A. CHANARD.

RECEPTACLE FOR INCENDIARY AERIAL BOMBS.

APPLICATION FILED JULY 29, 1918.

1,306,747.

Patented June 17, 1919.

2 SHEETS—SHEET 1.

Fig.1.

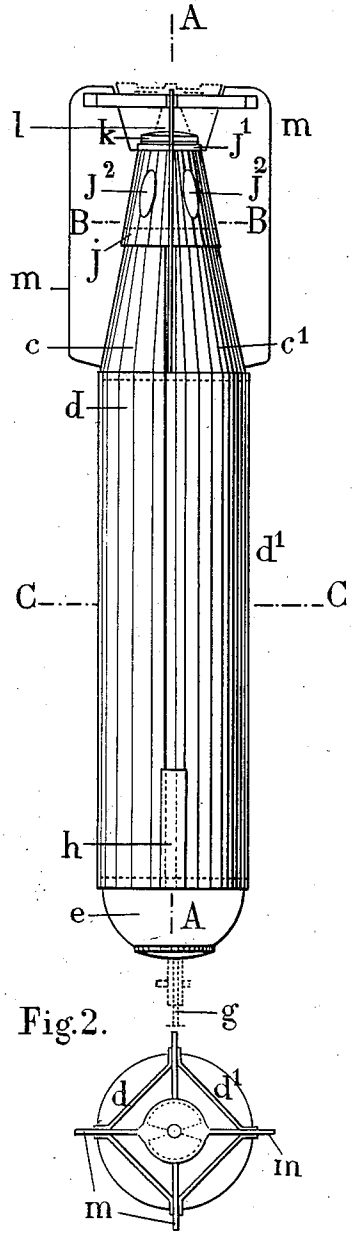
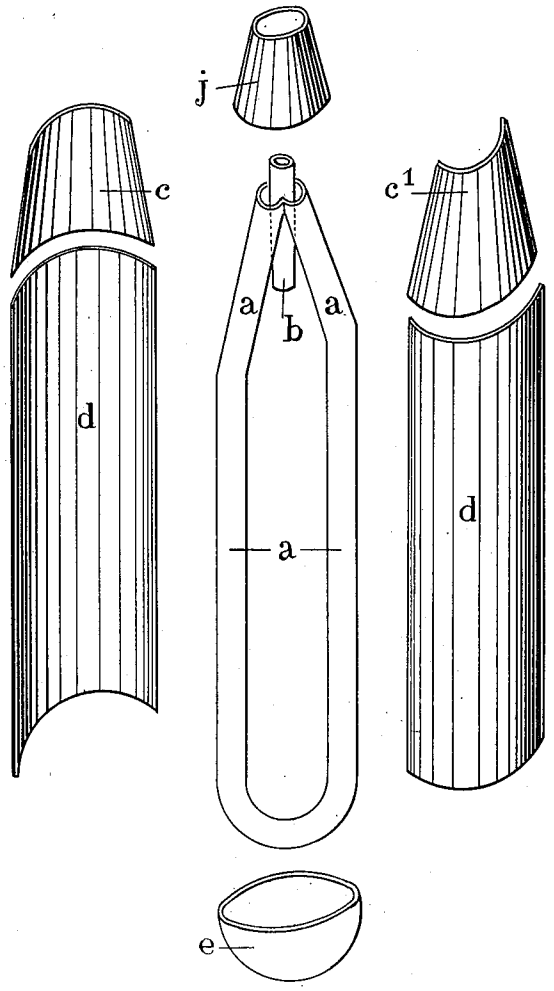


Fig.2.

Fig.6.



