

June 3, 1930.

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1,761,383

RECEPTACLE FILLING APPARATUS

Filed April 6, 1927

2 Sheets-Sheet 1

Fig. 1.

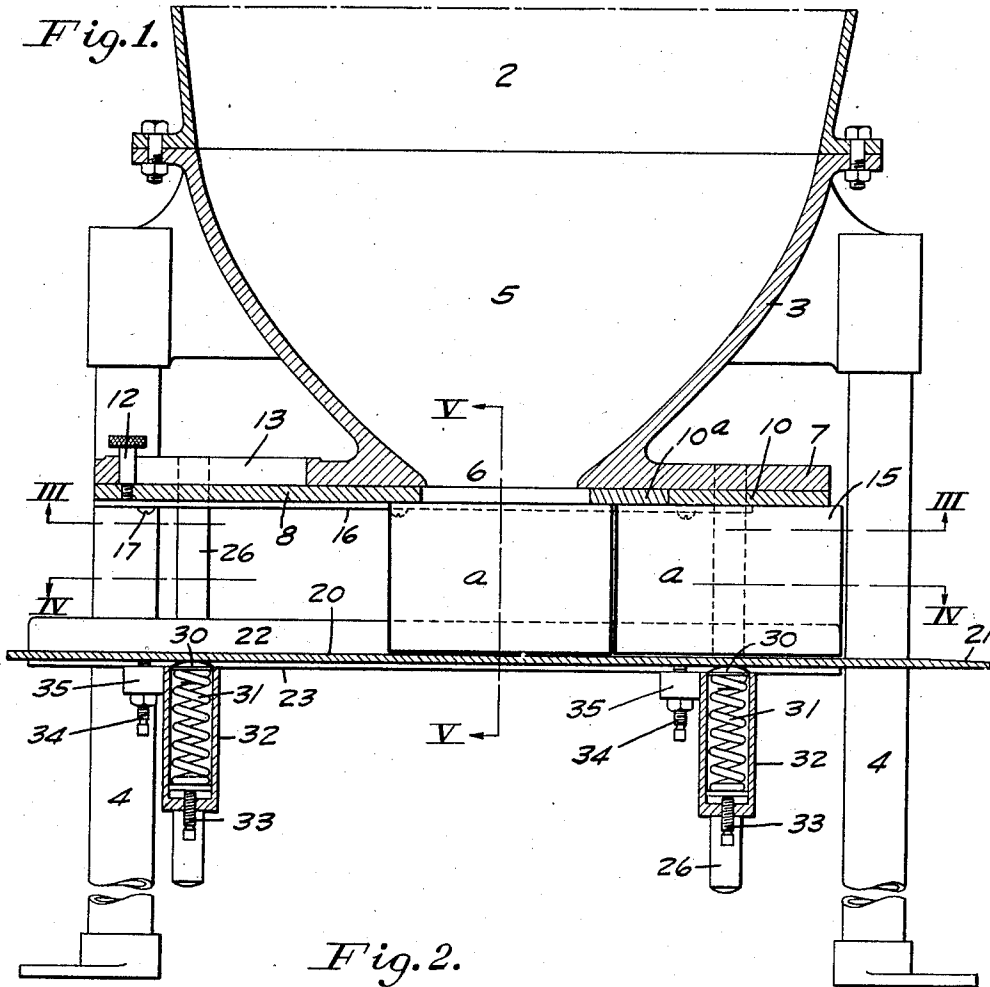
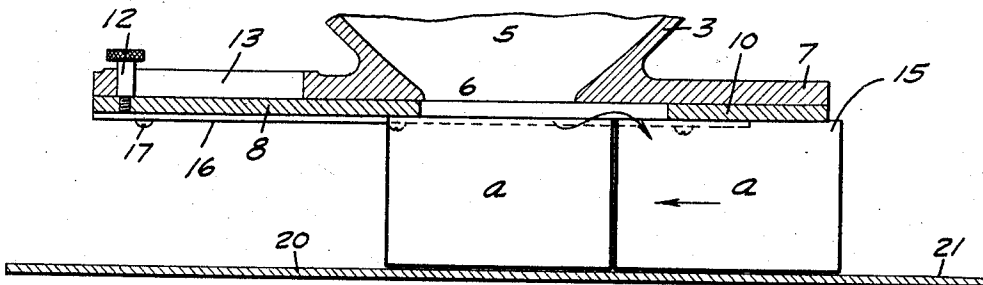


Fig. 2.



