April 15, 1930. S. BARKEY 1,755,045

STRAW SERVING MACHINE

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Fig. 1.

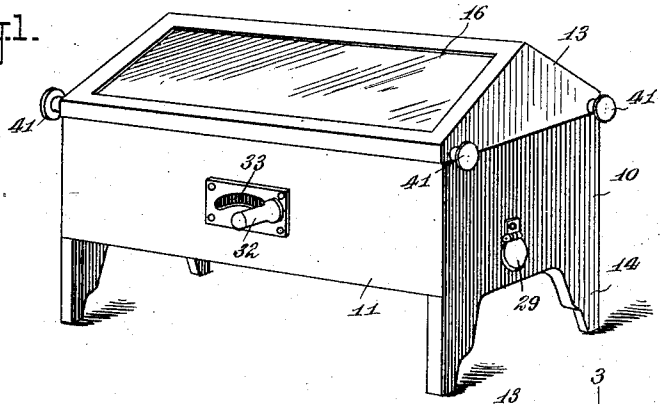



Fig. 2.

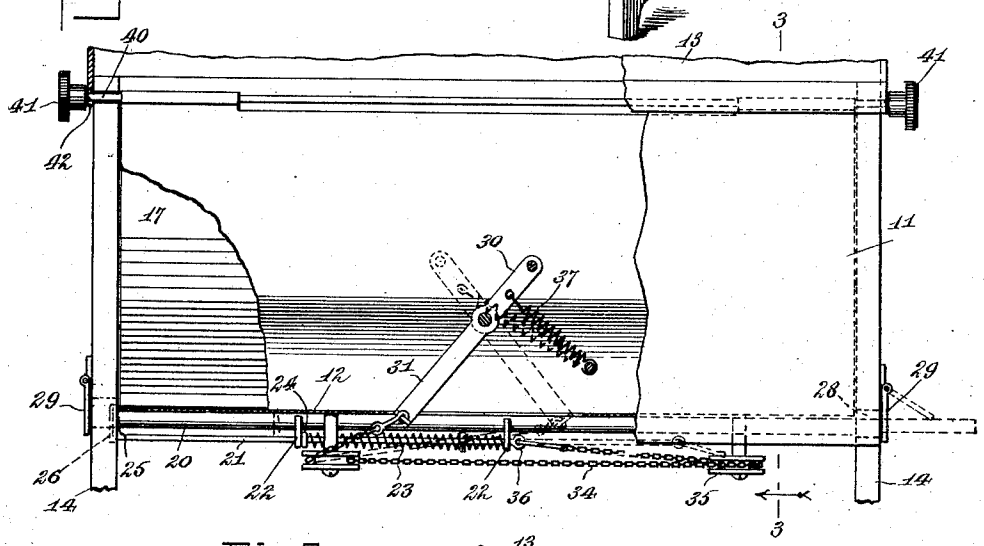



Fig. 4.

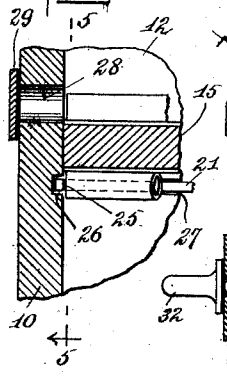



Fig. 3.

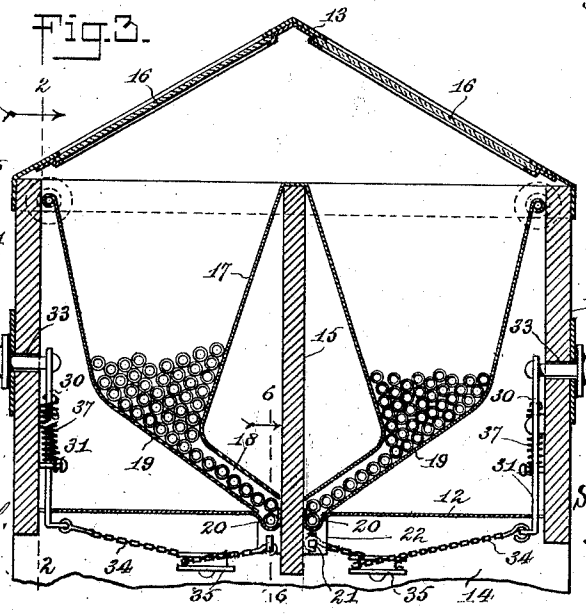
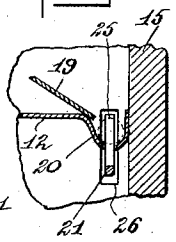



Fig. 5.




