

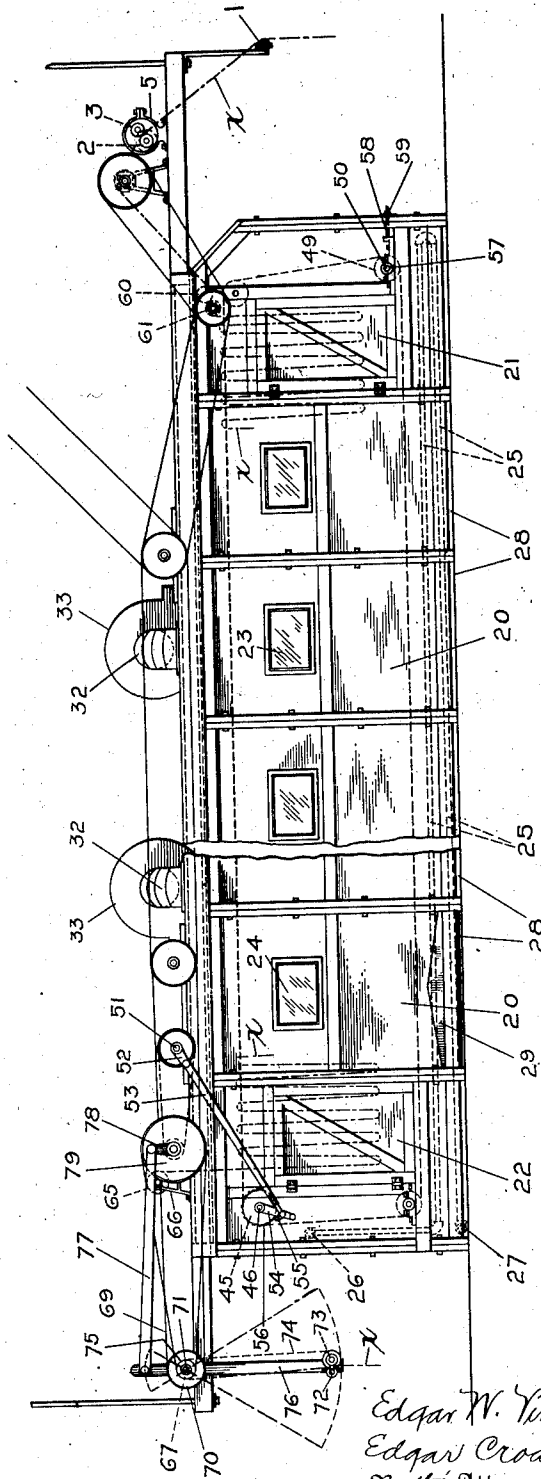
E. W. VINCENT & E. CROASDALE.  
FABRIC SHRINKING MACHINE.  
APPLICATION FILED MAY 1, 1911.

Patented Nov. 5, 1912.

3 SHEETS-SHEET 1.

1,043,742.

Fig. 1.



Witnesses:  
John Darby  
Rose Munk

Edgar W. Vincent Inventors  
Edgar Croasdale  
By their Attorney John D. Morgan

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3 SHEETS—SHEET 2.

Fig. 2.

