

# RESERVE COPY PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION

### An Improved Lighter for Burners, Cigars and the like

I, THOMAS CALDWELL LITLER-JONES, of 11, South Crescent, Hartlepool, in the County of Durham, England, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention consists in an improved lighter.

The object of the invention is to provide a lighter having the advantage of ordinary striking matches without their disadvantage of wastage of the wood or other match sticks most of which are thrown away with practically no portion burned; and with the further advantage that the lighting capacity of the device as compared with the same volume of match-box containing ordinary matches will be many times greater.

The device according to the invention comprises a striker which at one end is adapted to grip a head of igniting composition such as is used for forming the heads of ordinary matches, a container for feeding the heads—hereinafter referred to for convenience as “igniter balls”—to the striker, and means for igniting the head when held in the striker.

According to one form of the invention, the lighter comprises an oblong container or magazine inside which adjacent one of its longitudinal edges is formed a tubular receptacle or sheath which at one end opens to the outside of the container, and at its other end stops short of the end adjacent wall of the magazine to allow for the provision of a hinged flap adapted to open in a direction away from the sheath and so as to leave a space sufficient to allow of the passage of a single igniter ball means being provided for preventing the flap when in its open position from moving past a position of alignment with the inner wall of the sheath. A slide or other closure is provided for filling the magazine with igniter balls.

In order to ensure the correct location of the igniter balls and at the same time to prevent more than one ball from dropping into the position from which it is taken up by the striker, a recess is formed in the end wall of the magazine adjacent the flap; and the outer edge of the flap is cut into, for example in the form of a

shallow V or a segment; so that the flap clears the portion of the ball which protrudes from the said recess, but at the same time prevents other balls from passing below itself.

The striker comprises a tube of a diameter to enable it to be a comfortable fit in the magazine sheath, and having at one end a flanged member the narrow portion of which is adapted to snap into the outer end of the sheath, and the flange to abut against the outside of the sheath aperture. Inside the tube near the plain end is a plunger having rigidly secured thereto three or more semi-rigid chuck arms evenly spaced apart, and having their outer ends shaped to embrace an igniter ball, the said chuck arms being so arranged that when the plunger is drawn inwards the said arms at their shaped outer portions abut against the outer or plain end of the tube and close towards one another to hold the ball positively, but to clear resiliently the ball when in their extended position with the plunger in its outermost position. Secured to the plunger and extended through the flanged end of the tube is a rod having its projecting end shaped as a press button or stud. A helical tension spring arranged around the said rod, its one end being secured to the plunger and its other end to the flanged member maintains the chuck arms in their contracted position.

In one arrangement the plunger may be grooved to receive the inner ends of the chuck arms which thus lie flush with the outer surface of the plunger, so that directly the shaped portions of the arms come opposite the end of the tube they will be forced inwards.

In use, the magazine is charged with the igniter balls. There will then be one ball lying in the space between the end wall of the magazine and the flap of the sheath, with the outer ends of the chuck arms immediately adjacent. When a light is desired the lighter is held with the striker inserted, with the sheath lowermost and the press stud pointing upwards, so allowing the igniter balls to fall into the correct position. The press stud is then pressed inwards, thus opening the

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flap, and causing the chuck arms to pass over a ball and resiliently engage it. The press stud is then released, and the striker withdrawn holding the ball positively in the chuck arms. The pressure of the remaining igniter balls causes the flap to close and so prevent ingress of balls to the sheath, but leaves a fresh ball opposite the flap ready to be taken up on the next insertion of the striker. The igniter ball in the striker is then struck against a striking strip on the outside of the magazine and the ball fires.

Owing to the heat of the ignited ball, the chuck arms must not be too thin, but must be thick enough to allow of the heat being conducted away quickly enough to ensure that the temper of the arms is not affected.

