A. LUNGEN.

PUSH BUTTON.

APPLICATION FILED SEPT. 7, 1912.

1,085,215. Patented Jan. 27, 1914

Fig. 1.

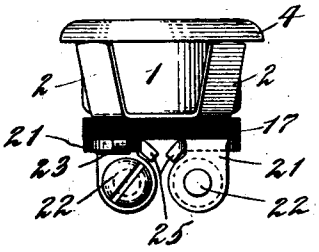


Fig. 2.

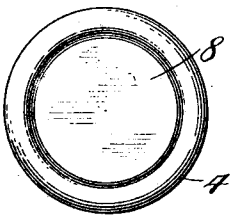


Fig. 3.

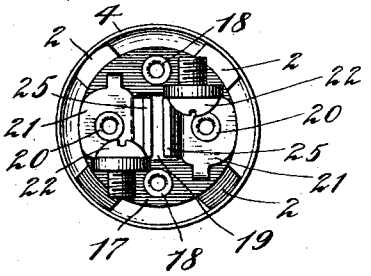


Fig. 4.

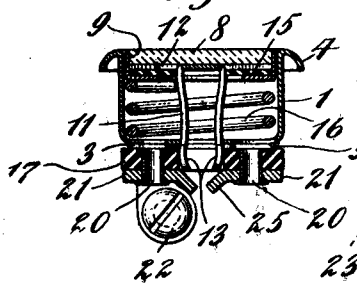


Fig. 5.

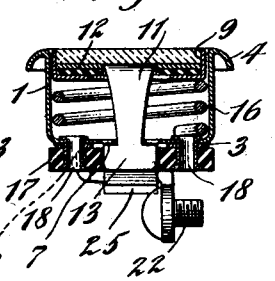


Fig. 6.

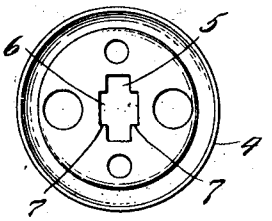


Fig. 7.

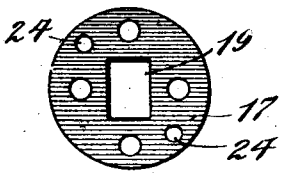


Fig. 8.

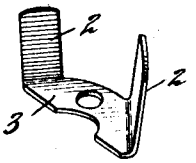


Fig. 9.

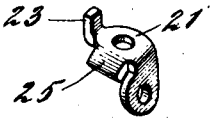
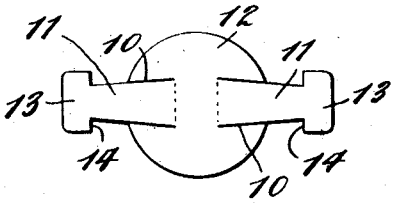


Fig. 10.



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UNITED STATES PATENT OFFICE.

ADAM LUNGEN, OF NEW YORK, N. Y., ASSIGNOR TO EDWARDS & COMPANY, A CORPORATION OF NEW YORK.

PUSH-BUTTON.

1,085,215. Specification of Letters Patent. Patented Jan. 27, 1914.

Application filed September 7, 1912. Serial No. 719,203.

To all whom it may concern:

Be it known that I, ADAM LUNGEN, a citizen of the United States, residing at the city of New York, in the borough of Bronx and State of New York, have invented certain new and useful Improvements in Push-Buttons, of which the following is a full, clear, and exact description.

This invention relates to electric push buttons, and is an improvement over the device shown in Patent No. 731,479, granted to me June 23, 1903, the object being to provide a device which is simple and cheap to construct and efficient and durable in use, and in particular to provide an improved means for securing the spring contact arms to the push button and an improved means for securing the contact arms against removal after insertion in the shell of the device.

An embodiment of my invention is shown in the accompanying drawings, in which like reference characters are applied to like parts throughout.

In the drawings: Figure 1 is a side elevation of the improved push button. Fig. 2 is a front elevation. Fig. 3 is a rear elevation. Fig. 4 is a vertical section. Fig. 5 is a vertical section at right angles to Fig. 4. Fig. 6 is a rear elevation of the shell of the device. Fig. 7 is a plan view of an insulating disk. Fig. 8 is a perspective of one of the frictional retaining members. Fig. 9 is a perspective of one of the contact pieces and circuit terminals. Fig. 10 shows the blank from which the spring contact arms are formed.

