Dec. 31, 1935. W. JOHANNES 2,026,177

MANUFACTURE OF ARTIFICIAL SPONGES

Filed March 5, 1932

Fig. 1.

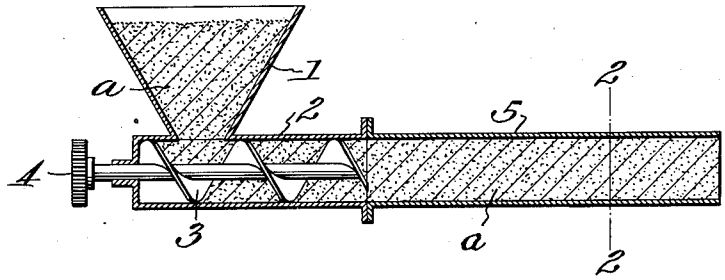


Fig. 2.

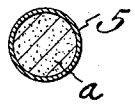


Fig. 3.

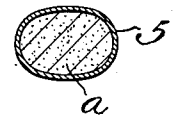


Fig. 4.

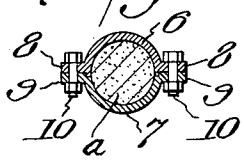


Fig. 5.

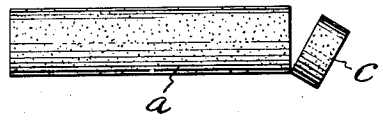
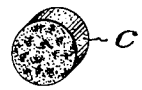


Fig. 6.



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MANUFACTURE OF ARTIFICIAL SPONGES

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Application March 5, 1932, Serial No. 597,039
In Germany March 7, 1931

1 Claim. (Cl. 18—48)

My present invention relates to the production of artificial sponges and more particularly to shaping of such sponges.

When preparing artificial sponges from viscose and salts used as a pore forming material, the sponge mass is carefully pressed into metal forms, so that hollow spaces are avoided and the mass contains as little air as possible, and then the mass is coagulated. The dimensions of the metal moulds have hitherto been chosen so large that the complete coagulation was just ensured throughout the mass that is to say right into its interior.

The surfaces of the spongy masses produced in the moulds have a smooth, coherent skin free from pores, which must be removed when the sponges are cut for use, in order that the sponges produced may not have unequal surfaces.

The masses which are coagulated in large moulds undergo such a shrinkage during the coagulation that they sink in the mold to a large extent particularly in the middle portion of the upper surface. Thus the mass has an uneven upper surface which can only be again rendered even at the expense of a loss of material of the sponge mass. Since the sponges must be cut in the dry state, disadvantages arise from the different shrinkage of the internal and external portions of the sponge masses. The sponges cut from the middle layer of the mass, which has shrunk to a great extent, have a greater density and therefore, a better swelling capacity, so that the middle layers swell more strongly when the sponges are wetted and cause irregularities in the shape of the wet sponges.

According to my invention these drawbacks are avoided and sponges are made which have a uniform appearance in the wet and in the dry state by pressing the sponge mass into long tubes which need not be closed at their ends, the inner width of which is chosen so that the long coagulated sponge produced therein need only be cut transversely after removal of the substance adapted to form pores in order to obtain sponges of the commercial size. The sponge mass may be pressed into the tubes, for instance, by a worm gear as it is used in tile presses or briquet presses.

With this method of working no wastes of the coagulated sponge mass are produced and it simplifies considerably the shaping of the sponges. The duration of coagulation can be shortened, because the heat required for the coagulation penetrates much more quickly into the interior of the mass. The heat wanted for the coagulation may be applied in any suitable manner, for instance, hot air may be used or steam of a certain pressure according to the temperature which is to be maintained during the coagulation process. When the coagulated sponge mass is cut into uniform pieces, each single sponge has an equal portion of the layer of coherent skin which is formed adjacent to the inner surface of the tube wall; this portion is distributed regularly and in such a manner that it is not present on those surfaces of the sponges which are generally used for cleaning purposes.

The tubular hollow moulds may either be formed in one piece or may be divided longitudinally into two parts which may be hinged or otherwise secured in a manner which permits the mould to be opened. The tubes may have any desired cross-section, such as an angular, round or oval cross-section. The order boundary of the cross-section may be flat, wavy or grooved.

The invention as described above is illustrated in the accompanying drawing in which:

Fig. 1 is a vertical section of apparatus showing the pressing of the sponge mass into the tube in which it is to be coagulated,

Figs. 2 and 3 are cross-sections, respectively, of a tube which is circular in cross-section and a tube which is oval in cross-section,

Fig. 4 is a cross-section of a coagulating tube made in two parts and adapted to be opened for the removal of the coagulated sponge mass,

Fig. 5 is a front elevation of a sponge mass,

Fig. 6 is a perspective view of a section or sponge unit cut from the cylindrical sponge mass.

Referring to the drawing, 1 is a hopper, 2 the compression chamber, 3 the screw and 4 the driving pinion of a typical device for forcing the plastic sponge mass *a* into the tube 5.

Figs. 2 and 3, as stated, represent optional cross-sectional shapes of the tube 5 and the formed sponge mass.

The tube shown in Fig. 4 consists of the two parts 6 and 7 provided with the flanges 8 and 9 adapted to be bolted together by means of bolts 10.

C, Figs. 5 and 6, is a section of the sponge mass of suitable thickness cut from the formed sponge mass *a*.

What I claim is:

A process of producing artificial sponge masses from viscose, which comprises pressing viscose containing a pore forming material into a tubular mould, coagulating the viscose in the mould by means of heat externally applied, removing the coagulated mass from the mould, and then removing the pore forming material from the coagulated mass and cutting the coagulated mass into pieces perpendicularly to its longitudinal axis.

WALTER JOHANNES.