April 29, 1969 T. WILDI 3,441,330

CONSOLE-MOUNTED MODULAR UNIT

Filed Oct. 30, 1967 Sheet 1 of 3

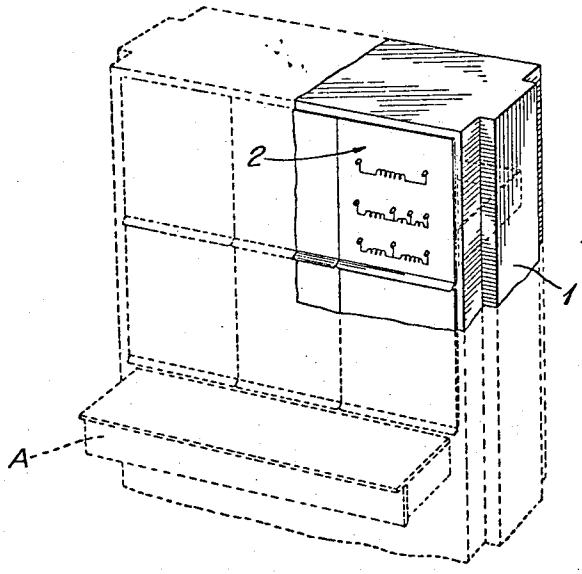

Fig. 1

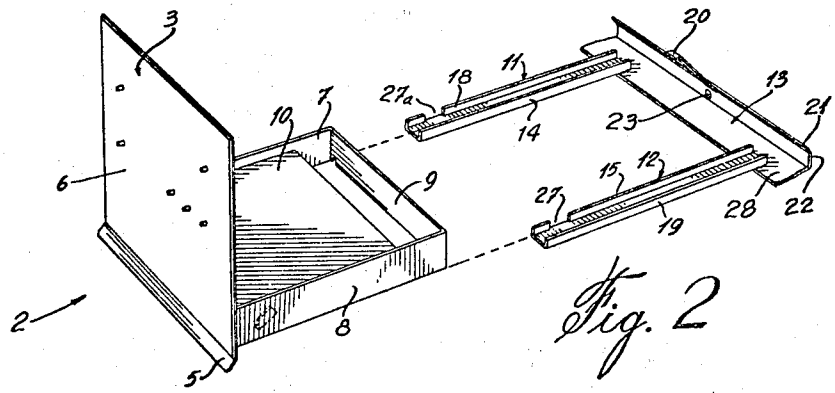

Fig. 2

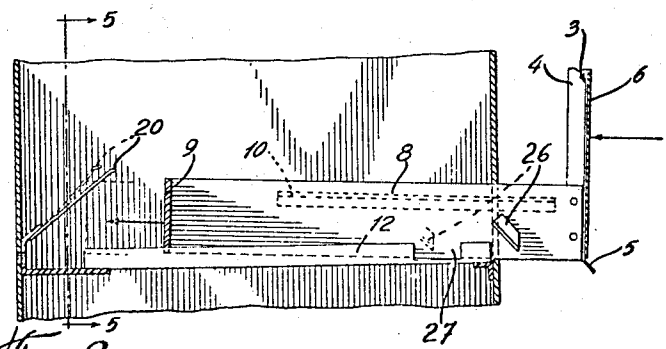

Fig. 3

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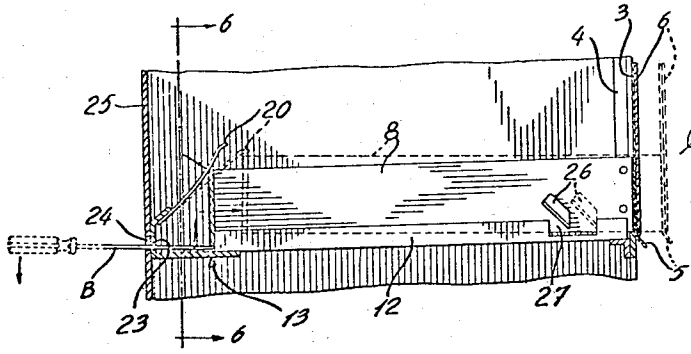
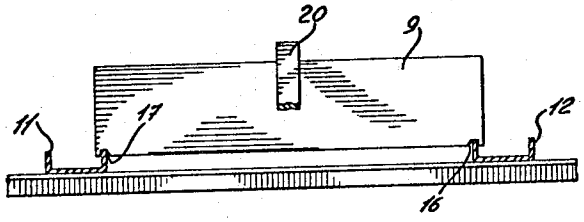


