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PRESS FOR FORMING PULP ARTICLES.

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1,019,786.

Patented Mar. 12, 1912.

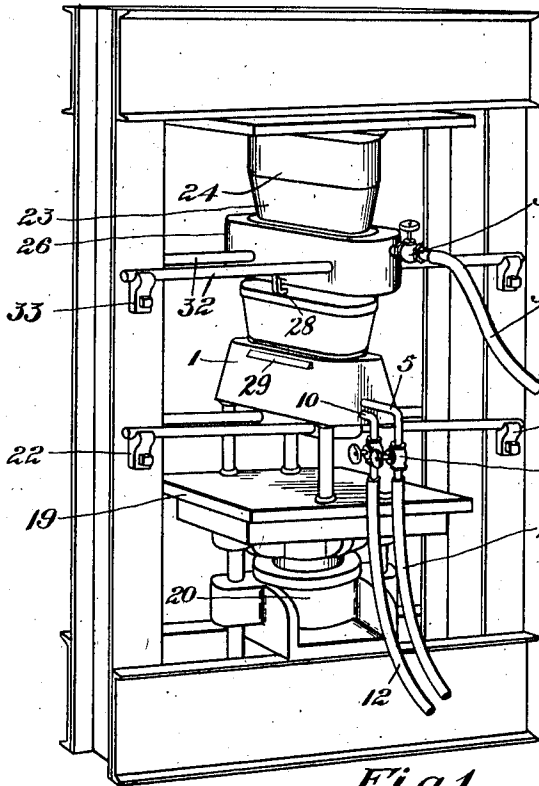


Fig. 1.

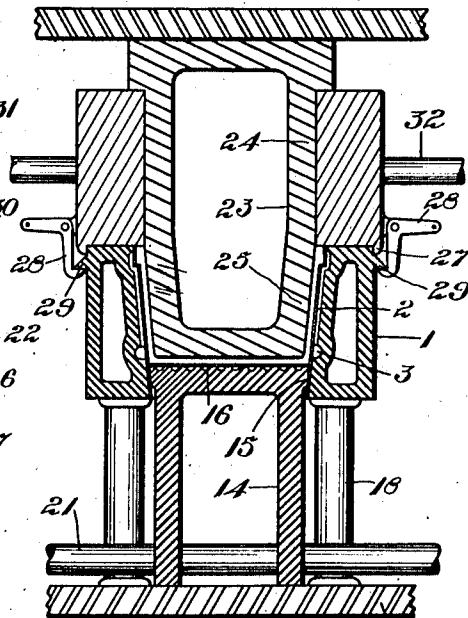


Fig. 2.

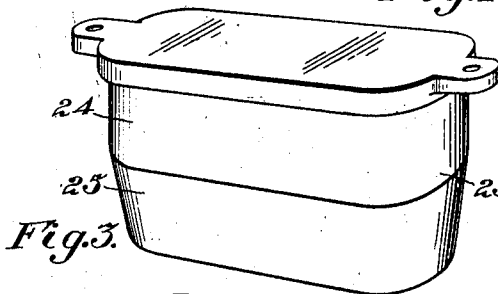


Fig. 3.

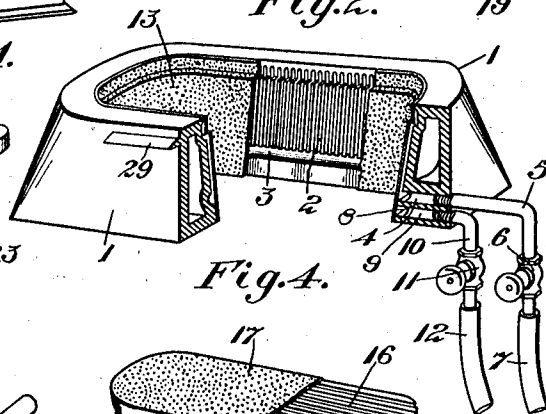


Fig. 4.

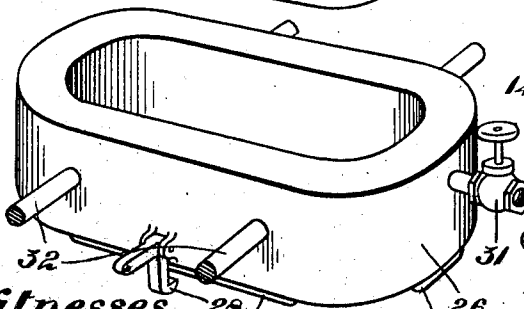


Fig. 5.

Witnesses
Admission
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Fig. 6.

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PRESS FOR FORMING PULP ARTICLES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER WHEELER GRENVILLE, a subject of the King of Great Britain, and resident of the town of Thorold, in the county of Welland, in the Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Presses for Forming Pulp Articles, of which the following is a specification.

My invention relates to improvements in presses for forming pulp articles, and the objects of my invention are to provide means for permitting the ready engagement of the pressed articles from the die after the pressing operation, and to further regulate the drainage of the moisture from the article during pressing in such a manner as to cause uniform distribution thereof, whereby the article will dry uniformly and be of an even consistency throughout.

