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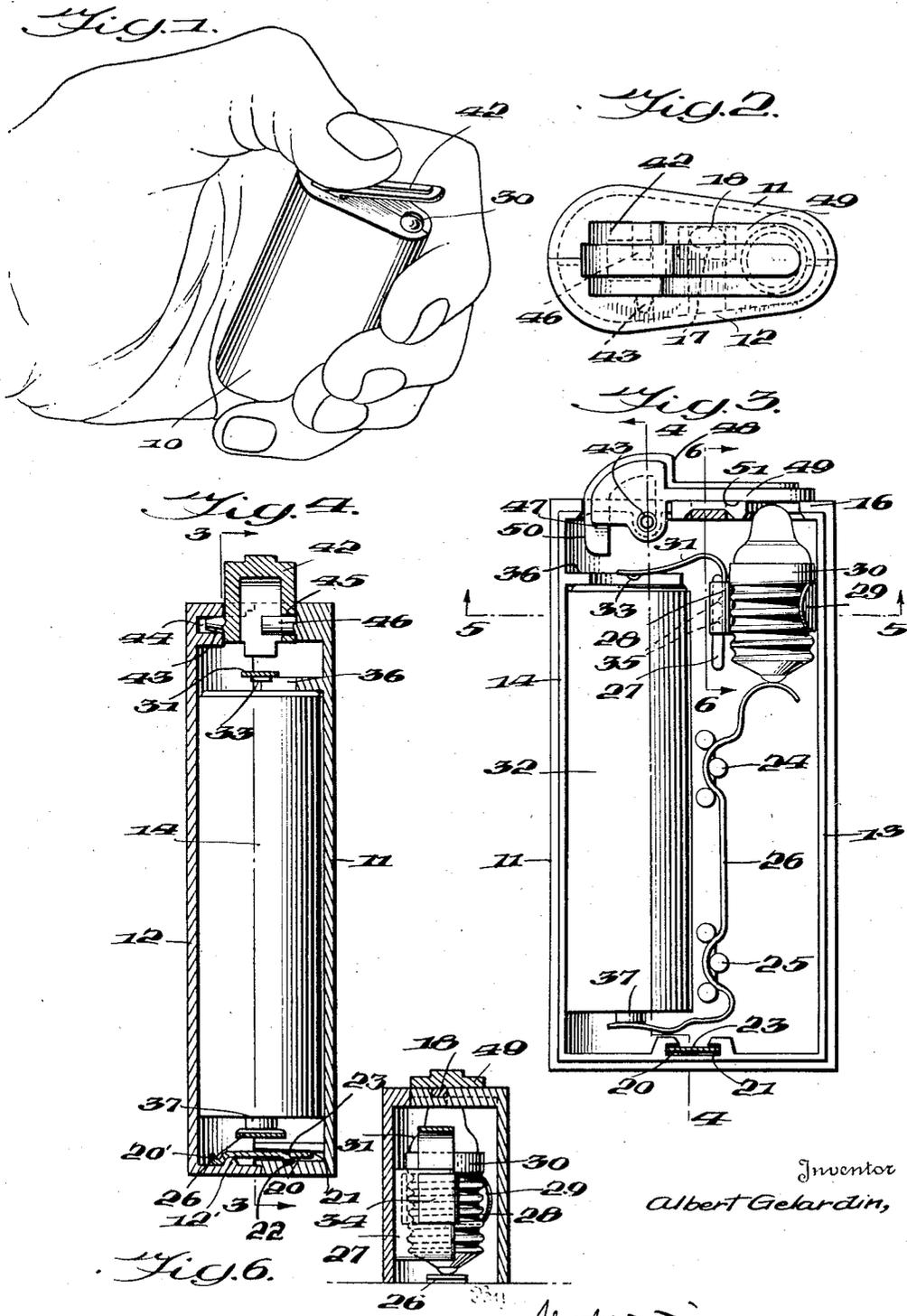
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POCKET FLASHLIGHT

