Dec. 19, 1933. W. P. HORNBUCKLE ET AL 1,939,816

BEAM FOR DYEING MACHINES

Filed March 26, 1931

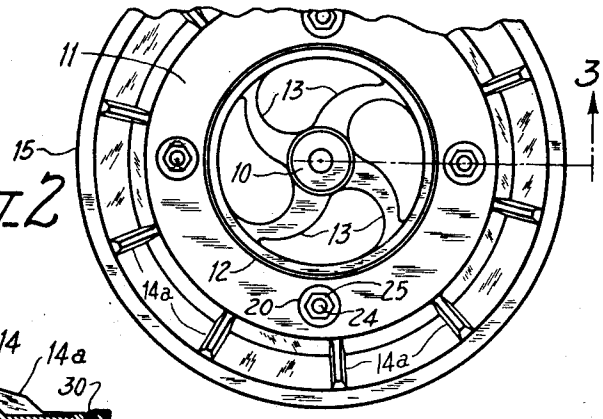


Fig. 2

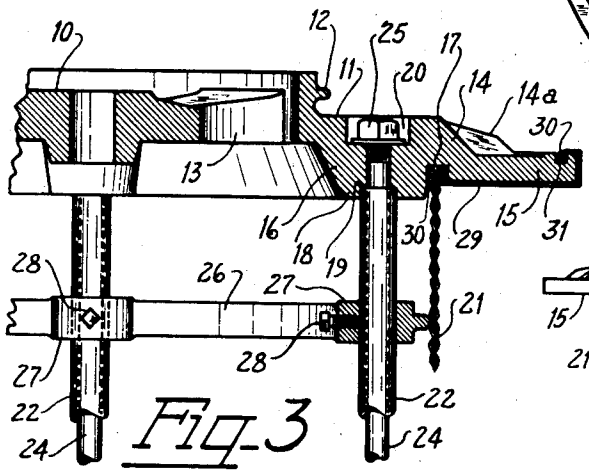


Fig. 3

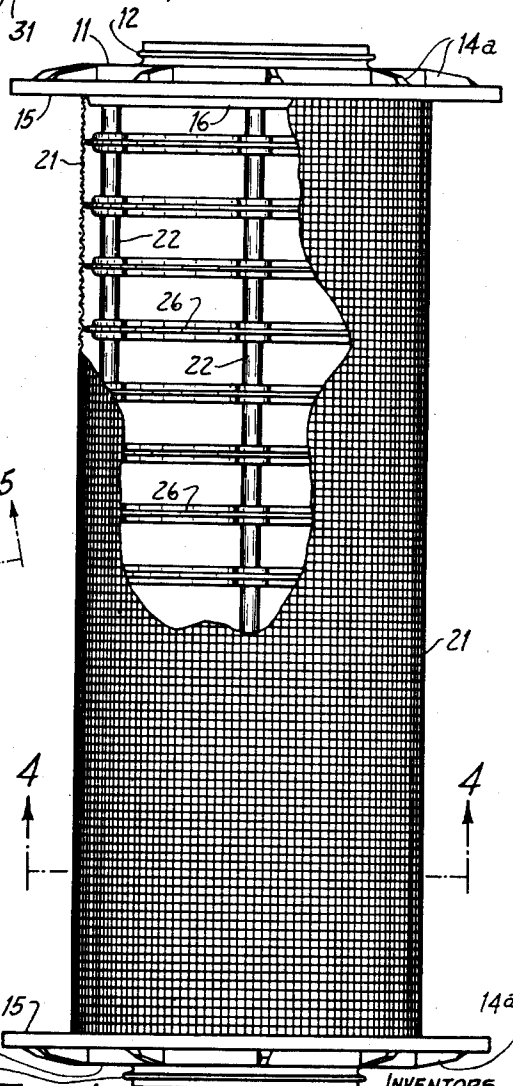


Fig. 1

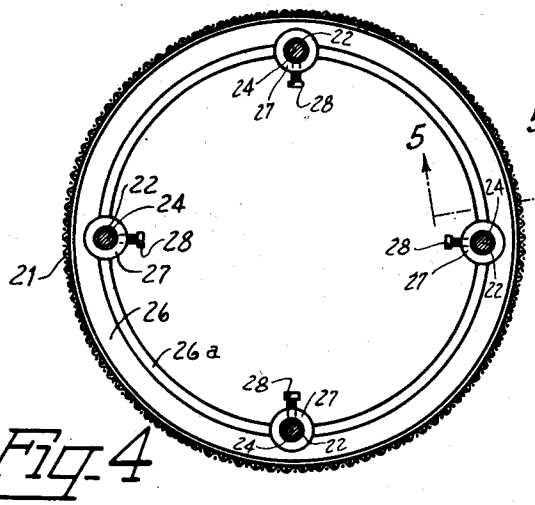


Fig. 4

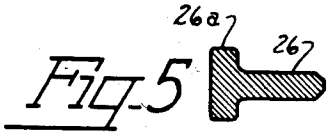


Fig. 5

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BEAM FOR DYEING MACHINES

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9 Claims. (Cl. 242—118)

The device forming the subject matter of this application is a beam, of the kind on which yarn and the like is wound and supported thereon while the yarn is being dyed, dried, extracted and the like, and the invention aims to provide a beam which may be manufactured at comparatively small cost, the beam being simple in construction, capable of ready repair, and being so constructed that it will resist the corroding or deteriorating effect of the dye and other chemicals used on the yarn. Another advantage of this beam is the fact that due to the peculiar structure, less resistance is offered to the passage of the treating fluid therethrough on account of the fact that the peculiar structure permits a foraminous covering such as wire woven of a mesh of suitable size, whereas, heretofore the foraminous portion of the beam must act as a part of the structure of the beam for holding the end portions in position.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

Although a preferred form of the invention has been shown in the drawing, it will be understood that a mechanic, working within the scope of what is claimed, may make changes and alterations, without departing from the spirit of the invention.

