

Aug. 12, 1958

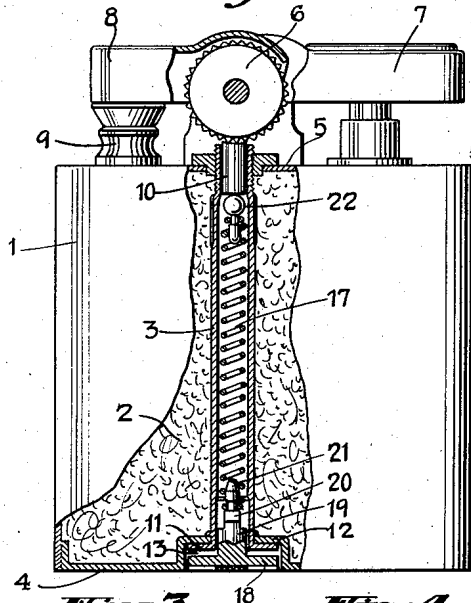
W. I. NISSEN

2,846,861

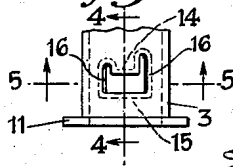
CIGAR LIGHTER FLINT POSITIONING MECHANISM

Filed Jan. 4, 1956

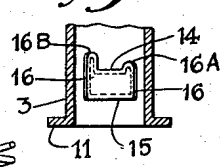
*Fig. 1.*



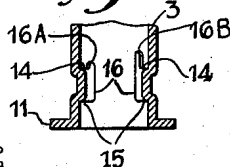
*Fig. 2.*



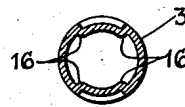
*Fig. 3.*



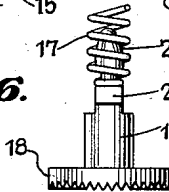
*Fig. 4.*



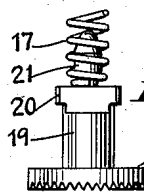
*Fig. 5.*



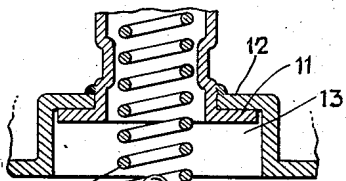
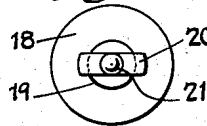
*Fig. 6.*



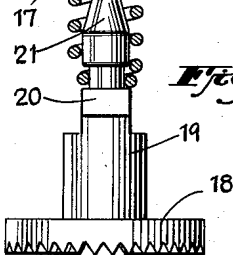
*Fig. 7.*



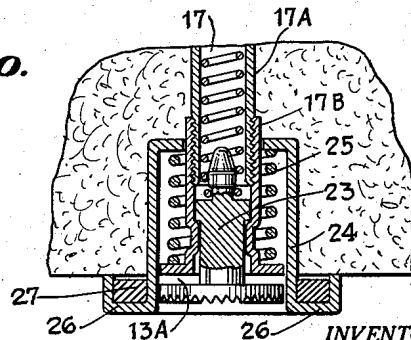
*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



INVENTOR.

WARREN I. NISSEN.

BY *Ward Neal Haskell*  
*Orms McElhannon*  
ATTORNEYS.

1

2,846,861

**CIGAR LIGHTER FLINT POSITIONING MECHANISM**

Warren I. Nissen, East Stroudsburg, Pa., assignor to Ronson Corporation, Newark, N. J., a corporation of New Jersey

Application January 4, 1956, Serial No. 557,287

3 Claims. (Cl. 67-7.1)

It has long been conventional in pyrophoric lighters embodying a flint tube which holds the flint in operating position and into which new flints are inserted as needed, to close the mouth of the tube through which the flint is inserted, by a threaded plug which is unscrewed with the aid of a coin or like tool whenever a new flint is needed, and screwed back into operating position in the same manner after the new flint has been inserted. To simplify the removal and reinsertion of the plug, it has been long since proposed to construct the latter to operate on the bayonet slot principle, but the structures of such nature as heretofore proposed have been so costly and cumbersome as to inhibit their practical adoption and use. The present invention aims to provide flint positioning structure of the above character which will be readily operable by direct manual engagement without the need of any special tools, and which will be within practical limits in respect to expense, complication and space required. Further objects and advantages of the invention will be in part obvious and in part as specifically referred to in the description hereinafter contained, which taken in conjunction with the accompanying drawings discloses certain preferred embodiments of a cigar lighter flint positioning mechanism which is constructed to operate in accordance with the invention. In the drawings

Fig. 1 is a side view, with certain parts cut away, of a cigar lighter having a flint positioning mechanism constructed to operate in accordance with the invention.

