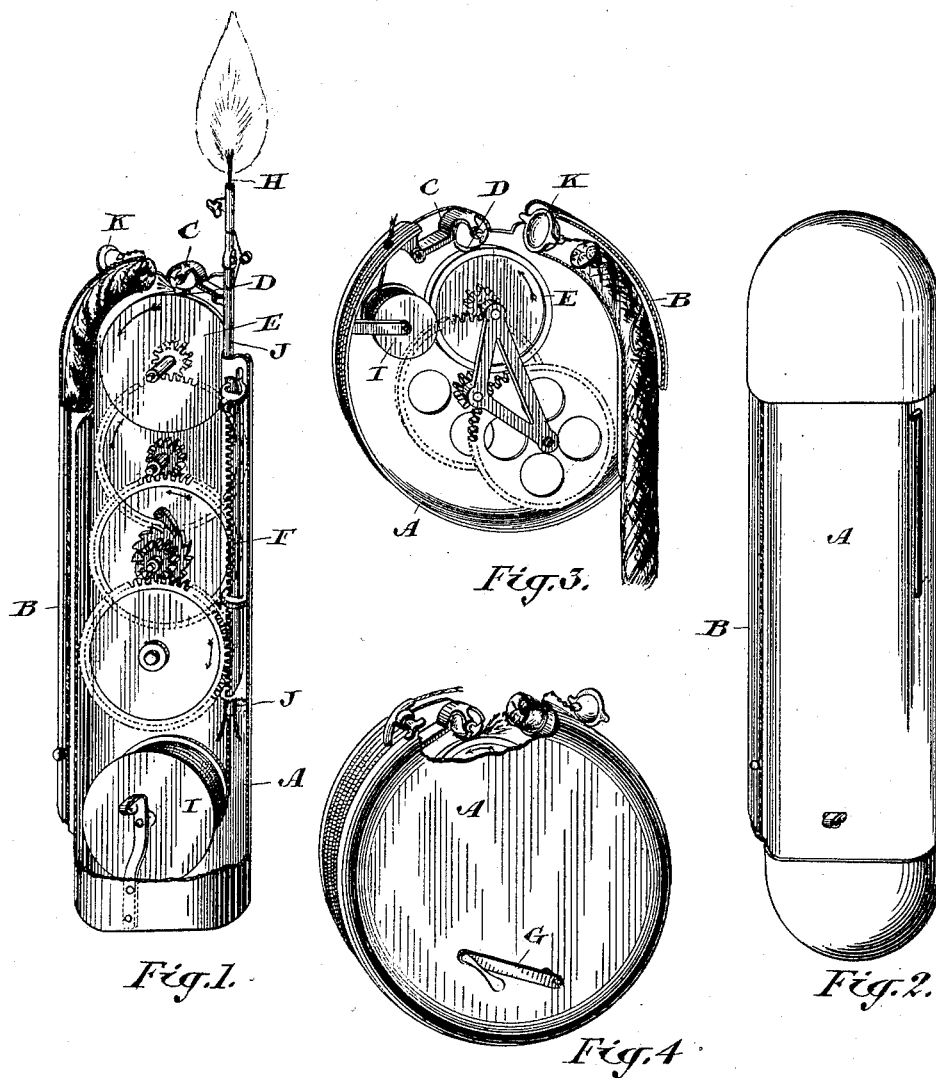


(No Model.)

J. R. COLLINS & J. WAD-EL-WARD.  
FUSE AND TAPER LIGHTER.

No. 418,110.

Patented Dec. 24, 1889.



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# UNITED STATES PATENT OFFICE.

JOHN ROBINETTE COLLINS AND JAMES WAD-EL-WARD, OF TORONTO,  
ONTARIO, CANADA.

## FUSE AND TAPER LIGHTER.

**SPECIFICATION** forming part of Letters Patent No. 418,110, dated December 24, 1889.

Application filed February 13, 1889. Serial No. 299,738. (No model.) Patented in Canada March 20, 1889, No. 30,966.

*To all whom it may concern:*

Be it known that we, JOHN ROBINETTE COLLINS, mechanic, and JAMES WAD-EL-WARD, both of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have jointly invented a certain new and improved Fuse and Taper Lighter, (for which we have obtained a patent in Canada, March 20, 1889, No. 30,966,) of which the following is a specification.

The object of the invention is to design a neat pocket-case containing mechanism by which sparks may be produced by friction, and also containing a supply of slow-burning inflammable material which may be easily ignited by the sparks so created, the slowly-burning material being utilized for igniting quickly-burning material also contained in the case and designed to produce a flame; and it consists, essentially, in the arrangement of mechanism and parts hereinafter more particularly specified.

Figure 1 is a sectional view of our improved fuse and taper lighter made oblong in shape. Fig. 2 is an outside view of Fig. 1 with caps fitted on its ends. Fig. 3 is a sectional view of our device made cylindrical in shape. Fig. 4 is an outside view of Fig. 3, the case being partially broken away to expose the interior. In the drawings like letters of reference indicate corresponding parts in the different figures.

A represents the outer case, which contains the parts involved in our invention, and may be made oblong, cylindrical, or in any other form desired.

B is a piece of slowly-burning inflammable material, like tinder, inserted into an open-ended chamber formed on or within the case A.

C is a bracket pivoted on the case A and designed to hold a piece of flinty stone D or other material by which sparks may be produced by friction.

E is a disk journaled in the case A and geared to suitable mechanism, by which it may be caused to revolve at a very rapid rate. The stone D rests on the periphery of the

disk E and is held against the said disk by weight or by a spring.

We do not claim anything peculiar in the gearing for driving the disk E.

In Fig. 1 we show a chain of gearing arranged to be operated by a rack F, as indicated in Fig. 1. In the arrangement of the gearing shown in this figure the downward movement of the rack F causes the disk E to revolve in the direction indicated by arrow, so that the sparks created by the action of the disk E on the stone D shall be thrown against the end of the slowly-burning material B, so as to ignite the said end.

In Fig. 3 we show the gearing for operating the disk E, arranged to be driven by a crank-handle G.

H is a taper made of quickly-burning material wound around a spool I, journaled within the case A, as indicated in Fig. 3, or it may be carried up through a tube J, as indicated in Fig. 1, the top end of this tube J being pivoted, as shown, so that the end of the taper H may be pressed against the burning end of the material B for the purpose of igniting the former.

K is a cap designed to close the end of the chamber in which the material B is kept. This cap is intended to close the said chamber, so as to exclude the air and thereby cause the lighted end of the material B to be extinguished.

What we claim as our invention is—

The combination, with the case, the train of gearing therein, and the disk and flinty stone for producing an emission of sparks, of the spool within the case, the vertical tube within said case, and the taper wound on said spool, passed through said tube, and having one end extended through said case, substantially as shown and described.

Toronto, January 31, 1889.

JOHN ROBINETTE COLLINS.  
JAMES WAD-EL-WARD.

In presence of—

CHARLES C. BALDWIN,  
GEORGE E. STOKES.