Oct. 11, 1949. A. E. BRICKMAN 2,484,485

DIE CAST TERMINAL FITTINGS AND METHOD OF MAKING THE SAME

Filed Jan. 8, 1945

FIG. 1.



FIG. 2.

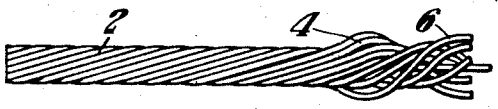


FIG. 3.

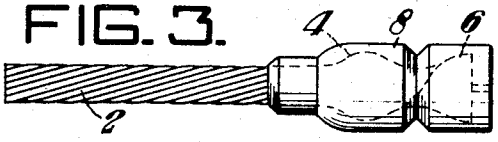


FIG. 4.

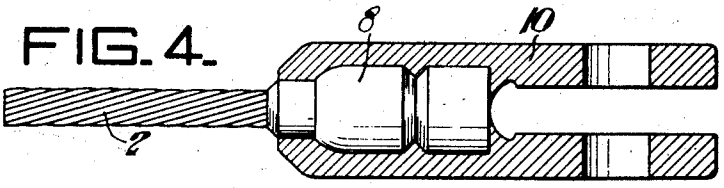


FIG. 5.

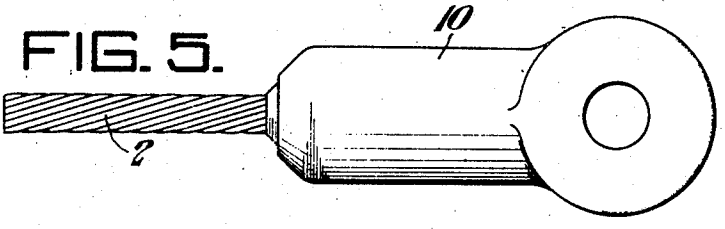


FIG. 6.

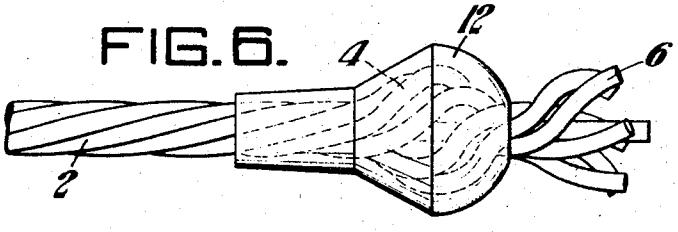
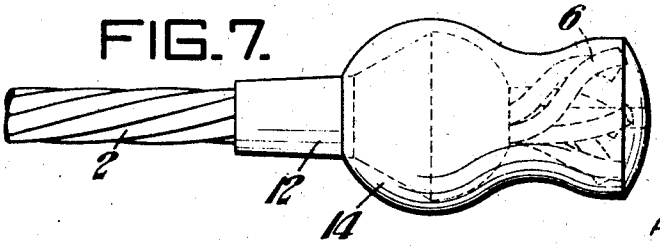


FIG. 7.



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DIE CAST TERMINAL FITTINGS AND METHOD OF MAKING THE SAME

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Application January 8, 1945, Serial No. 571,918

4 Claims. (Cl. 287—80)

1

This invention relates to die cast terminal fittings and the method of making the same, and more particularly to such fittings for stranded wire structures.

The present method of attaching terminal fittings to small flexible wire strands is by cold swaging. The design of these terminal fittings to fit screw machine production is desirable, but forging and drilling is the most common practice used to produce such fittings. Small flexible wire strands and necessary terminal fittings are used extensively on aircraft. In this use the wire strength must not be impaired and the strength of the terminal fitting must be comparable to that of low carbon steels.

It is an object of this invention to produce and attach terminal fittings faster and cheaper than at present.

Another object is to produce such fittings by die casting.

These and other objects will be more apparent after referring to the attached drawings, in which:

Fig. 1 is a view of a stranded wire structure;

Fig. 2 shows the same structure after its end has been broomed;

Fig. 3 shows an intermediate fitting cast onto the wire structure;

Fig. 4 is a view of the completed terminal fitting attached to the wire structure;

Fig. 5 is a side view of Fig. 4;

Fig. 6 is a view of a second embodiment of the invention showing an intermediate fitting cast in place;

Fig. 7 shows the completed terminal fitting of the second embodiment.

Referring more particularly to the drawings, the numeral 2 indicates a stranded wire structure to which a terminal fitting is to be attached. A length of the wire is prepared to receive the cast metal by brooming it to form a bulb portion 4 and an end portion 6, as shown in Fig. 2. Aluminum bronze is one common type of die casting metals having the wear and strength characteristics required for a terminal fitting. However, the fluid casting heat of these metals is between 1900° F. and 2300° F., and casting a terminal to the broomed end of a stranded wire structure by the insert method will bring about a heating of the wire so as to cause a marked drop in its wear and strength values. To protect the wire from such damage an intermediate fitting 8 made of a low melting point metal is cast around the broomed portion of the wire in any suitable manner, such as die casting, or by sprayng the

2

molten metal on the metal, it only being necessary that the metal be applied to the wire in molten condition in order that it be fused thereto. The fitting 8 may be made of a zinc alloy which bonds to steel and which is suited for die casting at a temperature of about 715° F. Such fittings, applied to broomed stranded wire structures by die casting and employing water-cooled dies, will not affect the physical properties of the stranded wires commonly used in the aircraft industry. The terminal fitting 10, made of aluminum bronze or a similar high strength material, is die cast directly onto the structure shown in Fig. 3. The design of the fittings, fusing and shrinkage of the metals as they cool are components which produce the tensile requirements. The zinc fitting hastens chilling and insulates the wires from any destruction from the high casting heat of the terminal fitting 10.

Figs. 6 and 7 show a second embodiment of the invention. A ball type fitting 12 is cast directly onto the ball portion 4 of the wire structure, leaving the broomed end 6 extending therefrom.

The fitting 12 has the same purpose and is made of the same material as the fitting 8. The terminal fitting 14 is cast directly onto the fitting 12 and the broomed end 6. The fitting 12 insulates the wire in the vicinity of the fatigue point and the high strength die metal is bonded with the extreme broomed end of the wire structure to develop the required assembled strength.

While two embodiments of the invention have been shown and described, it will be apparent that other modifications and adaptations may be made without departing from the scope of the attached claims.

I claim:

1. The method of making a terminal fitting for stranded wire structure, which comprises brooming a length of the stranded wire adjacent one end thereof, casting a zinc alloy fitting to that part of the broomed length adjacent the wound stranded wire, and then casting a high strength terminal fitting directly around said first named fitting and the remainder of the broomed length.

2. The method of making a terminal fitting for stranded wire structure which comprises brooming a length of the stranded wire adjacent one end thereof, casting a low melting point metal fitting to that part of the broomed length adjacent the wound stranded wire, and then casting a high strength terminal fitting directly around said first named fitting and the remainder of the broomed length.

3. A connector for stranded wire structure

comprising a cast metal layer surrounding and in intimate contact with said wire structure, said metal layer having a relatively low melting point, and a second cast metal layer surrounding and merging with said first metal layer, said second layer having a relatively high melting point.

4. A connector for stranded wire structure comprising a cast metal layer surrounding and in intimate contact with said wire structure a short distance from one end thereof, said metal layer having a relatively low melting point, and a second cast metal layer surrounding and merging with said first metal layer and also surrounding and in intimate contact with the exposed end of said wire structure, said second layer having a relatively high melting point.

ALAN E. BRICKMAN.

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