

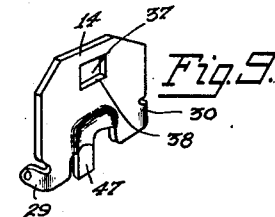
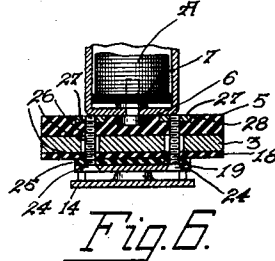
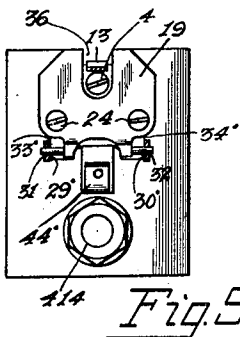
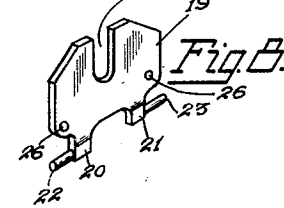
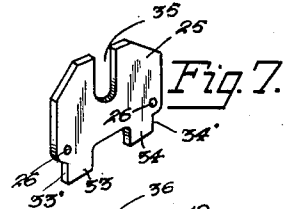
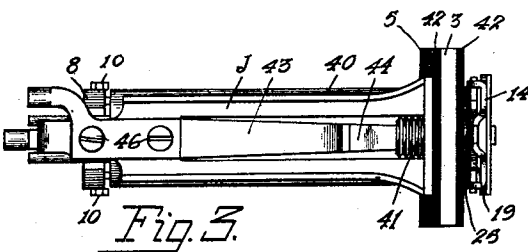
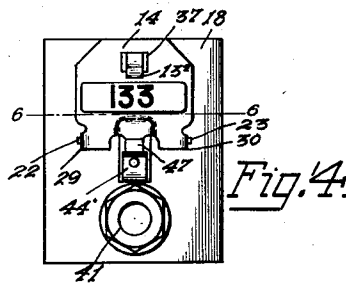
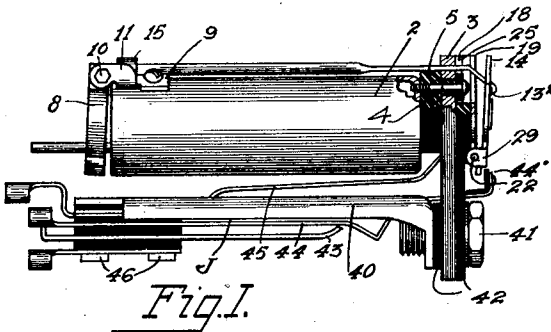
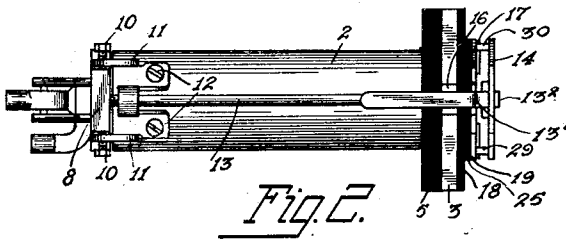
Feb. 21, 1928.

1,659,789

C. SPARKS

COMBINED DROP AND JACK

Filed Aug. 21, 1920



Inventor:

Charles Sparks

By Curtis B. Camp,

Attorney

Patented Feb. 21, 1928.

1,659,789

UNITED STATES PATENT OFFICE.

CHARLES SPARKS, OF OAK PARK, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COMBINED DROP AND JACK.

Application filed August 21, 1920. Serial No. 405,001.

My invention relates to telephone annunciators or drops of the character used at the central office of a telephone exchange system for the usual signaling purposes. The signal for attracting the attention of the exchange operator is in the form of a pivoted drop shutter, which is held in its normal position by means of a latch or catch lever.

In telephone drops as now most universally used the drop shutter is hinged or pivoted by means of pivot pins which are apt to, and do at times, work loose and prevent the proper operation of the drop shutter. To overcome these objections I provide a drop shutter which is hinged or pivotally supported on pivot pins integrally formed with a portion of the drop so that the drop shutter will operate at all times thus eliminating the possibility of loose pivot pins.

A further feature of my invention resides in the manner in which the shutter may be readily removed without removing the pivots, as has heretofore been necessary with some drops of the prior art.

