Jan. 28, 1936. E. G. RIDER 2,028,878

ADHESIVE APPLYING MECHANISM

Filed Nov. 11, 1931 4 Sheets-Sheet 1

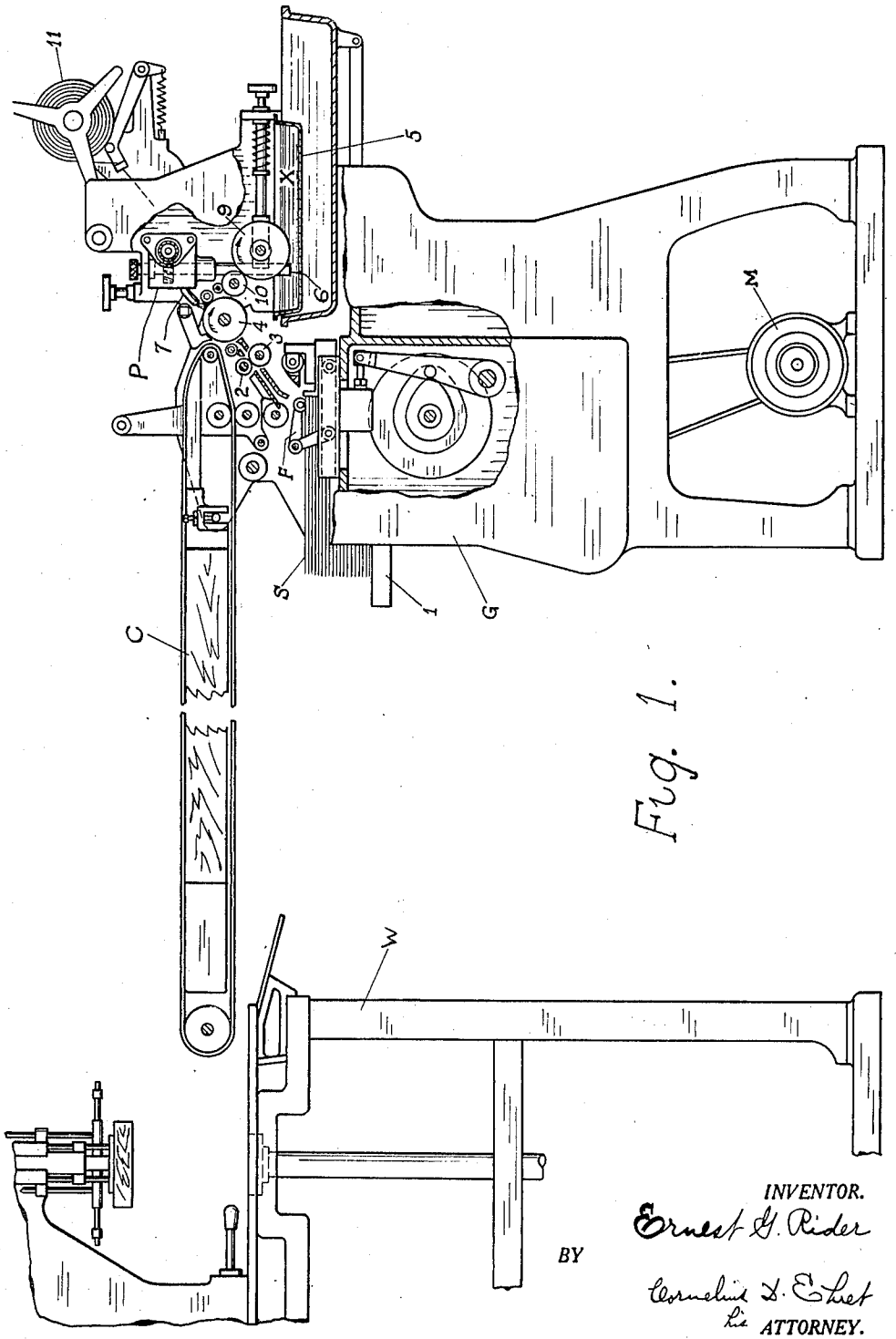


Fig. 1.

