(No Model.) 3 Sheets—Sheet 1.

A. BRAB.

MANUFACTURE OF PAPER BARRELS.

No. 410,726. Patented Sept. 10, 1889.

Fig. 1

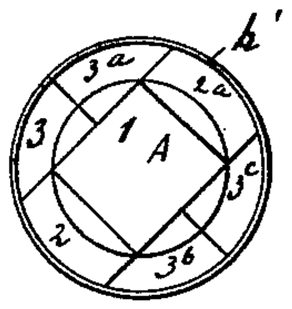


Fig. 2.

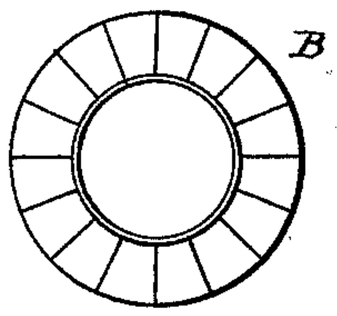


Fig. 3.

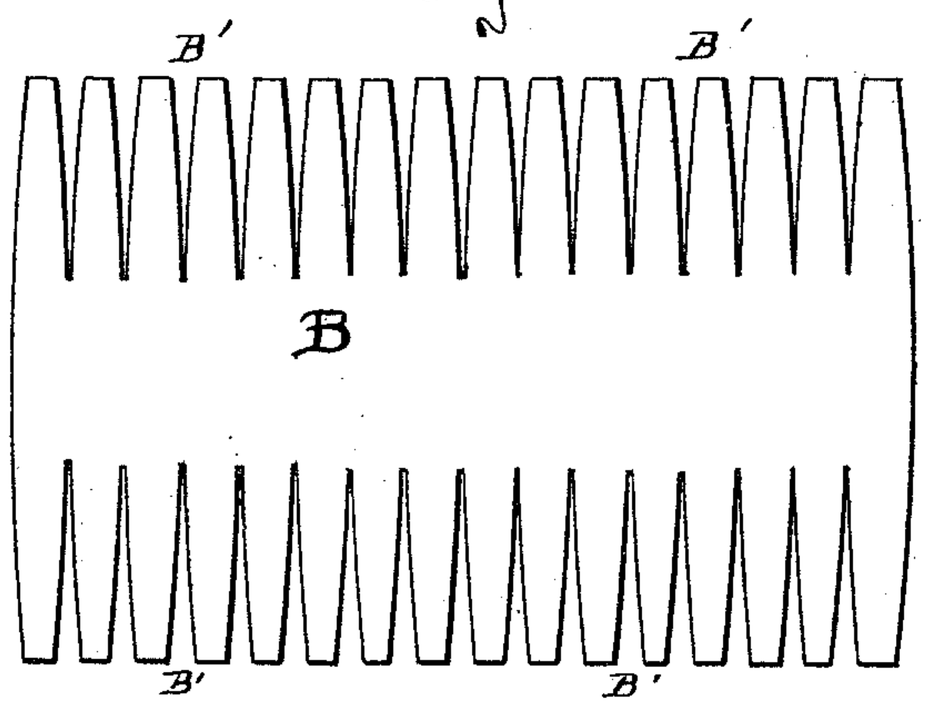


Fig. 4.

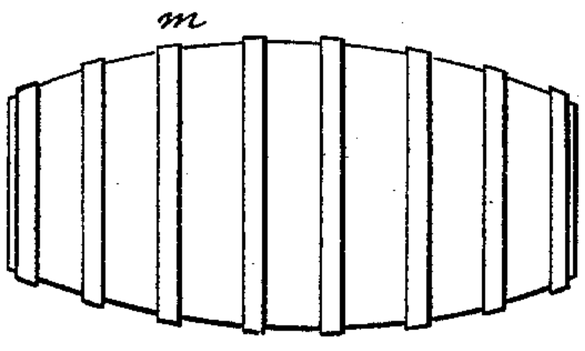
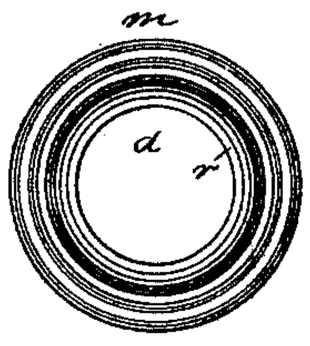


Fig. 5.



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(No Model.) 3 Sheets—Sheet 2.

A. BRAB.

MANUFACTURE OF PAPER BARRELS.

