

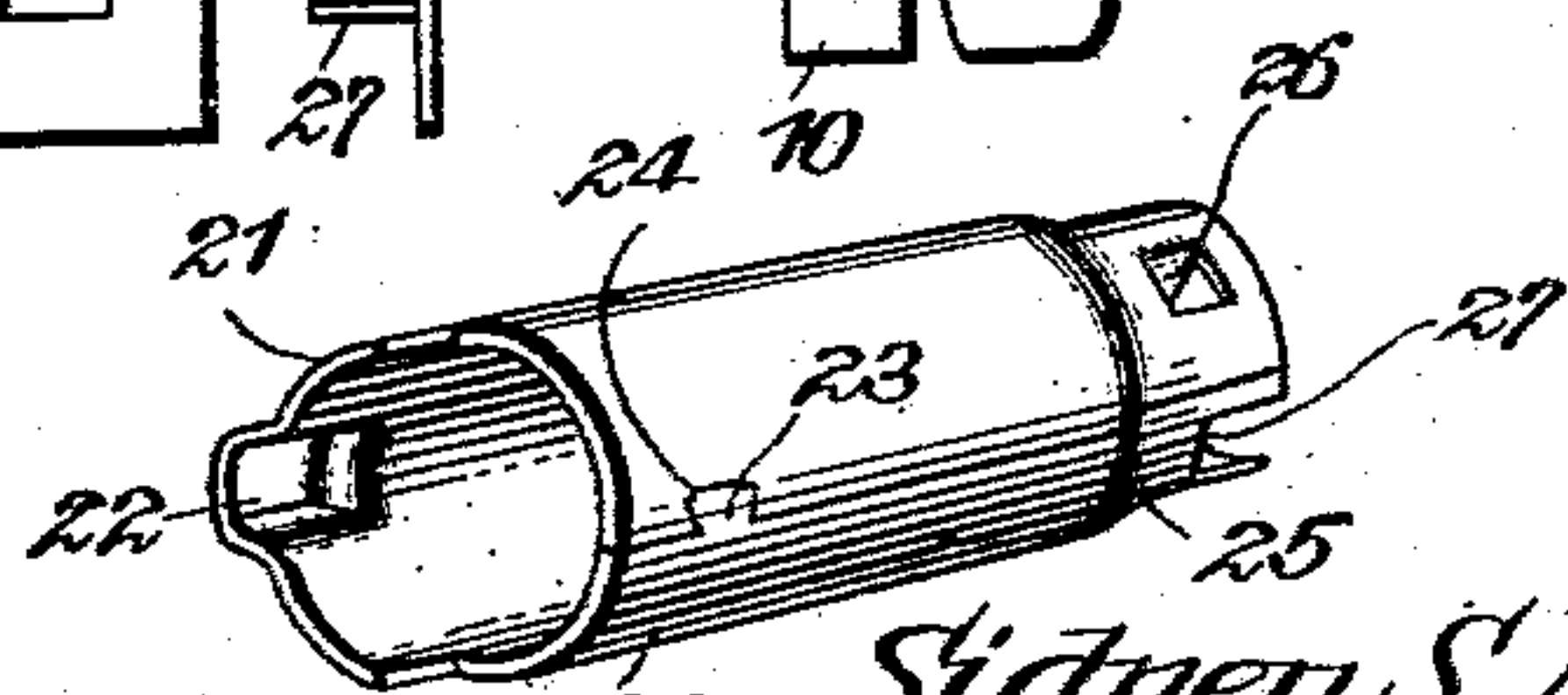
