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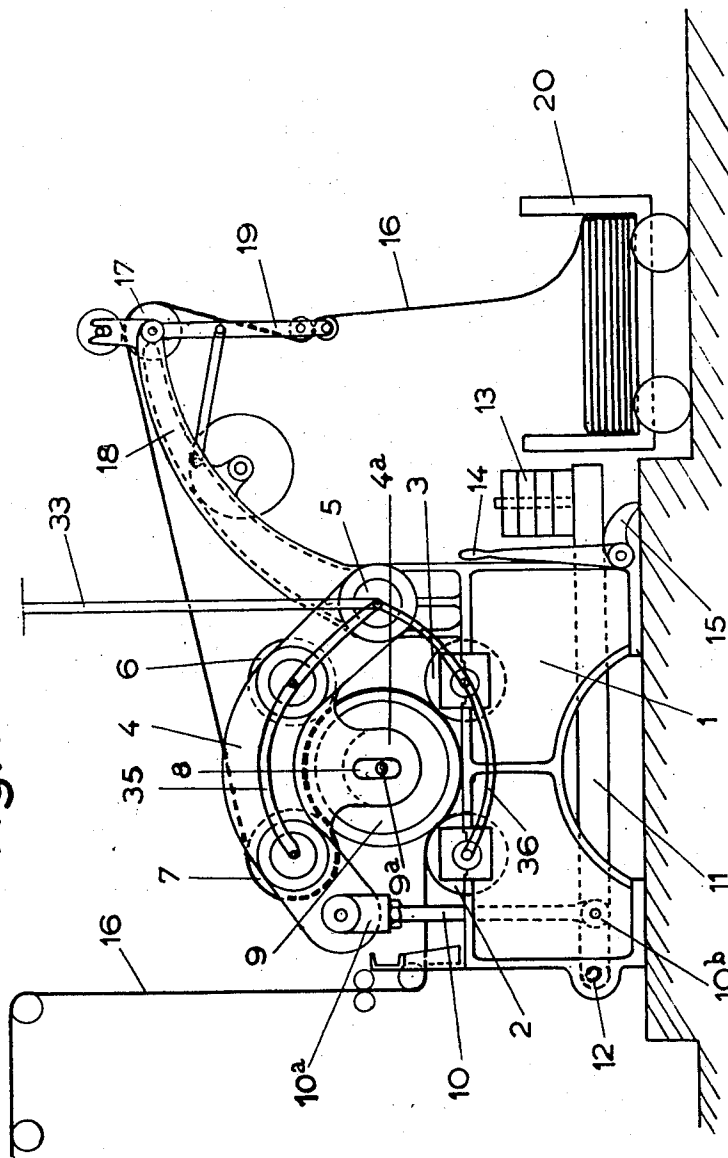
2,533,724