Filed March 18, 1939

2 Sheets-Sheet 1



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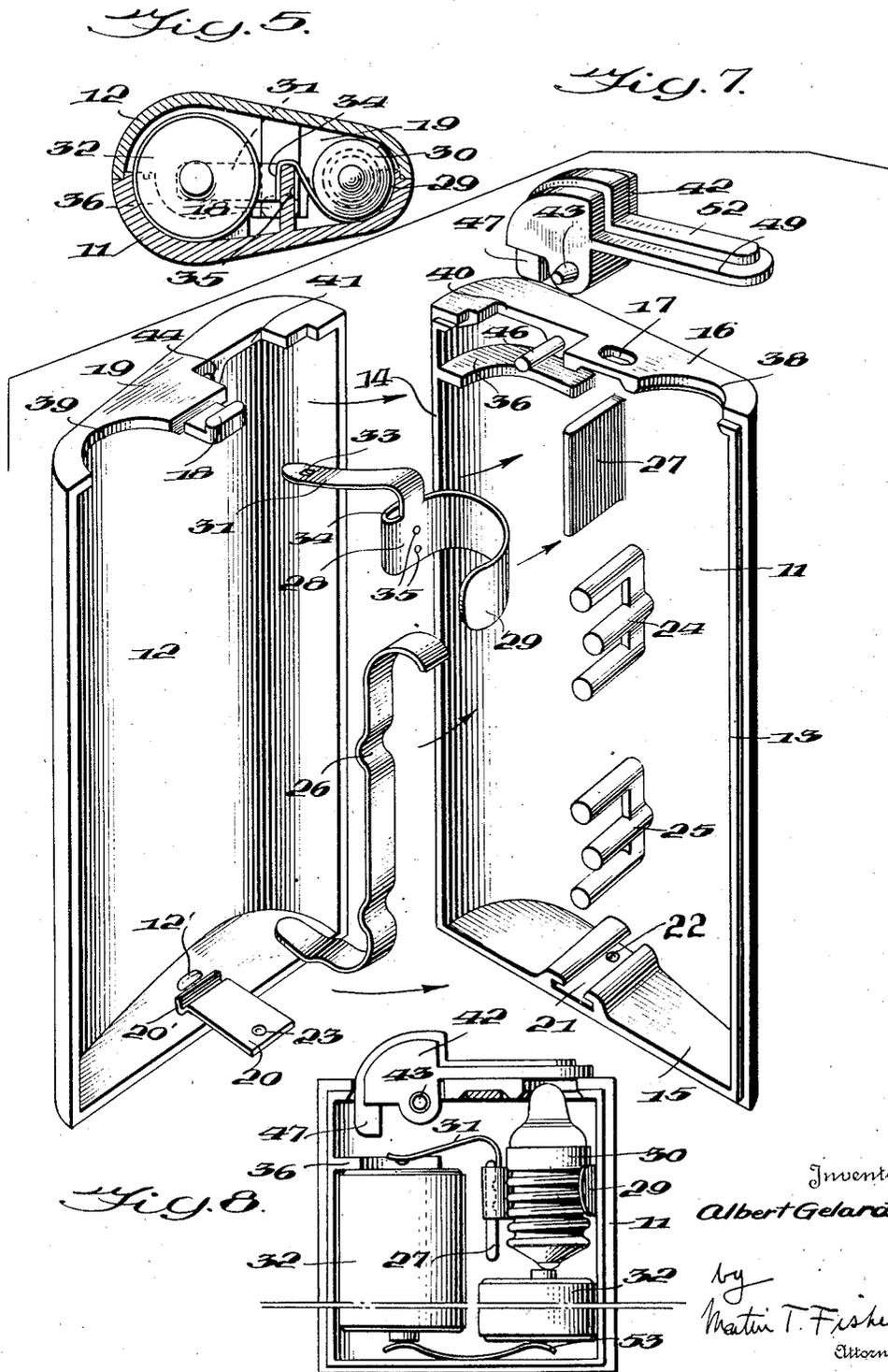
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# UNITED STATES PATENT OFFICE

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## POCKET FLASHLIGHT

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Application March 18, 1939, Serial No. 262,718

4 Claims. (Cl. 240—10.65)

This invention relates to pocket flashlights having either one or a plurality of battery cells.