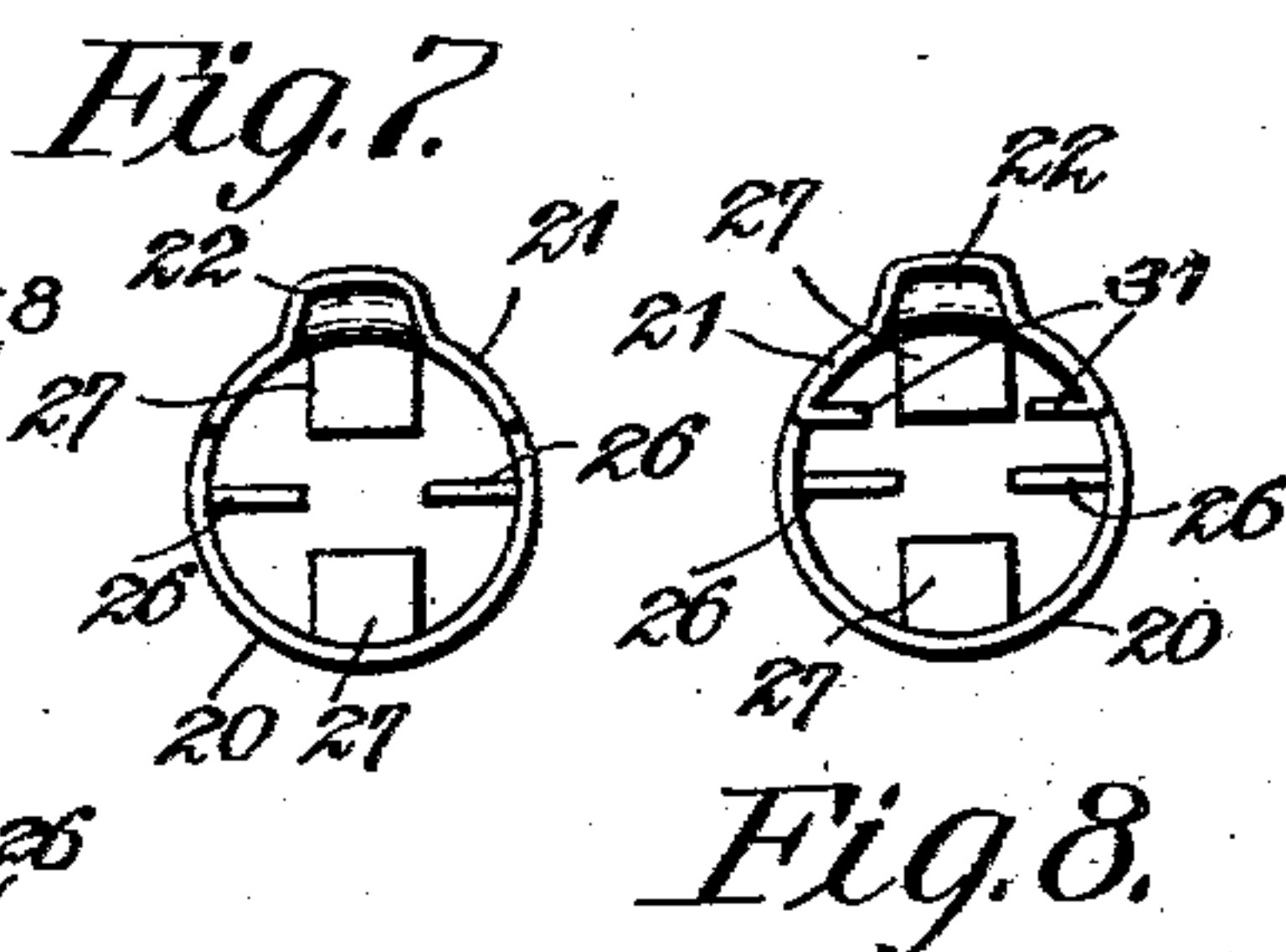
