Nov. 20, 1934. J. PIPE 1,981,246

EXTENSION DRAWER SLIDE

Filed Nov. 14, 1932 2 Sheets-Sheet 1

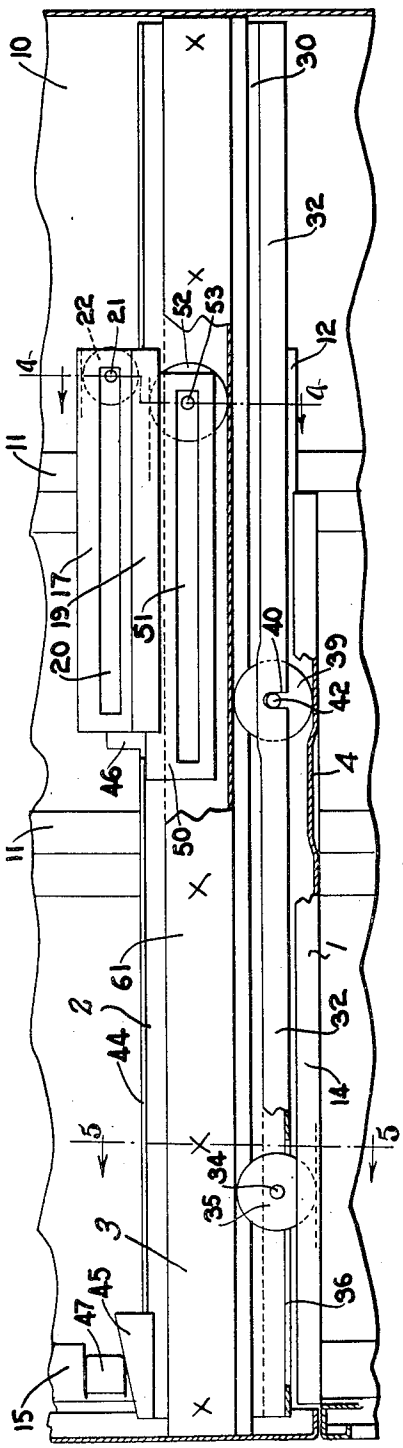


Fig. 1.

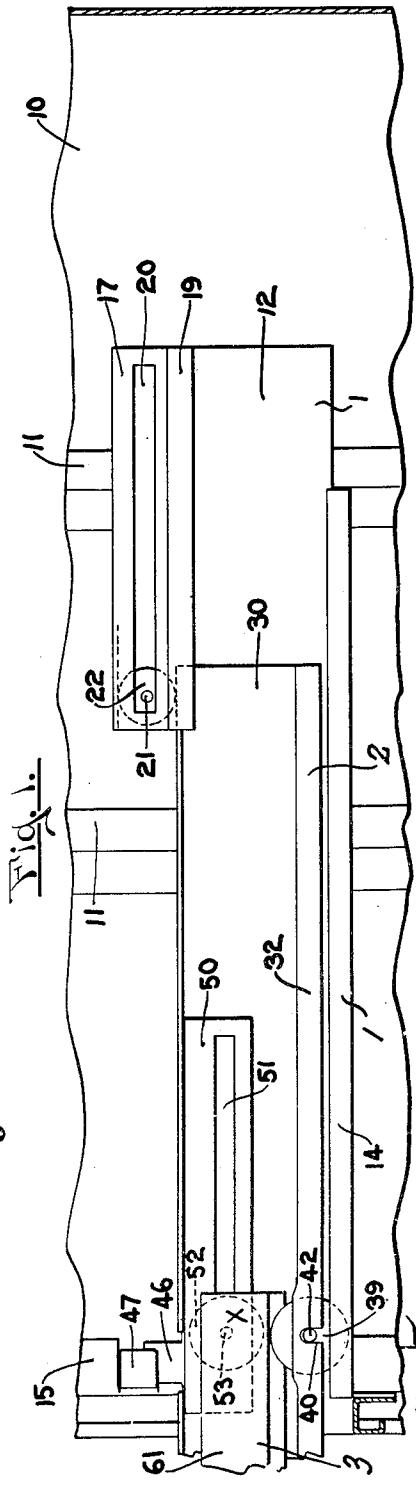


Fig. 2.