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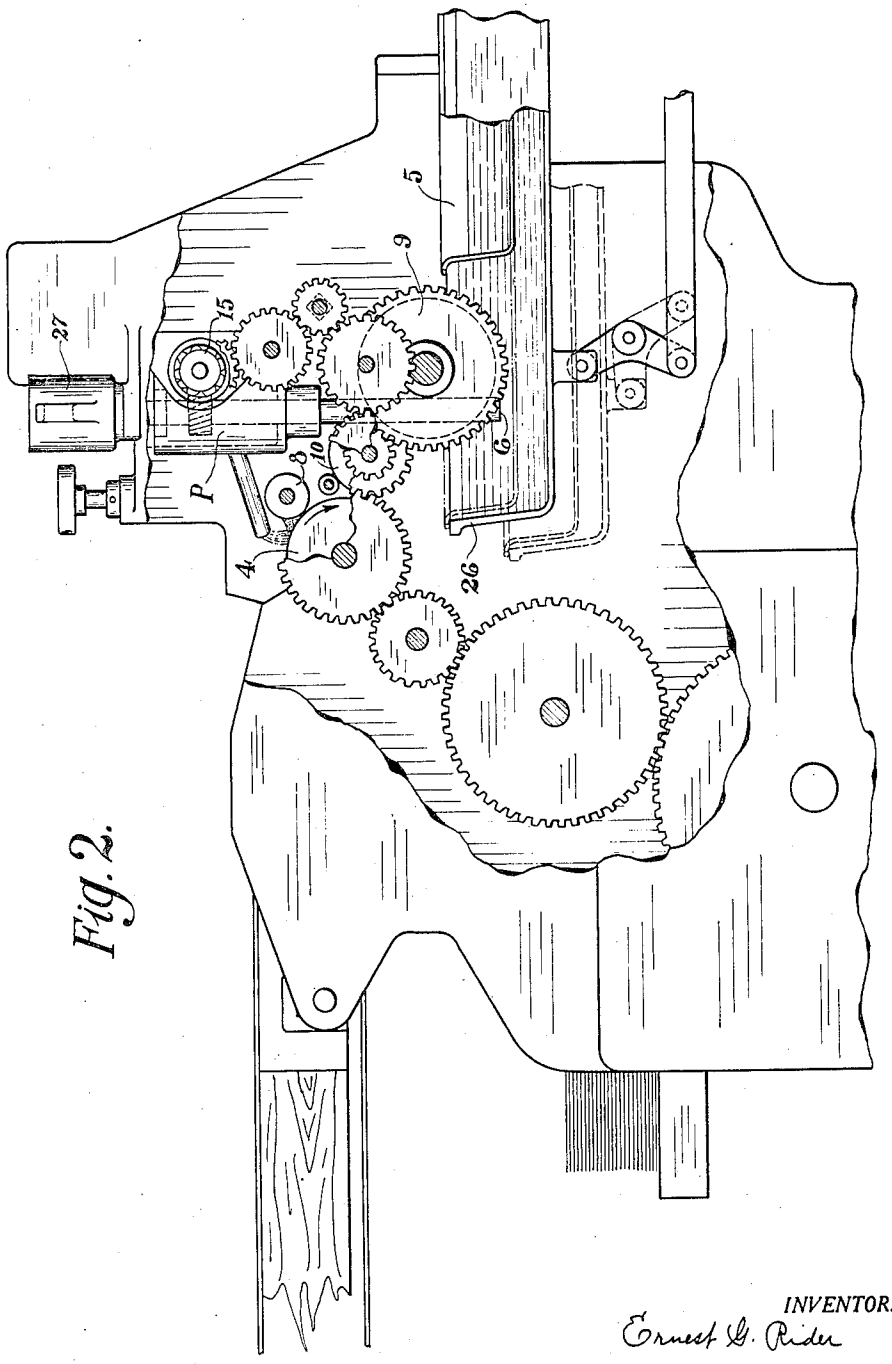


Fig. 2.

