July 6, 1948. W. C. MARSH 2,444,878

GUMMING MACHINE

Filed Oct. 30, 1944 3 Sheets-Sheet 1

Fig. 1.

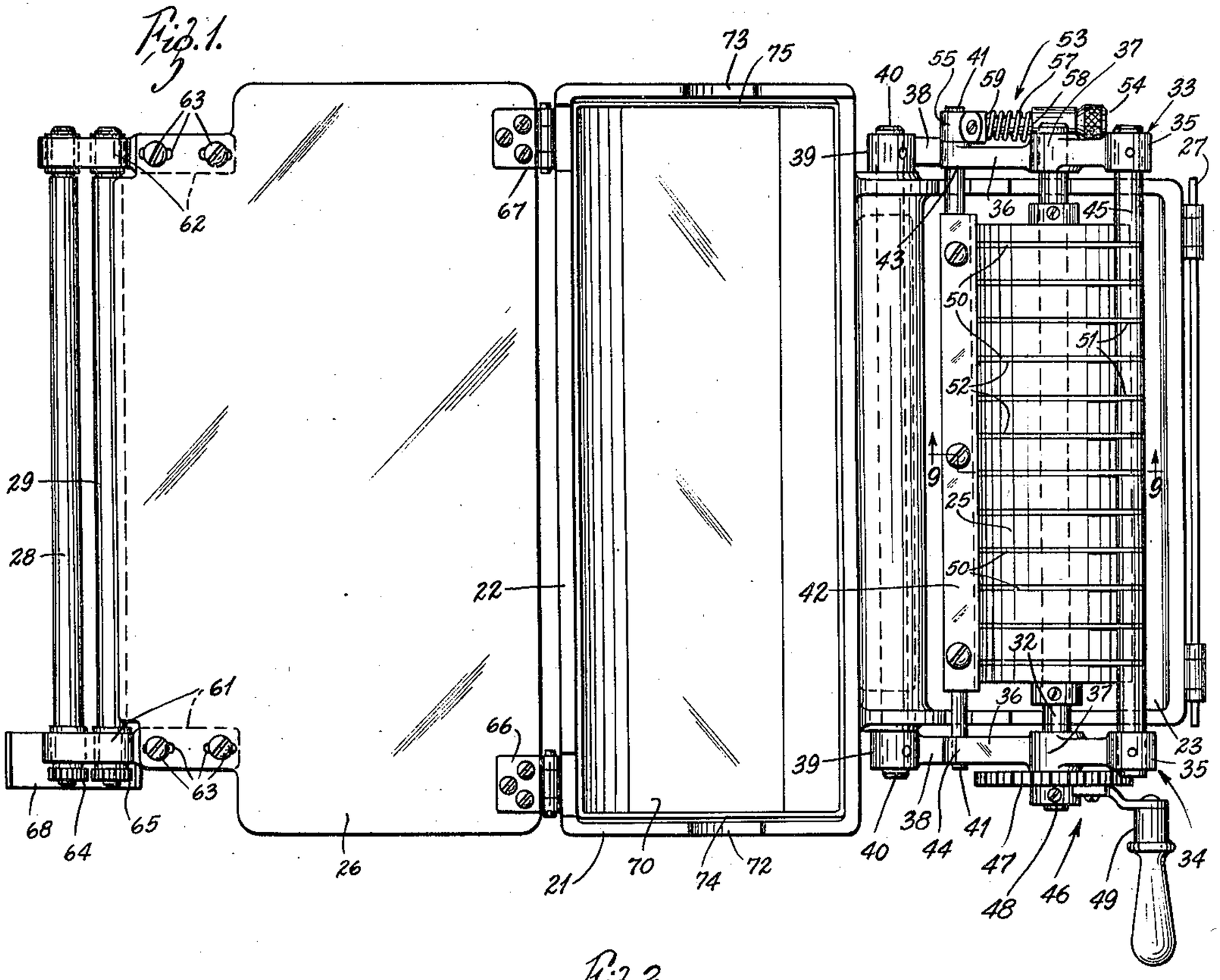


Fig. 2.

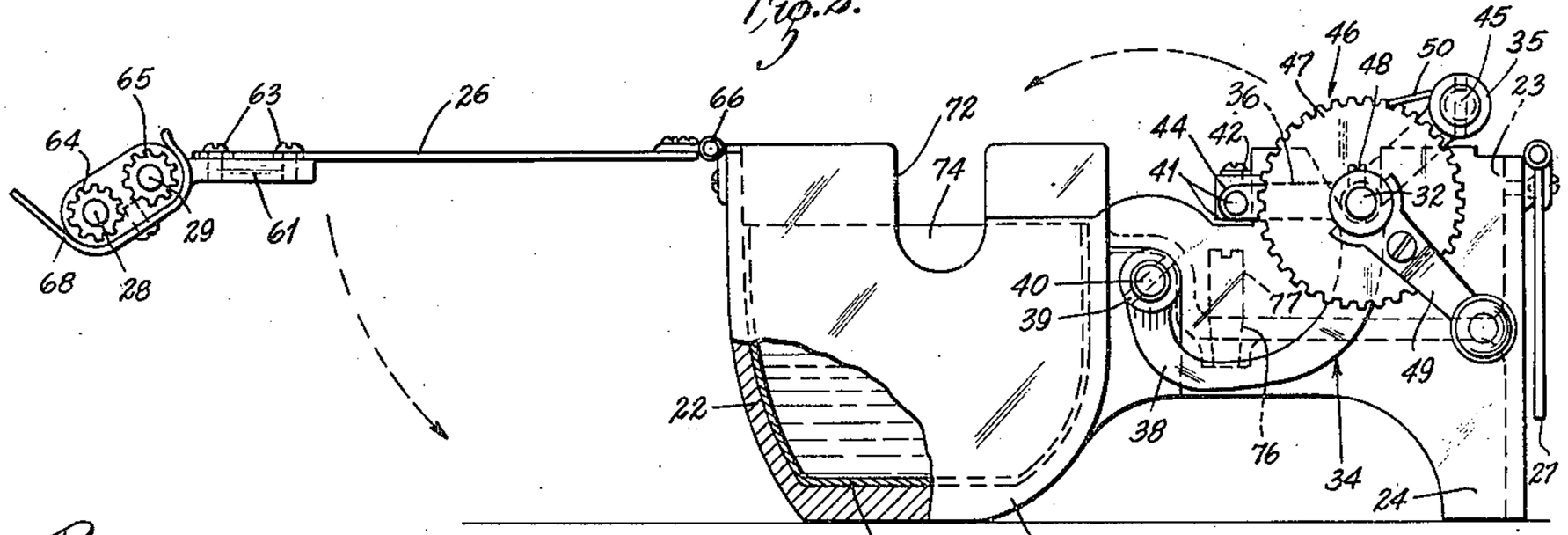
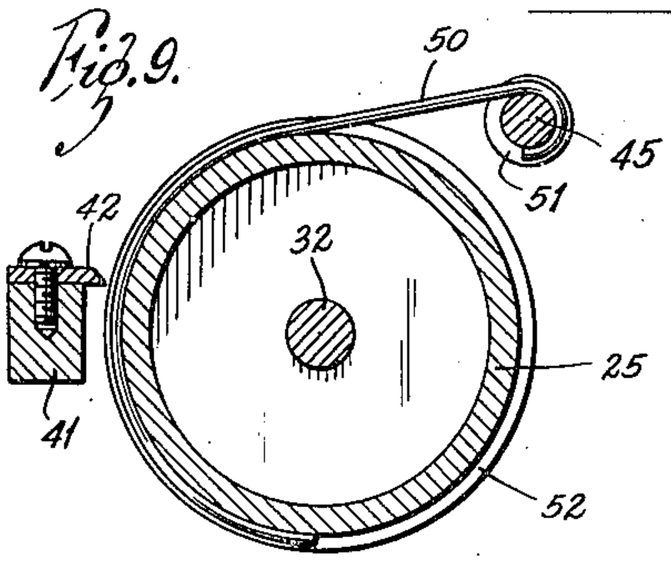


