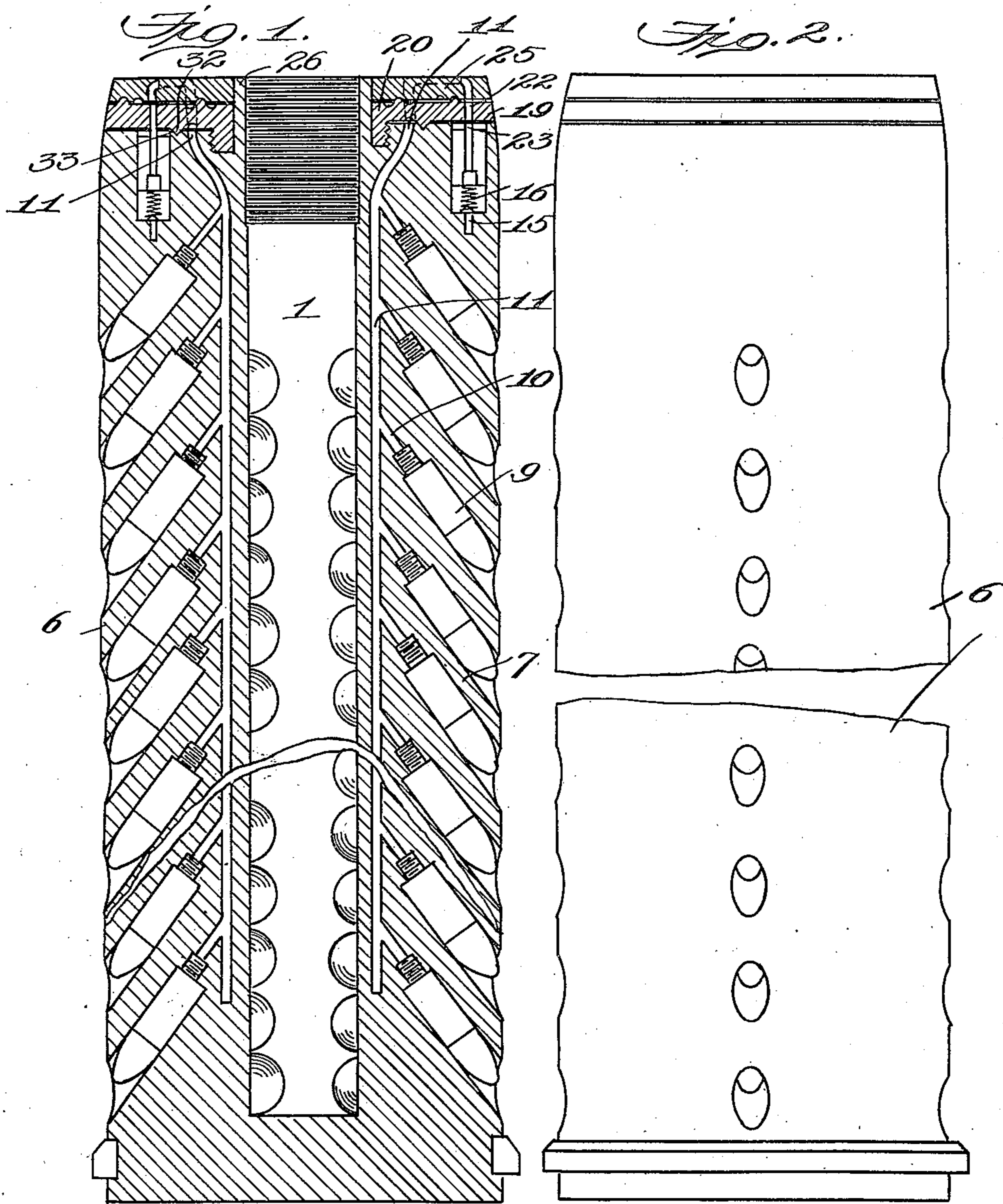


C. W. GEBAUER.  
SHELL FOR ARTILLERY.  
APPLICATION FILED JULY 8, 1909.

965,809.

