In one method of storing papers for reference, the papers are carried in folders which are suspended vertically. The upper edges of the folders have stiffening bars which project at each end and rest on horizontal rails. If the folders are stored in drawers, for example in a filing cabinet, it is usual for the rails to be part of a frame including vertical posts which rest on the bottom of the drawer and are connected by cross bars. Such a frame can be inserted readily in existing plain drawers, which can thus be made to house suspended filing systems. This invention relates to frames of this kind.

It is convenient for such frames to be arranged so that they can be easily assembled by the user without tools from a small number of components which will pack into a small space, and owing to the variety of drawers in which such frames may be used it should be possible for the user to assemble the frame with the cross bars at any desired distance apart. The rails may also have to be cut so as not to overhang the back of a drawer too far. These desiderata make it necessary to provide at one end, and preferably at both ends, of the frame means for variably securing the end of each rail to a cross-bar, as broadly claimed in Patent No. 2,278,403. The constructions shown in detail in Patent No. 2,278,403 have, however, the disadvantage that they include screws and these are expensive to produce and are lost before the frame comes to be assembled. Moreover they work loose in use. It is therefore desirable to construct a frame which can be assembled without the use of screws.

According to the present invention each rail passes at one end through and is held frictionally in a slot bounded by a cross-bar and part of a corner post, and a hand-operated locking member, constituted by a strip which lies along the cross-bar in a locking position, acts by lever or wedge action to urge the cross-bar downwards to grip the rail. Preferably each rail is held at each end in this way.

By using lever or wedge action it becomes possible for the person assembling the frame to cause it to grip the rail in the slot with a force several times that applied by hand to the locking member.

Preferably the locking member on being moved from the locking position sufficiently to permit the rail to be inserted or removed remains in interengagement with the cross-bar or corner post or both so that the locking member cannot readily become detached and lost.

Some constructions according to the invention will now be described by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of one frame;

Figure 2 is an enlarged plan of one corner of the frame shown in Figure 1;

Figure 3 is a section on the line III—III in Figure 2;

Figure 4 is an elevation taken from the left of Figure 2;

Figure 5 shows a modification of the frame shown in Figure 1;

Figure 6 is a plan of one corner of another frame; and

Figure 7 is a section on the line VII—VII in Figure 6.

The frame shown in Figure 1 comprises two horizontal rails 1 and at each end a sub-frame comprising a cross-bar 2 and a corner post 3 integral with and limited by a bottom bar 8. All these members are of flat strip metal of uniform section with smooth edges throughout.

Each corner post 3 is cranked to form a shoulder 4, a vertical part 5 offset from the main length of the post, which shoulder 6 and a vertical tapering end 7. The upper end 7 of each corner post is cut away to form a narrow neck 9 surrounded by a head 10 which is wider than the neck but narrower than the remainder of the strip of which the post is made.

Each cross-bar 2 has a down-turned end 11 terminating in a tongue 12, and is made with a hole through which the head 10 can pass. In initial assembly the head 10 and neck 9 are passed upwards through this hole in the cross-bar, and simultaneously the tongue 12 is passed through a hole 25 at the edge of the shoulder 6. The result is to form a slot which can be engaged by the end of the rail 1 and which is bounded laterally by the parts 7 of the corner post and 11 of the cross-bar, as clearly shown in Figure 3.

A locking member 13, consisting of a strip of metal with two slots 14 and 15 in it, is provided. The slot 14 is elongated, being slightly longer than the head 10 and slightly wider than the neck 9. The locking member 13 can therefore be loosely connected to the cross-bar by passing the head 10 through the slot 14 while the member is at right angles to the bar, and then turning the member to lie along the bar. The part of the cross-bar which lies immediately in front of the hole through which the neck 9 passes is raised so as to form a projection 16 on the upper face of the cross-bar. This projection acts as a fulcrum for the locking member 13. During the turning movement to bring the locking member 13 to lie along the bar 2, the inner end of the member is slightly depressed, as is permitted by its resilience, and is engaged beneath a hook 17 made by slotting the cross-bar 2 to form a tongue and bending this tongue upwards. This hook is so disposed that it lies over the slot 15.

