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REEL FOR DYEING MACHINES AND THE LIKE

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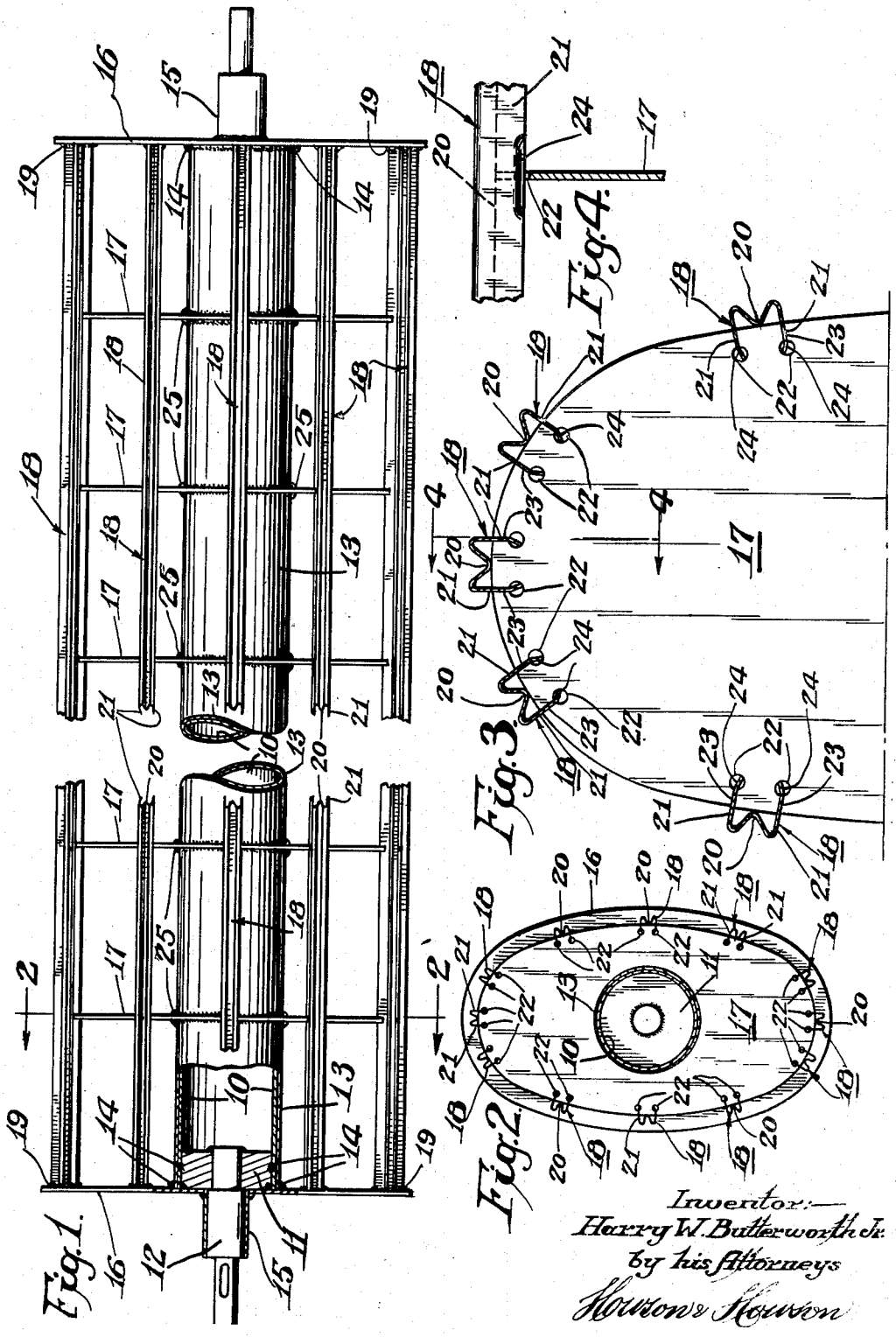


Fig. 1.

Fig. 2.

Fig. 3

Fig. 4.

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REEL FOR DYEING MACHINES AND THE LIKE

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5 Claims. (Cl. 242—118)

This invention relates to reels for dyeing machinery and to like reels utilized in cloth treating.

In a reel of this character, due to the fact that the liquids with which the cloth or yarns being treated are corrosive to most metals, it is desirable that the reel, in all of its exposed surfaces at least, be composed entirely of some resistant substance such as stainless steel. All such substances are extremely expensive and it is, accordingly, likewise desirable that the construction be made as light as possible. This has led, in ordinary reel construction, to an attempt to use skeletonic frame-works upon which the reel bars are secured, usually by welding. However, with a light body structure, considerable difficulty is met with in maintaining the reels in operation, for variations in temperature and distortion occurring in the reel itself, due to the fact that many such reels are not truly circular but ovate, and due to the fact that the reel is always constructed so that the supported material may have only a point contact therewith, tend to disrupt the connections between the bars and spiders of the reel.

An important object of this invention is the provision of a reel structure which will provide ample rigidity for support of the material being treated while the reel is in operation, and which is so constructed that neither the internal strains nor the loads placed on the reel will destroy the integrity of the structure.