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STRAW SERVING MACHINE

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Fig. 6.

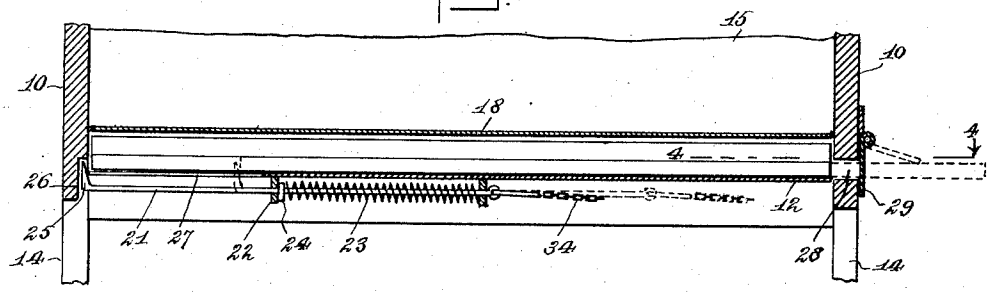



Fig. 7

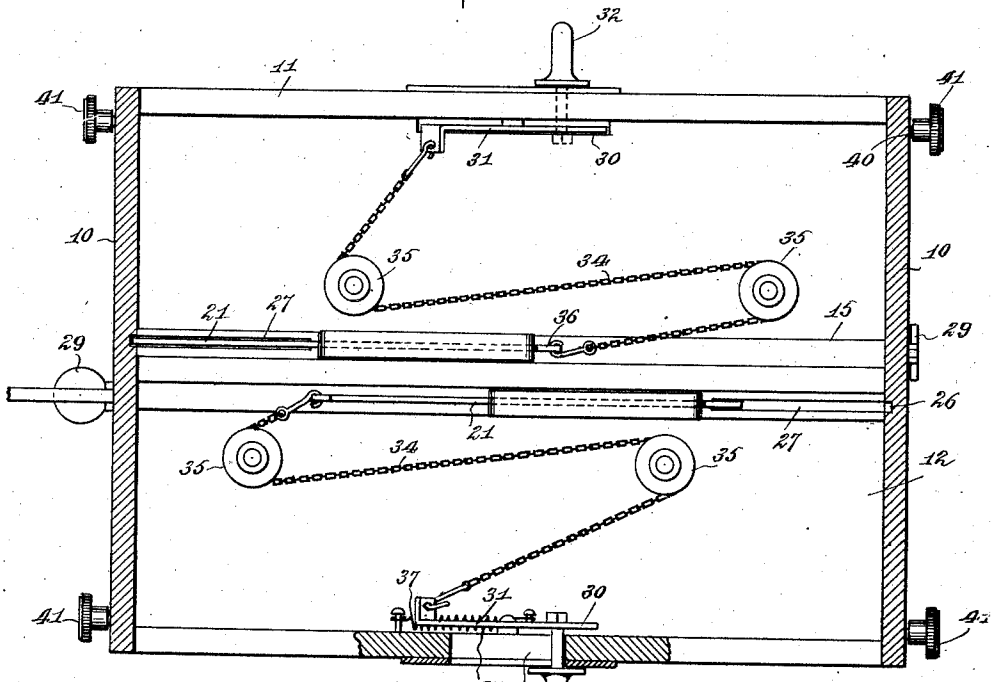
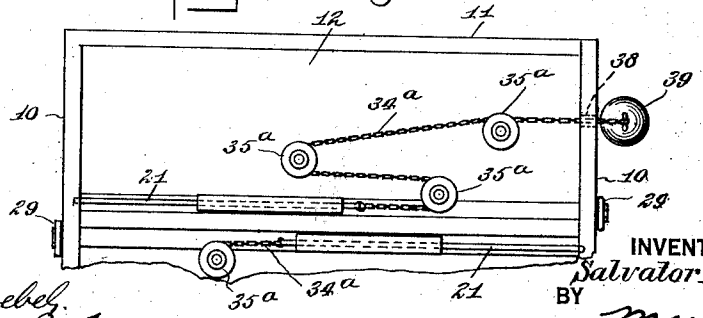



Fig. 8




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STRAW SERVING MACHINE

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Fig. 9.

