

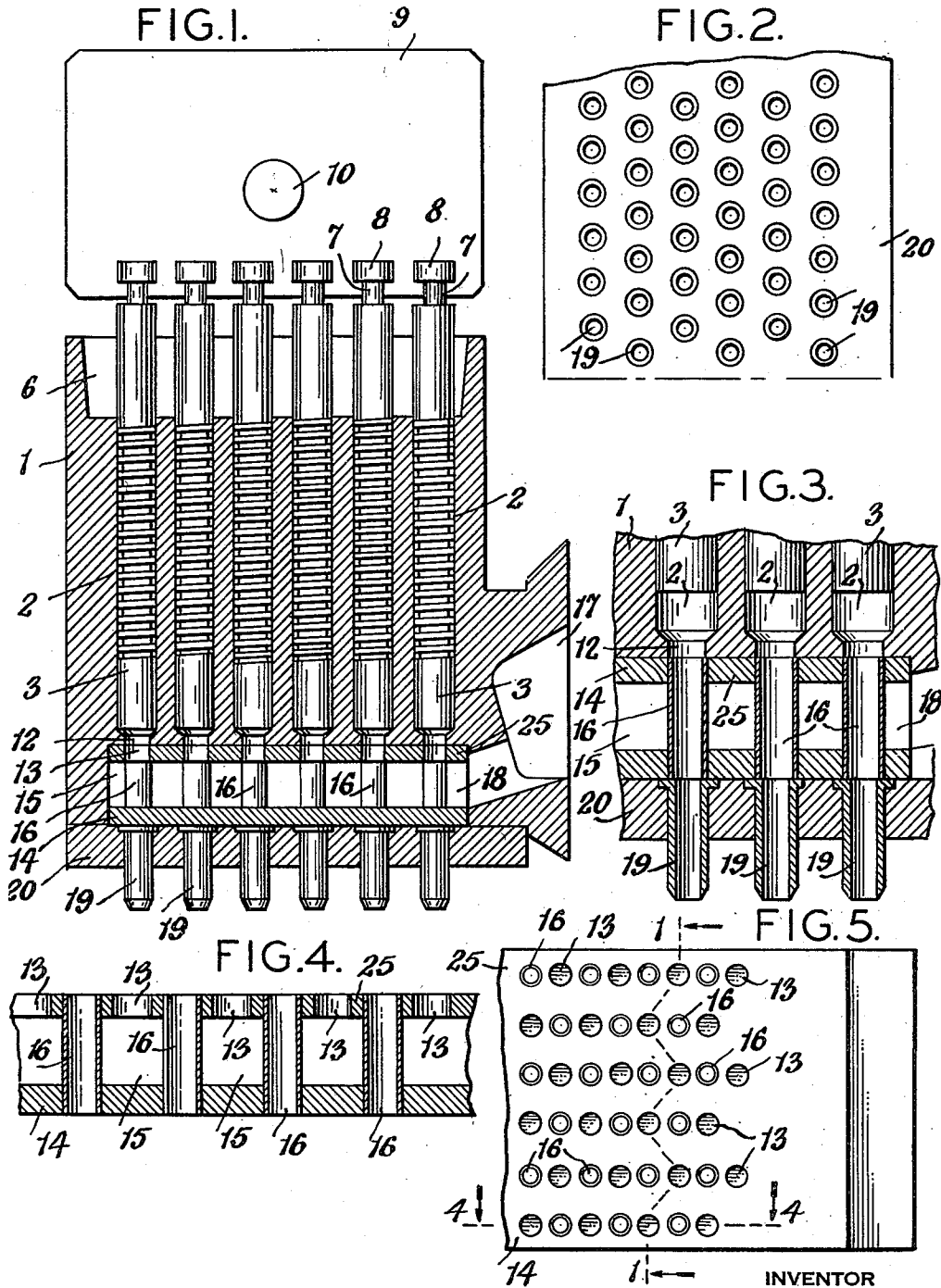
Nov. 20, 1956

G. S. PERKINS

2,771,225

PUMP CONSTRUCTION FOR CANDY DEPOSITING MACHINE

Filed June 17, 1955



INVENTOR  
George S. Perkins  
BY  
Harry Radzinsky  
ATTORNEY

1

2,771,225

**PUMP CONSTRUCTION FOR CANDY DEPOSITING MACHINE**

George S. Perkins, New York, N. Y., assignor to National Equipment Corporation, New York, N. Y., a corporation of New York

Application June 17, 1955, Serial No. 516,076

6 Claims. (Cl. 222—255)

This invention relates to pump construction, and more particularly to pumps especially adapted for use in confectionery-making and similar machines. An example of the type of pump to which the invention relates will be found in my Patent No. 2,510,317, dated June 6, 1950. Pumps of this character are usually employed for the purpose of dispensing candy material or other liquid, semi-liquid or viscous substances from a hopper into molds, which molds are often formed in starch contained in trays that are moved into position below the pump.