When the locking member 13 is in position on the bar, therefore, it is held by the engagement of the hook 17 in the slot 15. At the same time the end of the member 13 bears on the underside of the hook 17. The result is to rock the other end of the member 13 clockwise about the projection 16 as seen in Figure 3, and in consequence the cross-bar is forced downwards relative to the corner post and the rail 1 is tightly gripped in the slot.

On depressing the inner end of the locking member 13, it can be swung clear of the hook 17 and then allowed to rise until the locking member is inclined at about 10° to the upper face of the cross-bar. This permits slight relative movement of the cross-bar and corner post so that the depth of the slot is sufficiently increased to permit the rail to move in the slot.

In the modified construction shown in Figure 5 the tongue 12a is cranked inwards and the shoulder 6a is reduced in width, so the width of the complete frame is reduced. In the absence of a rail, the cross-bar can move downwards relative to the corner post until the depth of the slot is slightly less than the depth of a rail.

In the construction shown in Figures 6 and 7, the corner post 3b has a shoulder 6b, and the cross-bar 25 has a down-turned end 11b, as in Figures 1 to 4. A strip locking member 18 has a hole 19 which receives the neck 9b of the corner post and which is elongated so that the locking member can be moved in the direction of its length while being retained by the head 10b. The part
of the locking member outwards from the hole is inclined somewhat downwards towards the outer end 21. When the locking member is not in the locking position, the part 20 overlaps the bend 22 between the main part of the cross-bar and its end 11b. In moving to the locking position, the locking member is slid in the direction of the arrow A, and the inclined part 20 rides over the bend 22 so that the central part of the locking member is raised clear of the cross-bar. This action reduces the depth of the slot which receives the rail 1b and so the rail is tightly gripped frictionally. The inward movement of the locking member is guided by the engagement of a downwardly projecting nose 23 on its inner end in an elongated hole 24 in the cross-bar 2.

One advantage of the constructions shown is that if the locking member is moved to the locking position in the absence of a rail it is nevertheless retained in the locking position so that a cross-bar, corner post and locking member can be supplied as a unit with no loosely connected parts.

I claim:

1. In a frame of the character described having a pair of vertically extending corner posts interconnected by a transverse cross bar at each end of the frame and rails extending between the ends of the frame, means for connecting the rail, cross bar and corner post at each corner of the frame, said means comprising an integral terminal portion of the cross bar consisting in succession of a horizontal part and a terminal downwardly-extending part, and an integral upper terminal portion of the corner post consisting in succession of an upwardly-facing shoulder, an upwardly-extending part, a neck, and a terminal head; said horizontal part having a hole, said terminal portion of the corner post passing through said hole with said head above said horizontal part and with said upwardly-extending part lying below said horizontal part and in a position offset toward the longitudinal center line of the frame relative to said downwardly-directed part, whereby said horizontal part, downwardly-directed part, shoulder and upwardly-directed part together define a slot; said means further comprising an end portion of the rail lying in said slot, and a locking member extending in the general direction of the cross bar and engaging said horizontal part from above and said head from below and tending to separate said horizontal part and said head, whereby said slot is contracted vertically and the rail is gripped.

2. A frame according to claim 1 in which the cross bar and corner posts are of flat strip disposed with the major dimension of the cross-section lying parallel to the direction of the rails.

3. A frame according to claim 1 in which the locking member is mounted to swing round the upper part of the corner post and in the locking position bears on a projection on the cross-bar and beneath a catch on the cross-bar and by lever action about the projection forces the cross-bar downwards relative to the corner post.

4. A frame according to claim 1 in which the locking member has an inclined part which rides over the bend between the body of the cross-bar and its down-turned end and by wedge action forces the cross-bar downwards relative to the corner post.

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