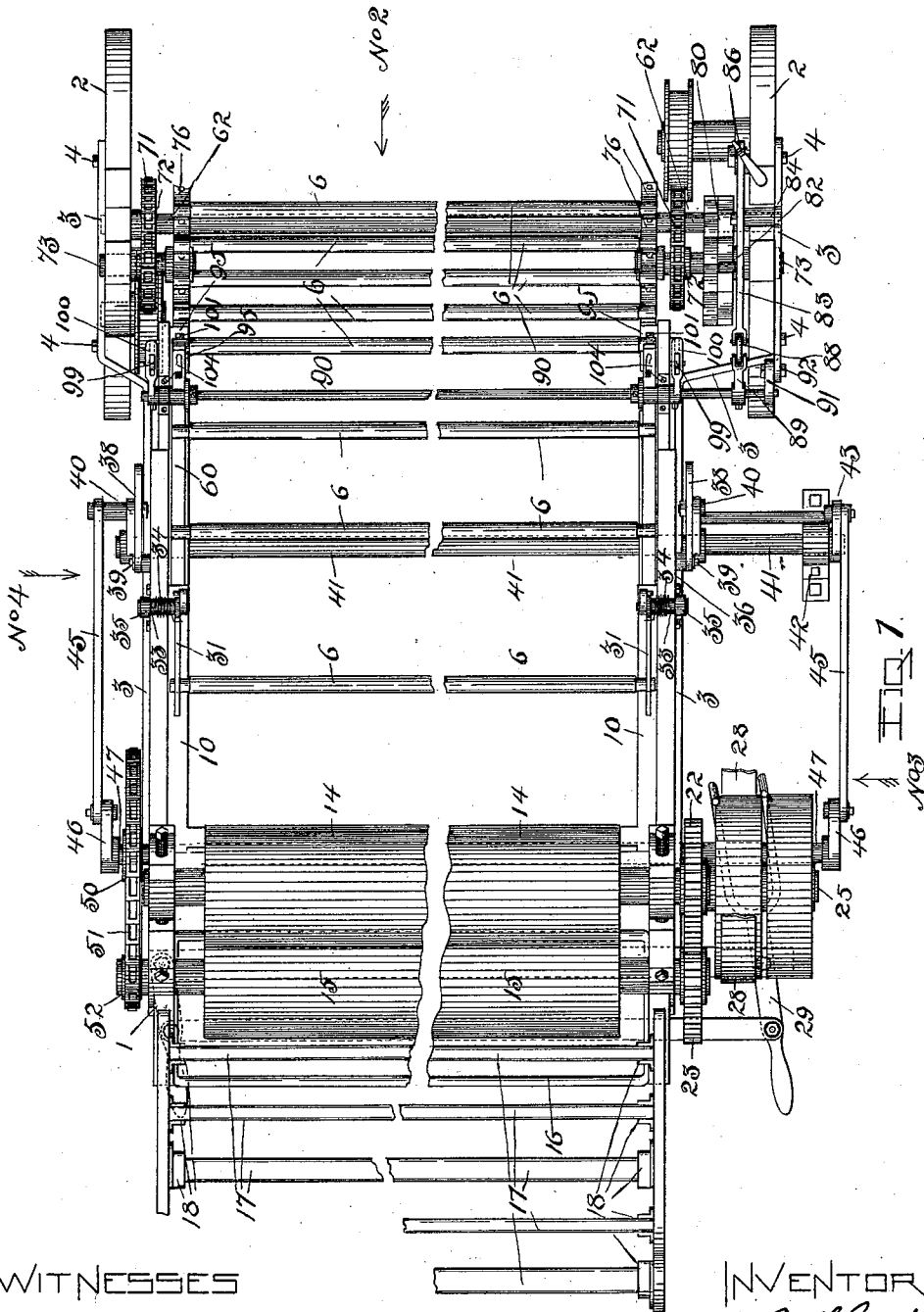


J. ZILLHARDT.
 FABRIC CARRYING APPARATUS.
 APPLICATION FILED OCT. 12, 1908.

1,000,478.

Patented Aug. 15, 1911.