Fig. 2 is an enlarged side view showing detached, the lower end portion of the flint tube shown in Fig. 1.

Fig. 3 is a central longitudinal section taken through the end of the flint tube which is shown in Fig. 2.

Figs. 4 and 5 are detail sections taken respectively on the broken lines 4-4 and 5-5 of Fig. 2, looking in the direction of the arrows.

Fig. 6 is an enlarged side view showing detached, the closure plug which is shown in Fig. 1.

Fig. 7 is a view similar to Fig. 6, but taken at right angles thereto.

Fig. 8 is a top plan view of the plug shown in Figs. 6 and 7.

Fig. 9 is an enlarged detail view similar to the bottom central portion of Fig. 1, but showing the plug in detached relationship to the lighter casing.

Fig. 10 is an enlarged view similar to the bottom central portion of Fig. 1, but showing a somewhat modified construction.

The invention is shown in Fig. 1 as applied to a lighter of well known general construction, having a casing 1 which encloses a fuel chamber 2, and a flint tube 3 which passes through the fuel chamber from the bottom wall 4 of the casing to the top wall 5 thereof. An abradant wheel 6 may be understood as located adjacent the wall 5, and operated by means of a fingerpiece 7 which also operates a cap 8 cooperating with an appropriate burner 9. A flint 10 is shown in engagement with the wheel 6, but since the present invention is not particularly con-

2

cerned with the details of the lighter operating mechanism, the abovementioned parts are not more particularly described herein.

Referring now more particularly to Figs. 1-9, the lower end of the flint tube 3 is shown as flanged outwardly at 11, against the inner wall 12 of a socket 13 in the bottom wall 4 of the lighter casing, it being understood that a fluid tight joint is effected between the parts 11 and 12.

As shown more in detail in Figs. 2-5, the lower end portion of the flint tube 3, somewhat inwardly of its mouth and inwardly of the wall 12, is indented to provide one or more internal shoulders 14 which project into the bore of the tube and are directed transversely thereof, these shoulders extending only part way around the interior of the tube. Preferably the indentation is shaped as best shown in Figs. 2 and 3, to provide a further pair of similar internal transverse shoulders 15 which likewise extend part way around the interior of the tube and are located closer to the mouth of the tube than the shoulders 14 previously referred to. Preferably the indentation above referred to is also shaped to provide spaced internal shoulders 16 which are directed longitudinally within the bore of the tube and extend respectively between the ends of the shoulders 14 and 15 as shown in Figs. 2 and 3. The reduced diameter of the tube 3 at the points where the above mentioned shoulders are located, will still be made large enough to receive the flint 10 and spring 17 hereinafter referred to, when the latter are inserted into the mouth of the tube.

The closure plug which fits into the mouth of the flint tube is provided at its outer end with a head portion 18 which is slidably and rotatably received in the socket 13 previously referred to, and which preferably lies approximately flush with the casing wall 4 when the plug is in normal position. Preferably also the outer surface of the plug head 18 is somewhat roughened to facilitate the twisting of the plug as hereinafter described by direct application of finger pressure thereto, without the aid of any tool.

Extending inwardly from its head 18, the plug is provided with a shank portion 19 which fits slidably and rotatably within the reduced portion of the bore of the flint tube 3 in the region of the shoulders 14-16 referred to. Inwardly of its shank 19, the plug is provided with one or more lugs 20 which project transversely of the plug beyond the confines of its shank 19, and at its inner end the plug is preferably provided with a central prong 21 which is engaged with the adjacent end of spring 17. The opposite end of this spring may be likewise provided with a fitting 22 (Fig. 1) which presses against the flint 10 when the flint positioning mechanism is in operating position.