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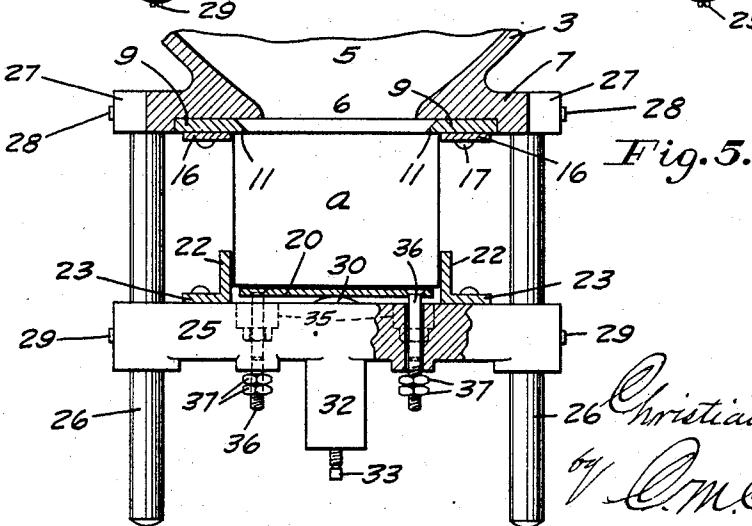
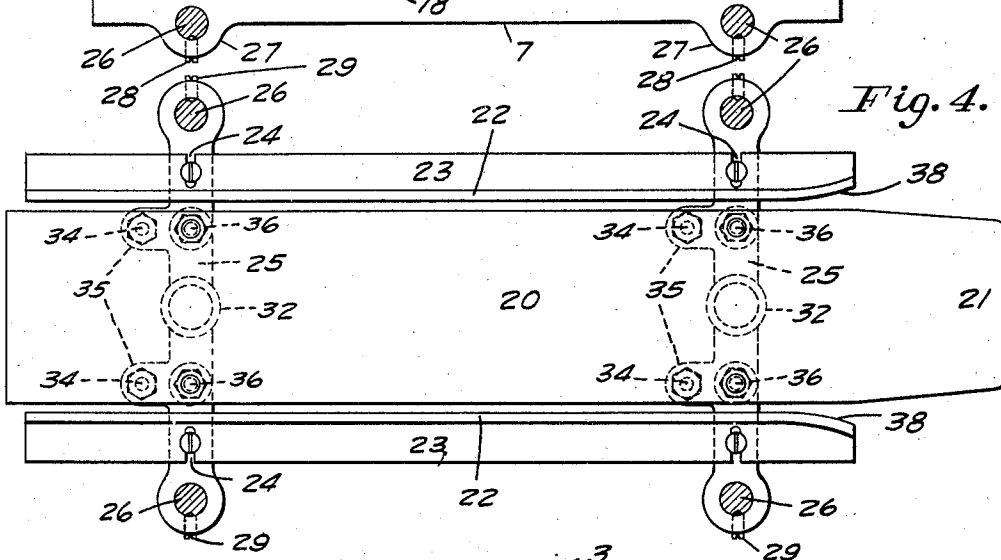
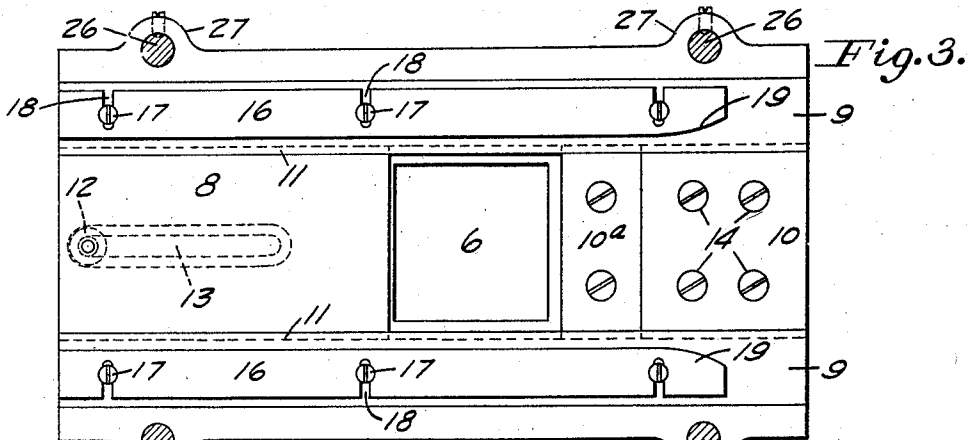
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UNITED STATES PATENT OFFICE

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RECEPTACLE-FILLING APPARATUS

Application filed April 6, 1927. Serial No. 181,545.

