Dec. 3, 1940. R. D. CONBOY 2,224,030

CIGAR LIGHTER

Filed Feb. 5, 1938

Fig. 1

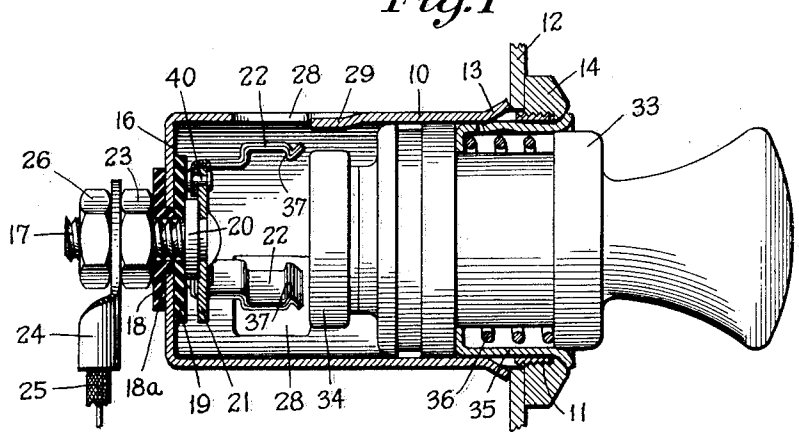


Fig. 3

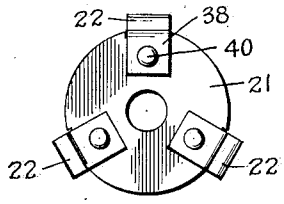


Fig. 2

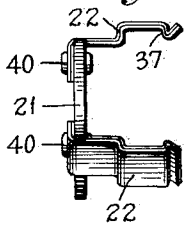


Fig. 4

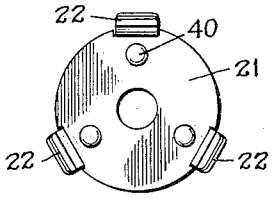


Fig. 5

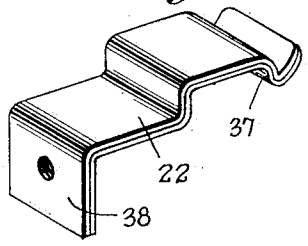
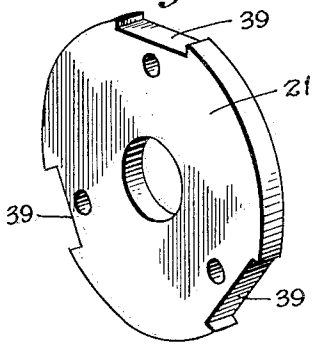


Fig. 6



INVENTOR
Russell D. Conboy
BY *Arthur A. Johnson*
ATTORNEY

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CIGAR LIGHTER

Russell D. Conboy, Waterbury, Conn., assignor to Automatic Devices Corporation, Bridgeport, Conn., a corporation of Connecticut

Application February 5, 1938, Serial No. 188,822

9 Claims. (Cl. 219—32)

The present invention relates to cigar lighters, and, more particularly, to the construction of the contacts for energizing the heating element thereof.

In some of the current cigar lighters, the energizing contact for the heating element is formed by stamping a spider-like member from a sheet of metal so as to form a central disk with a plurality of contact fingers radiating therefrom. The fingers are bent at the edge of the disk so as to extend substantially at right angles to the disk and into a position to be engaged by the heating element and close an energizing circuit to the latter.

When the contact member is thus formed with radiating contact fingers, it will be seen that the grain of the metal in these fingers will be different so that in the operation of the device the fingers will act differently when making contact with the igniting unit.

This is especially true in automatic lighters, wherein the contact members are made of bimetallic material. The contacts in this type of device not only operate as contacts to close the circuit but also as means for opening the circuit when the heating element attains its desired heat. If the grain in the metal of the bimetallic contact fingers differ, they will, when affected by heat, flex to different extents and may not operate to open the circuit. As the fingers also serve, in some instances, as latches for holding the igniting unit in closed-circuit position, the latches will fail to release properly.

Accordingly, in the contact means of the present device, all of the fingers are so constructed that the grain of the metal is the same in each finger.