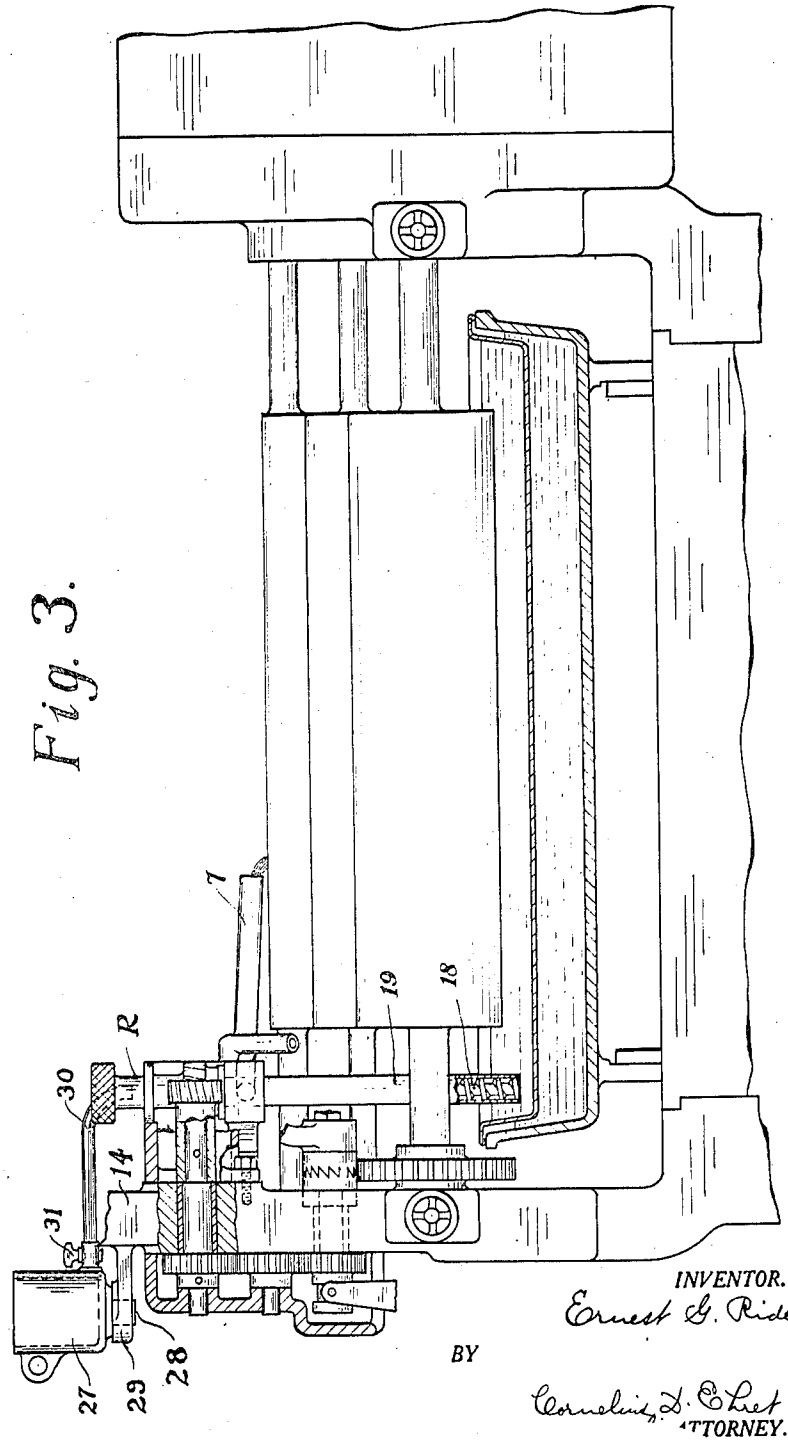
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Fig. 3.



