E. HAEFELY.

INSULATING TUBE MACHINE.

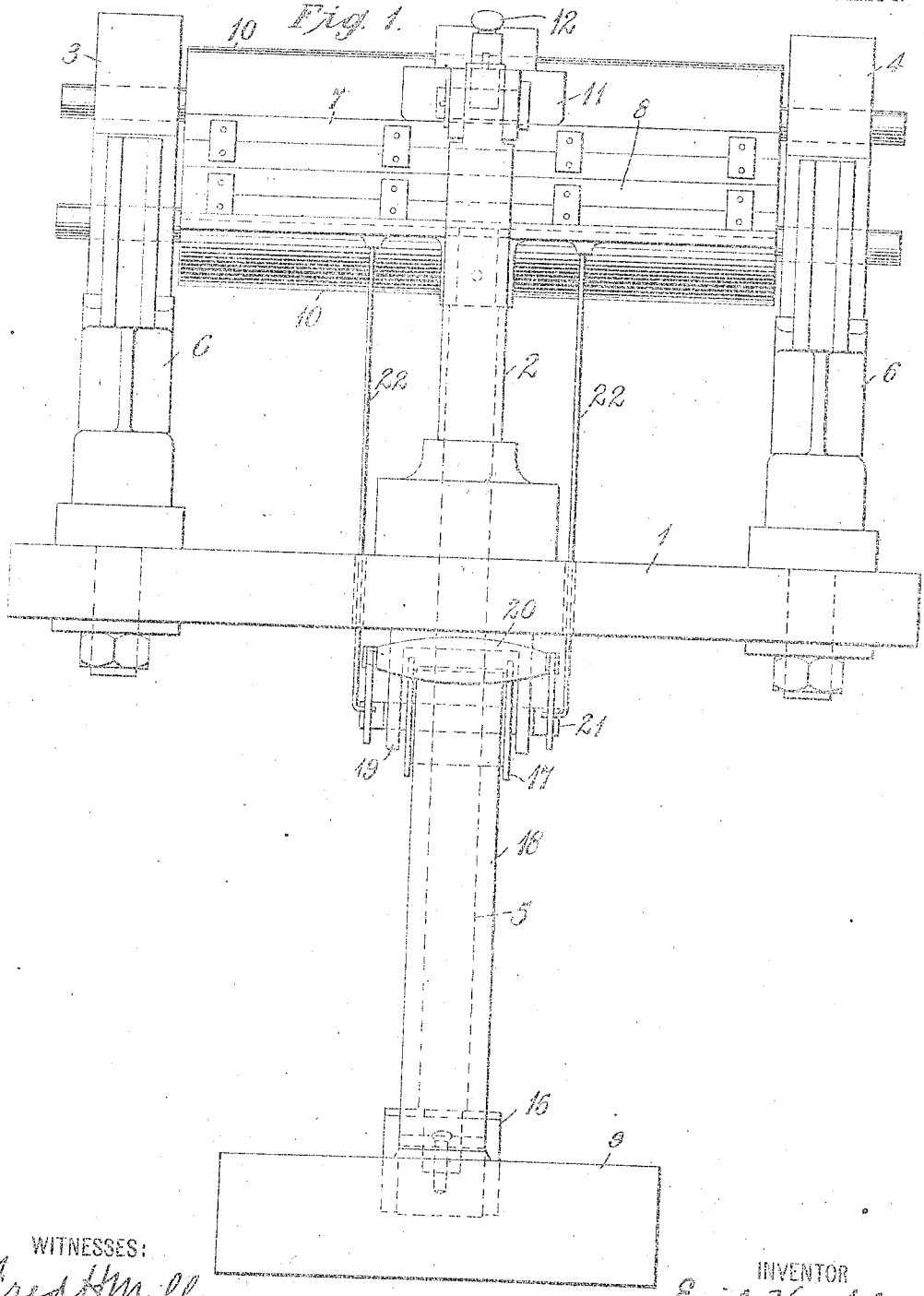
APPLICATION FILED JULY 10, 1909.

