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J. J. MALLOY

2,137,173

BASE FEEDER

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Fig. 1.

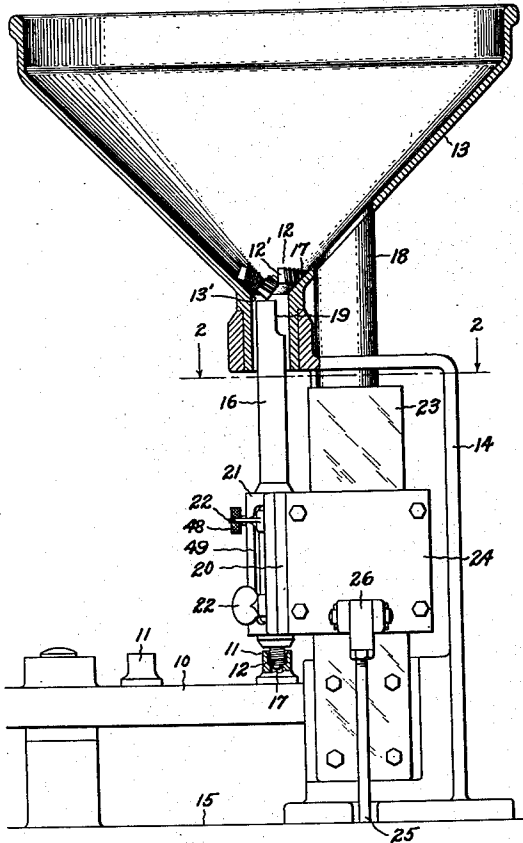


Fig. 3.

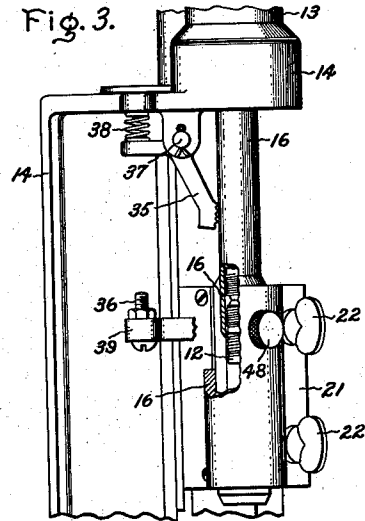


Fig. 4.

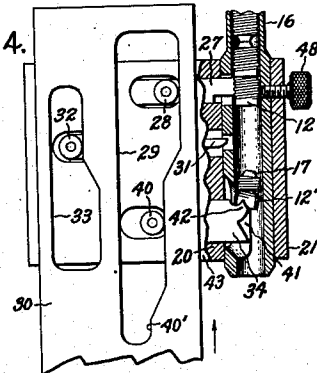
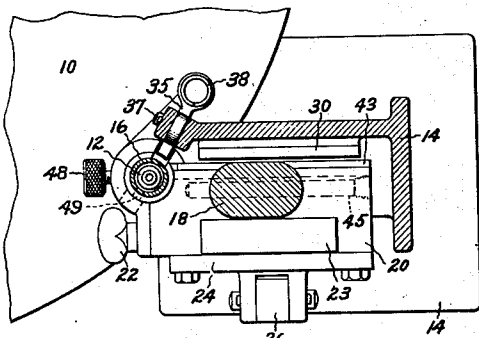
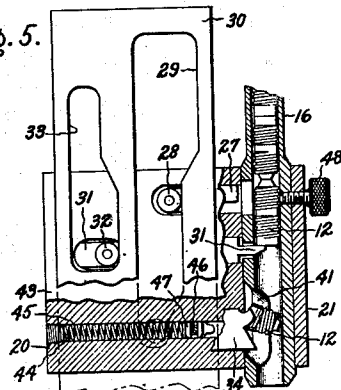


Fig. 2.

Fig. 5.



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## UNITED STATES PATENT OFFICE

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## BASE FEEDER

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to General Electric Company, a corporation of  
New York

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4 Claims. (Cl. 193—43)

My invention relates to apparatus for feeding articles and more particularly to apparatus for feeding lamp bases and the like. Prior to my invention, lamp bases and the like were usually fed manually because devices for this purpose operated very irregularly being often rendered inoperative by foreign matter and small pieces of glass jarred loose by the movements of the devices and by slight imperfections in the bases. To eliminate these objections, my device provides a relatively simple and inexpensive apparatus for the feeding operation which is not easily rendered inoperative by foreign matter, and satisfactory means for discharging the greater portion of the foreign matter introduced into the device with the bases and separating it therefrom prior to the actual feeding of the bases. My device also provides a particularly novel apparatus for inverting such bases as are advanced to the discharge position in the incorrect position. Other features and advantages of my device will be apparent from the detailed description which follows and from the accompanying drawing of one species thereof.

