

PATENT SPECIFICATION

318,753

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COMPLETE SPECIFICATION.

Improvements in Pyrophoric Lighters.



I, HANS SILBERKNOPF, a Citizen of the Republic of Austria, of 50, Seitenbergasse, Vienna XVI, Austria, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in pyrophoric lighters provided with a friction wheel mechanism and having means to prevent the direct touching of the sooty and sharp edged friction wheel.

The known mechanisms essentially comprise a bracket which is concentrically rotatable with respect to the friction wheel, a pawl being hinged to the said bracket and co-operating with notches in one of the sides of the friction wheel or with a ratchet wheel. However, the drawback of this kind of lighter consists in the complicated mode of manufacture and the high costs connected therewith.

In view thereof it has been proposed already to arrange the mechanism in such a manner that it operates directly on the periphery of the friction wheel. In a known lighter, operating according to this method, a lever, in the form of an arc bent over the friction wheel, has been secured to the oscillating bracket at a point between the wick cap and the friction wheel and has been pressed against the periphery of the friction wheel by a pressure applied to its back, in order to rotate the said wheel. The peculiar shape of the lever had the consequence that the same solely acted as a cover to protect the finger of the hand against injury by the sharp teeth of the friction wheel, and therefore due to the fact that the end of the curved lever was secured to the bracket between the wick cap and friction wheel the oscillating bracket had to be of sufficient length to allow the thickness of the lever to be inserted between the wick cap and the friction wheel. The friction wheel was accordingly spaced a corresponding distance from the wick which is undesirable. Further the necessary pressure, extending over a curved track could not be produced without the aid of the second hand.

[Price 1/-]

The present invention relates to the construction of a lighter in which the above drawbacks are removed by disposing the lever substantially tangentially with respect to the circumference of the friction wheel. In view of this construction the free end of the lever has to be subjected to a pressure acting solely at a right angle, in order to operate the friction wheel. The operating lever may be of any desired length, because the latter has no influence whatever on the diameter of the friction wheel. Further the present invention relates to means for considerably reducing the bearing reactions opposing the movement of the friction wheel and for increasing the effect of sparking. The parts are arranged in such a manner, that one hand only is required for operating the lighter. The device may be fitted to known lighters without any difficulty.

One mode of carrying out the present invention is illustrated by way of example on the accompanying sheet of drawings in which—

Fig. 1 shows in elevation the pyrophoric lighter.

Figs. 2 and 3 are sectional views of the friction wheel mechanism in the inoperative position and an operative position respectively.

Fig. 4 is a plan view of the operating mechanism.

The pyrophoric-lighter comprises a fuel-receptacle *b*, which is provided with the wicktube *a* and carries a bearing *d* for the friction wheel *c*, the flint *e* being guided within the said bearing *d*. A bracket *g* is mounted freely rotatable on the shaft *f* of the friction wheel, the rotation of the bracket being limited in both directions by extensions *h* of the bearing *d*. By means of a bolt *k* a single armed lever *i* is rotatably mounted in the bracket *g* outside the periphery of the friction wheel. In the neighbourhood of its pivot, the lever *i* is in the shape of the jaw *l*, which cooperates with the toothed circumference of the friction wheel *c*, while the free end of the lever *i* is bent upward substantially to the height of the bolt *k* and serves as a means for depressing the lever *i*. A spring

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m is wound round the shaft f and rests against the bearing d , as well as against the bracket g in order to maintain the latter in the position of rest, in which the bracket deviates slightly only from the direction of the bearing d , while the lever i is disposed substantially at a right angle with respect to the latter. Preferably the hole of the friction wheel c is larger than the diameter of the shaft f passing through it, so that the friction wheel c can move in a vertical direction about the shaft f against the action of the spring n .

The device operates in the following manner:

In order to operate the friction wheel c it is necessary only to press downward (arrow 1) the free end of the lever i , in order to bring the jaw l into close operative contact with toothed part of the friction wheel c . The first movement of the lever i therefore applies a vertical pressure on the end of the lever i , however, causes rotation of the friction wheel due to the gripping of the jaw l with the friction wheel and it will be seen that the actual applied force is substantially tangential to the friction wheel c due to the length of the lever i . Now the bracket g starts to rotate and the friction wheel c is rotated clockwise and causes the sparking. The jaw l and the friction wheel c have been coupled with one another without influencing in any way the freely rotatable bracket g , because at that time the undesirable rotation is prevented by the spring m and the vertical pressure, depending on the bearings, has produced a sufficient bearing reaction which far exceeds the resistances opposing the rotation of the lever i . In view of the favourable ratio of the lever i the force, necessary for rotating the friction wheel c , is far smaller than has been necessary in the known lighters. It is readily seen that during the first part of movement of the friction wheel c the vertical pressure, exerted by the jaw l on the friction wheel c , as explained above, operates against the action of the spring n keeping the flint e in frictional contact with the friction wheel and this pressure is taken up to a certain extent by the spring n due to the mounting of the friction wheel c . This floating mounting of the friction wheel c allows a more easy rotation of the same and effects a more intense sparking. The bracket g is moved back into its initial position by the action of the spring m when the lever i is released.