Patented July 26, 1910.

3 SHEETS—SHEET 1.



Witnesses

*[Signature]*  
*[Signature]*

Inventor  
Carl W. Gebauer

*[Signature]*  
James L. Norris

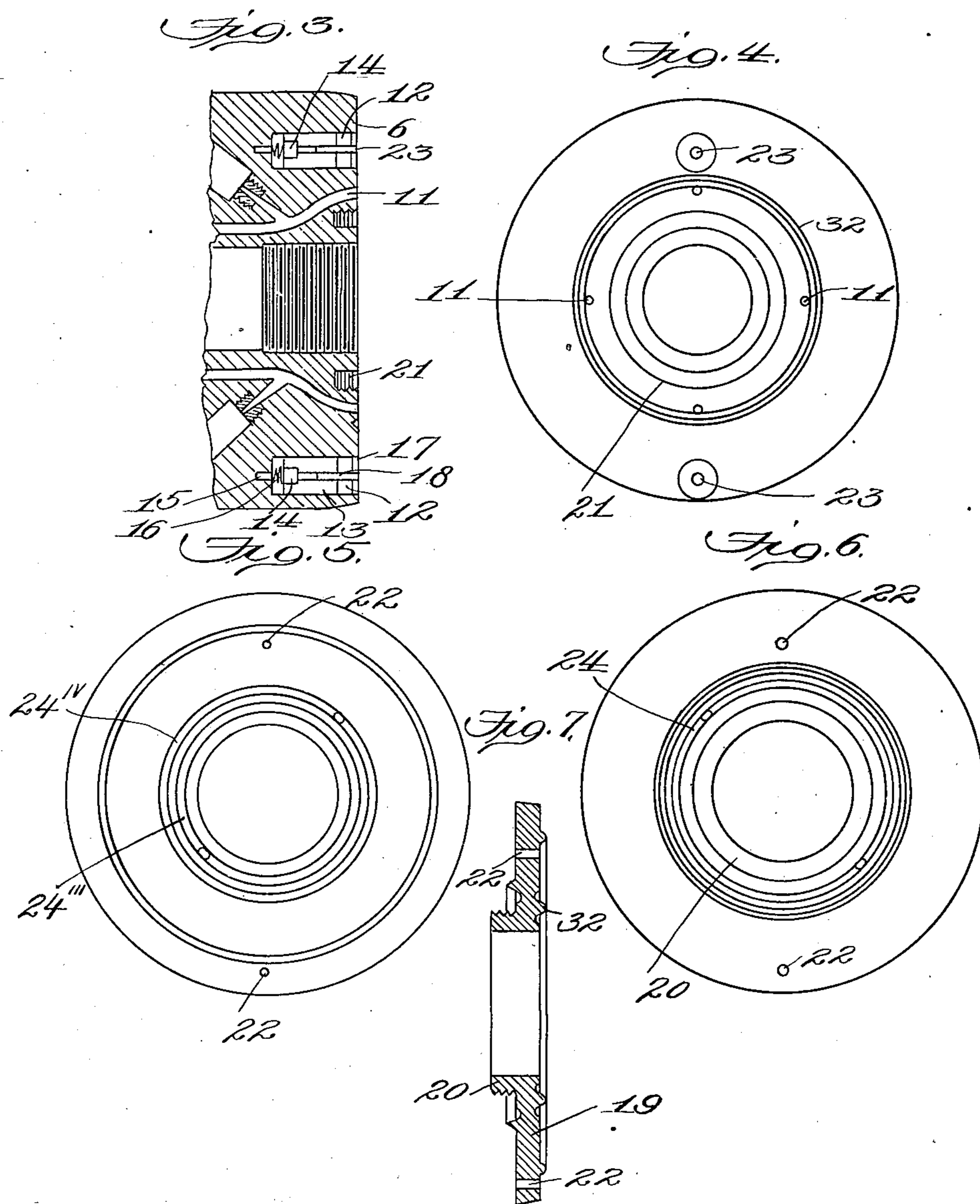
*[Signature]*

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3 SHEETS—SHEET 2.



