

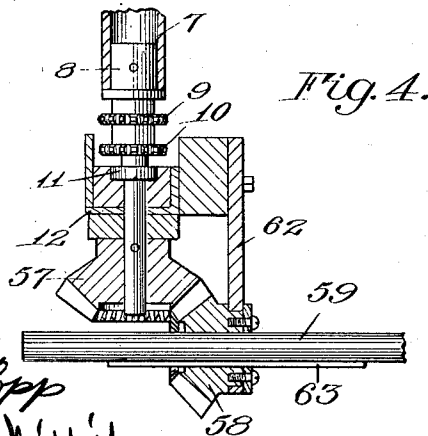
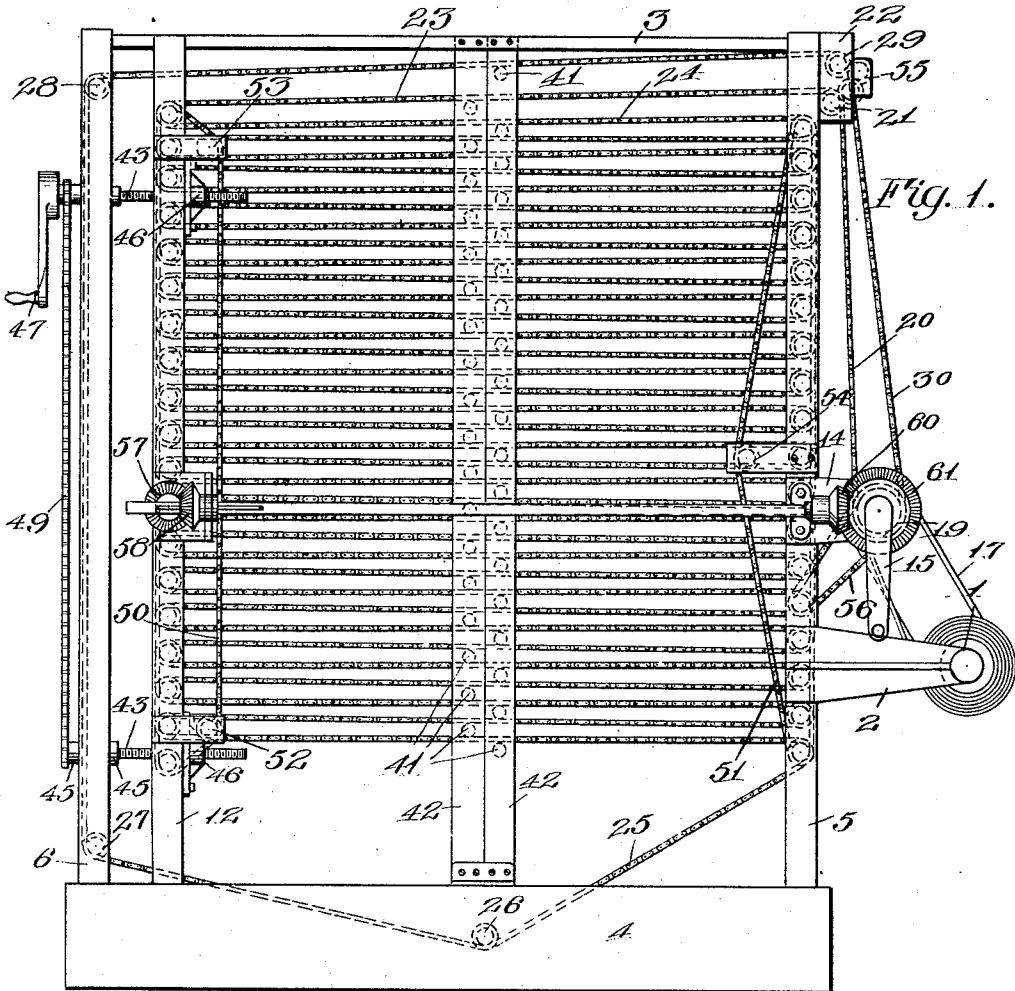
N. ZUCK.
 DRYING RACK.

APPLICATION FILED FEB. 24, 1911.

1,007,763.

Patented Nov. 7, 1911.

