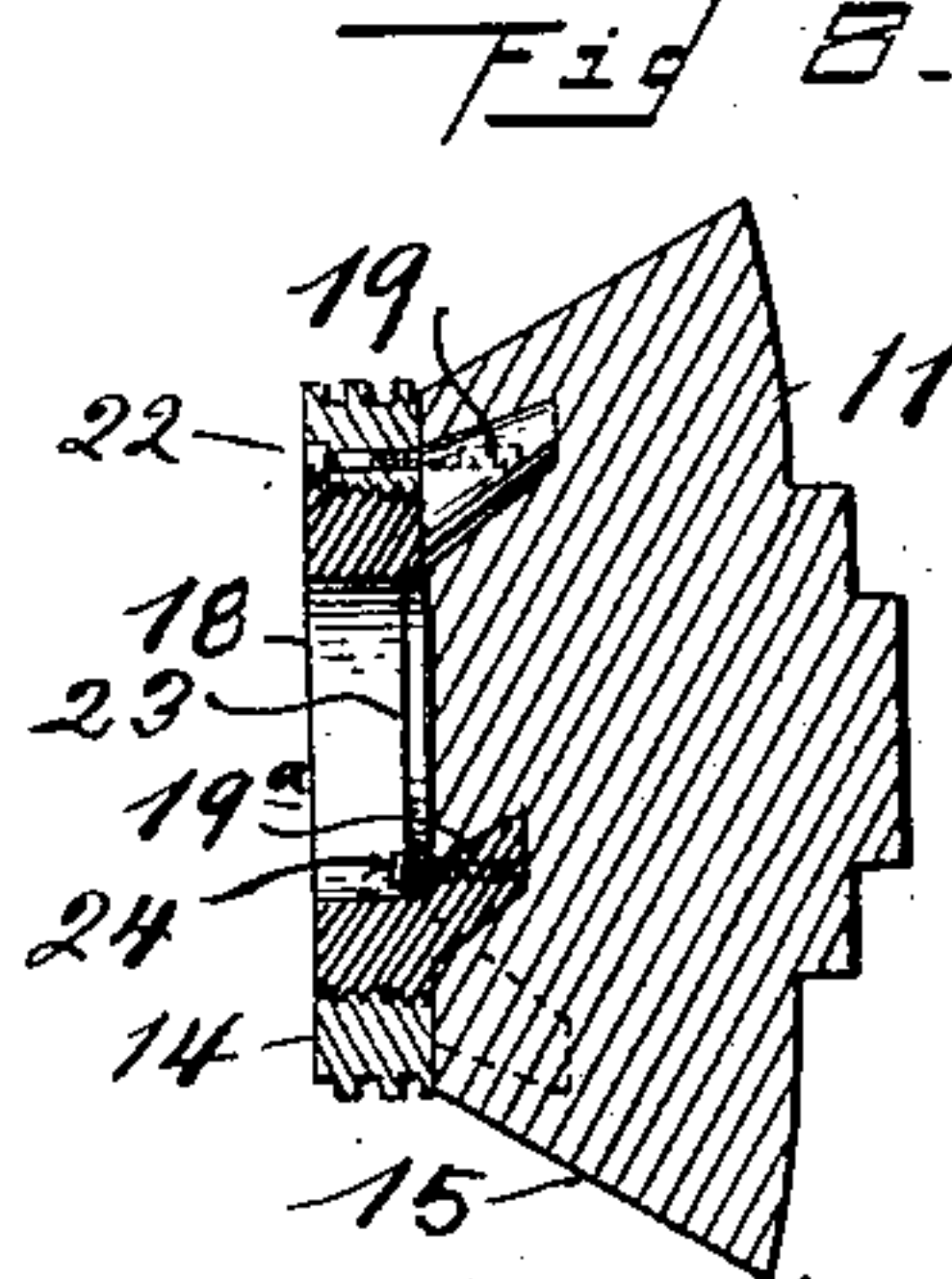
