

PATENTED NOV. 15, 1904.

APPLICATION FILED JUNE 6, 1904.

NO MODEL.

Fig. 1

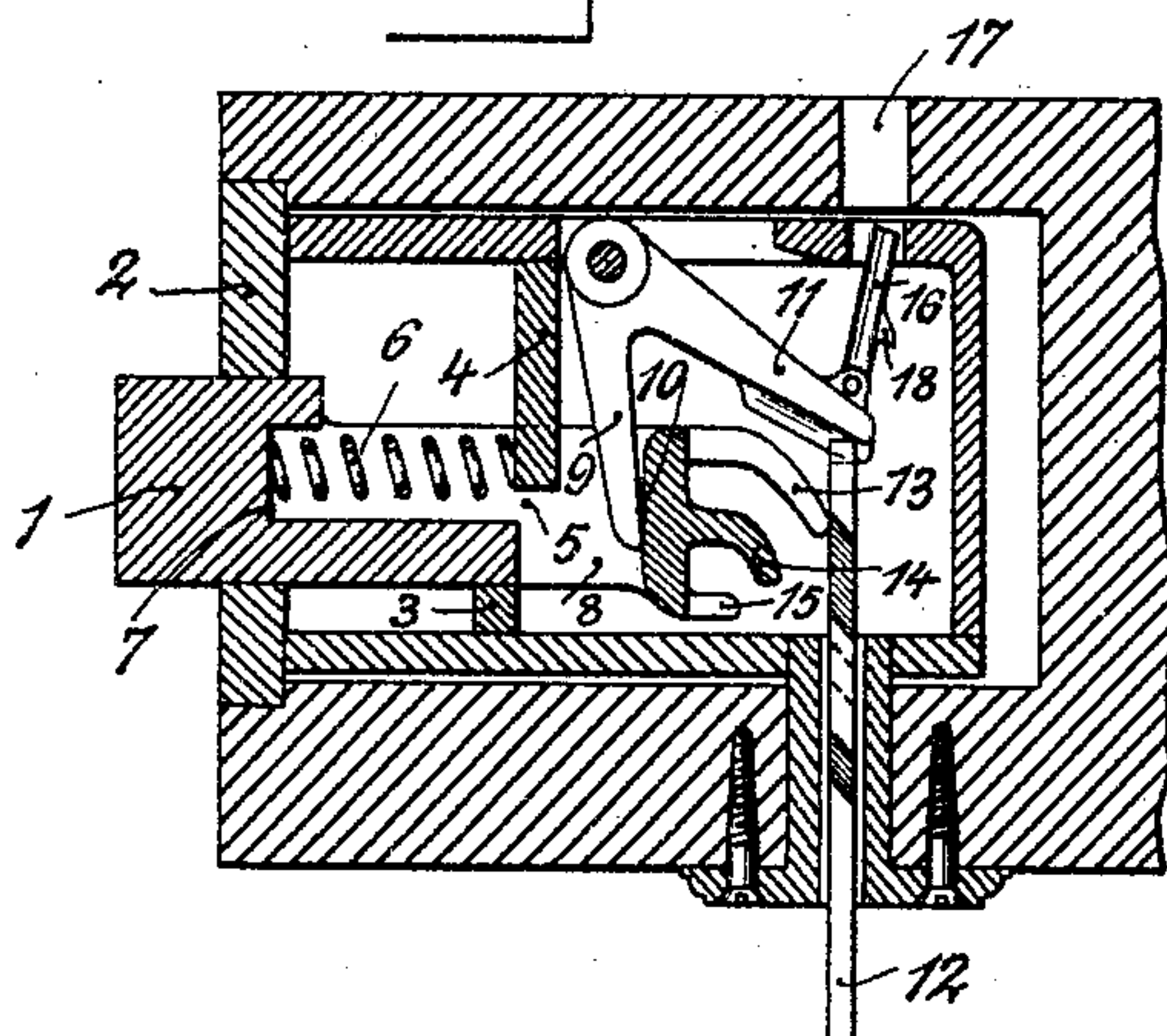


Fig 2.