3 SHEETS-SHEET 1.



Witnesses

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 Russell B. Saffitt

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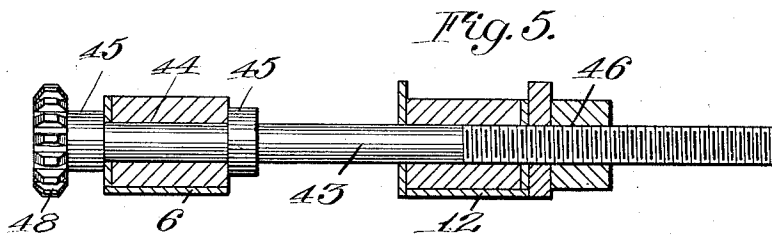
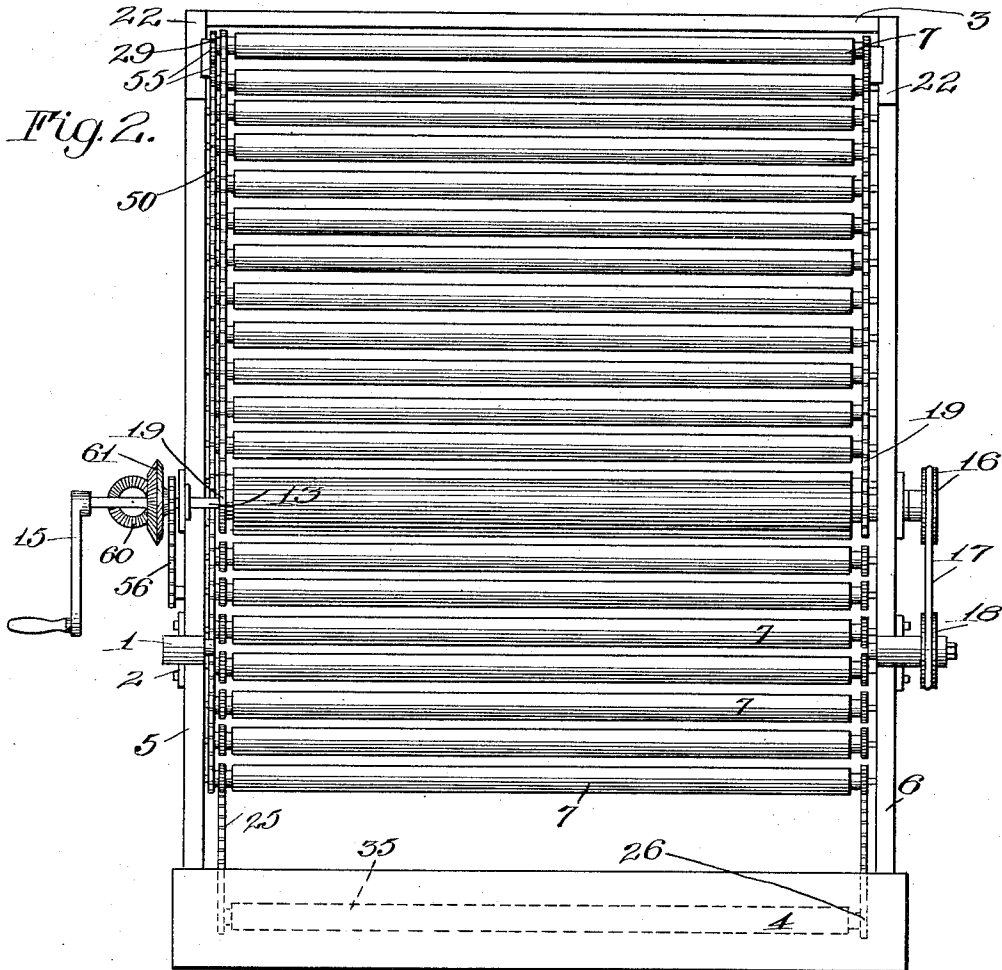
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3 SHEETS-SHEET 2.