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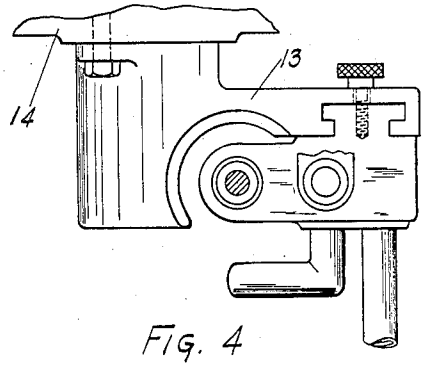


FIG. 4

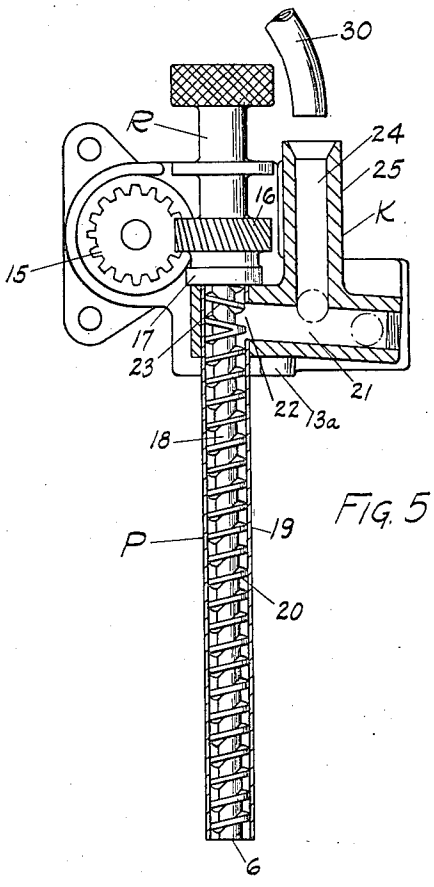


FIG. 5

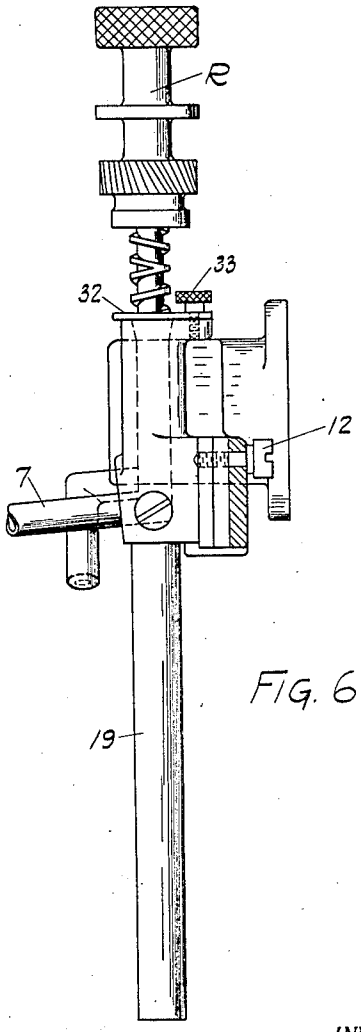


FIG. 6

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Patented Jan. 28, 1936 2,028,878

UNITED STATES PATENT OFFICE

2,028,878

ADHESIVE APPLYING MECHANISM

Ernest G. Rider, Philadelphia, Pa., assignor to Stokes and Smith Company, Philadelphia, Pa., a corporation of Pennsylvania

Application November 11, 1931, Serial No. 574,348

1 Claim. (Cl. 91—49)

My invention relates to adhesive applying machines and particularly to mechanisms for coating wrappers, labels or the like with adhesive in preparation for application to boxes, cartons, containers, or the like.