It is the object of the invention to provide a compact, efficient flashlight, formed with a minimum of moving parts so as to eliminate as much possibility of disorder as is practical.

Insulation of the various circuit making and breaking parts is achieved by forming most of the stationary and some of the movable parts of insulating material, such as of thermo-plastic resins or similar materials, which may be molded under heat and pressure so that when cooled and hardened an efficient, finished and pleasing device is produced.

One of the important objects of the invention is to provide a two-part casing, of insulating material, having portions molded therein to provide supporting and mounting elements for the light socket, for one or more battery cells, and for the several contact members. The two parts of the casing are also provided with securing elements which interengage to hold the two parts of the casing together simply by pressing the casing parts together. Another important feature of the invention is a thumb or finger operated switch, which by cam action closes the circuit and which is pivotally mounted by trunnions and bearings, which are brought into cooperative relationship by the operation of assembling the two parts of the casing. This switch member, when not in use, covers the light and may also act as a reflector.

Another feature of the invention is that it may be assembled with one or two battery cells, as the commercial situation may dictate.

Other objects and advantages of the invention will become apparent by referring to the accompanying specification, in which:

Figure 1 is a perspective view of my new flashlight, shown in process of being manipulated by the user;

Figure 2 is a top plan view of the same;

Figure 3 is a side elevation, partly in section, along the line 3—3 of Fig. 4;

Figure 4 is a side elevation at 90° to that of Fig. 3, in section along the line 4—4 of Fig. 3;

Figure 5 is a sectional plan view of details along the line 5—5 of Fig. 3;

Figure 6 is a sectional elevation of details taken along the line 6—6 of Fig. 3;

Figure 7 is an exploded view of my flashlight, showing details of the same; and

Figure 8 is a sectional, side elevation similar to Fig. 3, showing a modified structure of my device.

In pocket flashlights, it is desirable to have the same, first, as compact as possible, secondly, as well protected as is feasible, thirdly, provide as high a degree of insulation as practical, and lastly, to have a minimum of moving parts. The applicant has achieved these ends in the instant invention.

The present device, in order to effect a high degree of insulation, and also to reduce production costs, is preferably formed of plastic resins or similar electric insulating, moldable materials, which may be rapidly formed into products with a high degree of accuracy and finished surfaces whereby subsequent operations to place the same in completed conditions are unnecessary. Furthermore, due to a minimum of moving parts and ready assembly of the same, the finished products may also be rapidly assembled. While it is preferred to form the flashlight of insulating material, the same may be formed of moldable metals and means may be provided to insulate the necessary parts from said thus molded casing where necessary.

The casing 10 is composed of two parts 11 and 12. Part 12 might be considered the cover, while part 11 may be taken as the base inasmuch as practically all of the movable parts are secured within this member. Suitable aligning ribs 13 and 14 are provided on opposite sides of base 11, as well as along the end 15 of the base and extending around part of the top 16, as clearly shown in Fig. 7. These ribs telescopically engage with the interior of the side edges of cover 12.

Locking means for the base and cover are provided at opposite ends and consist, first, of a locking opening 17 arranged in the top 16, while a molded upwardly extending hook 18 protrudes from one edge of top portion 19. Hook 18 engages the locking opening 17 to secure the base and cover from separation at this end.

At the opposite end of the casing, cover 12 is provided with an outwardly projecting detent 12'. As shown in Fig. 4, a guideway 21 is formed which decreases in height as it approaches the side wall of base 11, to produce a wedging action on a spring metal tongue 20 which is inserted therein. To ensure that the tongue 20 will be permanently locked therein, a rounded protuberance 23 may be formed in the underside of tongue 20, which frictionally engages with the bottom of guideway 21, and the bottom of 21 may be provided with a recess 22 for receiving the protuberance 23. The opposite end of tongue 20 is formed with a cam-like projection 20' adapted to snap

over projection 12' to detachably lock the cover and base assembled.

