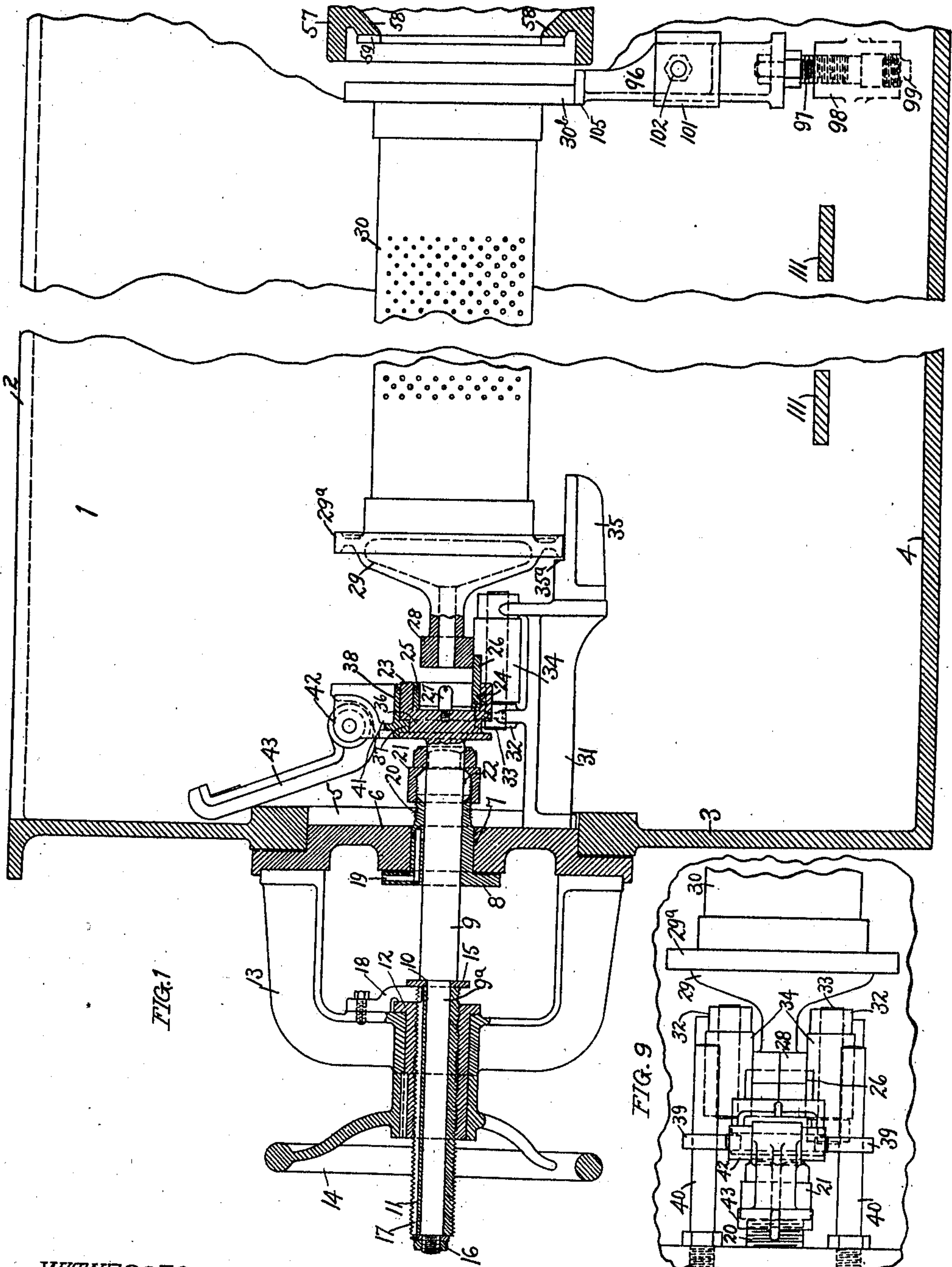


D. GESSNER.
CLOTH TREATING APPARATUS.
APPLICATION FILED APR. 21, 1910.

988,703.

Patented Apr. 4, 1911.

6 SHEETS—SHEET 1.



WITNESSES
C. H. Hylmer
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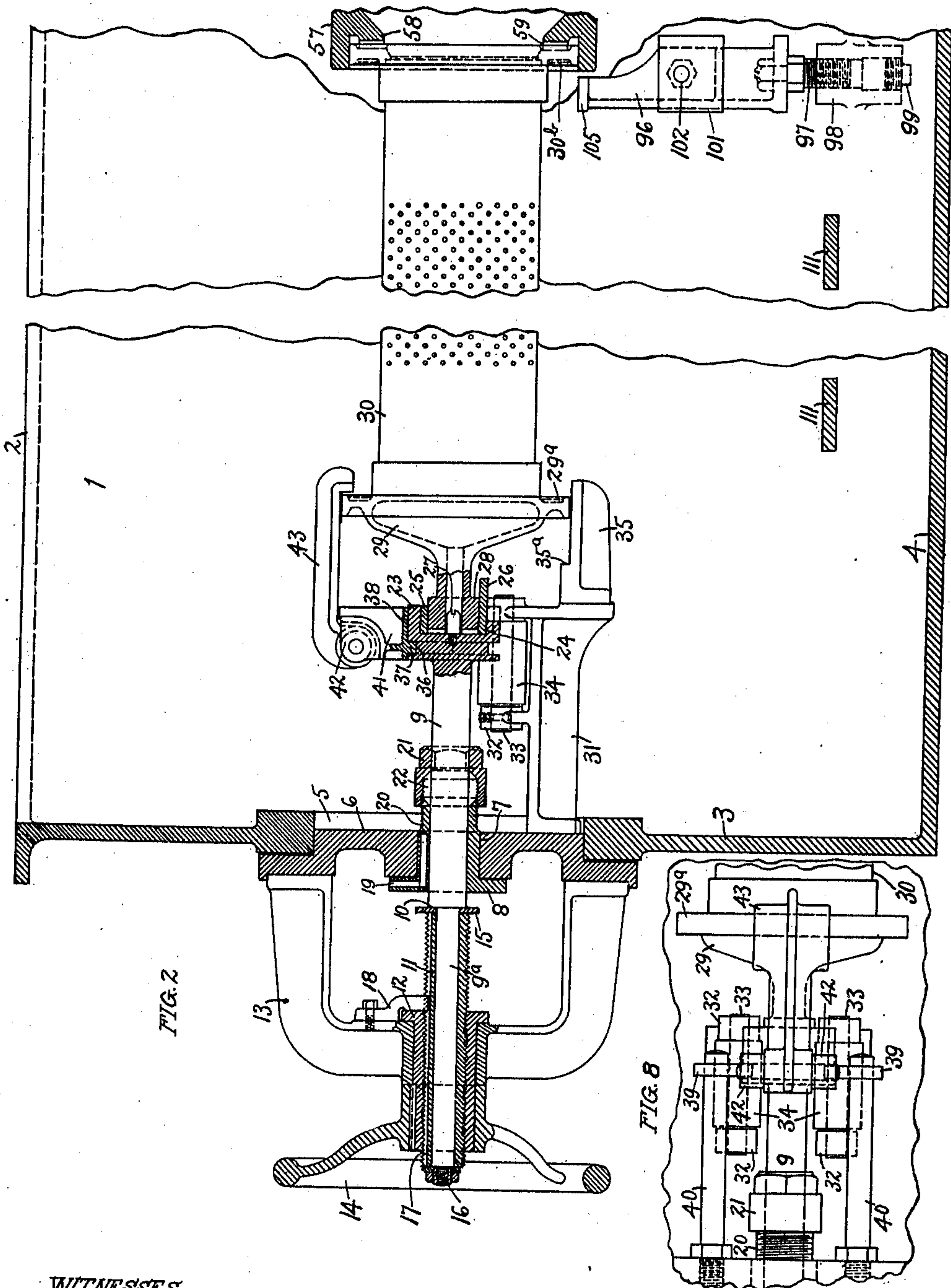
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CLOTH TREATING APPARATUS.
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6 SHEETS-SHEET 2.



