

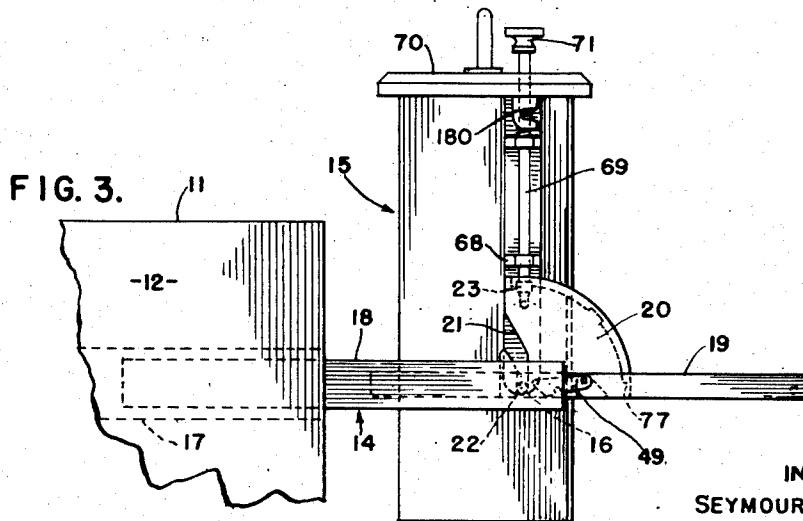
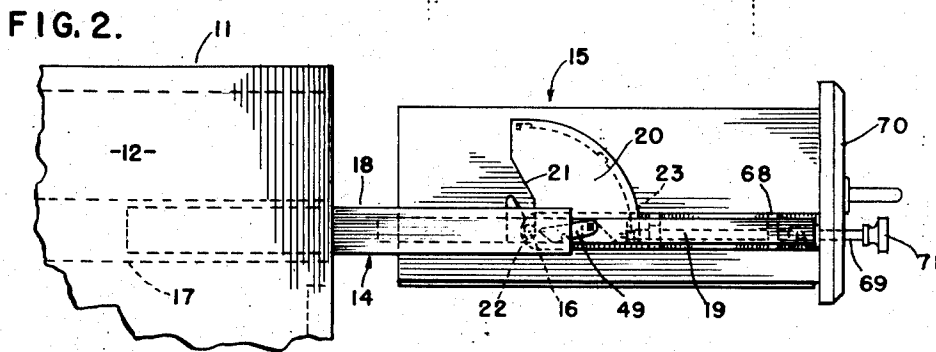
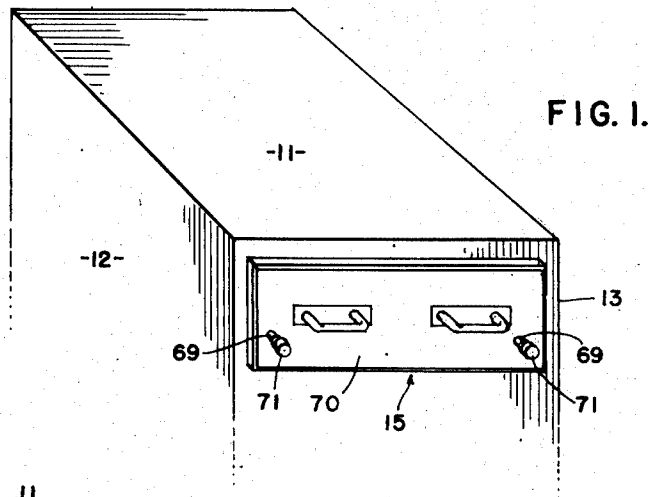
Oct. 13, 1953

