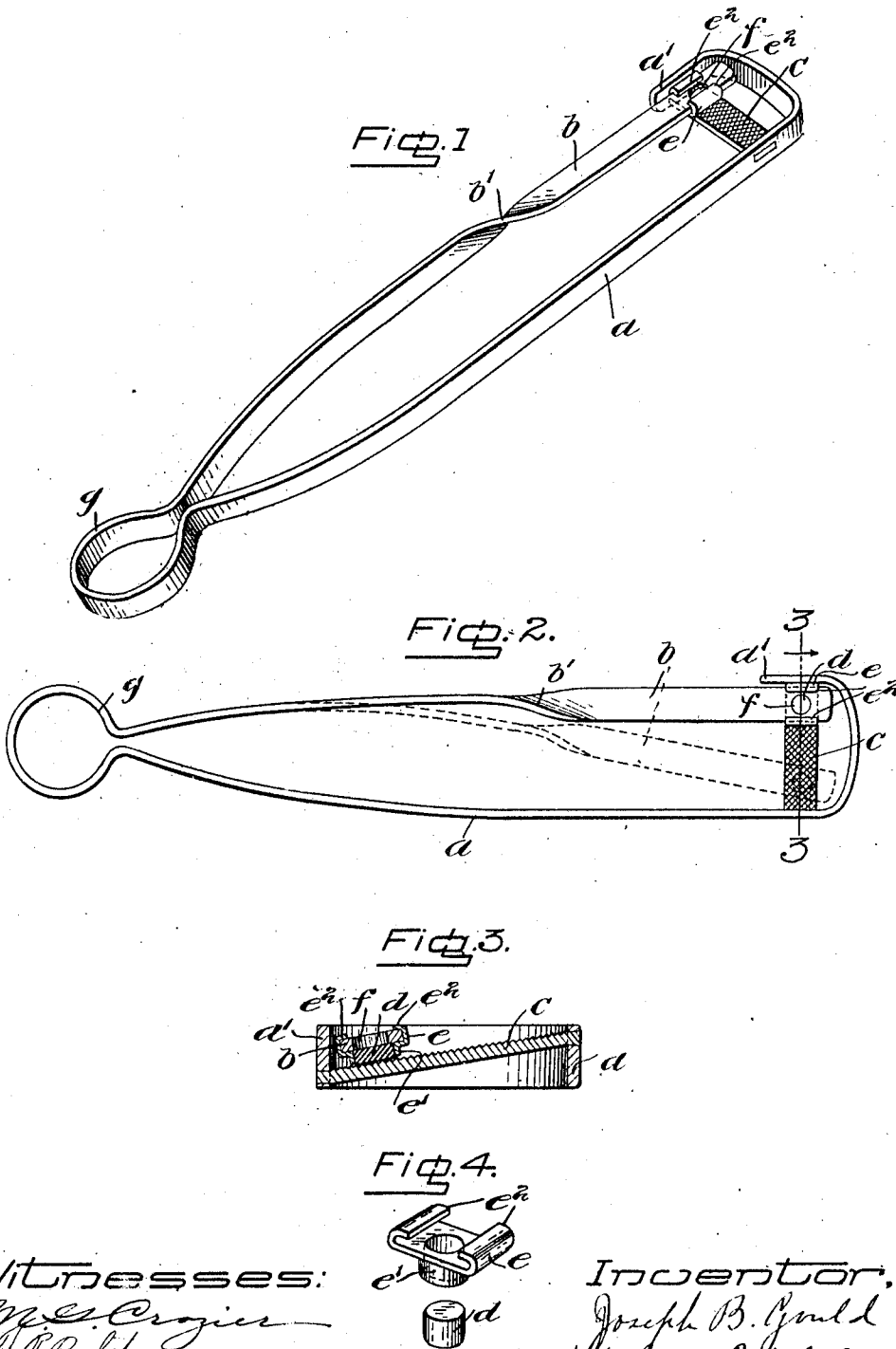


J. B. GOULD.
IGNITING DEVICE.
APPLICATION FILED MAY 14, 1910.

1,021,363.

