April 26, 1938. G. K. BAINBRIDGE 2,115,246

MULTIPLE SPOUT PRESS FOR PLASTIC MATERIAL

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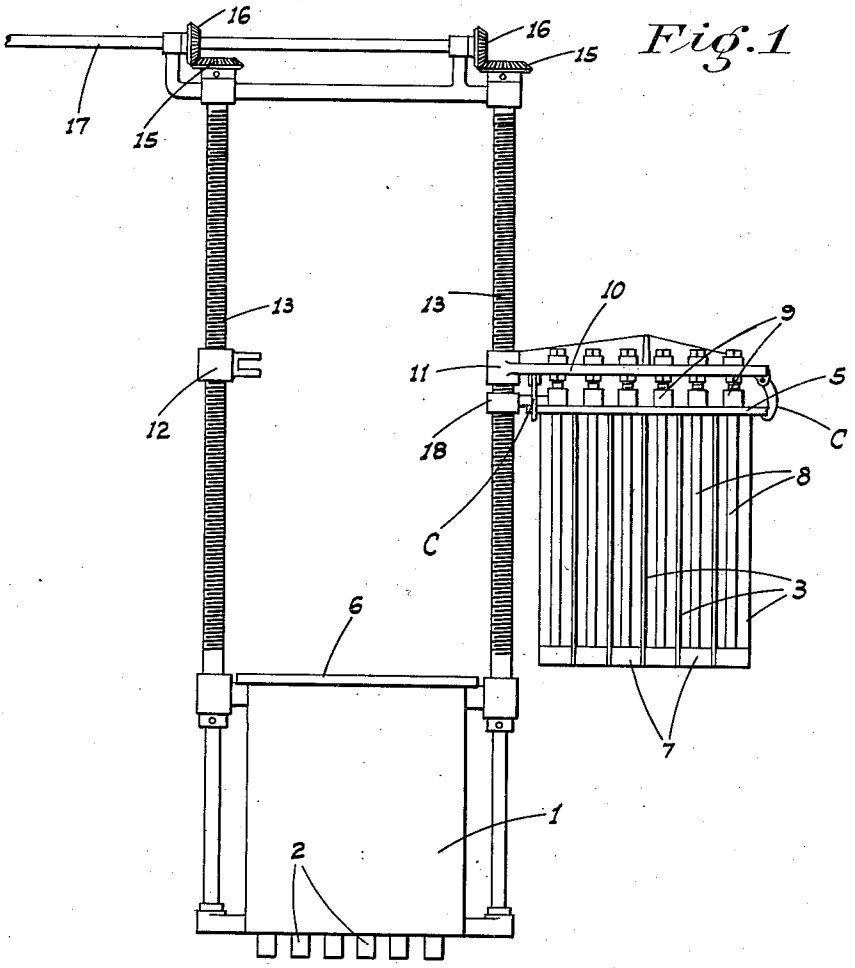


