Sept. 4, 1928. 1,683,023

A. CHAMPION

FLEXIBLE TUBE SUPPORT

Filed July 2, 1926

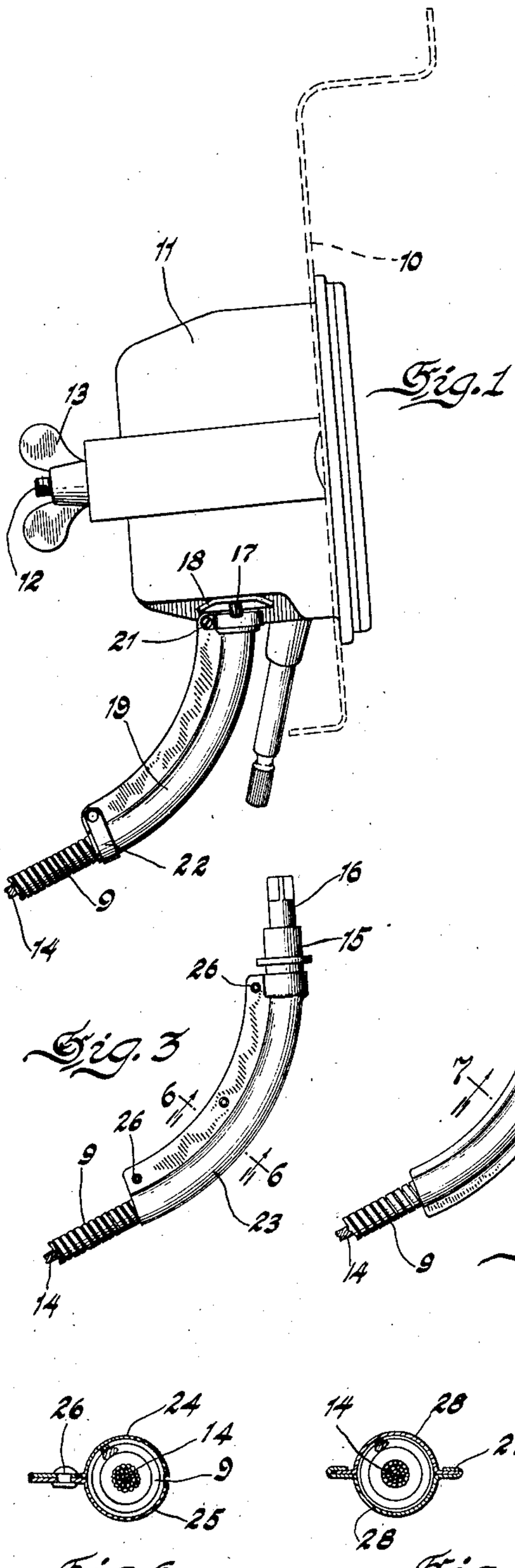

Fig. 1