6 SHEETS—SHEET 1.



WITNESSES

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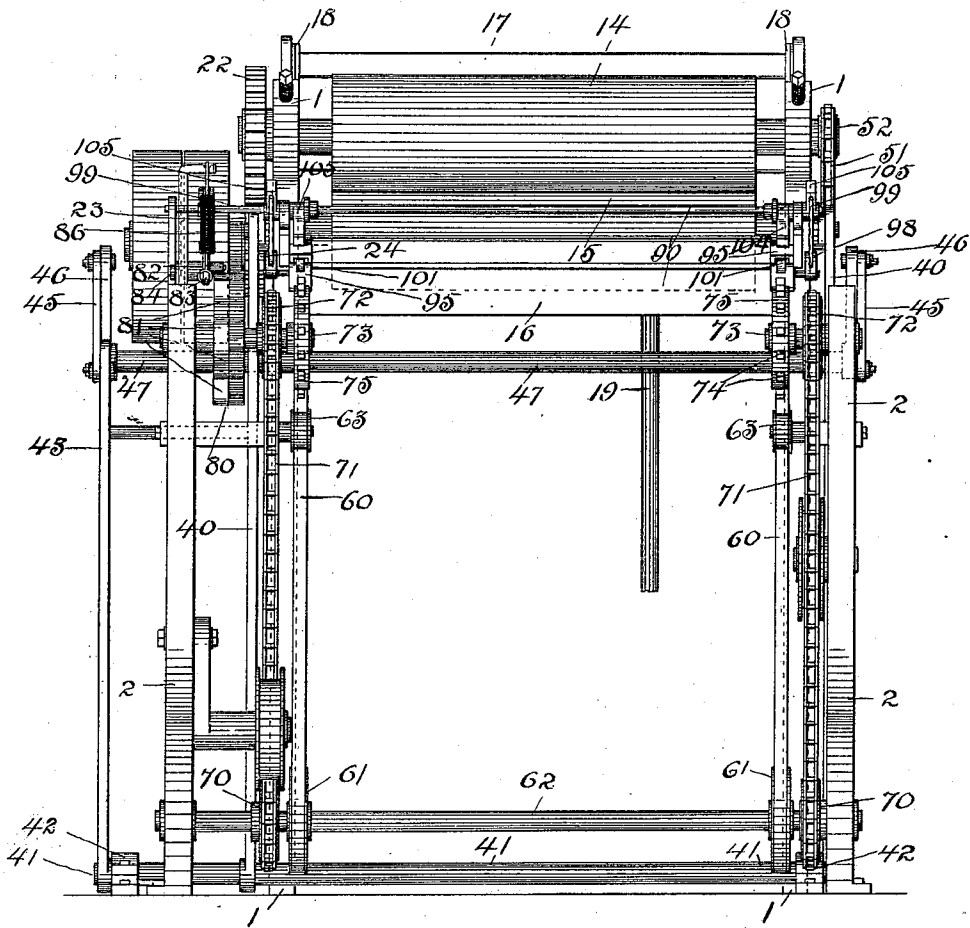


FIG. 2.