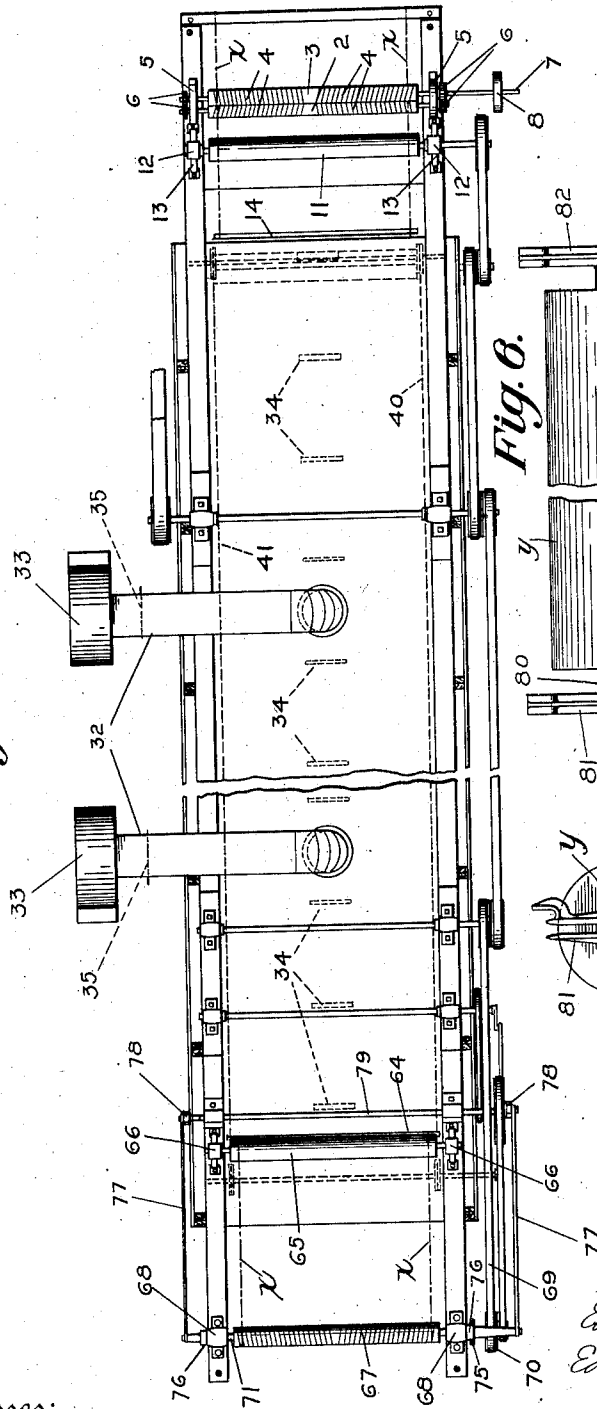


Fig. 6.

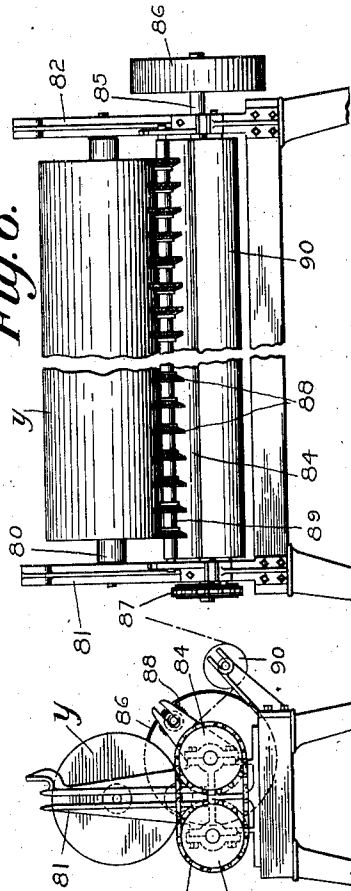
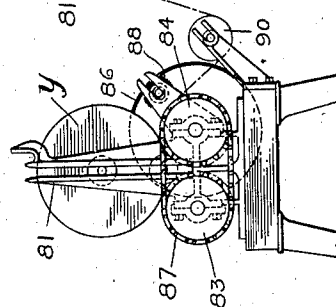


Fig. 7.



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3 SHEETS—SHEET 3.

