Nov. 17, 1953 R. E. TAGGART 2,659,342

GLUE-APPLYING APPARATUS FOR PACKAGING MACHINES

Filed Aug. 18, 1951

2 Sheets-Sheet 1

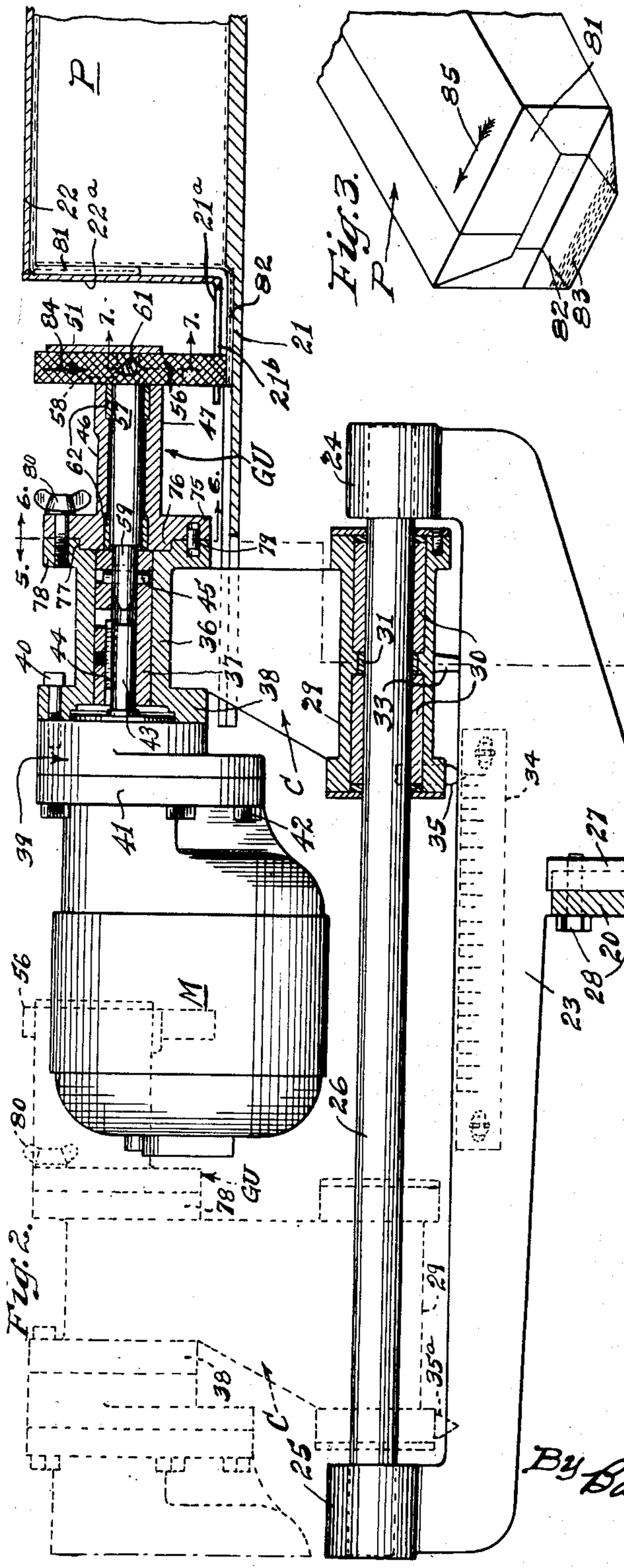

Fig. 2.

Fig. 3.

