F. W. SMITH.

UNIVERSAL CABLE TIP.

APPLICATION FILED MAR. 29, 1915.

1,210,110. Patented Dec. 26, 1916.

Fig. 1.

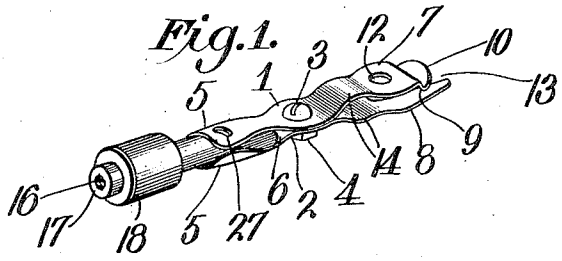


Fig. 2.

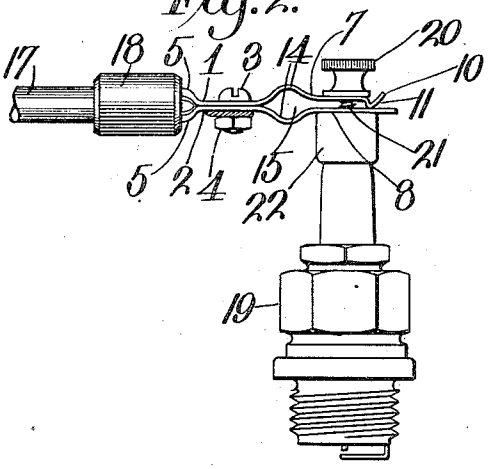


Fig. 3.

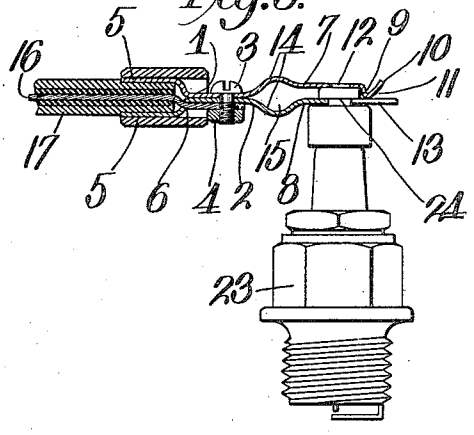


Fig. 4.

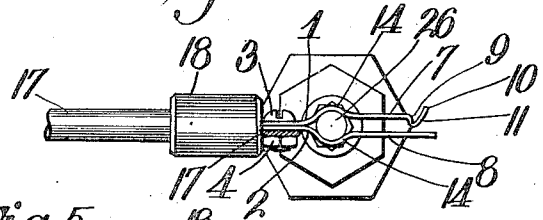
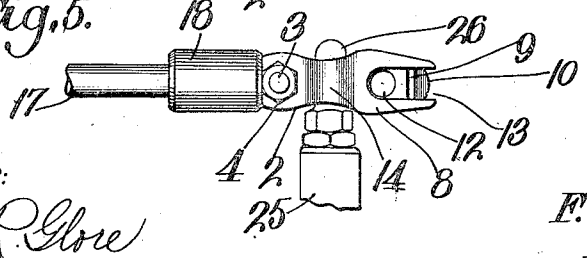


Fig. 5.



WITNESSES:

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UNIVERSAL CABLE-TIP.

1,210,110. Specification of Letters Patent. Patented Dec. 26, 1916.

Application filed March 29, 1915. Serial No. 17,301.

To all whom it may concern:

Be it known that I, FRANK W. SMITH, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Universal Cable-Tips, of which the following is a specification.

This invention relates to universal cable tips and more especially to cable tips for electrically connecting cables to spark plugs of explosive engines on automobiles and the like, and my object is to produce a tip of this character which may be used on any of the standard types of spark plugs with greater security against accidental disengagement than is now provided by the tips at present in use.

A further object is to provide a cable tip to which the wire portion of the cable can be secured with an efficient contact and less danger of detachment than is obtained by the common methods of making such connection.

With these objects in view the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a perspective view showing a fragment of a cable equipped with a tip embodying my invention, the cylindrical guard or collar being withdrawn from normal position to expose more clearly the relation between the cable and the tip. Fig. 2, is a side view of the same applied to a spark plug of standard pattern. Fig. 3, is a central vertical section of the same as applied to a second type of standard plug. Fig. 4, is a plan view showing the tip applied to what is generally known as the pillar type of spark plug. Fig. 5, is a side view of the same.

The tip is composed of two spring metal members in the shape of strips 1 and 2 which are secured flatly together midway their length by a bolt 3 and nut 4. Rearward of the bolt, the two strips terminate in similar oppositely bowed semicylindrical clasp arms 5 and the member 2 is provided adjacent the bolt with an opening 6. The front portions of the members constitute jaws 7 and 8, the former terminating in a tooth 9 projecting toward jaw 8 and a lip 10 projecting upwardly and forwardly from the lower end of the tooth and in conjunction with the adjacent portion of the member 8 constituting a flaring mouth 11.

The member 7 is provided with an opening 12 which is vertically above the inner end of a bifurcation 13 in the front extremity of the member 8, and between the perforated and bifurcated portions of the members and the securing bolt 3, said members are oppositely bowed at 14 to produce a substantially round opening 15 between the members, these bowed portions not only providing an opening 15 for a use which is hereinafter explained, but they constitute hinge coils to increase the clamping power of the jaws 7 and 8.