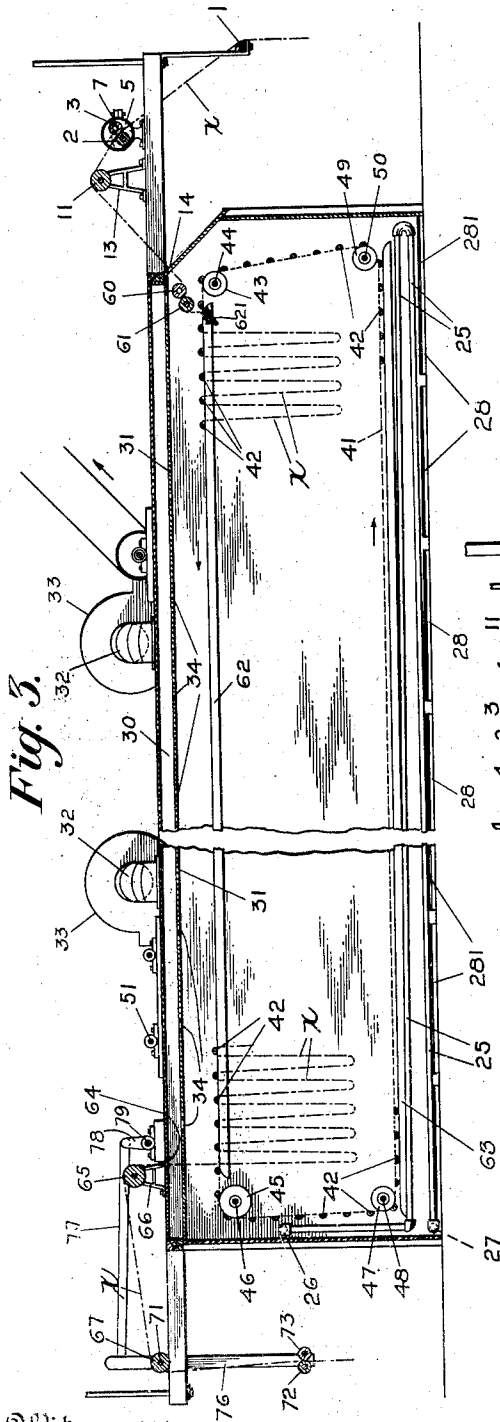


Fig. 3.

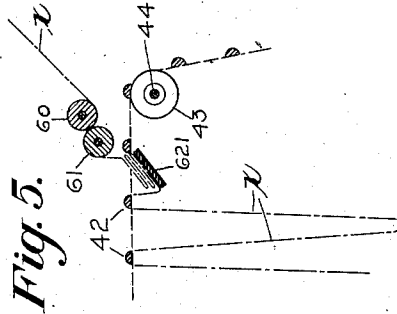


Fig. 5.

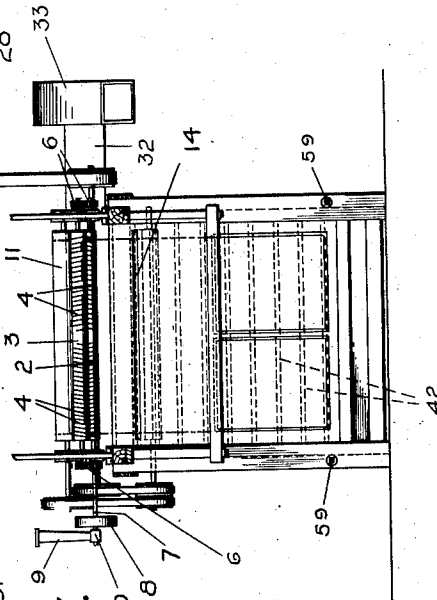


Fig. 4.

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John Darcy  
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By *John Morgan*

# UNITED STATES PATENT OFFICE.

EDGAR W. VINCENT, OF WATERVLIET, AND EDGAR CROASDALE, OF TROY, NEW YORK,  
ASSIGNORS TO TOLHURST MACHINE WORKS, OF TROY, NEW YORK, A CORPORATION  
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## FABRIC-SHRINKING MACHINE.

1,043,742.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed May 1, 1911. Serial No. 624,387.

*To all whom it may concern:*

Be it known that we, EDGAR W. VINCENT and EDGAR CROASDALE, citizens of the United States, residing, respectively, at Watervliet, in the State of New York, and at Troy, in the State of New York, have jointly invented new and useful Improvements in Fabric-Shrinking Machines, of which the following is a specification.

10 The invention relates to machines for shrinking fabrics and more particularly to machines for handling a web of fabric which has been wetted and which is to be dried and shrunk in the web.

15 Objects of the invention are to provide a machine wherein the web of fabric is uniformly shrunk so that there will be no later partial shrinking or shrinking of portions only of the fabric, and especially after the goods have been cut.

Further objects of the invention are to provide for a uniform smoothing of the fabric after it has been wetted and before it is dried; to provide for exposing a relatively great extent of the fabric to the drying action at one time while protecting the fabric from any pulling or straining as it is progressed during the drying action; to provide for a uniform action by the heated air upon the drying fabric, and for effectively carrying away the moisture saturated air.

