

Jan. 13, 1942.

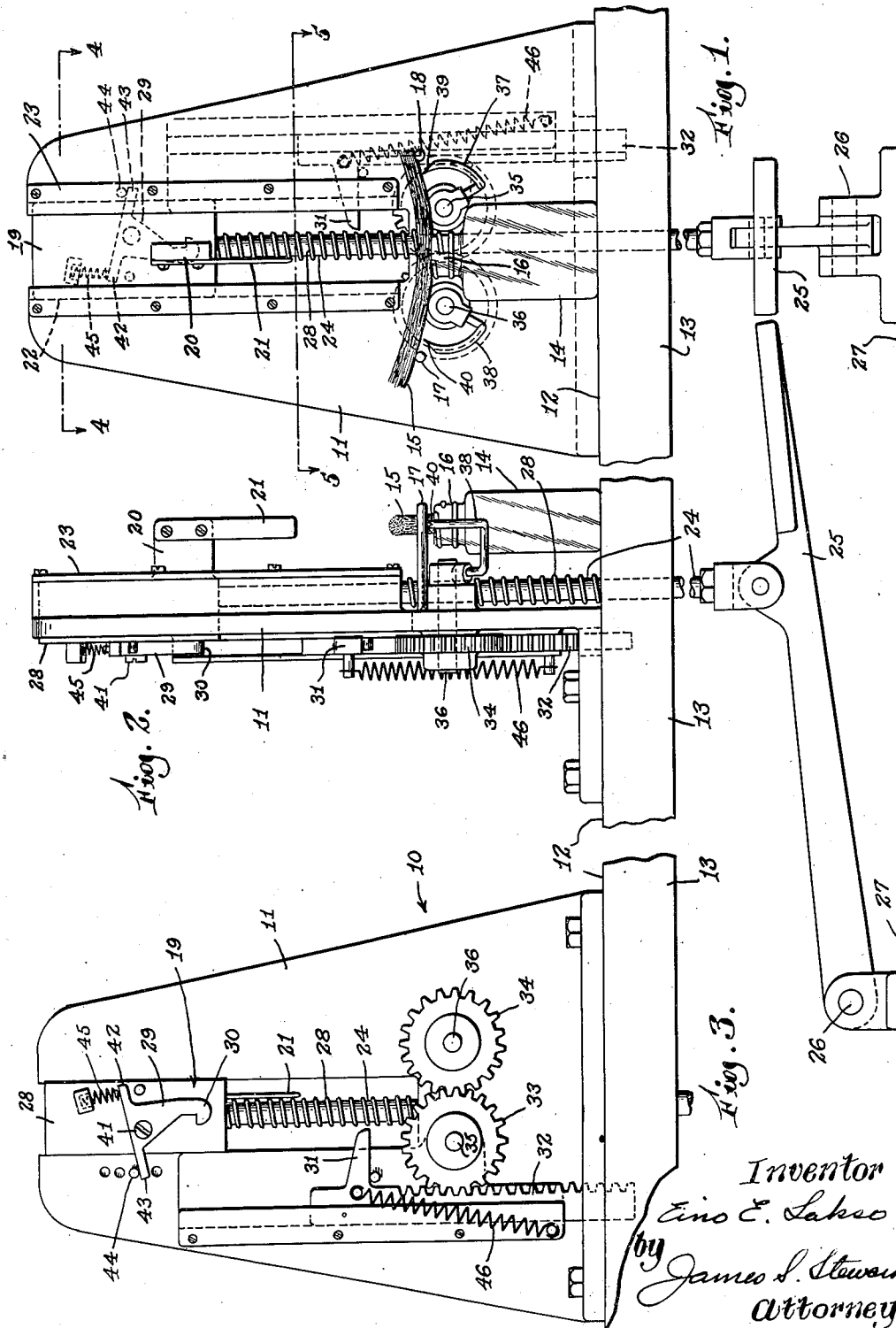
E. E. LAKSO

2,269,722

METHOD AND APPARATUS FOR INSERTING PACKING IN CONTAINERS

Filed Jan. 8, 1938

2 Sheets-Sheet 1



Inventor
Eino E. Lakso
by James S. Stewart
Attorney

Jan. 13, 1942.

