I. E. PALMER.

TEXTILE STORAGE APPARATUS.

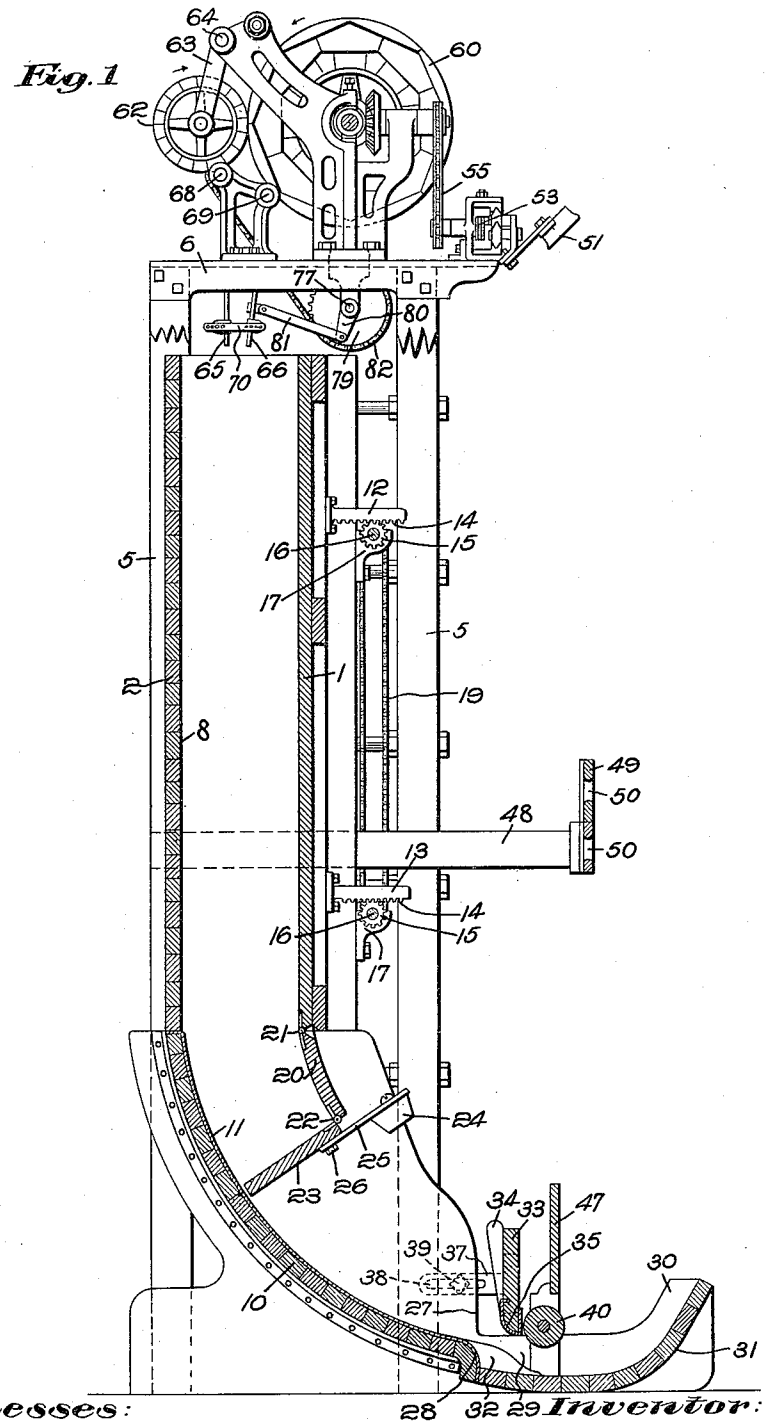
APPLICATION FILED JUNE 9, 1913.

1,160,111.

Patented Nov. 9, 1915.

5 SHEETS—SHEET 1.

Fig. 1



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Horace A. Crossman.

Inventor:

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TEXTILE STORAGE APPARATUS.

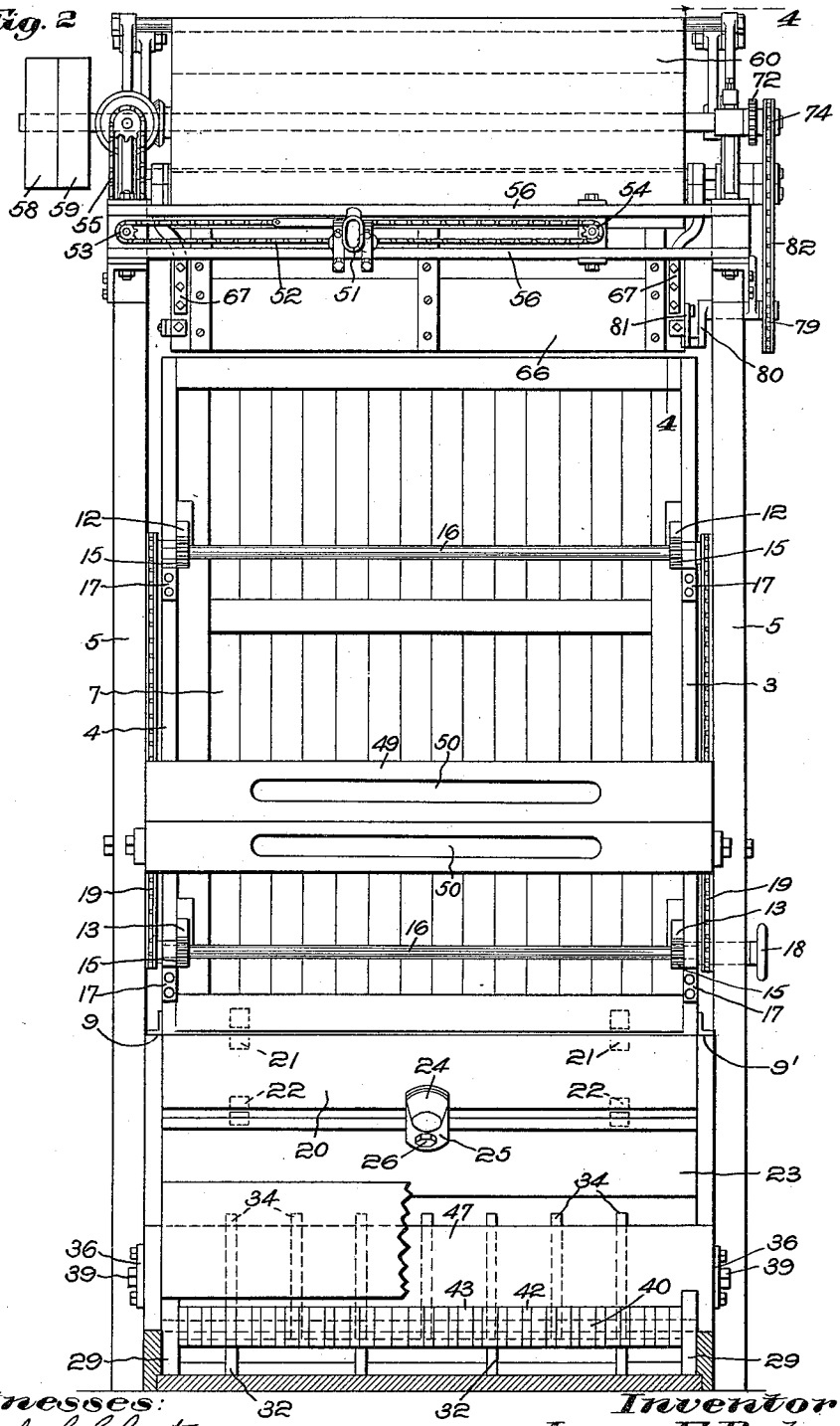
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5 SHEETS—SHEET 2.

