

May 13, 1958

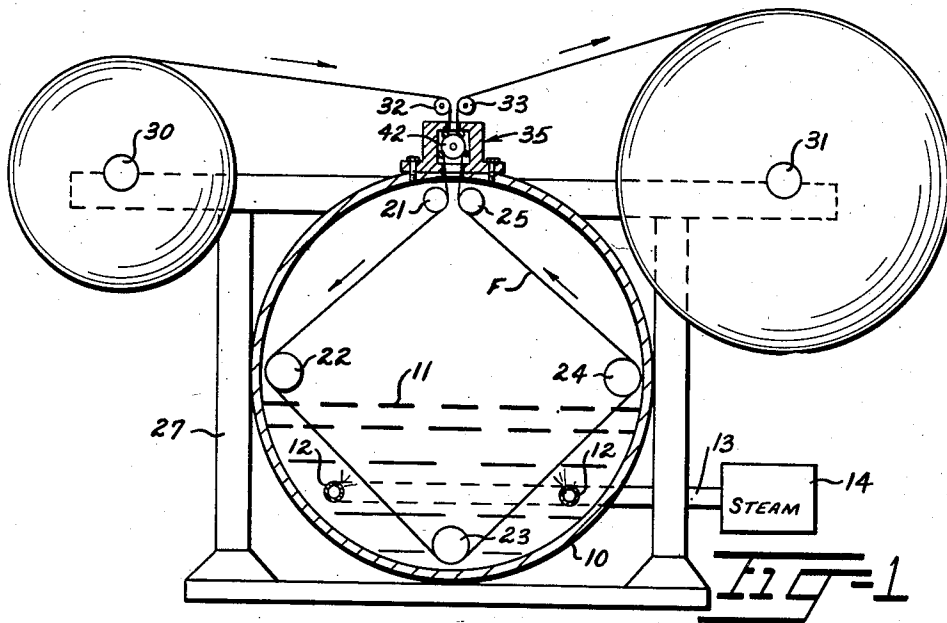
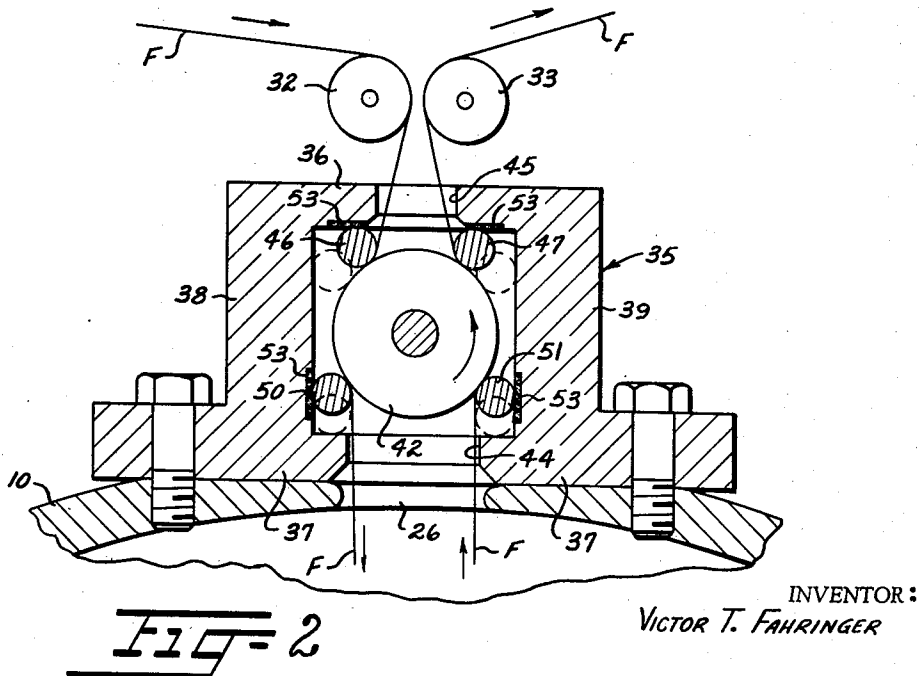
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2,834,193