CALENDAR, INCLUDING UPPER AND LOWER ROLLERS WITH
IMPROVED GUIDING AND LIFTING MEANS FOR
CENTRAL ROLLER MEANS

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2 sheets-Sheet 1

Fig. 1



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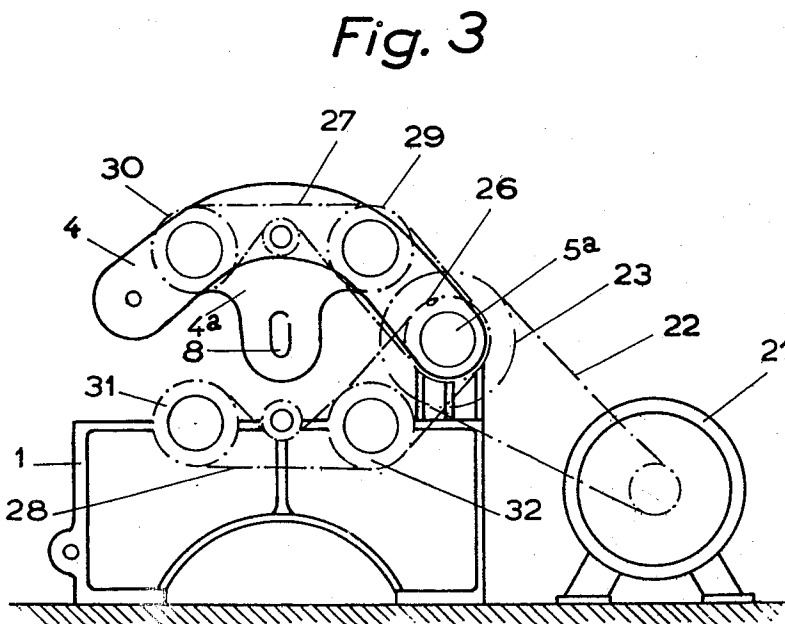
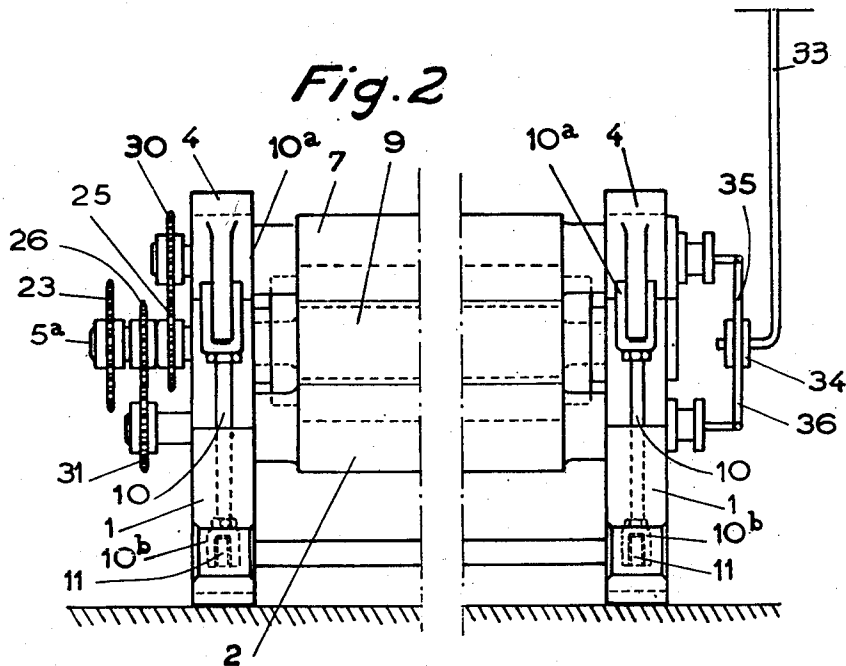
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CALENDER, INCLUDING UPPER AND LOWER ROLLERS WITH IMPROVED GUIDING AND LIFTING MEANS FOR CENTRAL ROLLER MEANS

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3 Claims. (Cl. 38-49)

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The invention refers to a novel kind of calender for dressing fabrics, paper or other materials.

The known calenders comprise a number of rollers which generally rest on one another (vertical calenders), or which are sometimes located side by side (horizontal calenders), and which are made of various materials, said rollers being subjected to pressure during operation of the calender. Often in such arrangements, metal rollers alternate with hard and flexible rollers made of compressed fibrous material, for instance layers of paper or layers of fibre or of cotton or other fabric, which has been subjected to very high pressure and then turned on a lathe so as to give these rollers a perfectly cylindrical shape.

It is known that such classical types of calenders, comprising a large total number of rollers, eight, ten or twelve for instance, are expensive, heavy, bulky, difficult to operate and involve high upkeep costs.

As regards the rollers made of compressed fibrous material which, precisely, require to be faced periodically, they are difficult to remove; furthermore, owing to the difference which soon appears in their diameters or in their hardness, and by the fact of the very heavy pressure to which they are subjected and of their contact with the heated metal rollers, local heating occurs at their periphery which may quickly deteriorate them.

The purpose of the invention is to eliminate all the drawbacks of the classical types of calenders, and it has for its object a calender of a novel kind which is characterized, in principle, by the fact that it comprises a set of lower rollers mounted on a fixed frame, a central roller made of compressed fibrous material resting on said lower rollers, and a set of upper rollers resting on the central fibre roller, the upper rollers and the central roller being mounted on a common upper frame adapted to receive a lifting movement relatively to the fixed frame supporting the set of lower rollers, and the central fibre roller being, furthermore, mounted in the common upper frame which can be lifted so as to enable it to move away from the upper rollers and the lower rollers owing to the actual lifting of the said upper frame.

By constructing calenders in accordance with the principle which has just been explained, machines are obtained which, for an equivalent work, are of considerably reduced size and weight and which, furthermore, provide a substantial simplification of the accessory members as a

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whole, and are easy to operate and to service. Thus, for instance, with a single central roller made of fibrous material and four metal rollers (two lower and two upper), the same work is obtained as with a classical eight-roller calender, four rollers of which are made of fibrous material. On the other hand, the central roller made of fibrous material no longer requires to have bearings and may merely rest against the lower metal rollers, a very simple lateral guiding being sufficient to keep it accurately in the desired position. It can be instantly removed without any difficulty, after the upper frame has been lifted. Furthermore, owing to the fact that it is driven by contact simultaneously by all of the metal rollers, all risk of uneven heating of its surface is practically eliminated, whereby its life is considerably increased.

In order to enable the invention to be better understood, an embodiment of a calender of the novel kind which is the object of the invention, is described hereinafter and diagrammatically illustrated, merely by way of a non-limitative example, in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of the calender, of which

Fig. 2 is a view in front elevation,

Fig. 3 being a diagram of the transmission of the movement to the metal rollers driving the fiber roller by contact.