These and other objects of invention will in part be more fully set forth hereinafter and will in part be apparent herefrom to those skilled in the art.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

40 The accompanying drawings, referred to herein and forming a part hereof, illustrate one embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

45 Of the drawings: Figure 1 is a side elevation of a machine, constructed in accordance with the principles of the invention; Fig. 2 is a top plan corresponding to Fig. 1; Fig. 3 is a longitudinal section through Fig. 1, just within the outer casing; Fig. 4 is an end elevation looking at Fig. 1 from the right; Fig. 5 is a detail on an enlarged scale of the feeding and looping devices for the web; Fig. 6 is an end elevation, on

an enlarged scale, of a winding device for the dried and shrunk web which may be used instead of a folding device such as is shown in Figs. 1 and 3; and Fig. 7 is an elevation looking at Fig. 6 from the left. 60

Referring to the accompanying drawings, illustrating by way of example, one embodiment of the invention, the web of wetted fabric is shown running over a guide bar 1, which serves to support and generally position the fabric *w*. The web *w* of fabric is then led between a pair of helically ribbed opener rolls 2 and 3, for the purpose of smoothing out and uniformly laying or smoothing all parts of the fabric, in order that it may be in uniform condition in all its parts both longitudinally and transversely of the web or fabric. These rolls are provided with ridges or ribs 4 which extend in helical form from the middle of each roll outwardly toward each end. These rolls are shown mounted in suitable bearings 5 and driven in a suitable manner. The rolls are driven in unison by means of intermeshing gears 6, the shaft 7 of the roll 3 being provided with a belt pulley 8, the end of said shaft being shown journaled in a bearing 10 carried by a hanger 9. The web of fabric passes from said opener rolls over a carrier roll 11, mounted in bearings 12 supported on the pedestals 13. The web of fabric *w* passes thence into the drying and shrinking room through suitable ingress means, such as a slot 14 at one end of said drying room (the right hand end referred to Figs. 1 and 2). 80 85 90

The drying room is closed and is arranged to receive the air only through the provided intakes, and to discharge it through the provided egress means, such as the exhaust or ventilating pipes 32, whereby the quantity and the distribution of the air and the resulting circulation of the air past and through the web of fabric throughout all parts of the drying room may be completely effected and controlled. This drying room is of general longitudinal and also preferably of rectangular form, and may have its various walls constructed of wood and lined with sheet metal. In Fig. 1 the side wall 20 is shown provided with doors 21 and 22, and with windows 23 and 24, thus affording both means for access and observation. 100 105

Means are provided, in the present embodiment, 110

ment, for heating the air within the drying room, the embodied form thereof comprising the coil of pipe 25, arranged in two tiers along the bottom of the drying room. Said pipes may be staggered or doubled sufficiently to give the requisite amount of radiating surface. Suitable inlets and outlets 26 and 27 for the steam coil are provided. Arranged along the drying room are suitable air intaking means designed to effect an equable circulation of dry air in all parts of the drying room. Said means are arranged at one side of the path of travel of the web of fabric to be dried. In the embodied form the air intakes are arranged along at the bottom and on both sides of the drying room, the long, narrow apertures 28 extending practically the entire length of the drying room. Said openings are also shown adjacent to and below the level of the steam coil 25. These orifices may be provided with slides 29 to control the amount of air admitted, and the distribution thereof in various parts of the drying room. Deflecting plates 281 are shown arranged to direct the air well out into the steam coils to insure the incoming air passing through the coil of pipe to be thoroughly heated thereby.

Suitable emitting means for the moisture-laden air are provided, and in the embodied form thereof are provided also means cooperating to effect the equable distribution or circulation of the air moving around and through the web of fabric. In the embodied form of such means are provided at the top of the drying room a chamber or space 30 separated by a floor or partition 31 from the main part of the drying room. Communicating with and leading out from the top of this chamber 30 are ventilating or exhaust pipes 32, which may be connected, if desired, with an exhaust fan 33. Dampers 35 may be provided in pipes 32 if desired.

The partition 31 between the chamber 30 and the main part of the drying room is provided with apertures 34 which are graduated in size to equalize the movement of the air in the drying room and effect an adequate and efficient circulation in all parts thereof. The apertures nearest the pipes 32 are smallest, the apertures increasing in size the farther their distance from said pipes as shown in Fig. 2.

