Jan. 21, 1936. J. A. JOHNSON 2,028,219

FEEDING MEANS FOR SEALING PADS FOR RECEPTACLE CLOSURE CAPS

Filed Feb. 15, 1934 2 Sheets-Sheet 1

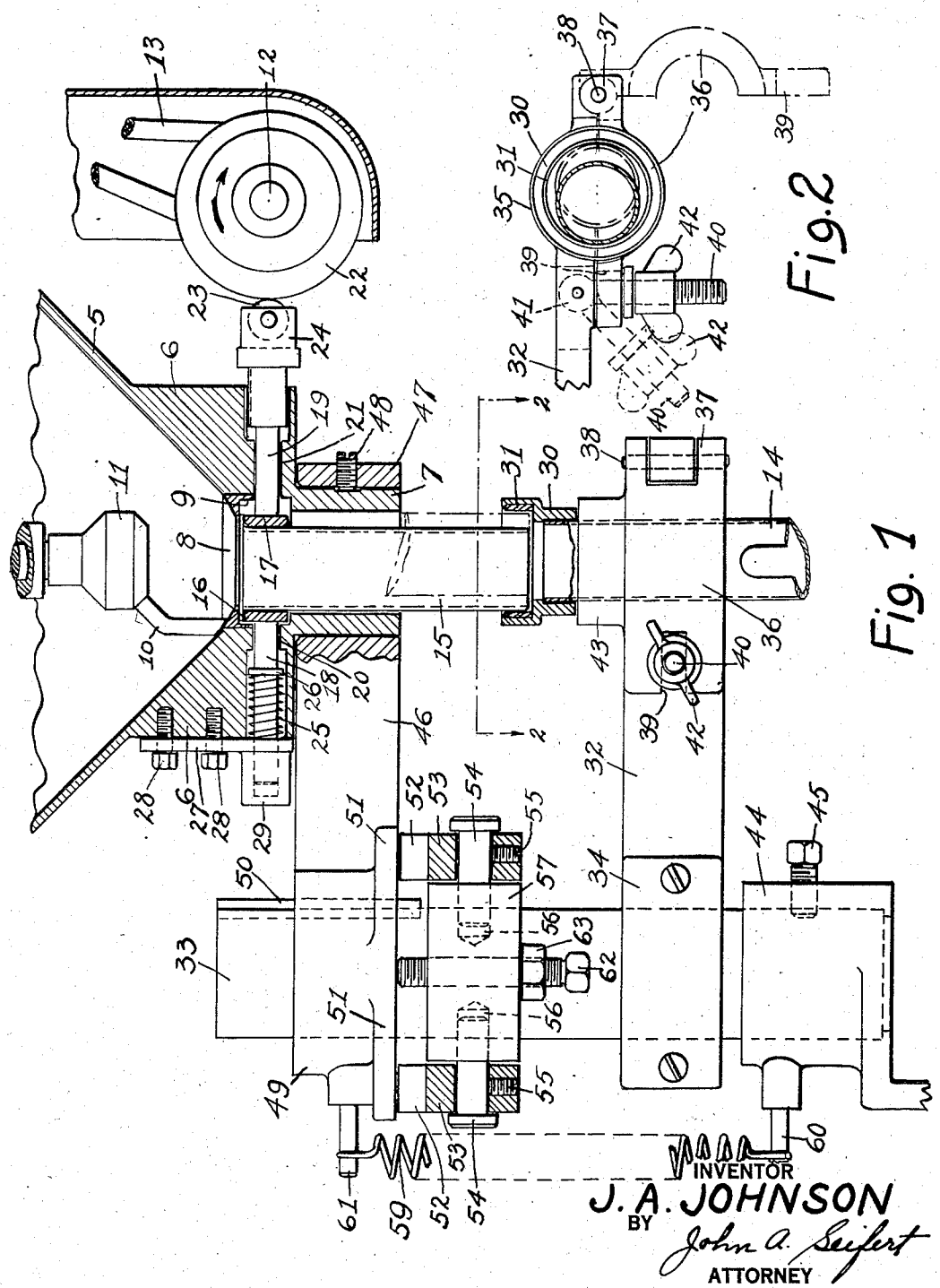


Fig. 1

Fig. 2

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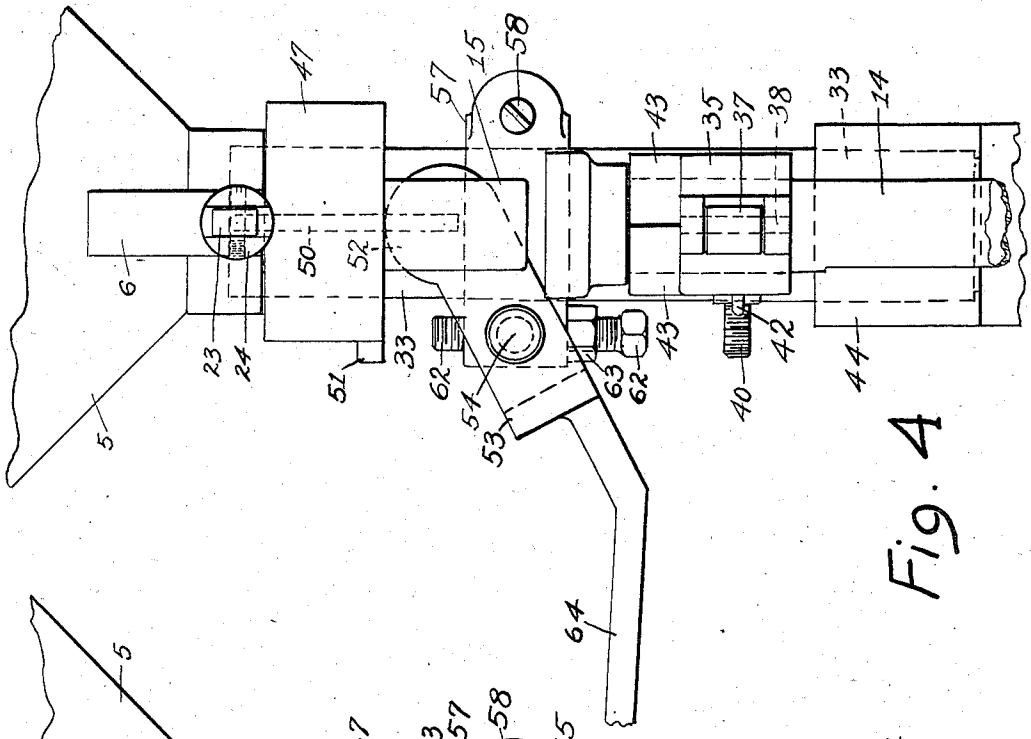


