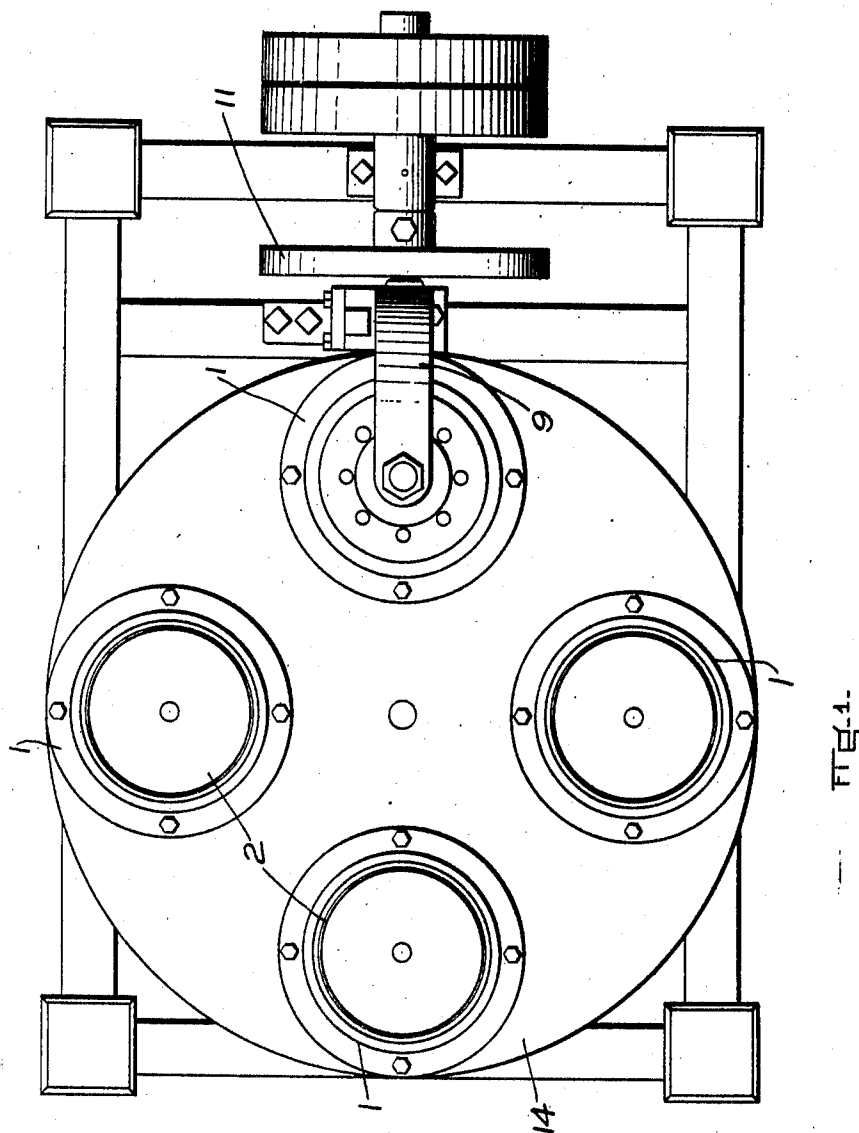


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 MACHINE FOR MAKING PAPER VESSELS.
 APPLICATION FILED MAY 9, 1910. RENEWED FEB. 27, 1912.

1,041,953. Patented Oct. 29, 1912.
4 SHEETS—SHEET 1.



