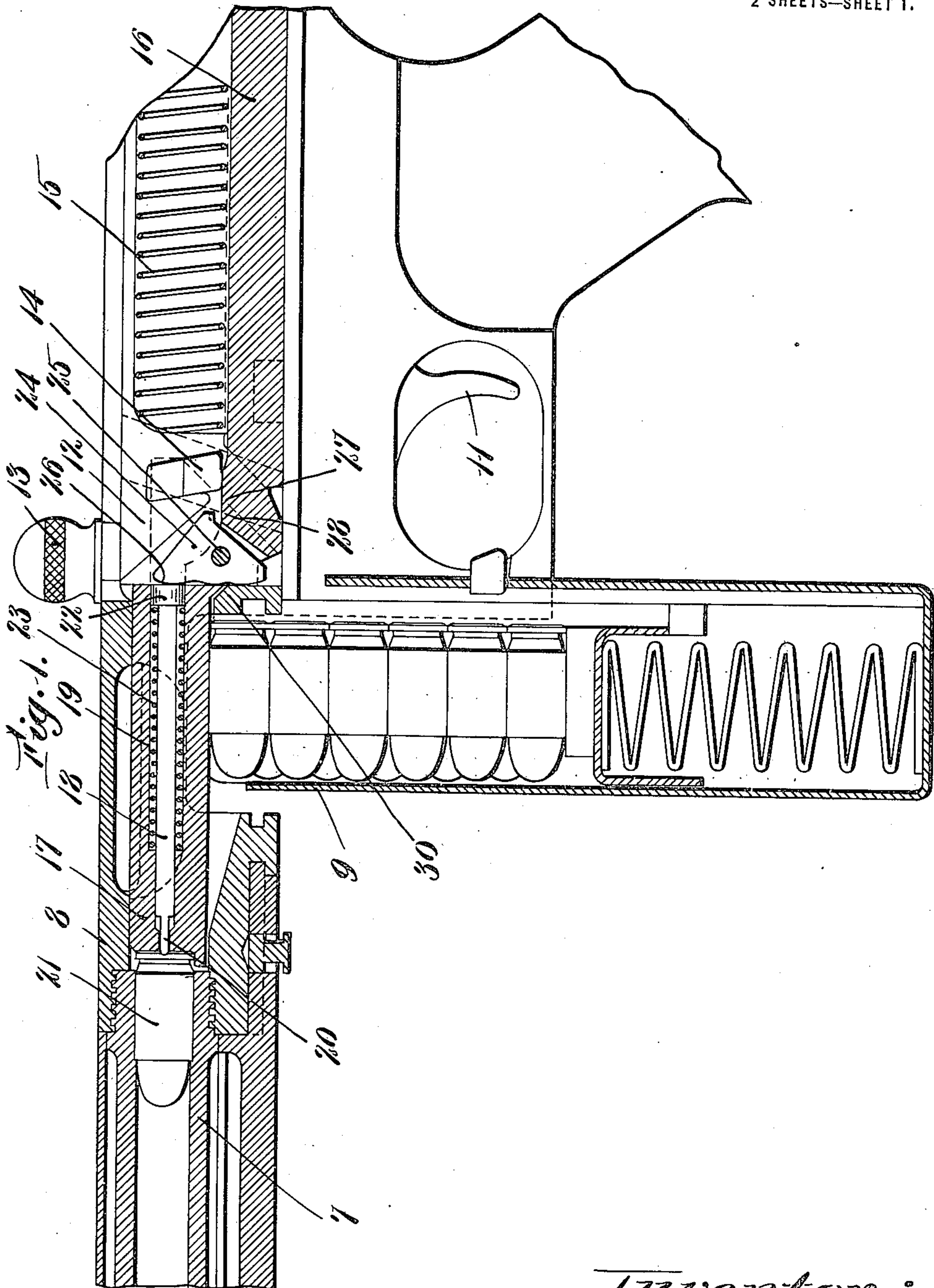


T. H. EICKHOFF.  
HAMMER CONSTRUCTION.  
APPLICATION FILED JUNE 29, 1920.

1,403,492.

Patented Jan. 17, 1922.  
2 SHEETS—SHEET 1.



