gear secured on the driving shaft in mesh with said ring gear; and

Figure 7 is a view in end elevation of the roller adjusting device.

Referring now to the drawings, the numeral 1 indicates the table of a heel building machine, on the underside of which is mounted a paste container, 2, which is usually hinged on a rod, 3, at one end and supported on a similar rod, 4, by means of a flange, 5, at its other. Both rods may be withdrawn to remove the paste pot when it is desired to supply paste thereto, or the rod 4, may be withdrawn and the container swung downward on the rod 3, as a pivot for this purpose. The table 1, is provided with a rectangular opening to permit of the installation and operation of the rollers to be hereinafter described, and secured on the table is a metal plate, 6, having depending flanges, 7, fitting in the opening of the table. The side flanges, 8, Figure 4, provide bearings, 9, for a drive shaft, 10, and secured on this drive shaft adjacent one of these bearings is a ring pinion, 11, Figures 4 and 6, which is provided with a collar, 12, on its outer end of slightly larger diameter than the body of the ring pinion. Secured on the shaft, 10, adjacent the other bearing 9, is a ring member, 13, of the same diameter as the body of the ring pinion 11, and having on its outer end a collar, 14, of the same diameter as the collar 12. The numeral 15 indicates a relatively large paste roller which is supported on the outer peripheries of the ring pinion 11, and ring member 13, to occupy a suspended position in the container 2, and has secured on its interior a ring gear, 16, which is in mesh with the ring pinion 11. The shaft 10, is driven from any suitable source of power, not shown, and by rotating the ring pinion 11, causes the rotation of the paste roller 15, by engagement with the ring gear 16. At the same time the ring member 13 is rotated with the result that the roller 15, is caused to be circumferentially rotated, that is to say, it is suspended from, and rolls around the pinion 11 and ring member 13. Projecting upward at each side of plate 6, are bearings, 17, 18, Figures 2 and 4, each of which has a slot, 19, provided in its upper end. The numeral 20 indicates the small upper paste roller which at each end is provided with a smooth cylindrical portion, or collar, 21, of slightly larger diameter than the central portion of the roller, and which collars are adapted to rest upon the collars 12 and 14, respectively, of the pinion 11, and ring member 13, and to be rotated by frictional engagement therewith. This roller is rotatably mounted on a shaft, 22, which projects beyond the roller at each end, and these projecting ends are provided with flat sides, 23, which slidably fit in the slots 19, so that the roller is free to move up and down while being maintained in proper position with respect to the lower paste roller. The roller 20, is held in yielding engagement with the paste roller 15, by means of coil springs, 24, secured at their lower ends to the plate 6, and at their upper ends to pins, 25, projecting from the outer ends of shaft 22. The surface of the roller 20, between the collars 21, is suitably roughened, or knurled, as indicated at 26, Figures 1 and 4, and the corresponding surface of the lower paste roller 15, is preferably provided with parallel diagonally-disposed slots, or corrugations, 27, to facilitate the carrying up of paste by the roller. These opposed roughened surfaces of the two rollers are maintained in separated relation by contact of the collars 21, 12, and 14, as previously explained. To vary the extent of separation between these positions of the rollers, I employ the adjusting mechanism, which I will now describe.

The numeral 28, Figures 1, 2, 3 and 7, indicates a plate which at its outer ends rests upon the plate 6, and its inner end at each side is provided with projecting lugs, 29, which rest upon the side members of the plate 6, and diverging from these lugs are curved guides, 30, which are of assistance to the operator in positioning the lifts centrally of the rollers when they are to be pasted. The plate 6, is provided with a large rectangular opening, 31, through which the lower roller 15, projects, and this recess, as shown more particularly in Figures 1 and 3, extends a considerable distance beyond the side of the roller nearest the operator. Depending from opposite sides of the plate 28, are hangers, 32, shown clearly in the detail view, Figure 7, and rotatably mounted in these hangers is a small roller, 33. This roller has a central reduced portion, 34, and end collars, 35, of slightly larger diameter. When the plate 28 is placed in position on the top of plate 6, as shown in Figure 1, the hangers 32, and rollers 33, are adapted to project downwardly through the opening 31, in which position the collars 35, of roller 33, will bear against the outer end portions of the paste roller 15, and normally holds the same slightly off-center as shown by Figure 3. In the relation of the parts shown, it is desirable to provide a downward incline, indicated at 36, to the portion of the plate adjacent roller 15, so as to facilitate contact of the lift with the paste on this roller.

