(No Model.)

W. H. CRAM.

MECHANISM FOR THE MANUFACTURE OF BARRELS.

No. 401,931. Patented Apr. 23, 1889.

Fig. 2.

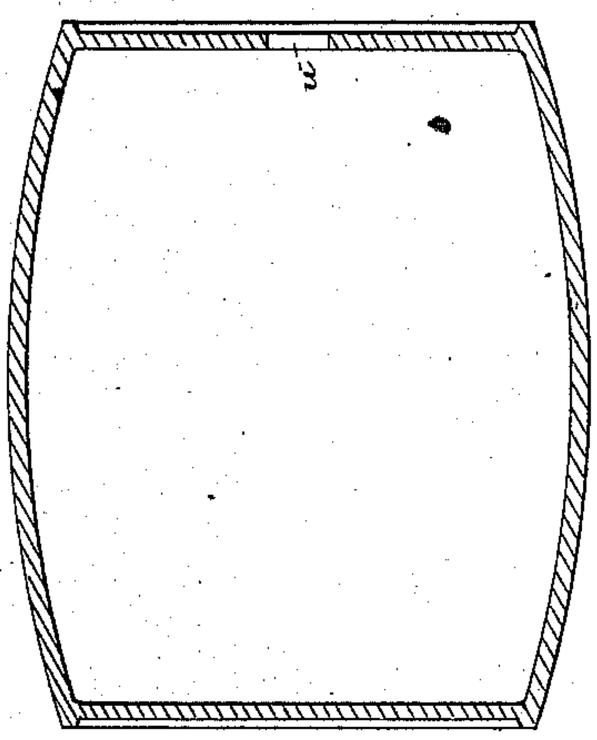

Fig. 1.

Fig. 3.

Witnesses.
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MECHANISM FOR THE MANUFACTURE OF BARRELS.

SPECIFICATION forming part of Letters Patent No. 401,931, dated April 23, 1889.

Application filed July 26, 1886. Serial No. 209,187. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARRIS CRAM, of North Windham, in the county of Cumberland, in the State of Maine, have invented a new and useful Improvement in Mechanism for the Manufacture of Barrels; and I do hereby declare the same to be described in the following specification, reference being had to the accompanying drawings, of which—

Figure 1 represents a longitudinal section of the machine. Fig 2 is a longitudinal and median section of the complete barrel. Fig. 3 shows one way of connecting the abutting ends of the two sections of the hollow vessel.

Such a barrel has its body in one entire piece of paper-pulp, the sides and heads being formed and connected at one operation.

In Fig. 1, A represents a hollow vessel, case, or shell of barrel form, it being divided transversely at its middle into two sections, *a* and *a'*, which butt together with a stuffed or close joint, and there they have in practice suitable means for connecting them to each other and for enabling them to be disconnected in order for one of them to be drawn endwise away from the other. One way of connecting these sections is shown in Fig. 3. One section, *a'*, has an overhanging lip, *n*, with a groove, *n'*, and projections n^2. The other section, *a*, has a circumferential groove, *p*, in which loosely fits an annulus, *p'*, provided with projections p^2. By turning this annulus so that the projections p^2 come behind the projections n^2, the sections *a* and *a'* are held together.

The vessel A is supported by two tubular shafts, B and C, extending in opposite directions from its heads and concentrically therewith, as represented, one of such shafts having a diameter larger than that of the other. The two shafts are supported or journaled in suitable bearings in four or any other proper number of standards, D. The said shafts near their outer ends extend through stuffing-boxes *b*, projecting from hollow boxes E and E', the shafts at their outer ends opening into such boxes.

Directly over the vessel A is a horizontal conduit, F, that opens into the boxes E and E' by vertical branch pipes G G', one of which, G, at its upper part is connected with the conduit F by an intervening flexible extension or part, F', which is a hose of sufficient length to allow of the section *a* of the vessel A being drawn far enough away from the section *a'* for the removal of a barrel from the machine after completion by it of such barrel.

The two standards D, by which the tubular shaft B is supported, extend upward from a carriage or platform, H, having its wheels resting on a railway, I, such being to enable the part *a* to be removed, as described, relatively to the part *a'* of the vessel A. From the middle of the conduit F a pipe, C', leads to an air-exhausting pump, K.

