April 25, 1950 R. A. STONE 2,505,592

SNAP-IN ROLLER

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Fig. 1.

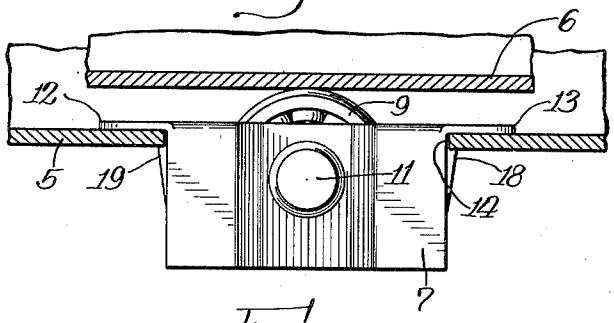


Fig. 2.

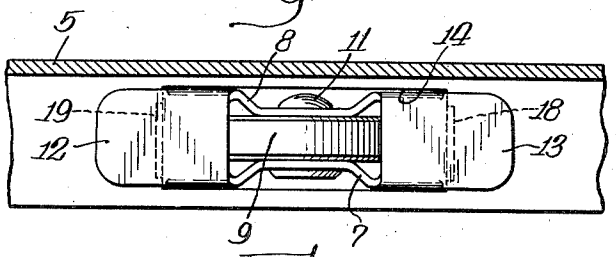


Fig. 3.

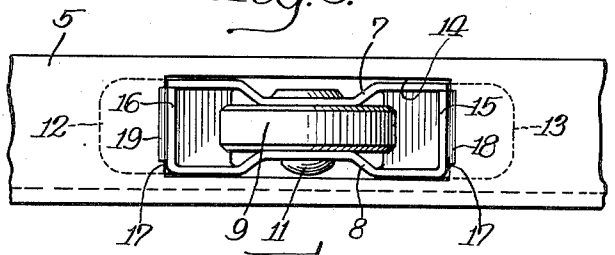
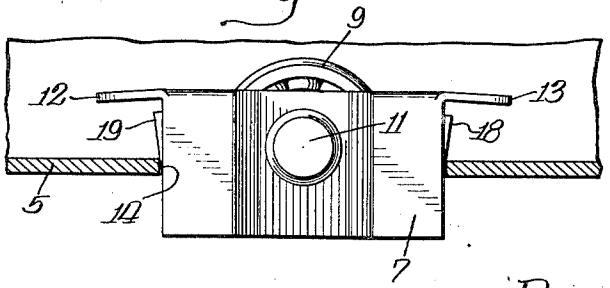


Fig. 4.



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SNAP-IN ROLLER

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13 Claims. (Cl. 308—6)

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This invention relates to rollers, and particularly to supporting rollers adapted to be used in kitchen cabinets, stoves, refrigerators, radios, and the like for supporting drawers or trays.

In equipping metal articles of furniture with supporting rollers of this general character, the prevalent practice has been to rivet the supporting pintle of such roller to a wall of the metal article. This manner of mounting is unsatisfactory, because the assembly lacks in many instances the requisite strength and durability, but primarily is objectionable because it conflicts with the finish of the article. For instance, if the article has an enamel finish applied before the rollers are mounted by riveting, the riveting operation chips and injures the enamel so that an area of the metal in the neighborhood of the rivet becomes exposed immediately or later as the cracked enamel chips off. If, on the other hand, the rollers are mounted before the article is enameled, the rollers and their bearings will be coated along with the rest of the article so that the rollers are rendered useless as an antifriction support.

The primary purpose of my present invention is to provide a roller for the purposes above indicated which can be mounted on a previously enameled or otherwise finished article without injuring the finish of such article, and which can also be readily removed for replacement or repair purposes when necessary without disfiguring or in anywise injuring the finish of the article.

Another purpose of my invention is to provide a roller which can be mounted without the employment of any tools whatsoever by simply shoving it through a previously formed opening in the article. When fully seated in such opening, a pair of spring acting resilient tangs snap into locking position to securely hold the roller against displacement. The construction is also such that when mounted by insertion through an opening in the manner indicated, the roller is firmly held in position so that it will not rattle or become noisy in use.