No. 410,726. Patented Sept. 10, 1889.

Fig. 9.

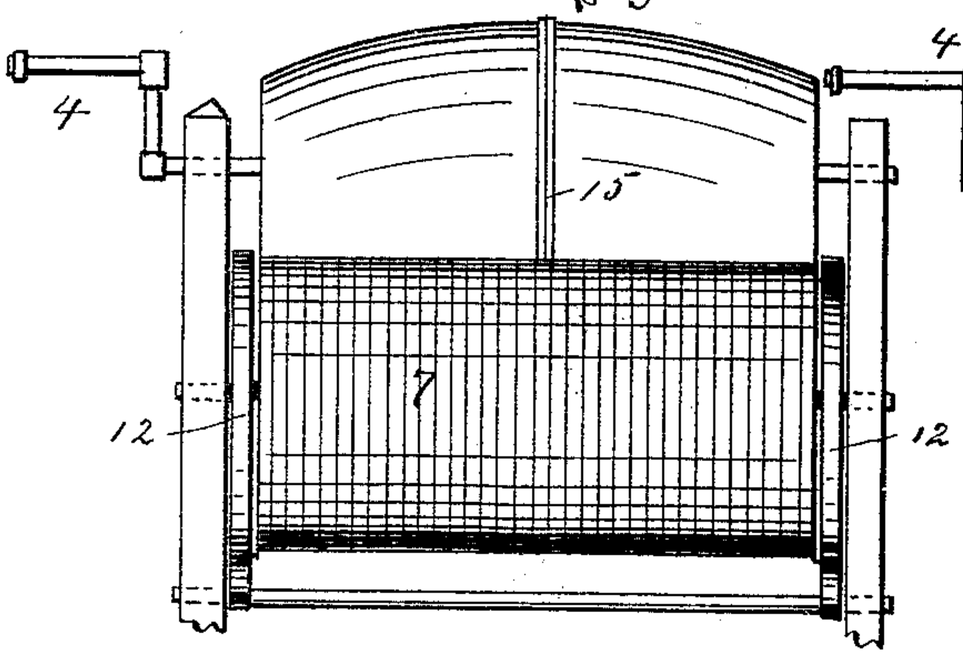


Fig. 6.

