

PATENT SPECIFICATION

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(54) AIR VENTILATING TUBE

(71) We, ANTHONY CECIL EAGLETON, OLWYN JEANNE EAGLETON, VERNON CHARLES EAGLETON and RUTH NANCY EAGLETON Australian citizens of 20 Rudloc Street, Morley, in the State of Western Australia, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to improved air ventilation tubes for mines and in particular to a means of joining the tubes together.

In the past air ventilation tubes have been constructed of flexible tubing having steel bands attached at each end. To join the tubes, one end of one tube was compressed an inserted into the end of an adjacent tube, the joint being formed by the two bands bracing the tube together. The disadvantage of this system was that the joints tended to break with a high air flow, as a result of which the underground staff tended to place a twitching ring between the two end rings, thereby reducing the diameter of the tube and consequently the air flow.

The present invention provides an air ventilator tube with improved joining means to overcome the above disadvantages.

According to the invention there is provided a flexible air ventilating tube formed of a substantially rectangular length of flexible sheet material having a hem formed at each end with an excess of free material beyond the hem, the sides of the sheet material being joined to form a tube, said excess material being capable of being extracted from within the tube to extend beyond the hem and to define a male end for engagement in a female end of another corresponding tube where the excess material has not been extracted from within the tube.

The invention will be better understood by reference to the following description of one specific embodiment. The description is made with reference to the accompanying drawings of which:—

Fig. 1 is a view of several tubes joined together;

Fig. 2 is a sectional view on an enlarged scale of a tube showing the end construction thereof; and

Fig. 3 is a sectional view on a further enlarged scale of a joint between two tubes.

In this embodiment each air ventilation tube 11 is formed of a flexible fabric or sheet material (such as canvas, or a reinforced plastics sheet) and is constructed such that each end may be modified to form a male connector shown at 13 or a female connector shown at 15. It is preferable that the sheet material be substantially impervious to the flow of air through it. The ends are formed by folding a portion of the tube 11 within itself and forming a hem 17 by sewing the inner and outer portions together near the fold line and leaving a suitable length 19 of the tube at the end free. Eyelets 20 are inserted at spaced intervals in the rib. The female connector 15 is simply formed by leaving the free length 19 inside the tube. The male connector 13 is formed by withdrawing the free length 19 from the end of the tubes to form an extension and cause the hem 17 to be spaced from the end of the connection.

As a result of such a construction a freedom of choice is permitted in choosing which end is to have a particular purpose and there is a uniformity in the construction of the tubes. A supporting rib 24 is formed along the top of the tube and running in a longitudinal direction along the tube; eyelets 20 are also inserted at spaced intervals in this rib. The supporting rib may be formed from a longitudinal fold in the tube or by the seam thereof.

In use, the male end 13 of one tube 11 is

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positioned adjacent the female end 15 of another tube, with the free end 19 of the male portion 13 extending into the female connection 15. The two tubes are then laced or clipped together by means of the eyelets 20 in each hem of the tubes. The length of tube can then be connected to a supporting wire in the mine by means of the eyelets 20 in the supporting rib 24 running along the top of the tube. The advantage of this method is that the joint between the tubes is stronger because of the lacing or clipping and a reasonably good seal results because of the free end 19 from the male portion extending into the female portion. The air flow must be in the direction from the male connection to the female connection of each joint, otherwise the free end of the male connection will block the flow path.

A method of forming the ventilation tube 11 consists of forming a hem at both ends of a substantially rectangular length material such that an excess of material is left between the hem and the end of the material. The sides of the length of material may then be joined to form a tube wherein the junction of the sides forms the longitudinal rib 24 and the said excess material lies within the tube. The male end of the ventilation tube may be formed by withdrawing the excess material from within the tube such that the hem formed at that end is spaced from the free end of the tube and forms the hem 17 at the male end.

WHAT WE CLAIM IS:—

1. A flexible air ventilating tube formed of a substantially rectangular length of flexible sheet material having a hem formed at each end with an excess of free material beyond the hem, the sides of the sheet material being joined to form a tube, said excess

material being capable of being extracted from within the tube to extend beyond the hem and to define a male end for engagement in a female end of another corresponding tube where the excess material has not been extracted from within the tube.

2. An air ventilating tube as claimed in Claim 1, wherein a longitudinal hem is formed on the exterior surface of the tubing and said longitudinal hem has a plurality of spaced eyelets mounted in it.

3. An air ventilating tube as claimed in Claim 1 or Claim 2, wherein the hems at the male and female ends have a plurality of eyelets located therein and wherein the male and female ends of adjacent tubes are maintained in engagement by lacing or clipping between the eyelets on the hems formed at the male and female ends.

4. A method of forming an air ventilating tube claimed at any one of Claims 1 to 3 comprising forming a hem at both ends of a substantially rectangular length of flexible sheet material and allowing an excess of material at each end joining the two sides of the material to form a tube, said excess material being capable of extraction from within the tube to extend beyond the hem to form a male end for engagement in a female end of another corresponding tube where the excess material has not been extracted from within the tube.

5. An air ventilating tube substantially as herein described with reference to the accompanying drawings.

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A method of forming the ventilation tube 11 consists of forming a hem at both ends of a substantially rectangular length material such that an excess of material is left between the hem and the end of the material. The sides of the length of material may then be joined to form a tube wherein the junction of the sides forms the longitudinal rib 24 and the said excess material lies within the tube. The male end of the ventilation tube may be formed by withdrawing the excess material from within the tube such that the hem formed at that end is spaced from the free end of the tube and forms the hem 17 at the male end.

WHAT WE CLAIM IS:—

1. A flexible air ventilating tube formed of a substantially rectangular length of flexible sheet material having a hem formed at each end with an excess of free material beyond the hem, the sides of the sheet material being joined to form a tube, said excess

material being capable of being extracted from within the tube to extend beyond the hem and to define a male end for engagement in a female end of another corresponding tube where the excess material has not been extracted from within the tube.

2. An air ventilating tube as claimed in Claim 1, wherein a longitudinal hem is formed on the exterior surface of the tubing and said longitudinal hem has a plurality of spaced eyelets mounted in it.

3. An air ventilating tube as claimed in Claim 1 or Claim 2, wherein the hems at the male and female ends have a plurality of eyelets located therein and wherein the male and female ends of adjacent tubes are maintained in engagement by lacing or clipping between the eyelets on the hems formed at the male and female ends.

4. A method of forming an air ventilating tube claimed at any one of Claims 1 to 3 comprising forming a hem at both ends of a substantially rectangular length of flexible sheet material and allowing an excess of material at each end joining the two sides of the material to form a tube, said excess material being capable of extraction from within the tube to extend beyond the hem to form a male end for engagement in a female end of another corresponding tube where the excess material has not been extracted from within the tube.

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