June 7, 1966 M. E. BROWN 3,254,891

KEYBOARD CONSOLE DEVICE

Filed July 9, 1963

3 Sheets-Sheet 1

Fig. 1.

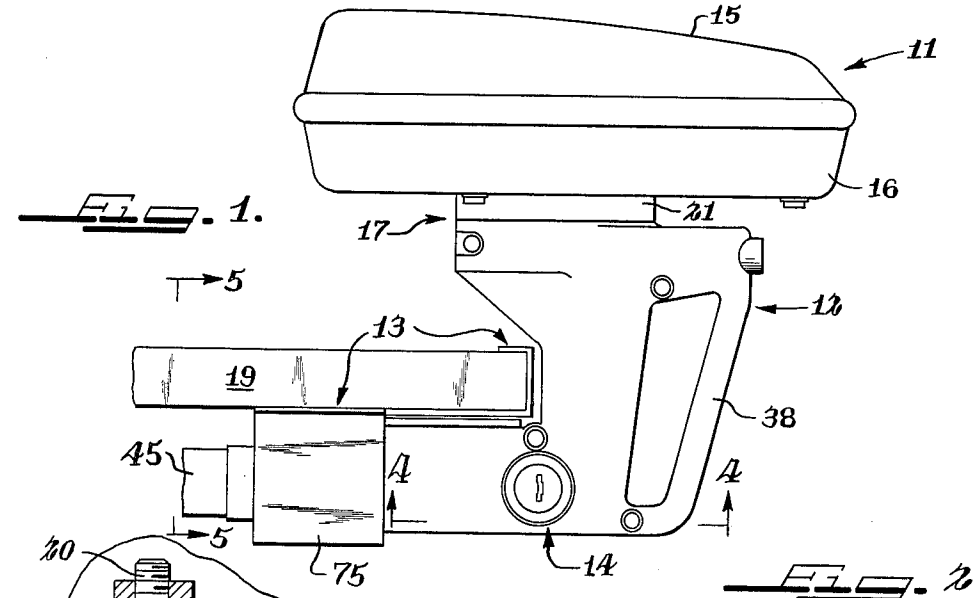


Fig. 2.

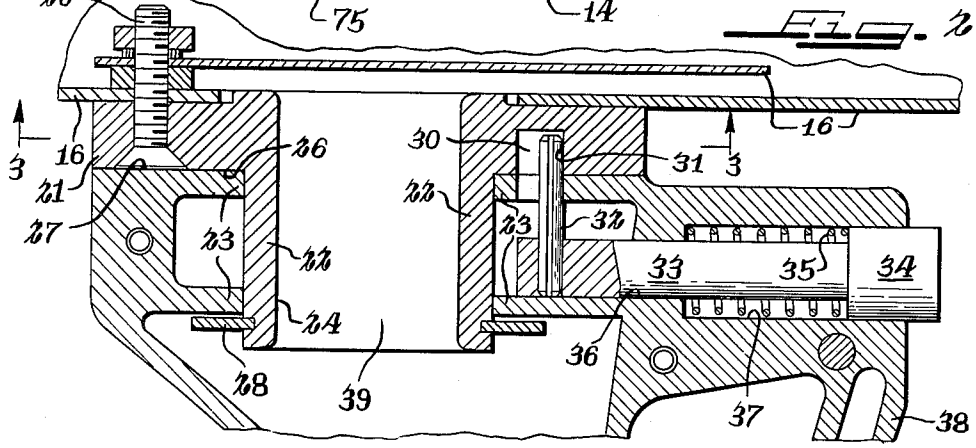
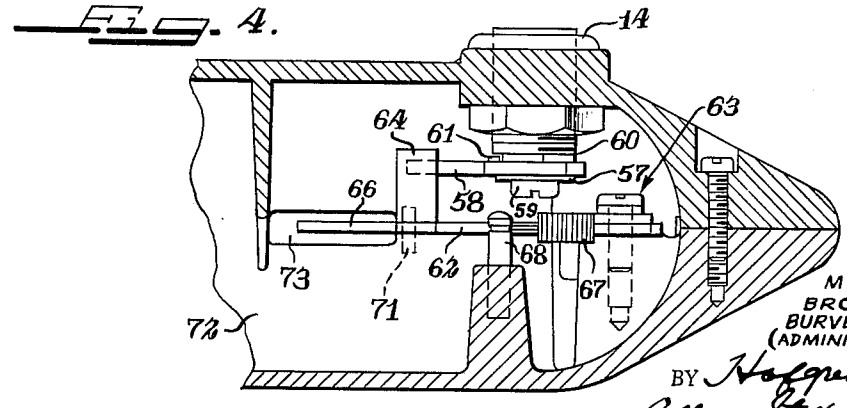