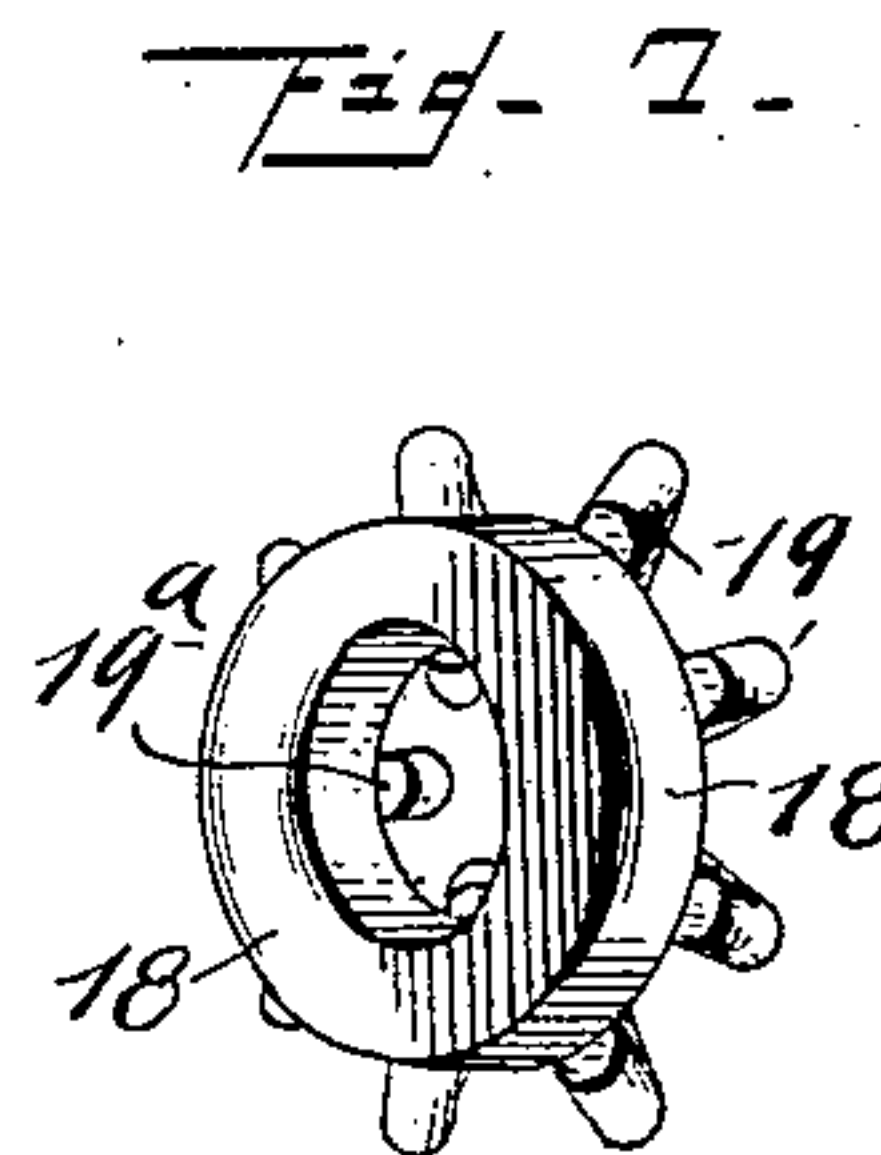
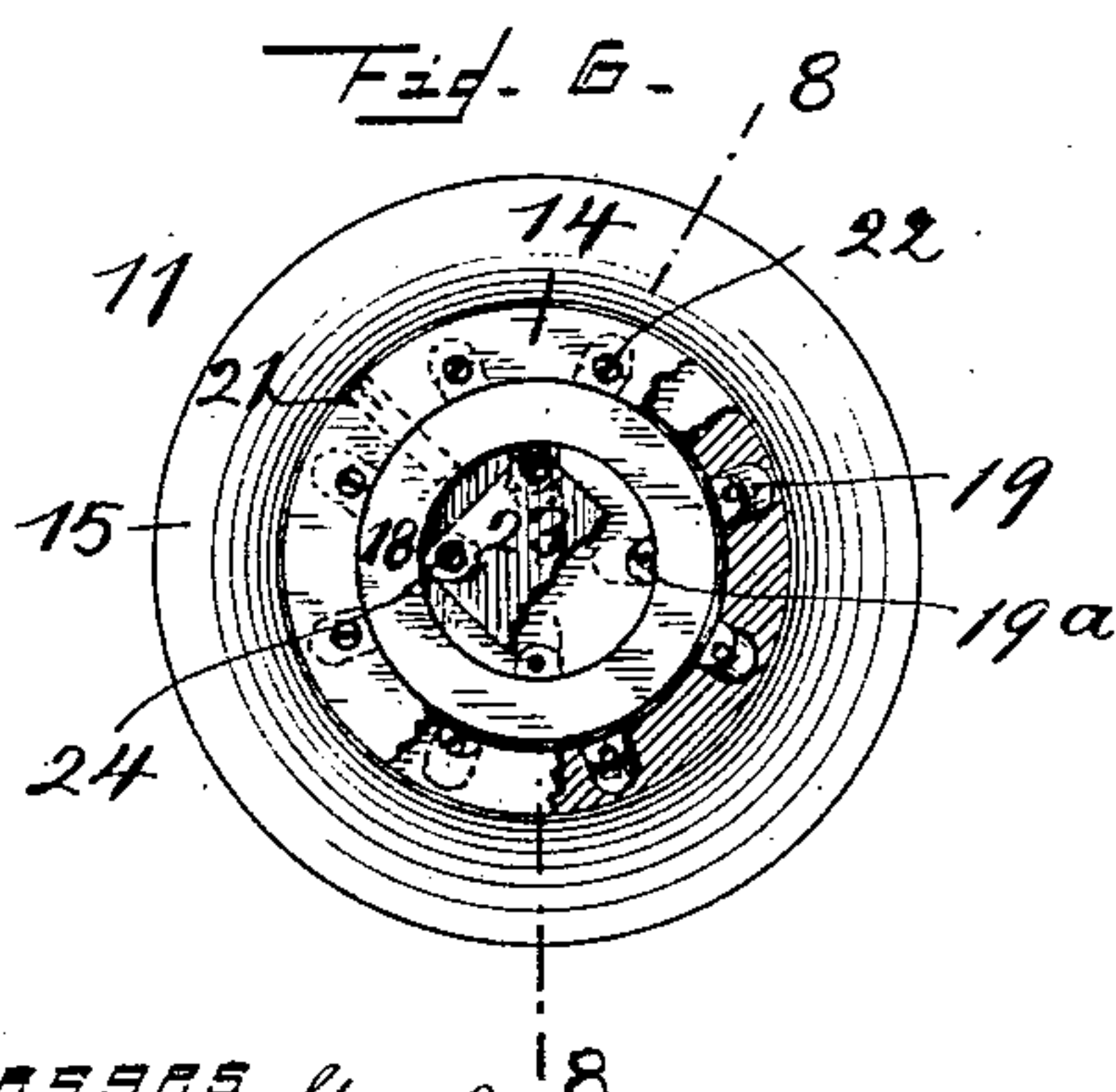