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Fig. 3

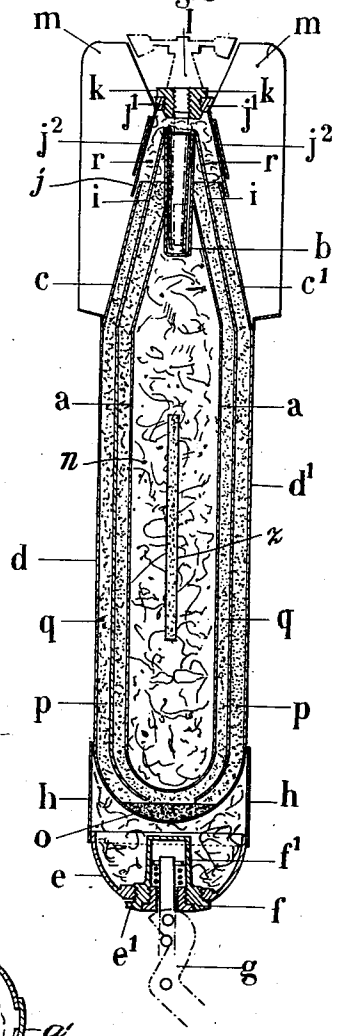


Fig 4

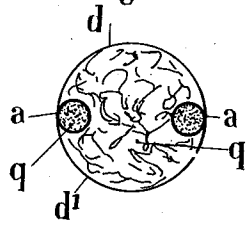
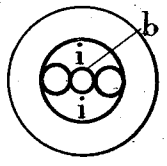


Fig. 5.



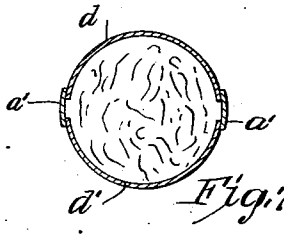


Fig. 7.

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UNITED STATES PATENT OFFICE.

AUGUSTE CHANARD, OF RUEIL, FRANCE.

RECEPTACLE FOR INCENDIARY AERIAL BOMBS.

1,306,747. Specification of Letters Patent. Patented June 17, 1919.

Application filed July 29, 1918. Serial No. 247,298.

To all whom it may concern:

Be it known that I, AUGUSTE CHANARD, of 16 Avenue de Paris, à Rueil, Seine et Oise, France, chemist, have invented a Receptacle for Incendiary Aerial Bombs, of which the following is a full, clear, and exact description.

It is known that although it is easy to ignite an incendiary mass when the latter is motionless, such ignition becomes exceedingly difficult to effect when the mass is moving through the air.

In the event of the mass having to constitute an incendiary bomb it is necessary for the said mass to be contained in a closed receptacle, in order that it will be capable of being ignited at will either in the air or on reaching its target, and of forming, when striking a target, a single or multiple fire or also a mixed fire, that is to say, single for a time and multiple during the rest of the combustion.

In order to make it possible to construct an incendiary bomb working according to these conditions, the receptacle or casing of the bomb should preferably be arranged in such a way that its constituent parts move away from the incendiary mass when the bomb reaches its target, so that the said mass, being freed from its casing, can come into direct contact with the object or surface that is to be set on fire.

On the other hand, when the bomb has been ignited in the air, devices should be provided to enable the combustion of the mass to be expedited and to prevent currents of air from extinguishing it.

The present invention relates to a receptacle for aerial bombs enabling the conditions set forth above to be fulfilled.

This receptacle is essentially characterized by the combination of two rigid shells which have, when united to one another, the form of a solid of revolution; and by a band or surface of readily fusible or combustible material uniting the longitudinal edges of these shells, leaving a certain space between the edges.

It will be realized that if a receptacle constituted in this way is filled with an incendiary mass, and the latter is suitably ignited, the material uniting the two halves of the casing will disappear by fusion and the two halves of the solid of revolution will be completely isolated and will part as a result of the shock when the bomb reaches its target.

The present invention also relates to a method of putting the invention into practice, characterized by the fact that the easily fusible material uniting the two parts of the casing is arranged in the form of a U-tube containing an autothermic mixture capable of melting the said tube during its combustion, this mixture being capable of being ignited by a fuse of known type.

When the autothermic mixture has been ignited by the fuse, the U-tube will be destroyed in consequence of the combustion of the said mixture, which will circularly ignite the incendiary mass, which will be entirely decanted on reaching the target, the two parts of the casing having been completely isolated from one another by the fusion of the U-tube that joined them together.