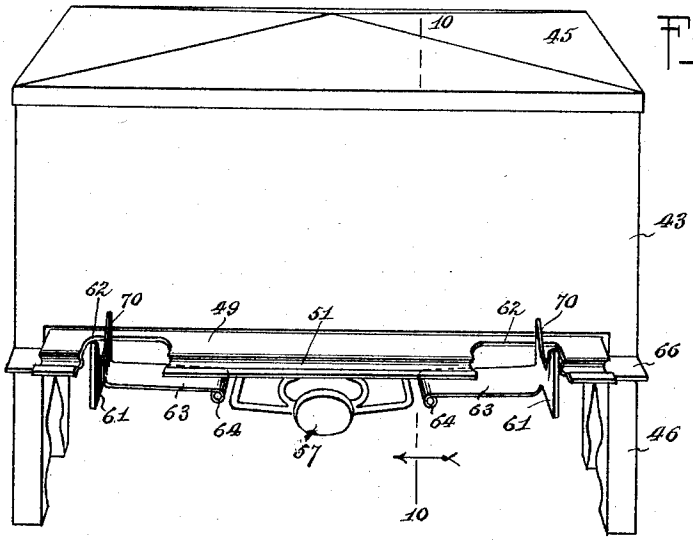



Fig. 10.

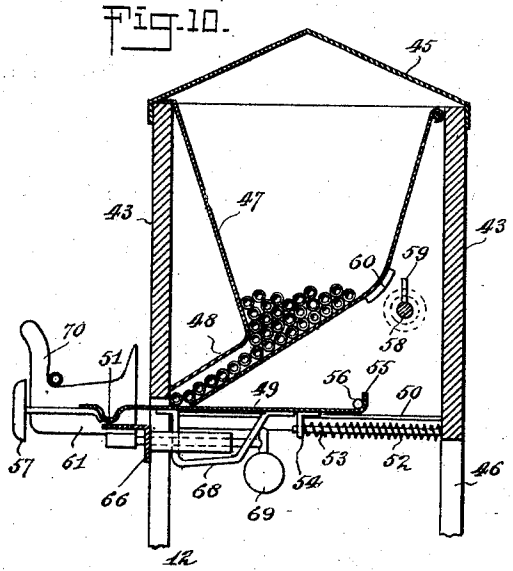



Fig. 11.

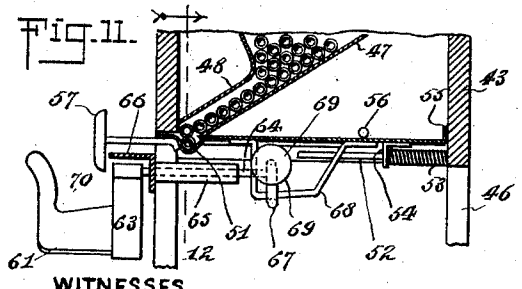
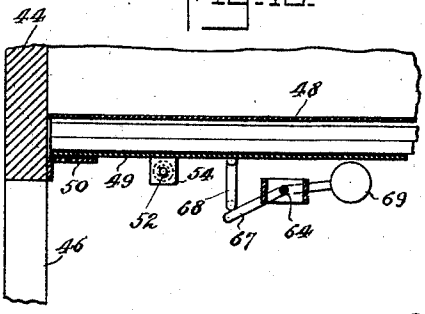



Fig. 12.



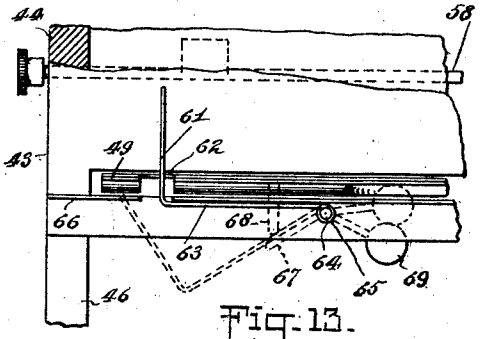




Fig. 13.

