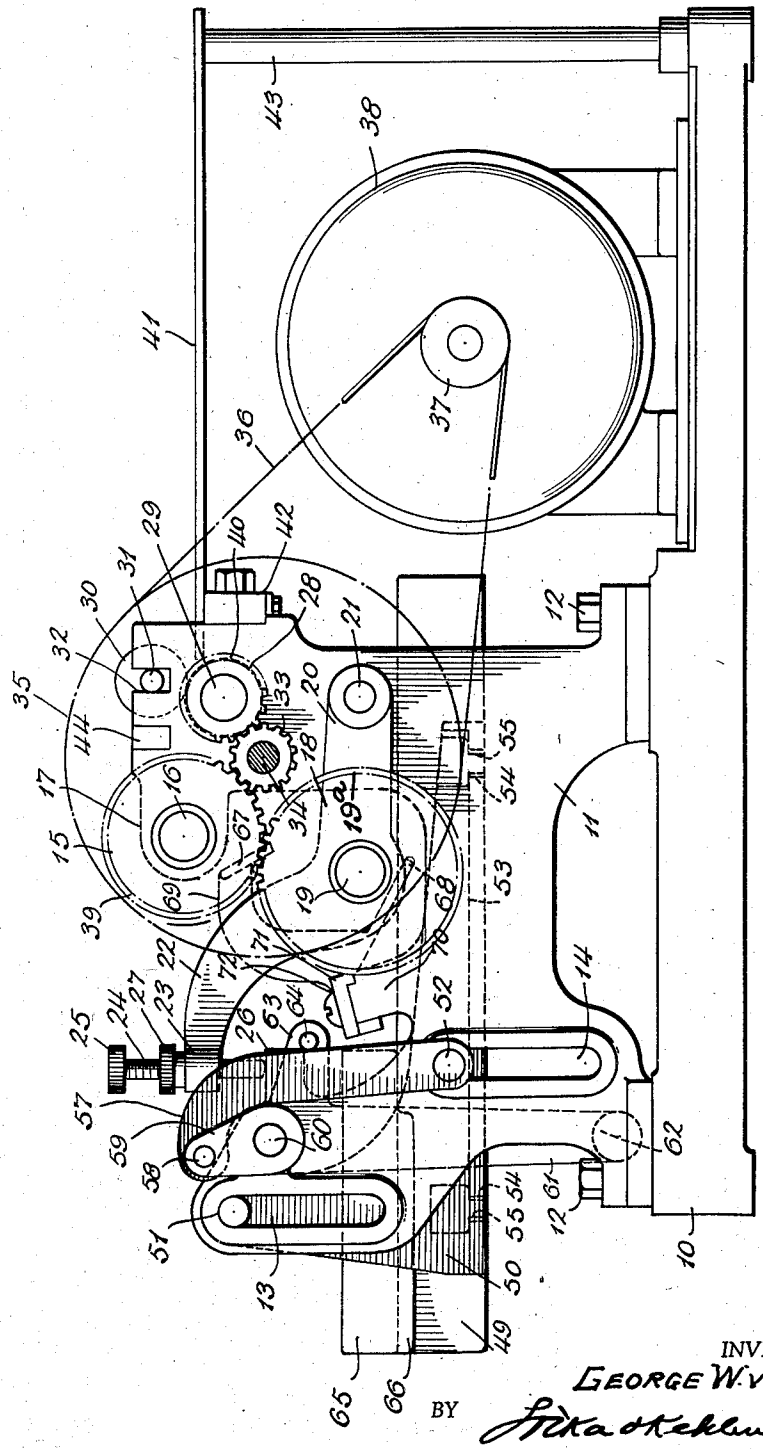
May 23, 1939. G. W. VON HOFE 2,159,641

GUMMING MACHINE

Filed Feb. 11, 1937 2 Sheets-Sheet 1

Fig. 1.