Means are provided for carrying the fabric through the drying room with a great extent of surface exposed to the drying action of the heated air while at the same time protecting the fabric from any strain which would tend to disturb or destroy the uniform shrinking of all parts thereof. The embodied form of such means comprises an intermittently moving conveyer upon which the fabric may be looped or festooned, while the wet fabric is fed in uniformly and carefully thereto. Said embodied form com-

prises a pair of endless sprocket chains 40 and 41 at either side of the drying room and running from the place of ingress at which the web of fabric  $x$  is taken into the drying room to the other end of the drying room to the place of egress where the dried web passes out of the drying room. Arranged transversely between and supported by the sprocket chains 40 and 41, are the supporting bars 42 over which the web of fabric  $x$  is looped. Suitable supporting and actuating means for the sprocket chains are provided, and they are shown running over a pair of sprocket wheels 43 on a shaft 44, over a pair of sprocket wheels 45 carried on a shaft 46, and over a pair of sprocket wheels 47 carried upon a shaft 48 and over a pair of sprocket wheels 49 carried on a shaft 50. The two last mentioned pairs of sprocket wheels are near the bottom of the drying room, the whole arrangement affording an endless path for the sprocket chains, the return portion of the path being near the bottom of the drying room, thus leaving the body of the drying room free for the traveling loops or festoons of the drying fabric.

An intermittent movement is given to the sprocket chains by suitable means and for this purpose the driven shaft 51 is shown having at its end the crank 52, to which crank is pivoted the rod 53, which is likewise pivoted to the oscillating pawl arm 54. Said pawl arm 54 is loosely mounted on the shaft 46. A pawl 55 upon the pawl arm 54, engages with a ratchet wheel 56 fast on the shaft 46. The pawl may be held to its ratchet wheel by a suitable spring (not shown). Means may be provided for adjusting or regulating the tension of the sprocket chains 40 and 41, and for this purpose the shaft 50 is shown mounted in slidable bearings 57 to which are connected threaded adjusting rods 58 provided respectively with adjusting nuts 59 on the exterior of the drying room.

In accordance with one feature of the invention, means are provided whereby a length, and preferably a full length of a loop, of the wet web of fabric is permitted to drop together with a jerk or flit. This causes the fabric to loop smoothly and uniformly, and in much better shape than if gradually fed between the supporting bars 42. In the embodied form of said means and the cooperating devices, feed rolls 60 and 61, substantially constantly driven are provided. Below these rolls, and just below the path of travel of the supporting bars 42, is located an inclined shelf 621 upon which the web of fabric  $x$  piles up as fed thereto by said rolls 61 and 62. At the movement of the supporting bars 42, the next adjacent bar knocks or pushes off the pile of fabrics from the shelf 612 which

drops with a jerk or flirt, as already described, to form the loop between the two bars. In addition to this smoothing action, the piling of the fabric on the shelf out of the rolls 61 and 62 prevents the selvage edge from curling in and forming a plait, and also aids in preventing the forming or persistence of wrinkles in the fabric.

The feeding rolls 60 and 61 are located just within the drying room, and just above the front end of the upper or fabric supporting reach of the sprocket chains 40 and 41 for the purpose of feeding the fabric to the conveyer. As will be noted from the drawing, these rolls are arranged relatively to the direction of the in-feeding web of fabric so that the web will have a good, fair contact with the peripheral surface of each roll instead of merely passing directly through the bite or contact line of these rolls. Suitable supports 62 and 63 are provided at either side of the drying room to support the ends of the bars 42 along the fabric conveying reach and the return reach of the sprocket chains to prevent sagging.

In the embodied form of egress means, the dried fabric passes out through the passage or slot 64 in the top of the drying room, and over the carrier roll 65, which roll is supported in bearings upon the bracket 66. The web  $x$  of dried fabric then passes over the roll 67 which is provided with helical ridges, beginning near the middle of the roll and running out toward its ends, for opening or working the cloth out widthwise of the web. The roll 67 is supported in bearings 68 upon the frame of the machine, and is driven by the belt 69 passing over the pulley 70 fixed to the shaft 71 of the roll 67. From the opening roll 67 the web  $x$  passes between the feeding out rolls 72 and 73. The rolls 72 and 73 are driven by the belt 74 running from a pulley 75 upon the shaft 71 of the rollers 67. The rolls 72 and 73 are journaled in the end of the oscillating arms 76, which arms are fulcrumed upon the shaft 71. The other end of the arms 76 are connected by a pivoted rod 77 to cranks 78 mounted on the shaft 79, whereby an oscillatory motion is imparted to the rolls 72 and 73 which with the rotation of said rolls acts to deliver the cloth in a folded pile.

