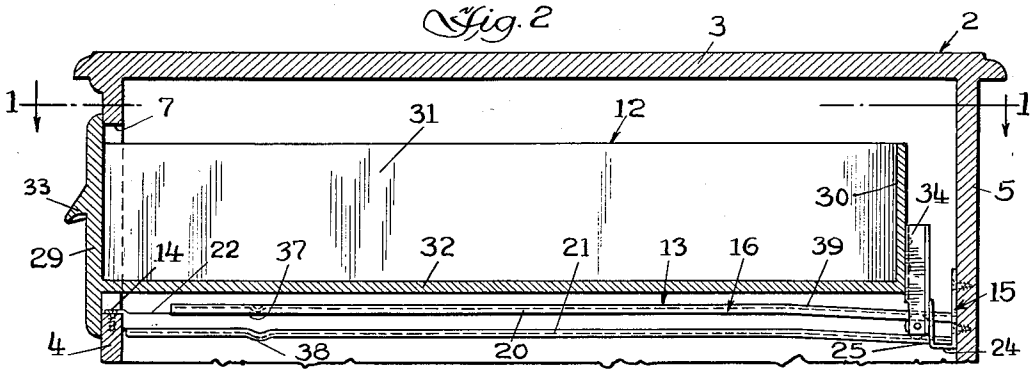
June 30, 1964 R. H. RULE 3,139,313

SELF-CLOSING DRAWER

Filed March 14, 1961

Fig. 2



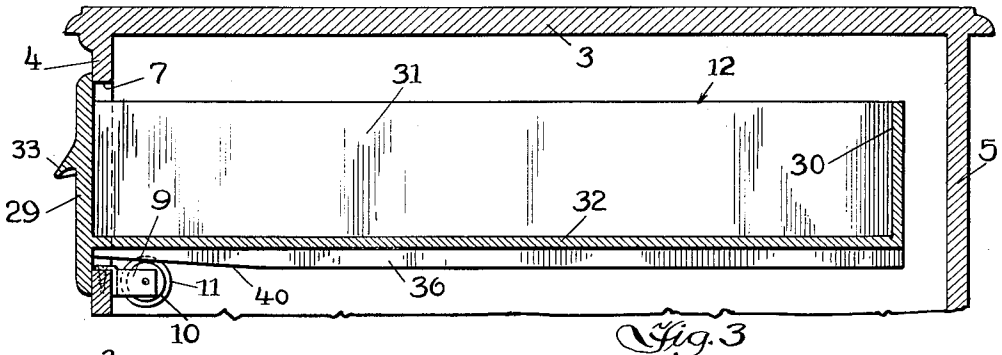


Fig. 3

Fig. 4

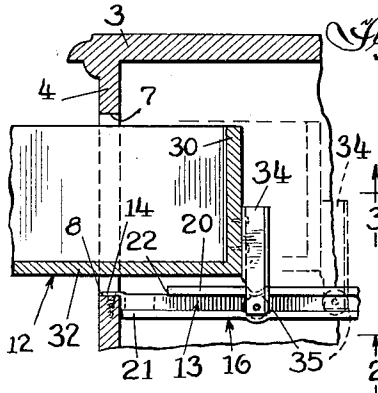
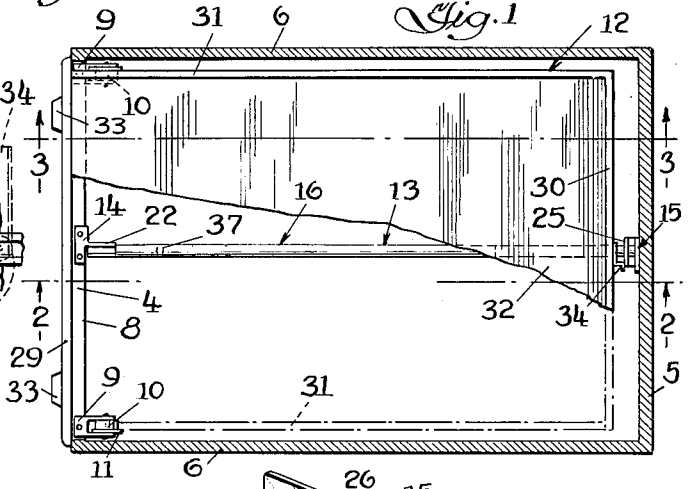


