

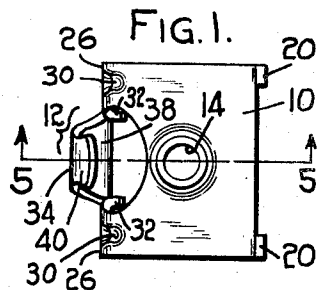
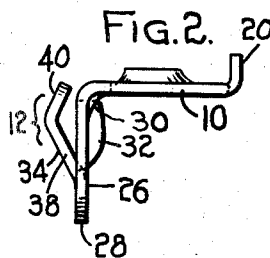
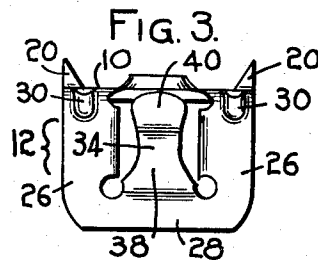
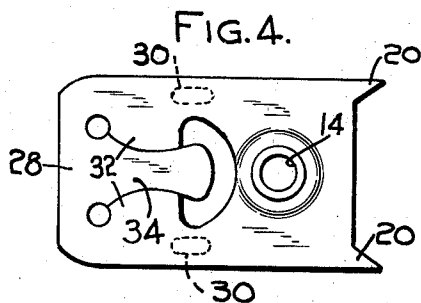
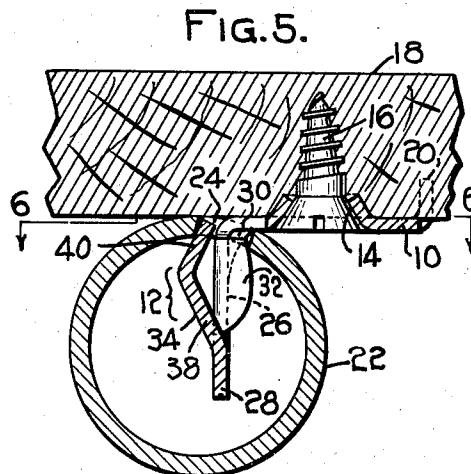
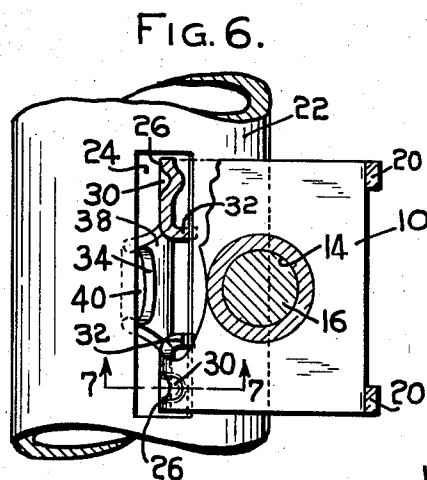
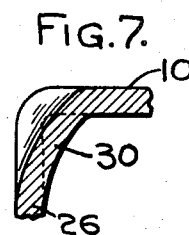
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FASTENER

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1

2,879,570

FASTENER

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3 Claims. (Cl. 24-73)

This invention relates to fasteners, and more particularly to a fastener adapted to be engaged by a straight push in a hole in a thin wall such as that provided by a metal plate, to interlock the margin of the hole and to be retained therein and thus secure to the wall some other object to which the fastener is suitably joined. The object is to provide a fastener which is easy to apply and not easily released under much greater stress than would normally be encountered in use but which nevertheless can be removed without breakage or distortion which might render it unfit for reuse.

One application of such a fastener shown herein by way of example is in connection with furniture, for securing parts such as seats, chair backs or table tops, to frames formed of metal tubes. The manufacturer desires a cheap device which may be quickly applied to reduce assembly costs. In the hands of a user a chair seat, for instance; must not come off during use, even under extraordinary stress. This is desirable, not only from the point of view of the user, but from the point of view of the manufacturer. Nevertheless the ultimate owner will at times force off such a seat. She may wish to put on a new covering to match her new curtains. If it is pried off and the fastener breaks a replacement is not available at the local hardware store. The user has spoiled the article and the manufacturer loses good will as a consequence.

Therefore the fastener to be described exerts a very strong grip, but does not provide a positive lock.

My invention will be understood by reference to the illustrative embodiment of the invention showing it as used for securing a chair seat wherein:

Figs. 1, 2 and 3 are a plan view, a side elevation, and an end elevation, as seen from the left of Fig. 1, of a fastener illustrative of the invention;

Fig. 4 is a development of the fastener in a plane;

Fig. 5 is a vertical section through the fastener on the line 5-5 of Fig. 1 showing it in use connecting a chair seat to a tubular element of a frame;

Fig. 6 is a section on the line 6-6 of Fig. 5; and

Fig. 7 is an enlarged, detailed section on line 7-7 of Fig. 6.

