

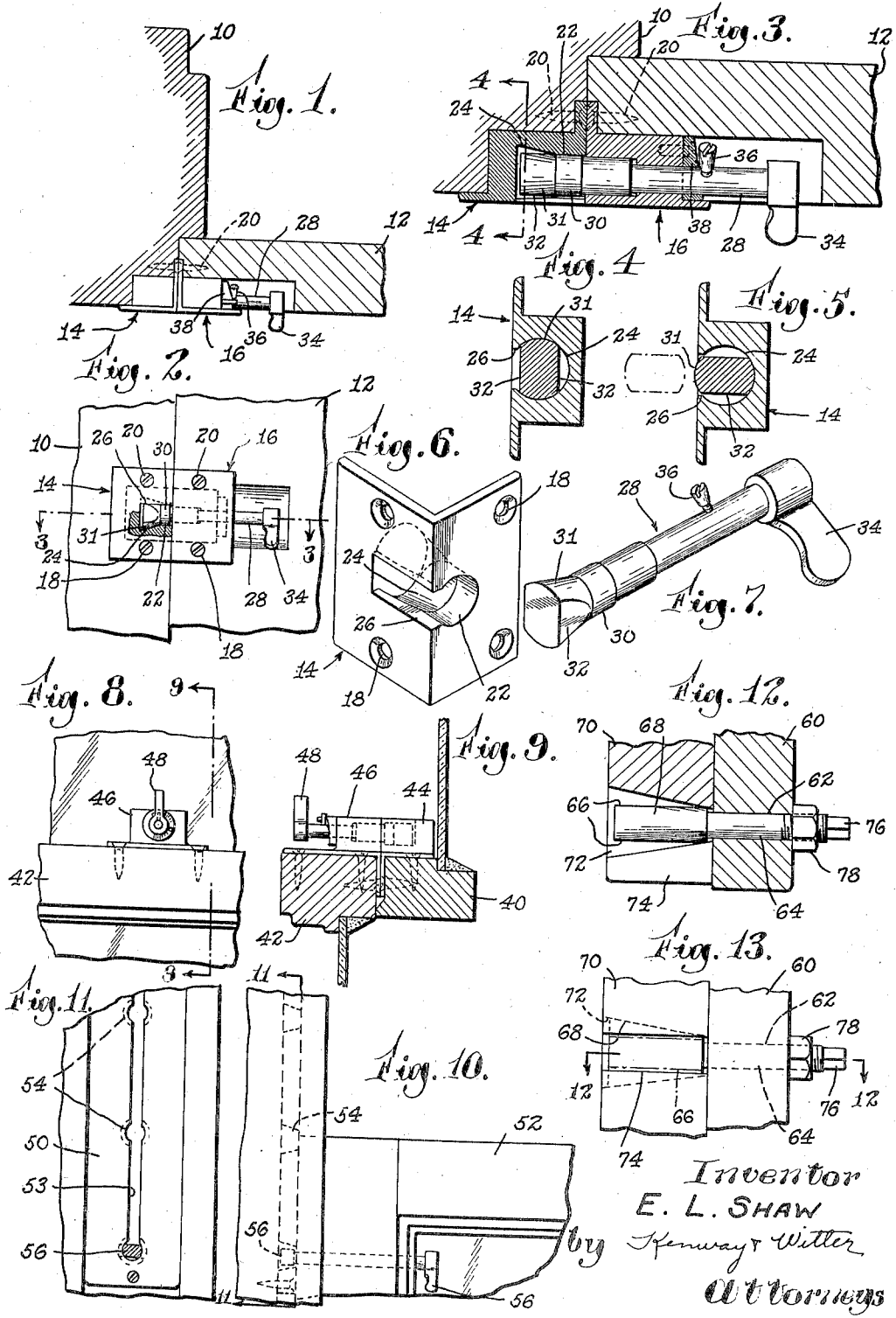
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LOCK, COUPLING, AND THE LIKE

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## LOCK, COUPLING, AND THE LIKE

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This invention relates to locks, couplings and the like wherein it is desired to secure two members together. The invention more particularly concerns a rotary element adapted to be carried  
5 by one of such members and having a portion projecting outwardly thereof in position to pass into an opening provided in the other member, this outwardly projecting portion being so constructed relative to the opening that rotation of  
10 the element after it passes into the opening securely locks the members together.

