

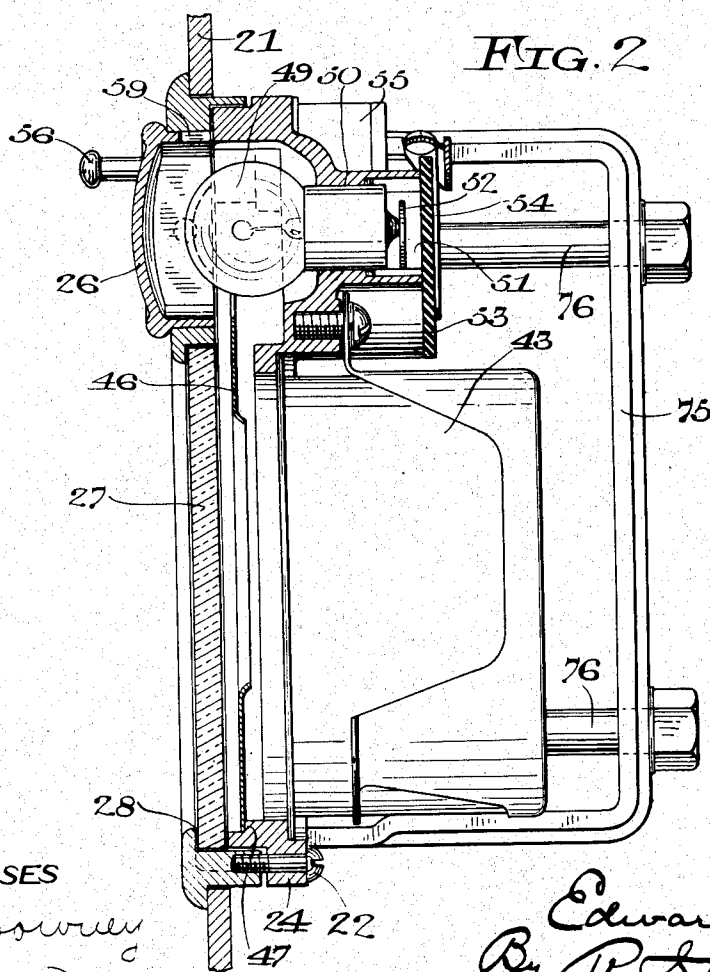
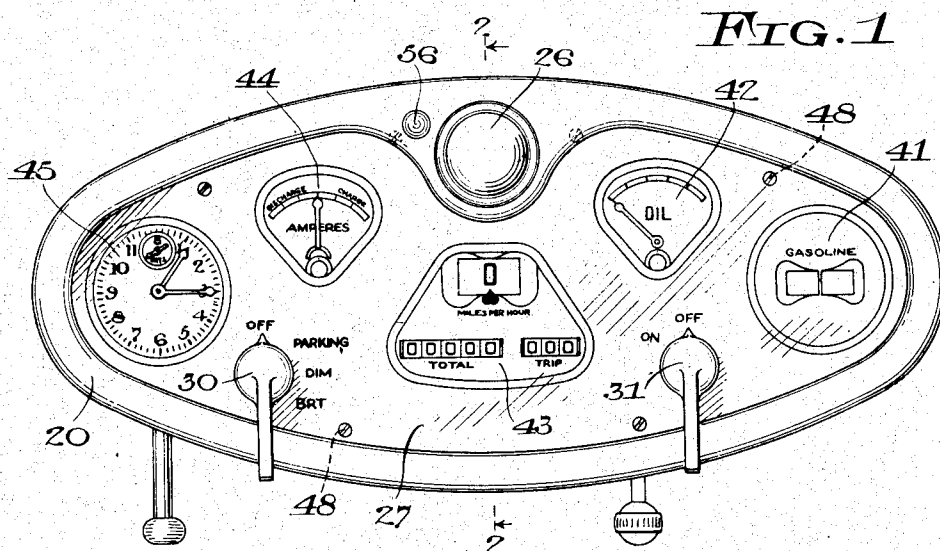
Jan. 6, 1931.

