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J. ZUBATY

FLEXIBLE SHAFT CONNECTION

Filed Feb. 14, 1927

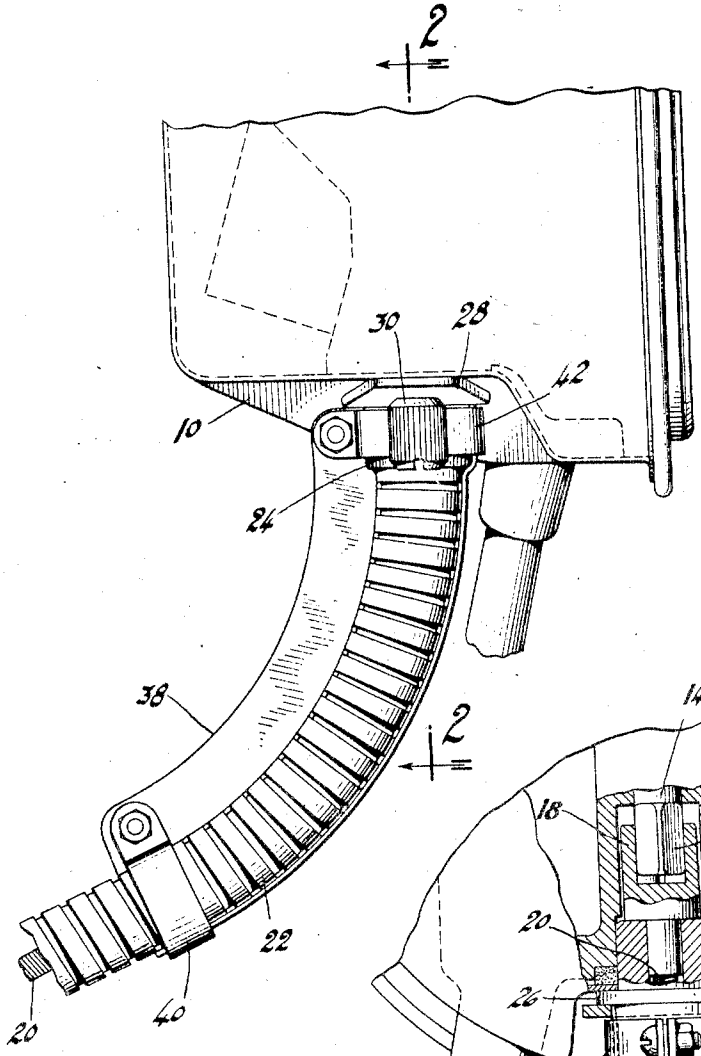


Fig. 1

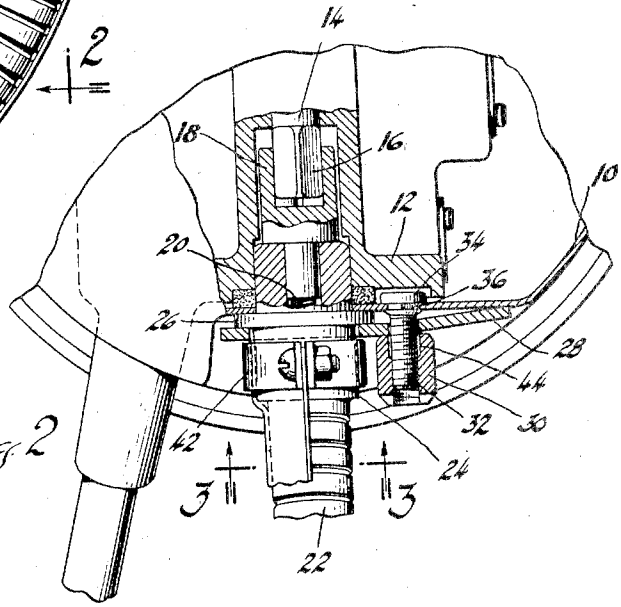


Fig. 2

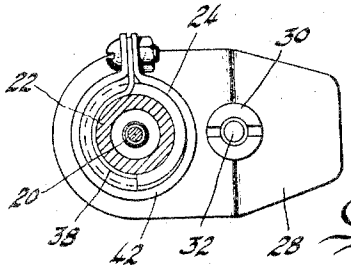


Fig. 3

Inventor

Joseph Zubaty

By Blackmore, Spencer & Hall

Attorneys

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UNITED STATES PATENT OFFICE.

JOSEPH ZUBATY, OF FLINT, MICHIGAN, ASSIGNOR TO A C SPARK PLUG COMPANY, OF FLINT, MICHIGAN.

FLEXIBLE-SHAFT CONNECTION.

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My invention relates to improved means for assembling and holding the flexible driving member in driving engagement with the speedometer head.

It has for an object the construction of the parts in such a manner that it is impossible to secure the flexible tubing to the speedometer head unless the tip on the flexible shaft is in proper driving engagement with the rotor shaft of the speedometer.