In these figures, 1 is the lower frame carrying the lower set of metal rollers 2 and 3; 4 are arc-shaped lateral arms adapted to pivot about a spindle 5 of the frame 1 and carrying the upper set of metal rollers 6 and 7. Each of the arms 4 has a lower extension or cheek 4^a, provided with a slideway 8 in which is loosely engaged a stub-axle 9^a screwed in the end of the shaft of a roller 9 made of compressed fibrous material which rests on the lower rollers 2 and 3, is retained at the sides between the cheeks 4^a and on which bear the upper rollers 6 and 7.

The free end of each supporting arm 4 is pivotally connected to the upper part forming a clevis 10^a of a rod 10 which is pivotally connected at its other end 10^b to a lever 11 adapted to pivot at 12 on the frame 1, the two levers 11 accommodating at the rear end means enabling the pressure which they exert on the upper frame 4 and, consequently, on the rollers of the calender, to be varied, for instance weights 13, the number of which can be altered at will. Of course, this set of levers may be replaced by a hydraulic device, also of known type.

By slightly lifting the upper frame 4 by swing-

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ing it about the pivot 5, by the operation of a lever 14 provided with an eccentric 15 acting on the set of articulated levers, the slideways 8 are shifted relatively to the stub-axes 9^a of the roller 9 made of fibrous material and, consequently, the said roller made of fibrous material is disengaged from the upper metal rollers 6 and 7. When the stub-axes 9^a have reached the end of the slideways 8, the lifting movement of the articulated arms forming the upper frame continues and the roller 9 is also disengaged from the lower metal rollers 2 and 3. In this position, the fabric 16 to be treated can readily be inserted.

When it is desired to remove the roller 9 made of fibrous material, after having moved it out of engagement with the upper rollers 6 and 7, the pivots connecting the clevises 10^a of the rod 10 to the ends of the arms 4 are removed and the stud-axes 9^a are unscrewed to remove them from the slideways 8. The lifting of the upper frame 4 is then continued by means of a hoist in order to disengage it completely from the roller 9.

In the drawing, 16 designates the fabric subjected to calendering, 17 a roller mounted on a rear support 18 and receiving the fabric as it comes out of the machine, 19 a mechanical folder of known type, and 20 a carriage receiving the folded fabric.

The drive of the metal rollers 2 and 3, 6 and 7, is obtained, for instance, by means of an electric motor 21, through the intermediary of a driving chain 22 driving a sprocket wheel 23 which is loosely mounted on the overhanging end 5^a of the spindle 5 of the pivoting upper frame 4, and on which are dependent sprocket wheels 25 and 26 which in their turn transmit, respectively by means of chains 27 and 28, the rotary movement to the sprocket wheels 29 and 30 of the rollers 6 and 7 and to the sprocket wheels 31 and 32 of the rollers 2 and 3. Owing to the arrangement adopted, it is possible to swing the supporting arms 4 about the pivot 5 without removing any movement transmitting member.

The same applies to the device for heating the metal rollers, the pipe 33 for supplying the heating steam opening into a box 34 which is coaxial with the pivot 5 and from which extend, with the interposition of elbow-joints, the pipes 35 and 36 for distributing the steam to the upper and lower metal rollers respectively.

It is of course understood that the invention is in no way limited to a particular embodiment and that it is possible, on the contrary, without exceeding the scope of the invention, to imagine modifications, improvements of details and uses of equivalent means.

For certain applications, it is possible to replace, for instance, one of the metal rollers by a roller made of fibrous material; thus, in particular, when it is desired that the fabric should

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pass between two fibrous rollers, the upper roller 7 may be made of fibrous material.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. In a calender; a fixed lower frame, an arc-shaped upper frame pivoted for swinging movement with respect to said lower frame, lower rollers fixedly mounted for rotation on said lower frame, upper rollers fixedly mounted for rotation on said upper frame, a central roller positioned between said upper and lower rollers, spaced parallel guide lugs depending from said upper frame, said guide lugs being provided with elongated slideways having upper and lower limits, said central roller having axles engaged for sliding movement within said slideways and being adapted to be lifted upon swinging movement of said upper frame to the extent that said axles abut against said lower limits whereby disengagement of said central roller from said upper and lower rollers will be brought about.

2. In a calender having an upper and a lower frame; lower rollers mounted on said lower frame, upper rollers mounted on said upper frame which is pivotally connected at one of its ends for swinging movement to said lower frame, a central roller positioned between said upper and lower rollers, guide lugs on said upper frame and provided with vertical slideways, and stub-axes removably mounted on said central roller and loosely engaging said slideways, said slideways terminating in upper and lower ends, whereby upon initial outward swinging movement of said upper frame away from said lower frame said central roller engages said lower ends and will be spaced from said upper rollers and subsequently upon completion of said outward movement be disengaged from said lower rollers.

3. A calender according to claim 1, in which said guide lugs form an integral part with said upper frame from which they extend in the direction of said central roller.

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