March 25, 1941. A. O. HURXTHAL 2,236,430

RUG DRIER

Filed April 30, 1933 7 Sheets-Sheet 1

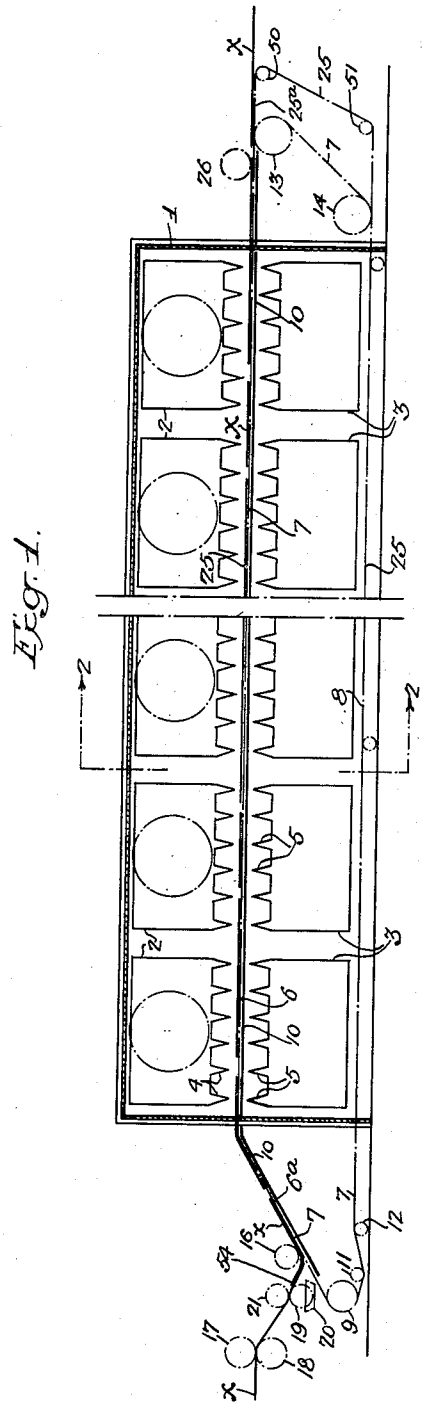

Fig. 1.

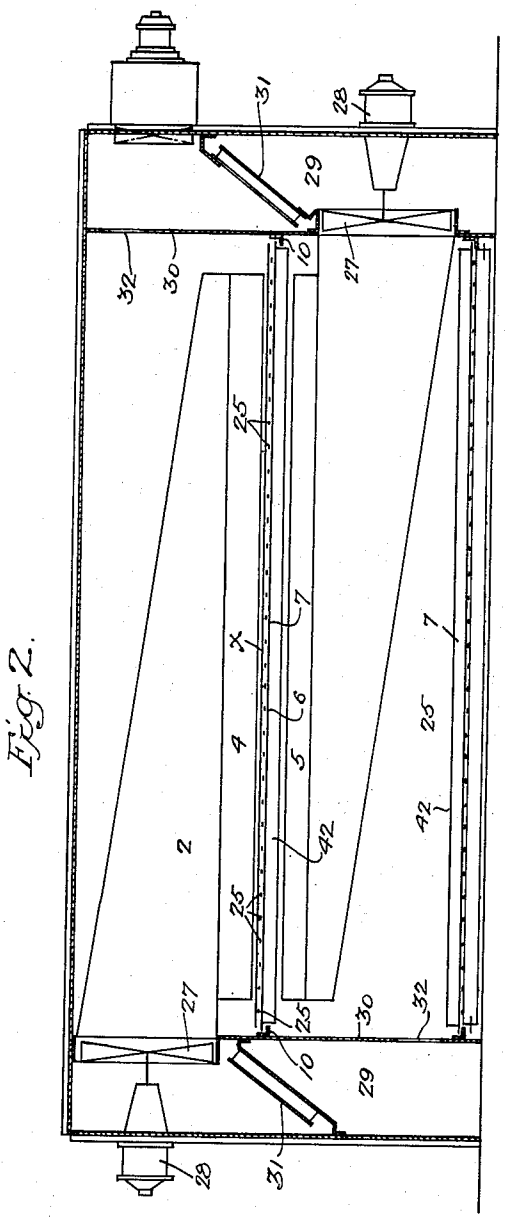

Fig. 2.

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RUG DRIER

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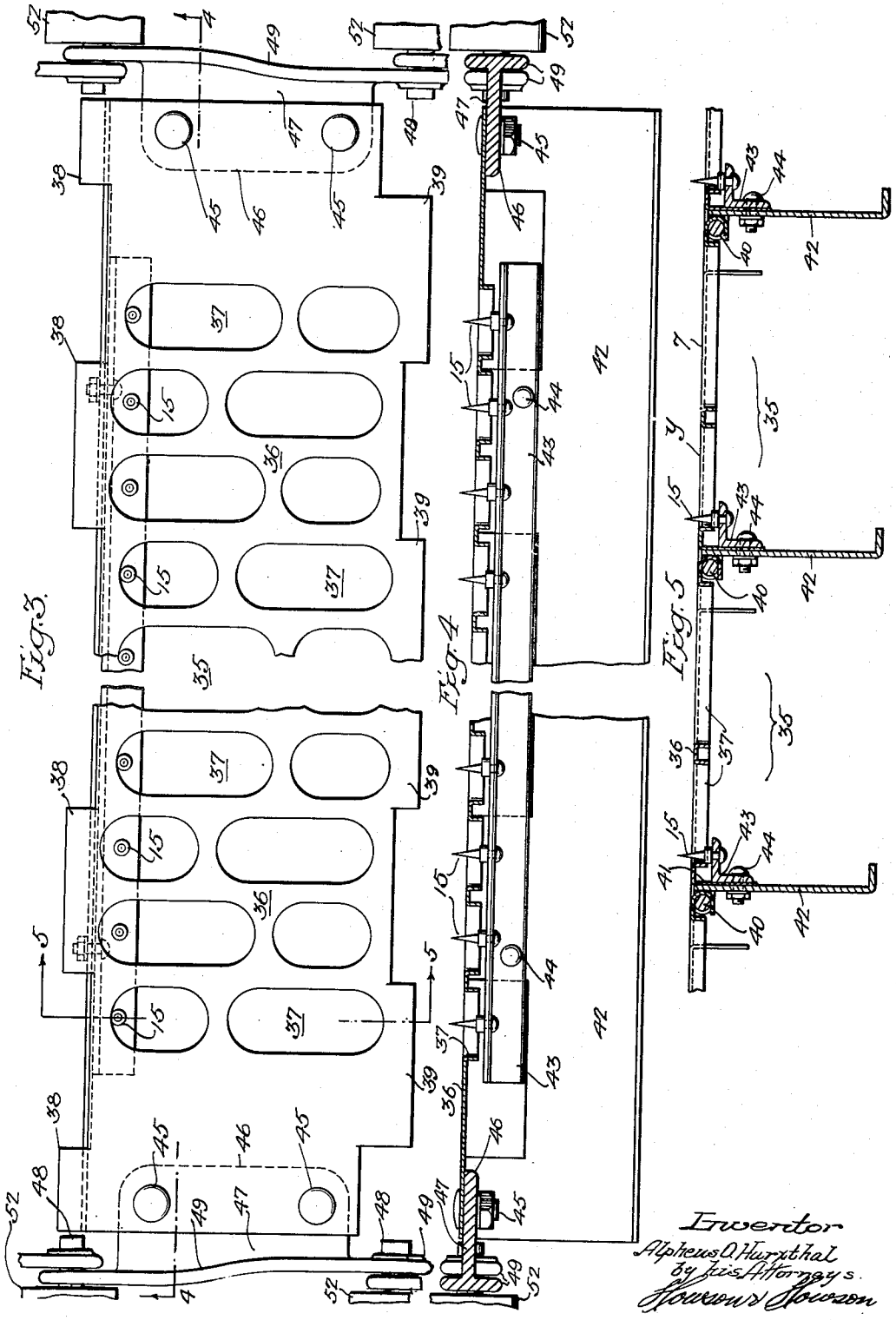