Fig. 4.



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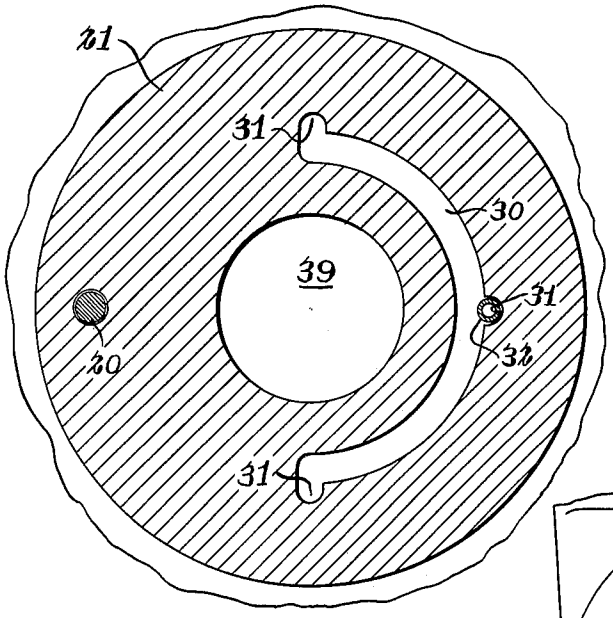


Fig. 3.

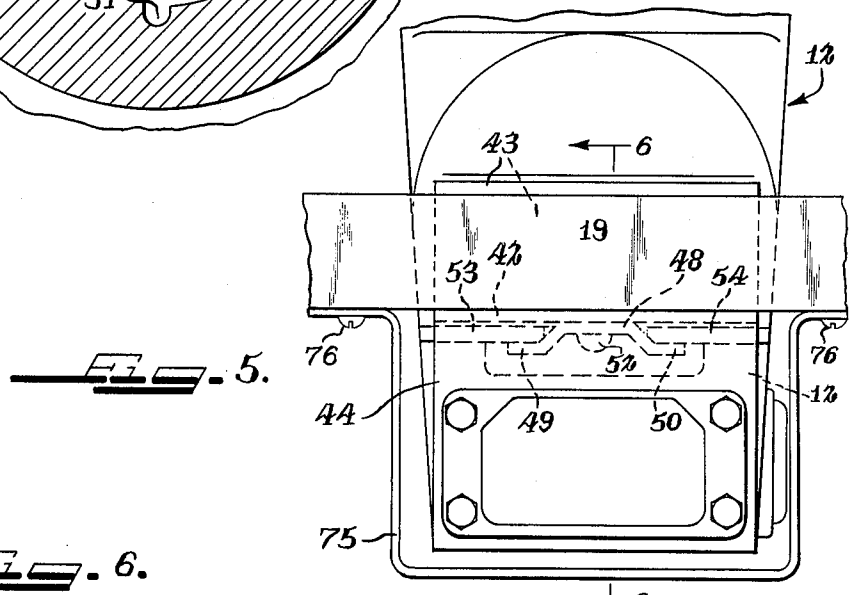
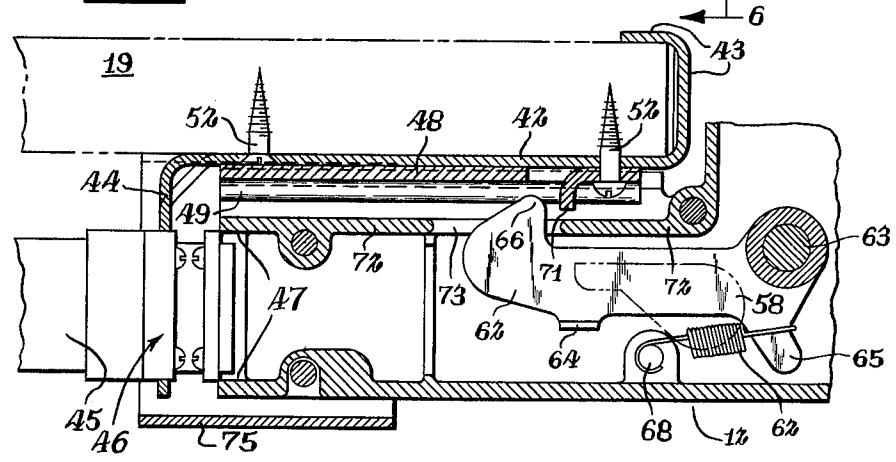