Witnesses:

*[Signature]*  
*[Signature]*

Inventor  
Carl W. Gebauer

By  
*[Signature]*  
James L. Norris

*[Signature]*

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3 SHEETS—SHEET 3.

Fig. 9.

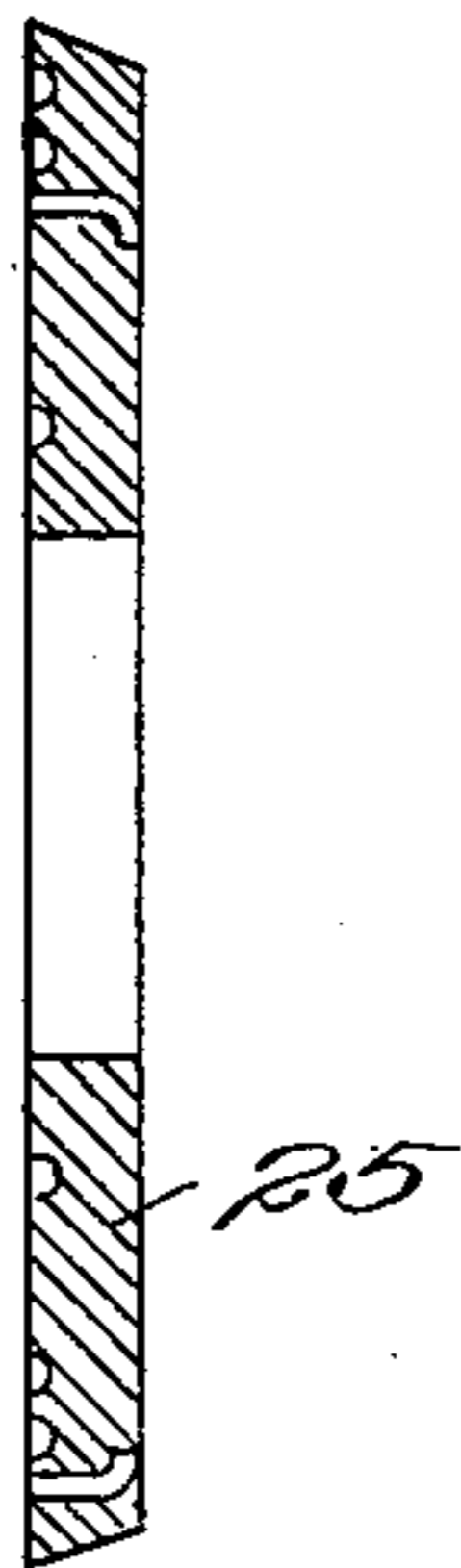


Fig. 8.