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1,787,684

AUTOMOBILE SWITCH AND INSTRUMENT PANEL

Original Filed June 11, 1923 4 Sheets-Sheet 1



WITNESSES

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AUTOMOBILE SWITCH AND INSTRUMENT PANEL

Original Filed June 11, 1923 4 Sheets-Sheet 2

FIG. 3

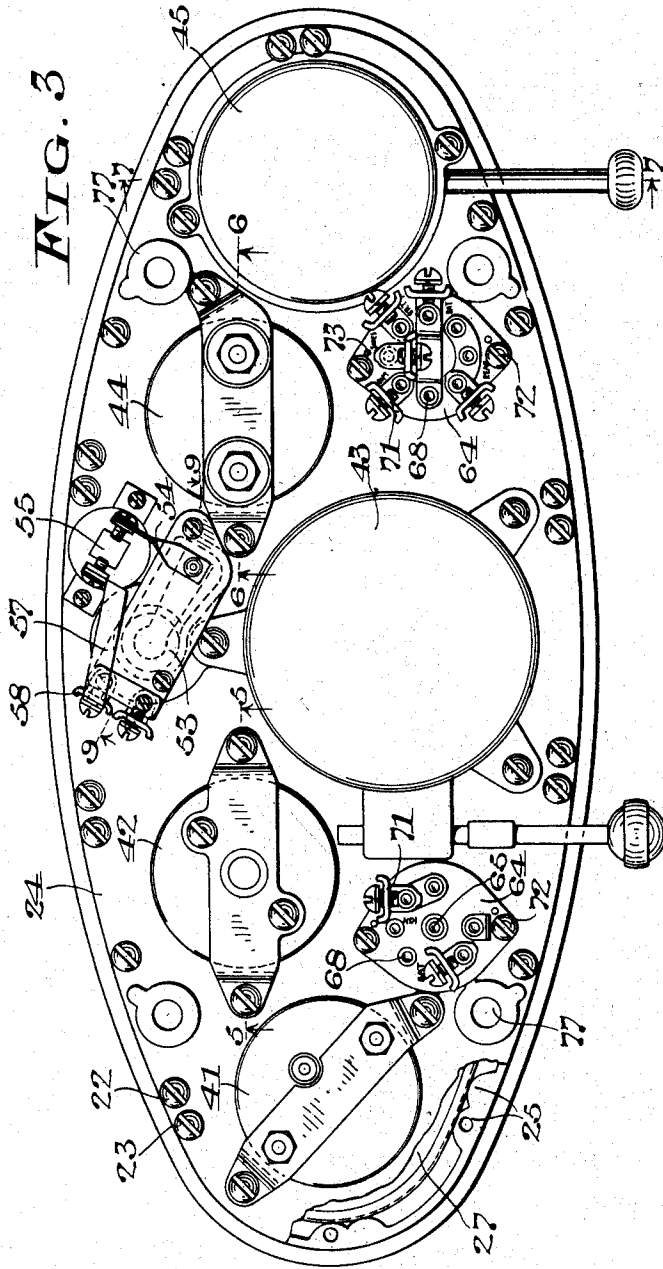


FIG. 6

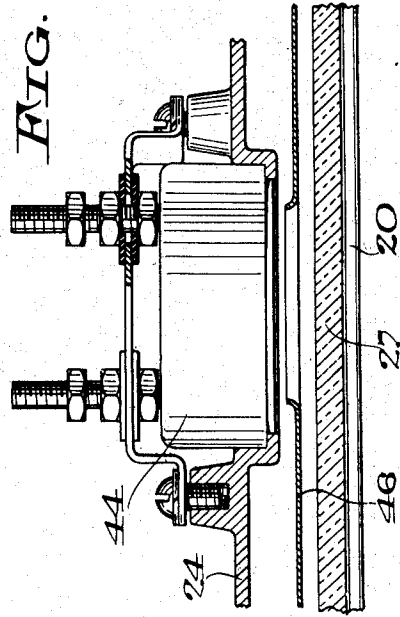
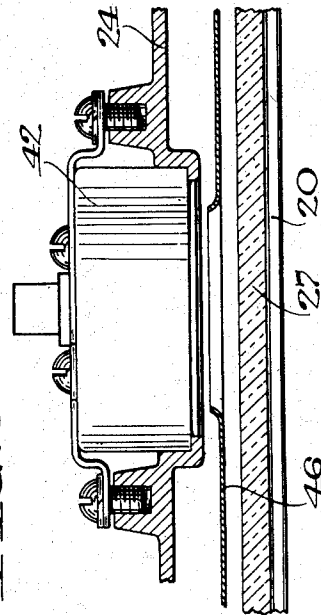


