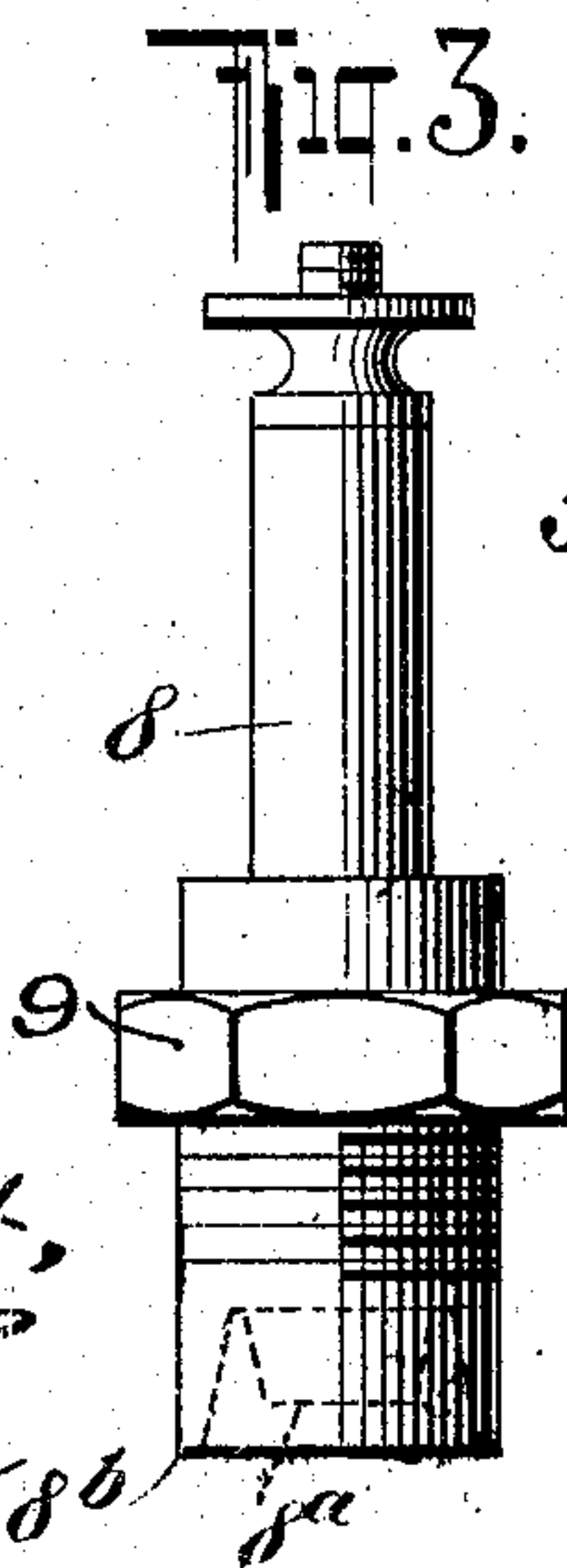