Assuming that a new flint is to be inserted, the flint positioning assembly including the plug, spring and fitting 22 will have been removed, and the flint will then be dropped in through the mouth of the flint tube, with the lighter more or less inverted from the position shown in Fig. 1. Then the pressure spring 17 carried by the closure plug and carrying the fitting 22, will be inserted through the mouth of the flint tube, and direct manual pressure will be applied to the plug head 18 until the spring 17 is compressed, and the plug head 18 engages against the inner wall of the socket 13. During this inward movement, the closure plug may be manually twisted by torsional force applied directly by the operator's finger, if necessary to move the lugs 20 out of alignment with the shoulders 14-16 above referred to, so that the lugs 20 will pass inwardly between adjacent longitudinal shoulders 16 to a position inwardly of the shoulders 14. Thereupon the plug will be manually twisted until the lugs 20 are alined with the shoulders 14. Then

3

upon release of inward manual pressure on the plug, the latter moves slightly outwardly to the position shown in Fig. 1 under the outward pressure applied by spring 17, in which position the lugs 20 are urged by the compressed spring 17 into engagement with the shoulders 14, to hold the plug in the operative position shown in Fig. 1. Upon release of manual pressure the head 18 of the plug moves slightly outwardly in socket 13 into a position substantially flush with the adjacent casing wall. To assist in guiding the lugs 20 into and out of engaging relation with respect to the shoulders 14, the longitudinal shoulders 16 may be provided with inwardly directed extensions 16A and 16B respectively, one of which is longer than the other, in such manner that when the plug is manually pushed to its inward limit of movement, the lugs 20 will lie inwardly of the extensions 16A but still be engageable by twisting movement with the extensions 16B. Thus the extensions 16B will act as stops limiting the extent of the twisting movement which may be manually imparted to the plug, and facilitating the proper alinement of lugs 20 with the shoulders 14. Before release of manual pressure, the plug is twisted in the proper direction (because of the stops 16B the plug is then free to twist in one direction but not in the other) until the lugs 20 engage against the stops 16B. It will be understood that the stops 16A are substantially diametrically opposite each other, and likewise as to the stops 16B. The stops 16A prevent the lugs 20 from twisting out of locking position, unless the plug be first pushed inwardly.

In disengaging the closure plug, the latter is first manually pressed inwardly from the position shown in Fig. 1, until the lugs 20 move inwardly beyond the stops 16A, whereupon the plug may be manually twisted (in the reverse direction) until the lugs 20 engage against the stops 16B. In this position the lugs 20 will be alined with the spaces between the juxtaposed longitudinal shoulders 16, so that if manual pressure on the plug be thereupon released, the pressure of spring 17 will push the plug outwardly to the position shown in Fig. 9. In this position the flint positioning assembly is freely removable from the tube, and will be withdrawn while the new flint is being inserted into the mouth of the tube.

Fig. 10 shows the invention applied to a lighter casing of the type disclosed in the United States patent to Aronson No. 2,505,167 issued April 25, 1950, Fig. 10 being a view similar to Fig. 2 of said patent. In Fig. 10, the flint tube 17A is shown as having an extension 17B threadedly connected thereto to serve as the mouth portion of the tube, and this extension may be understood as having the same internal shoulder structure as has already been described in connection with Figs. 2-5. Spring 17 of Fig. 10 may be understood to be the same as previously described, and also the closure plug 23 of Fig. 10 may be understood to be the same as above described in connection with Figs. 6-8. In this instance however the socket 13A (comparable to the socket 13 previously described) is provided in a hub 24 which slidably and rotatably surrounds the flint tube, and is urged toward an inner position by a spring 25. This hub is attached to the adjacent wall of the casing and the latter has rim portions 26 which are shown as provided with a packing ring 27. This ring seats against the edge of the lighter side wall structure (not shown). Thus the first mentioned wall of the lighter casing may be pulled outwardly against the pressure of the spring 25 and twisted to expose the fuel chamber of the lighter. When thereafter twisted in the reverse direction and released, the spring 25 will urge the movable wall of the lighter back into closed position.

While the invention has been disclosed as carried out by the above described specific structures, it should be understood that changes may be made therein without

4

departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A pyrophoric lighter including a casing having a fuel chamber therein, an abradant member mounted exteriorly of said fuel chamber, a flint tube extending through said chamber and having one end portion thereof positioned adjacent said abradant member, means mounting said flint tube fixedly in position in said casing the opposite end portion of said tube having a mouth which opens through a wall of the casing, and a closure plug for the mouth of the flint tube, said plug having at its outer end a head which is directly manually engageable to move the plug both longitudinally and angularly relative to the tube, said plug having a shank portion extending from said head and which is rotatably and slidably received in the mouth of the tube, said plug also having at portions thereof disposed inwardly along its shank, at least one lug projecting transversely of the plug beyond the confines of said shank, the side wall of said flint tube, inwardly of the mouth portion thereof, being indented to provide at least one shoulder extending into the bore of the tube and directed transversely of the tube, the wall of the tube being continuous and imperforate at the juncture of said shoulder with the adjacent portions of the tube said shoulder extending part way around the inner wall of the flint tube, a pressure spring within said tube and bearing against the inner end portion of said plug, whereby said plug may be manually pressed inwardly as aforesaid against the pressure of said spring until said lug is positioned inwardly of said shoulder, and thereupon manually moved angularly to aline said lug with said shoulder, said spring urging said lug into engagement with said shoulder upon release of the aforesaid manual pressure, to hold the plug against withdrawal from the mouth of the flint tube.

