

No. 706,877.

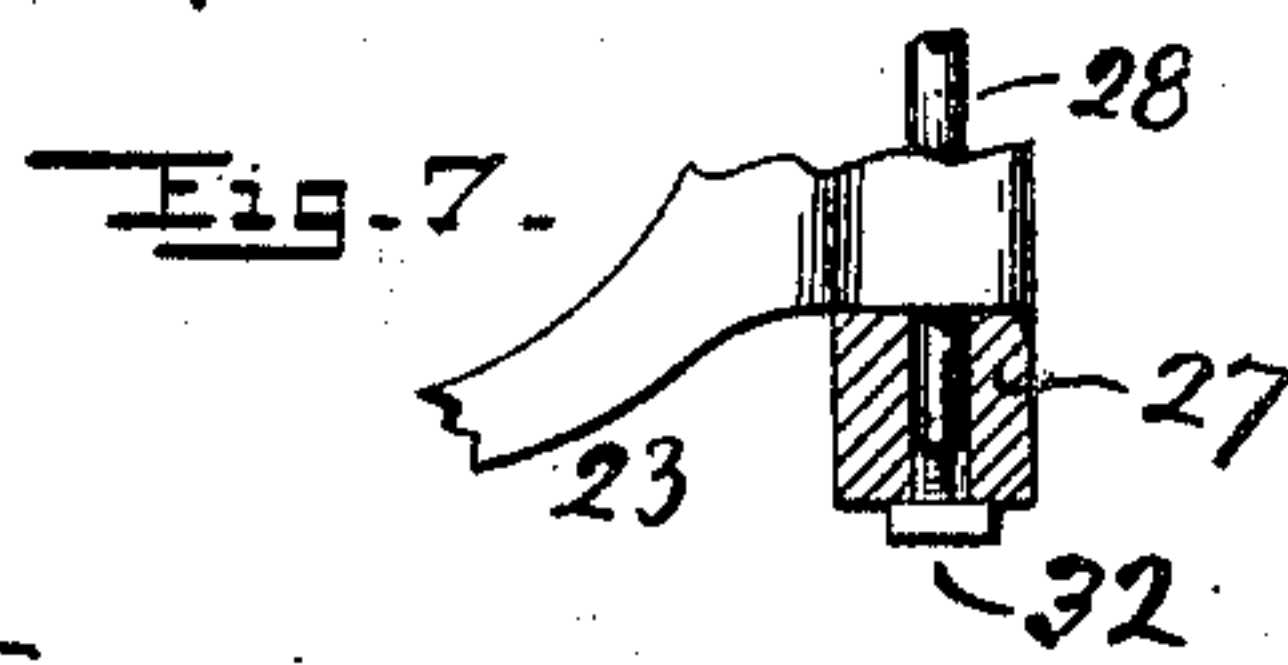
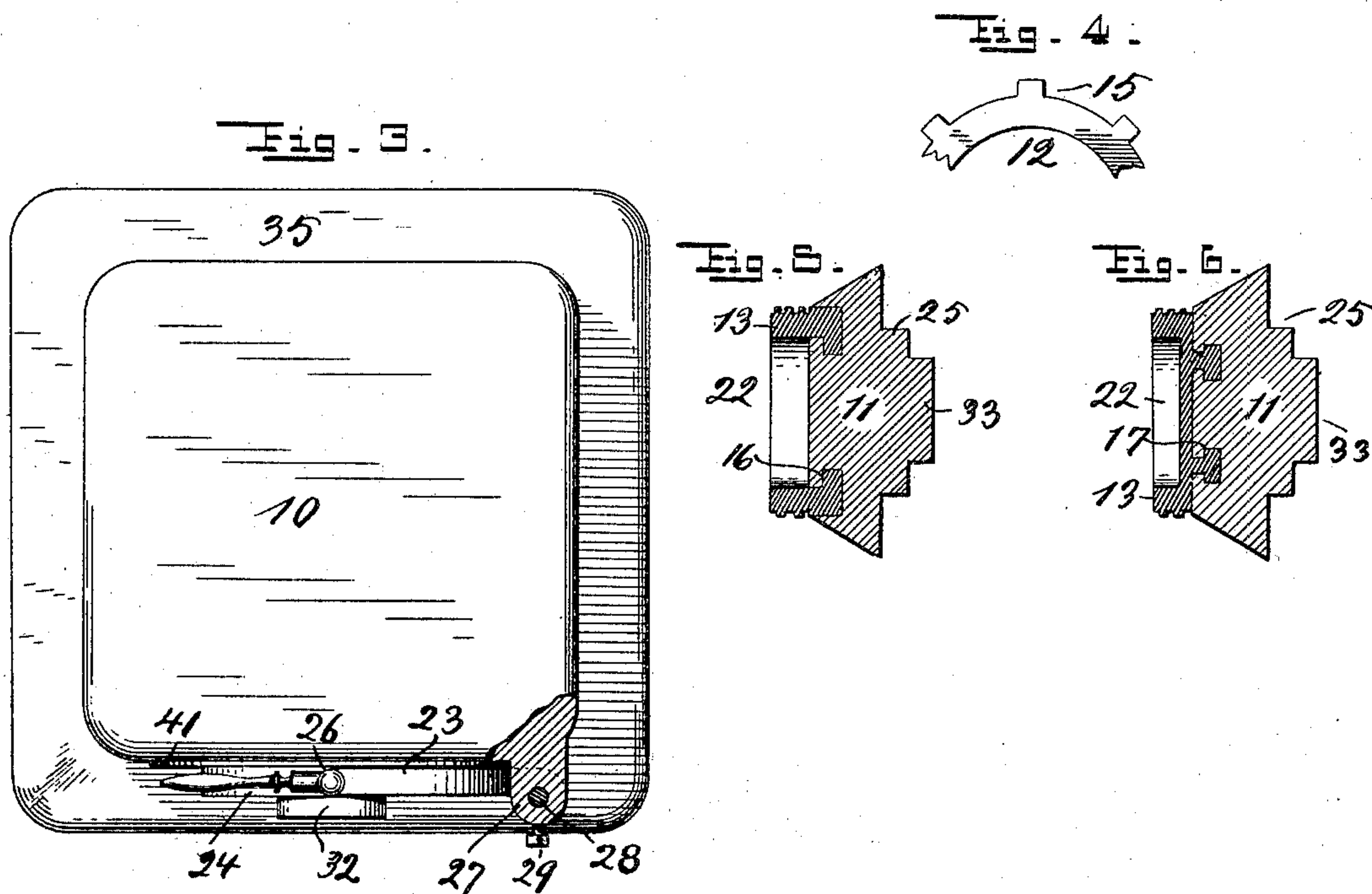