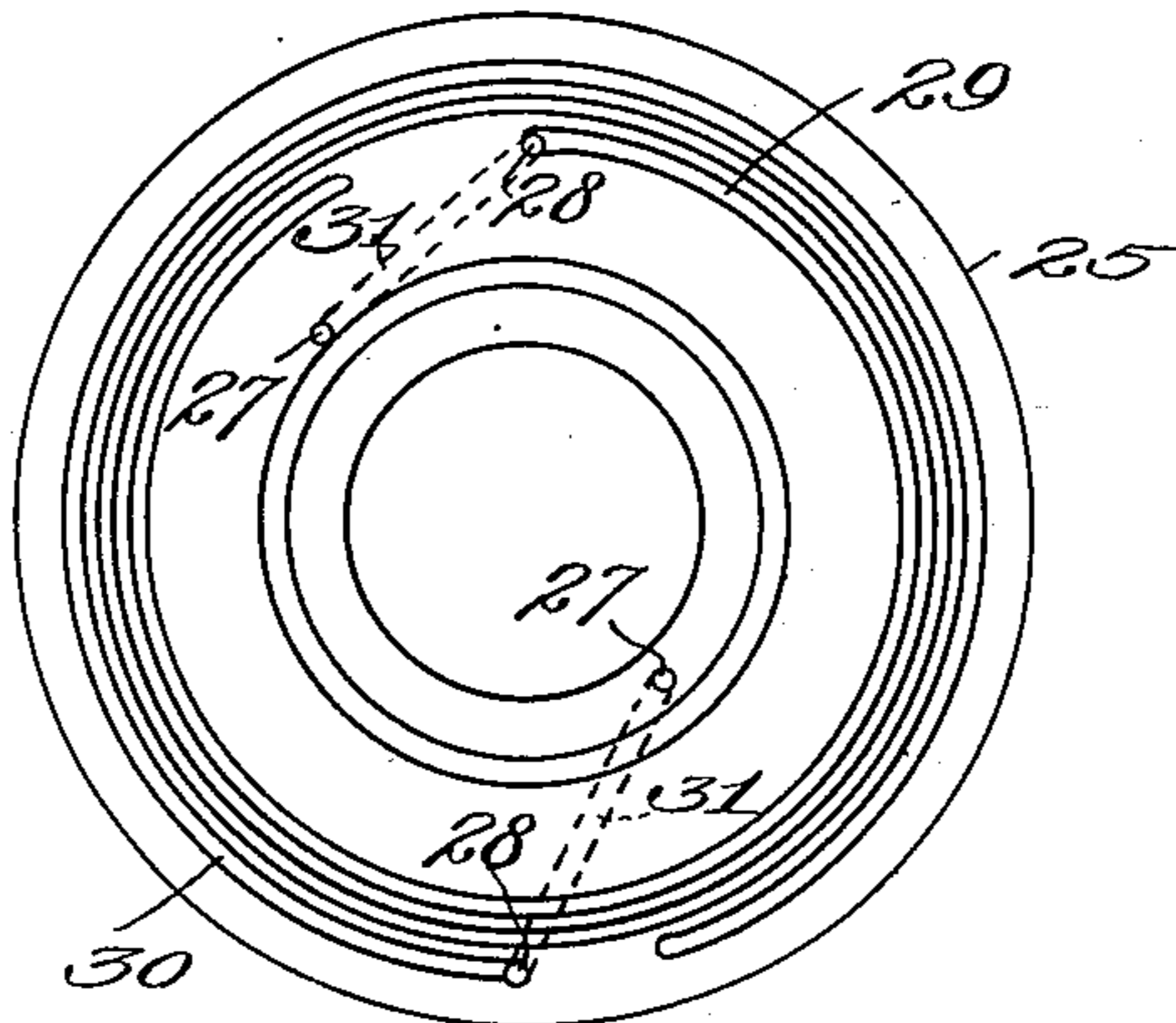


Fig. 10.