Other purposes and advantages of my invention will be apparent from the following description of a preferred embodiment thereof when considered in connection with the accompanying drawing.

Referring to the drawing,

Fig. 1 is a side elevation of a roller embodying my invention shown as mounted in operative position;

Fig. 2 is a plan view thereof;

Fig. 3 is a bottom view thereof; and

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Fig. 4 is an elevation exemplifying the manner of mounting a roller.

Referring to the drawing more in detail, reference character 5 indicates a supporting member such as a stationary channel bar or angle bar serving as a support for a slidable drawer or tray 6. For anti-friction purposes rollers (only one of which is here illustrated) are employed to support the drawer or tray 6 upon the member 5.

The roller of my invention designed for this purpose comprises a sheet metal body and a roller journaled therein so as to project beyond the plane of the body and carry the movable drawer or tray. The sheet metal frame, as will be apparent from the drawing, is made from a single piece of metal bent in substantially U-shape to provide the side members 7 and 8 between which the roller 9 is mounted upon a pintle 11. The bearing of the roller upon the pintle may be of ball or roller type or a solid roller may be employed, or a plastic or other type of roller rotatably mounted in the frame.

The central portion of the top wall of the frame is cut away to permit a segment of the roller to project above the frame, as shown in Fig. 1, and the end portions of the top are extended to provide wings 12 and 13 projecting longitudinally beyond the ends of the frame so as to overlie the margins of the opening 14 formed in the member 5 to receive the frame.

One of the side walls, as for instance the one indicated by reference character 8, has its ends extended and in-turned to form the end walls 15 and 16 of the frame and the upper portion of each end wall is cut or severed from the side wall 8, as indicated at 17, thus forming a pair of tangs 18 and 19 which are biased outwardly so that when the frame is projected through the opening 14 they will spring outwardly into locking position and by engagement with the under face of the supporting member 5 prevent retraction of the frame from the opening.

In this manner the roller is automatically locked in its supporting member as soon as it is positioned therein. In order that the roller frame will be snugly held against rattling and vibration during use, I prefer in the manufacture of the frame to have the projecting wings 12 and 13 incline downwardly, as illustrated in Fig. 4. When the frame is forced into position through the opening 14 in the support 5, these wings will be placed under tension before the locking tangs 18 and 19 spring into locking position. The tension exerted by the wings, therefore, holds the frame against rattling in the support.

It should be apparent from the foregoing that I have provided a simple roller structure which requires no tools for its mounting in a support, but which can be snapped into position by simply projecting the frame structure through an opening in the support and pressing it inwardly against the yielding tension of the wings 12 and 13 until the locking tangs spring outwardly into locking position. Furthermore, the supporting member may be enameled or otherwise finished before the pulleys are mounted therein and the finish of whatever character is not injured or defaced by the subsequent mounting of the rollers.

The structural details illustrated and described may obviously be varied within considerable limits without exceeding the scope of my invention as defined in the following claims.

I claim:

1. In a snap-in roller, comprising a frame adapted to be projected through an opening in a supporting member, and a roller journaled in and extending beyond the confines of the frame, said frame being shaped to loosely fit said opening and having wings extending outwardly therefrom to limit the extent of projection of the frame through said opening and having resilient tangs protruding from the end walls of the frame in position to engage a face of the supporting member and oppose retraction of the frame therefrom.

2. A snap-in mechanism carrier, comprising a frame formed of sheet metal to provide side and end walls and a top wall having spaced resilient wings projecting beyond the confines of the frame, said end walls being provided with resilient tangs projecting outwardly from said walls in spaced relation to said wings so that the opposite faces of a supporting member on which said frame is mounted may be engaged by said wings and tangs respectively, and a mechanism carried by said frame.

3. A snap-in mechanism carrier, comprising a sheet metal frame and a mechanism disposed therein and mounted between the side walls thereof, said frame consisting of side walls, end walls and top walls, the top walls being extended to provide holding wings and the end walls being unconnected with the side walls throughout a portion of their depth to provide resilient tangs biased outwardly beyond the confines of the frame to cooperate with said wings in holding said frame in mounted position in an opening of a support.

