

[54] **MACHINE FOR DRYING AND IRONING FABRICS**

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38/49-56; 29/114; 69/30; 68/58

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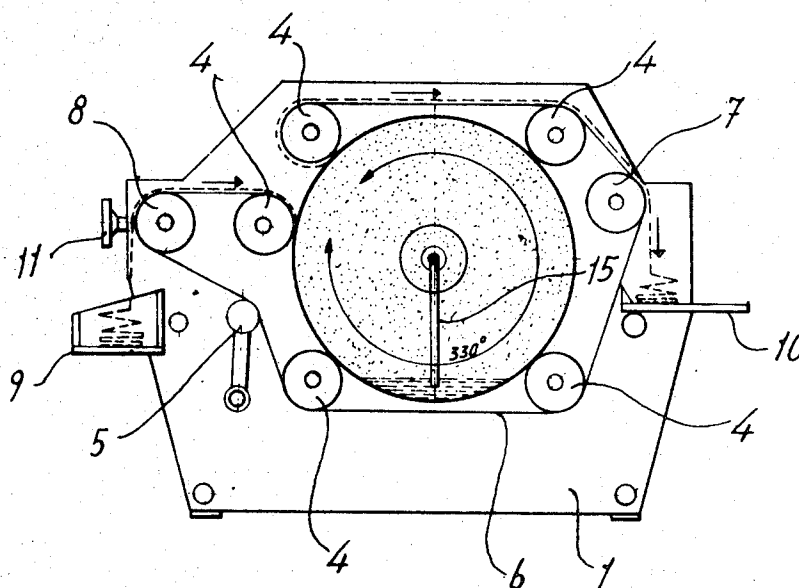
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[57]

ABSTRACT

A machine for drying and ironing fabrics having a central heating cylinder and a plurality of pressure rollers disposed around the central cylinder. An endless canvas belt accompanies the fabric to be treated, which belt is guided by the pressure rollers around the central cylinder whereby contact is established with the hot periphery of the cylinder over an arc of at least 330°.