Fig. 5.

Fig. 6.



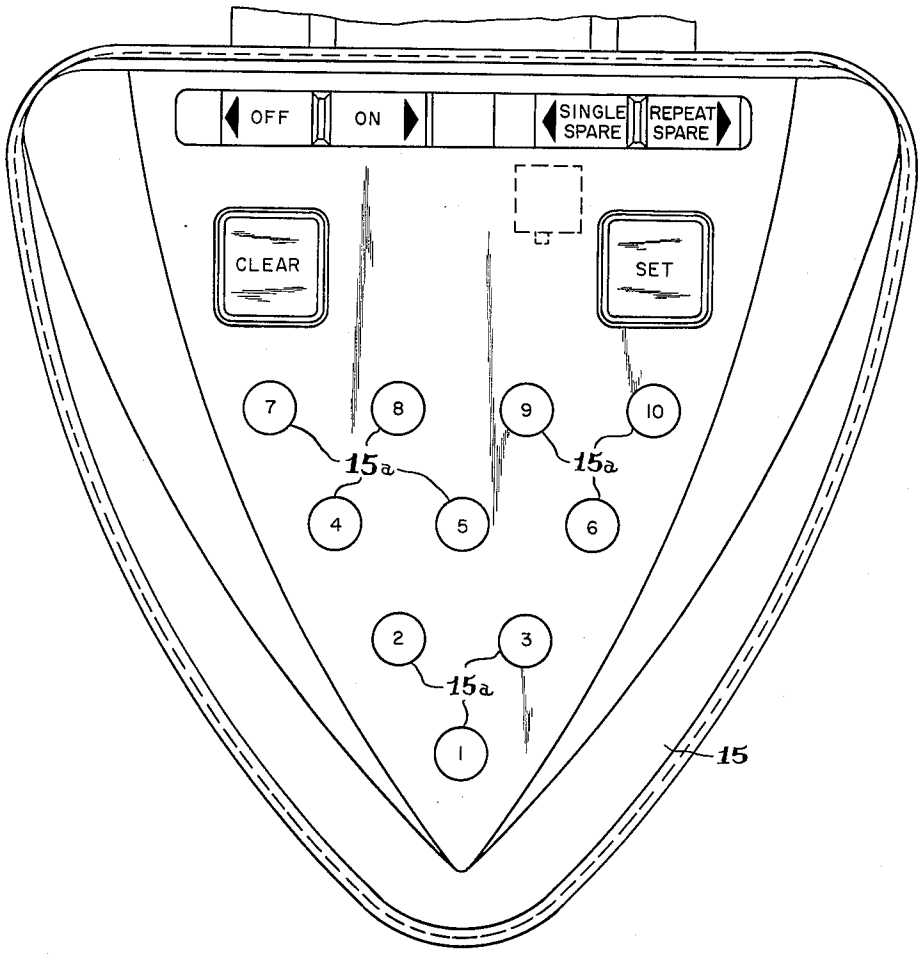
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Fig. 7.