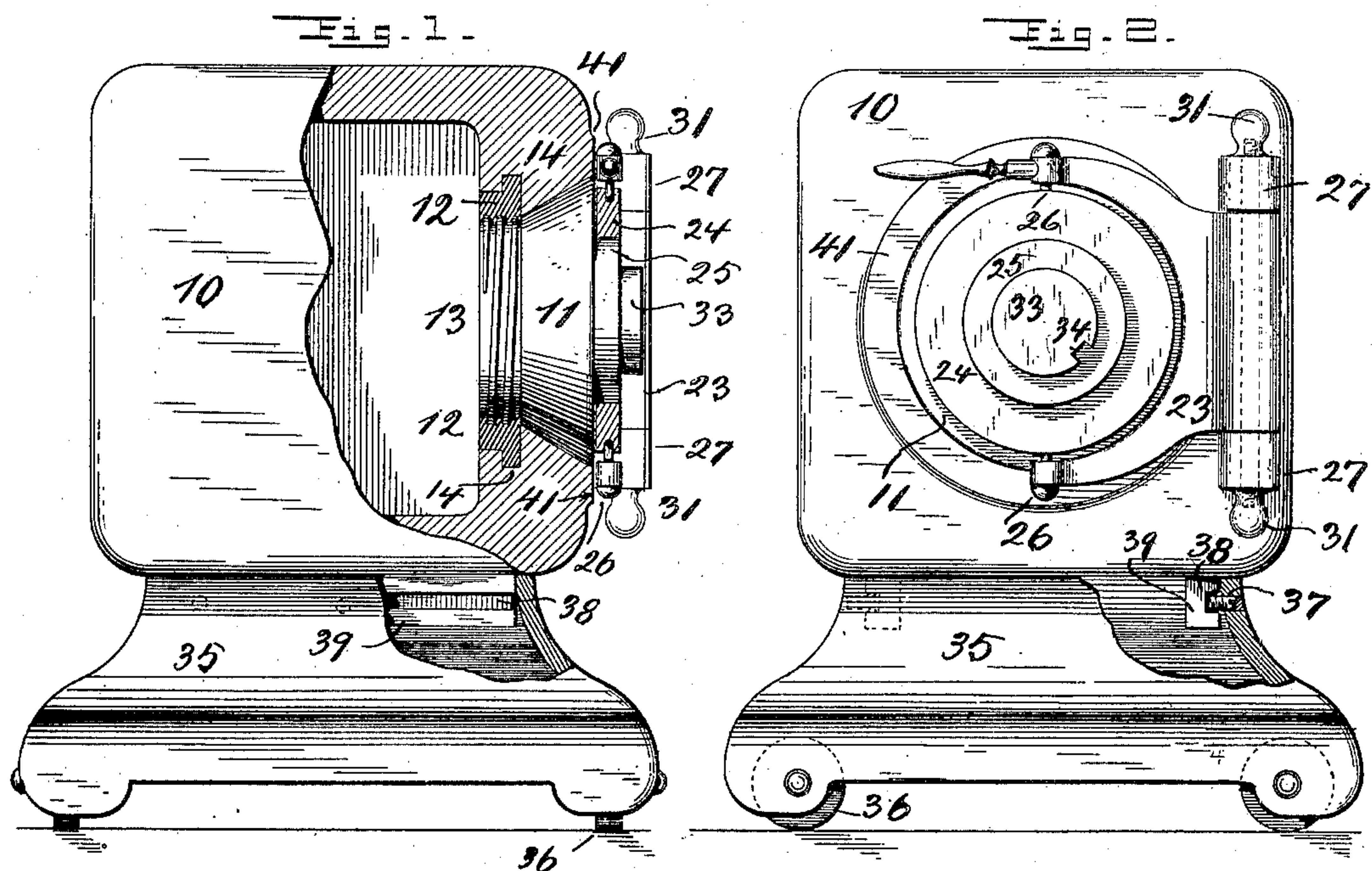
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W. E. ARNOLD.

