March 20, 1962 R. R. RUHNKE 3,026,149

DRAWER SLIDE MECHANISM

Filed June 24, 1959 3 Sheets-Sheet 1

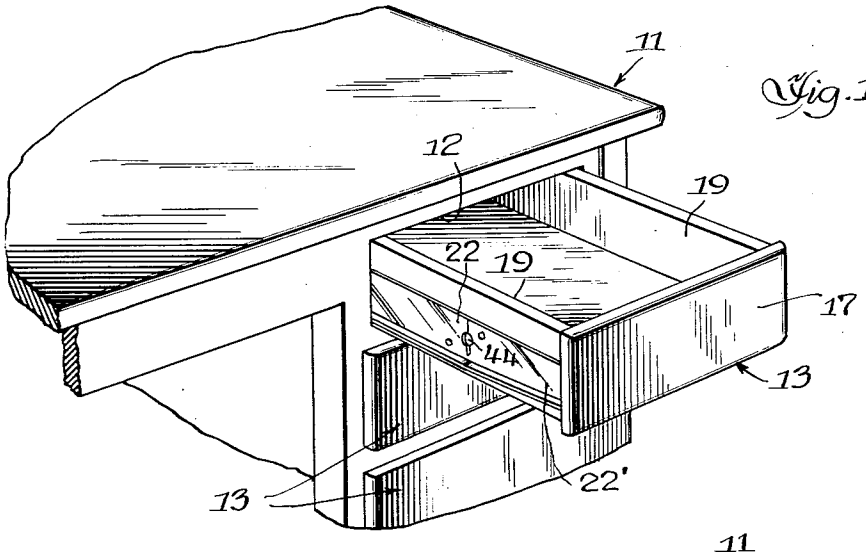


Fig. 1

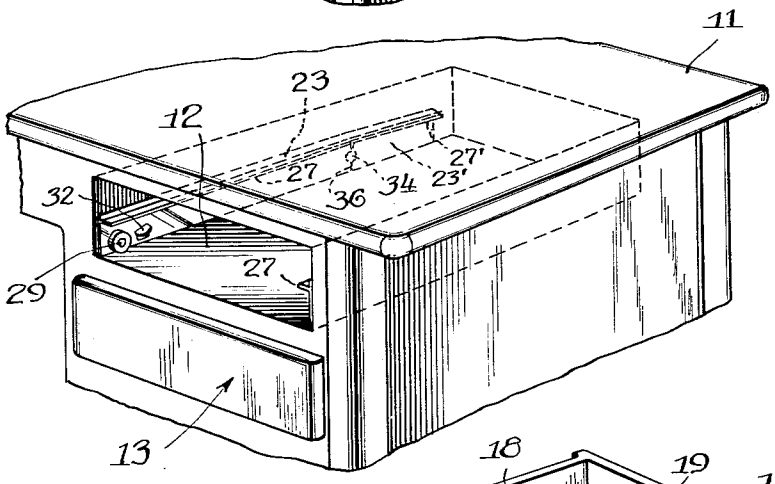


Fig. 2

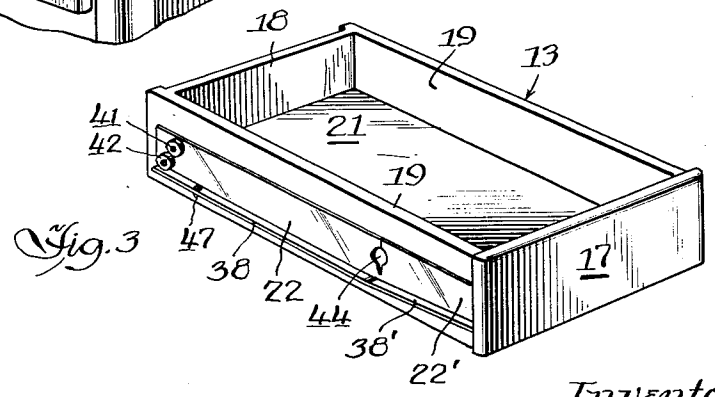


Fig. 3

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March 20, 1962 R. R. RUHNKE 3,026,149