Fig. 1

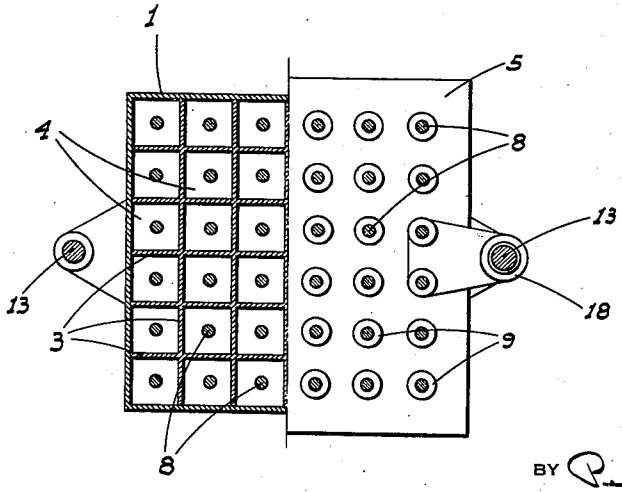


Fig. 3

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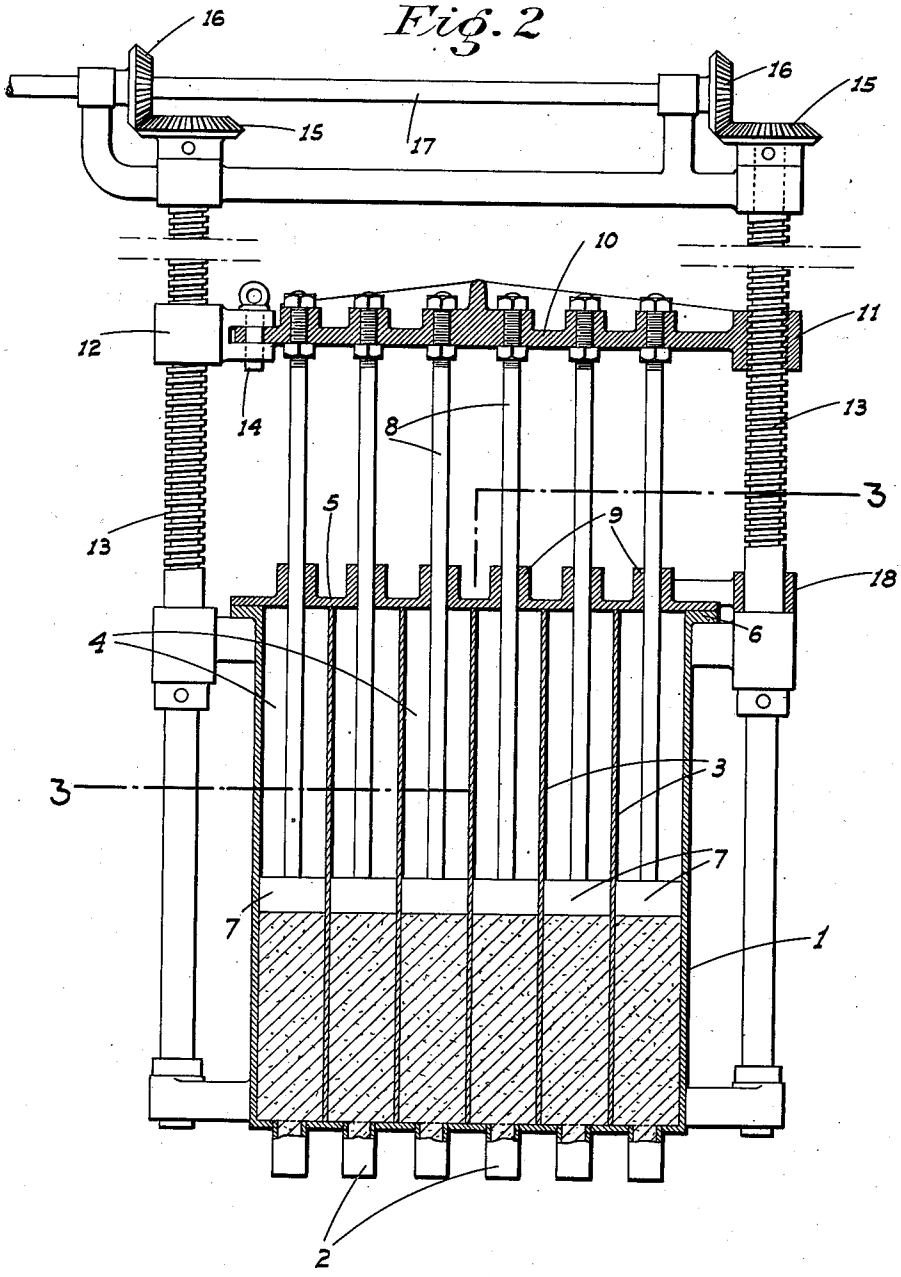
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Fig. 2



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MULTIPLE SPOUT PRESS FOR PLASTIC MATERIAL

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Application October 16, 1936, Serial No. 105,959

11 Claims. (Cl. 107—14)

This invention relates to multiple-spout presses for extruding plastic material and particularly deals with a press for use with plastic candy material, such as cream centers for chocolates which are cut from the spouts in the form of lumps as the material is forced from the press.

The advantages of a multiple-spout press, from a standpoint of quantity output, are of course obvious; but a press of this type employing a single plunger has not been successful for this type of material. It is essential that the amount of material forced from the different spouts shall be the same length, so that the lumps will be of uniform size as required in mass production of candy.

