

(No Model.)

E. L. ZALINSKI.

PROJECTILE.

No. 384,663.

Patented June 19, 1888.

Fig. 1.

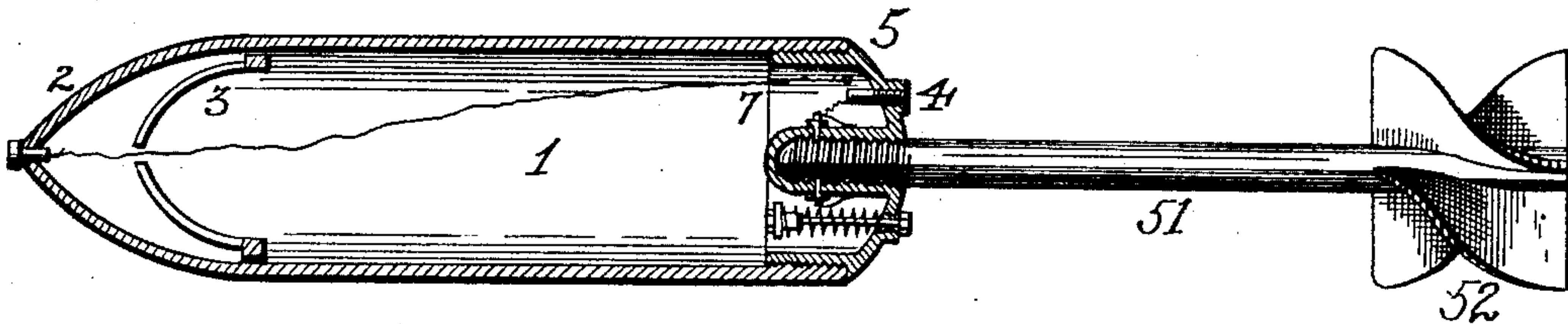


Fig. 2.