The contact means of the present invention comprises a disk having secured thereto a plurality of outwardly extending fingers for engagement with the igniting unit for closing the circuit through the heating element. These fingers are stamped from strip stock, one after the other, so that the grain in all the fingers will extend in the same direction. These fingers can either be merely contact fingers or they can be combination contact fingers and latches.

Also, according to the present invention, where bimetallic material is used for the fingers, a saving in the cost of manufacture can be made. Since the contact disk serves no control function, it can be made of any conducting metal and only the fingers secured thereto need be made of bimetallic material. This reduction in the amount of bimetallic material needed for the device considerably reduces the manufacturing cost.

When all of the fingers are formed from bimetallic strip stock and have the grain therein running in the same direction, they will all react substantially identically when heated and will cause the device to operate more accurately.

Other features and advantages of the invention will be apparent from the specification when taken in connection with the drawing, in which:

Figure 1 is a sectional view of the holder and contact therein.

Fig. 2 is a side elevation of the contact.

Fig. 3 is a bottom plan view of the contact.

Fig. 4 is a top plan view of the contact.

Fig. 5 is a perspective view of one form of contact finger.

Fig. 6 is a perspective view of the contact disk.

According to the present invention, a tubular sheet metal holder **10** is provided for mounting the cigar lighter. It is threaded at its open end **11** which is adapted to be inserted through an aperture in a dashboard **12** or other support. A plurality of tangs **13** are struck out from the body of the holder adjacent the open end thereof and are adapted to engage the back of the dashboard **12** when the holder is inserted through the aperture therein. A collar **14** is threaded on the open end of the holder and locks the latter in place with the dashboard clamped against the tangs.

The other end of the sheet metal holder is enclosed by a wall **16** having a central aperture therein. A bolt **17** is mounted so as to extend through the central aperture in the wall **16** and be insulated therefrom by an insulating washer **18** having a neck **18a** projecting through the aperture and another washer **19**. The bolt is provided adjacent one end with a spacer **20**.

A contact disk **21** is mounted on the inner end of the bolt and is clamped between the spacer and the headed-over portion of the bolt. The contact disk extends beyond the spacer and is provided with a plurality of outwardly extending contact fingers **22**. The bolt and contact are locked in position in the holder by means of a nut **23** threaded on the bolt. The contact is connected to a source of energy by means of a connector lug **24** connected to a conductor **25**. The connector lug is positioned on the bolt **17** and locked in place thereon by a nut **26**.

The contact can be assembled on the bolt in several different ways. For example, the spacer can be formed integrally with the bolt and the contact slipped over the projecting end of the

bolt after which the projecting end is headed over to clamp the contact disk against the spacer. If desired, the contact can be slipped over the shank of the bolt to engage a head formed thereon and a spacer, in the form of a washer, can then be slipped on the bolt and the entire assembly locked together by means of the nut **23** when the assembly is clamped to the end wall.

The holder is provided with a plurality of vent openings **28** adjacent the contact fingers and with a lanced contact tang **29** adapted to engage the igniting unit when in circuit-closing position to complete the circuit therethrough.

The igniting unit **33** is of the usual type having a contact cup **34** secured at one end for holding the heating element, and having a friction sleeve **35**, for engaging the holder, slidably mounted thereon. An ejector spring **36** is mounted on the igniting unit and engages the friction sleeve to normally hold the igniting unit in shallow open-circuit position.

In the preferred form of the invention, the contact means comprises a metal contact disk **21** and a plurality of contact fingers **22**. The contact disk **21** is formed of monometallic material, while the fingers **22** are formed of bimetallic material. The fingers, in this form of the invention, are bent at their outer ends so as to form latches **37**. The fingers are normally biased to a position wherein the latches engage and grip the contact cup of the igniting unit when the igniting unit is pushed into closed-circuit position and hold the igniting unit against the action of the ejector spring, which normally moves the igniting unit into open-circuit position, until the heating element has acquired its desired heat.

These fingers, being made from strip material, will all have the grain in the material thereof extending in the same direction. Upon the fingers being heated, they will all flex in the same manner and release the contact latches from the igniting unit, whereby the ejector spring moves the igniting unit into open-circuit position, and the heating element can then be removed from the holder for use.

