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APPARATUS FOR THE LIQUID TREATMENT OF STRAND MATERIAL

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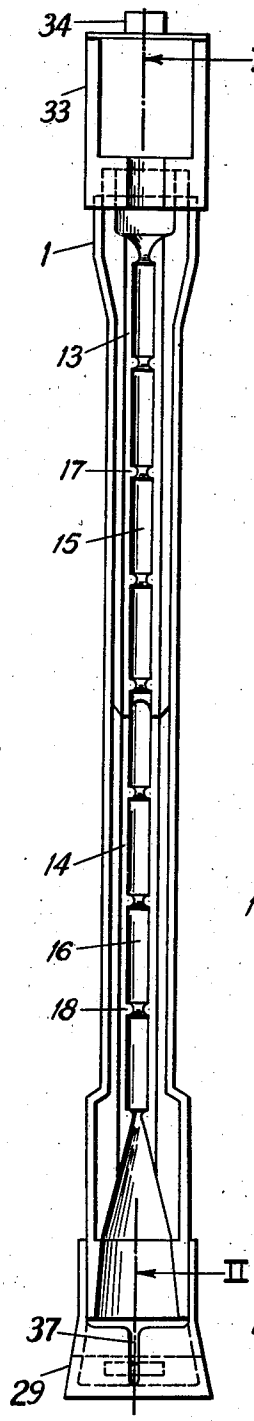


Fig-1

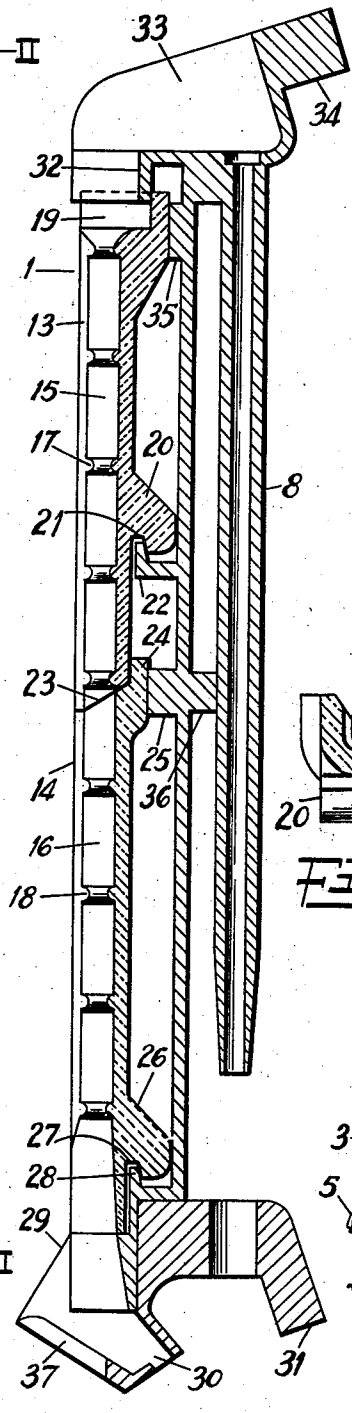


Fig-2

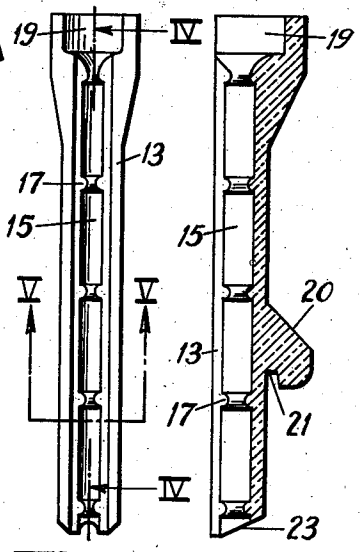


Fig-3. Fig-4.

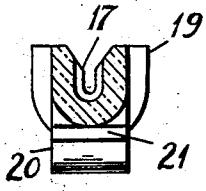


Fig-5.