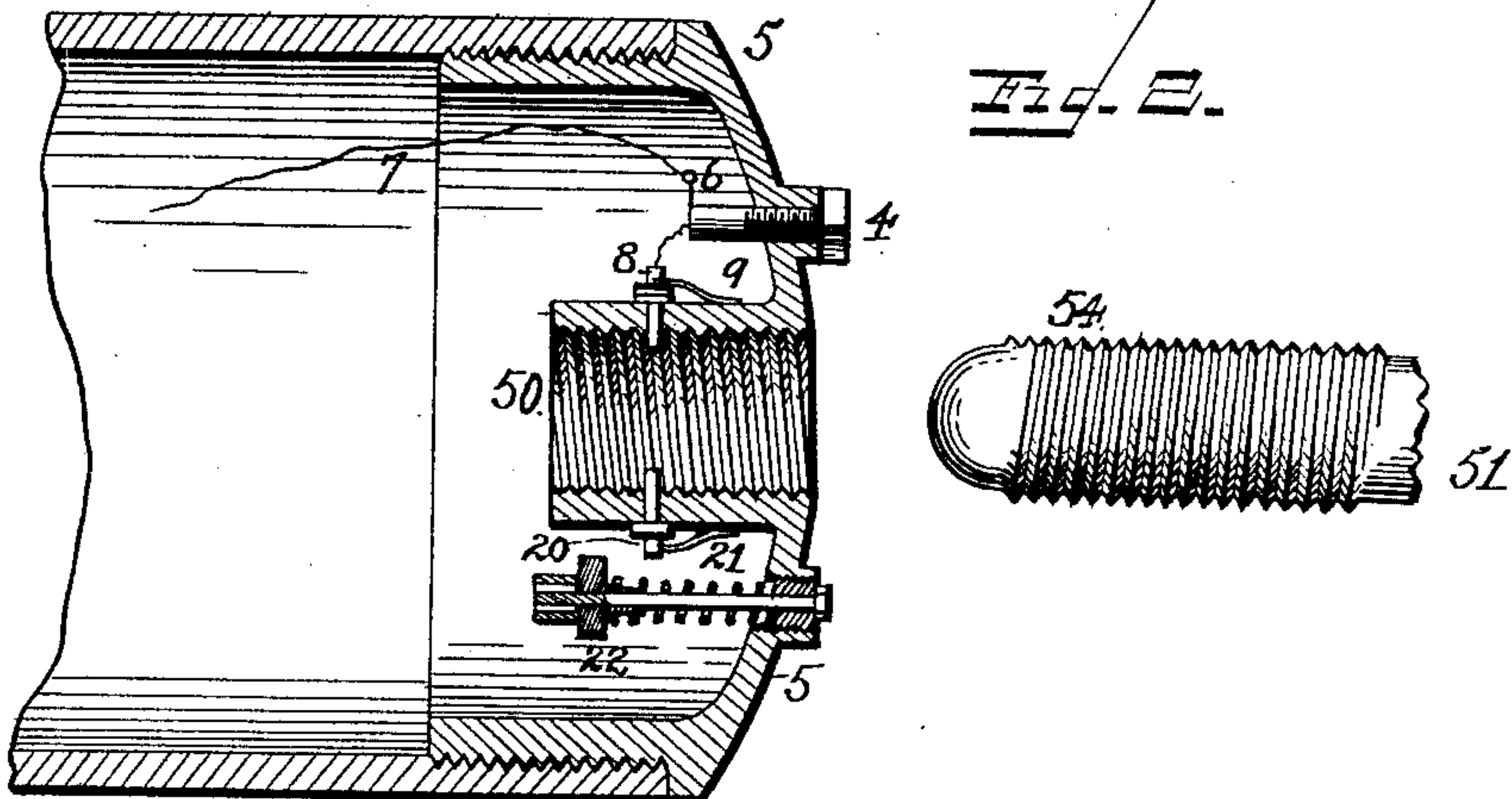


Fig. 3.

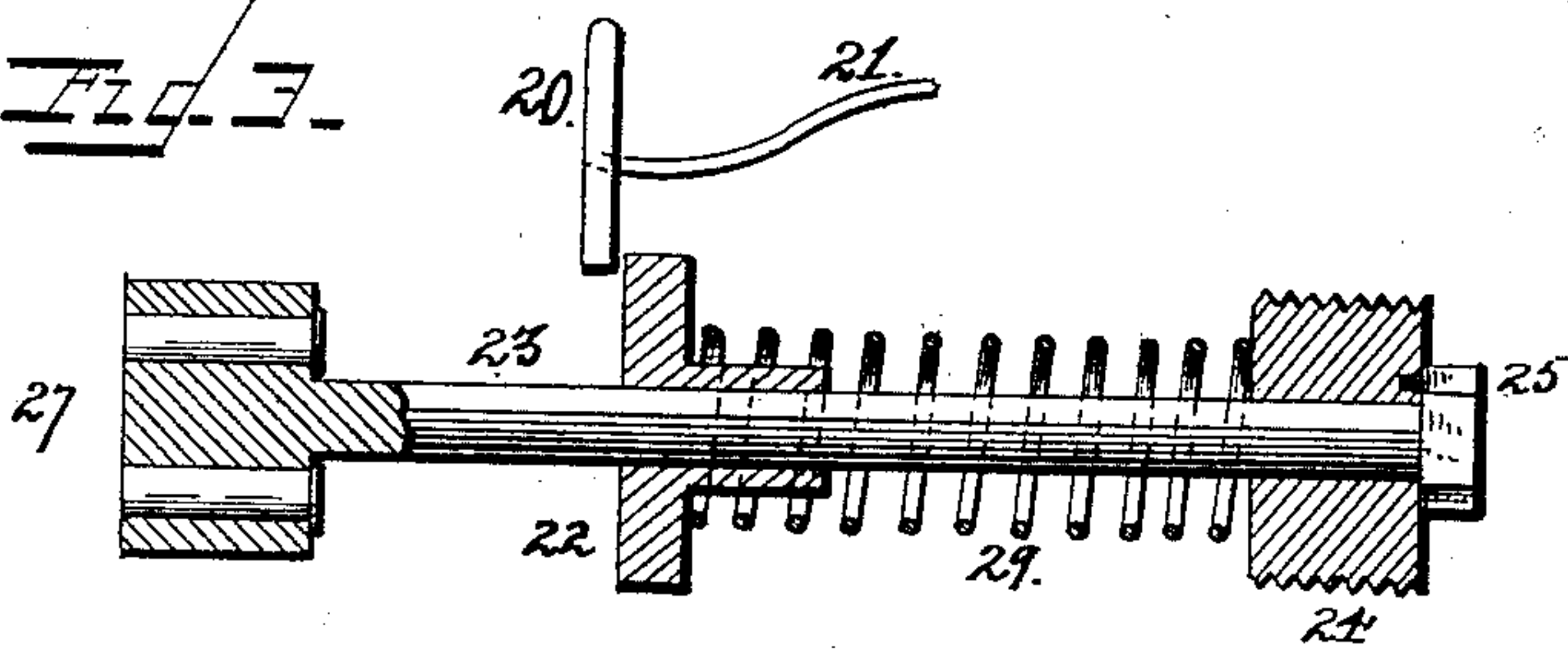
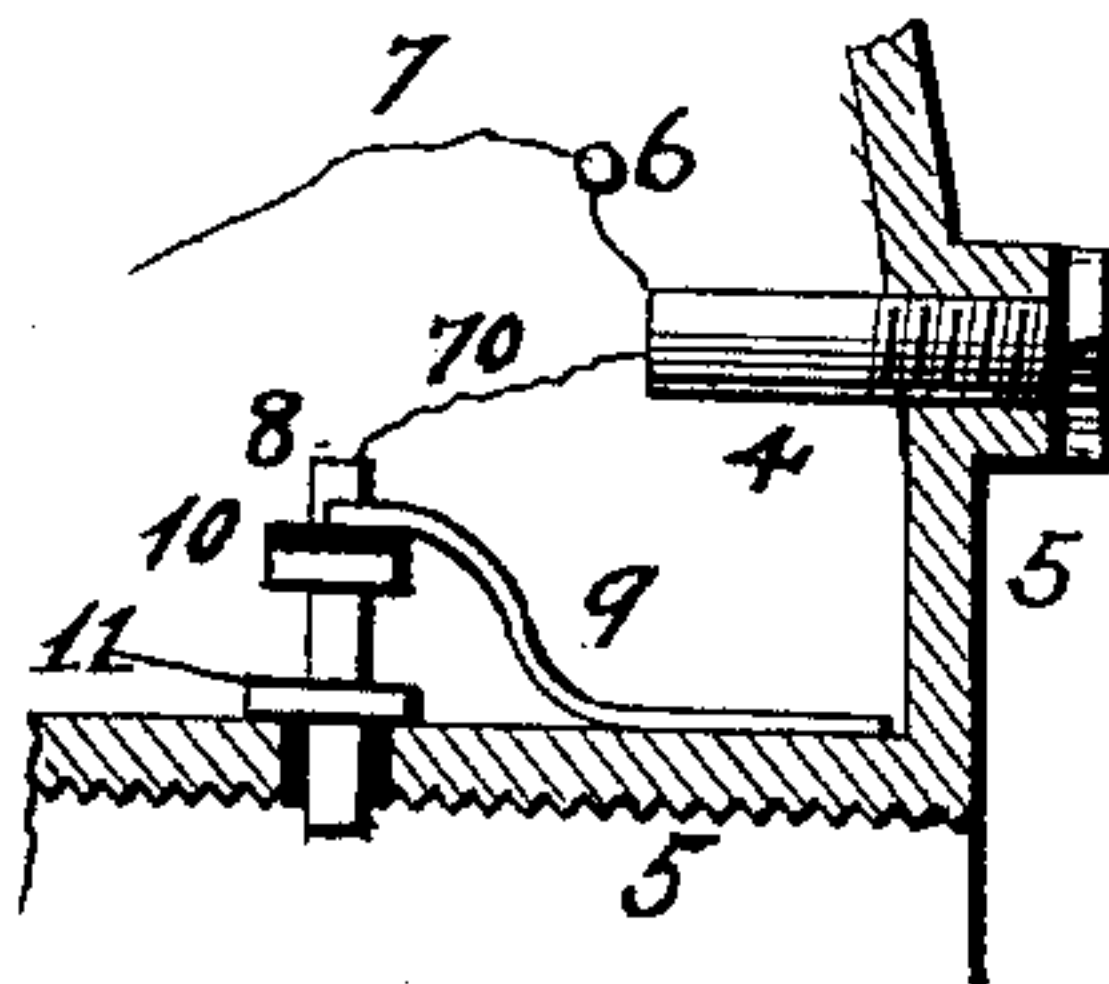