In its preferred form, my invention employs a rotary element of a shape and size to pass laterally into the opening provided in the said other member when the element is in one rotary position and to be so engaged with the walls of the opening as securely to bind the members together and prevent relative movement of the members in any direction when the element is  
20 rotated to another position within the opening.

More specifically the invention embodies a construction wherein the said opening and the outwardly projecting portion of said element are provided with cooperating walls converging away  
25 from the free end of said portion and wherein rotation of the element not only locks the element from lateral movement outwardly of the opening but which rotation also draws said walls into tight engagement with each other. The primary  
30 object of the invention resides in the provision of a new and improved lock or coupling of this nature.

These and other features of the invention will be best understood and appreciated from the following description of certain embodiments thereof selected for purposes of illustration and shown in the accompanying drawing wherein:

Fig. 1 is a plan sectional view through two members employing my improved lock and showing the lock in plan elevation cooperating there-  
40 with,

Fig. 2 is a front elevation thereof,

Fig. 3 is a plan sectional view taken on line 3—3 of Fig. 2,

45 Figs. 4 and 5 are sectional views taken on line 4—4 of Fig. 3 and showing the locked and unlocked positions respectively,

Fig. 6 is a perspective view of a portion of the lock,

50 Fig. 7 is a perspective view of the locking bolt,

Fig. 8 is a front elevation of my improved lock applied to a window,

Fig. 9 is a view thereof taken on line 9—9 of Fig. 8,

55 Fig. 10 is a fragmentary front elevation of a

window employing another form of my invention,

Fig. 11 is a view taken on line 11—11 of Fig. 10,

Fig. 12 is a sectional view on line 12—12 of Fig. 13 through two plates in face to face contact and employing one form of my improved lock to  
5 secure the same together,

Fig. 13 is an edge elevation thereof.

Referring first to Figs. 1-7 of the drawing, 10 and 12 indicate two members to be secured together by my improved lock. The lock comprises  
10 two pieces 14 and 16 having marginal holes 18 for receiving screws 20 to secure the two pieces within suitable recesses formed within the members. The piece 14 is provided with an opening  
15 22 therein in which the walls 24 converge conically toward the open cylindrical end of the hole. This piece is also cut away at 26 to provide the hole with a lateral mouth narrower thereacross than the diameter of the hole.

The piece 16 is bored to receive the locking bolt  
20 28 therewith a portion projecting outwardly therefrom, this portion comprising a cylindrical section 30, two oppositely disposed conical faces 31 and two oppositely disposed flats 32. The cylindrical section and flats are of a diameter  
25 to pass through the mouth 26 and the conical faces are constructed to fit the conical walls 24. A handle 34 is secured to the other end of the bolt and the bolt is permitted a limited longitudinal movement under the action of a pin 36  
30 bearing against a cam plate 38.

The locking bolt is so mounted in the piece 16 and member 12 that the outwardly projecting portion 30—32 of the bolt can pass laterally into the opening 22—24 through the mouth 26 when  
35 the bolt is turned to the position indicated in Fig. 5. Rotation of the bolt to the position shown in Fig. 4 precludes passage of the bolt outwardly through the mouth and thus secures the member 12 against opening movement. Furthermore, the  
40 engagement of the conical walls 31 of the bolt with the walls 24 prevent separating movement of the members longitudinally of the bolt. It will also be noted that the surface of the plate 38 against which the pin 36 engages is so inclined  
45 that rotation of the bolt from the position of Fig. 5 to the position of Fig. 4 draws the bolt longitudinally to the right. Such movement of the bolt brings the walls 31 tightly into engagement with the walls 24 whereby securing the two mem-  
50 bers 10 and 12 against relative movement in any direction.