Concentrically within the vessel A is the barrel-mold L, which, by means of a series of lugs, *d*, is maintained at a distance from the inner surface of the vessel A and concentric therewith, there being an air-space, *e*, not only between each end of the mold and the next adjacent one of the vessel A, but entirely around the sides of the mold. This mold is barrel-shaped, as shown, and is perforated with numerous holes, as represented at *e'*. It has a foraminous metallic lining, *f*, whose inner surface is covered with a lining, *g*, of cloth or finely-woven wire. The end portions, *h*, of the mold are separable from the sides, which, like the vessel A, are in two sections, *i i'*, abutting and scarfed together at the middle of the mold, the whole being to enable the section *i* to be drawn away from the section *i'*, as occasion may require. Each end portion, *h*, slides endwise into its side section of the mold, and is movable endwise by screws *k*, fitted to revolve in the head of the vessel A and screwed into the head or end portion of the mold.

Concentrically within the tubular shaft C is a pipe, P, which goes through the box E' and a stuffing-box, *l*, extending therefrom, and communicates with an air-forcing pump, N. Furthermore, there leads into the pipe P a branch pipe, O, for introducing paper or wood pulp into the said pipe P, and thence into the interior of the mold, into which the pipe P is led and opens, as represented in Fig. 1. The said pipe P is stationary while the mold and the shell or case A are being revolved by the pulley T, in order for the pulp to be uniformly spread over the inner surface of the mold.

In making a barrel by the machine above described the pulp is to be caused to flow into the interior of the mold, and such mold and

the vessel or case are to be simultaneously and slowly revolved. In the meantime air is to be extracted from the space or spaces between the mold and the casing A by the pump K. This extraction of air will cause the pulp by atmospheric pressure to be very powerfully forced against the inner surface of the mold, so as to form the entire barrel within the mold. After there has been a suitable amount of the pulp supplied to the mold, and while the air is being extracted from the space about the mold, air is to be forced through the pipe P into the mold. This air, acting against the pulp with additional pressure, operates to compact it and to drive the water therefrom into the space about the mold, such water being extracted from such space through a pipe, R, arranged as represented, and opening into the tubular shaft B and supported therein by a head, *s*, fitted therein and perforated with holes. The pipe R goes down within the space between the head of the mold and that next adjacent of the case A. When the pipe R is vertical, water that may gather in the lower part of the space about the mold can be extracted therefrom through the pipe B along with air which is being exhausted from the latter. After the barrel may have been thus formed in the mold, the two sections of the case are to be disconnected, so as to allow of that marked *a* being drawn endwise away from the other, pressure being exerted against the heads of the screws *k* to support the head of the mold while the section within the section *a* of the case is being started from the barrel. On this starting of the section from the barrel the said section with the section *a* and the next contiguous mold-head are to be drawn away from the barrel a sufficient distance to enable it to be fully extracted from the other section of the mold, from the sides of which it may be started by forcing in the screws of the other mold-head. After the barrel may have been drawn out of the mold, such barrel is to be desiccated, there being in one head of such barrel a round hole, *u*, (see Fig. 2,) which will have been formed by the pipe P, and will answer the purposes of the ordinary bung-hole.

I claim—

1. The mechanism, substantially as described, consisting in the perforated mold and its surrounding case, each made in section separable, and arranged as represented, the tubular shafts projecting from the said case and supported on bearings in standards, the air-exhaust boxes at the outer ends of such shafts, the air-exhaust pump and its pipes leading from such boxes, the railway and carriage for supporting the standards of one of such tubular shafts, the air-pressure pump and pipe, and the pulp-charging pipe, all being arranged to operate essentially as set forth.

2. The combination of the water-discharge pipe with the mechanism, substantially as described, for pressing a barrel in one piece from paper or wood pulp, as explained, such mechanism consisting of the perforated mold and its surrounding case, each made in sections separable, and arranged as represented, the tubular shafts projecting from the said case and supported in bearings on standards, the air-exhaust boxes at the outer ends of such shafts, the air-exhaust pump and its pipes leading from such boxes, the railway and carriage for supporting the standards of one of such tubular shafts, the air-pressure pump and pipe and the pulp-charging pipe, such water-discharge pipe being applied to one of the tubular shafts and extended therefrom down within the space between the next adjacent heads of the case and the mold, as specified.

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Witnesses:
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