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RUG DRIER

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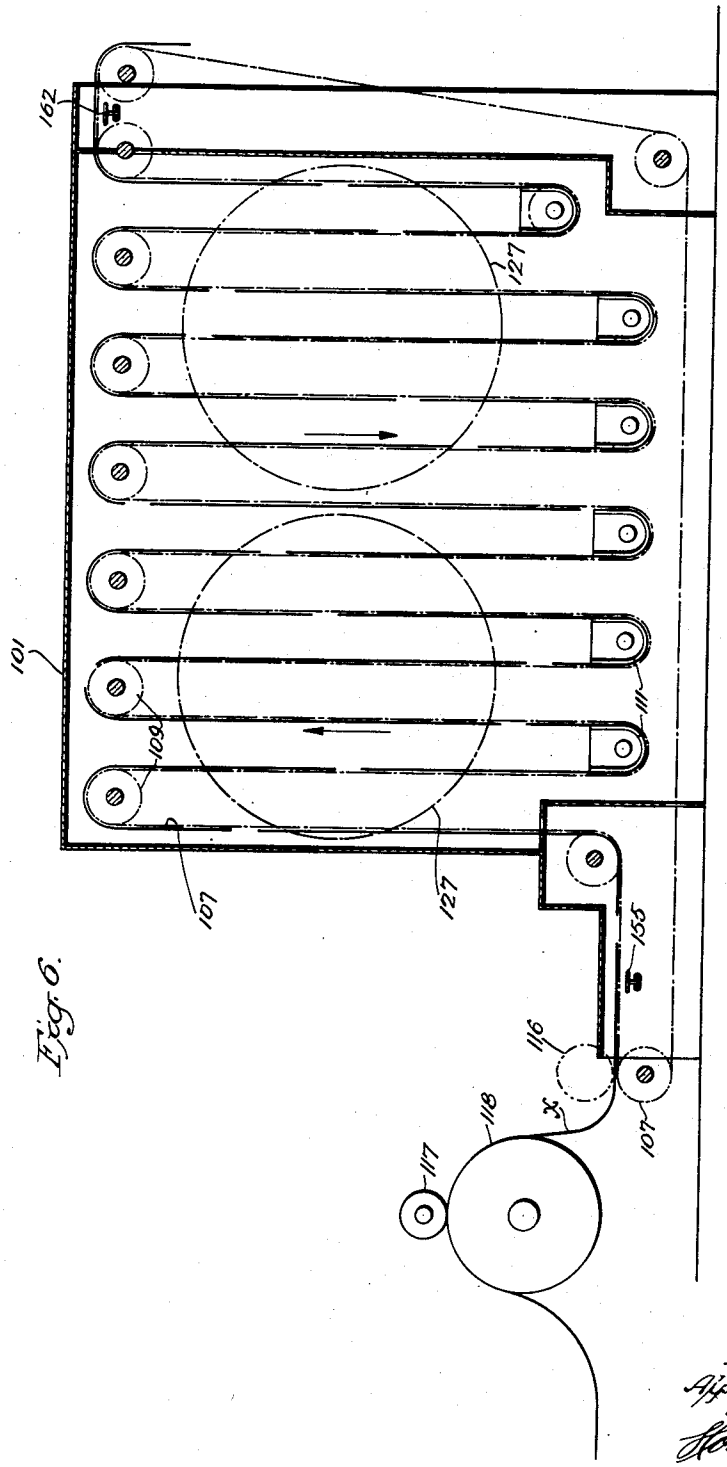

Fig. 6.

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RUG DRIER

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Fig. 7.

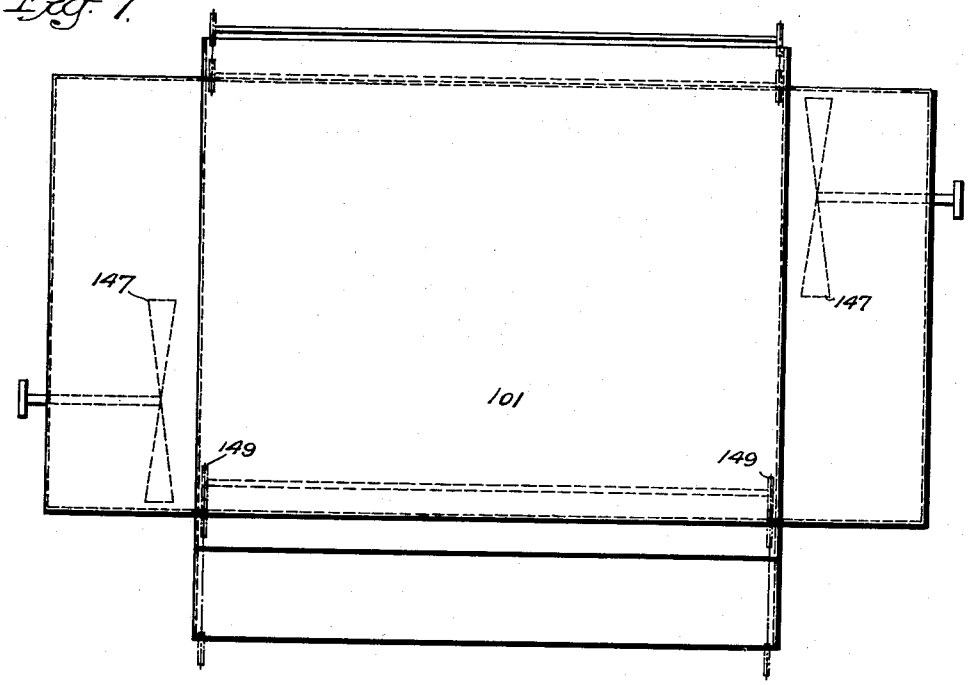
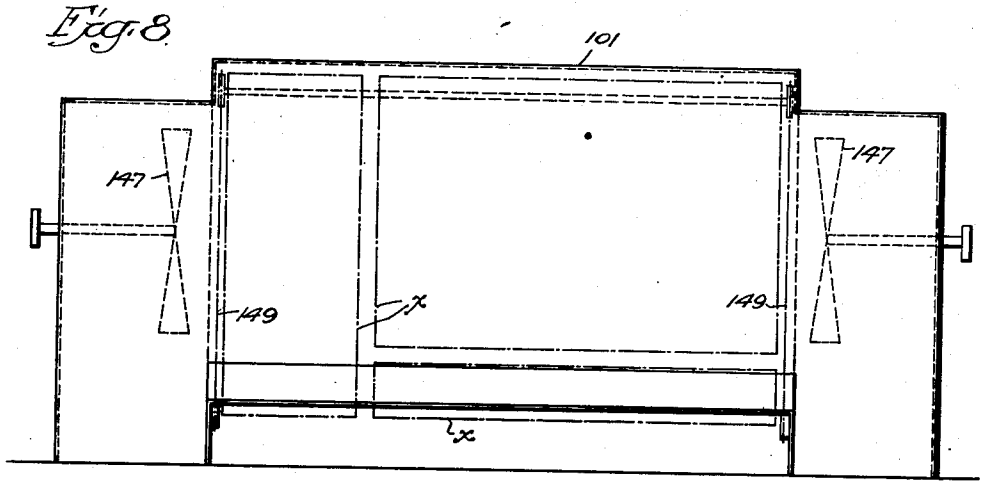


Fig. 8.