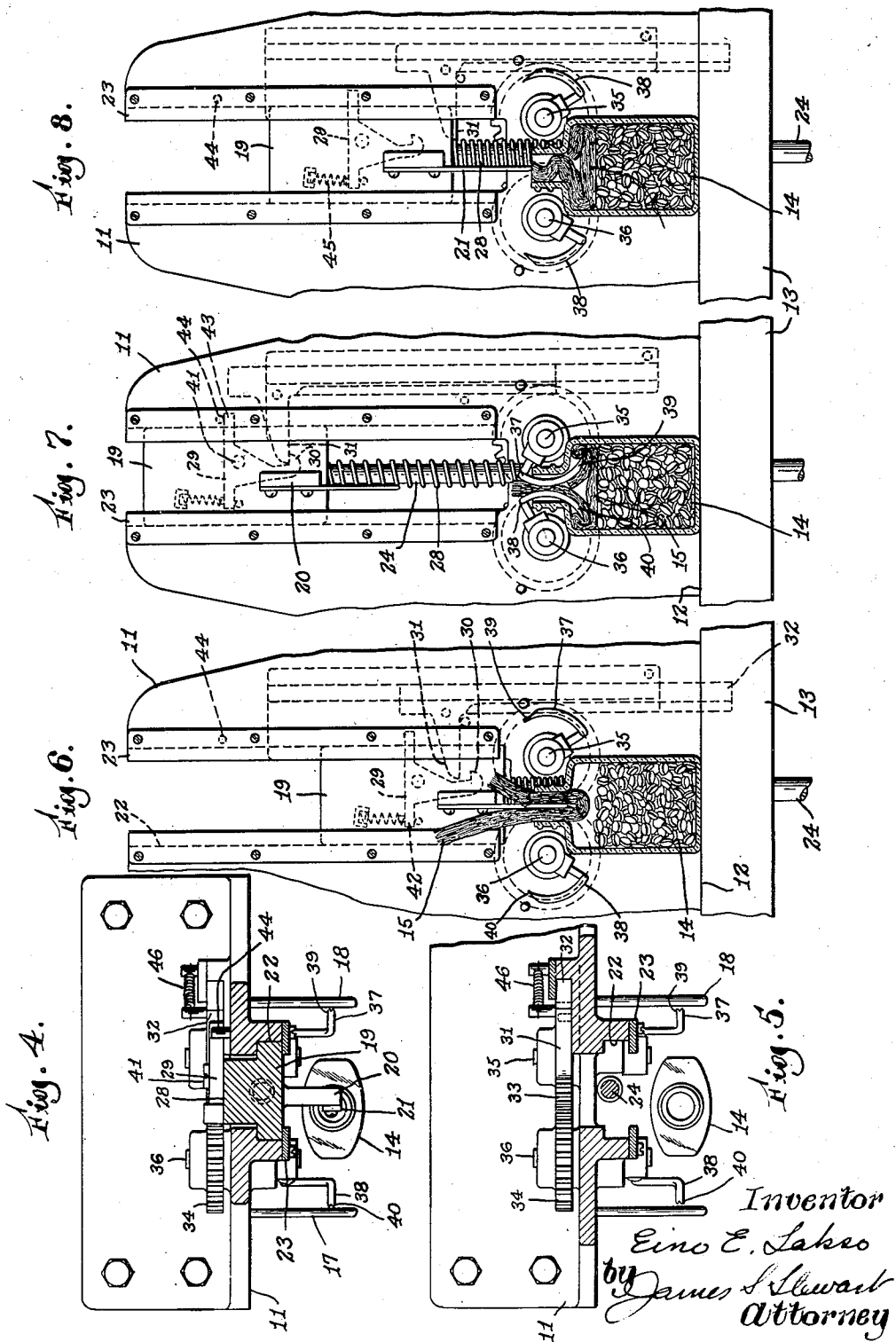
E. E. LAKSO

2,269,722

METHOD AND APPARATUS FOR INSERTING PACKING IN CONTAINERS

Filed Jan. 8, 1938

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,269,722

METHOD AND APPARATUS FOR INSERTING
PACKING IN CONTAINERS

Eino E. Lakso, Fitchburg, Mass.