Fig. 2



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5 SHEETS—SHEET 3.

Fig. 3.

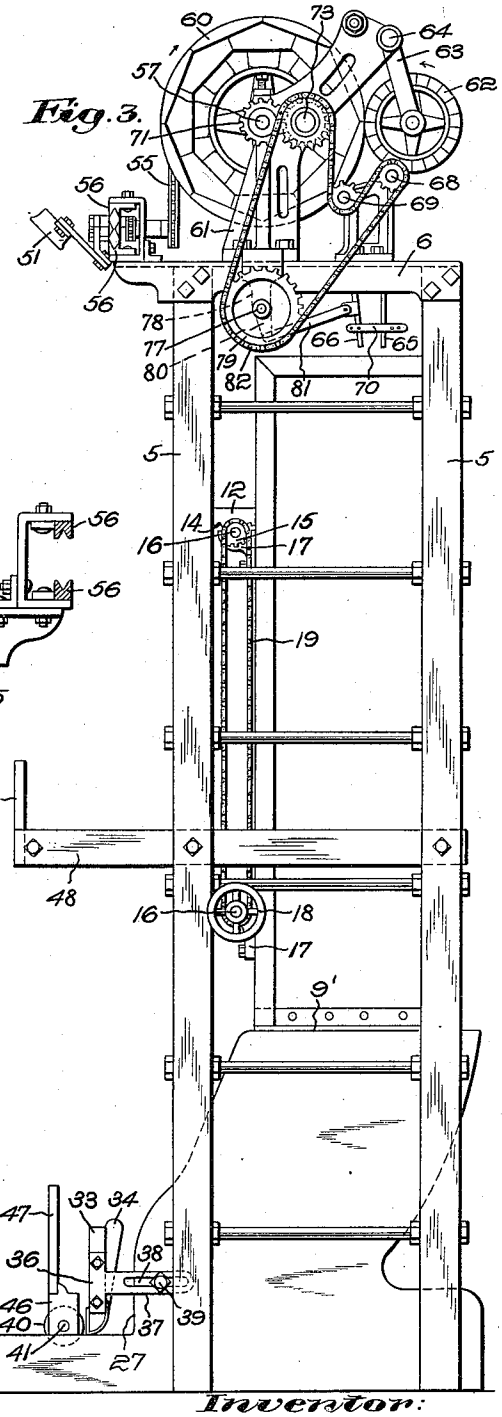


Fig. 4.

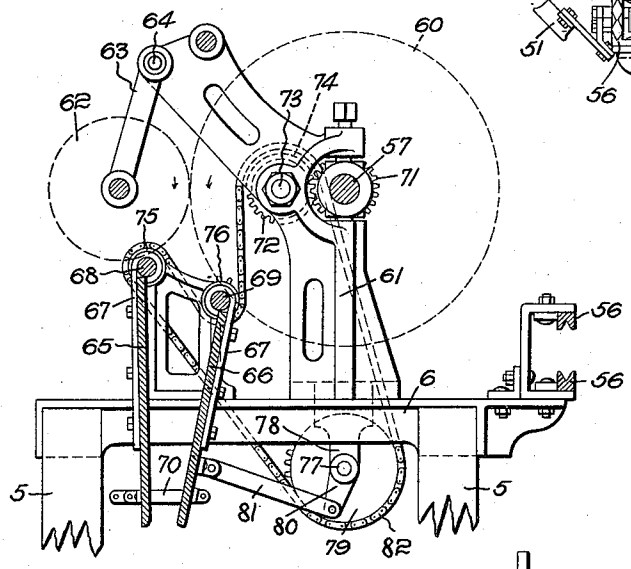
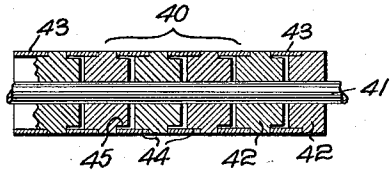


Fig. 5



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5 SHEETS—SHEET 4.

Fig. 7.