S. I. GUSSACK
PIVOTALLY MOVABLE SLIDING BRACKET FOR DRAWERS
OR SHELVES AND LOCKING MEANS THEREFOR

2,655,422

Filed April 24, 1951

5 Sheets-Sheet 1



INVENTOR
SEYMOUR I. GUSSACK,
BY
Irving Seidman
ATTORNEY

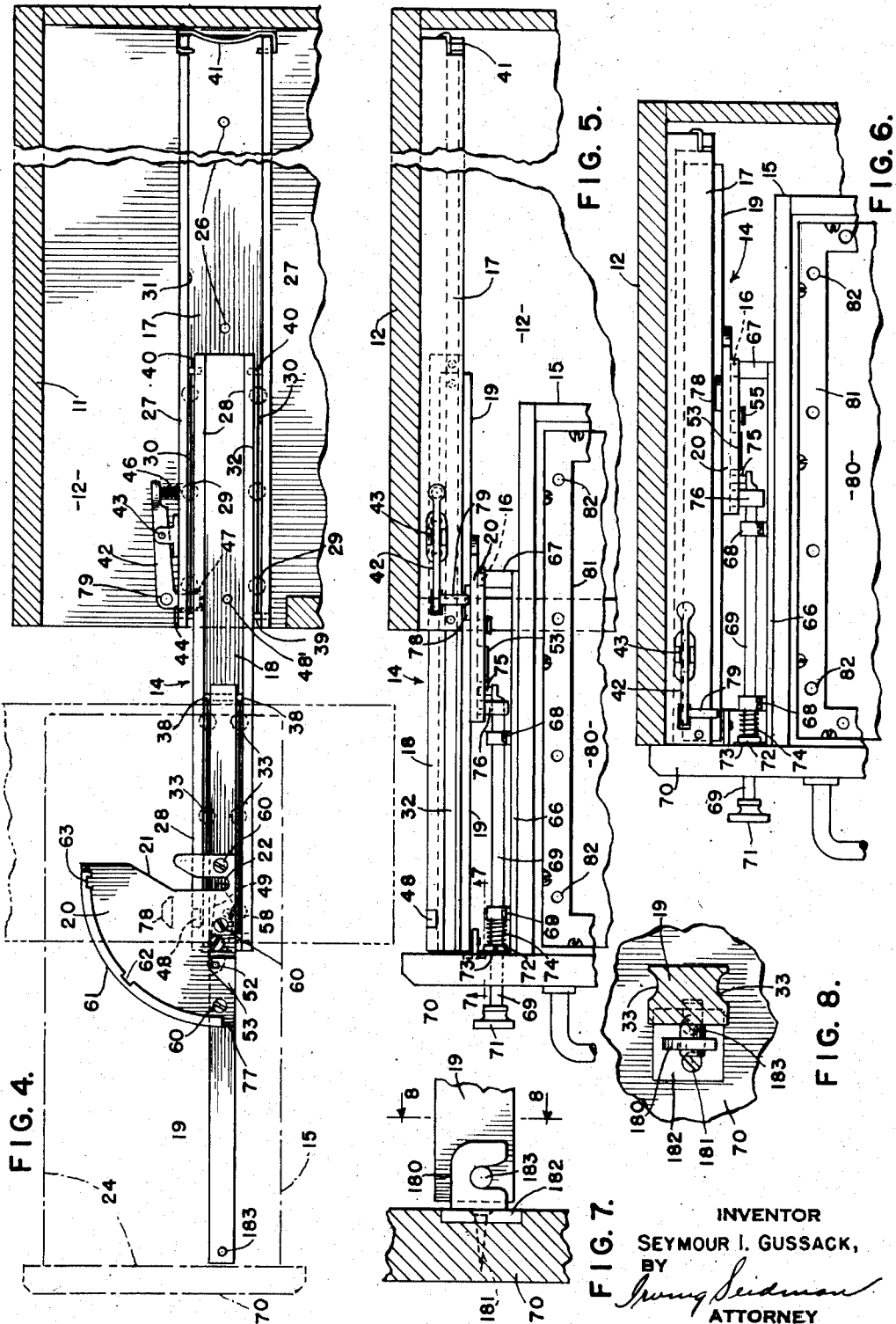
Oct. 13, 1953

S. I. GUSSACK
PIVOTALLY MOVABLE SLIDING BRACKET FOR DRAWERS
OR SHELVES AND LOCKING MEANS THEREFOR

2,655,422

Filed April 24, 1951

