April 17, 1934. J. P. LAIRD 1,955,136

SPIN POT

Filed March 14, 1933

Fig. 1.

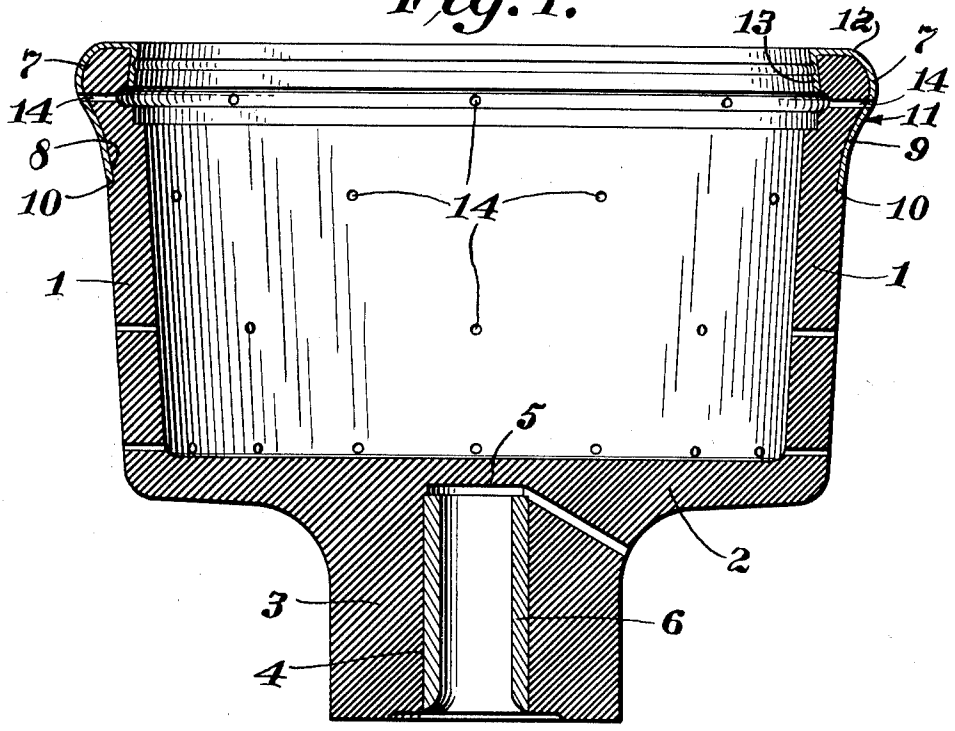
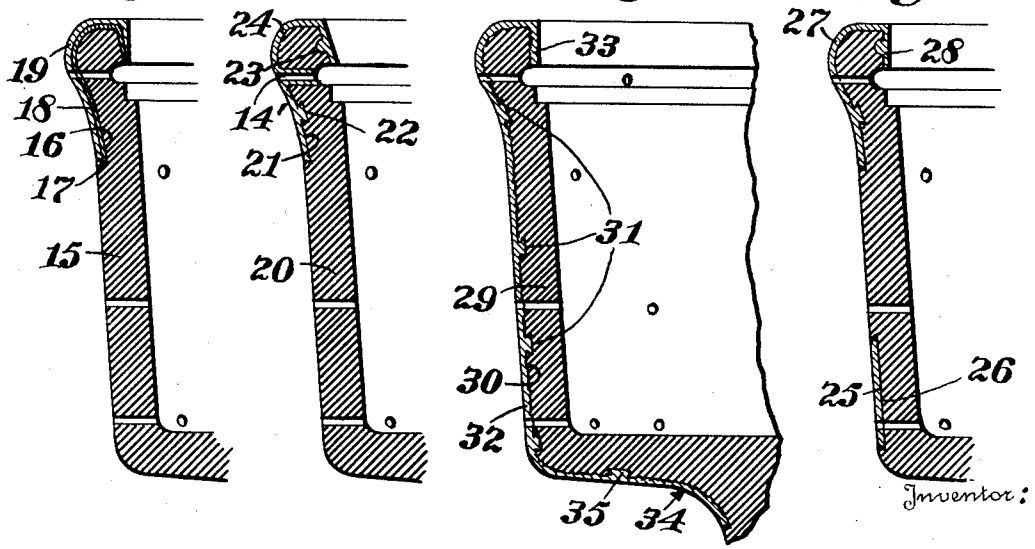


Fig. 2. Fig. 3. Fig. 4. Fig. 5.



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Patented Apr. 17, 1934

1,955,136

UNITED STATES PATENT OFFICE

1,955,136

SPIN POT

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Application March 14, 1933, Serial No. 660,751

2 Claims. (Cl. 118—49)

My invention relates to new and useful improvements in spin pots as used in the art of rayon manufacture and to a process of treating the same, and more particularly relates to a pot that is designed especially to withstand the wear incident to doffing.