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Filed Feb. 11, 1937 2 Sheets-Sheet 2

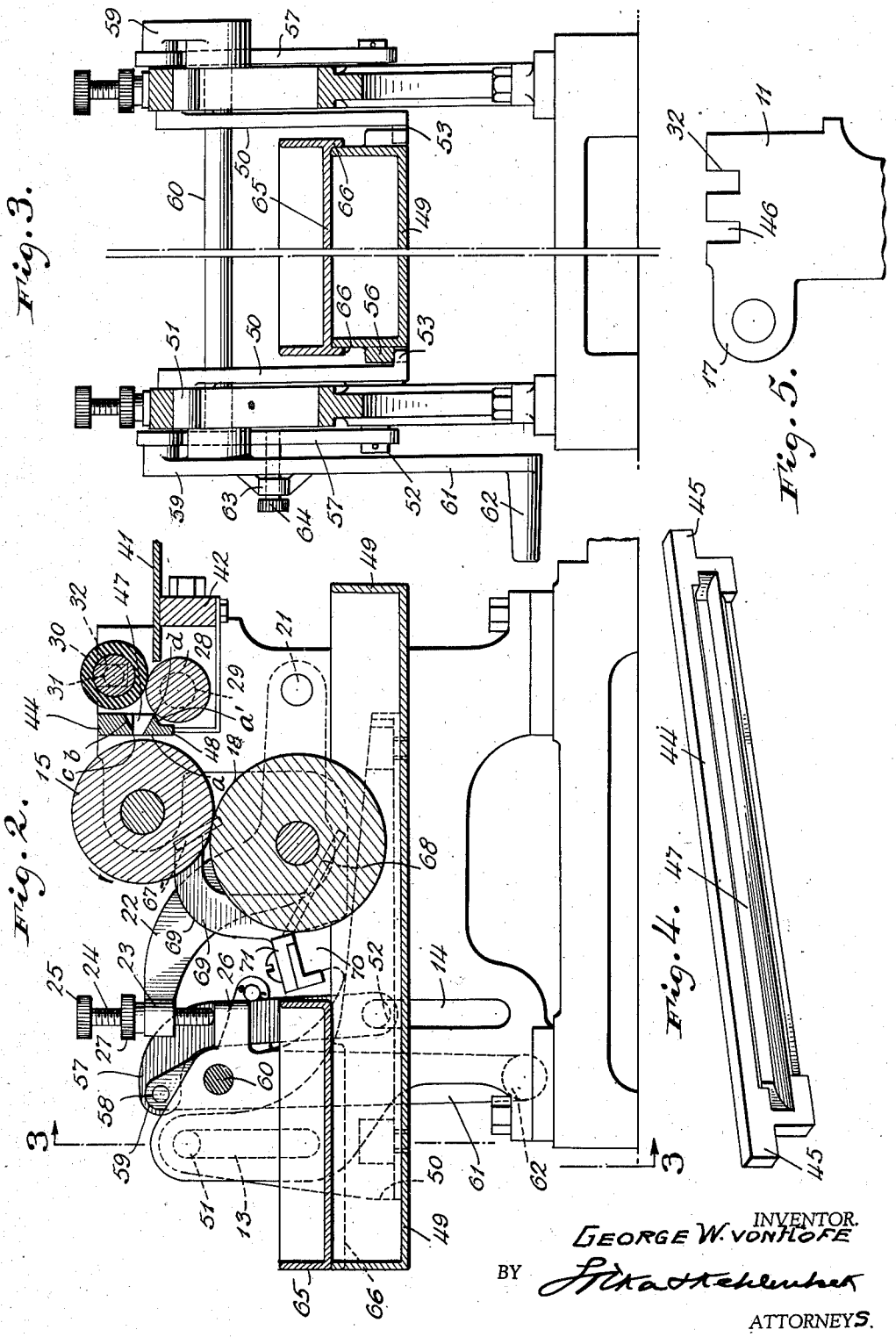


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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2,159,641

GUMMING MACHINE

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5 Claims. (Cl. 91—50)

The invention relates to gumming machines as exemplified by machines for applying coatings of adhesive to labels and the like and more particularly to relatively small machines of the indicated type commonly referred to as table gummers. The object of the invention is to improve the general construction and arrangement of machines of the aforesaid class and to provide novel and simple means for deflecting the labels or equivalent sheets to the gumming means or more specifically to the adhesive applying roll or equivalent element thereof. The invention contemplates further an improved and novel arrangement whereby the gumming means for distributing and applying the adhesive may be easily and quickly cleaned, at will, in an efficient manner. Other objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings, which illustrate an example of the invention without defining its limits, Fig. 1 is a side elevation of the novel machine; Fig. 2 is a fragmentary central longitudinal section thereof; Fig. 3 is a cross-section on the line 3—3 of Fig. 2; Fig. 4 is a detail perspective view of a novel tension plate forming part of the machine, and Fig. 5 is a fragmentary detail view of one of the side frames thereof.