5 Sheets-Sheet 2



Oct. 13, 1953

S. I. GUSSACK
PIVOTALLY MOVABLE SLIDING BRACKET FOR DRAWERS
OR SHELVES AND LOCKING MEANS THEREFOR

2,655,422

Filed April 24, 1951

5 Sheets-Sheet 3

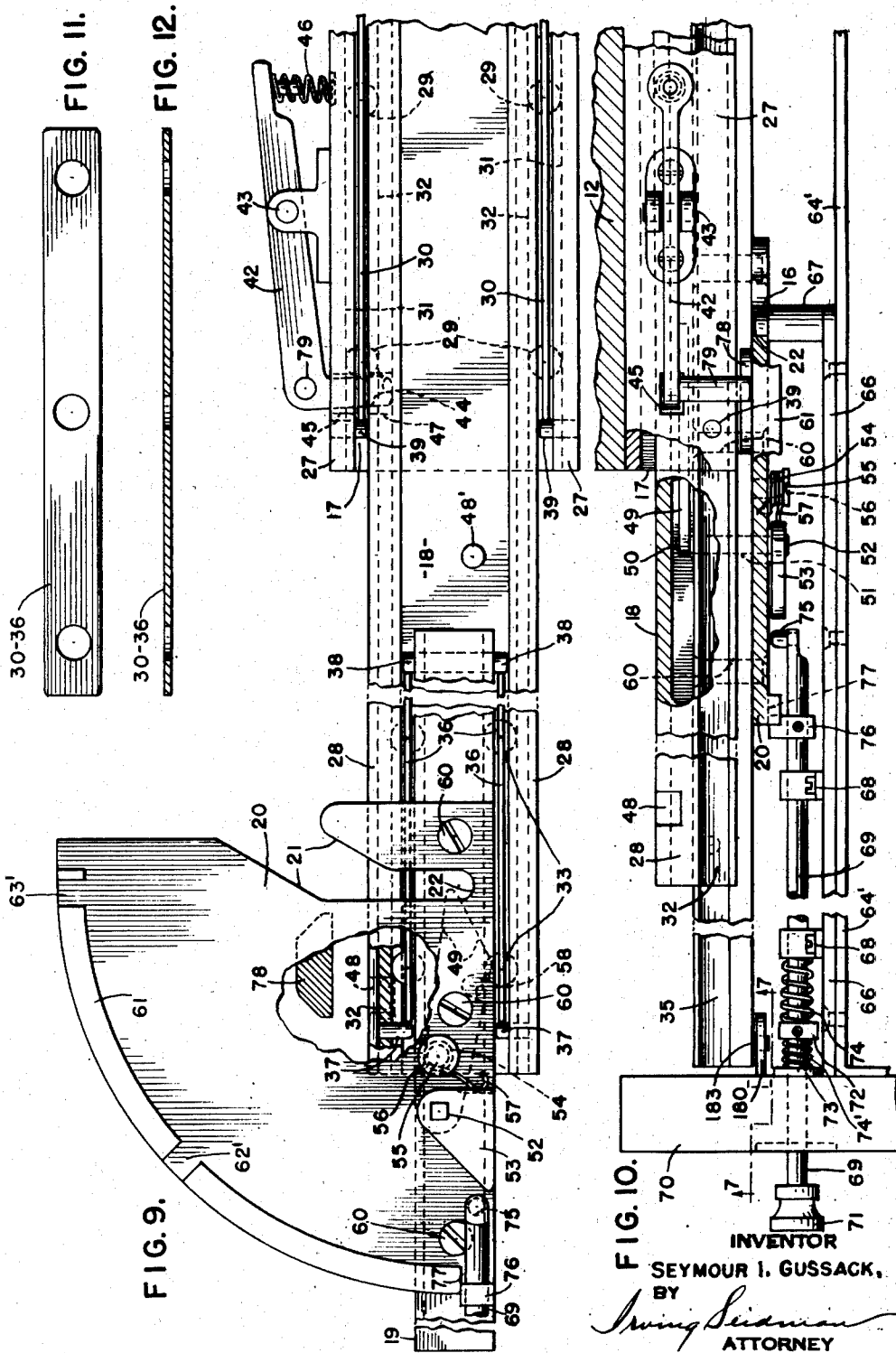


FIG. 10.

INVENTOR
SEYMOUR I. GUSSACK,
BY
Irving S. Lerman
ATTORNEY

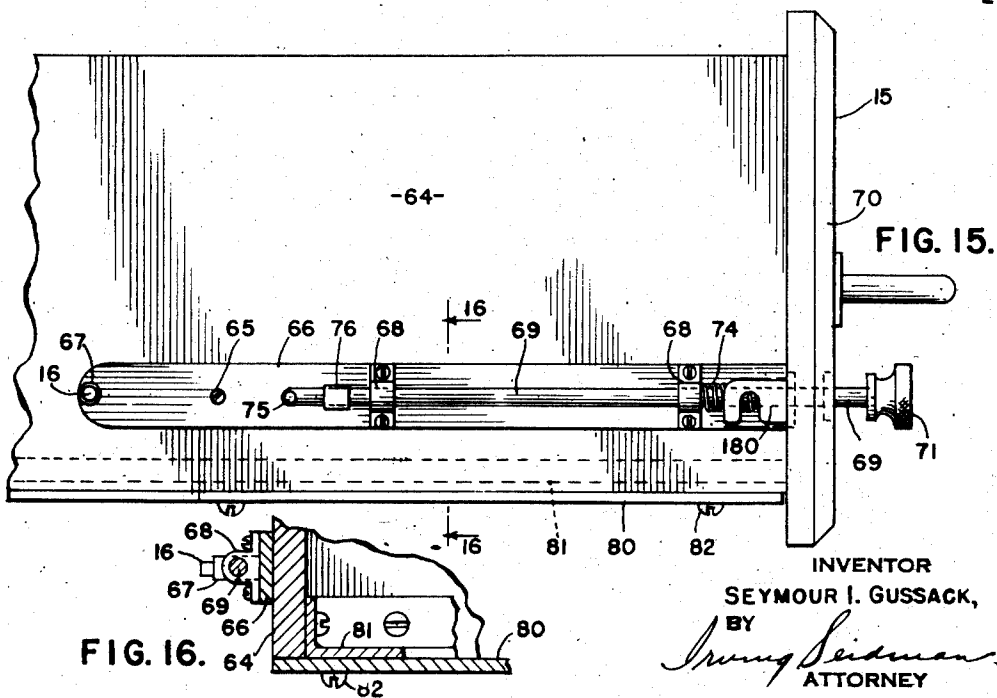
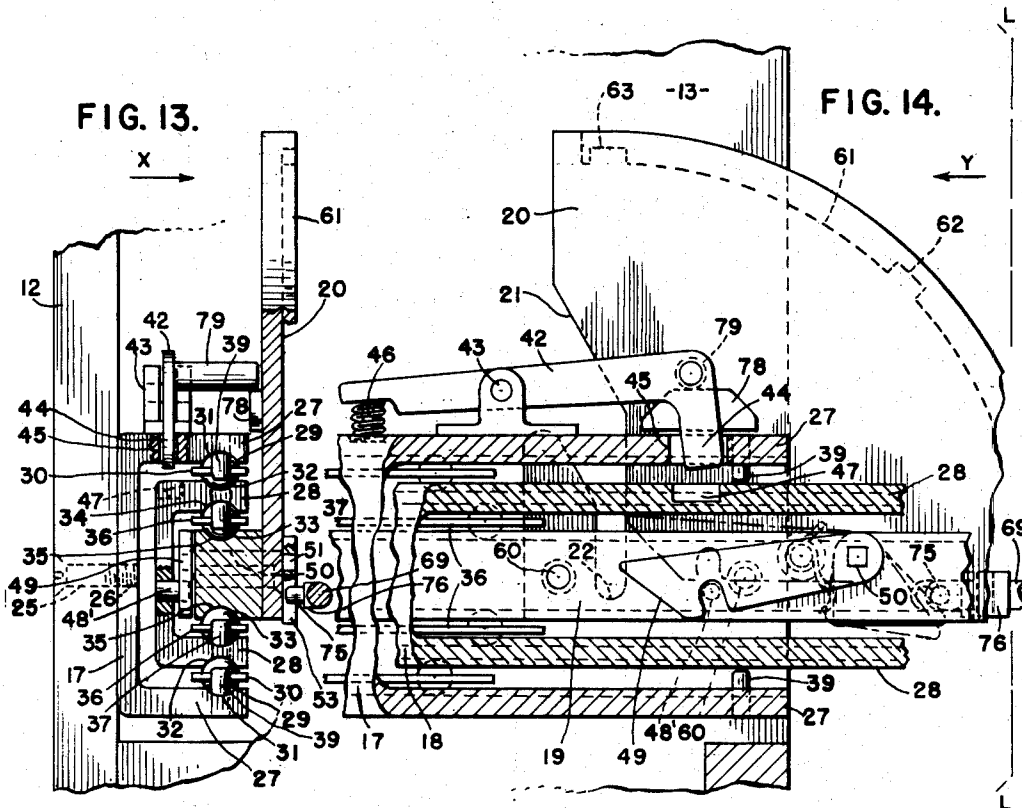
Oct. 13, 1953

