

No. 668,222.

Patented Feb. 19, 1901.

W. H. ROSE.  
ILLUMINATING PROJECTILE.

(Application filed Apr. 7, 1899.)

(No Model.)

Fig. 2.

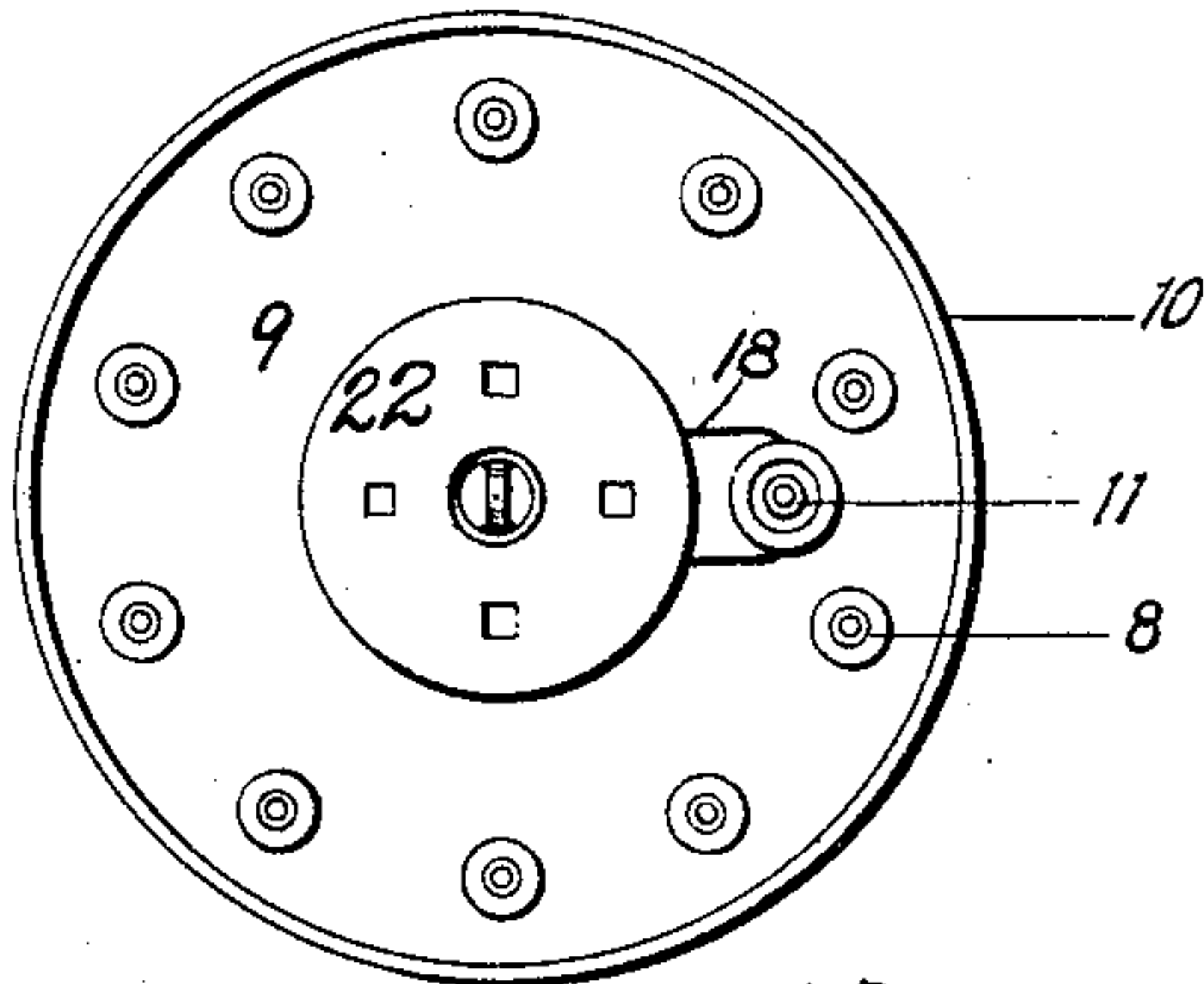


Fig. 5.