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KEYBOARD CONSOLE DEVICE

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Filed July 9, 1963, Ser. No. 293,910
8 Claims. (Cl. 273—54)

This invention relates to a structure and mounting of a keyboard console and especially a keyboard console intended for use at the bowlers' end of a bowling alley.

It is a general object of this invention to provide new and useful mounting of a keyboard console.

Another object of this invention is to provide a new and useful mounting bracket positionable or securable on a bowlers' score table or other structure and adapted to support the keyboard console.

Still another object of this invention is to provide new and useful swivel mounting of a keyboard on a mountable support member for releasably retaining the keyboard in angularly adjusted positions.

A further object of this invention is to provide a new and useful mounting bracket adapted to be secured to a bowlers' score table and to support a keyboard console through a supporting structure including a swivel mounting of the keyboard for releasably retaining the keyboard in angularly adjusted positions, wherein the supporting structure is releasably securable to the mounting bracket for support therethrough from the bowlers' score table.

A still further object is to provide such swivel mounting of a keyboard console wherein detent means are included for releasably retaining the console in angularly adjusted positions; another object is to provide releasable attachment of the structure supporting the console, including the swivel mounting, to the mounting bracket whereby the supporting structure may be secured and locked to the mounting bracket by means of the key operable lock to prevent unauthorized removal of the console and may be unlocked therefrom by means of the key operable lock to permit removal of the console for servicing, storage or the like.

Other objects or features of the present invention will be apparent to those in the art from the following detailed description and from the drawings in which:

FIG. 1 is a side view of a keyboard console mounted in accordance with an embodiment of the present invention;

FIG. 2 is an enlarged partial vertical section through the structure of FIG. 1 showing swivel mounting of the keyboard console in detail;

FIG. 3 (sheet 2) is a horizontal section through a portion of the swivel mounting along line 3—3 of FIG. 2;

FIG. 4 (sheet 1) is an enlarged partial horizontal section taken along line 4—4 of FIG. 1;

FIG. 5 (sheet 2) is an enlarged end view taken along line 5—5 of FIG. 1;

FIG. 6 (sheet 2) is a partial vertical section showing the interior structure of a portion of the mounting of FIG. 1 taken along line 6—6 in FIG. 5 and showing relative positioning of a latch operating arm of another parallel section in phantom; and

FIG. 7 (sheet 3) is a plan view of the keyboard.

While the present invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail a specific embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

The embodiment illustrated in the drawings, referring first to FIG. 1, generally includes a keyboard console indicated by reference numeral **11**, a supporting or bridging frame **12** carrying the console, mounting means or a mounting member **13** for mounting the bridging frame and console carried thereby to a suitable supporting structure at the bowlers' end of a bowling alley or plurality of adjacent bowling alleys, and lock means indicated generally at reference numeral **14** for locking the bridging frame **12** to mounting member **13**. Keyboard console **11** includes a keyboard **15** (with depressible buttons as at **15***a*) and a console frame **16** in the form of a casing providing a supporting structure for the keyboard. The bridging frame **12**, in combination with frame **16**, provides a swivel mounting indicated generally at **17** for pivotal movement of keyboard console **11** about a vertical axis. Mounting bracket or member **13** receives bridging frame **12** in a slidable supporting recess in the mounting bracket, and the bridging member carrying the keyboard console may be locked in supporting engagement with mounting bracket **13** by means of the key operable lock **14**.

Keyboard console **11** may be any console desired to be pivotally and releasably supported from a supporting structure, e.g., a bowlers' score table indicated by reference numeral **19**. For example, the console may be such a bowlers' console as described by Albert P. Rogers' application Serial No. 221,035, entitled "Selective Pin-setting Control," filed September 4, 1962.

Mounted to the bottom of frame or casing **16** of console **11** by means of a bolt assembly indicated generally at **20** there is a bearing member **21** which forms a portion of console **11**. Bearing member **21** includes a downward cylindrical or tubular projection **22** which is slidably fitted within a portion of frame **12** indicated by reference numeral **23** defining a cylindrical receptacle. Bearing member **21** has a lower bearing surface **26** around projection **22** and frame portion **23** has an upper bearing surface **27** around receptacle **23**. Surfaces **26** and **27** are cooperating planar surfaces of generally annular configuration. Projection **22** is retained against substantial upward axial movement within receptacle **23** by means of a retaining snap ring **28** on a portion of projection **22** extending downwardly beyond receptacle **23**, snap ring **28** being positioned in a circumferential groove **29** in projection **22**.