PRESSURE SEAL

Filed April 22, 1954

2 Sheets-Sheet 1



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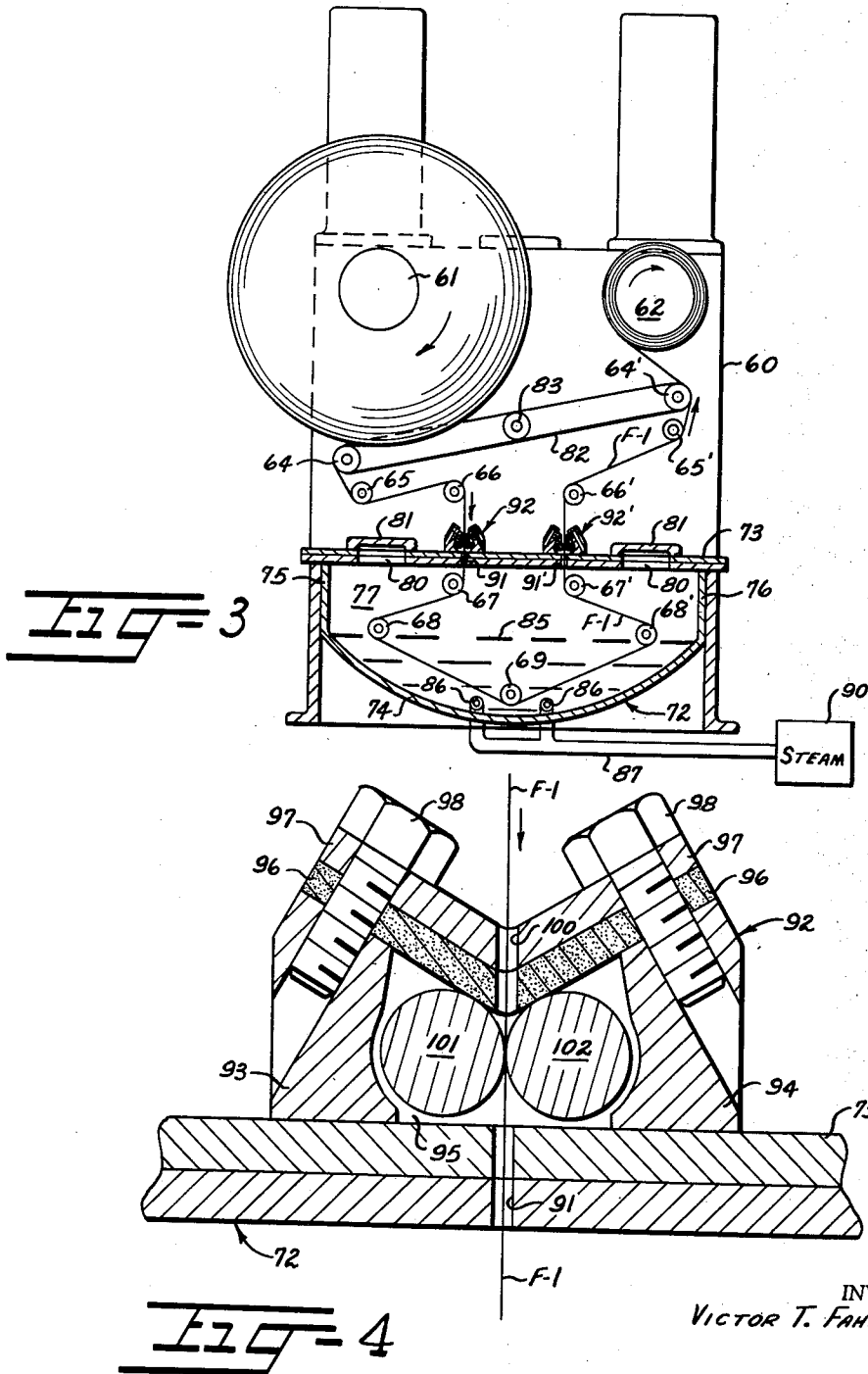
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2,834,193

PRESSURE SEAL

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Application April 22, 1954, Serial No. 424,869

16 Claims. (Cl. 68—5)

This invention relates to pressure seals or sealing valves and, more especially, to an improved apparatus for preventing the escape of relatively high pressure from within a pressure tank or vessel at the points at which web or strand material is introduced into and/or withdrawn from the pressure tank or vessel. The present invention shall be hereinafter described as though involved in the processing of web material or fabric although it should be distinctly understood that the principles of the present invention shall readily apply to the processing of single strands or a plurality of strands.

In treating textile material, especially fabrics made from synthetic polyamides, polyester, and acrylonitrile yarns such as nylon, "Dacron," "Orlon" and the like, for the purposes of dyeing, desizing, boiling off, decatizing and other processes, it is highly desirable that the fabric be immersed in the treating solution while the treating solution is maintained at a relatively high temperature; substantially higher than the boiling point of water under atmospheric pressure. Accordingly, it is necessary to maintain the treating solution under relatively high pressure.

