Dec. 22, 1925. 1,566,307

E. J. CARD ET AL

DRAWER SUSPENSION

Filed Sept. 19, 1921 3 Sheets-Sheet 1

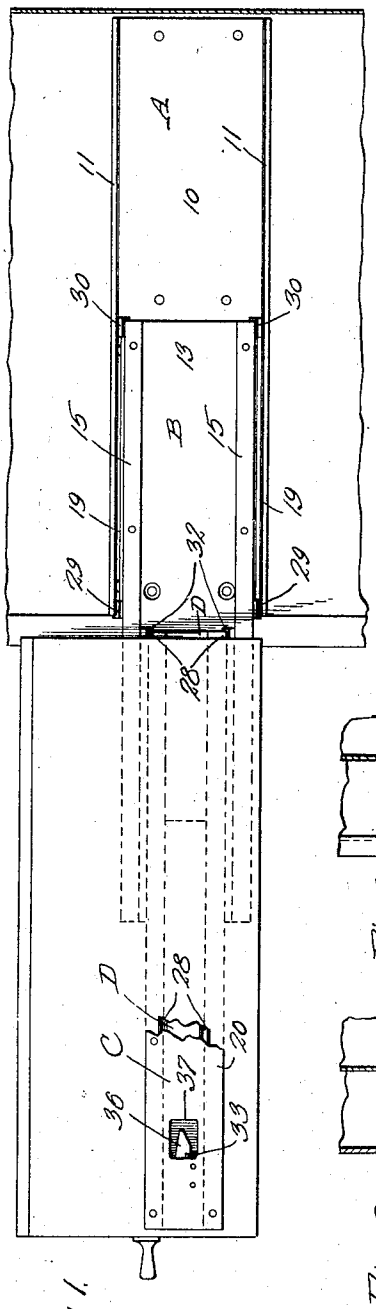


Fig. 1.

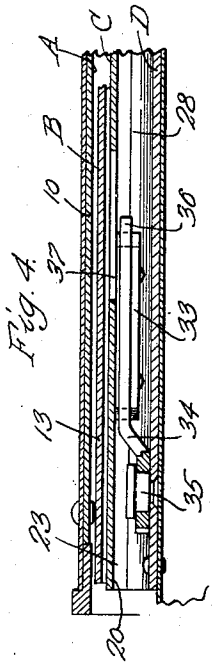


Fig. 4.

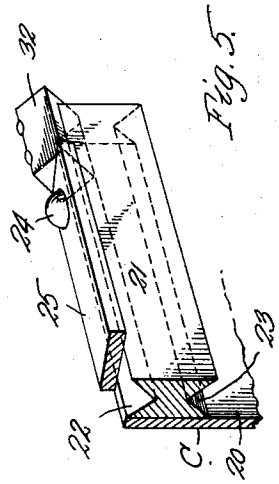


Fig. 5.

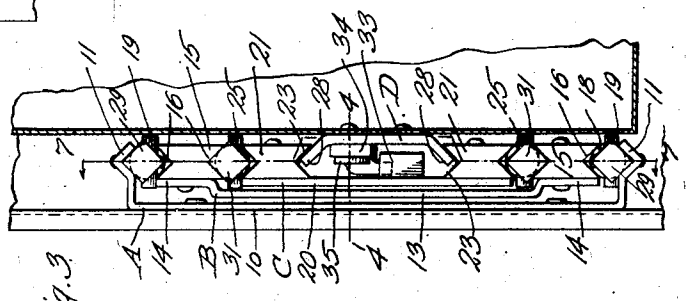


Fig. 3.

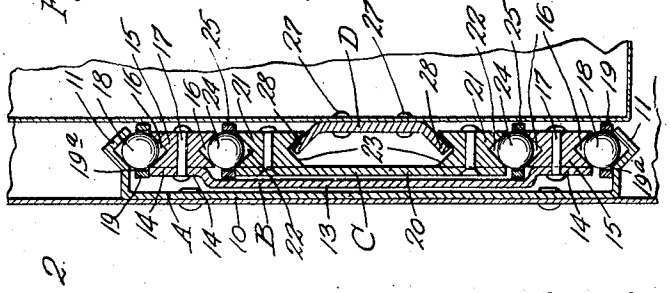


Fig. 2.

