F. SASS.

HEAT REGULATING ATTACHMENT FOR TUBE MACHINES.

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1,360,323. Patented Nov. 30, 1920.

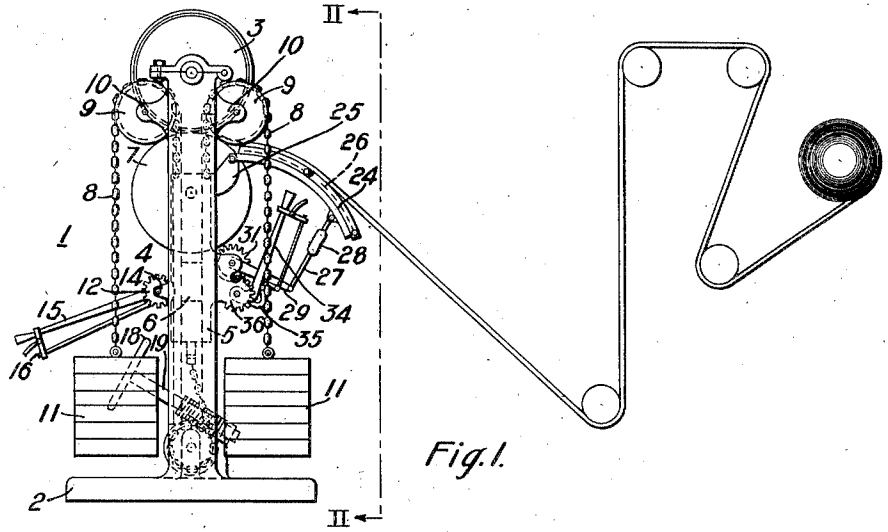


Fig. 1.

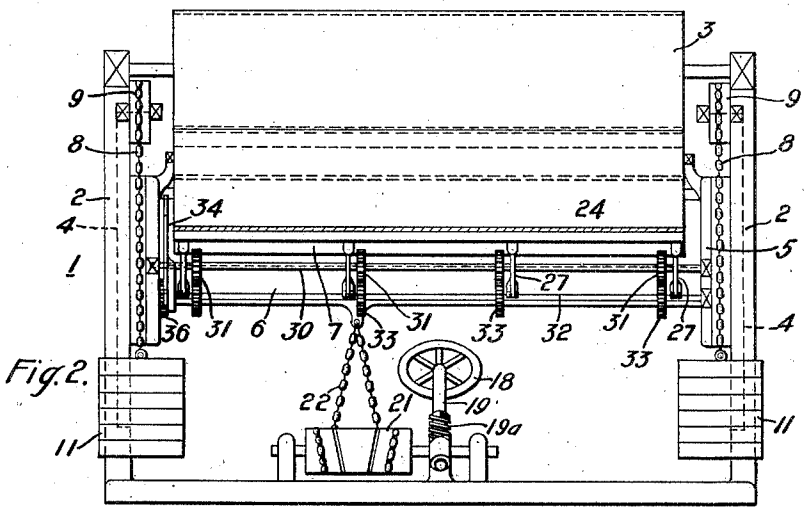


Fig. 2.

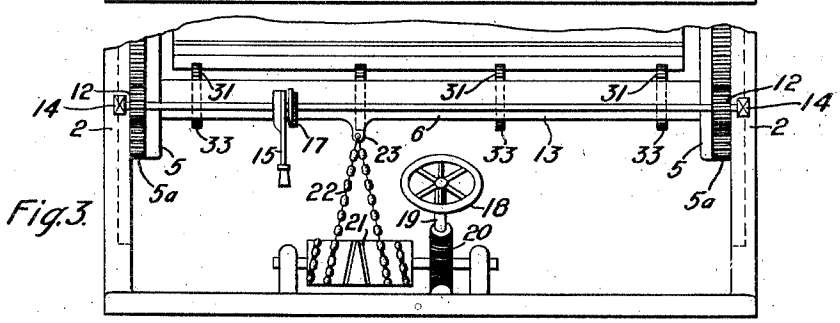


Fig. 3.