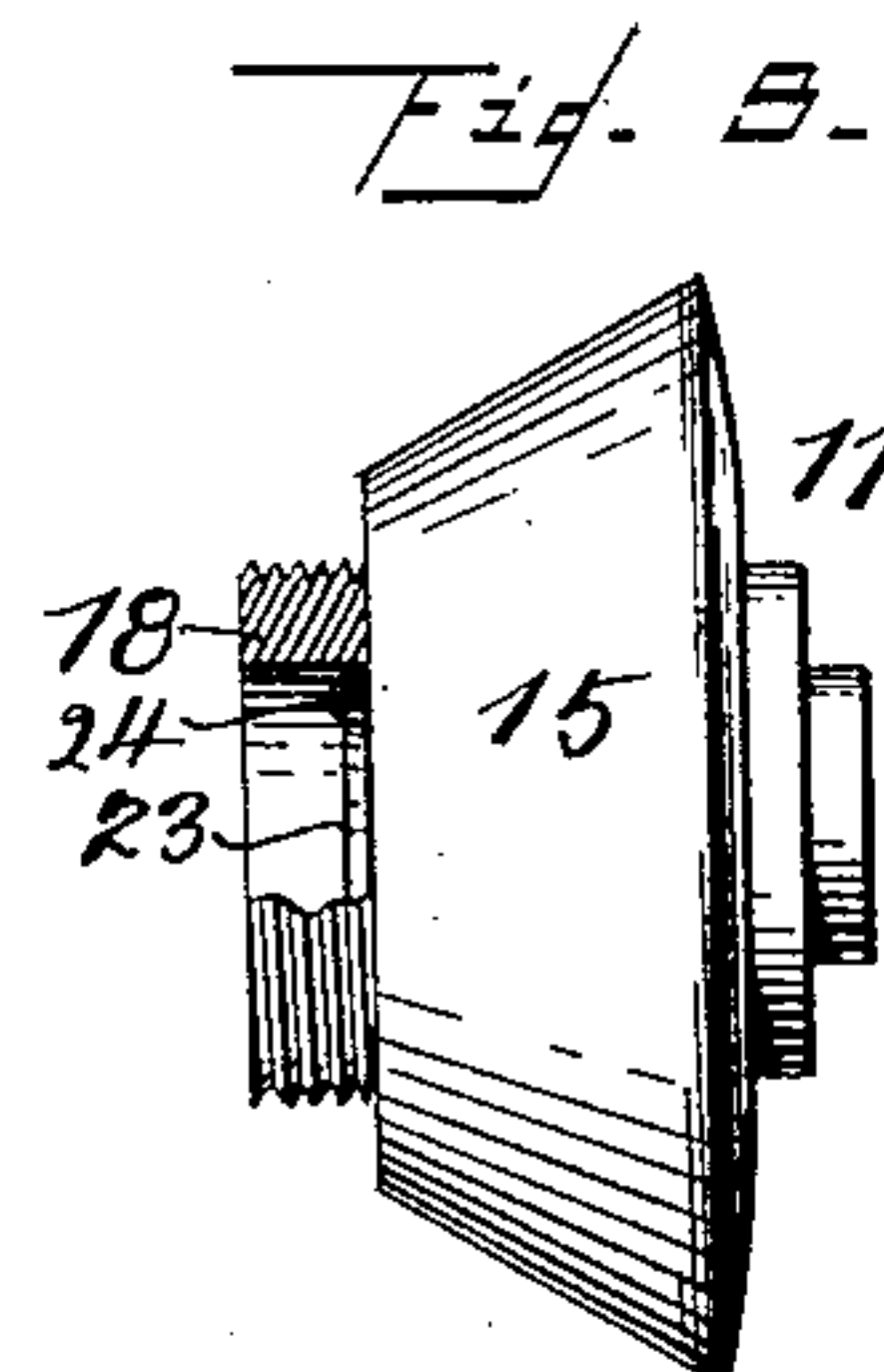
