

Sept. 4, 1928.

1,682,892

L. DE GOLL

LIGHTER

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Fig. 2.

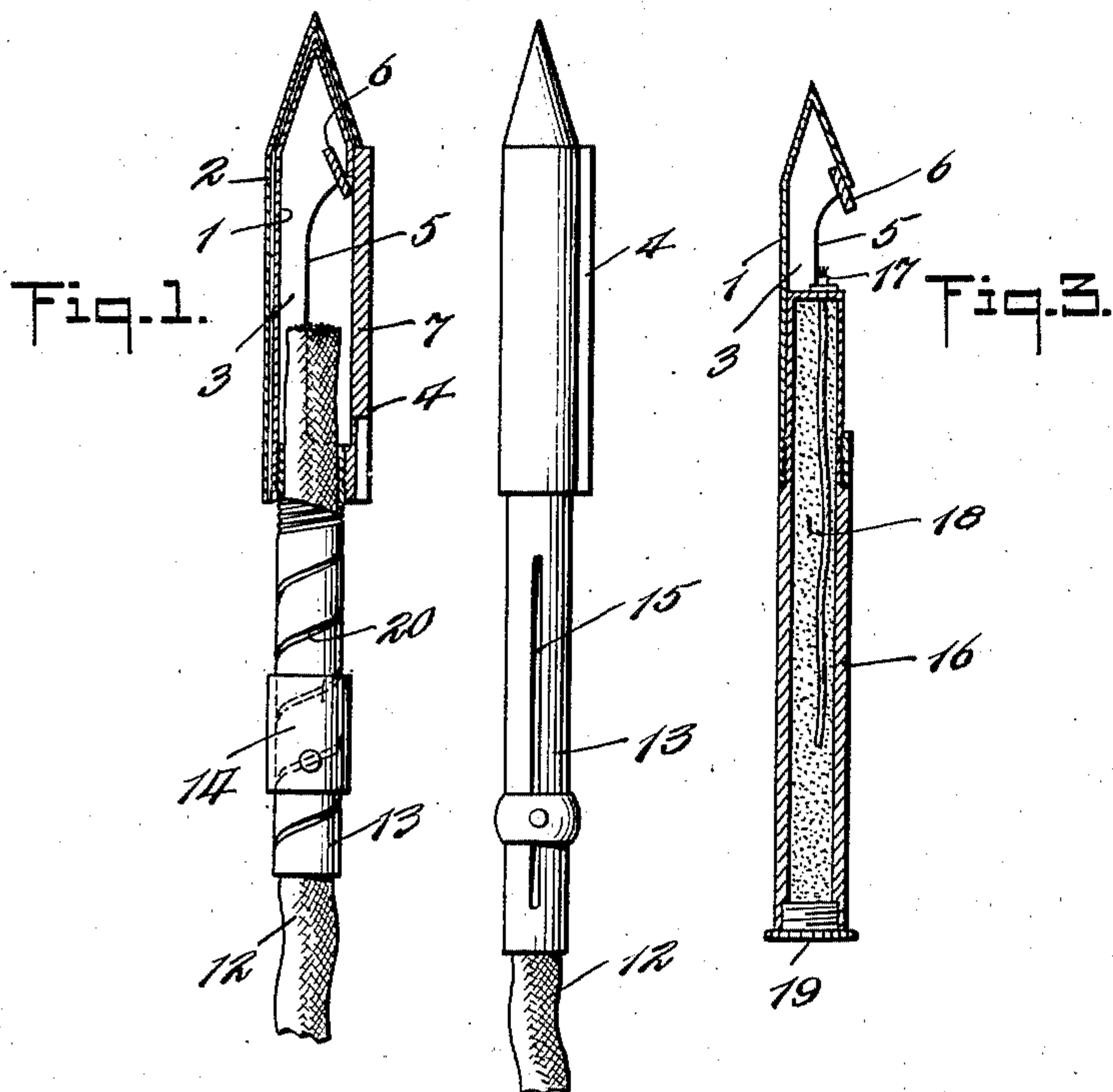
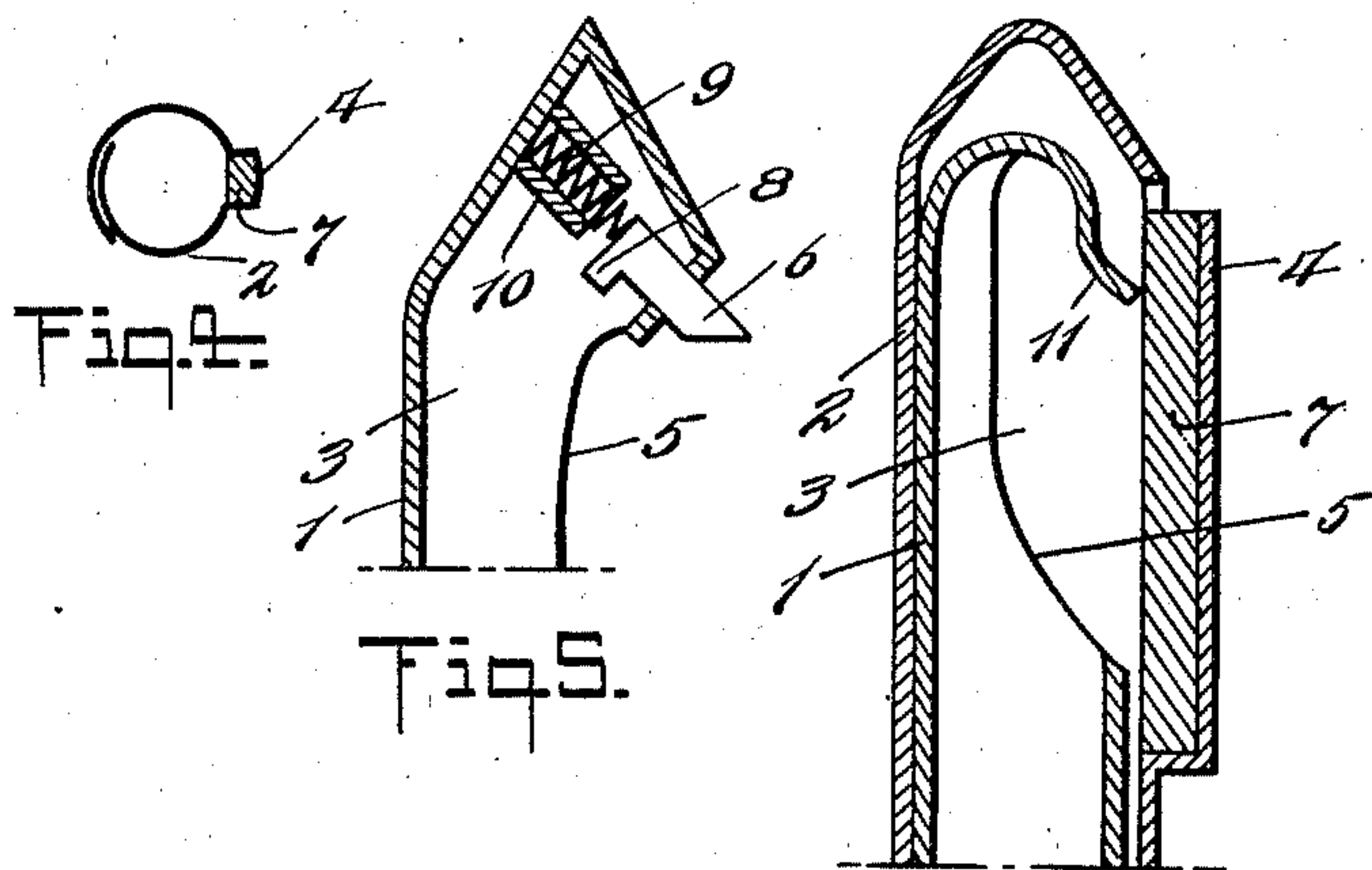


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## LIGHTER.