The accompanying drawing shows by way of example a casing for aerial incendiary bombs arranged according to the principle of this invention:

Figure 1 shows an elevation of the present receptacle.

Fig. 2 is a corresponding plan.

Fig. 3 is a sectional elevation on the line A—A in Fig. 1.

Figs. 4 and 5 are two sectional plans on the lines C—C and B—B in Fig. 1.

Fig. 6 shows the constituent elements of the receptacle in perspective.

Fig. 7 illustrates a modified form of the invention, this figure being a sectional plan passing through parts corresponding to those shown in Fig. 4.

As may be seen from the drawing, the present receptacle for bombs comprises a tin tube *a* of small thickness and of suitable diameter, about 25 millimeters, for example, for a bomb of a caliber of 120 millimeters.

This tube *a* is curved to a U-shape, and the extremities of its branches are soldered on to a vertical tube *b*, closed at the bottom, in such a way that the tops of the tubes *a* and *b* present the appearance of a figure 3.

The oblique parts of the branches of the fusible tube *a* are covered with a piece of metal in the form of a truncated cone, divided vertically into two parts *c* and *c'* soldered longitudinally on to the said tube.

On to the rectilinear part of the fusible tube *a* are soldered two semi-cylindrical

shells d and d'. These shells are fixed in such a way that their longitudinal edges are located about 10 millimeters from one another.

The tops of the shells cover to an extent of about 5 millimeters the lower edges of the truncated cone c, as shown in dotted lines in Fig. 1, and these parts are united by soldering.

The lower parts of the shells d and d' are soldered, under the same conditions, on to a cupped steel bottom e, which is provided in the middle with a tapped hole e' for the purpose of filling the body of the bomb. This hole is closed by a screw-threaded plug f, provided with a socket f', within which to lodge the tension spring of the suspension device g of the bomb.

Metal tongues h suitably soldered on to the longitudinal edges of the shells d and d' enable the free space between the said shells to be closed from the point where the latter cease to be in contact with the fusible tube a right down to the top edge of the steel bottom e.

Between the truncated cone c and the tubes a and b, and slightly below the level of the inlet of the latter, is soldered a metallic partition i intended for the purpose of rendering the main compartment of the bomb completely fluidtight.

The upper end of the cone c is covered by another cone j, united to the first by soldering, and having a tapped collar j' soldered to the top thereof, into which collar is screwed a plug k that takes an ignition fuse l of known type.

This cone j is provided with apertures closed by thin plates j^2 of easily fusible material, the object of which will be indicated below.

Guiding vanes m are fixed on to the conical part of the receptacle, after the various constituent parts that have just been described have been assembled.

For the purpose of charging the receptacle arranged in this way the following procedure is adopted:—

Through the opening e' in the base e the incendiary mass n is inserted in the main compartment of the receptacle.

During the course of this operation a closed tube z, preferably of brass, containing an explosive substance, is embedded longitudinally in the incendiary mass. This tube, of suitable length and diameter, may inclose melinite for example, and a priming for the purpose of making the latter explode.

When the main compartment of the receptacle is filled, the plug f and the suspension device g are put back into their places.

This being done, a small quantity of gun powder (25 grams for example) is introduced through the opening in the conical part of the receptacle into the fusible tube a. This powder o lodges at the point of maximum curvature of the tube, as shown in Fig. 3.

A quick-match p leading to the tube b containing the priming device, is then brought down into each branch of the fusible tube a, and then the latter is entirely filled with an autothermic mixture q. This mixture may be kept stationary by plugs of cotton r or by any other device.

The plug k is next screwed on to the collar j', and then the fuse l is put in position in the sheath tube b.

The bomb then operates in the following manner:—

The bomb having been thrown, from an aeroplane or from a dirigible balloon, for example, and the fuse having operated, the parts of the quick matches p contained in the tube b ignite, and then these matches ignite the autothermic mixture contained in the branches of the fusible tube a, which mixture in its turn ignites the incendiary mass n.

This ignition of the mass has the result of melting the plates j^2, which allows air to enter the fusible tube a.