7 Claims, 5 Drawing Figures



SHEET 1 OF 2

Fig. 1

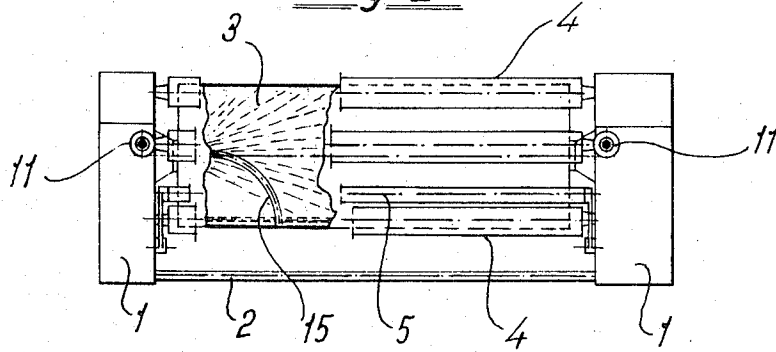


Fig. 2

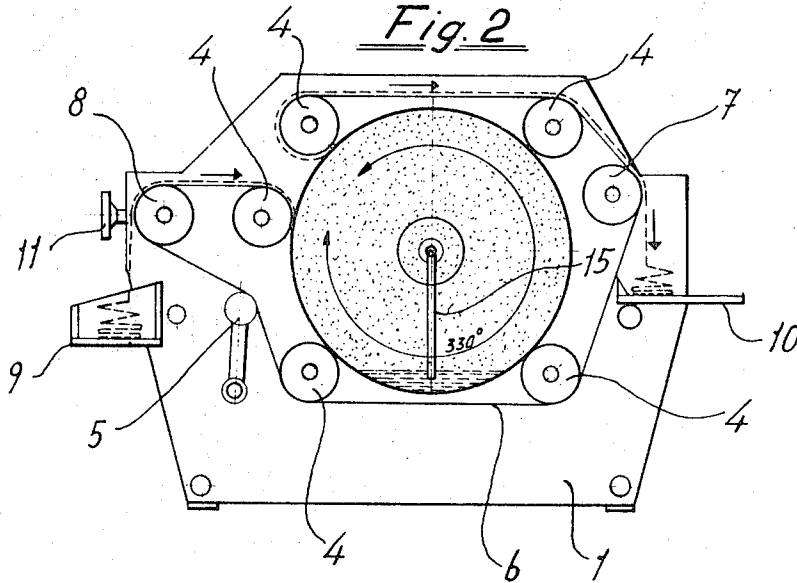


Fig. 3

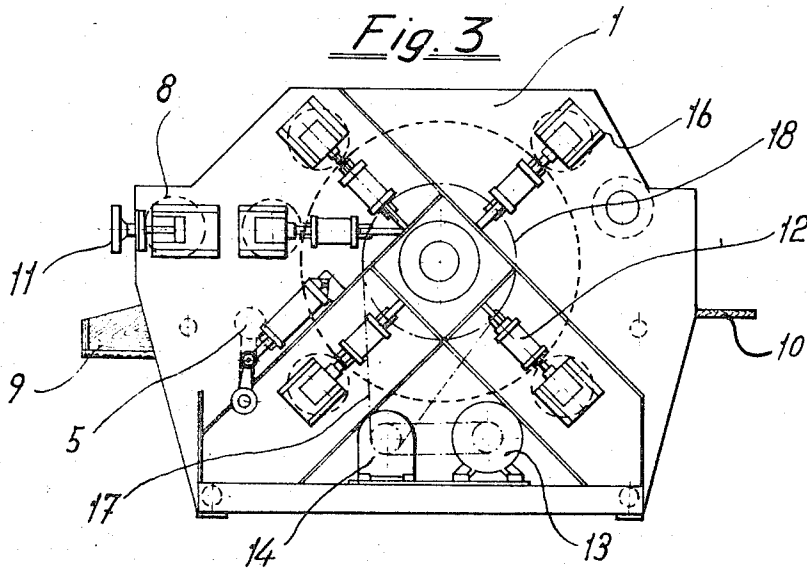


Fig. 4

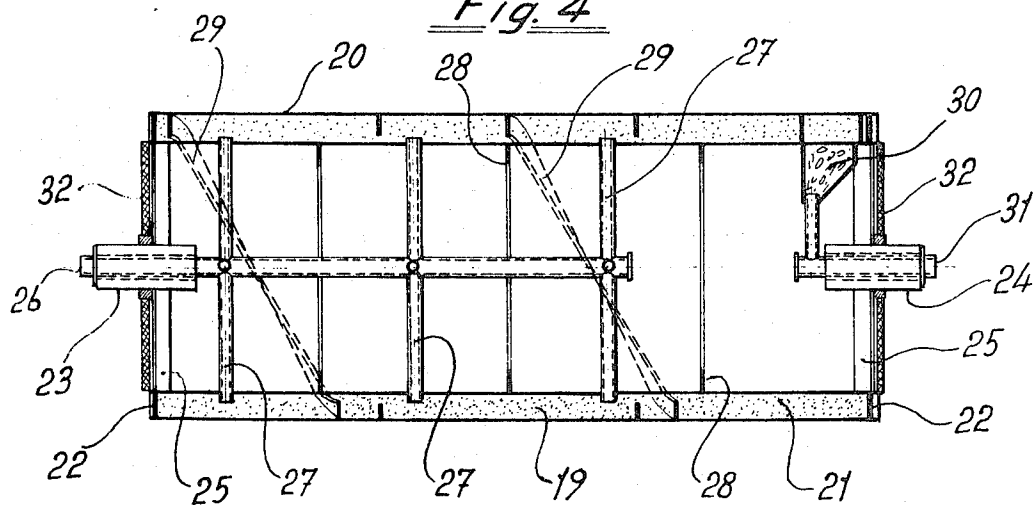
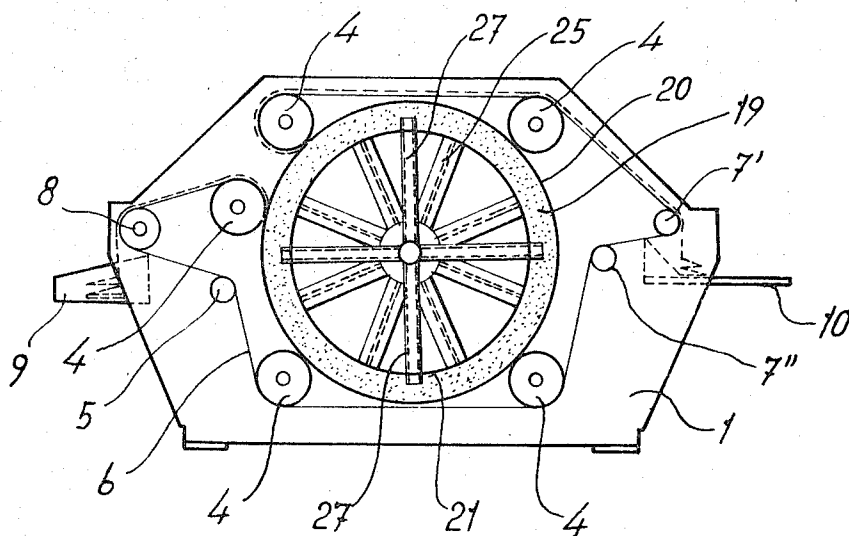


Fig. 5



MACHINE FOR DRYING AND IRONING FABRICS

The object of the invention dealt with comprises a machine for ironing and drying distinct classes of fabrics with the maximum utility of the central heating cylinder surface, due to the canvas belt or apron being in contact with the cylinder throughout about 330° of its wall, and in addition the belt in its zone existing between the loss of contact with the cylinder up to the fabric outgoing roller, or at the upper part of the machine passes very close to the central cylinder whereby the canvas belt of endless type is utilized as an entering support and an outgoing bedding of the fabric to be dried and ironed.

Said machine is essentially constituted by two steel plate benches that serve as supports for the five periphery pressure rollers and for the ingoing and outgoing garment rollers.

An endless canvas belt circulates pressed by the periphery rollers over the central heating cylinder, so that the fabric to be dried and ironed is situated between the endless cloth and the central cylinder, circulating precisely in the zone determined by the entrance rollers and the outgoing of the fabric.

An additional strainer roller provides the endless canvas belt with the necessary tension to prevent side displacements, which may be rectified if produced by actuating one of the hand flywheels which will situate the garment entrance roller that recuperates the side displacement suffered by the canvas belt.

The displacement and pressure of the periphery rollers is effected by means of cylinders with both pistons moved by compressed air.

The periphery rollers are dressed with rubber or other elastic material in order to absorb possible inequalities in the fabrics that circulate pressed by said rollers.

The assembly is driven by a motor and speed reducer housed in one of the benches, which transmit the movement to the central cylinder through two toothed wheels and a driving chain, the movement being transmitted to the rollers by tangential contact and by the traction effected by the endless canvas belt.

In order to obtain also more easily between the endless canvas belt and the ironed garment, two rollers are provided of small diameter at the outlet zone of the garment which, forming an acute angle with the profile, obliges the unfastening of the conducted garment while the canvas belt follows its endless course.

The central cylinder is steam heated, the steam entering through an opening in the center of the shaft, and the extraction of the condensed water is effected by means of a syphon tube from the cylinder bottom and through the same shaft opening.