WITNESSES

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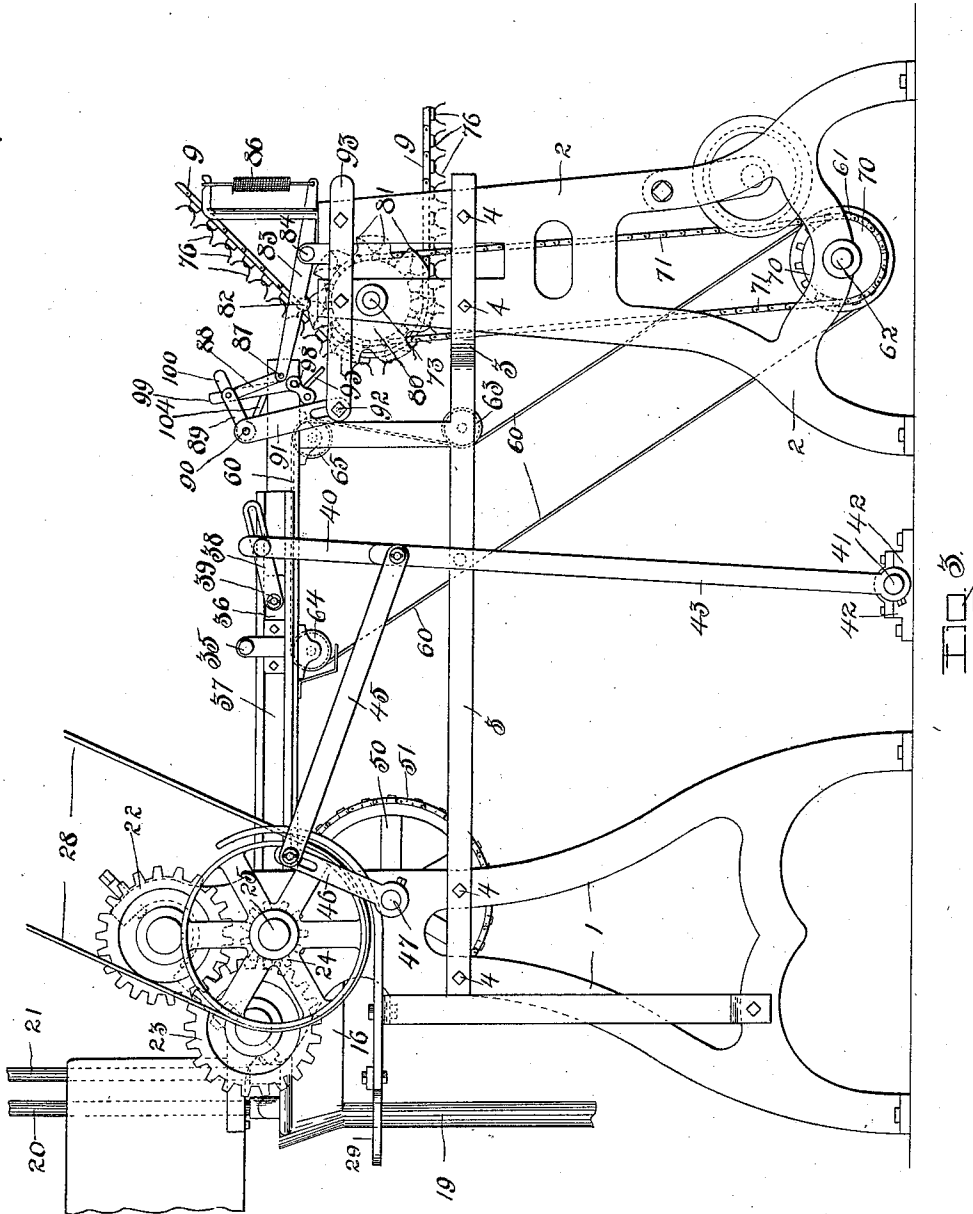
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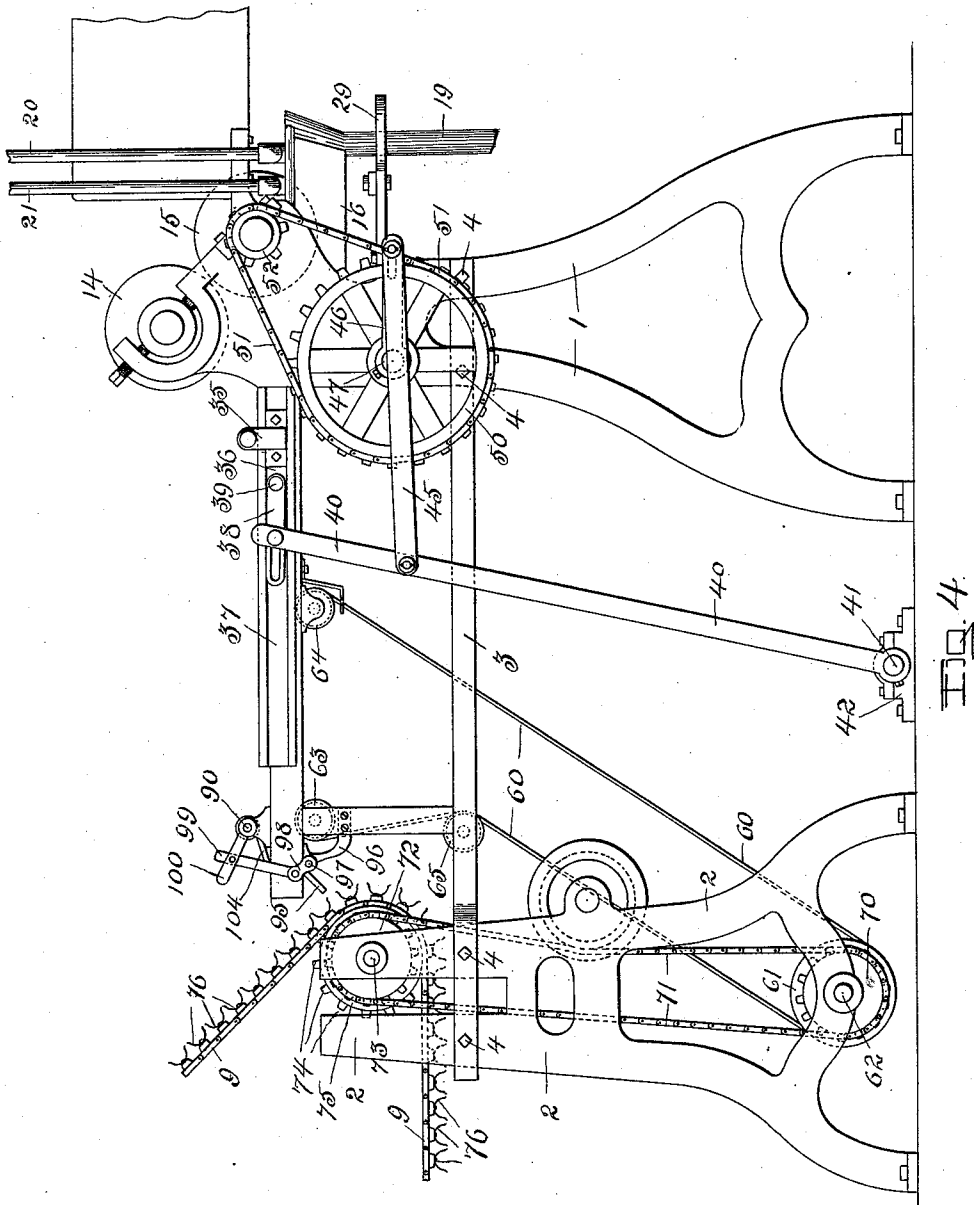


