

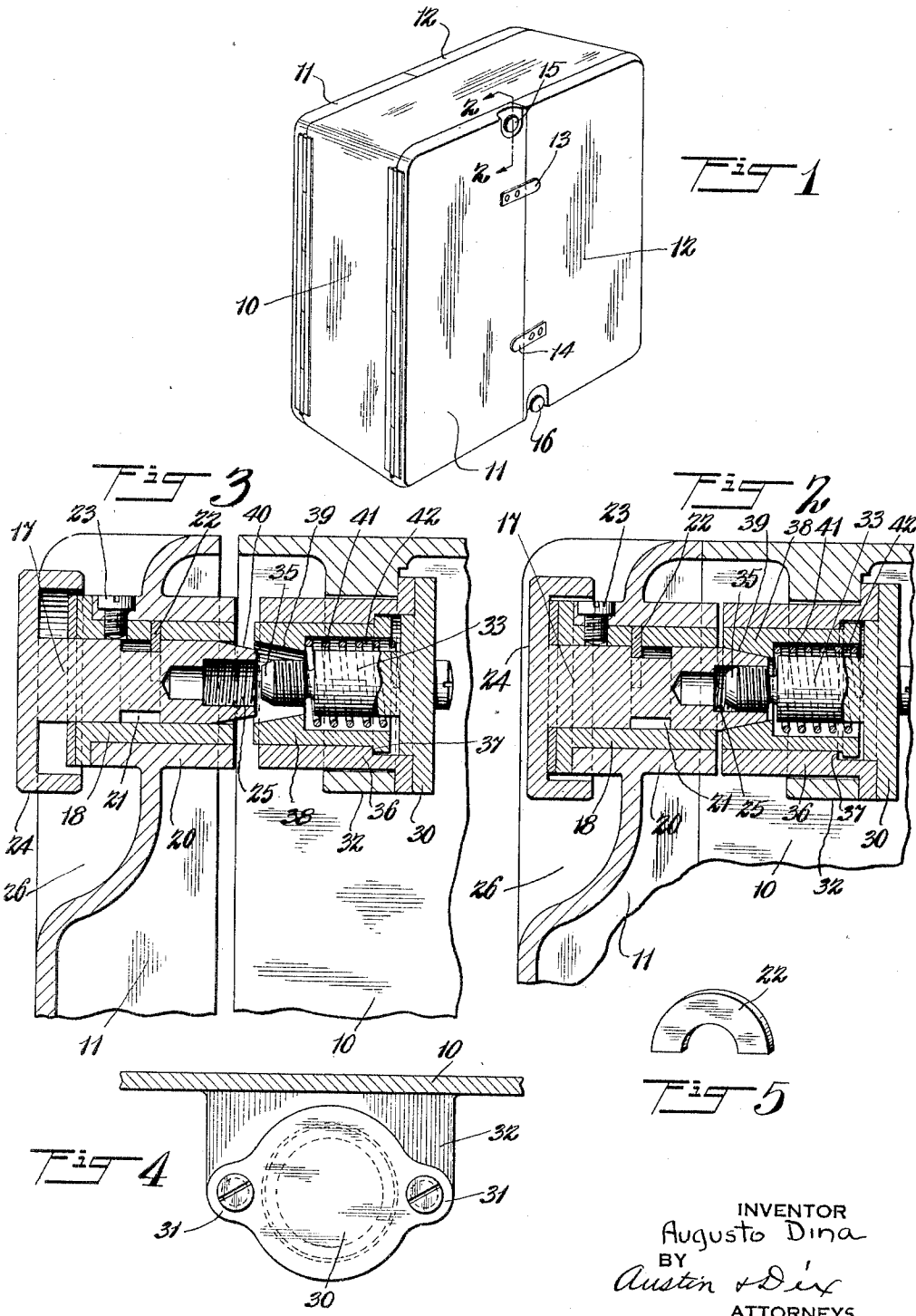
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DOOR LOCK

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DOOR LOCK

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This invention relates to a closure fastener, and more particularly to a door lock.