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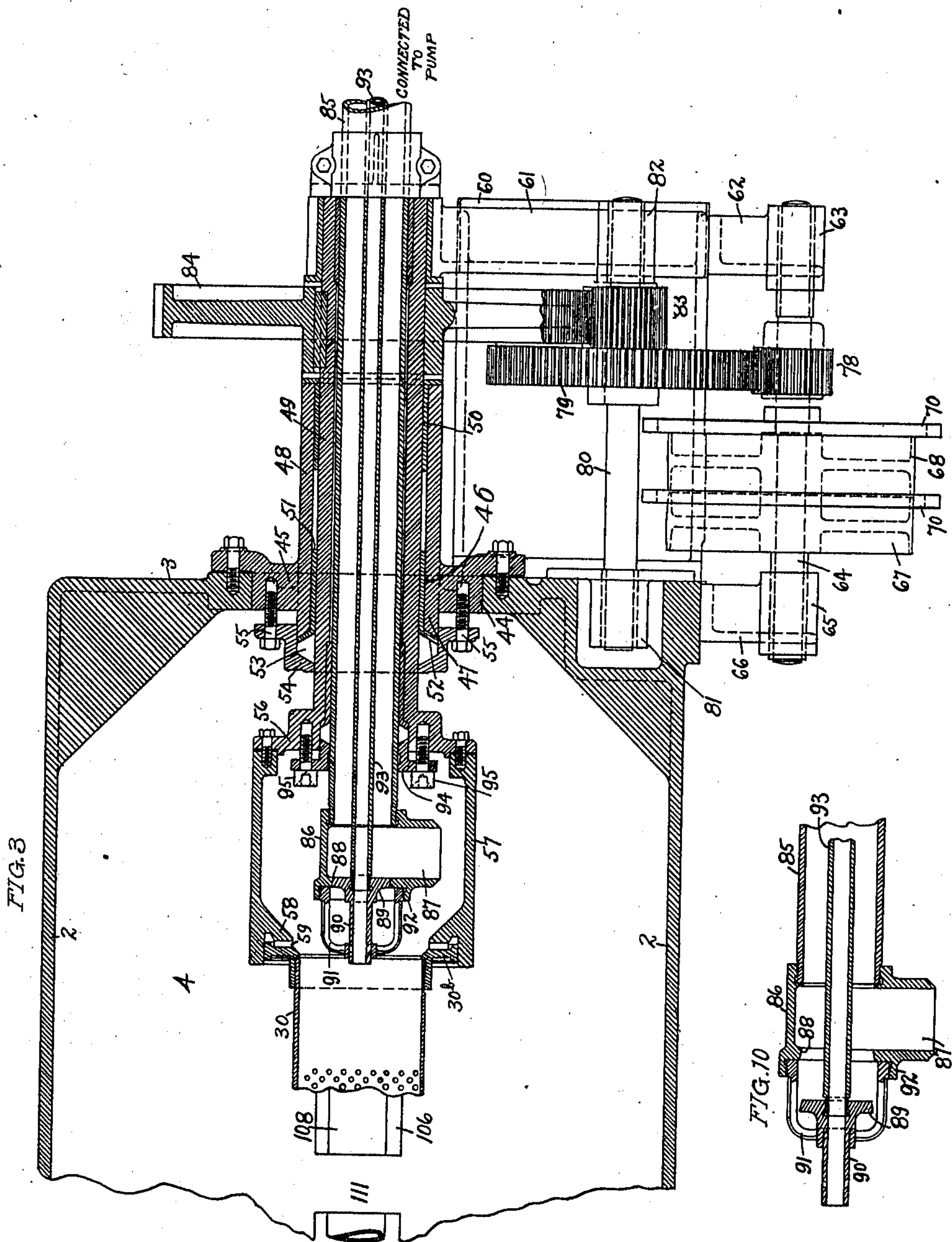
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CLOTH TREATING APPARATUS.
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6 SHEETS-SHEET 3.



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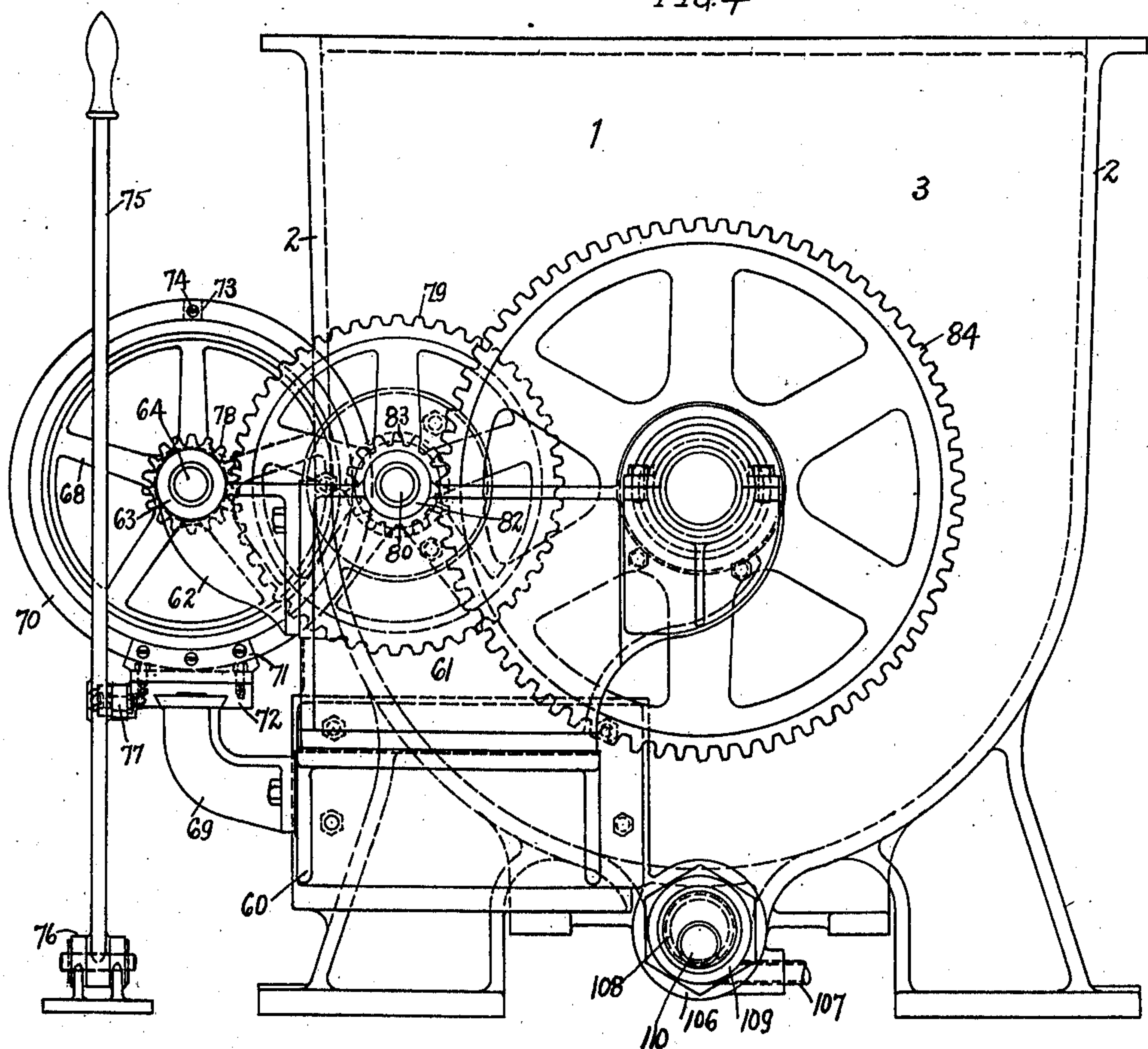
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CLOTH TREATING APPARATUS.
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988,703.