FIG. 5



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AUTOMOBILE SWITCH AND INSTRUMENT PANEL

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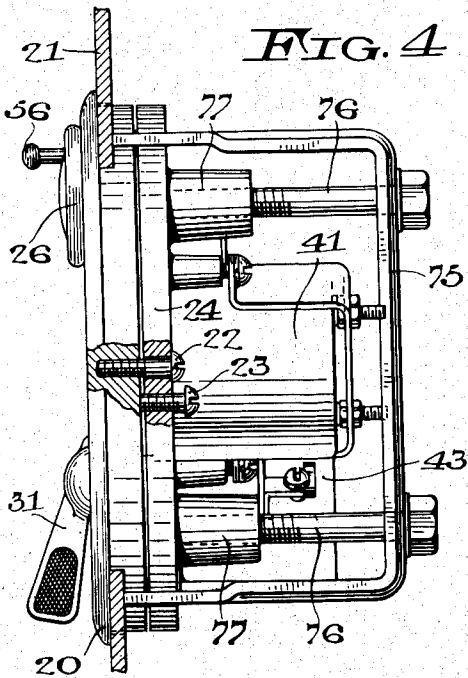


FIG. 4

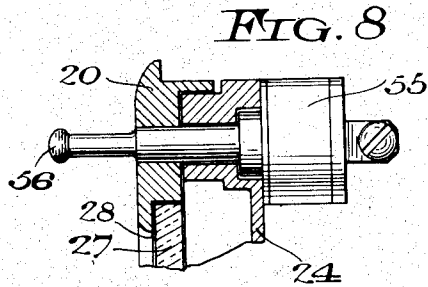


FIG. 8

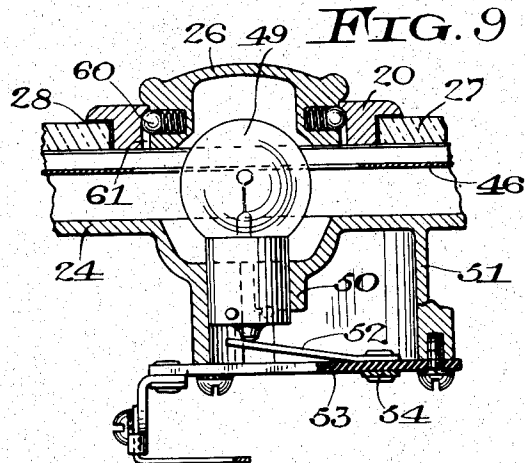


FIG. 9

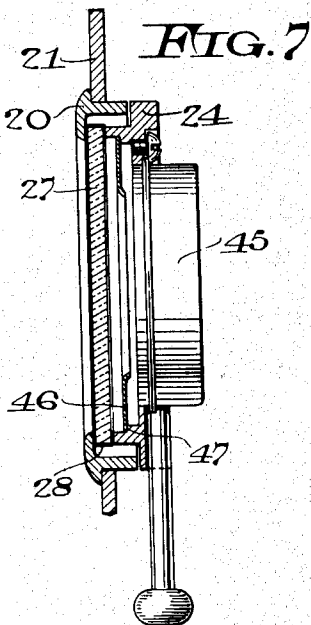


FIG. 7

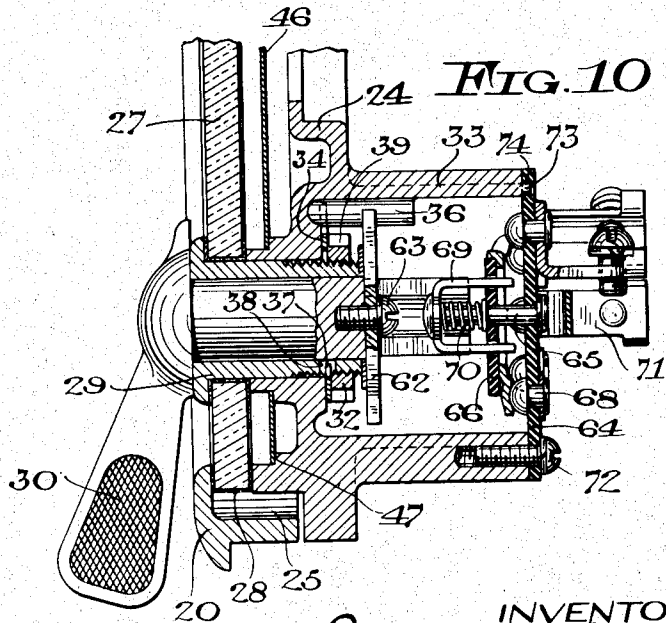


FIG. 10

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AUTOMOBILE SWITCH AND INSTRUMENT PANEL