An object of the invention is to provide a lock which is capable of securing the door accurately in a predetermined position.

Another object is to provide a lock which is simple to operate and which positively secures the door against displacement when the same is in closed position.

A further object is to provide a cheap, simple, efficient and convenient device of the type above indicated.

The above objects and others which will be apparent as the nature of the invention is disclosed are accomplished by providing a member carried by the door which is adapted to make threaded engagement with a stationary stud for securing the door in closed position.

A special means is provided for centering the member with respect to the stud whereby the door is accurately positioned regardless of the condition of the cooperating threads.

The invention is particularly applicable to a metal container in which the doors when closed form a part of the casing and impart rigidity thereto. For example, a container for a portable projection machine of the type disclosed in my copending application Serial No. 432,312, filed March 1, 1930, for ventilating and fire shutter for motion picture projection machines.

It is obvious, however, that the invention may be used in various other instances where it is desirable to obtain a positive lock for a variable closure member and to secure an accurate alignment of the parts when the member is in closed position.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in con-

nection with the accompanying drawings forming a part thereof, in which

Figure 1 is a perspective view of a container showing the locks applied thereto;

Figure 2 is a section taken on the line 2—2 of Figure 1 showing the lock in engaged position;

Figure 3 is a similar section showing the lock disengaged;

Figure 4 is a rear elevation of the lock housing; and

Figure 5 is a perspective of the key used in conjunction with the lock.

Like reference characters denote like parts in the several figures of the drawings.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawings more in detail the invention is shown as applied to a cabinet having sides 10 and doors or closure members 11 and 12 to which strips 13 and 14 respectively are secured. Said strips are adapted to engage the opposite door when the members are in closed position for securing the same against displacement. For locking the doors a pair of locks 15 and 16 are provided which are associated with doors 11 and 12 respectively at a point near strips 13 and 14. Said locks are adapted to engage a stationary portion of side members 10 and to positively hold the doors in predetermined position in a manner to be pointed out.

Each of said locks comprise a member 17 which is journaled in bushing 18 carried in a suitable housing 20 formed in a door 11. Said member 17 is provided with a circumferential groove 21 in which a key 22 is seated. Said key and groove permit a predetermined longitudinal movement of member 17 with respect to bushing 18 and also permit free rotational movement of member 17. Bushing 18 may be secured in a housing 20 by set screw 23. Member 17 is provided at its outer end with a handle 24 which may have its edge knurled or otherwise formed to provide a gripping surface. The inner end of member 17 is drilled and threaded, as by

threads 25, to receive a cooperating member to be described. Door 11 may be recessed as at 26 to permit handle 24 to normally lie within the plane of said door when the members are in locking position.

The stationary portion of the lock comprises a base plate 30 having a pair of extensions 31 by which it is secured to the housing 32 forming a part of side member 10. Said base plate carries a stud 33 which is provided at its end with suitable threads to cooperate with threads 25 of member 17. Said stud is also tapered as at 35 to assist in securing the proper alignment between member 17 and stud 33 when said members are brought into engagement. A stationary sleeve 36 is carried by base member 30 and is provided with a shoulder 37 against which a cooperating shoulder on a movable sleeve 38 rests for limiting the movement of said movable sleeve. Sleeve 38 is provided with an internal taper 39 which cooperates with a corresponding taper 40 formed on the outer surface of member 17. Sleeve 38 is normally held in an advanced position by spring 41 which seats in a suitable recess 42 in said sleeve and maintains the cooperating shoulders on sleeves 36 and 38 in contact. A comparatively small amount of longitudinal movement is permitted in sleeve 38 in response to pressure of tapered surfaces 39 and 40 when the lock is brought into engaged position.