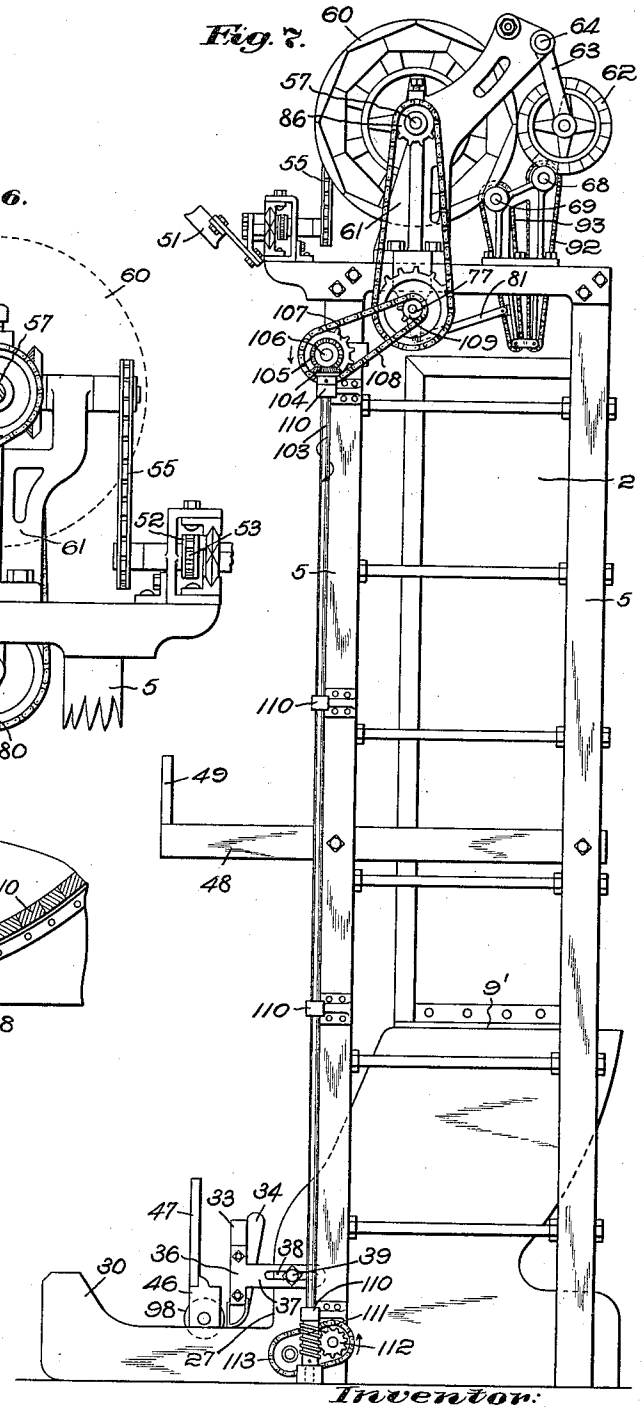


Fig. 6.

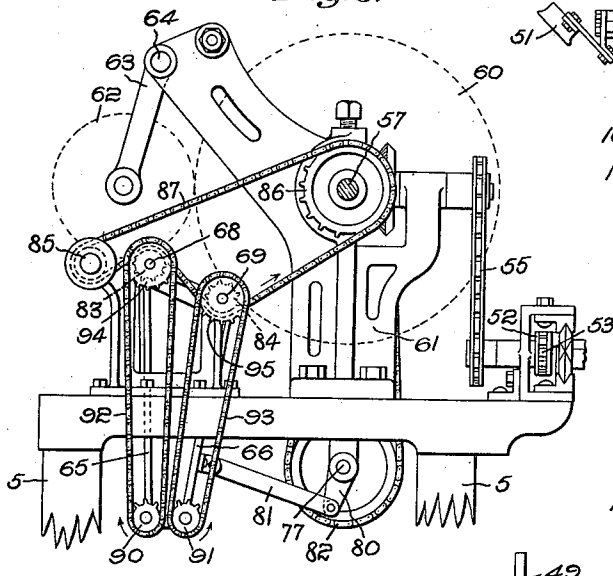


Fig. 8.

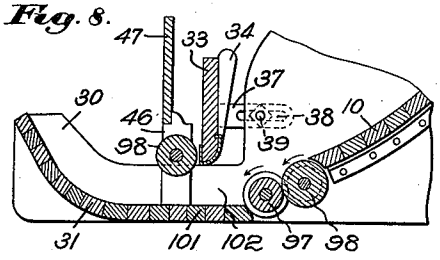


Fig. 10.

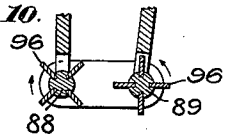
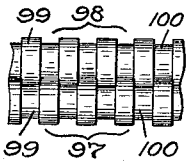


Fig. 9.



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TEXTILE STORAGE APPARATUS.

APPLICATION FILED JUNE 9, 1913.

1,160,111.

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5 SHEETS—SHEET 5.