INVENTOR.
Earl J. Card and
Joseph E. Turner,
By Parker & Prochnow
ATTORNEYS.

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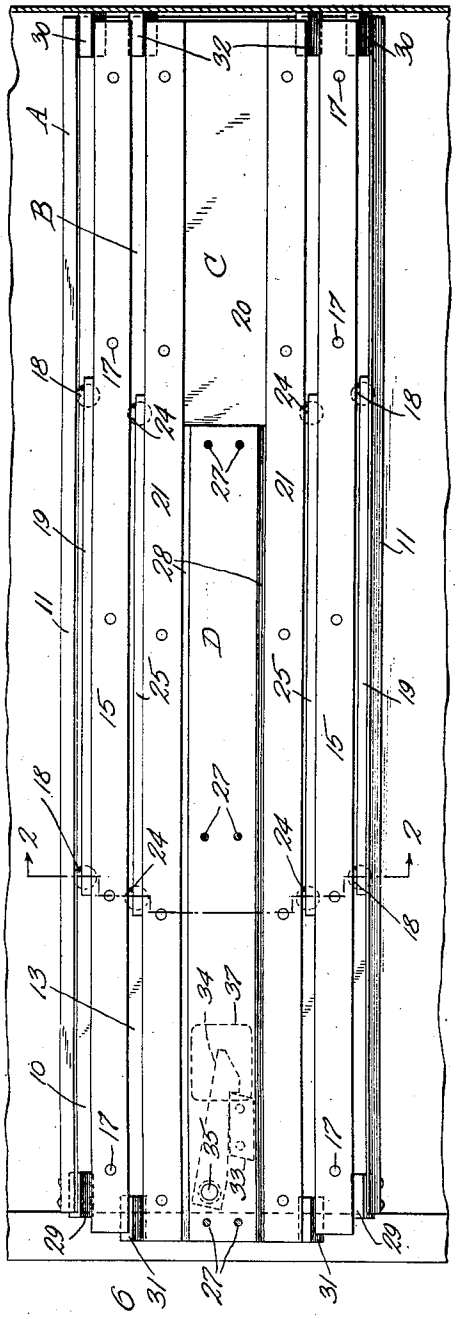


Fig. 6

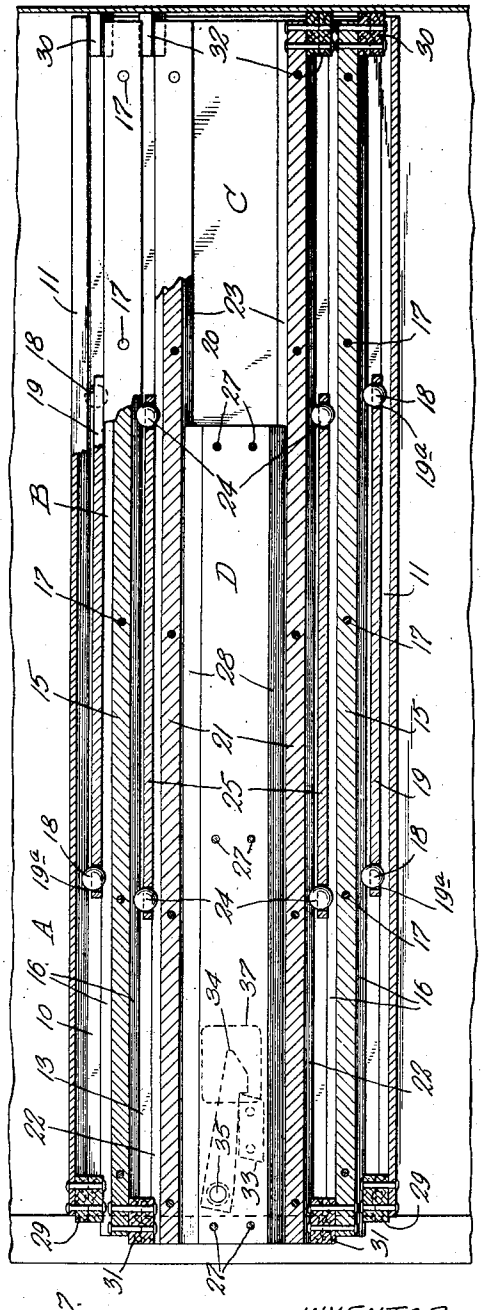


Fig. 7.

