

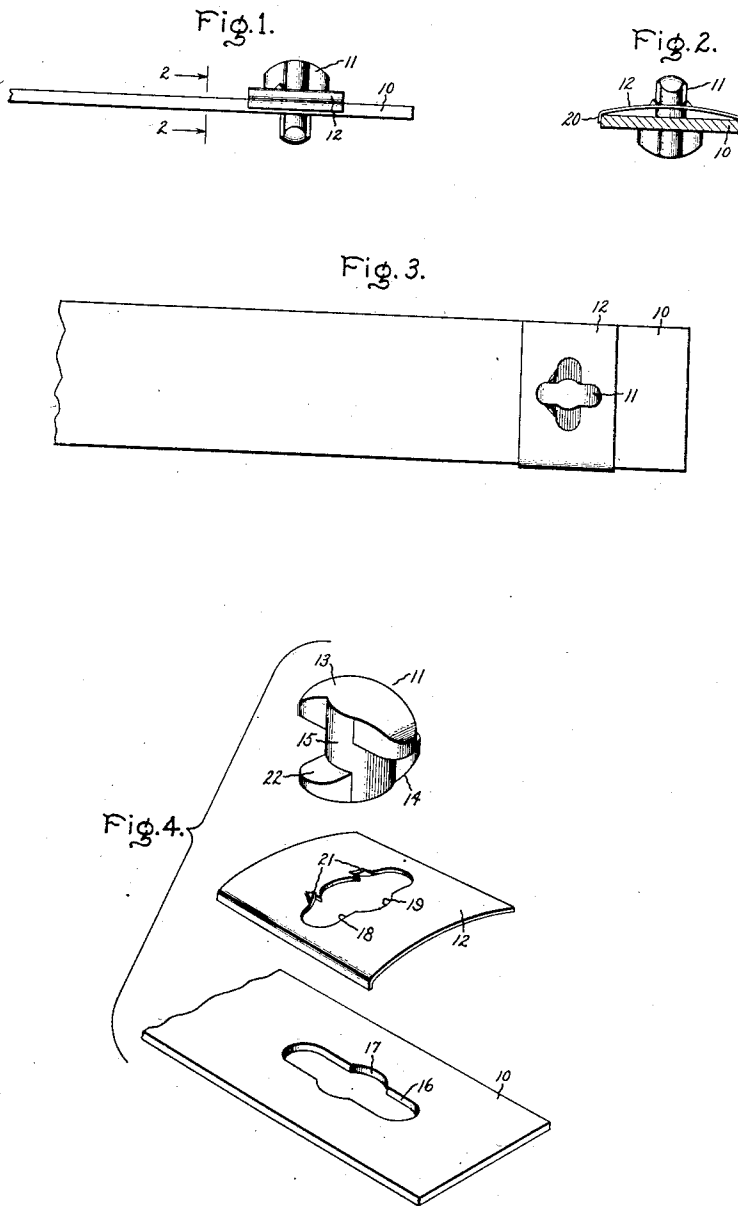
Oct. 21, 1941.

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2,260,048

FASTENING ARRANGEMENT

Filed Dec. 27, 1939



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UNITED STATES PATENT OFFICE

2,260,048

FASTENING ARRANGEMENT

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Application December 27, 1939, Serial No. 311,145

3 Claims. (Cl. 174-138)

My invention relates to a fastening arrangement and has for its primary object the provision of a novel arrangement whereby an object may be simply and firmly secured to a surface yet may be readily detached if desired.

More specifically, my invention relates to a fastening arrangement for securing an electrical insulator in its operative position. However, while the fastening arrangement will be described particularly with reference to an electrical insulator, it is to be understood that it is not intended to limit the invention thereto since it is of more general application.

It is a more specific object of my invention to provide a fastening arrangement which is simple in construction, easily operated, and inexpensive to manufacture.

An additional object of my invention is to provide a fastening arrangement by which an object may be quickly mounted in its operative position and is firmly held in such a position and constrained against rotation or translation.

It is a still further object of my invention to provide a fastening arrangement which requires access to only one side of the supporting surface in order to mount and secure the object to the surface.