Fig. 4

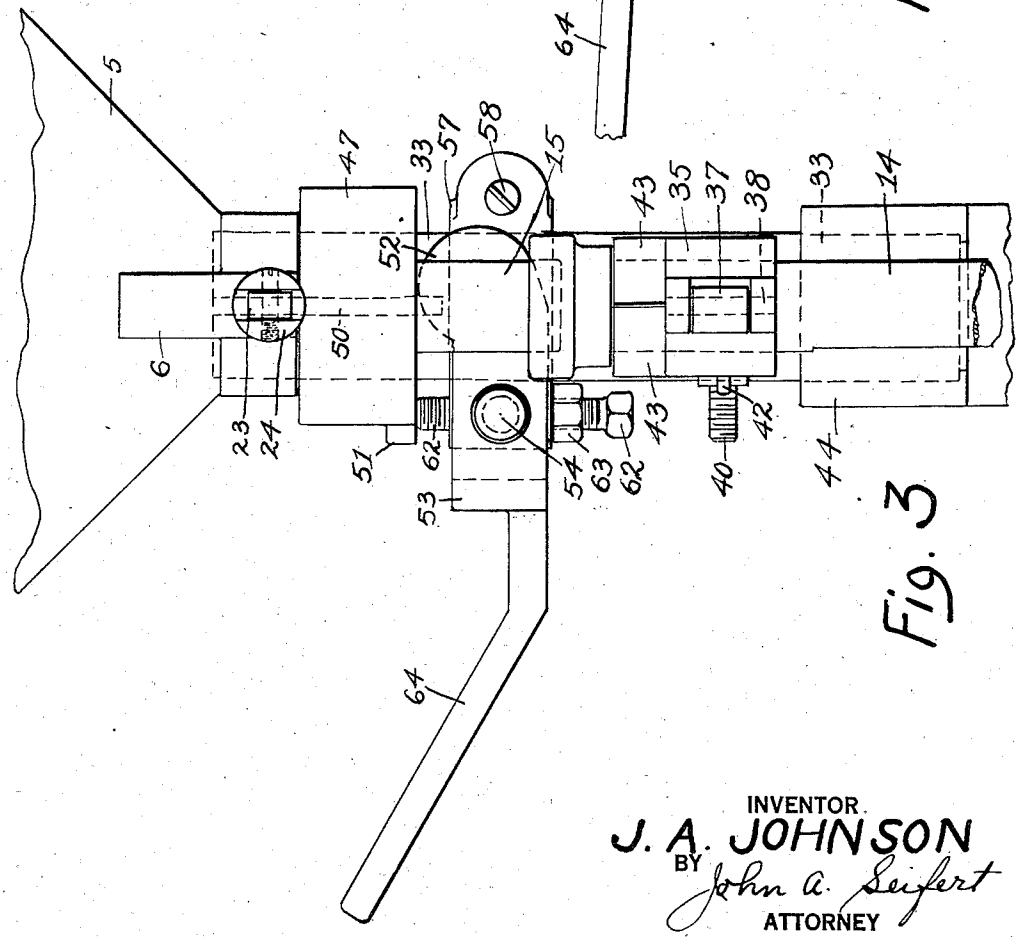


Fig. 3

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Patented Jan. 21, 1936 2,028,219

UNITED STATES PATENT OFFICE

2,028,219

FEEDING MEANS FOR SEALING PADS FOR RECEPTACLE CLOSURE CAPS

John A. Johnson, Woodhaven, N. Y.

Application February 15, 1934, Serial No. 711,308

13 Claims. (Cl. 113—113)

This invention relates to means for feeding by gravity sealing pads or disks to apparatus for assembling the pads in closure caps, and particularly to improvements made to the device disclosed by my co-pending application Serial No. 660,863, filed March 15, 1933.

One of the principal improvements is to provide a vibrating or stacking tube reciprocated transversely of the outlet of a hopper for the entire length thereof whereby the pads are more readily and quickly stacked.

Another improvement embodied in this invention is to releasably mount a delivery tube for the assembling apparatus to permit of the ready removal of said tube to dislodge any pads jammed therein or for the purpose of cleaning the tube.

A further improvement is the adjustable mounting of the hopper and stacking tube and the providing of means to position the hopper and stacking tube away from the delivery tube and permit removal of the delivery tube.

Other improvements and advantages over the device of my co-pending application Serial No. 660,863 will hereinafter be set forth in detail.

In the drawings accompanying and forming a part of this application Figure 1 is an elevational view, partly in section, to show the mounting of a stacking tube to permit reciprocatory movement of the entire tube and the means for adjustably supporting a hopper and stacking tube.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1 to show releasable mounting of a delivery tube.

Figure 3 is an elevational view looking at the right of Figure 1 and showing the hopper and stacking tube in their normal operative position; and

Figure 4 is a view similar to Figure 3, but showing the hopper and stacking tube adjusted to a position with the stacking tube in spaced relation to the delivery tube.

In the embodiment of the invention illustrated in the accompanying drawings, there is provided a hopper of similar design and arrangement of parts as shown in the prior mentioned co-pending application and only a funnel shaped discharge outlet section 5 thereof being shown in the drawings of the present application, which is believed to be sufficient to fully show the embodiment of the present invention. The hopper outlet section 5 is arranged with opposed bracket portions 6 for a purpose hereinafter described and a tubular portion 7 suspended from the outlet section below the bracket portions and having a bore in alinement with and of slightly greater diameter than a discharge opening 8 of the outlet section and an annular enlargement 9 between the bore and discharge opening in horizontal alinement with the bracket portions, as shown in Figure 1.

The pads in the hopper outlet section 5 are agitated and positioned relative to the discharge opening by continuously rotating means comprising a finger 10 fixed in a head 11 rotatably mounted in the hopper with the end of the finger extended adjacent the peripheral portion of the discharge opening 8. The head and finger are continuously rotated from a shaft 12 operatively connected to the head by a belt 13, as clearly shown in my co-pending application Serial No. 660,863, and as the specific mounting and operation of the head and finger does not affect the operation of the invention of the present application, it is deemed not to be necessary to show and describe the same in detail.

