

C. D. ORMISTON.
PULP MOLDING MACHINE.

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UNITED STATES PATENT OFFICE.

CYRUS D. ORMISTON, OF LOCKPORT, NEW YORK, ASSIGNOR TO THE UNITED INDURATED FIBRE COMPANY OF NEW JERSEY, OF NEW YORK, N. Y.

PULP-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,789, dated April 4, 1893.

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To all whom it may concern:

Be it known that I, CYRUS D. ORMISTON, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Pulp-Molding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of pulp molding machines wherein a male die or former secured to a suitable base is removably held within a dome or casing which is secured by bolts to a base ring. In these machines a rubber bag or diaphragm is secured between the outside of the former and the inside of the dome and this rubber diaphragm is usually secured to a rigid head which is adapted to mold the flat portion of the pulp article. The pulp is forced in between the former and the diaphragm until a sufficient quantity is admitted and water under pressure is admitted around the outside of the diaphragm whereby the pulp is compressed against the surface of the former. In the old form of machine the rubber diaphragm was made with a wide flange on its lower end and it was held in place by this flange being bolted between the dome and the base ring on which said dome rested. As a result of this construction it was a long and difficult operation to remove the bag from the machine for the purpose of repairing it as the dome had to be entirely disconnected from the base ring and raised up before the bag could be removed. Inasmuch as the bag had to be frequently repaired this involved a very considerable loss of time and lessened the production of the machine.

One of the principal objects of my present invention is to devise a means of securing the bag in the machine so that it may be readily removed without taking the machine apart.

A further object of my invention is to introduce the pulp into the machine through some non-movable part of the machine and so do away with the hose which has been heretofore used to introduce the pulp through the movable base.

A further object of my invention is to provide a pipe for conducting the pulp from the duct which passes through the movable base to the opening through the head of the former which will couple and uncouple automatically as the former is put on and taken off from its base, the pipe being in such a position that it cannot be reached for the purpose of manipulating it.

I attain the several objects of my invention by securing the lower edge of the bag to a ring which fits into a recess in the lower edge of the dome and against which the movable base rests to form a packing when said base is locked in position. The pulp is introduced through a duct passing through the lower part of the dome which connects with a duct in the movable base when the latter is in position. This latter duct connects with a pipe within the former, which in turn connects by a sleeve with the feed pipe which discharges through the head of the former.

I illustrate my invention in the accompanying drawing which represents a central vertical section through a machine for forming tubs and in which machine my invention is embodied.

In the drawing A is the dome, C the annular bed piece to which it is secured by bolts, C' C' being standards on which the machine rests.

B is the movable base which is adapted to fit the open end of the dome A and on the base B is secured the hollow former E.

b and D are the piston and cylinder respectively of a hydraulic jack by which the former is raised and lowered and b² is the locking ring by which the base B is locked in position.

F is the head to which the rubber diaphragm is attached, G is the spindle by which the same is centered and g is a guide for the same.

a is the pipe for introducing the pressure fluid.

The parts thus far described are all common to the old machines and need no further description and I will now proceed to point out the features of my invention.

In the lower portion of the dome and adjacent to the inner or upper surface of the base B I form an annular recess for receiving the ring j. This ring is in such a position that it

will form a packing between the base and the dome when the base is pressed up against it. In order to get the recess in a proper position and bring it in so that it will come over the base I make use of a ring *i* which is inserted between the dome and the bed piece. This extends inward beyond the inner surface of the dome or bed piece and in its under side is formed the annular recess spoken of. The ring *j* is preferably of rubber and molded in one piece with or otherwise secured to it, is the diaphragm *J* the upper edge *j* of which is clamped between the two plates *f'* *f*² of the head *F*. Where the base *B* comes in contact with the ring *j* I insert a ring *l* which is preferably made of brass or other non-corrosive metal. It will be seen that when the former is lowered the ring *j* is left in such position that it can be pulled down out of the groove and the bag removed without taking the machine apart, and when the base is raised into place the ring *j* forms a packing between the two sections of the machine.

I introduce the pulp into the machine through the bed piece *C* by means of a duct *c* connected by a pipe *c'* with the source of supply. This duct *c* connects with a duct *b'* situated in the base *B* and so arranged as to communicate with the duct *c* forming a tight joint between them when the base is raised. The duct *b'* may discharge outside the former by branching into the space between the former and the rubber bag as shown in dotted lines or it may discharge into said space by suitable connections passing through the inside of the former. I here show it as connecting with a pipe *e*³ inside of the former. This pipe *e*³ connects by means of a sleeve *e*⁴ with a supply pipe *e* having a branch or elbow *e*². The supply pipe *e* opens through the head of the former and has a plunger valve *e'* for closing its outlet. The valve *e'* is raised and lowered by means of a screw *r* which extends down through the base *B*. It is evident that when the former is removed the pipes *e*² and *e*³ will automatically uncouple and will couple again in the same way when it is put on.

When it is desired to remove the bag for repairs or for any other purpose the former is lowered and the ring *j* is slipped from the recess in which it is held. The two plates of the head *F* are then separated and the bag is removed. As already mentioned, I prefer to mold the ring *j* and the bag in one piece from rubber, but this is not essential and they may be otherwise connected. The pulp supply being connected with the pipe *c'* by ordinary

pipes the rubber hose which connected with the former in the old machines is done away with leaving the space beneath the machine clear.

The ring *i* is introduced for convenience and is not essential as the recess may be formed in an inward projecting portion of the dome proper.

I claim—

1. In a pulp molding machine the combination of an open ended dome or case, a male die or former fitting within said dome or case, a movable base to which said former is secured fitting the open end of said dome, an annular recess around the open end of said dome and adjacent to the inner side of said base, a ring fitting within said recess, an elastic bag or diaphragm attached to said ring and surrounding said former, substantially as described.

2. In a pulp molding machine, the combination of an open ended dome or case, a male die or former fitting within said dome or case, a movable base to which said former is secured fitting the open end of said dome, an annular recess around the open end of said dome adjacent to the inner side of said base, a ring of elastic material fitting within said recess, an elastic bag or diaphragm secured to said ring and surrounding said former, substantially as described.

3. In a pulp molding machine, an open ended dome or case, a removable base fitting within the open end of said dome, a male die or former on said base, a duct in said base for admitting pulp to the space between the former and the rubber diaphragm and a duct extending through the side of said dome connecting with a source of supply and connecting with the duct in said base when the base is in position, substantially as described.

4. In a pulp molding machine, a base and a hollow male die or former secured to said base, a feed pipe inside of said former and opening through the head thereof, a branch or elbow connecting with said feed pipe, a supply duct passing through said base, a pipe within the former connecting therewith and a sleeve connecting said pipe with said elbow whereby the former may be placed on said base and the pipes coupled by the same operation, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS D. ORMISTON. [L. s.]

Witnesses:

T. M. McGRATH,
CHAS. E. FOLGER.