One of the objects of the present invention is to provide a pump of this character which will greatly increase the output of a candy-making machine by enabling an increased number of mold depressions to be formed in each tray and to simultaneously fill such increased number of depressions through the use of a novel arrangement of pump nozzles and cylinders and pistons cooperating therewith, to deposit the candy material into the depressions.

It is another object of the invention to provide a pump in which the nozzles are arranged in staggered relation to thereby enable the same to be more closely spaced than is usual practice and thus fill closely-spaced mold depressions. It is another object of the invention to provide means by which all of the pump cylinders can be simultaneously filled or charged from a common manifold, and can be caused to have their contents ejected through tubes or passages leading through the manifold without being in communication with the same, whereby passages will be provided directly to the outlet nozzles from the cylinders.

It is another object of the invention to provide a hollow cut-off bar operative as a material-delivery manifold, which manifold shall be provided with separate passages extending completely through it to serve as communications between the cylinder outlets and the nozzles.

With these, and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed,

Fig. 1 is a vertical sectional view through a pump construction made in accordance with the invention, the section through the cut-off bar being taken substantially on the line 1—1 of Fig. 5, looking in the direction of the arrows;

Fig. 2 is a top plan view of a portion of the lower closure plate of the pump housing, showing the upper ends of the outlet nozzles;

Fig. 3 is a sectional view through parts of the housing, cut-off bar and outlet nozzles, showing the parts in ejection position;

Fig. 4 is a sectional view through a part of the cut-off bar, the section being taken substantially on the line 4—4 of Fig. 5, looking in the direction of the arrows, and

Fig. 5 is a top plan view of a portion of the cut-off bar.

2

A pump of the character herein described is particularly adapted for use in confectionery machines, wherein the goods in fluid, or nearly-fluid form, is delivered from a hopper to the pump and is ejected thereby in predetermined quantities into molds, or else can be deposited upon a suitable surface below the outlet nozzles of the pump. In the drawing, the pump housing is shown at 1, and the same is bored to provide a plurality of adjacent cylinders 2 in each of which is mounted a reciprocating piston 3. The particular pistons shown are of the so-called "hydro-sealed" type, and are provided with a plurality of circumferential grooves into which a fluid, such as water, contained in the recess indicated at 6, may enter, the water acting as a sealing means.

At the top, each piston is provided with a stem 7 terminating in a head 8 engaged by an operating member 9 which is raised and lowered by a suitable known mechanism, to thereby simultaneously raise or lower all of the pistons 3 in their respective cylinders.

The lower end of each of the cylinders 2 terminates in an outlet opening 12 of less diameter than the diameter of the cylinders, and said outlet openings 12 are adapted at pre-determined times, to register with openings 13 formed in the top wall 25 of a cut-off bar or valve member 14. The cut-off bar 14 has a hollow interior 15 constituting a common supply manifold for all of the cylinders 2, and said cut-off bar is slidably positioned below the cylinder outlets 12 and is maintained in position thereunder by means of the lower closure plate 20 secured at the bottom of the housing 1. The cut-off bar is longitudinally slidable back and forth to a predetermined extent to either register the cylinder outlets 12 with the openings 13 in the upper wall 25 of the cut-off bar, or else register these outlets with tubes 16 extending vertically and completely through the cut-off bar 14. Thus, when the outlets 12 are registered with the openings 13 in the top wall of the cut-off bar, as shown in Fig. 1, communication will be established between the hollow interior 15 of the cut-off bar and the cylinders 2, and when the pistons rise they will draw up a charge of the candy material from the interior of the cut-off bar into the cylinders 2. The candy material is supplied into the interior of the cut-off bar from a hopper connected to the inlet 17 of the housing 1, and which inlet is in constant communication with the interior of the cut-off bar through the open side 18 of the cut-off bar.

When the outlets 12 of the cylinders are registered with the tubes 16, as clearly shown in Fig. 3, communication will be established between the cylinders 2 and outlet nozzles 19 mounted in, and extending downwardly from, the housing closure plate 20. The pistons 3 are then moved downwardly and the material then contained in the cylinders 2 below the pistons, will be forced downwardly by the pistons through the tubes 16 and out through the nozzles 19 and into molds or a receptive surface then positioned below the nozzles.

The cut-off bar may be made of substantial length, only a short portion of it being shown in Fig. 5. In the arrangement shown, it contains six transverse rows of openings and each row may contain thirty-six, more or less, delivery tubes 16 with a corresponding number of cylinders 2 and outlet nozzles 19 provided in the housing 1 and plate 20 respectively.

As clearly seen in Fig. 2, the nozzles 19 and the pump cylinders which are vertically aligned therewith, are arranged so that the nozzles and cylinders in the several rows are in staggered relation. This arrangement permits of the use of a very substantial number of deposits in a given tray area, thus resulting in greatly increased production. This staggered arrangement of the nozzles and the cylinders therefore, is possible because of the

utilization of the hollow interior of the cut-off bar as a common material-supply manifold for all of the cylinders. It will be noted that the tubes 16 pass completely through the manifold and are not in communication with the hollow interior 15 thereof.