Another object of the invention is the provision of a reel of this character which may be comparatively cheaply manufactured as compared with previous structures.

These and other objects I attain by the construction shown in the accompanying drawing wherein, for the purpose of illustration, I have shown a preferred embodiment of my invention and wherein:

Fig. 1 is a side elevation partially in section of a reel constructed in accordance with my invention;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional view illustrating the method of connecting the reel bars to the intermediate spiders; and

Fig. 4 is a section on line 4—4 of Fig. 3.

Referring now more particularly to the drawing, the reel body comprises a reinforcing tube 10 which may be of steel or any suitable material, this tube having mounted in its ends closure discs 11 which, in turn, mount trunnions 12. Body tube 10 is surrounded by a sleeve 13 of suitable material, such as stainless steel, which is securely welded to both the tube and to the end discs 11 as at 14. The trunnions, and more particularly those portions thereof immediately adjacent the end discs 11, are likewise surrounded by sleeves 15 of the same material. End spiders 16 are provided, these spiders being securely welded both to the covering sleeve 13 and to sleeves 15, thus completely enclosing those portions of the mounting shaft structure provided by the tube 10, discs 11, and trunnions 12 in the corrosion-resistant material.

Secured at intervals along the sleeve 13 are a series of intermediate spiders 17 the number and spacing of which will be varied to suit the loads to be imposed upon the reel. Surrounding these spiders 17 is a series of bars 18 each having its ends firmly welded, as at 19, to the inner faces of the end spiders 16. Bars 18, as is customary in reels of this character, are so constructed that they provide substantially only a point contact for materials resting thereon. In the present instance the bars are substantially M-shaped, having the apices of the central connecting V thereof in contact with the peripheral portions of the intermediate spider 17, as indicated at 20. As a means for connecting the legs 21 of these bars to the intermediate spiders 17, I form in each of the spiders 17 at each point where it is desired to locate a bar 18 thereon, a pair of openings 22 arranged inwardly of the periphery of the spider, and form in the spider between these openings and the periphery slots 23 through which the legs 21 may be inserted to the openings. The material of these legs is then deflected angularly within the openings as, for example, by driving a drift or similar implement into the opening and against the leg to form the deflection indicated at 24. Such deflections will prevent radial displacement of the bars and at the same time will prevent any strains, resulting from a tendency of the bars to creep following a variation in temperature thereof or a distortion under load, from being imparted to the intermediate spiders and thus to the welded connections 25 between these spiders and the sleeve 13.

It will be obvious that this method of connecting the bars to the intermediate spiders is not only beneficial in that it prevents undue strains being applied to such spiders but is, likewise, relatively inexpensive as compared to the ordinary method of welding the bars to the spiders. Since the particular form of bar herein illustrated is merely a preferred form capable

of considerable variation, and since it is, likewise, possible to vary considerably the construction described without departing from the spirit of my invention, I do not wish to be understood as limiting myself to the structure illustrated except as hereinafter claimed.

I claim:

1. In a reel, a trunnioned reel body having a plurality of spiders mounted thereon, said spiders comprising end and intermediate spiders and a plurality of bars having their end portions fixed to said end spiders and legs slidably fitting within slots formed in said intermediate spiders, said legs having deflected areas preventing radial disengagement of said bars from the intermediate spiders.

2. In a reel, a reel shaft having a plurality of spiders mounted thereon, said spiders comprising end and intermediate spiders and a plurality of bars having their end portions fixed to said end spiders and legs slidably fitting within slots formed in said intermediate spiders, said slots communicating with openings formed in the intermediate spiders, said legs having portions deflected into said openings and preventing radial disengagement of said bars from the slots.

3. In a reel, a trunnioned reel body having a plurality of spiders mounted thereon, said spiders comprising end and intermediate spiders and a plurality of M-shaped bars having ends fixed to said end spiders and legs slidably fitting within slots formed in said intermediate spiders, said legs having deflected areas preventing radial disengagement of said bars from the intermediate spiders, the apices of the central connecting V-shaped portions of the bars being seated upon the peripheries of the intermediate spiders.

4. In a reel, a reel body having a plurality of spiders mounted thereon, said spiders comprising end and intermediate spiders and a plurality of bars having their end portions fixed to said end spiders and their intermediate portions seated upon the peripheries of said intermediate spiders, said bars comprising leg portions engaged in slots formed in the intermediate spiders, and means preventing radial disengagement of the legs from the slots while permitting relative movement of the intermediate spiders and bars in a direction longitudinal to the bars.

5. In a reel, a trunnioned reel body having a plurality of spiders mounted thereon, said spiders comprising end and intermediate spiders and a plurality of M-shaped bars having ends fixed to said end spiders and legs slidably fitting within slots formed in said intermediate spiders, said intermediate spiders having openings with which said slots communicate, said legs having deflected areas at said openings preventing radial disengagement of the bars from the slots, the apices of the central connecting V-shaped portions of the bars being seated upon the peripheries of the intermediate spiders.

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