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# UNITED STATES PATENT OFFICE

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## STRAW-SERVING MACHINE

Application filed May 14, 1928. Serial No. 277,556.

The present invention is concerned with the provision of a serving machine primarily intended for dispensing soda straws one at a time, although capable of handling various types of generally analogous articles.

Any reference to straws in this application is intended to cover any other generally similar shaped article. While the invention is concerned with a serving mechanism, it will be obvious that this serving mechanism might form part of a coin controlled vending machine if desired.

An object of the invention is to provide a machine of this character in which a single article is positively deliverel at each operation in a position where it may be conveniently manually picked up.

Another object is to provide a machine so arranged that jamming of articles in the storage chamber or feed hopper is prevented, yet there is no need to carefully pack or dispose the articles when loading the machine.

A further object is to provide a machine from which the release of an article may be conveniently effected by a single simple manual operation, such for instance as a push or pull on the controlling element of the server. Preferably, in order that the service of articles may be intriguing as well as useful, this manual push or pull tends to store energy in an operating spring for the serving mechanism. When the thrust or pull is discontinued, and the hand withdrawn, the spring acts automatically to set the dispensing means in motion and move an article into exposed delivered position.

The above feature, while preferred, is not essential, and if desired, the serving apparatus may be manually operated and reset by a spring.

Another object of the invention is to provide a machine in which the articles to be served are maintained in a sanitary condition within a closed storage chamber until such time as they reach their point of discharge or delivery. As the straw is served, it may be picked up without the receiver's fingers coming into contact with any other straw.

Other and more general objects of the invention are to provide serving apparatus of simple, practical construction, which will be rugged, durable and efficient in use and well suited to the requirements of economical manufacture.

With the above noted and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter set forth and pointed out in the claims. The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein—

Fig. 1 is a perspective view of a double unit serving machine embodying the invention.

Fig. 2 is a fragmentary vertical sectional view therethrough taken approximately on the line 2—2 of Fig. 3.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged horizontal sectional detail on the line 4—4 of Fig. 6.

Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 4.

Fig. 6 is a vertical sectional view on the line 6—6 of Fig. 3.

Fig. 7 is a bottom plan view of the machine.

Fig. 8 is a fragmentary bottom plan view of a slightly modified type of machine.

Fig. 9 is a perspective view of a further modified type of single unit machine.

Fig. 10 is a vertical transverse sectional view on the line 10—10 of Fig. 9 showing the machine in its normal position and with a recently served straw resting on the pick-up members.

Fig. 11 is a fragmentary view similar to Fig. 10 but showing the position of the parts as the serving tray is thrust inwardly to receive a straw and the pick-up members are depressed.

Fig. 12 is a sectional view on the line 12—12 of Fig. 11.

Fig. 13 is a front elevational detail showing in dotted lines, the position assumed by the pick-up members as the tray is pushed in.

Referring first to Figures 1 to 7 inclusive

of the drawings, I have shown a container consisting of end walls 10, side walls 11, a bottom 12 (preferably of sheet metal) and a peaked top 13. Preferably, the corners of the end walls are extended to form feet 14 which elevate the container bottom above a table or other support to provide clearance for mechanism which will be later described. The container is longitudinally subdivided into two compartments by a vertical partition 15 and the top 13 is preferably formed with windows 16 to permit inspection of both compartments. Each compartment with its associated mechanism constitutes a complete and independent dispensing unit. Since these units are identical a description of one will suffice for both.

Within the compartment is disposed a hopper 17 of tapering cross section which extends the full length of the machine and at its lower end terminates in a restricted chute 18. One hopper wall 19 forms a continuation of the lower wall of the chute, while the other hopper wall is bent at a sharp angle where it joins the chute. Thus the weight of a stack of straws in the hopper is not transmitted directly to the neck of the hopper, but rests for the most part on wall 19 and jamming of straws at the junction of hopper and chute is prevented. The chute is only wide enough to accommodate a single row of straws resting one upon the other, with the lowermost straw of the row disposed in a groove 20 formed in the bottom plate 12 immediately adjacent partition 15.