S. I. GUSSACK
PIVOTALLY MOVABLE SLIDING BRACKET FOR DRAWERS
OR SHELVES AND LOCKING MEANS THEREFOR

2,655,422

Filed April 24, 1951

5 Sheets-Sheet 4



INVENTOR
SEYMOUR I. GUSSACK,
BY
Irving Seidman
ATTORNEY

Oct. 13, 1953

S. I. GUSSACK
PIVOTALLY MOVABLE SLIDING BRACKET FOR DRAWERS
OR SHELVES AND LOCKING MEANS THEREFOR

2,655,422

Filed April 24, 1951

5 Sheets-Sheet 5

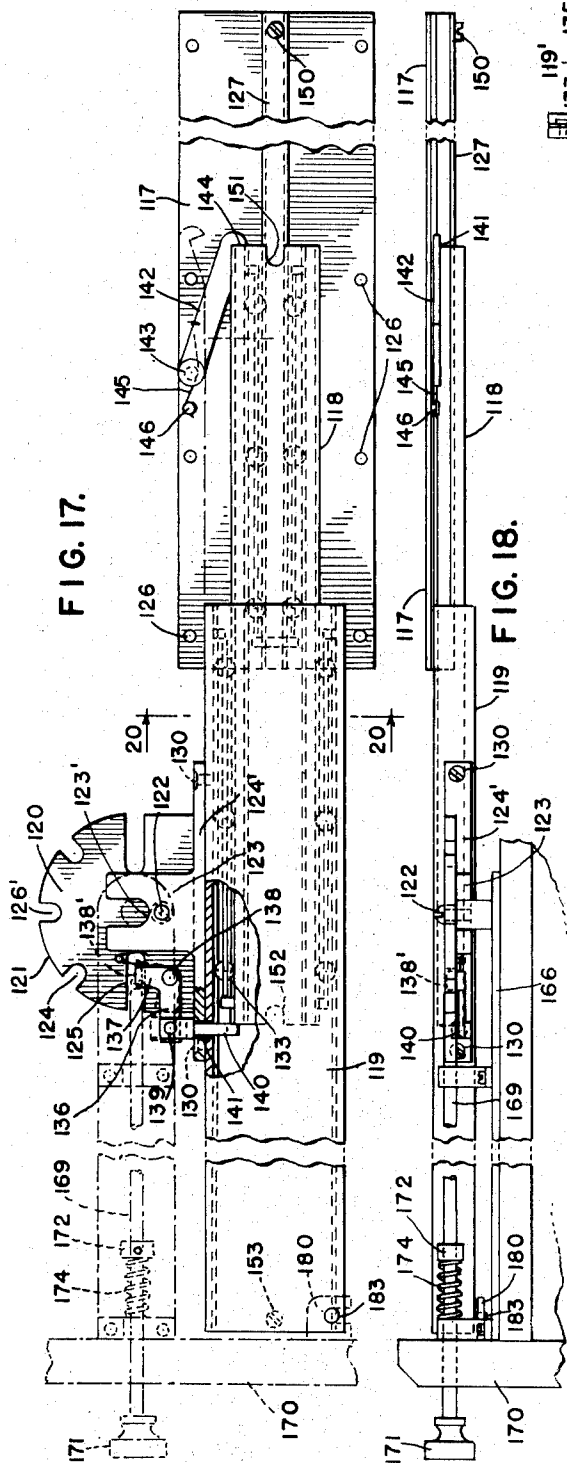


FIG. 17.

FIG. 18.

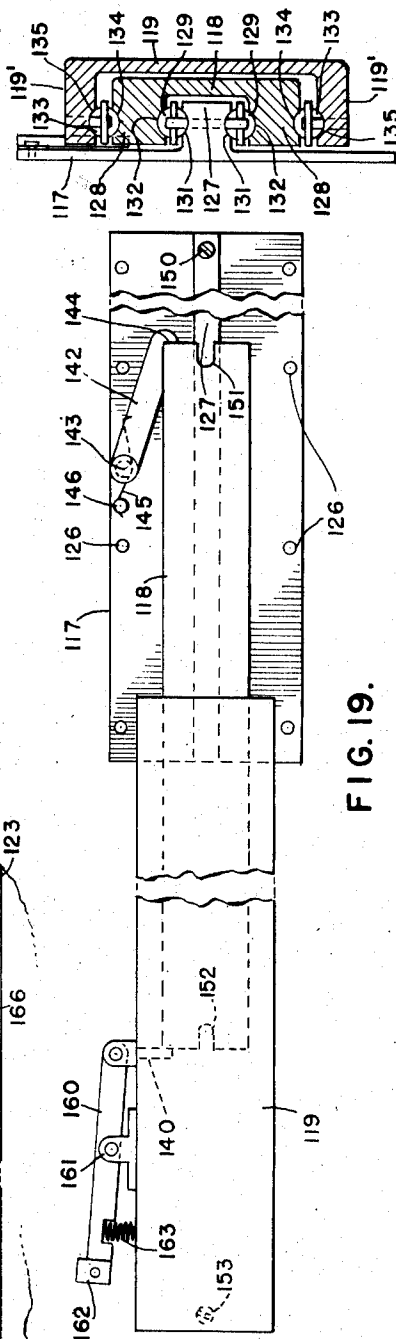


FIG. 19.