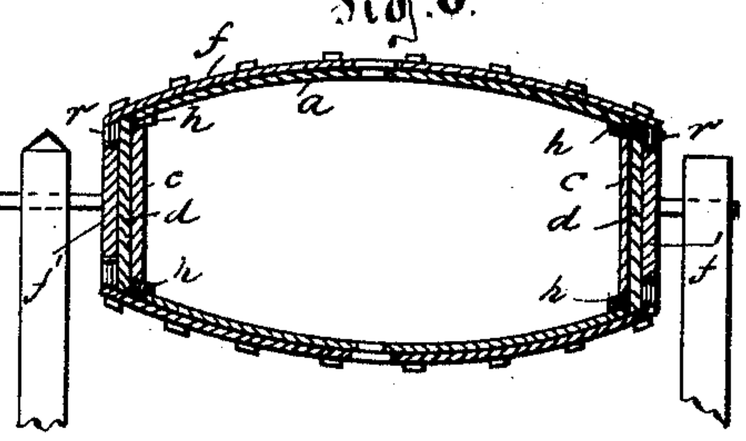


Fig. 7

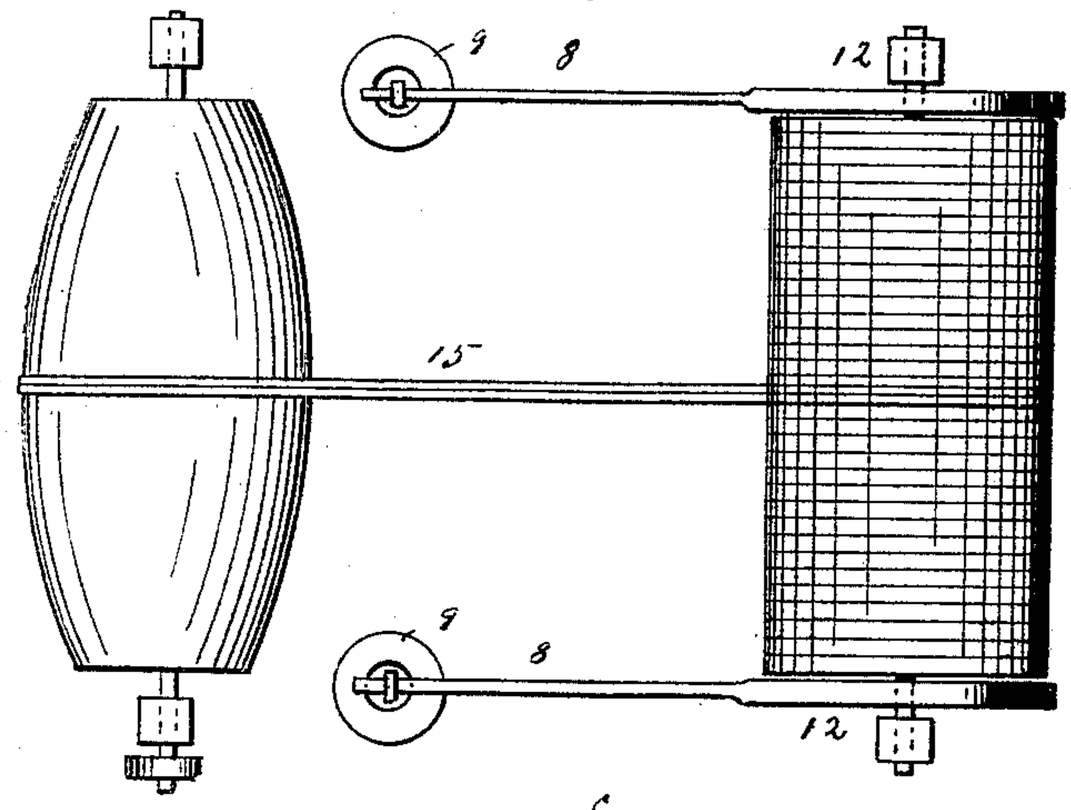
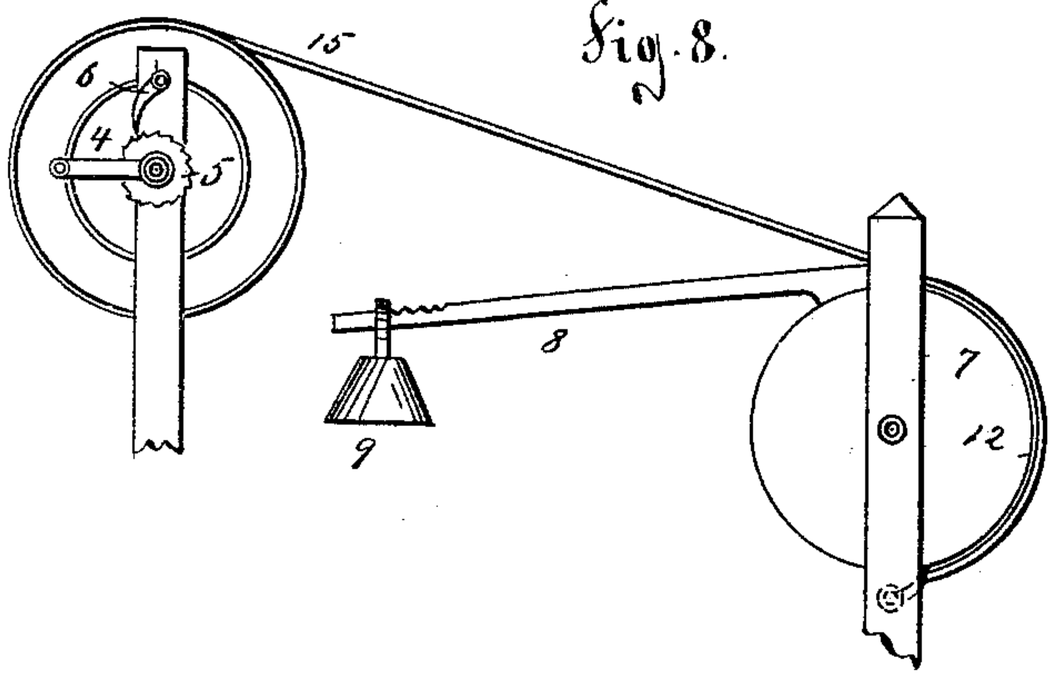


Fig. 8.



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(No Model.) 3 Sheets—Sheet 3.

A. BRAB.

MANUFACTURE OF PAPER BARRELS.

No. 410,726. Patented Sept. 10, 1889.

Fig. 10.