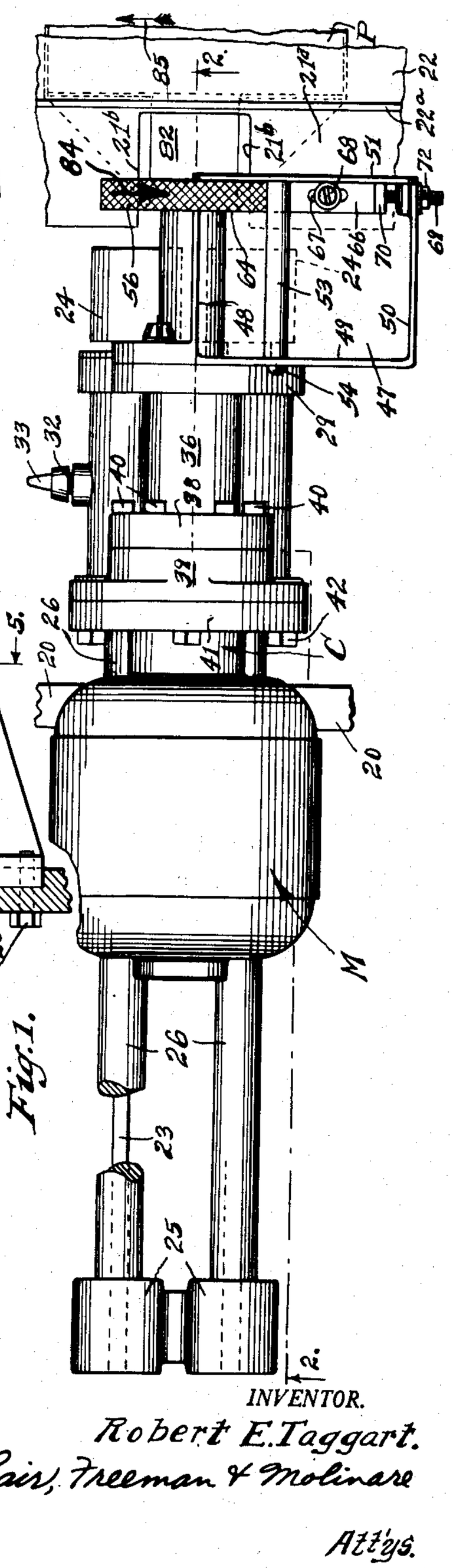

Fig. 1.

INVENTOR.

Robert E. Taggart.

By Bair, Freeman & Molinare

Atty's.

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Fig. 5.