According to an alternative form of striker the chuck arms are pivotally mounted on a stationary block at the chuck end of the striker tube, and the outer ends of the said arms are maintained in the "closed" position by a guide collar which engages the inner ends of the chuck arms which are inclined towards one another, a compression spring being interposed between the block and the collar. Axially slidable in the said block is a rod having thereon an abutment which is adapted to be pressed against the collar to cause the latter to move towards the block and so open the chuck arms. The end of the rod is shaped, and the tube is flanged as above described, but has another flanged thereon to facilitate the holding of the

striker between the first and second fingers, so that the rod may be pressed inwards by the thumb to release the burnt igniter ball. To extract a ball, the striker is held between the first and second fingers with the thumb on the press stud as above described, and the stud pressed inwards, so that the clutch arms are open and engage a ball. The stud is then released and the striker withdrawn charged with a ball.

Generally the igniter ball will burn for about ten seconds which is about the average space of time for which a match is required to burn. Hence when it is finished with it will be extinguished or nearly so, and as a result there will not be danger of fire when it is discharged from the striker—by pressing in the press stud and so allowing the chuck arms to expand. This is a further advantage over the usual match with its combustible stem which is so frequently thrown away while alight—often with disastrous results.

The length of time an igniter ball is to remain alight may be increased by forming the ball with an outer layer of igniting composition and a core of combustible material such as wood and paraffin wax.

Dated this 18th day of May, 1943.

For the Applicant,

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## COMPLETE SPECIFICATION

### An Improved Lighter for Burners, Cigars and the like

I, THOMAS CALDWELL LITLER-JONES, of 11, South Crescent, Hartlepool, in the County of Durham, England, a British Subject, 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 lighters of the kind comprising a receptacle for holding igniter balls and, removably fitting in a sheath in the said receptacle, a striker which at one end is adapted releasably to grip one of the said balls, and on withdrawal to strike the gripped ball against a striking surface to ignite the ball.

The object of the invention is to provide improved means for ensuring the correct and positive location of the individual ball inside the container to facilitate its engagement by the striker.

In previous proposals various means were provided for locating the individual

balls to facilitate engagement with the striker. In one proposal a false bottom inclined to the actual bottom of the container was formed so that when the container was held vertically there was a tendency for the balls to gravitate to the end of the sheath, an abutment being provided for preventing the lowermost ball in the row adjacent the bottom row from approaching the end of the sheath. In other proposals the bottom of the container was normal to the other sides of the container, and a space was left between the end of the sheath and the said end sufficient to prevent the passage of a single ball only. In further proposals the sheath was constituted by a resilient strip having its inner portion bent inwards so that when the striker was withdrawn the sheath was closed and no pellets could enter, while when the striker was inserted it forced the strip outwards and gave the striker access to the pellets.

According to the invention the inner end of one of the sheath walls stops short of the adjacent end wall or base of the container to leave a space sufficient to allow of the provision of a hinged flap which is adapted to open in a direction towards the axis of the sheath so as to leave a space sufficient to allow of the passage of a single igniter ball, means being provided for preventing the flap from moving away from the axis of the sheath past its closed position of substantial alignment with the sheath wall into a position which would allow of the passage of an igniter ball.

The invention will now be described by way of example with reference to the accompanying drawings:—

In the said drawings:—

Fig. 1 is a central longitudinal elevation in section of a pocket form of the lighter.

Fig. 2 is a section on the line II—II of Fig. 1.

Fig. 3 is an end view of Fig. 1.

Fig. 4 is an outside elevation.

Fig. 5 is a section on the line V—V of Fig. 4.

Fig. 6 is a similar view to Fig. 1 but with the striker partially inserted.

Figs. 7 and 8 are fragmentary views showing the action of the striker jaws.

Referring more particularly to Figs. 1 to 8 of the drawings, the lighter comprises an oblong container or magazine 1 inside which adjacent one of its longitudinal edges is formed a tubular receptacle or sheath 2 of square section which at one end opens into a small compartment 3 which in its turn opens to the outside of the container 1. At its other end; the upper part of the sheath 2 stops short of the adjacent end wall of the magazine to allow for the provision of hinged flap 4 adapted to open in a direction towards the axis of the sheath so as to leave a space sufficient to allow of the passage of a single igniter ball 5, means being provided for preventing the flap from moving away from the axis of the sheath to its closed position which is one of substantial alignment with the inner wall of the sheath, for example as shown, by making the flap longer than the distance between its pivot and the adjacent wall so that it abuts against the latter when still at an angle thereto. A slide 6 or other closure is provided for filling the magazine with igniter balls.