Inventor
Nicholas Zuck

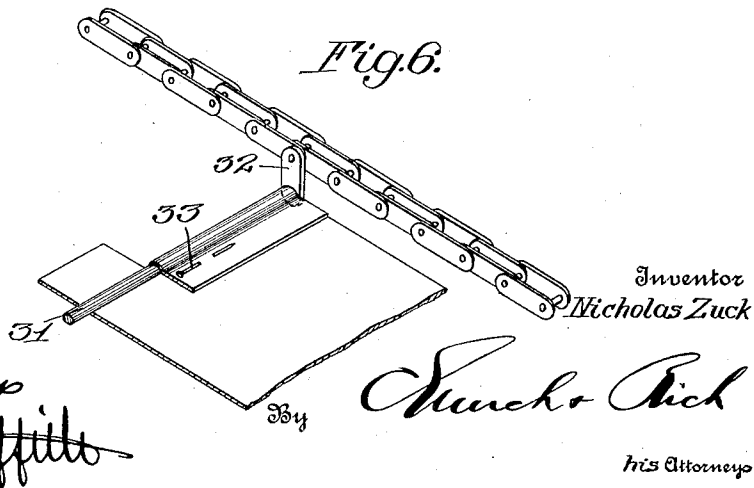
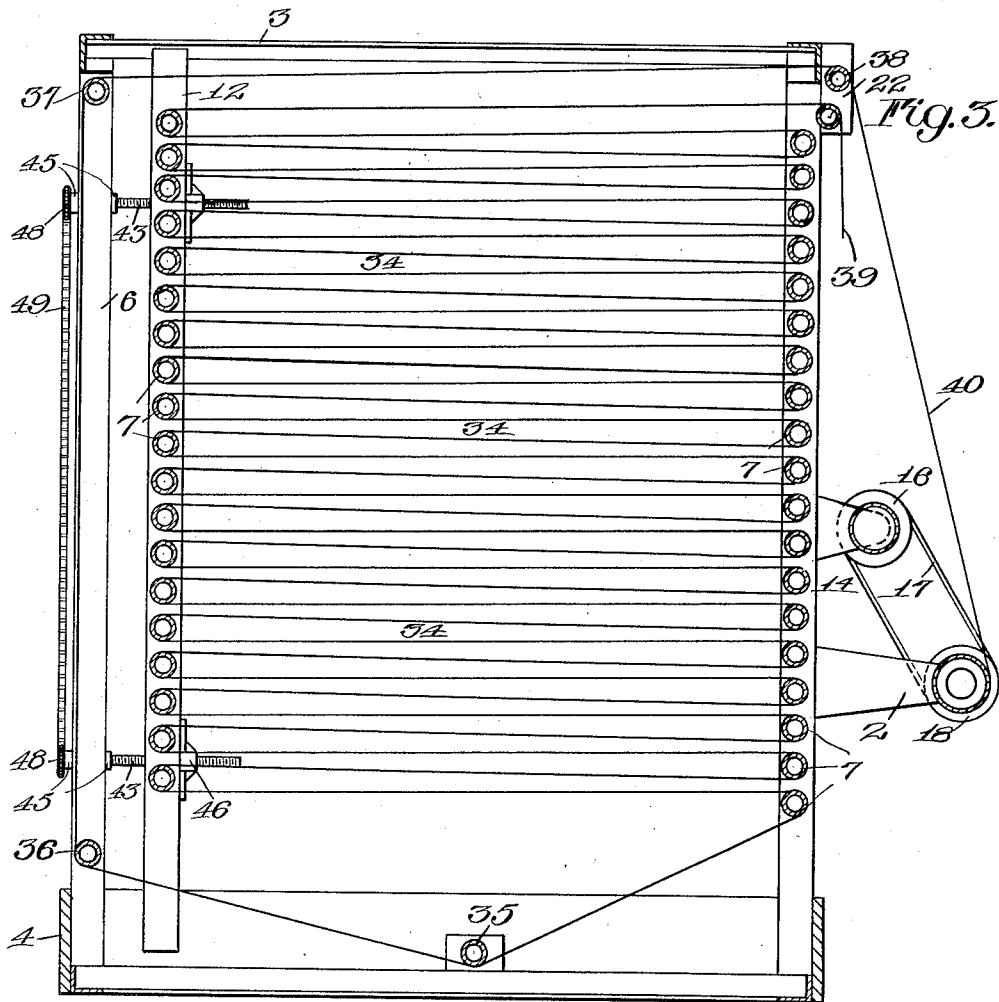
Witnesses

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UNITED STATES PATENT OFFICE.

NICHOLAS ZUCK, OF ROCHESTER, NEW YORK, ASSIGNOR TO IMPROVED COLD WATER SHRINKING MACHINE COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

DRYING-RACK.

1,007,763.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed February 24, 1911. Serial No. 610,621.

To all whom it may concern:

Be it known that I, NICHOLAS ZUCK, of Rochester, in the county of Monroe and State of New York, have invented certain
5 new and useful Improvements in Drying-Racks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings and to the reference-numerals marked thereon.

My present invention relates to drying apparatus and more particularly to such as is adapted for drying sheet material in a continuous web or strip, and it has for its
15 object to provide a simple machine of this character that will occupy very little space in proportion to its capacity and will so dispose the material acted upon as to cause uniform and rapid evaporation of the moisture contained therein.

