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METHOD FOR WORKING UP FIBROUS MATERIAL FROM HIDES

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Fig. 1.

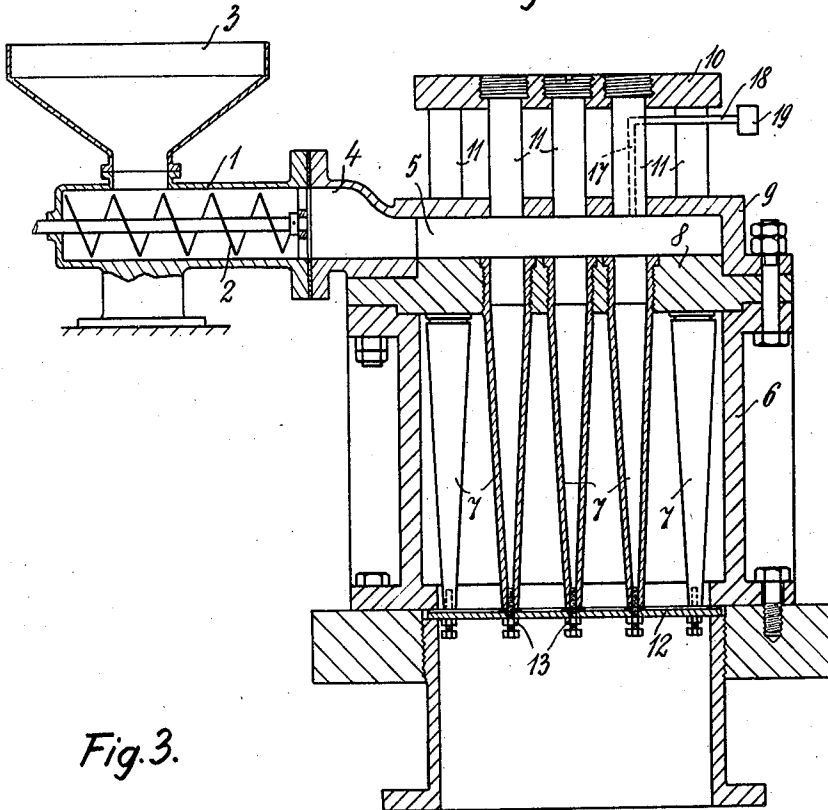
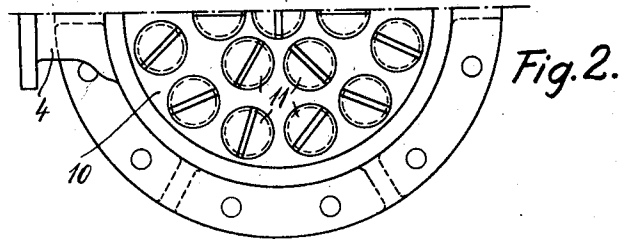
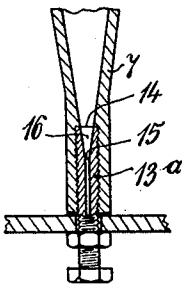


Fig. 3.



Witnesses:

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METHOD FOR WORKING UP FIBROUS
MATERIAL FROM HIDES

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This invention relates to a method and device for working up fibrous material from hide substance, and particularly from substance that has been swelled by a preceding chemical or chemico-physical treatment, the hide substance being obtained chiefly from hides, skins, hide and skin pieces, splits, glue-material, scrapings, and the like.

It is the object of the invention to expose the fibers within the swelled hide substance by a special mechanical treatment and to arrange the exposed fibers in a certain order for the purpose of bringing about a condition of the hide substance, in which the fibers or bundles of fibers are more or less isolated and the pasty mass produced is particularly suited for being made into plane, threadlike or tubular structures.

The invention attains its object by subjecting the fibrous material, which may be cut up into pieces, to pressure so as to form preferably cylindrical strands while exposing the fibers, or a large portion thereof, and arranging them in the direction of motion of the material. The device for carrying out the invention is fitted with at least one pipe whose inside diameter is reduced at the outlet with respect to the inlet and preferably relatively small. Having been separated into pieces whose size is determined by the length of the fibers, the swelled hide substance is introduced into this pipe and forced through it. Preferably, a plurality of such pipes tapering from the inlet to the outlet end is disposed in a casing of say circular cross section in such a way that the pipes open with their inlet end into a joint chamber into which pieces of hide substance are forced by a pressure device. Furthermore, stamps or the like attached to a joint plate may move in the direction of the longitudinal axes of the pipes and be insertable in the inlet ends thereof after passing through the chamber and the fibrous material contained therein. Details of construction of the pipes and stamps, according to the invention, will be described below.

By way of example, one form of the invention is illustrated in the accompanying drawing, in which Figure 1 is a longitudinal section of the device; Fig. 2, a top view of one-half of the device; and Fig. 3, a sectional detail view.