1,067,333.

Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Fred H. Miller

R. F. Dearborn

INVENTOR

Emil Haefely

BY

Kelly & Kerr

ATTORNEY

E. HAEFELY.

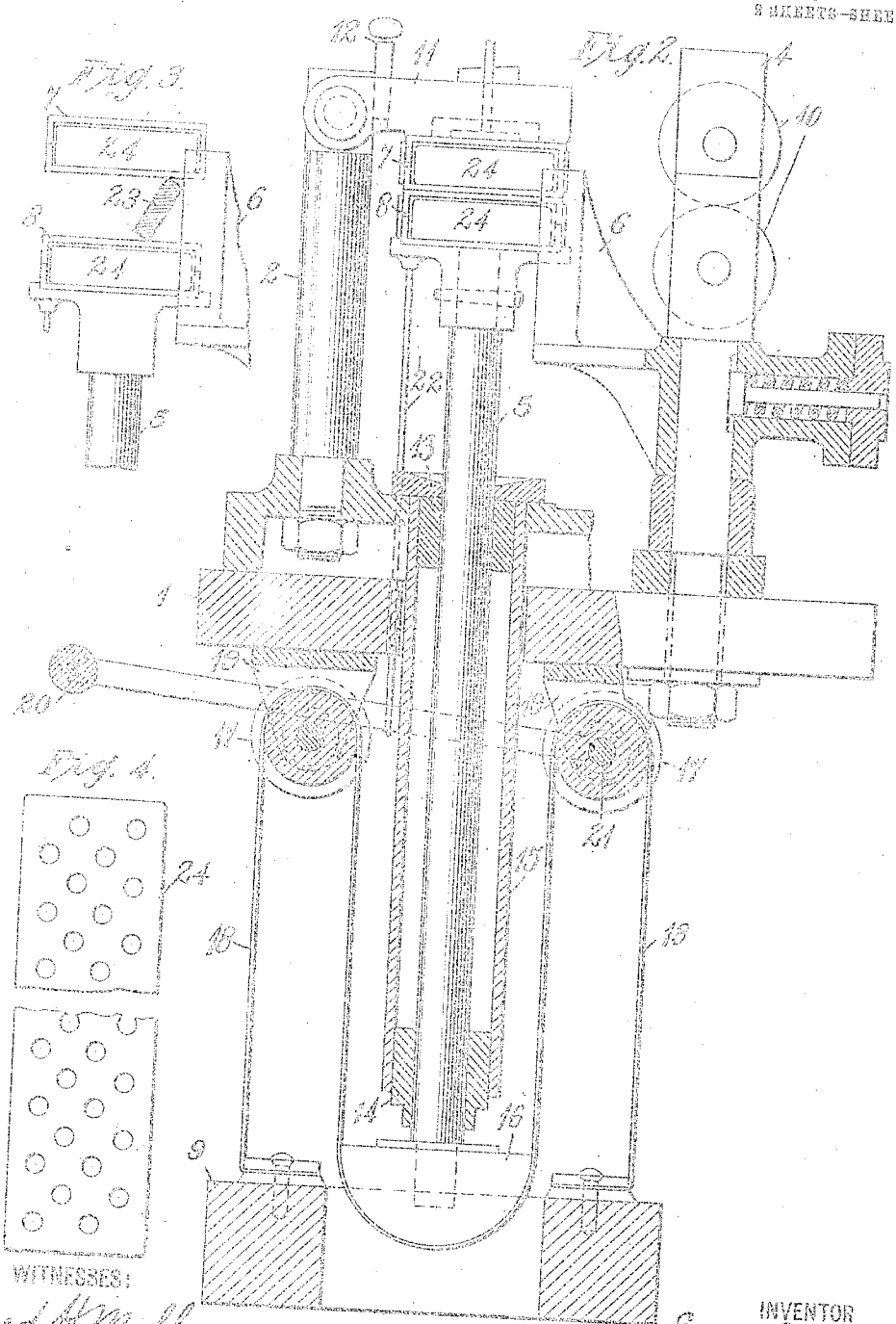
INSULATING TUBE MACHINE.

