Sept. 17, 1968 G. M. RAPATA 3,401,908

ONE-PIECE PLASTIC FOOT DEVICE

Filed Dec. 14, 1966

Fig. 1

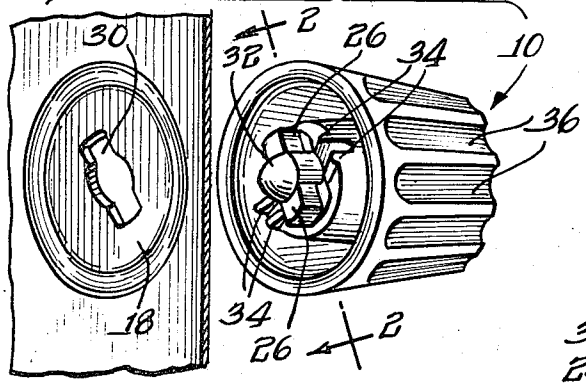


Fig. 2.

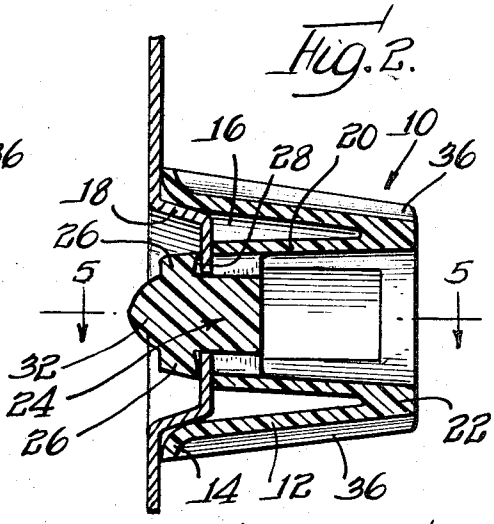


Fig. 3.

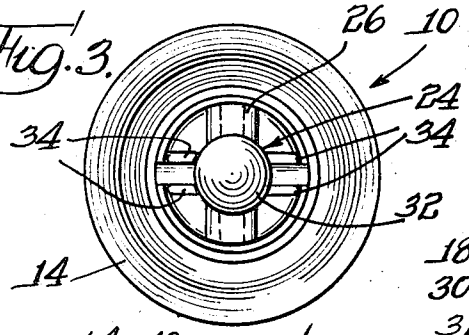


Fig. 4

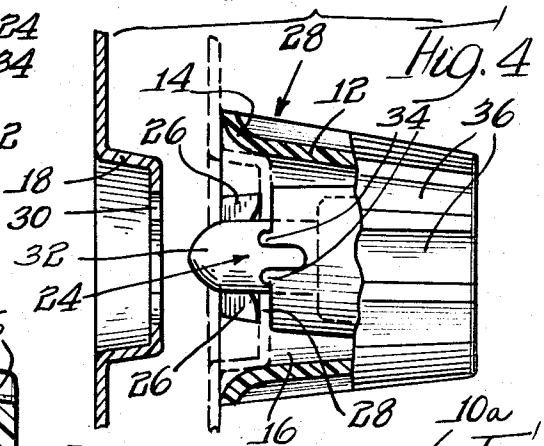


Fig. 5.

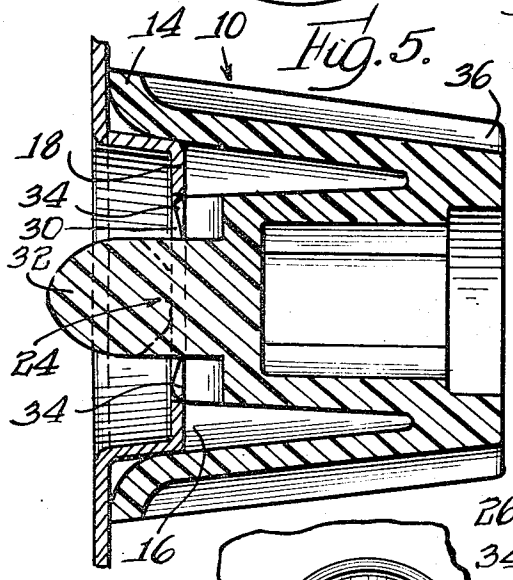


Fig. 6.