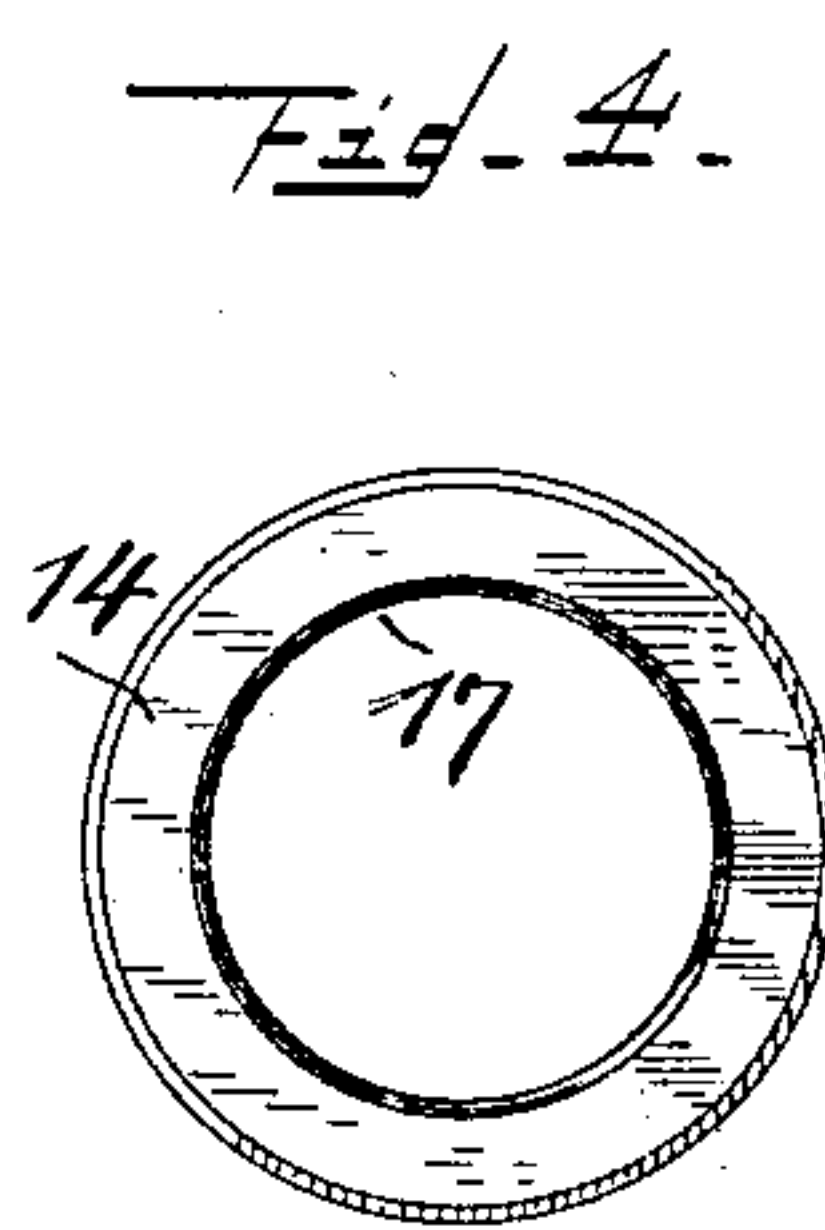