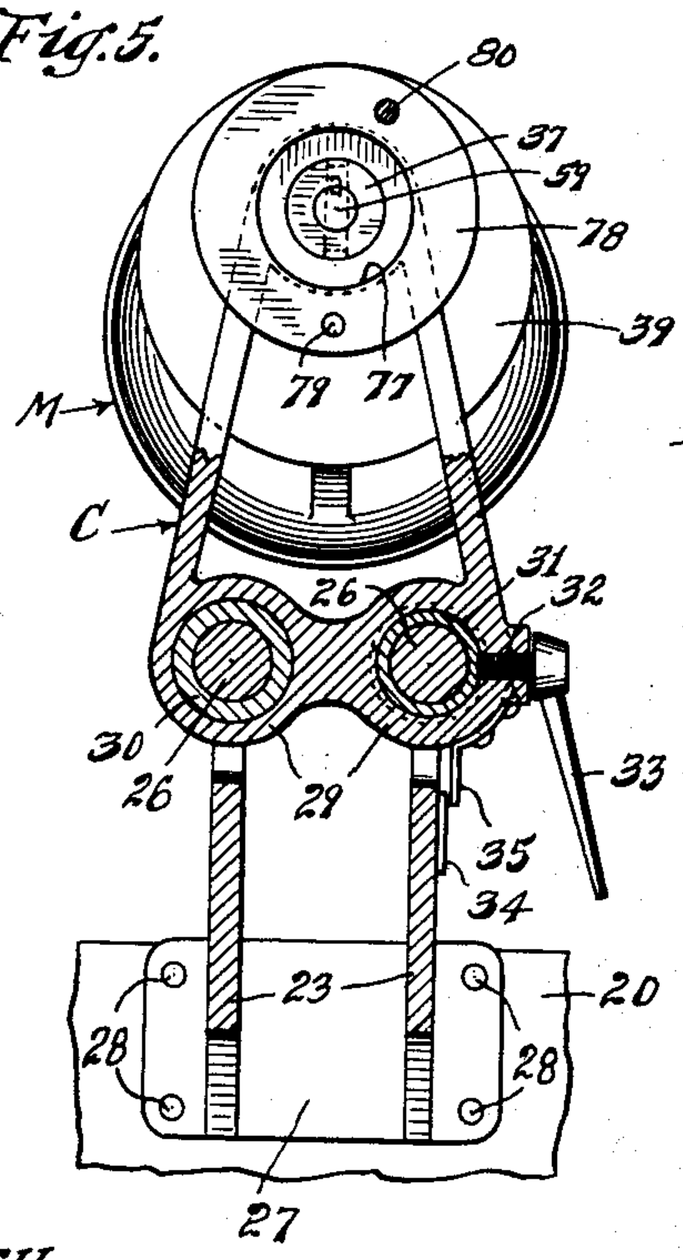


Fig. 6.

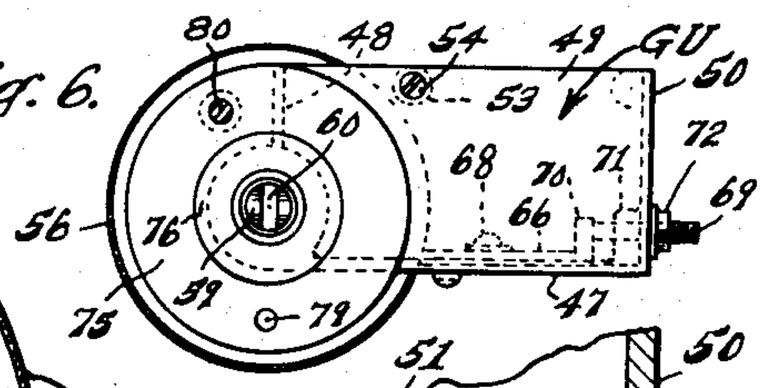


Fig. 7.

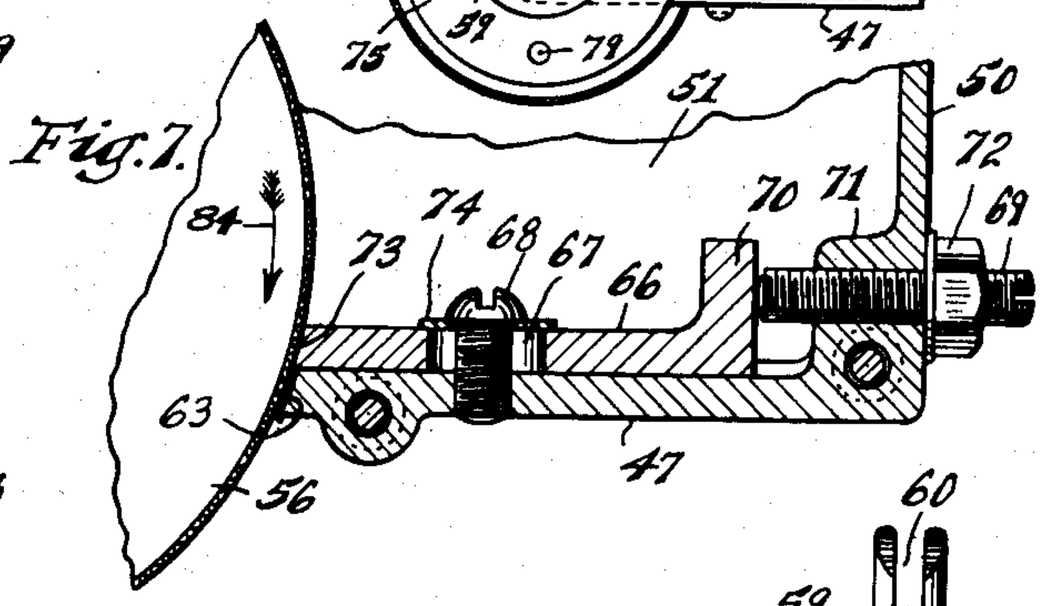


Fig. 8.