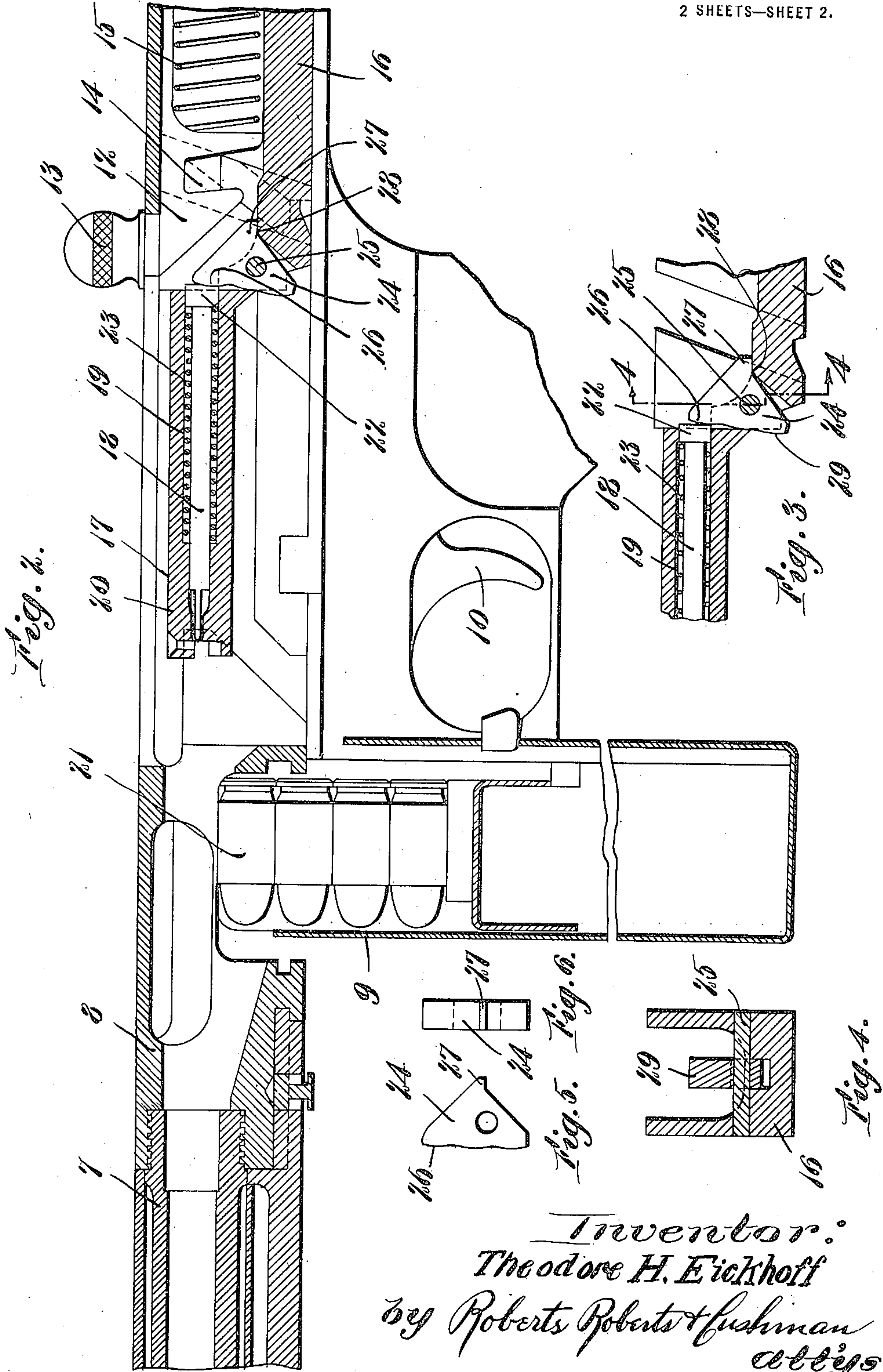
*Inventor:*  
Theodore H. Eickhoff  
by *Roberts Roberts &ushman*  
*attys*

T. H. EICKHOFF.  
HAMMER CONSTRUCTION.  
APPLICATION FILED JUNE 29, 1920.

1,403,492.

Patented Jan. 17, 1922.

2 SHEETS—SHEET 2.





# UNITED STATES PATENT OFFICE.

THEODORE H. EICKHOFF, OF CLEVELAND, OHIO, ASSIGNOR TO AUTO-ORDNANCE CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## HAMMER CONSTRUCTION.

1,403,492.

Specification of Letters Patent. Patented Jan. 17, 1922.

Application filed June 29, 1920. Serial No. 392,661.

*To all whom it may concern:*

Be it known that I, THEODORE H. EICKHOFF, citizen of the United States of America, and resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Hammer Constructions, of which the following is a specification.

My invention relates to a new and improved hammer construction for use with guns and more particularly adapted for use in guns of the type wherein firing takes place simultaneously with the closing of the breech.

In guns of the automatic type it is desirable that striking movement of the firing pin be simultaneous with the final portion of the closing movement of the breech in order that there be no delay in the firing cycle. This is desirable both to increase the rate of fire and to make the time during which the cartridge remains in the chamber as small as possible. During sustained fire the chamber becomes heated and a cartridge remaining in the chamber even a relatively short period of time expands due to the heat and this renders its extraction more difficult and the heat also varies the action of the powder.

It is highly important that a gun firing simultaneously with its closing be so constructed as to eliminate danger of premature fire before locking is completed. This danger has been generally considered such as to make it necessary to retard the firing somewhat after the closure of the breech.