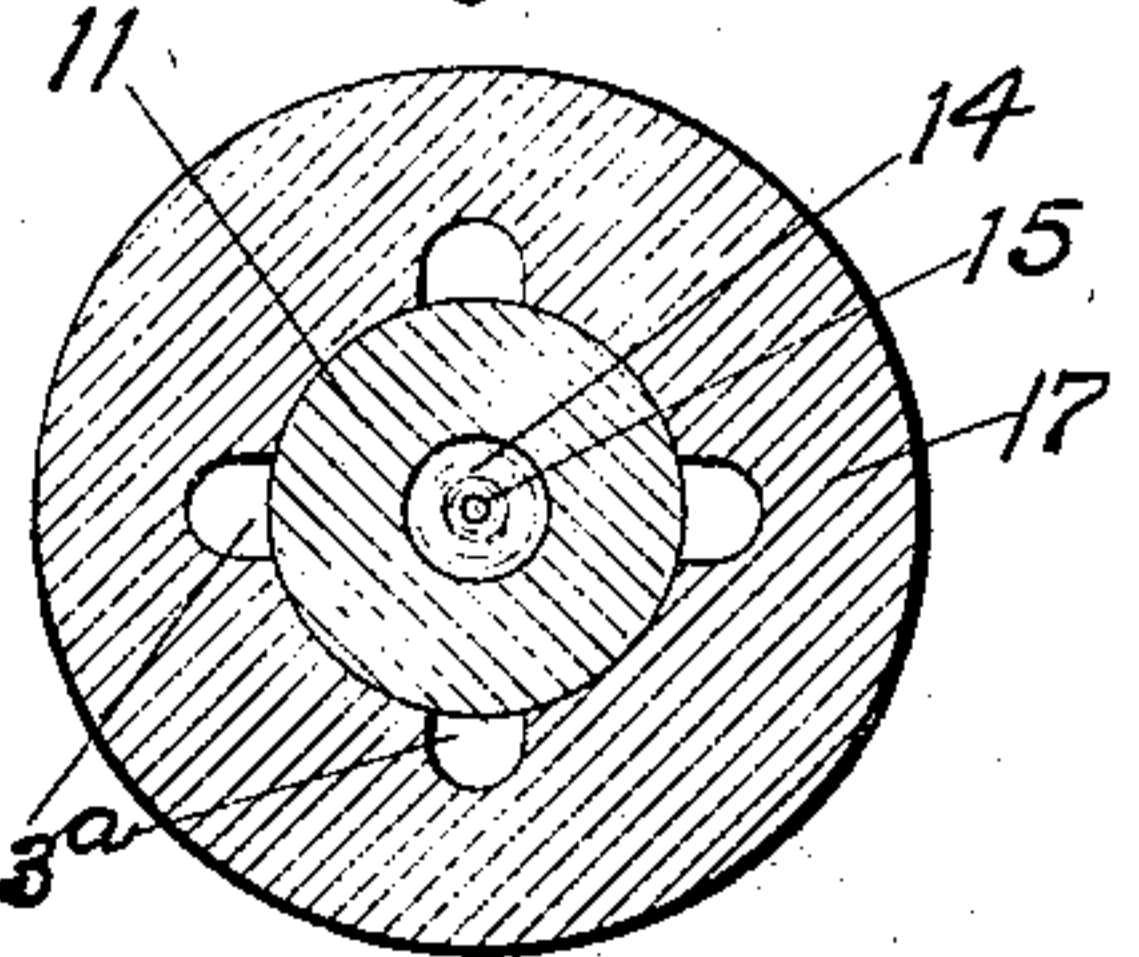


Fig. 1.