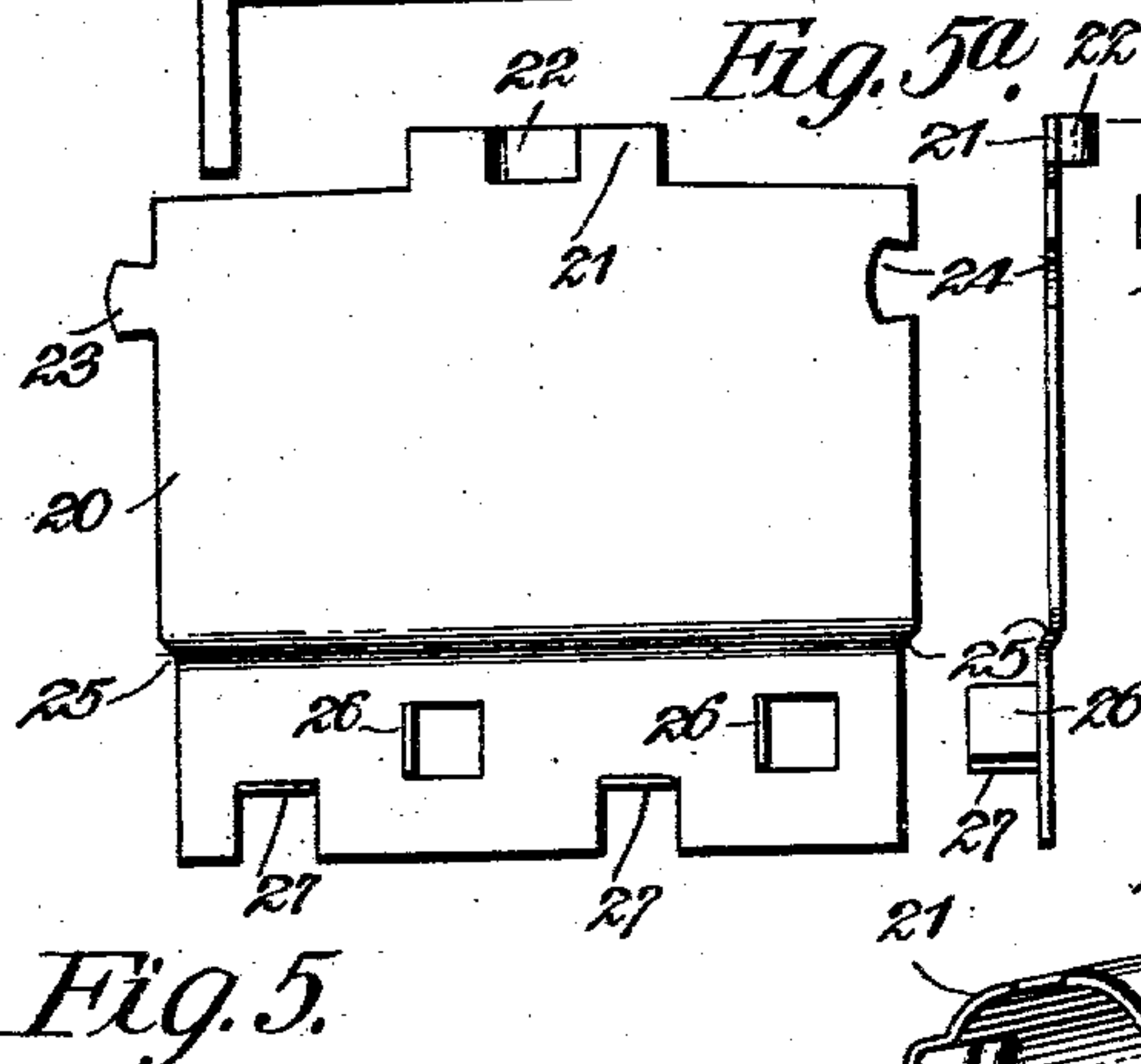