In a variation of the central cylinder for better efficiency of the heating steam, the cylinder receives the vapor exclusively adjacent the outer peripheral surface thereof through steam inlet tubes disposed perpendicular to the working surface. Said cylinder consists of two concentric cylinders or jacket between which there is defined a ring-like annular chamber that exclusively receives the steam that strikes directly against the inner surface of the outer wall.

Said central cylinder has in the interior of the chamber a helix of steel plate welded or soldered in the outer plate or jacket of the cylinder, which helix during the rotation of the cylinder causes a small quantity of con-

densed water, produced at each turn or rotation of the cylinder, to flow towards the retention chamber, which retention chamber collects the water in its lowest position and empties same by the outlet tube upon rotating towards the highest position at each turn of the cylinder.

In the drawings:

FIG. 1 is a front view of the machine with a part of same being shown in cross section.

FIG. 2 is a side cross section of the machine.

FIG. 3 is a side view of the machine.

FIG. 4 is a lengthwise cross section of the cylinder according to a preferred variation of same.

FIG. 5 is a lengthwise section of the machine equipped with the cylinder shown in FIG. 4.

As shown in FIG. 1, the benches or side supports 1 are joined by the stays 2 and rotatably support thereon a central hollow cylinder or roller 3, the periphery rollers 4 and the tension roller 5, which rollers engage the endless canvas belt or apron 6. A cloth entrance roller 8 forms with the first periphery roller 4 a feeding support, and an outlet roller 7 or 7' with the two last periphery rollers 4 form a drying platform for unfastening the fabric to be dried from the endless canvas belt. The trays 9 and 10 are the receptacles for the fabric respectively before and after its passage over the ironing cylinder, the fabric being illustrated by dotted lines in FIG. 2. The two hand wheels 11 are for the adjustment of the position of the fabric entrance roller 8, or to determine its parallelism with regard to the central cylinder 3.

The piston cylinders 12 are driven by air and automatically actuate the periphery rollers 4 between their rest and pressure positions, which rollers 4 are slidable in their bearing guides 16. A motor 13 drives a speed reducer 14, which transmits the rotation to the central cylinder 3 by means of a chain 17 and a wheel or sprocket 18.

The syphonic tubes 15 (FIGS. 1 and 2) empty the condensed water produced inside the central cylinder 3.

As illustrated in FIGS. 2 and 5, the angle enclosed by the endless canvas belt in working position on the hot central cylinder 3 permitting this special disposition is approximately 330°.

FIGS. 4 and 5 illustrate a preferred form for the rotatable central cylinder, which in said case comprises a steam chamber comprising a circular roll 19, defined by an exterior cylinder 20 and an interior cylinder 21 and two side plates 22 duly soldered or welded to cylinders 20 and 21. Two hollow shafts 23 and 24 carry radial arms 25 fixed to the interior body 21 of the cylinder. Through the interior of the shaft 23 passes a central steam inlet tube 26 which branches into smaller diameter tubes 27 that project radially of cylinder 3 and discharge steam into the hollow ringlike interior chamber of the cylindrical roll 19 as defined between cylinders 20 and 21.

Several rings 28 duly spaced strengthen the cylinder, and a helix 29 positioned within the hollow chamber and soldered to the outer cylinder 20 ensures the supply of water to the retention chamber 30, from which a drainage tube 31 passes through the hollow shaft 24 to the exterior.

As an accessory the sides 22 are provided with thermal insulation 32 to prevent heat losses.