FIG. 4

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6 SHEETS—SHEET 5.

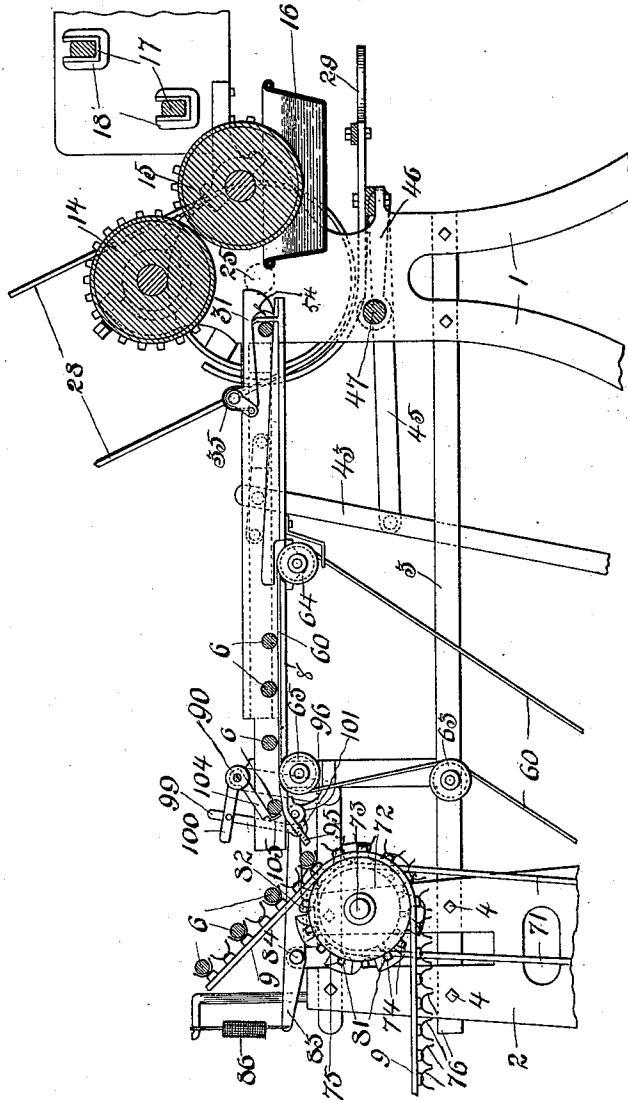


FIG. 5.

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6 SHEETS—SHEET 6.

