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PATENT SPECIFICATION



Convention Date (Germany): Nov. 14, 1930.

396,686

Application Date (in United Kingdom): Nov. 7, 1931. No. 30,911/31.

Complete not Accepted.

COMPLETE SPECIFICATION.

Improvements in Means for Actuating Pyrophoric Lighters and Gas Lighters.

We, Dr. H. KELLERMANN G.M.B.H., a firm organised under the Laws of the Republic of Germany, of 6—8, Rusche-
strasse, Lichtenberg, Berlin, Germany,
do hereby declare the nature of this in-
vention and in what manner the same is
to be performed, to be particularly de-
scribed and ascertained in and by the
following statement:—

The present invention relates to im-
provements in means for moving the
sparkling wheel rim of pyrophoric lighters
and gas lighters to be actuated.

In known devices of this kind the
sparkling wheel rim, against which the
pyrophoric pin is pressed from the out-
side, encircles a coupling disk with a
certain amount of play, in such a manner
that the latter may be displaced within
the sparking wheel rim and may be made
to engage and to disengage the latter at
will, in order to take it along when rotat-
ing or to leave it at rest. This arrange-
ment, however, shows the drawback that
the coupling disk being guided only on a
pin adapted to be displaced within an
oblong hole may axially displace along
this pin, i.e. describe evading move-
ments, the engagement of the coupling
disk with the sparking wheel rim thus
not being performed with absolute
security.

In accordance with the present inven-
tion the coupling disk is disposed between
two external disks connected with one
another and just fitting into the sparking
wheel rim, said external disks being
arranged rotatably, but undisplaceably
in a parallel direction upon the middle
axle and having eccentric oblong holes
corresponding to a central oblong hole of
the coupling disk, an eccentric pin taking
along the coupling disk, passing
through the eccentric oblong holes
of said external disks and engaging the
actuating part of the pocket lighter or
gas lighter. In consequence of this

[The invention]

arrangement every axial displacement of
the coupling disk along the middle axle
is made impossible, and the coupling disk
will be guided in an exact manner pre-
venting it from describing any evading
movement. The coupling and the taking
along of the sparking wheel rim thus is
performed here with absolute reliability.

Two embodiments of the invention
have been illustrated as examples, in the
accompanying drawing, in which Fig. 1
represents an opened pocket lighter of
the kind in question, partly in section and
in full size, Fig. 2 illustrates separately
the sparking wheel rim with the
coupling and the parts appertaining
thereto on a somewhat enlarged scale,
Fig. 3 shows a cross-sectional view along
the line of section of Fig. 2 of the cap of
the lighter with the sparking wheel rim
and the coupling, also on an enlarged
scale, Fig. 4 is a perspective detail view,
Fig. 5 a top view of the inner coupling
disk separately, and Fig. 6 shows a lateral
view of a gas-lighter with a coupling in
accordance with the present invention.

Referring now to Figs. 1 to 5, the
sparkling wheel rim 1, the outer surface
of which is ribbed at 2 in the usual
manner, is provided with teeth 6 on its
inner surface 5. The teeth 6, as will be
seen quite clearly from Fig. 2, are formed
very finely and are arranged closely one
beside the other. The points of the teeth
6 are, as may also be seen from Fig. 2,
suitably blunted, for a reason which will
be indicated later on.

In the interior of the sparking wheel
rim 1 a coupling disk 7 (Fig. 5) is provided
which in its centre has an oblong hole 9.
It is passed over the middle axle 8 which
simultaneously forms the pivot for the
cap 16 of the lighter and is disposed
within supports 31 arranged on the
lighter in accordance with Fig. 1.

About half of the circumference of the
disk 7 is provided with a toothing 10, cor-

responding to the tothing or gear 6 of the sparking wheel rim, the teeth of the disk 7, however, suitably not being blunted. The other half of the circumference of the disk 7 is essentially smooth, as seen at 11. At a certain point of the circumference of the disk 7 a notch or indentation 12 is provided, wherein an edge 13 is arranged. Close to its circumference the disk 7 has a round hole 14, within which a pin 15 is unmovably placed (Fig. 1, 2 and 3). The disk 7 is of a somewhat smaller diameter than the inner diameter of the sparking wheel rim 1, so that it may be displaced approximately radially within the rim 1 to a slight extent corresponding to the length of the hole 9.