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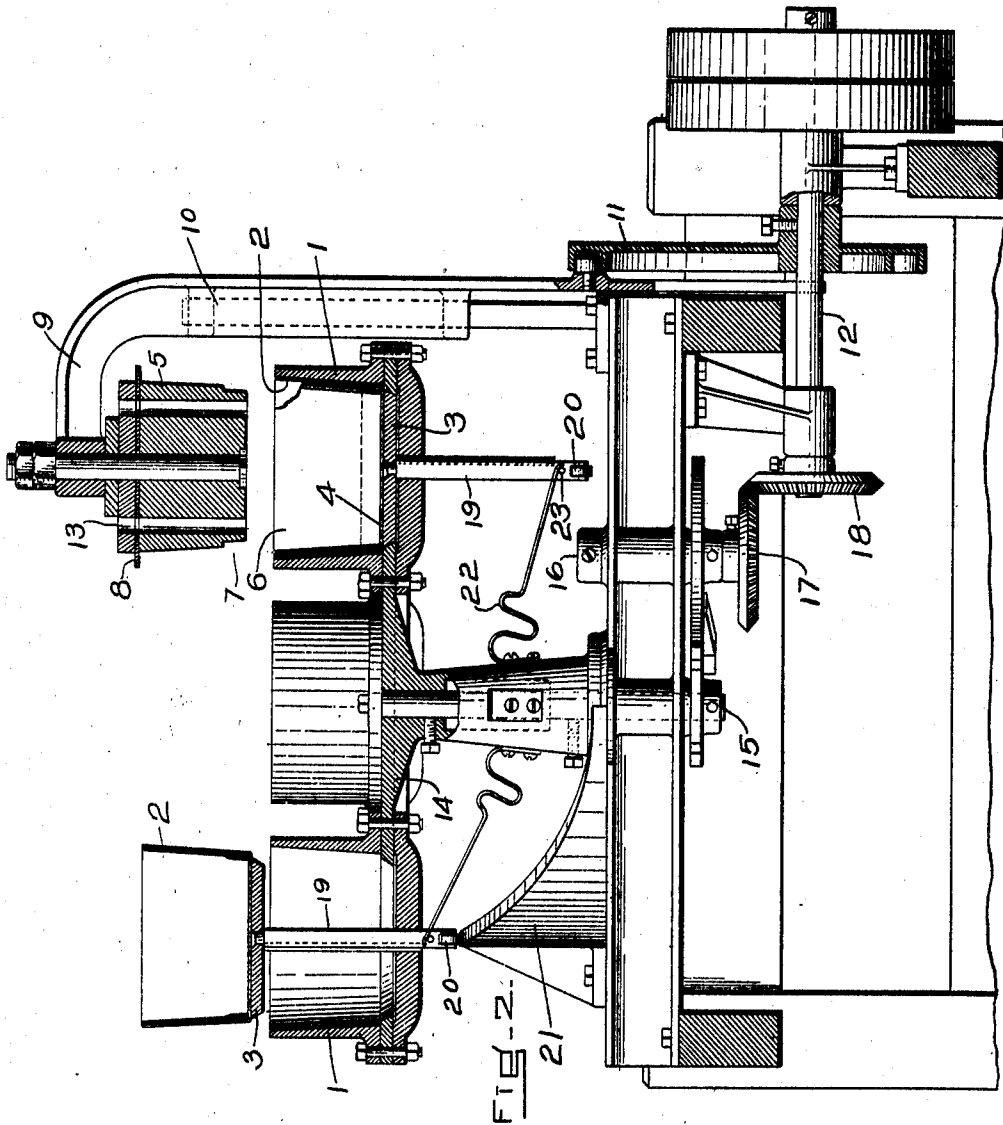
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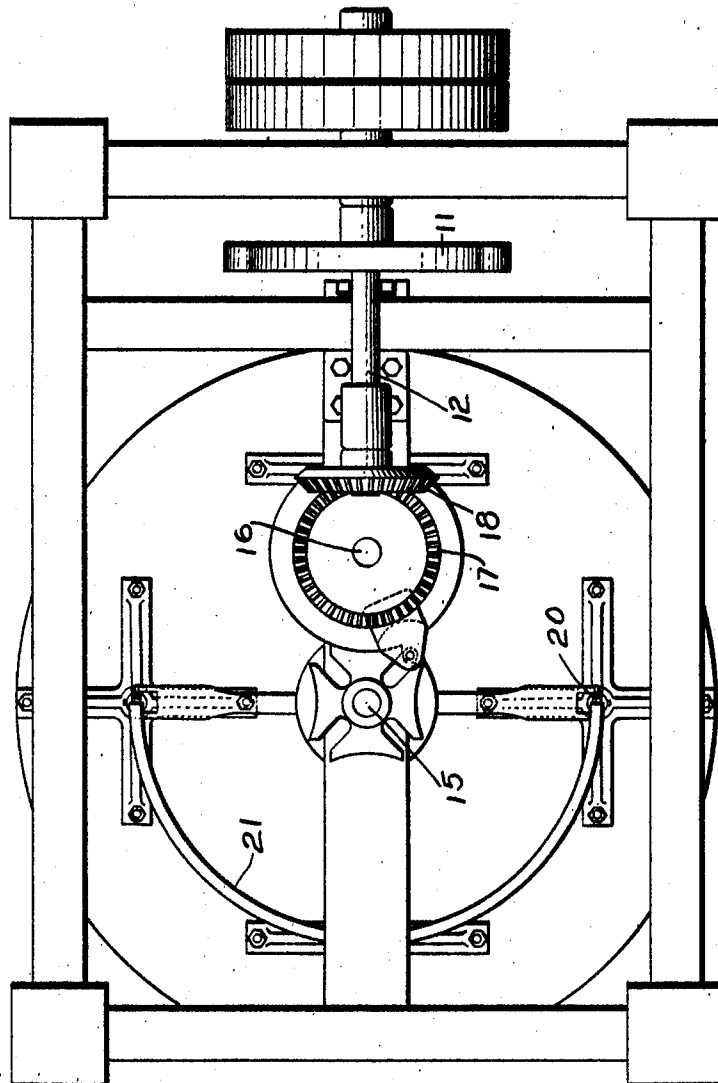


