

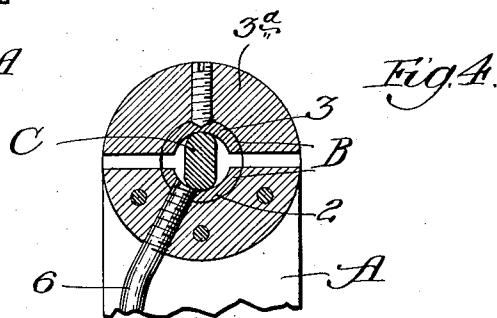
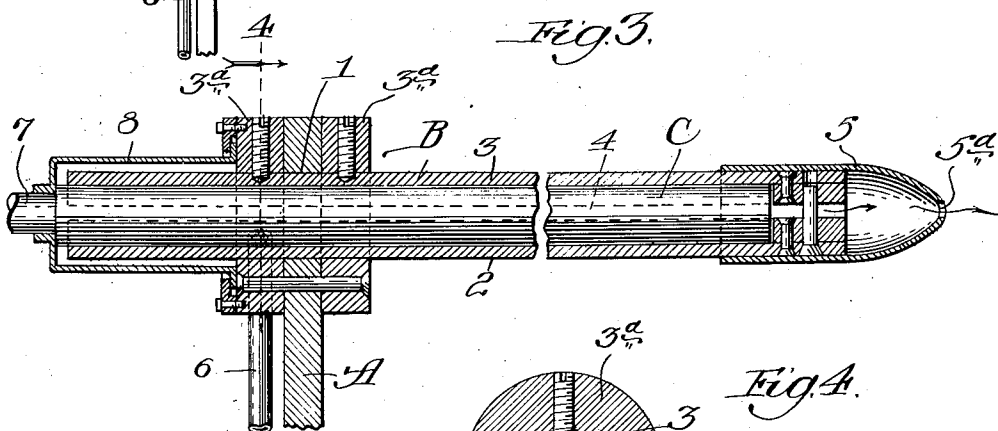
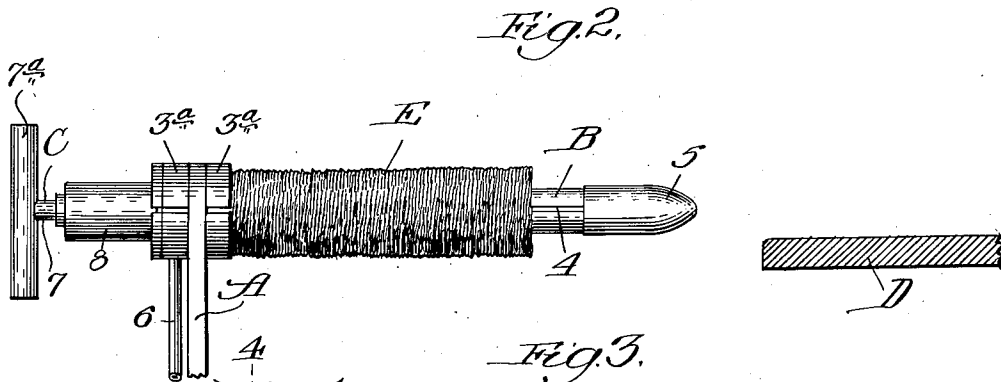
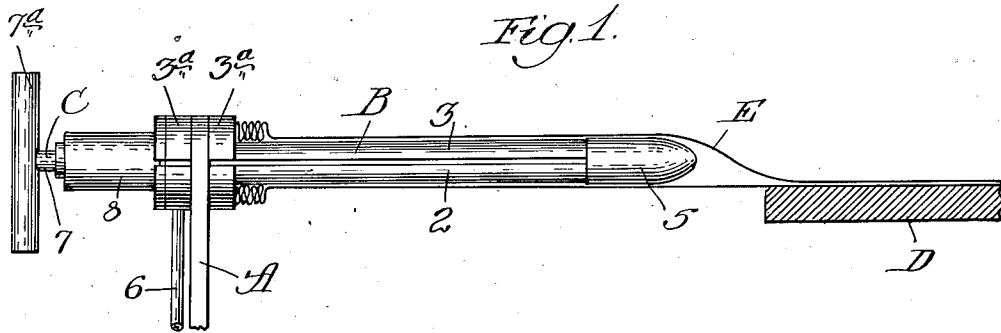
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METHOD AND APPARATUS FOR SHIRRING SAUSAGE CASINGS OR THE LIKE

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METHOD AND APPARATUS FOR SHIRING
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5 Claims. (Cl. 17-45)

This invention relates to a method and apparatus for shirring sausage-casings, or the like. It is particularly adapted to the packaging of cellulose casings, ordinarily manufactured in the form of continuous tubes. Such tubes may be cut into suitable lengths, say a length of about 32 feet; and a section of tubing of the length mentioned may be conveniently shirred upon a mandrel so as to occupy a space of about 12 inches in length.

The tubing may be removed from the shirring-mandrel onto a wooden rod, or dowel, for example. It may be shipped to sausage-makers in this condition, or may be otherwise packaged for shipment.