Original Filed June 11, 1923 4 Sheets-Sheet 4

FIG. 11

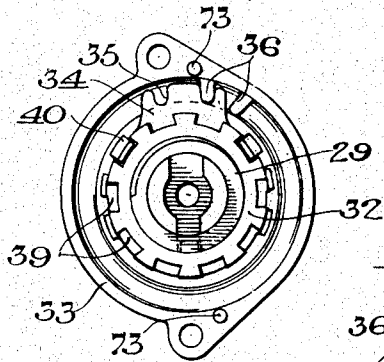


FIG. 12

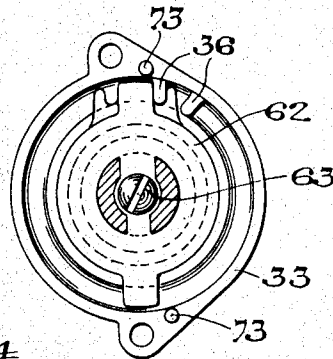


FIG. 16

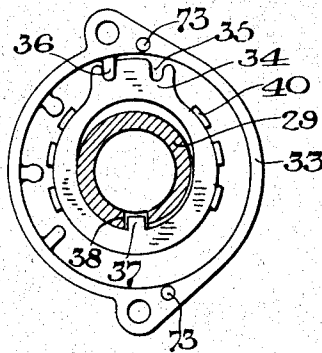


FIG. 13

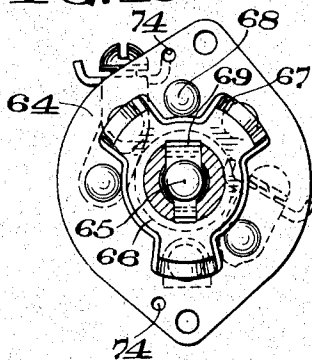


FIG. 14

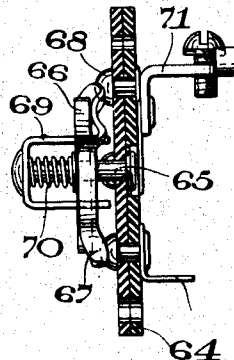


FIG. 15

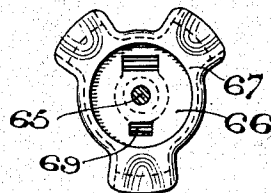
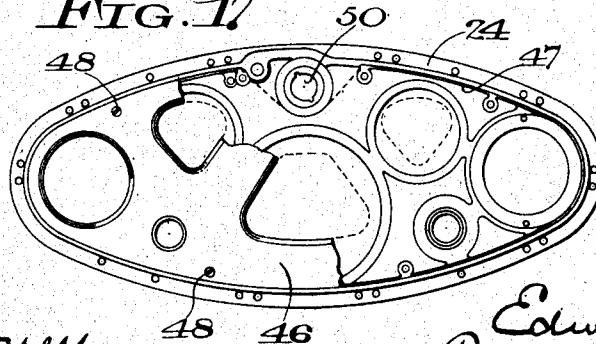


FIG. 17



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AUTOMOBILE SWITCH AND INSTRUMENT PANEL

Application filed June 11, 1923, Serial No. 644,679. Renewed June 20, 1930.

This invention has for its object to provide an automobile switch and instrument panel containing the usual switches and instruments in a single assembly with a single glass front and illuminated by a self-contained lamp in such a manner as to obtain even distribution of light and the avoidance of shadows so that the instruments may be easily read.

Another object of the invention is to provide such a switch and instrument panel that will exclude dust and water and that will compensate for the variation in thickness of glass fronts.