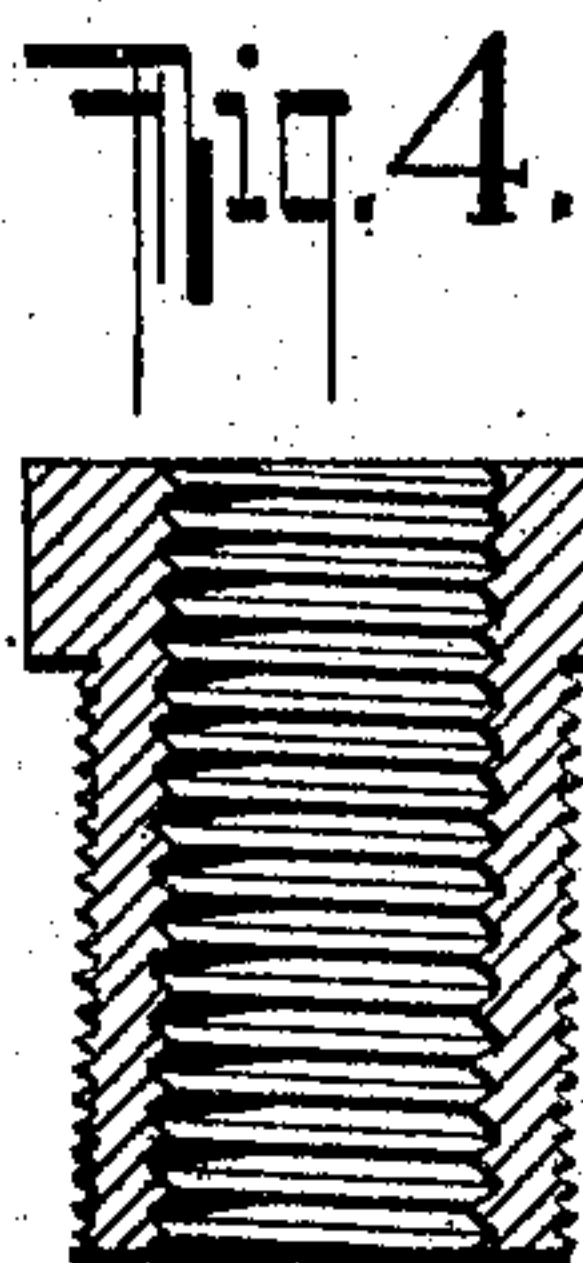
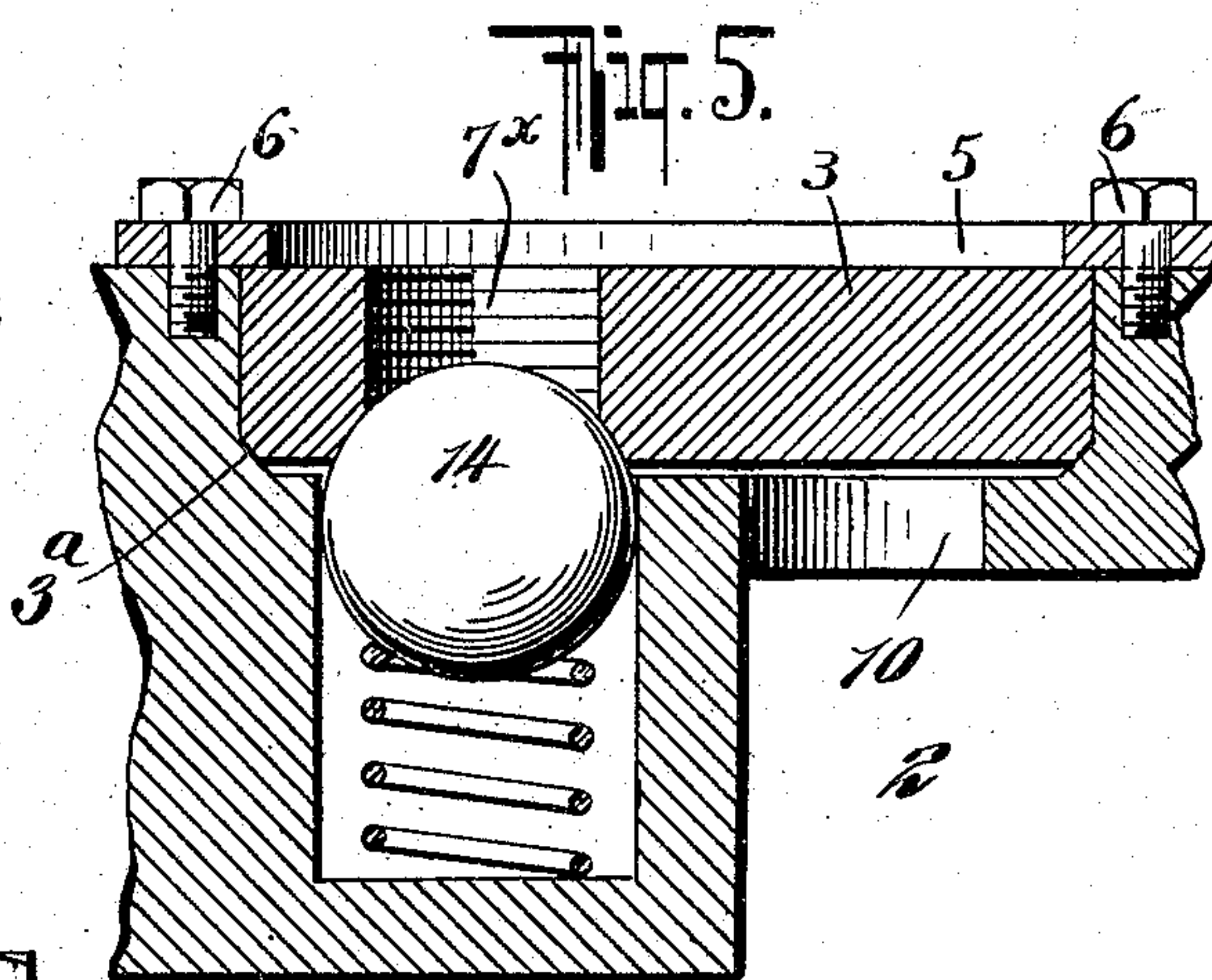