The primary object of the present invention is to provide a method for facilitating the shirring operation.

The manner of practicing the invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a broken elevational view of apparatus adapted to the practice of the process, illustrating the shirring operation; Fig. 2 is a view of the apparatus with the casing in shirred condition on the shirring-mandrel; Fig. 3 is an enlarged broken vertical view showing the formation of the shirring-mandrel; Fig. 4 is a broken section taken as indicated at line 4 of Fig. 3.

In the illustration given, A designates a suitable standard; B, a collapsible hollow mandrel supported by said standard; C, a device for expanding the mandrel; D, a table for supporting a length of casing; or tubing; and E, the casing, or tubing, which is shown in process of shirring in Fig. 1 and shown in completely shirred condition in Fig. 2.

The standard A is provided at its upper end with a horizontal opening 1 through which the collapsible mandrel extends.

The mandrel B is shown as comprising a fixedly mounted lower section 2 and a vertically reciprocable upper section 3. In the expanded condition, these sections are separated by longitudinal slots 4. A removable tip 5 is applied to the expanded mandrel. Preferably the tip has its point provided with an air-outlet 5^a. The tip may be removed to permit the shirred casing to be removed after the mandrel has been collapsed. The upper section 3 of the mandrel is equipped with ring-sections 3^a which slidably embrace the upper portion of the standard A.

The expanding device C is in the nature of a cam having the elongated cross-section shown in Fig. 4. When the long axis is perpendicular,

the mandrel is in expanded condition; and when horizontal, the mandrel may be collapsed.

The mandrel B is hollow, so that air may pass therethrough and, emerging through the slots 4, expand the casing E before and while it is being shirred. An air tube 6, connected with a source of very low pressure air, supplies light pressure to the interior of the mandrel, and, hence, to the interior of the casing.

The shank 7 of the expanding device C projects rearwardly through the rear end of the mandrel and is equipped with a handle 7^a by means of which the expanding device may be turned about its axis.

A cup or gland 8, which may be of rubber, preferably envelops the rear end of the mandrel and embraces the shank 7 of the expanding device, thus serving to confine air against escape from the rear end of the mandrel.

In the operation of the device, the operator slips one end of the cellulose tubing E onto the mandrel, thus covering the full length of the mandrel. At this time, or earlier if desired, light air pressure is admitted to the interior of the mandrel, say a pressure of one-half pound per square inch, more or less. This has the effect of keeping the inner wall of the tubing E substantially out of contact with the mandrel during the shirring operation. Also, air escaping through the orifice 5^a in the tip of the mandrel gradually opens up the flat tubing as it is drawn by the operator from the table D onto the mandrel. The shirring is accomplished at the base portion of the mandrel and gradually extends forwardly to the tip of the mandrel as the operation progresses.

After the operation has been completed, the tip 5 may be removed and the mandrel collapsed. The shirred casing may then be slipped off the mandrel onto a dowel-pin, or wooden rod, which will serve to support the shirred casing, either for shipment purposes, or for conveying the shirred casing to the point where a further operation may be performed.

The expedient of introducing a gaseous medium, such as air, under light pressure greatly facilitates the shirring operation, expedites the work, and avoids injury to the casing. Frequently, such casings, particularly in the small-diameter sizes, have a wall-thickness of a little less than 1/1000 of an inch. Accordingly, a method which facilitates the slipping of the tubing onto the mandrel and the shirring operation on the mandrel is of great advantage in the art.

The invention described is here illustrated in

the simplest form. It may be practiced in other and more complicated embodiments.

It is preferred, of course, to maintain a film, or layer, of air, between the mandrel and the tubing which is being shirred thereon. However, other suitable gaseous medium may be employed for the purpose, if desired. Ordinarily, the casing is substantially dry while the shirring is being effected. That is, the casing is dry to the feel, although it may have a slight amount of moisture hygroscopically contained therein.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

1. A process of shirring dry sausage-casings, or the like, which comprises shoving successive portions of the casing onto a mandrel and effecting shirring of the casing while maintaining a gaseous layer between the mandrel and the casing which is being shirred.

2. A process as stated in claim 1, as practiced by maintaining a light internal pressure in the

portion of the casing being shirred on the mandrel and admitting pressure to that portion of the casing which is being drawn onto the mandrel tip, thus tending to open the casing.

3. A tubing-shirring process which comprises drawing a flattened dry tubing onto a mandrel and effecting shirring of the tubing while maintaining a light internal air pressure in the portion of the tubing on the mandrel and in the portion of the tubing about to be slipped onto the mandrel.

4. A shirring apparatus for the purpose set forth comprising a standard, a collapsible tubular mandrel mounted upon the upper portion of said standard upon which a tubing may be shirred, said mandrel having means for emitting a gaseous fluid to maintain a gaseous layer between the mandrel and the tubing being shirred thereon, and means for supplying a gaseous medium under pressure to the interior of said collapsible mandrel.

5. Apparatus as specified in claim 4, combined with a mandrel-expanding device within the mandrel and equipped outside the mandrel with an actuating handle.

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