Fig. 4

Fig. 5



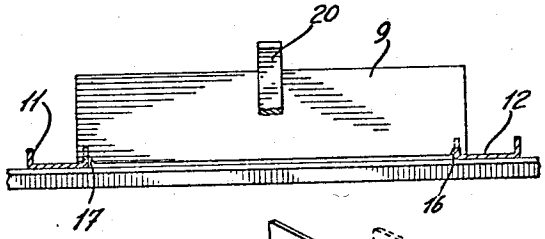


Fig. 6

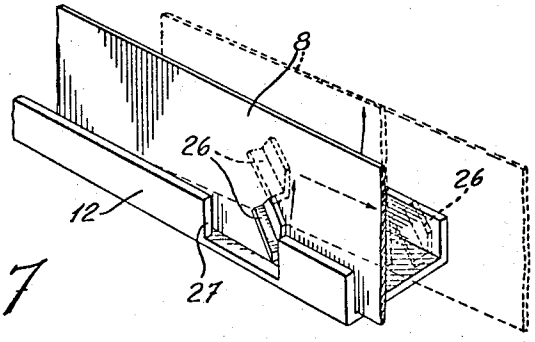


Fig. 7

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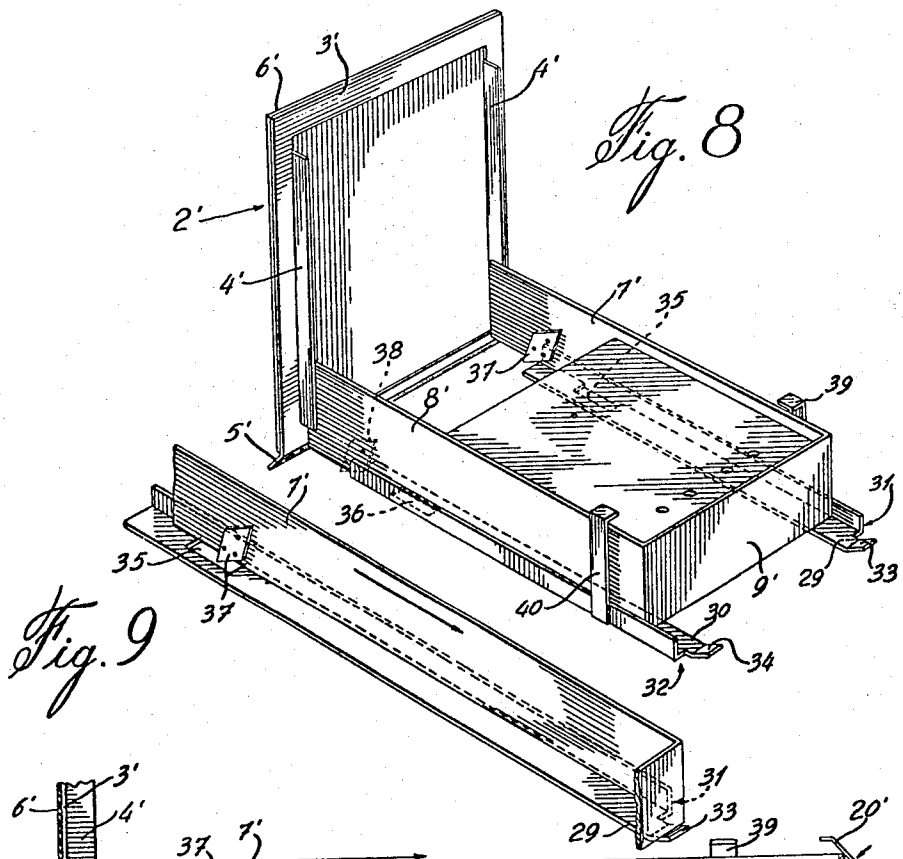

Fig. 8

Fig. 9

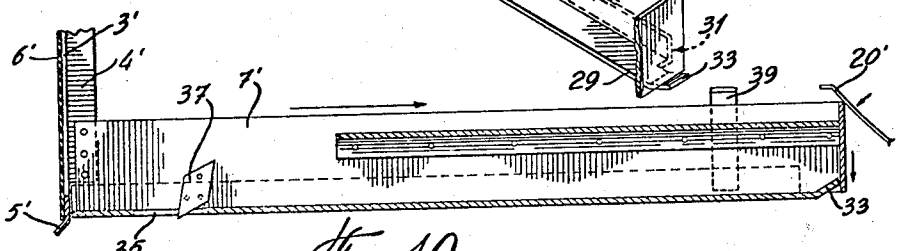

Fig. 10

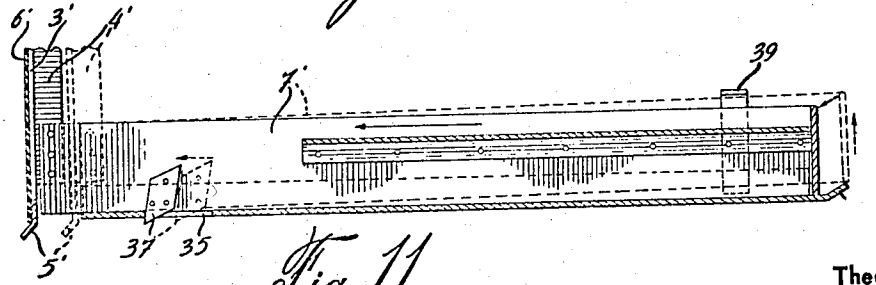

Fig. 11

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United States Patent Office 3,441,330 Patented Apr. 29, 1969