Another object of the invention is to provide such a switch and instrument panel affording ready access to the lamp for permitting it to be changed.

Another object for the invention is to utilize the base casting of such a device as the housing or casing for the lamp and switches.

Another object for the invention is to provide such a device with a single face plate common to all of the instruments with openings through which they may be read and spaced from the base to form a light conduit between it and the base through which all, or substantially all, of the light is conducted to the dials of the instruments either directly or by counter-reflection, thus giving a subdued but ample and uniform illumination to all of the instruments.

With the above and other objects in view the invention consists in the automobile switch and instrument panel as herein claimed, its parts and combinations of parts, and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in different views,

Fig. 1 is a front view of an automobile switch and instrument panel constructed in accordance with this invention;

Fig. 2 is a sectional view on the plane of line 2—2 of Fig. 1;

Fig. 3 is a back view thereof;

Fig. 4 is an end view showing the manner of clamping the panel to a cowl board;

Fig. 5 is a sectional view on the plane of

line 5—5 of Fig. 3 showing the manner of mounting the oil gauge;

Fig. 6 is a similar view on the plane of line 6—6 of Fig. 3 showing the manner of mounting the ammeter;

Fig. 7 is a similar view on the plane of line 7—7 of Fig. 3 showing the manner of mounting the clock;

Fig. 8 is a sectional view showing the manner of mounting the lamp switch;

Fig. 9 is a sectional view on the plane of line 9—9 of Fig. 3 showing the manner of mounting the lamp;

Fig. 10 is a sectional view through one of the switches;

Fig. 11 is a rear view of one of the switches with parts removed to the locking nut;

Fig. 12 is a similar view showing the stop plate in position;

Fig. 13 is an inside view of one of the terminal heads with the contact member and driver in position;

Fig. 14 is a sectional view thereof without the driver;

Fig. 15 is a rear view of the contact member;

Fig. 16 is a sectional view through the switch handle bushing showing the engagements of the locking plate, and

Fig. 17 is a front view of the instrument panel with the rim removed and the front plate partially broken away showing the construction of the base casting.

In these drawings, 20 indicates a rim or bezel, preferably of elliptical shape, as shown, and provided with a surrounding shouldered flange to fit in a correspondingly shaped opening in a cowl board 21.

Fitting within the rearwardly extending flange of the rim or bezel 20 and adjustably clamped thereto by clamping screws 22 and distance screws 23 in pairs at regular intervals, as shown in Fig. 3, is a base casting 24 with a surrounding forwardly projecting shouldered flange spaced from the flange of the rim or bezel by the pairs of bosses 25 formed on the latter for said screws 22 and 23.

One edge of the rim or bezel 20 is enlarged, forming an inwardly extending projection

provided with a circular opening to receive a lamp cover 26, the inwardly extending flange of the rim or bezel continuing around this projection, as seen in Figs. 2 and 9.

5 A glass front 27 covers the entire open face of the instrument panel, being cut to fit around the projection for lamp cover 26 and clamped between the inwardly extending flange of the rim or bezel and the forwardly extending
10 flange of the base casting with a gasket 28 of rubber or other suitable material fitting around its edge between the clamping faces. By a careful adjustment of the clamping screws 22 and distance screws 23 the clamping
15 of the glass may be made uniform and without undue pressure so as to obtain a tight fit without injury to the glass and that will permit of the usual variations in the thickness of the glass, it being commercially infeasible
20 to rely on glass being of uniform thickness.

Openings are drilled through the glass to receive flanged tubular bushings 29 for lighting and ignition switch handles 30 and 31 respectively, said bushings also fitting within
25 flanged openings in the base casting 24 where they are held by lock nuts 32 threaded on them within switch cases 33 formed integral with the base casting. Gaskets of rubber or other suitable material surround the edges of the
30 openings in the glass and fit between the clamping surfaces of the bushing shoulders and the flanges around the openings of the base casting, as shown in Fig. 10, to make a tight fit without undue stress on the glass,
35 and the adjustments of the lock nuts 32 for maintaining the clamping engagement are retained by means of lock plates 34. Each of these lock plates 34, as shown in Fig. 16, is anchored against turning by having notches
40 35 in its edge to engage one or another of a series of longitudinally extending flanges 36 projecting inwardly from the wall of the switch case 33. At the same time this lock plate anchors the bushing 29 so that it is in-
45 capable of turning, the oval shaped opening in said lock plate having an inwardly extending lug 37 to engage in an opening 38 in said bushing, as seen in Figs. 10 and 16. In assembling, the lock plate, because of the elongation of its opening, may be passed over the
50 end of the bushing and then with its lug 37 registering with the opening 38 it may be forced upwardly to effect their engagement, the same movement effecting the engagement
55 of a notch 35 with a flange 36. Then the lock nut is turned on the end of the bushing to effect the desired clamping of the glass front and incidentally serving to clamp the lock plate in place. When this adjustment is effected the lock nut is locked against displacement by bending into one of its peripheral
60 notches 39 one or more of the locking fingers 40 which are bent up from the edge of the locking plate and are so spaced that one or
65 another will be convenient for such engage-

