

Nov. 15, 1966

R. J. CLARK, JR., ETAL

3,286,045

COVER ASSEMBLY FOR SWITCHES

Filed March 16, 1965

2 Sheets-Sheet 1

FIG. 1

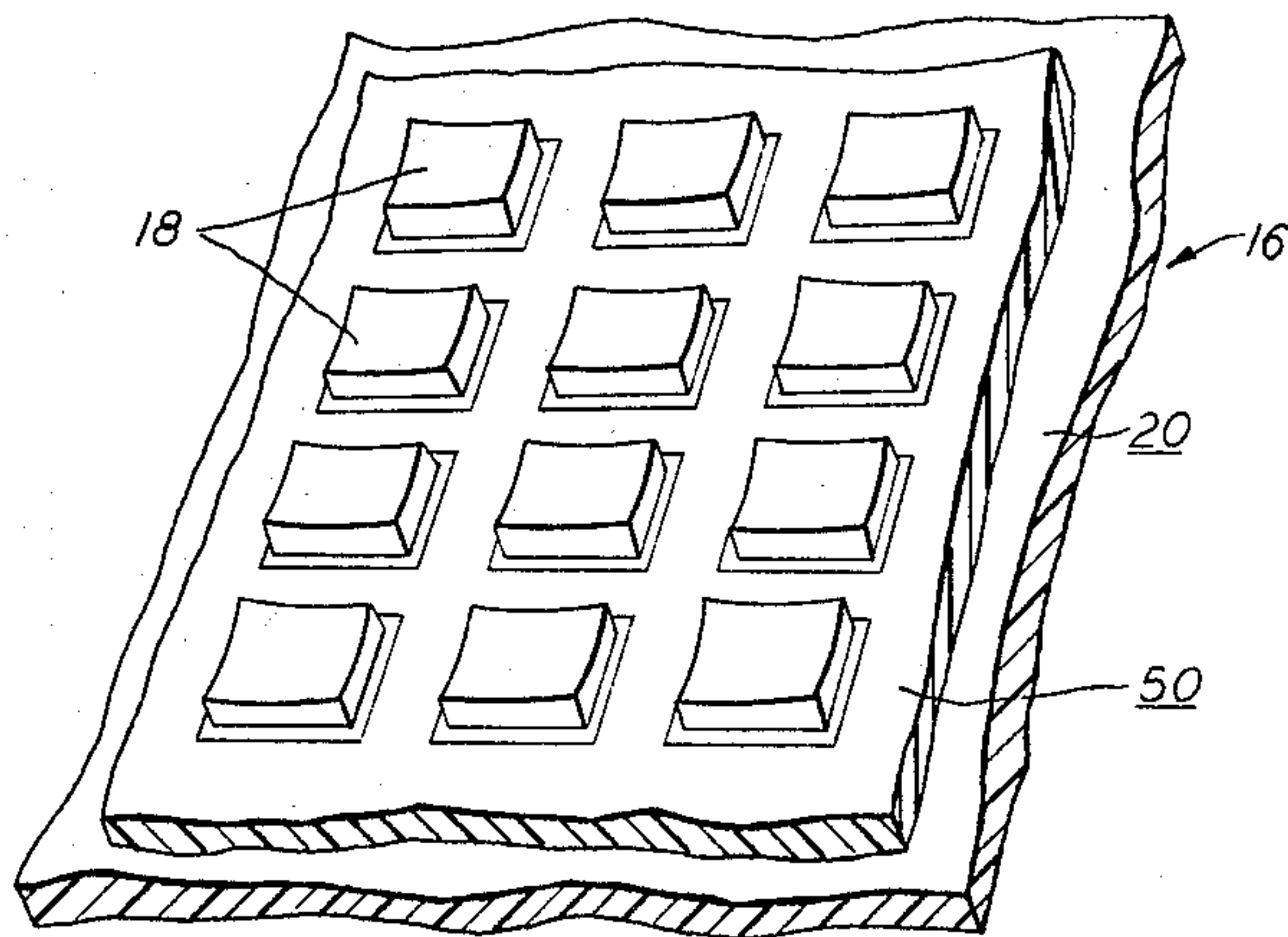
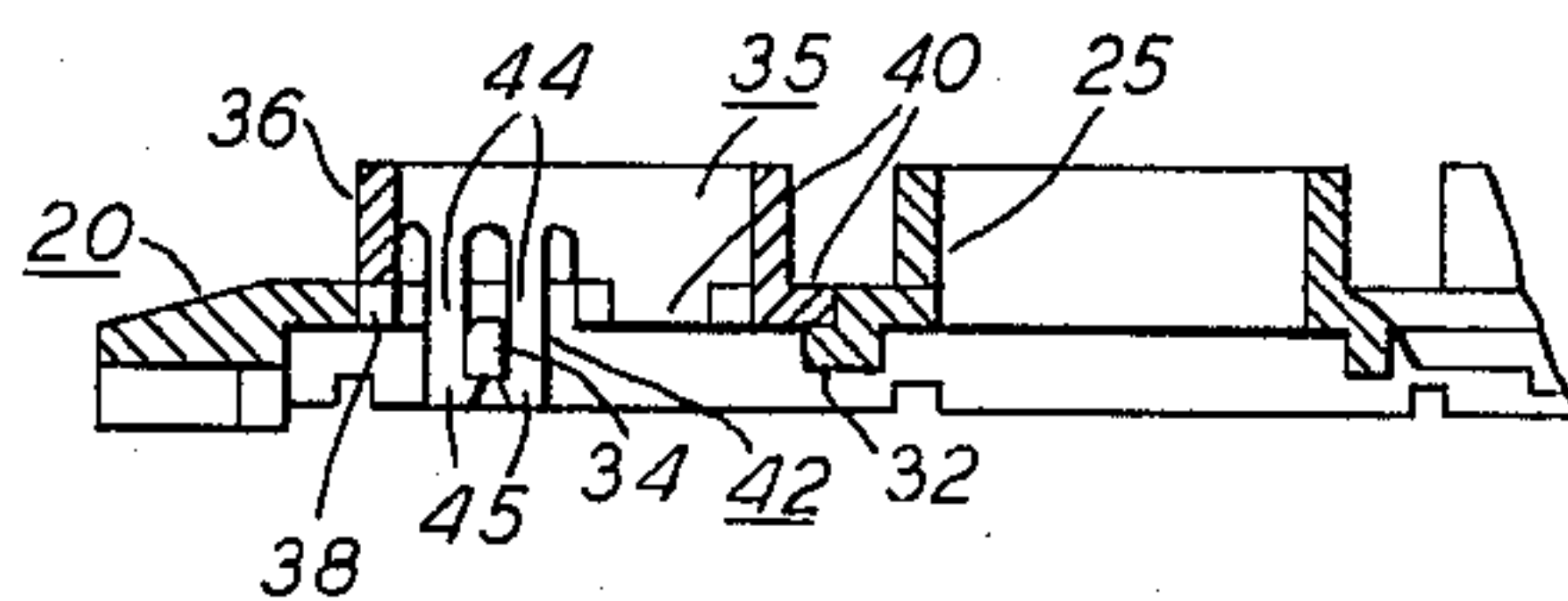