Fig. 3

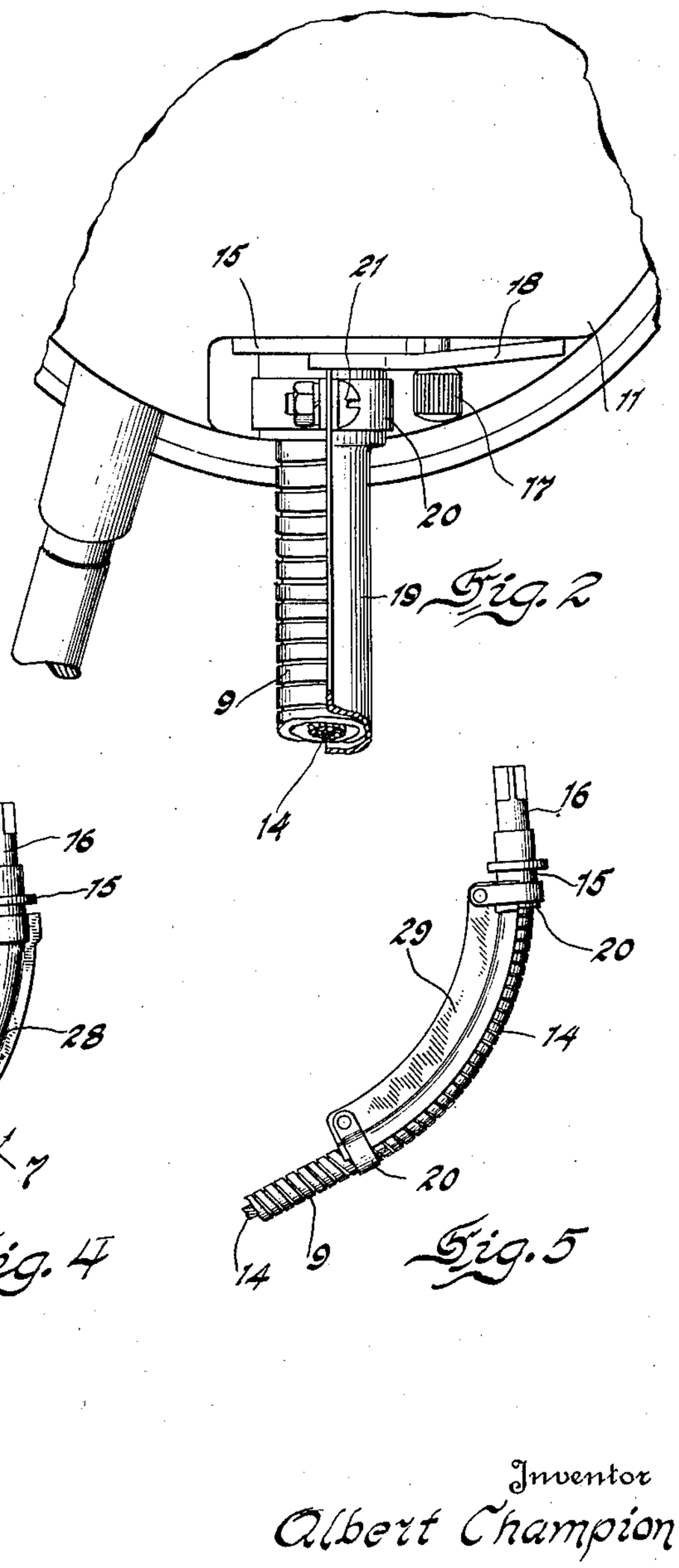

Fig. 2

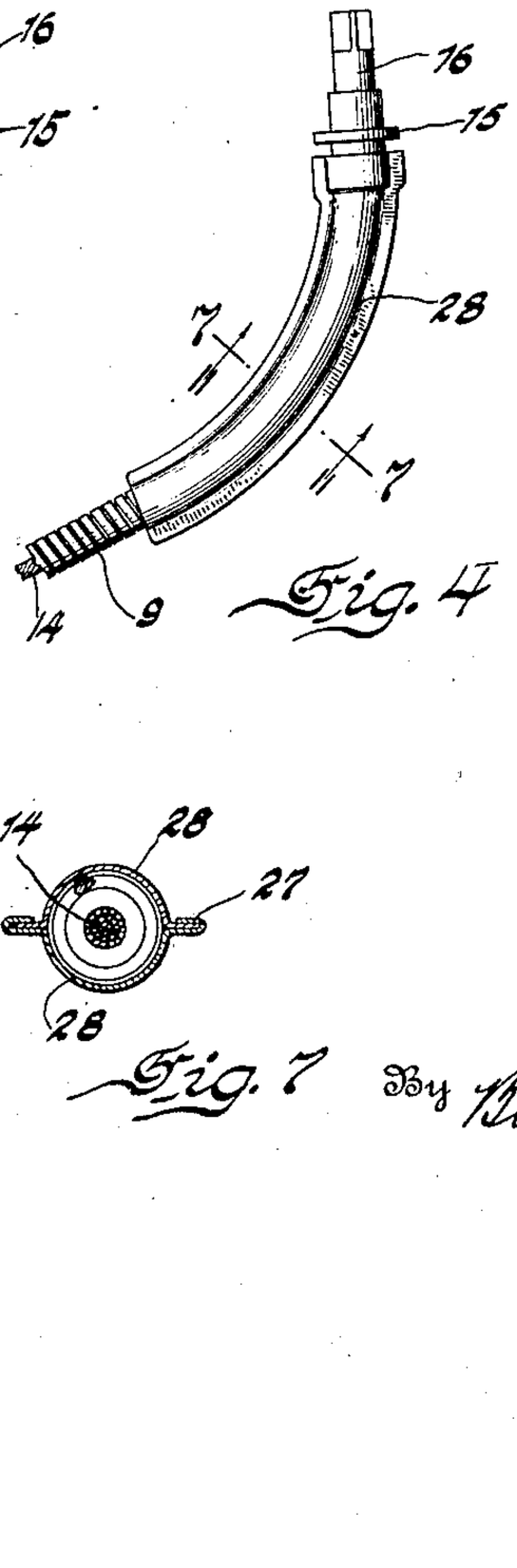

Fig. 4