It is a further object of my invention to produce an improved device of the class described which will embody desirable features and advantages, all in a simple, efficient and economical manner, and for a more complete understanding of my invention reference may be had to the accompanying drawing in which like reference characters in the several views denote like parts, and in which

Fig. 1 is a side view of a combined drop and jack embodying my invention.

Fig. 2 is a plan view of Fig. 1.

Fig. 3 is a bottom view of Fig. 1.

Fig. 4 is a right side or front view of Fig. 1.

Fig. 5 is a view similar to Fig. 4 but with parts broken away to more clearly illustrate the construction of the shutter mechanism.

Fig. 6 is a partial sectional view along the line 6—6 of Fig. 4.

Figs. 7, 8 and 9 are perspective views of the drop shutter and its associated parts.

Referring now more in detail to my invention as illustrated, the combined drop and jack comprises a shell 2 for the electromagnet A, and the shell 2 is secured at its enclosed end to the mounting or supporting plate 3 by means of a suitably insulated screw 4, as shown in section in Figure 1, which screw 4 has screw-threaded engagement with a suitable tapped orifice in the en-

closed end of the shell 2. The shell 2 is also insulated from the supporting plate 3 by means of a suitable strip of insulation 5, such as hard rubber or the like. The electromagnet A is located within the shell 2 and secured thereto by means of a screw 6, the said screw having screw-threaded engagement with a suitable tapped orifice in the core 7 of the electromagnet A. The head of the screw 6 is adapted to fit within a suitable orifice in the insulating strip 5, for the purpose of steadying the shell 2 and securing it in its fixed position against movement. At the other end of the shell 2 the armature 8 is pivotally supported by the armature supports 9. A pair of pivot screws 10 have screw-threaded engagement with ears 11 of the support 9 and pivotally support the armature between the said ears 11. The support 9 and the pivoted armature 8, as a whole, is secured to the shell 2 by means of the screws 12. A shutter hook 13 is secured at its rear end to the armature 8 in any suitable manner and extends forward to the drop shutter 14, the said shutter hook 13 extending through a loop portion 15 of the support 9 for steadying the said shutter hook 13. A notch 16 is provided in the supporting plate 3, and a similar notch 17 in the insulating plate 18, and in which the forward end of the shutter hook 13 normally rests and is adapted to vibrate.

To pivotally support the drop shutter 14, I provide a drop shutter supporting plate 19 provided with a pair of downwardly extending legs 20 and 21, which have integrally formed therewith, by means of a swaging operation outwardly extending angular projections in the form of pivot pins 22 and 23. The supporting plate 19 is secured to the supporting plate 3 by means of screws 24, but is spaced therefrom by means of the insulation strip 18 and a spacer plate 25, which slightly spaces the supporting plate 19 from the insulation strip 18. The screws 24 pass through suitable openings 26 in the supporting plate 19, spacer plate 25, insulation strip 18, mounting plate 3 and insulation strip 5, and nuts 27, which have screw-threaded engagement with the screws 24, clamp the plate 19, spacer 25 and insulation strip 18 in place upon the front face of the mounting plate 3, and the insulation strip 5 in place upon the rear face of the mounting plate 3. The nuts 27 rest in suitable orifices

28 in the insulation strip 5 to bring them below the face of the insulation strip 5, for purposes as are already apparent.

The drop shutter 14 is provided with a pair of ears 29 and 30 integrally formed therewith and angularly displaced in relation to the plane of the drop shutter face, the said ears 29 and 30 being provided with suitable orifices 31 and 32, respectively, of a size to receive the pivot pins 22 and 23, upon which the drop shutter is pivotally supported. The spacer plate 25 is provided with downwardly extending legs 33 and 34, whose outer edges 33' and 34' are engaged by the inner front surfaces 29' and 30' of the ears 29 and 30 of the drop shutter 14, when it is in place upon the pivot pins 22 and 23, as clearly illustrated in Fig. 5. This prevents side movement of the drop shutter when in place upon the pivot pins 22 and 23.

From the above it may be seen that with a construction as above described the pivot pins 22 and 23 are integrally formed with the shutter supporting plate 19, and positively support the shutter 14 in pivoted relation upon the said pins 22 and 23, and the ears 29 and 30 in cooperation with the legs 33 and 34 of the spacer plate 25 prevent lateral movement of the drop shutter 14 when thus pivotally supported. The spacer plate 25 and supporting plate 19 are also provided with notches 35 and 36, respectively, in which the forward ends of the shutter hook 13 rests. The forward end of the shutter hook 13 is bent downwardly as at 13' and extends through an aperture 37 near the upper edge of the drop shutter 14. The shutter hook 13 is provided with a catch 13² at its extreme end which is adapted to engage the drop shutter at the lower edge 38 of the aperture 37 to hold the shutter 14 in its normal position, as illustrated in Figs. 1 and 4.