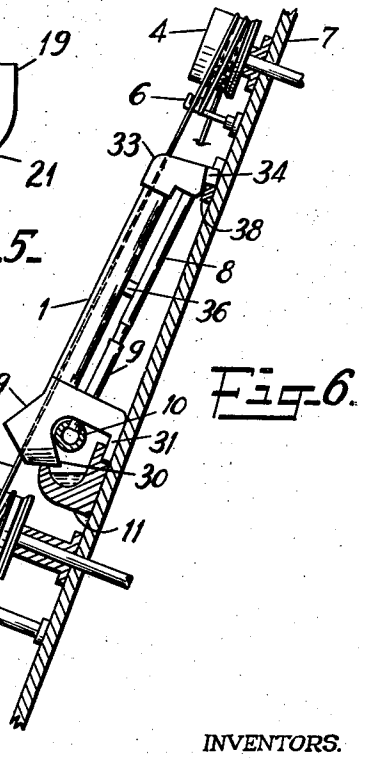


Fig-6.

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APPARATUS FOR THE LIQUID TREATMENT OF STRAND MATERIAL

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3 Claims. (Cl. 68—205)

1

This invention relates to improvements in apparatus for applying liquid to yarn. More particularly the invention relates to improvements in apparatus for applying liquid to a traveling yarn.

The invention has for its principal object to provide a unitary form of apparatus for applying liquid to a traveling yarn having means for mounting the apparatus in operative position which permits the apparatus to be readily removed.

A further object of the invention is to provide a unitary form of apparatus for applying liquid to a traveling yarn having associated means for guiding the yarn and applying liquid thereto which may be readily removed from the apparatus.

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

In the drawing,

Figure 1 is a front elevational view of a preferred embodiment of the invention.

Figure 2 is a section view taken on the lines II—II shown in Figure 1.

Figure 3 is a front elevational view of one of the means for guiding the yarn and applying liquid thereto.

Figure 4 is a sectional view taken on the lines IV—IV in Figure 3.

Figure 5 is a sectional view taken on the lines V—V in Figure 3.

Figure 6 is a side elevational view of the preferred form of the invention mounted in operative position.

Referring to the drawing reference character 1 indicates an open trough-like member made of material resistant to chemicals and having liquid supply means 33 and liquid discharge means 29. Liquid is delivered to the liquid supply means by the conduit 8 which is braced by the lug 36 extending from the bottom of the trough-like member. The trough-like member is provided with an outwardly extending lug 34 and a pin member 31 which cooperate with a suitable standard such as shown by reference character 7 in Figure 6 to support the trough-like member in operative position. The trough-like member is provided with means for guiding a traveling yarn and applying liquid thereto, comprising channel-like members 13 and 14 which are of material that is resistant to chemicals. The channel-like members are provided with relatively deep longitudinally extending grooves 15 and 16. Ridge members 17 and 18 are positioned or formed in

2

the longitudinally extending grooves in the channel members to guide and support the traveling yarn. The channel members have interfitting portions and are mounted in the trough-like member so as to be readily removable. The channel member 14 is provided with a portion 26 which extends from the bottom thereof and engages the bottom of the trough-like member. The portion 26 is slotted or undercut at 27 adjacent the end of the channel member to receive and engage the tongue or ridge member 28 fixed to the lower end of the trough-like member. The upper end of the channel member 18 is provided with a portion 24 which extends from the bottom of the channel member and engages the boss 25 fixed to the bottom of the trough-like member. The portion 24 of the channel member extends longitudinally and engages and supports one end of the channel member 13. The upper end of the channel member 14 is shaped to receive the lower end of the channel member 13. The channel member 13 is provided with a portion 20 which extends from the bottom of the channel member and engages the bottom of the trough-like member. The portion 20 is slotted or undercut at 21 to receive the tongue or ridge member 22 fixed to the trough-like member. The upper end of the channel member 13 is provided with a longitudinally extending portion 19, the bottom of which engages the boss 35 fixed to the bottom of the trough-like member and the inside of the portion 19 is adjacent the longitudinally extending ridge member 32 which is fixed at the upper end of the trough-like member. The upper end of the trough-like member is spaced from the longitudinal extremity of the portion 19 to permit the channel member 13 to be moved longitudinally and the portion 19 to slide between the boss 35 and the ridge member 32.

The apparatus embodying the invention as shown in Figure 6 is mounted in a rayon spinning machine having the lower godet 3 and guide means 5 and the upper godet 4 and guide means 6 between which the yarn indicated by reference character 2 travels. The godets are usually driven at different speeds so that the yarn is stretched while passing between them. The apparatus is supported on the standard 7 with the outwardly extending lug 34 supported on the lug or ledge 38 fixed to the standard and with the pin member 31 supported in a slot or socket in the upper wall of the liquid discharge trough 11 which is also mounted on the standard. The apparatus is further supported on the liquid discharge trough by the portion 30 of the liquid discharge means

which rests upon a lower wall of the discharge trough. Liquid is supplied to the apparatus by the pipe 10 having the flexible connection 9 which engages the lower end of the supply pipe 8.

