May 25, 1954 B. GRONDONA 2,679,216

DIE PLATE FOR MACARONI IN MACARONI PRESSES

Filed Sept. 25, 1951



Fig.3

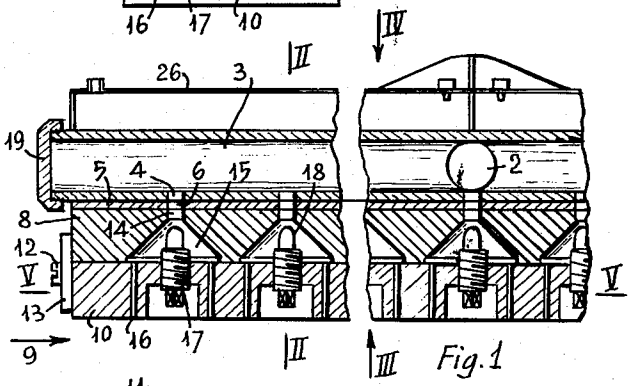


Fig.1

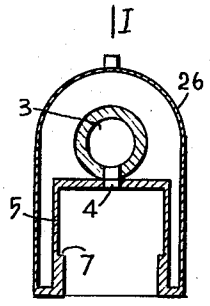


Fig.2

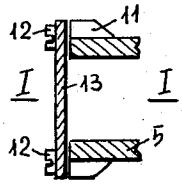


Fig.5

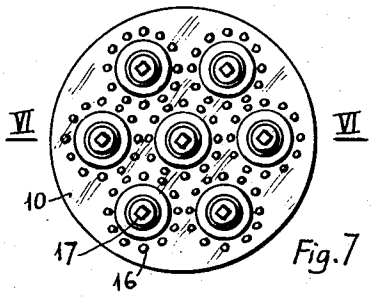


Fig.7

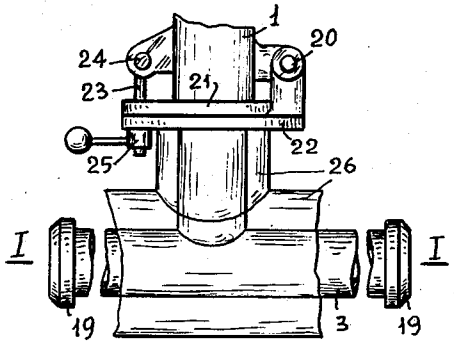


Fig.4

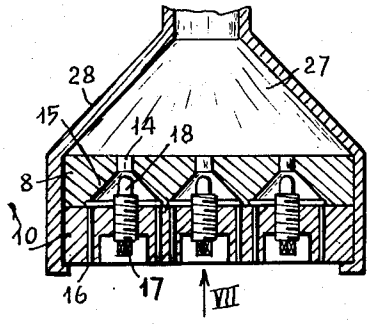


Fig.6

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DIE PLATE FOR MACARONI IN MACARONI PRESSES

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5 Claims. (Cl. 107—14)

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Presses for macaroni manufacture are provided with round die plates and in the more modern types with die plates having an elongated shape.

Though in the following description only the term die plate will be used, it is understood that the invention is equally well applied to round and to elongated die plates.

A serious inconvenience that should be rectified in all types of die plates is that the length of the macaroni strands, coming out from the various holes of the die plate is not uniform, as from one hole a longer macaroni strand may emerge than from another. As the macaroni strands obtained in this way must later, for technical and commercial purposes, be reduced to the same length, it is necessary to cut the strands which are longer. This is an operation which, besides causing a waste of time and labor, also causes a certain loss of alimentary paste.

Various attempts have been made to eliminate this inconvenience, without coming to a satisfactory result.

The object of the present invention is a die plate which fully avoids this inconvenience.

The die plate which may be of a round or of an elongated shape, is characterized by including adjustable elements which go through it and project in varying degrees in the direction of the chamber which feeds the alimentary paste into the press, each of these adjustable elements serving to control the flow of the macaroni paste in a zone of the die plate or in relation to a group of holes in the die plate.