Centrally of its upper side and outer end, the plate 28, is provided with a lug, 37, having an inclined outer side, 38, which is adapted to be engaged by the end of a set screw, 39, having a knurled head, 40, for turning it and which is screw threaded in a bearing, 41, mounted on the table 1. A coil spring, 42, interposed between the head 40, and outer end of bearing 41, tends to prevent movement of the screw from any position to which it may be adjusted by exerting continuous tension thereon. When the screw is turned clockwise its inner end engages the inclined side 38, of lug 37, and moves the plate 28, in a direction toward the paste roller 15. By reason of the engagement of roller 33 with the periphery of this paste roller, this movement will cause said paste roller to be swung rearwardly, or to the left, in Figure 3, to cause its upper surface to be brought nearer to the surface of the small paste roller 20. This produces an increase in the squeezing action on the paste carried up by the roller 15, and causes the building

up and maintaining of a larger quantity of paste in the crotch between the two rollers at the entrance side thereof. Should it be found that too much paste is being built up, so that more paste than is necessary is carried through with the lift between the rollers, the roller **33** may be backed off from the paste roller **15**, by unscrewing the set screw **39**, allowing the roller **15** to assume by gravity a nearer on-center position, thus allowing a greater quantity of paste to be carried between the rollers and back into the paste pot. This prevents waste of paste, whereas excess paste passing through with the lift is wasted, besides maintaining the top of the heel building table in a sloppy condition.

The main idea, however, is to insure that a sufficient amount of paste will at all times be supplied to the lifts caused to pass between the two paste rollers, and this is accomplished through adjusting the position of the paste roller **15**, relative to the upper roller **20** in the manner described, to cause more or less paste to be continuously built up in the crotch at the entrance side of the rollers. It will be readily seen that if the paste is relatively thin, the rollers will be moved closer together to cause an increase in the accumulation of paste in the crotch between the rollers; whereas, if the paste is relatively thick, the space between rollers **15** and **20** will be widened to permit a greater quantity of paste to be carried around by the paste roller.

The engagement of the end of screw **39** with the inclined side **38**, or lug **37**, tends to hold the plate **28** firmly in position on the plate **6**, as plate **28** is not otherwise secured in position. The space or opening in plate **6**, beyond, or on the far side of the roller **15**, is closed by a cover plate, **43**, Figures 1 and 3, which at its ends is provided with flanged enlargements, **44**, Figure 1, for fitting in and engaging over the sides of the plate **6**, and the inner edge of which is positioned in close proximity to the surface of the roller **15**, so as to cause the lifts to be separated from the roller and be deposited on said cover plate. The cover plate is provided in its central portion with two parallel ribs, **45**, which are preferably tapered toward the roller and which facilitate the removal of the lift from the cover plate by the operator. In other words, if the lifts were deposited flat wise on the cover plate, and no ribs were provided, the lifts being full of paste would tend to stick to the plate, and would be more or less difficult to remove.

In operation the roller **15** is continuously rotated by the pinion **11**, and causes corresponding rotation of the roller **20**, by means of frictional engagement of collars **12**, **14** and **21**. The roller **15** carries up paste with it and, according to the distance maintained between the rollers **15** and **20**, more or less of this paste will build up in the crotch between the rollers so that when a lift, indicated by **46**, in Figure 3, is placed in position to be drawn between the rollers, paste will be applied to the under side thereof by the roller **15**, and to the upper side by the roller **20**. As above explained, the adjustment of the distance between the two paste rollers, effected by causing the roller **15**, to be swung inward or outward, will regulate the amount of paste that will be permitted to build up, or accumulate in the entrance crotch between the rollers.

