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C. AMBRETTE

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PRESS FOR FORMING ALIMENTARY PASTES

Filed Sept. 15, 1926

Fig. 1.

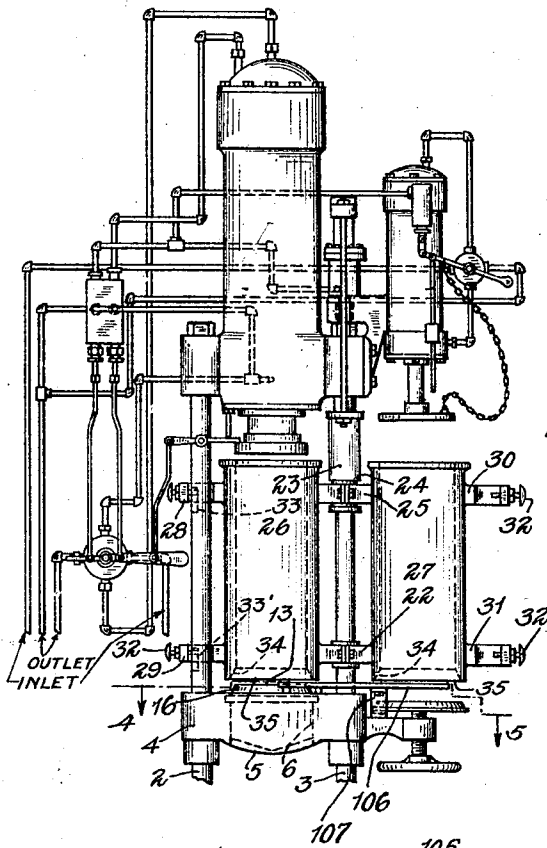


Fig. 2.

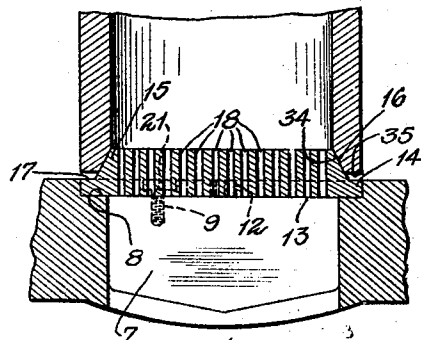


Fig. 3.

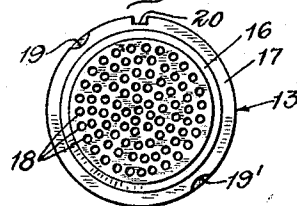


Fig. 4.

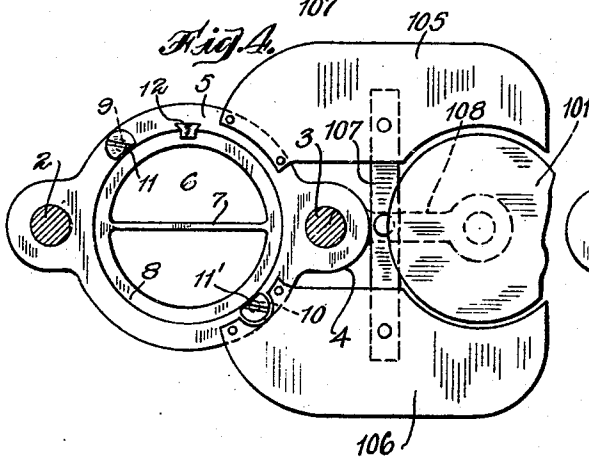
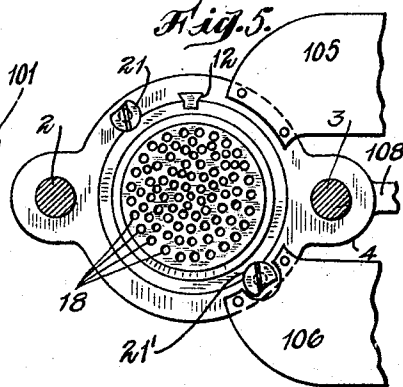


Fig. 5.



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PRESS FOR FORMING ALIMENTARY PASTES.

Application filed September 15, 1926. Serial No. 135,516.

This invention relates to presses in general for forming alimentary pastes in the shape of spaghetti and the like, and particularly to presses having a vertically extending cylinder having a die extruding member at its lower end and a plunger cooperating with this member to extrude the alimentary pastes through such member.

On account of the thick consistency of such alimentary pastes, the paste is subjected to extremely high pressures in order to produce the desired result. As a result thereof, unless proper means are provided to insure a tight non-leak joint between the cylinder and the die, the plastic mass would squeeze through between such cylinder and die. In the practice heretofor, it has been customary to use auxiliary jacks for pressing the cylinder into tight engagement with the die.