The die plate according to the invention is further preferably characterized by the fact that above the die plate itself are disposed one or more passing chambers for the paste, so that the variable projection of the adjustable elements in the chamber or chambers will assure a uniform passing of the paste through the various holes, relative to the element and to the chamber which is in connection with the head conduit or with a branch conduit of the head conduit, along which the press impels the paste.

In a preferred embodiment the round die plate of a press for macaroni manufacture according to the invention is characterized by the fact that the holes for the passage of the paste are grouped around the respective adjustable element.

In a preferred embodiment the elongated die plate for macaroni in a macaroni manufacturing machine according to the invention is characterized by the fact that the holes for the passing of the paste are divided in groups, each group being provided with its own adjustable element and the various groups being arranged in the longitudinal direction of the elongated plate.

In this last embodiment the die plate is characterized by cooperating with the plate above it,

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and is provided with as many passing chambers as there are adjustable elements, also with an upper longitudinal conduit, connected to said chambers, and substantially fed in one intermediate point by the arrival of the paste emitted by the press, this direct conduit being open on its two ends where it is provided with closure plugs to be removed for cleaning.

In the annexed drawing the invention is shown by way of example, in several of its embodiments:

Fig. 1 is a longitudinal section taken along the plane I—I of Figures 2, 3 and 4, of an elongated die plate applied to a screw press of a conventional type.

Fig. 2 shows, with some elements removed, a section taken along the plane II—II of Fig. 1.

Fig. 3 shows a view from the bottom in the direction of the arrow III, of the elongated die plate.

Fig. 4 shows a plan view of the end of the press and of the elongated die plate in the direction of the arrow IV.

Fig. 5 shows the details of the connection of the die plate and the counterdie plate of elongated shape, being a partial sectional view taken along the plane V—V of Fig. 1.

Fig. 6 shows a section taken along the plane VI—VI of Fig. 7 of the head of a press with a circular die plate and with a counterdie plate, all diagrammatically shown.

Fig. 7 shows the die plate as seen in the direction of the arrow VII (Fig. 6).

The end block 1 of the press provides the conduit 2 along which the screw of the press pushes the paste towards the die plate. Said conduit is connected (Fig. 1) with a transverse conduit 3 provided with spaced holes 4. Underneath the conduit 3 a guide 5 in the shape of a channel is disposed and has the same number of holes 6 which will register coaxially with the said holes 4. In the channel shaped guide 5 the ledges 7 are disposed and these are designed to house the counterdie plate 8 which will be pushed into the guide 5, in the direction of the arrow 9. The die plate 10 itself will consequently be disposed under the counterdie plate 8 and will rest on the guide surfaces and the ledges 7. In order to avoid displacing of the die plate 10 and the counterplate 8 in the direction of the arrow 9, the ends of the guide 5 have side swellings 11 in which the screws 12 which secure the end plate 13 are screwed; this structure being provided for each end of the die plate. Corresponding to the above mentioned holes 4 and 6, the counterplate 8 has the same number of holes 14 which are designed to connect the conduit 3 with the chambers 15 disposed in the counterdie plate; said chambers are substantially enlarged on their rim towards the die plate and, corresponding to the larger dimensions of said chambers there are, on the die

plate the holes 16 for the passing of the macaroni. In the illustrated embodiment, said holes are disposed around a threaded hole in which the threaded adjusting element 17 is screwed. The end 18 of this element penetrates to a variable extent, according to its adjustment, into the chamber 15. The rectilinear conduit 3, is open at its two ends on which the screwed plugs 19 are applied. When they are removed it is possible to enter directly into the inside of the conduit 3. The entire above mentioned group is mounted in an easily removable way to the head 1 by means of the pivot 20, the plate 21, the counterplate 22 and the bolt 23 mounted on a pivot 24 and controlled by means of the lever nut 25. The entire assembly is covered with the usual jacket or housing 26 for the passage of a heat transfer liquid to maintain the alimentary paste at the desired temperature.

The operation of the device is as follows: If the die plate 10 without the adjusting elements 17 and without the counterplate 8, would be directly connected to the conduit 3 so that the paste that passes to it would be forced to go through to holes 16 to form threads, it would be observed that, due to many causes such as: deviating of the flow of the paste, change of temperature and therefore of speed of the paste, varying friction in the various zones, etc., the threads of the macaroni which emerge from the holes 16 would have perceptibly different lengths as occurs in the well known elongated die plates.