If desired, the jaw l instead of being concave on its underside may be convex pressure on the end i bringing this convex portion into engagement with the friction wheel to clamp the same.

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

1. Pyrophoric lighter of the kind in which a lever for operating the friction wheel is pivotally secured to a bracket which is rotatable about the shaft of the friction wheel, the said lever being in the shape of a jaw near its pivot, characterised by the fact, that the operating lever is disposed substantially tangentially with respect to the friction wheel, so that the free end of the lever has to be subjected to a vertical pressure only in order to operate the friction wheel. 75
2. Pyrophoric lighter as claimed in claim 1 in which, for operating the same with one hand only, the bracket in its position of rest is disposed in line with or substantially in line with the flint tube. 85
3. Pyrophoric lighter as claimed in claims 1 or 2 hereof in which the bracket is subjected to the action of a spring in order to prevent its undesired premature swinging and after operation to return the same into the initial position. 90
4. Pyrophoric lighter as claimed in claims 2 or 3 hereof in which the hole of the friction wheel is larger than the diameter of its shaft, so that the pressure exerted on the friction wheel is taken up by the spring of the flint, whereby the bearing resistances are reduced and the sparking effect is increased. 95
5. Pyrophoric lighter as claimed in any of the preceding Claims in which the under surface of the clamping jaw is concave so as to clamp the friction wheel after the manner of a clamping lock. 105
6. Pyrophoric lighter constructed arranged and adapted to operate substantially as described and illustrated. 110

Dated this 17th day of September, 1928.
 GEE & Co.,
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 Agents for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

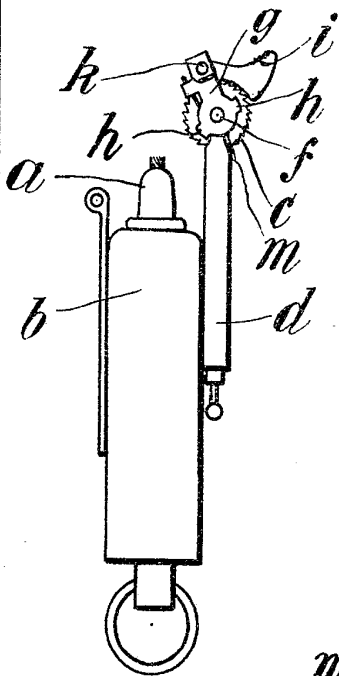


Fig. 2

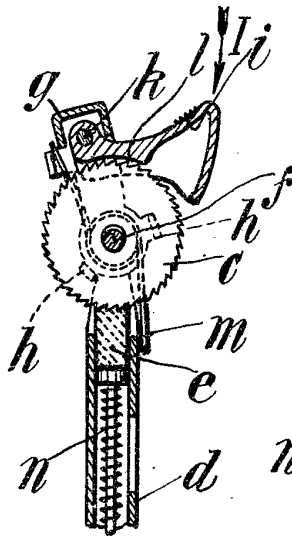


Fig. 3

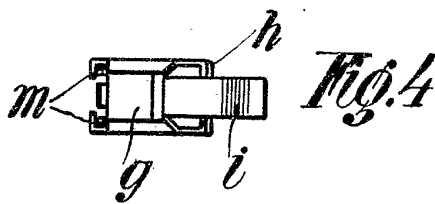
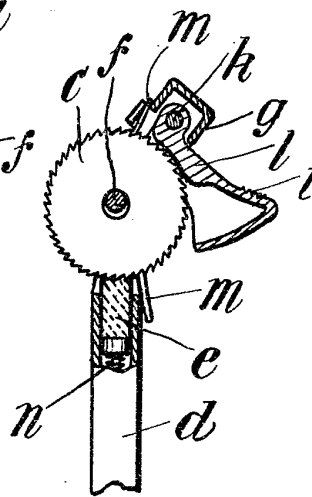


Fig. 4