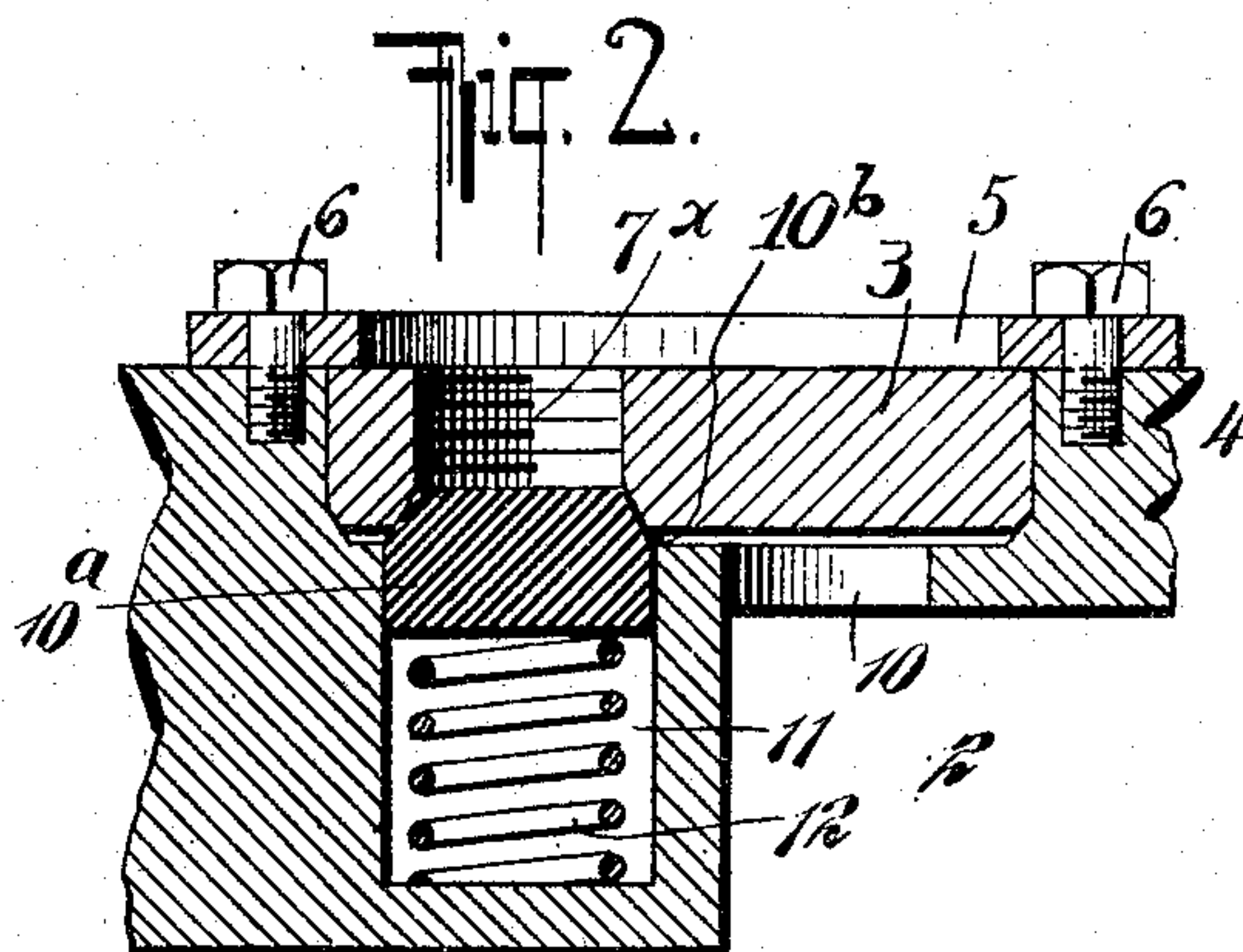
