

July 4, 1950

J. F. LETTL

2,513,656

LIGHTER WITH COMBUSTIBLE PELLETS

Filed Jan. 29, 1948

Fig. 1

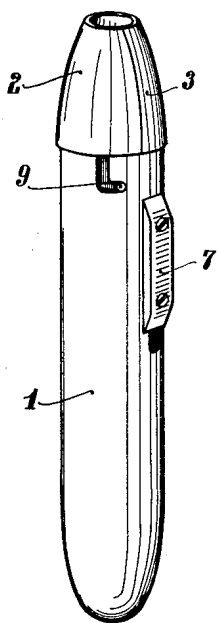


Fig. 2

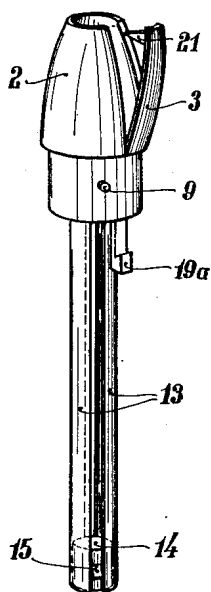


Fig. 3

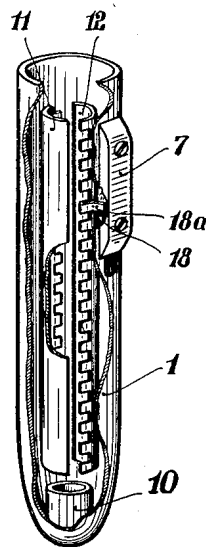


Fig. 4

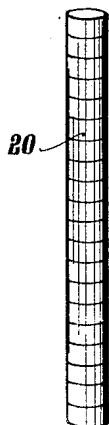


Fig. 5



Fig. 6

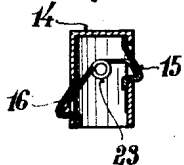


Fig. 7

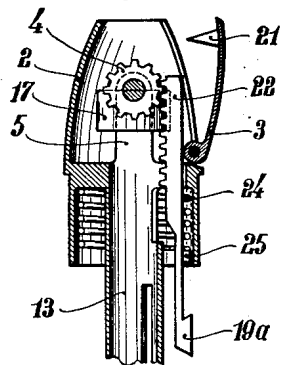


Fig. 9

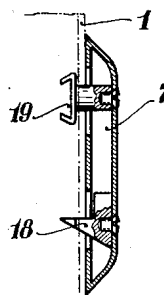
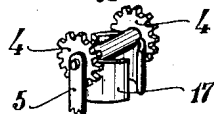


Fig. 8



INVENTOR  
JOSEPH F. LETTL  
BY

*Mocke Blum*

ATTORNEYS

# UNITED STATES PATENT OFFICE

2,513,656

## LIGHTER WITH COMBUSTIBLE PELLETS

Joseph F. Lettl, New York, N. Y.

Application January 29, 1948, Serial No. 5,080

6 Claims. (Cl. 67-7)

1

This invention relates to a new and improved lighter containing ignitable pellets and more particularly to a lighter of this type in which the pellets are mechanically pushed forward to the point of combustion and on their way there-  
to become ignited by friction on a suitable friction surface.

In the known lighters of this type, owing to permanent abrasive action among each other, the pellets are prematurely converted into pulverized form, in which they cannot be ignited on the friction surface. Moreover, the presence of loosely stored ignition pellets and highly combustible powder of the pellets in the lighter, do not comply with fire prevention regulations.

It is an object of the present invention to provide a lighter of the above mentioned type, in which the pellets are assembled and kept under conditions substantially preventing pulverization of the pellets.

Another object of the present invention is to provide a lighter, in which the pellets are assembled to a stick or the like, but are easily separable from each other.

It is also an object of the present invention to provide a lighter which can be operated by one hand without the use of liquid or gaseous fuel and without the application of wick, flint or the like.

Other objects and the advantages of the invention will be apparent from the appended claims and the following specification, and the drawings which illustrate by way of example but without limitation a preferred embodiment of the invention.