Fig. 9.



INVENTOR:
WALTON C. MARSH,
BY Kingsland, Rogers & Egell
ATTORNEYS.

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GUMMING MACHINE

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Fig. 3.

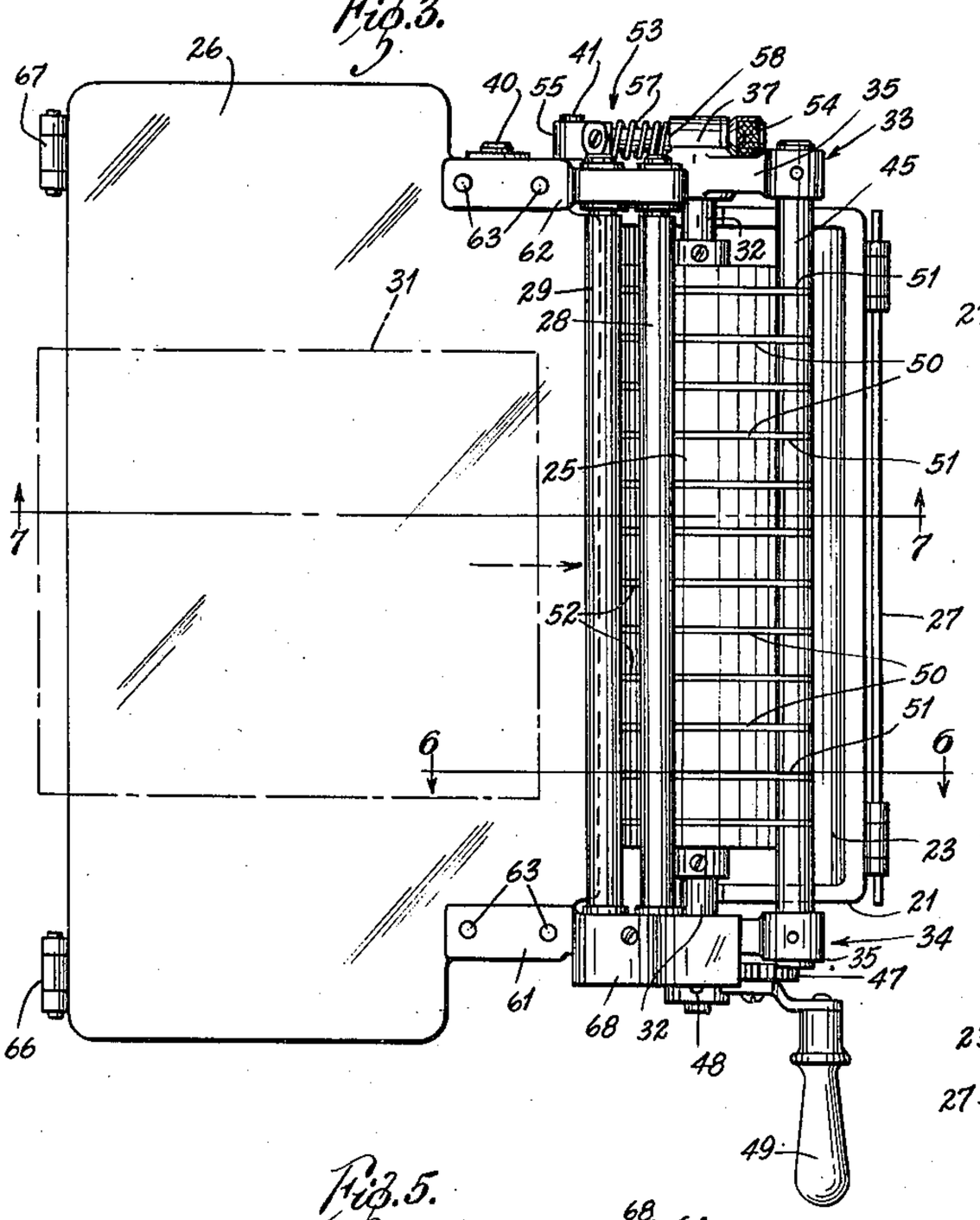


Fig. 4.

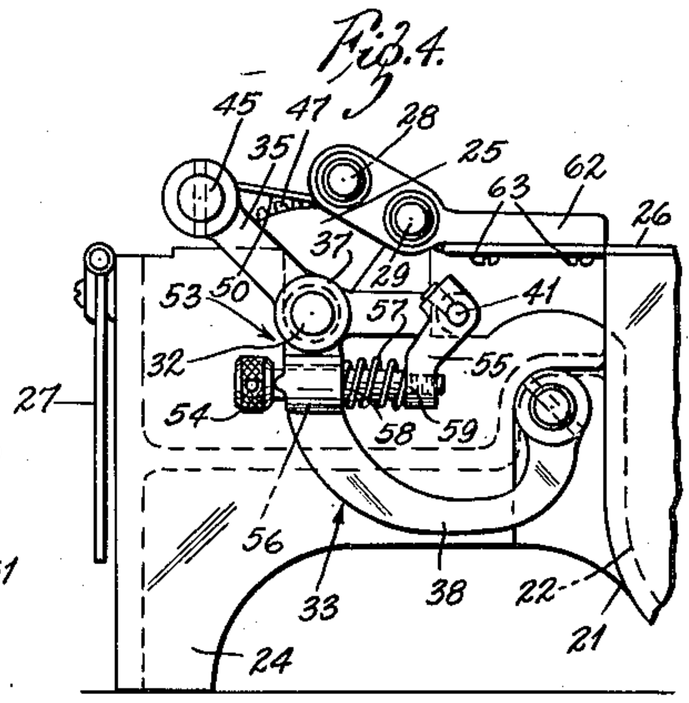


Fig. 6.