Further objects still are to provide an improved means for admitting the pulp and for stripping the male die.

In carrying out the invention these objects are accomplished in the first place by a series of drainage channels connected separately to the sides and bottom of the female die, whereby said sides and bottom of the die may be separately drained thereby preventing the segregation of the pulp articles in the bottom of the receptacle; in the second place by an inwardly movable bottom for the female die supported therefrom and adapted to be actuated inwardly upon opening of the press to lift the formed articles from the walls of the die; and in the third place by means of an improved annular extension member fitting around the top of the female die and adapted to be separated therefrom and from the male die when the presses are open, the pulp stock being fed through said extension member, and the said extension member being adapted to strip the male die, other features of the invention being more fully set forth and described in the accompanying specification and drawings.

In the drawings, Figure 1 is a perspective view of the press showing the dies in position with a formed article ready to be removed therefrom. Fig. 2 is an enlarged vertical cross section of the dies used in forming the article. Fig. 3 is an enlarged perspective detail of the male die. Fig. 4 is an enlarged perspective detail of the female

die shown partly in section and with the perforated lining partly broken away. Fig. 5 is an enlarged perspective detail of the movable bottom of the female die. Fig. 6 is a perspective view of the hopper for the female die.

In the drawings, like letters of reference indicate corresponding parts in each figure.

Referring to the drawings, 20 represents a hydraulic press of suitable construction and having a platen 19. 1 represents a female die which is supported in a suitable manner from this platen as by standards 18. In accordance with the present invention, this female die is formed with an inwardly movable bottom 14, the said bottom being supported wholly from the female die, this being accomplished in the particular embodiment illustrated by tapering the interior walls of the die and forming a corresponding outwardly flared portion 15 on the bottom adapted to engage the inner wall, as already mentioned.

As already mentioned it is desirable that separate means are provided for draining the side and bottom of the article during formation. As is usual in such presses the inner wall of the female die is covered by a perforated lining 13 and the top of the bottom is covered by a like lining 17. The draining of the side is effected through the medium of a plurality of parallel and longitudinally extending channels 2 which communicate at their bottom with an annular channel 3 which connects with an outlet passage way 4 which communicates with a drainage pipe 5 having a suitable stop valve 6 thereon and being connected to the flexible drainage pipe 7. The bottom is drained through the medium of a plurality of parallel passage ways 16 extending from end to end and adapted to communicate at one end with a transverse passage way 8 formed in the end walls of the female die, the said passage way communicating with an outlet port 9 connected to a pipe 10 having a valve 11 thereon, which pipe communicates with a flexible drainage pipe 12.

To limit the downward movement of the bottom of the female die and thereby to move the same inwardly to lift the article from the walls of the female die, transversely extending rods 21 are provided connected to the bottom, and are adapted to be engaged by suitable brackets 22 secured to the sides

of the frame of the press, the said brackets engaging the rods before the platen has completed the whole of its downward movement.

The material for the formation of the article is supplied through the medium of an annular extension member 26 adapted to rest on the upper side of the female die, and having guide-lugs 27 on the side adapted to engage and fit over the said walls of the female die. The pulp stock is supplied to this receptacle through a supply pipe 30 having a valve 31, the said supply pipe extending through the walls of the extension member and opening on the interior thereof. The male die 23 is rigidly secured to the frame of the press and has an upper portion 24 fitting closely to the walls of the extension member 26, whereby when the male die is withdrawn from the female die, the extension member will then operate to strip the same. The lower portion 25 of the male die is suitably shaped to conform to the interior of the female die.

In order to effect separation between the extension member and the female die after the article has been pressed, a plurality of rods 32 are provided on the extension member adapted on the lowering of the platen to engage suitable stops 33 on the frame of the press.

In order to hold the extension member and the female die together during the pressing operation, a plurality of pivoted latches 28 are provided on the extension member adapted to engage a flange 29 on the exterior of the female die.

In operation of the machine, when the female die is at its lowest position, the movable bottom 14 will extend a distance inwardly in the female die, being supported from the rods 21 as already described. Upon the female die being moved upwardly it will engage the flared portion 15 on the bottom and the bottom will be raised and the die closed. On the upward movement of the female die being continued it will engage the underside of the extension member 26, which member as previously described will have been supported by the rods 32. On engaging this member, the latches 28 will come into engagement with the flange 29. As soon as the extension member is raised from its support, the valve 31 is opened allowing the pulp stock to flow from said hopper into the female die. When a sufficient amount of the stock has been allowed to enter, the valve is closed and the upward travel of the platen continued. The male die then passes through the extension member into the female die, the upper portion of the die fitting closely to the walls of the extension member, and thereby closing the same. This inward movement of the male die will press the forming article, such as a basket, and cause the same

to be molded in the female die, the pulp stock surrounding the female die and filling up the space between the two dies. As the male and female dies move together, the liquid in the pulp stock is squeezed out and escapes through the perforated lining being carried away through the pipes 7 and 12 as already described.