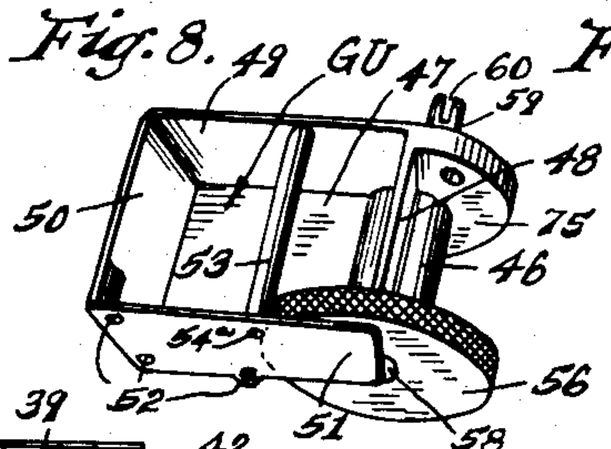


Fig. 9.

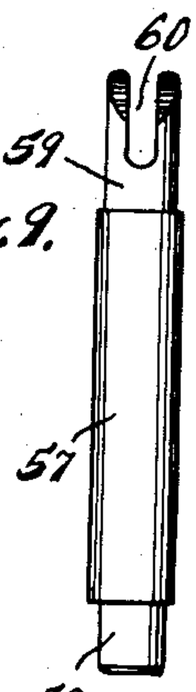


Fig. 4.

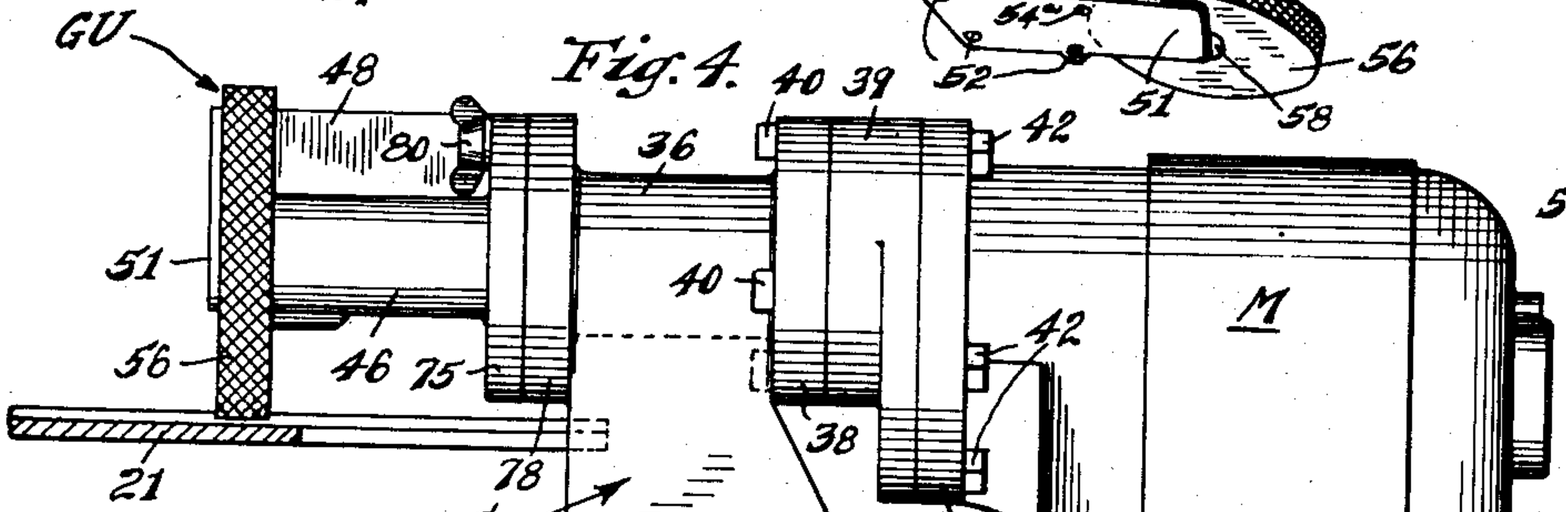
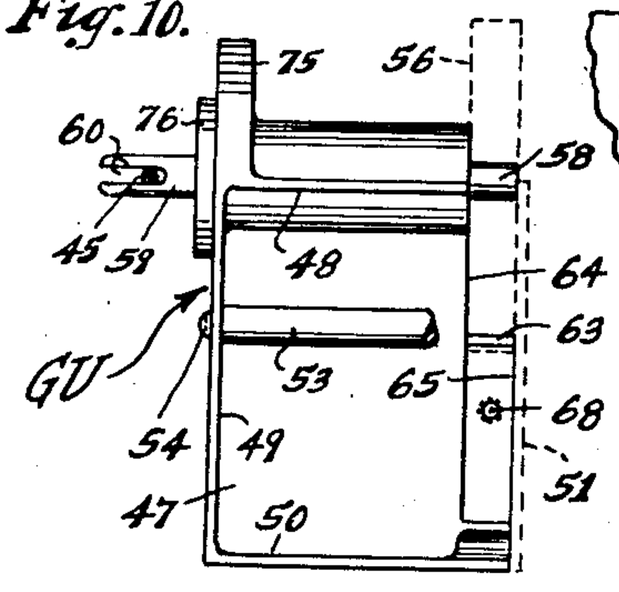