Another object is to eliminate the stresses usually placed on the speedometer frame when tightening the means for holding the flexible tubing in the driving position. This is accomplished by locating the fastening means in the speedometer casing instead of in the frame.

A further feature consists in so designing the clamping member that it will be held on the flexible tubing at all times, thus eliminating the possibility of its being assembled wrongly or of its being lost during shipment.

Other advantages will be disclosed in the specification and accompanying drawing, in which—

Figure 1 is a fragmentary side view of a speedometer head, showing my improved method of attaching the flexible tubing thereto.

Figure 2 is a section taken on line 2—2 of Figure 1.

Figure 3 is a view taken on line 3—3 of Figure 2.

The numeral 10 indicates a speedometer casing within which is held a frame 12. Journalled in this frame is a rotor shaft 14 having a squared end 16 around which fits a tip 18 on the end of the flexible driving shaft 20. This shaft rotates within the usual flexible tubing 22 to the upper end of which is secured a collar 24 having a flange 26. A clamping member 28 fits around the collar 24. A bolt 32 having a head 34 is secured in the casing 10 by being staked or upset as at 36. The shank of the bolt passes through an aperture in the clamping plate, and upon it is threaded the nut 30. By tightening the nut the flange 25 is clamped between the member 28 and the casing.

Ordinarily the flexible tubing is attached directly to the speedometer head by some means held in the frame. This is undesirable because any strain placed on the tubing will be transmitted to the frame and is apt to distort it sufficiently to cause it to register inaccurately. By securing the fastening means in the casing I thereby eliminate the possibility of transmitting such strains to the speedometer frame, as they will be carried directly from the flexible tubing through the casing to the instrument board, to which the casing is usually secured.

It is usually considered desirable to lead the flexible tubing away from the front of the speedometer, and in my preferred embodiment I have shown a curved stamping 38 held against one side of the flexible tubing 22 by split rings 40 and 42 as shown in pending application Serial No. 120,239 filed July 2, 1926. Injury to the drive by sharp bends or kinks is thus avoided. The clamping member 28 is slipped over the flexible tubing before the stamping 38 is secured in place, and is held loosely between the flange 26 and the split ring 40. By being held on the tubing there is no possibility of its being installed upside down or of its being mislaid or lost.

Upon assembling the flexible shaft and tubing to the speedometer head it is very essential that the tip 18 should be turned to such a position that it will register properly with the squared end 16 of the rotor shaft so that it may be slipped up in proper engagement as shown. Should the nut 30 be screwed onto the bolt 32 before the tip 18 and the squared end 16 are properly engaged, the rotor shaft 14 might be pushed up and the speedometer mechanism injured. To prevent this, I have provided the nut 30 with a counterbore 44. Should the tip not be in proper engagement with the squared end of the rotor shaft, the clamping member 28 would not be up far enough to permit the threads of the nut to engage those of the bolt 32. It will therefore be obvious that it is impossible to assemble the tubing to the casing unless the tip and the rotor shaft are in driving engagement.

It is thought from the foregoing taken in connection with the accompanying drawing that the construction and operation of the device will be apparent to those skilled in the art, and that various changes in size, shape, and proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A speedometer drive connection com-

prising, in combination, a speedometer casing, speedometer mechanism within the casing, a bolt secured in said casing, a flexible tube, a flexible shaft within said tube, a clamping member encircling said tube, and a nut engaging said bolt and bearing against said clamping member, said nut being counterbored to prevent engagement with the threads on the bolt until the flexible shaft is in proper driving relation with respect to the speedometer mechanism.

2. A speedometer drive connection comprising, in combination, a speedometer casing, speedometer mechanism within the casing, a flexible driving member, a clamping member adapted to hold said driving member in driving engagement with said speedometer mechanism, a bolt secured to said casing, and a nut threadedly engaged with said bolt for securing said clamping member to the casing.

3. A speedometer drive connection comprising, in combination, a speedometer casing, speedometer mechanism including a rotor shaft within said casing, a flexible tube, a flexible shaft within said tube, means on said flexible shaft adapted to engage said rotor shaft in driving relation, a bolt secured to said speedometer casing, a clamping member for holding said flexible tube against said casing, and a nut engaging said bolt for securing the clamping member to the casing, said nut being counter-bored to prevent engagement with said bolt until said means is in proper driving engagement with said rotor shaft.

4. A speedometer drive connection comprising, in combination, a speedometer casing, speedometer mechanism within said casing, a flexible driving shaft, flexible tubing encasing the driving shaft, a collar secured to the end of said flexible tubing, a flange on said collar, a split ring encircling said collar, and a clamping member held on said flexible tubing between the flange and the split ring and adapted to clamp said flange against said casing.

In testimony whereof I affix my signature.

JOSEPH ZUBATY.