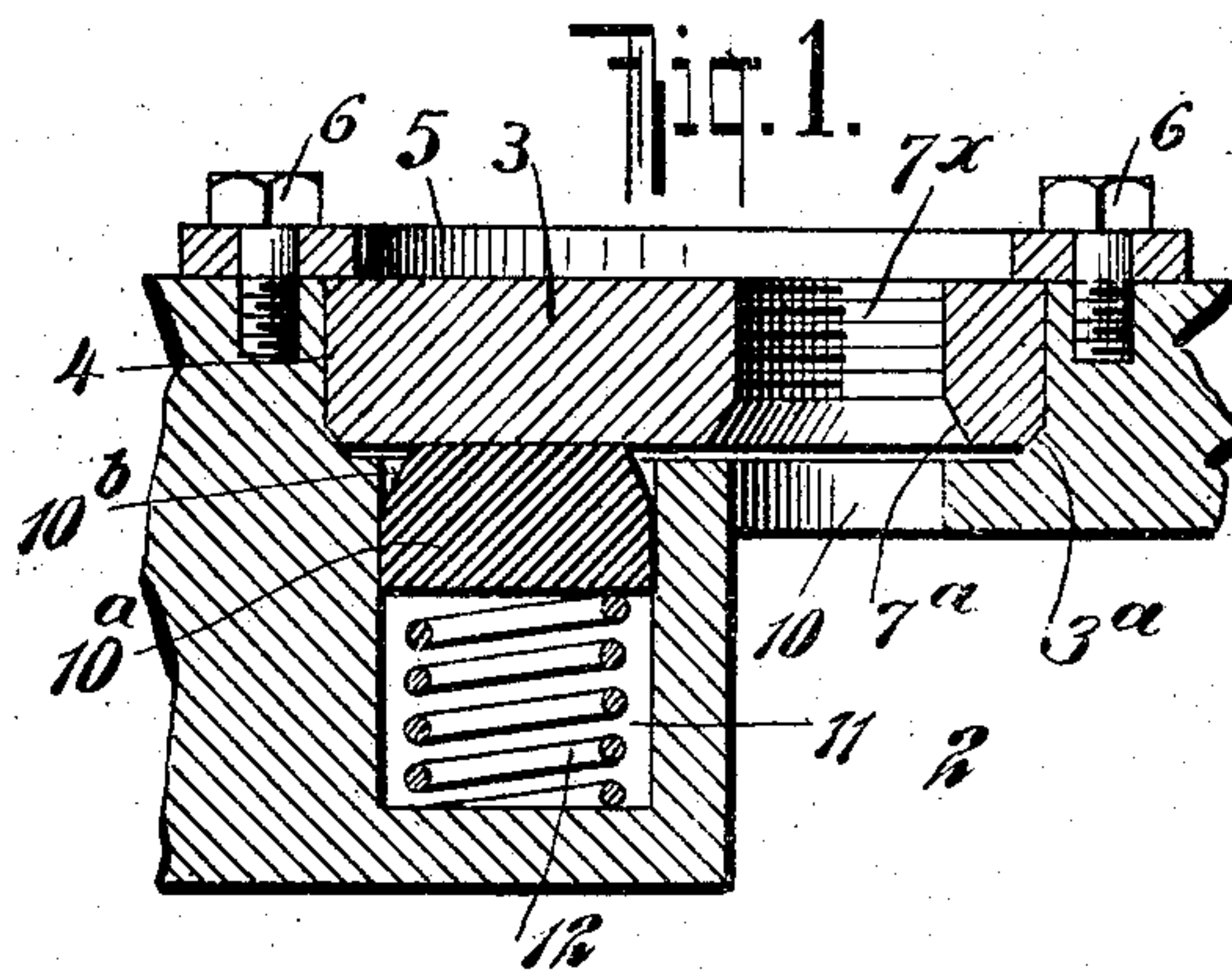


