June 9, 1936. W. MUMBRAUER ET AL 2,043,550

DOOR LOCKING MECHANISM

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Fig. 2

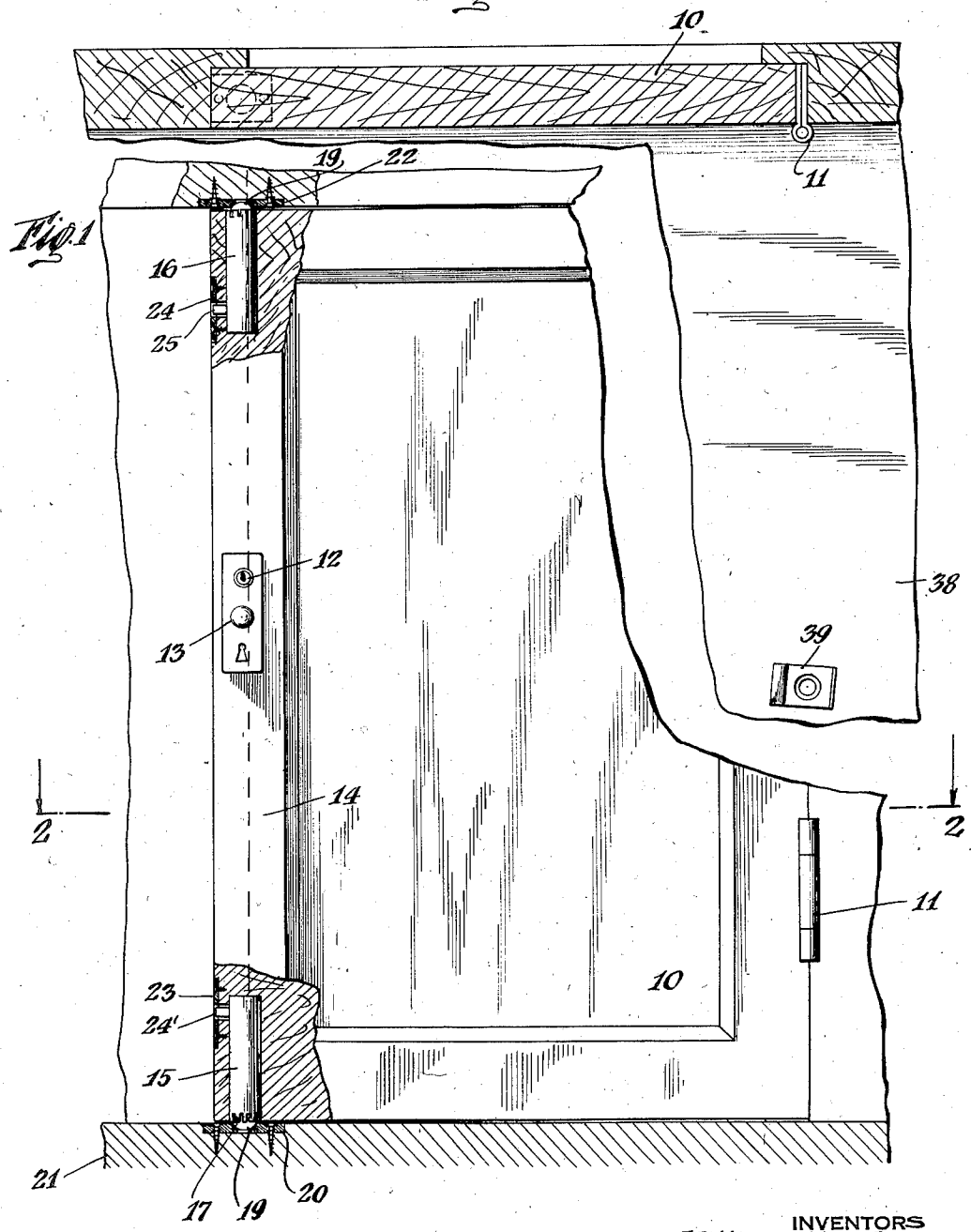


Fig. 1

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Fig. 3

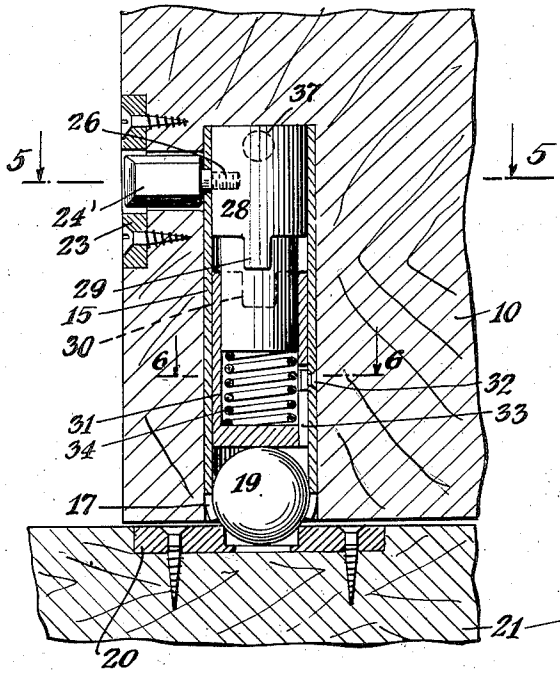


Fig. 4

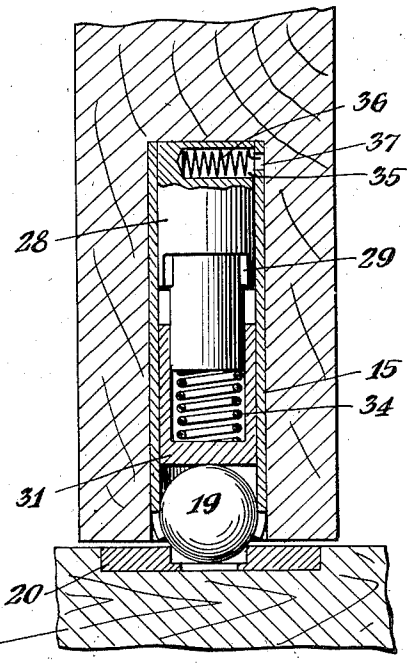


Fig. 5

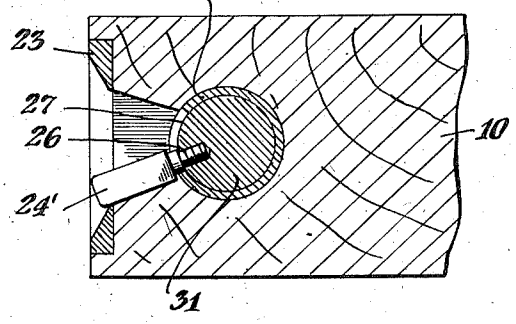


Fig. 7

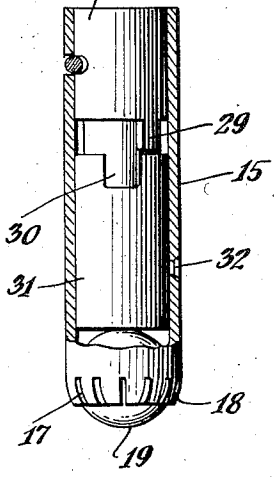
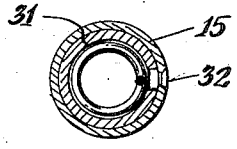


Fig. 6



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Patented June 9, 1936 2,043,550

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2,043,550

DOOR LOCKING MECHANISM

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Application May 31, 1935, Serial No. 24,194

2 Claims. (Cl. 292—75)

This invention relates to improvements in door latches and closers, and it is the principal object of our invention to provide a door, preferably a folding-door, with two, spring-controlled, lever operated, rotatable upper and lower latches which will automatically operate to hold the wings of the door closed and locked, if so desired, while the lower of the latches will automatically engage a socket in the floor when the wings of the door are swung about their hinges into door opening position for locking the wings in this position.

Another object of our invention is the provision of door latches or closers, each of which has a preferably cylindrical casing or housing in which the locking members proper consisting of spherical or semi-spherical bodies are held to partly project from their housing to engage suitable sockets in the door sill or upper frame bar or in the floor under spring pressure to be dogged or undogged by the proper operation of a lever.

A further object of our invention is the provision of latches or locking members for doors including cylindrical housings which each enclose two movable locking members interlocking and rotatably held in said housings and which are spring controlled and adapted to be operated by means of a lever extending to the outside of the housings for interlocking or disengaging the two members to either dog the spherical locking bodies in their socket engaging positions, or to allow their recession into the housing to allow the swinging of the door wings about their hinges.

A still further object of our invention is the provision of a door closer and latch of a comparatively simple and therefore inexpensive construction, yet durable and highly efficient in operation and including means for additionally safeguarding their operation.

These and other objects and advantages of our invention will become more fully apparent as the description thereof proceeds, and will then be specifically defined in the appended claims.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a fragmentary front elevation of one wing of a folding-door equipped with a pair of closers or latches constructed according to our invention.

Fig. 2 is a fragmentary top plan view of a floor provided with a door stop socket, with the door in section on line 2—2 of Figure 1.

Fig. 3 is a vertical section through one of the latches constructed according to our invention embedded in the material of a door, the door and sill shown fragmentarily.