Instead, according to the invention, by adjusting with care one by one the elements 17, that is to say by varying the capacity of each chamber 15, or by moving to various positions their heads 18 with respect to the arrival opening 14 of the paste, the above mentioned conditions are controlled in such manner that, through each of the holes of the die plate 16, the macaroni will pass at exactly the same speed, so that the length of the threaded paste will be absolutely the same along the whole of the die plate 10.

With particular reference to Figs. 6 and 7 there is in 27 the usual arrival chamber of the paste in the head 28 of a press with circular die plate (only diagrammatically shown). In this embodiment there are the same features of construction before mentioned and they are provided with the same reference characters as those before used.

For a circular die plate the operation is as above described, obtaining the desired uniformity of flow of the macaroni through the conduits 16 by means of suitable adjustment of each element 17.

Though, for illustrative purposes the present invention has been based on what is above described and shown, many changes and modifications may be made in the embodiments of the invention, all based on the fundamental idea of the same as set forth in the following claims.

What I claim is:

1. In a press for the manufacture of macaroni and like alimentary paste products from a mass of alimentary paste, a die plate positioned adjacent the outlet of said press, a plurality of chambers communicating with said outlet for supplying the paste to said die plate, each of said chambers communicating with at least one aperture in the die plate for expression of the alimentary paste, and an adjustable element movable in each of said chambers for controlling the volume of alimentary paste supplied to said aperture whereby the flow of alimentary paste in each zone of the die plate corresponding to each of said chambers is controlled at will.

2. In a press for the manufacture of macaroni and like alimentary paste products from a mass of alimentary paste, a die plate positioned adjacent the outlet of said press, a plurality of frusto-conical chambers communicating with said outlet for supplying the paste to said die plate, each of said frusto-conical chambers communicating with at least one aperture in the die plate for expression of the alimentary paste, and an adjustable cylindrical element coaxial with each of said frusto-conical chambers and movable axially therein for controlling the volume of alimentary paste supplied to said aperture whereby the flow of alimentary paste in each zone of the die plate corresponding to each of said frusto-conical chambers is controlled at will.

3. In a press for the manufacture of macaroni and like alimentary paste products from a mass of alimentary paste, a die plate positioned adjacent the outlet of said press, a plurality of frusto-conical chambers communicating with said outlet for supplying the paste to said die plate, each of said frusto-conical chambers communicating with a plurality of apertures in the die plate lying on the circumference of a circle having a center corresponding to the axis of the frusto-conical chamber for expression of the alimentary paste, and an adjustable cylindrical element coaxial with each of said frusto-conical chambers and movable axially therein for controlling the volume of alimentary paste supplied to said apertures whereby the flow of alimentary paste in each zone of the die plate corresponding to each of said frusto-conical chambers is controlled at will.

4. In a press for the manufacture of macaroni and like alimentary paste products from a mass of alimentary paste, a die plate positioned adjacent the outlet of said press, means defining a chamber communicating with said outlet for supplying the paste to said die plate, a plurality of smaller chambers communicating with said first-named chamber, each of said smaller chambers communicating with at least one aperture in the die plate for expression of the alimentary paste, and an adjustable element movable in each of said smaller chambers for controlling the volume of alimentary paste supplied to said aperture whereby the flow of alimentary paste in each zone of the die plate corresponding to each of said smaller chambers is controlled at will.

5. In a press for the manufacture of macaroni and like alimentary paste products from a mass of alimentary paste, a die plate positioned adjacent the outlet of said press, means defining a chamber communicating with said outlet for supplying the paste to said die plate, a plurality of frusto-conical chambers communicating at their apices with said first-named chamber, each of said frusto-conical chambers communicating with at least one aperture in the die plate for expression of the alimentary paste, and an adjustable element movable in each of said frusto-conical chambers for controlling the volume of alimentary paste supplied to said aperture whereby the flow of alimentary paste in each zone of the plate corresponding to each of said frusto-conical chambers is controlled at will.

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