It will be noted that when the door is in open position member 17 is loosely carried in bushing 19 and is free to move longitudinally a distance determined by the key 22 and cooperating slot 21. When the door is brought into closed position the threads 25 of member 17 contact with tapered end 35 of stud 33 and are brought thereby into engagement with the threaded end of said stud. When member 17 is threaded onto stud 33, as by turning handle 24, tapered surfaces 39 and 40 are brought into engagement and serve to positively align the axes of members 17 and 33. Further turning of handle 24 compresses spring 41 and permits the door 11 to be drawn tightly against side 10. In this position the members are held securely in closed position by means of the cooperating screw threads on members 17 and 33. Said members are also held against transverse displacement by the cooperating surfaces 39 and 40.

It will be noted that the closing of the lock is facilitated by the tapered end 35 on stud 33 which assists in properly aligning the members when the door is closed. Furthermore, after the members are brought into engagement the tapered sleeve 38 secures them against transverse movement and accurately maintains the members in their respective positions. This feature is particularly important in case certain apparatus is carried by the door which must be brought into an exact position with respect to other apparatus

carried by the stationary housing or stud members 10. Furthermore, sufficient rigidity is imparted to the housing by the above described lock to materially strengthen the assembly and in the case of the projection machine described in my copending application above referred to imparts sufficient rigidity to permit transportation from place to place.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:—

1. A closure fastener comprising a rotatable member carried by one element of said closure and movable longitudinally with respect thereto, said member being provided with an internal screw thread, a stationary stud carried by another element of said closure and being threaded to cooperate with said internal threads, said stud having a tapered end adapted to engage said internal threads for directing said members into axial alignment.

2. A closure fastener comprising a pair of threaded members adapted to be positioned in axial alignment, one of said members having a tapered surface and a movable sleeve having a complementary tapered surface associated with the other of said elements for securing said elements in axial alignment.

3. A closure fastener comprising a pair of threaded members adapted to be positioned in axial alignment, one of said members having a tapered surface and a movable sleeve having a complementary tapered surface associated with the other of said elements for securing said elements in axial alignment, said sleeve being resiliently movable in response to axial pressure between said tapered surfaces.

4. A lock having a closure member comprising a stationary stud having a threaded end, a sleeve surrounding the threaded end of said stud, a complementary member having an internal thread adapted to engage said stud and an external tapered surface adapted to engage said sleeve, said complementary member being carried by one element of said closure and said stationary stud and sleeve being carried by another element thereof, said members being adapted to maintain said elements in fixed relative position.

5. In a mechanism having a stationary housing and a movable door, a door lock comprising a threaded stud mounted in said housing, a sleeve surrounding said stud and longitudinally movable with respect thereto, a rotatable member carried by said door and internally threaded to engage said stud, said

member having a tapered surface to engage said sleeve for preventing transverse displacement, said stud having a tapered end for directing said members into axial alignment, and resilient means for normally holding said sleeve in engagement with said member.

6. A lock comprising a pair of cooperating threaded members adapted to be maintained in axial alignment, one of said members having a tapered end to facilitate engagement therebetween, and means for preventing transverse displacement of said members comprising cooperating tapered surfaces brought into engagement when said members are in closed position and resilient means for normally maintaining said surfaces in engagement.

7. A lock comprising a stationary stud having a threaded end, a movable member threaded to engage said stud, said movable member having a tapered surface, a sleeve surrounding said stud and mounted concentric therewith and having a surface complementary to said tapered surface, and means for bringing said sleeve and said surface into engagement when said members are fully engaged whereby transverse stress is transferred from the cooperating threads to said sleeve and said members are held in axial alignment thereby.

8. A lock comprising a stationary stud having a threaded end, a movable member threaded to engage said stud, said movable member having a tapered surface, a sleeve surrounding said stud and having a surface complementary to said tapered surface and adapted to engage the same, and means for resiliently holding said sleeve in engagement with said tapered surface whereby transverse stress is transferred to said sleeve and carried thereby.

In testimony whereof I have hereunto set my hand.

AUGUSTO DINA.