4. A snap-in mechanism carrier, comprising a frame and a mechanism carried therein, said frame being formed as an integral unit from a single piece of sheet metal cut and shaped to provide side walls, end walls and top walls for the frame, said top walls being extended longitudinally to form wings, said wings being inclined downwardly toward their extremities, the end walls of the frame being disconnected from the side walls throughout a portion of their depth and bent outwardly at their free ends to form resilient tangs cooperable with said wings to hold the frame against displacement from an opening in a supporting member shaped to receive said frame.

5. A snap-in frame adapted to house a mechanism and to be disposed through and within an opening in a supporting member, comprising a piece of sheet metal formed to provide a pair of opposite side walls and a pair of opposite end walls, each wall of one pair of walls having its free end directed away from the opposite wall of such pair to provide a wing, each wall of a pair having a tang struck therefrom and projecting outwardly therefrom and away from the opposite wall of such pair and in spaced relation to said wings, one of said wings being inclined in a direction toward a plane tangent to the free ends of said tangs, the vertical distance between said plane and a parallel plane tangent to the adjacent closest portion of said inclined wing being less than the thickness of the marginal edge of a supporting member at the opening in which the frame is to be disposed.

6. In a device to be secured to a supporting member and within an opening in the member and wherein the opening in the member is, in part at least, defined by substantially opposite marginal edges of the member at the opening and wherein the said edges are of predetermined thickness, a metal frame including substantially oppositely disposed walls spaced apart at one corresponding end of each by a distance slightly less than the distance between said marginal edges, a flange integral with each of said corresponding wall ends and each projecting in a direction opposite to the other flange and adapted to overlie said marginal edges at one side of the supporting member, and each of said walls having a tang struck outwardly therefrom in a direction corresponding to the flange on the end of such wall with the free end of the tang directed generally toward such flange, the outer end of each flange being inclined outwardly and downwardly toward a plane tangent to the free edges of said tangs so that the vertical distance between said plane and a plane tangent to the free edges of the flanges is less than the said predetermined thickness of the said marginal edges of said supporting member, said flanges being stressable within their elastic limits by at least the difference between said distance and thickness.

7. A snap-in carrier of the character described comprising a metal frame body having a pair of spaced and generally oppositely extending flanges, a wall integral with the body and extending at an angle less than a straight angle with respect to a plane tangent to the junctures of said flanges with the body, and a resilient tang struck outwardly from the said wall at an angle less than 90° thereto and having a free end projecting upwardly in the general direction of said flanges, said flanges being resilient and their outer portions being pre-set downwardly at an angle less than 90° to said plane tangent to their junctures with the body, the vertical distance between said plane and a substantially parallel plane tangent to the upper end of said tang being greater than a corresponding measurement between the plane tangent to the upper end of the tang and a substantially parallel plane contacting the outer ends of said flanges.

8. A snap-in carrier of the character described comprising a metal frame body having a top wall, a pair of spaced and generally oppositely extending flanges integral with said top wall, a second wall integral with the top wall and extending at an angle less than a straight angle thereo, and a resilient tang struck outwardly from the second wall at an angle less than 90° thereto and having a free end projecting upwardly in the general direction of said flanges, said flanges being resilient and their outer portions being pre-set downwardly at an angle less than 90° to a plane tangent to their junctures with the body, the vertical distance between said plane and a substantially parallel plane tangent to the upper end of said tang being greater than a corresponding measurement between the plane tangent to the upper end of

the tang and a substantially parallel plane contacting the outer ends of said flanges.