We are aware that heretofore the yarn bearing surfaces of some beams have been covered with lead, while others have been covered with nickel, in order to overcome the corrosive effect of the baser metals, but all of these non-corrosive metals have disadvantages, among which is the fact that these surfaces are softer than the base metals and therefore will not stand impacts and rough handling without having the smooth surface damaged and marred, while it is a known fact that a copper-nickel alloy is very hard and will withstand the effect of acids and chemicals much better than nickel or lead alone.

Some of the objects of our invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawing, in which—

Figure 1 shows a beam made in accordance with our invention in elevation with a portion of the foraminous member broken away;

Figure 2 is an end view of Figure 1;

Figure 3 is an enlarged detailed cross-sectional view taken along the line 3 in Figure 2;

Figure 4 is a slightly enlarged cross-sectional view taken along the line 4—4 in Figure 1;

Figure 5 is a cross-sectional view taken along the line 5—5 in Figure 4 with the foraminous member omitted.

The beam forming the subject matter of this invention and application comprises end members 11 provided with an outstanding annular collar 12 which is adapted to be seated in a dyeing machine, drying machine, extractor and the like, said collar carrying spiders 13 emanating from hub 10. At its periphery, each end member 11 has an inwardly sloping flange 14 with re-enforcing ribs 14*a* extending therefrom and being integral with an outstanding lip 15. The end member 11 is equipped with an inwardly extended annular rib 16, which with the flange 14, forms an annular recess 17. At intervals, the end member 11 has inwardly extended lugs 18 provided with seats 19 in their inner ends. Each end member 11 is provided at its outer surface with a recess 20 alined with the seat 19 of the adjoining lug 18.