DRAWER SLIDE MECHANISM

Filed June 24, 1959 3 Sheets-Sheet 2

Fig. 4

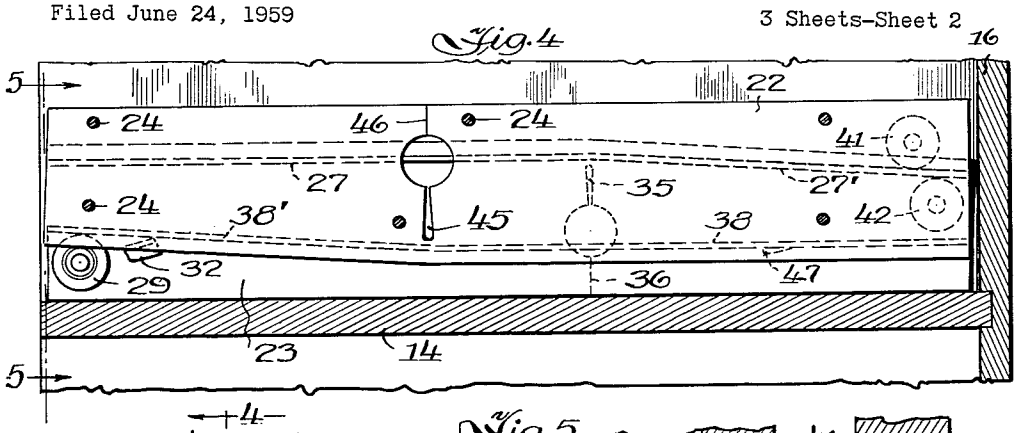


Fig. 5

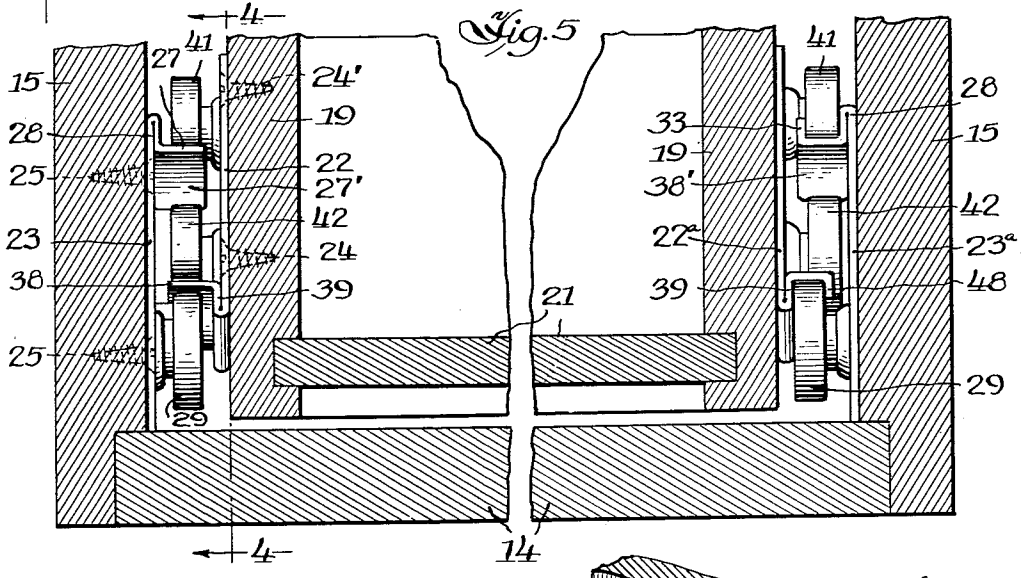


Fig. 6

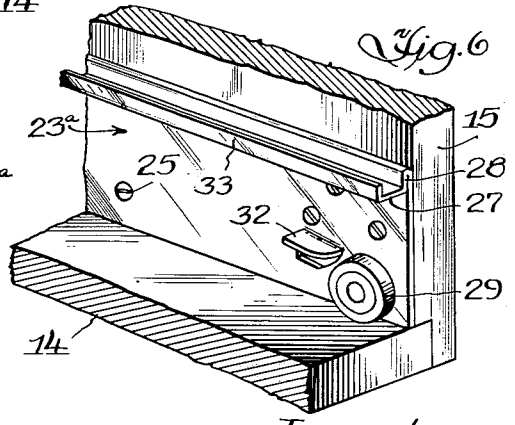