Fig. 4.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

EDMUND L. ZALINSKI, OF THE UNITED STATES ARMY.

## PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 384,663, dated June 19, 1888.

Application filed January, 6, 1888. Serial No. 260,008. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND L. ZALINSKI, of the United States Army, stationed at Fort Hamilton, New York, have invented certain  
5 new and useful Improvements in Projectiles and Fuses, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to projectiles and  
10 fuses for projectiles of a particular class, as will be hereinafter described.

The object of the invention is to provide a projectile with a fuse which will be fired by the detachment of a guiding tail or spindle.

15 In the drawings, Figure 1 is a longitudinal central section of a projectile of the character described, showing generally the arrangement of the fuse or fuses with respect to the spindle. Fig. 2 is an enlarged detail of part of the same  
20 figure. Fig. 3 is a diagrammatic detail illustrating the connections for a percussion-fuse; and Fig. 4, a similar detail of an electric fuse, operated according to the general principles of this invention.

25 The numeral 1 indicates the body of a shell provided with a collapsible point, 2, and interior plate, 3, after the manner of another of my inventions, and forming no special part of my present invention except to show suitable  
30 connections.

An electric fuse, 4, is secured in the base 5 of the shell. One wire, 7, of the fuse 4 has its circuit through a detonator, (indicated at 6,) which detonator may be at any point in the  
35 shell, as is usual with fuses of this class. The other wire, 70, is connected to a pin, 8, which is normally pressed by springs 9 toward the socket 50, into which the spindle of the shell extends.