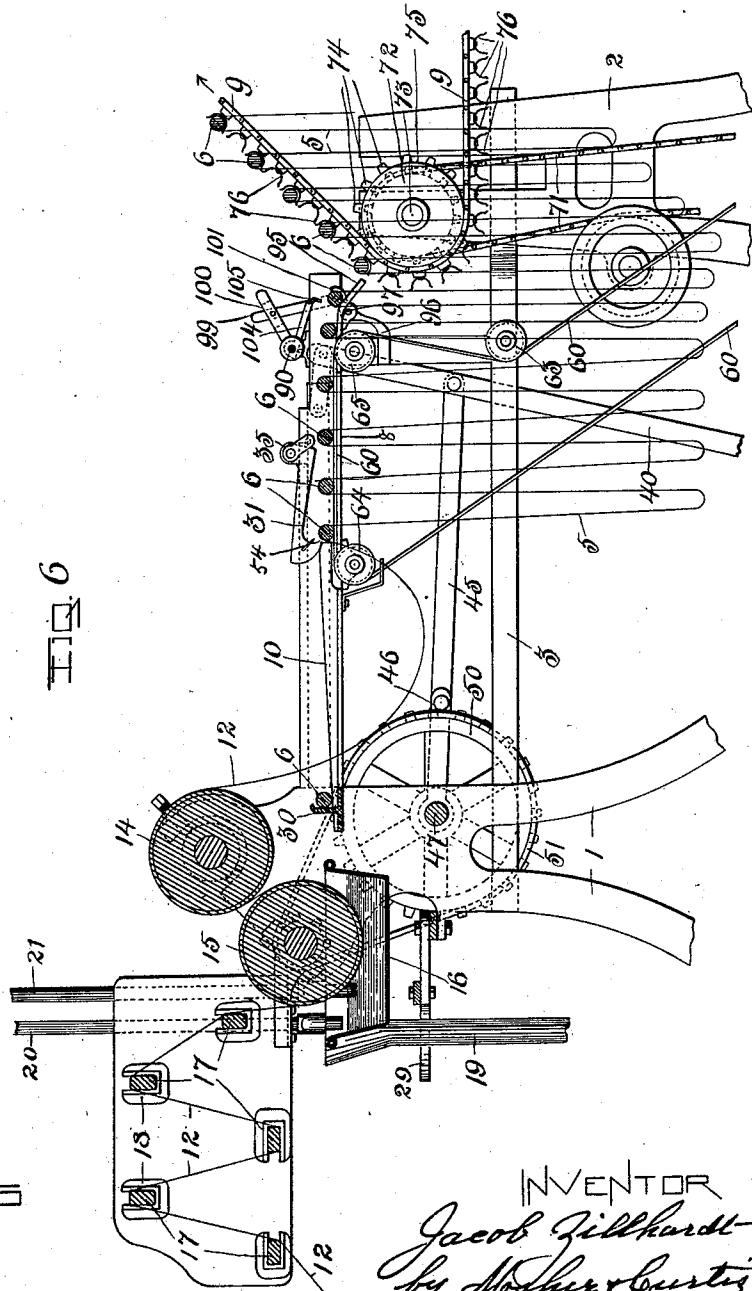


FIG. 6

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FABRIC-CARRYING APPARATUS.

1,000,478.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed October 12, 1908. Serial No. 457,253.

To all whom it may concern:

Be it known that I, JACOB ZILLHARDT, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Fabric-Carrying Apparatus, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a top plan view of the improved apparatus, with portions broken away for convenience of illustration. Fig. 2 is an end elevation of the same, viewed in the direction of arrow No. 2, in Fig. 1. Fig. 3 is a side elevation of the same, viewed in the direction of arrow No. 3, in Fig. 1. Fig. 4 is a side elevation, viewed in the direction of arrow No. 4, in Fig. 1. Fig. 5 is a central, vertical, longitudinal section, viewed in the direction of arrow No. 4, in Fig. 1. Fig. 6 is a similar section, viewed in the direction of arrow No. 3, in Fig. 1, and showing by a fine line the web of fabric being treated.

The object of the invention is to provide an automatically-operated apparatus by which a web of fabric can be shrunk, looped on supporting slats, and carried upwardly into the upper part of a dry-room by a constant and continuous movement.

The invention consists of a feed-roll, fabric-supporting slats, an approximately-horizontal carrier, an inclined carrier, means for sliding the slats, transversely of the path of the fabric delivered from the feed-roll, to the horizontal carrier, and means for delivering the slats, one at a time, from the horizontal carrier to the inclined carrier, as will hereinafter be more fully described and subsequently pointed out in the claims.