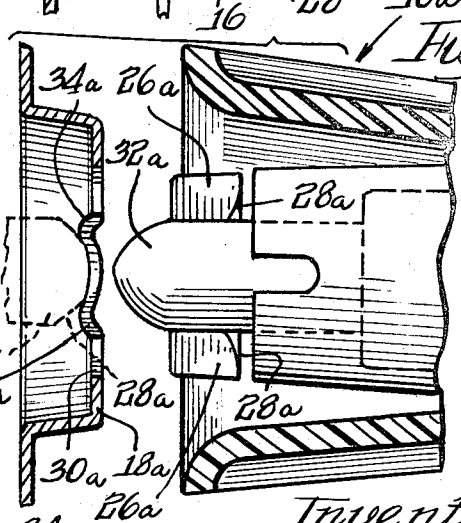
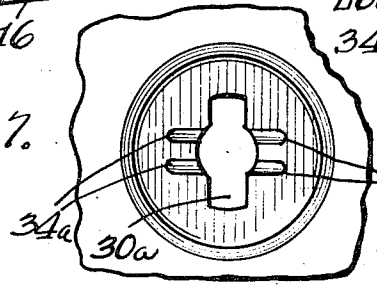


Fig. 7.



Inventor
George M. Rapata
By: Olson, Trexler, Wolters & Bushnell Attys.

United States Patent Office 3,401,908 Patented Sept. 17, 1968

3,401,908

ONE-PIECE PLASTIC FOOT DEVICE

George M. Rapata, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill., a corporation of Delaware

Filed Dec. 14, 1966, Ser. No. 601,765
10 Claims. (Cl. 248—188.8)

ABSTRACT OF THE DISCLOSURE

This invention relates generally to improvements in foot devices of the type adapted for attachment to the bottom of cabinets and the like, and more particularly to a one piece plastic foot device of simple and practical design which may be applied with facility to a protuberance extending downwardly from the under side of cabinets or the like.

One embodiment of the invention disclosed in this application contemplates a one piece plastic foot device for cabinets and the like including a body having a circumferential wall section which, at one extremity, provides an opening for accommodating a protuberance of a work part to be supported, as for example the bottom protuberance of a cabinet. The opposite extremity of the body provides the lowermost surface of the foot device. A latching device or structure including radial work-latching lugs is housed within the above-mentioned wall section, such lugs being supported by a body section which extends axially toward and is connected with the lowermost portion thereof.

It is not uncommon to form the bottom surface of a cabinet with sheet material such as a metallic or plastic sheet and one of the primary objects of the present invention is to provide a foot device of improved, practical construction which may be attached to a protuberance extending downwardly from the aforesaid sheet, by inserting a portion of the foot device into an aperture in the protuberance and thereafter applying rotation to the device to effect a permanent attachment.

The invention contemplates a simple, one piece plastic foot device as set forth above which may be applied and positively secured against lateral and longitudinal forces.

More specifically, the invention contemplates a foot device of the type referred to above, which may be produced by practicing conventional plastic molding methods, thereby reducing the cost of manufacture to the utmost minimum.

Still more specifically it is an object of the present invention to provide a simple and inexpensive foot device of the type above mentioned, which is particularly designed for interlocking association with an apertured sheet metal extrusion located at and depending from the bottom of a cabinet or the like.

The foregoing objects and advantages will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a one piece plastic foot device of the type contemplated hereby, said device being shown adjacent a metallic sheet having an apertured protrusion for accommodating the foot device;

FIG. 2 is a longitudinal central sectional view of the foot device shown in FIG. 1, in operative association with a sheet metal protrusion, said view being taken substantially along the line 2—2 of FIG. 1;

FIG. 3 is an end elevational view of the foot device as viewed from the left of FIG. 1;

FIG. 4 is a side elevational view of the foot device with a portion thereof broken away and the sheet metal

protuberance separated therefrom more clearly to illustrate parts otherwise hidden;

FIG. 5 is an enlarged longitudinal sectional view taken substantially along the line 5—5 of FIG. 2;

FIG. 6 is a view similar to FIG. 4, in which a modified structure is employed to secure the latching arms of the foot device in place, said structure being in the form of nibs formed in the sheet metal protuberance for accommodating the foot device; and

FIG. 7 is an elevational view of the sheet metal foot accommodating protuberance as viewed from the right of FIG. 6.