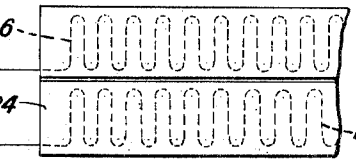


Fig. 4.

WITNESSES:

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HEAT-REGULATING ATTACHMENT FOR TUBE-MACHINES.

1,360,323. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed May 7, 1919. Serial No. 295,518.

To all whom it may concern:

Be it known that I, FRANK SASS, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Heat-Regulating Attachment for Tube-Machines, of which the following is a specification.

My invention relates to heat-regulating devices for tube machines, and it has, for its primary object, the regulation of the amount of heat transmitted to sheet material which has previously been treated with an adhesive and is to be automatically wound upon mandrels to form tubes.

Heretofore, it has been customary, in heating treated material which is being wound to form tubes, to employ a heating device in which heat regulation has been accomplished by varying the amount of heat delivered to the heating device, and, subsequently, transmitted to the treated material. This method, however, is subject to criticism on account of its inability to provide quick regulation and because of the constant attention required by it throughout the operation. In view of this, one object of my invention is to provide a heat-regulating device, for tube machines, which shall respond quickly to regulation and, therefore, require less attention while in operation.

A further object of my invention is the provision of a heat-regulating attachment, for tube machines and the like, which shall so efficiently coöperate with the machine to which it is attached that a more uniform and better product shall result.

A still further object of my invention is the provision of heat-regulating devices, for tube machines, of great durability and of such construction that all parts shall be easily accessible for repair work.

With these and other objects in view, my invention will be more fully described, illustrated in the drawings in which corresponding numerals indicate like parts, and then particularly pointed out in the appended claims.

In the drawings, Figure 1 is an end view of a tube machine having a heat-regulating device attached thereto which embodies my invention; Fig. 2 is a front elevation of the machine shown in Fig. 1; Fig. 3 is a rear elevation, parts being broken away, of the machine shown in Fig. 1, and Fig. 4 is a view of the heating device, parts being broken away, showing an electrical resistance element embodied therein.

A tube machine, of the well known Haefely type, has been employed to illustrate, in the drawings, the character and mode of operation of my improved heat-regulating device, and, on account of the well known construction of such machines, only a brief description thereof will be given herein.

In the drawings is shown a tube machine 1 having a frame 2 which removably supports a mandrel 3 to be driven by any suitable means (not shown). The inner faces of the frame 2 are provided with channels 4 to receive, and permit movement of, slides 5 connected by a beam 6 and supporting a pressure roll 7. The slides 5 are connected to the ends of chains 8 supported by pulleys 9, carried by brackets 10 mounted upon the frame 2 and the chains are connected at their other ends, to suitable counter weights 11. A plurality of pinions 12 are so mounted upon the ends of a shaft 13, carried by brackets 14 mounted upon the frame 2, as to operatively engage racks 5^a on the slides 5. A hand lever 15 is loosely mounted upon the shaft 13 and has a latch 16 adapted to engage a pinion 17 rigidly mounted upon the same shaft and thereby rotate the shaft which, in turn, moves the slides 5 by means of the pinions 12. A shaft 19 is provided with a hand wheel 18 and with a worm 19^a that meshes with a worm wheel 20 which is rigidly mounted upon the suitably supported shaft of a drum 21 having a grooved surface to receive a chain 22, the latter being fastened to the drum and to the beam 6, as indicated at 23. The hand wheel 18 and the worm gearing serve to rotate the drum 21 to wind or unwind the chain 22 so that the slides 5 may be secured in any desired position to which they may be adjusted.