In order to ensure the correct location of the igniter balls and at the same time to prevent more than one ball from dropping into the position from which it is taken up by the striker, a recess is formed in the end wall of the magazine adjacent

the flap 4 by forming a countersunk hole 7a in a strip 7 which is secured to the said wall; and the outer edge of the flap 4 is cut into at 4a, for example in the form of a shallow V or a segment of a circle, so that the flap clears the portion of the ball which protrudes from the said recess, but at the same time prevents other balls from passing below itself.

The striker comprises a cylindrical tube 8 of a diameter to enable it to be a clearing fit in the magazine sheath 2, and having at one end a tapered head 9 the outer portion of which is adapted to snap over a detent spring 10 into the outer end of the sheath, the said detent spring retaining the striker in the sheath 2. Inside the tube 2 near the plain end is an axially slidable rod 11 having its inner end squared to receive four resilient chuck arms 12 evenly spaced apart and with their outer ends shaped (Figs. 7 and 8) to embrace an igniter ball, the said chuck arms being so arranged that when the rod 11 is drawn outwards by the spring 14 the said arms at their shaped outer portions abut against the outer or plain end of the tube and close towards one another to hold the ball positively, but to clear resiliently the ball when in their extended position with the rod 11 in its innermost position. The rod 11 extends through the tube 8 and the head 9 and has on its projecting end a press button or stud 13. A helical compression spring 14 arranged around the rod 11, its inner end being located in an axial recess in the member 9, and its other end abutting against the button 13, maintains the chuck arms 12 in their contracted position.

In use, the magazine is charged with the igniter balls 5. There will then be one ball lying in the space between the end wall of the magazine and the flap 4, with the outer ends of the chuck arms 12 immediately adjacent, as shown in Fig. 6. When a light is desired, the lighter is held with the striker partly inserted as shown in Fig. 6, and with the sleeve 2 lowermost and the press stud 13 pointing slightly upwards, so allowing the igniter balls to fall into the correct position. The striker is then pressed inwards, thus closing the flap 4, and causing the chuck arms 12 to pass over a ball and resiliently engage it. The striker is then withdrawn holding the ball positively in the chuck arm 12. The pressure of the remaining igniter balls causes the flap 4 to open to allow the passage of a fresh ball opposite the flap ready to be taken up on the next insertion of the striker. The igniter ball in the striker is then struck against a striking strip on the outside of the magazine, and the ball fires. The striking strip may be

conveniently located on the slide 6.

It will be seen that as the lighter, when in use, is held in a nearly horizontal position, as shown in Fig. 6, the flap 4 serves as an inclined guide which guides one pellet at a time to the recess 7a and prevents further pellets from passing into the sheath 2.

Owing to the heat of the ignited ball, the chuck arms 12 must not be too thin, but must be thick enough to allow of the heat being conducted away quickly enough to ensure that the temper of the arms is not affected.

The tapering of the head 9 facilitates the holding of the striker between the first and second fingers, so that the rod 11 may be pressed inwards by the thumb pressing on the button 13 to release the burnt igniter ball.

Generally the igniter ball will burn for about ten seconds which is about the average space of time for which a match is required to burn. Hence when it is finished with it will be extinguished or nearly so, and as a result there will not be danger of fire when it is discharged from the striker—by pressing in the press stud and so allowing the chuck arms to expand.

This is a further advantage over the usual match with its combustible stem which is so frequently thrown away while alight—often with disastrous results.

The length of time an igniter ball is to remain alight may be increased by forming the ball with an outer layer of igniting composition and a core of combustible material such as wood and paraffin wax.