In accordance with my invention, adhesive is transported from a reservoir to the adhesive applying roll by a pump having no valves, or other parts, whose operation would be adversely affected by the peculiar properties of adhesive during its transfer and which would be fouled by drying of the glue during periods when the machine was not operating; more particularly, the pump has only one moving part, a spiral element, which transports the glue in an uninterrupted stream along a path free of obstructions, as valves, or the like.

More particularly, provision is made for permitting the introducing of cleaning fluid to the pump when desired, to flush accumulations of foreign matter, or adhesive, from the pump casing, and to clean the surface of the transfer roll of the machine.

Further, the single movable pump member can be withdrawn from the pump casing for cleaning, or replacement, without the use of any tools, the act of withdrawing the member interrupting a connection to the pump driving mechanism.

My invention further resides in the features of construction and arrangement hereinafter described and claimed.

For an understanding of my invention and for illustration of a preferred form thereof, reference is to be had to the accompanying drawings in which:

Fig. 1 illustrates a box wrapping system including a glueing machine utilizing the invention.

Fig. 2 is a detailed view on enlarged scale and with parts broken away, of the pump, the transfer roll, and driving mechanism therefor.

Fig. 3 is an end view with parts in section, and parts broken away, of structure shown in Fig. 2.

Fig. 4 is a plan view on enlarged scale of the pump and its support.

Fig. 5 is a front elevational view in section of the parts shown in Fig. 4.

Fig. 6 is an end elevational view of the pump with the movable element partly withdrawn.

Referring to Fig. 1, the glueing machine G, which may be generally similar to that shown in Federwitz Patent 1,770,483, applies a coating of adhesive to wrappers which are transported by the conveyor C which may be specifically of the type disclosed in Davis Patent 1,818,198, to a machine W generally of the type shown in Federwitz Patent 1,541,036 for applying them to boxes, containers, or the like.

The wrappers which are disposed in a stack S upon the bed 1 of the glueing machine are removed in turn by mechanism F of the type specifically shown in Federwitz Patent 1,772,344, which delivers them to the feeding rolls 2, 3. Adhesive is transferred from the coating roll 4 to the box engaging faces of the wrappers as they pass to the receiving end of the conveyor C.

Adhesive is continuously supplied to the surface of the roller 4 from a reservoir or pan 5 by a pump P whose inlet 6 is normally below the level of adhesive in the reservoir and whose outlet conduit 7 discharges adhesive to the roll. Preferably and as shown most clearly in Figs. 2 and 3, the discharged adhesive is received in a pocket formed by the roll 4 and the roll 8. In operation, as shown in Fig. 2, a fountain of glue is maintained in the pocket, and since the peripheries of rolls 4 and 8 are but slightly separated, the roller 8 serves as a scraper to insure a uniform and thin coating on the surface of roller 4. From time to time the roll 8 is rotated a small amount to present a fresh scraping surface, as there is a tendency for foreign matter to accumulate. This construction is not per se claimed herein, but is described and claimed in the aforesaid Federwitz Patent 1,772,344.

The roller 9 continuously agitates the glue in the reservoir 5 to keep the adhesive of uniform consistency and has no part in the transfer of adhesive to the roller 4 though it does supply adhesive to the roll 10 for a purpose not of interest here, but which is fully explained in application Serial No. 294,436 of which this application is in part a continuation. In this copending application which is particularly concerned with tabbing of wrappers, roll 10 serves to coat the tabs which are cut from strip removed from roll 11, and transfers them to roll 4 for engagement with a wrapper.

The adhesive supply pump P, referring particularly to Figs. 4, 5, and 6, consists of but two members, a casing K and a rotatable member R. The casing member K is secured as by the bolt 12 to a supporting member 13 secured to one of the side frames 14 of the gluer G and rests upon a stop 13a projecting from the supporting member. The gear 15 driven through the train of gears shown in Figs. 2 and 3, from the driving motor M of the gluer, normally engages gear 16 attached to or forming a part of the rotatable pump element R. As shown most clearly in Fig. 5, the member R is provided with an enlarged or

shoulder portion 17 which engages the pump casing K.