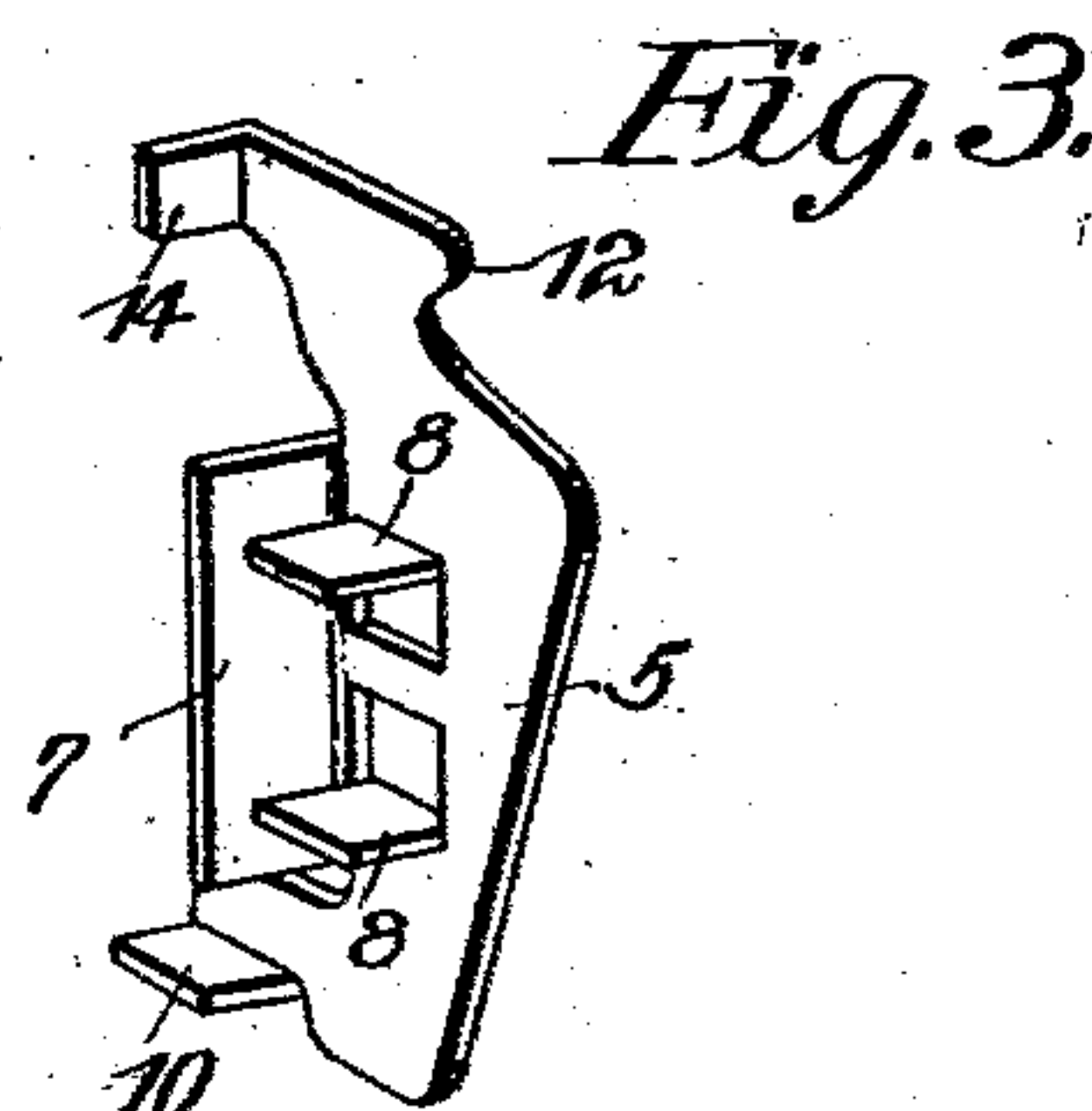
