April 6, 1926. 1,579,839

J. C. RAPER

SLAT FOR METALLIC ROLLING SHUTTERS

Filed Dec. 29, 1922

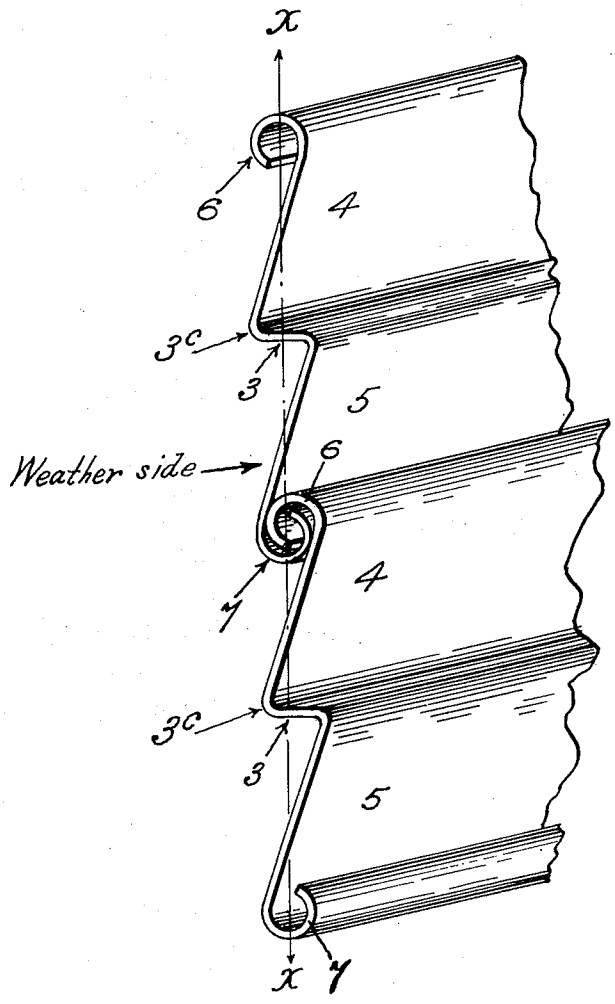


FIG. 1.

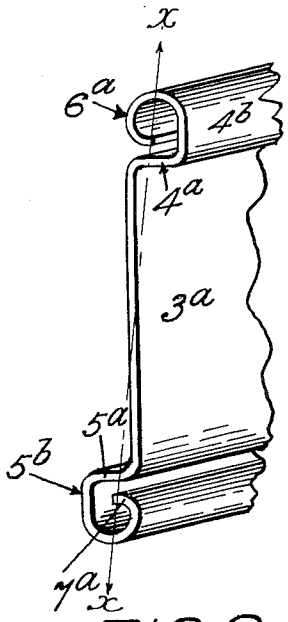


FIG. 2.

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UNITED STATES PATENT OFFICE.

JOSEPH C. RAPER, OF COVINGTON, KENTUCKY.

SLAT FOR METALLIC ROLLING SHUTTERS.

Application filed December 29, 1922. Serial No. 609,744.

To all whom it may concern:

Be it known that I, JOSEPH C. RAPER, a citizen of the United States of America, and a resident of Covington, in the county of Kenton and State of Kentucky, have invented a certain new and useful Improvement in Slats for Metallic Rolling Shutters, of which the following is a specification.

This invention relates to metallic rolling-shutter slats and its direct subject-matter is a subdivision of an already pending application for patent, under the Serial No. 518,218.

The prime object of the invention herein is to provide various widths and lengths of slats with longitudinal angular formations, of what may be ordinarily or conveniently termed or designated "modified-Z" cross-section, between their respective longitudinal edges, for both stiffness and increased necessary strength, and such longitudinal edges being of corresponding partial-coil or almost full-circle hook-formation and disposed in opposite directions to allow for the required flexible interlocking-engagement when the slats are arranged in vertical, parallel series for use in the make-up of an assembled rolling-shutter. The details of structure will be fully hereinafter described in connection with the accompanying sheet of drawings, in which—

Figure 1 is a fragmentary perspective view of a pair of my improved slats shown in suspended flexibly-connected position and as they appear in normal use for closing a door-way; and Figure 2 is a fragmentary perspective view of a modified form, showing but a single slat embodying my claim herein.