FIG. 20.

INVENTOR
SEYMOUR I. GUSSACK,

BY

Irving Seidman
ATTORNEY

UNITED STATES PATENT OFFICE

2,655,422

PIVOTALLY MOVABLE SLIDING BRACKET
FOR DRAWERS OR SHELVES AND LOCK-
ING MEANS THEREFORSeymour I. Gussack, Flushing, N. Y., assignor, by
mesne assignments, to Grant Pulley & Hard-
ware Corporation, Flushing, N. Y., a corpora-
tion of New York

Application April 24, 1951, Serial No. 222,682

1 Claim. (Cl. 312—333)

1

This invention relates to slide brackets and has particular reference to slidable tray supporting brackets especially usable with all types of electronic equipment.

One object of this invention is to provide a slide bracket which may be secured to the side walls of a cabinet or stand and support upon its sliding elements a chassis carrying electronic instruments or a tray or drawer in which a chassis for an electronic instrument may be carried or supported and permitting the said chassis tray or drawer to be moved outwardly from the cabinet or stand.

A second object is to provide a supporting slide bracket as above described upon which the said chassis or tray may be pivotally mounted and swung around an angle to expose the bottom of same to permit easy access to the parts of the instrument therein.

A third object of this invention is to provide a slide bracket as described, in which the moving parts of the slide bracket may be horizontally moved outwardly from the cabinet and be automatically locked in fixed outermost position and manually released to retract same from their outermost position.

A fourth object of this invention is the provision, in the invention described, of automatically actuated locking means to hold the parts in locked fixed position when the slide elements are retracted or moved to closed position.

A fifth object of this invention is to include in a slide bracket as described, means for manually and automatically actuating the locking means when sliding the moving element of the slide bracket in either forward or retracted direction.

A sixth object of this invention is the provision therein, of means for tilting a chassis or tray pivotally mounted upon the slide bracket and means upon the slide bracket coacting with a locking means upon the said chassis or tray to fix and lock same in a selected angular adjustment with the horizontal axis of the slide bracket and having manually operated means for releasing the chassis or tray from its tilted position.

A still further object of this invention is the provision of an organization in which the constituent elements are so arranged structurally and functionally as to assure improved results with materials and members which may be manufactured at reasonable cost, may be easily assembled and which will be efficient in operation with minimum wear to the parts.

The best embodiment of the invention has been chosen for illustrative purposes, but this embodi-

2

ment should be viewed as being illustrative only and not as limiting because obviously the invention is capable of other embodiments having revised details of construction, so long as they fall within the ambit of the appended claim.

The invention itself, however, both as to its organization and its method of operation, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of the upper portion of a cabinet and shows a closed drawer or tray.

Fig. 2 is a side elevational view of same, but shows the tray or drawer fully drawn out upon a slide bracket.

Fig. 3 is a similar view, but showing the tray or drawer in a tilted position.

One embodiment of this invention is illustrated in Fig. 4 which is an enlarged elevational view of a slide bracket fully extended or drawn out from the cabinet which is partially shown in section. The dot-dash lines show a tray or drawer in normal horizontal position and the three dot-dash lines shown the tray tilted to a position at right angles to its first position.

Fig. 5 is a top view of Fig. 4, but shows the slide bracket partly retracted and a part of one side wall, top and rear wall of a cabinet, to the side wall of which the slide bracket is partially attached. A portion of a tray or drawer also being shown in full lines.

Fig. 6 is a similar view but shows the slide bracket and tray fully retracted.

Fig. 7 is an enlarged fragmentary detail of a part taken along line 7—7 of Figs. 5 and 10.

Fig. 8 is a detail section taken along line 8—8 of Fig. 7.

Fig. 9 is an elevational detail view, similar to Fig. 4, but considerably enlarged and showing parts broken away.

Fig. 10 is a top or plan view of Fig. 9.

Fig. 11 is a plan view of a ball bearing spacer used in this invention.

Fig. 12 is a longitudinal sectional view of the ball bearing spacer of Fig. 11 and is taken approximately through its longitudinal center.

Fig. 13 is a front elevational view of a slide bracket looking in the direction of the arrow Y and embraced in the line L—L of Fig. 14.

Fig. 14 is an elevational view of a part of the slide bracket and is a view looking in the direction of the arrow X of Fig. 13.

Fig. 15 is a side elevational view of the front portion of a tray or drawer and shows a lock re-

3

leasing mechanism which forms an essential part of this invention.

Fig. 16 is a sectional detail view taken along line 16—16 of Fig. 15.

Fig. 17 is a side elevational view showing a second embodiment of this invention and has parts broken away and part of the tray or drawer outlined by the dot-dash lines.