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RUG DRIER

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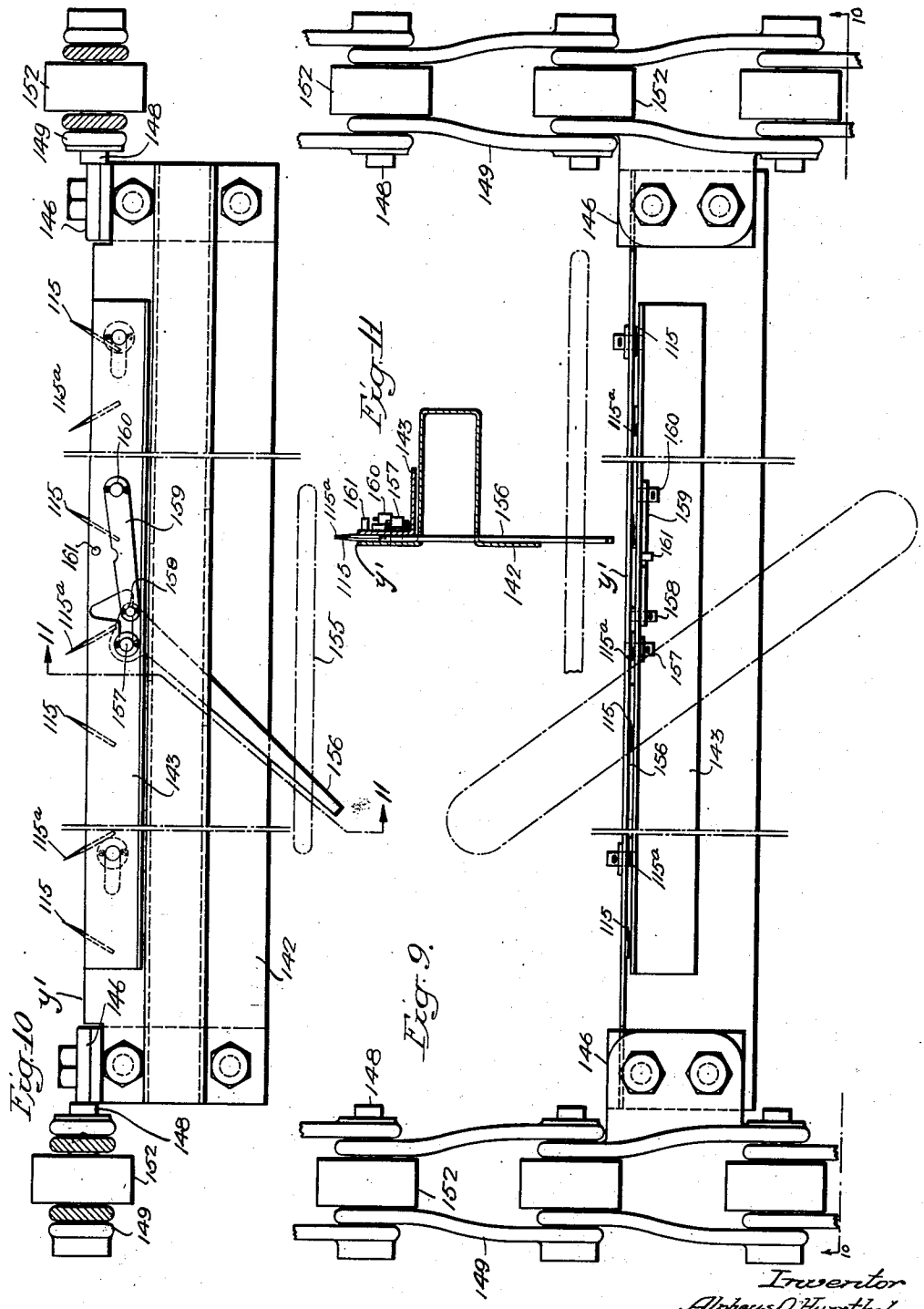

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RUG DRIER

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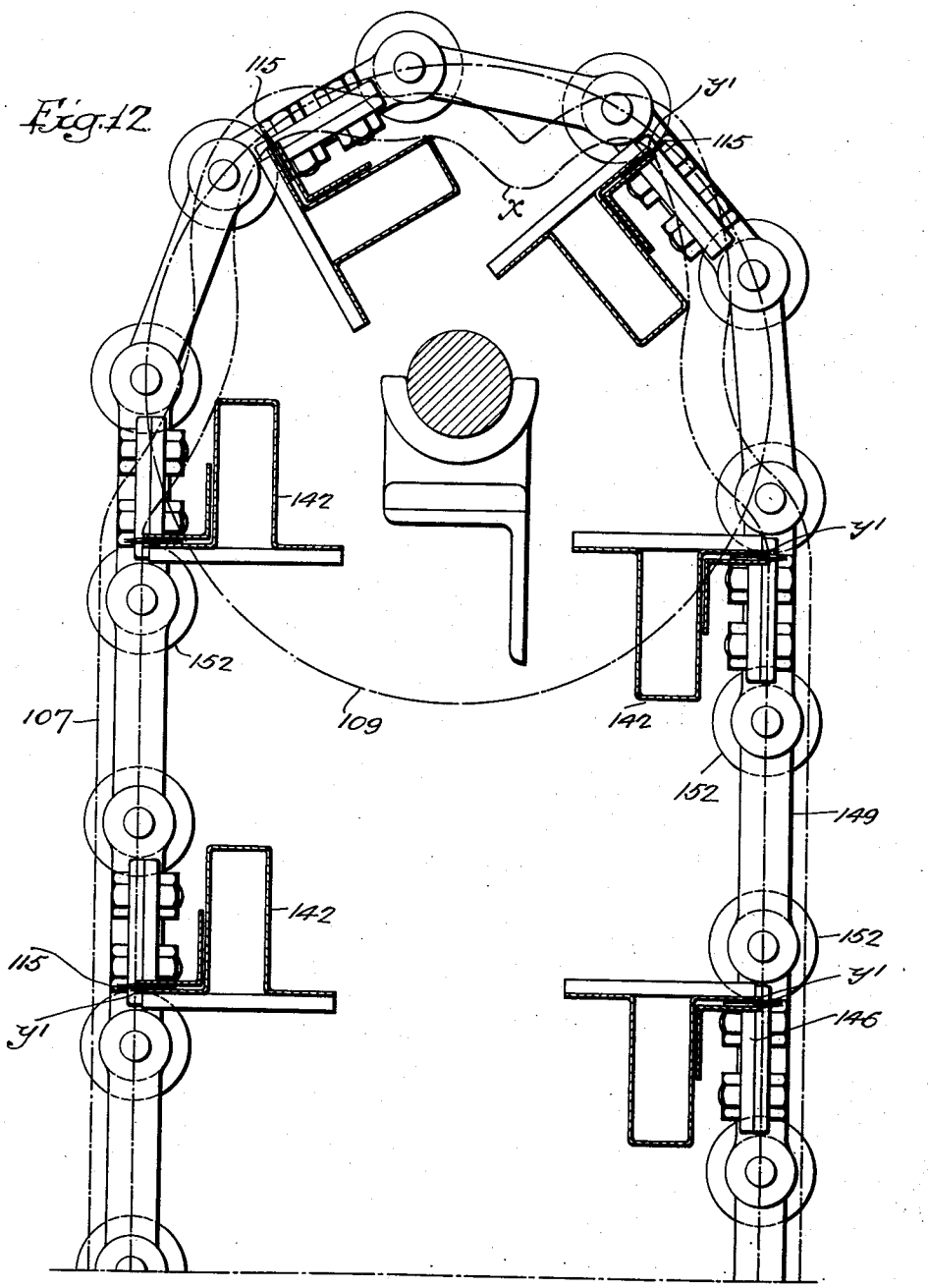
Fig. 12.