It is therefore an object of this invention to provide an improved pressure seal or sealing valve construction which permits the introduction and withdrawal of fabric into and out of a pressure tank or vessel through corresponding openings or slots formed in the wall of the vessel and wherein the improved pressure sealing valve is positioned adjacent each of said openings and the fabric passes through the pressure sealing valve. The pressure sealing valve is so arranged that the greater the pressure within the pressure tank or vessel, the greater the sealing effect produced by the improved pressure sealing valve to prevent escapement of the pressure from within the pressure tank.

It is an object of this invention to provide a pressure seal for a pressurized vessel having openings therein wherein members having convex surfaces are confined adjacent said openings to form a Venturi through which the material is passed and wherein said members are relatively movable to substantially close the Venturi upon pressure from said vessel flowing therethrough.

It is another object of this invention to provide an improved pressure sealing valve of the character described comprising a housing disposed adjacent and having its interior communicating with a fabric passageway or slot formed in the wall of the pressure tank or vessel and wherein the outer wall of the housing is also provided with a passageway or slot coinciding with the slot in the wall of the pressure tank or vessel. At least two pressure sealing rollers, preferably made from stainless steel, are loosely disposed in the housing, between which the fabric passes in its course through the housing whereby the force of the pressure tending to escape from the pressure tank or vessel through the passageway in the wall of the vessel, through the housing and through the passageway in the outer wall of the housing creates a reduced or negative pressure on the proximal portions of the rolls,

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known as the Bernoulli effect, and thus tends to attract the rolls to each other into engagement with opposite surfaces of the fabric and thereby prevents the pressure from escaping from within the pressure vessel or tank.

Also, the pressure exteriorly of the passageway in the outer wall of the housing being less than the pressure inside the housing tends to move the pressure sealing rollers toward the passageway in the outer wall of the housing. Since the sealing rollers are loosely mounted in the housing, they are free to rotate in accordance with the direction of movement of the fabric in engagement therewith.

There are various ways in which the principles of the improved pressure sealing valve may be applied and in one form of the invention, particularly adapted for use wherein the fabric or web material enters and leaves the pressure tank or vessel through a common opening or closely spaced openings, the housing has a relatively large pressure roller therein, which may be termed a sun roll, whose periphery is engaged by a plurality of relatively smaller pressure rollers which may be termed planetary rolls. The inwardly moving reach of the fabric passes between corresponding small rollers and the relatively large roller at one side of the relatively large roller and the outwardly moving reach of the fabric or web material passes between the opposite side of the large roller from that which is engaged by the inwardly moving reach of the web material or fabric and corresponding relatively small rollers. The small rollers are of greater diameter than the space between opposite sides of the relatively large rollers and the walls of the housing so that the pressure within the tank causes the planetary rollers to engage the inner surfaces of the walls of the housing and press the fabric against the relatively large center roller to thereby prevent pressure from escaping from within the pressure tank or closed vessel as the fabric passes into and out of the vessel.

Another form of the invention is herein disclosed which is particularly adapted for use wherein the fabric passes into and out of the pressure tank or vessel through substantially spaced separate openings or slots formed in the wall of the tank. In this instance, a pair of relatively small sealing rollers are loosely confined within a housing disposed exteriorly of each of the openings formed in the wall of the pressure tank or vessel and engage opposite surfaces of the web material or fabric and the outer surfaces of the pressure rollers relative to the pressure tank are forced, by the pressure in the tank, against the inner surface of the outer wall of the housing as the fabric passes between the pressure rollers and through the coinciding openings formed in the outer wall of the housing and in the wall or walls of the pressure tank or vessel.

This application is a continuation-in-part of my co-pending application Serial Number 424,855 entitled Method of and Apparatus for Treating Web and/or Strand Material, filed April 22, 1954.

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

Figure 1 is a schematic view showing one form of the improved pressure sealing valve as applied to a batch dyeing machine or jig-dyeing machine and wherein the inwardly and outwardly moving reaches of the fabric or web material are disposed in closely spaced relationship as they enter and leave the pressure tank or vessel;

Figure 2 is a greatly enlarged view of the upper central portion of Figure 1 showing, in solid lines, the pressure sealing rollers in the position occupied thereby when the pressure within the tank or pressure vessel is greater than the pressure exteriorly thereof and showing, in broken lines, the position occupied by the pressure rollers

in the absence of greater pressure in the tank relative to the pressure exteriorly thereof;

Figure 3 is a somewhat schematic elevation of another form of jig-dyeing machine showing another form of the improved pressure sealing valve particularly adapted for use when the opposed reaches of the fabric entering and leaving the pressure tank or pressure vessel are spaced substantially from each other;

Figure 4 is an enlarged sectional view of one of the improved pressure sealing valves shown in the lower central portion of Figure 3.