In the drawing, Fig. 1 is a side elevation of a base feeding device comprising my invention with the hopper shown in section; Fig. 2 is a section along line 2—2 of Fig. 1 looking downward; Fig. 3 is an angular side elevation of a portion of my device; and Figs. 4 and 5 are side elevations, partially in section, of the feeding and inverting portions of my device in two stages of operation.

Referring to the drawing, the device is shown mounted on the table of a lamp making machine adjacent to the periphery of a turret 10 which is indexed at regular intervals to present succeeding heads 11 thereon to my device. Each head 11 receives a single base 12 which, in this instance, is the screw type used for miniature lamps and consists of a cylindrical threaded metal shell 12' open at one end and closed at the other end by a plug of insulating material 17, except for a small hole through which a lead wire is subsequently threaded. The bases 12 that are fed are carried in the hopper 13 which is mounted on the standard 14 which in turn is mounted on the table 15 of the lamp machine. During operation of the device the bases 12 gradually move down in the hopper 13 and pass into the open upper end of the vertically disposed tube 16 located in the opening 13' at the apex of the conical hopper 13. The said opening in the hopper 13 is somewhat larger than the tube 16 and allows small pieces of glass broken from the insulating plugs 17 in one end of the bases 12 and

other foreign matter capable of injuring the device or interrupting the operation thereof to fall therefrom. Operation of the device carries the tube 16 and the plunger 18 up into the hopper 13 to agitate the bases 12 therein so that generally said bases 12 pass quite regularly into the end of the tube 16 and keep it completely filled. The plunger 18 dislodges the bases 12 that tend to form a bridge over the opening in the hopper 13 and the tube 16. To permit the bases 12, and especially those agitated by the plunger 18, to pass into the tube 16 more easily, a section 19 is cut from the upper end of said tube. Both the tube 16 and plunger 18 are attached to the block 20, the former by means of the bracket 21 and the thumb screws 22, and the latter by screws not shown, and are moved vertically by movement of said block 20 on the rectangular column 23. The column 23 is a stationary member attached to the standard 14 and passes through ways in the block 20 in which it is held by the plate 24 attached thereto. The desired movement of block 20 is produced by mechanism (not shown) actuating the rod 25 and operated by the usual cam on a driven shaft of the lamp machine. The rod 25 engages the block 20 through block 26 and the plate 24.

A base 12 is presented to the lamp machine each time the tube 16 moves down into registration with the heads 11 of said machine although two bases 12 are constantly being advanced in order through the feeding portion thereof, as shown in Figs. 4 and 5. The particular up and down movement used in feeding the base 12 into the head 11 is also used to separate the following base 12 from the others above it so that two up and down movements of the tube 16 are required to advance a base 12 through the feeding portion of my device. All the bases 12 move down in the passage in the tube 16 as the lower ones are fed and finally one comes into position before the end of the finger or slide 27 which is brought into engagement therewith, as shown in Fig. 4, to prevent further movement. These operations take place during the latter portion of the up stroke of the tube 16 and block 20 during which the roller 28 which is attached to the finger 27 passes into the wider portion of the opening 29 in the stationary cam 30. The following return downward movement of the block 20 causes the end of the finger or slide 31 which is located nearer the discharge end of the tube 16 to move into the passage therein and causes the finger 27 to withdraw therefrom so that the base 12 drops down into engagement with said finger 31 as

shown in Fig. 5. The finger 31 is moved by the advancement of the roller 32 thereon into the wider portion of the opening 33 in the cam 30. The succeeding upward movement of the tube 16 and block 20 causes the finger 27 to move in against the base 12 following the former base 12 and then causes the finger 31 to retract, thereby releasing the lowermost base 12 so that it falls down by its own weight onto the hooked finger or slide 34 to the position shown in Fig. 4. If the lowermost base 12 has caught on the base 12 held by the finger 27, it is released by the finger 35 (Figs. 2 and 3), which is pivotally mounted on the stationary standard 14 and extends through a slot in the tube 16, during a latter portion of the upward movement of said tube and catches on the threads of the said lowermost base 12 thereby preventing it from following said upward movement. At the end of the upward movement, the finger 35 is withdrawn from the slot so that the base 12 falls down onto finger 34. The withdrawal of said finger 35 is caused by the striking of screw 36 against the outer end of said finger 35 which turns it about the pin 37 in the standard 14 on which it is mounted and compresses the spring 38. The screw 36 is mounted on the arm 39 extending from the bracket 21 and is brought against the finger 35 by the upward movement thereof.

