

April 28, 1931.

W. H. EVANS

1,802,414

MINE VENTILATING TUBING

Filed April 30, 1927

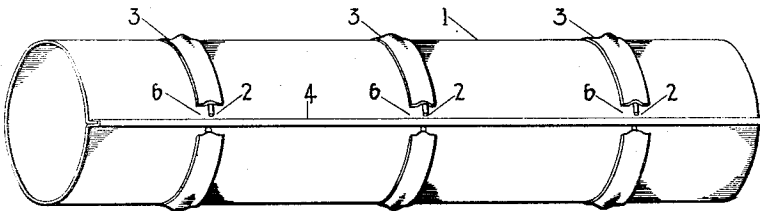


Fig. 1

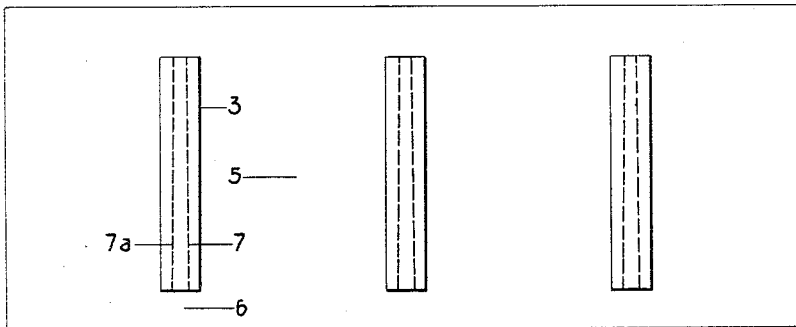


Fig. 2

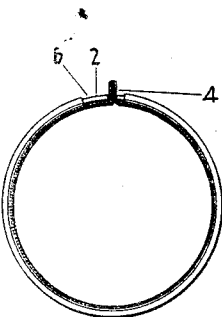


Fig. 3

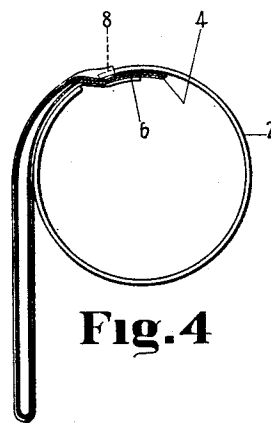


Fig. 4

W. H. EVANS Inventor

By his attorney

Charles A. Klingenberg

UNITED STATES PATENT OFFICE

WILLIAM H. EVANS, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO E. I. DU PONT DE NEMOURS & COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

MINE-VENTILATING TUBING

Application filed April 30, 1927. Serial No. 187,752.

This invention relates to mine ventilating tubing, that is, flexible tubing, of, say, coated and impregnated duck or similar material, of large diameter, for instance one to two feet, used for the ventilation of mines. This type of tubing should be substantially reinforced by ribs or the like spaced along its length and yet should be so designed that it can be made up compactly for shipment. I have devised a tubing meeting these requirements. It is the major object of the invention to provide such a tubing.

In general, the present tubing embodies the tube proper, and reinforcing rings. These rings are readily removable from the tube proper, whereby the tube proper may be made up and compactly shipped and the rings separately and compactly shipped. Upon, say, receipt by the user, the rings can be readily applied to the tube proper and the whole made ready for use.

Without restricting the invention thereto, the same is explained by reference to the embodiment thereof illustrated in the accompanying drawings. In these drawings:— Figure 1 is a perspective view of a section of the tubing; Figure 2 is a plan view of a portion of the tube material before being made up into the tube but with ring pockets attached; Figure 3 is an end view showing one of the ring pockets with the ring in place; and Figure 4 is a view showing the manner of inserting the ring.