Patented Apr. 4, 1911.

6 SHEETS—SHEET 4.

FIG. 4



WITNESSES

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CLOTH TREATING APPARATUS.
APPLICATION FILED APR. 21, 1910.

988,703.

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6 SHEETS—SHEET 6.

FIG. 7

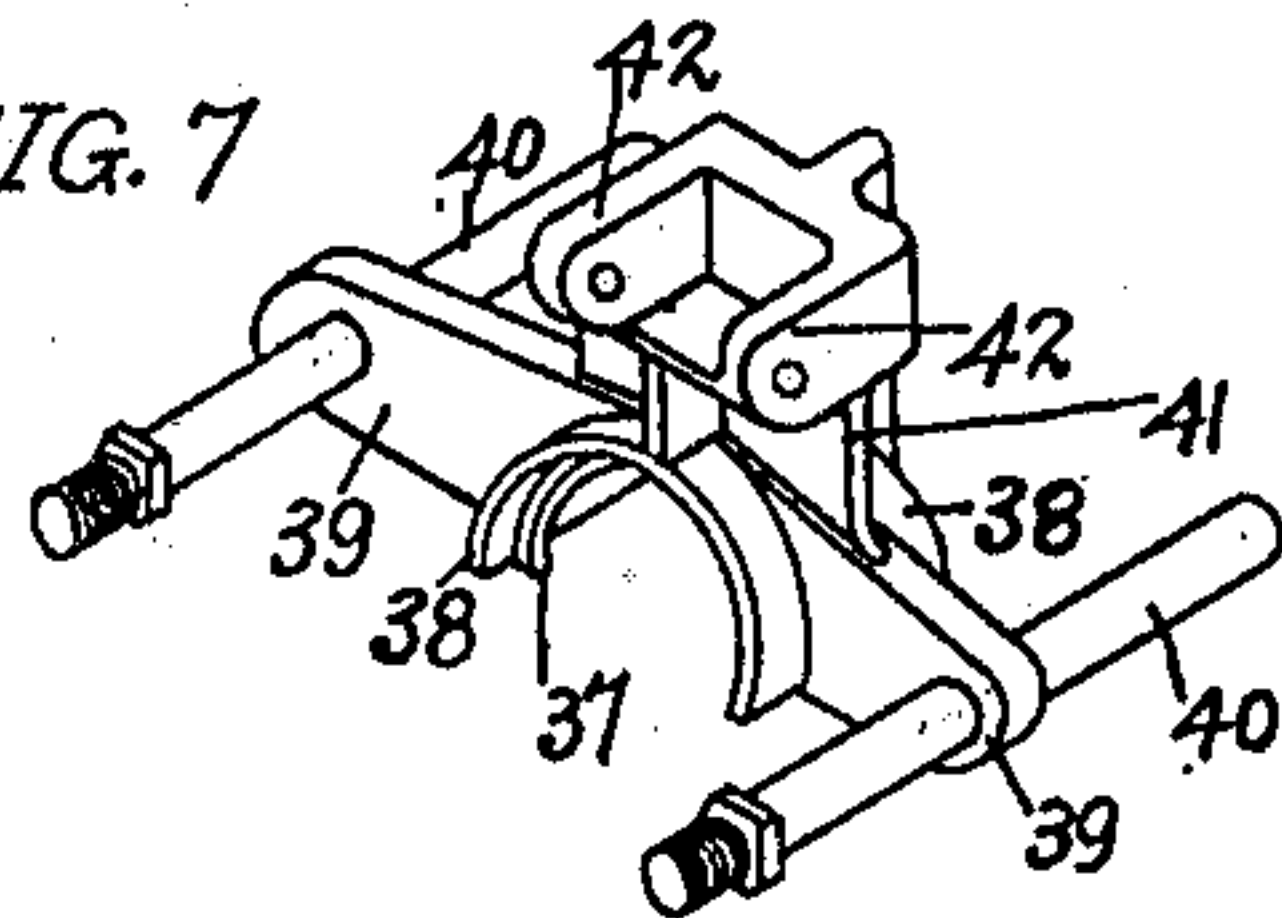
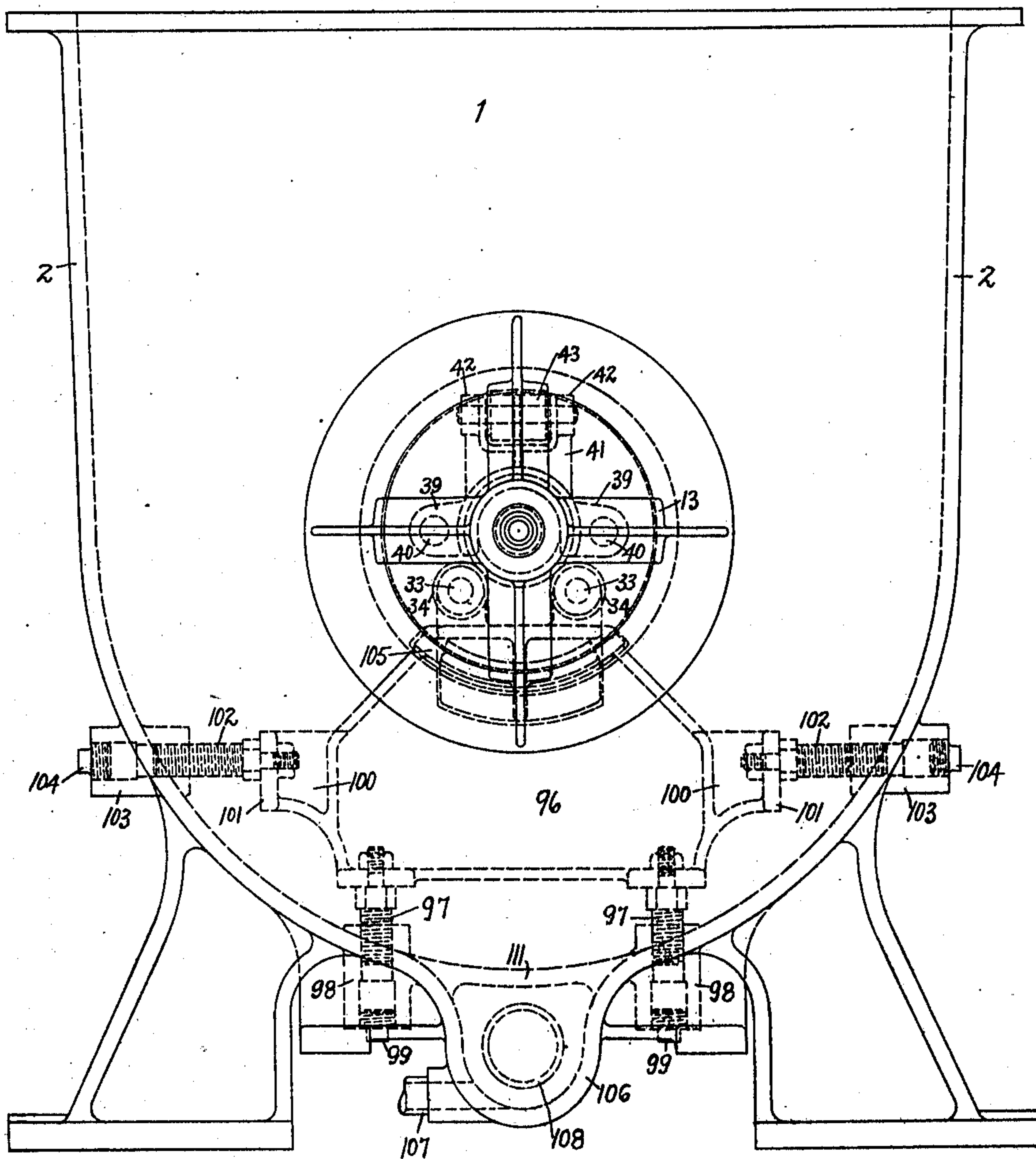