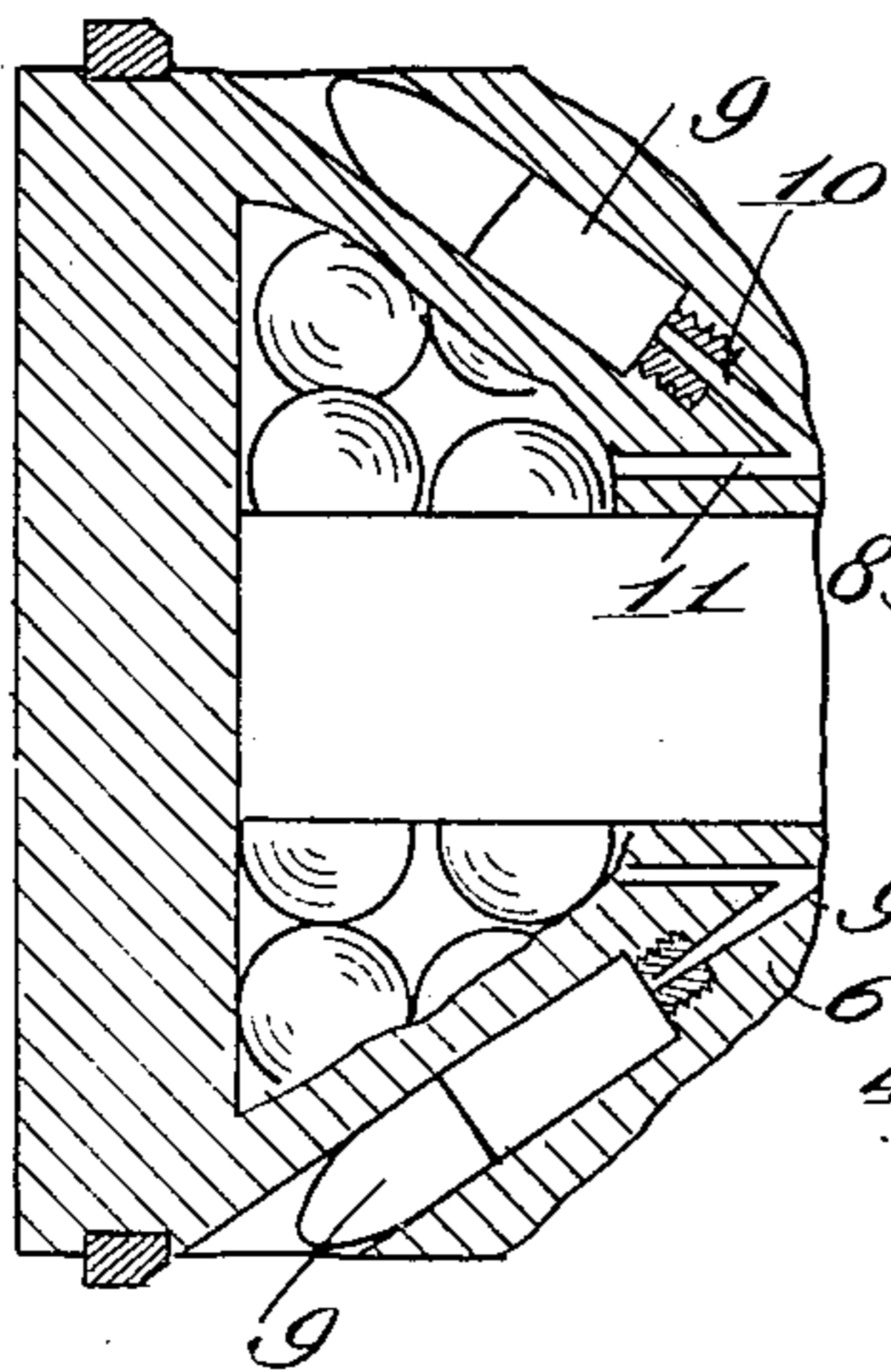