The reduced portion **34**, of the small roller **33**, permits a sufficient amount of paste to be carried up between roller **15**, and at the same time serves to produce uniformity in the amount of paste carried up to the crotch between the rollers; an excess of paste being prevented from being carried up by the fact that only a given quantity or thickness of paste can pass between the roller **15** and the small roller **33**. In the use of very thick paste, the lower paste roller will frequently carry up a large excess of paste, much of which is wasted, and as explained above, the excess passing through with the lift causes a very sloppy and unpleasant condition on the heel building table. To a large extent, such waste and undesirable results are avoided by the use of the roller **33**, which limits the amount of paste that can be carried up by the lower paste roller, while at all times permitting a sufficient amount to be carried up.

By causing the roller **33** to normally engage the surface of roller **15**, and hold it slightly off-center, I prevent any swinging movement of the roller in operation; as, if the roller was suspended normally out of contact with the roller **33**, it would swing back and forth and produce an irregularity in the feed of the paste.

I claim:

1. A paste applying device comprising, in combination with a container for paste, a relatively large floating lower roller suspended therein, an upper roller yieldably cooperating with the lower roller to receive paste therefrom, means for circumferentially rotating said lower roller and means for driving said upper roller.

2. A paste applying device comprising, in combination with a container for paste, a relatively large floating lower roller suspended therein, an upper roller yieldably cooperating with the lower roller to receive paste therefrom, means for circumferentially rotating said lower roller, means for driving said upper roller, and means for adjusting said lower roller about its suspending means to vary the distance between the opposed surfaces of said rollers.

3. A paste applying device comprising, in combination with a container for paste, rotatable supporting means mounted in said container, a relatively large floating lower roller suspended on said supporting means for rolling movement thereover within the container, means for simultaneously rotating said supporting means and circumferentially rotating said lower roller, and an upper roller frictionally driven by said supporting means and yieldably cooperating with said lower roller.

4. A paste applying device comprising, in combination with a container for paste, rotatable supporting members mounted in said container, one of said members constituting a ring pinion, a relatively large lower roller suspended on said supporting members for rolling movement thereover, and having an internal ring gear in mesh with said pinion, means for rotating said pinion, and an upper roller frictionally driven by said supporting members and yieldably cooperating with the lower roller.

5. A paste applying device comprising, in combination with a container for paste, a shaft journaled in said container, a pair of cylindrical supporting members secured on said shaft, one of said members constituting a ring pinion, a relatively large lower roller suspended on said supporting members for rolling movment thereover, and having an internal ring gear in mesh with said pinion, whereby when said shaft is rotated, said supporting members and lower roller will be simultaneously rotated, the latter by rolling over said supporting members, and an upper roller

frictionally driven by said supporting members and yieldably cooperating with the lower roller.

6. A paste applying device comprising, in combination with a container for paste, a relatively large floating lower roller suspended therein, an upper roller yieldably cooperating with the lower roller to receive paste therefrom, means for circumferentially rotating said lower roller, and for frictionally driving said upper roller, and means for adjusting said lower roller bodily about its suspending means to vary the distance between the opposed surfaces of said rollers comprising a roller engaging one side of said lower roller and movable to adjusted positions in opposite directions.

7. A paste applying device comprising, in combination with a container for paste, a relatively large floating lower roller suspended for rolling movement therein, an upper roller yieldably cooperating with the lower roller to receive paste therefrom, means for circumferentially rotating said lower roller, and for frictionally driving said upper roller and a third roller normally engaging one side of said lower roller and movable in opposite directions in right lines to adjust said lower roller about its suspending means to vary the distance between the opposed surfaces of said upper and lower rollers.

8. A paste applying device comprising, in combination with a container for paste, a relatively large floating lower roller suspended therein, an upper roller yieldably cooperating with the lower roller, the operative surfaces of said rollers being normally out of contact, but sufficiently close to insure the transfer of paste from the lower to the upper roller, means for circumferentially rotating said lower roller, and for frictionally driving said upper roller a third roller having end portions normally engaging one side of said roller at opposite ends thereof and an intermediate reduced portion, and means for adjusting said third roller to cause said lower roller to be moved in one direction or the other about its suspending means to vary the distance between its operative surface and the opposed surface of said upper roller.