SAFE.

(Application filed Jan. 16, 1902.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 706,877, dated August 12, 1902.

Application filed January 16, 1902. Serial No. 89,944. (No model.)

To all whom it may concern:

Be it known that I, WILBER E. ARNOLD, a citizen of the United States, residing at Madisonville, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in the Construction of 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-numerals marked thereon, which form also a part of this specification.

This invention relates to improvements in the construction of safes having doors closing with a screw connection, the object being to render them thoroughly burglar-proof; and the improvements consist substantially of making the body of the safe of one integral casting, the same to be of a metal like steel or an alloy, which in either case is of such texture and hardness as not to yield readily or not at all to the action of tools by cutting, boring, drilling, or otherwise working, and into which casting there is embedded the female part of the screw connection or the metal therefor, which operates in conjunction with the complementary male part of the screw connection on the door for the purpose of closing and locking this latter, and which parts requiring shaping and working by hand or machine tools are therefore of another metal of different degree of hardness or texture, so as to permit such working by tools. Both metals are combined with each other during the act of casting the safe, the metal to be worked by tools forming a part of the mold, so that during the succeeding act of casting the safe-body the metal becomes practically an integral part of such safe-body. This workable metal, as to its shape and form, may be entirely or partly finished before or after its connection with and incorporation into the metal constituting the safe-body. The door of this safe is constructed in a similar manner—that is, its main part, and particularly the outside thereof, is made of hard or non-workable cast metal, which contains, integrally connected by being cast thereinto, the male part of the screw connection required for closing and locking it and working in conjunction with

the female part of the screw connection first referred to and forming part of the safe-body.

The invention relates more particularly to the means, shape, and formation of the complementary parts of the screw connection for the door, whereby these parts are held in position on the body of the safe and its door. In connection with this feature of my invention there are certain additional features of arrangement and construction connected therewith which are incident to the former.

In the following specification, and particularly pointed out in the claims, is found a full description of the invention, together with its parts and manner of construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my improved safe with parts broken away and shown in section. Fig. 2 is a front view, and Fig. 3 a top view, thereof, parts in each case being broken away. Fig. 4 is a detail view of a certain part connected with the safe-body. Figs. 5 and 6, being each a vertical section through the safe-door, show the construction thereof, one being a modification of the other. Fig. 7 shows in a sectional detail view one of the methods for constructing the door-hinge.

In the drawings, 10 indicates the safe-body, and 11 the door, both of cast metal like steel or an alloy and of such texture and degree of hardness as to prevent it being subject to the action of tools usually employed in the working of metal.

The complementary parts of the screw connection used for closing and locking the door within the opening in the safe-front are of such metal which permits working by tools. These parts, either partly or wholly finished before their incorporation into the safe body or door or the unfinished metal for these parts, are inserted into the molds when the safe-body or its door is cast, and they are so shaped as to permit the molten metal to flow around them or certain parts of them, so that when the casting is completed this workable metal or the parts formed out of it are to all practical purposes and intents integral parts of the cast metal. These parts are a ring containing the female thread which lines the

inner part of the door-opening in the safe-front, and a ring or disk 13, having on its edge the complementary male thread and forming part of the door. Ring 12 is held in place by integral projections on its outside—
 5 as, for instance, an annular flange 14 or equivalent radially-projecting lugs 15, as shown in Fig. 4, around which in each case the molten metal out of which the safe-body is cast flows, so that they become intimately incorporated therein. As to ring 13 on the door, similar means—that is, integral projections—may be used, only that by preference they project inwardly on said ring, as shown in case of a
 10 flange 16 in Fig. 5. As to the door, the connection may be further modified in various ways. If the male thread is on the outer edge of a disk instead of on a ring, projections 17 may be used, as shown in Fig. 6, on
 15 the inner side of said disk.