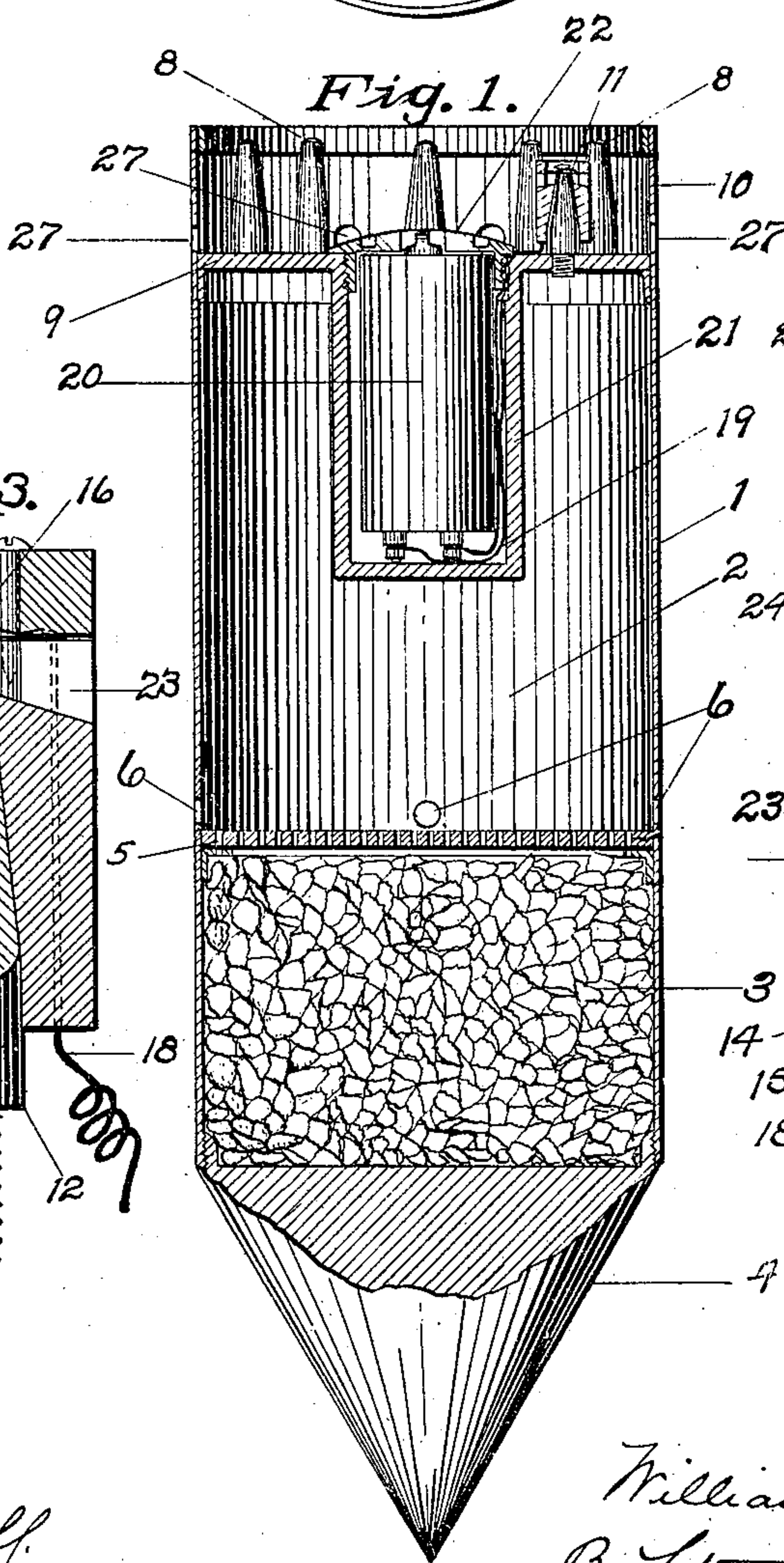


Fig. 3.