The disk 7 is enveloped by a double disk 17, 18 (Fig. 4) held together by a bridge 19, said double disk forming, to say so, a pocket for the reception of the disk 7. The diameter of the double disk or pocket 17, 18 corresponds to the inner diameter of the rim 1, and this pocket is also situated within this rim, being, however, incapable of being displaced radially with respect thereto. Consequently the central hole 20 of the double disk 17, 18 is round, so that it fits over the central axle or spindle 8. In a position corresponding to the round hole 14 of the disk 7 the double disks 17, 18 each are provided with an oblong hole 21, the length and direction of which corresponds to that of the oblong hole 9 of the disk 7. The pin 15 is made to pass through the oblong holes 21.

The disk 7 has been so placed in the pocket formed by the double disks 17, 18, that the edge 13 establishes contact with the bridge 19 in the middle of its inner surface. If desired a center-mark or the like may be provided at this point in order to secure the position of the edge 13 at the bridge 19.

The pin 15 is made to pass freely through gaps in the lateral walls of the supports 31, within which it is freely movable, and it is attached to the lateral tongues of the lid or cap 16 of the lighter eccentrically to the central pivot 8 in such a manner that, when rotating the cap 16 of the lighter, the pin 15 and the parts connected therewith are made to describe a corresponding rotary movement.

The wick-cap, resting under spring action and being jointed to the cap 16 of the lighter on the one hand and to the supports 31 on the other hand in a manner known per se, has been characterised in Fig. 1 by the number 22.

The operation of the device is as follows:

If the lighter is in the closed state and the opening movement of the cap 16 is now initiated by exercising pressure upon its rearward projection, the part 7, on the one hand, and the parts 17, 18, on the other hand, will first be displaced against one another in such a manner by the movement of the pin 15 being taken along by the cap 16, in consequence of the oblong holes 9 and 21 with which they are provided, that the inner disk 7 is made to describe a small rotary movement round the edge 13 to such an extent, that the teeth 10 of the disk 7 will engage the teeth 6 of the rim 1. Upon further rotation of the cap 16 and the pin 15, the double-disk 17, 18, as well as the inner or coupling disk 7, will be forced to partake in this rotary movement. In view of the fact, that simultaneously the pyrophoric pin 3 is pressed externally against the rim 1 by the spring 4 in the usual manner, so that the teeth 6 of the rim 1 are held in engagement with the teeth 10 of the disk 7, it is obvious, that the rim 1 will also be taken along, so that, owing to the friction between the file-cuts 2 of the rim 1 and the pyrophoric pin 3 the formation of sparks will take place in the customary manner.

At the commencement of the closing movement of the cap 16 of the lighter, the eccentric pin 15 moves in the first instance idly in the oblong hole 21 of the double disk 17, 18, whilst taking along the inner disk 7 in such a manner that the latter describes a return movement round the edge 13 within the limits set by the oblong hole 9 and the play of the disk 7 within the rim 1. This will separate the teeth 10 from the inner tothing 6 of the rim 1, whilst the smooth part 11 of the edge of the disk 7 establishes contact with the teeth 6 of the rim 1. Upon continuing this rotary movement, not only the disk 7, but also the double disk 17, 18 will be taken along by the eccentric pin 15, the disk 7, however, moving freely along the inner face of the rim 1. The latter, therefore, remains stationary and its rotation will be prevented by the friction exercised by the pyrophoric pin 3 pressed against it. The truncation or flattening of the teeth 6 of the rim 1 is, as will be obvious, effected for the purpose of enabling the smooth face 11 of the disk 7 to move freely over said teeth, and without the disk of damaging the teeth or of roughening the surface of the smooth part 11 of the disk 7.

In Fig. 6 it has been illustrated in what manner the coupling in accordance with the present invention may be employed in pyrophoric gas lighters. The rim 1 and the coupling parts connected therewith wholly corre-

spond to those illustrated in Figs. 2, 4 and 5 and have been characterised by the same reference letters. In this case the central pivot is attached to a bar 30 supported by the handle in the usual manner. The bar 30 further carries the pivot for the trigger 28, to which is also joined at 27 an arm 26 adapted to be displaced in a longitudinal direction and resting under spring action. The arm 26 is provided with the eccentric pin 15 which engages in the coupling disks 7 and 17, 18. The pyrophoric pin 25 is pressed from above against the outside face of the sparking wheel rim 1 in the ordinary manner by means of a spring 24 situated within a sleeve 23. The operation is wholly corresponding that of the lighter previously described.