The depending extension 18 of the member R which extends axially of the tubular member 19 of casing K is provided with a spiral 20 which lifts the adhesive from the inlet 6 of the casing member 19 to the chamber 21 of the pump casing which is in communication with the outlet of discharge pipe 7.

All the driving mechanism for the pump is outside of the path of and does not come in contact with the adhesive, and the single bearing for the rotatable member R afforded by shoulder 17 is above the opening 22 to reduce the possibility of adhesive reaching the bearing surfaces. As a further precaution, the member 18 is provided with a second spiral 23 which is reversed with respect to spiral 20, so that any adhesive tending to reach the bearing surface between the casing and the shoulder 17 is forcibly impelled back towards the discharge chamber 21. The location of the bearing surface and the provision of the reversed spiral 23 also prevent the escape of adhesive. The gears 15, 16 are so cut and their direction of rotation is such that the axial thrust upon member R tends to force the shoulder 17 into more intimate engagement with the bearing surface afforded by the casing K, to assist in sealing the pump interior.

The member R can be removed for cleaning simply by lifting it upwardly. The act of withdrawing the member R from the casing causes it to rotate slightly for releasing the gears 15 and 16 from engagement with each other. There is no need for tools of any kind as there are no screws or bolts, packing glands, or the like, requiring the use of tools. To restore the pump to operating condition, the member R is merely dropped back into place. The rotating spiral 20 continually forces adhesive from the reservoir to the discharge pipe in a stream uninterrupted by valves of any kind. The adhesive in the pump is always in motion. With a pump of this construction no troubles can arise because of interference with the action of valves by the properties of adhesive, nor is there any possibility of dried glue fouling the valves if the machine is left idle. The path of the glue from inlet to outlet contains no pockets for accumulation of foreign matter or dried glue.

In ordinary operation, it is not necessary to remove the member R for cleaning. Cleaning liquid, as water may be delivered to the opening 24 of extension 25 of the pump casing. The water flows down into the chamber 21, part of it flowing through the discharge conduit 7 onto the glue rolls for cleaning them, while the rest of the water flows downwardly through the tubular part 19 of the casing to remove the glue and accumulations of foreign matter from the spiral 20 and the interior of the casing. If during this operation the machine is running, the rotation of member R will tend to force the water onto the glue rolls, but since the water is considerably thinner than glue, at least part of it will work downwardly through the casing 19.

To avoid dilution of the glue in the reservoir during this cleaning operation, the pan 5 is preferably removed from its position below the pump casing 19, for example, to the position indicated in Fig. 2. The particular linkage for effecting this movement of the glue reservoir and the water container 26 may be generally similar to that disclosed and claimed in Weightman et al. Patent 1,433,976.

The water delivered to the casing opening 24 is or may be supplied from a cup 27, having a downwardly extending projection 28 which engages a hole in the bracket 29 extending from the frame of the machine to position the spout 30 directly above the opening 24 of the pump casing. To clean the rolls and the pump it is only necessary to open the valve 31 of the spigot, although if the cover plate 32, Fig. 6, is provided for normally closing the opening 24, it is also necessary to release clamping screw 33 therefor and swing the plate out of the path of the water discharged from the nozzle 30.

Under ordinary conditions, the cleaning afforded by the water from cup 27 is sufficient, but if a different grade of adhesive is to be used for a different type of work, or if the machine is to lie idle for some time, it is preferable that alternatively, or in addition, the movable element R of the pump be removed for cleaning as previously explained. This permits the tube 19 to be flushed out, or cleaned by a suitable implement.

What I claim is:

An adhesive-applying mechanism comprising a roller for applying a coating of adhesive to box wrappers, a reservoir for adhesive, a stationary pump casing normally dipping into adhesive in said reservoir and having an outlet discharging adhesive to said roller for application to said wrappers, and means for changing the position of the reservoir to permit cleaning fluid to be passed through said casing without dilution of adhesive in said reservoir.

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