9. A paste applying device comprising, in combination with a container for paste, rotatable cylindrical supporting members mounted in said container, one of said members comprising a ring pinion, a relatively large lower roller suspended on said supporting members for rolling movement thereover and an internal ring gear in mesh with said pinion, means for rotating said pinion to cause a rolling movement of said lower roller over said supporting members, an upper roller yieldably cooperating with the lower roller, and means for adjusting said lower roller in one direction or the other about said supporting members to vary the distance between the opposed surfaces of said rollers.

10. A paste applying device comprising, in combination with a container for paste, rotatable supporting means mounted in said container, a relatively large lower roller suspended on said supporting means for rolling movement thereover, means for circumferentially rotating said lower roller, an upper roller yieldably cooperating with said lower roller and having its surface normally out of contact therewith, but close enough thereto to continuously receive paste therefrom a slidable member having hangers depending therefrom, a third roller rotatably mounted in said hangers and normally engaging one side of said lower roller, an adjusting screw engaging said slidable member for moving it to adjusted positions to cause the roller carried thereby to move the lower roller about said supporting means to vary the distance between its surface and the opposed surface of the upper roller and means for frictionally driving the latter roller.

11. A paste applying device comprising, in combination with a container for paste, rotatable supporting members mounted in said container, a relatively large roller suspended on said supporting members for rolling movement thereover, means for circumferentially rotating said lower roller, an upper roller yieldably cooperating with said lower roller and having its operative surface normally out of contact therewith, means for frictionally driving said upper roller, a slide plate carrying a roller normally engaging one side of said lower roller and having a lug providing an inclined surface, and an adjusting screw having its end engaging said inclined surface for moving said slide plate to adjusted positions to cause its roller to move said lower roller about said supporting members to vary the distance between its surface and the opposed surface of said upper roller.

12. A paste applying device comprising, in combination with a container for paste, rotatable supporting members mounted in said container, each having a collar on its outer end and one of said members constituting a ring pinion, a relatively large lower roller suspended on said supporting members between the collars thereof and having an internal ring gear in mesh with said pinion, an upper roller yieldably mounted above said lower roller and having a collar at each end frictionally engaging the respective collars of said supporting members, the diameters of said collars being such as to maintain the opposed surface of said rollers out of contact, means for adjusting said lower roller about said supporting members to vary the distance between the opposed surfaces of said rollers, and means for continuously rotating said ring pinion to cause a rolling movement of said lower roller over said supporting members.

13. A paste applying device comprising, in combination with a container for paste, rotatable supporting members mounted therein, a relatively large, hollow, cylindrical paste roller, having open ends, interiorly supported at its ends on said members and suspended therefrom in said container, driving means operating on the interior of said paste roller to cause a rolling motion thereof over said supporting members, an upper roller yieldably cooperating with said suspended roller, but having its operating surface normally out of contact therewith, and means for adjusting said hollow paste roller about said supporting members to vary the distance between the opposed surfaces of the two rollers.

14. A paste applying device comprising, in combination with a container for paste, a floating, hollow cylindrical lower paste roller mounted in said container, an upper roller yieldably cooperating with said floating roller, but having its operating surface normally out of contact therewith but sufficiently close thereto to insure the continuous transfer of paste from the lower to the upper roller, means for circumferentially rotating said floating roller, and for driving said upper roller, and means for adjusting the position of said floating roller to vary the distance between the surfaces of the two rollers.

15. A paste applying device comprising, in

combination with a container for paste, friction rollers mounted therein, one of which has driving means, a relatively large, hollow, cylindrical paste roller, having open ends, mounted on and supported by said friction rollers for rolling movement thereover, and suspended therefrom in said container, an upper roller frictionally driven by said friction rollers and yieldably cooperating with said suspended roller and having its operating surface normally out of contact therewith but sufficiently close thereto to receive paste therefrom, means for rotating said friction rollers and simultaneously imparting by said driving means a rolling movement to said suspended roller thereover, and means for moving said hollow roller in one direction or the other about its points of suspension on said friction rollers to vary the distance between the opposed surfaces of said suspended and upper rollers.

16. A paste applying device comprising, in combination with a container for paste, rotatable supporting means mounted in said container, a relatively large floating lower roller suspended on said supporting means for rolling movement thereover, an upper roller yieldably co-operating with said lower roller to receive paste therefrom, and means for circumferentially rotating said lower roller and frictionally driving said upper roller.

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