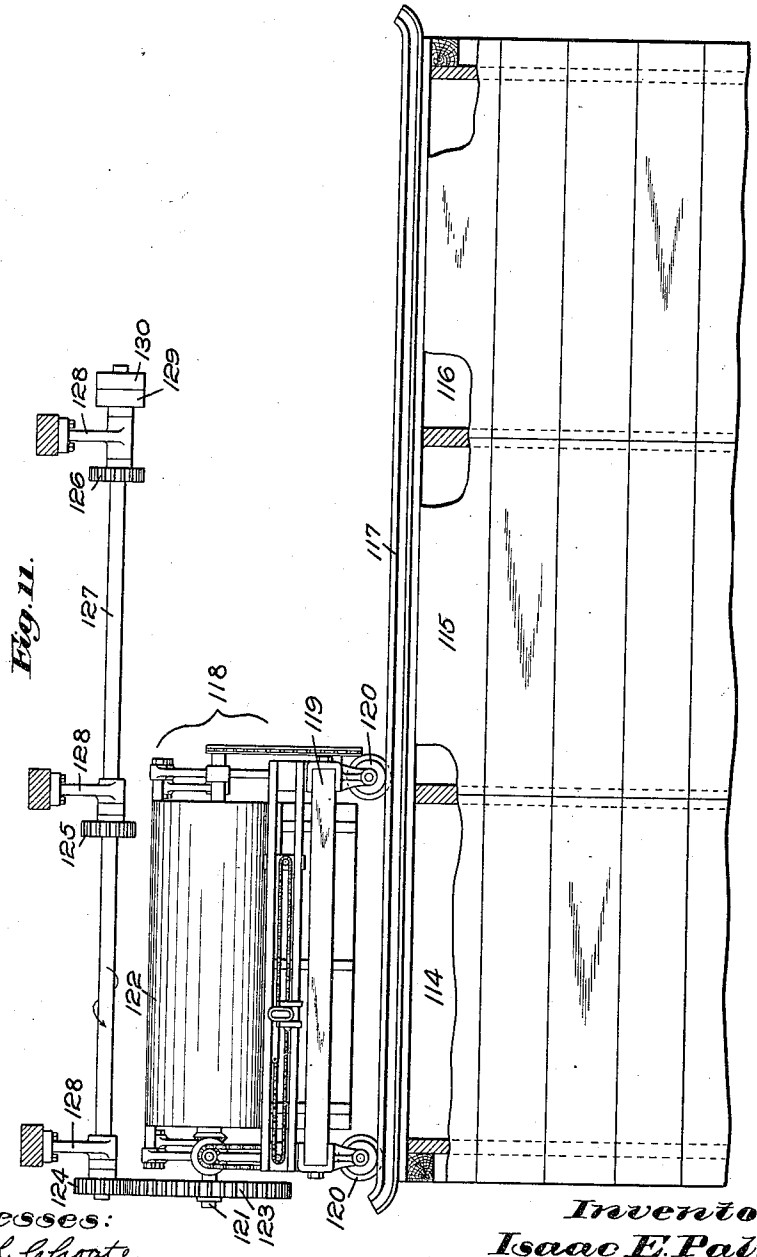


Fig. 11.

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UNITED STATES PATENT OFFICE.

ISAAC E. PALMER, OF MIDDLETOWN, CONNECTICUT; TOWNSEND PALMER AND NATHALIE T. PALMER ADMINISTRATORS OF SAID ISAAC E. PALMER, DECEASED.

TEXTILE-STORAGE APPARATUS.

1,160,111. Specification of Letters Patent. Patented Nov. 9, 1915.

Application filed June 9, 1913. Serial No. 772,596.

To all whom it may concern:

Be it known that I, ISAAC E. PALMER, a citizen of the United States, and a resident of Middletown, in the county of Middlesex and State of Connecticut, have invented an Improvement in Textile-Storage Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to textile storage apparatus and preferably to apparatus adapted for the continuous storage of textile material.

In order that the principle of the invention may be readily understood, I have disclosed a single embodiment thereof in the accompanying drawings, wherein—

Figure 1 is a view partially in vertical section and partially in end elevation of one form of apparatus embodying my invention; Fig. 2 is a front elevation, partially in transverse section, of the apparatus shown in Fig. 1; Fig. 3 is a side elevation of the construction shown in Figs. 1 and 2; Fig. 4 is a view on an enlarged scale, on the line 4—4 of Fig. 2 and partially in vertical section and partially in side elevation, of the textile feeding or distributing mechanism represented in the preceding figures; Fig. 5 is a detail in longitudinal vertical section of the preferred form of roller employed at the discharge end of the apparatus; Fig. 6 is a view similar to Fig. 4 but representing a slightly modified form of driving mechanism. Fig. 7 is a side elevation of the apparatus representing a modified form thereof wherein positively driven rolls are employed near the discharge end thereof; Fig. 8 is a detail in section representing said positively driven rolls and the related parts; Fig. 9 is a detail in plan showing said rolls; Fig. 10 is a detail in cross section representing a modified construction of rolls mounted upon the feeding chute; and Fig. 11 represents in a somewhat diagrammatic manner a feeding mechanism which may be moved to discharge the material into any one of a series of receptacles.

This invention relates to textile storage apparatus and is an improvement upon the construction shown in my Patents No. 408,388, August 6, 1899, No. 653,485, July 10, 1900, No. 971,778, October 4, 1910, and No. 1,033,925, July 30, 1912.

As shown in my patents above referred to, textile material in lengths, such, for example, as yarn or cloth in rope-like form or even in widths, has been piled or folded into the open upper ends of J or U-shaped chutes, the material being subjected either prior to or during its passage through said chute to the action of some suitable liquor, such for example, as a bleaching, dyeing, finishing or other conditioning liquor. As disclosed in my said Patent No. 408,388, the front and rear walls of said chute are made of power driven aprons to facilitate the passage of material therethrough. As shown in my Patent No. 653,485, I have facilitated the passage of the material through the chute by maintaining a flow of liquor sufficient to float the material therethrough. In my Patent No. 971,778, I have represented a chute of J form grooved for the downward flow of a treating liquor and having material traversing and feeding mechanism for feeding the material into the upper end of the chute. In my Patent No. 1,033,925, I have disclosed a chute of the J type and in certain forms thereof have represented the rear and bottom walls as having a series of freely rotating rolls to decrease the frictional resistance to the onward movement of the material. In the present application I disclose improved means for feeding the material into the upper end of the chute or other suitable receiver, and also disclose an improved form of chute, preferably of the J type, a particular object of the improved form of chute being to control the discharge of the material therefrom and to insure its discharge in a regular and even manner and without undue choking or tangling.

The material is delivered into the open, upper end of the preferably substantially upright chute and is gradually delivered therethrough, but I desire it to be understood that the feeding mechanism may be employed to deliver the material into other types of receiver than that herein shown, as for example, into square or other shaped bins.