Application January 8, 1938, Serial No. 184,051

29 Claims. (Cl. 226—19)

This invention relates to a method and apparatus for inserting packing in containers and, more specifically, for inserting packing material in the upper ends of necked containers for tablets or the like to prevent relative motion of the tablets during transportation or movement of the containers with resulting pulverization, or other damage.

It is well known that it is easier to pack pills or tablets in bottles or other containers if the latter are not completely filled by the pills and, furthermore, this facilitates the removal of the contents of the bottles as, if the latter are filled completely up to the necks, it is sometimes rather difficult to shake or otherwise dislodge the first pills from the bottle, the neck tending to trap the pills and hold them against movement.

It is also well known that pills or tablets must be packed and shipped in their containers under little, if any, pressure and that motion of the tablets in the containers must be prevented or otherwise they will become broken, pulverized or their coatings cracked. For this reason, as well as for the reason that it is not desirable to have the containers completely filled by the tablets, it is the custom to introduce into the necks and upper ends of containers a piece of resilient cotton packing which, while pressing lightly on the container contents, holds the latter against undue motion.

The usual method of introducing cotton packing in the upper ends of containers is to cut off suitable lengths of cotton strands which are pushed into the bottle by hand, efficient assembly of the cotton strip leaving a portion thereof near the upper end of the neck where it may be reached for withdrawal when it is desired to use the contents of the container. For large production requiring speed it is relatively impossible to insert cotton packing in this manner so that it will rest uniformly on the material within the conventional type of container and usually the packing wads itself on the materials immediately under the neck, leaving the materials under the shoulders at either side of the neck capable of moving so that they are apt to become pulverized, or their coatings cracked. It will be appreciated that in many cases the operator is unable to control the cotton strip beyond inserting it into the container neck and the position and condition of that portion thereof which is below the neck is wholly a matter of chance, in many cases more packing material being pressed into the container than is necessary in an attempt to force the pack-

ing away from its position below the neck or otherwise to fill the container below the shoulders.

One of the principal objects of the present invention is to bring about a method of introducing packing within the upper ends of the containers not only in a uniform manner but in such a way that the packing may engage and prevent motion of all of the contents of the container.

A further object of the invention is to bring about a method of insertion and of shaping or forming the packing after insertion wherein a minimum amount of packing material may be used to contact and cover the entire upper surface of the contents of the container and prevent undue movement thereof.

In a more specific aspect it is an object of the invention to bring about a method of introduction of packing in containers wherein the packing may not only engage the contents of the containers immediately under the neck portions of the latter, but likewise under the shoulders at either side of such neck portions.

A feature of the invention resides in the form of apparatus for introducing packing within containers wherein the insertion of the packing by hand methods is eliminated and the packing uniformly and efficiently inserted at all times.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the drawings

Fig. 1 is a front elevation of a machine for introducing packing in containers according to the invention;

Fig. 2 is a side elevation of the machine shown in Fig. 1;

Fig. 3 is a rear elevation of the machine shown in Fig. 1;

Fig. 4 is a cross-sectional view taken along line 4—4 of Fig. 1;

Fig. 5 is a cross-sectional view taken along the line 5—5 of Fig. 1; and

Figs. 6, 7 and 8 are views showing the relative position of the parts of the machine shown in Fig. 1 during the introduction of the packing.