APPLICATION FILED JULY 10, 1909.

1,067,333.

Patented July 15, 1913.

3 SHEETS—SHEET 2.



WITNESSES:

Fred A. Miller

P. L. Carlton

INVENTOR

Ernst Haefely

BY

Kerr & Page

ATTORNEY

UNITED STATES PATENT OFFICE.

EMIL HAEFELY, OF BASEL, SWITZERLAND, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

INSULATING-TUBE MACHINE.

1,067,383. Specification of Letters Patent. Patented July 15, 1913.

Application filed July 10, 1909. Serial No. 507,002.

To all whom it may concern:

Be it known that I, EMIL HAEFELY, a citizen of the Republic of Switzerland, and a resident of Basel, in Switzerland, have invented a new and useful Improvement in Insulating-Tube Machines, of which the following is a specification.

My invention relates to insulating tube machines and it has special reference to machines illustrated and described in Patents Nos. 858,383 and 858,384, granted, July 2, 1907, to my assignee, the Westinghouse Electric & Manufacturing Company.

The object of my invention is to provide a simple and efficent device of the character above indicated that shall be specially adapted for producing tubes of rectangular cross section.

In the patents above referred to, I have set forth machines which not only form cylindrical insulating tubes but are so designed and constructed that the insulating structure, which is usually composed of paper, mica and shellac, or some other suitable binder, may be suitably built up during the tube-forming process.

According to my present invention, I utilize a strip of insulating fabric which has already been specially prepared for the purpose and I form the tube by winding a number of convolutions of this fabric closely about a mandrel having the size and shape desired for the opening in the tube, heat and pressure being applied as the convolutions of insulation are wrapped upon the mandrel, in order to fuse the layers or convolutions together and make a solid durable structure.

Figure 1 of the accompanying drawings is a front elevation, and Fig. 2 is a partially sectional elevation at right angles to Fig. 1 of a machine constructed in accordance with my invention. Fig. 3 is an end view of the pressure members as they appear when the machine is in operation, and Fig. 4 is a detailed plan view of the heating bar.

Referring to the drawings, the device here shown comprises a base plate 1 which may be supported in any suitable manner, posts 2, 3 and 4 secured to and projecting upwardly therefrom, a vertical rod or plunger 5, guide brackets 6, pressure plates 7 and 8, a weight 9 which tends to force the pressure plates into engagement with each other, and a pair of guide rolls 10.

The hollow pressure plate 7 is rectangular in section and is secured to an arm 11 which is pivotally supported by the post 2. In operation, the arm 11 is stationary relative to the post 2, it being held in a substantially horizontal position by means of a key 12 which may be removed when it is desired to swing the pressure member to one side for the purpose of repairing or cleaning the contact surfaces of the pressure plates.

The plunger 5 is adjustably supported in bearings 13 and 14 which are provided at opposite ends of a vertical tube 15, rigidly supported by the base plate 1. A semi-cylindrical block 16 is secured to the lower end of the plunger 5 and the weight 9 is suspended from pulleys 17 by means of a strap 18, that is secured to the weight at its ends and passes over the pulleys and under the semi-cylindrical block 10. The pulleys 17 are supported by brackets 19 which are secured to the bottom surface of the base plate 1, and the arrangement of parts is such that the attraction of gravity on the weight 9 produces an upward pressure on the plunger 5 which tends to force the pressure members 7 and 8 together. This pressure may be relieved, at the will of the operator, by means of a handle lever 20 which is pivoted upon the shaft 21 of one of the pulleys 17 and is adapted to engage straps 22 which depend from the pressure member 8, so that a downward pressure upon the handle lever 20 opposes the action of the weight 9.