ment in any position of the locking nut. In this manner the bushing is prevented from turning by anchoring it to the base casting, the glass is clamped around the bushing to the desired degree to effect a tight connection
70 without undue stress, and the clamping adjustment is rendered permanent by the locking of the clamping nut in its adjusted position. It will be appreciated that this method
75 of adjusting and locking the clamping bushing to maintain tight connection with the glass adapts the parts to suit themselves to the thickness of the glass notwithstanding variations in such thickness so that, whether the glass is thin or thick, a tight seal may be
80 made that will exclude dust and water where it fits around the rim and also where it fits around the bushings and in this way provision is made for passing the switch handles through the glass front.
85

Considering now the matter of illumination before entering into the description of switch structure, the rear view of Fig. 3 shows that the base casting 24 is utilized as an instrument mount having a gasoline gauge 41, an
90 oil gauge 42, a speedometer 43, an ammeter 44, and a clock 45 mounted thereon and, as will be seen in Figs. 2, 5, 6 and 7, these instruments are suitably clamped within
95 flanged openings of the base casting with their faces or dials protected by no other glass cover than the common glass cover 27 for the entire instrument panel. The faces or dials of the various instruments thus mounted are disposed approximately in a common plane parallel with the plane of the glass front and
100 approximately midway between them is a sheet metal front plate 46 seated on a shoulder 47 on the flange of the base casting and secured thereto by means of screws 48. In
105 front of each instrument the front plate has a sight opening of an appropriate shape to permit of the inspection of the face or dial of the instrument and around the openings of the front plate through which the bushings 29 pass are placed words indicating the
110 operative positions of the switch handles. Each of the sight openings in the front plate has its edges turned rearwardly not only for the purpose of giving ornamental finish to
115 the panel but for deflecting the light which travels through the space between the front plate and the base casting toward the face of the dial of each instrument.

The electric lamp bulb 49 is seated in a
120 socket 50 formed in a depression of the base casting with its filament behind the plane of the front plate but close thereto so that, while the greater part of the light travels in the space between the front plate and the
125 base casting, a portion of the light will travel through the space between the front plate and the glass cover sufficient for showing the words appearing on the front plate. The front plate is provided with a large V-shaped
130

notch in its upper edge to accommodate the lamp bulb, as shown by dotted lines in Fig. 17 and, while the front surface of the front plate is preferably black, its rear surface is bright and the front surface of the base casting is coated with an enamel, giving it light-reflecting properties to facilitate the illumination of the instruments by increasing the light conductivity of the light-conducting chamber between them. As the face or dial of each instrument is in approximately the same plane as the lamp filament and surrounded by the instrument-receiving flange, the instrument is lighted by reflected light and all of the instruments are evenly and uniformly illuminated without the production of shadows.

The base casting, besides forming the lamp socket, containing the usual bayonet slots by means of which the lamp is removably attached from the front of the instrument panel when the cover 26 is removed, also affords a housing 51 for the lamp contact spring 52 which is mounted on a plate of insulating material 53 attached to the end of said housing. The rivet through the insulating plate which attaches the contact spring 52 on the inside of the housing also secures a connecting strip 54 on the outside and said connecting strip leads to a lamp switch 55 which is of the push and pull knob type and is seated in a recess in the back of the base casting with its stem 56 projecting through said base casting and the rim 20. From the other terminal of the lamp switch is a conducting strip 57 leading to a connector 58 for connection with the battery lead.