FIG. 3.

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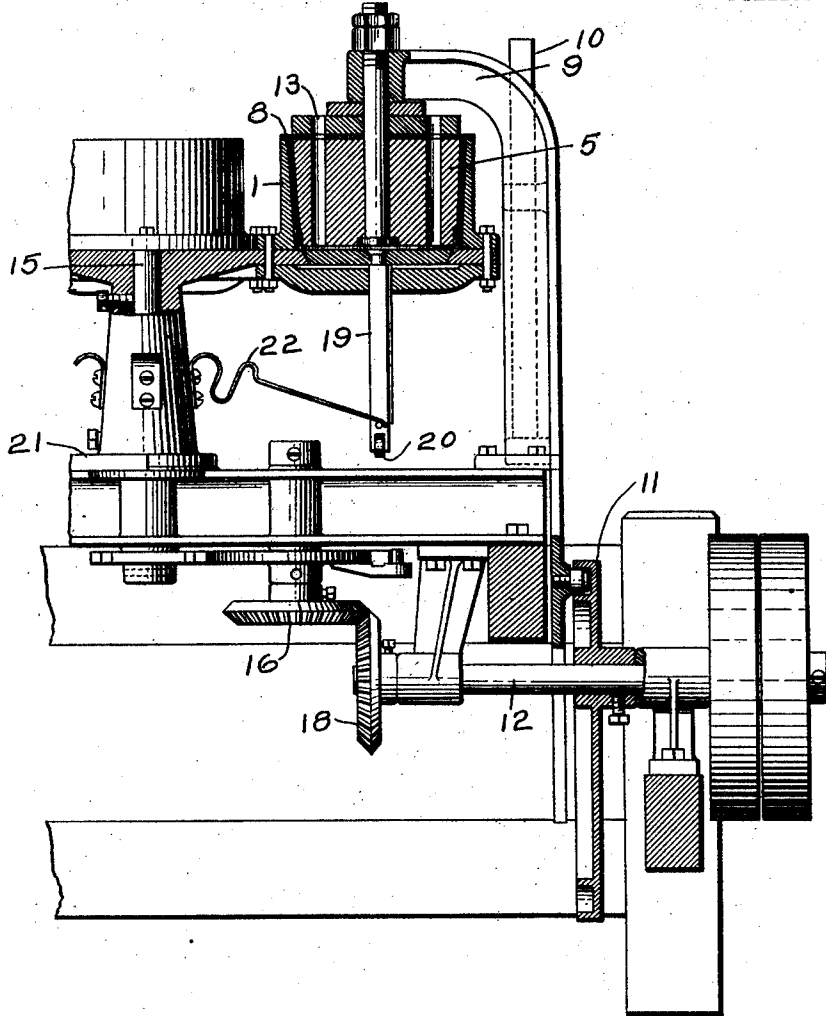