A single plunger press operating on such candy material has not heretofore as far as I am aware produced this necessary result. This is because the material within the press is of uneven consistency, due to unavoidable differences in temperature between the material near the walls of the press and that in the center. As a result with the pressure and a pre-determined movement of the plunger, the softer portion of the material found its way to certain spouts and was forced therefrom to a much greater length than the relatively hard material disposed adjacent and issuing from the remaining spouts.

It is therefore the principal object of my invention to provide a multiple spout press in which the material, while initially placed in the press as a single mass, is then confined so that the material in line with any one spout cannot pass to any other spout.

In other words each spout communicates with its own material compartment and has its own plunger. At the same time the plungers are all connected and operated as a unit so that there is no duplication of parts such as is necessary if a battery of separate presses are employed. As a result the same amount of material is discharged from all the spouts regardless of the relative consistency of the material in the different compartments of the press.

Another object is to construct the press so that while in operation it is formed as a number of separate compartments, it is not necesary to fill each compartment separately so that no undue time is consumed in performing this operation. Also the press is constructed so that it is a simple matter to thoroughly clean the same whenever necessary.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a persual of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of my improved press showing the plunger and partition unit swung to one side for the filling of the press.

Figure 2 is a sectional elevation of the structure in operation.

Figure 3 is a plan view taken on the line 3—3 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, 1 denotes the body of the press—a rectangular member completely open on top and having a plurality of spouts 2 depending from the bottom and arranged in evenly spaced and symmetrical relation in the bottom area of the body. The body is adapted to be mounted in a fixed position in overhanging relation to the usual conveyor belt in any desired manner.

Removably mounted in the body is a partition unit comprising a plurality of vertical partitions 3 crossing at right angles and connected to each other, and the same height as the interior of the body. This unit forms a cellular or honeycomb member open on the bottom. These partitions together with the side walls of the body form a number of separate vertical compartments 4 of rectangular form in cross section and all the same size; the partitions being arranged so that there is one compartment for each spout, which is disposed centrally of the corresponding compartment. The partitions are secured to and depend from a head plate 5 which normally rests on the top flange 6 of the body 1 when the partition unit is inserted for its full depth into the body.

Plungers or pistons 7 are slidably disposed in all the compartments and of course have a running fit with the walls of the same. These plungers are mounted on rods 8 which slidably project through bearing sleeves 9 in the plate 5. At their upper end the rods are secured in common to a cross head 10 so that the plungers may all move up and down as a unit.

Such movement may be imparted to the plunger unit in various ways and either by power or hand as may be desired. In the present instance I have shown the cross head as being provided with sleeves 11 and 12 on opposite sides. These sleeves have threaded engagement with vertical screw shafts 13 turnably mounted on opposite sides of the body and projecting above the same for a height greater than that of the body. The

cross head is rigid with the sleeve 11 but is separate from the sleeve 12, being disengageably connected thereto as by a coupling pin 14.

The screw shafts at the top are provided with bevel gears 15 meshing with bevel pinions 16 secured on a hand or power driven shaft 17 and arranged so that both shafts rotate in the same direction.

In operation, with the material in the press and the partition unit in place, rotation of the shafts to lower the plunger unit forces the material through the different spouts. Since the material in each compartment is separated from that in the other compartments, there is no chance for the material to flow to any spout other than that with which the corresponding compartment communicates, and, as a result, equal amounts of material are necessarily forced to the same length from all the spouts with a given movement of the plunger unit.

When the press is empty and the pistons are at the bottom of the partition unit, the cross head and plate 5 are coupled together by suitable means such as catches C. The rotation of the screw shaft is then reversed, so as to raise the plungers and partition unit, and thus withdrawing the partition unit from the press.

The cross head 10 is then disengaged from the sleeve 12 and the plunger and partition units are swung as one about the other shaft 13 as an axis so as to freely expose the top of the press body 1 for filling or cleaning as shown in Fig. 1. In order to prevent the partition unit from lateral deflection separate from the plunger unit, the head plate, on the side adjacent the shaft about which said unit swings, is provided with a sleeve 18 which slidably and turnably engages said shaft.