Immediately under the groove 20 a rod 21 is slidably mounted in bearing brackets 22 depending from plate 12. A coiled expansion spring 23 encircling the rod 21 between brackets 22 acts on a collar 24 on the rod to hold the latter in its extreme left hand position of Fig. 2. In this position a finger 25 projecting upwardly from the end of the rod lies in a pocket 26 in one end wall 10 of the container out of the path of straws in the chute 18. The grooved portion 20 of the bottom 12 is slotted throughout a portion of its length as at 27 to accommodiate the finger 25 so that when the rod 21 is pulled to the right (Fig. 2) the finger will engage the end of the straw in the groove 20 and slide this straw along under those above it, projecting its end outwardly through an aligned opening 28 in the opposite end wall of the container.

This opening may be normally closed by a pivoted gravity closure plate 29 serving the dual function of guarding the opening against dust and frictionally retarding the unduly rapid outward projection of a straw.

Obviously, numerous expedients might be resorted to for pulling rod 21 to serve a straw. For illustrative purposes only I have shown a simple form of mechanism for this purpose which includes a lever 30 pivoted at 31 between its ends on the inner face of the outer wall of the compartment. The upper end of this lever carries a handle extension 32 accessible from the outside of the container and working in an arcuate slot 33 in the container wall. The lower end of the lever 30 is connected by a flexible device 34 running around a pair of pulleys or sprockets 35 to an eye 36 at one end of the rod 21. The pulleys may be mounted under the bottom plate 12 and supported thereby.

It is believed that the operation of the machine may be fully understood from the above description. The straws feed gravitationally down the chute 18. Movement of the lever 30 from the full line to the dotted line position of Fig. 2 will act through chain 34 to pull the rod 21 against its spring and partially project a straw through opening 28 to a point where it may be manually withdrawn. In restoring the serving mechanism to normal position, spring 23 may if desired, be assisted by a spring 37 anchored to the outer compartment wall and acting on the lever 30.

In the modified form of machine shown in Fig. 8, the lever is discarded and the flexible device $34^a$ after being led over several pulleys $35^a$ is passed through an opening 38 in the depending end wall 10 and attached to a ball handle 39 of greater diameter than the opening so that it limits inward movement of the chain. Here the ball is grasped and pulled to cause a straw to be served and is then retsored to its normal position by spring 23.

It may be noted that the hopper wall 19 is hung on a jogger shaft 40, the ends of which extend through the ends of the compartment and carry manipulating handles 41 so that the hopper may be jogged or manipulated to agitate the straws therein in the remote contingency of said straws becoming jammed in the hopper neck.

The flanges of the removable cover 13 are notched at 42 to accomodate the ends of these shafts so that the cover may be readily removed to load the hoppers.

The form of the invention shown in Figures 9 to 13 inclusive is a single unit machine including a container of generally rectangular form having side walls 43, end walls 44, a removable cover 45 and no bottom. This container is mounted on feet 46 and houses a hopper 47 generally similar to the hopper 17. Here however, the hopper chute 48 terminates at the bottom of front wall 43 and the lowermost straw rests on a tray 49 mounted for horizontal sliding movement in rails 50.

Near its forward edge tray 49 is grooved at 51 and the tray is normally held in its forwardly projected position of Fig. 10 with the groove exposed by a suitable number of coiled expansion springs 52. These springs encircle rods 53 being confined between the rear casing wall 43 and brackets 54 depending from the tray 49 and slidably receiving the

forward ends of rods 53. An upturned tail piece 55 at the rear edge of the tray limits sliding movement of the latter in both directions, being engageable with rear wall 43 as the tray is thrust back against its spring and engageable with strap rod 56 as the tray is spring pressed outwardly.

A handle 57 is attached to the forward edge of the tray. As the tray is thrust inwardly, groove 51 aligns with chute 48 and receives a straw which is carried out and served upon return spring impelled movement of the tray.

It may be noted that hopper jogger mechanism is also provided here. A cross shaft 58 carries a crank arm 59 capable of being swung against a wear plate 60 on the rear hopper wall to jog the hopper.

Preferably, means is provided for engaging the ends of the straw and lifting it off the tray so that it may be readily manually grasped. This means has been shown as a pair of pick-up plates 61 normally vertically disposed and accommodated in notches 62 in the tray. These plates are connected with the free edges of and offset from horizontal plates 63, the opposite ends of which are connected to rock shaft 64 borne in sleeves 65 fixed to cross rail 66. At their rear ends shafts 64 carry crank arms 67 adapted to be depressed by cams 68 mounted on the bottom of tray 49. Shafts 64 also carry counterbalances 69 for the plates 61, 63.