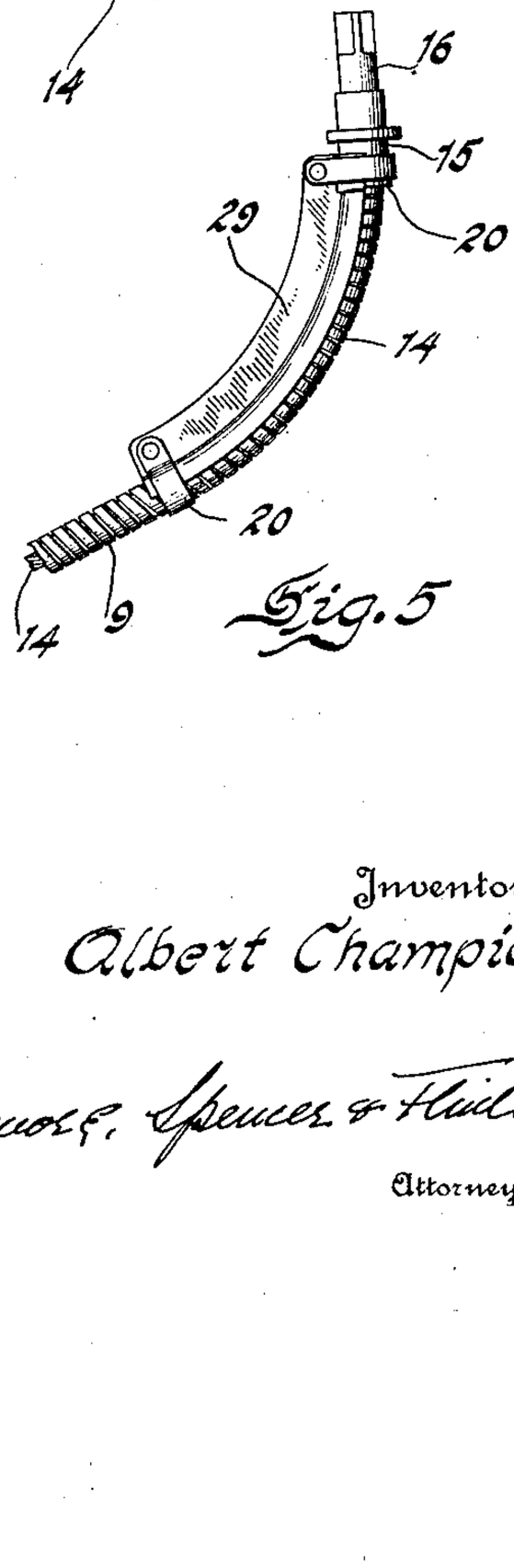

Fig. 5

Fig. 6

Fig. 7

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UNITED STATES PATENT OFFICE.