Fig. 10.



INVENTOR.
Robert E. Taggart.
By Bair, Freeman & Molinare
Att'ys.

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2,659,342

GLUE-APPLYING APPARATUS FOR PACKAGING MACHINES

Robert E. Taggart, Toledo, Ohio, assignor to Lynch Corporation, Anderson, Ind., a corporation of Ohio

Application August 18, 1951, Serial No. 242,504

4 Claims. (Cl. 118—261)

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This invention relates to a glue-applying apparatus and particularly one for applying glue to a flap of a package being wrapped in a packaging machine, the herein disclosed apparatus being particularly adapted for a packaging machine of the kind disclosed in a general way in the Stevens Patent No. 2,292,487 of August 8, 1942, and in the Doepel and Wiley application, Serial No. 103,875, filed July 9, 1949.

One object of the present invention is to provide a glue-applying apparatus which, in addition to being readily adjustable for different sizes of packages, is adjustable to a position for removing a gluepot assembly unit from the apparatus so that such unit can be soaked in water and any dried glue thereby softened so that it can be readily cleaned off as by brushing.

Another object is to provide a glue-applying apparatus which in itself is in the form of a unit that can be mounted on one side of a machine for applying glue to one end of a package, a similar assembly being mounted on the opposite side of the machine for applying glue to the other end of the package, each unit having its own motor drive so that one unit is mechanically independent of the other, the two motor drives being in the form of synchronous motors so that the speed of the glue-applying rollers driven thereby may be matched in surface speed with the transportation of the package past the gluing apparatus, which transportation is likewise accomplished by synchronous motor means, thereby coordinating the operation of each assembly with the packaging machine and properly applying the glue to the packages being transported past the gluing apparatus.

Still another object is to provide glue-applying apparatus in which there is a supporting bracket provided with guide means, a carriage mounted on the guide means for adjustment both for size of package and to a gluepot-removing position, and a glue-applying mechanism mounted on the carriage and including a gluepot unit readily removable from the carriage and so designed that the entire unit can be soaked in water without detriment to any of the parts thereof, thus softening the glue so that it can be readily removed at the end of a day's run. In this connection many previous gluing mechanisms include gluepots, glue-applying rollers and the like which are permanently attached to the machine and which are very difficult to clean after glue dries on them. With my arrangement the gluepot and all associated mechanism on which glue might dry is removable so as to facilitate the softening of the glue by soaking in water whereupon the excess glue can be brushed off, and

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the assembly thus cleaned for another day's run.

A further object is to provide a gluepot and glue-applying roller so designed and associated with each other as to effectively apply a film of glue to a package being wrapped, with the thickness of the film of glue being adjusted as desired by a novel wiper blade arrangement.

Still a further object is to provide a carriage and gluepot assembly that can be adjusted by means of a scale and pointer arrangement in a minimum of time to suit various sizes of packages, the arrangement being such that the carriage can be adjusted beyond the maximum position for moving the gluepot assembly to a position where a gluing unit thereof may be readily removed from the carriage and the entire unit then soaked in water for softening the glue.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my glue-applying apparatus, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a plan view of glue-applying apparatus embodying my present invention.