From the foregoing, the operation of the described apparatus will be readily understood. The material, in liquid or semi-liquid condition enters the hollow interior 15 of the cut-off bar 14 and while the cut-off bar is in the position shown in Fig. 1, with the outlet openings 12 in registration with the openings 13, the pistons are elevated and the material will be drawn upwardly into the cylinders. When the pistons 3 reach their highest position, the cut-off bar is then shifted to disalign the openings 13 from the outlets 12 of the cylinders and this movement brings the tubes 16 into registry with the outlets 12 and also in registry with the nozzles 19. The pistons 3 are then moved downwardly and they force the charges of material out of the cylinders 2, down through the tubes 16, and out through the nozzles 19 and into molds or onto a surface positioned below the nozzles. The means for slidably reciprocating the cut-off bar may be that disclosed in my Patent No. 2,510,317 or some other means providing the necessary limited sliding movement of the same from charge to discharge positions.

Having described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto, but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. In a pump construction, a housing provided with a plurality of cylinders, each cylinder having a bottom discharge opening, a piston mounted for reciprocating movement in each cylinder, an outlet nozzle located below each cylinder discharge opening, a slidable hollow cut-off bar mounted in the housing between the cylinder discharge openings and the outlet nozzles, said cut-off bar having an upper wall provided with a plurality of openings all of which communicate with the hollow interior of said cut-off bar, said openings being adapted, when the cut-off bar is in a predetermined position, to establish communication between the cylinder discharge openings and the hollow interior of the cut-off bar, the cut-off bar having a plurality of tubular passages extending through it without communicating with the hollow interior of said bar, said tubular passages being adapted to establish communication with the cylinder discharge openings and the outlet nozzles when the cut-off bar is moved to a position wherein the cylinder discharge openings are disaligned with the openings in the upper wall of said cut-off bar.

2. In a pump, a housing containing a plurality of cylinders, a piston movable in each of said cylinders, each cylinder having an outlet, a cut-off bar movable below the outlets of the cylinders, said cut-off bar having a hollow interior forming a common chamber through which material is forced to reach all of the cylinders, said cut-off bar being provided with a plurality of openings in one of its walls communicating with the interior of the cut-off bar, the cut-off bar being movable to a position to simultaneously register all of said openings with the outlets of the cylinders, the cut-off bar having a plurality of tubes extending through it, which tubes are caused to be registered with the cylinder outlets when said outlets are disaligned from the openings, and a plurality of nozzles positioned in the housing below the cut-off bar and adapted to be registered through the tube with the cylinder outlets.

3. In a pump construction, a housing provided with a plurality of cylinders, each cylinder having a bottom discharge opening, a piston mounted for reciprocating movement in each cylinder, an outlet nozzle mounted in the housing directly below each discharge opening, a flat, slidable, hollow cut-off bar mounted in the housing between the cylinder discharge openings and the outlet nozzles, said cut-off bar having a flat upper wall provided with a plurality of spaced openings extending through it and all of said openings communicating with the hollow interior of the cut-off bar, said openings being adapted, when the cut-off bar is in a predetermined position, to establish communication between the cylinder discharge openings and the hollow interior of the cut-off bar, the cut-off bar having a plurality of spaced, parallel tubes extending completely through it without establishing communication with the interior of the cut-off bar, said tubes being so located that in a certain position of the cut-off bar they establish communication with the cylinder outlets and the outlet nozzles, at which time the cylinder outlets are disaligned from the openings in the upper wall of the cut-off bar.

4. In a pump construction as provided for in claim 3, wherein some of the openings in the upper wall of the cut-off bar are in staggered relation to other openings therein.

5. In a pump of the character described, a cut-off bar for the outlets of a plurality of cylinders, said cut-off bar being hollow and having an opening through which material can enter a common chamber in the interior of said cut-off bar, a wall of the cut-off bar being provided with a plurality of holes through which material can pass from said common chamber to enter the cylinders when the cylinders are registered with the holes, the cut-off bar having spaced tubes extending through it from top to bottom, the tubes being open at one end to communicate with the cylinders and also being open at their opposite ends, so that material ejected from the cylinders can pass out of the lower ends of the tubes without reaching the interior of the cut-off bar.

6. In a pump of the character described, a housing provided with a plurality of cylinders, a piston mounted for reciprocation in each cylinder, each cylinder having an outlet opening at its lower end, a cut-off bar slidably mounted in the housing below said outlet openings, said cut-off bar having a hollow interior providing a common chamber and being provided with a plurality of staggered openings in its upper wall and which are adapted for registry with the outlet openings of the cylinders in a certain predetermined position of the cut-off bar, a plurality of tubular passages extending from top to bottom of the cut-off bar, said passages being open at the top and adapted to be placed in communication with the outlets of the cylinders in another position of the cut-off bar, said passages being open at the bottom, and nozzles fixedly located in the housing below the cut-off bar and adapted to register with the lower ends of the passages when the upper ends of said passages register with the outlets of the cylinders.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

2,510,317	Perkins	June 6, 1950
2,535,828	Ardron	Dec. 26, 1950
2,571,790	Tomkins	Oct. 16, 1951
2,597,175	Perkins	May 20, 1952