To this end the present invention aims to provide a new relation between the die and cylinder whereby auxiliary means such as jacks and the like may be dispensed with and yet a safety tight joint be provided between the cylinder and die such as will positively prevent the extrusion of material between the cylinder and die.

Specifically, the present invention aims to provide a press having a cylinder and die of different compositions, the cylinder preferably being composed of steel and the die of bronze, in which the lower inner periphery of the cylinder tapers outwardly to form a surface that extends at an angle of substantially seventy-five degrees to the plane of a transverse section, and in which the die has a face extended to oppose such inclined face of the cylinder, which face of the die similarly inclines at about seventy-five degrees to the transverse section of the cylinder, and in which these faces are of sufficient length so as to take care of ordinary wear.

It is further an object of the present invention to provide opposing faces on the die and cylinder which incline to the transverse section of this cylinder at an angle that is not less than sixty degrees and not more than eighty degrees, since it has been found that when the angle is less than sixty degrees, the average pressures used for extruding plastic material are sufficient to cause a leakage between the opposing surfaces, and that when the angle is greater

than eighty degrees the frictional engagement between the die and cylinder is such as to prevent the separation of the same without injury to the cylinder and die. It has also been found desirable not to make this angle greater than eighty degrees since the inclined face of the die as a rule terminates in a plane face lying substantially in a plane that lies on a transverse section of the cylinder, and that at an angle greater than eighty degrees the wear between the opposing faces is such that it will soon cause the lower plane edge of the cylinder to engage such plane surface of the die and thus permit the material to leak out through such opposing plane surfaces.

These and other features, capabilities and advantages of this invention will appear from the subjoined detailed description of one embodiment thereof illustrated in the accompanying drawings, in which

Figure 1 is a fragmental assembly view of the press in neutral position when the various elements are disposed in raised position.

Fig. 2 is an enlarged fragmental sectional view showing the die in engagement with the cylinder.

Fig. 3 is a plan of the die.

Fig. 4 is a section on the line 4—5 of Fig. 1, with the die removed.

Fig. 5 is a section on the line 4—5 of Fig. 1, with the die in place.

In the embodiment illustrated, see Fig. 1, a lower frame is provided having two standards 2 and 3 secured thereto. To the standards 2 and 3 there is secured the bracket 4, see Figs. 4 and 5. The bracket 4 has an apron 5 extending between it to form a central cylindrical chamber 6. For the purpose of reinforcement the bracket 4 has a rib 7 extending across the cylindrical chamber 6. At the upper inner periphery of the cylindrical chamber 6 there is formed a recess or die seat 8. Adjacent to the die seat 8 at diametrically opposed positions, there are pivotally secured the locking screws 9 and 10, each of which is recessed at one side 11, 11', which recesses 11, 11', register with the upper inner periphery of the chamber 6 to facilitate the insertion and removal of the die to be described. Extending inwardly from the bracket 4 above the seat 8, there is provided the key 12.

On the seat 8 is positioned the die 13, see Figs. 2 and 5. This die 13 has a lateral extension 14 to fit on the seat 8 and an upwardly extending portion 15, the periphery of which is machined off to form a conical face, the inner face 16, forming an angle of one hundred and five degrees in the present instance with the upper surface or outer face 17 of the lateral extension 14. Inwardly of the face 16 and the extension 14, the die is provided with a plurality of vertically extending openings 18. The die is preferably composed of bronze and, see Fig. 3, has two diametrically opposed notches 19 and 19' and a keyway 20. When in position on the bracket 4, see Fig. 5, the key 12 is received by the keyway 20, and the lock screws 9 and 10 will be turned so that their wing portions 21, 21' extend into the notches 19, 19', whereby the die is positively anchored against vertical as well as lateral displacement.

The standards 2 and 3 extend up above the bracket 4. To the standard 3 just above the bracket 4, there is pivotally connected the journal 22. Above the journal 22 there is slidably mounted the sleeve 23 having a recess 24 at its lower end to receive the journal 25 pivotally mounted therein. To the journals 22 and 25 there are secured the main dough containing cylinders 26 and 27. Extending from the side of the cylinder 26 there are provided two claws 28 and 29 respectively, which are positioned substantially diametrically opposed to the journals 25 and 22 respectively. Similarly, the cylinder 27 has secured to its side two claws 30 and 31 which are substantially diametrically opposed to the journals 25 and 22 respectively. The claws 28 and 29 are positioned relative to the rod 2 so that they will engage the same as illustrated in Fig. 1, and anchor the cylinder 26 in position above the die 13. The claws 30 and 31 are similarly positioned so that when the cylinder 26 is swung out of registration with the die 13, the cylinder 27 may be swung into registration with the same, in which position the claws 30 and 31 will engage the rod 2 and anchor the cylinder 27 in registration with the die 13. The claws 28, 29, 30 and 31 are provided with spring pressed fingers 32 to engage in the recesses 33, 33', in which recesses, the fingers 32 will slide vertically with the vertical movement of the cylinders 26 and 27 while anchoring the same against axial displacement.