FIG. 6



WITNESSES

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UNITED STATES PATENT OFFICE.

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CLOTH-TREATING APPARATUS.

988,703.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed April 21, 1910. Serial No. 556,781.

To all whom it may concern:

Be it known that I, DAVID GESSNER, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Cloth-Treating Apparatus, of which the following is a specification.

My invention relates generally and broadly to new and useful improvements in cloth treating apparatus and more particularly to apparatus of that character or type adapted to subject cloth in bulk to what is known as the "wet process" in which the cloth is treated with hot or cold water or steam in order to set the cloth and arrest shrinkage, so that subsequent shrinkage of the cloth when passing through the dyeing or other process will be reduced to a minimum.

The object of the present invention is to provide an apparatus for carrying out the "wet process" adapted for the treatment of cloth in a substantially cylindrical hollow roll by a continuous circulation of water which may be hot or cold and which will include means for subjecting the cloth roll to suction in order to remove the water, or other liquids, therefrom, whereby the removal of the water from the cloth is accomplished by the same apparatus which performs the wetting treatment, and the subsequent removal of the water by other steps or means is obviated.

The invention consists in the improvements to be fully described hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my invention in the accompanying drawings to be taken as a part of this specification and wherein—

Figure 1 is a view in central longitudinal vertical section through an embodiment of my invention showing a roll adapted to carry cloth, in position with the separable bearings therefor disengaged therefrom. Fig. 2 is a view similar to Fig. 1 showing the roll engaged by its bearings. Fig. 3 is a longitudinal section through the end of the apparatus appearing to the right of Figs. 1 and 2. Fig. 4 is an end elevation of the apparatus showing the driving means for the roll. Fig. 5 is a side elevation of the

driving means shown in Fig. 4. Fig. 6 is a view in elevation of the end of the apparatus opposite to that shown in Fig. 4. Fig. 7 is a detached perspective view of an adjunct of one of the bearings for the cloth receiving or carrying roll. Fig. 8 is a detailed plan view of one of the cloth roll bearings in engagement with the roll and showing means associated with the bearing for engaging the roll to move the latter lengthwise with the bearing. Fig. 9 is a similar view to that shown in Fig. 8, with the roll separated from the bearing. Fig. 10 is a detailed sectional view of the water circulating pipe shown in Fig. 3.

Referring to the drawings by numerals of reference: 1 designates a vat or vessel which is substantially oblong in plan and formed with side walls 2, 2, end walls 3, 3, and a transversely curved bottom 4, said vat being of any suitable material and of such dimensions and contour as to suit for the purposes for which it is employed. This vat is designed to receive a roll of cloth carried on a hollow cloth receiving roll and to contain water or other liquid for treating the roll of cloth, means being provided within the vat for supporting the cloth roll out of contact with the walls thereof, for establishing a circulation of liquid through the cloth roll, and for subjecting the roll to suction to remove the liquid therefrom.

One of the end walls 3 of the vat is formed with a circular opening 5 having a reinforced edge, in which opening is seated a closure plate 6, which may be secured in place by any suitable means, not shown. This closure plate 6 is formed with a central opening 7 which receives a bushing 8 through which projects a bearing thrust shaft 9, one end of which projects into the vat and carries a bearing to be described presently. The portion of the shaft 9 exterior of the vat is reduced as at 9^a, to form a shoulder 10, and on the reduced end 9^a is a threaded sleeve 11, said shaft and sleeve projecting through a threaded bushing 12 rotatably mounted in a four-arm yoke 13 rigidly mounted on the outer face of the closure plate 6, said bushing being manually rotatable by a hand wheel 14 keyed thereto. The sleeve 11 is held on the shaft against movement longitudinally thereof by said

shoulder 10, a stop collar 15 for a purpose to presently appear being clamped between the sleeve and said shoulder, and a nut and washer 16 threaded onto the outer end of said shaft. In order to prevent rotation of the sleeve 11 on the shaft, said sleeve is formed with a longitudinal groove 17 which receives a fixed guiding piece 18 rigidly mounted on the yoke 13.

From the above it will be seen that by rotating the hand wheel 14 the bushing 12 will be rotated to feed the sleeve 11 and shaft 9 back and forth according to the direction in which the wheel is turned. The bushing 8 may be provided with an oiling duct 19 by means of which lubricant may be fed to shaft 9 to lubricate the same. Said bushing is also provided with an exteriorly threaded neck 20 projecting within the vat and adapted to receive a threaded packing nut 21, between which and said neck is a packing 22, serving to prevent leakage of the fluid in the vat between the shaft and bushing.