Fig. 1



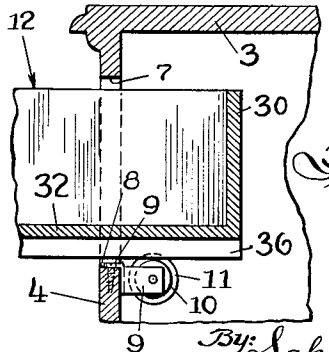


Fig. 5

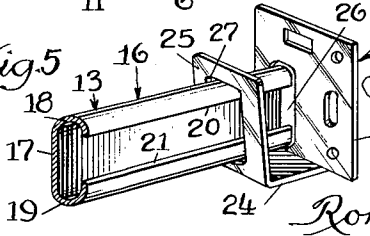
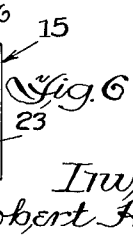


Fig. 6



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3,139,313

SELF-CLOSING DRAWER

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1 Claim. (Cl. 312—333)

This invention relates to a self-closing drawer, and is particularly concerned with means for supporting a drawer in a kitchen cabinet or other article of furniture by means of a three-point rolling contact that keeps the drawer level throughout its sliding movement.

The mounting means comprises a single centrally disposed track adapted to be engaged by a roller rotatably mounted on a bracket secured to and depending from the center of the rear wall of the drawer, and a pair of rollers rotatably mounted adjacent opposite edges of the cabinet in position to be engaged by the lower edges of the side walls of the drawer. The centrally disposed roller and the rollers at the opposite edges of the drawer opening cooperate to provide a three-point rolling support for the drawer.

The track is in the form of a horizontal channel member having its web vertically disposed with both flanges engaging diametrically opposite peripheral portions of the centrally disposed roller. The outer edges of the channel member are preferably curved toward each other in approximately vertical planes to hold the centrally disposed roller against accidental lateral displacement. Both flanges are indented downwardly in position to engage the single roller secured to the bracket depending from the rear end of the drawer to provide a rest position for the drawer at a point where the drawer is almost fully open. The indentations are sufficient to hold the drawer in said almost fully open position until a positive force is applied to the drawer to move it in either longitudinal direction.

The upper flange is cut away adjacent the front wall of the cabinet to provide for the removal or insertion of the drawer. When the drawer is to be removed it is pulled forwardly from its rest position until the centrally disposed roller engages the front wall of the cabinet. The front of the drawer is then lifted upwardly until the centrally disposed roller clears the upper flange of the channel member. The drawer may then be removed by pulling it forwardly through the drawer opening of the cabinet. The drawer opening is slightly higher than the side and rear walls of the drawer to provide the necessary clearance for the centrally disposed roller to be lifted out of the channel member.

The rear end portion of the track is inclined downwardly at a slight angle, and the front end portion of the lower edge of each side wall of the drawer are inclined at the same angle as the track. The length of each of the inclined portions is equal, and is preferably about four to six inches. If sufficient force is applied to the drawer to move it far enough toward closed position for the rollers to engage the inclined surfaces, gravity will move the drawer to its completely closed position and will hold it completely closed until it is pulled forwardly. The parallel relationship of the inclined surfaces will maintain the drawer level during its downward movement along the inclined surfaces. When the drawer is in its upper, partially open position, the lower front edge of the drawer opening and the upper surface of the level portion of the track are spaced below the bottom surface of the drawer a distance sufficient to provide the clearance required for the downward movement of the drawer adjacent the rear end of the cabinet.