The sealing pads are discharged from the hopper by the finger 10 in a disorderly manner and to properly position them in stack formation before they are delivered to a delivery tube or pipe 14 leading to a closure cap assembling apparatus, not shown, they are properly stacked by a tube or pipe 15 having one end flanged, as at 16, to engage and suspend said tube 15 from a ring or annulus 17 slidably mounted within the annular enlargement 9 by a pair of rods 18, 19 fixed at one end in opposite portions of the ring and slidably engaged in opposed bores 20, 21 in the bracket portions 6. The diameter of tube 15 is smaller than the bore of tubular portion 7 to permit reciprocation of the entire tube in a direction transversely of the axes of tubular portion 7 and discharge opening 8 and reciprocation is imparted to said tube by a cam or eccentric wheel 22 fixed on the shaft 12 and adapted to engage a roller 23 rotatably mounted in a bifurcation 24 arranged on the end of the rod 19 extending exteriorly of the bracket 6. The rotation of wheel 22 and engagement of the eccentric portion thereof with the roller 23 will position the ring 17 and the tube 15 adjacent the side of the enlargement 9 having the bore 20 and to impart return movement to the ring and tube and urge the roller 23 into engagement with the wheel 22, the ring and tube are yieldingly urged toward the side of enlargement 9 having the bore 21 by a spring 25 coiled about the rod 18 between a collar 26 fixed to the rod 18 intermediate the ends thereof and a cover plate 27 secured to a bracket 6 by bolts 28 and having a socket portion 29 positioned in alinement with the bore 20 to slidably support the free end of the rod 18, the greater portion of the bore 20 being enlarged to permit the mounting of the spring 25 and collar 26 on the rod 18 and therefore it only supports one end portion of said rod, as shown in Figure 1.

The lower portion of tube 15 extends beyond the tubular portion 7 of the hopper with the end thereof adapted to be engaged in an enlarged end of pipe 14 formed by a coupling or sleeve member 30 having the opposite end portions of differ-

ent diameters, the portion of smaller diameter being engaged on the upper end of pipe 14 and the larger portion of a diameter corresponding with the diameter of tubular portion 7 to be engaged by and permit free lateral movement of the tube 15 and having a lining 31 of absorbent material to absorb the impact of the tube 15 and prevent the swinging of the lower end thereof, as shown in Figure 1.

The pipe 14 is supported in predetermined fixed position in alinement with the discharge outlet of the hopper by an arm or bracket 32 clamped at one end to a post 33, as shown at 34 in Figure 1, and the opposite end portion being arranged with an arcuate recessed section 35 for the engagement of half of the diameter of the pipe 14. The pipe 14 is releasably retained in said arcuate recess 35 by a clamping member having an arcuate recessed portion 36 intermediate the ends thereof corresponding to the recess 35 and one end bifurcated to form a hinge joint with a reduced end portion of the arm 32 extending from the recess 35, as shown at 37, pivotally connected by a pin 38 engaged in alined perforations in the arm and the bifurcation legs, to permit the swinging of said clamping member toward and away from the pipe 14. The recessed portion 36 is releasably retained in position to clamp the pipe 14 in the recess 35 by arranging the end of the clamping member opposite the bifurcated end with a slot 39 to be engaged by a swinging latch in the form of a shank 40 pivotally mounted in an opening in the arm 32, as shown in dotted line at 41 in Figure 2, with the opposite free end screw threaded for the adjustable engagement of a wing nut 42 to retain the pipe 14 in position on the arm 32 when the shank 40 is engaged in the slot 39. By this arrangement of clamping the pipe 14 to the arm 32, said pipe may readily be removed for the purpose of releasing pads that have become jammed therein or to clean the pipe.

The recesses 35 and 36 are arranged at the upper edges with collar portions 43 to increase the clamping surfaces and also form an abutment for the sleeve 30 to prevent downward longitudinal movement of the pipe 14 from the arm 32.

The post 33 is releasably mounted in a socket portion 44 of a bracket not shown but ordinarily supported by the closure cap assembling apparatus, the post being retained in the socket by a set screw 45.