INVENTOR.
Earl J. Card and
Joseph E. Turner,
by Parker & Prochnow
ATTORNEYS.

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Filed Sept. 19, 1921 3 Sheets-Sheet 3

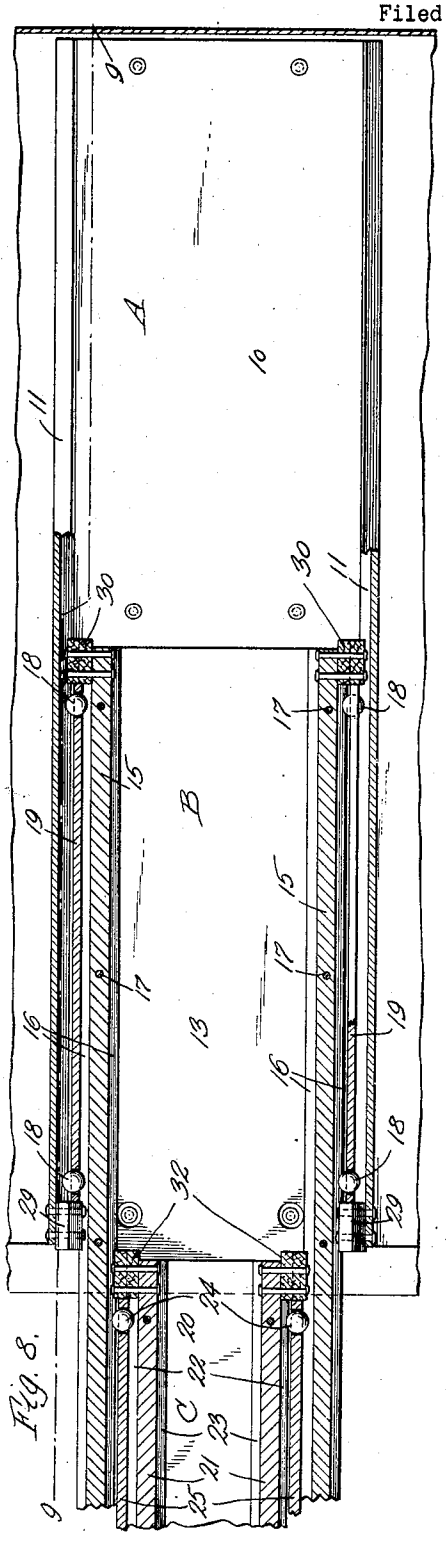


Fig. 8.

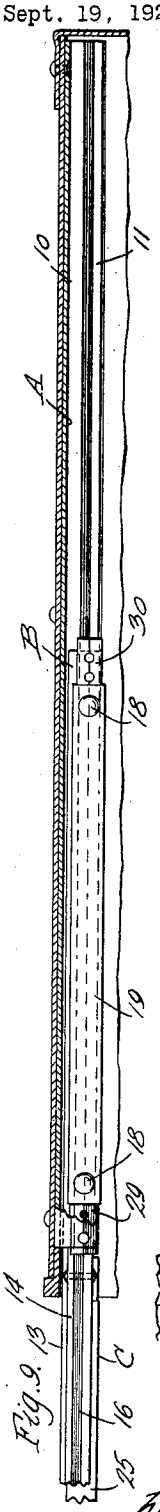


Fig. 9.