When the press has been filled, the units are swung to a position over the press body, the sleeve 12 is re-engaged with the cross head, and the catches C are disengaged so that the partition unit may be lowered into the body ready for a subsequent plunger advancing and material extruding operation. It will be noted that since the partition unit has no actual connection with the plunger unit, the operation of the latter does not have any back pressure effect on the partition unit, nor can the material in the press have any such effect. The weight of said unit is thus sufficient to retain it in position in the body.

If desired, and as shown, the screw shafts 13 may be extended upwardly an amount sufficient to enable the plungers to be raised to the top of the partition unit while maintaining the latter elevated, so as to facilitate the cleaning of the various compartments 4.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. A multiple spout press for plastic material comprising a press body, means dividing the entire interior space in the body into a plurality of separated compartments, a discharge spout for each compartment, plungers slidable in said compartments, means connecting the plungers together for movement as a unit, and means applied to said connecting means to move the plungers; said division means and the plungers being removable from the body to provide for the filling of the same with a single pouring operation.

2. A multiple spout press for plastic material comprising a vertical press body open on top, a partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means mounting the unit for vertical movement into and out of the body and enabling said unit when out of the body to be then swung laterally, and plungers slidable in the compartments and mounted in connection with the partition unit for lateral swinging movement therewith.

3. A multiple spout press for plastic material comprising a vertical press body open on top, a partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means mounting the unit for vertical movement into and out of the body, plungers slidable in the compartments and connected together for simultaneous movement, means to raise the plungers a distance greater than the height of the body, and means to relatively connect the plungers and partition unit together to cause the latter to be raised with the plungers.

4. A multiple spout press for plastic material comprising a vertical press body open on top, a removable partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means mounting the unit for vertical movement into and out of the body, plungers slidable in the compartments and connected together for simultaneous movement, and means to releasably connect the plungers and the partition unit when the plungers are adjacent the bottom of the body.

5. A multiple spout press for plastic material comprising a vertical press body open on top, a partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means for mounting the unit for vertical movement into and out of the body, plungers slidable in the compartments, rods projecting upwardly from the plungers, a head plate on the partition unit through which the rods are slidable, means connecting the rods together above the plate for movement as a unit, and means applied to said connecting means to move the same vertically through a total distance in excess of twice the height of the body.

6. A multiple spout press for plastic material comprising a vertical press body open on top, a partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means for mounting the unit for vertical movement into and out of the body, plungers slidable in the compartments, rods projecting upwardly from the plungers, a head plate on the partition unit through which the rods are slid-

able, a cross head on which the upper ends of the rods are secured, a vertical screw shaft turnably mounted to one side of the body, a sleeve on the cross head threaded on the shaft, and means to rotate the shaft.

7. A multiple spout press for plastic material comprising a vertical press body open on top, a partition unit insertable in the body from the top to then divide the same into a number of separated vertical compartments, a discharge spout for each compartment depending from the bottom of the body, means for mounting the unit for vertical movement into and out of the body, plungers slidable in the compartments, rods projecting upwardly from the plungers, a head plate on the partition unit through which the rods are slidable, a cross head on which the upper ends of the rods are secured, vertical screw shafts turnably mounted on opposite sides of the body, sleeves threaded on the shafts, one sleeve being rigid with the cross head, means disengageably connecting the other sleeve and the cross head, and means to rotate both shafts simultaneously.

8. A structure as in claim 7 with a sleeve rigid with the head plate and turnably and slidably engaging that shaft on which said one sleeve is threaded.

9. A multiple spout press for plastic material comprising a press body open at one end, a division unit removably inserted into the body from said end and dividing the interior of the body into a plurality of longitudinal compartments, a discharge spout for each compartment in the other end of the body, a plunger unit slidable into the division unit from said one end of the body, means to reciprocate the plunger unit into and out of the body, and means to releasably connect the plunger and division units together, whereby the division unit may be withdrawn from the body with the plunger unit.

10. A structure as in claim 9, with means mounting the plunger unit relative to the body so that when the plunger and division units have been withdrawn from the body, they may be swung clear of said body.

11. A multiple spout press for semi-solid plastic material comprising a press body open at one end for filling, a relatively large number of discharge spouts in the opposite end of the body, a partition unit separate from the body adapted to be mounted therein after said body is filled for dividing the mass of material into a number of separate individual portions each registering with a discharge spout, and means to press such portions through the corresponding spouts.

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