Fig. 4 is a view similar to Figure 3 at an angle of 90° thereto.

Fig. 5 is a section on line 5—5 of Figure 3.

Fig. 6 is a section on line 6—6 of Figure 3.

Fig. 7 is a sectional detail view of one of the latches.

As illustrated, the wing 10 of a door adapted to be swung about its customary hinges 11 and equipped with the conventional locks 12 and knob 13, has embedded in its material at the upper and lower portion of the inner frame bar 14 the latch casings 15, 16, preferably cylindrical in form and enclosing the locking members and their operating parts.

Each of the casings 15, 16 has its material at the outer end slitted, as at 17, and inwardly bent, as indicated at 18, to enclose and hold a locking member 19 either as shown of spherical shape or of hemi-spherical shape and partly projecting from the outer end of the cylindrical casing to engage either a socket 20 provided in the door sill 21, or a socket 22, provided in the upper bar of the door frame.

The inner edge of the door wing 10 has provided in its frame bar 14 two sockets 23 and 24, a lower and an upper one, into which extend the pins 24' and 25 respectively with their threaded tenons 26 through slots 27 in the casings 15, 16 into a member or head 28, slidably arranged within the cylindrical casing 15 and having formed at its lower reduced end a plurality of downwardly extending lips or tongues 29 spaced from one another about the outer circumference of the reduced end of member 28 and adapted to engage suitably formed recesses 30 in the inner marginal edge of a second sleeve member 31 held in the housing 15 by means of an inner stud 32 guided in a longitudinally extending groove 33 of member 31.

The sleeve member 31 contains a spring 34 engaging with its inner end the outer reduced end of member 28 and with its outer end the bottom part of sleeve 31.

Near its upper end, the head of member 28 has formed therein a chamber 35 in which a spring 36 is located frictionally engaging with its outer end in an opening 37 in the wall of the transverse chamber 35 adapted to be closed by a suitable screw or the like, and with its inner end engaging the inner end wall of the chamber 35.

At a proper distance from the door, the floor 38 has secured thereto a socket 39 so located as to be positively engaged by one of the locking members 19 when the door wings are swung into their open position, so that the wings can be

locked in this position by the proper operation of pin 24'. In operation, the parts 28 and 31 being in the position illustrated in Figure 3, the spherical locking member 19, when engaging the socket 20 will recede into body 15 against the pressure of the spring 34 which will then press the ball 19 into the cavity of the socket. If it is desired to dog the latch 19 in this position, the pin 24' is operated to rotate member 28 to bring its tongues into the position shown in Figure 7 in which the ball latch 19 is held against inward movement into the body 15. When then the pin 24' is operated again to swing the member 28 into the position shown in Figure 3, the locking member 19 can recede into the cylindrical body 15 and the door may be opened and swung about its hinges into open position until the locking member 19 arrives at the socket 39 in the floor to engage with its ball latch the same and to be locked in this position in the aforedescribed manner. The spring 36 will control the rotation of member 28 by frictional engagement of the door when the spring slides past opening 37 during the rotation of member 28.

It will be understood that we have described and shown the preferred form of our invention only as an example of the many possible ways to practically construct the same, and that we may make such changes in the general arrangement of the device and in the construction of the minor details thereof as come within the scope of the appended claims without departure from the spirit of our invention and the principle involved.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a door locking mechanism, a plurality of latches, each comprising a hollow cylindrical body embedded in the material of the door, a headed member having a reduced end rotatably held in said body, a pin secured to said headed member and extending from said body, tongues formed with said member at its reduced end, a sleeve member in said body having marginal recesses adapted to be engaged by said tongues, spherical latch elements in said body partly projecting therefrom, a spring in said sleeve member, said spherical latch element held in locking position during engagement of said members, and allowed to recede into said body upon their disengagement.

2. In a door locking mechanism, a plurality of latches, each comprising a hollow, substantially cylindrical metal body embedded in the material of the door, a solid headed member having a reduced lower end held in said body for rotation, a pin having a threaded inner tenon screwed into said headed member and extending from said body into a socket in the door, for rotating said member from the outside thereof, tongues formed from the material of the head and circumferentially surrounding the reduced end, a sleeve member in said body beneath said solid member and having recesses in its inner marginal edge adapted to receive the tongues of said solid member, a spring in said sleeve for holding said members in engagement, a spherical latch element held in the lower end of said body partly projecting therefrom to be pressed into its locking position during the engagement of said members and to recede from its locking position upon disengagement of said members when said solid member is turned at an angle of 90° by said pin to engage the tongues with the recesses in said sleeve for opening the door when said latch is repressed into said body against the action of said spring.

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