Fig. 4-

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MACHINE FOR MAKING PAPER VESSELS.

1,042,953.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed May 9, 1910, Serial No. 580,213. Renewed February 27, 1912. Serial No. 680,163.

To all whom it may concern:

Be it known that I, LIONEL NORMAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Paper Vessels; 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.

The present invention relates to machines for making paper vessels and is designed particularly for use in the manufacture of paper vessels which comprise inner and outer walls, a flanged bottom inserted between the inner and outer walls, and a sealed air chamber between the walls.

The object of the invention is to provide a simple and efficient machine for pressing together the inner and outer walls and flanged bottom of a double-wall paper vessel of the class above referred to.

With this object in view the invention consists of certain novel constructions and arrangements of parts hereinafter described and claimed, the advantages of which will be apparent to those skilled in the art from the following description.

The several features of the present invention will be clearly understood from an inspection of the accompanying drawings in which—

Figure 1 is a plan view of a machine embodying the same in their preferred form. Fig. 2 is a longitudinal sectional view of the machine. Fig. 3 is a bottom plan view and Fig. 4 is a fragmentary sectional view taken on the same plane as Fig. 2 but showing the parts in different positions.

The machine illustrated in the drawings is provided with four holders indicated at 1. Each holder is provided with a side wall shaped to receive and support the outer wall 2 of a paper vessel and with a bottom 3 to support the inserted flanged bottom 4 of the vessel. A single plunger 5 is provided which is shaped to force the inner wall 6 of a vessel into proper relationship with the outer wall 2 and flanged bottom 3, while leaving a sealed air-chamber between the inner and outer walls. This plunger is provided at its lower end with a recess 7 corresponding to the flange of the inserted bottom 4 and at its

upper end is provided with a plate 8 which projects beyond the plunger to form an abutment shoulder for the upper end of the inner wall 6. This shoulder forces the upper edge of the inner wall flush with the upper edge of the outer wall when the plunger is depressed into a holder. The holder is tapering from the top toward the bottom and the plunger is correspondingly tapered so that the plunger readily enters the wall or walls of the vessel which have been placed in the holder and as it reaches its lower position in the holder exerts an outward pressure to force the inner wall of the vessel against the flange of the bottom. The plunger is slightly more tapering than the holder so as to exert pressure at the upper and lower edges of the inner wall and leave the walls slightly separated between these points to form the sealed air chamber above referred to. The recess 7 at the base of the plunger is of slightly less depth than the thickness of the flanged portion of the bottom of the vessel so that the plunger, although the plunger has a greater taper than the holder forces the lower end of the inner wall of the vessel out against the flange of the bottom. The plunger 5 is secured in the overhanging end 9 of a slide 10, which is actuated at the proper times during the operation of the machine by means of a cam 11 on the driving shaft 12. To admit air into the interior of the vessel when the plunger 5 rises and thus prevent the vessel from sticking to the plunger, perforations 13 are provided passing through the plunger and opening on its top and bottom surfaces.