40 The pin 8 has a collar, 10, which, when the pin is pressed inward, will come in contact with plate 11, thus "grounding" or closing circuit through the walls of the shell. The pin 10 is otherwise insulated from the socket  
45 50 of base-piece 5 and from the spring 9.

The spindle 51, which has the spiral feather 52 thereon, screws into the socket 50. When it is screwed into the socket, it serves to press out the pin 8, which carries collar 10, and  
50 keeps collar 10 out of contact with plate 11. When the spindle 51 is unscrewed from its

socket, the pin 8 can move into the socket and so close circuit through the battery-connections and detonator. The socket 50 has another spring-pin, 20, passing through its walls. 55 This pin 20 is pressed inward by spring 21 when not held out by the spindle 51. The end of pin 20, when the pin is forced out, is in the line of movement of collar 22, borne on rod 23, so as to slide longitudinally thereon. 60 The rod 23 is keyed or otherwise fastened (as by solder) to base 24, which screws into a recess in the base 5 at such distance from the spindle-socket that the pin 20, when forced out by the spindle, shall project into the path of 65 movement of sliding collar 22; but when pressed in by its spring the pin 20 will be out of the way of said collar.

The nut 25 serves as a means of turning in and turning out the plug 24, which is the sup- 70 port of this percussion-fuse. The rod 23 carries at its front end a head, 27, which has seats for a number of detonating-cartridges, 28.

A spring, 29, serves to press the collar or striker 22 toward the detonating-cartridges. 75

When the spindle 51 is in its socket, the pin 20 will be pressed out against the force of its spring 21. If now the percussion-fuse be screwed into the base of the shell, the head 27 will pass the point of the pin 20; but the col- 80 lar 22, being of greater diameter, will be engaged by said pin and will be held, the collar pressing back on spring 29 and placing the latter under compression. When the spindle 51 screws out of socket 50, the pin 20 will be free 85 to move inward under the pressure of the spring 21, which pin will thus act as a trigger to release the sliding collar 22. This collar 22, impelled by the spring 29, flies forward and acts as a hammer to fire the cartridges 28. 90

The spindle 51 may have its screw-threaded part 54, which enters the socket 50, threaded in either direction; but the vanes 52 will have their pitch in the opposite direction. It is desirable, however, that the spiral vanes 52 have 95 such pitch as to cause the projectile while in its flight to have the usual rifled movement "with the sun." The pressure of the air on the vanes will turn the spindle and this turns the projectile on its axis, the first tendency be- 100 ing to screw in the threaded part 54 of the spindle into its socket.



When the projectile, having a rapid rotary motion, falls into water, the resistance of the water will prevent the rotation of the vanes 52 and spindle 51, while the body part 1 will  
 5 by its own inertia continue to revolve, the surface being smooth and offering little frictional resistance. This will unscrew the spindle 51, and as this spindle moves back in its socket the pins 8 and 21 are pressed into the  
 10 socket, the one closing circuit through the battery 4 and the other permitting the fall of the hammer 22.

It will be understood that other mechanisms than a screw-thread may be used to retain  
 15 the spindle 51 in its socket. The salient idea of this invention is that the detaching of the tail or spindle of the projectile serves to operate the "trigger" of a detonating or electric primer. It is also obvious that the spring pins  
 20 or triggers 8 and 20 have many mechanical equivalents. The firing-detonators may operate as time-fuses in well-known manner so that the explosion of the shell takes place at any required time after the detachment of the  
 25 tail or spindle.

The spiral vanes on the spindle are the invention of another. I do not claim them.

The guiding-spindle when detached offers no further resistance to the progress of the  
 30 head 1 of the shell through the water. Consequently the shell will have increased range under water.

I do not make specific claims on the precise mechanism presented, as I have devised several modifications thereof. In this application 35 I desire to cover the generic invention.

What I claim is—

1. The combination, with a projectile, of a detachable guiding-spindle, and a fuse or primer having an operating-trigger in position 40 to be engaged by said spindle, substantially as described.

2. The combination, with a shell, of a detachable guiding-spindle, and a percussion-detonator in the shell and connected with said 45 spindle.

3. The combination, with a shell, of a detachable guiding-spindle, a detent engaged thereby, and a percussion-detonator held in 50 cocked position by said detent.

4. The combination, with a shell, of a detachable guiding-spindle, a detent or trigger engaged thereby, and a spring-actuated detonator wherein the spring is held under compression by said detent but, released to fire the 55 charge when the guiding spindle is detached, as set forth.

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

EDMUND L. ZALINSKI.

Witnesses:

PHILIP MAURO,

W. A. BARTLETT.