Figure 2 is a rear elevation of Figure 1, partly in section on the line **2—2** of Figure 1.

Figure 3 is a perspective view of a partially wrapped package showing the position of the parts at the time glue is applied by my glue-applying apparatus.

Figure 4 is also an elevation, this figure being taken in the opposite direction relative to Figure 2, and thereby being a front elevation.

Figure 5 is a sectional view on the line **5—5** of Figure 2.

Figure 6 is a sectional view on the line **6—6** of Figure 2, showing the removable gluing unit of my glue-applying apparatus.

Figure 7 is an enlarged sectional view on the line 7—7 of Figure 2 showing particularly a wiper blade coacting with a glue-applying roller.

Figure 8 is a perspective view of the removable gluing unit of my glue-applying apparatus.

Figure 9 is an elevation of the glue-applying roller shaft; and

Figure 10 is a plan view similar to a portion of Figure 1 but with the glue-applying roller and a shield plate omitted but shown by dotted lines.

On the accompanying drawings I have used the reference numeral **20** to indicate a section of the frame of a packaging machine. The packaging machine includes a package receiving table **21** shown in Figure 2 and a top plate **22**

above the package which is shown generally at P. An end plate 22*a* is provided for the end of the package and has a flange 21*a* that acts as a bottom plate.

I provide a supporting bracket 23 having bosses 24 and 25 spaced from each other. Two of the brackets are provided, one on the right side and one on the left side of the machine. Guide rods 26 extend between the bosses 24 and 25 and are for a carriage shown generally at C.

The carriage C has a pair of hubs 29 (see Figures 5 and 2) in which bearing sleeves 30 are mounted for sliding movement on the guide rods 26. A clamp ring 31 is also provided in one of the hubs against which a clamp screw 32 is adapted to engage when a handle 33 on the clamp screw is manipulated, thus distorting the ring 31 so that it clamps firmly on its guide rod 26 and locks the carriage C in the desired adjusted position. Mounted on the bracket 23 is a scale 34 numbered suitably as for instance in inches to designate the size of the package to which the glue-applying apparatus is adjusted. A pointer 35 on the carriage C cooperates with the scale 34 for this purpose.

The carriage C is provided with a third hub 36 above the hubs 29 in which a drive sleeve 37 is rotatably mounted. The hub 36 has a flange 38 to which is secured a speed reducer 39 by means of cap screws 40. The speed reducer in turn supports a motor M having a flange 41 secured by bolts 42 to the speed reducer. The slow speed shaft of the speed reducer extends as at 43 into the drive sleeve 37 and is keyed thereto as at 44. The drive sleeve has a drive pin 45, the purpose of which will hereinafter appear.

One of the most important features of my present invention is a gluing unit shown in Figure 8 and designated in general GU. This unit is removable with respect to the parts thus far described and comprises a hub 46 and a gluepot having a bottom 47, three side walls 48, 49 and 50, and a fourth side wall 51 which constitutes a shield plate for a purpose which will hereinafter appear.

The shield plate 51 is secured to the gluepot by means of three countersunk screws 52 shown in Figure 8 and a brace rod 53. The brace rod 53 is secured to the wall 49 by a screw 54 and the wall 51 is in turn secured to the brace rod by a countersunk screw 54*a*.

The gluing unit further includes a glue-applying roller 56 and a glue-applying roller shaft 57. The shaft has a reduced end 58 to which the roller 56 is secured as by a set screw 61 (see Figure 2) and a reduced end 59 to enter the drive sleeve 37. The reduced end 59, shown in Figure 9, has a slot 60 to receive the drive pin 45. The shaft 57 is journaled in bearing sleeves 62 in the hub 46 as shown best in Figure 2. The plate 21*a* has a slot 21*b* for the roller 56.