The fastener shown in Figs. 1, 2 and 3 is made of a single piece of sheet metal of suitable strength and resiliency. The parts are shown developed in a plane in Fig. 4, although this figure does not necessarily indicate that the fastener has that particular form at any intermediate stage of its shaping as performed in practice. The fastener comprises a base portion 10 and its substantially rigidly related right angle extension 12. The base may be secured to the object to be retained, such as a chair seat and is herein provided with a countersunk opening 14 to receive a flat-headed wood screw 16, by which it is secured to chair seat 18 (Fig. 5) and may also be provided with prongs 20 which penetrate the seat and aid in anchoring the fastener base thereto.

The chair seat as seen in Fig. 5 may rest directly on a tubular frame element 22 having a rectangular slot

2

24 (see Fig. 6) to receive the angularly related portion 12 of the fastener, the latter being located just at one side of the line of tangency so that the support of the seat from the frame element 22 is direct, the fastener base being secured just laterally of the line of tangency but entering the slot and locking therein substantially along the vertical diameter of the tube 22. This particular relative position of the parts is desirable, but not essential.

The angular extension 12 from the base comprises two lateral arms 26, distally supporting along two laterally spaced lines (see Fig. 3) the proximal edge of an integral cross bar 28 of substantial depth. The angular position of these arms is rigidified by portions 30 pressed out of the metal across the apex of the angle as best seen in Fig. 7, and by outwardly turned flanges 32 at the inner sides of the arms which flanges are contoured to provide a gripping function as will appear.

The metal between the flanges provides a tongue 34 integrally joined to the proximal edge (the upper edge viewing Figs. 2 and 5) of the cross bar 28, which tongue is bent to provide the outwardly and proximally extending surface 38 and then rebent to provide an inwardly and proximally inclined jaw surface 40 for cooperating with a wall of the slot 24 when the fastener is in position therein as illustrated in Fig. 5. The edges of the flanges 32 are contoured as shown, providing an outwardly inclined distal portion merging into inwardly inclined shoulders which cooperate in use with the inner margin of the slot, but which however are not abrupt so as to lock under the same.

In the application of the fastener after its base is secured to the chair seat 18 or similar structure, the bar 28 serves as a pilot which enters the slot 24. When the seat is pushed in, the flaring surfaces of the flanges and the surface 38 of the tongue ride along the margins of the slot. The tongue yields, but does not in itself bend substantially. The central portion of the cross bar 28 is twisted out of its plane between its end supports at the distal terminals of the rigid arms 26. Its yielding and elastic recovery are due to torsion forces acting on the cross bar. At the conclusion of the entering movement the proximal shoulders of the flanges move under the internal edge of the opposed margin of the slot and the inclined shoulder 40 of tongue 34 similarly cooperates with the opposite margin. Herein no flat end is shown at the extremity of the tongue for engagement with the wall of the slot as the sloping engagement of the surface 30 supported by the powerful torque bar 28 is found to be sufficient.

It will be noted that in the particular example shown the screw 16 is closely adjacent the plane of the angular portion of the fastener, avoiding twisting strains on the base. This brings the head of the screw 16 over the under end of the tube as seen in Fig. 7, where it is not readily accessible to a straight screwdriver.

The grip of the fastener, secured as it is by the torque of the deep cross bar 28, is very strong and will not be relaxed by the forces encountered in ordinary use or abuse. It can be withdrawn by a prying action such as could be exerted by a long and strong screwdriver vigorously operated as a pry bar and will not break or be permanently distorted so that the panel cannot be replaced. Such removal would not of course be frequent and perhaps would never occur in the normal life of the chair in a majority of cases.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, as is in fact clear in several matters from the description itself. Reference is

3

to be had to the appended claims to indicate those principles of the invention exemplified by the particular embodiment described and which I desire to secure by Letters Patent.

What is claimed is:

1. A fastener comprising a base portion, a leg portion integrally secured to one end of said base portion at substantially right angles thereto, a tongue secured at one end adjacent one end of said base portion remote from said leg portion, said tongue having one portion extending away from the plane of said base portion with the remaining portion thereof extending back toward said base portion and terminating at approximately the jointure point of said base portion and said leg portion, and flange portions integrally secured to said base portion on opposite sides of said tongue, each of said flanges having its free end inwardly spaced from the outer longi-

4

tudinal edge of said base portion and substantially perpendicular thereto.

2. A fastener in accordance with claim 1 wherein the free end of said leg portion is provided with prongs immediately adjacent each corner for engagement with a support, and said leg portion having an opening adapted to receive a fastener element therein.

3. A fastener in accordance with claim 1 wherein the jointure line of said base portion and said leg portion is provided with intergal reinforcing ridges adjacent the opposite ends thereof.

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