Referring to the drawings, there are shown at the respective ends of the apparatus upright portions, 1 and 2, of the supporting-frame, which portions are connected at the sides of the apparatus by metallic bands, 3, bolted to the uprights, as at 4.

The rear part of the frame is made with

an open unobstructed passageway, below the plane of the horizontal carrier, for the folds, 5, of fabric, depending from the slats, 6, which are carried by the horizontal part of the endless belt, 8, to the upwardly inclined carrier, 9, from the slideway 10. That part of the web of fabric which is not shown depending from the slats is given the indicating mark 12. The fabric is fed across the slideway, 10, Fig. 6, by the feed-rolls, 14 and 15, the lower roll, 15, having its lower portion immersed in water contained by the pan 16.

The fabric is made to pass and engage with the smoothing-out resistance-bars, 17, around the lower side of roll, 15, where it is saturated with water, up between the rolls, over the upper roll, 14, and across the slideway, 10, where a new slat is inserted at stated intervals to support the web in the form of depending folds marked 5. The resistance-bars, 17, can be varied in number, as desired, being loosely and detachably supported at their ends by sockets 18.

The water-pan is shown provided with an outlet-pipe, 19, a supply-pipe, 20, and a steam-pipe, 21, for heating the water when desired.

The feed-rolls, 14 and 15, are mounted upon shafts supplied with intermeshing gears, 22 and 23, Figs. 1 and 3, one of which, 23, meshes with pinion, 24, shown by dotted lines in Fig. 3, and fixed upon a drive-shaft, 25, which shaft is provided with loose and tight pulleys provided with the driving-belt, 28, shown partly broken away, and adapted to be shipped from one pulley to the other by a belt-shipper, 29, in the usual well known manner, as seen in Fig. 1.

To loop the fabric upon the slats, a slat is placed by hand upon the end of slideway, 10, against the stop, 30, which is located on the roll side of the fabric-web delivered from the upper roll transversely of the slideway, as shown in Fig. 6.

While the web is being delivered from the roll, the hooks, 31, pass from the position shown in Fig. 6, over the inserted slat, to the positions shown in Fig. 5, and engage the same, so that the hooks, upon returning to the position shown in Fig. 6, slide the inserted slat transversely of the path of the fabric delivered from the feed-roll, and draw the slat onto the horizontal carrier 8 to the position shown by the slat located at the point of the hook in Fig. 6, thereby fold-

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ing the fabric over such slat to the position shown by the fabric-fold lines extending from the first slat on the horizontal carrier, as shown in Fig. 6. The operation is repeated as often as required to produce depending folds of fabric of the desired length.

In Fig. 1, the hooks are shown in engagement with the last-inserted slat at an intermediate position between the stop, 30, and the horizontal carrier, the ends of the slat resting upon the slideway 10. As a means for imparting to the hooks the required movements to transfer the inserted slat to the horizontal carrier, each of the hooks is pivotally mounted upon a stud, 33, Fig. 1, and provided with a controlling spring, 34, on the supporting stud.

The studs project horizontally from the uprights, 35, secured to the slide-blocks, 36, (Figs. 3 and 4) adapted to slide to and fro in the slideways 37. The slide-blocks are each provided with a link, 38, pivoted at, 39, upon the block. Pivotally secured to such links are the rocker-arms, 40, fixed upon rock-shaft, 41, adapted to rock in fixed bearings 42. The rock-shaft, 41, is also provided with a rocker-arm, 43, Fig. 1, fixed thereon at the end located on the side of the apparatus shown in Fig. 3.

The rocker-arm, 43, on one side of the apparatus, and the rocker-arm, 40, on the opposite side of the apparatus, are respectively connected by pitman-rods, 45, with the slotted cranks, 46, fixed upon crank-shaft, 47, which crank-shaft is provided on the side of the apparatus shown in Fig. 4, with a sprocket crank-wheel, 50, fixed thereon, and connected by sprocket, 51, with the sprocket-pinion, 52, fixed upon the shaft of the lower roll 15.