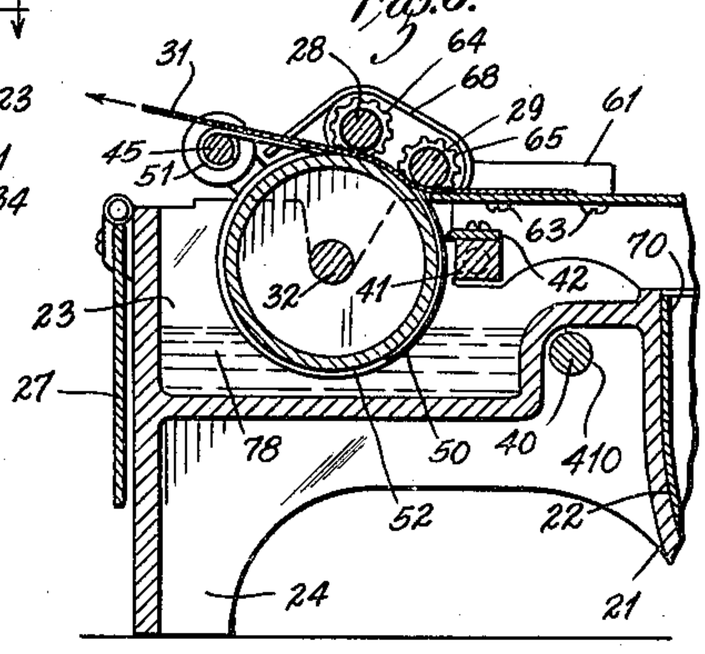


Fig. 5.

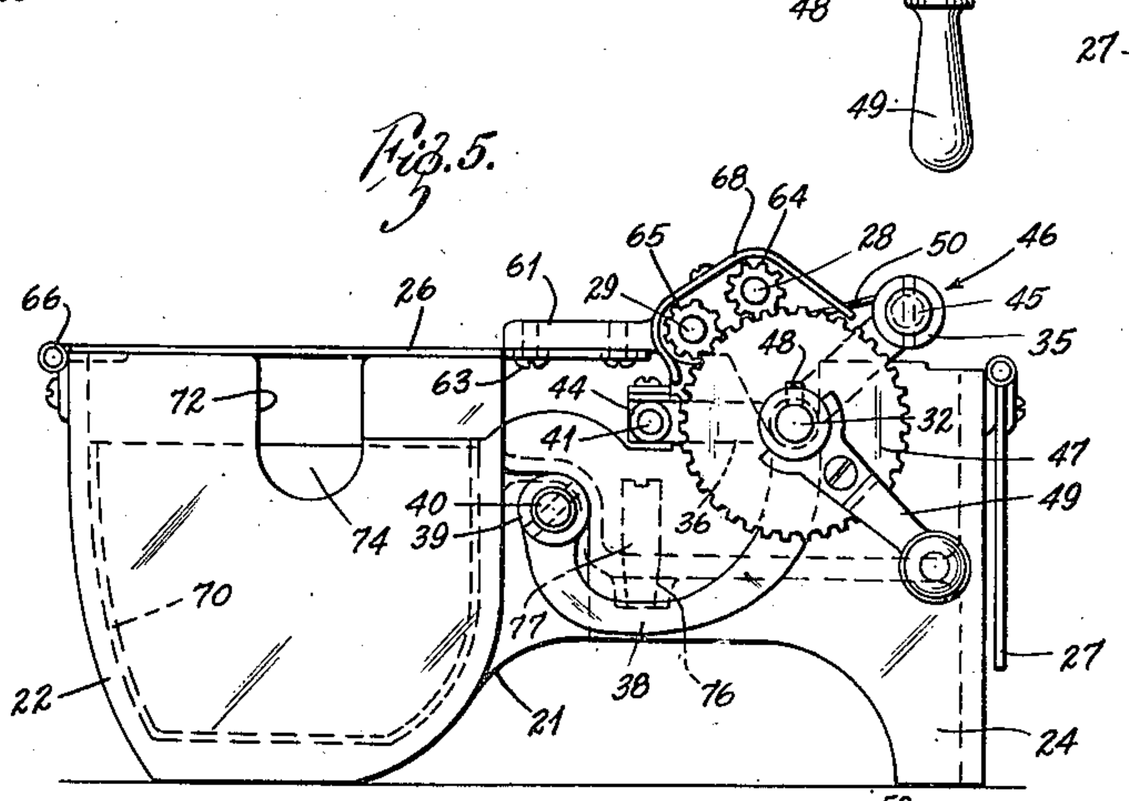


Fig. 8.