In the form of winding means shown in Figs. 6 and 7, the fabric is wound around a roll or mandrel 80 slidably held in ways or guides 81 and 82. The roll of fabric  $y$  rests upon driven rolls 83 and 84, so that notwithstanding the changing diameter of the roll of fabric it will wind up at the same peripheral speed. On the shaft 85 of roll 84 is a belt pulley 86, and a chain drive 87 drives the rolls 83 and 84 together. A spreading or smoothing roll or series of disks 88 on a shaft 89 are shown acting on the fabric as it passes over the roll 84. This

device (see Figs. 6 and 7) comprises a series of disks composed of bristles presenting an inclined surface on the side toward the center of the web and being annular at the other side. Said device acts to smooth out the web of fabric just prior to its being rolled up. The web may be led over a roller 90 from any suitable feeding out device such as a pair of feeding out rolls.

The manner of operation of the herein described mechanism will be generally understood from the foregoing description, but a brief résumé will be here given.

The web  $x$  of the damp fabric passes over the guide bar 1 between the opening rolls 2 and 3 and over the carrier roll 11 and between and partly around the feeding rolls 60 and 61. By reason of the intermittent movement of the supporting bars 42, and the substantially constant feed of the web  $x$  of the fabric, the fabric will be looped or festooned between successive bars 42 for substantially the free depth of the drying room. The sprocket chains 40 and 41 will then receive an intermittent feed for substantially the distance between two successive bars 42, thus forming another loop or festoon of the same size as that just described. This action goes on continuously, the loops of cloth each passing along the drying chamber subject to the drying action of the transversely traveling currents of warm dry air which pass through and around these loops of fabric. The dried fabric emerging from the drying room passes over the carrier roll 65 and over the opening roll 67, and between the feeding out rolls 72 and 73. The operation of the winding device, when same is employed, will be clearly understood from the previous description thereof. It will be seen that during the drying the utmost freedom for shrinkage is allowed, and no part of the fabric is submitted to any mechanical pulling or stress, which would in anywise interfere with uniform action of the heat on all parts of the web of fabric. The slides 29 will regulate the amount and thus the temperature of the air admitted through apertures 28 along the drying chamber to conform exactly to the requirements of the gradually drying fabric, and the apertures 34 cooperating therewith will cause the proper distribution and travel of the air currents through the drying room and into the chamber 30, from whence the moisture-laden air is exhausted.

The objects and advantages of the invention, together with its principles of operation will be understood from the foregoing, and it will likewise be understood that variations may be made from the exact structure shown and described within the scope of the accompanying claims without departing from the principles of the invention.

What we do claim as our invention and desire to secure by Letters Patent, is:

1. A fabric shrinking machine including in combination a relatively long inclosed chamber said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and means for maintaining an equable circulation of air between one series of openings and the other.
2. A fabric shrinking machine including in combination a relatively long inclosed chamber said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and a chamber with which one of said series of openings communicates, and means for exhausting the air from said chamber.
3. A fabric shrinking machine including in combination a relatively long inclosed chamber said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, a chamber with which one of said series of openings communicates, and means for exhausting the air from said chamber, said openings being successively larger in area as their distance from said air exhausting means is greater.
4. A fabric shrinking machine including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports, continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings for admitting air arranged along the bottom part thereof, air heating means arranged along and within said chamber near said air admitting openings, a second inclosed chamber arranged along the top of said first-mentioned inclosed chamber and a plurality of openings between said chambers, means for exhausting air from said second chamber, said openings between said two chambers being of successively greater area as their distance from said exhausting means is greater.
5. A fabric shrinking machine including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling

along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports, continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, means for receiving the continuously fed in web and intermittently dropping substantially a loop length between two adjacent supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loop on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and means for maintaining an equable circulation of air between one series of openings and the other.

6. A fabric shrinking machine including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports, continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, means for receiving the continuously fed in web and intermittently dropping substantially a loop length between two adjacent supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loop on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and means for maintaining an equable circulation of air between one series of openings and the other, and smoothing means operating to smooth the damp web adjacent to said feeding in rolls and before the web is looped.

7. A fabric shrinking machine including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near

the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports, continuously operating feed rolls for feeding in said fabric through said feeding in openings to be looped loosely between said supports, means for receiving the continuously fed in web and intermittently dropping substantially a loop length between two adjacent supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and means for maintaining an equable circulation of air between one series of openings and the other, and smoothing means operating to smooth the damp web adjacent to said feeding in rolls and before the web is looped.