Generally speaking, in carrying out the invention, I prefer to use strips of relatively loose but matted cotton fibers, which strips may be varied in diameter and/or length according to the size of the container or space within which they are to be inserted, the strips being folded or doubled on themselves at points nearer one end than the other, the doubled or folded portions of the strips being inserted into the bottle or container until they contact the container contents, thereafter

the branches of the strips above the doubled or folded portions being engaged and carried laterally under the shoulders at the sides of the container necks, the long ends of the strips extending upwardly to points where they may be reached for withdrawal purposes. The method of insertion of the strips may be more fully understood by reference to the preferred form of machine shown herein for illustrative purposes, which will now be described.

The reference numeral 10 indicates, in general, a machine capable of carrying out the method described above, the machine 10 having a frame 11 secured to the upper surface 12 of the table or bench 13, the latter conveniently forming a support for the container 14 herein shown as a bottle, in which the strip 15 of cotton is to be inserted. As described above, the diameter and/or length of the strip 15 will be varied in accordance with the size of the bottle or the space to be filled thereby and desirably is produced by cutting an elongated strip into strips of predetermined length. In any case the strip of suitable length is supported initially on the neck 16 of the bottle and the pins or studs 17 and 18 extending forwardly from the frame 11 at either side of the neck 16 and slightly above the same. As shown in the drawings, the strip is placed on the pins and neck with its center at one side of the neck. Mounted for vertical reciprocating motion on the frame 11 is a crosshead 19 having at its lower end a forwardly extending lug 20 to which is secured a downwardly extending ram 21, in this case made of relatively thin but stiff strip material, such as steel. The crosshead 19 may be supported for vertical reciprocating motion in guideways 22 and gibs 23, and is actuated by a rod 24 extending downwardly from the crosshead through the bench 13 and pivotally secured at its lower end to a treadle 25 which in turn is pivotally supported at 26 on the floor 27. A compression spring 28 is telescoped over rod 24 between the crosshead 19 and the bench 13 downward movement of the treadle 25 compressing the spring so that the release of the treadle 25 will permit the spring to move the crosshead and treadle upwardly into their original positions. Upon the downward movement of the crosshead 19, by means of treadle 25, the plunger or ram 21 engages the strip 15 and carries it downwardly into contact with the bottle neck, the strip being folded by contact with the neck into two branches of unequal length, as shown in Fig. 6, and further downward movement of the ram carrying the strip downwardly into the bottle until its lower end rests lightly on the contents within the bottle.

Pivotally mounted on the rearward face 28 of crosshead 19 is a pawl 29 having a hook 30 at its lower end which, upon downward movement of the crosshead 19, engages the arm 31 of vertically movable rack 32, the rack 32 meshing with a pinion 33 which in turn meshes with a pinion 34, the respective pinion shafts 35 and 36 in this instance being mounted at either side of the neck of the container and extending through the frame from front to rear. It will be noted that in the particular machine shown herein the rack and pinions are mounted rearwardly of the frame, the shafts 35 and 36 being elongated to extend forwardly at least to the position of the bottle. Mounted on shafts 35 and 36 and rotating therewith are rams 37 and 38, the rams 37 and 38 being conveniently formed out of wire or rods bent into arcuate shape, each ram terminating

in a preferably double pointed end as at 39 and 40 and being secured on shafts 35 and 36 in any suitable manner. Upon release of the treadle and upward movement of the crosshead, the hook 30 carries the rack upwardly and thus effects rotation of the pinions, and thus the rams 37 and 38, bringing the pointed ends 39 and 40 into engagement with the folded strip, the pointed ends of the rams engaging the strip adjacent the upper end of the bottle neck and, upon continued rotary movement of the shafts 35 and 36, carrying the strips downwardly into the bottle and laterally under the shoulders thereof, as shown in Fig. 7.