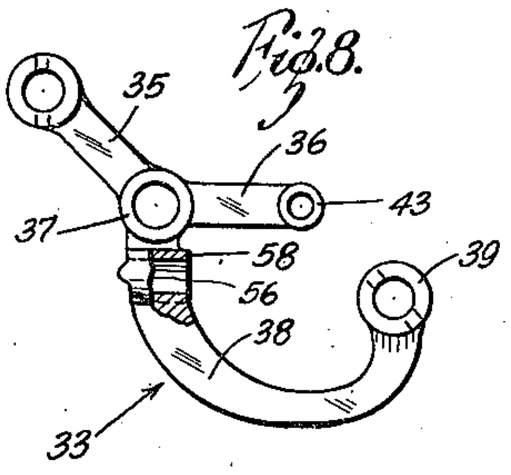
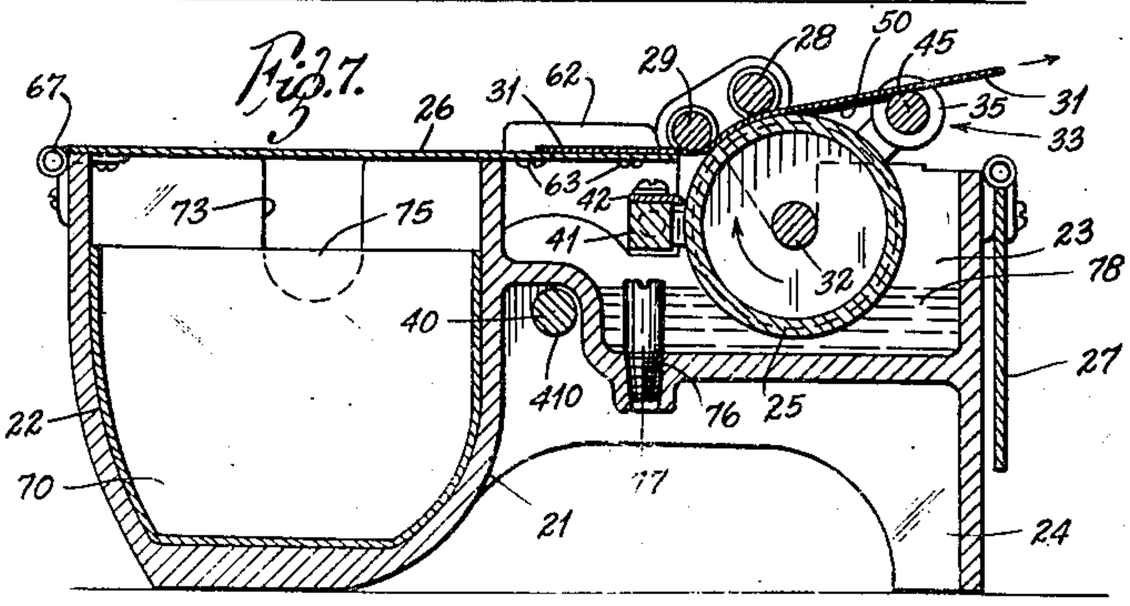


Fig. 7.



INVENTOR:
WALTON C. MARSH,

BY Kingsland, Rogers & Ezell

ATTORNEYS.

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GUMMING MACHINE

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Fig. 10.

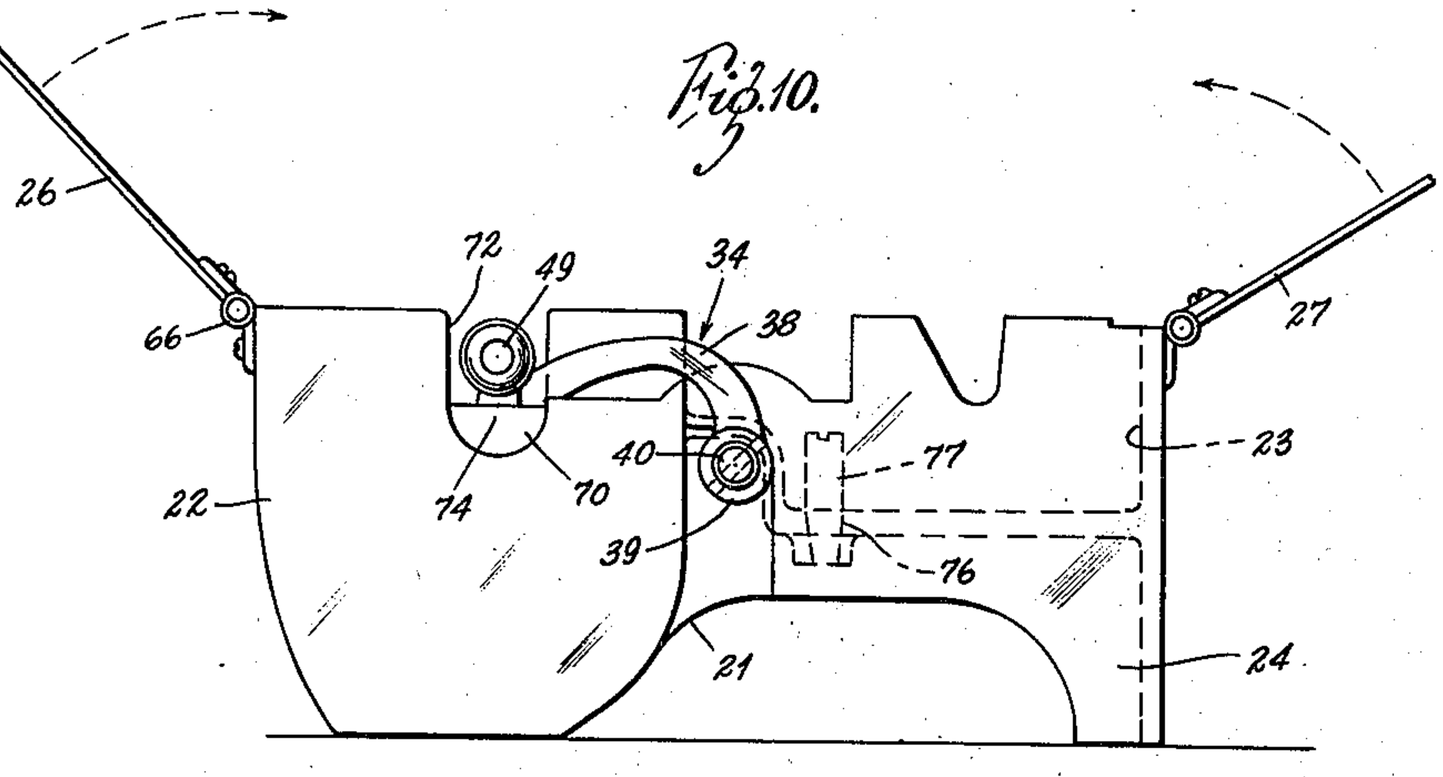


Fig. 11.