The device is adapted to be inserted and frictionally held in an opening in a desk or other surface to which it is desired to attach the same. It comprises a cup shaped shell 1 adapted to be inserted in an opening in the surface to which the button is to be attached, said shell being frictionally held in position by retaining members consisting of pairs of spring ears 2 which engage the wall of the opening, each pair of ears being connected by a segmental base 3 which is secured to the bottom of the shell 1 in a manner to be hereinafter described. The shell 1 has an annular flange 4 at its outer edge which forms a stop when inserting the button in its opening.

In the bottom of the shell 1 is an elongated opening 5, the walls of which are cut away at their middle portion forming recesses 6 and abutments 7. Inside the shell is the movable button proper which comprises a disk 8 and cup shaped sheath 9 and which is pushed by the finger to close the circuit. This button carries spring contact arms which are formed and secured to the button in the following manner: A flat piece of metal such as shown in Fig. 10 is cut on the lines 10, and the arms 11 bent up at substantially right angles to the base 12. The arms 11 are transversely elongated, producing heads 13 and forming shoulders at 14, and the heads 13 are slightly concaved as clearly seen in Fig. 4. The base 12 of the contact arms fits within the cup shaped metallic sheath 9 but is spaced therefrom by the insulating disk 15, the arms 11 protruding through central openings in the insulating disk and sheath. The disk 8, which may be of ivory, pearl or other desired material, is then secured by friction within the sheath on top of the base 12, thereby maintaining the contact arms 11 in fixed relation to the button without the use of bails, bent up ears or other external means for securing them to the button. In placing the button in the shell, the heads 13 of the spring contact arms are drawn together and inserted through the elongated opening 5 in the bottom of the shell, and as soon as they have passed through the opening the springing apart of the arms will cause them to enter the recesses 6 at the middle portion of the opening 5. In this position the shoulders 14 engage the shoulders or abutments 7 and outward movement of the button and the arms 11 carried thereby is prevented. A compression spring 16 is inserted between the bottom of the shell and the button, but the upward movement of the button, due to the spring, is limited by the engagement of the shoulders 14 and abutments 7, which form a stop therefor.

An insulating disk 17 is secured to the shell 1 by the hollow rivets 18, the segmental base 3 of the spring ears 2 being interposed between the two and also secured by the same rivets. The disk 17 has an opening 19 therein through which the contact arms 11 may move.

Secured on the outer side of the insulating disk by hollow rivets 20 are the contact pieces 21 disposed on opposite sides of the opening 19. Projecting outwardly from said contact pieces are arms on wihch the

binding screws 22 are mounted, and opposite thereto are the inwardly bent ears 23, adapted to fit within the openings 24 in the insulating disk, whereby the contact pieces are prevented from rotating around the hollow securing rivets 20. Lateral projections 25 are also formed on the contact pieces 21, the same extending opposite the opening 19 and adapted to be engaged by the heads 13 on the arms 11. The operation of the device is as follows: Upon pushing the button inwardly against the spring 16, the heads 13 of the contact arms 11 engage the projections 25 on the contact pieces 21, thus completing the circuit. When the button is released the spring 16 returns the same to its normal position, the engagement of the shoulders 14 and abutments 7 preventing the separation of the button proper from the shell.

Having described my invention, I claim:

1. In a circuit closing device, a button comprising a cup-shaped sheath, having a central opening in its bottom, three superposed disks contained in said sheath, the intermediate disk being of conducting material and provided with two circuit closing spring arms projecting therefrom at points inside of its periphery and extending through an orifice provided in one of the other disks and through the central opening in the bottom of the sheath, in combination with a pair of terminals adapted to be bridged by said arms.

2. In a push button, a shell having an opening in its bottom, with recesses in the walls of said opening, forming abutments, a button proper depressible in said shell, resilient means for retracting said button, and resilient contact arms movable in said recesses and having enlarged ends forming shoulders adapted to engage said abutments, whereby the retraction of the button is limited and its rotation prevented.

3. In a push button, a shell having an opening in its bottom, with recesses in the walls of said opening forming abutments, a button proper carrying contact arms having enlarged ends, forming shoulders, said arms being resilient and adapted to be inserted through said opening, whereby on insertion of the enlarged ends through the opening the arms will engage the recesses and retraction of the arms will be limited by the engagement of said shoulders and abutments.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

ADAM LUNGEN.

Witnesses:
HORACE WHITMAN,
GEORGE PRICE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."