The lamp cover 26 has a notch in its edge to receive a positioning lug 59 projecting from the edge of the cover opening and spring-pressed ball detents 60 in the opposite sides of the cover engage recesses 61 in the edges of the cover opening to securely lock the cover in place, said detents yielding, however, when sufficient force is applied to remove the cover and thus give access to the lamp for replacing the bulb when desired.

The construction of the lighting and ignition switches is substantially the same except for the range of movement being greater with the lighting switch. The range of movement is determined by a stop plate 62 mounted on the stem of the switch handle and having oppositely extending stop lugs to engage the flanges 36 previously mentioned. The end of the stem of the switch handle has a central bore and is slotted with the slot through one wall slightly wider than the slot through the other wall and openings in the stop plate match with the sectional shape of the slotted bored handle stem, as shown in Fig. 12. A screw 63 in the bore of the stem secures the stop plate to the unslotted portion of the stem, as seen in Fig. 10. This manner of mounting the stop plate on the stem makes it in-

capable of turning thereon so that when the lugs strike the flanges 36 the handle is incapable of turning further. It will be noted that for modifying the switch for different purposes the range of movement may be increased by removing one or more of the flanges 36.

The contacting portions of the switch are self-contained, that is they constitute an independent assembly readily attachable to the switch housings and comprise an insulating terminal head 64 preferably of one or two sheets of bakelite fabric having a stud 65 riveted to its center to constitute a pivot post for the contact member. The contact member comprises an insulating plate 66 preferably of vulcanized fiber rotatably and slidably mounted on the pivot post 65 with radial projections fitting within the correspondingly shaped flanged edges of a metal contact ring 67 whose corresponding radially extending projections are recessed to fit the rivet heads of contact studs 68 arranged in a circle around the pivot post. A U-shaped sheet metal driver 69 is pivotally mounted on the pivot post and bears against the rivet head thereof and one of its legs is wider than the other to correspond with the width of the slots in the switch handle stem and assure proper assembly therewith for these parts of the driver are contained within the slots of the handle stem when assembled, as shown in Fig. 13, and their ends pass through openings in the insulating plate 66 without contacting with the contact ring. The turning movements of the switch handle are therefore communicated to the driver and through the driver to the contact member, the position of the driver in the slots of the handle stem being variable to accommodate the varying thickness of the glass front 27. A coiled spring 70 surrounds the pivot post, bearing at one end against the driver 69 and at the other end against the insulating plate 66, thus serving to hold the contact ring firmly in engagement with the rounded heads of the contact studs 68 and causing the recesses in said contact ring in engagement with the heads of the studs to serve as detents for holding the switch in its operative positions. The contact studs 68 serve as rivets for attaching angular binding posts 71 arranged and marked for the various wiring connections to establish the desired switch connections in the various positions of the switch handles. The terminal heads 64 are secured to the ends of the switch housings 33 by means of screws 72 and in addition thereto positioning lugs 73 on the edge of the switch housing enter openings 74 in the terminal heads assuring proper assembly.

The U-shaped clamping members 75 serve to clamp the instrument to the cowl board by bridging around the ends of the instrument panel and bearing on the edges of the

cowl board around the opening with screw studs 76 passing therethrough and threading into bosses 77 on the back of the base casting.

By means of this invention the main problems involved in the grouping together in one panel of all of the instruments of the panel board under a single glass front have been solved, the varying thickness of the glass being taken care of both in the clamping of the glass between the base casting and the rim or bezel and in the clamping of the glass between the base casting and the bushing for the switch handles while the uniform illumination of the instruments without objectionable shadows is accomplished by the provision of the front plate spaced from the base casting and from the glass front with the lamp filament so related thereto that, while sufficient light passes in front of the front plate to show the names appearing thereon, the major portion of the light is conducted through the space between the front plate and the base casting, where it is diffused and reflected upon the face or dial of each instrument. This gives a subdued indirect lighting free from glare and shadows. At the same time the lamp is accessible for replacements and the base casting is utilized to house the lamp contact and the switch structures, making the entire instrument panel comparatively inexpensive, air and dust tight and free from loose parts.