In the specific embodiment shown herein the pawl 29 is pivoted on the crosshead at 41 and provided at either side of its pivotal connection with arms 42 and 43, there being a release pin 44 mounted on the rearward portion of the frame 11 in the path of movement of the arm 43, the release pin being so positioned as to contact the arm 43 when the rams have carried the packing under the shoulders of the bottle, as shown in Fig. 7, contact of arm 43 with release pin 44 causing the pawl to swing on its pivot 41 to disengage the hook from the arm 31. The pin 44 swings the pawl against the tension of compression spring 45 mounted between and engaging pawl arm 42 and the crosshead 19, which spring normally holds the pawl in position to engage arm 31. The rack spring 46, connected at one end to the rack and at its other end to the frame, moves the rack downwardly, upon the release of the arm 31, to rotate the pinions and withdraw the rams 37 and 38 from the bottle. If desired, the treadle may be again pressed to bring the ram 21 downwardly in position where it may engage such portions of the strip, especially the longer branch thereof, as may remain above the upper end of the bottle neck to force the same downwardly into position where the bottle may be capped during the subsequent steps of the packing process. It will be understood however that the crosshead is not moved downwardly to the point where the hook engages the arm 31 so that upon release of the treadle the rack and pinions remain idle.

It will readily be understood by one skilled in the art that the amount of movement of the arcuate rams 37 and 38 may be varied by adjusting the position of the pin 44. Thus if the pin is placed in a lower position the rack will be released sooner and with less lateral separating movement of the points 39 and 40 of the rams 37 and 38, whereas if the pin 44 is placed in a higher position there will be more motion of the rack and consequently the lateral separating movement of the ram points 39 and 40 will be greater. In this way I am able to accommodate the machine shown to bottles or other containers of different dimensions. Although I have found that if the pinion centers are spaced two inches apart and the radii of the curved portions of the rams 37 and 38 are substantially $\frac{1}{8}$ inch the rams, as shown, are capable of handling the packing of practically all the small sizes of containers now in use, it being but a matter of design to so space the centers of the pinions and the radii of the rams 37 and 38 to accommodate the latter to relatively large containers.

From the above description of the invention it will be seen that I have devised a method wherein packing material may be uniformly introduced into containers of the class contemplated and

spread evenly over the upper surfaces of the entire contents thereof. Owing to the uniformity of introduction I am able not only to insure that the contents of the containers will be held against undue movement after the same are packed, but I am able to accomplish these results with a minimum amount of packing material.

While I have shown and described a preferred form of my invention, it is to be understood that the same is not limited to the details shown and described but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What I claim is:

1. The method of packing a necked container for loose materials to prevent relative movement of the materials therein which comprises, positioning a predetermined amount of fibrous material at the container neck, engaging the material when so positioned and simultaneously advancing contiguous intermediate portions of the material through the container neck and thereafter simultaneously moving said portions laterally away from one another over the container contents.

2. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, positioning predetermined amounts of fibrous material in the container necks, engaging the material while so positioned and moving contiguous portions of the material laterally away from one another into position below the container shoulders while leaving other portions of the material substantially centrally of the container and above the loose materials.

3. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, positioning in a container neck two contiguous portions of packing material, engaging the contiguous portions of packing material while so positioned and moving them wholly into the container and partly laterally away from one another under the container shoulders.

4. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, inserting two contiguous portions of fibrous packing material into the container neck and thereafter further inserting the said portions of material into the container neck while moving their lower ends laterally away from one another under the container shoulders, and positioning the other ends of the portions in the container.

5. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, cutting a strip of fibrous material to predetermined length, folding the strip to form two parallel contacting branches, inserting the doubled portion of the strip into the container neck, and engaging the branches above the lower ends thereof and carrying them further into the container and laterally away from one another under the container shoulders.

6. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, cutting a strip of fibrous material to predetermined length, folding the strip to form two parallel contacting branches, simultaneously inserting the branches in the container neck and thereafter further inserting the branches in the container neck while moving them laterally away

from one another under the container shoulders.

7. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, cutting a strip of fibrous material to predetermined length, folding the strip to form two parallel contacting branches of unequal length, inserting the folded portion of the strip into the container neck, engaging the branches above their lower ends and moving the branches laterally under the container shoulders while carrying the same further into the container neck.

8. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, cutting a strip of fibrous material to predetermined length, folding the strip to form two parallel contacting branches of unequal length, inserting the doubled portion of the strip into the container neck until it reaches the material in the container, engaging each of the branches above the lower ends thereof and moving them laterally away from one another under the container shoulders until the shorter strip is fully within the container neck.

9. The method of packing necked containers for loose materials to prevent relative movement of the materials therein which comprises, cutting a strip of fibrous material to predetermined length, folding the strip to form two parallel contacting branches of unequal length, inserting the doubled portion of the strip into the container neck until it reaches the material in the container, engaging each of the branches above the lower ends thereof and moving them laterally away from one another under the container shoulders until the shorter strip is fully within the container neck and thereafter inserting the remaining portion of the longer strip into the neck.

10. A machine for inserting relatively loose fibrous packing material into a partially filled necked container which comprises, means for inserting and positioning the packing material at least partly into the container neck and means for engaging part of the packing material while so positioned and moving it downwardly out of the container neck and laterally under the container shoulders.

11. A machine for inserting relatively loose fibrous packing material into a partially filled necked container having shoulders below the neck thereof which comprises, means for supporting the material above the container neck, means for forcing the material downwardly into the container neck, and means for engaging the material while it is positioned in the container neck and moving contiguous intermediate portions thereof laterally away from one another under the container shoulders.

12. A machine for inserting packing material into a partially filled necked container which comprises, means for supporting a strip of fibrous material above the container neck, means for simultaneously folding the material into two parallel contacting branches while inserting the same within the container neck, and means for engaging the material while it is in the container neck and moving it laterally under the container shoulders.

13. A machine for inserting packing material into a partially filled necked container which comprises, means for supporting a strip of fibrous material above the container neck, means for forcing the material downwardly into the con-

tainer neck, and cooperating means for engaging at least two distinct intermediate portions of the material while the latter is positioned in the neck and moving the same downwardly and laterally away from one another under the container shoulders.

14. A machine for inserting relatively loose fibrous packing material into a partially filled necked container having shoulders below the neck thereof which comprises, means for engaging an intermediate portion of the packing material at the container neck and moving the same downwardly through the neck and laterally under one of the shoulders thereof and simultaneously operating means for engaging another intermediate portion of the material and moving it downwardly through the container neck and laterally under the other shoulder thereof.

15. A machine for inserting packing material into a partially filled necked container which comprises, a vertically reciprocal plunger adapted to engage a strip of fibrous material and to fold the same into two parallel contacting branches while inserting the strip within the container neck and simultaneously operable means for engaging the strips while they are in the container neck and moving the strips laterally away from one another under the container shoulders.

16. A machine for inserting packing material into a partially filled necked container which comprises, a plunger adapted to engage the packing material and move the same into the container neck, a pair of simultaneously operable arcuate plungers adapted to engage the material while the latter is in the container neck and move the same downwardly and laterally into the container and under the shoulders thereof, and means to move said plungers in curves along lines entering the neck and extending under the shoulders of the container.

17. A machine for inserting relatively loose fibrous packing material into a partially filled necked container which comprises, a plunger adapted to engage the packing material and to move the same into the container neck, and means actuated upon the withdrawal of said plunger from the container neck adapted to engage the material while the latter is in the neck and to move the same downwardly and laterally into the container and under the shoulders thereof.

18. A machine for inserting packing material into a partially filled necked container which comprises, a plunger adapted to engage the packing material to move the same into the container neck, and means controlled by the withdrawal movement of the plunger from the neck for engaging contiguous portions of the material in the neck to move the same further into the neck and laterally away from one another under the container shoulders.

19. A machine for inserting packing material into a partially filled necked container which comprises, a plunger adapted to engage the packing material to move the same into the container neck, a pair of arcuate plungers adapted to engage the material while the latter is in the container neck to move the same downwardly and laterally into the container and under the shoulders thereof, and means controlled by the withdrawal movement of the first plunger for actuating the movement of the arcuate plungers.