In operation, as the tray is thrust inwardly, cams 68 depress arms 67 and move the pick-up plates 61 to the dotted line position of Figure 13 with their upper ends below the plane of the tray. As the tray moves outwardly carrying a straw with it, counterbalances 69 reelevate the pick-up plates causing them to move upwardly through notches 62, and, engaging the ends of the straw, lift it off the tray, the straw at this time being cradled in the notched upper edges 70 of the pick-up plates. In the absence of the pick-up arms, notches 62 would permit a straw to be readily grasped and removed from the groove.

In practice, both of the above described types of serving apparatus will be provided with some means to completely encase and protect the mechanism which is disposed below the bottom of the container. Inasmuch as the provision of such encasing means is an obvious expedient, I have omitted any showing thereof for the sake of clarity. It will also be evident that the container legs may be omitted if desired.

I claim:

1. In a serving machine for soda straws or analogous articles, a hopper in which the straws are stored, an inclined chute communicating with the bottom of the hopper for gravitationally feeding straws from the hopper to the point of service, said chute being only of sufficient size to accommodate a single row of straws resting one upon the other, and the lower wall of said chute being disposed in the same plane as one wall of the hopper adjacent said chute, the opposite hopper wall defining a sharp angle with the upper wall of the chute, a bottom plate under said chute, said bottom plate having a groove therein adapted to receive the lowermost straw of the stack, and a pusher engageable with one end of the lowermost straw and working in the groove to project said straw endwise through an opening in one wall of the container.

2. In a serving machine for soda straws or analogous articles, a hopper in which the straws are stored, an inclined chute communicating with the bottom of the hopper for gravitationally feeding straws from the hopper to the point of service, said chute being only of sufficient size to accommodate a single row of straws resting one upon the other and the lower wall of said chute being disposed in the same plane as one wall of the hopper adjacent said chute, the opposite hopper wall defining a sharp angle with the upper wall of the chute, a bottom plate under said chute, said bottom plate having a groove therein adapted to receive the lowermost straw of the stack, and a pusher engageable with one end of the lowermost straw and working in the groove to project said straw endwise through an opening in one wall of the container, said pusher including a finger working through a slot in the bottom of the groove.

3. In a serving machine for soda straws or analogous articles, a hopper in which the straws are stored, an inclined chute communicating with the bottom of the hopper for gravitationally feeding straws from the hopper to the point of service, said chute being only of sufficient size to accommodate a single row of straws resting one upon the other and the lower wall of said chute being disposed in the same plane as one wall of the hopper adjacent said chute, the opposite hopper wall defining a sharp angle with the upper wall of the chute, a bottom plate under said chute, said bottom plate having a groove therein adapted to receive the lowermost straw of the stack, a pusher engageable with one end of the lowermost straw and working in the groove to project said straw endwise through an opening in one wall of the container, said pusher including a finger working through a slot in the bottom of the groove, and a slide rod mounted under the bottom plate and rigidly connected to said pusher.

4. In a serving machine for soda straws or analogous articles, a hopper in which the straws are stored, an inclined chute communicating with the bottom of the hopper for gravitationally feeding straws from the hopper to the point of service, a bottom plate under said chute, said bottom plate having a groove therein adapted to receive the lower-

most straw of the stack, and a pusher engageable with one end of the lowermost straw and working in the groove to project said straw endwise through an opening in one wall of the container, said pusher including a finger working through a slot in the bottom of the groove.

5. In a serving machine for soda straws or analogous articles, a hopper in which the straws are stored, an inclined chute communicating with the bottom of the hopper for gravitationally feeding straws from the hopper to the point of service, a bottom plate under said chute, said bottom plate having a groove therein adapted to receive the lowermost straw of the stack, a pusher engageable with one end of the lowermost straw and working in the groove to project said straw endwise through an opening in one wall of the container, said pusher including a finger working through a slot in the bottom of the groove, and a slide rod mounted under the bottom plate and rigidly connected to said pusher.

Signed at New York, in the county of New York and State of New York, this 8th day of May, A. D. 1928.

SALVATOR BARKEY.