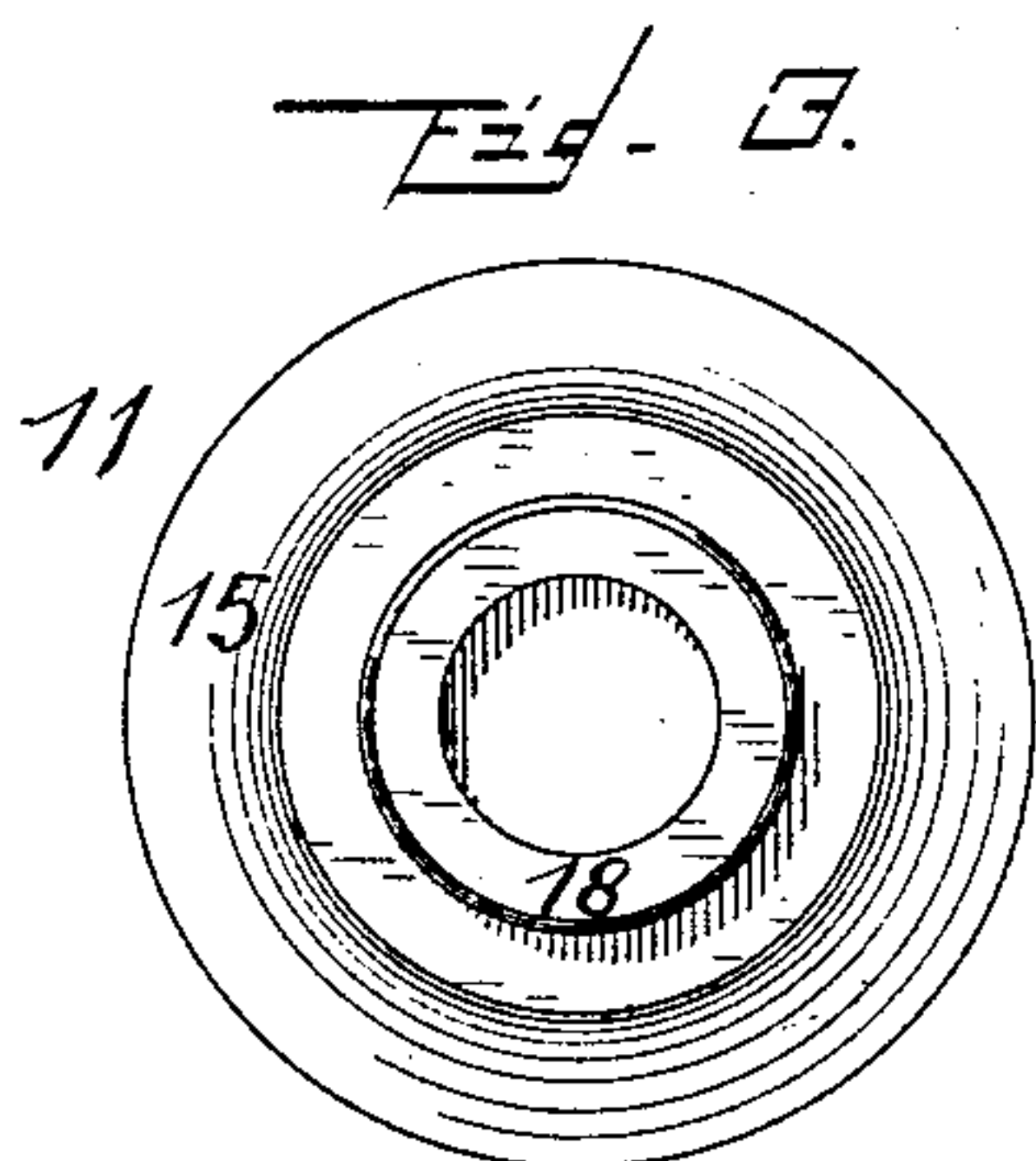
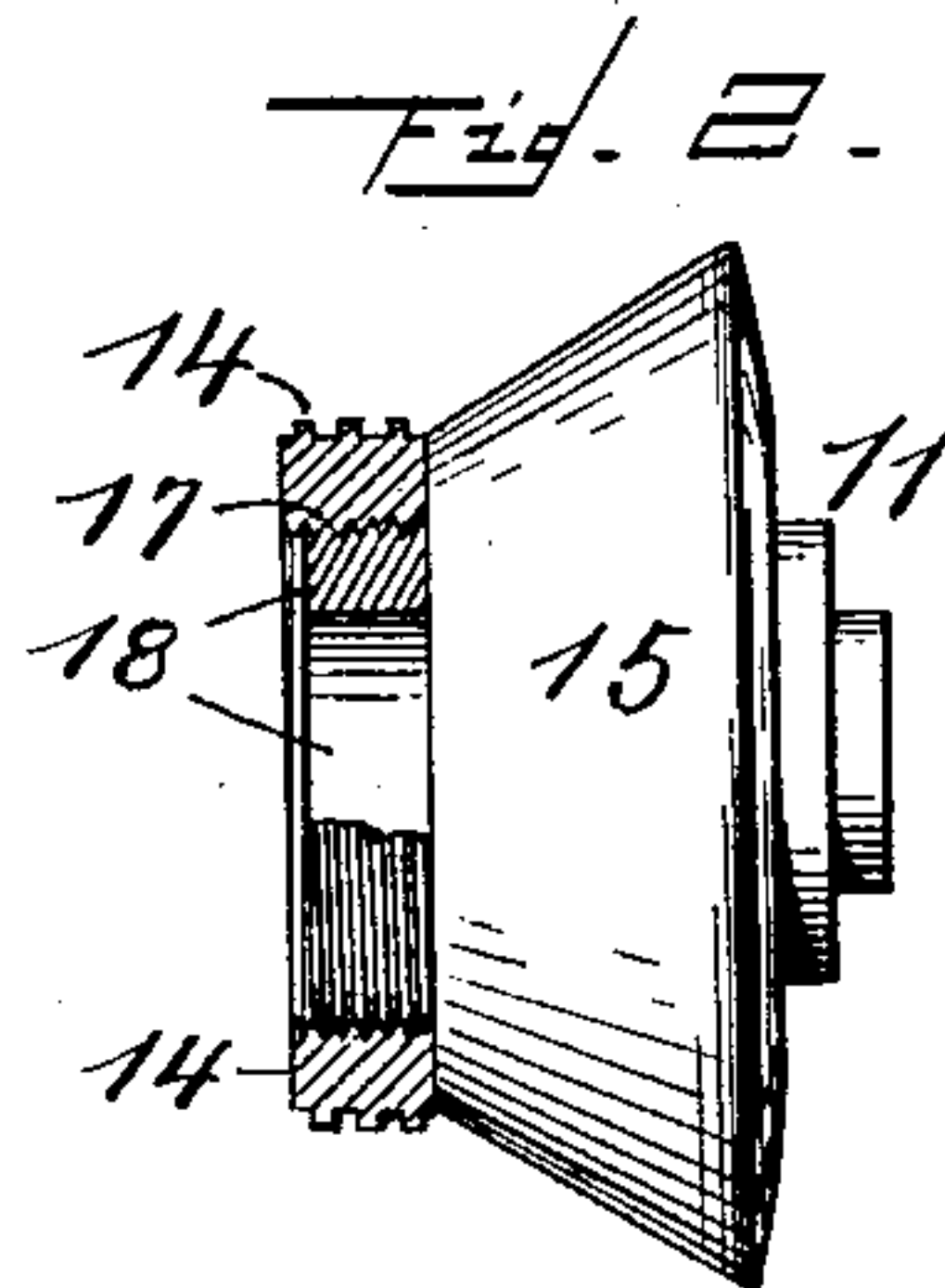