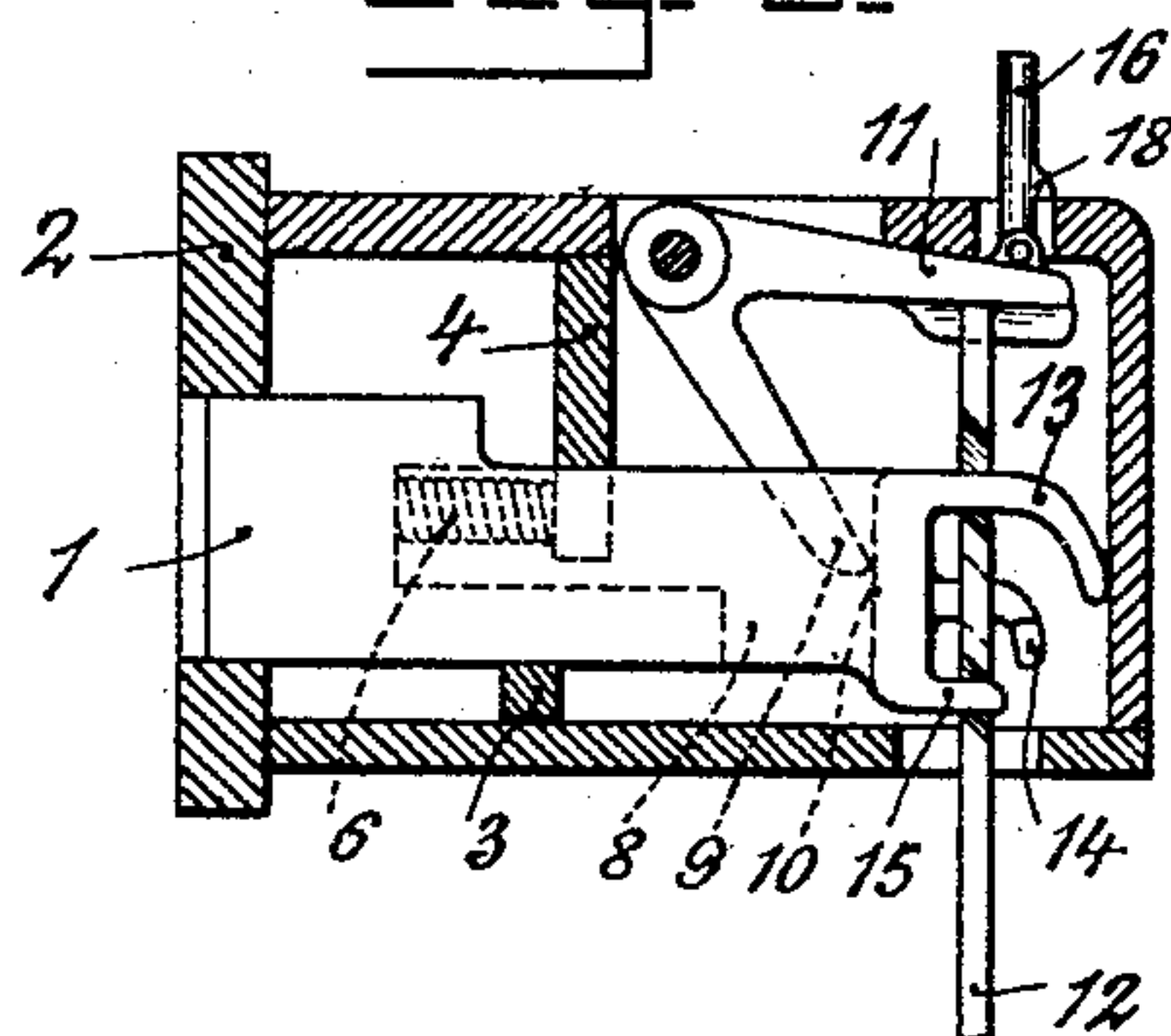


Fig. 3.