It is an object of the present invention to provide a new and improved hammer construction adapted to positively fire the piece simultaneously with the closure of the breech. It is an object to provide a hammer so associated with the breech as to eliminate danger of premature firing by means of a positive operative connection between breech closure and hammer. It is also an object to provide an operative association with such a hammer, a firing pin and a firing pin spring, the firing pin spring being adapted to cushion the closing shock of the breech closure. It is a further object to provide mechanism of the character described which is composed of but few parts, which is simple in construction, positive in its action and relatively inexpensive to manufac-

ture. Other and further objects will appear as the description proceeds.

I have shown a preferred embodiment of my invention in the accompanying drawings in which,

Figure 1 is a longitudinal section of a gun embodying my firing mechanism, the breech being closed;

Figure 2 is a view similar to Fig. 1 showing the breech open;

Figure 3 is a detail section of the breech closure, and hammer;

Figure 4 is a section on line 4—4 of Fig. 3;

Figure 5 is a side view of the hammer; and

Figure 6 is a rear view of the hammer.

The gun as shown comprises the barrel 7, receiver 8, magazine 9, housing 10, trigger 11, actuator 12, actuator handle 13, lock 14, recoil spring 15, and breech closure 16 having the forwardly extending bolt 17.

The firing pin 18 is seated in the cavity 19 in the bolt 17 and has the reduced point 20 adapted to pass through the forward end of the bolt and fire the cartridge 21. The rear of the firing pin is provided with the head 22, and the compression spring 23 surrounds the firing pin, one end of the spring bearing on the bolt at the front end of the cavity 19 and the other end bearing against the forward side of the head 22.

The hammer 24 is pivoted on the pin 25 in the breech closure 16, the upper portion of the hammer having a forward convex portion 26 bearing against the head 22 of the firing pin. The rear of the hammer forms a lug 27 which seats at 28 on the breech closure to prevent further rearward movement of the hammer.

The lower portion 29 of the face of the hammer is curved convexly and projects downward through the breech closure 16 at substantially the junction of the bolt 17 with the main body of the closure. This portion 29 is adapted to contact with the cross portion 30 of the receiver.

Owing to the breech closure being reduced in depth throughout its forward portion 17 a recess 31 is thus formed in the lower side of the closure to receive the abutment, the recess extending from the location of the hammer to the forward end of the closure. Inasmuch as the lower end of the hammer



projects into operative relationship to the abutment within this recess the necessity of its projecting transversely beyond the outline of the breech closure is avoided.

5 In the operation of my firing mechanism, the firing pin 18 is normally held retracted by the force of the spring 23, the head 22 of the firing pin bearing against the convex portion 26 of the hammer 24. The thrust of  
10 the spring rotates the hammer 24 about its pivot 25 until the rotation is stopped through the lug 27 bringing up against the portion 28 of the breech closure 16. When in this position the lower portion 29 of the hammer  
15 projects beyond the forward face of the breech closure 16, the face of the breech closure being shown in dotted lines on Figs. 2 and 3.

When the breech closure moves forward  
20 to the position shown in Fig. 1 the portion 29 of the hammer contacts with the cross portion 30 of the receiver and the hammer is rotated about its pivot 25, the portion 26 moving forward and thrusting the firing  
25 pin forward against the spring 23. This compression of the spring 23 aids in cushioning the shock of the closing of the breech and also serves to prevent the inertia of the firing pin from forcing it forward when the  
30 breech assembly is retarded as the hammer contacts with the receiver.

It is to be noted that the lever arm between the point of contact of the portion 26 with the head 22 and the pivot 25 is approxi-  
35 mately twice as great as that between the

pivot 25 and the point of contact between the portion 29 and the cross portion 30 of the receiver. The relation of these lever arms is such that the firing pin moves forward approximately twice as rapidly as the  
40 bolt 17 and the movements are so coordinated that the firing pin contacts with and fires the primer just as the breech is completely closed.

From the foregoing description and the  
45 accompanying drawings it will be noted that the engaging faces between the hammer and the firing pin 22, abutment 30 and stop 28 are spaced approximately equidistantly about the pivot 25, that is, about 120° apart;  
50 this affords a symmetrical hammer which is strong and durable.

I claim:

A gun comprising a reciprocating breech closure having a stop thereon, an abutment  
55 adjacent the path of the breech closure, a firing pin on the breech closure, and a hammer pivoted on the breech closure, the hammer having three abutting faces spaced approximately equidistantly about the pivotal  
60 axis of the hammer to engage the abutment firing pin and stop respectively, the engagement with the abutment causing the hammer to engage the firing pin and the engagement with the stop limiting the retraction of the  
65 hammer.

Signed by me at Cleveland, Ohio, this 24th day of June, 1920.

THEODORE H. EICKHOFF.