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RUG DRIER

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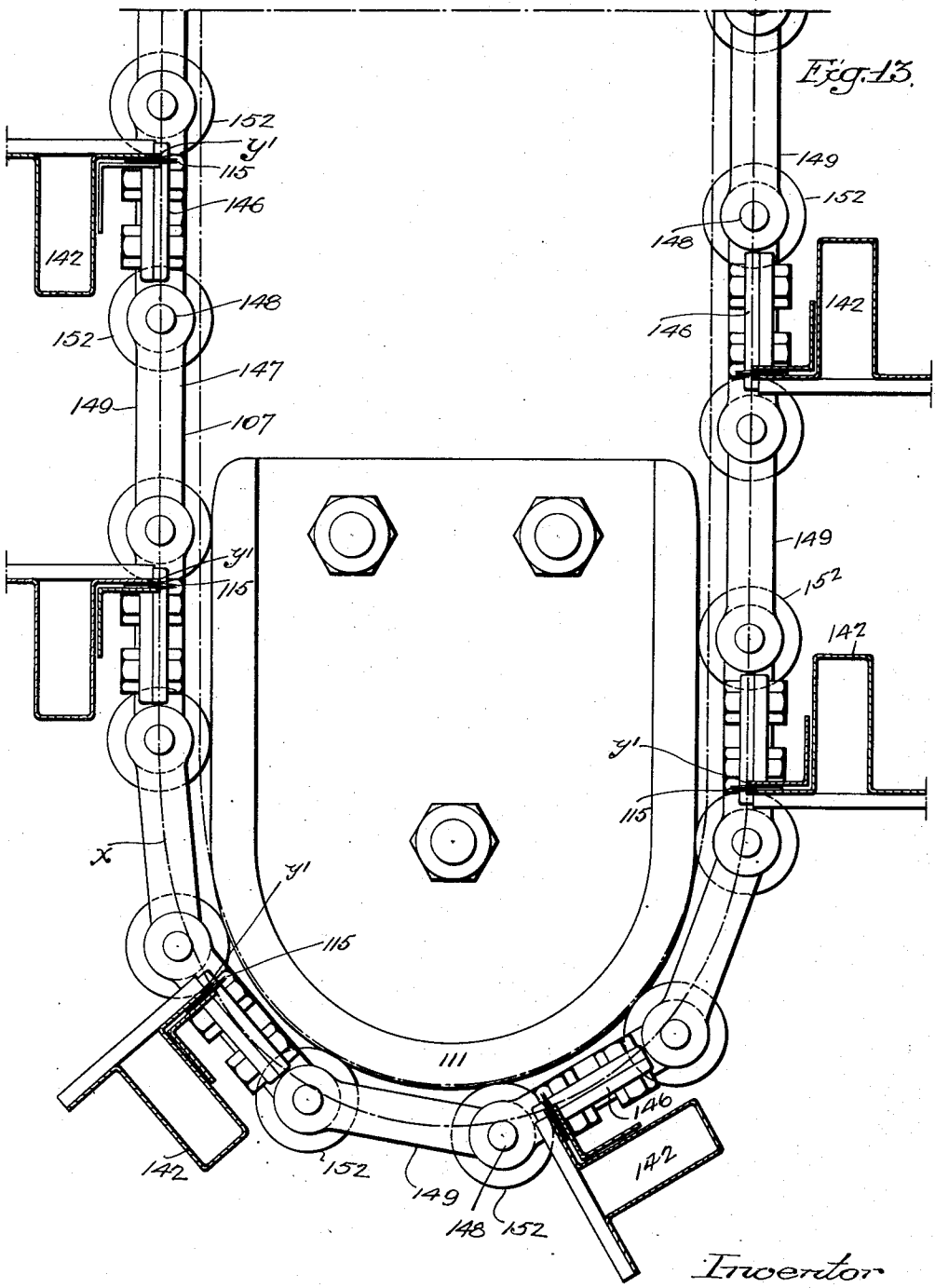
Fig. 13.



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Patented Mar. 25, 1941

2,236,430

UNITED STATES PATENT OFFICE

2,236,430

RUG DRIER

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Application April 30, 1938, Serial No. 205,342

4 Claims. (Cl. 34—12)

This invention relates to the carpet cleaning art; and particularly to the drying of carpeting units such as rugs, runners, or other pieces or strips of carpet which have passed through a washing, scouring or other wet processing. The present invention is particularly adapted for use by commercial cleaners of rugs collected indiscriminately from homes, offices, institutions, etc.

One object of the invention is to provide a device which will quickly dry rugs, etc., of various lengths, widths and thicknesses, continuously, in progressive simultaneity, regardless of the respective sizes or thicknesses of the individual units.

Another object of the invention is to squeeze or otherwise extract or evacuate excessive free moisture from the rugs preliminary to final drying and to complete the drying of the rugs in or as one continuous automatic operation with such extraction.

Another object of the invention is to provide means for applying a sizing to the underside of each rug during and as a part of the continuous free moisture evacuating and final drying operations, preferably intermediate the preliminary and final drying operations.

Another object of the invention is to anchor each rug, etc., to a rigid structure, at a number of relatively spaced points throughout the length and breadth and over the entire area of each unit, to prevent the pieces from shrinking as the drying progresses and to distribute the strains resulting from the shrinkage prevention over the entire area of each piece, for reducing the strain at any given point to a minimum. Such shrinkage prevention is particularly preferable in cases where the rugs are sized before final drying.

Another object of the invention is to construct the device in such a manner that the rugs of various sizes may be automatically fed from and by the preliminary squeezing device directly to the rigid supporting structure and automatically anchored thereto in the manner above noted.

Another object of the invention is to provide means for automatically stripping the various sized rugs, etc., from the anchoring means at the conclusion of the final drying process.

Another object of the invention is to provide the rigid supporting structure in the form of a flat platform for maintaining each rug, etc., in a single flat plane during the drying and anti-shrinkage operation, in order that the rug, after drying, will lie flatly on the floor.