On completion of the pressing operation, the platen is dropped and as it recedes from the male die, the extension member 26 moves downwardly until clear of the lower end of the male die, when the latches 28 are tripped in any suitable manner which will permit the extension member and the female die to separate. The extension member in its downward movement will strip the male die. Immediately following this tripping of the latches, the rods 32 engage the brackets 33 and arrest the downward movement of the extension member. Immediately following the arresting of the extension member 26 the bottom 14 of the female die is arrested and caused to move inwardly by means of rods 21 coming in contact with the brackets 22. As the female die continues its downward movement it will separate from the formed article leaving the article supported on the upper surface of the bottom 14 of the female die. The downward movement of the female die should be sufficient to finally leave the upper edge of the top surface of the bottom 14. The basket or other article may then be removed and placed aside to dry.

It will thus be seen that the extraction and separation of the completed article from the press is an exceedingly simple operation as the inwardly movable bottom causes the article to be delivered free and clear from all dies.

As many changes could be made in the above construction, and many apparently widely different embodiments of my invention, within the scope of the claims, could be made without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specifications and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. A pulp press having suitable dies and means for separately withdrawing the liquid from the sides and bottom of the article being pressed and means for separately controlling the amount of liquid withdrawn from said sides and bottom.

2. In a pulp press, a female die having an open bottom, a male die, means for effecting cooperative movement between the dies, a movable plate forming the sole closure of the bottom of the female die, and means for automatically moving the plate on the female die inwardly as the dies are separated.

3. In a pulp press and in combination, a female die, a hopper fitting about the top of the same, but disconnected therefrom, a male die adapted to extend through the hopper into the female die, and means for producing relative movement between the hopper, the female die, and the male die, whereby when the dies are separated, the hopper will be disconnected from the female die and from the male die, and when closed the male die will extend through the hopper into the female die.

4. In a pulp press and in combination, a male die, an annular hopper disposed below the same and adapted to fit closely around the same, means for supporting the hopper in position, a female die disposed below the hopper, means for moving the female die upwardly and downwardly, and an inwardly movable bottom for the female die supported wholly therefrom, and means engaging the underside of the bottom of the female die, whereby, when the female die is in its lowest position, the bottom will be moved a distance inwardly, the operation of the female die being such that it successfully lifts the bottom and the hopper then comes into proper position with respect to the male die.

5. A pulp press having a female die with separate outlets for the liquids through the sides and bottom thereof, and means for separately controlling the amount of liquid passing through the said outlets.

6. A pulp press having a female die with a plurality of channels along the sides thereof, a conducting pipe communicating with said channels and a plurality of other channels formed in the bottom, and a conducting pipe communicating with the channels formed in the bottom.

7. A pulp press having a female die formed with a plurality of longitudinally extending channels in the side walls and an annular channel communicating with the said longitudinally extending channels, a plurality of transverse channels formed in the bottom, a second channel communicating with said transverse channels, and conducting pipes separately connected to said annular and second channels.

8. In a press for forming pulp articles, a female die rigidly supported from the platen of the press and having its inner walls formed to the outside shape of the article to be made and open at the bottom, a block closing the open end of said die and carried by said die through the operation of the platen in its upward travel, means for arresting the downward movement of said block, and a male die rigidly secured to said

press and formed to the inside shape of the article to be made.

9. In a press for forming pulp articles, a platen, a female die rigidly secured to said platen and being open at the bottom, a removable bottom of said die moving upwardly therewith and having rods extending therefrom and contacting with suitable stops on said press in its downward movement, a male die rigidly secured to said press and having its lower end formed to the inside shape of the article to be made, and a hopper encircling said male die and adapted to rest upon the upper surface of said female die and having rods extending therefrom engaging suitable stops on said press to arrest the downward movement of the hopper.

10. In a pulp press and in combination, a platen, a female die supported therefrom, a removable bottom for the female die, stops adapted to force said bottom inwardly on the downward movement of the female die, an extension box adapted to fit around the top of the female die, stops adapted to limit the downward movement of the extension box to cause separation between the same and the female die, and a male die adapted to fit through the extension box into the female die.

11. In a pulp press and in combination, a male die, a female die, an extension member fitting around the top of the female die and adapted to strip the male die, means for actuating the dies and the extension member to cause separation of each from each, and closure together.

12. In a pulp press the combination with a fixed male die, movable platen, and female die carried by the platen and having an open bottom, of a plate forming the sole closure of the female die, means for reciprocating the platen and fixed means adapted to engage the movable plate and force the same inwardly before the female die has reached the end of its movement away from the male die.

13. A pulp press having suitable dies and means for separately withdrawing liquid from different parts of the article being pressed, and means for separately controlling the amount of liquid withdrawn from each part.

Signed at the city of Toronto, in the county of York, in the Province of Ontario, in the Dominion of Canada this 10th day of July, 1908.

WALTER WHEELER GRENVILLE.

Witnesses:

H. DENNISON,
WM. C. MUIR.