Further objects of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be set forth in the claims appended to and forming a part of this specification.

For a more complete understanding of my invention, reference should be had to the accompanying drawing in which Fig. 1 is an elevation showing my improved fastening arrangement used for securing an insulator to a control member for a control device; Fig. 2 is a partial sectional view taken on the line 2-2 of Fig. 1 and looking in the direction of the arrows; Fig. 3 is a plan view of the arrangement shown in Fig. 1, and Fig. 4 is an exploded view showing details of the operative elements of my improved fastening arrangement.

As previously stated, my improved fastening arrangement will be described with reference to the fastening of an insulating button on a control arm of a control device but it is to be understood that it is not limited to this use. In many control devices it is customary to have a bimetallic member actuate a contact arm in order to perform a switching function in response to temperature changes. In order to prevent the bimetallic member from coming in

direct contact with the switch arm, some insulating device is usually provided on the member or on the arm to insulate the two from each other. In such a construction, it is essential that the insulating member is firmly held in its operative position in order to avoid variation in the calibration of the device. In addition, it is important to have a construction and arrangement for mounting the member which is simple and easy to assemble. By employing my new and improved mounting arrangement to mount the insulator in position, these and other desirable features are attained.

Referring to Fig. 1, 10 designates a surface, in this instance the bimetal blade of a temperature control device, upon which an object 11, in this instance an insulating button, is mounted. Arranged between the object or button 11 and one surface of bimetal blade 10 is a resilient strip 12, the details and function of which will be described hereinafter. It is to be observed that with my improved fastening construction and arrangement the insulating button 11 can insulate the member 10 from both sides irrespective of the pressure applied and the button 11 will be held in place even though an outside pressure exerted thereon and tending to hold it in place is removed.

Referring now to Fig. 4 in which the component elements of my invention are illustrated in detail, it will be observed that the object or button 11 comprises two elongated portions 13 and 14 lying at substantially right angles to each other and connected together by a cylindrical body portion 15. In the form shown, the button 11 is made from a suitable moldable ceramic material. It has been found that the construction of the button 11 just described may be readily produced by a molding operation for with the head portions arranged at an angle to each other, each of the separate molds therefor may be easily stripped after the molding operation has been completed. By providing a construction which readily lends itself to a molding operation, the cost of making the button 11 is reduced substantially.

Referring further to Fig. 4, it will be observed that an elongated opening 16 is punched or cut in the member 10. Provided centrally of the opening 16 is a rounded portion 17 the diameter of which is slightly larger than the diameter of the body portion 15 of the button. The width of the remainder of the slot, however, is smaller than the portion 15 of the button and the wide central part of the head portions 13 and 14 so

that any tendency of the button to slide in the slot is restrained.

Located between the surface of member 10 and the under side of one of the head portions, such as the head portion 13, is a wide flat spring 12 which is provided with a slot 18 having a shape similar to the slot 16 and having a central rounded portion 19 similar to the portion 17. The member 12 is made from some suitable spring material and is arranged to have a slight curvature relative to the member 10. Means are provided on the spring 12 to prevent rotation of the spring relative to the supporting surface once it is assembled in position. In Fig. 4 this means comprises a flange formed along one edge of the spring. This flange is arranged to engage an edge of the surface 10.

In order to prevent rotation of the button 11 relative to the spring member 12, a pair of ears 21 is turned up from the flat spring 12 adjacent the rounded portion of the slot 19 on one side thereof. As shown in Figs. 1, 2 and 3, these ears are adapted to lie on opposite sides of the head portion 13 when the button is mounted on the member 10.