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FLEXIBLE TUBE SUPPORT.

Application filed July 2, 1926. Serial No. 120,239.

This invention relates to speedometer drives and more particularly to the flexible shaft connections therefor.

An object of the invention is to provide the upper end of the usual flexible shaft casing with a curved sheath or reinforcement whereby that part of the casing is given a predetermined degree of curvature and protected during both installation and use.

With these and other objects in view, the invention consists essentially in the novel arrangement, construction, and combination of various parts, more particularly described in the following specification and pointed out in the annexed claims.

In the drawing:

Figure 1 is a side elevation view of a speedometer mounted upon an instrument board showing the flexible shaft casing reinforcing member connected thereto.

Figure 2 is an enlarged fragmentary view showing the manner of attachment of the preferred embodiment of the invention.

Figures 3, 4 and 5 illustrate one end of a flexible drive shaft casing embodying modified forms of the invention.

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 3.

Figure 7 is a cross sectional view taken on the line 7—7 of Figure 4.

Like numerals of reference designate corresponding parts.

Referring now to the drawing; the numeral 10 designates an instrument board upon which the speedometer 11 is clamped by the fastening screws 12 engaged by the thumb nuts 13. Operatively connected to the bottom of the speedometer is a flexible shaft generally designated throughout the various views by the numeral 14 and contained within the casing 9. Said casing 9 carries at its upper end, in a flanged collar 15, the driving stub shaft 16 which extends into the speedometer casing and mechanically drives the speedometer mechanism. The drive shaft casing 9 is removably clamped to the speedometer by a screw 17 carried in the speedometer housing 11 which engages a resilient bar 18 clamping the flange of the collar 15 into firm engagement with the speedometer housing.

According to the present invention, there is provided a curved sheath 19, preferably comprising a one piece stamping as shown in Figures 1 and 2. The upper end of the sheath 19 is clamped to the collar 15 by a bank clamp 20 and screw 21. Another clamp 22 secures the lower end of the sheath to the flexible shaft casing, and a definite curvature is given to that portion of the flexible shaft casing 9 which it embraces.

In Figures 3 and 6 there is shown a two piece sheath 23 consisting of the curved sections 24 and 25 which embrace the flexible shaft casing 9, the two sections being held together about the casing 9 by rivets 26.

Figure 4 and Figure 7 illustrate a two piece sheath 28, the two pieces being secured in place by crimping the outer edges together, as indicated at 27.

In Figure 5 the construction of the sheath 29 is substantially the same as the embodiment illustrated in Figures 3 and 6, but instead of having the sheath extend completely around the flexible shaft casing, the sheath extends around substantially one half of the casing as shown, being secured in position by the attaching clamps 20.

From the foregoing it will he readily understood that there has been provided a simple and inexpensive means of protecting the driving end of the speedometer drive shaft and casing from acute bends during the installation operation as well as after the car is put into use, thus materially increasing the life of the drive shaft and the casing surrounding the same.

Modifications of the above may be made within the spirit and scope of the invention.

What I claim is:

1. A flexible drive shaft casing having a rigid sheath for the end comprising a stamping having a curved cross section and a radial external flange, the said curved portion shaped to fit over the flexible casing, and means associated with the said radial flange whereby the sheath is fixed to the said casing.

2. An instrument drive comprising, in combination, a flexible casing, a curved stamping adapted to be clamped against said casing, a radially extending flange formed on said curved stamping, and clamp-

ing means encircling said casing and fastened to said flange for the purpose of securing said curved stamping against said casing.

3. An instrument drive comprising, in combination, a flexible casing, a plurality of curved stampings adapted to be clamped against said casing, radially extending flanges formed on said curved stampings, and means associated with said flanges serving to secure said curved stampings against said casing.

In testimony whereof I affix my signature.

A. CHAMPION.