R. KNOLL.

PROCESS FOR THE MANUFACTURE OF HOLLOW BODIES AND ESPECIALLY OF HEAD COVERINGS FROM FIBROUS MATERIAL.

APPLICATION FILED NOV. 12, 1908.

993,605. **Patented May 30, 1911.**

Fig. 1

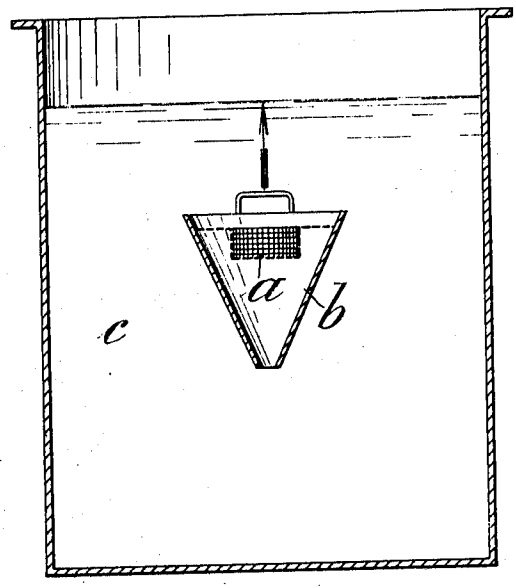


Fig. 2

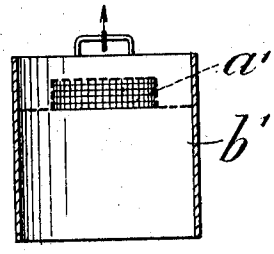
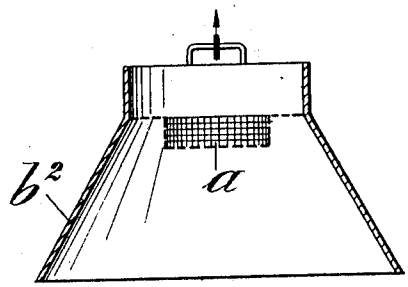


Fig. 3



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PROCESS FOR THE MANUFACTURE OF HOLLOW BODIES AND ESPECIALLY OF HEAD-COVERINGS FROM FIBROUS MATERIAL.

993,605. Specification of Letters Patent. Patented May 30, 1911.

Application filed November 12, 1908. Serial No. 462,291.

To all whom it may concern:

Be it known that I, RUDOLF KNOLL, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented a new and useful Process for the Manufacture of Hollow Bodies and Especially of Head-Coverings from Fibrous Materials; and I do hereby declare the following to be a full, clear, and exact description of the same.

According to the known methods for the manufacture of head coverings from fibrous materials, the fibrous material is collected from a suitable viscous mass placed on a perforated form or mold by means of suction, and the perforated hat shape has usually been maintained in a stationary position during the process of deposition and connected with a special suction device.

The present invention has for its object to obviate the necessity for employing such special suction devices and thus to render the entire process of manufacture both more simple and expeditious. In accordance with this invention this is effected by arranging the form or mold in such manner that it can be moved in the fibrous pulpy mass and by providing it with a downwardly extending external casing, preferably of funnel shape, the collection and settling of the fibrous material on the form or mold being effected by a vertical reciprocating motion, which moreover produces the vacuum requisite for the quick and uniform deposition of the fibrous material.

The shapes obtained by means of the process just described can, after they have been freed from the adhering moisture, be used either at once without any further manipulation, or after they have been impregnated with a stiffening material, as head coverings or as intermediate products for the manufacture of such coverings.

In the reduction of this process to practice, the fibrous material, preferably consisting of cellulose or a mixture of cellulose with other cheaper fibers, is soaked in water until there is obtained therefrom a mass resembling stuff or pulp. The form or mold by means of which this stuff is collected is permeable by liquids.

Referring to the drawing which forms a part of this specification Figures 1 and 3 are hollow-forms a or Fig. 2 is a core form a^1.

This form which may consist of wire netting, woven material or the like, is provided with a downwardly projecting external casing, in which during the movements of the form a, through the stuff c as aforesaid there is produced a vacuum the degree of which depends on the permeability of the mold, the quickness of its movement, and the height of the surrounding casing.

The casing may be funnel shaped (b, Fig. 1) or cylindrical (b^1, Fig. 2) or conical (b^2, Fig. 3). The manipulation of the mold is effected by means of handles such as d secured to the upper end of the casing.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. A process for the manufacture of hollow bodies, especially head coverings, from fibrous pulp, which process consists in providing a perforated hand mold with a downwardly extending petticoat casing open at the bottom lowering said mold and casing below the upper level of the fibrous pulp, whereby pulp is deposited upon the mold, and then raising the mold and casing until all but the lower part of the casing is removed from the pulp.

2. Process for the manufacture of hollow bodies, especially head coverings, from fibrous material, which consists in immersing in a fibrous pulp a foraminated form, inclosing the same in a casing, and raising the form vertically in the fibrous pulp, until all but the lower edge of the casing is removed, substantially as set forth.

3. Process for the manufacture of hollow

bodies, especially head coverings, from fibrous material, which consists in immersing in a fibrous pulp a foraminated mold, inclosing the same in a casing, and raising the form vertically until all but the lower part of the casing is removed from the pulp, substantially as set forth.

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

RUDOLF KNOLL.

Witnesses:
ING. ALFRED KLOR,
ROBERT W. HEINGARTNER.