In its illustrated form the machine comprises a base 10 of suitable shape and dimensions on which upright side frames 11 are fastened in any convenient manner, as by means of customary bolts or screws 12. The side frames are located in spaced parallel registry with each other and are each provided with upper slots 13 and lower slots 14; as shown in Figs. 1 and 2 the slots 13 and 14 extend in perpendicular relation to the base 10 in spaced parallel vertical planes for the purpose to be more fully described hereinafter. It will be understood that the slots 13 and 14 of the respective side frames 11 are in registry with each other transversely of the machine.

The machine further includes gumming means which, in the specific example of the machine shown in the drawings, comprises an upper or adhesive applying roll 15 of conventional type carried by a shaft 16 or its equivalent journalled in suitable bearings 17 preferably forming part of the side frames 11. The gumming means further consists of a lower or adhesive transferring roll 18 located in tangential transferring relation to the upper or adhesive applying roll 15 and carried by a shaft 19 or its equivalent whereby said lower roll 18 is rotatably mounted in operative position. To provide for adjustment of the rolls 15 and 18 relatively to each other to secure the most efficient results, as exemplified by predetermined distribution of adhesive to the upper roll 15, the shaft 19 or its equivalent may be journalled in levers 20 pivoted at 21 upon the side frames 11 as illustrated in Figs. 1 and 2. The levers 20 include extensions 22 terminating at their free ends in internally screwthreaded bosses 23 for the accommodation of adjusting screws 24 provided with heads 25 to facilitate the manipulation of said screws 24; the latter rest upon lugs 26 projecting from the side frames 11 as shown in Figs. 1 and 2 and may be locked in their adjusted positions in any convenient manner as by means of lock-nuts 27. It will be evident that by suitably manipulating the screws 24, the levers 20 may be swung on their pivots 21 to adjust the lower roll 18 toward and away from the upper roll 15.

In addition to the parts so far described, the illustrated example of the machine is provided with means for feeding the labels or equivalent elements to the gumming means during an operative period of the machine. The feeding means may, as shown consist of a lower feed roll 28 rotatably mounted in the side frames 11 by means of a shaft 29 or its equivalent. The illustrated feeding means further comprises an upper feed roll 30 which co-operates with the lower feed roll 28 and is carried by a shaft 31 or its equivalent journalled in upwardly open bearing slots 32 provided in the side members 11. The slots 32 are arranged and dimensioned to permit the upper feed roll 30 to rest by gravity upon the lower feed roll 28 in tangential engagement therewith; with the arrangement set forth the upper feed roll 30 may also be easily lifted from the bearing slots 32 and removed from the machine at will for any reason or purpose. The feed rolls 28 and 30 are located in operative relation to the gumming means and more specifically to the adhesive applying or upper roll 15 thereof for instance as illustrated in Figs. 1 and 2.

The gumming means and the feeding means may be operated in any conventional manner to secure the desired results. For instance, as shown in the drawings, a main drive pinion 33 may be suitably journalled in one of the side frames 11 by means of a shaft 34 which also carries a main drive pulley 35 or its equivalent, the latter being connected through the medium of a belt or the like 36 with a motor pulley 37 fixed upon the shaft of an electric motor 38 mounted upon the base 10. With this arrangement the drive pinion 33 is in mesh with co-operating gears 39 and 40 mounted to rotate with the upper or adhesive applying roll 15 and the lower feed roll 28 respectively. The gear 39 also meshes with a gear 19a on the shaft 19 whereby the lower or adhesive distributing roll 18 is also positively driven; the upper feed roll 30 as shown may be driven by frictional engagement with the co-operating roll 28. For con-

venience of operation a label or paper feed table 41 may be suitably mounted in delivery relation to the feed rolls 28 and 30 for instance by resting upon a cross-bar 42 forming part of the machine and by means of upright supporting rods 43 projecting upwardly from the base 10 and suitably fixed in place thereon; as shown in Fig. 1 the motor 38 may be located in the space beneath the table 41.