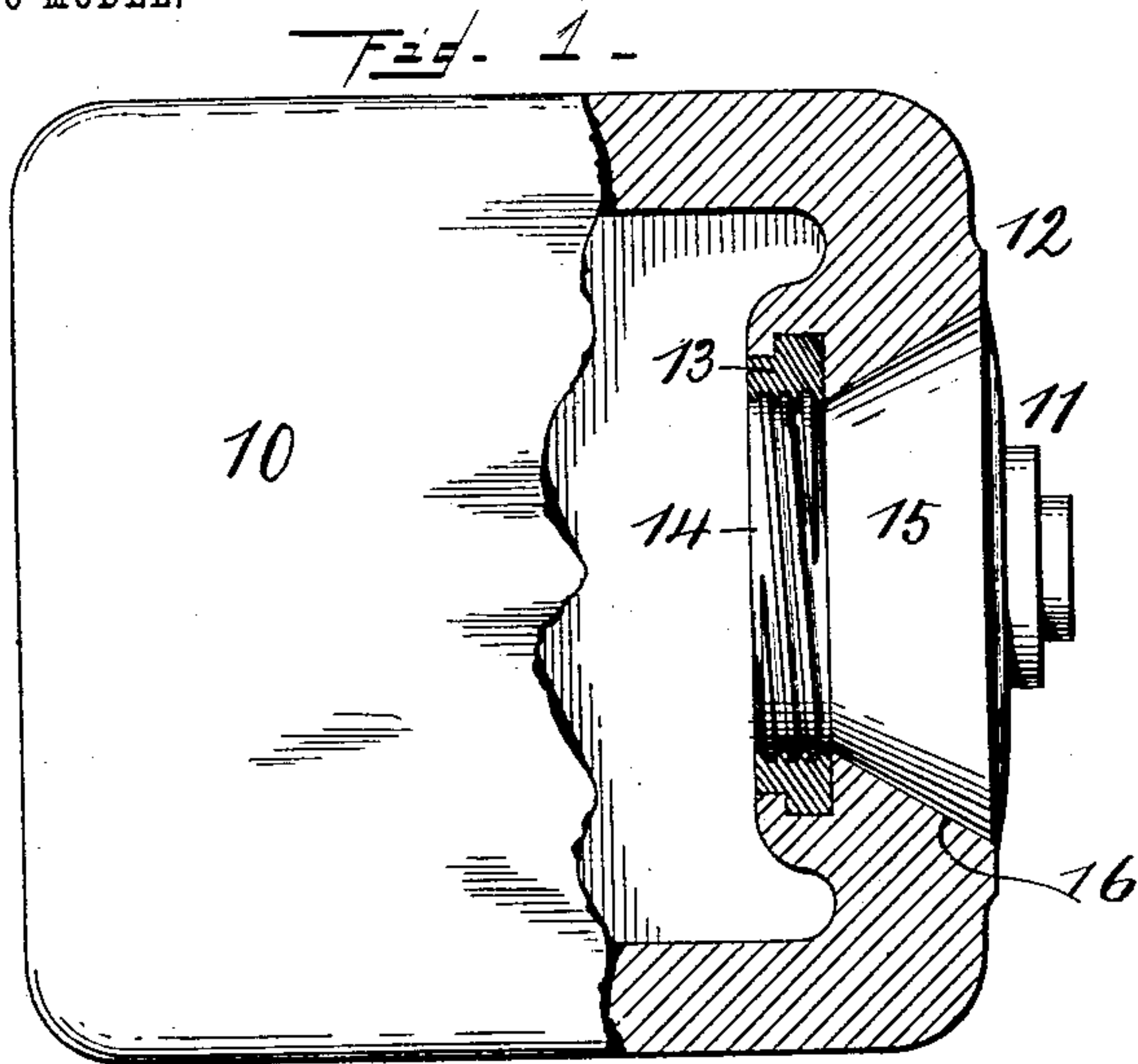