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EXTENSION DRAWER SLIDE

Filed Nov. 14, 1932 2 Sheets-Sheet 2

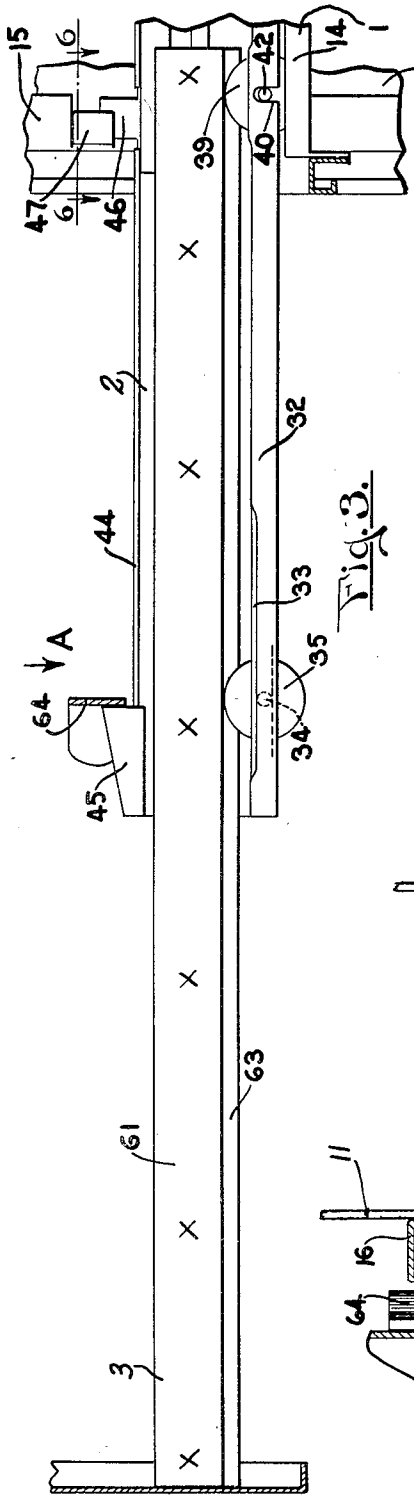


Fig. 3.

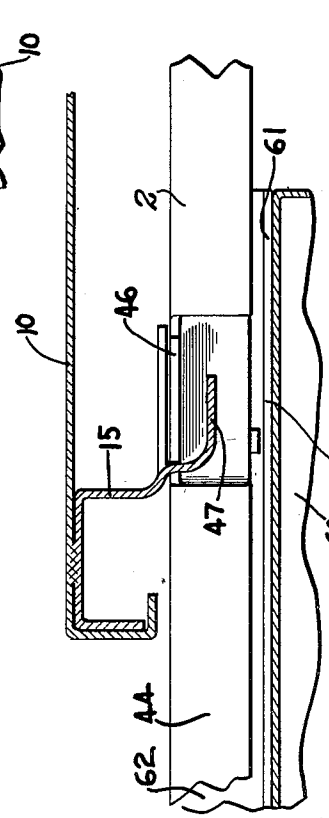


Fig. 6.

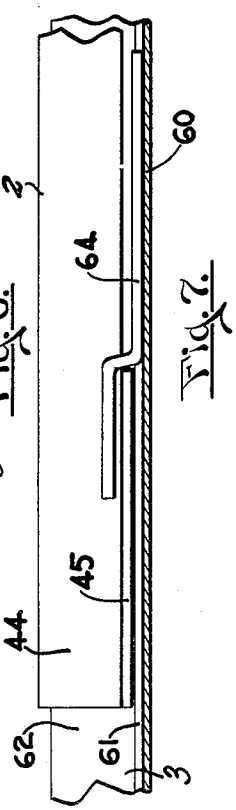


Fig. 7.

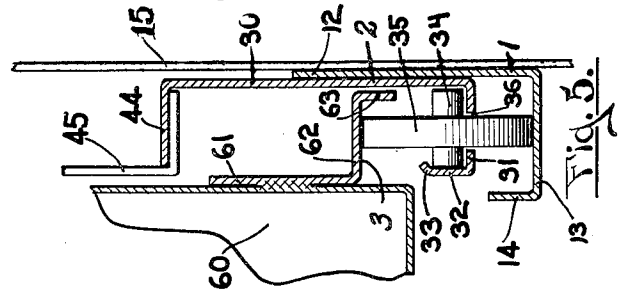


Fig. 5.