What I claim as new and desire to secure by Letters Patent is:

1. An instrument panel for automobiles containing several instruments under a single glass front comprising a base having instruments fitted thereto, a rim or bezel adjustably mounted on the base, a glass front clamped between the rim or bezel and the base, a shouldered bushing passing through the glass front and adjustably clamped to the base for accommodating the thickness of the glass front, and a switch on the base having a switch handle passing through the bushing.

2. An instrument panel for automobiles containing various instruments behind a single glass front comprising a base, a rim or bezel adjustably connected thereto, a glass front clamped between the base and the rim or bezel, a flanged bushing passing through an opening in the glass front and through an opening in the base, a nut threaded on the bushing, means for locking the nut and for preventing the bushing from turning, and a switch on the base having a handle passing through the bushing.

3. An instrument panel for automobiles containing various instruments behind a single glass front comprising a base forming a switch housing, a rim or bezel adjustably secured to the base, a glass front clamped between the base and the rim or bezel, a shouldered bushing passing through an opening

in the glass front and through an opening in the base and entering the switch housing, a flange in the switch housing, a lock plate surrounding the bushing and having a projection entering an opening in the bushing and a notch to fit the flange, a nut threaded on the bushing against the lock plate and provided with notches in its edge, an ear on the lock plate bent into one of the notches of the nut for locking it, and a switch in the switch housing having a handle passing through the bushing.

4. An instrument panel comprising a base, an instrument mounted therein, a glass front secured in front of the instrument, a front plate positioned between the face of the instrument and the glass front and having marks thereon and an opening through which the face of the instrument may be seen, and an electric lamp with its filament back of the plane of the front plate, the light therefrom being conducted through the space between the front plate and the base to the face of the instrument and through the space between the front plate and the glass front to said marks.

5. An instrument panel comprising a base, an instrument mounted thereon, a glass front mounted in front of the instrument, a front plate positioned between the base and the glass front and spaced therefrom and having an opening through which the face of the instrument may be seen and having marks thereon, an electric lamp with its filament behind the front plate but close to the plane thereof whereby the greater part of the light is conducted through the space between the front plate and the base to the face of the instrument and a part of the light is conducted through the space between the front plate and the glass front to show the marks on the front plate.

6. In an instrument panel, a base, a plurality of instruments mounted on the base with their faces approximately located in a common plane, a glass front mounted on the base in front of the instruments, a front plate mounted on the base between the instruments and the glass front and spaced therefrom and provided with openings through which the faces of the instruments may be seen, said openings having rearwardly turned edges, a switch on the base having a switch handle passing through the front plate and the glass front, said front plate having marks appearing thereon indicating the positions of the switch, an electric lamp mounted in the base with its filament approximately in the plane of the front plate whereby the light from the lamp may be conducted through the space between the front plate and the base to the faces of the instruments and through the space between the front plate and the glass front to show the marks on the front plate.

7. An instrument panel comprising a base,
an instrument mounted thereon, a rim or
bezel secured to the base, a glass front
clamped between the base and the rim or
bezel, a front plate secured to the base and
5 extending between the face of the instrument
and the glass front, a removable cover fitting
in an opening in the rim or bezel, a lamp
socket formed in the base behind the remov-
able cover, an electric lamp seated in the
10 lamp socket and accessible through the open-
ing for the cover and having its filament in
approximately the plane of the front plate
to illuminate the front plate as well as the
15 face of the instrument.

8. An instrument panel comprising a base,
an instrument mounted therein, a rim or bezel
secured to the base, a glass front clamped
between the rim or bezel and the base, a front
20 plate secured to the base and extending be-
tween the instrument and the glass front, a
removable cover seated in an opening in the
rim or bezel and having means for holding
it in place, a lamp socket in the base behind
25 the removable cover, a lamp fitting in the
lamp socket with its filament approximately
in the plane of the front plate, and a switch
for the lamp secured to the base and having
its switch handle extending through the rim
30 or bezel.

9. In an instrument panel, a base casting,
a rim or bezel secured thereto, a glass front
held in place by the rim or bezel, an instru-
ment mounted on the base casting, there be-
35 ing a circular opening in the rim or bezel,
a removable cover member fitting in said
opening, spring pressed balls carried by the
cover for engaging notches in the edges of
the opening to releasably hold the cover in
40 place, and an electric lamp seated in the base
casting and accessible through the opening
when the cover is removed.

In testimony whereof I affix my signature.
EDWARD N. JACOBI.

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