The cylindrical body of the beam is indicated by the numeral 21 and is foraminous, the body preferably being made out of netting, aluminum and galvanized netting being preferred. The ends of the body 21 are received in the recesses 17 of the end members 11 between the flanges 14 and the ribs 16. Spacers 22 of tubular form are adapted to their ends to fit in the seats 19 of the end members 11. Securing devices 24, such as bolts, carrying nuts 25, pass removably through the spacers 22 and through the end members 11, the nuts 25 on the bolts and the heads of the bolts, being received in the recesses 20 of the end members 11, as clearly disclosed in Figures 2 and 3 of the drawing.

It is obvious that the securing devices 24 and the spacers 22 hold the end members together on the body 21, without crimping or bending the body.

A means is provided for holding the body 21 of the beam in cylindrical form and for preventing it from collapsing. With this end in view, a plurality of annular supports 26 are located within the body 21 and are spaced apart longitudinally of the body, as shown in Figure 1 of the drawing. The annular supports 26 have inwardly extended projections 27 through which the spacers 22 pass. Fastening devices 28, which may be set screws, are threaded into the projections 27 and engage the spacers 22 to prevent the supports 26 from sliding longitudinally on the spacers. The portion which supports

member 21 is thin to offer a minimum resistance to the fluid, but has thickened portion 26*a* to re-enforce the same.

The inner face of lip 15 is covered with a non-corrosive alloy of nickel, copper, manganese and iron which projects into annular groove 17 and has molten metal, such as lead 30 poured thereabout. This non-corrosive alloy is indicated by reference character 29. Member 29 is curled over the outer edge of rib 15 and projects into an annular groove 31 in the rear face of the rib 15, and molten metal, such as lead is poured thereinto to hold the sheet of material in position. This arrangement, together with the non-corrosive member 21, prevents the yarn from coming into contact with any corrosive metal during its treatment.

The end members 11 and the members 26 can be of any suitable material, preferably aluminum.

In the drawing and specification, there has been set forth a preferred embodiment of our invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being set forth in the appended claims:

We claim:—

1. In a device of the class described, end members, a foraminous body located between the end members, a plurality of rods for connecting the end members, and annular supports mounted on said rods and engaging the body internally.

2. A device of the class described comprising end members, a foraminous body extended between the end members, a plurality of rods for connecting the end members, annular supports engaging the body internally and mounted on said rods for adjustment longitudinally thereof, and mechanism under the control of an operator for holding the supports in adjusted position on said rods.

3. A device of the class described comprising end members, tubular spacers extended between the end members, securing devices passing through the spacers and engaging the end members, a foraminous body extended between the end members and disposed about the spacers, annular supports engaging the body internally and adjustable on the spacers longitudinally thereof, and means for holding the supports in adjusted positions longitudinally of the spacers.

4. In a device of the class described, end members, a foraminous body located between the end members, a plurality of rods for connecting the end members, annular supports supported entirely by said rods and engaging the body internally.

5. In a device of the class described, end members, a foraminous body located between the end members, a plurality of rods for connecting the end members, annular supports mounted on said rods and engaging the body internally, an annular groove in the yarn bearing surface of each end member into which the foraminous body is adapted to project, a covering for the yarn bearing surfaces of said end members, said covering being adapted to project into the said annular groove, and means for securing said covering and said foraminous body in said groove.

6. In a device of the kind described, end members, a foraminous body located between the end members, a plurality of rods for connecting the end members, annular supports mounted on said rods and supported entirely thereby and engaging the body internally.

7. A yarn beam comprising end members, a foraminous body located between the end members, an annular groove in the end members into which the foraminous body projects, means for securing the foraminous body in said groove, a plurality of rods for connecting the end members, and annular supports supported entirely by said rods and engaging the body internally.

8. In a device of the class described, end members, a foraminous body located between the end members and secured to the end members, a plurality of rods for connecting the end members, and annular members supported entirely on said rods and engaging the body internally.

9. A device of the class described, comprising end members, a foraminous body extending between and secured to the end members, a plurality of rods for connecting the end members, annular supports engaging the body internally and supported entirely on said means, and rods for holding the annular supports in adjusted position on said rods.

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