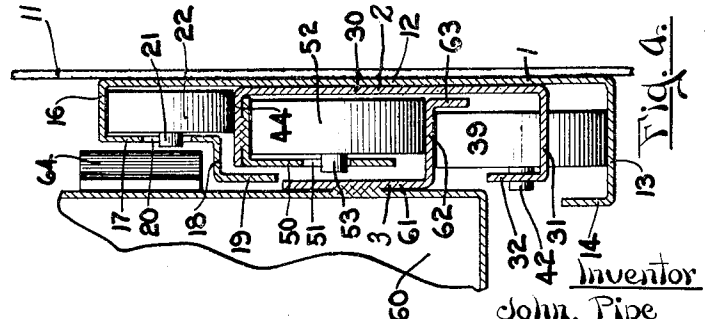


Fig. 4.

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UNITED STATES PATENT OFFICE

1,981,246

EXTENSION DRAWER SLIDE

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Application November 14, 1932, Serial No. 642,578

7 Claims. (Cl. 45—77)

The invention relates generally to a cantilever extension means and more specifically to an extension drawer construction.

One difficulty which has always been present to a great or less degree in mechanisms of this character is the resistance to motion, such being the result of friction between the several relatively movable parts and it is a primary object of this invention to so construct and inter-relate the parts as to greatly reduce the friction therebetween.

In accomplishing the above result, I utilize full floating roller bearings in several places and also additional advantages are attained in the said construction as will be apparent from the following description.

Another advantage lies in the shiftable extension slide, this extension slide having three rollers mounted therein, said rollers supporting a drawer slide at three spaced apart points when the extension slide is in an extended position, the pressure downwardly upon the drawer slide causing a shifting of the extension slide upwardly at its outer end whereby this three point contact occurs. The central roller, when the slide members are in extended position, serves as a fulcrum for the drawer slide resting thereon and the outer roller provides a full floating contact between the drawer slide and the extension slide. This last mentioned roller comes into contact with the stationary track when the slide members are in their retracted positions and hence supports the drawer on the stationary track through this slide roller and the drawer slide, the drawer being attached to the drawer slide as will be set forth in the following description.

Another advantage lies in my provision of the full floating roller connection between the rear end of the drawer slide and the upper portion of the extension slide, this roller being one of the three rollers previously referred to.

A further feature is the provision of a full floating roller mounted between the upper rear edge of the extension slide and a stationary channel shaped portion located thereabove.

Another advantage lies in the stop means for preventing excessive outward movement of the extension slide, this stop means being integrally formed with the extension slide and serving to prevent lateral movement of the extension slide when said slide is in its outer position.

Other advantages lie in the particular economical and efficient construction of the several parts.

Referring to the drawings:

Fig. 1 is a side view of my invention as applied to a drawer, parts being broken away in order to expedite the showing.

Fig. 2 is a view similar to Fig. 1, but showing the several members in extended position.

Fig. 3 shows the extension slide and the drawer slide located therein in fully extended position.

Fig. 4 is a view taken along the line 4—4 of Fig. 1.

Fig. 5 is a view taken along the line 5—5 of Fig. 1.

Fig. 6 is a view taken along the line 6—6 of Fig. 3, parts being broken away as shown.

Fig. 7 is a view looking in the direction of arrow A of Fig. 3.

Similar numerals refer to similar parts throughout the several views.

Numeral 10 indicates the frame construction, such having Z-bars 11 as reinforcing, these Z-bars having the stationary track 1 welded thereonto. The stationary track 1 consists of a vertical portion 12, a horizontal portion 13 and a short upturned flange 14. The vertical portion 12 of this track member, as aforesaid, is welded to the reinforcing members 11 and also may be attached at its front end to a reinforcing member 15. The member 15, see Fig. 6, is welded to the front of the frame or case 10 and serves as a vertical reinforcing means therefor. See Fig. 3.

As shown in Fig. 1, the horizontal portion 13 of the stationary track is raised as indicated at 4, the purpose of this to be set forth later in the specification.

The vertical portion 12, see Fig. 4, extends upwardly near the rear end thereof and is bent inwardly at 16, then downwardly in a vertical portion 17, then inwardly as at 18 and terminates in a depending flange 19. Also see Fig. 2. The portion 17 is slotted as indicated at 20, this slot receiving the stub shaft 21 of the anti-friction means 22.

The extension slide 2, which rides in the stationary track 1, consists of a vertical portion 30 having a bottom portion 31 which terminates in an upturned flange 32, this flange being bent as indicated at 33, see Fig. 5, which prevents upward movement of the shaft 34 of an anti-friction roller 35, such roller being received in the slot 36 of the bottom portion 31.

The slot 36, see Fig. 1, extends for a considerable distance whereby the roller 35 may move therealong as will be set forth later in the specification.