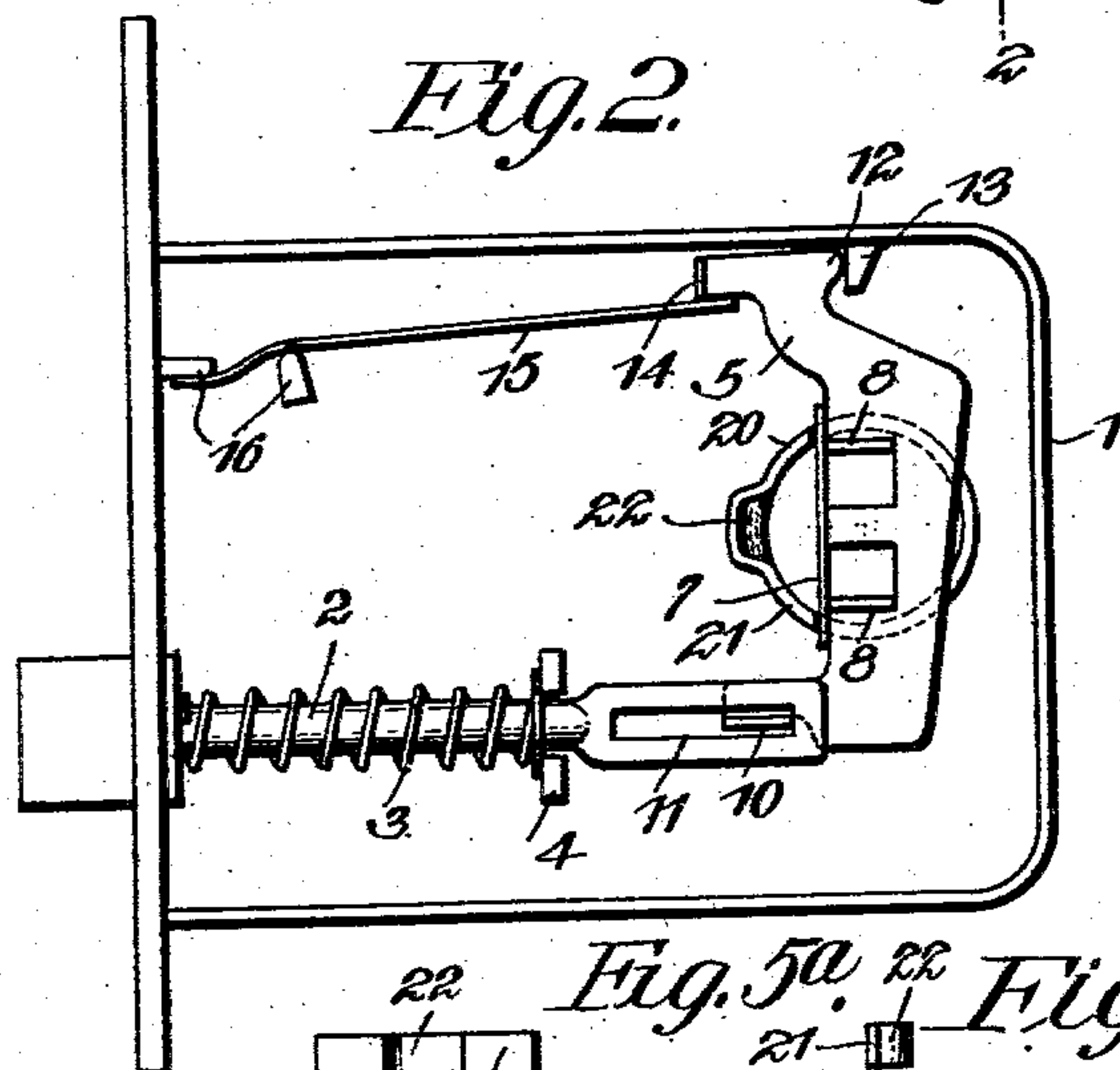