It will be noted that the shaft 9 can be rotated in its bearings formed by the bushing 8 and the sleeve 11, and at the end of the shaft within the vat the same carries suitable means for so supporting the end of a cloth roll that the shaft turns with the roll when the latter is rotated by means to be described hereinafter. At said inner end the shaft 9 is provided with a head 23 formed with a pocket 24 and seated in said pocket is a two-part poly-faced sleeve 25 having a lower projecting wall or shelf 26 which extends out for a distance beyond the extreme inner end of the head 23. Seated in the bottom of the pocket 24 is a centering pin which coöperates with the cloth roll to center the same, in a manner to be presently set forth. This pocket 24 is designed to receive a poly-sided head 28 on the head 29 of a hollow perforated cloth receiving roll 30, whereby one end of the roll is supported and causes the shaft 9 to turn therewith. The connection between the shaft and roll is the same as that covered by my co-pending application Serial No. 446,958, filed August 1908. Also carried by the inner face of the closure plate 6 is a shelf member 31 located below the shaft 9, and carrying pairs of ears 32, one located on each side of the shaft, as shown in Figs. 8 and 9, in which are secured pins 33, upon which turn loosely anti-friction rollers 34, said rollers being arranged with their axes of rotation parallel to the axis of the shaft. The cylindrical head 23 on the shaft 9 rests upon these rollers, the element 31 thereby serving to support the shaft, and the rollers 34 providing for the easy rotation of the head 23 on the support.

The end of the support or shelf 31 car-

ries a safety shelf member 35 projecting out beyond the elements 23 and 28 to take position beneath the adjacent end of the cloth roll to catch the latter should an attendant, through any cause whatever, fail to place the head 28 on the shelf 26, or should the socket have been turned so as not to properly present the shelf 26 to the head 28, said roll resting clear of the shelf when the parts are in the condition shown in Fig. 2, when the head and socket are properly engaged.

From the description so far given it will be understood that by manipulating the hand wheel 14 the socket head may be moved back and forth with the shaft 9, and that by this means the socket head 23 and the head 28 are separated, the movement of the shaft and head outward being limited by the stop collar 15 abutting the projection 18, on the yoke 13.

As will be hereinafter described the end of the cloth receiving roll opposite to that carrying the head 28 is adapted to detachably engage a bearing member, and I will now describe means associated with the shaft 9 for imparting a longitudinal movement of the cloth roll to separate the same from this bearing whenever the shaft 9 is moved outward. The head 23 heretofore described is formed with a circumferential groove 36 adapted to receive a bead or flange 37 formed on the inner face of a saddle element 38 which rests upon the said bead, said element having opposite, laterally disposed arms 39, which slidably engage parallel guide bars 40 rigidly mounted upon the inner face of the closure plate 6, the said arms being formed with guide openings to receive said bars 40. The connection between the saddle element and the bars 40 provides simple and effective means for preventing rotation of the saddle element on the head 23. Preferably formed integral with the saddle element is a vertically extending bracket 41 having spaced ears 42 between which is pivoted an engaging member 43, adapted to engage the cloth roll and move the same with the head 23, said member being preferably in the form of a hook to engage over an end flange 29^a on the head of the cloth receiving roll. By this provision means is afforded for positively moving the cloth receiving roll to draw it from its bearing at the end opposite to the head 29.

Means is provided for limiting the movement of the cloth roll by the shaft 9 and member 43, a convenient and simple provision being a shoulder 35^a on the upper surface of the shelf part 35. This shoulder is so located that when the shaft 9 has been sufficiently retracted the cloth roll will engage said shoulder, and then after the hook 43 has been detached from the roll the shaft may be further retracted until the stop col-

lar 10 abuts the element 18, the remaining extent of movement after the roll has engaged the shoulder 35^a being such that the projection 26 on the socket will not be withdrawn from beneath the head 28 on the roll. When the hook 43 is released from the roll as when the roll is to be placed in or taken from the vat it may be conveniently placed in the position shown in Fig. 1.

In the end wall of the vat opposite to that supporting the shaft 9, is a central opening 44 closed by a closure plate 45, the latter also having a central aperture 46 surrounded by annular flanges 47, 48, on said plate, the former projecting within the vat and the latter exterior thereto, said flanges forming a cylindrical bearing. Extending through this cylindrical bearing just described, is a hollow shaft member 49, the same being spaced from the inner face of the bearing by suitable packing sleeves 50, 51, the latter projecting within the flange 47 and having a conical seat 52 to receive packing 53, surrounding the hollow shaft, said packing being compressed and held in place by a packing collar 54 also surrounding the shaft and bolted to the plate 45 as shown at 55. At its end within the vat the shaft 49 is provided with an end head or plate 56 preferably cast integral therewith to which is bolted a cylindrical shell 57, said shell being open at its inner end and formed with an internal annular flange 58 carrying suitable packing 59 on its outer face. The open end of this shell 57 is adapted to receive the end of the cloth carrying roll opposite to that provided with the head 29, said roll being adapted to abut the flange 58. The roll may be provided with a circumferential flange 30^b to engage said flange 58 and form a water-tight joint between the same. This shell 57 is of greater diameter than the cloth carrying roll and they are so related when the flanges 30^b, 58, abut as to be concentric with each other so that in any position of rotation of the chamber and roll the lowermost portion of the chamber will be below the lowermost portion of the body of the roll.

The hollow shaft and the chamber 57 are arranged to be rotated so as to turn the roll 30, and suitable gearing acting upon the said hollow shaft is employed for this purpose, said gearing being preferably constructed and arranged as follows: Rigidly connected to the end of the vat is a horizontally disposed platform bracket 60, upon which is detachably mounted a vertical bearing supporting member 61, to one vertical edge of which is detachably bolted a bearing bracket 62, carrying a bearing 63 for one end of a driving shaft 64, the opposite end of which turns in a bearing 65 in a bracket 66 connected to the vat. Upon this shaft mounted

to turn therewith is a belt pulley 67 adapted to be connected by a belt—not shown—with any suitable source of power, and also on this shaft is a loose pulley 68. The belt may be shifted from one to the other of these pulleys by a belt shifter slidably supported on a bracket arm 69 on the bracket 60. The belt shifter consists of two spaced rings 70, mounted on a block 71 which is bolted to a second block 72, which latter block is dovetailed onto the bracket arm 69. The rings 70 may be braced and held in spaced relation by means of a spring bar 73 between said rings and secured thereto by screws 74. I employ this form of belt shifter for the reason that I am enabled to apply the driving belt to the pulley from practically any angle which is of advantage in that the apparatus may be conveniently installed in a mill or factory without the necessity of altering an established line of shafting. The belt shifter may be operated by a hand lever 75 fulcrumed on the floor as at 76, and connected to the block 72 by a connecting rod 77. Keyed to the shaft 64 is a pinion 78 which meshes with a gear 79 on a counter shaft 80, the ends of which shaft respectively have bearing in a bearing 81 in the end of the vat, and a bearing 82 in the element 61. This shaft 80 carries a pinion 83 which meshes with a gear wheel 84 on the hollow shaft 49.

From the above description taken in connection with the drawings, it will be apparent that whenever the belt-shifter is operated to place the belt upon the fixed pulley 67, through the gears 78, 79, 83 and 84 the hollow shaft 49 and the chamber formed at the shoulder 57 will be rotated which will in turn operate to rotate the cloth-carrying roll 30.