Another object of the invention is to arrange the rug supporting structure to travel between two opposed series of correspondingly relatively spaced air jets or nozzles similarly distributed over the opposite sides of the entire path of travel of the supporting structure; and to impinge air ejected from said jets or nozzles under pressure against each of the opposite faces of the continuous procession of rugs, etc., whereby the opposed series of relatively spaced jets of air simultaneously impinging upon the opposite faces of the rugs, etc., will reduce the drying time to a minimum.

The device forming the subject matter of the present invention may be provided at its delivery end with means for raising the nap of the carpet after the rugs have been thoroughly dried.

Prior to the present invention it has been customary, after rugs, etc., have been washed, to pass the rugs through a pair of squeeze rolls, or through a water evacuating device comprising a vacuum extractor, and to hang the rugs over poles, or to suspend the rugs from poles by securing one edge of each rug to the pole after which the loaded poles were hung in a drying room or carried by an overhead conveyer through a drying chamber.

It has also been the practice to secure the rugs to open frames around the marginal edges solely of each rug and to stand or hang the framed rugs upright in a room containing heated air or in which heated air is circulated. These frames in some instances have been made adjustable to take care of various sizes of rugs within relatively small limits of variation.

The drying time under the above noted practices varied from 2 to 24 hours, depending upon the manner in which the rugs were suspended, and the efficiency of the air circulating means and other apparatus affecting the condition of the drying air.

The rugs which are hung over the overhead poles during drying would not lie flatly after drying. Suspending the rugs from or hanging the rugs over poles in the manner noted also had a tendency to cause migration of dye stuff from the upper portion of the hanging rug into the lower and/or intermediate portions of the rug, frequently causing disfiguration of the rug, particularly in patterned rugs. The rugs hanging over or suspended from the supporting poles, being more or less unrestricted, tended to shrink unevenly. This frequently distorted the rugs from their original shapes and dimensions.

Rugs secured to open frames around their marginal edges and placed in upright positions

during drying were subject to damage by dye running and were also subject to severe strains which frequently damaged the rugs at their marginal edges as a result of uncontrolled shrinkage in the more centrally disposed portions of the rug during the drying thereof.

Another difficulty attending the drying of the rugs on open frames was that the rugs as they were delivered one after another from the cleansing apparatus varied in length and width to such an extent that it was necessary to keep an extremely large stock of various sizes of frames on hand or to adjust stock frames frequently and in some instances, to make up new frames to take care of odd sized rugs. As the successive rugs coming from the washing apparatus varied considerably in size a great amount of time was lost and an excessive amount of labor was required in and for preparing the washed rugs for the drying operation.

The present invention overcomes all the above noted objections as a result of its improved construction and mode of operation of the apparatus, in which the rugs, coming from the washing apparatus one after another, regardless of their respective sizes, are automatically delivered from the primary evacuators or squeeze rolls onto the continuous moving rigid support; and are anchored automatically at a large number of relatively spaced points distributed over the entire area of each piece, regardless of its dimensions, as the pieces pass successively into the feed end of the drying apparatus. The rugs anchored individually on the flat continuously moving platform are then subjected to jets of air simultaneously impinging against the opposite faces of the pieces as they progress through the drying chamber to complete the drying of the individual pieces in approximately 20 to 30 minutes as compared with the 2 to 24 hour drying time under the old method.

By maintaining the rugs in a flat, horizontal single plane during the drying process migration of the dye stuff from one portion of the rug into another portion thereof, is eliminated. In cases of rugs which have had a sizing applied to the back face thereof, prior to the drying operation, the sizing likewise is held in even distribution over the entire back of the rug during the drying of the rug in a flat horizontal position.

By automatically anchoring the rugs on the rigid moving support in the manner noted, the time consuming handling of the rugs, the poles and the frames, and the damage and distortion of the rugs as a result of such practices, is eliminated.

The construction and operation of the apparatus forming the subject matter of the present invention will be fully disclosed hereinafter, reference being had to the accompanying drawings, of which—

Fig. 1 is a diagrammatic longitudinal sectional elevation of the preferred form of apparatus;

Fig. 2 is a transverse sectional elevation taken on the line 2—2, Fig. 1;

Fig. 3 is a plan view of one of the rigid units of which the movable supporting platform is composed;

Fig. 4 is a sectional elevation taken on the line 4—4, Fig. 3;

Fig. 5 is a sectional elevation taken on the line 5—5, Fig. 3, and showing a plurality of the individual rigid units of Fig. 4 connected together to form the endless supporting platform;

Fig. 6 is a longitudinal sectional elevation of a modified form of apparatus;

Fig. 7 is a diagrammatic plan view of the device shown in Fig. 6;

Fig. 8 is an end view of the device shown in Figs. 6 and 7;

Fig. 9 is a plan view of a portion of the traveling rug support employed in the form of the device shown in Figs. 6, 7 and 8;

Fig. 10 is a transverse sectional elevation taken on the line 10—10, Fig. 9;

Fig. 11 is a sectional elevation taken on the line 11—11, Fig. 10;

Fig. 12 is a sectional elevation showing the rug support passing around an upper turn in the circuitous path traveled by the support in the structures shown in Figs. 6, 7 and 8; and

Fig. 13 is a corresponding view showing the rug support passing around one of the lower turns in its circuitous path.

The preferred form of apparatus, as clearly illustrated in Figs. 1 to 5 inclusive, comprises a substantially closed casing 1 in which is mounted a plurality of upper manifolds 2 and a plurality of lower manifolds 3, 3.

The manifolds 2 and 3 are respectively provided with a multiplicity of relatively spaced air jets or nozzles 4, 4 and 5, 5 respectively. The jets or nozzles 4, 4 and 5, 5 are arranged to eject streams of air in opposite vertical directions toward a medium, horizontal plane extending from end to end of the casing 1.

Arranged to travel in the above noted medium plane, in one direction through the casing 1 from end to end thereof, is a rug carrying run 6 of an endless conveyer 7, the return run 8 of which passes in a reverse direction through the lower part of the casing 1 below the manifolds 3.

The conveyer 7 passes around suitable rotary supports or guides 9, 11 and 12 at and outside the feed end of the casing 1, and around rotary supports or guides 13 and 14 at and outside the delivery end of the casing 1. Between the rotary supports or guides 9 and 13, and extending from one to the other thereof, the carrying run 6 of the conveyer 7 is supported on and moves along rails 10, 10 located at opposite sides respectively of the casing 1.

Distributed over the entire surface of the conveyer 7, in lateral and longitudinally relatively spaced relation to each other, and projecting substantially perpendicular to the plane of the rug carrying surface of the conveyer 7, is a multiplicity of pins 15. The pins 15 are adapted to be projected into the rugs supported on the upper carrying run 6 of the conveyer 7 during the conveying of the rugs x through the casing 1.

Along an inclined portion 6a of the carrying run 6 between supports 9 and the entrance of the conveyer 7 into the casing 1, the rugs are engaged by a press roll 16, which preferably is composed of or provided with a relatively thick layer of soft sponge rubber or its equivalent. This resilient faced roll engages the upper face of each rug x as it is fed onto the inclined portion 6a of the conveyer 7. The relatively soft facing of the roll 16 firmly presses each rug x down firmly onto the pins 15, projecting upwardly from the conveyer 7, and thereby anchors the rugs to the conveyer 7, in the manner above noted.