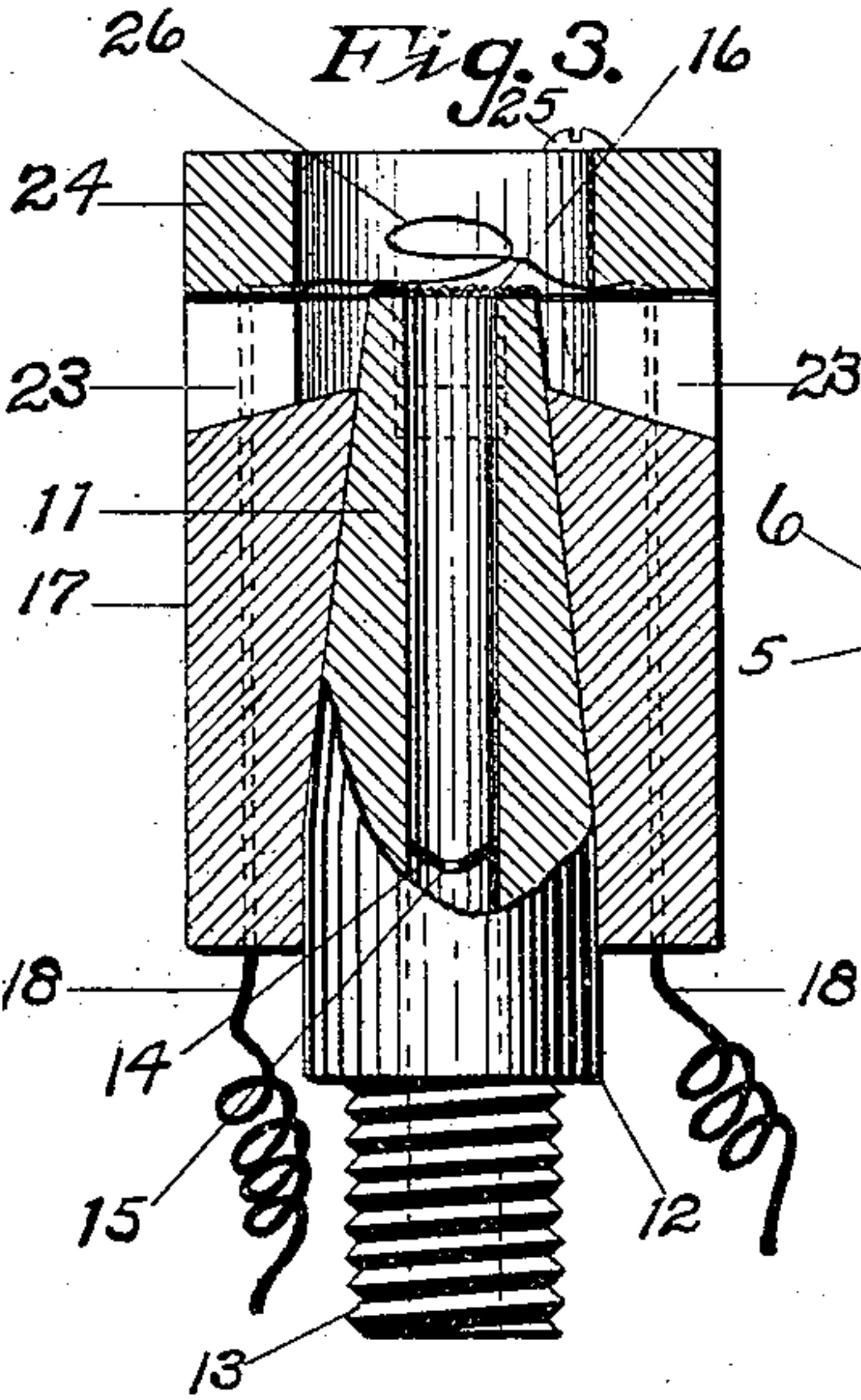
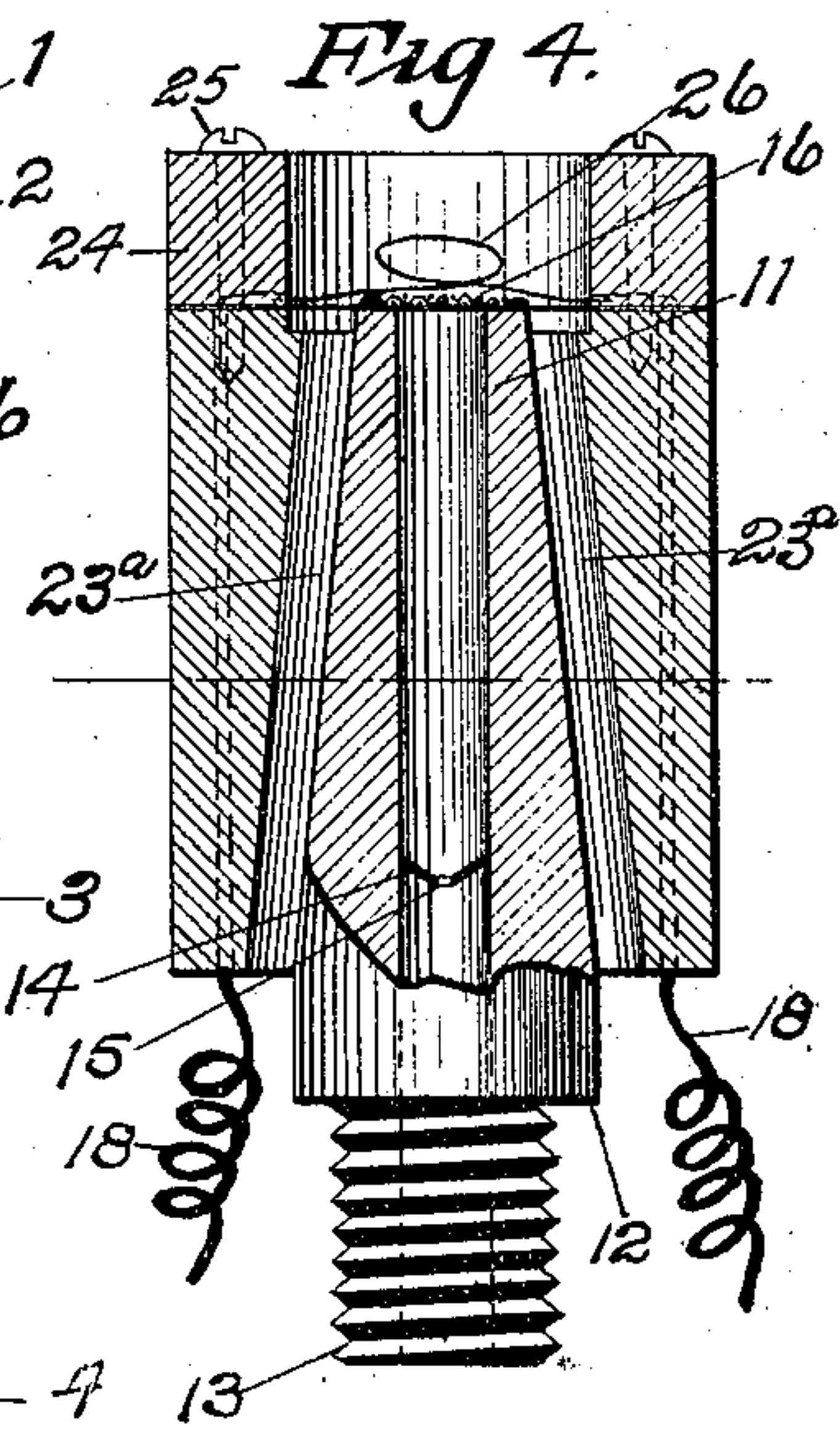