The holders 1 are mounted upon a rotary carrier 14 and this carrier is moved intermittently to bring the holders successively into alinement with the plunger 5 by mechanism driven from the main driving shaft 12. This mechanism comprises a Geneva stop motion of well known construction, the parts of which are mounted respectively upon the shaft 15 of the carrier 14 and a short vertical shaft 16. The shaft 16 is driven from the main driving shaft 12 through the intermeshing bevel gears 17 and 18.

The bottom 3 of each holder 1 is movably mounted so that during the rotation of the carrier 14, it can be moved upwardly to eject the vessel and then moved downwardly

to receive another outer wall and bottom before it is again brought into alinement with the plunger. Each bottom 3 is secured upon the upper end of a vertical plunger 19 which passes through a guiding opening in the carrier 14 and is provided at its lower end with a roll 20. This roll during the rotation of the carrier 14 is arranged to engage a circular cam 21 secured to the frame of the machine. The cam 21 is so placed in the machine that the plunger 19 with its attached bottom 3 is raised to its highest position when the holder corresponding thereto is diametrically opposite the plunger 5. The return of the plungers 19 to their lowest position is insured by springs 22, one of which is provided for each plunger. These springs are secured at their inner ends to the hub of the carrier 14 and at their outer ends engage pins 23 projecting from the plungers.

In the operation of the machine illustrated in the drawings the outer wall 2 and flanged bottom 3 of the vessel either before or after being assembled are placed in the holder 1 while the carrier 14 is stationary, and the inner wall 6 of the vessel is placed in the holder 1, inside of the outer wall 2 and flanged bottom 3. Glue or some other adhesive is first placed, before inserting the parts in the holder, on the inner and outer sides of the flange on the bottom 3 and also on the upper inside edge of the outer wall 2, and on the lower edges opposite the flange of both the inner and outer walls respectively so as to cause proper adhesion of the parts when the operation is concluded. The carrier 14 is now moved to bring the holder containing the outer wall, bottom, and inner wall into alinement with the plunger and the plunger is moved downwardly into the holder into the position illustrated in Fig. 4. This downward movement of the plunger forces the inner wall into place against the outer wall at their upper edges and molds the lower end of the inner wall over the flange of the inserted bottom, and causes adhesion of the parts while leaving a sealed air chamber between the inner and outer walls. The plunger now rises leaving the assembled vessel in the holder. The parts of another vessel are placed in the next succeeding holder and the carrier and plunger are again actuated. As each holder contain-

ing a vessel moves to a position diametrically opposite the plunger its ejecting bottom is raised by the cam 21 and the vessel is removed from the holder as indicated in Fig. 2. During the next movement of the carrier the bottom which has been raised moves to its lowest position.

The cam for operating the plunger is shaped to hold the plunger in its depressed position for an appreciable interval of time so as to allow the glue or other adhesive to partially set and the mechanism for actuating the carrier for the holders is timed and arranged to cause a holder to remain stationary for a sufficient interval of time to allow the insertion of the parts of the vessel. The mechanism for actuating the carrier for the holders is also so timed and arranged that the glue or other adhesive is allowed to set before the vessels are expelled from the holders.

The nature and scope of the present invention having been indicated and a machine embodying the several features of the invention in their preferred form having been specifically described, what is claimed is:—

1. A machine for making paper vessels which comprise inner and outer walls, an inserted flanged bottom and a sealed air chamber between the walls, having, in combination, a holder to receive the outer wall and inserted flanged bottom of the vessel, and a cooperating plunger exerting pressure at the upper and lower edges of the inner and outer walls to seal the walls at their upper and lower edges while leaving an air chamber between these points.

2. A machine for making paper vessels which comprise inner and outer walls, an inserted flanged bottom and a sealed air chamber between the walls, having, in combination, a holder tapering inwardly from the top toward the bottom to receive the outer wall and inserted bottom of the vessel, and a cooperating tapering plunger exerting pressure at the upper and lower edges of the inner and outer walls to seal the walls at their upper and lower edges while leaving an air chamber between these points.

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