Referring to Figures 1 and 2, the numeral 10 indicates a closed pressure vessel or tank shown in the form of a cylinder and which is adapted to contain a supply of treating solution 11, such as dye liquor, water, sizing solution, decatizing solution or the like. The treating solution 11 in tank 10 may be maintained at the desired temperature and pressure by any suitable means and, in the present instance, a pair of perforated steam pipes or coils 12 are provided within the tank 10 and pass through one of the end walls thereof and are connected to a suitable steam line 13 which is, in turn, connected to a suitable source of steam shown schematically and indicated at 14 in Figure 1. The treating solution 11 may also be introduced into the tank or vessel 10 in any suitable manner.

Also, suitably journaled in the tank or pressure vessel 10 is a plurality of idler rollers 21 to 25, inclusive, in engagement with which web material or strand material, such as fabric F, passes as it is introduced into and withdrawn from the pressure tank or vessel 10 and immersed in the treating solution 11. The tank or pressure vessel 10 is provided with an opening or slot 26 in its upper portion through which opposed reaches of the fabric F pass as the fabric enters and leaves the pressure tank or vessel 10.

The pressure tank or vessel 10 may be supported in any desired manner and is shown schematically in Figure 1 as being supported on a suitable frame 27 which frame also supports a pair of rollers 30 and 31 which may be respectively termed as let-off and take-up rollers. The fabric is withdrawn from the roller 30 and passes over a roller 32 and then downwardly through the housing of the improved pressure sealing valve to be later described and thence through the opening 26 in the pressure tank 10 and successively in engagement with rollers 21 to 25, inclusive. Thereafter, the fabric passes upwardly through the opening 26, through the housing of the improved pressure sealing valve, over a roller 33 spaced thereabove and outwardly to the take-up roll 31. The take-up roll 31 may be driven by any suitable means, not shown.

Now, in order to maintain the relatively high pressure within the tank or pressure vessel 10 which is necessary in order to insure that the treating solution therein can be maintained at a temperature substantially above the boiling point at atmospheric pressure, one form of improved pressure sealing valve is shown in Figures 1 and 2 which comprises a pressure seal housing broadly designated at 35. The housing 35 is suitably secured to the tank or pressure vessel 10 adjacent the opening 26. The housing 35 is also shown somewhat schematically in Figure 2 and includes a top wall 36, a bottom wall 37 and opposed side walls 38 and 39 which may or may not be cast integral with each other as desired. Opposite ends of the housing 35 are also closed and journaled in opposite ends of the housing 35, preferably in low friction or anti-friction bearings, is a relatively large centrally located pressure sealing roll 42 which may be termed as a sun roll and which roll may if desired be covered with a resilient material such as rubber, neoprene or the like. It will be noted that the roll 42 is of substantially less diameter than the width and height of the pressure sealing chamber defined by the walls 36 to 39 of the housing 35.

It will be observed in Figure 2 that the lower wall 37

of housing 35 has an opening or passageway 44 therein which is preferably of the same size as and coincides with the opening 26 in the pressure tank or vessel 10. The upper or outer wall 36 of housing 35 is also provided with an opening or passageway 45 therein which is disposed in opposed relationship to the opening 44. It should be noted that the fabric F, as it enters the housing 35 through the opening 45, engages the sun roll 42 at one side thereof and then passes successively through the openings 44 and 26 into the tank or pressure vessel 11. On the other hand, the other reach of the fabric F passes successively through the openings 26 and 44 as it is withdrawn from the tank 10 and then passes in engagement with the opposite side of the sun roll 42 from that which is engaged by the inwardly moving reach of the fabric F. Thereafter, the web material or fabric F passes outwardly through the opening 45 and into engagement with the roll 33.

Now, the portions of the inwardly moving and outwardly moving reaches of the fabric F inwardly of and adjacent the opening 45 in wall 36 engaged by respectively relatively small outer pressure sealing rolls or rollers 46 and 47, respectively, and the opposed reaches of the web material or fabric F are also engaged by respective inner pressure sealing rolls or rollers 50 and 51 which are disposed adjacent the opening 44 in the inner wall 37 of the pressure seal housing 35. For purposes of description in the specification and claims, the relatively small pressure sealing rolls or rollers 46, 47, 50 and 51 may be termed as planetary rollers or floating since they are movable relative to the sun roll 42, although they do not revolve about the sun roll 42.