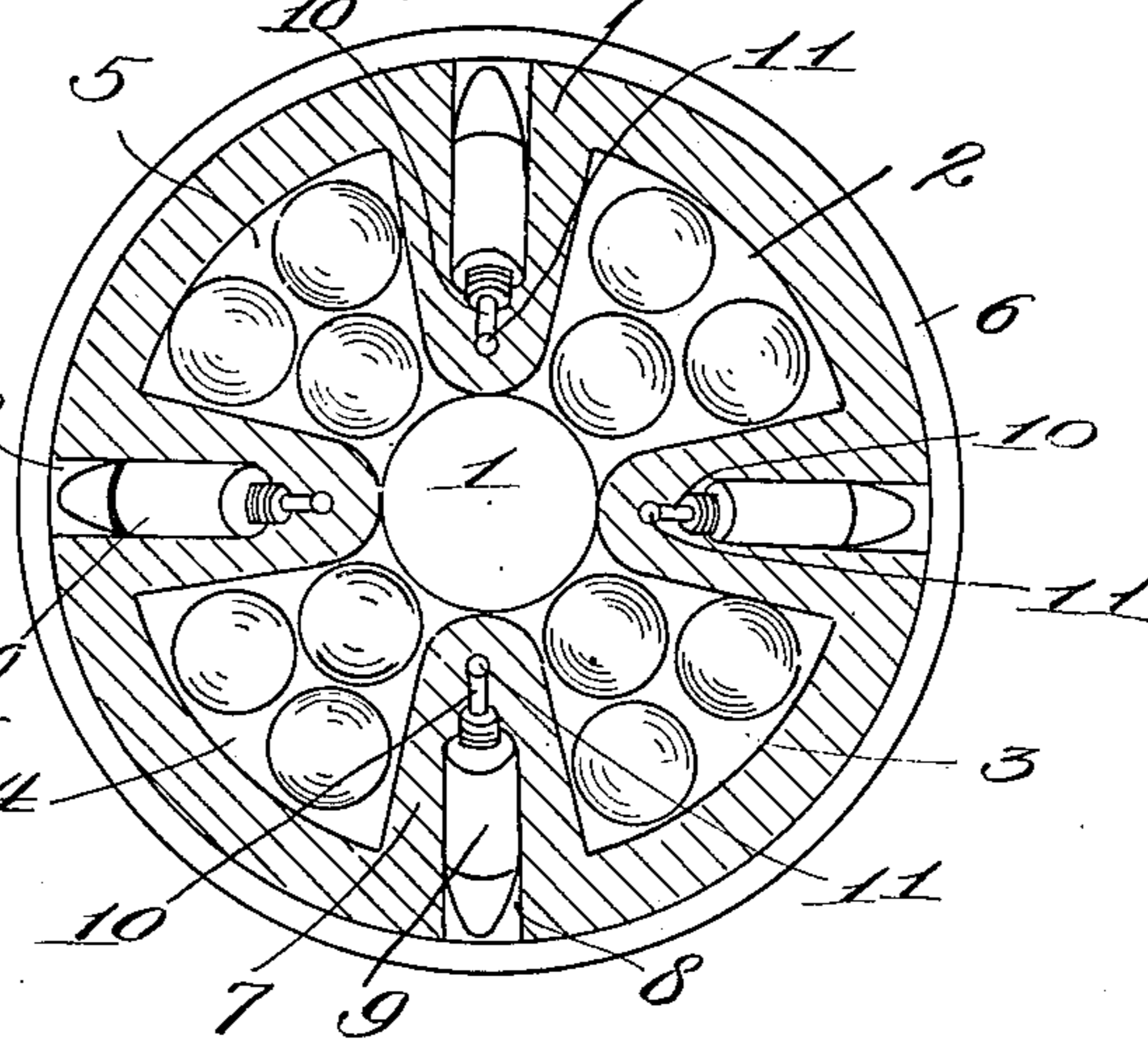