From the foregoing description it will be seen that the slat-sliding hooks are given reciprocating movements, having a fixed relation to the speed of the feed-rolls, whereby the depending folds on the slats are made uniform in length. The hooks may be provided with a spur, 54, projecting from the neck of the hook and adapted to engage a hook-actuated slat, and prevent the rotation of the slat while being acted upon by the hook,

The horizontal carrier which transfers the slats from the slideway, 10, to the inclined carrier, 9, is shown in the form of belts, one on each of the opposite sides of the apparatus, passing around the drive-wheels, 61, fixed upon the rotary shaft, 62, guide-pulleys, 63, and loose pulleys 64 and 65. The shaft, 62, is provided with sprocket-wheels, 70, fixed thereon, and these sprocket-wheels are connected by the sprocket-chains, 71, with sprocket-wheels, 72, fixed upon the studs, 73, rotary in suitable bearings, fixed to the upright portions of the main frame. Fixed upon the studs, 73, are the sprocket-

wheels, 75, which are driven by the sprocket-chain of the inclined carrier 9. Upon each link of the sprocket-chain carrier, 9, is mounted the U-shaped receptacles, 76, severally adapted to receive the end of a slat. The sprocket-chain carrier may be driven by a suitable power in any known manner, and located at the opposite end of the dry-room, or some other convenient place, such means not being shown.

As a means for transferring the fabric-supporting slats from the horizontal carrier to the inclined carrier, there is fixed upon one of the rotary studs, 73, a cam-wheel, 80, having on its periphery the cam-teeth, 81, shown by solid lines in Fig. 2, and by dotted lines in Fig. 3, severally adapted to engage a cam-follower, 82, Figs. 1 and 3, projecting laterally from the lever, 83, pivoted at, 84, upon the frame, and connected, at one end, with a retracting spring, 86, and at its opposite end, pivotally with a link, 88, which is pivotally connected with the rocker-arm, 89, fixed upon the rock-shaft, 90, Fig. 1, which shaft is supported at one end by the arm, 91, Fig. 3, secured by bolt, 92, to a bracket, 93, bolted to the main frame.

At the end of the horizontal carrier, there is provided on each side of the apparatus a stationary inclined slideway, 95, supported by the bracket-arm 96, Figs. 5 and 6. Pivotally supported on the underside of each slideway is a short rock-shaft, 97, having on one end a rocker-arm, 98, Fig. 4, pivotally connected by a link, 99, with the rocker-arm, 100, fixed upon the shaft, 90. Upon the other end of the short rock-shaft is fixed a rocker-arm provided on its outer end with the curved stop, 101, Figs. 1 and 6, adapted to retain one end of a slat resting upon the inclined slideway, as seen in Fig. 6. Each inclined slideway 95 is apertured to permit of the rocking movement of the curved stop, 101, therethrough.

As a means for retaining upon the inclined slideway the slat next preceding the one held by the curved stop, when such curved stop is depressed so as to deliver the slat held by it down the inclined slideway to the inclined carrier, there is provided another rocker-arm, 104, Fig. 5, fixed upon the rock-shaft, 90, which is forced down in front of such slat, as seen in Fig. 5, from which it is apparent that when the rock-shaft, 90, is rocked one way by means of the cam, 80, the curved stop, 101, is forced from the position shown in Fig. 6, down through the inclined slideway, which permits the slat to slide down the incline to one of the U-shaped holders on the inclined carrier, and the stop, 105, on the rocker-arm, 104, is forced down to the inclined slideway in front of the next slat, as seen in Fig. 5. When rocked the other way, the movement of the rock-shaft lifts both stops, 101 and

105, to the position shown in Fig. 6, thereby permitting the next slat to descend to the position shown in Fig. 6, where it is supported by the curved stop 101.

5 The improved fabric-carrying apparatus is shown in connection with a shrinking device consisting of a fabric-carrying roll, partly immersed in water, which saturates the fabric, but it is obvious that any known
10 means for wetting or shrinking the fabric may be employed, so long as the fabric is fed to the slideway where the fabric-supporting slats are inserted by hand. It is also obvious that any drying apparatus may
15 be employed, to which the fabric may be carried by the inclined carrier 9.

The details of the apparatus may be changed, as desired, without departing from the spirit of the invention.