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APPLICATION FILED MAY 23, 1906.

924,116.

Patented June 8, 1909.

2 SHEETS—SHEET 1.



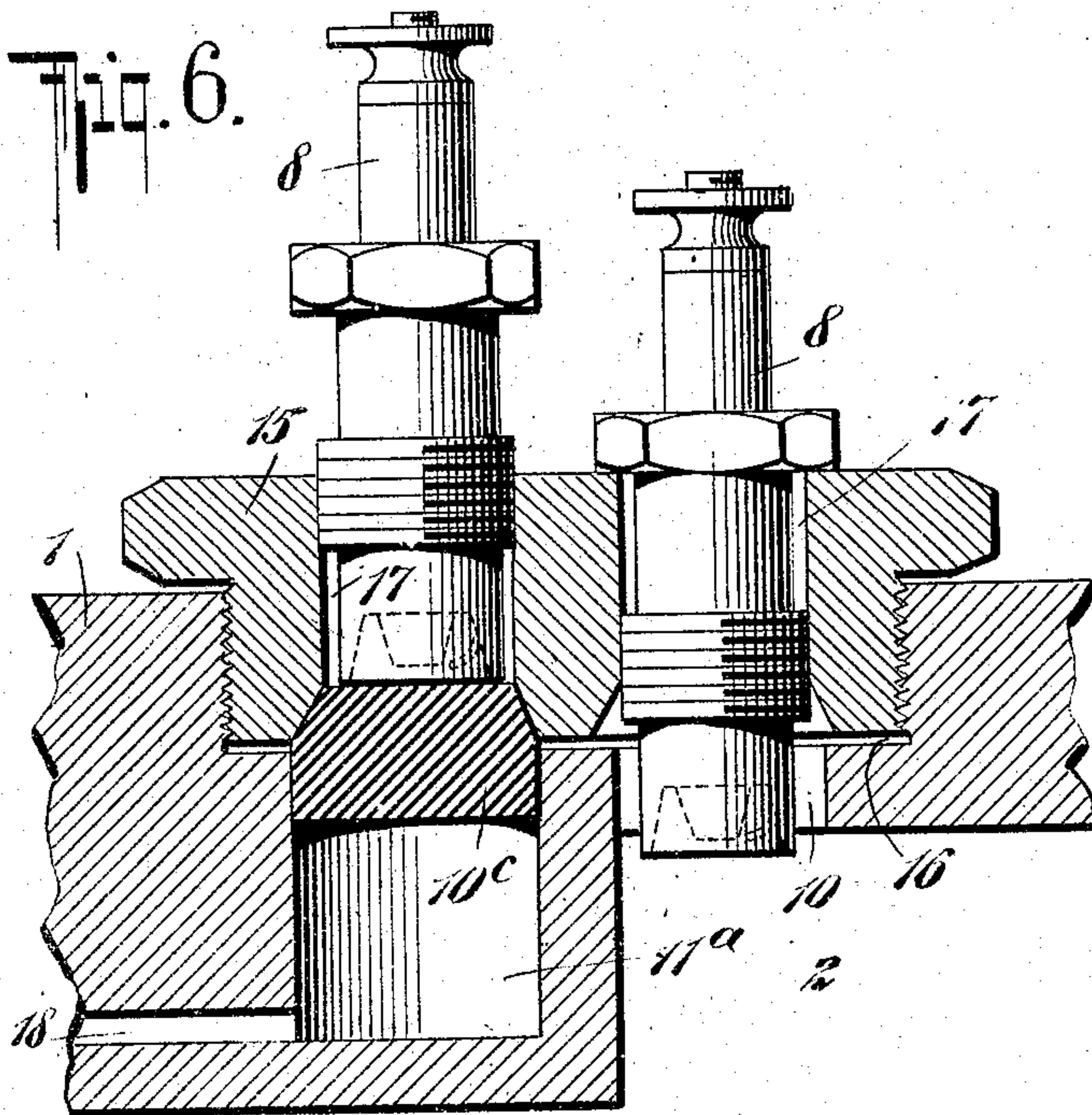
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WITNESSES  
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# UNITED STATES PATENT OFFICE.