In the drawings

Figure 1 is a perspective view of the assembled lighter embodying my invention, containing an upper part and a lower part;

Figure 2 illustrates the upper part with the lower part removed;

Figure 3 illustrates the lower part of the lighter with parts broken away;

Figure 4 shows a series of igniting pellets assembled to form a stick, while Figure 5 shows an individual pellet;

Figure 6 illustrates a feeding mechanism comprising elements 14, 15 and 16 and denoted in the specification and claims as the "climber";

Figure 7 is a sectional view of the upper part of the lighter, with certain parts broken away;

Figure 8 is a perspective view of the pellet carrier 17 and parts associated therewith, and

Figure 9 is a sectional view of slide 7 arranged on the lower part of the lighter.

2

As will be understood from the drawings, particularly Figure 1, the lighter is made in the form of fountain-pen like container, and consists of an upper part and a lower part which can be readily separated and connected by a bayonet socket construction. Figure 2 illustrates the upper part of the lighter withdrawn from the lower part and containing the ignition device and the combustion spot. Fastened to this upper section is the pellet container 13, 13, which also serves as a guiding device for the feeding mechanism shown in Figure 6. This mechanism contains elements 14, 15, 16 to be described in detail further below and is briefly denoted hereinafter and in the claims as the climber.

As shown in Figure 3, the lower sleeve-like part of the lighter houses two tubular racks 11, 12, which are adapted to snugly embrace sleeve 13, 13 serving as the container for the ignition pellets 20. These two racks are displaced by 180° relative to the individual range of teeth and their edges are spaced for a distance sufficient for permitting entrance of guide elements 15, 16 of climber 14, during the opening and refilling of the lighter. Upon assembling and closing the lighter by applying the upper part to the lower part and twisting the bayonet-socket, the previously open toothed racks form a continuous range of holes. Rack 11 is rigidly fastened to part 1, while rack 12 can be shifted upward and downward by actuating slide 7, for the height of one single ignition pellet, whereby the climber when moving upward will push up the whole pile of pellets by the height of one pellet, and upon downward movement of slide 7 comes to rest within the next higher tooth of the racks. Figure 6 illustrates the climber 14 comprising two laterally projecting guide blocks 15, 16 and an extension spring 23. Figure 7 shows the upper half of the lighter without the ignition pellet container. This upper half consists of hood 2, the laterally collapsible ignition fixture 3, which on its inside carries a fluted or otherwise roughened surface or a chemical coating along which the ignition pellets are moved in frictional contact, thereby causing ignition of the pellet. Furthermore, part 3 has a cam-like extension 21 which cooperates with part 17 and, when pressed towards the center of the hood, expels the burnt ignition pellet. Sleeve 10 is fastened to part 1 and in the assembled lighter parts 13, 13 rest in sleeve 10, safeguarding at the same time the exact position of the climber relative to the tubular racks. As illustrated in Figure 8, the upper part carries bearing brackets 5, 5 for the two

cogwheels 4, 4 as well as pellet carrier 17. The latter is provided with two diametrically arranged slots extending at right angle relative to the axis of the cogwheel shaft. In gear with the cogwheels 4, 4 and guided inside of part 2, are two toothed racks 22, 22 connected with lug 19a facing part 1 which is disengaged from grab 19 of slide 7 when opening the lighter or actuating the bayonet-socket respectively.

In the rest position the racks 22, 22 are pressed downward under the action of spring 24 on stud 25.

If now in actuating the lighter the laterally arranged slide 7 provided with two grabs 18 and 19 is pressed upward, then on the one hand racks 22, 22 are pushed upward by means of grab 19 which cooperates with lug 19a of the racks 22, 22, and by their engagement with cogwheels 4, 4, upward swinging of clamp 7 and the pellet held by said clamp by 180° is brought about; during this swinging, ignition of the pellet takes place, for example by friction on the friction surface of the downward swinging part 3 of cap 2.

On the other hand, simultaneously with this step, by the action of the second grab 18 which is fastened to slide 7, and engages the radial lug 18a of movable rack 12 from below, rack 12, which provides for the movement of climber 14, is caused to move upward by one tooth (equal to the height of a pellet).