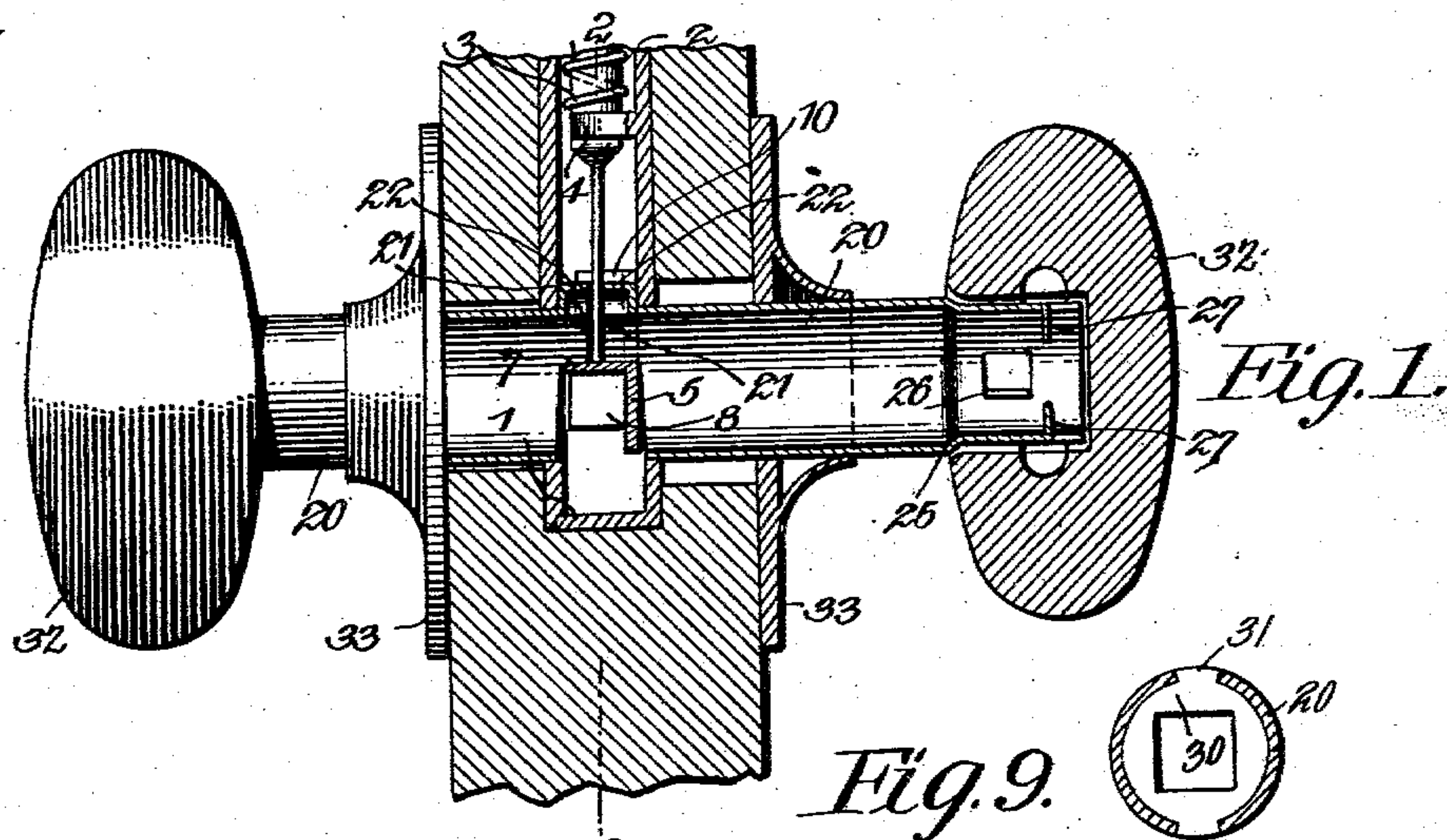
No. 743,545.