The rugs are automatically fed to the inclined portion 6a of the conveyer 7 by a pair of rolls 17 and 18, which in addition to feeding the rugs to the supporting conveyer 7, may effect a pre-

liminary extraction of excessive free moisture from the rugs x. The rolls 17 and 18 may form part of the washing machine (not shown) in cases where the washing and drying apparatus are connected in tandem and by which the washing and drying would be effected as a continuous process. In other cases, however, the rolls 17 and 18 may form complementary parts of the drying apparatus, for receiving the rugs x successively for primarily extracting excessive free moisture and in addition, functioning as means for feeding the wet rugs to the conveyer 7 of the drying apparatus.

The rolls 17 and 18 may be of the ordinary rubber faced squeeze type or may be of the hollow perforated suction type for effecting extraction of excess moisture from the rugs x as the rugs are fed thereby to the conveyer 7.

Intermediate the press roll 16 and the feed rolls 17 and 18, the apparatus may include a sizing roll 19 arranged to engage the underside of each of the rugs x as it passes from the feed rolls 17 and 18 to the carrying run of the conveyer 7. The sizing roll 19 may be supplied with a sizing in liquid form from a tank 20, into which the lower portion of the roll 19 may extend, or the sizing may be conveyed from a similar tank 20 to the sizing roll 19 by a series of intermediate rolls, if desired.

The rug x, while passing down the incline from the feed rolls 17 and 18 to the inclined portion 6a of the conveyer 7, is pressed into contact with the sizing roll 19 by an upper contact roll 21.

The conveyer 7 is of such rigid construction that it will maintain the pins 15 in definitely fixed spaced relation to each other in such a manner as will resist any and all tendency of the pins to move toward each other as a result of the rugs tending to shrink as the drying operation progresses. Thus the rugs are prevented from shrinking longitudinally and transversely.

The relative spacing of the pins 15, longitudinally and transversely of the conveyer 7, correspondingly distributes the strains attending the shrinkage prevention over the entire area of each rug, whereby the strain at any one of the large number of relatively spaced anchor points is substantially nil. Such arrangement prevents tearing or fraying of the rugs around the edges thereof or adjacent any weak areas in the rug.

When a sizing is applied to the back of the rug and the sized back is pressed firmly against the carrying surface of the conveyer 7, the rugs tend to adhere to the carrying surface of the conveyer, during and after drying, and if care is not exercized in removing the rugs from the carrying surface and from the pins 15 which project from the carrying surface of the conveyer into the body of each rug, the rug will be damaged in separating the rug from the conveyer. To prevent such damage the rug must be loosened from the carrying conveyer and from the pins substantially at all points across the conveyer at one and the same time. In order to accomplish this result successfully and automatically, the apparatus is provided with a plurality of relatively thin, narrow stripping bands 25 of the endless type, which travel concurrently with the conveyer 7 in contact with the rug carrying surface of the conveyer, and between the rugs and the conveyer, throughout at least the full extent of the carrying run 6a—6 of the conveyer 7. The stripping bands 25 are arranged in laterally spaced relation to each other across the entire width of the carrying run 6 of the conveyer 7, as diagrammatically illustrated in Fig. 2.

At the delivery end of the casing 1 the conveyer 7 and the series of stripper bands 25 are caused to separate one from the other and to move in planes disposed at an angle to each other, whereby the stripper bands 25 raise the rugs x from the carrying surface of the conveyer 7 and off the pins 15 which project from the rug carrying surface of the conveyer 7.

For the above purpose, as illustrated in Fig. 1, the stripper bands 25 travel in a horizontal plane with the carrying run 6 of the conveyer 7 until the concurrently moving conveying and stripper bands arrive at the rotary support 13 of the conveyer 7, whereupon the stripper bands 25 continue to move in the same horizontal plane as before while the conveyer 7 passes down and around the rotary support 13. This separates the bands 25 and the conveyer 7 and leaves the rugs x supported on the portions 25a of the bands 25 and causes the carrying surface of the conveyer 7 to be stripped from the rugs and the pins 15 to be withdrawn from the rugs, as the rugs are advanced away from the conveyer 7 by the stripper bands 25.

Prior to the stripping of the rugs from the conveyer 7 the upper face of each rug is subjected to a nap raising operation, performed by a rotary brush 26 of any suitable type which brushes the nap in one direction as the rugs x are advanced under said rotary brush.

During the passage of the conveyer 7 through the casing 1, from the feed end to the delivery end thereof, with the rugs x supported by the flat horizontal carrying run 6 of the conveyers, the rugs are subjected to the impingement of jets of air upon the opposite faces respectively of the rugs, simultaneously, by the jets or nozzles 4, 4 and 5, 5.

The air jets 4, 4 and 5, 5 may be of any desired construction, in the form of parallel rows of individual nozzles or, as in the preferred form of the invention, the jets are in the form of continuous slots formed between converging walls projecting from the lower and upper sides of the manifolds 2 and 3 respectively and extending continuously from side to side of and transversely across substantially the entire width of the upper carrying run 6 of the conveyer 7 with the parallel slots spaced apart longitudinally of the casing 1 throughout substantially the full length of the casing, from the feed end thereof to the delivery end thereof, whereby air forced under desired pressure from the jets 4 and 5 continuously impinges upon both of the opposite faces of the rugs simultaneously, as the rugs are moving through the casing 1 from the feed end to the delivery end thereof.

The air ejected from the nozzles or jets 4 and 5 may be forced into the manifolds 2 and 3 under desired pressure by any suitable means. In the present instance, each of the manifolds is provided with a fan type impeller 27 which is driven by any suitable means such as an individual motor 28.

At each side of and extending from end to end of and along the casing 1 is a circulating compartment 29, which is separated from the central portion of the casing 1, through which the conveyer 7 passes, by a vertical partition 30. The end of each manifold 2 and 3 into which the drying air enters communicates with the circulating compartment 29 at one or the other of the sides of the casing 1. Air is drawn from the cir-

culating compartment 29 by the impeller 27 and forced into the manifold 2 or 3, as the case may be. The circulating air may be heated by any suitable form of heating apparatus, such as steam coils, etc., diagrammatically illustrated at 31, in each of the side compartments 29.

In order to complete the circulation of air the vertical partitions 30 may be provided with suitable openings 32 affording communication between the circulating compartments 29, 29 and the intermediate drying compartment in which the conveyer 7 travels.

In order to provide the necessary rigidity in the conveyer 7, said conveyer is composed of a plurality of relatively flat sections 35. Each section 35 is composed of a flat plate 36 perforated over substantially the entire surface thereof in any suitable manner, for example, as indicated at 37. Along its opposite, transversely extending edges, in the present instance, each plate 36 is provided with relatively staggered hinge bosses 38 and 39. The hinge bosses 39 of one plate 36 fit into the spaces between the hinge bosses 38 of the next adjacent plate, with a pivot rod 40 passing through the axially aligned bosses and pivotally connecting the sections 35, 35 together to complete the continuous endless conveyer 7.

In the present instance, each plate 36 is provided with a depending transversely extending flange 41 to which is secured a transversely extending girt 42, for stiffening the sections transversely of the conveyer.

In the present instance, the pins 15 project through the perforations 37 in the plates 36 and are carried by readily removable or replaceable angle bars 43 which are connected by bolts or other suitable fastening means 44 to the flange 41 and girt 42 adjacent one edge of the plate 36.