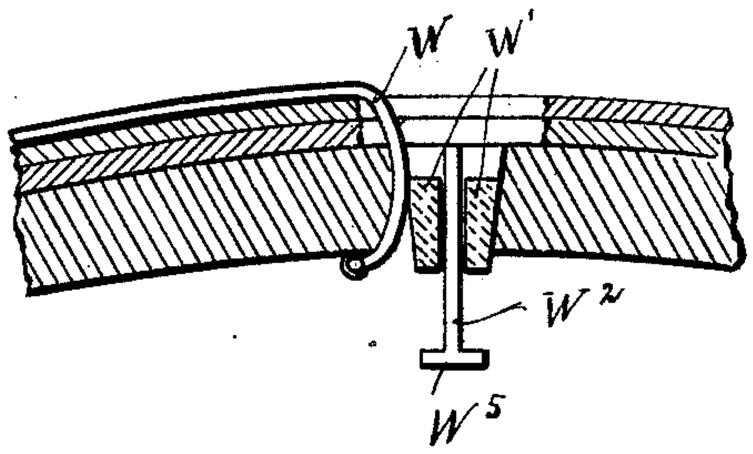


Fig. 11.

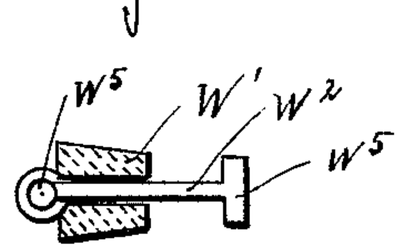
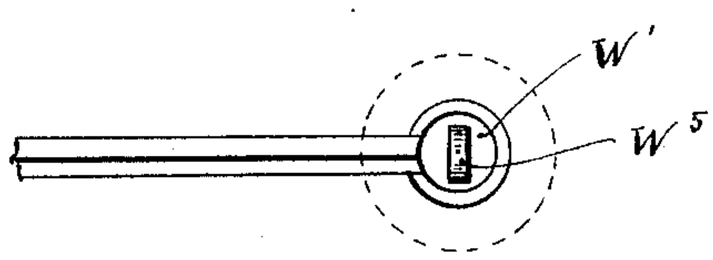


Fig. 12.



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UNITED STATES PATENT OFFICE.

AUGUST BRAB, OF EHRENFELD, NEAR COLOGNE, PRUSSIA, GERMANY,
ASSIGNOR TO KOHNEN & CO., OF SAME PLACE.

MANUFACTURE OF PAPER BARRELS.

SPECIFICATION forming part of Letters Patent No. 410,726, dated September 10, 1889.

Application filed May 9, 1888. Serial No. 273,270. (No model.)

To all whom it may concern:

Be it known that I, AUGUST BRAB, a subject of the King of Prussia, German Emperor, residing at the city of Ehrenfeld, near Cologne, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in the Manufacture of Paper Barrels, of which the following is a specification.

This invention relates to certain new and useful improvements in making paper barrels.

The object of my invention is to produce a paper barrel which is strong, durable, and thoroughly liquid-proof.

The invention consists in building the barrel up of paper sheets on a core, one sheet being pasted upon the other until the requisite thickness of the barrel is obtained. Said pasted sheets are pressed together by winding ropes on them, as will be fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an end elevation of the core on which the barrel is made. Fig. 2 is an end view of the blank, showing the same rolled up as it is when forming part of the barrel. Fig. 3 is a plan view of one of the paper blanks for making the shell of the barrel, said blank being shown extended. Fig. 4 is a side view of the completed barrel. Fig. 5 is an end view of the same. Fig. 6 is a vertical longitudinal section of the barrel and the apparatus for rotating it. Fig. 7 is a top view of the barrel and the device for pressing the layers of the same. Fig. 8 is a side view, and Fig. 9 a front elevation, of the apparatus shown in Fig. 7. Fig. 10 is a detail enlarged vertical transverse sectional view of the barrel, showing the manner in which the wires are fastened in the bung-hole. Fig. 11 is a detail cross-sectional view of the rubber stopper. Fig. 12 is a top view.

Similar letters of reference indicate corresponding parts.

The barrel is made on a core composed of a center piece 1 and the exterior pieces 2, 2^a, 3, 3^a, 3^b, and 3^c, Fig. 1, and is tapered from the middle toward its ends. A shaft is passed longitudinally through the hole in the center of the central piece 1 of the core, which shaft has a crank-handle that is mounted in suitable supports for turning it. The core is provided near each end with an annular groove h'. Into the same a paper ring h is placed, which is wedge-shaped in cross-section, as shown in Fig. 6.