In accordance with my invention, the textile material may be discharged or drawn either in a saturated or wet condition or in a squeezed condition from the chute or receiver. That is to say, the apparatus is adapted to receive material which may be in rope or chain form, or as yarn, or in the

condition of flat goods of suitable width, such material being treated, either in the apparatus or previous to its entrance thereto, with any suitable conditioning liquor, such, for example, as a bleaching, dyeing, finishing or other liquor, or just prior to the delivery of the material into the chute, the conditioning liquor, of whatever nature, may be substantially expelled therefrom by the action of the squeeze rolls, so that while the material remains in the chute, the comparatively small amount of treating liquor yet remaining in the goods may continue to act thereon, and, if desired, until the force of such treating liquor is exhausted. For example, the material prior to its delivery into the chute may be subjected to the action of a bleaching liquor, and the greater proportion of this bleaching liquor may be expelled therefrom by squeeze rolls prior to the delivery of the material into the chute. This permits the continued action upon the material of a weak bleaching liquor, so that the time may be prolonged without injury to the material, such as would result if a bleaching liquor of full strength were permitted to act upon the material for any considerable period.

Referring more particularly to the drawings, and first to that form of my invention shown in Figs. 1 to 5 inclusive, I have therein represented a chute of substantially J form and having a front wall 1, a rear wall 2, and side walls 3 and 4. The said chute is supported in any suitable manner, as for example, by or between suitable beams or uprights 5 connected at their upper end by suitable cross beams 6. If desired, the said chute may be mounted within a suitable tank into or through which the material may be discharged from the chute. Also, I may provide suitable means, such, for example, as indicated in my Patent No. 971,778, for introducing a treating or other liquor into the upper portion of the chute. Such liquor may be employed for the purpose of treating the material, and may be of any suitable nature, as, for example, bleaching, dyeing, or finishing liquor, or it may be water or other liquid employed merely to facilitate the passage of the material through the chute.

The walls of the chute may be of any suitable material. I have represented the front wall 1 as composed of upright, wooden strips 7 and the rear wall as composed of wooden strips 8 transversely arranged. Preferably the front wall 1 of the chute is vertical, and preferably the rear wall 2 is also vertical, though within the scope of my invention either one or both of the walls may be inclined so as gradually to increase the cross sectional area of the chute in the direction of the passage of the material therethrough. Preferably, however, I provide for an increasing cross sectional area in the direction of the passage of the material through the chute by forming the side walls 3, 4 with stepped portions, as indicated at 9, 9′ in Fig. 2, it being understood that such stepped portions may be provided at any desired number of points between the top and bottom of said side walls.

The lower portion 10 of the rear wall 2 is suitably curved or inclined, as indicated in Fig. 1, the prolongation of said curved portion constituting the bottom of the chute and whereon the material is wholly supported just prior to its discharge from the chute. The provision of this curved or inclined portion of the chute makes the rear and bottom wall of the chute of greater length than the front wall thereof, assuming the same to be continued to a corresponding point, and this greater length is preferably substantially compensated for by the provision of some suitable lining, such, for example, as the lining 11 of sheet copper extending preferably throughout the curved portion of the rear wall of the chute.

If desired, I may provide any suitable means for circulating liquor through the chute; that is to say, the chute may be supported in a suitable tank, and the liquor discharged into the upper end of the chute, so as to pass down therethrough into the tank, and then to be withdrawn from the tank and re-introduced into the upper end of the chute, substantially as indicated in my Patent No. 971,778.

While the apparatus is mainly intended for treating the material in rope form, as, for example, narrow goods or yarn, it is also adapted for treating goods in lengths in a flat condition, and in order to accommodate different widths of goods, the side walls may be adjustable toward and from each other in any suitable manner. The front wall 1 may be adjusted in and out with respect to the rear wall 2, so as to facilitate the laying of the material in folds of the desired extent. I have herein represented the front wall as supported between the side walls 3, 4, and as provided adjacent its upper and lower ends with pairs of brackets 12, 13, having rack teeth 14 upon their under edges with which mesh pinions 15 upon rods 16 supported in suitable brackets 17 upon said sides. One of said rods 17 is provided with a hand wheel 18, and sprocket chains 19 are provided to compel uniform adjustment of the front wall 1 in and out upon rotation of said hand wheel 18.

At some suitable part of the front wall 1, and, as here shown, substantially in the horizontal plane of the upper end of the curved portion 10 of the rear wall, I provide a movable member, here shown as a former or apron 20 hinged at 21 to the lower edge of the vertical portion of the front wall, but so

that its inner face is flush with the inner face of the front wall. The said former or apron 20 is preferably formed in two parts, the lower part being adapted to be extended inwardly toward the curved rear wall 10 at suitable times, as, for example, upon the commencement of the piling down operation, thus constituting a temporary support for the material. For this purpose, I have represented the apron or former 20 as having hinged thereto at 22 a material supporting member 23 preferably of sufficient area substantially to fill or block the lower end of the chute when in an infolded position, as indicated in Fig. 1. I have provided self-acting means adapted to hold the said supporting member 23 in the position shown in Fig. 1 but permitting it to be positioned at substantially right angles thereto, in which latter case it acts as a prolongation of the main portion of the apron 20. For this purpose, I have herein provided a relatively heavy weight 24 secured by a bracket 25 and bolt 26 to the outer face of the supporting member 23. When the weight is in the position shown in Fig. 1, it holds the supporting member 23 across the mouth of the chute, and the weight may be sufficient thus to support the material until the weight is swung against the outer wall of the upper portion of the former 20 when the lower portion of the former will be in general parallelism in its new position with the curved rear wall 11, and press with the desired force against the material, or the weight 24 may be merely sufficient to support the material until a substantial amount thereof has accumulated in the chute, whereupon a further accumulation of the material causes the former to swing into a position at right angles to that shown in Fig. 1.