Instead of the means just described for holding the two halves of the casing together, ribs 13 and 14 may be made to form a friction fit assembly with the cover 12, which friction fit may be supplemented by a screw or the like.

Also molded in the base 11 is a series of protruding elements or pins formed as clusters 24 and 25, which are substantially identical and are for the purpose of holding a contact member 26 formed of thin flexible metal, which may be readily inserted in a wedging fashion between various of the protruding elements in the clusters, to secure the contact member in place.

The pins of the clusters 24 and 25 are preferably positioned to provide a lateral support and positioning means for the battery 32 with sufficient space being provided to the right of such pins as viewed in Figure 3 to accommodate a second battery operatively connected in said circuit, details of which are described subsequently with respect to Figure 8. It will be noted that when the flexible contact member 26 is wedgingly engaged between the pins of clusters 24 and 25, the pins nearest the battery in Figure 3 are of sufficient dimension to provide ample insulating space between the outer wall of the battery 32 and the contact member 26 so that it would not be necessary to provide a battery with an insulating casing surrounding the same. The location of the pins in the clusters 24 and 25 is also sufficiently to the left side of the casing in Figure 3 to prevent the cell from accidentally coming in contact with the metallic element 28. Where a second cell is used, the two cells are spaced and insulated from each other by these pins of the clusters 24 and 25.

The base 11 also has molded therein a rib 27 adapted to support a combination lamp support and contact 28. One portion of this element is in the shape of a U-shaped clip 29, adapted to engage the base of the lamp or bulb 30 with a spring grip to ensure electrical contact. The tongue 31 extending from another portion of element 28 serves as the electrical connection with one end of a battery cell 32. To ensure that connection will take place with the cell to close the circuit, a small portion 33 is stamped from one end of the tongue 31 so that the portion is connected with the tongue at one of its ends and will form a spring contact against battery 32. This is clearly shown in Fig. 3.

The element 28 is secured to the rib 27 by means of part 34 of the element 28, which is bent backwardly upon itself to engage opposite sides of the rib 27 in a spring-like fashion and, if desired, protuberances 35 may be stamped inwardly in the element 28 to insure secure gripping action of element 28 with the rib 27. These protuberances are clearly shown in Fig. 7.

A curved rib 36 is also molded in the base 11, and so positioned as to have the base of the battery 32 abut thereagainst to hold the battery in operative position and insure contact of the terminal 37 of the battery with one end of the connector 26, as shown in Fig. 3. By having the battery so positioned, connector tongue 31 may readily disengage the battery when it is desired to interrupt the circuit and in so doing, the battery will not "ride upwardly" with the tongue 31.

In the top portions 16 and 19 of the base and cover respectively semi-circular apertures 38 and 39 respectively are provided so that when the base and cover are assembled a circular opening

results through which rays from the lamp 30 are projected.

Also arranged in the top portions 16 and 19 of the base and cover respectively, rectangular apertures 40 and 41 respectively are provided which, when the cover and base are assembled, provide a generally rectangular aperture in which a switch or circuit operating member 42 is pivotally supported.

In the preferred construction, the switch or circuit operating member 42 is molded from material similar to that from which the base and cover 11 and 12 are formed and is preferably of insulating material. It is preferably of a different color, to contrast with the color of the casing. The member 42 is provided on one side with a trunnion 43 projecting therefrom adapted to be pivotally supported in a bearing recess 44 in the cover 12. In the opposite side of the member 42 a bearing recess 45 is formed and pivotally engages a projecting trunnion 46 formed in one side of the rectangular recess 40 in the base 11. Thus it will be seen that the member 42 is provided with pivotal supports that are inexpensively formed yet result in a very efficient means which is insulated at all times for opening and closing the circuit of the flashlight when the member 42 is rotated.