Each conveyer section 35 is connected by bolts, rivets, or other fastening means 45 to an attachment flange 46 of a chain link 47. The chain links 47, 47 are pivotally connected at 48, 48 and collectively form the side chains 49, 49 of the conveyer 7. The axes of the pivot pins 48, 48 of the side chains 49, 49 are in axial alignment with each other and with the axis of the pivot rod 40. The rug carrying faces y, y of the adjacent sections 35 are thereby arranged and maintained in a single plane throughout the carrying run of the conveyer 7.

The pins 15, as shown in Fig. 5, project above the flat composite carrying face y of the conveyer 7 and the stripping bands 25 normally lie on the carrying face y of the conveyer 7, between the pins 15, 15.

As noted above, the bands 25, 25 travel concurrently with the conveyer 7 and are supported thereby except at the delivery end of the casing 1 where said bands follow in the plane of the carrying surface of the conveyer to a desirable distance beyond the rotary support 13 of the conveyer 7, where said conveyer turns from said plane and thereby effects stripping of the rugs from the carrying surface y and the pins 15.

Beyond the rotary supports 13 and 14 for the conveyer 7, the stripper bands 25 are supported by rotary supports 50 and 51, as shown in Fig. 1.

Rotatably mounted on the pivot pins 48, 48 in the present instance, of the chains 49, 49, are rollers 52, 52 which ride on the rails 10 and support the carrying run of the conveyer with the carrying faces y, y of the sections 35, 35 in a continuous single horizontal plane.

The conveyer 7 may be driven in any suitable manner. For example, either or each of the rotary guides or supports 9, 13 or 14 may be in the form of pairs of sprockets meshing with the links 47, 47 of the side chains 49, 49 and each or any pair secured to a single shaft may be driven by any suitable means from any suitable source of power applied to the shaft or shafts.

From the above, it will be clear that the rugs x regardless of their length, width or thickness are received by the rolls 17 and 18 and fed thereby in continuous succession onto the inclined portion 6a of the carrying run 6 of the conveyer 7 and automatically pressed by the roll 16 onto the carrying surface y and the pins 15 of said conveyer 7. In instances where a sizing is to be applied to the back of the rugs, the rugs pass between the sizing roll 19 and the contact roll 21, before being laid on the carrying surface y of the conveyer 7. Before the rugs pass under the press roll 16, the rugs may, if desired, pass under a transversely extending guide plate 54. However, in some instances this guide plate may be eliminated and the rugs may pass directly from the rolls 19 and 21 or the rolls 17 and 18 to the underside of the press roll 16.

The distribution of the pins 15, over the carrying surface y of the conveyer 7, rigidly holds the rugs at a number of relatively spaced points over the entire area of each rug and makes the structure universally adaptable for drying rugs of all sizes having one dimension less than the width of the conveyer 7, which obviously would be made sufficiently wide to take in any and all of the larger sizes of rugs.

It is possible also, to place a number of narrow rugs or runners side by side, as well as end to end, on the carrying surface y of the conveyer 7 and such a plurality of narrow rugs would be automatically applied to the carrying surface of the conveyer in the same manner as a single rug of maximum width.

As the rugs are advanced through the casing 1 by the conveyer 7, the drying air is continuously impinged against the opposite faces respectively of each and every rug, by the nozzles or jets 4 and 5 positioned respectively above and below the carrying run 6 of the conveyer 7. The air impinging against the opposite faces of the rugs continuously quickly dries the rugs, in from 20 to 30 minutes as noted above, the variation depending primarily upon the thicknesses of the rugs being dried, the thinner rugs drying in a shorter length of time than the thicker rugs which require a slightly greater length of time.

The length of the casing 1 is determined by the speed at which the conveyer 7 is operated, which speed should be sufficiently high to take care of the rugs as fast or slightly faster than the speed at which the rugs are passed from the washing mechanism between the rolls 17 and 18; and the rate of moisture absorption of the air impinging upon the opposite faces of the rugs for each foot of travel of the carrying run of the conveyer 7.

As the dried rugs pass from the delivery end of the casing 1, the nap is raised by the brush 26, whereupon the conveyer 7 is diverted from the normal horizontal plane of the carrying run 6, while the stripper bands 25 continue to advance in said plane and strip the rugs from the conveyer 7 in a flat, dried condition.

If desired, the bands 25 may be continued to any desired extent beyond the delivery end of the casing 1, to function as a conveyer to deliver the rugs to any suitable form of table etc. on

which the rugs may be rolled and wrapped for delivery.

In that form of the invention shown in Figs. 6 to 13 inclusive, a rug supporting conveyer 107 passes through a casing 101 in a more or less circuitous path, passing over a plurality of upper rotary supports 109 and under a series of lower bend guides 111. In this instance, the conveyer 107 is composed of side chains 149, 149, the links 147 of which are pivotally connected by pintles 148 on which are rotatably mounted rollers 152. Each, or alternate, links are provided with attachment flanges 146, to which are secured the opposite ends respectively of cross girts 142.

Carried by each girt 142 is a series of fixed pins 115, 115. Slidably mounted on each cross girt is a bar 143 which carries a series of pins 115a, 115a. In this instance the pins 115 are disposed at an angle to the perpendicular and are inclined toward one side of the conveyer 107. The pins 115a are inclined in the opposite direction, toward the opposite side of the conveyer 7.

The rugs are pressed down onto the upper edges $y1$ of the girts 142 and onto the pins 115 and 115a projecting above the carrying edge of each girt 142. The bar 143 is then shifted longitudinally to a slight extent, which moves the pins 115a slightly toward the pins 115. This slight, relative shifting of the pins 115a with respect to the stationary pins 115 effects a gripping of each rug, at a large number of relatively spaced points distributed over the entire area of each rug, whereby each rug is held firmly to the girt 142 as the girts pass around upper and lower supports and guides 109 and 111.

Intermediate the upper and lower guides, the side chains 149, 149 straighten out and maintain the carrying edges $y1$, $y1$ of the girts 142, 142 in a common plane. This straightens or flattens the rugs being carried by the conveyer 107 and causes the rugs, when dry, to lie in a flat condition.

The shifting of the bars 143 may be effected in any suitable manner and in the present instance is automatically effected in one direction by a cam 155 disposed in the path of the conveyer 107 adjacent the receiving end of the casing 101. The cam 115 is arranged to engage and rock a lever 156 which is pivotally connected at 157 to the girt 142. The lever 156 is provided with an eccentric pin 158 to which is pivotally connected one end of a link 159. The opposite end of the link 159 is pivotally connected at 160 to the bar 143.

As the conveyer 107 advances the lever 156 engages the cam 155 and is swung about its pivot 157 raising the eccentric pin 158 to a position above a line extending through the axis of the pin 167 and that of the pivot pin 160, until the upper edge of the link 159 engages a stop pin 161. Such movement shifts the bar 143 and moves the pin 115a relative to the pins 115, placing the fabric under tension between said pins, the reaction of which holds the link 159 in contact with the stop pin 161 and locks the lever 156 against accidental release.

Adjacent the delivery end of the casing 101, the lever 156 engages a second cam 162 which rocks the lever 156 in an opposite direction and moves the bar 143 in an opposite direction. The pins 115a are thereby moved in a direction away from the pins 115 and release the rugs from the conveyer 107.