The plate 3 extends below the shell 2 and this portion carries the jack structure J. The jack structure J comprises a jack frame 40 suitably secured to the plate 3 by means of the sleeve 41, which sleeve passes through a suitable insulating opening in the plate 3, and has screw-threaded engagement with a suitable tapped orifice in the frame 40, the said frame 40 being also suitably insulated from the plate 3 by means of one of the insulating strips 42. The springs 43, 44 and 45 are insulatingly mounted upon the rear end of the frame 40 by means of the screws 46, the said springs 43 and 44 extending forward so as to place their contacting ends in position to be engaged by the plug when the same is inserted. The shutter 14 is also provided with a downwardly extending projection 47 which is adapted to engage the spring 45 when the drop falls to close the night alarm circuit, or any other circuit, as is well understood in the art. The projec-

tion 47 is also adapted to be engaged by the angular end 44' of the spring 44 when the plug is inserted in response to the actuated drop shutter to restore the said actuated drop signal, the restoration being effected in the following manner: When the plug is being inserted into the sleeve 41 of the jack J, a portion of said plug will engage spring 44, causing it to move upward to bring the portion 44' into engagement with the portion 47 of the shutter 14, which forces the shutter 14 to move to its normal position whereupon it is retained in its normal position by the armature 13 as hereinbefore described.

It will be noted that the distance from the outer edge of pivot pin 22 to the outside edge of lug 21 is slightly less than the distance from the inner face of ear 29 to the inner face of ear 30. To remove the shutter it is only necessary to slightly loosen screws 24 and pull the shutter and drop supporting plate 19 forward until the rear face of ear 29 or 30 will slide past lug 34' or 33' of the insulating plate 25, then the shutter may be slid along the pivot pins 22 and 23 to the right or left, until lug 29 or 30 may be slipped off of the end of pin 22 or 23, then the shutter is slid back in the opposite direction until the other lug slips off of the other pivot pin.

Likewise, to replace a drop, it is only necessary to insert the pivot pin 23 in the orifice in ear 30, then slide the shutter to the left until pivot pin 22 may be placed in the orifice in lug 29, then the shutter is moved back to its central position and screws 24 tightened to prevent the shutter from moving sidewise along the pivot pins.

While I have illustrated and described my invention with a particular form of combined drop and jack, it is to be understood that I do not wish to be limited to the exact form as shown, as it is readily apparent that my invention is applicable to other forms of drop and jack. I also do not wish to be limited to the exact structure as shown, as changes and modifications will readily suggest themselves to those skilled in the art, and therefore, I aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described including a drop supporting member provided with outwardly extending studs, a drop shutter having rearwardly extending ears provided with orifices adapted to receive said studs, the distance across said studs being greater than the distance from one of the ears on said drop shutter to the other ear of said drop shutter, but the distance

from the point where one stud is connected to the drop supporting member to the end of the other stud being less than the distance between the inside faces of the said ears of the drop shutter, whereby the studs on the drop supporting member may be inserted in the orifices in the ears of the drop shutter, and a third member, whose width is slightly less than the distance from the inner face of one ear to the inner face of the other ear of the drop shutter, whereby when said drop shutter is supported on the studs of the drop supporting member said third member prevents lateral displacement of said drop shutter.

2. A device of the character described including a drop supporting member provided with outwardly extending studs, a drop shutter having rearwardly extending ears provided with orifices adapted to receive said studs, the distance across said studs being greater than the distance from one of the ears on said drop shutter to the other ear of said drop shutter, but the distance from

the point where one stud is connected to the drop supporting member to the end of the other stud being less than the distance between the inside faces of the said ears of the drop shutter, whereby the studs on the drop supporting member may be inserted in the orifices in the ears of the drop shutter, a third member, whose width is slightly less than the distance from the inner face of one ear to the inner face of the other ear of the drop shutter, whereby when said drop shutter is supported on the studs of the drop supporting member said third member prevents lateral displacement of said drop shutter, a mounting member, and means for securing the said third member and said drop supporting member to said mounting member, whereby said drop shutter is supported in position.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 19th day of August, 1920.

CHARLES SPARKS.