In the normal operating position of the hopper the reciprocating or stacking tube 15 is positioned within the larger diameter of the sleeve 30, but in said position of tube 15 the tube 14 cannot be removed from the arm 32 as it is impossible to move the tube 14 in a downward direction. To permit the removal of the tube 14 the hopper is adjustably mounted on the post 33 by an arm or bracket 46 having a boss 47 at one end for the engagement of the tubular portion 7, said engagement being maintained by a set screw 48, and the opposite end of the arm 46 having another boss 49 slidably mounted on and connected to the post 33 by a key 50 and the boss 49 having laterally extending flat portions 51 for the engagement of arcuate protuberances 52 arranged on the leg portions of a bifurcated member 53 pivotally mounted by pins 54 fixed in the bifurcation legs by set screws 55 and rotatably engaged in alined recesses 56 in a split collar 57 retained on the post 33 in predetermined position by a screw 58 engaged in the split ends and adapted to clamp the collar to the post. The hopper is normally positioned on the post 33 with the lower end of pipe 15 within the sleeve 30 by a spring 59 fixed at one end to a pin 60 fixed in and extended from the socket 44 and the opposite end of the spring fixed to a pin 61 fixed in and extended from the boss 49, the spring yieldingly urging the boss 49 or the flat portions 51 into engagement with a set screw 62 adjustably mounted in the collar 57 with the free end of said set screw projecting from the upper surface of the collar to engage the boss and the head of the screw extended below the collar with a lock nut 63 engaged on the screw to abut the lower surface of the collar and retain the screw in adjusted positions. The set screw 62 is adjusted to support the hopper with the pipe 15 within the sleeve 30 and to readily adjust the hopper in a direction away from the pipe 14 and position the pipe 15 out of the sleeve 30 to permit removal of pipe 14 from the arm 32, the bifurcated member 53 is actuated about its pivots 54 by moving in a downward direction a handle in the form of an arm 64 fixed to and extended from the connecting portion of the bifurcated member 53 to engage the protuberances 52 with the flat portions 51 and move the arm 46 upwardly on the support 33 and position the tube 15 in spaced relation to the sleeve 30 against the force of spring 59. Upon the removal of the pipe 14 from the arm 32 the hopper may be permitted to assume its normal position under the influence of spring 59 and actuated to its raised position when it is desired to replace tube 14.

It will be obvious that various modifications may be made in the structure and arrangement of parts without departing from the scope of the invention.

Having thus described my invention, I claim:

1. In feeding means for sealing pads for receptacle closure caps, a hopper having an outlet, a tube movably carried in the hopper outlet to have lateral movement relative to the vertical axis thereof, a second tube mounted in alinement with the hopper outlet, means to normally support the hopper with the first tube in communication with the second tube, and means adapted to move the hopper away from the supporting means and position the first tube in spaced relation with said second tube to permit removal of the second tube from its mounting.

2. In feeding means for sealing pads for receptacle closure caps, a tube mounted in fixed position, a hopper having an outlet, a second tube movably carried by the hopper to extend between the first tube and hopper outlet, an arm connected to the hopper and slidably mounted, and means mounted to engage and normally support the arm to position the hopper outlet and the second tube in proximity and alinement with the first tube, and means pivotally mounted and adapted to be actuated about its pivot to engage and lift the arm and move the hopper and second tube away from the first tube in a straight path.

3. In feeding means for sealing pads for receptacle closure caps, a tube mounted in fixed position, a hopper having an outlet, a second tube movably carried by the hopper to extend between the first tube and hopper outlet, a vertical support, an arm slidably engaged on the support and connected to the hopper, and a pair of members pivotally mounted on opposite sides of the support to engage and operative to lift the arm and position the second tube in spaced relation to the first tube.

4. In feeding means for sealing pads for receptacle closure caps as claimed in claim 3, yielding means connected to the support and arm to

urge the arm into engagement with the pair of members.

5. In feeding means for sealing pads for receptacle closure caps, a tube mounted in fixed position, a hopper having an outlet, a second tube movably carried by the hopper to extend between the first tube and hopper outlet, a vertical support, an arm slidably mounted on the support and connected to the hopper, a bifurcated member pivotally mounted on the support with the leg portions straddling the support and having arcuate protuberances to engage the arm, and a manipulating arm extended from the connecting portion of the bifurcated member to facilitate the actuation of said member about its pivots and lift the hopper arm to position the second tube away from the first tube.