Means is provided for introducing water or steam, or both, through the hollow shaft 49 into the chamber formed by the shell 57, whence it may flow into the interior of the cloth-carrying roll to moisten the roll from the interior thereof. The means for accomplishing this result, while capable of wide variation, consists preferably of a pipe 85 extending longitudinally through said hollow shaft and terminating at its end portion within the chamber formed by the shell 57, the outer end of the pipe being connected by any suitable means, not shown, to a source of water supply. A suitable pump, not shown, or other circulator, is employed for causing the circulation of water in either direction through the pipe 85. At its inner end within the chamber 57 the pipe 85 is provided with a head 86 having a depending hollow extension 87, the lower end of which projects below the lowermost level of the cloth receiving roll 30, while the latter is connected to the chamber 57. The wall of the head 86 opposite to the opening in the

end of the pipe 85 is provided with an opening 88 closed by a valve 89 having a hollow valve stem 90 guided in a spider 91 threaded into a flange 92 on the head 86.

5 This valve 89 is rigidly connected to a steam pipe 93 arranged within and extending longitudinally of the pipe 85 and connected to a suitable source of steam not shown. This pipe is movable longitudinally of the pipe

10 85 and is connected at its inner end to the valve 89 with the hollow stem of which it communicates, the arrangement being such that the pipe 93 may be moved to seat the valve 89 as shown in Fig. 3, or to unseat it

15 as shown in Fig. 10. The opening 88 is provided within the head 86 in order that a flow of water may pass directly into the interior of the roll 30, while the wetting of the roll is taking place, while the neck 87 is

20 adapted to draw water from the roll which may flow into the interior of the chamber 57 when the circulation of water through the vat is cut off and it is desired to reverse the flow through the pipe 86 to draw moisture

25 from the roll.

Suitable means may be employed for properly packing the space between the interior of the shaft 49 and the exterior of the pipe 85 to prevent leakage of water, said

30 means consisting of a flanged packing collar 94 surrounding pipe 85 within the chamber 57 and bolted to the head 57 by bolts 95, suitable packing being employed between the packing collar 94 and a shoulder in the shaft

35 49, all as clearly shown in Fig. 3 of the drawing.

I prefer to construct the chamber 57 as heretofore described in order that the parts associated with the ends of the steam and

40 the water pipes may be readily accessible for adjustment or repair in order that the packing between the shaft 49 and pipe 85 may be conveniently reached when desired.

45 Mounted within the vat at a point closely adjacent the inner end of the chamber 57 is a support adapted to receive the end of the cloth-receiving roll whenever said roll is withdrawn from its connection with the

50 chamber 57, so that said end will be held against dropping down within the vat. This means consists of a vertically disposed plate member 96 adjustably supported at its lower edge upon bolts 97 let through sleeves 98

55 in the bottom of the vat, the outer open ends of the sleeves being closed by plugs 99 to prevent leakage from the interior of the vat. The plate member 96 is provided with lateral ears 100 having flanges 101 which are

60 engaged by horizontally disposed bolts 102 let through sleeves in the side walls of the vat and closed by plugs 104. The upper edge of the plate member 96 is formed in an arc of the same radius as the flange 30^b

65 as at 105, which flange 30^b engages with the

flange 58 on the chamber 57, the arc-shaped seat on said plate member 96 being adapted to receive the flange 30^b to support that end of the roll when the latter is separated from the chamber and supporting member 56. By

70 means of the bolts 97 which support the plate 96, said plate may be adjusted vertically so as to bring said arc-shaped seat slightly below the internal surface of the member 57, so that when the roll 30 is

75 moved lengthwise under the influence of the hand-wheel 14, the flange 30^b will pass to said seat 105.

The bottom of the vat is formed with a longitudinally extending trough 106, one of the purposes of which is to receive any sediment or foreign particles which may collect in the vat during the wetting process and said trough is provided with an outlet 107 through which the sediment may be drawn

85 off. Arranged within this trough 106 is a short piece of longitudinally extending pipe 108 through which water, or other treating fluid, may be introduced or drawn from the receptacle, said pipe being supported at one

90 end in a plug 109 which closes an opening in the end wall of said trough. Also projecting through the plug and extending through the water pipe just described is a smaller pipe 110 through which steam may

95 be passed into the vat when it is desired to heat the contents thereof. These pipes are located wholly within the trough so that there is no projection extending above the main body portion of the bottom of the vat

100 to interfere with the manipulation of the roll, as will be set forth presently.

Adjacent the ends of the vat I may provide bridge pieces 111 of a desired width which connect the side portions of the bot-

105 tom of the kettle on either side of the trough 106, the upper surface of said bridge pieces being substantially continuous with the side walls and curved bottom of the kettle so that a smooth and continuous surface

110 is provided, over which a flexible lifting band or bands may pass slidingly without being caught by having its passage obstructed by the walls of the trough 106, or the pipe located therein. These lifting bands usually

115 consist in part of flexible metal which are passed about the roll by inserting one end from the side of the vat and pushing upon the body of the band until the inserted end portion emerges from between the roll and

120 the opposite side of the vat, the end of the bands being guided by the inner surface of the vat.

Having thus described one embodiment of my invention I will now set forth briefly the

125 complete operation thereof from the time a roll of cloth is inserted therein until it is removed after being treated. A roll of cloth having been formed upon one of the winding machines which have formed the subject-

130

matter of other applications filed by me, upon the roll 30, the latter is placed within the vat 1, so as to rest at one end upon the plate 96 and at the other end upon the supporting shelf 26, the socket head 23 having previously been retracted by means of the hand wheel 40. It will be understood that previously to placing the roll 30 within the vat, the hook or connecting member 43 is swung back out of the path of movement of the roll to the position shown in Fig. 1. The roll having been inserted as just described, the hand wheel 14 is operated in the proper direction to move the shaft 9 and the head 23 toward the cloth roll, the head 23 being supported throughout its movement upon the friction rollers 34 mounted on the bracket 31. This movement continues until the head 28 is secured within said head 23, the pin 27 entering said head 28 to center the roll 30, and the movement of the head being continuous, the roll 30 is moved longitudinally toward the chamber 57 until the flange 30^b enters the open end of said chamber and is seated against the flange 58 forming a fluid-tight joint between said roll and said chamber. This operation of course serves to move said flange 30^b from the seat 105, so that this end of the roll is no longer supported by said seat, and it will be understood that after the completion of this operation just stated the roll 30 is supported entirely by the head 23 and the chamber 57 and is free to rotate without engaging any of the other parts of the vat or the elements therein. Water at suitable temperature can then be pumped through the pipe 85 into the interior of the chamber 57 and the valve opening 88 in the end of the head 86, the valve 89 having first been operated to open said port 88. The water injected through the pipe 85 flows within the perforated cylinder 30 and when the latter is rotated by means of the gearing described the water is permitted to pass through the perforations in the cylinder to the internal folds of the cloth and find its way outward through the roll. It will be understood that before this operation takes place the outlet 107 is closed. This operation continues until the vat is filled with water and the cloth roll submerged, after which the outlet through the water pipe 108 is opened and the pump of the circulatory system is set in operation to circulate water through the vat, the water passing through the pipe 85 out through the roll into the vat and thence out of the vat through the pipe 108.