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The invention relates to improvements in portable lighters or torches in which the ignition or lighting of the inflammable member such as the wick is accomplished by friction of a hard substance, preferably steel or similar substance, against a pyrophoric stone.

The object of the invention is to produce a lighter of small size, in which the spark is brought in direct and absolute contact with the wick or inflammable material without effort, the deterioration or wearing away of the pyrophoric stone being reduced to a minimum.

The invention consists in covering the wick carrier with a cap carrying a pyrophoric stone, which cap has to be removed to release the wick. The pyrophoric stone comes into contact during this movement with a hard body carried by the wick holder so that the spark ignited by the friction of the stone and of the hard body against one another is produced in an enclosed chamber in the interior of the cap, and this insures its proper action on the wick or other inflammable member.

Several methods of carrying out the invention are represented in the annexed drawings, in which

Fig. 1 is a vertical cross section of a pocket lighter made according to the present invention;

Fig. 2 is a side elevation of a modification of my invention;

Fig. 3 is a vertical cross section showing the invention in its application to a gasoline torch, the cap being raised;

Fig. 4 is a horizontal cross section of the cap or hood employed in these different lighters;

Figs. 5 and 6 are enlarged cross sectional views of modified forms.

As shown by the drawings, this lighter device comprises a housing or body 1 over which a friction cap 2 fits, the body of the lighter being hollow in its upper part so as to form a chamber 3 called the lighting chamber in which the spark is produced. The hood 2 of substantially cylindrical form is provided in the direction of its length with an opening 4 containing a pyrophoric stone 7. The side of the upper part of the lighter housing is cut away, as shown at 5 on Figures 1, 3, 5, and 6 for the purpose of opening chamber 3, and carries in any convenient form, a piece of metal or other suit-

able hard material 6 adapted to be ground or rubbed against the pyrophoric stone 7 when the cap 2 is slid off the lighter housing 1. This friction produces the spark which penetrates chamber 3 through the slot 5 and reaches the inflammable material or wick, the cap not being yet disengaged from housing 1. It will be observed that at the moment when the spark is produced the chamber 3 is still closed by cap 2 so that this spark, produced in a closed chamber, is conveniently isolated and directed and certain to reach the material to be ignited. Preferably cap 2 is formed of a flat piece of metal rolled into cylindrical form with overlapping edges as shown in Fig. 4, so that it is possible to exert a certain pressure on the edges to tighten them while the cap is being slid down, thus insuring a tight contact of the stone 7 and the striker 6. I can thus give to the cap a slightly conical form, the flexibility of the thin metal tending to press the two edges together for opening and closing the cap and for this purpose can use a ring sliding thereon adapted to be turned in the desired direction to produce the contraction necessary to the application of the striker 6 against the stone 7. This is particularly advantageous to compensate for deterioration in the stone 7. The conical form which is given to the upper part of the lighter housing 1 makes such compensation easier. It is sufficient in fact to slightly incline the cap 2 to apply it more tightly against the conical part in question while slipping it thereon to assure friction of the striker 6 against the stone 7. I can besides compensate for the deterioration of the stone by means of a spring interposed between it and the bottom of its attachment.

The striker can be composed of any appropriate piece of material and be mounted in any convenient fashion. It can be formed for example of a section of file pressed and positioned so as to come into contact with the stone 7. In order to compensate for deterioration or wearing away of the stone I can also mount a striker flexibly as shown in Fig. 5. In this modification the striker 6 is placed across the side of the lighter housing obliquely and is furnished with a finger 8 which prevents it from becoming disengaged. A spring 9, located in a small socket or tube 10 forms part of the housing and serves to push it toward the outside, thus maintaining it in contact with the stone 7 no matter how



the same has been worn away. It is interesting to note that the deterioration of the stone in this sort of lighter will be much less in the ordinary lighter because of the relatively feeble pressure of the striker and the stone necessary to generate the spark. Ordinary lighters are generally manipulated by the finger or hand in direct contact with the striker and the pressure thus exerted is almost always much stronger than is necessary to get good results, a considerable deterioration of the stone results which does not take place in the present system.