As is well known to those skilled in the art, these pots used in the manufacture of rayon are generally formed of acid-proof "Bakelite", they being much more durable and serviceable than the metal pots which frequently develop imperfections in operation, due to machining or casting. Furthermore, "Bakelite" pots cannot be battered or dented or thrown out of shape or balance. It is also well known that these pots revolve at a very high rate of speed, to wit, about 6,000 R. P. M. to thereby twist the thread as it is delivered and wound into the cake in the pot, there generally being two and one-half twists per inch. Now the greatest wear on these "bakelite" pots is likely to be around their upper peripheral edge, as when they are doffed or removed they are often turned upside down to allow the cake to drop therefrom and in that manner the edges become chipped and worn.

Furthermore, it is sometimes the practice to clamp a brake around the upper peripheral edge and by thus applying friction to the pot, the drift or rotation of the pot will be immediately cut down without the waste of time.

The spinning machines are generally made in a plurality of sections, and if the machine consists of four sections there will be eighty pots. Any loss of time with the doffing of a pot is multiplied eighty times and it is imperative that this time be cut to a minimum.

One of the principal objects, therefore, of the present invention is to provide a pot made up of "Bakelite", "Micarta" or other similar material, which materials have been found the most serviceable, and to further so construct the pot, especially at the upper peripheral edge, that the wear incident to the use of the pot, either when doffed in the ordinary manner or when doffed by braking action, will not wear perceptibly at this upper peripheral edge.

Still another object of the invention is to form a pot having a reinforced peripheral upper edge, so that even though the pot is turning at a high rate of speed, a brake, when applied to the peripheral edge, will not wear the same in anywhere near the same time that it does with the present form of pot.

Still another object of the invention is to cut or form, in the outer upper peripheral surface of the pot, various forms of undercuts or keys, so that a metal lining or ring may be sprayed on the pot, which has first been placed on a revolving spindle, the metal coating, in reality, a form of brake band, and the metal flowing into the undercuts or keys, so that there is no possibility of the so-formed metal band becoming separated from the pot.

Still another object of the invention is to provide a "Bakelite" spin pot which has been so formed that when a desirable metal is sprayed thereon the pot will be strengthened and reinforced throughout its side and bottom walls.

Still another object of the invention is to form a pot of non-metal and to spray thereon a coating of metal, this coating being preferably applied around the upper peripheral edge, across the top edge or top surface, and then downwardly around the inner peripheral edge to thus form a brake band that is sealed against accidental removal. Also, the pot may be sprayed over a greater part of its outer peripheral walls or its entire outer peripheral walls, as will be further explained as the specification proceeds.

With these and other objects in view, the invention consists in certain new and novel arrangements and combination of parts, as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawing showing a prefered embodiment,

Fig. 1 is a vertical sectional view of a "Bakelite" pot as used in "pot type" rayon spinning machines;

Fig. 2 is a fragmentary sectional view of the pot with a slightly modified form of coating;

Fig. 3 is a view similar to Fig. 2, showing a still further slightly modified coating and showing one manner of keying the metal to the pot;

Fig. 4 is also a fragmentary section of the pot, showing the metal coating extending from the upper edge to and including the under surface of the pot;

Fig. 5 is a fragmentary sectional view of the pot, showing the metal keyed to the upper peripheral edge and also forming the reinforcing band at the juncture of the bottom and side walls of the pot.

Referring now more specifically to the several views, and for the moment to Fig. 1, there is shown a pot formed of "Bakelite" or "Micarta", and although I have not shown the pot having laminations of fabric therein to strengthen the walls thereof, it will, of course, be understood that the pots are often made this way. It will be seen

generally that the pot consists of the moulded side walls 1, the bottom 2, and the integral hub 3. The hub has the bore 4, which terminates at the wall 5. This bore 4 is usually provided with a metal bushing 6, in which fits the end of a rotating spindle (not shown).

These spindles generally are provided with some expanding or clutching means, so that the spindle and pot are frictionally held. Thus, when the spindle ceases to revolve the pot may continue to do so.

It will be remembered that these pots revolve at a relatively high rate of speed, to wit, about 6,000 R. P. M. and they cannot be instantly stopped, through the spindle mechanism.

As mentioned in the earlier part of the specification, when it is necessary to doff the pots or remove them from the spindles, a metal clamp is held by the operator and clamped around the upper peripheral edge 7 of the pot, and it is this wear about the upper peripheral edge that finally causes the destruction of the pots, they becoming worn and chipped and unevenly balanced and even dangerous to revolve at their high rate of speed.

Still referring to Fig. 1, it will be noticed that I cut away a small annular portion of the "Bakelite", as at 8, so that this cut-away portion, when filled with the metal 9, will be flush with the outer surface of the side wall. The bottom wall of the cut-out portion is slightly undercut, as at 10, so that the metal, when sprayed on this portion, will form a key or seal with the walls thereof.

It will be seen that this metal coating, in reality, forms a solid integral band 11 that extends upwardly over the upper peripheral edge, as at 12, and then downwardly and slightly outwardly to form the locking flange 13.