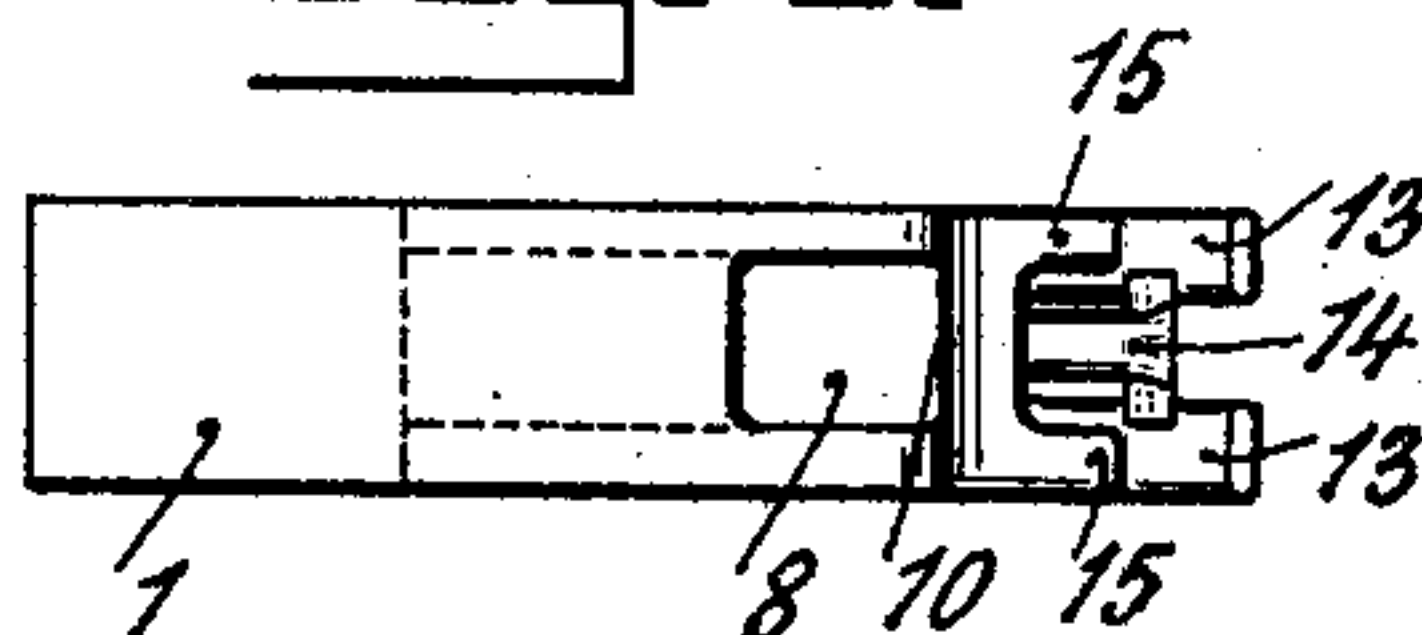


Fig. 9.

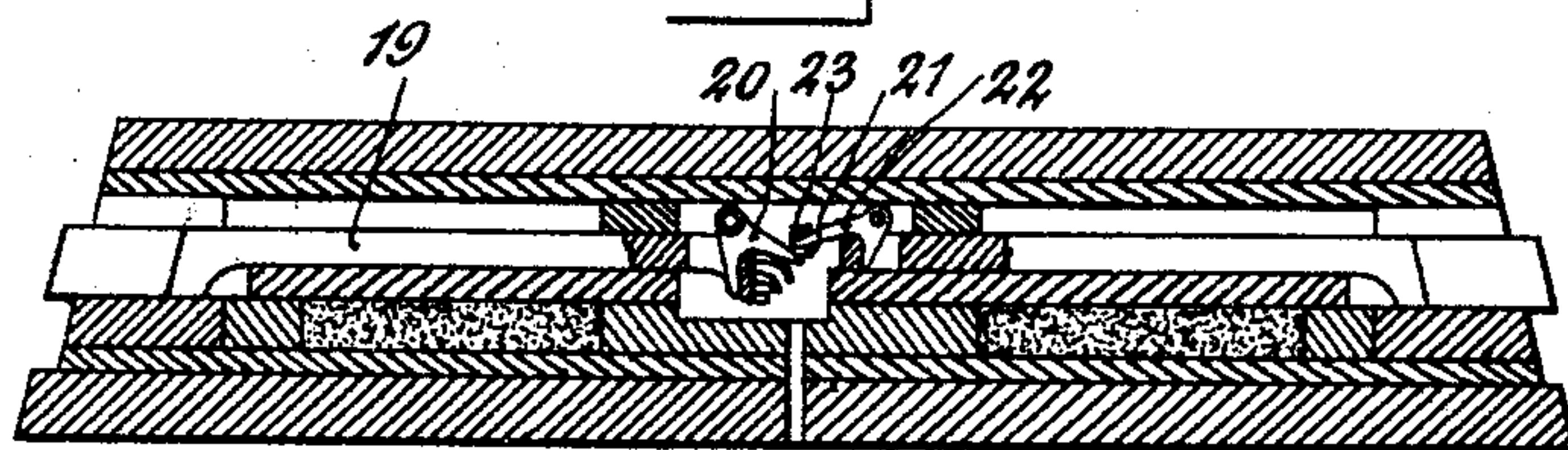


Fig 4.