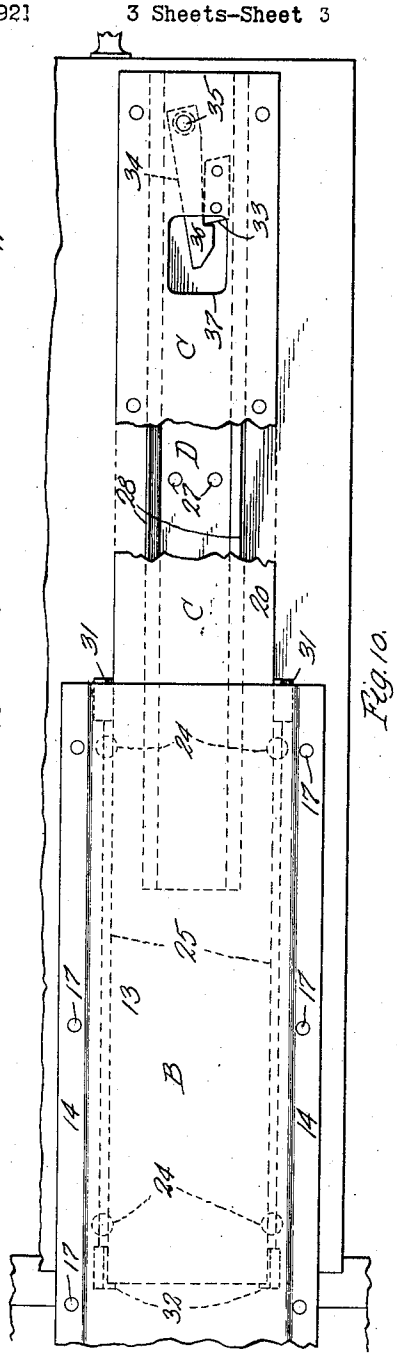


Fig. 10.

INVENTOR.
Earl J. Card and
Joseph E. Turner,
By Parker & Prodmore.
ATTORNEYS.

Patented Dec. 22, 1925. 1,566,307

UNITED STATES PATENT OFFICE.

EARL J. CARD AND JOSEPH E. TURNER, OF JAMESTOWN, NEW YORK, ASSIGNORS TO ART METAL CONSTRUCTION COMPANY, OF JAMESTOWN, NEW YORK.

DRAWER SUSPENSION.

Application filed September 19, 1921. Serial No. 501,676.

To all whom it may concern:

Be it known that we, EARL J. CARD and JOSEPH E. TURNER, citizens of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Drawer Suspensions, of which the following is a specification.

This invention relates to drawer guides or suspensions of the extensible type comprising telescoping or relatively sliding supporting members which are associated and connected to the cabinet or housing in which the drawer slides and to the drawer or the like, in such a way as to extend and properly support the drawer even when the latter is pulled out to its full length.

The objects of the invention are to provide a drawer support or suspension of relatively simple but sturdy construction which will effectively support large, heavy drawers and the like and enable the same to be operated with ease and facility and practically noiselessly; and also to provide a drawer suspension or the like which may be readily assembled and will not easily get out of order. Further objects are to improve drawer guides or suspensions in the other respects hereinafter set forth and claimed.

In the accompanying drawings:—

Fig. 1 is a longitudinal sectional elevation of a portion of a cabinet and a drawer suspension embodying this invention, showing the drawer in open position.

Fig. 2 is a transverse section thereof, on line 2—2, Fig. 6, but on an enlarged scale.

Fig. 3 is a sectional elevation thereof, viewed from the front of the cabinet, with the drawer in closed position.

Fig. 4 is a horizontal section thereof on line 4—4, Fig. 3.

Fig. 5 is a fragmentary perspective view of one of the inner floating suspension channels showing the slide stops in the extended position of the suspension.

Fig. 6 is a sectional elevation of a cabinet showing one of the suspension members, with the drawer removed.

Fig. 7 is a vertical longitudinal section thereof on line 7—7, Fig. 3.

Fig. 8 is a longitudinal sectional elevation of a portion thereof with the suspension extended.

Fig. 9 is a horizontal section thereof on line 9—9, Fig. 8.

Fig. 10 is a side elevation thereof looking in the other direction.

The drawer support or suspension of this invention, generally stated, comprises three or more slides or telescoping members arranged to telescope one within the other and suitable friction reducing balls or devices therebetween, one of said members, as is usual, being connected to the cabinet or housing, and another of the members being connected to the drawer or the like. The suspensions are arranged, as usual, in pairs at opposite sides of the drawer to be supported.

In the embodiment of the invention illustrated, the suspension device at each side of the drawer includes four slide members; namely, an outer or case channel A, which is secured by suitable means within the cabinet or housing, an outer floating channel B mounted to slide in the case channel, an inner floating channel C mounted to slide in floating channel B, and a drawer channel or attaching member D which slidably fits in the inner floating channel C and is secured to the drawer for removably attaching the floating channel C to the drawer.

Each outer or case channel A comprises a substantially vertical attaching portion 10 and the facing channel flanges 11. As illustrated, the case channels are preferably of single piece metal construction, the upper and lower edges being bent to form the inwardly projecting channel flanges 11 shown.