A further object of the invention is to provide a drying rack on which woolen goods and other cloths may be dried and shrunk in an improved manner as a result
25 of which it will be delivered from the machine with a better finish and in a more favorable condition than usually follows this operation, the machine being adapted for treating the goods in the piece.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the
35 specification.

In the drawings: Figure 1 is a side elevation of a drying rack constructed in accordance with and illustrating one embodiment of my invention; Fig. 2 is a front elevation thereof; Fig. 3 is a sectional view taken
40 from front to rear in order to show, diagrammatically, the manner in which the goods is disposed upon the rack; Fig. 4 is a detail section, enlarged, taken substantially on the line 4—4 of Fig. 1, showing the manner in which the driving power is relayed through the machine; Fig. 5 is a detail section, enlarged, of one of the adjusting devices through the operation of which
45 shrinkage in the goods is compensated for, and Fig. 6 is a detail perspective, enlarged, illustrating the manner in which the goods is connected to the carrier.

Similar reference numerals throughout the several figures indicate the same parts. 55

As before indicated, the invention is particularly applicable to the treatment of cloth, the machine of the present embodiment having been designed for the shrinking of woolen and other goods in the piece
60 preparatory to making them up into articles of clothing and the goods may be first subjected to any desired dampening process, such, for instance, as that provided for by the machine illustrated in my companion
65 application, in which case the goods, rolled in a continuous length upon the shaft or center 1 is presented to the machine of the present embodiment by inserting the said shaft in bearing brackets 2 projecting at the
70 front of the main frame. This frame, in the present instance, is of a skeleton design embodying upper and lower rails 3 and 4 and corner uprights 5 and 6 at the front and rear, respectively. 75

A plurality of preferably laterally extending and horizontal shafts are carried by the frame and arranged in spaced rows at the front and rear, respectively, which shafts may be of like construction and a portion of
80 only one of them is shown in detail in Fig. 4. They comprise a tubular body portion 7 forming intermediate roller supports at the opposite ends of which are portions 8 carrying inner and outer sprockets 9 and 10, and
85 beyond these sprockets the portions 8 are suitably journaled, as by bearings 11, in the main frame, the journals of the shafts of the front row being supported in the front uprights 5 and those in the rear row
90 in suitable floating supporting bars or members 12, which will be hereinafter further described.

A drive shaft 13 is supported on brackets 14 on the uprights 5 to extend across the
95 front of the machine parallel with the roll 1 and is, in the present instance, shown provided with a crank 15 for manual operation thereof. A pulley 16 at the opposite projecting end of the shaft carries a belt 17
100 passing over a pulley 18 on the shaft or center 1 for turning the latter to wind the goods on or off and the drive shaft also carries sprockets 19 turning in the planes of the sprockets 9 at the respective ends of
105 the shafts or rolls 7. An endless chain or

conveyer 20 passes around each sprocket 19, upwardly over an idler sprocket 21 on a bracket 22, thence rearwardly at 23 around the inner sprocket 9 of the top-most roller in the rear row and forwardly at 24 to the sprocket 9 of the top-most roller in the front row forming a loop 23—24 between the two rows. This loop is duplicated to any extent desired by passing the conveyer back and forth over the respective roller shafts according to the number of the latter employed. The conveyer finally emerges, in the present instance, at 25 from the lowermost shaft of the front row and from thence passes over an idler 26 on the bottom rail 4 of the frame, rearwardly over idlers 27 and 28 on a rear upright 6 and forwardly over an idler 29 on the bracket 22, whereby it encompasses the looped portion and finally returns to the driving sprocket 19 at 30. The end of the roll of goods on the shaft or center 1 is connected to the carrier formed by these conveyers or chains, to lie between the same, by any suitable means but I prefer to utilize, in the present embodiment, a bar 31 extending transversely between the chain and connected at its opposite ends to each, as by links 32. The end of the piece of goods is passed upwardly from the roll and attached to the bar by means of any suitable fasteners, such as the pin 33 shown in Fig. 6, while the said bar is carried on the stretch of chain 20 just above the driving shaft 13, the intermediate portion of which latter is preferably enlarged, as shown in Figs. 2 and 3, to constitute a guiding roll.