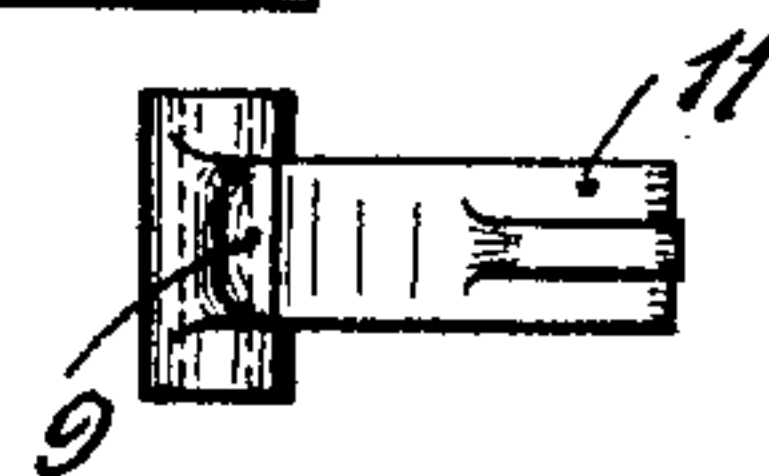


Fig 8.

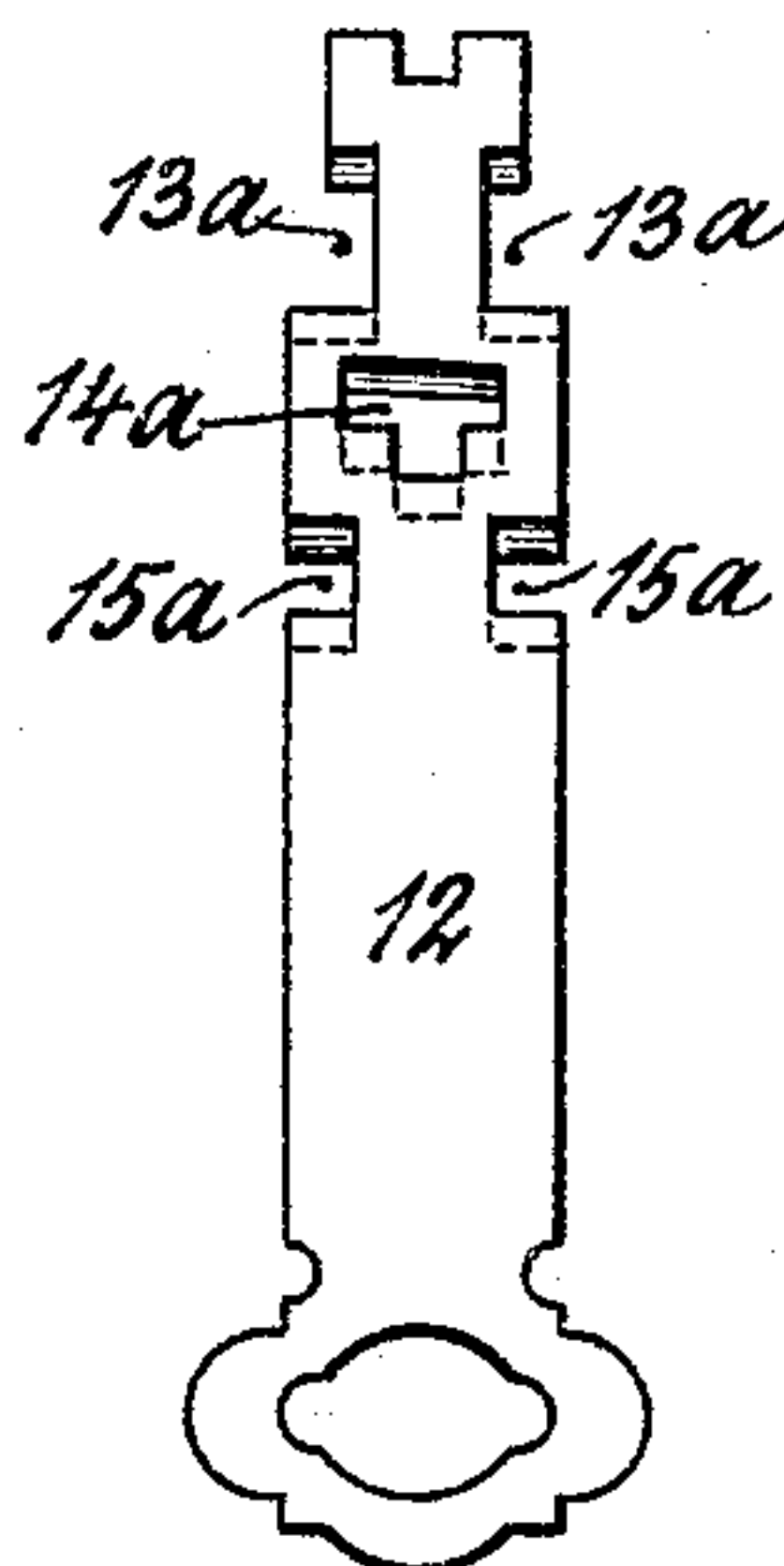