9. A snap-in carrier for a mechanism to be attached to and supported by a supporting member having an aperture in a wall thereof and wherein the aperture is defined, in part at least, by substantially opposite marginal edges of the member at the aperture and wherein a marginal edge defining said wall aperture at a place intermediate of said substantially opposite edges has a surface facing inwardly of the wall, comprising a resilient metal frame having a pair of substantially oppositely directed portions adapted to over-lie exteriorly facing surfaces of said substantially opposite marginal edges, the outer ends of said portions being directed outwardly from the frame and rearwardly toward that part of the frame which will be disposed inwardly of the aperture, and a resilient tang attached to said frame rearwardly of said portions and projecting outward and forward therefrom toward a plane that is transverse to the frame and substantially parallel to the said exteriorly facing surfaces, said tang being adapted to engage said inwardly facing surface, the vertical distance between the outer ends of said portions and the outward and forward end of said tang as measured perpendicularly to said plane being less than the corresponding vertical distance between said exteriorly and inwardly facing surfaces.

10. A snap-in carrier for a mechanism to be attached to and supported by a supporting member having an aperture in a wall thereof and wherein the aperture is defined, in part at least, by substantially opposite marginal edges of the member at the aperture and wherein a marginal edge defining said wall aperture at a place intermediate of said substantially opposite edges has a surface facing inwardly of the wall, comprising a resilient metal frame having a pair of substantially oppositely directed portions adapted to over-lie exteriorly facing surfaces of said substantially opposite marginal edges, the outer ends of said portions being directed outwardly from the frame and rearwardly toward that part of the frame which will be disposed inwardly of the aperture, and a thrust member attached to said frame rearwardly of said portions and projecting forward therefrom toward a plane that is generally parallel to the said oppositely directed portions, said thrust member having a forward end adapted to engage said inwardly facing surface, the vertical distance between the outer ends of said portions and the forward end of said thrust member as measured perpendicularly to said plane being less than the corresponding vertical distance between said exteriorly and inwardly facing surfaces.

11. In a device to be secured to a supporting member and within an opening in the member and wherein the opening in the member is, in part at least, defined by substantially opposite marginal edges of the member at the opening and wherein the said edges are of predetermined thickness, a metal frame including a side wall and an end wall projecting transversely of the side wall at one end thereof, a resilient flange integral with the frame adjacent to each end of said side wall and each flange projecting in a direction opposite to the other flange and adapted to overlie said marginal edges at one side

of the supporting member, one of said walls having a tang struck outwardly therefrom with its free end pointing in an upward direction generally toward the said flanges and toward the general plane of said marginal edges, the outer end of each flange being pre-set to incline outwardly and downwardly toward a plane tangent to the free edge of said tang and parallel to said general plane so that the vertical distance between said tangent plane and said general plane is less than the said predetermined thickness of the said marginal edges of said supporting member, said flanges being stressable within their elastic limits by at least the difference between said distance and thickness.

12. In a device to be secured to a supporting member and within an opening in the member and wherein the opening in the member is, in part at least, defined by substantially opposite marginal edges of the member at the opening and wherein the said edges are of predetermined thickness, a metal frame including a side wall and substantially oppositely disposed end walls spaced apart at one corresponding end of each by a distance slightly less than the distance between said marginal edges, a resilient flange integral with the frame adjacent to each of said corresponding end walls and each flange projecting in a direction opposite to the other flange and adapted to overlie said marginal edges at one side of the supporting member, and one of said walls having a tang struck outwardly therefrom with its free end pointing in an upward direction generally toward the said flanges and toward the general plane of said marginal edges, the outer end of each flange being pre-set to incline outwardly and downwardly toward a plane tangent to the free edge of said tang and parallel to said general plane so that the vertical distance between said tangent plane and said general plane is less than the said predetermined thickness of the said marginal edges of said supporting member, said flanges being stressable within their elastic limits by at least the difference between said distance and thickness.

13. The combination with a supporting member provided with an opening, of a frame comprising a side wall proportioned to be projected through said opening, an end wall attached to said side wall, one of said walls being provided with a resilient outwardly projecting tang adapted to engage the inner face of said support to prevent retraction of the frame from said opening, said frame being provided with a plurality of resiliently deflectable wings spaced apart and from said tang, said wings engaging the outer surface of the support and cooperable with said tang to snugly hold said frame in mounted position, said wings continuously exerting resilient pressure toward said tang against said outer surface, said wings and tang tending to compress said support therebetween.

ROY A. STONE.

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The following references are of record in the file of this patent:

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