The outer floating channel B preferably comprises a suitable metal plate having the substantially vertical central portion 13 and the offset upper and lower edges 14 which carry the double channel flanges 15. The channel flanges 15 may be of metal or other suitable material and have longitudinal grooves 16 in their upper and lower faces. These channel flanges may be integral with the upper and lower edges 14 of the member B, or as illustrated, be separate strips riveted or otherwise secured to the members B as at 17.

The channel flanges 11 of the case channel member A and outer grooves 16 of the floating channel B provide races for friction reducing devices. In the suspension illustrated, these devices comprise balls 18, two of these balls being shown in each raceway, and ball spaces 19 which slide in the raceways and hold the balls in proper spaced relation. Each ball spacer comprises a strip

or bar of metal of less thickness than the diameter of the balls and having holes 19ª in which the balls loosely fit.

The inner floating channels C are preferably of substantially the same construction detailed for the floating channels B, except that it is not necessary to offset the upper and lower edges as in the channels B. Each member C includes a plate portion 20 and flanges or channel bars 21 which have longitudinal outer grooves 22 and inner grooves 23, similar to corresponding parts of channel B.

24 designates the balls in the raceways constituted by the opposing grooves in the channels B and C, and 25 designates ball spacers, therefor, similar to the ball spaces hereinbefore described.

In its preferred form, the drawer channel or attaching member D comprises a strip of metal riveted or otherwise suitably secured to a side of the drawer as at 27, and having outwardly projecting edges 28 which engage the inner grooves 23 of the member C. As illustrated, it is preferred that the grooves be substantially V-shape in cross section and that the edges 28 of the drawer channel be shaped to conform to the angularity of the groove forming portion of member C. In this manner a more rigid mounting is effected but at the same time the drawer channel D will slide easily in the inner grooves 23 when it is desired to remove the drawer from the suspension.

The case channels A are provided adjacent their front ends with stops 29 for limiting the forward travel of the ball spacers 19 and floating channels B, the stops 29 being disposed in the paths of travel of ball spacers 19, and the channels B carry stops 30 adjacent their rear ends adapted to engage the rear ends of the spacers. The floating channels B have fixed stops 31 adjacent their front ends and in the paths of travel of ball spacers 25 and the inner floating channels C have the rear stops 32 for engaging the rear ends of ball spacers 25. These stops may be made of any suitable material and may be secured in position by any suitable means. As illustrated, the stops 29 are preferably riveted in the grooves 11 of channels A, the stops 30 likewise secured at the rear ends of outer grooves 16 of channels B, the stops 31 at the front ends of inner grooves 16 of channels B, and the stops 32 at the rear ends of inner floating channels C are suitably secured in outer grooves 22 thereof. Preferably the stops are made of leather or analogous tough yielding material so as to cushion the blows and reduce the noise when the stops strike the spacers and arrest the movements of the parts in the operation of the drawer.

Means are provided for connecting the inner floating channel to the drawer so that in the normal opening of the drawer these parts will move together but so that the drawer may be disconnected when desired so as to permit of its removal from the suspension. For this purpose the inner floating channel C preferably carries near its front end a fixed stop or lug 33 which is engaged by a latch or dog 34 pivoted to the drawer channel D as at 35. As shown, this latch 34 is preferably provided with an offset head 36 which engages the lug 33. 37 designates an opening in the vertical wall of the inner floating channel C to permit the insertion of fingers or of a tool to lift the latch and release the drawer from the suspension devices so that it may be entirely withdrawn from the casing and suspension devices when desired.

In the use of the drawer suspension of this invention the V-shaped grooves of the several channels cooperate with the balls which move therein to permit easy movement of the parts, but at the same time effectively prevent any lateral play and rattle between the parts and make the device practically noiseless in operation. The ball spacers, as illustrated in Figs. 6 and 7, assume a substantially central position in the grooves when the drawer is closed and, as illustrated in Figs. 8 and 9, are engaged by the stops at the ends of adjacent grooves to limit forward movement of the extension members and retain them in connected relation as the drawer is pulled out. Since the balls in each race are held at all times a considerable distance apart lengthwise of the race by the spacer, and the spacers limit the amount that the telescoping member can be extended, the telescoping members are always held parallel or prevented from tipping relative to the drawer or case whether the drawer is in the closed or open position. A very strong and rigid support for the drawer is therefore ensured even when the drawer is pulled out of the case to the full limit. The latch 34 which engages stop 33 effectively holds the inner floating channel and the drawer channel D together during normal withdrawal of the drawer and through the opening 37 in the inner channel C permits a ready disconnection of the drawer from the suspension devices.

