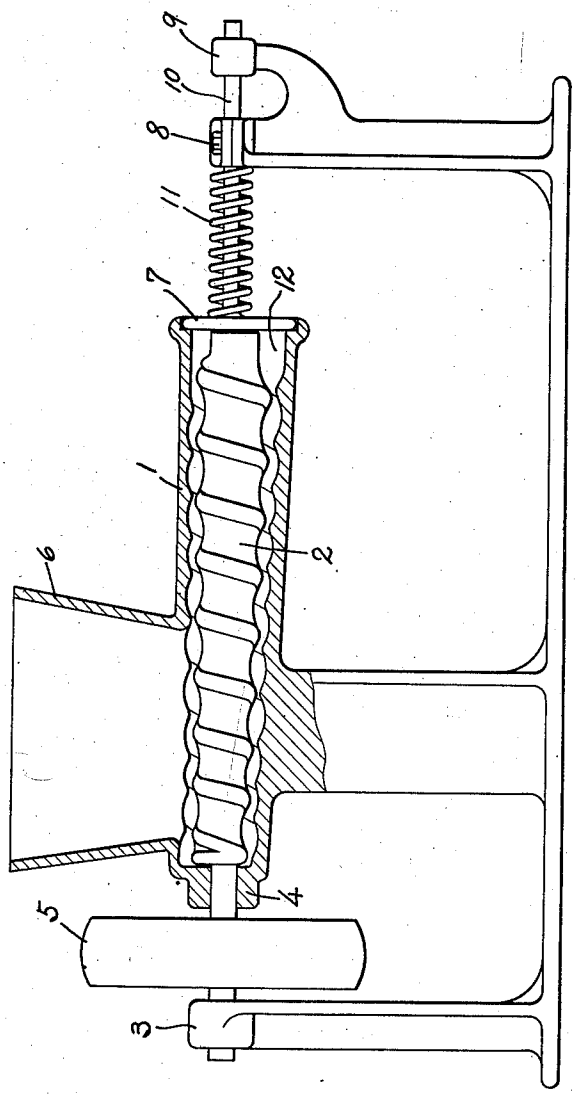
Sept. 6, 1938. M. KOGA 2,129,219

METHOD AND APPARATUS FOR MANUFACTURING FEATHER COTTONS

Filed April 16, 1937



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Patented Sept. 6, 1938

2,129,219

UNITED STATES PATENT OFFICE

2,129,219

METHOD AND APPARATUS FOR MANUFACTURING FEATHER COTTONS

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Application April 16, 1937, Serial No. 137,371

2 Claims. (Cl. 19—66)

My invention relates to a method of and an apparatus for manufacturing feather cottons adapted for use as cushions and mattresses, and has for its object the provision of elastic and expansible feather cottons of best quality, which are free from worms and have sufficient moistureproof nature necessary for feather cottons.

Feather cottons have heretofore been manufactured mainly from the feathers of waterfowls which are waterproof. Though such feather cottons have advantages of being highly elastic and expansive and having sufficient thermal capacity, yet bacteria enter into the stem through the fissure of feather so that worms may hatch and considerable time is required for the repair and preservation of feathers. Particularly chicken feathers have not sufficient waterproof nature as compared with those of water-fowls and are liable to absorb moisture and to lose elasticity and expansibility so that the feathers of chicken did not show full advantages as feather cottons.

A chief object of my invention is to improve the manner of disinfecting the feathers and to add waterproof properties so that the chicken feathers which were neglected and almost valueless may be profitably utilized to manufacture good cushions and mattresses.

An apparatus for carrying out the method of my invention is shown in the accompanying drawing, a single figure of which is a partial sectional elevation of a feather twisting machine.

Referring to the drawing, 1 represents the casing of a feather twisting screw machine having a spiral groove therein; 2 is a screw rod put in the casing 1 and rotatably supported on the bearings 3 and 4. 5 is a driving pulley and 6 represents a hopper. 7 represents a forcing plate pressed on the outlet opening of the casing 1 by a spring 11 and the rod 10 of the plate is supported on the bearings 8 and 9.

In accordance with my invention, the feathers are first pressed and crushed so as to be easily bent and then the feathers are twisted by external force and at the same time are warmed up to maintain the twisted shape. Such feathers are then treated with formalin which enters into the structure of the feather through the fissures or crushed spaces, thereby perfectly disinfecting the feather, not only on its outer part but also in its interior to prevent hatching of worms. The gelatinous substance inherent in the feathers is fused out by the warming up and combines with the formalin vapour to form a waterproof film over the exterior and in the interior of the feather so that the feathers become waterproof and are not softened by moisture. The film also increases the elasticity and expansibility to a degree equal to that of the feathers of water-fowls. If the present method is applied to the feathers of water-fowls more effective feather cottons can of course be manufactured.

A manner of carrying out my invention will be explained in the following:—

At first the feathers are put into a sterilizing chamber and hermetically sealed for two or three days and sterilized with known sterilizing agent according to an ordinary method; then the feathers are dipped into water and washed with soap in warm water. After the feathers are washed with clean water for several times they are dried. Then the feathers are passed between cooperating rollers to be pressed and crushed so that the feather together with stem are collapsed and flattened. Thus treated feathers are supplied to the hopper 6 of the screw machine as shown in the drawing and if the screw rod 2 is turned by means of the pulley 5 the feathers are twisted around the rod 2 and forced through the cooperating spiral grooves between the rod 2 and the casing 1. The curved and twisted feathers are delivered to the outlet opening 12 of the casing 1 which is closed by the forcing plate 7 so that the feathers filled in the spiral groove are compressed and gradually delivered out by forcing out the plate 7 against the spring 11. When the feathers are forced through the spiral groove between the casing 1 and the rod 2 the gelatinous substance contained in the feather itself is fused out by the heat due to the friction between the feathers and the casing 1 and rod 2 and forms gelatinous film covering the feather so that the twisted or bent form of the feather may be maintained forever. Such film also adds waterproof nature of the feather. The casing 1 or rod 2 may be heated by external heat source to a required temperature, if desired. After such treatments the feathers are put in a closed drying chamber and subjected to a temperature of about 100° C. for about thirty minutes and the formalin vapour is supplied into the chamber. The formalin vapour enters into the feather structure through the crushed stem and fissures to perfectly disinfect the feathers. The fused or oozed out gelatinous substances combine with the formalin vapour to form insoluble formaldehyde condensation products, thereby establishing water-proof film in the interior and over the exterior parts of the feather. Thus the finished products main-

tain the bent, warped or twisted shapes forever giving sufficient elasticity and expansibility and are free from worms, thus providing very splendid feather cottons.

I claim:

1. A method of manufacturing feather cottons comprising pressing and crushing the feathers, warping and twisting the feathers by applying pressure and warming up, heating the crushed feathers to about 100° C., to free the gelatinous substance therein, impregnating the feathers with formalin vapours to form a waterproof coating in the interior and on the exterior of the feathers by the combination of the formalin and gelatinous substance.

2. A method of treating feathers comprising sterilizing and disinfecting the feathers, washing the feathers clean, drying, pressing and crushing the feathers, warping and twisting the crushed feathers, heating the feathers to about 100° C., and finally treating the feathers with formalin vapor to form a waterproof coating.

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