FIG. 3



INVENTORS R.J. CLARK, JR.
W.R. TOLMAN

BY *Steven L. Newman*
ATTORNEY

Nov. 15, 1966

R. J. CLARK, JR., ETAL

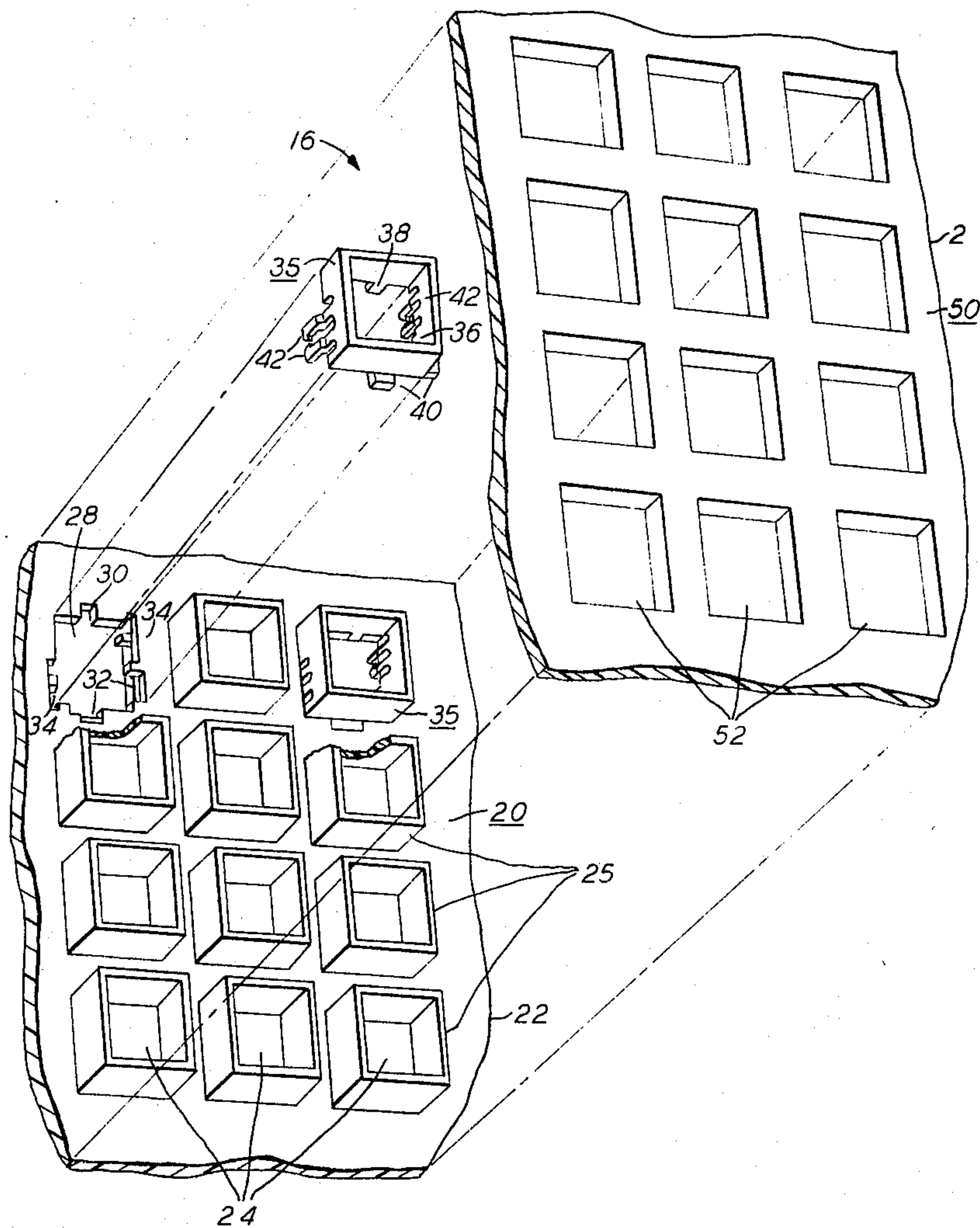
3,286,045

COVER ASSEMBLY FOR SWITCHES

Filed March 16, 1965

2 Sheets-Sheet 2 .

FIG. 2



1

3,286,045

COVER ASSEMBLY FOR SWITCHES

Robert J. Clark, Jr., and Warren R. Tolman, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y., a corporation of New York

Filed Mar. 16, 1965, Ser. No. 440,159

4 Claims. (Cl. 200—5)

The present invention relates to switch construction and particularly to cover assemblies for multiswitch structures.

An object of this invention is to provide a cover assembly that permits the number of switch actuators of a multiswitch structure to be easily modified.