The side walls, 3, 4 of the chute are preferably of greater width at the lower end of the chute, as indicated in Fig. 1 and each preferably terminates in a vertical or upright edge 27, which is here represented as extending downward to a point 28 close to the termination of the curved portion 10 of the rear wall 2. The said side walls 3, 4 thus reduced in height, are continued forward, as indicated at 29, and are upwardly curved, as at 30, in general parallelism with the forward, upwardly turned extension 31 of the curved, rear wall 10. Viewing Fig. 1, it will be noted that the forward edge of the curved wall 10 terminates more or less abruptly adjacent to or in the plane of the upright edges 27 of the side walls, and that the continuation 31 of the curved portion of the rear wall lies at its rear in a lower plane than the said curved portion 10. In advance of the curved portion 10 and leading directly forward therefrom, I provide a series of relatively narrow strips 32, here represented as four in number, and which are tapered at their forward portions, so as to afford an exit for the material along their upper edges. The said strips 32 not only serve to support the material at spaced points, but they also form between them pockets or depressions and prevent the sudden pulling out of a long piece or portion of the material, as might occur if the material becomes choked for any reason, and then suddenly yields to the pull of the mechanism to which the material is fed from the chute. In other words, the strips localize the discharge of the material and restrict the length thereof that can be pulled out at any given time, even under undue tension or strain.

The provision of a depression at the leading edge of the curved portion 10 adjacent to the supporting board 33 is an important feature of my invention. As hereinafter set forth, it is evident that the supporting board 33 may be positioned at any suitable angle and that, if desired, it may be inclined with its inner face directed inwardly and downwardly. The material descending through the chute or receiver accumulates in folds or layers which contact with the inner face of the supporting board 33, whether the latter be vertical or inclined, and also with the inner face of the curved portion 10, thus extending across the discharge throat. As the material is drawn out through the discharge throat the depression at the leading edge of the curved portion 10 permits that portion of the column which is contacting with the inner face of the supporting board 33 to gradually move downward toward the exit throat thus preventing any clogging or binding of the material. In other words, the depression at the leading edge of the curved portion 10 effects an easing up of the material bearing against the inner face of the supporting board 33 so that the material is drawn through the exit throat both from the inner face of the supporting board 33 and from the upper face of the curved portion 10 with equal tension and without undue strain.

At a suitable point in advance of the upright edges 27 of the sides 3, 4, I provide a supporting board 33, here shown as upright, and having a series of spaced strips 34 secured or formed upon its inner face and against which the material accumulates in its passage through the lower end of the chute. These strips are shown as tapered downwardly and preferably the lower end of the supporting board 33 is lined with sheet copper or other like substance to facilitate the passage of the material through the chute.

I have herein represented the supporting board 33 as mounted or carried by the side walls 3 and 4 and preferably adjusted with respect thereto. Herein for the purpose, I have represented said board as provided

with T-shaped brackets, the horizontal members 37 of which are slotted as indicated at 38 for the reception of bolts 39, by which the said supporting board may be secured in any position in and out or up and down with respect to the forward terminals of the rear, curved wall 10 and the strips 32. It will be apparent that the said supporting board 33 may be swung upon the bolts 39 as pivots, or moved in and out in a right line.

In coöperation with the supporting board 33, I preferably provide means to facilitate the discharge of the material through the mouth of the chute. Herein for the purpose, I have represented a roller 40 which may be continuous and may if desired be driven, but which preferably is sectional as indicated in Fig. 5, so that only that portion thereof with which the band or rope of yarn or material is in contact need be rotating at any given time. In this manner, I very markedly reduce the strain upon the material when in rope-like form which would necessarily result from the turning of the entire roller by the stress of the material. While the sectional roller may be of any suitable character, I preferably mount the same loosely upon a fixed shaft or rod 41. Each member 42 of the roller 40, excepting one of the end members, is provided with a metallic or other suitable sleeve 43 fitted tightly onto a portion of the roller of reduced diameter, as indicated at 44, and which encircles a correspondingly reduced portion 45 of the adjacent section of the roller. In other words, the roller sections are nested one onto another and the entire periphery of the composite roller is unbroken. The roller sections 42 are adapted to rotate freely about the shaft or rod 41, but are held against longitudinal movement thereon in any suitable manner, as for example, by the end supports for the roller. Each roller section is preferably formed of wood and the ring-like members 43 are of metal or any suitable material that will not corrode or impair the fabric.

The shaft or rod 41 is preferably mounted in short uprights 46 positioned in advance of the supporting board 33, and above the said roll 40 there may be supported a dash or drain or guide board 47. If desired, the roller 40 and also the board 47 may be supported by the board 33 on suitable extensions therefrom, so that all the said members may be adjusted together by means of the slotted brackets 36, 37.

The material discharged from the chute may be passed to any subsequently acting mechanism or may be re-passed through the chute, and if desired I may provide the latter with a suitable guiding device to shake out the wrinkles from the material after its passage through the chute. For that purpose, I have in Figs. 1, 2 and 3, represented the uprights 5 as provided with cross pieces 48 projecting beyond the front wall of the chute and having mounted thereon one or more transverse strips 49 slotted as indicated at 50, through which the material may be reversely passed for the purpose stated.

In order to introduce the material into the chute or other receiver, I provide suitable means to traverse the material when in rope or yarn-like form, and then to fold it back and forth in the upper end of the chute, or merely to fold the material if the latter be wide goods. Assuming that the material is in rope or yarn form, it is introduced from the apparatus by which it was last previously treated, or it is reintroduced from the discharge end of the chute, through a suitable pot-eye 51 represented in Figs. 1, 2 and 3. In order to traverse the material from side to side of the chute, I provide any suitable mechanism, such for example, as a sprocket chain 52 represented in Fig. 2 as mounted upon suitable pinions 53, 54, the latter being driven by suitable sprocket gearing 55 from the main drive shaft. The pot-eye is traversed to and fro by the chain 52 and is guided in its to and fro movement by upper and lower guides 56 in a manner not necessary more fully to describe. If desired, it may be traversed in any other manner, as for example, in the manner shown in my Patent No. 971,778.

In order to introduce the material into the upper end of the chute or other receiver, I have herein represented a main driveshaft 57 having thereon fast and loose pulleys 58, 59 whereby it may be driven from any suitable source. Upon the said shaft 57 is fast a suitable drum 60, about which the material passes, it being directed thereto from the pot-eye 51. The main shaft 57 is supported in suitable bearings in uprights or castings 61 themselves supported upon the upper ends of the uprights 5. The material after passing about the upper end of the drum 60 thence passes between the drum and the squeeze roll or rider roll 62, which is supported at the lower ends of links 63 pivoted as indicated at 64 in the upper end of the brackets or uprights 61. The squeeze roll 62 rests by gravity against the material and may expel a considerable portion of the liquor therefrom, if the material be received from an apparatus wherein it has been subjected to liquid treatment.