The rolls 10 are rotatably mounted in bearings provided in the posts 3 and 4 and their surfaces are held in engagement with each other so that they serve as guides for the strip of insulating fabric which is utilized in constructing the tube. The length of the rolls 10 corresponds substantially to that of the pressure members 7 and 8, and the guide brackets 6 are so located at the ends of the pressure members that they do not interfere with the free movement of the strip of insulation as it passes between the rolls and is wound upon the mandrel or forming bar 23 which is rotated between the adjacent surfaces of the pressure members and rests against the guide brackets 6 at its ends (see Fig. 3). Solid rods or bars 24 of iron or other heat-conducting material may be inserted in the hollow pressure members 7 and 8 in order that the contact surfaces may be heated during the operation of the device.

The operation of the machine is as follows: A mandrel or forming bar, corresponding in cross sectional shape and area to the desired opening in the insulating tube to be constructed, is first introduced between the pressure surfaces of the members 7 and 8. A strip of insulating material is fed between the rolls 10 and one turn is manually wrapped about the mandrel, the pressure being relieved by the lever 20 during the wrapping process and being applied in order to hold the first convolution in place before the process is continued. In order to facilitate the process, it may be found convenient not to introduce the heated iron rods or bars until this stage of the process is reached. In any event, heat should be applied at this point in order to soften the shellac or other binder which is applied to the insulating fabric to bind its convolutions securely together. The forming rod or mandrel is then rotated slowly in order that pressure may be applied to each convolution as it is added.

The weight shown in the drawings may obviously be replaced by springs or other suitable means for producing the desired pressure, and various structural modifications may be effected within the spirit and scope of my invention.

I claim as my invention:

1. An insulating tube machine comprising two relatively movable hollow pressure members of heat-conducting material, bars or rods adapted to be heated and to be disposed in said pressure members when hot, and guide brackets located at the ends of the pressure members for holding the work in position between them.

2. An insulating tube machine comprising hollow pressure members of heat-conducting material having plane engaging surfaces, an interposed mandrel upon which an insulating strip of fabric is wound, guide brackets located at the ends of the pressure members for preventing the lateral displacement of the mandrel, and guide rolls adjacent and parallel to the pressure members.

3. An insulating tube machine comprising hollow pressure members of heat-conducting material having plane engaging surfaces, an interposed mandrel to receive convolutions of insulating fabric, rods or bars adapted to be heated and to be disposed within the pressure members when hot for imparting heat thereto, guide brackets located at the ends of the pressure members for preventing the lateral displacement of the mandrel, and guide rolls adjacent and parallel to the pressure members between which the insulating strip is fed to the mandrel.

4. An insulating tube machine comprising a vertical rod or plunger, a pressure member secured to the upper end thereof, a stationary pressure member coöperating therewith, means for producing a constant upward pressure upon the plunger, stationary guide brackets located at the ends of the pressure members, and a pair of guide rolls adjacent and parallel to the pressure member, and manually operated means for relieving the pressure upon the plunger.

5. An insulating tube machine comprising a stationary base plate, a tubular guide member secured thereto, a vertical rod or plunger mounted in the tubular guide member, a hollow pressure member secured to the upper end of the plunger, a stationary hollow pressure member disposed above the movable pressure member and coöperating therewith, guide brackets supported by the stationary base adjacent to the ends of the pressure members to prevent lateral displacement of the work in the machine, stationary guide rolls adjacent and parallel to the pressure members, and rods or bars adapted to be heated and to be inserted in the pressure members when hot for imparting heat thereto.

6. A machine for making insulating tubes comprising a pair of relatively movable hollow pressure members having substantially parallel adjacent working surfaces, means for heating said working surfaces, a mandrel and stationary guides for preventing lateral displacement of the mandrel.

In testimony whereof, I have hereunto subscribed my name this 8th day of July, 1909.

EMIL HAEFELY.

Witnesses:
R. J. Dearborn,
B. B. Hines.