Bearing member **21** has a generally semicircular groove **30** therein extending from surface **27** upwardly and communicating with a plurality of angularly spaced detent receivers **31** which are adapted to receive a detent **32**. Detent **32** is slidable into and out of each of the detent receivers **31** by radial movement with respect to groove **30** with the detent receiver generally radially aligned with detent **32**. For such sliding movement of detent **32**, the detent is mounted on a plunger **33** having a button **34** secured to the other end of the plunger. A compression spring **35** normally urges the button **34** and plunger **33** carried thereby to the right as illustrated in FIG. 3 to normally urge detent **32** into detent receiver **31** when a detent receiver **31** is aligned with detent **32**. Plunger **33** is slidably mounted in a bore or cylinder **36** in frame **12** and spring **35** is mounted and grounded or anchored against frame **12** within a larger coaxial bore **37**. Button **34** is slidable within bore **37**. Button **34** is accessible adjacent to a handle member **38**, which handle is a part of frame **12** and may be used for carrying frame **12** and console **11** mounted thereon upon release of frame **12** from mounting member **13** as will be described more particularly hereinbelow.

In operation of the pivotal mounting of console **11** on frame **12**, when it is desired to pivot console **11**, button **34** is depressed, releasing detent **32** from a receiver **31** and

the console is then pivoted with detent 32 disposed in groove 30. Button 34 may be released at any time desired or may be held depressed until another detent receiver 31 is aligned with detent 32 by swivelling of console 11 with surface 27 sliding on surface 26. Upon alignment of detent 32 with a receiver 31, and upon release of button 34, spring 35 will urge detent 32 into the receiver 31 which is angularly aligned with detent 32. Three detent receivers 31 are provided in the illustrated device and are spaced 90° from each other.

The groove 30 is of sufficient curved length to provide about 180° travel of the center of detent 32 within groove 30. The detent receivers define separate angular positions in which console 11 may be releasably retained by means of the detent and detent receivers. Thus, console 11 may be pivoted on frame 12 and held in position by detent 32 to face either a left-hand bowling alley or a right-hand bowling alley 180° therefrom or a position intermediate the two bowling alleys, e.g., facing the bowlers' end of the two alleys between the alleys, for use on either alley.

An axial opening 39 is provided through bearing member 21 to define a passageway for electrical wires which may be connected to components within the console 11.

Turning now to FIGS. 1, 5 and 6, mounting bracket 13 includes a frame member 42 configurated to conform to a bowlers' score table 19 for attachment against the lower surface thereof. An edge 43 of frame member 42 is bent upward and over the top of table 19 to conform to the edge and tabletop to assist in supporting the mounting bracket from the top of table 19. Frame member 42 is also formed at the other end 44 to provide a downward projection for supporting an electrical cable 45 provided to carry electrical wires extending from console 11 through frame 12 exteriorly thereof. Cable 45 terminates in a plug 46 receivable in a receptacle 47 in frame 12.

An overhead rail member 48 in the form of a pair of opposing outwardly projecting flanges 49 and 50 is secured to frame 42 which is mounted to the bottom of table 19 by means of screws 52. Flanges 49 and 50 are elongate and extend over a sufficient length of mounting bracket 13 to provide adequate bearing surface for mounting of frame 12 thereto as will be more particularly described hereinbelow.