The arrangement is such that rugs of various widths and lengths are automatically applied to the conveyer 107 and are maintained in a substantially flat condition throughout the greater portion of the travel of the conveyer 107 through the casing 101, and are automatically released from the conveyer 107 adjacent the delivery end of the casing 101.

The shifting of the one series of pins with respect to the other series of pins holds the rugs against shrinkage and against accidental release from the conveyer 107 as the conveyer passes around the turns in its circuitous path.

In this instance, instead of the rugs passing between impinging jets of air, circulation of drying air is created within the drying casing 101 by suitable fans 127, any suitable means being provided for controlling the temperature and humidity of the circulated drying air.

In this instance the rugs x are shown as being delivered to the conveyer 107 directly from a vacuum extractor 118 cooperating with which is a press roll 117 to function as a feeding means for the rugs x.

If desired, a press roll 116 may be provided between the roll 118 and the cam 155, for pressing rugs firmly onto the pins 115 and 115a before the one series of pins in shifted relation to the other series of pins for securing the rugs to the girts 142 in the manner above noted.

Obviously this form of apparatus may also be provided with mechanism for applying a sizing to the back of the rug prior to its application to the conveyer 107.

With this form of apparatus stripping bands are not necessary, for the reason that the conveyer 107, aside from the contact with the rugs afforded by the pins 115 and 115a, engages the rugs only at and on relatively spaced parallel lines as represented by the edges $y1$ of the girts 142. Therefore, there is small likelihood of the rugs sticking to the conveyer and the use of stripping bands is, therefore, unnecessary.

The function of removing the carpet from the shrinkage preventing pins is performed by the shifting of the pins 115a relative to the pins 115 in the direction to release the rug as noted above, and which causes the dry and relatively stiff rug to slide upwardly on the inclined pins when the one set of pins is moved away from the other set of pins.

In order that the rugs will not be subjected to stretching strains as the conveyer 107 passes around the turns of its circuitous path, the rug carrying edges of $y1$, $y1$ of the girts 142, 142 are arranged in line with the pitch lines of the side chains 149, 149.

In that form of the invention shown in Figs. 1 and 2, it will be obvious that rugs of different widths respectively may be passed between the squeeze rolls 17 and 18 in side by side relation to each other across the full width of the squeeze rolls which corresponds to the width of the conveyer 7; and with rugs of various sizes as well as various widths the rugs may be fed to the squeeze rolls in continuous end to end succession. A number of rugs would then be fed simultaneously from and by the squeeze or feed rolls directly onto the conveyer 7 in the same order and relation as they are fed to the rolls 17 and 18 and thus substantially completely cover the surface of the conveyer 7 from side to side and end to end of the carrying run 6 thereof, the depositing of the rugs on the conveyer 7 being automatically effected by the rolls 17 and 18.

In the above case the sizing rolls 19 and 20 may be eliminated and if desired, the pins 15 may be also eliminated; and the press roll 16 may be

used merely as a flattening roll to insure the rugs lying flatly on the plain surface of the conveyer 7 or it may be dispensed with entirely as desired.

The rugs may be guided from the squeeze rolls 17 and 18 to the conveyer 7 by any suitable form of support such as a plain flat table, a slatted table or by a series of rollers in lieu of the support afforded by the sizing roller 19.

Under the above noted circumstances a plurality of various size rugs, strips, etc., may be fitted together on the conveyer in a manner to cover substantially the entire surface of the carrying run 6 of the conveyer 7 and lie loosely and flatly in the conveyers the conveyer with said rugs passes between the upper and lower series of air jets and the action of the air being substantially above and below the rugs will keep the rugs from shifting relative to each other as the drying progresses.

The stripper bands 25, 25 may or may not be used, as desired, as conveyers for moving the dried rugs off the conveyer 7 instead of performing their primary function as strippers when the pins 15 are used.

I claim:

1. The combination of an endless conveyer adapted to support a plurality of rugs of similar or varying shapes and dimensions adjacent each other simultaneously on one face of the conveyer, rug anchoring pins secured to said conveyer and projecting outwardly from said face thereof in relatively closely spaced relation to each other longitudinally and transversely of the conveyer to pierce and anchor each rug at a multiplicity of relatively spaced points regardless of its shape and dimensions over the entire area of each rug within the marginal boundaries thereof, a resilient faced roll rotatably mounted above said face and extending completely across the conveyer from side to side of said face for pressing the rugs progressively down on said pins into flat contact with said face of the conveyer, and means for drying said rugs while anchored to said conveyer by said pins.

2. The combination of an endless conveyer adapted to support a plurality of rugs of similar or varying shapes and dimensions adjacent each other simultaneously on one face of the conveyer, rug anchoring pins secured to said conveyer and projecting outwardly from said face thereof in relatively closely spaced relation to each other longitudinally and transversely of the conveyer to pierce and anchor each rug at a multiplicity of relatively spaced points regardless of its shape and dimensions over the entire area of each rug within the marginal boundaries thereof, a resilient faced roll rotatably mounted above said face and extending completely across the conveyer from side to side of said face for pressing the rugs progressively down on said pins into flat contact with said face of the conveyer, a pair of squeeze rolls for receiving said rugs in said relationship in advance of said conveyer to flatten and extract excess moisture from said rugs and to deliver said rugs in said relationship between said conveyer face and said press roll.

3. The combination of an endless conveyer adapted to support a plurality of rugs of similar or varying shapes and dimensions adjacent each other simultaneously on one face of the conveyer, rug anchoring pins secured to said conveyer and projecting outwardly from said face thereof in relatively closely spaced relation to each other longitudinally and transversely of the conveyer to pierce and anchor each rug at a multiplicity of relatively spaced points regardless of its shape and dimensions over the entire area of each rug within the marginal boundaries thereof, a resilient faced roll rotatably mounted above said face and extending completely across the conveyer from side to side of said face for pressing the rugs progressively down on said pins into flat contact with said face of the conveyer, means for drying said rugs while anchored to said conveyer by said pins, a plurality of thin laterally spaced endless narrow bands of greater lengths respectively than said endless conveyer encircling said conveyer longitudinally thereof and adapted to lie upon one face between said rugs and said face and travel concurrently with said face of said conveyer in stationary relationship thereto during said drying of said rugs, and means for guiding said conveyer and said bands into divergent paths respectively at the conclusion of said drying to strip said rugs from said face of the conveyer.

4. The combination of a perforated endless conveyer adapted to support a plurality of rugs of similar or varying shapes and dimensions adjacent each other simultaneously on one face of the conveyer, rug anchoring pins secured to said conveyer and projecting outwardly from said face thereof in relatively closely spaced relation to each other longitudinally and transversely of the conveyer to pierce and anchor each rug at a multiplicity of relatively spaced points regardless of its shape and dimensions over the entire area of each rug within the marginal boundaries thereof, a resilient faced roll rotatably mounted above said face and extending completely across the conveyer from side to side of said face for pressing the rugs progressively down on said pins into flat contact with said face of the conveyer, and air nozzles extending transversely across the full width of the conveyer above and below said conveyer in spaced relation longitudinally of the conveyer to impinge air against opposite sides respectively of said rugs simultaneously for drying said rugs while anchored to said conveyer by said pins.

ALPHEUS O. HURXTHAL.