It is important to note that the planetary pressure sealing rollers 46, 47, 50 and 51, which are preferably all of the same diameter, are of greater diameter than the distance between the proximal portions of the walls 36 to 39 of the housing 35 and the periphery of the sun roll 42. This is not necessarily the case between the proximal portions of the sun roll and the uppermost edges of the opening 44 in the inner or bottom wall 37 of the pressure seal housing 35. However, the spacing between the center pressure roll or sun roll 42 and the walls 36, 38 and 39 must be less than that of the diameter of the planetary pressure rollers 46, 47, 50 and 51 in order that the planetary rollers 46, 47, 50 and 51 may tightly engage the periphery of the pressure sun roller or roll 42 while also snugly engaging the proximal faces of the walls 36, 38 and 39 of the pressure seal housing 35.

The planetary pressure rollers should be made from a hard, smooth, non-corrosive material, such as stainless steel. It is preferable that each of the walls 36, 38 and 39 of the pressure seal housing 35 is provided with a low friction bearing plate or insert 53, preferably formed from compressed graphite material, so positioned as to be engaged by the corresponding planetary pressure rollers 46, 47, 50 and 51 when the planetary pressure rollers are in pressure sealing position or in the solid line position shown in Figure 2. The shoulders are formed on the upper surface of the bottom wall 37 of the pressure seal housing 35 adjacent opposite sides of the opening 44 in order to support the lower planetary pressure sealing rollers 50 and 51 in the dotted line position shown in Figure 2 when the pressure inside of the pressure tank or vessel 10 is substantially the same as that exteriorly of the pressure tank or vessel 10.

The upper planetary pressure sealing rolls or rollers 46 and 47 will then occupy substantially the broken line position in which they are illustrated in Figure 2. In other words, when the pressure on both the upper and lower surfaces of the planetary sealing rollers 46, 47, 50 and 51 is substantially equal, they will not exert any pressure contact on the fabric in pressing the fabric against the sun roller 42. However, when the internal pressure of the tank or vessel 10 is substantially greater than the external pressure, the small rollers 46, 47, 50

and 51 are forced against the fabric passing in engagement with the sun roll 42, since the surfaces of the rollers 46, 47, 50 and 51 opposite from the sun roll 42 engage the corresponding walls or bearing plates 53 in the walls of housing 35 thereby sealing and preventing the passage of gas or liquid outwardly from within the pressure vessel or pressure tank 10 while, at the same time, permitting the fabric or web material F to enter or leave the pressure vessel 10. Rotation of the sun roll or center roll 42 and the movement of the fabric F in engagement therewith causes the planetary sealing rollers 46, 47, 50 and 51 to rotate so the improved pressure sealing valve will not retard movement of the fabric therethrough. Of course, if an extremely high pressure is to be maintained within the pressure vessel or pressure tank 10, the sun roll 42 may be driven in any desired manner.

It is apparent that the pressure which the improved pressure sealing valve can seal is limited only by the strength of the material used in its construction and the strength of the pressure vessel. The sealing action is positive and, at comparatively low pressures of, say, from ten to fifteen pounds, the traction of the fabric is sufficient to drive the center or sun roll 42. It is further apparent that, if the sun roll 42 is driven, the end wall through which the shaft of the sun roll 42 extends should be provided with a suitable seal to prevent escape-ment of pressure around the shaft of the roll 42.

Modified form of pressure sealing valve

In Figure 3 there is shown, schematically, another form of treating machine which is shown in the form of a jig-dyeing machine and in association with which a modified form of pressure sealing valve is provided. The machine shown in Figure 3 comprises a frame 60 which supports a let-off roll 61 and a suitably driven take-up roll 62. Fabric, web material or strand material F-1 is withdrawn from the roll 62 and passes successively in engagement with rollers 64 to 69, inclusive, 68', 67', 66', 65' and 64' from whence the fabric or web material F-1 is taken up by the take-up roll 62. It should be noted that the rolls 67, 68, 69, 68', 67' are disposed within a pressure vessel or tank 72 suitably supported by the frame 60. The pressure vessel or tank 72 has a flat top wall 73, a curved bottom wall 74, side walls 75 and 76 and end walls 77, only one of which is shown in Figure 3.

The top wall 73 of the pressure tank or pressure vessel 72 has a pair of hand holes 80 therein which are normally closed by removable covers 81. The rollers 65, 66, 67, 68, 68', 67', 66' and 65' may be suitably journaled in the frame 60 or in the end walls of the pressure vessel or tank 72, as the case may be, and the rolls 64 and 64' are journaled in a tilting spreader rack generally designated at 82 which is pivoted intermediate its ends, as at 83, on the frame 60.