PATENTED NOV. 10, 1903.

S. S. NILES.  
LATCH.

APPLICATION FILED FEB. 26, 1903.

NO MODEL.



Witnesses  
*E. J. Stewart*  
*J. M. Parker*

*Sidney S. Niles*, Inventor:  
by *C. A. Snow & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

SIDNEY S. NILES, OF OAKPARK, ILLINOIS.

## LATCH.

SPECIFICATION forming part of Letters Patent No. 743,545, dated November 10, 1903.

Application filed February 26, 1903. Serial No. 145,273. (No model.)

### *To all whom it may concern:*

Be it known that I, SIDNEY S. NILES, a citizen of the United States, residing at Oakpark, in the county of Cook and State of Illinois, have invented a new and useful Latch, of which the following is a specification.

The invention relates to certain improvements in the construction of latches, and has for its principal object to construct a knob-shank of die-formed sheet metal in such manner that all shanks shall be exact duplicates of each other, a further object being to reduce the cost of manufacture by dispensing with the milling, gaging, and finishing operations now necessary in the construction of shanks from cast metal.

A still further object of the invention is to provide for the more secure fastening of porcelain or other knobs to the knob-shank, so as to prevent disengagement of the knob under any ordinary conditions of use.

In the accompanying drawings, Figure 1 is a sectional plan view of a latch and latch-operating means constructed and arranged in accordance with the invention. Fig. 2 is a sectional elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the latch-operating lever detached. Fig. 4 is a plan view of a die-formed sheet of metal from which the latch-lever is made. Figs. 5 and 5<sup>a</sup> are views of a sheet from which the knob-shank is made. Fig. 6 is a detail perspective view of the knob-shank. Fig. 7 is an end elevation of the knob-shank after the latter has been rolled or pressed into tubular form. Fig. 8 is a similar view illustrating a slight modification of the structure. Figs. 9 and 10 are views illustrating slight modifications of the structure and particularly the means for holding the shank in cylindrical form.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In the drawings, 1 represents the casing of a mortised latch for application to doors and the like and designed to be opened by the turning of a knob or knobs in either direction, and said casing may be formed of cast or stamped metal in any ordinary manner. In the casing is guided a bolt 2 of any ordinary construction, the bolt being projected by a

helical compression-spring 2 bearing at one end against the rear portion of the head of the bolt and at the opposite end against a washer or ring encircling the bolt and held in place by a slotted guide 4.

The latch-lever 5 is formed of a sheet of metal of suitable gage, the die-struck blank from which the latch is formed being shown more clearly in Fig. 4. This blank is provided with a laterally-extended wing 7, which is turned upwardly by a suitable die or forming-machine to form a flange against which bears the cam or cams of the latch-operating means, and this flange is reinforced by cutting out one or more tongues 8 from the body of the metal at the rear of the wing and bending the same up at right angles to the body of the latch to form braces disposed at the rear of the flange at points adjacent to the engaging portion of the latch-operating member. The lower end of the latch 5 is provided with a vertically-arranged tongue 10, which projects through an elongated slot 11, formed in the flattened shank of the bolt, the slot being of sufficient length to permit the operation of the bolt within the casing, as on the closing of the door or other device to which the latch is attached, this operation being accomplished without moving the lever or its operating means. At the upper portion of the latch-lever is a rounded or projecting tongue or boss 12, which fits against one wall of a depending lug 13, carried by the latch-casing, and said upper portion of the latch-lever is further extended, as indicated in Fig. 6, and in the forming operation is bent upwardly at a right angle to the body of the latch-plate to form a tongue 14, against which bears the free end of a suitable spring 15, serving to maintain the latch in proper position. The opposite end of the spring is held between a pair of lugs 16, formed on the inner surface of the casing of the latch.

The knob-shank is also formed of sheet metal. The plate 20 is of a generally rectangular contour and at its upper end has an extension 21, which when the plate is rolled or otherwise formed into a cylindrical knob-shank constitutes a cam for engaging the latch-lever, and this extended portion has a depression 22, which serves to prevent outward movement of said shank and its disen-



gagement from the latch. At one edge of the plate is a dovetailed tongue 23, and at the opposite edge is a correspondingly-shaped recess 24, into which said tongue is forced after the shank has been rolled into tubular form, and this may be swaged, brazed, or otherwise secured in order to retain the shank in cylindrical form.

The plate 20 may be of the same width throughout; but when it is to be attached to a solid knob it is preferred to make the lower portion of the plate somewhat less in width than the upper end. The sides of the plate are cut away, forming a pair of small shoulders 25, and when the plate is rolled in tubular form the portion between the shoulders and the end of the plate will form a cylindrical portion of a diameter of somewhat less than that of the main body of the shank, and this portion is designed to be introduced within a recess in a porcelain or other knob. In the reduced portion of the plate are formed a number of tongues 26 and 27, the tongues 26 being disposed at a right angle to the tongues 27 and one set serving to prevent independent rotative movement of the knob, while the other confines the knob and prevents the removal of the same from the end of the shank.