In the operation of the apparatus as shown in Figure 6 yarn passes from the lower godet 3 to the upper godet 4. Liquid from the pipe 10 passes from the connection 9 and through the pipe 8 to the liquid supply means 33 and then flows downwardly through the channel member 13 and 14 to the discharge portion 29 from which it is discharged into the liquid discharge trough 11. The thread on passing through the channel member is supported and guided by the ridge members 17 and 18 and is further guided by the vertical slot 37 formed in the discharge portion 29.

The apparatus embodying the invention may be readily removed from its supporting means by merely disconnecting the flexible connection 9 from the pipe 8 and raising the trough-like member 1 to free the pin member 31 from the slot or socket in the discharge trough. Also the channel-like members may be readily removed from the trough-like member without removing the trough-like member from its operative position by sliding the upper channel member 13 longitudinally until the slot 21 in the portion 20 is free of the tongue or ridge member 22 fixed to the trough-like member. There is a slight clearance between the longitudinally extending portion 19 and the ridge member 32 to permit the lower end of the channel member 13 to be swung outwardly and the channel to be then moved downwardly to remove it from the trough-like member. After the channel member 13 has been removed the lower channel member 14 may be readily removed by merely lifting it upwardly to free the slot 27 in the portion 26 from the tongue or ridge 28 at the lower end of the trough-like member. While the channel members may be readily removed from the trough-like member the interlocking relation of the end portions and of the portions of the channel members with the ridge portions on the trough-like member assures that the channel members are securely held in operative position when mounted in the trough-like member.

The invention is adapted to be used with all types of strand materials and where the term yarn is used it is intended to include thread and other strand materials as well and while the invention is shown in Figure 6 as applied to a rayon spinning machine, it is to be understood that the apparatus can be used with any other arrangement or devices where traveling thread, yarn, or strand material passes between two points. Also while a preferred embodiment of the invention has been shown it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

What we claim is:

1. Apparatus for applying liquid to traveling yarn and the like comprising a trough-like supporting member having one side open throughout its length and having liquid inlet means at one end thereof and liquid discharge means at the other end thereof, channel-forming means having one side open longitudinally throughout, removably positioned in the trough-like member and extending between the inlet and discharge means of the member so that the channel thereof communicates with the inlet and discharge means, said channel-forming means and said trough-like member having interengaging parts which permit the channel-forming means to be moved longitudinally in the trough-like member and which are so constructed and arranged as to securely retain the channel-forming means in the trough-like member at one extreme of their relative movement and to release the means from the member upon relative movement in the other direction.

2. Apparatus for applying liquid to traveling yarn and the like comprising a trough-like supporting member having one side open throughout its length and having liquid inlet means at one end thereof and liquid discharge means at the other end thereof, channel-forming means having one side open longitudinally throughout removably positioned in the trough-like member, said channel-forming means and said trough-like member having interengaging tongue and groove-like portions which permit the channel-forming means to be moved longitudinally in the trough-like member and which are so constructed and arranged as to securely retain the channel-forming means in the trough-like member at one extreme of their relative movement and to release the means from the member upon relative movement in the other direction.

3. Apparatus for applying liquid to traveling yarn and the like comprising a trough-like receptacle having one side thereof open throughout its length, a liquid inlet channel at one end of the receptacle having a portion thereof spaced from and overhanging the bottom of the receptacle to form a recess therebetween, a liquid discharge channel formed in the other end of the receptacle, channel-forming means having one side thereof open longitudinally throughout and positioned in the receptacle so that the channel thereof extends between and communicates with the inlet and discharge channels of the receptacle, said channel-forming means having a portion projecting from one end thereof and adapted to extend partially into the recess adjacent the inlet to the receptacle in all positions of the channel-forming means in the receptacle, interengaging parts on the channel-forming means and receptacle comprising at least one tongue spaced from the inlet and projecting from the bottom of the receptacle toward the inlet, said channel-forming means being longitudinally slidable away from the inlet to secure it in position in the receptacle and toward the inlet to release it from the receptacle.

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