The combustion of the autothermic mixture, which takes place very rapidly, brings about the fusion of the tube a, which is destroyed so that the two shells d and d' become separated by the interval between their longitudinal edges.

When the combustion of the autothermic mixture spreads to the gunpowder o occupying the lowest part of the fusible tube a, the explosion of this powder sharply separates the two halves d and d' of the receptacle.

The incendiary mass will therefore be in this way laid bare on the very target that it has reached. This mass will burn in a single fire until, owing to its volume being reduced by combustion, the heat of the fire explodes the substance contained in the tube embedded in the mass. The deflagration of this explosive substance will disperse the incendiary mass, which will then form multiple fires burning separately.

The present receptacle also presents the following advantage:—

When ignition takes place in the air, by means of a suitable fuse, the tube a is melted in a few seconds, and the incendiary mass n is ignited and surrounded by a circle of fire. While the bomb continues its accelerated fall, the wind, entering the narrow slit between the longitudinal edges of the shells d and d', feeds, in moderation, the fire created, which fills up the empty space left by the tube a after the disappearance thereof, so that the said wind promotes the fire instead of extinguishing it.

The present method of putting the invention into practice has only been given by way of example, as the U-tube *a* may be replaced by a mere band of fusible or inflammable material, the destruction of which may be brought about by the ignition of the contents of the receptacle or by means of any suitable device, so as to permit of the separation of the two parts of the solid of revolution, the said solid being of any suitable geometrical form.

Thus, I have illustrated in Fig. 7 an embodiment of the invention in which the adjacent edges of the shells *d* and *d'* are held together by longitudinal bands of fusible and preferably combustible material, such as magnesium.

Similarly the receptacle may be filled with any solid or liquid incendiary material, the latter admitting at will, on account of the composition of the fusible band and of the material permitting of the destruction thereof, either of being ignited instantaneously throughout its periphery or of being ignited progressively.

Finally, this receptacle may consist of any suitable materials, and the dimensions of its constituent parts may vary according to circumstances, without affecting the principle of the invention.

Claims.

1. A receptacle for incendiary aerial bombs comprising two shells and a member forming a joint and uniting the edges of these two shells, the said member being formed of a material which disappears when the incendiary mass contained in the receptacle is ignited for the purpose of allowing the incendiary mass to be decanted on the target reached by the bomb.

2. A receptacle for incendiary aerial bombs comprising two shells and a band of fusible material uniting the edges of these two shells.

3. A receptacle for incendiary aerial bombs comprising two shells and a band of combustible material uniting the edges of these two shells.

4. A receptacle for incendiary aerial bombs comprising two shells and a band of fusible and combustible material uniting the edges of these two shells.

5. A receptacle for incendiary aerial bombs comprising two shells, between the edges of which is left a space and a band of fusible material uniting the edges of these two shells.

6. A receptacle for incendiary aerial bombs comprising two shells, between the edges of which is left a space, and a band of combustible material uniting the edges of these two shells.

7. A receptacle for incendiary aerial bombs comprising two shells, between the edges of which is left a space, and a band of fusible and combustible material uniting the edges of these two shells.

8. A receptacle for incendiary aerial bombs comprising two shells, between the edges of which is left a space, a tube of fusible material curved and soldered on the edges of these two shells within the receptacle so as to form a joint, an autothermic mixture contained in the said tube, and means for igniting the said mixture and thus determine the fusion of the tube and the ignition of the incendiary mass.

9. A receptacle for incendiary aerial bombs comprising a cylindrical body composed of two semi-cylindrical shells, between the edges of which is left a space, a body in the form of a truncated cone composed of two shells soldered at one of the ends of the previous ones, a tube of fusible material, curved and soldered on the edges of the two semi-cylindrical shells and on the semi-frustum-shaped shells, on the inner face of these shells, the said tube containing an autothermic mixture, a conical body soldered at the end of the body in the form of a truncated cone, apertures provided in the conical body, thin plates of fusible material for covering these apertures, means for igniting the autothermic mixture contained in the fusible tube forming a joint on the edges of the shells, guiding vanes fixed on the body in the form of a truncated cone and on the conical body, a cap soldered at the opposite end of the cylindrical body, and means for suspending the receptacle.