20. The method of packing containers for loose materials to prevent movement of the latter

which comprises, cutting a strip of fibrous material to predetermined length, folding the strip between its ends to form two contiguous branches, inserting the folded end of the strip into the open end of the container and thereafter further advancing the strip until all portions thereof are within the end of the container.

21. In a machine for inserting a piece of loose fibrous material into a container for loose materials to prevent movement of the latter, the combination of, positioning means for the container and means for advancing the piece of packing material into the open end of the container when received on said positioning means, said second named means including a pair of plungers formed on arcs having centers, said plungers being movable in arcs substantially coexistent with themselves concentrically about said centers to engage the material at opposite sides of the opening in the container and means for effecting simultaneous motion of the plungers into the container.

22. In a machine for inserting relatively loose fibrous packing material into the ends of necked containers to hold the contents thereof against motion, the combination of means for positioning an enlarged piece of the packing material opposite the open neck of a container, means for engaging the packing when so positioned and forcing the same at least partially into the neck of the container and means for engaging a portion of the packing when positioned in the container and moving the same downwardly and laterally to spread it over the container contents.

23. In a machine for inserting fibrous packing material into containers the combination of, means for positioning the packing at the open end of a container and means adapted to engage contiguous portions of the material and to advance the same simultaneously into the container, said last named means including a pair of rotatable shafts disposed at the sides of the open end of the container, arcuate plungers associated one with each shaft in planes radial with respect to the shaft axes and means for effecting simultaneous rotation of said shafts to move the plungers into the open end of the container.

24. In a machine of the character described the combination of, positioning means for a container and means for engaging packing disposed at the open end of the container and advancing the same into the container, said last named means including a pair of rotatable shafts disposed opposite the end of the container, rods mounted one on each of said shafts, each rod having an arcuate free end portion disposed concentric with respect to its respective shaft axis and means for effecting rotation of said shafts to move the free ends of the rods into the container.

25. In a machine of the character described the combination of, positioning means for a container and means for engaging packing disposed at the open end of the container and advancing the same into the container, said last named means including a pair of rotatable shafts disposed opposite the end of the container, rods mounted one on each of said shafts, each rod having an arcuate free end portion disposed concentric with respect to its respective shaft axis and means for effecting simultaneous rotation of said shafts to move the free ends of the rods into the container.

26. The combination in a machine for inserting loose fibrous packing in the end of a necked

container, of means for positioning a strip of the packing material across the open end of the neck of the container, means for engaging the packing between its ends and simultaneously folding and inserting the packing at least partially into the neck of the container and means for engaging parts of the packing while so inserted and moving it at least partially downwardly out of the neck and laterally under the container shoulders formed by the neck.

27. The method of packing the ends of containers for loose materials to prevent relative movement of the materials which comprises, cutting a strip of loose fibrous material to predetermined length, folding the strip to form two parallel contacting branches of unequal length, inserting the doubled portion of the strip into the end of the container until it contacts the materials in the container and thereafter engaging the end of the branch of greater length and forcing the same into the end of the container.

28. The method of packing a necked container for loose materials to prevent relative movement

of the materials therein, which comprises inserting an amount of fibrous material partly into the container neck, engaging a portion of the fibrous material exterior of the neck and moving it into the neck, moving certain portions of the fibrous material laterally away from said neck into positions below the container shoulders, and leaving other portions at said neck.

29. The method of packing a necked container for loose materials to prevent relative movement of the materials therein, which comprises inserting a length of fibrous material partly into the container neck, engaging a portion of the fibrous material exterior of the container and pushing it down into said neck, and spreading substantially most of the fibrous material formerly in the neck laterally from the neck and under the shoulders of the container, while leaving that part of the fibrous material formerly substantially exterior of the container, in the neck and adjacent thereto.

EINO E. LAKSO.