Patented Mar. 26, 1912.



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UNITED STATES PATENT OFFICE.

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IGNITING DEVICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH B. GOULD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Igniting Devices, of which the following is a specification.

This invention relates to devices capable of mechanically producing a shower of sparks by which easily inflammable substances may be ignited, thus providing an ever ready and safe device for the purpose, by the use of which the necessity for using matches may be avoided, and which also is capable of being used for igniting gas jets such as those beneath the oven of a gas stove which cannot be so easily reached by a match held in the hand.

My object is to produce a simple, inexpensive and easily handled device of the general character and adapted for the purpose above-noted, which does not require the use of a wick or oil, and may be operated by a single hand, and which also has the advantage of long life without requiring more than very infrequent renewal of any of its parts.

The invention finds its most convenient and practical embodiment in a device having the form and construction substantially as shown in the accompanying drawings, although I desire to state at this point that said drawings and the description thereof hereinafter appended are provided for the purpose of illustrating my invention, and not of limiting it to any particular details of construction, for I reserve the right to embody the principles of my invention in any other forms than that here shown which may at any time seem desirable.

Figure 1 represents a perspective view of the igniting device. Fig. 2 is a plan view. Fig. 3 is a detail sectional view on the line 3-3 of Fig. 2. Fig. 4 is a detail perspective view of the spark-producing member and its holder.

The same reference characters indicate the same parts in all the figures.

The device consists of two members or arms *a* and *b*, one of which carries an element or member *c* having a frictional rubbing surface, which acts as an abrader and

may be so termed, and the other of which carries a piece of spark-producing or pyrophoric material *d*. These arms are movable together and apart and the elements for producing the sparks are so arranged on the arms that during such movement they rotate over each other.

The spark-producing member *d* is of any suitable material having such characteristics that when moved rapidly across a sufficiently roughened hard surface, it will produce a series of sparks. The material which I find preferable for my purpose is an alloy of cerium and iron, although it is conceivable that other alloys or materials may be used for the purpose. A small block or piece of this material is mounted in a holder *e* of such form and construction that it may be easily removed from and placed on the arm *b*, in order that the spark-producing material may be renewed when it becomes worn away. This holder is conveniently a clip having a tubular shank portion *e'*, forming a socket in which the block *d* is held, and flanges *e''* adapted to embrace the side edges of the arm *b*. The latter arm has a perforation *f* over the roughened rubbing member *c* and the clip or holder *e* is so located that the block *d* lies under this perforation, whereby the block may be pushed outward from time to time through the holder as it becomes more or less worn away.

The rubbing member *c* is conveniently a short strip of hardened steel or equivalent material having a roughened or serrated surface on the side toward the block *d*. This strip is mounted upon the arm so as to extend approximately at right angles thereto, or in the direction of movement of the arms together and apart.

As a practical detail of construction I prefer to make the arms *a* and *b* of a single strip of spring material such as steel, said strip being bent so that the arms lie approximately parallel to each other and are connected together at one end by a bowed portion *g*. By reason of this construction the resiliency of the material tends to hold the arms apart, but they can be grasped by the fingers and thumb of one hand and brought together by a squeezing action. By alternately squeezing and releasing the arms

they may be caused to move together and apart as rapidly as desired, and the spark-producing piece is thus rubbed back and forth over the rubbing member.

5 I have devised a very simple, and at the same time satisfactory and secure mode of attaching the rubbing member, which is illustrated in the drawings. For this purpose the arm *a* is made considerably longer
10 than the arm *b* and its end portion is bent over toward the arm *b*, while its extreme end is still further bent into approximate parallelism with the main body of the arm. Thus between the main portion of the arm
15 *a* and its extreme end is a space in which the rubbing strip *c* is contained, such strip being secured at its ends to the separated parallel portions of the arm.