At one end of the member 42 a cam-like projection 47 is formed which is adapted to engage the circuit closing spring tongue 31 to press the same against the battery 32 and thus complete the circuit of the flashlight. The member 42 is readily pivoted by engaging the flat upstanding projection 48 with the thumb, as shown in Figure 1, whence the switch may be flipped to circuit closing position and the bulb lit.

Projecting outwardly from another part of the member 42 is a flat elongated tongue 49 adapted to cover the aperture 38, 39 adjacent which the head of the lamp 30 is located to protect the lamp and also prevent lint and other undesirable material from entering into the casing of the flashlight through the aperture 38, 39 when the same is carried in the pocket of the user. Furthermore, the tongue 49, in conjunction with the flat projection 48, forms a notch in which the thumb or finger of the user is readily received when desired to manipulate the switch member 42.

The projection 47 is formed with a flat portion 50 on the outer side thereof for the purpose of engaging the connector tongue 31 when the member 42 is moved to its full circuit closing position with tongue 49 extending parallel to the axis of the flashlight and thus lock the circuit in operative position so that it is not always necessary to hold the switch "on."

The flat tongue 49, which is preferably formed from light colored or white material, is preferably smoothly polished to form a reflecting surface 51 whereby, if desired, when the tongue is in a position similar to that shown in Figure 1, light may be reflected onto an area or in a cavity efficiently and not impair the vision of the user; whereas in cases where the light from the lamp 30 is directly shined upon the surface, the hand of the user and flashlight might obstruct adequate vision. In addition to the foregoing attributes of the tongue 49, the same provides a pleasing, modernistic appearing manipulating member for the flashlight and may be provided with an ornamental and reinforcing rib 52 extending substantially the entire length of the member 42, as clearly shown in Figure 7.

In the modification shown in Figure 8, two bat-

tery cells are employed instead of one and in such structure, the arrangement of the circuit making metallic members is somewhat modified. In the preferred embodiment of such modification the lamp 30 has one terminal directly contacting the positive terminal of one cell at all times, whereas the negative cell of the same battery and the positive terminal of the opposite battery are connected in series at all times by a metallic spring leaf element 53. The curved rib 36 maintains the second cell 32 in proper position whereby when tongue 31 is moved to the position to break the circuit, the cell will not ride up with the tongue. The remaining structure in the modified form shown in Figure 8 is substantially the same as described in the foregoing and the other figures in the application, the clusters 24 and 25 being placed sufficiently far to the left in Fig. 3 to provide space on the right for a second cell, the clusters serving as a lateral support and positioning means for the cells.

It will thus be seen that the applicant has provided a compact, relatively fool-proof, well-insulated, attractive and efficient flashlight with relatively few moving parts, all of which are quickly and easily assembled. No elaborate jigs are necessary to assemble any of the details. The circuit connecting metallic members, for instance, are all quickly put in place in the various supporting ribs and other projections. The switch or circuit operating member 42, upon being pivoted upon the trunnion 46 of the base 11, is in position to have its trunnion 43 readily receive the bearing recess 44 when the cover is being assembled on the base. The batteries and lamp are quickly inserted in their operative positions before the cover is placed upon the base and the final closing of the cover completes the flashlight. By a few simple molding operations, quick insertion of the minimum number of moving parts and the final closing of the case, a finished and attractive article is produced.

While the foregoing illustrates the preferred construction and embodiments of the invention, it is to be understood that the foregoing is merely illustrative of the present invention. In addition to the several modifications described, it will be apparent that various changes may be made in the form and arrangement of various parts without departing from the spirit of the invention.