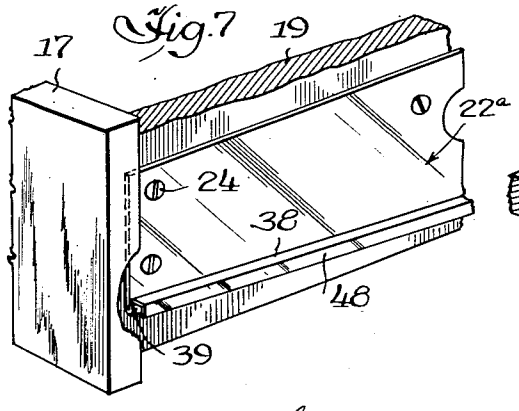


Fig. 7

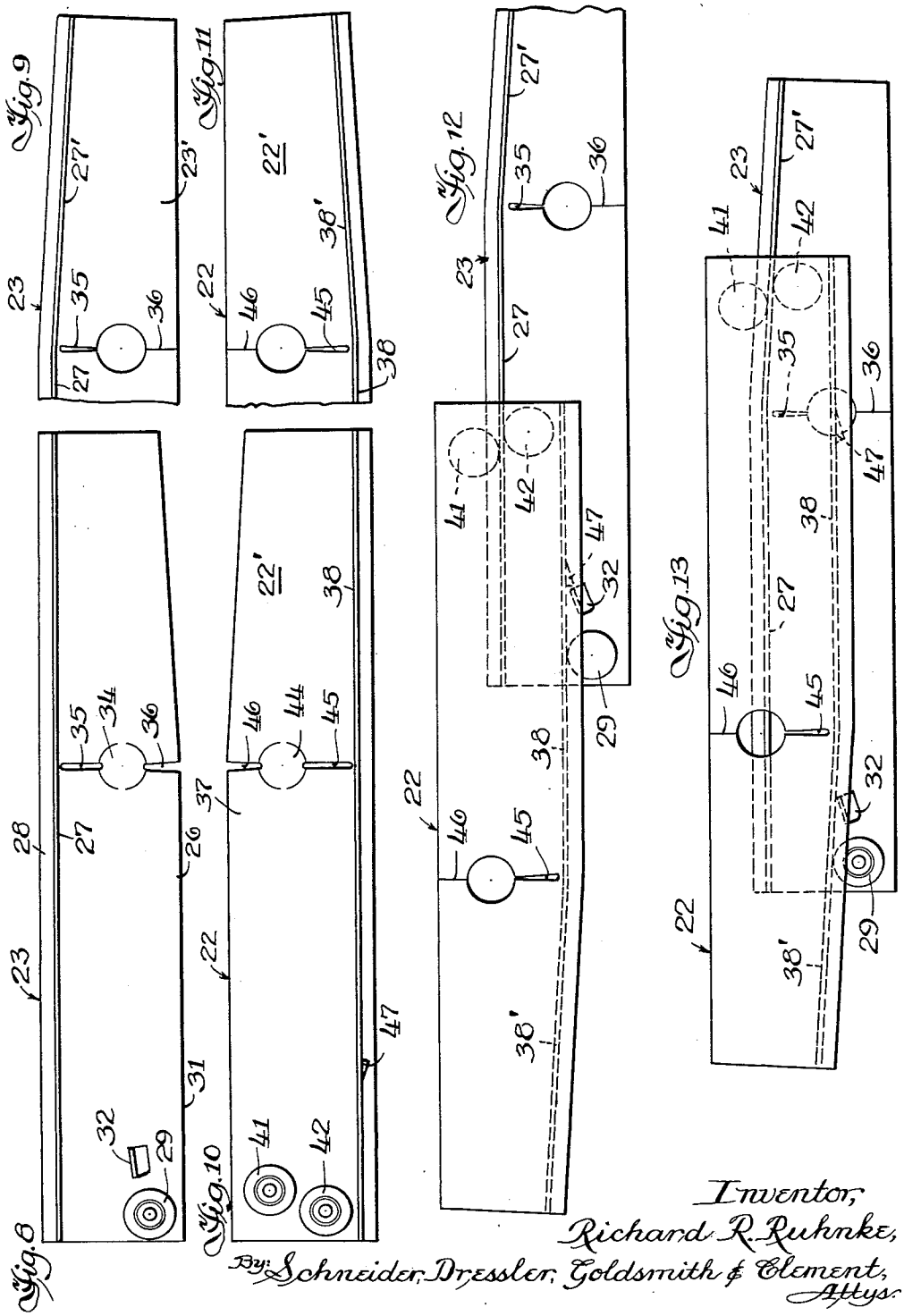


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Filed June 24, 1959 3 Sheets-Sheet 3