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. An improved lighter of the kind described, wherein the inner end of one of the sheath walls stops short of the adjacent end wall or base of the container to leave a space sufficient to allow of the provision at the end of the said wall of a hinged flap which is adapted to open in a direction towards the axis of the sheath so as to leave a space sufficient to allow of the passage of a single igniter ball, means being provided for preventing the flap from moving away from the axis of the

sheath past its closed position of substantial alignment with the sheath wall into a position which would allow of the passage of an igniter ball.

2. A lighter according to claim 1 wherein there is formed in the wall opposite the end of the sheath, a recess for receiving a single igniter ball.

3. A lighter according to either of the preceding claims wherein the container is of oblong form and the sheath is arranged adjacent one of the longitudinal edges of the container and the hinged flap is provided on the inner wall of the sheath.

4. A lighter according to any of the preceding claims wherein the flap is cut away at its free edge for the purpose set forth.

5. A lighter according to any of the preceding claims wherein the striker comprises a tube adapted to be a clearing fit in the sheath in the container and having therein an axially slidable rod which at its inner end has clutch jaws shaped to embrace an igniter ball, and resilient means which normally maintain the said jaws closed as a result of their being drawn into the tube, characterized in that the sheath in the container opens into a larger compartment which is adapted to receive a tapered or otherwise shaped head for holding between two fingers, and the rod has a head thereon against which the thumb may be pressed for opening the jaws, while the length of the rod is such that when it is inserted in its innermost position the clutch jaws force the flap into its closed position.

6. A lighter according to claim 5 wherein means such as a snap device are provided for retaining the striker in the sheath.

7. An improved lighter having its parts arranged, combined and adapted to operate substantially as described with reference to and as illustrated in the accompanying drawings.

Dated this 18th day of May, 1944.

For the Applicant,

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

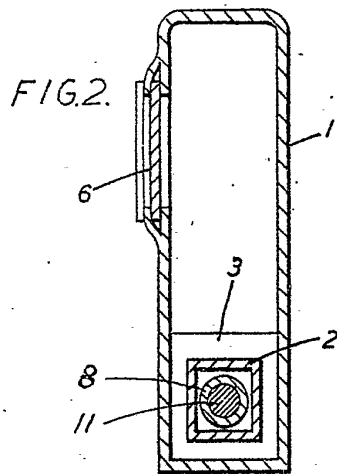
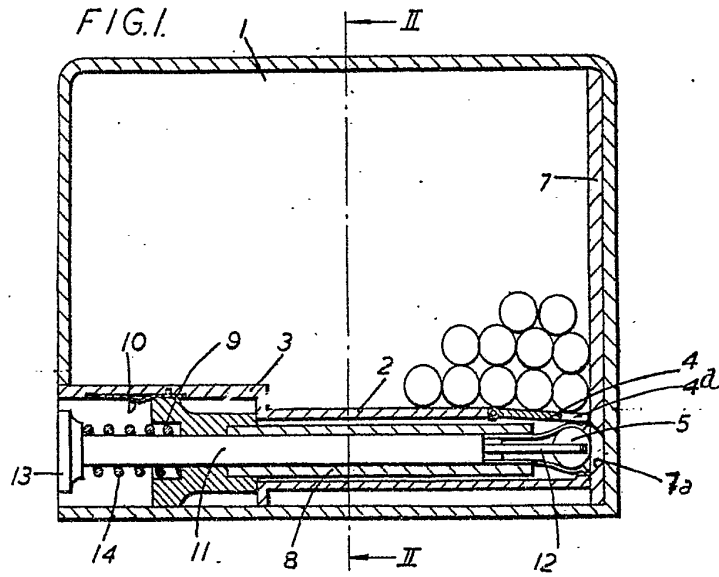


FIG. 3.

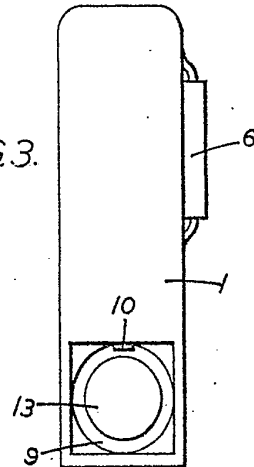


FIG. 4.