Secured to frame 12 are a pair of opposing slide plates or inward projecting flanges 53 and 54 which are adapted to slide lengthwise over the outwardly projecting flanges 49 and 50 in the position illustrated in FIG. 5. With flanges 53 and 54 longitudinally slidable on flanges 49 and 50 respectively, it is apparent that the frame 12 may slide from right to left or left to right as viewed in FIG. 6 for mounting of frame 12 on bracket 13 or withdrawal of frame 12 from bracket 13. Sliding movement of frame 12 with respect to mounting bracket 13 to the left as viewed in FIG. 6 an excessive amount would be stopped by engagement of plug 46 with receptacle 47. Thus, the unit of console 11 and frame 12, which may be handled by handle 38 for lifting purposes, may be removably mounted on bracket 13 and thereby secured to table 19 by sliding the engaging flanges lengthwise to the left to the position illustrated in FIG. 6, and may be removed by grasping handle 38 and moving frame 12 to the right as viewed in FIG. 6.

Referring now to FIGS. 1, 4 and 6, lock assembly 14 is a key operable tumbler lock assembly of conventional design having a cylinder rotatable by insertion of the proper key for alignment of tumblers and turning of the key. Lock 14 is secured to a casing portion of frame 12 in the conventional mounting manner for such locks. The central rotatable cylinder of lock 14 is identified by reference numeral 57 and secured thereto by mounting screw 59 is an arm 58 which is pivoted with cylinder 57 in either direction by turning of the key inserted in lock 14 in the corresponding direction. Arm 58 is shown in its proper mounted position in FIG. 4 and is also added in side view in phantom in FIG. 6 for further illustration. The lock assembly is provided with a stop surface 60 and a stop projection 61 to limit the pivotal travel of the rotatable cylinder with respect to the securely mounted lock casing.

A latch member 62 is pivotally mounted at 63 to frame 12 by means of a machine screw and washer. Latch member 62 includes a projection 64 disposed for engaging arm 58. A projection 65 and a latching end 66 are also provided as parts of the pivotal latch member 62. A tension spring 67 attached to frame 12 through mounting member 68 and attached to projection 65 normally urges latching member 62 in a clockwise direction as viewed in FIG. 6, toward a latching position as will be more particularly described hereinbelow.

A projection 71 secured to track member 48 and as thereby secured to mounting member 13 forms a latch receiver. With frame 12 mounted on mounting member 13 as illustrated in FIG. 6, projection 71 is disposed above a cross frame 72 and is accessible for engagement by the latching end 66 of latch member 62 through opening 73 in the cross frame 72. Thus, spring 67 normally urges latch member 62 into latching engagement with projection 71, locking bridging frame 12 against slidable removal from mounting member 13.

Insertion of a key in lock 14 and turning the key, and therefore cylinder 57, in a counterclockwise direction as viewed in FIG. 1, causes arm 58 to pivot against projection 64 withdrawing latching member 62 from latching engagement with projection 71 against the biasing of spring 67 so that the bridging frame 12 and console 11 may be removed from its mounting on table 19 by grasping handle 38 and withdrawing the assembly from bracket 13.

With the structure assembled as in FIG. 6, turning of the key in lock 14 in the opposite or counterclockwise direction results in raising arm 58 to the position shown thereby permitting spring 67 to urge latch 62 into engagement with projection 71 for locking frame 12 in position on mounting member or bracket 13. Thus, the key operated lock 14 is capable of effecting locking and unlocking of the console unit on the mounting bracket.

A decorative shield 75 is disposed about the assembly of bridging frame and mounting bracket in the illustrated device and is secured to the bottom side of table 19 by means of suitable screws 76.

What is claimed is:

1. A keyboard console comprising a keyboard, a structure carrying said keyboard, a frame, means mounting said structure for swivel movement on said frame, means for releasably retaining said structure and keyboard carried thereby in angularly adjusted positions, a bracket adapted to be releasably secured to said frame for mounting the frame on a support member, and lock means for locking said frame to said bracket.

2. In a selector device for selecting bowling pins comprising a keyboard carried by a frame, a triangular array of buttons on said keyboard, one button for each pin of a bowling pin set-up, a support member, means mounting said frame for swivel movement on said support member to positions in which the base of the triangle of said array faces in either of two opposite directions, means for releasably retaining the frame and keyboard carried thereby in each of said positions, and bracket means for securing said support member to a supporting structure.