No. 750,792.

PATENTED FEB. 2, 1904.

W. E. ARNOLD.  
DOOR FOR SCREW DOOR SAFES.  
APPLICATION FILED JULY 8, 1903.

NO MODEL.



Witnesses  
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A-43



# UNITED STATES PATENT OFFICE.

WILBER E. ARNOLD, OF MADISONVILLE, OHIO.

## DOOR FOR SCREW-DOOR SAFES.

SPECIFICATION forming part of Letters Patent No. 750,792, dated February 2, 1904.

Application filed July 8, 1903. Serial No. 164,632. (No model.)

*To all whom it may concern:*

Be it known that I, WILBER E. ARNOLD, a citizen of the United States, residing in Madisonville, in the county of Hamilton and State of Ohio, have invented a certain new and Improved Door for Screw-Door Safes; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to improvements in the construction of doors for safes of the screw-door type and where the body of the safe and door or the latter only are made of non-workable metal. By this latter I mean such metal which is of a texture and hardness or temper which prevents it yielding readily or not at all to cutting, boring, or drilling, or when otherwise acted upon by machine or any other tools. The object of using such non-workable or non-machineable metal is to render the safe thoroughly burglar-proof.

The metal used is generally a non-workable cast-steel or an alloy, and the construction of such safes, as to the body, may be substantially like the one described in one of my prior patents, No. 706,877. The use of this non-machineable cast metal does not include such parts which have an operative motion with reference to each other and which present toward each other surfaces which are expected when in normal position to be in absolutely tight and fitting contact and must for such purpose be worked and finished by machine or other tools. Such surfaces are found in the complementary parts of the screw connection whereby the door is held to the safe-body when closed and within its opening in the front of such safe-body. This screw connection consists of the male screw formed around the circular edge of the door and of the female screw which receives it and is formed around the door-opening. The engaging surfaces of these complementary screw parts must be cut, worked, and fitted by tools to obtain a proper operation of the parts and a closely-fitting joint when they are in contact. This requires the presence of metal sufficiently soft to be workable and which metal

must be accordingly provided for around the edge of the door and within the door-opening and around its edge, the connection of such metal to the contiguous metal of, respectively, door and safe-body to be in each case in a manner which is suitable and sufficient for the purpose. This connection is in most cases by the incorporation of such soft metal into the non-workable metal during the act of casting this latter, and, as to the safe-body, it may be done substantially as described in the patent above mentioned—that is, by casting. As to the door, it is only formed partly by casting, the connection being completed by mechanical means, and, as hereinafter described and claimed, the specific form of connection of the screw part of the door forming the particular subject of this invention.

The construction is also illustrated in the accompanying drawings, in which—

Figure 1 shows the body of such a safe in side view with parts broken away and in section, showing also the door in its closed position. Fig. 2 shows an edge view of the door detached and with parts broken away. Fig. 3 shows the inner side of the door with reference to the safe-body and without its screw-ring. Fig. 4 shows the detached screw-ring. Fig. 5 is an edge view of the door as it appears in Fig. 3—that is, without the screw-ring shown in Fig. 4—parts being broken away. Fig. 6 is a view of the door similar to Fig. 3, but with the screw-ring in position and parts of this latter and the door broken away. Fig. 7 is a perspective view of the intermediate connecting-ring whereby the screw is attached to the door, the same being shown before the incorporation of its attaching parts into the body of the door-casting, it being also unfinished—that is, its external thread is not cut yet, such being deferred until after the casting to prevent loss of shape by warping. Fig. 8 is a vertical cross-section of the door with the screw-ring and time-lock base attached.

In the drawing, 10 is the body of the safe, and 11 is the door used to close the opening in the front 12 of the safe-body. Both, or as far as my present invention is concerned the door only, are of non-workable metal. The



door when closed is held in position by a screw connection which consists of two complementary screw-rings, one, 13, being the female part of the screw and is connected so as to  
 5 form a part of the safe-body lining the edge of the opening in the front 12 thereof, and the other, 14, is the male part fitted to be received by this ring and connected around the inner edge of the door. Since my present  
 10 invention concerns only this latter, it is immaterial in what manner screw-ring 13 is connected to the safe-body. It may be assumed to be done as described in the patent mentioned, which is by incorporation during the  
 15 act of casting the safe-body. As to the door, it is substantially like this, that screw-ring 14 is independently constructed and finished, the non-workable casting of the door-body having portions of soft workable metal incorporated  
 20 while it is being cast, so that said portions become part of it, the independent screw-ring 14 being finally connected to the safe-door by means of these incorporated soft-metal portions of it, which afford a possibility for such  
 25 connection. This enables me to finish each separately, doing away with the necessity of handling the weight of one while working on the other, and the work on each may be done more conveniently, and therefore as a final  
 30 result turns out to be more accurate and satisfactory.