To increase the efficiency of the machine, a tension plate 44 is mounted in the machine in operative relation to the feed rolls 28—30 and the upper or adhesive applying roll 15 as illustrated in Figs. 1 and 2; the tension plate 44 preferably is removable as a unit from the machine for purposes of cleaning or for other reasons and accordingly may be provided with lugs 45 arranged to fit into recesses 46 formed in the side frames 11 as shown in Fig. 5. With this arrangement the tension plate 44 is suspended in the recesses 46 and projects downwardly between the upper or adhesive applying roll 15 and the feed rolls 28 and 30. The tension plate 44 is provided with a longitudinal slot 47 located in the path of the advancing labels or other elements and through which said labels or other equivalents pass in their travel from the feeding means to the gumming means. The lower surface *a* of the slot 47 is inclined upwardly from the feed roll 28 toward the adhesive applying roll 15 as illustrated in Fig. 2, while the upper surface *b* of said slot 47 preferably slopes downwardly toward the roll 15 and terminates in an edge *c* for the purpose to be more fully described hereinafter. Along its lower edge the tension plate 44 is of reduced transverse width to provide a depending extension 48 and a surface *a'* which inclines upwardly toward the surface *a* into connection therewith to form a relatively sharp edge *d* extending lengthwise of the plate 44. In the assembled condition of the parts the edge *d* contacts with the cylindrical surface of the lower feed roll 28 and extends lengthwise thereof for the purpose to be more fully set forth hereinafter. While the tension plate 44, generally speaking, may be held in place in the recesses 46 of the side members 11 by its own weight, any conventional means may be provided, if desired or necessary, for removably fixing said tension plate 44 in its operative position in the machine.

In the normal operative condition of the machine the lower or adhesive distributing roll 18 dips into a supply of adhesive and in rotating therethrough gathers adhesive which is distributed to the upper or adhesive applying roll 15 in the well known way. In the illustrated example the aforesaid supply of adhesive is contained in a pan 49 which is capable of being temporarily lowered at will to an inoperative position in order to permit the gumming means to be readily cleaned at intervals as may be necessary. The machine accordingly includes supporting members 50 provided with studs 51 and 52 projecting into and vertically slidable respectively in the upper and lower slots 13 and 14 of the side frames 11; in the illustrated example the members 50 are located in opposed registry with each other adjacent to the inner faces of the respective side frames 11 as shown in Fig. 3. The supporting members 50 in the illustrated example include horizontally extending sections provided with inwardly projecting flanges 53 extending lengthwise thereof and interrupted at intervals to form seats 54 for the accommodation of projections 55 depending from lugs 56 with which the pan 49 is provided. The arrangement and dimensions are such that the pan 49 fits between the flanges 53 and is supported thereon by means of the lugs 56, the projections 55 of which extend into the seats 54 and fix the pan 49 against movement lengthwise of the supporting members 50; the flanges 53 in cooperation with the lower portion of the pan 49 prevent transverse movement of the latter in the machine as clearly shown in Fig. 3.

The means whereby the supporting members 50 are raised and lowered comprises links 57 pivotally connected at one end with the studs 52 of said members 50; the other ends of the links 57 are pivotally connected at 58 with lifting arms 59 fixed upon a shaft 60 which extends transversely across the machine and is suitably journalled in the side frames 11 as illustrated in Fig. 3. The one lifting arm 59 preferably comprises an integral part of an operating lever 61 which, at its free end, may be provided with a handle 62 and in addition preferably includes an off-set member 63 which slidably carries a locking-pin 64 for the purpose to be more fully set forth hereinafter; suitable provision is made to prevent the locking-pin 64 from being unintentionally detached from the member 63, it being understood that the pin 64 is adjustable to an inoperative position in which it does not interfere with the intended operations of the operating lever 61 and associated elements.