The walls of the barrel are composed of a series of paper blanks B, provided in the longitudinal edges with triangular or tapered notches B', so that the blank has the appearance of a number of barrel-staves placed side by side. The first blank B is placed upon the core and its ends secured to the beveled outer edges of the rings h by means of cement or some other suitable adhesive substance. In this manner a number of sheets of paper or blanks are secured on the core, each sheet being cemented or secured by adhesive material to the preceding sheet or blank and all said blanks extending to the outer edges of the rings h. The sheets or blanks are placed in such a manner that their joints are not over each other, but alternately the solid portion of one blank covers the joints of the adjacent blanks. The core and sheets on the same are them placed between two standards, on which the shaft passed through the core can be rotated by means of its crank 4, Fig. 9.

The shaft carries a ratchet-wheel 5, with which a pawl 6 engages.

On the drum 7 two wire ropes 15 are secured and wound on the drum from the center toward the rims. The drum is provided at each end with a brake-band 12, connected with a lever 8, carrying an adjustable weight 9 to admit of giving any desired resistance. The ends of the ropes are secured to the core at the bung-hole of the barrel in the following manner: The ends W of the wires are passed through the bung-hole and their ends bent over, and, if desired, may be bent to form a knot or head. A tapering rubber plug W' is then forced into the bung-hole for the purpose of keeping the ends of the wires in place. A sliding rod W^2 is passed through the tapering plug and is provided at the outer end with an eye W^4 and at its inner end with a transverse plate W^5. By pulling the said rod outward the plug can be removed from the

bung-hole and the wires released. By turning the core or barrel by means of the crank the ropes are gradually unwound from the drum 7 and wound on the barrel or core from the center toward the rim. As the ropes are wound round very tightly, they exert a pressure and press the several layers together very firmly, and then the ropes are unwound and the completing of the barrel can be proceeded with. The core is then removed, as the shell formed has sufficient strength and thickness to act as the core for the following layers.

The heads of the barrel consist of two strong paper disks *c* and *d*, of which the disks *c* fit precisely within the rings *h*. The diameter of the outer disks *d* is such that their rims are flush with the outer surface of the layers *a*. Then more paper blanks or sheets are secured on the shell, said outer blanks forming the thickness *f* of the barrel and extending some distance beyond the outer disks *d* of the heads.

In making very strong and heavy barrels a thick paste of wood or paper pulp is applied between the outer and inner layers of the shell.

Strong paper rings *r* are placed in the ends of the shell and against the outer disk *d* of the heads, and are cemented or secured by any other adhesive material to said heads and the projecting part of the shell *f*, the said shell being turned off flush with the outer faces of said rings. Wooden blocks *f'* are placed on the heads within the rings *r*, and then the ropes are again wound on the barrel for the purpose of pressing the outer layers firmly together. When that part of the barrel consisting of the layers *a* is completed and the core has been removed, the bung-hole *m* is cut flaring from the exterior toward the interior, this being done before the heads are inserted. Strong iron hoops or bands are then applied on the barrel, and the ends are secured by means of screw-clamps. The barrels are then made water-proof. Then the barrels are painted on the outside with linseed-oil, and are then baked in an oven at 120° to 140° Reaumur until they are as hard as wood on the outside. The hoops *m* are then driven on, and the ends may be secured by means of angle-irons. Beer-barrels are pitched in the usual manner.

Barrels for other liquids are provided with a suitable coating, the nature of which must correspond to the nature of the liquid for which the barrel is to be used, and which coating must not affect the color, smell, or flavor of the contents.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The method of making paper barrels, consisting in pasting a series of sheets of paper one upon the other, and then winding ropes under pressure around said pasted sheets for the purpose of pressing them together, substantially as herein shown and described.

2. The method of making paper barrels, consisting in pasting a number of sheets upon each other on a core, then removing the core, then inserting heads in the ends of the shell thus formed, and then pasting another series of sheets of paper upon the first series and over the edges of the heads, substantially as herein shown and described.

3. The method of making paper barrels, consisting in placing rings on the ends of a barrel-shaped core, then pasting a number of paper sheets one upon the other around said core, then removing the core, then placing heads in the ends of the shell thus formed and against the above-mentioned rings, and then pasting more sheets on said shell and over the edges of the heads, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUST BRAB.

Witnesses:
GUSTAVE ALBERT OELRICHS,
WM. D. WARNER.