United States Patent Office 3,026,149 Patented Mar. 20, 1962

3,026,149

DRAWER SLIDE MECHANISM

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Filed June 24, 1959, Ser. No. 822,578
7 Claims. (Cl. 308—3.8)

The present invention relates to a drawer slide mechanism, and is particularly concerned with means for making self-closing drawer slide mechanisms from component parts that can be used for making drawer slide mechanisms that are not self-closing.

The tracks that are mounted on a casing at opposite sides of a drawer opening and the slides that are mounted on opposite sides of a drawer for cooperation with the tracks for slidably supporting the drawer comprise rigid plates that are each provided with at least one perpendicular flange extending longitudinally thereof. In a drawer slide mechanism, that is not self-closing the flanges must be straight throughout their length, and in a self-closing drawer one portion of each flange must be inclined relative to the rest of the flange. Therefore it has heretofore been considered impossible to use the same components for both types of drawers.

In accordance with the present invention applicant has incorporated into the component parts for drawer slides that are not self-closing means for facilitating bending each plate in its own plane to provide the required inclination so that they may be used for making self-closing drawer mechanisms.

The invention enables a manufacturer to make component parts for both types of drawer mechanisms alike and to keep only one type of parts in stock, thereby reducing inventory stocks as well as manufacturing costs.

The means for changing components for straight drawer slide mechanisms into components for self-closing drawer slide mechanisms locates the bending angle and also controls the degree of angularity to insure uniformity of parts and also the proper cooperation of the parts in each correctly assembled mechanism.

More particularly, each track and slide is fabricated from sheet metal plates suitably formed at one edge to provide a flange along with conventional antifriction rollers travel when the drawer is moved. Each track and slide is straight throughout its length, and each is formed inwardly of one end with a knockout and a pair of diametrically opposed slots extending therefrom. One slot of each of said pairs of slots terminates adjacent said flange, and the other slot opens at one end on the edge opposed to the edge carrying the flange. The knockout is readily removed, and when it is removed the track or slide can be bent in the plane of its plate a distance sufficient to close the second mentioned slot at its open end and thereby carry the flange at one end portion of the plate into a position inclined from the flange at the other end portion of the plate. The flange is thereby inclined for a part of its length, all for a purpose to be explained in detail hereinafter.

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

FIGURE 1 is a fragmentary perspective view of a desk having a drawer therein mounted on the novel tracks and slides, showing a drawer in a partially open position;

FIG. 2 is a similar perspective view with one drawer removed;

FIG. 3 is a perspective view of a drawer showing the novel slide mounted thereon;

FIG. 4 is a vertical sectional view taken substantially on line 4—4 of FIG. 5, showing the track and slide in elevation in the relative positions assumed when the drawer is closed;

FIG. 5 is a fragmentary vertical sectional view taken substantially on line 5—5 of FIG. 4 and showing the drawer slide mechanism mounted in an opening in the desk;

FIG. 6 is a fragmentary perspective view of a track showing it mounted in the drawer opening;

FIG. 7 is a fragmentary perspective view of the slide showing it mounted on the drawer;

FIG. 8 is a side elevational view of a track in its original fabricated condition;

FIG. 9 is a fragmentary side elevational view of the track shown in FIG. 8 after it has been bent in the plane of its plate to dispose a portion of its flange angularly relative to the main portion thereof;

FIG. 10 is a side elevational view of a slide in its original fabricated condition;

FIG. 11 is a fragmentary side elevational view of the slide shown in FIG. 10, after it has been bent in the plane of its plate to dispose a portion of its flange angularly relative to the main portion thereof;

FIG. 12 is a side elevational view showing a track and slide assembled in positions assumed when the drawer is in full open position; and

FIG. 13 is a view similar to FIG. 12, showing the track and slide in positions assumed when the drawer is partially open.