The cylinders 26 and 27 are preferably composed of steel to cooperate with the bronze die 13. In the present instance, the lower inner periphery of the steel cylinders 26 and 27 is tapered to form a conical face, the inner face 34 forming an angle of seventy-five degree with a plane extending at right angles to the axes of the cylinders 26

and 27. Preferably the lower peripheral edge of the face 34 is smaller than the lower peripheral edge of the face 16. In the present instance, the face 34 is shorter than the face 16 so that in actual practice a distance of about one-eighth of an inch is formed between the extreme lower face, the outer face 35 of the cylinder 26 or 27 and the face 17 of the die 13 when in engagement with one another. The angle formed by the face 16 with the face 17 of the die should not be greater than one hundred and twenty degrees and not less than one hundred degrees, and similarly the angle formed by the face 34 with the face 35 should not be greater than one hundred and twenty degrees and not less than one hundred degrees. In practice it has been found that when the angle is more than one hundred and twenty degrees, with the extreme pressures exercised on the dough contained in the cylinders 26 and 27, unless auxiliary fastening means are provided, the dough would squeeze through between the lower edges of the cylinders 26 and 27 and the die 13. On the other hand, if the angle is less than one hundred degrees, the wear on the faces 34 and 16 would be sufficient in time to permit the lower face 35 to engage the face 17. As a result thereof, the dough would easily squeeze out through the space formed between the faces 35 and 17, if a sufficient space were formed between the faces 34 and 16 to permit access thereto by the dough contained in the cylinder. Furthermore, when the angle is less than one hundred degrees, the frictional resistance caused by the engagement of the two faces is such that considerable difficulty is experienced in separating the cylinder from the die without materially injuring the same. After extensive experiments it has been found that the best results can be obtained by making this angle substantially one hundred and five degrees. When the angle is more than one hundred and twenty degrees, it is necessary to use auxiliary jacks to hold the cylinder 26, 27, in engagement with the die 13 while the pressure is being exercised on the dough in the extruding process. When the angle is less than one hundred and twenty degrees and preferably one hundred and five degrees, all auxiliary tightening or holding means may be dispensed with, and a sufficiently tight joint will be formed between the faces 34 and 16 to withstand the various extreme pressures required to extrude dough such as the alimentary pastes in the making of spaghetti and the like.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. The combination with a pressure exer- 130

cising plunger, of a vertically extending dough receiving tubular cylinder having its lower end provided with an outer face and an inner face, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and an inner face tapering inwardly from said outer face and terminating in the inner wall of said cylinder to form an angle of about one hundred and five degrees with the outer face, and a die having a series of die openings and an outer face and an inner face surrounding said die openings, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and the inner face tapering inwardly and upwardly from said outer face to form an angle of about one hundred and five degrees with the outer face, and in dimensions conforming to the dimensions of the inner face of said cylinder to register with the same and form a space between said outer faces.

2. The combination with a pressure exercising plunger, of a vertically extending dough receiving tubular cylinder having its lower end provided with an outer face and an inner face, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and an inner face tapering inwardly from said outer face and terminating in the inner wall of said cylinder to form an angle of less than one hundred and nineteen degrees and more than ninety-nine degrees with the outer face, and a die having a series of die openings and an outer face and an inner face surrounding said die open-

ings, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and the inner face tapering inwardly and upwardly from said outer face to form an angle of less than one hundred and nineteen degrees and more than ninety-nine degrees with the outer face, and in dimensions conforming to the dimensions of the inner face of said cylinder to register with the same and form a space between said outer faces.

3. The combination with a pressure exercising plunger, of a vertically extending dough receiving tubular cylinder having its lower end provided with an outer face and an inner face, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and an inner face tapering inwardly from said outer face and terminating in the inner wall of said cylinder to form an angle of about one hundred and five degrees with the outer face, and a die having a series of die openings and an outer face and an inner face surrounding said die openings, the outer face lying in a plane that extends perpendicularly to the axis of the cylinder, and the inner face tapering inwardly and upwardly from said outer face to form an angle of about one hundred and five degrees with the outer face, and in dimensions conforming to the dimensions of the inner face of said cylinder to register with the same.

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