Fig. 11.



Witnesses:

*James B. Kessler*  
*Carl Kessler*

Inventor

Carl W. Gebauer

By *James L. Norris*

*att'y.*

# UNITED STATES PATENT OFFICE.

CARL WALTER GEBAUER, OF DRESDEN, GERMANY.

## SHELL FOR ARTILLERY.

965,809.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed July 8, 1909. Serial No. 506,628.

*To all whom it may concern:*

Be it known that I, CARL WALTER GEBAUER, girdler, subject of the King of Saxony, residing at Dresden, Germany, have invented certain new and useful Improvements in Shells for Artillery, of which the following is a specification.

This invention relates to a shell for use with all kinds of artillery, which may be of any caliber and is so constructed that in addition to the ordinary spreading effect similar to shrapnel produced only when it bursts, it causes elongated bullets to be discharged at intervals as desired at an obtuse angle in relation to the direction of its flight, so that it is possible to reach an enemy who is under cover: this being rendered possible by means of a special arrangement. In the case of the projectile any desired number of elongated bullets are obliquely arranged in such a manner that they lie at an acute angle in relation to the axis of the hollow shell and can be discharged from the latter during its flight by means of special ignition devices at an acute angle in the opposite direction to the line of flight.

In Sheets I, II and III of the accompanying drawing the construction of a shell according to the present invention is illustrated.

Figure 1 is a longitudinal section of the shell, Fig. 2 is an elevation, Fig. 3 is a longitudinal section of the head of the shell, Fig. 4 is a cross section thereof, Fig. 5 is a plan of the timing disk, Fig. 6 is an inverted plan of the same, Fig. 7 is a section of the same, Fig. 8 is a plan of the adjusting ring by means of which the timing of the ignition can be regulated, Fig. 9 is a section of the same, Fig. 10 is a sectional view of the base of the shell, Fig. 11 is a transverse section through the shell.

In the interior of the shell is a cylindrical chamber 1, which is filled with explosive material, and into which four trapezoid like chambers 2, 3, 4, 5 (Figs. 1 and 11) open which are intended for the reception of the shrapnel shot. Between the chambers 2 to 5 are partitions 7 (Fig. 11) which extend inward up to the cylindrical chamber 1 and form a whole with the shell casing 6. In the casing 6 extending into the partitions 7 are holes 8 for the cartridges 9 which are suitably screwed into the same. These holes 8 which form an acute angle with the axis of the shell are connected by means of small

passages 10 with longitudinal passages 11 (Fig. 1) running through the shot in the partitions 7.

To the side of the passages 11 forward of the rows of projectiles, that is in the casing 6 which is reinforced by partitions 7 two longitudinal cylindrical borings 12 are suitably provided for the fuses. The latter are formed by a longitudinally drilled weight 13, the hole in which is enlarged rearwardly at 14 for receiving a detonator. On the bottom of the hole 12 a pin 15 is arranged from which the weight is held apart by a spring 16 (Figs. 1 and 3). The hole 12 is closed by a drilled screw disk 17 which extends by means of a small tube 18 into the hole in the weight and acts as a guide to the latter.

In the hole in the weight 13, and in the tube 18 as well as in the passages 10 and 11, a suitable fuse powder is placed. When the shell is fired, the weights 13 with the detonators move sharply against the pin 15 in consequence of their inertia, the power of the spring 16 being overcome, and the fuse powder in the passages which lead to the cartridges being ignited and the bullets discharged (Fig. 3).

In order that the ignition for the elongated bullets may be adjusted to any desired distance the following arrangement is made. The timing disk 19 illustrated in Figs. 5, 6 and 7 is screwed by means of its screw piece 20 into the screw thread 21 formed in the shell in such a manner that the borings 22 therein come exactly over the ignition openings 23 or communicate therewith (Fig. 1). On the rear face of this disk is a circular groove 24, which in turn stands over the passages 11 in the casing. As the one fuse is placed somewhat inward, the one through the boring 24 of the timing disk 19 is drilled through obliquely rearward in order to meet the groove 24. In front of the timing disk 19 the adjusting disk 25 shown in Figs. 8 and 9 is screwed on to the inner cylindrical part 26 of the shell (Fig. 1). This disk is formed with through passages 27 and 28 and with two grooves 29 and 30 which break the circle at places situated opposite one another. The passages 27 and 28 are connected by tangential grooves 31. The passages 27 are somewhat oblique and run into the groove 24 of the timing disk. The through borings 27 open into the grooves 24<sup>III</sup> 24<sup>IV</sup> provided on the forward face of the timing disk and

thence into the groove 24 in the rear face. All grooves and passages are filled with fuse powder. Between the grooves circular ribs 32 are formed on the one hand and recesses 33 on the other hand, so that the filled ignition passages cannot communicate with one another in any unintended manner owing to any lack of tightness. The head of the shell containing the known igniting devices for the charge of shrapnel is then screwed on over the adjusting disk 25.