In the form of slat shown in said Figure 1 the original flat strip of sheet-metal is bent or flexed along its middle longitudinal line to form a transverse plane rib or practically horizontal offset 3 along whose opposite longitudinal edges extend at an inclination from the perpendicular the upper member 4 and the lower member 5 that together constitute the body-portion of the slat and correspond to each other and each thus disposed at, preferably, an acute-angle to the said offsetted plane rib-center 3, and the slat assuming what may be arbitrarily termed a "modified-Z" structure in cross-section that is quite stiff and strong, as well as somewhat symmetrical, the outer rounded-corner 3^c serving as a water-shed, of considerable advantage in use.

Along the upper edge of the said upper-member 4 of the body-portion of the slat I provide a partial curl or coil 6 that corresponds to the coil 7 of the lower member 5, but it is disposed in the opposite direction, with coil 6 disposed toward the outer face of the slat and coil 7 disposed toward the other or inner face of the slat.

The oppositely-disposed arrangement of the coils 6 and 7 is made to enable the flexible or pivotal interlocking of the slats in vertical, parallel alinement to form the metallic rolling shutter or curtain contemplated in the use of my slats, the space between the longitudinal edges of such coils and the adjacent faces of the members 4 and 5 being preferably limited to just sufficient to allow the respective pairs of coincident coils 6 and 7 of the slats to be telescoped together lengthwise but at the same time not permitting their disengagement from the faces of such coils in the making-up of the chain or series of slats that constitute the completed shutter. Said determined space between the edges thereof and the adjacent members 4 and 5 of the slat is also sufficient for the several slats to freely pivot for the proper flexibility of the completed shutter and is otherwise necessary for its easy and compact winding on the customary housing and suspension roller.

In the modified form of slat, seen in Figure 2, the main middle member or body-portion 3^a is broad and inclined and it has narrow, lateral, extension reverse Z-arm members 4^a and 5^a along its opposite upper and lower longitudinal edges, respectively. Vertical, narrow, longitudinal extensions 4^b and 5^b are further provided on the Z-arm extensions 4^a and 5^a, respectively, that then continue to extend onwardly and finally into the partial volute coils or open curls 6^a and 7^a, respectively, that are oppositely disposed, and correspond to the coils 6 and 7 of the said preferred form seen in Figure 1, and act in the same manner to co-operate with succeeding or progressive slats in the chain or series required in the formation of the completed shutter.

Both of these forms of slats make a strong, comparatively light and very symmetrical device for use in metallic rolling-shutters that will not stretch or expand

lengthwise, or otherwise buckle at any point thereof.

I have shown on each of the two views a vertical dotted-line x, x, to indicate the line of draft or pull on the slats when in assembled use, such line passing through the approximate center of the middle or median flexed portion (3 in Fig. 1 and 3^a in Fig. 2) of the slats for an equalization of the pull, or a uniform draft on said middle or median portion at either side its center and thence through the vertical centers of the coils (6 and 7 in Fig. 1 and 6^a and 7^a in Fig. 2), whereby the slats are rendered free from pulling out flat, especially along the said median, flexed, stiffening portion thereof.

I claim:

1. As an article of manufacture, a slat for metallic rolling fire-shutters comprising an elongated body portion or strip of flat sheet-metal having a substantially horizontal rib section medially thereof with the upper and lower portions of said body extending obliquely from the forward and rear ends respectively of said rib section to cross the vertical axis of the completed slat, and oppositely disposed hook-shaped formations arranged along the edges of the inclined upper and lower portions.

2. As an article of manufacture, a slat for metallic rolling fire-shutters comprising an elongated body portion or strip of flat sheet metal having along its upper and lower longitudinal edges oppositely disposed open partial-circle formations or volutes adapted for co-engagement into interlocking hinge-joints when coupled in a vertical series of such slats, the upper and lower portions of said body being inclined in a relative parallel relation and connected by a rib at the medial portion of the body.

JOSEPH C. RAPER.