Referring to the drawing, and first to Fig. 1, 1 is a pressure or feeding device comprising, for instance, a worm 2 moving in a piece of pipe, which is supplied with swelled hide substance, preferably cut up into pieces, by the hopper 3. The device 1 may form part of a meat chopper

or the like which separates the hide substance into pieces before it is fed to the pressure device. The worm 2 forces the pieces of hide substance through a connection 4 into the chamber 5 disposed above the casing 6 of cylindrical cross section. Into the chamber 5 open the inlet ends of the pipes 7 which are cylindrical only at their inlet ends inside and which taper between this cylindrical portion and the outlet ends. The inlet ends of the pipes 7 are screwed into a joint plate 8 which is united with the casing 6 and the cover portion 9 containing the chamber 5.

A joint carrier 10 has attached thereto the stamps 11 which are guided in openings of the cover 9. The carrier 10 with the stamps 11 is movable in the direction of the longitudinal axis of the pipes 7 to permit introduction of the stamps 11 into the cylindrical inlet ends of the pipes 7.

The outlet ends of the pipes 7 are secured to a plate 12 or the like, and each pipe is provided with a screwed in nozzle 13, each of which has a longitudinal bore whose inside diameter is chosen in accordance with the desired reduction of cross section of the strands of fiber pressed through.

The inside diameter of the longitudinal bore of a nozzle 13 may either be equal to the smallest inside diameter of the tapering pipe 7 or, according to Fig. 3, the construction may be such that the last tapered portion of the pipe is disposed in the longitudinal bore of the nozzle itself. Fig. 3 shows that the smallest inside diameter of the pipe at 14 is larger than the smallest inside width of the tapering bore 16 of the nozzle 13a at 15. This construction facilitates the removal of foreign bodies which may be present in the fibrous mass and clog the outlet ends of the pipes 7 or the nozzles 13. Such foreign bodies will, as a rule, be smaller in diameter than the joint 14 of the pipe and nozzle and be held in the conical bore 16 of the nozzle after removal of which they can be readily eliminated.

The nozzles 13 may be connected with the pipes 7 in any suitable manner.

To prevent a pipe or its stamp from breaking, owing to excess pressure due to the presence of foreign bodies or for other reasons, a bore 17 of a stamp, as indicated in Fig. 1, may be connected by a conduit 18 to a safety device 19 of any desired form and being constructed, for instance, as cap nut, which in case of excess pressure will draw attention to the pipe concerned,

so that the latter may be stopped or the cause of the trouble removed.

The device functions as follows:

At each rapid stroke of the stamps 11 hide substance is forced out of the chamber 5 and into the pipes 7 at a very high pressure amounting to say 700 atmospheres or more. Owing to this strong pressure, the mass previously consisting of pieces is extruded through the nozzles 13 preferably in the form of cylindrical strands. While the mass is on its way to the nozzles 13, the fibers, or a large portion thereof, are rearranged in the tapering pipes 7 and, simultaneously, exposed, that is, disconnected. During this process the fibers individually and in their entirety are carefully handled, since there are no sharp corners and edges in the device.

The extruded strands of hide substance constitute a mass excellently suited for the production of plane forms, and particularly for making endless tubular structures which may serve as artificial sausage skins.

I claim:—

1. In the preliminary treatment of fibrous hide material to be used in the manufacture of artificial sausage casing and the like, the steps of converting fibrous hide material into swollen condition, forming masses of separate pieces of the swollen fibrous material into moving elongated rodlike form, and gradually reducing the cross section of such rodlike form during movement thereof, whereby the fibers are mechanically liberated and are positioned in the direction of movement of the material.

2. In the preliminary treatment of fibrous hide material to be used in the manufacture of artificial sausage casing and the like, the steps of converting fibrous hide material into a swollen condition, forming masses of separate pieces of the swollen fibrous material into moving elongated rodlike form, gradually reducing the cross section of such rodlike form during movement thereof, and expressing said rodlike form through a restricted space, whereby the fibers are mechanically liberated and are positioned in the direction of movement of the material.

3. In the preliminary treatment of fibrous hide material to be used in the manufacture of artificial sausage casing and the like, the steps of converting fibrous hide material into a swollen condition, expressing a mass of separate pieces of such swollen material through a nozzle at the end of a conical tube of gradually decreasing diameter.

4. In the preliminary treatment of fibrous hide material to be used in the manufacture of artificial sausage casing and the like, the steps of converting fibrous hide material into swollen condition, moving a mass of separate pieces of the swollen fibrous material under pressure and during such movement gradually reducing the cross section of the mass in the direction of movement, whereby the fibers are mechanically liberated and are positioned in the direction of movement of the material.

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