FIG. 5 shows that the endless canvas 6 belt is provided with outlet rollers 7' and 7'' which, owing to their small diameter and disposition, cause an extreme change in the movement direction of the belt, the belt when passing around the roller 7' forming an acute angle, and also result in the belt reach between the rollers 7' and 7'' facing downwardly in order to obtain efficient unfastening of the fabric from the belt (as illustrated by dotted lines in FIG. 5) so that the fabric is deposited in the receptacle 10.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A machine for drying and ironing fabrics, comprising:

frame means;

an axially elongated central heating cylinder rotatably supported on said frame means for rotation about a substantially horizontal axis;

a plurality of rotatable rollers supported on said frame means and disposed around said heating cylinder, said rollers being mounted for rotation about substantially horizontal axes;

an endless flexible belt movably supported on said rollers and positioned with a portion thereof disposed in contact with an external peripheral surface of said heating cylinder over an angle of at least approximately 330°;

said heating cylinder including inner and outer substantially cylindrical walls which are radially spaced from one another and define therebetween an annular ringlike heating chamber, said chamber extending axially throughout substantially the complete length of said heating cylinder;

means for supplying steam to said chamber for heating said outer cylindrical wall and particularly the external peripheral surface of said heating cylinder as defined by said outer cylindrical wall;

helical wall means disposed within said chamber and fixed to said heating cylinder, said helical wall means defining a helical flow path within said chamber for causing condensate to be moved axially toward one axial end of said heating cylinder during rotation thereof; and

discharge means associated with said one axial end of said heating cylinder and associated with said chamber for permitting the discharge of the condensate.

2. A machine according to claim 1, wherein said frame means includes a pair of hollow shaft portions rotatably supporting the opposite ends of said heating cylinder;

said discharge means including wall means disposed within the interior of said inner cylindrical wall and defining a condensate collection chamber, said wall means being fixed relative to said heating cylinder, and opening means providing communication between said collection chamber and said heating chamber adjacent said one axial end of said heating cylinder;

said discharge means further including a discharge conduit extending through and rotatably supported within one of said shaft portions, said discharge conduit having an inner end thereof positioned within said heating cylinder and disposed in communication with said collection chamber, whereby condensate flows from said collection chamber

through said discharge conduit during rotation of said cylinder when said collection chamber is positioned above the rotational axis of said cylinder; and

said means for supplying steam to said heating chamber including a steam supply conduit rotatably supported within and extending through the other shaft portion, and a plurality of radial conduits fixed to said steam supply conduit and extending radially outwardly of said heating cylinder, the radially outer ends of said radial conduits communicating with said heating chamber.

3. A machine according to claim 2, wherein said steam supply conduit extends substantially along the rotational axis of said heating cylinder and extends axially of said heating cylinder over a substantial portion of the axial length thereof, and said plurality of radial conduits being spaced axially from one another and communicating with said heating chamber at locations which are spaced from one another along the axial length of said heating cylinder.

4. A machine according to claim 2, wherein said plurality of rollers includes at least four support rollers positioned around the periphery of said heating cylinder at angles of approximately 90° therebetween, and a fluid pressure cylinder supporting each of said support rollers on said frame means for resiliently urging each of said support rollers radially inwardly toward the external peripheral surface of said heating cylinder, whereby said four support rollers maintain said portion of said endless belt in engagement with said heating cylinder, said endless belt including further portions thereof spaced outwardly from said heating cylinder and disposed in engagement with said four support rollers at contact points thereon which are spaced substantially diametrically opposite the contact points between said four support rollers and said portion of said endless belt which is disposed in engagement with said heating cylinder.

5. A machine according to claim 4, wherein said plurality of rollers includes a first pair of belt engaging rollers disposed adjacent one side of said heating cylinder, one of said first pair of rollers being resiliently urged toward the external peripheral surface of said heating cylinder, the other of said first pair of rollers being spaced horizontally outwardly from said one roller, and said endless belt including a supply portion extending between said first pair of belt engaging rollers and defining a substantially upwardly facing surface on which the fabric is positioned which is to be fed into engagement with the external surface of said heating cylinder; and

said plurality of rollers including a second pair of belt engaging rollers disposed adjacent the side of said heating cylinder which is substantially diametrically opposite said first pair of rollers, said second pair of rollers including first and second rollers which are substantially horizontally spaced from one another and are both spaced radially outwardly from the external peripheral surface of said heating cylinder, and said endless belt including a discharge portion extending between said first and second rollers with said discharge portion of said belt having a downwardly facing surface for permitting the fabric to fall therefrom.