8. A fabric shrinking machine including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, progressing means for a looped fabric comprising a plurality of spaced apart supports traveling along within said chamber near the top thereof from said feeding in opening to said feeding out opening and back along said chamber near the bottom thereof, means for traveling said supports, continuously operating feed rolls for feeding in said fabric through said feeding in opening to be looped loosely between said supports, continuously operated feeding out rolls near said feeding out opening for feeding out the dry and shrunk web from the loops on said supports, said drying chamber having a series of openings arranged therealong on one side of the loosely looped web of fabric and another series of openings arranged therealong on the opposite side of said web, and means for maintaining an equable circulation of air between one series of openings and the other, and means for rolling the dry and shrunk web into a roll at uniform speed.

9. A machine for shrinking fabric in the web including in combination a relatively long inclosed chamber, a series of air orifices located along the bottom part of said chamber, a series of air orifices located along the upper part of said chamber, said chamber having a long and narrow opening at one end thereof through which the web of damp fabric is fed in, and having a long and narrow opening at the other end thereof through which the web of dry and shrunk fabric is fed out, and means inclosed within said chamber for forming said fed in web near

said feeding in opening for the damp fabric into loose loops not under tension within said chamber and transporting it slowly along said chamber in such loose loops not under tension and for feeding it out from said loose loops through said feeding out opening for the shrunk and dried fabric, and means for causing a travel of air between said two series of air orifices.

10 10. A machine for shrinking fabric in the web including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having  
15 a long and narrow opening through which the web of dry and shrunk fabric is fed out, a plurality of spaced apart supports traveling slowly along within said chamber near the top thereof from near said feeding in  
20 opening to near said feeding out opening means for traveling said supports, means for moving said web of fabric and said supports relatively to each other whereby said fed in web is deposited in loose loops be-  
25 tween said supports near said point of feeding the web, and means for withdrawing the dry and shrunk fabric through said feeding out opening from the loose loops upon said traveling supports when said supports are  
30 near said feeding-out opening.

11. A machine for shrinking fabric in the web including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through  
35 which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out, a plurality of spaced apart supports traveling slowly along within said  
40 chamber near the top thereof from near said feeding in opening to near said feeding out opening, means for traveling said supports, means for moving said web of fabric and said supports relatively to each other where-  
45 by said fed in web is deposited in loose loops between said supports near said point of feeding the web, and means for withdrawing the dry and shrunk fabric through said feeding out opening from the loose loops  
50 upon said traveling supports when said supports are near said feeding-out opening, and means for maintaining an equable circulation of air through said chamber transversely to the direction of travel of the  
55 fabric.

12. A machine for shrinking fabric in the web including in combination a relatively long inclosed chamber, said chamber having a long and narrow opening through which  
60 the web of damp fabric is fed in and having

a long and narrow opening through which the web of dry and shrunk fabric is fed out, a plurality of spaced apart supports traveling slowly and intermittently along within said chamber near the top thereof from near  
65 said feeding-in opening to near said feeding out opening, means for traveling said supports, means for continuously feeding in the damp web through said feeding in opening, whereby said web is loosely looped be-  
70 tween said supports, and means for continuously feeding out the dried and shrunk web through said feeding out opening.

13. A machine for shrinking fabric in the web including in combination a relatively  
75 long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out,  
80 a plurality of spaced apart supports traveling slowly along within said chamber near the top thereof from near said feeding in opening to near said feeding out opening, means for traveling said supports, means  
85 for feeding in said web of damp fabric through said feeding in opening, and means for causing substantially a loop length of said fabric to simultaneously fall between  
90 two adjacent supports, and means for feeding out the dry and shrunk fabric through said feeding out opening.

14. A machine for shrinking fabric in the web including in combination a relatively  
95 long inclosed chamber, said chamber having a long and narrow opening through which the web of damp fabric is fed in and having a long and narrow opening through which the web of dry and shrunk fabric is fed out,  
100 a plurality of spaced apart supports traveling slowly along within said chamber near the top thereof from near said feeding in opening to near said feeding out opening, means for traveling said supports, means for  
105 feeding in said web of damp fabric through said feeding in opening, a support upon which said fed in damp web is accumulated and from which it falls substantially a fold length at a time between two adjacent sup-  
110 ports, and means for feeding out the dry and shrunk fabric through said feeding out opening.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

EDGAR W. VINCENT.  
EDGAR CROASDALE.

Witnesses:

A. J. CADY,  
J. W. CROWE.