Fig. 18 is a top or plan view of same.

Fig. 19 is a side elevation of a partially extended slide bracket showing another embodiment of this invention, and

Fig. 20 is a sectional elevation taken along the line 20—20 of Fig. 17.

In Figs. 1, 2 and 3 of the drawings, 11 designates the top of a cabinet or frame, 12 the near sidewall and 13 the far side wall of the cabinet. 14, in general, indicates a slide bracket, a part of which is secured to the inside walls 12 and 13 of the cabinet. A tray or drawer 15 is pivotally mounted, at 16, upon the slide brackets 14. While a single slide bracket is shown in the illustrations and herewith described, it is to be understood that a slide bracket is also partly attached to the far side wall 13 and that the tray 15 is pivotally mounted upon and between both slide brackets.

The slide bracket 14 consists of an outer channel member 17 which is suitably secured to the inside of the side wall of the cabinet as shown by the dotted lines in Figs. 2 and 3. Slidably engaging within the channel member 17 is an intermediate channel member 18 and slidably engaging in the intermediate channel member 18 is a center or inner member 19. A plate 20, in the form of a quadrant, is attached to the center channel member and is formed with a slotted recess 21 and bearing pocket 22 within which the tray 15 is pivoted. Locking means 23 is provided to hold the tray in its manually horizontal position (Fig. 2) or in the tilted position shown in Fig. 3. A further detailed description of the parts so far described now follows, reference being had to Figs. 4 to 16 inclusive.

In Fig. 4, as heretofore stated, the slide bracket members 18 and 19 are fully extended or withdrawn from the cabinet and the tray 15 which is mounted upon the center or inner member 19 is fully withdrawn as indicated by the dot-dash lines 24. The outer channel member 17 is secured to the side wall 12 by screws 25 (shown only in Fig. 13) which engage through the side wall 12 and into threaded bores 26 in the said outer channel member 17. Disposed between the inner surfaces of flanges 27 formed upon the channel member 17 and upon the outer surfaces of the flanges 28 formed upon the intermediate channel member 18, are ball bearings 29 which are held in place by spacer members 30. The said ball bearings 29 roll in race-ways 31 and 32 (Fig. 13) formed upon the opposing surfaces of the flanges 27 and 28 upon the outer channel member 17 and the intermediate channel member 18, respectively. A similar series of ball bearings 33 is disposed between the flanges 28 upon the intermediate channel member 18 and the center or inner member 19 and run in race-ways 34 and 35, respectively, upon said intermediate channel member. The ball bearings are similarly held in place by spacers 36.

When not locked against sliding or rolling movement the said inner or center member 19 will roll within the intermediate channel member 18 which in turn will roll within the outer channel member 17. To limit the outward move-

4

ment of the inner member 19 within the intermediate channel member 18 there are provided stop pins 37 (Fig. 9) secured upon the flanges 28 of the intermediate channel member 18 and which engage the forward end of the spacers 36. The said stop pins 37 and spacers 36 coacting with stop pins 38, secured upon inner member 19 and engaging with the opposite or rearward end of the spacers 36, limit the outward or forward movement of the inner member 19. Similarly stop pins 39 secured upon the front of flanges 27 of the outer channel member 17 coacting with the spacers 30 and stop pins 40 upon the rear end of the intermediate channel member 18, limit the outward movement of the intermediate channel member 18. A spring element 41 removably attached at the rear end of the outer channel member acts as a stop when the slidable parts are completely retracted.

In Figs. 2, 3, 4 and 9 the intermediate channel member 18 and the inner member 19 are shown locked and immovable in their outermost position. A locking member 42 pivotally attached at 43 to the outer channel member 17 is formed at one end with a dog 44 which engages through an orifice 45 in the flange 27 of the said outer channel member 17. A helical spring 46 engages between the opposite end of the locking member 42 and the flange 27 and acts to urge the dog 44 through the said orifice 45 and into a pocket 47 formed in the flange 28 upon the intermediate channel member 18 to hold same against movement with respect to the outer channel member 17. The location of the pocket is best illustrated in Fig. 4. A similar pocket 48 is also provided at the forward end of the upper flange 26 of the intermediate channel member 18.

The inner member 19 may also be locked against sliding movement at two points. When in its innermost position a locking pin 48' (Figs. 4, 9, 10, 13 and 14) upon the intermediate channel member 18 is adapted to engage a locking cam arm 49 which is attached to the squared shank 50 of a pin 51 in turn extending through the inner member 19 and terminating in a squared shank 52 beyond the inner face of the said inner member. Upon the said squared shank 52, there is attached a cam member 53 which is best shown in Figs. 9, 10 and 13. A movement of the said cam 53, counterclockwise, will raise the locking cam 49 to disengage the lock pin 48'. A spiral spring 54 mounted upon a pin 55 has one free end anchored in an orifice 56 upon the quadrant plate 20 and has its opposite free end 57 in engagement with the cam 53 to urge the locking arm 49 into locking engagement with the lock pin 48. A second lock pin 58, also secured upon the intermediate channel member 18 (see Figs. 4 and 9) near its foremost end, is in engagement with the locking cam arm 49 when the inner member 19 is withdrawn to its outermost position.