WILLIAM E. STRUSS, OF BUFFALO, NEW YORK.

## INTERNAL-COMBUSTION ENGINE.

No. 924,116.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed May 23, 1906. Serial No. 318,292.

*To all whom it may concern:*

Be it known that I, WILLIAM E. STRUSS, a citizen of the United States, and a resident of Buffalo, county of Erie, State of New York, have invented certain new and useful Improvements in Internal-Combustion Engines, of which the following is a specification.

My invention relates to internal combustion engines and has for its object to improve the construction thereof.

My invention will be fully and clearly described hereinafter and the features of novelty will be pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a sectional elevation of as much of an engine as is necessary to show my invention; Fig. 2 is a similar view with the parts in a different position; Fig. 3 is an elevation of one form of the igniter used in my construction; Fig. 4 is a sectional view of a bushing which may be used in connection therewith; Fig. 5 is a sectional view of another form of my invention and Fig. 6 is a sectional view of still another form of my device.

Referring now more particularly to the construction shown in Figs. 1 and 2, 1 is the head of the cylinder, which may be of any approved construction and is provided with the usual combustion or working chamber 2, which is suitably connected with the carbureter or other source of operating medium. The remainder of the engine may be of any usual construction, and may consist of the usual parts, which form no part of my present invention and which I have therefore not deemed it necessary to show. A circular plate or carrier 3 is located in a recess 4 formed in the cylinder head 1, and is held in said recess in any suitable and customary manner as by a ring 5 which may be secured to the cylinder by bolts 6. The plate or disk 3 is provided with an eccentrically arranged opening or socket 7<sup>x</sup>, which is screw threaded and is adapted to receive the igniter or spark plug 8. This igniter may be of the usual form, and as shown is adapted to screw into the opening 7<sup>x</sup>, a nut 9 being supplied to enable this to be readily accomplished. The said igniter is connected with a source of electrical energy in the customary manner. The cylinder head 1 is also provided with an opening or port 10, which establishes com-

munication with the combustion or working chamber 2 and the opening 7<sup>x</sup> in which the igniter is located. Thus when from any cause the igniter has become ineffective, the disk 3 is rotated until the opening 7<sup>x</sup> has been brought to a point where it is no longer in communication with the port 10 and the combustion chamber 2, after which the igniter is removed and a new one inserted. The disk 3 is then returned to its initial position and the engine again placed in operation. The disk 3 may be rotated by any convenient means. In the case of a multiple cylinder engine the said engine need not be stopped during this interchange of igniters.

A plunger or valve 10<sup>a</sup> located in a suitable valve chamber 11, is provided for sealing the socket 7<sup>x</sup> when the disk 3 is rotated for the purpose of removing the igniter. A spring 12 serves to maintain the plunger or valve 10<sup>a</sup> against the lower surface of the disk 3 when it is in the position shown in Fig. 1, so that it will spring into the opening 7<sup>x</sup> when the disk 3 is brought to the position illustrated in Fig. 2. The plunger or valve 10<sup>a</sup> is provided with a bevel 10<sup>b</sup> adapted to engage a corresponding bevel or valve seat 7<sup>a</sup> of the opening 7<sup>x</sup>. A very tight and effective joint between these parts is thus secured and the danger of leakage is thus minimized. The disk 3 is also provided with a bevel 3<sup>a</sup> at its lower edge where it engages the walls of the recess 4 to prevent leakage at these points. After the defective igniter has been removed from my device, while it is in the position shown in Fig. 2, a new igniter is screwed down until it forces the plunger or valve 10<sup>a</sup> back far enough to permit the disk 3 to be brought back to the position shown in Fig. 1, after which the engine is again ready for service. As before stated, this interchange of igniters may take place during the operation of the engine, if such engine is of the multiple cylinder type.