The pressure tank or vessel 72 is adapted to contain a supply of treating solution indicated at 85 and which treating solution may be of the same character as the treating solution 11 described with respect to Figure 1. The treating solution 85 may also be pre-heated and introduced into the tank or pressure vessel 72 in any desired manner.

The treating solution 85 in the pressure tank or pressure vessel 72 may also be maintained at the desired temperature and pressure by any suitable means such as steam coils or steam pipes 86 which are connected, by means of a pipe 87, to a suitable source of steam shown schematically in Figure 3 and indicated at 90.

It should be noted that, in the form of the invention shown in Figure 3, the inwardly moving reach of the fabric passes into the tank 72 through an opening 91 formed in the upper wall of the tank 72 and which is spaced substantially from an opening 91' also formed in the upper wall 73 of the tank 72. Of course, the latter opening 91' is provided for egress of the fabric or web

material F-1 from within the tank 72. Therefore, a separate pressure sealing valve is provided adjacent each of the openings 91 and 91', said sealing valves being broadly designated at 92 and 92', respectively.

Since both of the pressure sealing valves 92 and 92' are identical, an enlarged illustration is given only of the pressure sealing valve 92 in Figure 4 and only one of the pressure sealing valves 92 and 92' will be described in detail. As best shown in Figure 4, the modified form of pressure sealing valve also comprises a housing formed of spaced side walls 93 and 94 which are preferably of a length slightly greater than the width of the fabric or web material F-1 and which are connected at opposite ends thereof by end walls 95, only one of which is shown in Figure 4, since the invention is only shown schematically in the present drawings.

The top wall 73 of the pressure tank or pressure vessel 72 forms the bottom wall of the pressure seal housing in this instance and the top wall of the housing is formed by a pair of upwardly or outwardly diverging low friction bearing plates 96 preferably made from graphite or other low friction material and which are held in angular position by reinforcing rigid plates 97 which also diverge upwardly in Figure 4. The outer portions of plates 96, 97 are suitably secured to the walls 93, 94, as by screws 98.

The proximal portions of the adjacent plates 96 and 97 are cut away to form a slot, passageway or opening 100 therein which corresponds with the passageway or opening 91. These openings or passageways should be of only slightly greater dimensions than the material passing therethrough, but sufficiently large to permit the material to pass therethrough without engaging the walls thereof. The walls 93 and 94 of the housing of the pressure sealing valve 92 are spaced from each other a distance slightly greater than the combined diameters of a pair of relatively small pressure sealing rollers 101 and 102 and the lower proximal edges of the portions of the plates 96 defining the walls of the slot 100 should be spaced above the bottom wall of the housing 92 a distance substantially the same as the diameter of each pressure sealing roller 101 and 102. The pressure sealing rollers 101 and 102 are also preferably made from a hard, smooth and non-corrosive material, such as stainless steel.

It is thus seen that, when the internal pressure of the tank or pressure vessel 72 is substantially greater than the external pressure, the pressure in the tank is also present in the chamber 95 and, thus, the pressure sealing rollers 101 and 102 are forced toward the opening, passageway or slot 100. Also, the tendency of the pressure to escape through slot 100 creates a negative pressure between the pressure rollers 101, 102 so they tend to press against opposite sides of the web or strand material F-1 as shown in Figures 3 and 4. Of course, inasmuch as both the pressure sealing rollers 101 and 102 are loosely disposed within the housing of the pressure sealing unit 92, it is evident that they may rotate in either direction in engagement with the web material or fabric F-1 regardless of the direction of movement thereof, the resistance to rotation of the pressure sealing rollers 101 and 102 against the top wall of the housing being minimized by the plates 96 which have a relatively low co-efficient of friction.

The invention is not limited to pressure rollers as any suitable members having convex mating surfaces may be used to form a movable variable Venturi through which the material passes.

It is thus seen that I have provided novel pressure sealing devices which may be positioned adjacent the ingress and egress openings of a pressure tank or vessel and which will permit continuous movement of web or strand material into and out of the vessel while restricting the escapement of steam or liquid under pressure from within the vessel so that the material being processed can

be passed through a super-heated treating solution in a continuous manner without being entirely enclosed within the pressure tank or pressure vessel throughout the treating process.

In the drawings and specification there has been set forth a preferred embodiment of the 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 defined in the claims.