It will thus be seen that as the driving shaft is rotated to the right the length of goods will be drawn off the roll and, as it follows the loops of the conveyer, will be looped back and forth over the supporting rolls 7 in the same manner as the chain, but intermediate the latter, the loops being indicated at 34 in Fig. 3, and in this way the advance portion, after leaving the supporting members, travels over idler rollers 35, 36, 37 and 38 and by a continuous movement in the same direction is delivered back to the shaft or center 1 at the front of the machine, being the same side at which it entered. In Fig. 3 the goods is shown hung upon the rack, the rear end thereof, indicated at 39, being free, and the advance end 40 being connected again to the shaft 1 for winding off. The rollers 7, it will be seen, support the goods in flat lengths and as they are smooth and are driven with the goods they operate to preserve the finish and prevent distortion.

Of course, any suitable means for heating or circulating the air in and about the rack may be utilized to hasten the drying operation, but I believe that best results are obtained in most instances without the use of

heated air and in order to prevent the looped portions, heavy with moisture, from sagging at times into contact with each other whereby the air would not have a free circulation, natural or otherwise around and against them, I prefer to provide intermediate supporting members 41 that extend between the loops parallel with the main supporting rollers approximately centrally of the same and carried, in the present instance, by the bars or uprights 42.

Inasmuch as it is usually desired to give the goods free opportunity for natural and uniform shrinkage during the drying process, I make provision for varying the distance between the rows of supports so that the latter may be eased off as the looped portions shorten up. Two crank shafts 43 are, for this purpose, journaled in each rear upright 6, as at 44, between collars 45 thereon (Figs. 1 and 5) the ends of which are threaded at 46 in the floating bars 12 before referred to as carrying the bearings of the rearmost row of supporting shafts 7. One of these shafts has an operating crank 47 and the motion thereof is imparted to the other by means of a sprocket 48 on each and a chain 49 passing over the same. Through this mechanism the rear row of supports may be moved bodily toward and from the other roll, as desired.

The inner sprockets 9 on the roller shaft 7 have been before described (Fig. 4) as carrying the conveyer chain. The purpose of the other sprocket 10 of each is to cooperate with one or the other of sprocket chains 50 or 51 that run on idlers 52, 53 and 54 and lock all the rolls in each row together for joint movement so that the motion of the conveyers will be uniform at all points and the attaching bar 31 may travel parallel with the supports at all times. To the same end, the idlers 21 and 29 are connected by gearing 55.

When a large number of supporting elements are used, providing for a great many loops, the strain upon the conveyer chain of the carrier is considerable, particularly on the portions beyond the loops that are traveling toward the drive shaft. To relieve this strain, or rather to distribute it more evenly throughout the length of the chain, it is preferable to relay the driving power and apply it directly at one or more points to the intermediate portions and for this purpose I drive one or more of the intermediate shafts of the front row by means of a sprocket 56 run from the drive shaft 13, and one in the rear row by providing the projecting end thereof with a gear 57, as shown in Fig. 4, that meshes with a gear 58 on a counter-shaft 59, a second gear 60 on the latter meshing with a gear 61 on the drive shaft. The gear 58 is held in position by a bracket 62 that also supports that end

of the countershaft and is feathered on the latter at 63 to the end that the driving couple may not be disturbed by the adjustments of the floating bar 12, as will be understood.

Of course, the machine may be arranged, if desired, in such manner that the goods will be disposed in vertical instead of horizontal loops as by turning the rack illustrated upon its side, but I prefer the horizontal disposal thereof as it prevents the moisture from accumulating at any one point.

I claim as my invention:

1. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a carrier embodying a flexible element looped back and forth between the rows at one end of the supporting members, means for driving the carrier and means for attaching the end of a web of goods to the carrier to loop it back and forth over the supporting members.

2. In a drying rack, the combination with a plurality of supporting members arranged in spaced vertical rows, of a carrier comprising a flexible element looped back and forth horizontally between the rows at each end of the supporting members, means for driving the carrier and means for attaching the end of a web of goods to the carrier between the flexible elements thereof to loop it back and forth over the supporting members as the carrier is operated.

3. In a drying rack, the combination with a plurality of supporting members arranged in spaced vertical rows, of a carrier comprising a flexible element looped back and forth horizontally between the rows at each end of the supporting members, means for driving the carrier, means for attaching the end of a web of goods to the carrier between the flexible elements thereof to loop it back and forth over the supporting members as the carrier is operated and devices extending transversely of the carrier between the looped portions of the goods to provide additional central supports for the latter and prevent them from sagging.

4. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a carrier comprising a flexible element looped back and forth between the rows at each end of the supporting members, means for driving the carrier and means for attaching the end of a web of goods to the carrier to loop it back and forth over the supporting members as the carrier is operated comprising a member extending parallel with the supporting members and connected to both flexible elements.

5. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a carrier comprising a flexible endless conveyer looped back and

forth between the rows at each end of the supporting members, means for driving the carrier and means for attaching the end of a web of goods to the latter to lie between the conveyers whereby the goods is looped back and forth over the supporting members as the carrier is operated.

6. In a drying rack, the combination with a supporting frame carrying a plurality of rollers arranged in spaced rows, of sprockets on the roller shafts at opposite ends thereof, a carrier comprising a pair of endless chains looped back and forth between the sprockets, means for attaching the end of a web of goods to the carrier between the chains and means for driving the latter to loop the web back and forth between the rollers.

7. In a drying rack, the combination with a supporting frame carrying a plurality of rollers arranged in spaced rows, of sprockets on the roller shafts at opposite ends thereof, a carrier comprising a pair of endless chains looped back and forth between the sprockets, means for attaching the end of a web of goods to the carrier between the chains, means for driving the latter to loop the web back and forth between the rollers, a second sprocket on the corresponding ends of each roller shaft in one row, and an endless chain coöperating therewith to connect the shafts for joint movement.

8. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a carrier embodying an endless flexible element looped back and forth between the rows at one end of the supporting members, means for attaching the end of a web of goods to the carrier to loop it back and forth over the supporting members, the said flexible element being extended from the last supporting element of one row back to the point of starting to deliver the web from the same side of the machine at which it enters with a continued movement of the carrier.

9. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a drive shaft, a carrier comprising a flexible endless conveyer extending therefrom and looped back and forth between the rows at each end of the supporting members, said conveyer being finally extended back to the drive shaft whereby it encompasses its looped portions, and means for attaching the end of a web of goods to the carrier to lie between the conveyers and be looped back and forth over the supporting members, as the carrier is operated.

10. In a drying rack, the combination with a plurality of supporting members arranged in spaced rows, of a drive shaft, a carrier comprising a flexible endless conveyer extending therefrom and looped back

and forth between the rows at each end of the supporting members, said conveyer being finally extended back to the drive shaft whereby it encompasses its looped portions, means for attaching the end of a web of goods to the carrier to lie between the conveyers and be looped back and forth over the supporting members as the carrier is operated and means for supporting a shaft or center parallel with the drive shaft to feed on or take off the goods by a continued movement of the carrier in one direction.

11. In a drying rack, the combination with a plurality of shafts arranged in spaced rows having sprockets at their ends and intermediate supporting rolls, of a drive shaft, a carrier comprising endless chains extending from the drive shaft, looped back and forth over the sprockets of the first mentioned shafts, and back to the drive shaft, and means for attaching a web of goods to the carrier to lie between the chains and be looped back and forth over the supporting rollers as the carrier is operated.

12. In a drying rack, the combination with a plurality of shafts arranged in spaced rows having sprockets at their ends and intermediate supporting rolls, of a drive shaft, a carrier comprising endless chains extending from the drive shaft, looped back and forth over the sprockets of the first mentioned shafts, and back to the drive shaft, means for attaching a web of goods to the carrier to lie between the chains and be looped back and forth over the supporting rollers as the carrier is operated and means for driving one of the intermediate supporting shafts of one row directly from the driving shaft.

13. In a drying rack, the combination with an open frame, and a plurality of shafts arranged in spaced rows thereon having sprockets at their ends and intermediate supporting rolls, of a carrier comprising endless chains looped back and forth over the sprockets of said shafts, means for driving the carrier, means for attaching a web of goods to the latter to lie between the chains and be looped back and forth over the supporting rollers as the carrier is operated, a support for the bearings of one row of shafts movable toward and from the other and means for so adjusting it on the frame comprising a crank shaft journaled in one part and threaded into the other.

14. In a drying rack, the combination with a main frame and a plurality of shafts arranged in spaced rows thereon having sprockets at their ends and intermediate supporting rolls, of a drive shaft, a carrier comprising endless chains extending from the drive shaft, looped back and forth over the sprockets of the first mentioned shafts and back to the drive shaft, means for attaching a web of goods to the carrier to lie between the chains and be looped back and forth over the supporting rollers as the carrier is operated, a support for the bearings of one row of shafts movable toward and from the other, means for so adjusting said support on the frame, a countershaft operated by the drive shaft and a sliding gear thereon for driving one of the intermediate shafts in the adjustably mounted row.

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Witnesses:

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