In Fig. 3 I have shown an igniter 8, constructed so as to prevent the injury of the igniter points when said igniter 8 is screwed down to force back the plunger or valve 10<sup>a</sup>. In this device the points 8<sup>a</sup> of the igniter do not project beyond the lower ends 8<sup>b</sup> of said igniter, which end engages the plunger when the igniter is screwed into position. In Fig. 4 I have shown an internally and externally screw-threaded bushing 13, into which the igniter is partly screwed. The bushing 13



is then screwed into the opening 7<sup>x</sup> and thus engages the plunger or valve 10<sup>a</sup> and prevents wear on the igniter. After the disk 3 has been rotated back to its initial position, the igniter is screwed into the bushing so that its end projects. This permits the use of existing types of igniters.

In the form of my invention shown in Fig. 5 the spring-pressed ball 14 takes the place of the plunger or valve 10<sup>a</sup> shown in Figs. 1 and 2. Thus by exerting sufficient tangential pressure after the igniter is partly screwed into place, the disk 3 can be rotated to a position where the opening 7<sup>x</sup> communicates with the combustion chamber without requiring the igniter to first force back the ball 14. Wear on the points of the igniter is thus done away with. After the disk 3 has been rotated as just described, the igniter is screwed in as far as desired.

In the form of my invention shown in Fig. 6 the disk 15 is screwed into the recess 16 of the cylinder instead of being held in said recess by a ring as in the other forms of my device. I further provide the said disk 15, with two openings 17 diametrically opposite each other, and each adapted to receive an igniter as shown. Thus as one igniter becomes defective, the disk 15 is rotated and as the one igniter is removed from communication with the combustion chamber another is brought into communication therewith. Three or more igniters might be arranged on said disk 15 so that the rotating movement to bring an igniter into its working position would be comparatively small. Thus an effective igniter can be quickly substituted for a defective one, and the danger of the engine stopping during this interchange is practically done away with. Further in this form of my invention the plug or valve 10<sup>c</sup> is forced into its active position by means of compressed air or other fluid, the valve chamber 11<sup>a</sup> being in communication with a source of compressed fluid through the medium of the passage 18. Furthermore the igniters in this form are so constructed as to project directly into the combustion chamber 2 as shown.

It is to be understood that if desired, the rotating disk in all the forms of my device may be provided with accommodations for

more than one igniter in the manner as described with regard to Fig. 6.

While I have shown and described a jump spark igniter in connection with all the forms of my invention, I wish it distinctly understood that any form of igniter may be substituted as for instance a make and break igniter.

I claim as my invention:

1. In an internal combustion engine, a working chamber, a movable carrier provided with a socket adapted to receive an igniter and a valve arranged to close said socket.

2. In an internal combustion engine, a working chamber, a movable carrier provided with a socket adapted to receive an igniter, and a valve movably carried by the walls of the working chamber and arranged to close the socket of the carrier.

3. In an internal combustion engine, a working chamber provided with a port, and a valve chamber separated from said working chamber, a movable carrier provided with a socket adapted to receive an igniter and arranged to be brought into registry either with the port or with the valve chamber, and a valve in said valve chamber for closing the socket which receives the igniter.

4. In an internal combustion engine, a working chamber provided with a port and a valve chamber, a carrier mounted to turn about an axis located at the same distance from the port and valve chamber, said carrier having a socket adapted to receive an igniter, and arranged to be brought into registry either with the port or with the valve chamber and a valve located in said valve chamber for closing the socket which receives the igniter.

5. In an internal combustion engine, a working chamber, a movable carrier provided with a socket having a valve seat adapted to receive an igniter, and a valve arranged to engage said seat to close the socket.

In testimony whereof, I have hereunto set my name in the presence of two subscribing witnesses.

WILLIAM E. STRUSS.

Witnesses:

WAYLAND W. WOODWORTH,  
HIRAM H. BACON.