I claim:

1. In a pressure treating apparatus having a pressure vessel provided with an opening therein through which relatively thin material is adapted to pass and having means therein for creating internal fluid pressure substantially in excess of atmospheric pressure; a pressure sealing valve comprising a housing having spaced side walls and an outer wall defining a chamber communicating with the opening in said vessel, the outer wall having an opening therein aligned substantially with the opening in the vessel, at least two freely displaceable pressure sealing floating rollers loosely disposed in said housing and adapted to straddle the material as it passes through the housing and through the openings in the outer wall of the housing and the vessel, and the combined diameter of the two rollers being slightly less than the distance between opposed side walls of the housing, whereby the pressure within the vessel is also present within the housing and tends to force the rollers towards the opening in the outer wall and into engagement with the outer wall as well as against opposite sides of the material passing through the housing to thereby restrict the outward flow of the pressure through the opening in the outer wall.

2. In a pressure treating apparatus having a pressure vessel provided with an opening therein through which relatively thin material is adapted to pass and having means therein for creating internal fluid pressure substantially in excess of atmospheric pressure; the pressure sealing valve comprising a housing having spaced side walls and an outer wall defining a chamber communicating with the opening in said vessel, the outer wall having an opening therein aligned substantially with the opening in the vessel, at least two freely displaceable pressure sealing floating rollers loosely disposed in said housing and adapted to straddle the material as it passes through the housing and through the openings in the outer wall of the housing and the vessel, the combined diameter of the two rollers being slightly less than the distance between opposed side walls of the housing, whereby the pressure within the vessel is also present within the housing and tends to force the rollers towards the opening in the outer wall and into engagement with the outer wall as well as against opposite sides of the material passing through the housing to thereby restrict the outward flow of the pressure through the opening in the outer wall, and at least those portions of the outer wall which are engaged by the floating rollers being made from graphite material.

3. In a pressure treating apparatus having a pressure vessel provided with means for creating pressure therein and having an opening therein through which a web material is adapted to pass, and said opening being of slightly larger dimensions than the dimensions of said web material; an improved pressure sealing valve comprising a housing on the exterior of the pressure vessel and having a chamber therein communicating with the opening in the pressure vessel, a pair of freely displaceable floating rollers loosely disposed within the chamber in said housing and between which the material passes, and said housing having a second opening therein through which the material passes in its course through the housing whereby the tendency of the pressure to escape through the second opening causes the pressure sealing rollers to restrict passage of pressure from within the

pressure vessel through the second opening in the housing.

4. In a pressure treating apparatus having a pressure vessel provided with means for creating fluid pressure therein and having an opening therein adapted for passage of a web material therethrough and said opening being of slightly larger dimensions than the dimensions of said web material; an improved pressure sealing valve comprising a housing fixed on the exterior of the pressure vessel and having a chamber therein communicating with the opening in the pressure vessel, a pair of freely displaceable floating rollers loosely disposed within the chamber and between which the material passes, and said housing having a second opening therein aligned substantially with the opening in said vessel whereby the tendency of the fluid pressure to escape through the second opening causes the pressure sealing rollers to tightly engage opposed surfaces of the web material and to be urged toward the second opening and against the inner surface of the wall of the housing in which said second opening is formed to thereby restrict passage of pressure from within the pressure vessel through the second opening.

5. In a pressure treating apparatus having a pressure vessel provided with means for creating fluid pressure therein and having an opening therein adapted for passage of a web material therethrough and said opening being of slightly larger dimensions than the dimensions of said web material; an improved pressure sealing valve comprising a housing fixed on the exterior of the pressure vessel and having a chamber therein communicating with the opening in the pressure vessel, a pair of freely displaceable floating rollers loosely disposed within the chamber and between which the material passes, said housing having a second opening therein aligned substantially with the opening in said vessel whereby the tendency of the fluid pressure to escape through the second opening causes the pressure sealing rollers to tightly engage opposed surfaces of the web material and to be urged toward the second opening and against the inner surface of the wall of the housing in which said second opening is formed to thereby restrict passage of pressure from within the pressure vessel through the second opening, and at least that part of the inner surface of the wall of the housing which is engaged by the floating rollers while under pressure being made from a low-friction material.

6. In a pressure treating apparatus having a pressurized vessel provided with means for creating pressure therein and wherein a wall of the vessel has an opening therein through which web material is adapted to pass, a said pressure seal comprising housing means communicating with the opening in the vessel and fixed to the exterior of said vessel, said housing means having side walls and an outer wall spaced from the pressure vessel, the outer wall of said housing means having a second opening aligned with the opening in the wall of the pressure vessel, and at least two freely displaceable pressure rollers loosely disposed in said housing means and adapted to engage the web material as it passes through the housing and through the coinciding openings in the outer wall of the housing and the wall of the pressure vessel, said housing means being adapted to cause said rollers to be forced against the outer wall of the housing and toward the second opening and thereby prevent the internal pressure of the vessel from escaping through the second opening.