10. A receptacle for incendiary aerial bombs comprising:—a cylindrical body composed of two semi-cylindrical shells between the edges of which is left a space,—a body in the form of a truncated cone composed of two semi-frustum-shaped shells soldered at one of the ends of the previous ones,—a conical body soldered at the end of the body in the form of a truncated cone,—apertures provided in the said conical body,—thin plates of fusible material for covering the said apertures,—a tube of fusible material, curved and soldered on the longitudinal edges of the two semi-cylindrical shells and on the semi-frustum shaped shells, the said tube containing an autothermic mixture,—means for igniting the said autothermic mixture,—a cap soldered at the opposite end of the cylindrical body,—a tapped hole provided in the said cap for filling the body of the bomb,—a plug closing the said hole,—a socket provided in the plug and in which is lodged the spring of the suspension device of the bomb.

11. A receptacle for incendiary aerial bombs comprising:—a cylindrical body composed of two semi-cylindrical shells between the edges of which is left a space,—a body in the form of a truncated cone composed of two semi-frustum-shaped shells soldered

at one of the ends of the previous ones,—a conical body soldered at the end of the body in the form of a truncated cone,—apertures provided in the said conical body,—thin plates of fusible material for covering the said apertures,—a tube of fusible mterial curved and soldered on the longitudinal edges of the two semi-cylindrical shells and on the semi-frustum-shaped shells, the said tube containing an autothermic mixture,—means for igniting the said autothermic mixture,—a tube-gaine closed at one of its ends and on which are soldered the end of the two branches of the fusible tube forming a joint, the said tube-gaine being adapted to receive the priming fuse, a wall adapted to close the receptacle at the level of the end of the branches of the fusible tube, an aperture provided in the conical body for introducing in the fusible tube the autothermic mixture, a plug for closing the said aperture and so arranged as to be capable of receiving the ignition fuse,—a cap soldered at the opposite end of the cylindrical body,—a tapped hole provided in the said cap for filling the body of the bomb,—a plug closing the said hole,—a socket provided in the plug and in which is lodged the spring of the suspension device of the bomb.

12. A receptacle for incendiary aerial bombs comprising two parts between which is left a space, a tube of fusible material, curved and soldered on the edges of these two constitutive parts of the receptacle, an autothermic mixture contained in the said fusible tube, a tube-gaine containing the priming fuse, a quick-match embedded in the autothermic mixture and leading to the tube-gaine.

13. A receptacle for incendiary aerial bombs comprising two parts between which is left a space, a fusible and curved tube soldered on the edges of the two constitutive parts of the receptacles, an autothermic mixture contained in the said fusible tube, a small quantity of gun powder introduced in the curved or bent part of the fusible tube, and means for igniting the autothermic mixture.

14. A receptacle for incendiary aerial bombs comprising two parts between which is left a space, a fusible and curved tube soldered on the edges of these two constitutive parts of the receptacle, an autothermic mixture contained in the said fusible tube, a small quantity of gun powder introduced in the curved or bent part of the fusible tube, a closed tube containing an explosive substance embedded in the incendiary mass, and means for igniting the autothermic mixture.

15. A receptacle for incendiary aerial bombs comprising two parts between which is left a space, a fusible and curved tube soldered on the edges of these two constitutive parts of the receptacle, an autothermic mixture contained in the said fusible tube, a small quantity of gun powder introduced in the curved or bent part of the fusible tube, a tube-gaine containing the priming fuse, a quick-match embedded in the autothermic mixture and leading to the tube-gaine, and a closed tube containing an explosive substance embedded in the incendiary mass.

The foregoing specification of my "receptacle for incendiary aerial bombs," signed by me this 26th day of June 1918.

AUGUSTE CHANARD.

Witnesses:

JOHN F. SIMONS,

FRANÇOIS WEBER.