At this point in the operation of my device, the turret 10 of the machine is indexed so that a succeeding head 11 comes into position below the tube 16, and the tube 16 and the block 20 move down until the end of said tube 16 registers with the machine head 11 as shown in Fig. 1. During this movement the finger 34 is withdrawn from the tube 16 since the roller 40 thereon passes into the narrowest part 40' (Fig. 4) of the opening 29 in the stationary cam 30, and the base 12 resting on said finger 34 is permitted to pass down through the tube 16 and into the head 11. If the particular base 12 resting on the finger 34 lies in an upright position with its insulating plug 17 lowermost, said finger 34 moves back without altering the position of said base 12 and the said base moves down while still in this position, but should the base 12 lie in an inverted position with the plug 17 uppermost, as shown in Fig. 4, the open edge of the base shell 12' is caught by the hooked end 42 of the finger 34 and pulled into the chamber or opening 41 in the side of the tube 16 so that it is caused to turn over, as shown in Fig. 5. This operation causes all bases 12 to be fed into the machine with the open end of the shell 12' uppermost as required. The fingers 27, 31 and 34 are held in slide ways in the block 20 by the plate 43 attached thereto and are pushed inward toward the tube 16 so that the rollers 28, 32 and 40 follow the various surfaces of the cam 30 in each case by a spring 44 like that shown adjacent finger 34 located in a hole 45 (Figs. 2 and 5) in the block 20. The finger 34 engages the spring 44 through a pin 46 extending through a slot in the block 20 and into the groove in the piston 47 which is located in the hole 45 behind one end of the spring 44. Since my device feeds a base 12 each time it moves down and is connected to the machine so that this movement occurs regularly with the operation thereof, the screw 48 is provided for engaging one of the bases 12 and thereby stopping the movement of bases through my device when desired. The slots 49 in the bracket 21 and the tube 16 permit the movements of the bases 12 to be observed and

permit easy removal of foreign material and bases 12 wedged in said tube 16. If bases having laterally projecting bayonet pins are being fed by my device, suitable longitudinally extending grooves are provided in the tube therefor and the proper positioning thereof is accomplished by funnel-like upper end portions of said grooves.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described for feeding bases comprising a cylindrical shell having one end substantially closed, a feeder tube for passage of said bases therethrough having a chamber in the wall thereof, and means located adjacent to said chamber for inverting such bases as approach said chamber with their open ends foremost, said means comprising a finger having a hook portion extending into said tube and adapted to engage the open end of a base, and means for withdrawing said finger into said chamber to cause said base to be inverted.

2. In a device of the class described for feeding bases comprising a cylindrical shell having one end substantially closed, the combination of a hopper having an opening at the bottom thereof, an upright feeder tube having its upper end located in alignment with said opening and having an opening in the wall thereof, and means located adjacent to the opening in said tube for inverting such bases as approach said opening with their open ends lowermost, said means comprising a finger having a hook portion extending into said tube through the opening therein and adapted to engage the open edge of a base, and means for retracting said finger through said opening to cause said base to be inverted.

3. In a device of the class described for feeding bases comprising a cylindrical shell having one end substantially closed, the combination of a hopper having an opening at the bottom thereof, an upright feeder tube having its upper end located in alignment with said opening and having an opening in the wall thereof, means for moving said tube upward into said hopper to agitate the bases therein and cause some of them to enter the tube, and means located adjacent to the opening in said tube for inverting such bases as approach said opening with their open ends lowermost, said means comprising a finger having a hook portion extending into said tube through the opening therein and adapted to engage the open edge of a base, and means for retracting said finger through said opening to cause said base to be inverted.

4. In a device of the class described for feeding bases comprising a cylindrical shell having one end substantially closed, the combination of a hopper having an opening at the bottom thereof, an upright feeder tube having its upper end located in alignment with said opening, and feed control means located adjacent to said tube and comprising fingers located in alignment with openings in said tube, means for reciprocating said fingers to cause them to engage and release one of the bases in said tube to cause said bases to be fed one at a time, another finger having a hook portion extending into said tube through an opening therein and adapted to engage the open edge of such bases as approach it with their open ends lowermost, and means for retracting said last-mentioned finger to pull the said open edge of such base toward the said opening and cause said base to be inverted.

JOHN J. MALLOY.