In other words, not only does the sprayed metal interlock with the outer peripheral wall of the pot, but it extends up over the upper peripheral edge and down within the pot to form a seal or lock therewith.

It will also be noticed in Fig. 1 that there are several rows of openings 14 about the pot, so that the acids still clinging to the rayon thread may escape through these openings by centrifugal action.

It will be noticed that so far in the specification I have mentioned that the metal is sprayed on the pot. This spraying of metal is becoming very well known, and although the manner of spraying forms no part of the present invention, it might be briefly stated that the spraying action is performed with a gun (not shown) in which the metal, in the form of a spool, is passed through an oxo-acetylene flame and then subjected to a heavy air blast, so that the metal can be successfully sprayed on various objects to any thickness desired.

By thus spraying the present pot, it is possible to thereby form a brake band thereon, which could not successfully be done by any other former method or process. I can spray with steel or iron, or any other desired metal or alloy.

It is impossible to get the correct diameter to cast a band on the pot that will be a perfect fit, and it is also impossible to sweat one thereon and have a perfect fit, but by spraying on the metal and forming the seals or keys, an excellent reinforced portion or brake band is obtained.

Now referring for the moment to Fig. 2, there is shown a section 15 of a pot, and it will be noticed that at its upper peripheral edge, I groove the pot, as at 16, and undercut the lower wall, as at 17, and then spray this cut-out portion first with a lead coating 18, so that there will be a better cohesion. After this lead has been sprayed in place, a coating of steel 19 is then applied which, of course, forms a hard braking surface for the pot.

In Fig. 3, I have shown a section of a further spin pot wall 20. There is also the peripheral groove 21, which is provided with an undercut key-way 22, and it will be noticed in this instance that I interline (spray) the row of openings 14' that are formed in the pot, which will tend to prevent any of the acid of the rayon from impregnating the walls of the pot. I also form an internal annular groove 23 to further key or interlock the metal band 24, which, it will be remembered, is applied in liquid or spray form, so that when it hardens it will be tightly keyed or interlocked and practically integral with the walls of the pot.

Fig. 5 shows a construction similar to that shown in Fig. 3, with the exception that there is a further reinforcing band 25, which is placed in the external undercut groove 26, the upper peripheral edge having the metal band 27 locked therewith. In this instance, it will be noticed that the flange 28 extends in a substantially vertical direction, whereas in Fig. 3 it is shown in a slightly inclined position.

The construction shown in Fig. 4 is very similar to the other constructions mentioned. In this instance, there is shown a fragmentary portion of the wall 29 of the pot, the surface being first sand-blasted, as may be noticed, as at 30, and there may also be seen the undercut rings 31.

The metal (steel or other desirable metal) is sprayed on to form an outer covering 32 and, in this instance I have shown it as extending from the top flange 33 over the entire outer cylindrical wall and down under the bottom of the pot, as at 34, there being a key 35 formed on the under surface of the body. Therefore, not only is the upper peripheral edge provided with a metal coating but the entire bucket is reinforced.

Although I have not shown a further outer thin coating of lead over the steel, this might be easily applied to prevent the steel from being contaminated by the acids used in the manufacture of the rayon.

From the foregoing, it will be seen that I have been able to retain all of the advantages derived from the use of a phenol condensation process composition pot and have overcome the former disadvantage of the pot wearing out at its upper surface, which wear was due to the manner in which the pot is usually doffed. By being able to spray the pot with metal, it is possible to form this band substantially integral, which is impossible with any other method of applying the metal.

I am aware that it is old to make cast metal pots, or to apply metal bands, but these have never been successful, whereas the present pot is one that retains all of the advantages of a phenol ("Bakelite" or similar composition) pot and, at the same time, has a substantially integral metal band sprayed on the same, preferably at its top, to provide a braking surface but which can be reinforced at any point or points desired. I have found that a coating substantially $\frac{1}{32}$ of an inch is thick enough for all general purposes and will prevent the upper edge from chipping or cracking or breaking and, at the same time,

will also form a good brake band if the pot is doffed by a friction method.

Finally, with a pot formed in this manner, there is no danger whatever of the so-formed metal band working loose from the pot and being thrown into the air, nor is there any danger of the parts cracking or flying, due to the high centrifugal speed to which the pot is subjected.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A spin pot of the character described comprising a composition body having an annular cut-away portion adjacent its upper edge, a metal band interlocked in the cut-away portion substantially flush with the outer wall of the pot formed by spraying metal into said cut-away portion to form a braking surface therefor, said band having an integral extension projecting over and covering the peripheral edge for protecting the same when the pot is doffed and inverted.

2. A spin pot of the character described comprising a body having a portion of its outer wall adjacent its upper peripheral edge constructed for the reception of an annular member formed by spraying metal onto said edge, said annular member comprising a combined metal brake band and edge protector interlocked with the pot and extending over the edge and along the inner wall of the pot.

JOSEPH PAUL LAIRD.