Any desired means or mode of attaching
20 the rubbing strip may be employed, but perhaps the simplest and most satisfactory is that here illustrated, which consists in indenting the material of the arm at the points where the ends of the rubbing strip are located and slipping the ends of the strip into
25 such indentations. The resiliency of the material from which the device is made causes the end portion *a'* of the arm to press toward the main body of the arm and thereby
30 by securely retain the rubbing strip. The holding end of the arm *a* is so bent and the strips so placed thereon that the strip lies at something of an inclination to the path in which the spark-producing block moves
35 when the arms are pressed together, so that as the block moves toward the main portion of the arm *a* it rides up on the rubbing strip, and the pressure employed in so moving it causes it to bear heavily on the rough surface
40 of the strip, thereby pressure to cause sufficient friction to produce a copious shower of sparks is easily applied. This relation of the rubbing strip also causes the end portion *a'* of the arm to serve as a guard
45 preventing too great separation of the arms. The point of attachment between the strip *c* and end *a'* is near one edge of the latter, whereby the greater part of the width of the end *a'* rises above the rubbing surface
50 of the strip and the arm *b* in moving outward, by reason of its resiliency encounters the end *a'* and is arrested thereby.

Where, as in the form shown, the spring material of which the igniter is made is a
55 flattened strip, the arm *b* is twisted at an intermediate point as *b'*, so that its wider dimension will extend approximately parallel to the rubbing member *c*, thus making more secure the attachment of the holder *e*.

60 The igniting device made as hereinbefore described, or with an equivalent construction, is exceedingly and especially useful for lighting gas, as the sparks produced are sufficiently intense and numerous to effect
65 the desired purpose. Moreover, as the ig-

niter is long and slender, it may be used in igniting gas jets in such inaccessible positions that matches cannot be conveniently used, as for instance the jets for heating
70 ovens in the ordinary gas stoves etc. The device moreover is practically indestructible and always ready for use, for the wear on the block *d* is relatively so slight that it has a long life. Moreover the device has the advantage over the ordinary friction match
75 in that it is not affected by dampness.

I claim,—

1. An igniting device comprising a pair of arms movable relatively together and apart, a piece of spark-producing material
80 carried by one of said arms, and a rubbing member carried by the other in such position that the spark-producing member is caused to travel over its surface in contact therewith during the relative movement of
85 the arms, said rubbing member being inclined to the direction of application of the pressure employed in moving the arms, whereby the members are crowded together in close frictional contact.

2. An igniting device comprising arms
90 mounted so as to be movable together and apart, one of said arms being bent over and doubled back at its end, a rubbing strip contained between the body of said arm and
95 the bent over end thereof, and a spark-producing member carried by the other arm in such position as to be movable therewith over and in contact with the surface of said rubbing strip.

3. An igniter, comprising a flexible spring frame in the form of a hand-hold and having two arms, one of said arms being movable with relation to the other, an abrading member carried by the extremity of one of
100 said arms and a spark-producing friction member carried at the extremity of the other arm, said members being held in contact with each other by the spring of said frame in such manner that when one arm
105 of said frame is moved with respect to the other, the said members are brought into operative frictional engagement.

4. An igniter comprising a flexible spring frame made of a flattened strip doubled to
115 from two resiliently connected arms movable together and apart, an abrader extending from one of the arms in the direction of such relative movement, the other arm being
120 twisted to bring the wider dimension of its end approximately parallel to the abrader, and a piece of spark-producing material secured to the end of said latter arm and held thereby in contact with the surface of the abrader.

5. An igniting device comprising a pair of arms arranged to swing laterally toward and from each other, one of said arms being longer than the other and being bent
125 at its outer end toward and partly around 130

the other, to form a stop limiting the separation of the arms, the first named arm having an abrasive surface extending in the direction of swinging motion, and a quantity of pyrophoric material secured on the other arm arranged to bear on the abrasive surface.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOSEPH B. GOULD.

Witnesses:

WILLIAM T. ATWOOD,
P. W. PEZZETTI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."