This and other objects of this invention are achieved in an illustrative embodiment thereof wherein the multiswitch structure comprises a pushbutton station normally provided with a particular number of pushbutton switch actuators. Each of the pushbuttons extends through an individual aperture in a cover member, the cover member having an upstanding integral collar portion disposed about each aperture.

The cover member further includes a pair of optional apertures, each adapted to receive an additional pushbutton switch actuator when they are required. Each of the optional apertures has a notch and a pair of spaced ledges formed in the periphery thereof and a pair of spaced tabs extending inwardly from the periphery thereof.

When an additional pushbutton switch actuator is required, a collar member is mounted on one of these optional apertures. The collar member has an upstanding collar portion from which a boss, a pair of spaced laterally extending flanges, and a pair of spaced latches depend. The boss and flanges of the collar member are respectively received by the notch and positioned on the ledges of the optional aperture, the interaction therebetween serving to locate and support the collar member on the periphery of the aperture. In addition, the latches of the collar member engage the tabs on the optional aperture to secure the collar member thereto.

A face member, which has a plurality of apertures corresponding in number and arrangement to the upstanding collar portions integral with and secured to the cover member, is positioned on the cover member with the collar portions extending through the apertures in the face member. The face member covers the optional aperture or apertures not provided with a collar member.

A complete understanding of the invention and of these and other features and advantages thereof may be gained from consideration of the following detailed description taken in conjunction with the accompanying drawing wherein one embodiment of the invention is illustrated. It is to be expressly understood, however, that the drawing is for the purpose of illustration and description and is not to be construed as defining the limits of the invention.

In the drawing:

FIG. 1 is a perspective view of a pushbutton station employing a cover assembly embodying the present invention;

FIG. 2 is an exploded perspective view of the cover assembly; and

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2 showing the interaction between the latch on a collar member and the tab of an associated aperture.

Referring to the drawing and to FIG. 1 in particular, a pushbutton station is shown employing a cover assembly 16 embodying the present invention. The pushbutton station includes a plurality of rectangular pushbutton switch actuators 18 that extend through and project above

2

apertures in the cover assembly 16. The walls defining the apertures in the cover assembly 16 serve to guide the rectilinear movement of the pushbutton switch actuators 18, and each pushbutton when depressed actuates one or more switches. The actuation of switches by the depression of pushbuttons is well known in the art, and since the particular manner in which the pushbuttons 18 actuate switches forms no part of this invention, it will not be described herein. An example, however, can be found in the copending application of J. H. Ham, Jr., W. E. Hostetler, J. F. Ritchey, W. R. Tolman, Serial No. 291,770, filed July 1, 1963, and assigned to the assignee of this invention.

The pushbutton station herein described always has ten pushbutton switch actuators 18, but sometimes an eleventh or twelfth pushbutton switch actuator is required. The cover assembly 16 permits the ready assembly of a pushbutton station having ten, eleven, or twelve pushbutton switch actuators 18.

Turning to FIG. 2, the cover assembly 16 comprises a cover member 20 having a generally planar upper portion 22 through which an array of twelve spaced apertures extend. Ten of the apertures, indicated by the reference character 24, are square and each is encompassed by an upstanding square collar portion 25 integral with the upper portion 22. The other two apertures, indicated by the reference character 28 and referred to as optional apertures, are generally rectangular, and these optional apertures have certain features formed in the surfaces of the upper portion 22 that define the apertures. For convenience, these surfaces will be referred to as the periphery of the apertures.

The periphery of each of the optional apertures 28 has a notch 30 formed in one side thereof and a ledge 32 formed in each of the two other adjacent sides thereof. In addition, the periphery of each optional aperture 28 has a tab 34 extending inwardly from each of two opposite sides thereof. Each tab 34 has a generally rectangular configuration, the upper end of which is rounded and the lower end of which is flat.

Each of the optional apertures 28 is adapted to accommodate a collar member 35. The collar member 35 includes an upstanding square collar portion 36 that is substantially identical in appearance to the collar portions 25 integral with the upper portion 22 of the cover member 20. Depending from one side of the collar portion 36 is a boss 38, and depending from each of two other adjacent sides of the collar portion is a laterally extending flange 40. Furthermore, depending from each of two opposite sides of the collar portion 36 is a latch 42.