The latch fingers, adjacent their inner ends, are provided with a right angle bend forming a portion **38** by which they are secured, preferably, to the underface of the contact disk. When secured in this manner, the disk will hold the fingers against outward movement resulting from the pull of the ejector spring when in closed-circuit relation. The contact disk is provided with a plurality of notches **39** in the periphery thereof to receive the projecting fingers and hold them against shifting. The bent portion of the fingers are secured to the disk by rivets **40** or any other suitable securing means. The spacer **20** provides ample space for locating the rivets and bent portion of the fingers in the base of the holder.

While the herein preferred form of the invention discloses bimetallic contact latches for closing the circuit, it is clear that plain bimetallic contacts, which will flex and open the circuit, can be made in the same manner by eliminating the latches formed at the outer end of the fingers. Being made of strip material, these elements can be made much more quickly and will function much more accurately than those formed integrally with the disk and stamped directly as a spider from a sheet of material. Also, since a contact disk performs no function other than supporting the contact fingers, it can be made of monometallic conducting material, which, of course, is less expensive than bimetallic material.

If the contacts are to be made of monometallic material alone, it will be clear that they can be much more readily and cheaply made by forming the contact fingers from strip metal and securing them to a metal disk or washer. This procedure will eliminate many steps which are now necessary when the entire contact means are stamped as a unit.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In an electric cigar lighter, a holder; an igniting unit having a heating element movably mounted on the holder and completely removable therefrom for use; and means in the holder for closing the circuit through the heating element comprising a disk and a plurality of heat-responsive fingers secured to the disk and having the grain of the material extending in the same direction in each finger so as to all operate in the same manner to open the circuit incident to the heating of the heating element.

2. In an electric cigar lighter, a holder; an igniting unit having a heating element movably mounted on the holder and completely removable therefrom for use; and means in the holder for closing the circuit through the heating element comprising a disk and a plurality of bimetallic fingers secured to the disk and having the grain of the material extending in the same direction in each finger whereby each finger will flex in the same manner upon being heated incident to the heating of the heating element to open the circuit.

3. In an electric cigar lighter, a holder; an igniting unit having a heating element movably mounted on the holder and completely removable therefrom for use, and means in the holder for closing a circuit through the heating element comprising a monometallic disk and a plurality of bimetallic heat-responsive contact fingers having substantially identical grain structure, said fingers being spaced less than 180° apart and extending therefrom and operating identically incident to the heating of the heating element to open the circuit.

4. In an electric cigar lighter, a holder; an igniting unit having a heating element mounted on the holder; contact means in the holder for closing a circuit through the heating element, comprising a plurality of flexible contacts having the grain of the metal extending in the same direction in each contact so that all of the contacts will flex in the same manner; and means including a spacing shoulder interposed between the contact and holder for spacing the contact means from the holder.

5. In an electric cigar lighter, a holder; an igniting unit having a heating element movably mounted on the holder and completely removable therefrom for use; and means in the holder for closing a circuit through the heating element comprising a disk provided with peripheral notches and L-shaped bimetallic fingers secured to the disk so as to engage the notches.

6. In an electric cigar lighter, a holder; an igniting unit having a heating element movably mounted on the holder and completely removable therefrom for use; and means in the holder for closing a circuit through the heating element comprising at least three uniformly spaced flexible latch contacts having the grain of the material extending in the same direction in each

contact so that they will all flex in the same manner when moved to latching or unlatching position.

7. In an electric cigar lighter, a holder for supporting an igniting unit for complete removal for use; and means in the holder for closing a circuit through the heating element comprising a plurality of thermostatic contacts spaced less than 180° apart and having the grain of the material extending in the same direction in the contacts so that all of the contacts operate in the same manner when heated incident to the heating of the heating element to open the circuit thereto.

8. In an electric cigar lighter, a holder for supporting an igniting unit for complete removal for use; and means in the holder for closing a circuit through the heating element comprising at least three uniformly spaced bimetallic contacts, all having the grain of the material extending in the same direction in the contacts so that all of the contacts operate in the same manner when heated incident to the heating of the heating element to open the circuit thereto.

9. In an electric cigar lighter, a holder for supporting an igniting unit for complete removal for use; and means in the holder for latching the igniting unit in closed position on the holder comprising a plurality of bimetallic latches spaced less than 180° apart and having the grain of the material of the latches extending in the same direction in all of the latches so that all of the latches operate in the same manner to release the igniting unit and open the circuit thereto.

RUSSELL D. CONBOY.