My invention relates to an improvement in machines for packaging material in receptacles of the unit container type so as to provide a completely filled box or other suitable holding unit, as hereinafter described.

The invention has in view to provide means for placing an open top container underneath a storage or supply hopper by means of advancing such containers successively in a continuous series underneath the delivery opening of the hopper intermittently with alternating movement and rest periods, as hereinafter described. The object in view is to provide a machine which may be operated by hand to bring each empty container successively to filling position in front of a rear pushing container, the filled containers being successively removed from the delivery side of the machine, filled flush to the top.

The mechanism comprises a hopper provided with a bottom delivery outlet over a lower trackway having a resiliently supported bottom by which the containers may be guided to the machine underneath the delivery opening, a suitable cut-off valve, means providing for adjustment of the machine in various directions, and other features of detail construction, as shall be more fully hereinafter described.

Referring to the drawings, showing certain preferred embodiments of the invention,

Fig. 1 is a vertical central sectional view through the machine, partly broken away;

Fig. 2 is a partial similar sectional view, showing a modified construction providing for escape of contained air or for overflow from the receptacle being filled;

Fig. 3 is a sectional plan view of the trackway on the line III—III of Fig. 1, looking upwardly;

Fig. 4 is a sectional plan view on the line IV—IV of Fig. 1;

Fig. 5 is a transverse sectional view on the line V—V of Fig. 1.

The machine as a whole comprises an upper hopper or reservoir 2, of any suitable construction or shape, mounted upon and extending above a partly spherical delivery base portion 3. Said base portion is mount-

ed by suitable lugs or supporting frame 4 for proper elevation above a floor or table surface, the base 3 being preferably of a single casting.

The interior of base 3 is provided with an inwardly converging or sloping delivery cavity 5 terminating in a rectangular discharge opening or port 6 through which the contents are delivered by gravity to the full capacity of a rectangular box or container *a* at each time such container is brought into receiving position with the bottom opening of the hopper base.

The inner wall surfaces of base 5 preferably slope inwardly towards the opening 6 at a decreasing slope or diminishing steepness, as shown. The surrounding edges of the opening are thus comparatively sharp and thin, so that the cream passes freely over them and out of the opening without adhering to the walls.

For the purpose of freely delivering the contents of the hopper, as partly frozen or semi-fluid ice cream, to the container, when in receiving position as in Fig. 1, the base 3 is provided with a laterally and longitudinally extending integral flange portion 7, the middle longitudinal bottom of which is planed off to provide a smooth surface, for interfitting reception and engagement therewith, of a sliding valve plate 8, guide plates 9 therefor, and stationary bearing plates 10, or 10 and 10^a.

Slide plate or valve 8 is mounted by dovetail edges, as at 11, between the flanking side plates 9 for easy sliding movement therebetween, and has a thumb screw 12 extending upwardly through slot 13 of flange 7, by which the plate 8 may be adjusted for full opening, partial opening, or complete closure of outlet orifice 6. Plate 10 and supplemental plate 10^a either of the double length shown in Fig. 1 or of the single length shown in Fig. 2, are similarly mounted between the side plates 9, and are fixedly held up against the flange 7 by screws 14. By such arrangement, the plate 10^a may be used, or removed. Its removal facilitates free escape of air during filling of the receptacle over into the next adjacent one, or of

overflow thereinto, which condition may be observed from the front of the machine through the clearance opening 15 during operation.

5 Guide plates 16 are secured underneath the side plates 9 by their securing screws 17 engaging lateral slots 18, whereby the plates 16 may be accurately adjusted for sliding engagement with the upper edges of the receptacle, with provision for a limited variation in their width. The front inner end portions of plates 16 are tapered, as at 19, for easy entrance of the upper edges of the receptacle in introducing it into the machine at the front.

15 For the purpose of properly supporting the receptacles in their intermittent movement through the machine, and for holding them upwardly in tight sliding engagement against the plates 10, 10^a, 9, and valve plate 8, I provide a resiliently mounted bottom plate 20 tapered downwardly and inwardly, as at 21, where the supporting plate projects at the front of the machine, providing a receiving shelf for the incoming receptacles. Plate 20 is of a width corresponding to that of the receptacle, or of a less width for clearance at each side, and is located between the side flanges 22 of bars 23 secured by screws through lateral slots 24 to cross supporting bridge members or bars 25. Said members are mounted at a suitable height upon stems or bars 26 depending below holding lugs 27 of flanges 7 and fixedly held thereon by set screws 28. Supporting bridges 25 are similarly mounted on bars 26 by set screws 29, thereby providing for accurate location.