A great number of modifications of the embodiments shown are, of course, possible within the scope of invention. For instance the coupling disk 7 may be replaced by a toothed segment which does not require to be in contact with the inner surface of the wheel-rim during the disengagement.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1.—A device for actuating pyrophoric lighters and gas lighters, with a displaceable coupling disk situated within the sparking wheel rim with a certain amount

of play, characterised in that the coupling disk is arranged between two external disks connected with one other, said external disks just fitting into the sparking wheel rim and being rotatable upon the central pivot but not adapted to be radially displaced thereon, and being provided with eccentric oblong holes corresponding to a central oblong hole of the coupling disk, a pin which is connected with the actuating part of the lighter passing through said eccentric holes of said inner and outer disks.

2.—A device in accordance with claim 1, characterised in that at the circumference of the coupling disk beside a connecting bridge of the external disks an edge has been provided, round which the coupling disk is made to rotate during the displacement against the external disks.

3.—A device in accordance with claim 1, characterised in that the inner or coupling disk is provided with coupling teeth on a part of its circumference whereas the interior face of the sparking wheel rim is toothed correspondingly on the whole circumference.

4.—A device in accordance with claims 1 and 3, characterised in that the inner teeth of the sparking wheel rim are blunted.

Dated this 7th day of November, 1931.
BARKER, BRETTEL & DUNCAN,
75/77, Colmore Row, Birmingham,
Agents for the Applicants.

Fig. 1.

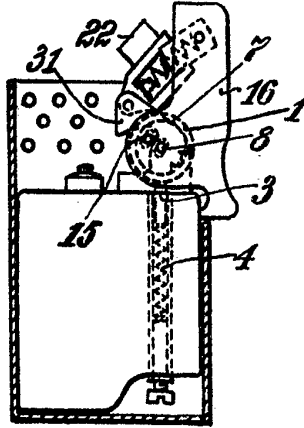


Fig. 6.

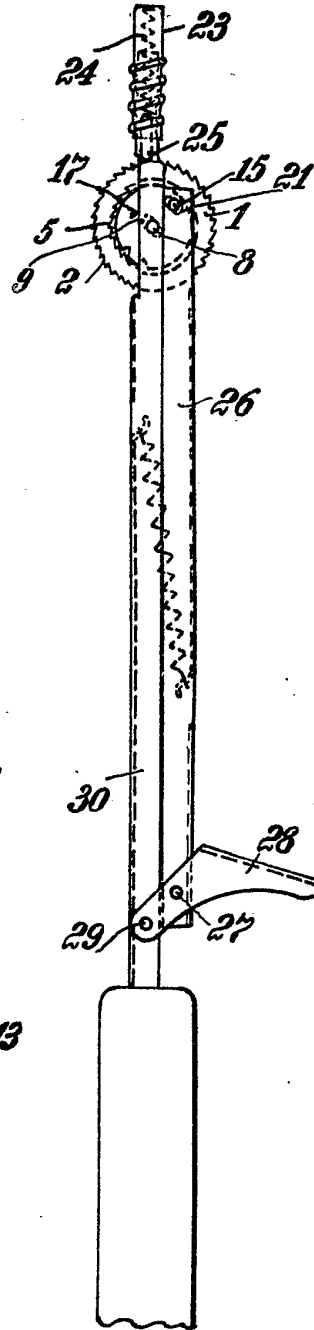


Fig. 2.

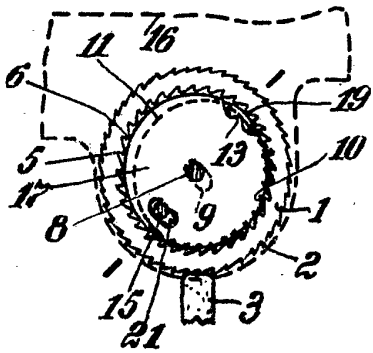


Fig. 4.

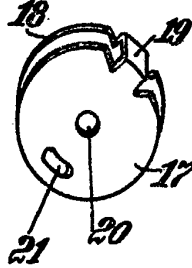


Fig. 3.

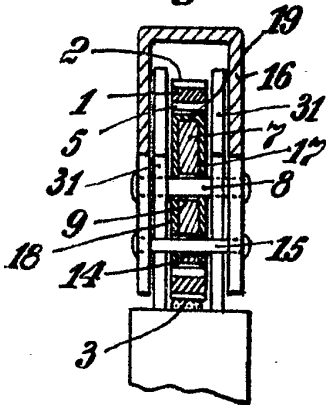


Fig. 5.