The quadrant plate 20 is secured to the said inner member 19 by means of screws 59 and is formed, along its arcuate edge, with a flange 61 (Figs. 4, 9, 13 and 14) which flange is notched, upon its inner periphery as at 62 and 63. A tray or drawer 15, hereinabove described, is partly shown in Figs. 5, 6, 10 and 15, and has attached to its side wall 64 (by screws 65) a flat bar 66 upon the innermost end of which there is provided a stud 67 formed with a contracted portion which has been heretofore designated as the pivot 16. The said pivot 16 provides the means for

pivotaly seating the tray in the aforementioned bearing pocket 22 (Figs. 9, 10 and 14).

Mounted in bearing blocks 68, which are attached to the flat bar 66, there is a rod 69 adapted for slight reciprocal movement within the bearing blocks 68. One end of the rod 69 extends through the front panel 70 of the tray 15 (Figs. 1, 2, 3, 5, 6, 10 and 15) and is provided with a knob 71. A collar 72 is suitably secured upon the rod 69 and engages against a washer 73 upon the inside of the front panel 70. A helical spring 74 encircles the rod 69 and is disposed between the fixed collar 72 and the bearing block 68 near the panel 70. Upon the innermost end of the rod 69 there is provided a pin 75 which will contact the cam 53 when the rod 69 is pushed inwardly against the urge of the spring 74. The movement of the cam 53 will raise the locking end of the locking cam arm 49 as already described. There is also attached to the rod 69, in close proximity to the pin 75, a locking block 76 which is immovably secured upon the said rod. Normally the said locking block 76 is positioned in a notched out space 77, at the base of the arcuate flange 61 (Figs. 3, 4 and 9). By a slight pushing movement of the rod 69 this block 76 may be moved clear of the notched space 77 allowing the tray 15 to be tilted to a right angular position, as shown in Fig. 3. The locking block 76 will then engage the notch 63 and lock the tray in its tilted position. Obviously, a slight downward pushing movement of the rod 69 will disengage the locking block 76 from notch 63 and allow the tray to be restored to its normal horizontal position. The notch 62 permits a 45° angular adjustment.

When it is desired to retract the tray 15 or push same into its normal position in the cabinet, the push rod 69 is moved inwardly to bring the pin 75 into contact with the cam 53. A continued pushing movement will turn the cam 53 counterclockwise and release the locking cam arm 49 from the locking pin 58 and allow the inner member to roll rearwardly until the locking cam arm 42 engages the inner locking pin 48'. At this point a cam 78, upon the arcuate plate 20 (Figs. 5, 13 and 14), will align with and contact a pin 79 and raise the dog 44 on lock member 42 to lift said dog clear of the pocket 47, thus allowing a further rearward movement of the tray 15. When the tray has reached its innermost position the dog 44, which has been riding upon the upper surface of the flange 28, will again drop into a pocket 48 thereby locking the tray in closed or fully retracted position.

The bottom of the tray 15 comprises removable panels 80 which are attached to angular members 81 by means of screws 82. The said angular members 81 are secured along the lower inside edge of the side, rear members and the front panel 70 of the tray. The angular members 81 form a ledge upon which a chassis (not shown) carrying various electronic units and hookups may be mounted. When it becomes necessary to make repairs, replacement of parts, adjustment or inspection, the tray may be withdrawn from the cabinet, tilted and locked in tilted position and the bottom panels removed thus exposing and making the parts readily accessible.

To unlock the tray, preliminary to withdrawing same, the push rod is manually pushed inwardly to actuate the cam 53 and disengage the locking cam arm 49 from the pin 58. The inner member 19 may then be drawn out bringing the cam 78 upon the plate 20, into engagement with the pin

79 to disengage the dog 44 of the arm 42 from the pocket 47 thus freeing the intermediate channel member 18 and allowing the tray 15 to be withdrawn to its outermost position.

In the embodiment shown in Figs. 17, 18 and 20, the outer member consists of a plate 117 having a centrally aligned rib 127 which is formed with race-ways 131 longitudinally running along the upper and lower surface of the said rib 127. An intermediate channel member 118 engages around the said rib 127 and has upper and lower flanges 128 upon which are raceways 132 opposed to the raceways 131 upon the rib 127. Disposed between said raceways 132 and 131 are ball bearing units 129. An inner channel member 119 engages around the intermediate channel member 118 and has upper and lower flanges 119' upon which there are raceways 135 which are opposed to raceways 134 upon the intermediate channel member 118, and in which ball bearings 133 run. The outer member 117 is provided with screw orifices 126 for attaching same to the side wall of a cabinet.

A locking arm 142 is pivotaly mounted upon the outer member 117 at 143 and has a hook formation 144 at its free end which is adapted to engage over the rear end of the intermediate member 118. A helical spring 145 encircles the pivoting pin 143 and is anchored at one end to a pin 146 while its opposite end engages over the locking arm 142 to urge the hook end 144 over the edge of the intermediate member 118. A stop screw 150 at the rear end of the rib 127 is engageable with a cutout 151 and limits the movement rearwardly of the intermediate channel member 118, when in its forwardly extended position. A cutout 152 at the forward end of the intermediate channel member is engageable with a stop screw 153 upon the inner channel member 119 to limit its rearward movement when fully retracted.

An upstanding plate member 120 having a semi-circular upper edge 121 is secured, by means of a screw 122, to an upright supporting member 123 which is formed with a base 124' and secured to the upper edge of the inner channel member 119 by means of screws 130. The upright supporting member 123 is formed with a pocket 123' which provides the means for receiving the supporting pivot of the aforementioned tray or drawer. Around the semi-circular periphery of the plate 120 at spaced intervals are shallow notches 124, 126' and deep notches 125. The radial lines of the two deeper notches 125 are in a horizontal straight angle, the notch 126' is radially at an angle of 90° to same while the notch 124 is radially arranged at 45° to the radial line of the other notches.