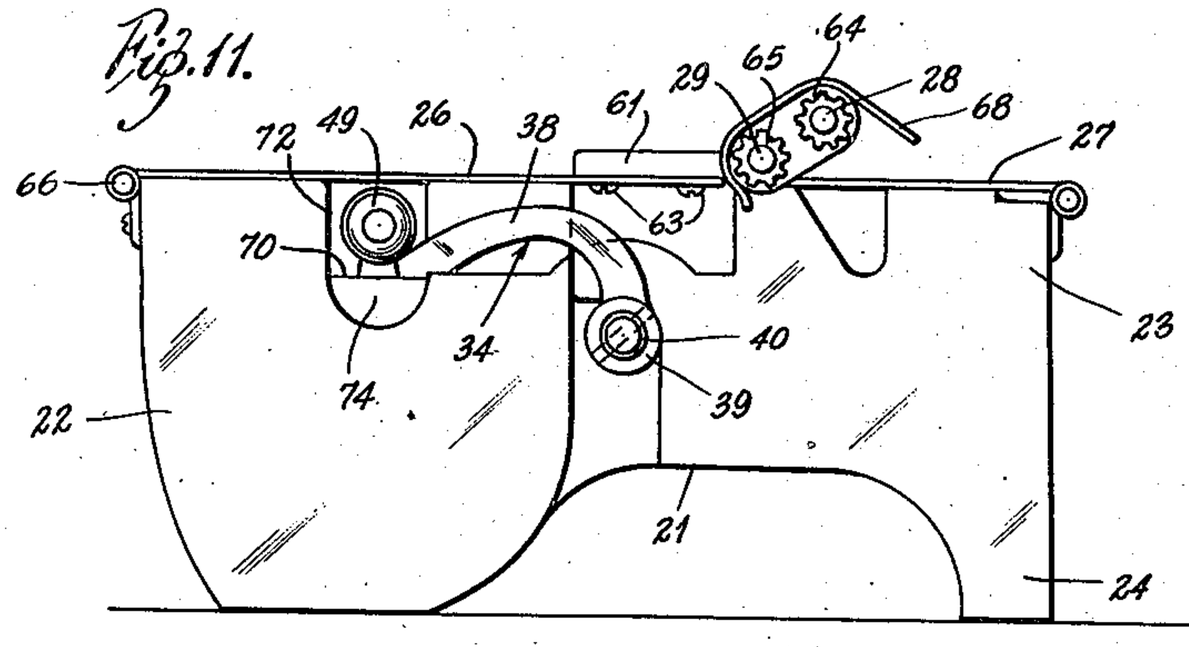
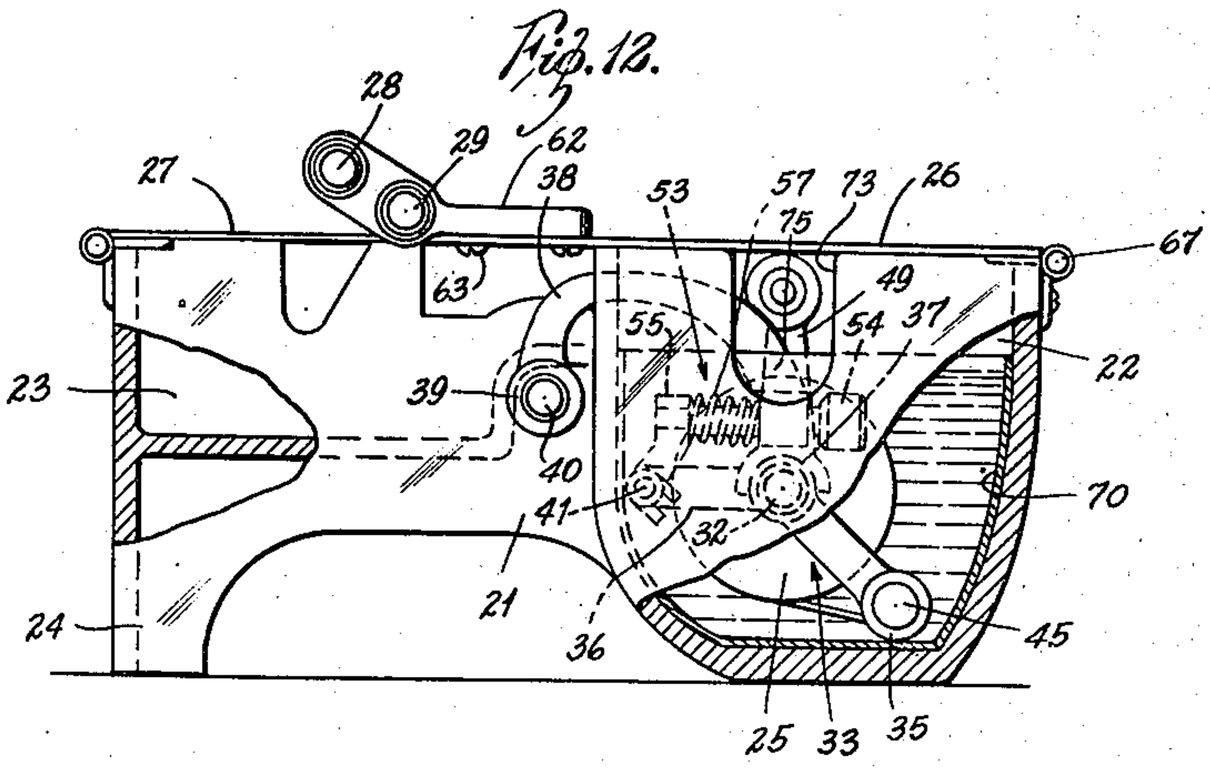


Fig. 12.



INVENTOR:
WALTON C. MARSH,

BY Kirkpatrick, Rogers & Egerton

ATTORNEYS.

Patented July 6, 1948 2,444,878

UNITED STATES PATENT OFFICE

2,444,878

GUMMING MACHINE

Walton C. Marsh, Belleville, Ill., assignor to Marsh Stencil Machine Company, Belleville, Ill., a corporation of Illinois

Application October 30, 1944, Serial No. 561,095

24 Claims. (Cl. 91—51)

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This invention pertains to a label gumming machine for applying adhesive substance to paper strips such as labels.

It is a primary object of the invention to provide a label gumming machine of the rotatable applicator type which may be readily cleaned without the removal of any parts.

It is also an object of the invention to provide an improved adhesive applicator for label gumming machines.

Still another object of the invention is to provide an improved means for controlling the amount of adhesive substance adhering to a rotatable applicator which is incapable of becoming jammed.

More specifically, it is an object of the invention to provide a label gumming machine with a washing means into which the rotatable drum of the applier may be immersed without removal of its parts from the machine.

Other objects and advantages of the invention will become apparent as the description proceeds.

In carrying out the invention in its preferred form, an improved rotatable paste-applying drum has been mounted with respect to a gum pot and a wash compartment in a manner such that the entire adhesive-applying assembly can be pivotally moved from its position in the gum pot to the water bath without removal of the parts. Further, the adhesive-applying drum is provided with a spring impressed scraper provided with means for adjusting the tension of its spring in a manner such that the maximum pressure at which the scraper may be impressed against the roller is predetermined.