Fig. 5.

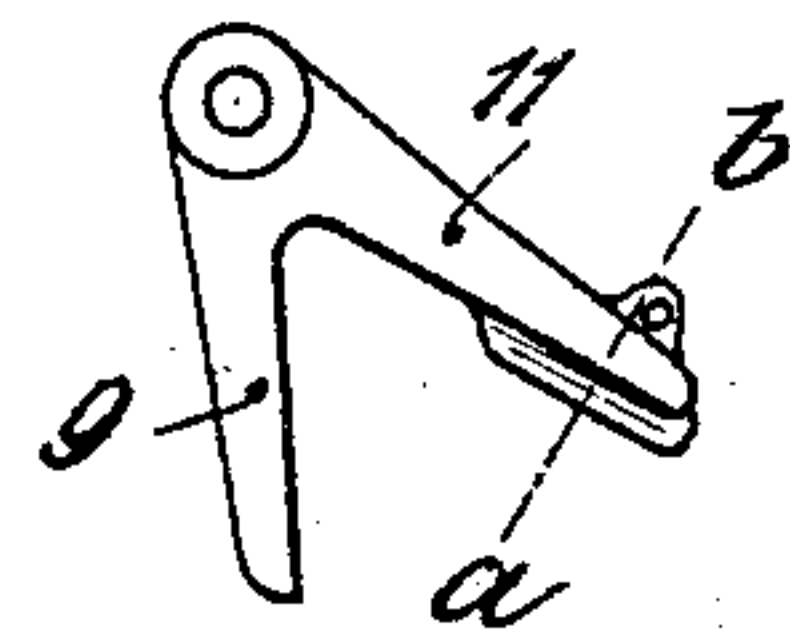
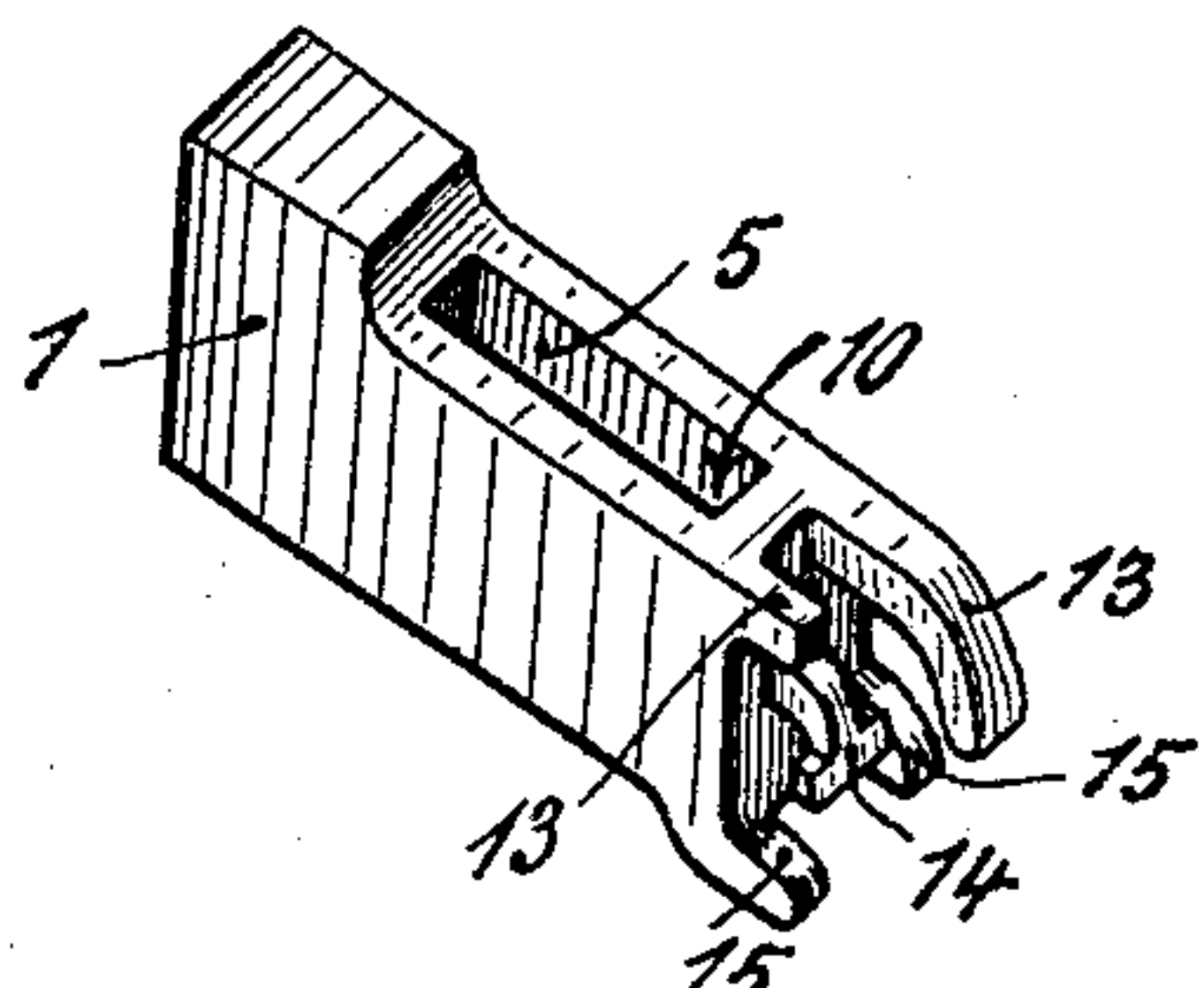