3. A keyboard console comprising a keyboard, a frame carrying said keyboard, a mounting member comprising an elongate cylindrical receptacle generally vertically disposed, a generally continuous upper surface surrounding said receptacle, an elongate cylindrical downward projection from said frame slidably fitted within said elongate receptacle with said frame bearing against and angularly slidable upon said upper surface, said elongate projection extending downwardly beyond said receptacle, circular flange means on the outer surface of said cylindrical projection beyond said receptacle for retaining said cylindrical projection against withdrawal from said receptacle, a generally semicircular groove in the lower surface of said frame coaxial with said cylindrical projection, three de-

tent receivers spaced 90° from each other and accessible from said groove, a detent pin movable between holding and released positions, said detent pin being disposed within said groove in released position and being disposed within one of said detent receivers in holding position, spring means normally biasing said detent pin toward holding position, a gripping handle on said support member, manually operable button means adjacent said gripping handle for releasing said detent against the urging of said spring, said frame being locked against swivelling on said upper surface with said detent in holding position and being free for swivelling with said detent in released position whereby said structure and keyboard carried thereby may be moved between angularly adjusted positions within an arc of about 180°.

4. A keyboard console comprising a keyboard, a frame carrying said keyboard, a mounting member including a pair of outwardly projecting opposing flanges adapted to be supported from the bowlers' score table, means for securing said mounting member to the bowlers' score table, a pair of inwardly projecting opposing flanges on said frame adapted to engage and contain therebetween said outwardly projecting opposing flanges of said mounting member by sliding said frame flanges from one end thereof lengthwise over said mounting member flanges to a supported position wherein said frame is supported by said mounting member, a key operable cylinder lock mounted on said frame providing access from the exterior thereof for insertion of a key, a latch member pivotally mounted on the frame and movable between latched and unlatched positions, an arm carried by the rotatable cylinder of said lock and pivotal therewith, means normally biasing said latch member to latched position, said arm being adapted to move said latch member to unlatched position against said biasing means upon movement of said arm in one direction and releasing said latch member to latched position upon movement of said arm in the opposite direction, a latch receiver on said mounting member disposed to receive said latch member with said frame in supported position and said latch member in latched position to secure said frame in supported association with said mounting member, said latch receiver releasing said latch member upon pivoting of said latch member to unlatched position to permit sliding withdrawal of said inwardly projecting flanges from said outwardly projecting flanges for release and removal of said frame from said mounting member.

5. A keyboard console comprising a keyboard, a structure carrying said keyboard, a frame, means mounting said structure for swivel movement on said frame, detent means for releasably retaining said structure and keyboard carried thereby in angularly adjusted positions with respect to said frame, means for selectively rendering said detent means inoperable so that said structure is pivotally movable on said frame, said detent means providing angularly spaced stops for selectively releasably retaining said structure and keyboard against swivel movement with respect to said frame, a bracket comprising an elongate slide rail, means for mounting said bracket to a support member, slide means on said frame adapted to slidably engage said rail and support said frame therefrom, and lock means for locking said frame to said bracket with said slide means supported from said rail.

6. The keyboard console of claim 1 wherein said lock means is operable to unlock said frame from said bracket for removal of the frame and keyboard for purposes of servicing the same.

7. In a selector device comprising a keyboard carried by a frame, a support member attached to said frame for supporting said frame, a mounting bracket for receiving said support member and mounting said support member on a supporting structure, a latch receiving member on said bracket, a key operable lock member secured to said support member, and latch means extending from said lock to and received by said latch receiving member with said support member received by said bracket, said latch being mounted for movement to disengage said latch receiving member responsive to operation of said lock member.

8. A keyboard console comprising a keyboard, a frame carrying said keyboard, a support member, means mounting said frame for swivel movement on said support member, a circular groove in said frame concentric with the axis of swivel of said frame, a plurality of spaced detent receivers in said frame extending radially outward from said circular groove, a button receiver in said support member extending to an opening in the outer surface of said support member, a button in said receiver and having a pushing face accessible at the receiver opening for pushing the button inward, spring means for returning the button outward, and a detent member carried in said groove and secured to said button to limit the inward movement of said button, each of said receivers limiting the outward movement of said button with the frame swiveled to present the receiver in alignment for receiving said detent.

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