For a more comprehensive understanding of the invention, reference will be had to the following detailed description together with the accompanying drawings which form a part thereof and in which:

Fig. 1 is a plan view of a label gumming machine embodying the invention in its preferred form and showing the covers thereof in an open position to expose the parts;

Fig. 2 is an end view of the machine, taken from the bottom of Fig. 1, with parts of the water tank broken away showing the driving mechanism for the gum-applying roller;

Fig. 3 is a plan view of the machine similar to Fig. 1 showing one of the covers closed to position the cooperating parts for operation of the machine;

Fig. 4 is a fragmentary end view of the machine, taken from the top of Figs. 1 and 3, showing portions of the mounting of the gum-applying roller and the tensioning mechanism for the scraper forming a part thereof;

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Fig. 5 is a full end view similar to Fig. 2 but differing therefrom in that the cover supporting the feed rollers is closed to the operating position;

Fig. 6 is a fragmentary cross-sectional view of the machine illustrated taken along the line 6—6 of Fig. 3;

Fig. 7 is a full cross-sectional view taken along the line 7—7 of Fig. 3 and illustrating the path taken by a label in passing through the machine;

Fig. 8 is a detailed showing of one of the pivotal brackets used in mounting the gum-applying roller;

Fig. 9 is a cross section of the gum-applying roller, taken along the line 9—9 of Fig. 1, illustrating the position of the deflecting fingers thereof;

Fig. 10 is an end view of the machine showing the gum-applying roller positioned in the washing receptacle with the covers of the machine open, feed rollers and the supporting portion of the cover being broken away for conservation of space on the drawing;

Fig. 11 is a view presenting a similar showing to that of Fig. 10, but illustrating the manner in which the machine may be closed when not in use; and

Fig. 12 is an end view of the machine, from the end opposite that of Fig. 11, with sections of the casting removed to illustrate the position of the parts when the machine is closed and out of use. Like reference numerals have been used throughout in the several views to designate like parts.

As illustrated in Figs. 1 and 2, a unitary casting 21, which is partitioned to form a washing chamber 22 and a gum receptacle 23, provides a base for the machine. The machine rests on the bottom of the washing chamber housing and on legs 24 formed as part of the casting.

A rotatable gum-applying drum 25 is rotatably mounted in a suitable frame, to be moved, as indicated by the arrow, from the gum receptacle 23 to the water bath 22 and vice versa. Two covers 26 and 27 are hinged to the casting and provide means for closing the machine when it is not in use. The cover 26 carries feed rollers 28 and 29 arranged to be driven by the same mechanism that drives the drum 25, all in a manner which will be explained subsequently in detail. With the cover 26 of the machine closed, as is illustrated in Fig. 3, the label 31, which is to be gummed, is placed on the upper face of the cover

26 forming a table therefor and fed into the rollers 28 and 29 where the gum is applied thereto in a manner which will be described in connection with the operation of the machine.

The gum-applying drum 25, together with its associated instrumentalities, embodies a novel feature of invention which permits the drum to be cleaned without removal from the machine. The drum 25 is mounted on a shaft 32 which is journaled in the mounting brackets 33 and 34. Both of the brackets 33 and 34 are similarly shaped and are provided with a pair of arms 35 and 36 which terminate in a hub 37 forming the journal housing for the bearings in which the shaft 32 rotates. Each bracket also has a goose-neck extension 38 projecting from the hub 37, and which is provided with a hub 39, through which a shaft 40, extending the complete length of the machine, is inserted, and about which the entire assembly is pivoted. The shaft 40 is supported in suitable openings 410 passing through the webs of the casting that join the gum receptacle 23 to the washing chamber.

A bar 41, to one face of which a knife blade or scraper 42 is removably attached, is carried between the brackets 33 and 34 and is provided with rounded ends journaled in hubs 43 and 44, respectively, of the arms 36. One of these ends projects beyond its journal, for a purpose to be described. A rod 45 is securely fastened between the arms 35 of the brackets 33 and 34 to complete the assembly.

A driving mechanism 46 for the drum 25 is provided and comprises a pinion 47 which is keyed to the shaft 32 at 48. A crank 49 is secured to the pinion 47 and provides a means for manually operating the machine. A plurality of deflecting fingers 50 are bent around and are contained in spaced recesses 51 cut in the rod 45 (see Fig. 9). These fingers extend to and are slidably carried in similar recesses 52 cut in the periphery of the drum 25. These fingers, which form a part of the gum-applying assembly, provide means for deflecting the gummed label as it is carried through the machine by the frictional forces applied through the rollers 28 and 29.

As a part of the gum-applying assembly, the scraper or knife 42 functions to control the amount of adhesive substance that is carried on the drum 25. Obviously it is desirable that the amount of adhesive substance may be controlled, and accordingly a tension adjusting means, generally designated 53, is provided, and contributes one of the essential features of the invention in that the knife or scraper 42 cannot be adjusted to a binding position against the roller 25.

The adjusting mechanism 53 is made up of a thumb screw 54 which is screwably engaged in an arm 55 keyed to the aforementioned projection of the bar 41 to which the scraper 42 is attached. The thumb screw 54 is carried through a slot or opening 56 in the arm 38 of the bracket 33, with a compression spring 57 bearing against the surface 58 of the arm 38 and against the surface 59 of the arm 55. With this arrangement of the parts the scraper 42 is located relative to the drum 25 by means of the thumb screw 54, and the amount of adhesive carried by the rotating drum is controlled by the position of the scraper with respect thereto. The adjustable means 53 is so assembled that when the thumb screw is turned in one direction, the arm 55 with the bar 41 is rocked about the journals of the

hubs 43 and 44 to withdraw the scraper 42 from contact with the drum 25. This action compresses the spring 57. When the screw 54 is turned in the opposite direction, which is in a sense to loosen the same out of the threads in the arm 55, the compressive forces of the spring 57 urge the arm 55 to pivot about the hubs provided in the arms 36 and urge the scraper 42 to contact with the drum. Accordingly, the amount of force exerted on the scraper 42 in urging it against the drum 25 is controlled and may be set at a predetermined limit by a proper selection of the strength of the spring 57. It will be observed that the arrangement of the fingers 50 on the drum 25 permit the scraper bar to be in contact with the drum substantially all the way across the same.

As previously stated, the label or paper to be gummed is driven through the machine by means of the feed rollers 28 and 29 and the drum 25. These rollers are journaled in a pair of brackets 61 and 62 which are adjustably fastened to the opposite edges of the cover 26 by means of slot and screw arrangements 63. A pinion 64 and a pinion 65 are splined, respectively, to one terminal end of the rollers 28 and 29 which extend through the bracket 61 and are mounted for cooperation with the pinion 47 on the driving mechanism 46. The cover 26 is hinged to the casting 21 by means of hinges 66 and 67, and, when it is positioned as in Fig. 2, the pinions 64 and 65 are brought into operational engagement with the pinion 47, by movement to the position illustrated in Fig. 5. Then, as the handle 49 of the driving mechanism 46 is turned to rotate the gum-applying drum 25, the rollers 28 and 29 are positively driven by the pinions 64 and 65, respectively, and the label is forced through the machine across the gum-applying drum. Both of the pinions 64 and 65 are protected by a suitable shield 68.