Fig. 6.



Fig 7



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRIK BIRKEDAL, OF STAVANGER, NORWAY.

LOCK.

SPECIFICATION forming part of Letters Patent No. 774,823, dated November 15, 1904.

Application filed June 6, 1904. Serial No. 211,274. (No model.)

To all whom it may concern:

Be it known that I, HENRIK BIRKEDAL, dentist, a citizen of the Kingdom of Norway, and a resident of the city of Stavanger, Norway, have invented certain new and useful Improvements in Locks for Doors, &c., of which the following is a specification.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section through the lock, the bolt being in its outer position. Fig. 2 is a similar section, the bolt being in its inner position. Fig. 3 is a view of the bolt seen from below in Fig. 2. Figs. 4 and 5 are two views of the bolt-lever; and Fig. 6, a section along the line *a b*, Fig. 5, of the key-arm of the bolt-lever. Fig. 7 is a perspective view of the bolt, and Fig. 8 shows a proper key for the illustrated lock. Fig. 9 illustrates an arrangement of the present lock on a safe-door.

The bolt 1 is during its movement guided by the front plate 2 and by means of fixed posts 3 and 4. The post 4 projects at its middle into the longitudinal groove 5 of the bolt, Fig. 7, in order to form the inner bearing-piece for the bolt-spring 6, the outer end of which bears against a surface 7 in the inner of the bolt, (see Fig. 1,) so that the spring tends to force the bolt outward. The groove 5 goes at its rear portion quite through the bolt, so that at one side (the under side in Fig. 1) is formed an oblong slot 8, in which one arm, 9, of the bolt-operating lever can travel and operate the bolt by bearing against the rear face 10 of the slot 8. The other arm, 11, of the bolt-lever is intended to be operated by the key 12, which when inserted into the lock through a proper slot will bear against the arm 11, and thereby turn the bolt-lever so that the other arm, 9, retracts the bolt. In order that this shall not be possible without using a proper key 12, the inner end of the bolt is provided with a number of projections 13, 14, and 15. To these projections correspond, respectively, the notches 13^a, 14^a, and 15^a on the key, Fig. 8. When, therefore, this latter is through the slot inserted into the lock, pressing with its terminal face against the arm 11, the bolt will be retracted, whereby simultaneously the projections 13, 14, and 15