Referring now to the drawings, the ventilating tubing illustrated comprises the tube proper 1 of any suitable flexible air-tight material, as coated and impregnated duck of the type disclosed in U. S. Patent 1,432,585, Abraham, October 17, 1922, provided along its length with reinforcing rings 2 of, for example, coppered steel, the spacing of these rings depending upon the amount of rigidity desired in relation to the amount of pressure to be exerted by the air flowing through the tubing, as will be understood by those skilled in the art. For instance, at a 2 or 3 inch water gauge the intervals between the rings may be longer than where the tubing is to be used at 6 inch water gauge, the spacing being governed by the use to which the tubing is to be put. The rings 2 are split and removably and closely received in pockets 3 extending circumferentially of the tube 2, and are of a length to abut the ledge 4 of the tube 1. As will be understood, the ledge 4 is formed by the joining of the edges of the duck when making up the tube, and frequently serves as the location for fastening means (not shown) for suspending the tubing. With this construction, of after-applied rings, it will be seen that the tube can be compactly shipped, the rings separately packaged and shipped, and the tube and rings assembled by the user at convenience, as at the mine.

The pockets 3 are conveniently provided by sewing a cover piece or lap 5 on the exterior of the tube, such piece being desirably of the same material as the tube. Preferably, and as indicated at 6, one end of the lap is spaced a substantial distance from the ledge 4 (for example, about two inches on a tube having a circumference of about fifty-two inches) to facilitate ready insertion of the rings 2, as indicated in Figure 4. Furthermore, as indicated in Figure 2, the stitchings 7, 7^a diverge somewhat from each other (exaggerated in the drawing) in the direction of the end 6, thus to provide for easy introduction of the ring while at the same time giving the pocket a relatively close fit about the ring throughout the major length of the pocket. In assembling, the end, say 8, of the ring is inserted in the pocket at 6 and worked around the pocket until the ends butt up against the ledge 4, thus anchoring the ring. If desired, to facilitate the insertion of the ring, whose ends are quite close, the ring may be bent or sprung out of its plane to place the ends slightly out of alignment. The ring,

while somewhat resilient, is of substantial size and strength, a coppered steel ring of, for illustration, one-fourth inch cross-sectional diameter being desirable, where a ring of about 16-inch diameter is used. The ring is, of course, of substantially the diameter of the tube.

I claim:

1. Mine ventilating tubing comprising a tube proper having a ledge along the same and a series of open-ended external circumferential pockets along the length of the tube between the ends of said ledge with their open ends adjacent said ledge and accessible from the exterior of the tube, and reinforcing split rings inserted in said pockets and closely received therein, said rings surrounding the tube with the ends of said rings abutting said ledge at each side thereof along its length thereby to hold the rings against accidental removal from the pockets.

2. Mine ventilating tubing comprising a tube proper having a ledge along the same and a series of open-ended external circumferential pockets along the length of the tube between the ends of said ledge with their open ends adjacent said ledge and accessible from the exterior of the tube, and reinforcing split rings inserted in said pockets and closely received therein, said rings surrounding the tube with the ends of said rings abutting said ledge at each side thereof along its length thereby to hold the rings against accidental removal from the pockets; the ends of at least one of said pockets being spaced a substantial distance from said ledge to facilitate insertion of the rings to be respectively received therein.

3. Mine ventilating tubing comprising a tube proper having a ledge along the same and a series of open-ended circumferential pockets along the length of the tube with their open ends adjacent said ledge, and reinforcing split rings inserted in said pockets and closely received therein, with the ends of said rings abutting said ledge at each side thereof along its length; the ends of at least one of said pockets being spaced a substantial distance from said ledge to facilitate insertion of the rings to be respectively received therein, and such pockets having their sides diverging in the direction of said spaced ends to further facilitate the insertion of said rings.

4. Mine ventilating tubing comprising a tube proper having exterior circumferential pockets spaced along and intermediate the length thereof, strong form-retaining expansion-resisting split reinforcing rings the resiliency of which tends to urge the ends thereof towards each other extending around said tube and removably housed in said pockets, said pockets having spaced ends to facilitate the insertion of said rings.

5. Mine ventilating tubing comprising a

tube proper having a ledge along the same and a series of open ended external circumferential pockets spaced along the length of the tube between the ends of said ledge with their open ends adjacent said ledge and accessible from the exterior of said tube, and resilient reinforcing split rings detachably housed in said pockets, the ends of said rings being abutted against opposite sides of said ledge by the resiliency of said rings.

In testimony whereof I affix my signature.
WILLIAM H. EVANS.