Referring now to the drawing more in detail, wherein like numerals have been employed to designate similar parts throughout the various figures, it will be seen that a one-piece plastic foot device of the type contemplated by the present invention is designated generally by the numeral 10. The foot device 10 includes an annular body portion in the form of a circumferential wall 12 which extends longitudinally and flares radially outwardly at 14, and defines an opening 16 for accommodating a sheet metal extrusion or protuberance 18.

The opposite and smaller extremity of the body 12 is formed integral with a substantially cylindrical support section 20 which extends longitudinally from an annular section 22 toward the open flaring extremity of the circumferential wall section 12. The annular support section 20 is formed integral with a transversely extending latching section 24. This latching section 24 includes a pair of oppositely disposed radially extending latching arms 26. The under surfaces 28 of these radial arms 26 are spaced axially from the terminating extremity of the annular support section 22 a distance which is sufficient to accommodate the stock of the sheet metal protuberance 18 as clearly shown in FIGS. 2 and 5. These under surfaces 28 are in the form of cams to facilitate the functioning of the latching arms or lugs 26, as will previously appear.

The sheet metal protuberance 18 is provided with a transverse slot 30 which is adapted to telescopically receive the radial arms 26 of the foot device 10, as well as the tapering entering extremity 32 of the central section from which the arms 26 radiate. The extended diameter and peripheral contour of the protuberance 18 conforms substantially with the inner annular surface of the circumferential wall 12 in the vicinity of the open end thereof, as clearly shown in FIGS. 2 and 5. Thus as the radial arms 26 and entering extremity 32 are moved into telescopic association with the work aperture 30 in the protuberance 18, the end surface of the annular support member 20 is ultimately brought into contact with the flat outer surface of the protuberance.

After the parts have thus been moved into association, rotation may be imparted to the foot device 10 so as to cause the arms 26 to be moved into overlying relation with the inner surface of the protuberance 18, as illustrated in FIG. 2. In this position, the arms 26 prevent axial dislodgement of the foot device 10. Also, when the associated parts occupy the position shown in FIG. 2, locking lugs 34 are in registration with the opposite extremities of the slot 30. These lugs 34, upon entering the opposite extremities of the slot 30, serve to prevent unauthorized rotation of the foot device. In this connection, it should be noted that the cam surfaces 28 of the radial arms 26 cooperate in causing said arms to spring axially a sufficient amount to permit passage of the protuberance stock between the arms and the extremity of the annular support 20. As a result, when the arms 26 have been rotated 90 degrees from their original position of insertion within the slot 30 to the position shown in FIG. 2, the resiliency

of the radial arms serves to assure telescopic association of the lugs **34** with the opposite extremities of the slot **30**.

From the foregoing, it will be apparent that after the foot device **10** has been rotated 90 degrees to its final interlocked relation with the sheet metal protuberance **18**, axial forces such as the weight of a cabinet to which the sheet metal protuberance may be attached, are transmitted to the annular support member **20**. The cooperation of the outer periphery of the protuberance **18** with the inner periphery of the circumferential wall **12** is such as to resist forces tending to shift the foot device laterally. Hence the snug engagement of the protuberance within the foot piece, together with the firm clamping engagement of the radial arms **26** with the inner surface of the protuberance, and the consequent interlock of the lugs **34** within the aperture **30**, assure a firm attachment of the foot device to the sheet metal part. When this sheet metal workpiece forms the under surface of a cabinet and a plurality of foot devices of the type just described are attached thereto, the weight of the cabinet is adequately supported and lateral forces tending to dislodge the foot devices are effectively resisted.