The bottom portion 31 is also cut away to receive the roller 39, see Figs. 1 and 2, and a slot

40 is formed in the upturned edge 32, this slot freely receiving the single axle 42 of the roller 39.

The vertical portion 30 of the extension slide is continued upwardly and bent over as indicated at 44. A stop member 45 is welded to the front end thereof. A second stop member 46, see Figs. 2, 3 and 6, is continued upwardly from the vertical portion 30 and abuts against a bent out portion 47 of the member 15. See Fig. 6. This bent out portion 47 also prevents excessive upward movement of the front end of the extension slide member.

An L-shaped member 50, see Fig. 4, is welded to the underside of the top portion 44 of the extension slide, this member having a relatively long slot 51 formed therein. A roller member 52 having a single stub shaft 53 which is received in the slot 51, rides between the upper side of the extension slide and the drawer slide 3 which is now to be described.

The drawer slide 3, such being attached to the drawer 60, see Figs. 4 and 5, consists of a vertical portion 61 which is welded to the drawer 60, and a horizontal portion 62 which terminates in a depending portion 63. A stop plate 64, see Figs. 3, 4 and 7, is welded to the drawer 60.

As has been described, rollers 22, 35 and 52 provide anti-friction means between the several parts and they may be referred to as "full floating means". Also, it is to be observed that the roller 35 provides a full floating means not only between the drawer slide and stationary member, when the parts are at or near their inner position, but the axle 34, extending from both sides of the roller 35, see Fig. 5, is of such size as to roll along the extension slide a distance substantially equal to the slot 36, in which it rides, during the outward movement of the drawer slide.

The operation

When the slides are in retracted position the parts are located as shown in Fig. 1 and the weight of the drawer is carried principally by the rollers 35 and 39.

However, as soon as the drawer is drawn slightly outwardly, the roller 39 rolls upon the raised portion 4 of the track 13 and when this occurs the top part of this roller raises the drawer slide by contacting underneath the same and this causes the drawer slide and drawer to be raised slightly at their outer ends because the roller 52 rolls against the rear portion of the drawer slide at its top side and prevents such from moving upwardly. Therefore, as the inner end of the drawer slide is held in the same plane and as the adjacent portion is elevated by the action of the roller 39, such will cause the raising of the outer end of the drawer and drawer slide.

This elevating is desirable as it gives a gravity impulse to the drawer when it is pushed towards its closed position and thus the drawer will readily be closed. In other words, the slight lowering of the drawer during its final stage of closing provides an impulse which fully closes the same.

It is also desired to explain that the roller 39, rolling between the drawer slide and the stationary track, travels outwardly only half as fast as the roller 52, the roller 52 rolling between the drawer slide and the extension slide. Thus, during the initial movement, referred to in the preceding paragraphs, the upper roller 52 moves outwardly at a speed twice that of the roller 39 and as the roller 52 bears against the upper side of the drawer slide 3 and gradually approaches the roller 39 it causes a gradual elevating of the outer end of the drawer. That is, the roller 39 might be said to serve as a traveling fulcrum member, with the roller 52 preventing movement of the inner end of the drawer slide upwardly. During this initial movement the roller 35 is lifted slightly from its track 1.

Further outward movement of the drawer causes the roller 39 to roll completely over the elevation 4 and this causes the extension slide 2 and the drawer slide 3 to return to substantially horizontal position whereupon the rollers 35 and 39 support the drawer slide and if only the outer end of the drawer is loaded then the roller 35 becomes the fulcrum point of the drawer slide 3 with the roller 52 serving as means to prevent upward movement of the drawer slide. The roller 35 rolls upon its axle 34 during this movement.

During the start of the initial outward movement the weight of the drawer, transmitted through the drawer slide is directly carried upon the stationary track 1 by means of the rollers 35 and 39. Further initial movement causes the elevating of the several parts, as previously described, and during this movement the extension slide 2 pivots upon the roller 39, similar to the drawer slide 3. However, the extension slide 2 is held at its rear portion against upward movement by the small roller 22. This roller 22, combined with the roller 39, acts upon the extension slide 2 to cause it to have an upward tilting movement at its outer end similar to that set forth in connection with the drawer slide 3.

It will be apparent that the rollers 39 and 52 will cause movement of the drawer slide outwardly at twice the speed as that of the extension slide. The upper rear flange of the extension slide, see Figs. 2 and 4, rides against the roller member 22, this roller member bearing against the underside of the horizontal portion 16.