We claim as our invention:

1. In a drawer suspension, the combination of an outer channel member having inwardly facing longitudinal grooves and adapted to be secured to a support, a floating channel slidably arranged in said channel member, and having flanges at its opposite edges, each of said flanges having an outwardly and an inwardly facing longitudinal groove therein, said outwardly facing grooves in said flanges cooperating with the inwardly facing grooves of said outer channel member to form raceways, friction reducing devices in said raceways, an inner

channel slidably arranged in said floating channel, and having flanges at its opposite edges, each of said last mentioned flanges having an outwardly and an inwardly facing groove therein, friction reducing devices between the outwardly facing grooves of said inner channel and the inwardly facing grooves of said floating channel, and an attaching plate having edges engaging the inner grooves of said inner channel and attached to a drawer.

2. In a drawer suspension, the combination of an outer channel member having inwardly facing longitudinal grooves and adapted to be secured to a support, a floating channel slidably arranged in said channel member, and having flanges at its opposite edges, each of said flanges having an outwardly and an inwardly facing longitudinal groove therein, said outwardly facing grooves in said flanges cooperating with the inwardly facing grooves of said outer channel member to form raceways, friction reducing devices in said raceways, an inner channel slidably arranged in said floating channel, and having flanges at its opposite edges, each of said last mentioned flanges having an outwardly and an inwardly facing groove therein, friction reducing devices between the outwardly facing grooves of said inner channel and the inwardly facing grooves of said floating channel, an attaching plate having edges engaging the inner grooves of said inner channel and attached to a drawer and a latch for releasably retaining said inner channel in place on said attaching plate.

3. In a drawer suspension, the combination of an outer channel member having inwardly facing longitudinal grooves and adapted to be secured to a support, a floating channel slidably arranged in said channel member, and having flanges at its opposite edges, each of said flanges having an outwardly and an inwardly facing longitudinal groove therein, said outwardly facing grooves n said flanges cooperating with the inwardly facing grooves of said outer channel member to form raceways, friction reducing devices in said raceways, an inner channel slidably arranged in said floating channel, and having flanges at its opposite edges, each of said last mentioned flanges having an outwardly and an inwardly facing groove therein, friction reducing devices between the outwardly facing grooves of said inner channel and the inwardly facing grooves of said floating channel, an attaching plate having edges engaging the inner grooves of said inner channel and attached to a drawer, a latch for releasably retaining said inner channel in place on said attaching plate, said inner channel having a hole therethrough to permit access to said latch to release the same.

4. The combination with a drawer or the like and a housing therefor, of a drawer suspension comprising a channel member having upper and lower flanges providing inwardly facing longitudinal grooves, a floating channel arranged to slide in said channel member and having inwardly and outwardly facing longitudinal grooves at its upper and lower edges, friction reducing devices between the grooves of said channel member and the outwardly facing grooves of said floating channel, an inner channel arranged to slide in said floating channel and having inwardly and outwardly facing longitudinal grooves at its upper and lower edges, friction reducing devices between the inwardly facing grooves of said floating channel and the outwardly facing grooves of said inner channel, and an attaching plate having portions engaging the inner grooves of said inner channel, said outer channel member and said attaching plate being connected, the one to said housing and the other to said drawer.

5. In a drawer suspension, the combination of a channel member, means for connecting said channel member to a support, an inner channel slidably arranged in said first mentioned channel member, and having flanges at opposite edges, each of said flanges having an outwardly and an inwardly facing groove therein, said grooves being V-shaped in cross section, friction reducing devices between the outwardly facing grooves on said inner channel and said first mentioned channel, an attaching member secured to a drawer and having outwardly extending flanges entering and bearing in the inwardly facing V-shaped grooves of said inner channel and conforming to the angularity of at least one of the sides of said grooves and means for removably securing said inner channel in place on said attaching member.

EARL J. CARD.
JOSEPH E. TURNER.