The striker can also be made an integral part of the lighter as shown in Fig. 6. As shown in this modification the upper part of the housing 1 turns back so as to form a flexible finger 11, the edges of which bear against the stone 7 and generate a spark when the cap is withdrawn.

It is evident that these different variations permitting the production of a spark in a closed chamber are applicable to all sorts of lighters whether they employ wicks or inflammable liquids such as gasoline. Figs. 1 and 2 show two sorts of wick lighters while Fig. 3 shows the application of the system to a gasoline torch. In the example in Figs. 1 and 2 the wick end 12 is placed in a tube 13 screwed or otherwise fixed to the body of the lighter 1 and can be slipped down so that its lighting end can be placed close to the striker, that is to say at the portion where the spark is produced. The wick can be removed and replaced in any convenient manner for example by means of a socket or ring 14 provided with a holder or point running in the groove 20 cut into the tube 13 and entering into the body of the wick. It is sufficient to turn ring 14 or in some other manner cause the wick to turn in its length in order to make it assume the desired position. The guiding groove of ring 14 can be formed longitudinally on the tube 13 as shown at 15 on Fig. 2 and the regulation of the wick is thus obtained simply by the displacement of the ring 14 toward the top or bottom.

The modification shown in Fig. 3 can be used on a gasoline torch or even as a little pocket lamp. The part of this device which constitutes the body 16 of the lamp is provided with a threaded shoulder which permits it to be screwed in the body of the lighter. This lamp body 16 can be made in any convenient manner and can be furnished as usual with a pipe 17 for the wick with a filling apparatus 18, a threaded cap 19 closing its extremity in order to permit it to be filled with gasoline.

It is evident that the different variations which have just been described admit of various modifications without departing from the spirit of the invention, for in-

stance the striker can be affixed to the cap and the stone to the body of the lighter. Interchange of wick is also of no consequence as the basic idea of the invention lies in the fact that the spark is produced in an enclosed chamber, insuring the efficacy of its action on the wick. It also consists in the direction of the movement of the friction so as to cause the spark to be projected towards the wick and to fall in this direction. The friction not only makes the visible spark, but, at the same time, it disengages small particles of the pyrophoric stone in a condition of incandescence, which also acts in igniting the wick. They are heavier than the visible spark, and are more certainly directed downward towards the wick. The flexibility, from an angle of friction of the striking steel and its range or distance of action and its passing beyond the stone, all contribute to provide a spark of the highest incandescence and igniting power, and to direct it properly.

A further feature of the invention is the fact that the wick is entirely contained in the body of the lighter, obviating the inconvenience of all lighters having an inflammable fuse, which carry a long fuse extending beyond the body of the lighter.

I claim:

1. A portable lighter comprising a body portion, a striker attached thereto and a cap provided with a pyrophoric stone fitting over the lighter body, the said cap being formed from a flat piece of metal rolled into cylindrical form with overlapping edges which tend to contract the cap into diminished diameter and press the striker against the pyrophoric stone.

2. A portable lighter comprising a body portion and a cap provided with a pyrophoric stone, a striker carried by the body portion and formed therefrom by curving the extremity of the body portion to provide a flexible point which bears frictionally upon the stone while the cap is being removed.

3. A portable lighter having a support for a wick, a casing extending beyond the end of the wick to provide a chamber about the wick, the casing being open at one side, a cap slidably mounted on the casing, a pyrophoric stone carried by the cap opposite the open side of the casing, and a striker carried by the casing in a position to engage the pyrophoric stone as the cap is withdrawn, said cap being formed of flat sheet metal rolled to form a cylinder having overlapped edges whereby the same is resilient to press the pyrophoric stone inwardly.

Signed at Paris, in the Republic of France, this 21st day of November 1923.

LOUIS DE GOLL.