A bracket is mounted on the rear wall of the cabinet to support the rear end of the centrally disposed channel member and to serve as a buffer. The front plate of the bracket is engaged by the bracket mounted on the rear wall of the drawer to cushion the end of the closing movement and prevent the drawer from slamming.

The structure by means of which the above mentioned and other advantages of the invention are attained will be described in detail in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

FIGURE 1 is a horizontal sectional view, taken along the line 1—1 of FIGURE 2, with a portion of the drawer bottom broken away to facilitate illustration of some of the drawer supporting structure;

FIGURE 2 is a vertical sectional view, taken along the line 2—2 of FIGURE 1, a portion of the front wall of the cabinet being omitted for clarity of illustration;

FIGURE 3 is a vertical sectional view, taken along line 3—3 of FIGURE 1;

FIGURE 4 is a fragmental sectional view showing the rear end portion of the drawer with the centrally disposed roller in engagement with the track indentation near the front end of the track;

FIGURE 5 is a fragmentary sectional view of the rear end portion of the drawer, taken along a line adjacent one side of the drawer, with the drawer in the same position as in FIGURE 4; and

FIGURE 6 is a detail perspective view of the resilient buffer, with one end of the centrally disposed track mounted therein.

Referring to the drawings, a cabinet **2** includes a top wall **3**, a front wall **4**, a rear wall **5** and a pair of side walls **6**. Front wall **4** has an opening **7** therein. The upper surface **8** of the section of the front wall that defines the lower edge of opening **7** has a bracket **9** secured adjacent each side thereof. A roller **10**, preferably having a flange **11** at one side thereof, is rotatably mounted in each bracket **9**. Rollers **10** provide two laterally spaced points of support for a drawer **12** slidably mounted in the cabinet in alignment with opening **7**.

A track **13** has one end secured to a bracket **14** that is fixed to the cabinet adjacent the lower horizontal plane of opening **7**. Preferably, bracket **14** is mounted on upper surface **8** of front wall **4**. The opposite end of track **13** is secured to a bracket **15** mounted on rear wall **5** of the cabinet. Track **13** extends longitudinally of the drawer intermediate the vertical planes of rollers **10**, and is preferably disposed centrally with respect to said rollers. Track **13** is preferably in the form of a channel member **16** having a vertically disposed web **17**, an upper flange **18** and a lower flange **19**. Bracket **14** is preferably welded to web **17** adjacent the front end of channel member **16**, but may be secured in any suitable manner. The free edges **20** and **21** of flanges **18** and **19**, respectively, are curved toward each other, and the forward end of upper flange **18** is cut away, as indicated at **22**. The purposes of the curved edges **20** and **21**, and the cut away portion **22** will be hereinafter disclosed.

Bracket **15** comprises a flat, vertically disposed plate **23**, an integral section **24** extending forwardly from the lower edge of plate **23**, and an integral plate **25** extending upwardly from the forward edge of section **24**. Plate **25** is inclined slightly, relative to plate **23**, so that its upper edge is spaced farther from plate **23** than its lower edge. Bracket **15** is made of sheet metal, and when force is applied to the upper edge portion of plate **25** to urge it backwardly toward plate **23**, the resilience of plate **25** resists such force and acts as a buffer to cushion the closing movement of the drawer and prevent it from slamming. Plates **15** and **25** are provided with apertures **26** and **27**, respectively, adapted to receive channel member **16** and support it at two longitudinally spaced points.

Drawer 12, adapted to be inserted into cabinet 2 through front opening 7, comprises a front wall 29, a rear wall 30, side wall 31, and a bottom 32. The width of the drawer is substantially equal to the width of opening 7. The height of front wall 29 is greater than the height of opening 7 and completely covers said opening when the drawer is in closed position. A handle 33 or, if desired, a pair of handles, of any suitable configuration is provided on front wall 29 to facilitate opening the drawer.