The construction which I have described provides for the water being passed through the cloth from the exterior thereof into the roll 30 and out through the pipe 85 with equal facility to the operation just described. When it is desired to so treat the cloth, the flow is reversed and the pipe 93 is operated

to close the valve opening 88, so that suction is created by the pump in the pipe 85 and the water is drawn through the roll into the chamber 57 through the neck 87 and out through the pipe 85. If, at any time, it should be desired to heat the water, steam may be admitted through either the pipe 93 or the pipe 110, as may be desired.

When the wetting process has been completed and it is desired to remove the moisture from the roll, the pipe 108 is cut off from the circulatory system, the outlet 107 may be opened to permit the water to drain from the vat. The valve 89 is then closed, and suction being created in the pipe 85, water which is in the cloth will be drawn inwardly into the roll 30 whence it will flow into the chamber 87 and pass therefrom through the neck 87 and to 85. It will be understood that during this operation the roll is continuously rotated, so that the moisture will be drawn equally from all parts thereof. The extraction of the moisture having been carried on to the proper degree the circulatory system, or such part thereof as has been used in the extracting process is cut off and the hook or connecting member 43 is swung to engage over the flange 29^a on the end of the cloth-receiving roll. The operator then turns the hand wheel 14 in the proper direction to retract the shaft 9 which moves the head 23, the connecting member 43, and the cloth-carrying roll longitudinally until the flange 29^a on said roll engages the shoulder 35^a on the supporting bracket 35, this shoulder serving to arrest further movement of the roll. In this position the roll is supported at one end on said shell 26 and at the other end is supported by its flange 30^b upon the seat 105 on the supporting plate 96, said latter-mentioned flange having been withdrawn from engagement with the chamber 57. The hook member 43 is then disengaged from the roll and the hand-wheel is turned still farther in the same direction to continue the movement of the socket head 23 so as to disconnect its square pocket from the head 28 upon the end of the roll 30 while still leaving the head 28 resting upon the shelf 26. The parts having been operated to take this position, both ends of the roll are thus freed, so that the roll may be engaged by a proper lifting means to lift the same from the vat. The vat is then in position to have another roll of cloth inserted therein for treatment and the operation may be repeated.

I have shown and described with considerable particularity a detailed construction which I deem desirable in order to produce an efficient and conveniently-operated machine, but I do not desire to be limited to the exact details shown and described as I may alter the same as occasion

may require, without departing from the spirit and scope of my invention.

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

1. In an apparatus for the treatment of cloth, a vat, a hollow cloth roll, an imperforate rotatable chamber in the vat, a hollow shaft connected directly to the chamber to rotate the chamber and through which liquid may pass to or from all parts of the interior of the chamber, and means for supporting the hollow cloth roll in engagement with the chamber to rotate therewith.

2. In an apparatus for the treatment of cloth, a vat, a hollow cloth roll, an imperforate rotatable chamber in the vat, a hollow shaft connected directly to the chamber to rotate the chamber and through which liquid may pass to or from all parts of the interior of the chamber, and means for supporting the hollow cloth roll in engagement with the chamber to rotate therewith, the interior of said chamber projecting laterally beyond the interior of the cloth roll.

3. In an apparatus for the treatment of cloth, a vat, a hollow shaft, an enlarged imperforate chamber supported on the shaft, a pipe extending through the shaft and opening into said chamber, all parts of said chamber being in communication with said pipe, and means for rotatably and detachably supporting a cloth roll in communication with the chamber.

4. In an apparatus for the treatment of cloth, a vat, an imperforate rotatable chamber in the vat having an open end, a hollow shaft to rotate the chamber, a pipe extending through the shaft and opening into the chamber, means for rotatably and detachably supporting a cloth roll in communication with the chamber through the open end of the latter, and means for forming a fluid tight detachable joint between a roll and the chamber.

5. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, a hollow shaft to rotate the chamber, a pipe extending through the shaft and opening into the chamber, a valve in the chamber controlling the opening, and means for supporting a hollow cloth roll in communication with said chamber.

6. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, a hollow shaft to rotate the chamber, a pipe extending through the shaft and opening into the chamber, all parts of said chamber being in communication with said pipe, a valve in the chamber controlling the opening, means for supporting a hollow cloth roll in communication with said chamber to rotate therewith.

7. In an apparatus for the treatment of cloth, a vat, a hollow bearing in the vat

carrying a hollow chamber having an open end portion, a hollow cloth roll, and means for detachably supporting said roll in said open end portion in longitudinal alinement with the chamber, said chamber having a portion located laterally outside the shell of the roll, and all parts of the interior of said chamber being in communication with the hollow bearing.

8. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, a hollow shaft to rotate the chamber, a pipe extending through the shaft and opening into the chamber, said pipe having a valved opening and a hollow inlet neck, the opening to which terminates adjacent the wall of the chamber, and means for supporting a hollow cloth roll in communication with said chamber.

9. In an apparatus for the treatment of cloth, a vat, a hollow cloth roll, an imperforate chamber in the vat consisting of a rotary cylindrical head, means for introducing liquid directly into the head and from the head into the roll, and means for supporting the hollow cloth roll in longitudinal alinement with the head, the entire interiors of the roll and head being in communication with each other.

10. In an apparatus for the treatment of cloth, a vat, an imperforate chamber in the vat, means for supporting a hollow cloth roll in communication with said chamber, with the lowermost part of the chamber below the lowermost part of the roll and in communication with the interior of the roll.

11. In an apparatus for the treatment of cloth, a vat, an imperforate chamber in the vat, means for supporting a hollow cloth roll in communication with said chamber, with the lowermost part of the chamber below the lowermost part of the roll, and in communication with the interior of the latter, and a supply pipe opening into the chamber.

12. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, means for supporting a hollow cloth roll in communication with said chamber with the lowermost part of the chamber below the lowermost part of the roll, a pipe opening into the chamber and having an opening below the body of the roll.

13. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, means for detachably supporting a hollow cloth roll in communication with said chamber, with the lowermost part of the chamber below the lowermost part of the roll, and communicating with the interior of the roll, and a pipe opening into the chamber, said pipe having an opening co-axial with the hollow roll.

14. In an apparatus for the treatment of cloth, a vat, a chamber in the vat, means for

supporting a hollow cloth roll in communication with said chamber, with the lowermost part of the chamber below the lowermost part of the roll, a pipe opening into the chamber, said pipe having an opening co-axial with the hollow roll, and a valve for controlling said co-axial opening.

15. In an apparatus for the treatment of cloth, a vat, a bearing in the vat to support a cloth roll, means for moving a cloth roll longitudinally to engage or disengage it from the bearing, means for supporting the roll when disengaged from the bearing, and means for limiting the movement of a roll from the bearing to said support.

16. In an apparatus for the treatment of cloth, a vat, a bearing for a cloth roll, a rotatable member for moving a roll longitudinally to engage it with or disengage it from said bearing, means carried by and moving with the rotatable member to connect the roll thereto, and a stop to limit the movement of the roll.

17. In an apparatus for the treatment of cloth, a vat, a bearing for a cloth roll, a rotatable member for moving a roll longitudinally to engage it with or disengage it from said bearing, means carried by and moving with the rotatable member to connect the roll thereto, and means for preventing rotation of said connecting means with the rotatable member.