The adjustment for timing the ignition is effected as follows: When the adjusting disk 25 on the edge of which the suitable marks appear is adjusted so that the through passages 28 therein come exactly over the through borings 22 in the fuse regulating disk, the quickest time for ignition for the projectiles 9 is at a distance of 500 meters, because in this case the flashing of the igniting mass is only effected through the tangential path 31 to the vertical passages 11. If on the other hand the disk 25 be adjusted so that the through borings 22 in the timing disk communicate with the ends of the grooves 29 and 30, the explosion of the projectile is longest delayed, because the igniting substance must first burn away in the grooves before there is any ignition of what is in the grooves 31. Consequently the explosion only takes place at a distance of 8,000 meters. Accordingly as the through passages 22 in the timing disk 19 are more or less distant from the through borings 28 and the tangential grooves 31 run into the grooves 29 and 30, the earlier or the later will the projectile 9 arranged in the casing be ignited. If the adjusting disk be so adjusted that the places where the grooves 29 and 30 are interrupted come over the through borings 22, the path of ignition is shut off there and no ignition of the projectile can occur. It is advisable to effect this adjustment when the shot is removed from one place to another.

The effects of the shell are once more briefly summarized. When the shell is discharged the fuse powder in the ignition weights is ignited by the return action on the head placed on the detonating cap. The ignition proceeds through the ignition holes in the disk, and the passages in the adjusting ring filled with fuse powder and thence through the inner ignition holes or ignition grooves in the disk, reaching the passages 11 in the cartridges and causing these latter to explode. According to the adjustment of the timing ring or according to the length of the path of ignition in the grooves of the timing ring the elongated bullets are discharged at certain times and places, the greatest and smallest adjustment of the timing ring in regard to the periods of explosion of the elongated bullets varying between distances of 500 and 8000 meters. A

scale which is arranged on the periphery of the timing ring indicates the time to be adjusted for the explosion of the elongated bullets in meters. Moreover the "dead" position of the timing ring in which the ignition passages are closed and no explosion can occur even if ignition take place is shown on the scale. Thus the cartridges can be fired at a determined distance and time. By the firing of the cartridges enemies even under good cover in trenches can be reached, while the shot itself has a greater range through the reaction of the bullets. The bursting of the shell and the spreading of the round shot can be adjusted by the timing disk independently of the firing of the cartridges owing to the number of borings in the casing the latter bursts into a much larger number of small parts, than hitherto, and thus insures a powerful explosive effect.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with an artillery shell having a plurality of longitudinal shrapnel chambers and partitions separating the chambers, of a plurality of projectiles fitted in each partition.

2. The combination with an artillery shell having a plurality of longitudinal shrapnel chambers and partitions separating the chambers, of a plurality of projectiles fitted in each partition, and means independent of the explosive in the shell for firing the projectiles.

3. The combination with an artillery shell having a plurality of longitudinal shrapnel chambers and partitions separating the chambers and each having a longitudinal powder duct, of a plurality of projectiles fitted in each partition and fired by the explosion of the powder in each duct, a detonator, and means for transmitting the flash from the detonator to the powder ducts.

4. The combination with an artillery shell having a plurality of longitudinal shrapnel chambers and partitions separating the chambers and each having a longitudinal powder duct, of a plurality of projectiles fitted in each partition and fired by the explosion of the powder in each duct, a detonator, and means for transmitting the flash from the detonator to the powder ducts, consisting of an adjustable part by means of which the length of the path of transmission between the detonator and the powder ducts may be varied.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CARL WALTER GEBAUER.

Witnesses:

PAUL ARRAS,

ULYSSES J. BYWATER.