In mounting the insulating button on the member 10, the flat spring member 12 is first inserted over the head portion 14 so that the body portion 15 lies in the opening formed by the circular portion 19 of the slot 18. The head portion 14 is next inserted through the elongated opening provided in the member 10 so that the bottom wall 22 of the head portion projects beyond the under side of the member 10. In order to do this, it is necessary to compress the spring member 12. While the spring member is thus compressed, the entire assembly is turned so that the head portion 14 lies at right angles to the opening 16 and at the same time the flange 20 of the spring snaps over the edge of the member 10. Prior to this rotary movement, the head portion 13 will have been brought down against the spring member 12 so that the ears 21 lie on opposite sides of the head member. After the flange 20 has snapped over the edge of member 10, the pressure on the spring 12 is released. The spring then serves to bias the head 14 of the button against the member 10 and to hold the component elements firmly in position. Furthermore, the flange 20 provided on the spring member 12 will prevent any relative rotation of the spring member with respect to the member 10 and the ears 21 serve as stops to prevent any relative rotation of the insulating button with respect to the spring member 12.

It is to be observed that during the assembling or mounting operation described above all of the operations are performed from one side of the member 10. This is one of the features of my fastening means since it makes it possible to use the arrangement without regard to the size or shape of the wall or surface to which it is attached.

When my improved fastening arrangement is used to secure an insulator in position, it is preferred to have the button 11 made of insulating material and thus become the object to be fastened to a wall. However, when used in other applications, it is apparent that the particular object could be suitably secured to either the button 11 or the resilient member 12 and then fastened to a wall or surface in the manner described above.

While I have shown a particular embodiment of my invention, it will be understood, of course,

that I do not wish to be limited thereto since many modifications such as those stated in the preceding paragraph may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The combination with a wall having an elongated opening therein of a resilient strip adapted to engage said wall and having an elongated opening therein similar to the opening in said wall, said elongated openings in said strip and said wall having a central portion wider than the remaining portions of said openings, a button having a pair of elongated head portions lying at an angle to each other and connected by a cylindrical body portion, said head portions having a length less than the length of said elongated openings and said body portion having a diameter less than the central portion of said elongated openings so that either of said head portions may be inserted through said elongated openings in said strip and said wall an amount sufficient to permit said cylindrical body portion of said button to be received in said central portions of said elongated openings whereby said button may be rotated so that each of said head portions lies at an angle to said openings in said wall and strip respectively, means on said strip adapted to engage said wall so as to prevent relative movement between said strip and said wall, and additional means on said strip adjacent the central portion of said elongated opening therein for engaging the adjacent head portion to prevent relative rotation between said button and said strip.

2. The combination with a wall having an elongated opening therein of a resilient strip adapted to engage said wall and having an elongated opening therein similar to the opening in said wall, said elongated openings in said strip and said wall having a central portion wider than the remaining portions of said openings, a button having a pair of elongated head portions lying at an angle to each other and connected by a cylindrical body portion, said head portions having a length less than the length of said elongated openings and said body portion having a diameter less than the central portion of said elongated openings so that either of said head portions may be inserted through said elongated openings in said strip and said wall an amount sufficient to permit said cylindrical body portion of said button to be received in said central portions of said elongated openings whereby said button may be rotated so that each of said head portions lies at an angle to said openings in said wall and strip respectively, means on said strip adapted to engage said wall so as to prevent relative movement between said strip and said wall, and a pair of ears extending outwardly from said strip and adapted to engage opposite sides of the head portion of the button adjacent thereto to prevent relative rotation between said button and said strip.

3. The combination with a wall having an elongated opening therein of a resilient strip adapted to engage said wall and having an elongated opening therein similar to the opening in said wall, said elongated openings in said strip and said wall having a central portion wider than the remaining portions of said openings, a button having a pair of elongated head portions lying at an angle to each other and con-

nected by a cylindrical body portion, said head portions having a length less than the length of said elongated openings and said body portion having a diameter less than the central portion of said elongated openings so that either of said head portions may be inserted through said elongated openings in said strip and said wall an amount sufficient to permit said cylindrical body portion of said button to be received in said central portions of said elongated openings whereby said button may be rotated so that each of said

head portions lies at an angle to said openings in said wall and strip respectively, said resilient strip having a flanged portion arranged to engage an edge of said wall to prevent relative rotation between said strip and said wall and a pair of ears extending outwardly from said strip and adapted to engage opposite sides of the head portion of the button adjacent thereto to prevent relative rotation between said button and said strip.

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