Fig. 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. ROSE, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MARINE TORCH COMPANY OF BALTIMORE CITY, OF MARYLAND.

## ILLUMINATING PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 668,222, dated February 19, 1901.

Application filed April 7, 1899. Serial No. 712,165. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. ROSE, a citizen of the United States, residing at the city of Baltimore, in the State of Maryland, have  
5 invented certain new and useful Improvements in Illuminating Projectiles, of which the following is a specification.

The present invention relates to improvements in that class of projectiles which are  
10 charged with carbide of calcium or other gas-generating substances adapted to produce illuminating-gas when the shell is thrown into the water, and more particularly to means for igniting the gas as it is liberated from the  
15 shell through a series of burners.

The invention will be more fully described in connection with the accompanying drawings, in which—

Figure 1 is a central longitudinal section of  
20 a shell illustrating my invention. Fig. 2 is a plan view of the same. Fig. 3 is a central longitudinal section through the igniting-burner. Fig. 4 is a similar section through a different form of burner, and Fig. 5 is a section on line  
25 a a of Fig. 4.

Referring to the drawings, 1 indicates a cylindrical shell, having a gas-chamber 2, a carbide-chamber 3 below the gas-chamber, and a weight 4 attached to the lower end and  
30 adapted to cause the shell to float in a perpendicular position. The gas and the carbide chambers are separated by a perforated partition 5, which permits water to run from the former chamber to the latter and the liberated gas to escape from the carbide-chamber.  
35 In the gas-chamber, just above the perforated partition, are openings 6 to permit water to pass into the gas-chamber.

On the upper end of the gas-chamber are a  
40 series of burners 8, preferably arranged in a circle, as shown. These burners may be of any suitable construction. To protect the burners, the casing of the shell is preferably carried beyond the end 9 in the form of a  
45 flange 10, as clearly seen in Fig. 1.