For purposes of cleaning the gumming means, the machine includes a water container or pan 65 slidably mounted upon the adhesive pan 49 and provided with depending longitudinal flanges 66; the latter project downwardly over the pan 49 and in addition to maintaining the water pan 65 in place thereon serve to guide said pan 65 in its movements lengthwise of the adhesive pan 49 for the purpose to be more fully set forth hereinafter. Normally, when the adhesive pan 49 is in its operative raised position the water pan 64 may be positioned at the outer end thereof as illustrated in Figs. 1 and 2; if desired, the pan 64 may be combined with the pan 49 only when cleaning of the gumming means is to be effected. In the form shown in the drawings the machine is provided with roll scrapers for removing adhesive unintentionally present on the rolls 15 and 18 and returning it to the adhesive pan 49 or its equivalent. The roll scrapers consist of upper scraper blades 67 and lower scraper blades 68 carried by side members 69 located at opposite ends of the rolls 15 and 18 and supported upon brackets 70 forming part of the side frames 11; as shown the side members 69 may be provided with members 71 fastened to the brackets 70 by screws or bolts 72 which serve to removably fix the side members 69 in place in the machine. The upper scraper blades 67 project from the side members 69 into engagement with the end faces of the rolls 15 and 18 and preferably extend across the point at which the latter are in tangential contact or approximately so; the lower scraper blades 68 extend from the side members 69 into contact with the end faces of the roll 18 and preferably slope downwardly toward the adhesive pan 49. With this arrangement any adhesive collected upon the end faces of the rolls 15 and 18 will be scraped therefrom by the blades 67 and 68 and will gather upon the lower blades 68 and from there gradually flow back to the adhesive pan 49.

In describing the operation of the machine

it will be assumed that said machine is being used for gumming labels, it being understood, however, that this is done only for the purpose of simplifying the description and that the term "label" is intended to cover sheets of paper or other material or any equivalent elements capable of being operatively handled by the machine.

In practice the labels pass from the feed table 41 to the feed rolls 28 and 30 by which said labels are advanced and caused to enter the slot 47 of the tension plate 44, which slot 47 is, as previously stated, located in the path of said labels. As the feeding action of the rolls 28 and 30 proceeds, the forward edge of the label will engage the inclined surface *a* of the slot 47 and will be deflected upwardly thereby to the upper or adhesive applying roll 15; in other words, the label will be deflected in the direction of rotation of the roll 15 and will be easily picked up on the cylindrical surface thereof. In passing over the roll 15 the label receives a coating of adhesive therefrom and is then removed from the machine in any conventional manner either automatically or manually. As the label is picked up by the roll 15 and gradually fed through the slot 47, it will pass over the edge *c* thereof and accordingly will be subjected to tension; as a result, the label passes to the roll 15 in a smooth condition and the adhesive will be applied to said label as a coating in a uniform and efficient manner. The edge *d* of the tension bar 41 by engaging the cylindrical surface of the feed roll 28 prevents any labels or their equivalent from being carried on said cylindrical surface as the roll 28 rotates, or in other words, from being diverted out of their path toward the gumming means; that is to say, the edge *d* functions as stripping means to assure the passage of the labels or their equivalent to the surface *a* of the slot 47 in the intended manner.

During the aforesaid operations the lower or adhesive distributing roll 18 rotates through the supply of adhesive contained in the pan 49, the latter being held in its operative position by means of the locking pin 64 which has been adjusted to project across and in engagement with the one link 57 to effect this result. In rotating through said supply of adhesive, the distributing roll 18 gathers adhesive which is transferred to the cylindrical surface of the upper roll 15 in the well known way. In order to maintain the machine and particularly the rolls 15 and 18 in conditions of maximum efficiency, it becomes necessary to periodically clean these rolls by washing the same with water or other suitable cleansing liquid. In existing machines this cleaning operation often necessitates the complete removal of the adhesive rolls from the machine and in any case requires considerable time and effort in its performance.