Referring to the accompanying drawings, and particularly to FIGURES 1 and 2 which disclose a representative form of a desk **11** for purposes of illustration, said desk includes one or more substantially rectangular drawer openings **12** each having a drawer **13** slidable therein. Each opening is defined by a bottom wall **14**, (FIGS. 4, 5) parallel side walls **15** and a back wall **16**. As shown in FIG. 3, the drawer comprises a front wall **17**, a back wall **18**, connecting side walls **19** and a bottom **21**. As is well understood, drawer **13** is adapted to be mounted in drawer opening **12** for sliding movement between open and closed positions.

Easy sliding movement of the drawer without binding is assured by providing the drawer with novel slides **22** and **22***a* having nonfriction rollers thereon adapted to cooperate with novel tracks **23** and **23***a* mounted in the drawer opening and also carrying nonfriction rollers to cooperate with the slides. As shown in FIG. 5, one slide **22** is mounted securely, as by screws **24**, on the outside face of one drawer side wall **19** and the other slide **22***a* is mounted by screws **24** to the outside face of the other side wall of said drawer. One track **23** is secured firmly, as by screws **25** on the inside face of one side wall **15** of the drawer opening, and the other track **23***a* is similarly secured by screws **25** to the other side wall **15** of the drawer opening.

Referring particularly to FIG. 8, track **23** consists of a heavy sheet metal plate formed, as by stamping, to provide a body portion **26** having a flange **27** formed adjacent to the top thereof and extending perpendicularly therefrom. Preferably flange **27** is offset inwardly from the edge of said body portion by initially folding the margin of the plate inwardly upon itself as at **28** (FIG. 5) and then outwardly at right angles thereto so as to reinforce said edge. An antifriction roller **29** is rotatably mounted on body portion **26** closely adjacent to the front end thereof and near its bottom edge **31** for a purpose to be described presently. A lug or stop **32** is struck out from the body portion **26** rearwardly of and closely adjacent to roller **29**. Stop **32** is inclined rearwardly upwardly as shown. Track **23***a* is like track **23** in all respects, and

like numerals identify corresponding parts, except that the free marginal edge of flange 27 is turned upwardly to provide a lip 33 (FIG. 6) coextensive with the length of flange 27.

A knockout 34 is formed in the body portion 26 inwardly of the rear end of track 23 and substantially midway between its top and bottom edges. Slots 35 and 36, which are preferably diametrically aligned, are formed in said body portion. Slot 35 extends from the knockout to a point adjacent the flange 27, and slot 36 extends from the knockout through free edge 31 of said body portion. Slots 35 and 36 preferably extend perpendicularly to flange 27, but they may be disposed at any desired angle thereto.

When the track is to be used in a conventional mounting it is installed with the knockout in place so as to remain straight. However, when the track is to be used in mounting a self-closing drawer, the knockout is removed. Removal of knockout 34 leaves an opening communicating with slots 35 and 36 to form a continuous opening in the plate extending from a point adjacent flange 27 through edge 31 of the plate. The length of the continuous opening makes it easy to bend the narrow portion of track 23 and flange 27 between the closed end of the opening and the adjacent edge of the plate.

The rear end portion 23' of the plate is bent in the plane of the plate to move the opposed edges of slot 36 into abutment with each other. This abutment controls the degree of bending permitted. When the plate is bent, as described above, the rear end portion of flange 27 is inclined downwardly in the rearward direction, as indicated at 27'. Since the abutment of the edges of slot 36 control the angularity of the bend, it is essential that each slot 36 be of equal width and that each slot 35 be wide enough to permit the opposite edges of slot 36 to abut each other.

Slide 22, as shown in FIG. 10, and slide 22*a* are each fabricated from a heavy sheet metal plate formed by stamping to provide an elongated body portion 37 having a flange 38 formed adjacent to the bottom edge thereof and extending perpendicularly therefrom. Preferably flange 38 is offset upwardly from the body portion edge by initially folding the margin of said plate inwardly upon itself as at 39 (FIG. 5) and then outwardly at right angles thereto so as to reinforce said edge. A pair of antifriction rollers 41 and 42 are rotatably mounted on body portion 37 closely adjacent to the rear end thereof. These rollers are offset vertically one from the other and are spaced apart a short distance for a purpose to be explained presently.