3,441,330

CONSOLE-MOUNTED MODULAR UNIT

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Filed Oct. 30, 1967, Ser. No. 678,861
Claims priority, application Canada, Sept. 27, 1967, 1,156
Int. Cl. A47b 88/00, 95/00; E05c 7/06
U.S. Cl. 312—333 7 Claims

ABSTRACT OF THE DISCLOSURE

The invention is directed to a novel drawer and slide combination which is particularly intended for use in modular electric or electronic equipment. Eccentric spring biasing force acts to urge the rear end of the drawer to fall in locked position as it reaches the end of the track course; the lock cannot be released from the front but only through use of an implement through the back of the console to raise the rear against the biasing force; the drawer then snaps out but means are additionally foreseen to stop the outward travel thereof; said means being releasable by raising the liberated front end of the drawer from the front.

This invention relates to a console-mounted modular unit.

The use of consoles with modular units mounted therein for industrial, educational and other equipment has the advantage of providing replaceability of parts of the equipment as they become obsolete or as the equipment is adapted to different uses.

Certain standards for equipment including electrical elements, specify that all the live parts must be contained in an enclosure which requires a tool to be opened. It is in any case desirable for such equipment not to be too easily accessible, in order to prevent tampering therewith by unauthorized persons.

It is the main object of the present invention to provide a locking system for such console-mounted modular units which requires a screwdriver or similar instrument to unlock the unit but at the same time does away with complex latching or fastening systems.

Preferred embodiments of the invention are illustrated by way of example in the accompanying drawings in which:

FIGURE 1 is a perspective view of a console including a multiplicity of modular units according to the invention;

FIGURE 2 is a perspective view of a modular unit and of a slideway receiving such unit;

FIGURE 3 is a vertical longitudinal section of a modular unit partly inserted into the console, a fragment of which is illustrated;

FIGURE 4 is a section similar to FIG. 3 but with the modular unit shown in locked position;

FIGURE 5 is a section along line 5—5 of FIG. 3;

FIGURE 6 is a section along line 6—6 of FIG. 4;

FIGURE 7 is a fragmentary perspective view of a detail of the modular unit;

FIGURE 8 is a perspective view of a modular unit and associated slideway according to a modified embodiment shown in partly open position;

FIGURE 9 is a fragmentary perspective view of the modular unit shown in FIG. 8 in further closed but not locked position;

FIGURE 10 is a longitudinal section of the unit according to the modified embodiment of FIG. 8 shown in locked position;

FIGURE 11 is a section similar to FIG. 10 but showing the unit in partly open position intermediate the positions of FIGS. 8 and 9.

Referring to FIG. 1, the console is in the form of a cabinet 1 with a plurality of openings at the front in which are inserted the modular units 2. The cabinet may comprise a pull-out utility table A.

Each modular unit 2 as can be seen from the remaining figures comprises a front panel 3 with a backing frame 4. The panel 3 has a forwardly inclined lower flange 5 acting as a handle, and may have secured to the front face thereof, if required, a board 6 of insulating material which may serve to mount the elements of an electrical circuit.

Secured to the frame 4 is a drawer comprising a pair of side members 7 and 8 and a back 9 made for example of sheet metal. A horizontal panel 10 which supports the required equipment (not shown) is attached to the drawer sides 7 and 8.

A slideway for the modular unit 2 is mounted inside the console 1 and comprises a pair of channels 11 and 12 secured at the front to the console structure and at the rear to a transverse angle 13 also attached to the console structure.

The sides 7 and 8 of the drawer of the modular unit fit in the channels 11 and 12 respectively just inside of the inner upright channel flanges 14 and 15. The rear frame member 9 of the modular unit 2 comprises, as best seen in FIGS. 5 and 6, a pair of small recesses 16, 17 near either end thereof, these recesses riding over the edges of flanges 14 and 15 when the unit is inserted. The outer flanges 18 and 19 of channels 11 and 12 provide slideways for adjacent modular units 2.

A relatively strong blade spring 20 is attached to the angle 13, more particularly to a forwardly slanted portion 21 of the upright flange 22 of angle 13. As best seen in FIGS. 4 and 5, the spring 20 is in an upwardly and forwardly inclined position.