An L shaped lever formed with legs 136 and 137 is pivotaly attached, at 138 to the plate 120 and has a lateral projecting end 138' which extends into one of the deep notches 125. To the leg 136 there is pivotaly attached, at 139, a lock pin 140 which engages through an orifice 141 formed in the base 124, and flange 128 of the inner channel member 119 and contacts the foremost end of the intermediate channel member 118. Thus, it will be noted, the two locking units 142 and 140 will hold, immovable, the fully extended or withdrawn members and prevent the accidental closing of the tray which is pivotaly carried upon the inner channel member 119. The relative position of the unlocking rod 169 is shown by the dot-dash lines wherein the pin 75 of the first embodiment

shown and described, is omitted. The inner end of the shaft (Fig. 17) engages the lowermost and deeper notch 125 of the plate 120 and normally maintains this position in the slot to lock the tray against tilting movement. However, by pulling out the knob 171 and shaft 169, the end of the said shaft may be pulled clear of the notch 125 and the tray swung upwardly to the uppermost notch 126' and when the knob 171 is released, the spring 174 will urge the rod's end into the notch 126' and lock the tray in a vertical position, or by allowing the rod end to enter the notch 24, the tray may be held at an angle of 45°.

To close or retract the tray and the operative parts, with the tray in its normally lowered or horizontal position, the rod 169 is pushed inwardly to engage the laterally projecting end 138' of the L-shaped lever arm 137 thereby raising the lock pin 140 to clear the end of the intermediate channel member 118 and allow the inner channel member 119 to move rearwardly. When the rear end of said member 119 reaches the locking arm 142 it will pass under the said locking arm and lift same to allow the inner channel member 119 to pass. It will be noted that a shoulder 172 upon the shaft 169 and against which the spring engages is positioned in juxtaposition to the inner end of the spring 174, instead of as shown in the first embodiment.

The embodiment shown in Fig. 19 is similar with respect to the outer member 117 and the intermediate and inner channel members 118 and 119 respectively, and the locking means 142. The means for tilting the tray, shown in the embodiments first mentioned, is omitted in this latter embodiment wherein the inner channel member 119 is suitably secured directly to the side wall of the tray. Further the locking means shown upon the inner channel member comprises the pin 140 which is pivotally attached to one end of a finger operated arm 160 which is pivotally mounted as at 161, to the member 119 and has a button 162 at its free end. A helical spring 163 is disposed between the arm 160 and the inner channel member 119 to urge the pin 140 into locking position.

A hooked step member 180 (Figs. 17 and 18) is attached to the panel 170, by means of screws 181 and flange plate 182 and engages a pin 183. This feature provides a rest for the front end of the tray while same is in its horizontal position.

The above description has included a tray or drawer 15 which may be pivotally mounted upon the inner sliding member 19. The said drawer or tray, however, may be dispensed with and a bottomless chassis 64' (Fig. 10) may be mounted directly upon the sliding member 15 in which case the flat bar 66 is secured to the side wall of the chassis and to the front panel 70. The said bottomless chassis when tilted to a vertical position gives ready access to the electronic elements and connections mounted in same.

In Figs. 9 and 10 a variation of the locking

and unlocking means is shown. In this form, the unlocking of the tilting of the tray or chassis is accomplished by an outward or pulling movement of the rod 69 pulling the locking block 76 outwardly beyond the periphery of the flange 61. Block 76 rides along the outer periphery to engage the slots 62' or 63' (see Fig. 9) which slots are substituted for the inner notches 61 and 63 already described. To permit this outward action or pull of the rod 69, the collar 72 is moved along the rod 66 as indicated in Fig. 10 making a space between it and the washer 73, for a spring 74' of slightly less urging power than the spring 74. The said spring 74 urges the rod outwardly but not far enough to disengage the locking block 76, maintaining it normally locked in the cut out slot 77. The outward pull of the rod 66 will pull the block free but when the pull is released the spring 74' will urge and hold the block 76 in locked position. To unlock the sliding members the rod is pushed inwardly as already described.

I claim:

In a cabinet for slidably and pivotally supporting a drawer and chassis for carrying electronic units, the combination comprising side walls in said cabinet, stationary outer channeled members fixed to said side walls of said cabinet, intermediate channeled members slidable within said stationary channeled members, central inner members slidable within said intermediate channeled members, a drawer mounted on and between said inner members, locking means pivotally attached to the said stationary channeled members, said locking means comprising lever members pivotally mounted upon said outer channeled members and having depending dogs engageable through orifices in the upper flanges of said outer channeled members and through orifices in the upper flanges of said intermediate channeled members, spring elements engageable between one end of the said pivotal locking means and the upper flanges of said stationary member to urge said depending dogs through and into said orifices upon the said outer stationary channeled members and intermediate channeled members, cams upon the said slidable inner central members engageable with a pin upon the said locking member to release same when the said drawer is in closed position.

SEYMOUR I. GUSSACK.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,092,270	Kurtz	Apr. 7, 1914
1,175,801	Northall	Mar. 14, 1916
1,321,167	Voigt	Nov. 11, 1919
1,566,307	Card	Dec. 22, 1925
1,944,687	Henderson	Jan. 23, 1934
2,245,526	Fox	June 10, 1941
2,486,764	Singer	Nov. 1, 1949
2,510,681	Campbell	June 6, 1950
2,566,064	Keim	Aug. 28, 1951