18. In an apparatus for the treatment of cloth, a vat, a bearing for a cloth roll, a rotatable member for moving a roll longitudinally to engage it with or disengage it from said bearing, a saddle on the rotatable member and movable therewith, means on the saddle for connecting the same to a roll, and means for preventing rotation of the saddle.

19. In an apparatus for the treatment of cloth, a vat, a bearing for a cloth roll, a rotatable member for moving a roll longitudinally to engage it with or disengage it from said bearing, a saddle on the rotatable member and movable therewith, means on the saddle for connecting the same to a roll, and a member on the vat engaging the saddle to prevent rotation thereof.

20. In an apparatus for the treatment of cloth, a vat having end walls formed with openings, closure plates for said openings and cloth roll bearings carried, by said plates, said bearings each being removable with its supporting plate as an entirety through the opening in the vat.

21. In an apparatus for the treatment of cloth, a vat, a bearing in the vat, reciprocating means adapted to be connected to a cloth roll to move the same to engage it with and disengage it from said bearing, a support for the roll when free from said bearing, a stop to limit the movement of the roll to cause it to rest on said support.

22. In an apparatus for the treatment of cloth, a vat, a bearing in the vat, reciprocating means adapted to be connected to a cloth roll to move the same to engage it with and disengage it from said bearing, a support for the roll when free from said bearing, a stop to limit the movement of the roll to cause it to rest on said support, said reciprocating means having an additional movement to disengage it from the roll.

23. In an apparatus for the treatment of cloth, a vat, a bearing in the vat, reciprocating means adapted to be connected to a cloth roll to move the same relative to said bearing, a support for the roll when free from said bearing and a stop to limit the movement of the roll to cause it to rest on said support.

24. In an apparatus for the treatment of cloth, a vat, a bearing in the vat, a reciprocating bearing adapted to receive a cloth roll to move the same toward and away from the first mentioned bearing, a roll support adjacent the first mentioned bearing to receive the roll when disengaged from said bearing, means for connecting the roll to the reciprocating bearing, and means for limiting the movement of the reciprocating bearing.

25. In an apparatus for the treatment of cloth, a vat, a bearing in the vat, a reciprocating bearing adapted to receive a cloth roll to move the same toward and away from the first-mentioned bearing, a roll support adjacent the first-mentioned bearing to receive the roll when disengaged from said bearing, means for connecting the roll to the reciprocating bearing, means for limiting the movement of the reciprocating bearing, and means for limiting the movement of the roll away from the first-mentioned bearing.

26. In an apparatus for the treatment of cloth, a vat, fixed and reciprocating bearings within the vat adapted to rotatably support the cloth roll, means for connecting a cloth roll to one of said bearings whereby the roll is separated from the other of said bearings when the reciprocating bearing is reciprocated, a safety shelf located beneath one of said bearings, and a stop on said shelf to limit the movement of the roll relative to its bearings.

27. In an apparatus for the treatment of cloth, a vat, a reciprocating bearing and a fixed bearing for a cloth roll located in the vat, means for connecting the reciprocating bearing to a cloth roll to move the latter longitudinally relative to the fixed bearing, a safety shelf adjacent the reciprocating bearing and a stop on the shelf to limit the movement of the roll away from the fixed bearing.

28. In an apparatus for the treatment of cloth, a vat, a reciprocating bearing and a fixed bearing for a cloth roll located in the vat, means for connecting the reciprocating

bearing to a cloth roll to move the latter longitudinally relative to the fixed bearing, a safety shelf adjacent the reciprocating bearing, a stop on the shelf to limit the movement of the roll away from the fixed bearing, and a support adjacent the fixed bearing to support the roll when removed therefrom.

29. In an apparatus for the treatment of cloth, a vat, a fixed bearing and a reciprocating bearing for a cloth roll arranged within the vat, means on the reciprocating bearing supporting one end of the roll, means adjacent the fixed bearing for supporting the other end of the roll, and means to connect the reciprocating bearing and the roll to withdraw the latter from the fixed bearing onto the support adjacent the same.

30. In an apparatus for the treatment of cloth, a vat, a fixed bearing and a reciprocating bearing for a cloth roll arranged within the vat, means on the reciprocating bearing supporting one end of the roll, means adjacent the fixed bearing for supporting the other end of the roll, and means to connect the reciprocating bearing and the roll to withdraw the latter from the fixed bearing onto the support adjacent the same, and a stop to limit the movement of the roll away from the fixed bearing.

31. In an apparatus for treating cloth, a vat, bearings therein for rotatably and detachably supporting a hollow cloth-carrying roll, one of said bearings consisting of a hollow head communicating throughout with the roll, the interior of the head projecting laterally beyond the roll, a hollow shaft independent of the roll upon which the head is mounted, and a pipe extending through the hollow shaft and opening into said head.

32. In an apparatus for treating cloth, a vat, bearings therein for supporting a hollow cloth-carrying roll, one of said bearings consisting of a hollow head of greater diameter than said roll, the interiors of the roll and head communicating with each other throughout, and a pipe projecting into said head and having an opening located outside the wall of the cloth-carrying roll.

33. In an apparatus for the treatment of cloth, a vat, bearings therein for supporting a hollow cloth-carrying roll, one of said bearings consisting of a hollow head adapted to communicate with the interior of the roll, said head being of greater diameter than the roll it is adapted to receive, and a pipe projecting into said head and having

a depending neck terminating at a point below the lowermost part of the shell of the cloth-carrying roll.

34. In an apparatus for the treatment of cloth, a vat, bearings therein for supporting a hollow cloth-carrying roll, one of said bearings consisting of a hollow head, a pipe extending into said hollow head and having an end opening adapted to open directly into the roll supported by the head and having a lateral opening, and a valve controlling said first-mentioned opening.

35. In an apparatus for the treatment of cloth, a vat, bearings therein for supporting the hollow cloth-carrying roll, one of said bearings consisting of a hollow head, a pipe extending into said hollow head and having an end opening adapted to open directly into the roll supported by the head and having a lateral opening, a valve controlling said first-mentioned opening, and a second pipe extending through the first-mentioned pipe and connected to said hollow valve to operate the same.

36. In an apparatus for the treatment of cloth, a vat, fixed and movable bearings within the vat adapted to receive a cloth-carrying roll, a shaft upon which the movable bearing is mounted, a threaded sleeve mounted on the shaft, a hand wheel threaded to said sleeve and rotatable to reciprocate the shaft, and means associated with the bearing adapted to detachably engage the roll to connect the same to the bearing whereby when the bearing is moved the roll is moved longitudinally relative to the fixed bearing.

37. In an apparatus for the treatment of cloth, a vat, a fixed bearing and a reciprocating bearing for a cloth roll mounted within the vat, said movable bearing having a seat for the end of the roll, and a projecting support for said end, means for connecting the bearing and the roll whereby the reciprocations of the bearing move the roll relative to the fixed bearing, means for limiting the movement of the roll away from the fixed bearing, and means for limiting the movement of the reciprocating bearing relative to the roll.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID GESSNER.

Witnesses:

M. E. McNinch,

C. G. Heyburn.