7. In a pressure treating apparatus having a vessel provided with means for creating fluid pressure therein substantially above atmospheric pressure and having an opening therein through which a web material is adapted to pass, a pressure seal comprising a plurality of rollers, said plurality of rollers comprising at least two freely displaceable pressure rollers and housing means having an opening therein in alignment with the opening

in the vessel for the passage of the web material therethrough, said housing means normally loosely confining said pressure rollers adjacent its opening therein to straddle the material passing therethrough and maintaining the pressure rollers in sealing position with respect to said opening in the housing means upon pressure escaping from the vessel and between the freely displaceable rollers.

8. In a pressure treating apparatus having a vessel provided with means for creating fluid pressure therein substantially above atmospheric pressure and having an opening therein through which a web material is adapted to pass, a pressure seal for said opening comprising a plurality of rollers, said plurality of rollers comprising at least two freely displaceable pressure rollers adapted to straddle the web material passing through the opening in the vessel and means for permitting the passage of the web material therethrough and normally loosely confining said rollers and for directing the pressure rollers relative to each other into sealing position upon pressure escaping through the opening in the vessel.

9. In an apparatus according to claim 8 wherein said plurality of rollers comprises two additional freely displaceable pressure rollers and a rotatably mounted roller positioned between said first-mentioned freely displaceable pressure rollers and said two additional pressure rollers, said rotatably mounted roller having peripheral portions extending between said first-mentioned pressure rollers and between said two additional pressure rollers, and said rotatably mounted roller aiding said means loosely confining said rollers for directing the pressure rollers into sealing position upon pressure escaping from the vessel.

10. In an apparatus according to claim 8 wherein said plurality of rollers comprises a rotatably mounted roller positioned adjacent said freely displaceable pressure rollers and having peripheral portions extending between said pressure rollers and serving to direct the pressure rollers relative to each other and into sealing position upon pressure escaping through the opening in the vessel.

11. In an apparatus according to claim 10 wherein said rotatably mounted roller has a diameter substantially greater than the diameter of each of said freely displaceable pressure rollers.

12. In a pressure treating apparatus having a vessel provided with means for creating fluid pressure therein substantially above atmospheric pressure and having an opening therein through which indefinite length material is adapted to pass, a pressure seal comprising a plurality of rollers, said plurality of rollers comprising a pair of freely displaceable pressure rollers positioned to straddle the material passing through the opening in the vessel, housing means on the vessel having an opening for passage of the material therethrough, said housing means normally loosely confining said plurality of rollers and directing said pressure rollers relative to each other into sealing position upon pressure escaping through the opening in the vessel.

13. In an apparatus according to claim 12 wherein

said plurality of rollers comprises a rotatably mounted roller positioned adjacent said freely displaceable pressure rollers and having peripheral portions thereof extending between said freely displaceable pressure rollers for forming a seal therewith upon said pressure rollers being moved relative to each other upon pressure escaping from the vessel.

14. In an apparatus according to claim 13 wherein said rotatably mounted roller is positioned in substantial alignment with the opening in the vessel and the opening in said housing means.

15. In a pressure treating apparatus having a vessel provided with means for creating fluid pressure therein substantially above atmospheric pressure and having an opening therein through which an indefinite length material is adapted to pass, a pressure seal comprising a plurality of rollers, said plurality of rollers comprising at least two freely displaceable pressure rollers adapted to straddle the web material passing through the opening in the vessel, a rotatably mounted roller positioned adjacent said freely displaceable pressure rollers and having peripheral portions thereof extending between said pressure rollers, and means through which the web material is adapted to pass for loosely confining said pressure rollers adjacent the opening in the vessel and for directing said pressure rollers into sealing position upon pressure escaping from the vessel and between the freely displaceable rollers.

16. In a pressure treating apparatus having a vessel provided with means for creating fluid pressure therein substantially above atmospheric pressure and having an opening therein through which a web material is adapted to pass, a pressure seal for said opening comprising a housing having an opening therein communicating with the opening in the vessel, said housing also having side walls and an outer wall, a plurality of rollers positioned within said housing comprising a sun roller of lesser diameter than the internal dimensions of said housing and being rotatably mounted in said housing, at least two freely displaceable pressure rollers loosely positioned in said housing to straddle the material passing therethrough and each being of greater diameter than the distance between the proximal portions of said sun roller and the walls of said housing, and said housing serving to direct the pressure rollers relative to each other into sealing position with said rotatably mounted roller and said housing upon pressure escaping from the vessel.

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