The section 22 of the casting 21, which provides a housing for the water bath, has a liner 70 which is shaped to conform to the internal walls of this chamber. This liner, which is preferably made of sheet brass, provides a receptacle in which water for washing the drum is contained. It is removable so that it may be easily cleaned. A portion of the casting 21 is removed at both ends thereof to form the apertures 72 and 73. These open sections in the casting enable the liner 70 to be grasped at points 74 and 75 for its easy and convenient removal. The section 72 also provides an opening through which the handle 49 projects when the gum-applying drum is immersed in the water bath.

The section of the casting 21 forming the glue-containing compartment 23 is drilled and tapped with a hole 76 into which a plug 77 is screwed. This plug is removed to drain the adhesive substance from the compartment 23, and its height also provides a convenient indicator at the top of which the adhesive substance is carried to maintain the same at a desirable level within the compartment 23.

Operation

The machine operates in conventional and well known manner and requires no detailed description. The label 31, such as illustrated in Fig. 3, is placed on top of the cover 26, which forms a plate therefor and is inserted between the rollers 28 and 29, and the drum 25. The handle 49 and the driving mechanism 46 are then turned in a clockwise direction, which forces the label 31

between the rollers 28 and 29 and the drum 25, as is illustrated in Fig. 7. By proper adjustment of the brackets 61 and 62, the pressure exerted by the rollers 28 and 29 on the label 31 is controlled. This pressure also may be varied by manual pressure against the top of the cover 26. As the label passes over the drum 25, the adhesive substance 78 carried in the chamber 23 adheres to the periphery thereof and is carried upwardly to the undersurface of the label, in quantity governed by the scraper 42. As the label continues through the machine, it is deflected upwardly by the fingers 50 and is supported thereby for removal. When the machine is not in use, the gum-applying assembly is moved pivotally about the shaft 40, into the position illustrated in Fig. 10, by means of the handle 49. The covers 26 and 27 are then closed to the position illustrated in Fig. 11, and the working parts thereof, as well as the adhesive substance and the water bath, are protected from dirt and other foreign matter.

As illustrated in Fig. 12, the gum-applying drum is completely immersed in its water bath when positioned as illustrated. In this manner, the drum is always maintained clean and is not subject to incrustations produced by leaving the adhesive substance contained on the roller exposed to air. It further eliminates the necessity of removing the roller after each use for cleaning thereof. Thus, the machine may be placed into operation and out of operation at will without regard to intervening periods of inactivity or without necessitating the removal of the parts to clean the same.

It is also evident that the operating mechanism 53 is wholly outside the gluing chamber 23, so as to be kept free of glue, but is immersed in the cleaning water when the mechanism is in the position of Fig. 12 for precaution against its becoming fouled. The fingers 50 are readily removable for servicing purposes. To remove one, it is grasped and its upper end is moved backwardly to disengage the hook from the rod 45. Then it may be moved in the same direction until freed from the roller or drum 25.

It is apparent that many changes could be made in the above described apparatus without departing from the scope of the invention. Insofar as such modifications are covered by the appended claims, they are included as if described.

What is claimed is:

1. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber, feed means for applying adhesive from the adhesive chamber to a label or the like, comprising a rotatable drum, and means supporting the drum for partial immersion in the adhesive in the adhesive receptacle, said supporting means being movable to withdraw the drum from the adhesive receptacle and to dispose the same in fully immersed relation in the washing chamber, said drum being in fully immersed position when in said washing chamber.

2. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber therein, a feed mechanism including a rotatable drum, drum support means upon which the drum is mounted for rotation, said drum support means including framework attached to the ends of the drum and pivoted to the main support between the receptacle and the chamber, whereby the feed mechanism may be swung from the receptacle to the chamber, and operating means for the feed mechanism, said

operating means being outside of the receptacle but connected with the drum, and the washing chamber being disposed and sized to receive both the feed mechanism and the operating means when the feed mechanism is moved to washing position, said feed mechanism being in fully immersed relation when in said washing chamber.

3. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber, feed means for applying adhesive from the adhesive chamber to a label or the like, comprising a rotatable drum, means supporting the drum for partial immersion in the adhesive in the adhesive receptacle, said supporting means being movable to withdraw the drum from the adhesive receptacle and to dispose the same in the washing chamber, feed elements to urge the label against the drum, and means pivoting the feed elements to the main support for movement toward and away from the drum.

4. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber, feed means for applying adhesive from the adhesive chamber to a label or the like, comprising a rotatable drum, means supporting the drum for partial immersion in the adhesive in the adhesive receptacle, said supporting means being movable to withdraw the drum from the adhesive receptacle and to dispose the same in the washing chamber, feed roller elements to hold the label against the drum mounted for movement towards and away from the drum, means to rotate the drum, and means connected to said feed rollers and interconnectable with the drum rotating means for rotating the feed roller elements when the drum is rotated.

5. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber, feed means for applying adhesive from the adhesive chamber to a label or the like, comprising a rotatable drum, means supporting the drum for partial immersion in the adhesive in the adhesive receptacle, said supporting means being movable to withdraw the drum from the adhesive receptacle and to dispose the same in the washing chamber, feed elements to urge the label against the drum, and means pivoting the feed elements to the main support for movement toward and away from the drum, said means comprising a cover adapted to extend across the washing chamber to adjacent the adhesive receptacle.

6. In a gumming machine, a base, an adhesive receptacle thereon, a washing chamber on the base alongside the adhesive receptacle but separated therefrom, a feed roller, framework means upon which the feed roller is rotatably mounted at its ends, means pivoting the framework means to the base between the receptacle and the chamber, whereby the feed roller may be swung from the receptacle to the chamber, and a scraper means supported on the framework for disposition adjacent the surface of the feed roller.

7. In a gumming machine, a base, an adhesive receptacle thereon, a washing chamber on the base alongside the adhesive receptacle but separated therefrom, a feed roller, framework means upon which the feed roller is rotatably mounted at its ends, means pivoting the framework means to the base between the receptacle and the chamber, whereby the feed roller may be swung from the receptacle to the chamber, a scraper means supported on the framework for disposition adjacent the surface of the feed roller, and means

for adjusting the scraper toward and from the feed roller.