16 is a wire cable provided with the customary insulation sheath 17 which terminates short of the front end of the cable so that when the cable as a whole is fitted between the semi-cylindrical clasp arms, the extended portion of the cable can be threaded through the opening 6 and bent around the bolt between member 2 thereof and the nut 4. To make this connection more efficient and permanent the usual guard or sleeve 17 upon the cable, is slipped forward over the arms 5 until it contacts with the nut 4 and thus tends to prevent the latter from unscrewing.

To apply this tip to a spark plug of the type indicated by the reference character 19, the clamping nut 20 of the plug is removed from the threaded stem 21 of the plug, the tip is then slipped down upon said stem preferably with member 8 undermost, the stem extending up through the bifurcation and the opening 12. The nut 20 is then screwed down upon the stem until it clamps the tip firmly upon the upper end of the metal cap 22 of the plug. This organization of parts establishes an efficient and reliable connection between the tip and plug, as any unscrewing action of the nut will not result in disengagement between the plug and tip

because of the engagement between the stem and the opening 12 of the upper member or jaw 7 of the tip, it being noted that the jaw 7 through its upward pressure, locks the nut 20 against unscrewing.

When it is desired to use the tip upon a plug of the type indicated at 23, which plug is provided with a short headed stem 24, the bifurcated end of the lower member is fitted under the head of said stem so that the head of the latter shall fit in the mouth 11 of the tip, which is then pushed forwardly so as to overcome the resilient resistance of member 7, the pressure being applied until the stem occupies the rear end of the bifurcation and the tooth 9 stands in front of the head of the stem as shown in Fig. 3, and in this arrangement it will be seen that a good electrical contact is made between the tip and plug and that it is impossible for the tip to move upwardly out of engagement with the plug because the head overlaps and rests upon the member 8, around the bifurcation thereof and that disengagement due to rearward movement of the tip cannot occur because the tooth 9 is disposed in front of the head and forms in effect a spring closure for the bifurcation and to overcome the resistance of this spring closure, it is necessary to pull rearwardly on the cable with considerable force.

For engagement with the pillar type of spark plug identified by character 25, the tip is turned edgewise with respect to the plug. It is then arranged so that its opening 15 registers with the pillar part 26 of the plug and forced downward upon the latter so that the same shall be firmly though yieldingly clasped by the bowed portions of the members 7 and 8 forming the walls of said opening. The resiliency of the members is such that it is practically impossible for the tip to be disengaged from the pillar by pulling rearwardly upon the tip and it clasps the latter with such firmness that a positive application of power is required to disengage the tip by pulling upward upon it to withdraw it from the pillar.

The advantage of a universal tip of the character described will be readily understood by motorists particularly when touring, as it is frequently necessary to replace a defective spark plug with a new one of different type, and if the cable tips are adapted for use only with a definite type of plug it is necessary to resort to makeshift connections. The equipment of the cables with a tip embodying my invention will eliminate this trouble entirely.

From the above description it will be apparent that I have produced a universal cable tip embodying the features of advantage enumerated as desirable and I wish it to be understood that while I have illustrated and described the preferred embodiment of the same, I reserve the right to make all changes falling within the spirit and scope of the appended claims.

I claim:—

1. A cable tip comprising a pair of spring metal jaws, one of the jaws having a tooth for engagement with the other to limit approaching movement of the front ends of the jaws and the other jaw having a bifurcation extending from its front extremity to a point rearward of said tooth.

2. A cable tip comprising a pair of spring metal jaws, one of the jaws having a tooth for engagement with the other to limit approaching movement of the front ends of the jaws and the other jaw having a bifurcation extending from its front extremity to a point rearward of said tooth; said jaws being outwardly bowed at opposite points rearward of said bifurcation.

3. A cable tip, comprising a pair of spring metal jaws having registering openings at their front ends, and a tooth projecting from one of said jaws toward the other forward of one of said openings.

4. A cable tip, comprising a pair of spring metal jaws having registering openings at their front ends, and a tooth projecting from one of said jaws toward the other forward of one of said openings, said jaws at opposite points rearward of said openings being bowed outwardly.

5. A cable tip comprising a pair of spring metal jaws, one provided at its front end with a forwardly opening bifurcation and the other near its front end with an opening registering with the rear portion of said bifurcation and with a transverse tooth projecting toward the bifurcated jaw and bridging the bifurcation thereof; said tooth having an extension diverging forward with respect to the front extremity of the bifurcated jaw and constituting a flaring mouth for the jaws.

6. A cable tip comprising a pair of spring metal jaws, one provided with a forwardly opening bifurcation at its front end and the other near its front end with an opening registering with the rear portion of said bifurcation and with a transverse tooth projecting toward the bifurcated jaw and bridging the bifurcation thereof; said tooth having an extension diverging forward with respect to the front extremity of the bifurcated jaw and constituting a flaring mouth for the jaws; said jaws rearward of said opening and bifurcation being bowed outward at opposite points.

7. A cable tip, comprising a pair of spring metal members fitting flatly together intermediate their ends to form a pair of jaws and a pair of arms at opposite sides of the point of engagement, a bolt extending

through said members at their engagement point, a nut engaging the bolt to clamp the jaws together; the said arms being spaced apart and transversely oppositely bowed, an insulated cable fitting between the said arms, and having its core electrically connected to said members, and a cylindrical guard or sleeve fitting frictionally on the cable and arms and abutting against the nut to prevent backward turning thereof.

In testimony whereof, I affix my signature, in the presence of two witnesses.

FRANK W. SMITH.

Witnesses:

FRANK R. GLORE,

G. Y. THORPE.