Channel 13 has at the center of its upright flange 22 a hole 23 just large enough to allow passage of a screwdriver or similar tool, the hole 23 being aligned with a hole 24 in the rear panel 25 of the console 1 as shown in FIGS. 3 and 4.

The side 8 of the drawer of modular unit 2 has secured to the inside thereof a stop or tooth 26 and the adjacent channel flange 15 is provided near the front end thereof with an elongated recess 27 which receives the tooth 26 in the closed position of the modular unit.

In operation, the modular unit 2 is pushed into the console 1 and slides along the slideways provided by channels 11 and 12 until the top edge of rear frame member 9 strikes against the spring 20. The spring 20 is pushed back until the rear frame member 9 drops off the ends of channel flanges 14 and 15 and is locked against the rear ends of these channel flanges. In this position the spring 20 due to its forward inclination exerts on the modular unit a force having both downward and forward components.

In order to unlock the unit a screwdriver B or a similar tool is inserted through holes 23 and 24 along the horizontal flange 28 of channel 13 until it engages under the lower edge of frame member 9. The outer end of the screwdriver is then pushed down as shown by the arrow in FIG. 4 thereby prying up the frame member 9 against the downward component of force of spring 20 to clear it from the rear end of the channel flanges 14 and 15. The forward component of the force exerted by spring 20 then takes effect and pushes the modular unit forward until the tooth 26 engages the forward end of recess 27 to prevent the modular unit from being shot out of the console by spring 20 and landing on the floor.

The front end of the modular unit 2 is then raised so that the tooth 26 clears the recess 27, and the modular unit can then be removed from the console.

The recess indicated at 27*a* on the channel flange 18

serves the same function as the recess **27** for the next adjacent modular unit.

It will be seen that the removal of the modular unit from the front will be impossible if the spring **20** is made strong enough to resist any effort to tilt the modular unit from the front to allow the frame member **9** to clear the channel flanges **14** and **15**.

In the embodiment of FIGS. 8 to 11, the slideways are provided by the horizontal flanges **29** and **30** of angles **31** and **32** respectively, these flanges having at the rear ends thereof upwardly inclined extensions **33** and **34** respectively which act as the locking means by engaging the back **9'** of the drawer of the modular unit **2'**.

The horizontal flanges **29** and **30** of angles **31** and **32** are provided with openings **35** and **36** engageable by teeth **37** and **38** respectively mounted on the inside faces of the unit frame members **7'** and **8'**.

The functioning of the embodiment of FIGS. 8 to 11 is essentially the same as described in connection with the first embodiment shown in FIGS. 2 to 7; the remaining elements of this modified embodiment which correspond to elements of the first embodiment are indicated by equal reference numerals with the addition of a prime (').

Furthermore, the modified embodiment of FIGS. 8 to 11 comprises a pair of stops **39** and **40** secured to angles **31** and **32** respectively, near the rear end thereof, these stops serving to limit upward movement of the unit by engaging the frame members **7'** and **8'**, since, as has been found in practice, if the rear end of the unit **2'** is pried up too violently by the screwdriver when unlocking the unit, the forward end of the unit has a tendency to bounce, thereby prematurely allowing the teeth **37** and **38** to move past the openings **35** and **36** respectively.

I claim:

1. A console mounted modular unit comprising: a drawer, a slideway for said drawer secured to said console, locking means on said console engageable with said drawer; a spring urging said drawer into engagement with said locking means and a small opening in said console adjacent said locking means to permit insertion of a tool to force said drawer out of its engagement with said locking means against the action of said spring.

2. A console mounted modular unit according to claim **1**, wherein said spring is a blade spring secured to said console at the rear of said slideway and slanted upwardly and forwardly to exert a downward push on the drawer when the same is pushed back and a forward push on the drawer when the same is raised by the tool clear of said locking means.

3. A console mounted modular unit according to claim **1**, wherein said locking means is an upwardly extending portion of said slideway engageable with a transverse rear downwardly extending portion of said drawer.

4. A console mounted modular unit according to claim **3**, wherein said console further comprises means to limit the upward movement of the rear end of said drawer.

5. A console mounted modular unit according to claim **2**, further comprising a stop mounted on said drawer and a corresponding stop on said slideway engageable therewith in a partly opened position of the drawer to prevent said drawer from shooting out of the console under the action of said spring.

6. A console mounted modular unit according to claim **5**, wherein said stops are near the forward end of said drawer.

7. A console mounted modular unit according to claim **6**, wherein said drawer stop is a projecting tooth and said slideway stop is an opening in said slideway engageable with said tooth.

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U.S. Cl. X.R.

312—319, 222