A bracket 34 rigidly mounted in vertical position on back wall 30 depends below the horizontal plane of bottom 32. A roller 35 is mounted in the lower end of bracket 34 and is adapted to rotate about a horizontal axis. Roller 35 fits between flanges 18 and 19 of channel member 16, and curved edges 20 and 21 prevent lateral displacement of roller 35. Cut-out 22 has a length greater than the diameter of roller 35 so that the roller may be passed through said cutout to insert it or remove it from the channel.

Each side wall 31 extends below the bottom 32 of drawer 28, as indicated at 36, to form rails for the drawer. These rails 36 have rolling contact with the peripheral surface of rollers 10 and are held against lateral displacement by flanges 11. If desired, bottom 32 may be flush with the lower edges of rails 36, and may be provided with a groove adjacent each side to receive flanges 11. Rollers 10 and roller 15 cooperate with rails 36 and track 13 to provide a three-point rolling support for the drawer that permits it to be moved through opening 7 in either direction. The rollers are spaced laterally to provide stable support for the drawer. The vertical relationship between the mounting of rollers 10 to the height of rails 36, and between the mounting of roller 35 and the vertical distance between track 13 and the bottom of the drawer is such that the drawer is supported in a horizontal plane.

Flanges 18 and 19 are provided with vertically aligned indentations 37 and 38, respectively, spaced a short distance from the front end of the cabinet so that roller 35 will engage said indentations when the drawer is almost fully open. Indentation 38 is dimensioned and shaped to fit the outer contour of roller 35 and is deep enough to provide a definite rest position for the roller. Indentation 37 is merely a depending projection that engages the top of roller 35 to prevent the roller from passing indentation 38 when the drawer is pulled out fast. Indentation 37 also engages the top of roller 35 when the roller is in said rest position to prevent the drawer from tilting. The drawer cannot tilt at other points along its path of travel because flanges 18 and 19 fit closely against the diametrically opposite peripheral surfaces of roller 35.

The rear end portion of channel member 16 is inclined downwardly at a slight angle, as indicated at 39. The angle is sharp enough to cause the drawer to move rearwardly to its fully closed position by gravity alone, when the drawer has been moved rearwardly far enough for the roller 35 to engage the inclined portion 39 of the channel member. The front end portion of each rail 36 is inclined upwardly toward its end, as indicated at 40, at the same angle as the inclination of the rear end portion of channel member 16. As the drawer approaches the end of its

movement toward closed position, the angles of inclination 39 and 40 cause the front and rear ends of the drawer to move downwardly at the same rate, thus keeping the drawer level throughout its closing movement. This action is reversed at the start of the movement of the drawer toward open position. Bottom 32 is spaced above the channel member 16 and the lower edge of rails 36 a distance greater than the vertical movement of the drawer so that the bottom 32 does not touch either roller 10 or channel member 16 when the drawer is in its closed position.

Although I have described a preferred embodiment of the invention in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of construction may be modified or changed, without departing from the spirit or scope of the invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

In combination, a cabinet having a front wall provided with an opening, a rear wall, a pair of brackets mounted on the upper edge of the section of said front wall defining the lower edge of said opening, a third bracket mounted on said upper edge between said pair of brackets, each of said three brackets extending rearwardly from said front wall, a drawer mounted in said opening, a pair of longitudinal rails depending from the bottom of said drawer, and a three-point rolling support for said drawer within said cabinet, said three-point support including a pair of laterally spaced rollers each mounted on one of said pair of brackets and engageable with one of said rails, a fourth bracket secured to said rear wall in alignment with said third bracket, said fourth bracket including a resilient plate spaced forwardly from said rear wall, a track extending longitudinally of said drawer, the opposite ends of said track being secured to said third and fourth brackets, and a third roller rotatably mounted below the rear end of said drawer, said third roller being engageable with said track, the rear end portion of said track and the front end portions of said rails being inclined downwardly toward the rear end of said cabinet at substantially equal angles to provide self-closing movement of the drawer adjacent its closed position and a level three-point rolling support for said drawer throughout its movement relative to said cabinet, said resilient plate being engageable with said third roller as said drawer is moved to closed position to prevent said drawer from slamming into closed position.

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