The male screw-ring 14 may be conveniently finished in a suitable machine-tool—like a lathe, for instance—and is easily manipulated  
 35 while fitted to its complementary ring 13 in the safe-body. The door-body may also be conveniently handled for grinding and fitting until its tapering edge 15 comes to a close fit within the tapering part 16 of the door-opening. This grinding is by rotating the door  
 40 with its screw-ring still detached within the opening in the safe-body intended to receive it, and which procedure is the only correct method to obtain a true and accurate closing  
 45 fit. With this screw-ring in place this procedure could not be carried out, because the unavoidable engagement of screw-ring 14 with screw-ring 13 would prevent this rotary grinding motion. After both of these parts are  
 50 thus separately fitted, each to a final fit and seat—that is, ring 14 of the locking-screw connection being fitted within its complementary ring 13 and the tapering edge 15 of the door against the corresponding tapering side  
 55 16 of the door-opening—ring 14 is now ready to be finally attached to door 11 in a manner which is as follows:

The inner side 17 of ring 14 is threaded with a comparatively fine thread and fitted onto the  
 60 external thread of a ring 18, which projects from the inner flat side of the door and forms a part of the same. For its connection it is provided with a number of projections 19 on one side, which might be compared to so-called  
 65 “tenons,” and which are surrounded by cast

metal, the connection being had during the act of casting the door-body, at which time this ring 18 forms a part of the mold into which it is placed in proper position, so that when the body of the door is cast these tenons are  
 70 completely surrounded by the molten metal and thereafter by embedding become thoroughly incorporated, so as to form a part of the completed casting. They are disposed at an angle to ring 18 and to the axis of the  
 75 door, thus increasing the resistance by which they would oppose any action tending to separate ring 18 from the door-body.

There is an additional set of holding-tenons 19<sup>a</sup>, which are arranged so as to be inclined  
 80 in a direction opposite to that of tenons 19. The general arrangement and procedure is now readily understood. The door-body and ring 18 form together a complete and practically integral structure. A thread may be  
 85 readily cut onto ring 18, because it is of soft metal. This thread is preferably cut after the casting, since otherwise and under the influence of the heat the true shape of this thread would be lost. It therefore appears unfinished  
 90 in Fig. 7, while Fig. 5 shows it completed.

The door may be readily ground into its opening until a complete fit is obtained without interference by the complementary parts of the locking-screw, which, as to the door,  
 95 are not attached until the guiding of this latter is finished. The separately-finished screw-ring 14 is finally screwed onto ring 18. It may be held in place by a convenient locking-pin 21 or by screws 22 entering tenons 19. It  
 100 may be mentioned here that this pin and screws 22 would not be exposed to any rotary stresses tending to open the door, since for such the resistance of the usual boltwork (not shown) is relied upon. Such boltwork is usually op-  
 105 erated by a time-lock mechanism (not shown) and which is attached within a recess formed by ring 18, this latter, being of soft metal, affording readily the opportunity for drilling holes to receive attaching-screws. I prefer  
 110 to use, however, tenons 19<sup>a</sup>, for which purpose they are arranged to sit over so as to project partly into the space surrounded by ring 18, as shown in Figs. 6 and 8. They may thus be used to be tapped for reception of  
 115 screws 24, whereby the time-lock mechanism is attached. This latter may be attached direct to tenons 19<sup>a</sup> or by means of an intervening member or plate attached to these tenons. 23 may indicate this plate of the frame of the  
 120 time-lock mechanism.

Having described my invention, I claim as new—

1. In a door for a screw-door safe where the same is of non-workable cast metal, the combination of an independent ring 14 which has  
 125 formed around its outside, one of the complementary parts of the screw connection whereby the door is held in its locked position within the door-opening of the safe-body, a ring 18  
 130



of workable metal on the inner side of the safe-door and upon and around which ring 14 is secured, and spaced projections circularly disposed around ring 18, arranged at an angle thereto and extending into the cast metal of the door into which metal they are embedded and whereby the two rings are held in position on the safe-door.

2. In a door for a screw-door safe where the same is of non-workable cast metal, the combination of an independent ring 14 which has formed around its outside one of the complementary parts of the screw connection whereby the door is held in its locked position within the door-opening of the safe-body and a ring 18 of workable metal projecting from the inner side of the safe-door and upon and around which ring 14 is secured, ring 18 being provided with two sets of tenons arranged at opposite angles to such ring and extending into the cast metal of the door into which they are embedded during the act of casting this latter and whereby the two rings mentioned are held in place.

3. In a door for a screw-door safe where the same is of non-workable cast metal, the combination of an independent ring 14 which has formed around its outside, one of the complementary parts of the screw connection whereby the door is held in its locked position within the door-opening of the safe-body and a ring 18 of workable metal projecting from the inner flat side of the safe-door and upon and around which ring 14 is secured, ring 18 being provided with projections extending into the cast metal of the door into which they are embedded, said projections projecting also laterally beyond the periphery of the ring and affording means to receive locking and attaching screws to hold ring 14 on ring 18 and to secure internal locking mechanism in place.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

WILBER E. ARNOLD.

Witnesses:

C. SPENGEL,  
ALBERT A. MOEBUS.