Ring 13 is so arranged as to form a recess 22 on the inside of the door for the reception of a time-lock when such is to be used or for any other mechanism connected with the locking operation of the door. A similar recess 22 is provided where a disk is used, as shown in Fig. 6. This time-lock, as well as the bolt-work and the mechanism operating the same, are also contained in this recess, but are not
 25 shown, as having no bearing on my invention. The locking-bolts pass usually in a radial direction through boltways cut in ring 13 and enter sockets in ring 12. These screw-doors are usually carried on a crane-frame 23, consisting of two door-sustaining arms, to which
 30 they are suitably connected, so as to be free for rotation. Such a connection is usually by an intermediate ring 24, in which the door rests by means of a journal 25, so as to be free to rotate. This ring 24 is held on the
 35 crane-frame by trunnion-joints in shape of vertically-disposed screws 26. The crane-frame is hingedly held to the safe-body, it being one of the complementary parts of such hinge, which part, with the door-sustaining
 40 arms, forms an integral casting, the other parts 27 forming integral parts of the casting constituting the safe-body and between which the hinge part of the crane-frame is fitted. These hinge parts are vertically cored
 45 for the reception of a hinge-pin 28, which occupies all core-openings when aligned and is held in position and proper adjustment by a pin or set-screw 29, as shown in Fig. 3, passing through the workable metal of the
 50 crane-frame, or by knobs 31, as shown in Figs. 1 and 3, and interiorly screw-threaded and engaging the correspondingly-threaded projecting ends of the hinge-pin. It may also be
 55 held by binding-screws 32, tapped into the ends of the hinge-pin, as shown in the detail view in Fig. 9, it being understood that the hinge-sections 27 cannot be worked, for reasons already explained. The means for rotating the door may consist of any approved
 60 mechanism, usually gear-wheels, and are con-

nected to a journal 25 or to a projection 33 thereon. In case of gear-wheels the necessary keyways 34 for their connection are cast into these projections. By preference I propose
 70 to give to the safe-body the shape of a perfect cube with rounded corners as insuring the best results as to strength and resistance. It rests on a base 35, which may be of cast-iron, and is provided with rollers 36. The two are
 75 held together by screws 37, entering two opposite sides of the base near their upper edges and passing into openings or grooves 38 in the sides of strips 39, or equivalent projections depending from the under side of the safe and
 80 forming integral parts of its casting. These screws are countersunk and may be puttied over, so as to become invisible after the safe is painted. The edge of the door is smooth and tapering inwardly to where it meets the
 85 screw-thread and fits into a corresponding taper around the inside of the door-opening. A close fit and tight joint is obtained by grinding it into this opening. To facilitate this grinding and to obtain a smooth finish around
 90 the outer edge of the door-opening, I provide a grinding-raise 41 around this opening, it being simply an increase in the thickness of the casting thereat of the front of the safe. It
 95 will be seen that a safe so constructed will successfully resist illegitimate attempts to gain access to the interior and is practically burglar-proof.

Having described my invention, I claim as new—

1. A screw-door safe having its body cast in its entirety of non-workable metal, a circular opening in the front thereof adapted to receive the door of the safe, a ring 12 of workable metal lining part of the door-opening and
 100 having on the inside of its periphery the complementary female screw to receive the door and on the outside of its periphery integral parts projecting radially outwardly so as to extend into the metal which forms the safe-body, said ring being held in position by being placed accordingly during the act of casting the safe-body and whereby the outwardly-projecting parts mentioned become embedded
 105 into the molten metal of which the safe-body is formed in which position they also resist any strain in a peripheral direction which would tend to rotate ring 12 and due to the manipulation of the complementary male screw of the door when said screw is in en-
 110 gagement with the female screw on the inner side of ring 12.

2. A screw-door for a screw-door safe being cast of non-workable metal and provided on its inner side with a disk of workable metal, said disk formed with a screw-thread on its
 115 outer edge adapted to engage the female thread within the door-opening of the safe-body and having integral projections on its outer side which reach into and are embedded within the non-workable metal of the safe-door and whereby said disk is connected to
 120

the inner side of this latter, said projecting parts being embodied into the metal of the safe-door while the same is cast.

5 3. A cast-metal safe having projecting from its under side strips 39 forming integral parts thereof, depressions 38 in the sides thereof, an independent base-frame fitted against the under side of the safe-body and connecting

means passing through the upper part of this base-frame and engaging depressions 38. 10

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

WILBER E. ARNOLD.

Witnesses:

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ARTHUR KLINE.