In Figs. 8 and 9 I have shown my improved lock applied to the upper and lower sashes 40 and  
55 42 of a window. The two parts of the lock are

herein indicated by reference characters 44 and 46 and the construction is substantially the same as above described. When the bolt is rotated by the handle 48 to the position indicated in Fig. 5 the locking end of the bolt can pass freely into the opening in the part 44 and turning of the bolt to the position of Fig. 4 securely binds the two sashes together against movement or rattling.

In Figs. 10 and 11 I have indicated a further application of the lock to a window. In this case a plate 50 is secured in one guideway of the window sash 52. The plate is slotted longitudinally at 53 and conical openings 54 are provided at spaced locations along the slot. The locking bolt 56 is mounted in the sash with the conical locking end thereof projecting into the slot. The window is free to move up and down when the bolt is turned to the position indicated in Fig. 5 and may be locked against movement or rattling in any one of the positions 54 by turning the bolt to the position indicated in Fig. 11.

In Figs. 12 and 13 I have illustrated how my invention can be employed to secure a plate or the like to a foundation or to another plate. The plate 60 to be secured is drilled at 62 to receive a bolt 64 having a head provided with two oppositely disposed flats 66 and two oppositely disposed conical faces 68 of the nature illustrated in Fig. 7. The foundation plate 70 is provided with an opening 72 therein and an entrance mouth 74 of a width just permitting the flats 66 to pass therethrough. In use the bolt is passed through the hole 62 and through the mouth 74 into the opening 72. The bolt is then turned 90°, by engagement of a wrench with the squared outer end 76, to the position indicated in Figs. 12 and 13 wherein the conical faces 68 of the bolt engages the conical wall of the opening 72. A nut 78 threaded to the bolt is then tightened against the plate 60 to draw the faces 68 and 72 into tight contact whereby holding the plate 60 tightly to the plate 70. It will be understood that as many bolts 64 may be employed as are necessary.

It will be understood that I have herein shown only certain specific embodiments of my invention and that the same is adaptable to a wide application of forms and uses.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a coupling, a member having a chamber therein with concave conical side walls, a second member having a longitudinally extending portion provided with convex conical side walls sub-

stantially corresponding to said concave side walls and having two oppositely disposed flats or the like therealong rendering the diameter of said portion less in the direction of said flats, the first named member having an opening into the chamber permitting the insertion of said portion of the second member thereinto when the flats of the second member are in a predetermined position relative to said opening, and cam means for giving the members a relative longitudinal movement drawing said convex and concave walls into tight engagement upon relative rotary movement of the cam means and one of the members when said portion of the second member is within the chamber.

2. A lock for securing together two relatively movable members one of which has a chamber therein open at one end in the direction of the other member and having a relatively lateral mouth open thereinto and narrower thereacross than within the chamber, the walls of the chamber converging toward said open end, a rotary element carried by the other member and having a portion projecting outwardly thereof in position to pass through said mouth and into the chamber, said portion having one diameter permitting such portion to pass through the mouth into the chamber and having another larger diameter permitting rotation of the portion within the chamber but preventing passage thereof through the mouth, said portion also converging toward said other member and being of a size preventing passage through said one end of the chamber, and means for rotating the element.

3. A lock for securing together two relatively movable members one of which has a chamber therein open in the direction of the other member and also having a relatively lateral opening thereinto, a rotary element carried by the other member and having a portion projecting outwardly thereof in position and of a shape and size to pass through the lateral opening into the chamber when in one rotary position and to prevent return movement of the element there-through when rotated to another position within the chamber, the chamber and the outwardly projecting portion of the element being provided with cooperating conical walls converging toward the other member, means for rotating the element, and cam means for moving the element longitudinally in a direction to draw said walls into tight engagement upon rotation of the element to said another position.

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