Below and between the drum 60 and roll 62, I mount a chute, to which to and fro movement is imparted to fold the material in the upper end of the receiving or storage chute, and which is therein represented as composed of two spaced boards or plates 65, 66, each of which is provided at its ends with metallic hangers 67, the upper ends of which encircle the supports of two clearing rolls or shafts 68, 69, whereby the said

boards or plates are supported. It will be observed that the said plates or boards 65, 66 are independently supported as contra-distinguished from the construction shown in my Patent No. 971,778.

The boards or plates 65, 66 are connected adjacent their lower ends by bars or strips 70, and in order to impart to and fro or swinging movement to said boards or plates, I have herein provided the following mechanism. Upon the main drive shaft 57 is provided a pinion 71 (see Fig. 4) meshing with a pinion 72 upon a stud shaft 73 (see Figs. 2 and 4), the latter also having thereon a sprocket pinion 74. Fast upon the shafts or rollers 68, 69 are sprocket pinions 75, 76 and mounted on a shaft 77 in a suitable hanger 78 is a sprocket gear 79, while upon the opposite end of said shaft 77 is a crank arm 80 connected by link 81 to the plate or board 66. A sprocket chain 82 passes as indicated in Fig. 4, about the said sprocket pinions 74, 75, 76 and sprocket gear 79, the said sprocket chain being driven in the direction indicated by the arrow in Fig. 4, thereby to swing the board 65, 66 to and fro, and also to rotate the rollers or shafts 68, 69, preferably at a relatively low rate of speed compared with the peripheral speed of the drum 60. The function of the shafts or rollers 68, 69 is to clear the drum 60 and roller 62 from any material that might adhere thereto, and for the purpose each is driven in an opposite direction with respect to the drum 60 and roller 62, and with which they are in contact or substantially in contact. The to and fro movement imparted by the crank 80 and link 81 is sufficient to lay the material in folds in the upper end of the chute, the length of each fold being substantially the depth of the chute from front to rear. By varying the length of the crank arm 80, the length of the folds may be likewise varied.

In Fig. 6 I have represented a somewhat different construction of feeding mechanism. Therein I have provided, as in the construction already described, the drum 60 and the squeeze roll or rider roll 62 and also the plates or boards 65, 66 which constitute a feeding chute and which are oscillated in the manner previously described. At the upper edges of the said plates 65, 66 I provide the clearing rolls or shafts 68, 69 as previously described and mount thereon sprocket pinions 83, 84 and also provide an idler or sprocket pinion 85, suitably supported upon the uprights or castings. The main shaft 57 is provided with a sprocket pinion 86 and a sprocket chain 87 is passed about said sprocket pinions 83, 84, 85 and 86 and is driven in the direction of the arrow adjacent thereto in Fig. 6, thereby rotating the clearing rolls or shafts in directions respectively opposite to the direction of rotation of the drum 60 and the squeeze roll or rider roll 62.

If desired, I may provide distributing rollers mounted at or adjacent the lower edges of the plates 65, 66 and in Figs. 6 and 10 I have represented two such rollers at 88 and 89. These rollers which may be of any suitable length, are suitably supported for rotation upon the plates 65, 66 and are herein represented as provided with sprocket pinions 90, 91 which are driven by sprocket chains 92, 93 in the direction of the descent of the material between the feeding plates 65, 66. The said sprocket chains 92, 93 are passed respectively about the sprocket pinions 94, 95 mounted upon the shafts 68, 69 and which are herein represented as of somewhat larger diameter than the sprocket pinions 83, 84 so as to drive the distributing rollers 88, 89 at a higher speed than the clearing rolls or shafts 68, 69. It is evident, however, that the distributing rollers, if employed, may be driven at any suitable speed since the purpose thereof is merely to prevent any possible clogging of the material between the plates 65, 66. It is not necessary that the distributing rollers 88, 89 be so spaced as to contact at all times with the opposite faces of the material as they may be so spaced as to contact therewith only when there is a tendency of the material to thicken or clog between the plates 65, 66. The distributing rollers 88, 89 may have smooth or other peripheries and in Fig. 10 I have represented them as provided with a series of wings 96 which may be of any suitable extent and any number of which may be provided so as in effect to act as fans and create a draft or suction which will aid in feeding the material through the feeding chute.

If desired, I may provide the inner face of the chute or receiver with one or more positively driven rolls. If provided, these rolls are preferably positioned at the inner face of the curved portion 10 of the rear wall 2 and in Figs. 8, 9 and 10 I have represented two such rolls 97 and 98 which are positioned at the extreme lower end of the said curved portion 10. These rolls may be of any suitable character and form but preferably each of said rollers is provided with annular enlargements or shoulder portions 99 which are suitably spaced to provide therebetween recessed portions 100. The annular enlargements 99 of each roller are opposite the recessed portions 100 of the other roller and the described construction provides an increased or enlarged surface to contact with and effect the forward movement of the material. It will be observed, viewing Fig. 8, that immediately in advance of the rollers 97, 98 I provide a material guiding surface 101 the inner edge of which is at a lower level than the leading edge of

the curved surface 10, thus providing a depression 102 for the purpose fully described with reference to the construction shown in Fig. 1.