The slides 22 and 22*a* each also have a knockout 44 located inwardly of the front end and substantially midway between the upper and lower edges thereof. Slots 45 and 46 are formed in the body portion, one above and one below the knockout and in communication therewith. These slots are identical with slots 35 and 36, and therefore will not be described specifically. Slot 45 terminates short of flange 38, and slot 46 extends through the top edge of the plate as shown.

When the slide is used in a conventional drawer mounting the knockout is left in place so as to prevent misalignment of the front and rear sections of the slide. In order to adapt the slide for use when mounting a self-closing drawer, the knockout is removed, and the front end section 22' is bent upwardly in the plane of its plate in the same manner as the track is bent, to move the opposed side edges of slot 46 into abutment. Such bending moves the front end portion of flange 38 upwardly at an incline, as indicated at 38'. A stop lug 47 is struck downwardly out of flange 38 adjacent to the rear end thereof for a purpose to be explained presently. The slide 22*a* differs from slide 22 only in that slide 22*a* has a coextensive downturned lip 48 (FIG. 7) on the free edge of flange 38. Lips 33 and 48 cooperate to prevent lateral movement of the drawer.

The tracks and slides are of substantially equal length, and the spacing of knockout 34 from the rear end of the track is substantially equal to the spacing of knockout 44 from the front end of the slide. The slots 36 and 46 are of equal width. The location of each knockout determines the location of the bend in the track and in the slide. The width of slots 36 and 46 controls the degree of angularity to which the track and slide, respectively may be bent.

Accordingly, when the tracks and slides are bent to bring the opposite edges of slot 36 and the opposite edges of slot 46 into abutment with each other, the angle of inclination is identical in each member and the length of the inclined portions of both members is substantially the same. When the tracks and slides are installed and the drawer is mounted in the opening provided therefor, the straight portions of flanges 27 and 38 are parallel, and inclined portions 27' and 38' are also parallel, but are positioned at opposite ends of the drawer slide mechanism.

In the assembly, a track 23 is secured on the inside face of one of the walls 15 of the opening 12, and the companion track 23*a* is secured on the inside face of the other wall 15 with the flanged edges disposed upwardly and the flanges 27 thereof in opposed relation and in horizontal alignment. The slides 22 and 22*a* are similarly secured, one to the outside face of each drawer side wall 19 with the flanged edges at the bottom and the flanges 38 extending outwardly.

When the drawer is inserted into the opening 12, the rollers 41 and 42, respectively, are initially engaged above and below the related flange 27 of the guides while the slide flanges 38 are supported on guide rollers 29. The drawer is then moved inwardly. During initial inward movement of the drawer it is held with its front end elevated slightly to permit stop lugs 47 to pass over guide rollers 29 and guide stops 32. The drawer may then be slid into a fully closed position, in which position the rear end of the drawer is supported by rollers 41 riding on flanges 27 and flanges 38 riding on rollers 29. Normal movement of the drawer outwardly into full open position is limited by abutment of slide stops 47 with stops 32 on the guides.

When drawer 13 is opened from its fully closed position, the drawer is lifted slightly by inclination 38' of flange 38 which rides on roller 29, and inclination 27' of flange 27, upon which roller 41 rides. The parallelism of inclinations 38' and 27' causes the drawer to remain level. If the force pulling drawer 13 open is released before roller 41 reaches slot 35, the weight of the drawer will cause it to roll back into fully closed position. Similarly, if the drawer is moved from fully open position far enough for roller 41 to pass slot 35, the drawer will roll to fully closed position. Accordingly, it is impossible for the drawer to be left partially open unless it is open far enough to position roller 41 forwardly of slot 35. When the drawer is opened far enough to position roller 41 forwardly of slot 35, it will remain open because roller 41 or 42 is then engaged with the horizontal portion of flange 27, and roller 29 is engaged with the horizontal portion of flange 38.