The gluepot 47—48—49—50—51 has a slot, the slot back being shown at 63 in Figure 10, one side thereof at 64 and the other side thereof at 65. The side 65 is formed by the shield plate 51 and the slot is substantially the same width as the glue-applying roller 56 so as to eliminate the leakage of glue out of the gluepot past the sides of the glue-applying roller.

The periphery of the roller 56 is preferably knurled so as to pick up a desired amount of glue, and I provide a wiper blade 66 shown particularly in Figure 7 having a wiper end 73 substantially the same angle and curvature as the periphery of the glue-applying roller 56. The blade 66 is provided with a slot 67, and a clamp screw 68 and washer 74 serve to cooperate therewith for holding the wiper blade 66 in any desired adjusted position of tightness with respect to the periphery of the glue-applying roller for thus adjusting the thickness of the film of glue carried out of the gluepot by the roller.

For adjusting the wiper blade 66, I provide a set screw 69 engageable against a projection 70 of the wiper blade. A set screw is threaded in a boss 71 of the gluepot and the adjustment of the set screw is retained by a lock nut 72.

Referring to Figures 8 and 10, the gluing unit GU includes a flange 75 having a locating shoulder 76. The shoulder 76 is adapted to fit a counterbore 77 of the hub 36 (see Figure 2). The hub 36 has a flange 78 against which the flange 75 engages. A locating pin 79 extends into both flanges 75 and 78 as shown in Figure 2, below the shaft 57. On the opposite side of the shaft a wing screw 80 extends through the flange 75 and is threaded into the flange 78.

Practical operation

In the operation of my glue-applying apparatus, the carriage C may be adjusted to the farthest out (dotted) position with the pointer 35 at the position 35*a* in Figure 2 before the wrapping machine is adjusted for the size of package on which the machine is to operate. The clamp screw 32, of course, is loosened for this purpose.

The machine may then be adjusted which includes adjustment of the package receiving table 21 and the plates 22 and 22*a* of Figure 2 to the proper position for the size of package to be wrapped. After the gluepot is filled with glue, which may be conveniently done while the carriage is in this outermost position, the carriage is adjusted inwardly, that is, toward the side frame 20 of the packaging machine until the pointer 35 is at the proper marking on the scale 34 for the package to be wrapped.

The machine is started and the wrapper is wrapped thereby around the package P as shown in Figure 3 with the top flap 81 folded down and the bottom flap 82 ready to fold up. It is at this stage of the wrapping operation that glue such as shown at 83 is to be applied to the flap 82, after which this flap 82 is bent up and glued against the flap 81 in an obvious manner by mechanism of the packaging machine which forms no part of my present invention.

Referring to Figure 2, the rear of the package P is illustrated, that is, the package is traveling away from the observer, or in the direction of the arrow 85 in Figures 1 and 3. The glue-applying roller 56 is rotating in the direction of the arrow 84 at substantially the same surface speed as the travel of the flap 82. The end plate 22*a* serves to fold the flap 81 downwardly and hold it in position while the bottom flap 82 is being glued. The bottom flap passing under the glue-applying roller 56 results in the roller depositing a film of glue 83 thereon, and after the package passes the roller, the wrapping machine bends up the flap 82, thus gluing it to the flap 81 and finishing the package.

The gluing unit disclosed is capable of operating throughout substantially an 8-hour day without attention, depending of course on the quality and consistency of the glue used therein. At the end of the day the gluing unit shown in Figures 8 and 10 is quickly removable by unscrewing the wing screw 80 whereupon the gluing unit can be pulled away from the flange 78

with the shaft bifurcation 59—60 readily removable from the drive pin 45 and the flange 75 of the gluing unit coming off the locating pin readily. The entire gluing unit may then be soaked in water which will loosen the glue so that it can be readily brushed off the parts. This conditions the unit for another period of operation.

Depending upon the thickness of glue desired on flaps 8 of the packages, which is usually required thicker on larger packages than on small ones, the wiper blade 66 may be adjusted for securing the desired result. The removable gluing unit GU also makes it possible to have replacement units in case the wrapping or packaging machine is to operate continuously in which case one gluing unit can be soaking while another one is being used.