8. In a gumming machine, a base, an adhesive receptacle thereon, a washing chamber on the base alongside the adhesive receptacle but separated therefrom, a feed roller, framework means upon which the feed roller is rotatably mounted at its ends, means pivoting the framework means to the base between the receptacle and the chamber, whereby the feed roller may be swung from the receptacle to the chamber, a scraper means supported on the framework for disposition adjacent the surface of the feed roller, means for adjusting the scraper toward and from the feed roller, comprising resilient means urging the scraper toward the feed roller, and means to withdraw the scraper against the force of said resilient means.

9. In a mechanism of the kind described, a feed roller, a scraper, means movably supporting the scraper adjacent the feed roller, yieldable means urging the scraper toward the roller, means to withdraw the scraper from the feed roller against the force of the yieldable means, and means supporting the feed roller and scraper for movement as a unit.

10. In a mechanism of the kind described, a feed roller, a support, a scraper bar pivotally mounted on the support adjacent the feed roller and pivotable to move the scraper toward and from the roller, yieldable means urging the bar to pivot the scraper against the roller, and means to pivot the bar in the opposite direction against the yieldable means, said support also supporting said feed roller and being pivotally mounted for movement of the feed roller and scraper as a unit.

11. In a mechanism of the kind described, a feed roller, a support, a scraper bar pivotally mounted on the support adjacent the feed roller and pivotable to move the scraper toward and from the roller, an arm extending from the bar, a screw engaged between the arm and the support, a spring urging the arm to pivot the scraper against the roller, the screw being operable to move the arm in an opposite direction, said support also supporting said feed roller and being pivotally mounted for movement of the feed roller and scraper as a unit.

12. In a mechanism of the kind described, a base, an adhesive receptacle thereon, a feed roller, framework means attached to the base, and supporting the feed roller, a scraper means on the framework, a label deflecting means mounted on the framework means and extending into association with the roller, said roller, scraper means, deflecting means and framework means constituting an independently movable unit.

13. In a mechanism of the kind described, a base, an adhesive receptacle thereon, a feed roller, framework means attached to the base, and supporting the feed roller, a scraper means on the framework, means on the framework to adjust the scraper means toward and from the feed roller, a label deflecting means mounted on the framework means and extending into association with the roller, said roller, scraper means, deflecting means and framework means constituting an independently movable unit.

14. In a mechanism of the kind described, a roller, a support therefor, a deflecting finger holding means on the support, a plurality of deflecting fingers extending from the holding means across to the roller and at least partially around the same to points beyond a line drawn from the holding means through the center of, and across the roller.

15. In a mechanism of the kind described, a roller, a support therefor, a deflecting finger holding means on the support, a plurality of deflecting fingers removably hooked to the holding means and extending from the holding means across to the roller and at least partially around the same to points beyond a line drawn from the holding means through the center of, and across the roller.

16. In a mechanism of the kind described, a roller, a support therefor, a deflecting finger holding means on the support, a plurality of deflecting fingers extending from the holding means across to the roller and at least partially around the same to points beyond a line drawn from the holding means through the center of, and across the roller, and scraper means extending across the roller and adjacent the deflecting fingers.

17. In a gumming machine, a base having an adhesive receptacle and a washing chamber mounted side by side thereon, but separated from each other by a partition, framework means pivoted to the base at the partition on the opposite sides of the base, a roller, opposite bearings on the framework spaced from the pivots to hold the roller partially inserted into the adhesive receptacle, said framework means extending from the pivots down, toward the receptacle, and upwardly to the bearings, whereby when the framework is pivoted about the pivots it can pass over the partition and insert the roller into the washing chamber into immersion relation therewith.

18. In a machine for applying adhesive to labels or the like, an adhesive applicator comprising a rotatable drum having a plurality of recesses carried on the surface thereof, a scraper extending the length of said drum, a rod mounting a plurality of elevating fingers engaging said drum in said recesses, and means for rotating said drum, said drum, scraper, fingers and rotating means comprising an independently movable unit.

19. In a machine for applying adhesive to labels or the like, an adhesive applicator comprising a rotatable drum having a plurality of recesses carried on the surface thereof, a scraper extending the length of said drum, a rod mounting a plurality of elevating fingers engaging said drum in said recesses, driving means for rotating said drum, and means including a pair of rollers arranged to be driven by said driving means for passing a label or the like into contact with said drum, said pair of rollers being mounted for movement towards and away from said drum.

20. In a mechanism of the kind described, an adhesive receptacle, a washing chamber, said receptacle and chamber being supported in adjacent relationship, a rotatable adhesive applying member, means for rotating the member, and movable means supporting both said member and said rotating means in operative relation to said receptacle and said chamber, said member and said rotating means being optionally movable as a unit to dispose the member in dipped relation to adhesive in said receptacle and to dispose the member and the rotating means in washing relation to a washing fluid in said washing chamber.

21. In combination, a main support having an adhesive receptacle and a washing chamber, a rotatable adhesive applying member, means for rotating the member, a scraper member located in adhesive scraping relation to the first member, and movable means supporting the first member and scraper member as a unit on the main sup-

port in relation to the receptacle and chamber, said unit being movable to dispose the first member in dipped relation to adhesive in the adhesive receptacle and the first member and scraper member in fully immersed relation to a washing fluid in the washing chamber.

22. In combination, a main support having an adhesive receptacle and a washing chamber, a rotatable adhesive applying member, means for rotating the member, a scraper member located in adhesive scraping relation to the first member, deflecting fingers operatively mounted in respect to the first member, and movable means supporting the first member and scraper member and deflecting fingers as a unit on the main support in relation to the receptacle and chamber, said unit being movable to dispose the first member in dipped relation to adhesive in the adhesive receptacle and the first member and scraper member and deflecting fingers in fully immersed relation to a washing fluid in the washing chamber.

23. In combination, a main support having an adhesive receptacle and a washing chamber, a rotatable adhesive applying member, means for rotating the member, a scraper member located in adhesive scraping relation to the first member, deflecting fingers operatively mounted in respect to the first member, and movable means supporting the first member and scraper member and deflecting fingers and first member rotating means as a unit on the main support in relation to the receptacle and chamber, said unit being movable to dispose the first member in dipped relation to adhesive in the adhesive receptacle

and the first member and scraper member and deflecting fingers and first member rotating means in fully immersed relation to a washing fluid in the washing chamber.

24. In a mechanism of the kind described, a main support having an adhesive receptacle and a washing chamber, feed means for applying adhesive from the adhesive chamber to a label or the like, and means supporting the feed means for movement from an operating position relative to the adhesive receptacle to a washing position in the washing chamber, said washing chamber being of sufficient capacity to receive the feed means in immersed relation therein, said feed means being movable into fully immersed position in said washing chamber.

WALTON C. MARSH.

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