Although I have described a preferred embodiment of my invention in considerable detail, it will be understood that the description thereof is intended to be illustrative, rather than restrictive, as many details of the structure shown 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:

1. In a drawer slide mechanism, a rigid metal plate, a perpendicular flange extending longitudinally of said plate adjacent one edge thereof, and a knockout intermediate the length of said plate approximately midway between said flange and the opposite edge of said plate, said plate having a pair of slots extending angularly to said flange from opposite edges of said knockout, one of said slots

terminating short of said flange and said other slot extending through said second mentioned edge of said plate, to facilitate bending of said plate in its own plane adjacent said knockout.

2. In a drawer slide mechanism, a rigid metal plate, a perpendicular flange extending longitudinally of said plate adjacent one edge thereof, and a knockout intermediate the length of said plate approximately midway between said flange and the opposite edge of said plate, said plate having a pair of diametrically opposite slots extending perpendicularly to said flange from opposite edges of said knockout, one of said slots terminating in spaced relationship to said flange, and the other slot extending through said second mentioned edge of said plate, to facilitate bending of said plate in its own plane adjacent said knockout.

3. In a drawer slide mechanism, a rigid metal plate, a perpendicular flange extending longitudinally of said plate adjacent one edge thereof, and a knockout intermediate the length of said plate approximately midway between said flange and the opposite edge of said plate, said plate having a pair of slots cooperating with the area of said knockout after removal of said knockout to provide a continuous opening in said plate extending from a point spaced from said flange through the opposite edge of said plate to facilitate bending of said plate in its own plane adjacent said knockout.

4. A drawer slide mechanism comprising a pair of slides adapted to be permanently secured to opposite sides of a drawer and a pair of tracks adapted to cooperate with said slides, each of said slides and tracks comprising a rigid metal plate of substantially equal length, a perpendicular flange extending longitudinally of each of said plates adjacent one edge thereof, and a knockout in each plate, the knockout in each of said track plates being spaced from the rear end thereof a distance equal to the distance between the knockout in each slide plate and the front end thereof, each of said plates having a pair of slots extending angularly to said flange from opposite edges of said knockout, one slot of said pairs of slots extending through said second mentioned edge of its plate to facilitate bending of said plate in its own plane adjacent said knockout.

5. A drawer slide mechanism comprising a pair of slides adapted to be permanently secured to opposite sides of a drawer and a pair of tracks adapted to cooperate with said slides, each of said slides and tracks comprising a rigid metal plate of substantially equal length, a perpendicular flange extending longitudinally of each of said plates adjacent one edge thereof, and a knockout in each plate, the knockout in each of said

track plates being spaced from the rear end thereof a distance equal to the distance between the knockout in each slide plate and the front end thereof, each of said plates having a slot extending angularly from its knockout to said flange and a slot extending from its knockout through the opposite edge of the plate to facilitate bending of each of said plates in its own plane adjacent said knockout, each of said last mentioned slots being of equal width.

6. A drawer slide mechanism comprising a pair of slides adapted to be permanently secured to opposite sides of a drawer and a track adapted to cooperate with each of said slides, each of said slides and tracks comprising a rigid metal plate of substantially equal length, a perpendicular flange extending longitudinally of each of said pates adjacent one edge thereof, and a knockout in each plate, the knockout in each of said track plates being spaced from the rear end thereof a distance equal to the distance between the knockout in each slide plate and the front end thereof, each of said plates having a pair of slots extending angularly to said flange from opposite edges of said knockout, one of said slots terminating adjacent said flange, and the other slot extending through said second mentioned edge of said plate, to facilitate bending of each of said plates in its own plane adjacent said knockout, and each of said slots terminating adjacent the flange of its plate being wide enough to permit the edges of the other slot of its plate to be moved into abutment with each other.

7. A drawer slide mechanism comprising a pair of cooperating plates having oppositely disposed perpendicular flanges, each of said plates rotatably supporting a roller engageable with the flange of the cooperating plate, each of said flanges extending straight along the length of its plate, means integral with one of said plates for facilitating bending of said one plate in its own plane to provide a specific angular relationship between the rear end portion of its flange and the rest of its flange, and means integral with said cooperating plate to facilitate bending it in its own plane to provide an angular relationship between the front end portion and the rest of its flange identical with said first mentioned angular relationship.

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