I claim:

1. A flashlight comprising a separable, bipartite, molded casing formed of insulating material, securing means for the separate parts being molded on the parts and adapted to lock the parts together in operative position, apertures formed in one end of said casing, a lamp secured inside the casing adjacent one aperture and a circuit operating member formed of material similar to said casing arranged adjacent another of the apertures and having a portion projecting therethrough, molded trunnions and bearings provided on said operating member and on said casing adjacent said second aperture and pivotally supporting said member in said second aperture, circuit connectors in said casing, a battery, supporting means for said circuit connectors and battery molded to said casing, one of said connectors being mounted to connect a pair of terminals of said battery and lamp, and a second connector comprising a combined lamp base support and connector adapted to connect the other terminals of said lamp and battery, said operating member, when manipulated, serving to force one of said connectors into circuit closing position to

light said lamp, the other connector being in constant circuit connection, said circuit operating member being also formed with a projection extending therefrom defining a finger engaging means on said member, said projection extending along the outer side of one end of the casing and covering the first aperture to protect the lamp therein when said operating member is in circuit disengaging position.

2. A flashlight comprising a separable, bipartite, molded casing formed of insulating material, securing means for the separate parts being molded on the parts and adapted to lock the parts together in operative position, apertures formed in one end of said casing, a lamp secured inside the casing adjacent one aperture and a circuit operating member formed of material similar to said casing arranged adjacent another of the apertures and having a portion projecting therethrough, molded trunnions and bearings provided on said operating member and on said casing adjacent said second aperture and pivotally supporting said member in said second aperture, circuit connectors in said casing, a battery, supporting means for said circuit connectors and battery molded to said casing, one of said connectors being mounted to connect a pair of terminals of said battery and lamp, and a second connector comprising a combined lamp base support and connector adapted to connect the other terminals of said lamp and battery, said operating member being formed with a cam of insulating material protruding therefrom and upon manipulation of said member contacting one of said connectors and forcing the same into circuit closing position to light said lamp, the other connector being in constant circuit connection.

3. A flashlight comprising a separable, bipartite, molded casing formed of insulating material, securing means for the separate parts being molded on the parts and adapted to lock the parts together in operative position, apertures formed in one end of said casing, a lamp secured inside the casing adjacent one aperture and a circuit operating member formed of material similar to said casing arranged adjacent another of the apertures and having a portion projecting therethrough, molded trunnions and bearings provided on said operating member and on said casing adjacent said second aperture and pivotally supporting said member in said second aperture, circuit connectors in said casing, a battery, supporting means for said circuit connectors and battery molded to said casing, one of said connectors being mounted to connect a pair of terminals of said battery and lamp, and a second connector comprising a combined lamp base support and connector adapted to connect the other terminals of said lamp and battery, said operating member being formed with a cam of insulating material thereon which when the member is manipulated, engages one of said connectors and forces the same into circuit closing position to light the lamp, said operating member also being provided with a portion adjacent said cam adapted to lock said connector in closed position, the other connector being in constant circuit connection.

4. A flashlight comprising a separable, bipartite molded casing formed of insulating material, securing means for the separate parts being molded on the parts and adapted to lock the parts together in operative position, apertures formed in one end of said casing, a lamp secured inside the casing adjacent one aperture and a circuit

operating member formed of material similar to said casing arranged adjacent another of the apertures and having a portion projecting there-through, molded trunnions and bearings provided on said operating member and on said casing adjacent said second aperture and pivotally supporting said member in said second aperture, circuit connectors in said casing, a battery, supporting means for said circuit connectors and battery molded to said casing, one of said connectors being mounted to connect a pair of terminals of said battery and lamp and a second connector comprising a combined lamp base support and connector adapted to connect the other terminals of said lamp and battery, said operating member, when manipulated, serving to force one of said connectors into circuit closing position to

light said lamp, the other connector being in constant circuit connection, said securing means for the casing parts comprising a hook molded to one end of one part of the casing engaging an aperture molded in a juxtaposed end portion of another part of the casing, the opposite end portions of said casing parts having a protruding springlike tongue permanently fixed in a recess molded in one end portion, the height of the recess decreasing toward the bottom thereof whereby a wedging engagement takes place with the tongue when inserted in said aperture, the opposite end of the tongue having a cam-like projection cooperating with a molded detent formed on the other end portion to secure the separable parts of the casing in operative position.

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