2. A pyrophoric lighter including a casing having a fuel chamber therein, an abradant member mounted exteriorly of said fuel chamber, a flint tube extending through said chamber and having one end portion thereof positioned adjacent said abradant member, the opposite end portion of said tube having a mouth which opens through a wall of the casing, means mounting said flint tube fixedly in position in said casing and a closure plug for the mouth of the flint tube, said plug having at its outer end a head which is directly manually engageable to move the plug both longitudinally and angularly relative to the tube, said plug having a shank portion extending from said head and which is rotatably and slidably received in the mouth of the tube, said plug also having at portions thereof disposed inwardly along its shank, at least one lug projecting transversely of the plug beyond the confines of said shank, the side wall of said flint tube, inwardly of the mouth portion thereof, being indented to provide at least one shoulder extending into the bore of the flint tube and directed transversely of the tube, said shoulder extending part way around the inner wall of the flint tube, the wall of said tube being further indented to provide at least one further shoulder extending into the bore of the tube which runs from said first mentioned shoulder toward the mouth of the tube, the wall of the tube being continuous and imperforate at the junctures of said shoulders with the respectively adjacent portions of the tube, a pressure spring within said tube and bearing against the inner portion of said plug, whereby said plug may be manually pressed inwardly as aforesaid against the pressure of said spring, to travel along said further shoulder to a position inwardly of said first mentioned shoulder, and thereupon manually moved angularly to aline said lug with said first mentioned shoulder, said spring urging said lug into engagement with said first mentioned shoulder upon release of the aforesaid manual pressure, to hold the plug against withdrawal from the mouth of the flint tube.

5

3. A pyrophoric lighter including a casing having a fuel chamber therein, an abradant member mounted exteriorly of said fuel chamber, a flint tube extending through said chamber and having one end portion thereof positioned adjacent said abradant member, the opposite end portion of said tube having a mouth which opens through a wall of the casing, means mounting said flint tube fixedly in position in said casing and a closure plug for the mouth of the flint tube, said plug having at its outer end a head which is directly manually engageable to move the plug both longitudinally and angularly relative to the tube, said plug having a shank portion extending from said head and which is rotatably and slidably received in the mouth of the tube, said plug also having at portions thereof disposed inwardly along its shank, at least one lug projecting transversely of the plug beyond the confines of said shank, the side wall of said flint tube, inwardly of the mouth portion thereof, being indented to provide pairs of substantially parallel shoulders, the shoulders of each pair being spaced from each other longitudinally along the flint tube and extending into the bore of the tube and directed transversely of the tube, said shoulders of each pair extending part way around the inner wall of the tube, the wall of said tube being further indented to provide further pairs of substantially parallel shoulders extending into the bore of the tube which run longitudinally of the tube and respectively be-

6

tween the end portions of the shoulders of said first mentioned pairs of shoulders, the wall of the tube being continuous and imperforate at the junctures of said shoulders with the respectively adjacent portions of the tube, a pressure spring within said tube and bearing against the inner end portion of said plug, whereby said plug may be manually pressed inwardly as aforesaid against the pressure of said spring, to travel between said further pairs of shoulders until said lug is positioned inwardly of said first mentioned pairs of shoulders, and thereupon manually moved angularly to align said lug with one of said first mentioned pairs of shoulders, said spring urging said lug into engagement with one of the inner shoulders of said first mentioned pairs of shoulders upon release of the aforesaid manual pressure, to hold the plug against withdrawal from the mouth of the tube.

## References Cited in the file of this patent

## UNITED STATES PATENTS

|           |           |               |
|-----------|-----------|---------------|
| 1,766,136 | Markstrum | June 24, 1930 |
| 2,476,149 | Horning   | July 12, 1949 |
| 2,603,075 | Levene    | July 15, 1952 |

## OTHER REFERENCES

Product Engineering, August 1952, published by McGraw-Hill, Albany, New York, page 163.