These objections are entirely avoided in the instant novel machine in which the operation of cleaning the adhesive rolls is reduced to the utmost simplicity and is performed without requiring the adhesive rolls to be removed from the machine or disturbed in any way. When it is desired to clean the rolls 18 and 15, the locking pin 64 is first withdrawn from behind the link 57 after which the latter through the medium of the handle 62 is swung in an arc to the left in Fig. 1 to correspondingly rock the shaft 60 and thereby swing the arms 59 to the right in Fig. 1. As this occurs, the links 57 will be caused to move downwardly and thereby lower the supporting members 50 and adhesive pan 49 to an inoperative position at a distance beneath the roll 18; during this downward movement of the parts, the studs 51 and 52 travel downwardly in the respective slots 13 and 14 and in co-operation therewith guide the supporting members 50 and the pan 49 during said downward movements.

As the adhesive pan 49 is thus moved downwardly, the water pan 65 resting thereon is correspondingly moved, the arrangement being such that in the lowered inoperative position of the adhesive pan 49 the water pan 65 will be positioned at a level below the lower or adhesive distributing roll 18. At this stage the water pan 65 may be slidably shifted on the adhesive pan 49 from the position shown in Figs. 1 and 2 to a position beneath and in vertical registry with said adhesive distributing roll 18. The lever 68 is then manipulated in the reverse direction or in other words toward its normal position to correspondingly rock the shaft 60 and swing the arms 59 in a manner to develop an upward pull on the links 57. The supporting members 50 will thereby be raised and guided upwardly by the studs 51 and 52 which shift vertically in the respective slots 13 and 14, and the two pans 49 and 65 will be lifted until the pan 65 is in operative relation to the lower roll 18 and the latter dips into the water or other cleaning liquid contained in said pan 65. When this adjustment has been reached, the lever 61 extends diagonally across the slot 13 of the adjacent side frame 11 and in a position to enable the locking pin 64 to be projected into said slot 13 to thereby fix the pan 65 in the aforesaid operative relation to the roll 18.

With the water pan 65 in the above mentioned adjustment, it is simply necessary to start the machine in operation to thereby cause the lower or adhesive distributing roll 18 to rotate through the water or other cleaning liquid in the pan 65. This will result in a complete and thorough removal of the adhesive from the roll 18 and because of the tangential contact of the roll 18 with the upper or adhesive applying roll 15, will also bring about the removal of the adhesive from said upper roll 15; at the same time any other foreign matter which may be present on the rolls 18 and 15 will be removed therefrom by the action of the water or other cleaning liquid in the pan 65. In this manner the rolls 18 and 15 will be thoroughly cleaned in a minimum of time and with no effort on the part of the attendant other than the operation of starting and stopping the machine. When the aforesaid cleaning operation has been completed to the satisfaction of the attendant, the locking pin 64 is withdrawn from the slot 13 to an inoperative position on the off-set member 63 to thereby release the lever 61 which is again manipulated to lower the adhesive pan 49 to the aforesaid inoperative position in Fig. 1 and to correspondingly lower the water pan 65 to a point below the lower roll 18. The water pan 65 is then slidably adjusted on the adhesive pan 49 toward the left in Figs. 1 and 2, or in other words, is returned to the position illustrated in these two figures. When this adjustment has been completed, the lever 61 is operated in a return direction to develop a lifting action upon the supporting members 50 and to thereby restore the adhesive pan 49 and its associated elements to the normal position shown in Figs. 1

and 2 in which the lower or adhesive distributing roll 18 again dips into the adhesive contained in the pan 49. The locking pin 64 is then adjusted to an operative position in which said pin projects across and in contact with the one link 57 to thereby lock the parts in their adjusted position and to maintain the adhesive pan 49 in the operative relation to the roll 18 illustrated in Figs. 1 and 2. If it should be necessary or advisable to do so, the supply of adhesive in the pan 49 may be replenished or renewed at any convenient time during the operations described above; likewise, the water pan 65 may be easily removed from the machine and cleaned and provided with a fresh supply of water or other cleaning liquid at the convenience of the attendant.