Some changes may be made in the construction and arrangement of the parts of my glue-applying apparatus without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In glue-applying apparatus, a supporting bracket adapted to be mounted on a packaging machine, guide rods having their opposite ends supported thereby, a carriage mounted on said guide rods between the supported ends thereof for adjustable movement toward or from the packaging machine and for movement to a gluepot removing position, and glue-applying mechanism mounted on said carriage and comprising a gluepot having a slot adjacent the bottom thereof, a glue-applying roller rotatable in, and downwardly out of said slot, a shaft journaled in said gluepot for supporting said roller, a wiper blade for the periphery of said glue-applying roller mounted in said gluepot on the bottom thereof and adjustable toward said glue-applying roller to vary the film of glue carried by said roller downwardly and out of said gluepot, and motor means mounted on said carriage and thereby movable with said gluepot and said glue-applying roller for rotating said shaft and glue-applying roller at a surface speed substantially equal to the speed of a package transported past said glue-applying apparatus by the packaging machine.

2. In a unitary glue-applying apparatus, a supporting bracket adapted to be mounted on a packaging machine, guide means supported thereby, a carriage mounted on said guide means for adjustable movement toward or from the packaging machine and for movement to a gluepot removing position, and glue-applying mechanism mounted on said carriage and comprising a gluepot having a bottom provided with a slot, a glue-applying roller rotatable in said slot, a shaft journaled in said gluepot for supporting said roller, a wiper blade for the periphery of said glue-applying roller mounted in said gluepot on the bottom thereof adjacent said slot and adjustable toward said glue-applying roller to vary the film of glue carried by said roller out of said gluepot, and motor means mounted on said carriage for rotating said glue-applying roller at a surface speed substantially equal to the speed of a package transported past said glue-applying apparatus by the packaging machine, said gluepot, glue-applying roller and shaft being removable as a sub-unit relative to said carriage and said shaft having a disengageable connection with said motor means to facilitate such removal.

3. In glue-applying apparatus, a supporting bracket adapted to be mounted on a packaging machine, guide means supported thereby, a carriage mounted on said guide means for adjustable movement toward or from the packaging machine and for movement to a gluepot removing position, and glue-applying mechanism mounted on said carriage and comprising a gluepot having a slot in the bottom thereof, a glue-applying roller rotatable in, and downwardly out of said slot, one wall of said gluepot constituting one side of said slot and acting as a shield plate between the side of the glue-applying roller and the package to which glue is being applied, a shaft journaled in said gluepot for supporting said roller, a wiper blade for the periphery of said roller mounted in said gluepot on the bottom thereof and thereby submerged in the glue, and adjustable toward said roller to vary the film of glue carried thereby out of said gluepot, and motor means mounted on said carriage for rotating said shaft and glue-applying roller at a surface speed substantially equal to the speed of a package transported past said glue-applying apparatus by the packaging machine, said motor means and said gluepot having coacting parts to axially align said glue-applying roller shaft with a shaft driven by said motor, and permitting removal of said gluepot, glue-applying roller and glue-applying shaft as a unit relative to said carriage and motor means, said shaft having a disengageable connection with said motor means.

4. Glue-applying apparatus comprising a supporting bracket adapted to be mounted on a packaging machine, guide means supported thereby, a carriage mounted on said guide means for movement toward or from the packaging machine, and glue-applying mechanism mounted on said carriage and comprising a gluepot having a bottom provided with a slot, a glue-applying roller rotatable in said slot, one wall of said gluepot constituting one side of said slot and acting as a shield between the side of the glue-applying roller and the package to which glue is being applied, a shaft journaled in said gluepot for supporting said roller, a wiper blade for the periphery of said glue-applying roller, said wiper blade being mounted within said gluepot on said bottom thereof and adjustable relative to said glue-applying roller to vary the film of glue carried by said roller out of said gluepot, and motor means mounted on said carriage for rotating said shaft and glue-applying roller, said motor means and said gluepot having coacting parts to axially align said glue-applying roller shaft with a shaft driven by said motor, and permitting removal of said gluepot, glue-applying roller and glue-applying shaft as an assembly relative to said carriage and motor means.

ROBERT E. TAGGART.

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