The positively driven roll or rolls of any suitable type may be omitted, but if employed, any suitable number thereof may be used as example, one, two, three or more. If employed, they are driven in any suitable manner and when a series thereof is employed, they are rotated in the same direction. I have in Fig. 7, represented suitable driving means consisting of a vertical shaft 103 having at its upper end a beveled gear 104 driven by a beveled gear 105 mounted upon a shaft 106 and having a sprocket pinion 107 driven by sprocket chain 108 passing about a suitable sprocket pinion 109 mounted upon the shaft 77. The said rolls may be driven in this manner at any suitable speed. At its lower end the shaft 103, which is mounted in suitable hangers 110, is provided with a worm 111 meshing with a worm wheel 112 upon the shaft of the roller 98. The rollers 97, 98 are both provided with sprocket pinions about which is passed a sprocket chain 113 whereby said rollers are both driven in a forward direction as indicated by arrows in Figs. 7 and 8. Obviously any other suitable driving mechanism may be employed but if the rollers be used they are preferably driven at a slow rate of speed corresponding substantially to that of the desired rate of travel of the material through the chute or receiver.

In Fig. 11 I have somewhat diagrammatically represented my invention as adapted to delivering material into any one of a series of receptacles. In said figure I have represented a series of receptacles 114, 115, and 116 which may be rectangular in cross section and upon which are mounted suitable tracks or rails 117. Thereon I mount the feeding mechanism 118 which is generally similar to that shown in Figs. 1 to 6 inclusive and which is provided with a suitable platform 119 having wheels 120 supporting said feeding mechanism upon the tracks or rails 117. The feeding mechanism shown in said Fig. 11 is preferably substantially similar to that shown in Figs. 1 to 6 inclusive but in addition thereto I have provided the shaft 121 whereon the drum 122 is mounted with a spur gear 123 which is adapted to mesh with any one of a series of pinions 124, 125, 126 mounted upon a shaft 127 supported in suitable hangers 128 longitudinally of the bins or receivers 114, 115, 116. The shaft 127 is provided with fast and loose pulleys 129, 130 whereby it may be driven at any suitable speed. When it is desired to feed the material into the chute or receiver 114 the feeding mechanism is positioned as indicated in Fig. 11 with the spur gear 123 meshed with and driven by the spur pinion 124. When it is desired to feed material into the bin or receiver 115 the feeding mechanism is moved to the right, viewing Fig. 11, until the spur gear 123 is brought into mesh with the spur pinion 125. Similarly the feeding mechanism may be moved still farther to the right when it is desired to feed material into the bin or receiver 116.

If the bins or receivers be arranged one in advance of another, instead of side by side, I may provide any suitable mechanism to move the feeding mechanism into position over each of said bins or receivers.

The apparatus herein shown is adapted to treat material either in rope or flat form, whether woven or in the form of warp. The material may be passed repeatedly through the chute or other receiver, if desired, and may be treated by passing it in succession through a series of chutes wherein different liquors are circulated or provided. It will be evident that the chute of the apparatus is composed wholly or substantially wholly of fixed parts, and that the friction of the material as it is conveyed therethrough is reduced substantially to a minimum. It is also evident that instead of treating the material in the chute with liquor as described, the chute may be used as a time receiver or storage receptacle, from which the material may be drawn in any suitable manner.

By reason of the hereinbefore described relation of the supporting board 33 and the lower end of the curved wall 10, the lower end of the column of folded material is supported with the bends or folds resting against said parts, and the material may be drawn with equal facility from either of said parts without undue choking of the outlet, the area of which may be varied by the adjusting means described. It is, however, important that the material be sufficiently choked at or adjacent the delivery mouth to prevent the same from too free discharge or from flowing off into the tank if treating liquor be provided. I thus restrict the material to a gradual and substantially regular discharge.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding chute composed of independently mounted front and rear members, means to impart to and fro movement to said feeding

chute, and means to traverse the material transversely of said feeding chute.

2. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding drum extending substantially from side to side of the receiver, a feeding chute mounted below the discharge portion of said drum, means to impart to and fro movement to said feeding chute, and means to traverse the material from end to end of said drum.

3. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding drum coöperating squeeze roll positioned at the side thereof and resting by gravity thereagainst, a feeding chute mounted below the engaging portions of said drum and roll, and means to impart to and fro movement to said feeding chute.

4. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding drum, means to traverse the material from end to end of said drum, a pair of independently pivoted plates or boards constituting front and rear walls of a feeding chute, and means to reciprocate the latter.

5. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, independently mounted spaced feeding boards or plates adjacent said intake end, means to introduce material between said feeding boards, means to impart movement to said material-introducing means and to move said boards or plates transversely to the mouth of the receiver.

6. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding drum throughout spaced feeding boards independently pivoted above the chute, crank means to impart to and fro movement thereto, and means to traverse the material along said drum.

7. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding roll or drum positioned above said intake end, and a clearer therefor.

8. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding roll or drum and co-acting squeeze roll above said intake end, and clearer devices for said roll or drum and said feed roll.

9. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding roll or drum and co-acting squeeze roll above said intake end, clearer devices for said roll or drum and said feed roll, and means to rotate said clearer devices in the direction of movement of the material into the chute.

10. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, a feeding chute mounted above said intake end, means to reciprocate the same, and distributing rollers mounted at the lower end of said feeding chute.

11. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, spaced feeding boards independently pivoted above said chute, means to impart to and fro swinging movement thereto, and a distributing roller mounted at the lower end of each of said feeding boards.

12. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material in-take end independently mounted, spaced feeding boards or plates adjacent said intake end, means to impart movement thereto transversely to the mouth of the receiver and distributing rollers mounted upon the lower portions of said feeding boards or plates.

13. Apparatus for treating textile material in lengths comprising a chute or receiver having an upper material intake end, co-acting feeding rolls therefor, independently mounted, spaced feeding boards or plates adjacent said feeding rolls and between which the material is directed thereto, said feeding boards, distributing rollers at from, clearing rolls at the upper end of the lower end thereof, and means to reciprocate said feeding boards.

14. Apparatus for treating textile materials in lengths comprising a chute or receiver having an upper material in-take end, feeding rollers, a feeding chute adjacent thereto, and having clearing rollers at its upper portion and distributing rollers at its lower portion, and means to reciprocate said feeding chute.

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

ISAAC E. PALMER.

Witnesses:
W. M. Brown,
Irving U. Townsend.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."