The novel construction provides a gumming machine of relatively small dimensions and compact arrangement in which the labels or their equivalent are directed into engagement with the cylindrical surface of the adhesive applying roll 15 in the most efficient manner and so as to guarantee the development of uniform and even coatings of adhesive thereon. In addition, the novel mechanism for effecting the cleaning of the gumming means as exemplified by the rolls 18 and 15 increases the efficiency of the machine by reducing the cleaning of said adhesive rolls to a point of utmost simplicity and thereby avoiding long periods of inactivity.

While the novel features are illustrated in connection with and are specially adapted for so-called table gummers, it will be obvious that said novel features may be embodied in any type of gumming machine regardless of size, with equal advantages.

Various changes in the specific forms shown, and described may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. In a gumming machine of the kind described, the combination of gumming means including an adhesive distributing roll, side frames each provided with spaced vertical slots, vertically movable supporting members, studs on said members extending into said spaced slots for guiding said supporting members in their vertical movements, a pan for adhesive removably resting upon said supporting members and suspended thereby for normally supplying said gumming means with adhesive, a pan for cleaning liquid slidably mounted on said adhesive containing pan, a rock shaft journalled in said side frames, arms carried by said shaft, links connected with said arms and with said sppporting members, and an operating lever for rocking said shaft to thereby vertically adjust said supporting members and said pans whereby said pan for cleaning liquid may be shifted at will into operative suspended relation with said adhesive distributing roll to permit said gumming means to be cleaned by said cleaning liquid.

2. In a gumming machine of the kind described, the combination of gumming means including an adhesive distributing roll, side frames provided with vertical slots, vertically movable supporting members, studs on said members extending into said slots for guiding said supporting members in their vertical movements, a pan for adhesive removably resting upon said supporting members and suspended thereby for normally supplying said gumming means with adhesive, a pan for cleaning liquid slidably mounted on said adhesive containing pan, a rock shaft journalled in said side frames, arms carried by said shaft, links connected with said arms and with said supporting members, and an operating lever for rocking said shaft to thereby vertically adjust said supporting members and said pans whereby said pan for cleaning liquid may be shifted at will into operative relation with said adhesive distributing roll to permit said gumming means to be cleaned by said cleaning liquid.

3. In a gumming machine of the kind described, the combination of gumming means including an adhesive distributing roll, side frames provided with vertical slots, vertically movable supporting members including horizontally extending sections, studs on said members extending into said slots for guiding said supporting members in their vertical movements, flanges extending lengthwise of the horizontal sections of said supporting members and arranged to form spaced seats, a pan for adhesive supported upon said flanges for normally supplying said gumming means with adhesive, projections on said pan co-operating with said seats for removably fixing said pan in position on said supporting members, a pan for cleaning liquid slidably mounted on said adhesive containing pan, a rock shaft journalled in said side frames, arms carried by said shaft, links connected with said arms and with said supporting members, and an operating lever for rocking said shaft to thereby vertically adjust said supporting members and said pans whereby said pan for cleaning liquid may be shifted at will into operative relation with said adhesive distributing roll to permit said gumming means to be cleaned by said cleaning liquid.

4. In a gumming machine of the kind described, the combination of gumming means, vertically movable supporting members including horizontally extending sections, an adhesive containing pan removably carried by the horizontally extending sections of said supporting members and normally maintained thereby in operative relation to said gumming means, a pan for cleaning liquid movably mounted on said adhesive containing pan, adjusting means for vertically adjusting said supporting members to permit said pan for cleaning liquid to be shifted into operative relation with said gumming means to effect a cleaning of the latter, and releasable means for locking said adjusting means to prevent vertical movement of said supporting members.

5. In a gumming machine, the combination of side frames each provided with spaced vertical slots, gumming means including an adhesive distributing roll, a container for adhesive, a container for cleaning liquid, one of said containers being movably carried by the other, suspending means including horizontally extending sections for removably suspending said containers in said machine and vertically guided in said vertical slots, actuating means for operating said suspending means to suspend either of said containers in operative relation to said adhesive distributing roll, and a locking device carried by said actuating means and co-operating respectively with one of said slots or with said suspending means to lock either of said containers selectively in said operative relation to said roll.

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