Feb. 20, 1945. E. K. BAUER 2,369,769

APPARATUS FOR THE LIQUID TREATMENT OF YARN AND THE LIKE

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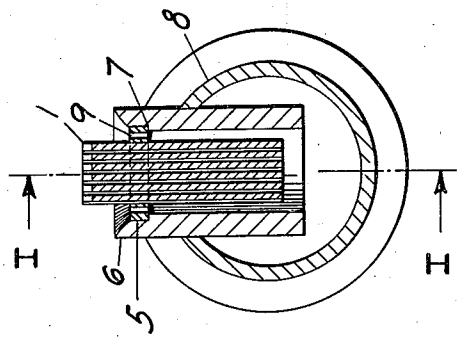
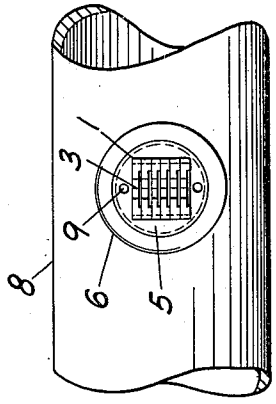


FIG-2-

FIG-3-



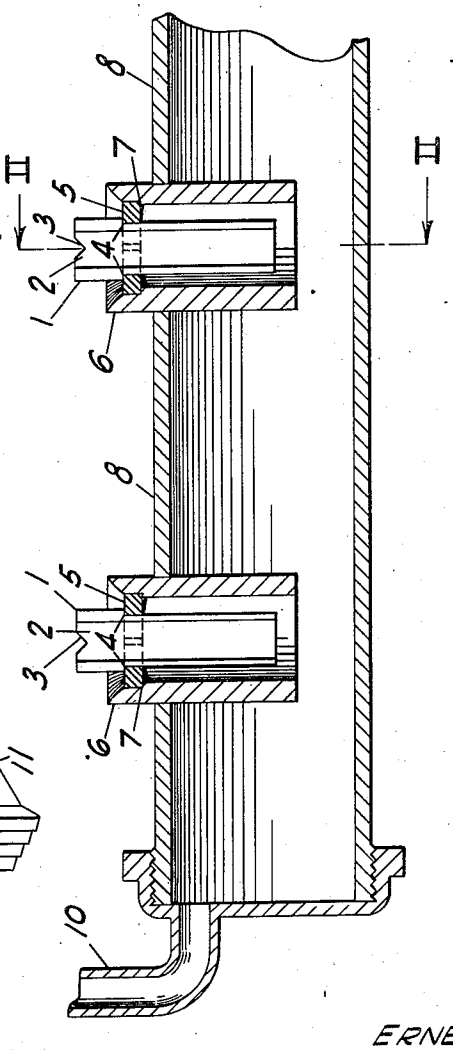


FIG-1-

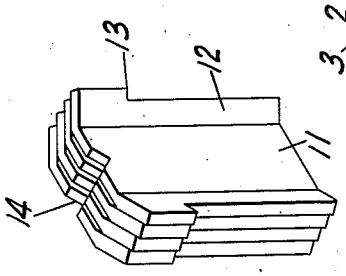


FIG-4-

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APPARATUS FOR THE LIQUID TREATMENT OF YARN AND THE LIKE

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3 Claims. (Cl. 91—43)

This invention relates to improvements in apparatus for the liquid treatment of yarn. More particularly, the invention relates to improvements in apparatus for applying a treating liquid to traveling yarns, threads, filaments and the like.

The principal object of the invention is to provide an improved form of apparatus for applying treating liquid to a traveling yarn, thread or the like, which is simple in its construction, which will be uniform in its operation, and which may be readily serviced.

Other objects and advantages of the invention will be apparent from the following description and accompanying drawing.

In the drawing:

Figure 1 is a sectional elevational view of a preferred embodiment of the invention, taken on the line I—I in Figure 2.

Figure 2 is a sectional elevational view taken on the line II—II in Figure 1.

Figure 3 is a partial plan view of the embodiment of the invention shown in Figure 1.

Figure 4 is a perspective view of a modification of the invention.