are moved into the corresponding notches of the key. The projections must therefore be formed in a particular manner, as shown in Figs. 1 and 2. If, however, the notches of the key do not exactly correspond with the projections, these latter will as soon as a false key has been inserted and pressed a little into the lock strike against the side of the key, and thereby prevent further insertion. The projections are arranged in such a manner one after the other that they together in a somewhat retracted position of the bolt cover one or more times the whole width of the key. (See Fig. 3.) If, therefore, a wire is, for instance, inserted through the key-slot, soon one or more of the projections will force the wire away from the arm 11 or prevent movement of the same. The projections can be in high degree varied in width, number, location, and distances. In the drawings a very simple example is illustrated. In order to hold the bolt in its inner position, so that the lock may remain open, the arm 11 is provided with a pivotal bar 16, which during the movement of the bolt-lever will pass upward through a hole 17 on the inner side of the door, drawer, &c., upon which the lock is arranged. When the bolt is carried to its inner position, the bar 16 can be swung to the side, so that a nose 18 projects over the edge of the hole in the lock-casing, and thereby holds the bolt-lever in the position desired. The arm 11 may have varying section, (see Fig. 6.) and the key is fitted according to this section.

If the lock shall be used on safe-doors, only one of the bolts 19, Fig. 9, is preferably provided with projections, and the key operates only the lever 20 for this bolt, said lever 20 bearing on one arm of a second bolt 21, lever, and so on, as shown in the drawings. The levers 20, 21, 22, and 23 are thereby operated simultaneously by means of a single key.

The lock may also be opened by electromagnetic force, which is preferably used when a number of doors have to be opened simultaneously—for instance, in a railway-wagon, in public office-buildings, and the like. In this case the same electrical circuit is used for all locks which are opened simultaneously when the circuit is closed by the guard, door-

keeper, &c. In this circuit is for each lock arranged an electromagnet, which when energized attracts the arm 11 of the bolt-lever, so that the bolt is retracted. The electrical conductors are arranged within the rooms closed by the locks, in order to be inaccessible by persons not concerned.

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

1. In a lock, the combination of a bolt, provided with a plurality of projections of particular shape, a bolt-operating lever, one arm of which is acted upon by the key and the other arm of which serves to actuate the bolt, and a key provided with notches corresponding to said projections in such a manner, that the projections pass through the notches, when the key during its insertion operates the bolt-lever.

2. In a lock, the combination of a bolt, provided with a plurality of projections, having particular shape and covering the whole width of the key, a bolt-operating lever, one arm of which is acted upon by the key and the other arm of which serves to actuate the bolt and a key provided with notches corresponding to said projections in such a manner, that the projections pass through the notches, when the key during its insertion operates the bolt-lever.

3. In a lock, the combination of a bolt, having at its rear end a plurality of projections of particular shape, a bolt-operating lever, one arm of which is acted upon by the key, an insertion-guide, forcing the key to pass

into the lock perpendicular to the moving direction of the bolt, and a key provided with notches corresponding to said projections in such a manner, that the projections pass through the notches, when the key during its insertion operates the bolt-lever.

4. In a lock the combination of a bolt, having a plurality of projections of particular shape, a bolt-operating lever, one arm of which is operated by the key and provided with means such as a nose 18 to hold the bolt-lever and the bolt in retracted position, and a key provided with notches corresponding to said projections in such a manner, that the projections pass through the notches, when the key during its insertion operates the bolt-lever.

5. In locks for safe-doors, the combination of a number of bolts, one of which is provided with projections of particular shape, an operating-lever for said bolt, one arm of which lever is acted upon by the key, a key provided with notches corresponding to said projections in such a manner, that the projections pass through the notches, when the key during its insertion operates the bolt-lever and levers for the remaining bolts, which levers are operated by that lever, which is actuated by the key.

In testimony whereof I have hereunto affixed my signature, this 9th day of May, 1904, in the presence of two witnesses.

HENRIK BIRKEDAL.

Witnesses:

OLOF STANBERG,
C. M. ENGELSEN.