As shown most clearly in FIG. 3, each latch 42 comprises a pair of flexible spaced arms 44 the upper ends of which are secured to the collar portion 36 and the lower ends of which are each provided with a hook 45. Each hook 45 has a horizontal upper surface and an inclined under surface. The hooks 45 of each pair of arms 44 extend toward each other and are normally contiguous with one another.

When a pushbutton station having twelve pushbutton switch actuators is required, a collar member 35 is positioned on the periphery of each of the optional apertures 28. Each collar member 35 is so positioned on the periphery of its associated optional aperture 28 that the boss 38 of the collar member extends into the notch 30 in the periphery and the flanges 40 of the collar member rest on the ledges 32 in the periphery. Each collar member 35 is thereby properly located and supported on the periphery of its associated optional aperture 28.

In addition, as each collar member 35 is placed in this position, the inclined bottom surface of the hooks 45 on

3

the arms 44 of the latches 42 engages the rounded upper surface of the tabs 34 and the arms are deflected apart. The arms 44 on each latch 42 remain deflected apart as the hooks 45 move along the sides of the tab 34, and as the collar member 35 seats in its proper position, the hooks 45 of each latch 42 move together beneath the associated tab. The upper horizontal surfaces of the hooks 45 engage the flat lower ends of the tabs 34 and secure the collar member 35 in place.

The final component of the cover assembly 16 is a face member 50. The face member 50 is a generally planar opaque member having a plurality of apertures 52 corresponding in number and arrangement to the upstanding collar portions 25 integral with the cover member 20 and the collar portions 36 of the collar members 35 positioned on the cover member. The face member 50 is positioned on the upper portion 22 of the cover member with the collar portions 25 and 36 extending through the apertures 52 in the face member. The apertures 52 closely conform to the outside surfaces of the collar portions 25 and 36, and with the face member 50 in place the collar portions 36 cannot be distinguished from the collar portions 25.

Should eleven pushbutton switch actuators 18 rather than twelve be required, only one collar member 35 is positioned on the cover member 20, and a face member 50 having the corresponding eleven apertures 52 is employed, the face member covering the optional aperture 28 not used. Of course, if only ten pushbutton switch actuators 18 are required, no collar members 35 are employed, and a face member 50 having the corresponding ten apertures is positioned on the cover member 20, covering both of the optional apertures 28.

While the invention has been disclosed in terms of a multiswitch station always having at least a preselected number of pushbutton switch actuators, it is not limited thereto. The multiswitch station may have no minimum number of switch actuators, in which case the cover member 20 will only have optional apertures 28. In addition, the switch actuators need not be pushbuttons, but may be slide, pull, or rotate buttons or knobs, or a combination thereof. Consequently, the collar portions 36 need not conform to one another or to the collar portions 25.

What is claimed is:

1. A cover assembly for a pushbutton station having a variable number of pushbuttons, the cover assembly comprising:

- a cover member having a plurality of first and second apertures, each first aperture and a selected one of the second apertures adapted to have a pushbutton extend therethrough, an integral upstanding collar portion disposed about each of the first apertures, a notch and a pair of spaced ledges formed in the periphery of each of the second apertures and a pair of spaced tabs extending inwardly from the periphery of each of the second apertures;
- a collar member positioned on the periphery of the selected second aperture, the collar member having an upstanding collar portion of substantially the same shape as the collar portions integral with the cover plate, a boss depending from the collar portion, the boss being received by the notch in the selected second aperture, a pair of spaced flanges depending from and laterally extending from the collar portion, the flanges being respectively positioned on the spaced ledges of the selected second aperture, the interaction between the boss and the notch and between the flanges and the ledges serving to properly locate and support the collar member on the selected second aperture, a pair of spaced latches depending from the collar portion, each latch comprising a pair of flexible arms, each of the arms having a hook on the end thereof and the hooks extending toward each other and normally being contiguous with one

4

another, the placement of the collar member in the proper position on the selected second aperture resulting in each pair of hooks being deflected apart and then moving together beneath an individual tab on the selected second aperture to secure the collar member thereto; and

- a face member having a plurality of apertures corresponding in number and arrangement to the upstanding collar portions integral with and secured to the cover member, the face member being positioned on the cover member with the collar portions extending through the apertures in the face member, each aperture in the face member closely conforming to the outside surface of the collar portion about which it is disposed.