Referring to Figures 1, 2 and 3 of the drawing, reference character 1 indicates one of a plurality of plate members having a recessed center portion 2 on one face extending the length of the member. The opposite face of the member is a plane surface. The plate members are made of metal or plastic material that is relatively resistant to wear and is resistant to the treating liquid. Notches 3 are formed in the upper end of the plate members to form a groove through which the traveling yarn or thread passes. A plurality of plate members are assembled together with the plane face in contact with the recessed face of the adjacent member. The upper portion of the plate members is wider than the lower portion forming shoulder members 4 at each side. The plurality of plate members are held together as a unit by the annular member 5 which surrounds the plate members and is in contact with the shoulders 4. The plurality of plate members comprising a unit is mounted in the cylindrical member 6 with the annular member in contact with a shoulder 7 formed in the cylindrical member. The cylindrical member is mounted on a reservoir 8 for the treating liquid to be applied. The treating liquid is maintained in the reservoir at a level above the lower end of the plate members. The upper end of the cylindrical member 6 extends above the annular member 5 and forms a receiver for collecting excess liquid. Holes 9 are formed in the annular member which permit the excess liquid to drain back into the reservoir. The reservoir is supplied with liquid by the pipe 10 mounted at one end. The recess in the face of the plate member is relatively shallow and when the recessed face of one is positioned in contact with the plane face of the adjacent plate member, forms a capillary.

In the operation of the device traveling yarn or thread is passed over the plate members in the groove formed by the notches 3. Liquid from the reservoir passes upwardly through the capillaries formed between the plate members and is applied to the traveling yarn. Any excess liquid that is not applied to the traveling yarn may be drained back into the reservoir. The amount of liquid that is applied to the traveling yarn may be determined by the number of plate members that comprise the unit, also the size of the capillaries formed between the plate members.

In the modification of the invention shown in Figure 4 a different form of plate member is used. The plate member comprises a central portion 11 and diverging side portions 12. The upper portion of the plate member is wider than the lower so that shoulders 13 are formed. Notches 14 are formed in the upper end of the plate members to provide a groove through which the traveling yarn or thread passes. Due to the diverging side portions, the plate members are substantially concave on one side and convex on the other. A plurality of plate members are assembled together to form a unit with the convex face of one closely adjacent to the concave face of the next plate member. The central portion of the convex face is slightly wider than the central portion of the concave face so that when the plate members are assembled together as a unit with the diverging side portions of adjacent plates in contact, the central portions are slightly spaced apart forming capillaries therebetween. The plurality of the plate members are assembled and retained in position together as a unit and are mounted in the reservoir in substantially the same manner as in the embodiment of the invention shown in Figures 1, 2, and 3 of the drawing.

A plurality of units may be mounted on the same reservoir so that a plurality of traveling yarns or threads may be treated.

While preferred embodiments of the invention have been shown, it is to be understood that changes and variations may be made in the invention without departing from the spirit and

scope of the invention as defined by the appended claims.

I claim:

1. An apparatus for the liquid treatment of traveling yarn and the like comprising a plurality of relatively thin plate-like members, two edge strips on opposite sides of each of the members being bent at a predetermined angle to one side of the plane of the intermediate portions thereof, the two lines of bending being substantially the same distance apart in the several members, and means for mounting the members with the bent side surfaces of adjacent members in contact so that the intermediate portions of adjacent members are separated by a capillary distance of substantial size thereby forming longitudinal channels between the intermediate portions of the members.

2. An apparatus for the liquid treatment of traveling yarn and the like comprising a plurality of relatively thin plate-like members, two edge strips on opposite sides of the members being bent at a predetermined angle to one side of the plane of the intermediate portion thereof, the two lines of bending being substantially the same distance apart in the several members, a reservoir for treating liquid, and means for mounting the members in nested relation so that the intermediate portions of adjacent members are separated by a capillary distance of substantial size thereby forming longitudinal channels between the adjacent intermediate portions of the members, said mounting means being arranged to support the nested members with one end of the channels therein in the liquid and the other end above the liquid.

3. An apparatus for the liquid treatment of traveling yarn and the like comprising a plurality of relatively thin plate-like members, two edge strips on opposite sides of the members being bent at a predetermined angle to one side of the plane of the intermediate portion thereof, the two lines of bending being substantially the same distance apart in the several members, a reservoir for treating liqffuid, and means for mounting the members in nested relation so that the intermediate portions of adjacent members are separated by a capillary distance of substantial size thereby forming longitudinal channels between the adjacent intermediate portions of the members, said mounting means being arranged to support the nested member with one end of the channels therein in the liquid and the other end above the liquid, and notches in the upper ends of the members arranged to form a guiding groove extending transverse of the intermediate portions of the members in substantial alignment with the channels.

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