The igniting-burner is suitably located to communicate its flame to the burners 8. As shown, the igniting-burner 11 is located adjacent to the burners 8 at one side of the cen-

ter of the shell. In Fig. 3 the details of the  
50 igniting-burner are illustrated. The burner proper, 12, is provided with a shank 13, which may be screwed into the end plate 9 of the shell, as shown in Fig. 1. To govern the flow of gas, and thereby prevent it from cooling  
55 the resistance-wire, the burner is provided with a diaphragm 14, having a small opening 15. The outlet of the burner is preferably covered with perforated material, such as fine wire-gauze. The burner is surrounded and  
60 protected by a stout cylindrical casing 17, which is preferably constructed of insulating material, such as vulcanized fiber or porcelain, the casing being securely fastened to the burner by any suitable means. The cas-  
65 ing 17 is designed for the purpose of holding and protecting the terminals 18 of a circuit 19, which is furnished with current by a battery 20. The battery is located in a receptacle 21, which, as shown, is connected to the  
70 head 9 of the gas-chamber. The receptacle 21 may be closed to protect the battery by means of a suitable cover 22. The protecting-casing 17 may be provided with openings 23 near and preferably below the tip of the  
75 igniting-burner 11 to permit water to drain away from the burner, or the interior of the casing may be grooved to provide drainage-openings 23<sup>a</sup>, as shown in Fig. 4. This latter  
80 construction is preferable, as thereby the resistance-wire is protected from the cooling effect of wind. The gauze tip 16 prevents the water from rushing into the burner. To protect the resistance-wire and the end of the  
85 burner and to prevent the flame from being blown out by wind, the casing 17 is preferably extended some distance above the tip of the burner and may be partially inclosed or covered. For convenience of construction  
90 the upper portion of the casing may be made in the form of a separate ring 24, which may be attached to the lower portion by means of screws or other suitable fastenings 25. The terminals 18 are connected by a fine resistance-wire 26, which is heated to a suitable  
95 degree by the passage of the current from the battery. The wire 26 lies above the gauze outlet of the burner and is protected by the



upper portion of the casing. In some instances an ordinary burner may be used, in which event the resistance-wire will be placed above and to one side of the gauze tip, so as to avoid the cooling effect of the large out-flow of gas.

The operation of the invention will be obvious from the preceding description. When the shell is thrown into water, it assumes an upright position by reason of the weight 4 being at one end and the empty gas-chamber at the other, and it floats, with the burners, above the surface of the water. The water rushes in through the opening 6, and immediately acetylene gas is formed, which fills the gas-chamber. Any water which may have gathered within the protecting-flange 10 is permitted to escape through openings 27. The gas flows through all of the burners 8 and also through the igniting-burner 11. The current from the battery heats the wire 26 and ignites the gas from the burner 11, and immediately the gas issuing from the other burners becomes ignited and the shell forms a brilliant torch, which will light up any vessels or other objects in the vicinity.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a buoyant shell having a gas-chamber, of a gas-burner in communication with said chamber, an electric battery carried by the shell, and an igniting device for the burner in circuit with the battery.

2. The combination with a buoyant shell having a gas-chamber, of a burner communicating with said chamber, an electric battery carried by the shell, a circuit for said battery having its terminals adjacent to the burner, and a resistance-wire connecting said terminals and located in position to ignite the gas issuing from the burner.

3. The combination with a buoyant shell having a gas-chamber, of an igniting-burner, a casing surrounding said burner, a battery carried by the shell, and an igniting-wire for the burner within and protected by the casing, said wire being in circuit with the battery.

4. The combination with a buoyant shell having a gas-chamber, of an igniting-burner in communication with the gas-chamber, a casing of insulating material surrounding the burner, a battery having its terminals supported and protected by said casing, and an igniting-wire connecting said terminals and located adjacent to the burner in position to ignite the gas issuing therefrom.

5. The combination with a buoyant shell having a gas-chamber, of an igniting-burner in communication with said gas-chamber, a protecting-casing surrounding the burner and extending above the same, a perforated cover for the burner to prevent water from entering in quantity, and openings in the casing below the burner-tip to drain the water from the casing.

6. The combination with a buoyant shell having a gas-chamber, of a series of burners arranged on the end of the shell, a flange surrounding and protecting the burners, an igniting-burner also arranged on the end of the shell, a battery, and a casing surrounding the igniting-burner, the terminals of the battery-circuit being carried by said casing and connected to an igniting-wire located adjacent to the burner-tip, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. ROSE.

Witnesses:

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