2. A cover assembly for a multiswitch station having a variable number of switch actuators, the cover assembly comprising:

- a cover member having a plurality of apertures, certain ones of which are selected to have an individual switch actuator extend therethrough, a notch and a pair of spaced ledges formed in the periphery of each of the apertures and a pair of spaced tabs extending inwardly from the periphery of each of the apertures;
- a plurality of collar members respectively positioned on the periphery of the selected apertures, each collar member having an upstanding collar portion, a boss and a pair of spaced laterally extending flanges depending from the collar portion, the boss and the flanges being respectively received by the notch and positioned on the spaced ledges of a selected aperture, each collar member further having a pair of spaced latches depending from the collar portion, each latch comprising a pair of flexible arms, each of the arms having a hook on the end thereof and the hooks extending toward each other and normally being contiguous with one another, the placement of a collar member in the proper position on a selected aperture resulting in each pair of hooks being deflected apart and then moving together beneath an individual tab on the selected aperture to secure the collar member thereto; and
- a face member having apertures corresponding in number and arrangement to the collar portions on the cover member, the face member being positioned on the cover member with each collar portion extending through an individual aperture in the face member, each aperture in the face member closely conforming to the outside surface of the collar portion about which it is disposed.

3. A cover assembly for a multiswitch station having a variable number of switch actuators, the cover assembly comprising:

- a cover member having a plurality of first and second apertures, each first aperture and a selected one of the second apertures adapted to have a switch actuator extend therethrough, integral upstanding collar portions respectively disposed about each of the first apertures;
- a collar member positioned on the periphery of the selected second aperture, the collar member having an upstanding collar portion of substantially the same shape as the collar portions integral with the cover member, the collar member further having means for locating the collar member on and securing the collar member to the cover member;
- a face member having a plurality of apertures corresponding in number and arrangement to the upstanding collar portions integral with and secured to the cover member, the face member being positioned on the cover member with the collar portions extending through the apertures in the face member, each aperture in the face member closely conforming to

5

the outside surface of the collar portion about which it is disposed.

4. A cover assembly for a switch comprising:

- a cover member having an aperture therein through which the actuator of the switch is adapted to extend, a notch and a pair of spaced ledges formed in the periphery of the aperture and a pair of spaced tabs extending inwardly from the periphery of the aperture;
- a collar member positioned on the periphery of the aperture, the collar member having an upstanding collar portion, a boss and a pair of spaced laterally extending flanges depending from the collar portion, the boss and the flanges being respectively received by the notch and positioned on the spaced ledges of the aperture, the collar member further having a pair of spaced latches depending from the collar portion, each latch comprising a pair of flexible arms, each of the arms having a hook on the end thereof and the hooks extending toward each other and normally being contiguous with one another, the placement of the collar member in the proper position on the aperture resulting in each pair of

6

hooks being deflected apart and then moving together beneath an individual tab on the aperture to secure the collar member thereto; and

- a face member having an aperture therein, the face member being positioned on the cover member with the collar portion extending through the aperture therein, the aperture closely conforming to the outside surface of the collar portion.

References Cited by the Examiner

UNITED STATES PATENTS

3,164,688 1/1965 Jozefowski ----- 200—5

References Cited by the Applicant

UNITED STATES PATENTS

2,169,996 8/1939 Edwards.
2,680,794 6/1954 Ballou.
2,933,581 4/1960 Naimer.

20 ROBERT K. SCHAEFER, *Primary Examiner.*

ROBERT S. MACON, *Acting Examiner.*

M. GINSBURG, *Assistant Examiner.*