20 For example, it is not absolutely essential that the inclined carrier, 9, should be inclined, for the reason that the apparatus may be raised to a sufficiently high level to permit the carrier, 9, to deliver the fabric
25 to the dry-room, along a horizontal plane, the sole function of the carrier, 9, being to carry the fabric depending from the slats into the dry-room, and to maintain the slats at a uniform distance from each other during
30 their travel through the dry-room, and, for the purposes of this application, such a carrier may be termed the delivering or spacing carrier, to distinguish it from the other carrier, 8, which latter carrier may be termed
35 the transferring carrier. The function of this latter carrier is to transfer the slats, and fabric depending therefrom, from the slideway, 10, to the delivering carrier, and it may be inclined when found desirable.

40 In case the fabric is only moistened, or partially saturated with water, so that the folds depending from the slats will not adhere to each other when brought into contact, one with another, the transferring carrier
45 might be dispensed with, and the stationary inclined slideway extended to the slideway, 10, in which case the slats would be delivered from the slideway, 10, by the hooks, 31, directly upon the slideway having
50 the inclined portion leading to the delivering carrier, and the slats delivered therefrom by the escapement-mechanism, as before described.

The term "inclined slideway," whenever
55 used in the specification, is intended to include the inclined slide-plates located on opposite sides of the apparatus, adapted, respectively, to support at the same time the opposite ends of a slat resting thereon.

60 The operation of the machine is as follows: The fabric is drawn through the water in a pan or tank by the feed-rolls, 14 and 15, the latter roll being partly immersed in the water, and the proper tension upon
65 the fabric being secured by the resistance-

bars, 17, and delivered by the upper roll, 14, across the slideway, 10, where the slats are inserted one at a time by hand, and made to support the fabric web in the form of depending folds, 5, the slats being drawn by hooks;
70 31, from the slideway, 10, on to the horizontal carrier; the slats and depending folds are then moved along the horizontal carrier by the horizontal part of the endless belt, 60, until they are transferred therefrom by
75 gravity controlled by escapement-mechanism to the upwardly inclined delivering carrier, by which the fabric is carried to the desired destination into, along and through a drying-room.
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What I claim as new and desire to secure by Letters Patent is—

1. The combination with a fabric-feeding roll; a plurality of fabric-supporting slats; and a delivering carrier; of a downwardly
85 inclined slideway leading to the delivering carrier; means for successively moving the slats across the path of the fabric, between the feed-rolls, and the inclined slideway; escapement-mechanism for delivering the
90 slats, one at a time, down the inclined slideway to the delivering carrier; and means for automatically operating the escapement-mechanism.

2. The combination with a fabric-feeding
95 roll; a plurality of fabric-supporting slats; and a delivering carrier; of a transferring carrier; means for delivering the slats, one at a time, from the transferring to the delivering carrier; a slideway extending trans-
100 versely of the path of the roll-fed fabric and leading to the transferring carrier; and means for successively sliding the slats, placed by hand, one at a time, on such slideway, across the path of the fabric onto the
105 transferring carrier.

3. The combination with a fabric-feeding roll; a plurality of fabric-supporting slats; and a delivering carrier; of a transferring
110 carrier; a downwardly-inclined slideway leading from the transferring to the delivering carrier; escapement-mechanism for delivering the slats, one at a time, down the inclined slideway to the delivering carrier; means for automatically operating the es-
115 capement-mechanism; and means for successively moving the slats, one at a time, across the path of the fabric between the feed-roll, and the transferring carrier.

4. In an apparatus of the class described,
120 the combination with a feed-roll; a plurality of slats; and a delivering and spacing carrier; of an inclined slideway, means for moving the slats, one at a time, transversely of the path of the fabric between the feed-
125 roll, and said inclined slideway; and means for delivering the slats, one at a time, to the delivering and spacing carrier.

5. In an apparatus of the class described,
130 the combination with a feed-roll; a plurality

of slats; a carrier; and a slideway leading, transversely of the path of the fabric delivered from the feed-roll, toward the carrier; of a pair of spring-controlled pivoted
5 hooks engageable, respectively, with the opposite ends of a slat placed on such slideway, and movable along said slideway to the carrier, across the path of the fabric delivered from the feed-roll; and means for
10 automatically moving such hooks along such slideway.

6. In an apparatus of the class described

including fabric-supporting slats, a feed-roll and carrier, a hook, for sliding slats across the path of the fabric delivered from the
15 feed-roll to a carrier, having a spur projecting from the neck of such hook adapted to engage the slat and prevent its rotation.

In testimony whereof, I have hereunto set my hand this 9th day of Oct. 1908.

JACOB ZILLHARDT.

Witnesses:

GEO. A. MOSHER,

J. DONSBACH.

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