In FIGS. 6 and 7 a slightly modified arrangement is shown. In the foot device previously described, the interlock of the protuberances **34** within the aperture **30** serves to secure the foot device against unauthorized rotation after the device has been rotated to its final position. In the foot device shown in FIG. 6, these protuberances **34** are omitted and in their place a plurality of nibs **34***a* are formed in the sheet metal protuberance **18***a*. The spacing of the nibs **34***a* is such that when the radial arms **26***a* of the foot piece **10***a* are shifted 90 degrees from the position shown in FIG. 6, the under surfaces **28***a* of these arms, indicated by dotted lines in FIG. 6, interlock with the protuberances **34***a*. It will be understood from the foregoing that the interlock between the foot piece and the sheet metal protuberance may be effected either by the use of lugs **34** as shown in FIGS. 1–5, inclusive, or by the use of nibs or detents **34***a* shown in FIGS. 6 and 7.

From the foregoing it will be appreciated that the present invention has a very practical application to the support of cabinets and furniture generally, in instances where the bottom of the part to be supported is equipped with sheet stock from which protuberances depend. The ease with which the rotation may be imparted to the foot piece is enhanced by the provision of peripheral grooves or serrations **36** to facilitate frictional engagement by the user. By forming the foot device from suitable plastic material, it may be conveniently molded by the practice of conventional molding methods. Also, it may be desirable to use plastic materials which have some degree of inherent resilience, for reasons previously set forth.

While for purposes of disclosure certain structural features have been illustrated, it should be understood that other modifications and changes are contemplated without departing from the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A one piece plastic foot device for cabinets and the like including a body presenting a circumferential wall section defining at one extremity thereof an opening for accommodating a correspondingly shaped protuberance of a work part to be supported, as for example the bottom protuberance of a cabinet, the opposite extremity of said body providing the lowermost surface of the foot device, a latching structure surrounded by and spaced radially inwardly from said wall section, said latching structure including radial work-latching lugs having work engaging undersurfaces facing axially away from the open extremity of said body, and lug supporting means extending axially toward and connected with the lowermost portion of said body.

2. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, including means for interlocking the foot device and a correspondingly shaped protuberance of a work part against unauthorized relative rotation.

3. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, wherein means associated with the latching structure is provided for interlocking with an aperture in a protuberance of a work part.

4. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, wherein the radial work latching lugs are yieldable axially of the body.

5. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, wherein axial projections such as nibs formed integral with the body of the foot device are provided for interlocking with an apertured work part.

6. A one piece plastic foot device for cabinets and the like as set forth in claim **5**, wherein the nibs are disposed substantially ninety degrees from the radial latching lugs.

7. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, wherein the under portion of the radial work latching lugs are provided with cam surfaces.

8. A one piece plastic foot device for cabinets and the like as set forth in claim **1**, wherein the axially extending lug supporting means is in the form of an annular wall section.

9. In combination with a protuberance extending from sheet stock having an elongated lug accommodating aperture, a one piece plastic foot device including a body presenting a circumferential wall section defining at one extremity thereof an opening for accommodating said protuberance, the opposite extremity of said body providing the lowermost surface of the foot device, a latching structure surrounded by and spaced radially inwardly from said wall section, said latching structure including radial work latching lugs defining a periphery complementary with the elongated aperture in the protuberance, said lugs having work engaging surfaces facing axially away from the open extremity of said body and adapted to overlie the inner surface of said protuberance when rotated after telescopic association with the aperture of said protuberance, and lug supporting means extending axially toward and connected with the lowermost portion of said body.

10. The combination as set forth in claim **9** wherein nibs are provided on one of the parts for interlocking with the other part when the latching lugs have been rotated to a given position after telescopic association thereof with the aperture in the protuberance.

References Cited

UNITED STATES PATENTS

2,626,773	1/1953	Backman	248—239
2,826,388	3/1958	Janos et al.	248—239
3,179,367	4/1965	Rapata	24—221 X
3,180,606	4/1965	Sabin et al.	248—239

FOREIGN PATENTS

1,067,250	10/1959	Germany.

ROY D. FRAZIER, *Primary Examiner.*

FRANK DOMOTOR, *Assistant Examiner.*