The plate 20 is rolled or otherwise formed until it assumes a cylindrical shape, the reduced portion, constituting the lower end of the plate, as shown in Fig. 3, being inserted in the central portion of a porcelain or similar knob 30, after which the usual fusible metal is introduced into the interior of the shank and passes through the several openings formed by cutting out the tongues 26 and 27, the fusible metal engaging against the wall of the recess and serving to confine the knob in place. As the fusible metal will to some extent be held in depressions in the wall of the recess, the inwardly-bent tongues, being embedded in the fusible metal, will serve to firmly lock the knob in position and prevent its removal under any ordinary circumstances.

The extended portion 21 of the shank forms a cam, the ends of the extension parallel with the plane of the shank forming cams which engage the flange 7, so that when the knob is turned one or other of said cams will engage the flange and operate the latch-lever, the latter swinging on the tongue 12 and against lug 13 and serving to withdraw the bolt. This construction may be slightly modified by allowing more metal in the formation of the extension 21 and splitting the same in order to form tongues 31, bent inwardly at the end of the shoulders or cams to form an extended surface for contact with the flange 7. This construction is illustrated in Fig. 8.

When the several parts are assembled, the depressed portion 22 of the extension forms a shoulder which engages against the inner surface of the latch-plate and serves to prevent the withdrawal of the shank until the

rose or escutcheon 33 is detached from the outer surface of the door or other article to which the latch is applied. In assembling the parts the latch is introduced in the door-mortise, and the shanks, having previously received the escutcheons, are introduced within the receiving-openings in the face-plates of the latch-casing by inserting them through the corresponding openings in the door at a slight angle to the horizontal in order to permit the passage of the shoulders 22. The shanks are then turned to horizontal position, and the rose or escutcheon is secured in any suitable manner to the outer surface of the door and prevents any movement of the shank to such position as will permit its disengagement and withdrawal from position.

In assembling the parts there is at times danger of securing the parts slightly out of alinement, and if the upper face of the plate 20, as shown in Fig. 3, is arranged at a right angle to the sides of the plate there will be a tendency of the end of the subsequently-formed cylindrical shank to bind against the latch when turned. This objection is overcome by slightly inclining the upper edge of the plate, as shown by dotted lines in Fig. 5. This prevents any binding of the end of the shank-latch should the shank be slightly out of a horizontal position.

It will be understood that the means for interlocking the edges of the blank to retain the shank in cylindrical form may be modified in various ways or that auxiliary fastening devices may be employed for the purpose without departing from the invention. In Fig. 9 I illustrate one form of interlocking means, comprising a ring 30, having two projecting lugs 31, which are passed through small openings in the blank and are then slightly upset or riveted to retain the shank in shape. A further modification is illustrated in Fig. 10, wherein 30' indicates a cross-bar having similar lugs and which may be used in place of the ring 30.

When the ring 30 is employed as shown in Fig. 9, the opening in said ring may be circular, but is preferably rectangular or polygonal in form in order that it may, if necessary, form an engaging device for a spindle or other member operable by the shank.

Having thus described the invention, what is claimed is—

1. In latch-operating mechanism, a knob-shank of die-formed sheet metal bent into cylindrical form and provided at its opposite edges with interlocking securing means to prevent spreading or opening movement of said shank.

2. In latch-operating mechanism, a knob-shank of die-formed sheet metal provided at one end with an integral cam extension and a shoulder and the metal at the opposite end of said shank being cut out and turned inwardly to form tongues, one set of tongues being arranged in the plane of the longitudinal



nal axis of the shank and the other set of tongues at a right angle thereto.

3. In latch-operating mechanism, a knob-shank of die-formed sheet metal provided at one end with an integral cam extension and a shoulder, the opposite ends of the cam extension being in the form of inwardly-bent tongues to provide an extensive bearing-surface, and means for holding the shank from spreading or opening movement.

4. In latch-operating mechanism, a knob-shank of die-formed sheet metal provided at one end with an integral cam extension and a shoulder, and the metal at the opposite end

of said shank being cut out and turned inward to form angular tongues.

5. A knob-shank formed of a sheet of metal bent in cylindrical form, and an auxiliary securing means disposed within the shank and serving to hold the same in proper position.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SIDNEY S. NILES.

Witnesses:

J. H. JOCHUM, Jr.,

JNO. E. PARKER.