A heating member 24, having a curved or arcuate surface, may be pivotally mounted upon brackets 25 carried by the slides 5 and may have heat imparted to it by heating coils 26, best shown in Fig. 4, of any suitable design such, for instance, as the electrical-resistance elements here shown. Links 27, having turn buckles 28, are connected, at one end, to the outer edge of the heating member 24 and are connected, at their other ends, to lever arms 29 that are rigidly at-

tached to a shaft 30 supported by the slides 5 which carries a plurality of pinions 31. A similar shaft 32, also supported by the slides 5, carries a plurality of pinions 33 that mesh with the pinions 31, and also has a hand lever 34 rigidly mounted thereon that is provided with a latching pawl 35 to engage a ratchet wheel 36 which is also mounted upon the adjacent slide 5. The member 24 may be raised or lowered by operating the lever 34 which actuates the pinions to cause the lever arms 29 to move the links 27. The lever arms 29 and, consequently, the member 24, are held in any position to which they may be adjusted by means of the pawl 35 of the hand lever 34 when it engages the ratchet wheel 36, thus holding the shaft 32 against rotation.

In operating my heat-regulating device in conjunction with the tube machine 1, a treated material is supplied, in any suitable manner, as diagrammatically shown in Fig. 1, to the mandrel 3, after having passed over the heating member 24. The pressure roll 7 is adjusted, to exert a suitable pressure against the mandrel 3 to compact the material on it, by operating the hand lever 15 and its latch 16 in such manner that the pinions 12 raise the slides 5 which support the pressure roll 7 and thus bring the roll into engagement with the material being wound upon the mandrel 3. The counter weights 11 tend, at all times, to force the pressure roll 7 toward the mandrel 3 and to counterbalance the slides 5 and the attachments supported by them. The drum 21, upon which the chain 22 may be wound, serves as a check against the weights 11 forcing the pressure roll upwardly after suitable adjustment has been made.

The heating member 24 may be so adjusted that the treated material, passing over it, may be forced to engage its entire upper surface, or any part thereof, by raising or lowering the lever arms 29, by operating the hand lever 34. When it is desirable to have the treated material engage the greater portion of the heating surface of the member 24, the hand lever 34, which is rigidly attached to the shaft 32, may be raised to thereby rotate the shaft 32 and the pinions 33 which, in turn, rotate the pinions 31 and the shaft 30 upon which they are mounted, thereby causing the lever arms 29 to be raised which, consequently, impart upward movement to the heating member 24 by means of the links 27. If it is desirable to lower the heating member, the hand lever may be operated in a reverse direction to obtain an action opposite to that described. The heating member, therefore, may be so adjusted that the treated material passing over it may engage any desired portion of its heating surface.

It will be apparent from the above description that the heat, imparted to the material which is to be wound to form a tube, may be easily controlled to any desired degree by adjustment of the heating device above described. The movement of the heating device, after the material has been started, in order to obtain heat regulation, is ordinarily relatively small and, therefore, the tension of the sheet material remains substantially unchanged during the winding process. While I have shown a means of heating the device as comprising an electrical-resistance element, it will be obvious that any skilled mechanic could install other suitable heating-elements, such as steam pipes or a gas-heater, by practising ordinary methods.

Although I have shown a heat-regulating attachment for tube machines as applied to a particular type of machine and specifically described its construction, it is obvious that it may be applied to various types of machines and its construction may be slightly modified without departing from the spirit of my invention and I desire, therefore, that no limitations shall be imposed except such as are indicated in the appended claims.

I claim as my invention:

1. A heat-regulating device for tube machines and the like comprising a heating member adapted to engage treated material and means for adjusting the position of the member to vary the extent of such engagement.

2. A heat-regulating device for tube machines and the like comprising a heat-transmitting member having an arcuate engaging surface, a link attached thereto, a lever member connected to the link and means supporting the lever member.

3. A heat-regulating device for tube machines and the like comprising a heat-transmitting member having an arcuate engaging surface, a plurality of links attached thereto, a lever member connected to each link and an adjustable supporting means for the lever members.

4. A heat-regulating device for tube machines and the like comprising a heat-transmitting member having an arcuate engaging surface, means for supporting said member, means for manually adjusting the member and means for securing the member in place.

5. A heat-regulating device for tube machines and the like comprising a heat-transmitting member pivotally supported at one end and having an arcuate engaging surface, and means for adjustably raising and lowering its opposite end.

In testimony whereof, I have hereunto subscribed my name this 17th day of April 1919.

FRANK SASS.