6. In feeding means for sealing pads for receptacle closure caps, a tube mounted in fixed position, a hopper having an outlet, a second tube movably carried by the hopper to extend between the first tube and hopper outlet, a vertical support, an arm slidably mounted on the support and connected to the hopper, means carried by the support to be engaged by the arm in predetermined position thereof to support the arm and hopper and position the free end of the second tube in alinement and proximity with the first tube, and means movably mounted on the support operative to lift the arm from the arm engaging means and move the hopper outlet from the tube.

7. In feeding means for sealing pads for receptacle closure caps, a hopper mounted to have a straight line movement in a vertical plane and arranged with an outlet, a tube loosely mounted in the hopper outlet, a second tube mounted in fixed position in alinement with the hopper outlet and having an end of enlarged diameter, means to normally support the hopper in position to loosely engage the first tube within the enlarged end of the second tube, and means operative to move the hopper away from the supporting means and position the first tube out of engagement with the enlarged end of the second tube to permit lateral movement of said second tube.

8. In feeding means for sealing pads for receptacle closure caps, a hopper mounted to have a straight line movement in a vertical plane and arranged with a circular outlet, a tube of less diameter than the diameter of the outlet and mounted therein, means to impart movement to the tube transversely of the hopper, a second tube mounted in fixed position in alinement with the hopper outlet and having an end of enlarged diameter substantially equal to the diameter of said outlet, means to normally support the hopper in position to loosely engage the first tube within the enlarged end of the second tube, and means operative to lift the hopper from the supporting means and position the first tube out of engagement with the enlarged end of the second tube to permit lateral movement of the second tube.

9. In feeding means for sealing pads for receptacle closure caps, a vertical support, a hopper slidably mounted on the support and having an outlet, a tube loosely supported in the hopper outlet to permit lateral movement of the tube therein, an arm fixed to and laterally extending from the support below the hopper, a second tube releasably carried by the arm, a sleeve of two diameters, the portion of small diameter being engaged on an end of the second tube extending beyond the arm to abut the arm and retain said tube on the arm and the portion of large diameter extending from said end of the tube to be loosely engaged by the first tube, and means carried by the support to normally support the hopper with the first tube within the large diameter of the sleeve, and means movably mounted on the support operative to actuate the hopper away from the arm and position the first tube in spaced relation to the sleeve to permit removal of the second tube from the arm.

10. Feeding means for sealing pads for receptacle closure caps as claimed in claim 9, wherein the second tube is releasably carried by the arm by arranging the arm with an arcuate recess for the engagement of the tube, and a clamping member pivotally mounted on the arm on one side of the arm recess having an arcuate recess corresponding to the recess of the arm to engage the second tube in the arm recess and adapted to be releasably connected to the arm on the side of the arm recess opposite the mounting of said member to clamp and retain the second tube to the arm.

11. In feeding means for sealing pads for receptacle closure caps, a hopper having an outlet, a tube mounted parallel to the vertical axis of the hopper to have a straight line movement transversely of the outlet and adapted to receive pads from the hopper, a second tube mounted in fixed position in alinement with the hopper outlet and having an end portion adapted to receive and permit lateral movement of the first tube, and means to impart reciprocatory movement to the first tube for the entire length thereof to agitate and force the pads from said tube into the second tube in stack formation.

12. In feeding means for sealing pads for receptacle closure caps, a hopper having an outlet, a ring mounted below the hopper outlet to have reciprocatory movement transversely of said outlet and yieldingly urged in one direction, a tube carried by the ring and extended from the hopper outlet, means to impart intermittent movement to the ring in a direction against the yielding force applied to the ring to impart reciprocation to the tube and agitate the pads into stack formation in said tube, and a second tube mounted in alinement with the hopper outlet and having an enlarged end portion for the engagement and permit reciprocation of the entire length of the first tube and delivery of the pads from the first tube to the second tube.

13. In feeding means for sealing pads for receptacle closure caps, a hopper having an outlet, a ring having rods extending from the opposite sides thereof and slidably supporting the ring below the hopper outlet, a tube suspended from the ring, resilient means carried by one of the rods to yieldingly urge the ring in a direction laterally of the hopper outlet, a cam engaged by the other rod under the force of the resilient means and actuated to impart movement to said rod against the resilient means and cause reciprocation of the ring and the entire length of the tube in cooperation with the resilient means, and a second tube mounted in alinement with the hopper outlet and having an end of enlarged diameter to receive the free end and permit the reciprocation of the first tube and discharge of pads from the first tube to the second tube.

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