Slide plate 20, providing a supporting floor for the receptacles, is resiliently mounted for a limited extent of upward movement and slight depression by insertion of the receptacle, by means of a cushioning mechanism and limiting devices.

45 Such cushioning mechanism comprises an upwardly pressing stud 30 on spring 31 within a depending housing 32 having an adjusting set screw 33, such housing being incorporated with and forming a part of the middle portion of each bridge member 25 at front and back of the middle filling portion of the machine, as in Fig. 1.

Downward movement of the supporting plate 20 is limited by adjustable studs 34 with lock nuts, secured in lugs 35 of the bridge member at each side of the spring pressed stud 30. Likewise, upward movement of plate 20 is limited by restraining screws or studs 36 engaging the plate 20 by their upper recessed heads extending downwardly through the bridge member 25 and having holding nuts 37. By such means, upward movement of plate 20 is limited under action of the springs 31, while the plate is also held against accidental removal

from the machine. Its downward movement against pressure of the springs is also limited by the studs 34, thus providing for a limited range of movement upon insertion of the receptacles, with active upward pressure of the springs and studs 30 within such limited range of movement, so as to effectively hold the upper edges of the containers in tight sliding and sealing engagement against the several plates and valve, as above described.

The front edges of flanges 22 are flared outwardly, as at 38, facilitating easy entrance of each receptacle at the front, and the ends of flange bars 23 and their guiding flanges extend outwardly just sufficiently far to provide arresting abutments for the thumbs of the operator in introducing a receptacle into the machine. By such arrangement, the open receptacle being pushed in will stop when the thumbs of the operator strike against the front ends of flanges 22 and the receptacle in advance of such pushed receptacle is thus positively located centrally below the delivery opening 6 of the hopper base. It will there remain stationary sufficiently long for filling, during the time required to insert the next receptacle.

Further movement of such front receptacle, by inserting another one, advances the filled receptacle beyond the charging position and brings the one behind it into such filling position, the operation continuing indefinitely as long as empty receptacles are thus introduced. At the other end of the machine, the filled receptacles are taken away by another operator, placed in cans or other suitable holders, and transported to any suitable refrigerating or storage chamber.

105 The construction as thus described and shown provides for rapid, continuous filling of the usual square or rectangular boxes or cartons commonly used for holding ice cream, or any other sufficiently fluid material. Each receptacle is filled even, full, and flush with the top, any surplus being removed as the filled receptacle is progressed through the machine, by shearing action of the front edge of valve plate 8. Any surplus passes over into the next oncoming empty or partly empty receptacle, so that any voids or uneven filling of each individual holder is positively prevented. The mounting of the slide supporting plate 20 and its parts admits of sufficient adjustment, either lateral or vertical, to provide for a limited range of variation in either the vertical or lateral dimensions of the receptacles, so that the same machine may be utilized for use within such variable sizes.

The construction as a whole is comparatively simple and inexpensive, and the machine is capable of rapid operation without the necessity for employing skilled labor and

with a large output of filled units per diem.

It will be understood, of course, that its construction may be changed or varied by the skilled mechanic to adapt it otherwise to suit varying conditions of use, but that all such changes are to be understood as within the scope of the following claims.

What I claim is:

1. A receptacle filling apparatus comprising a supply reservoir having a lower outlet opening and a flat bottom face surrounding said opening, and a lower trackway for receptacles to guide them for movement under said opening with their rims contacting with said face, said face having a removable portion beyond one side of said opening to permit the material to flow into a receptacle before reaching the opening.

2. A receptacle filling apparatus comprising a supply reservoir having a lower outlet opening and a flat bottom face surrounding said opening, and a lower trackway for receptacles to guide them for movement under said opening with their rims contacting with said face, said face including a removable portion at one side of said opening and including a slidable cut-off plate at the opposite side of said opening.

3. A receptacle filling apparatus comprising a supply reservoir having a lower outlet opening and a flat bottom face surrounding said opening, a bottom plate for supporting receptacles with their rims contacting with said face, two spaced supporting members below said bottom plate, means supporting each of said members for individual vertical adjustment, means between said plate and each of said members for limiting the vertical movement of said plate relatively to said member, and spring means between said plate and each of said members for yieldingly raising the plate.

In testimony whereof I hereunto affix my signature.

CHRISTIAN N. BERGMANN.