Thus, by one single step (pressure of the finger) the ignition pellet is brought with its burning portion to the upper opening of the container of the lighter and simultaneously the pellet magazine is pushed upward by the height of a pellet and thus brought again to the initial setting for the next ignition. If part 3, now in an outward extended position, is pushed back into its initial position, the cam-like part 21 attached to part 3 enters the diametrical slot of clamp 17 thereby discharging the consumed or partly consumed pellet. The racks 22, 22 actuated by spring 24 will move downward and turn clamp 17 into its "ready" position.

The ignition pellets shown in Figure 5 consist of a container, preferably of metallic material, open at one end, and filled with a combustible matter, e. g. magnesium-alcoholate, methylated spirit in non-liquid form, organic or inorganic fuels. The fuel charge proper is covered by an ignition coating, which if moved in frictional contact along the friction surface of part 3, becomes ignited. To the combustible matter ingredients causing the flame to appear in different hues of color may be added. Furthermore, for the purpose of producing a desired aromatic effect, substances having the desired scent may be added to the pellets.

The shaft of the lighter can be used in known manner for advertising purposes.

The ignition pellets can be manufactured in the form of one unit with the climber, i. e., as a "ready for use" outfit.

The combustible compound of the pellets can also be ignited without the use of an ignitable coating by using a compound which is capable of being ignited by catalytic reaction. The frictional face is treated with a catalytically acting material, such as catalytic platinum, catalytic aluminum or any other suitable catalytic material, so that the gaseous surface which exists above the surface of the pellets will be ignited by the catalyst.

What I claim is:

1. Lighter with combustible pellets, comprising an outer two-part container consisting of an upper part and a lower part, a doubly slotted guide sleeve which is fastened to said upper part of the outer container and is adapted to receive the combustible pellets, a step by step switching mechanism comprising a climber, said combustible pellets resting on said climber, a stationary and a movable rack, the teeth of which are arranged in front of the slots of said sleeve, and a laterally arranged slide provided with two grabs, upon the actuation of which on the one hand by means of one of the grabs and a rack gear guided by said one grab, a clamp which grips the uppermost pellet from above is swung upward by 180° under simultaneous ignition and thus places the burning pellet in the upper opening in safe distance from the pellet magazine, and, on the other hand, the second grab which controls the movement of said movable rack, lifts said climber in each case by one step corresponding to the height of a pellet, in order to move the set of pellets in the direction of the combustion place.

2. Lighter with combustible pellets according to claim 1, having a combustible pellet magazine consisting of a continuous set of easily combustible pellets forming a rod-like structure, said set of combustible pellets forming a unit with the climber of the step-by-step switching mechanism, said unit serving for filling the lighter.

3. Lighter with combustible pellets as claimed in claim 1, the upper part of said lighter containing a cap adapted to be assembled with the outer container of the lower part of the lighter, and a swinging frictional surface arranged on said cap on which the uppermost pellet gripped by the clamp is ignited by causing it to pass under friction during its upward swinging, along said swinging frictional surface.

4. Lighter with combustible pellets, as claimed in claim 1, in which the pellets contain a compound ignitable by contact with a catalytically acting material, said lighter containing a frictional surface comprising said catalytically acting material for igniting the pellet upon contact with said surface.

5. Combustible pellet for a lighter as claimed in claim 1, consisting of a combustible mass containing an admixture adapted to color the flame.

6. A combustible pellet for a lighter as claimed in claim 1, consisting of a combustible mass containing an aroma substance.

JOSEPH F. LETTL.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
390,467	Foley	Oct. 2, 1888
1,208,747	Chandler et al.	Dec. 19, 1916
1,583,798	Rosenberg	May 11, 1926
2,106,467	Schmitt	Jan. 25, 1938
2,166,881	Voss	July 18, 1939
2,287,525	Kitts	June 23, 1942

#### FOREIGN PATENTS

Number	Country	Date
169	Great Britain	Jan. 14, 1878