The stop member 64, see Fig. 7, abuts against the stop member 45 to prevent excessive outward movement of the drawer slide relative to the extension slide while the stop member 46 comes against the out struck portion 47 of the member 15 to prevent excessive outward movement of the extension slide.

Having thus revealed this invention, I claim as new and desire to secure the following combinations and elements, or equivalents thereof, by Letters Patent of the United States.

I claim:

1. In a device of the class described, a stationary track, an extension slide adapted to be received upon the said stationary track, said extension slide having a roller positioned intermediate its ends, said roller running along the stationary track whereby the extension slide may be reciprocated therealong, said roller contacting against and rolling upon the track and carrying a fractional part of the weight of the slide and its appurtenances at all times, means located at the rear of the extension slide and slightly above the same whereby the extension slide may tilt slightly about the roller mounted thereon, said roller serving as the fulcrum about which the extension slide tilts, a drawer slide mounted upon the roller of the extension slide, said drawer slide also being capable of tilting about the said roller, the upper surface of the said roller serving as a fulcrum about which the drawer slide tilts, roller means positioned at the front of the extension slide below the drawer slide whereby the drawer slide is limited in its tilting movement and addi-

tional means between the opposite end of the drawer slide and the extension slide for likewise limiting the said tilting movement of the drawer slide.

2. In an extension drawer slide the combination of, a stationary track, an extension slide, means for mounting the extension slide for movement outwardly along the said stationary track, and means for preventing upward movement of the rear end of the extension slide, said means including a channel shaped portion of sheet metal located in inverted position over the upper surface of the said extension slide and fixed to said stationary track, one of said flanges of the U-shaped portion having a long slot therein, and a roller member having a stub shaft extending from one side thereof positioned between the upper surface of the extension slide and the web of the said U-shaped member, said stub shaft of the roller extending through the slot for the purpose described.

3. A combination of elements as set forth in claim 2 but also having an integral portion extending from one of the flanges of said U-shaped member outwardly and then downwardly around the extension slide to prevent lateral movement thereof.

4. In combination, a stationary track member, an extension slide of channel shape, means to mount the extension slide upon the stationary track member for reciprocating movement, the web of the extension slide being vertically positioned and at right angles to the upper surface of the stationary track member, stop means integrally formed from the upper flange of the extension slide, said stop means being in alinement with the web of the said extension slide and additional means contacting with said stop means when the extension slide is in retracted position whereby the extension slide is held against lateral movement.

5. In combination, a stationary track member, an extension slide of channel shape, means to mount the extension slide upon the stationary track member for reciprocating movement, said mounting means including a roller having a stub shaft extending axially from one side thereof, the flange of the extension slide being cut away to permit placing the roller therein, said cut away portion being continued in a plane at right angles thereto to receive the stub shaft whereby the roller is revolubly mounted, a drawer slide, and means for mounting the drawer slide within the extension slide, said drawer slide resting upon the said roller for the purpose described.

6. In a device of the class described, a stationary track, an extension slide adapted to be received upon the said stationary track, said extension slide having a roller positioned intermediate its ends, said roller running along the stationary track whereby the extension slide may be reciprocated therealong, means located at the rear of the extension slide and slightly above the same whereby the extension slide may tilt slightly about the roller mounted thereon, said roller serving as the fulcrum about which the extension slide tilts, a drawer slide mounted upon the roller of the extension slide, said drawer slide also being capable of tilting about the said roller, the upper surface of the said roller serving as a fulcrum about which the drawer slide tilts, roller means positioned at the front of the extension slide below the drawer slide whereby the drawer slide is limited in its tilting movement and additional means between the opposite end of the drawer slide and the extension slide for likewise limiting the said tilting movement of the drawer slide.

7. In a device of the class described, a stationary track, an extension slide adapted to be received upon the said stationary track, said extension slide having a roller positioned intermediate its ends, said roller running along the stationary track whereby the extension slide may be reciprocated therealong, means located at the rear of the extension slide and slightly above the same whereby the extension slide may tilt slightly about the roller mounted thereon, said roller serving as the fulcrum about which the extension slide tilts, a drawer slide mounted upon the roller of the extension slide, said drawer slide also being capable of tilting about the said roller at all times, the upper surface of the said roller serving as a fulcrum about which the drawer slide tilts, roller means positioned at the front of the extension slide below the drawer slide whereby the drawer slide is limited in its tilting movement and additional means between the opposite end of the drawer slide and the extension slide for likewise limiting the said tilting movement of the drawer slide.

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