6. A machine for drying and ironing fabrics, comprising:

frame means;
 an axially elongated heating cylinder supported on
 said frame means for rotation about a substantially
 horizontal axis, said heating cylinder having a
 heated external peripheral surface adapted to
 contact the fabric for heating and ironing same;
 a plurality of rollers disposed adjacent and around
 said heating cylinder, said plurality of rollers being
 individually rotatable about horizontal axes;
 an endless belt supported on said rollers and on the
 external peripheral surface of said heating cylinder,
 said endless belt including a first portion disposed
 adjacent one side of said cylinder and positioned
 approximately horizontally for supplying fabric
 toward the external surface of said heating cylinder,
 said endless belt including a second portion
 continuous with said first portion and maintained
 in engagement with the external peripheral surface
 of said heating cylinder over a majority of the arcuate
 peripheral extent thereof for permitting the fabric
 to be pressed between the belt and the external
 peripheral surface of the cylinder;
 said endless belt including a third portion continuous
 with said second portion, said third portion being
 spaced from the peripheral surface of said heating
 cylinder for transmitting the pressed fabric to a discharge
 zone, said belt including a fourth portion
 which is continuous with said third portion and defines
 said discharge zone, said fourth portion being
 disposed on the side of said heating cylinder opposite
 said first portion and being disposed approximately
 horizontally and facing downwardly for permitting
 the discharge of the fabric therefrom;
 said endless belt including still a fifth portion extending
 below said heating cylinder and continuous with and
 connected between said first and fourth portions;
 said plurality of rollers including a plurality of pressure
 rollers disposed around the periphery of said
 heating cylinder, each of said pressure rollers being
 disposed in engagement with different portions of
 said endless belt at substantially diametrically opposite
 points on said pressure roller;
 fluid pressure cylinder means individually mounting
 each of said pressure rollers on said frame means

for resiliently urging each pressure roller independently
 into engagement with the external peripheral surface
 of said heating cylinder, whereby each of said pressure
 rollers engages said second portion of said endless belt
 and presses same into engagement with the external
 peripheral surface of said heating cylinder, a first pair
 of said pressure rollers being disposed above said
 heating cylinder and disposed in engagement with said
 third portion of said belt, and a second pair of said
 pressure rollers being disposed below said heating
 cylinder and maintained in engagement with said fifth
 portion of said belt;
 said plurality of rollers also including a pair of inlet
 rollers disposed adjacent one side of said heating
 cylinder, said pair of inlet rollers being horizontally
 spaced from one another and supporting thereon
 said first portion of said belt, said first portion of
 said belt having an upwardly facing surface on which
 the fabric is deposited and fed toward the heating
 cylinder, the belt after passing over said inlet
 rollers being fed downwardly around the periphery
 of said heating cylinder; and
 said plurality of rollers including a pair of discharge
 rollers positioned adjacent the side of said heating
 cylinder which is diametrically opposite said inlet
 rollers, said discharge rollers being horizontally
 spaced from one another and both being spaced
 from the external peripheral surface of said heating
 cylinder, said fourth portion of said belt extending
 between said discharge rollers whereby the fabric
 carrying side of said belt faces downwardly for
 permitting the fabric to be discharged therefrom.
 7. A machine according to claim 6, wherein said
 fourth portion of said belt extends from one of said
 pressure rollers of said first pair to one of said
 discharge rollers, and said other discharge roller
 being horizontally positioned between said one
 discharge roller and said heating cylinder, whereby
 said belt engages said one discharge roller over a
 substantial angle and undergoes an abrupt change
 in direction so as to tend to dislodge the fabric
 from the fabric carrying surface of the belt.

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