

J. G. & L. G. WILSON.
 FLEXIBLE OR ROLLING METALLIC SHUTTER.
 APPLICATION FILED MAY 22, 1909.

949,789.

Patented Feb. 22, 1910.

Fig. 2.

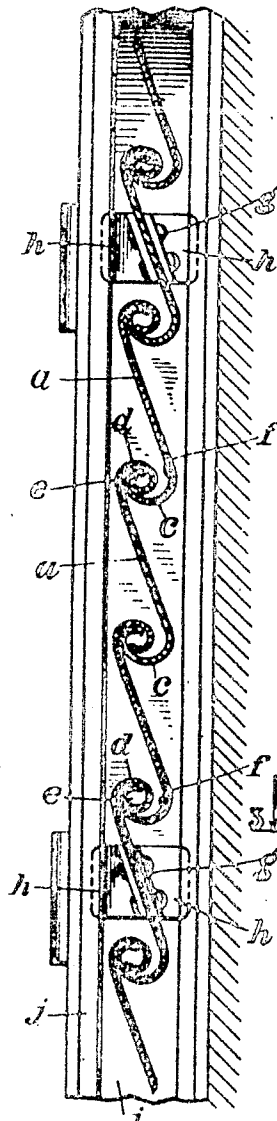


Fig. 1.

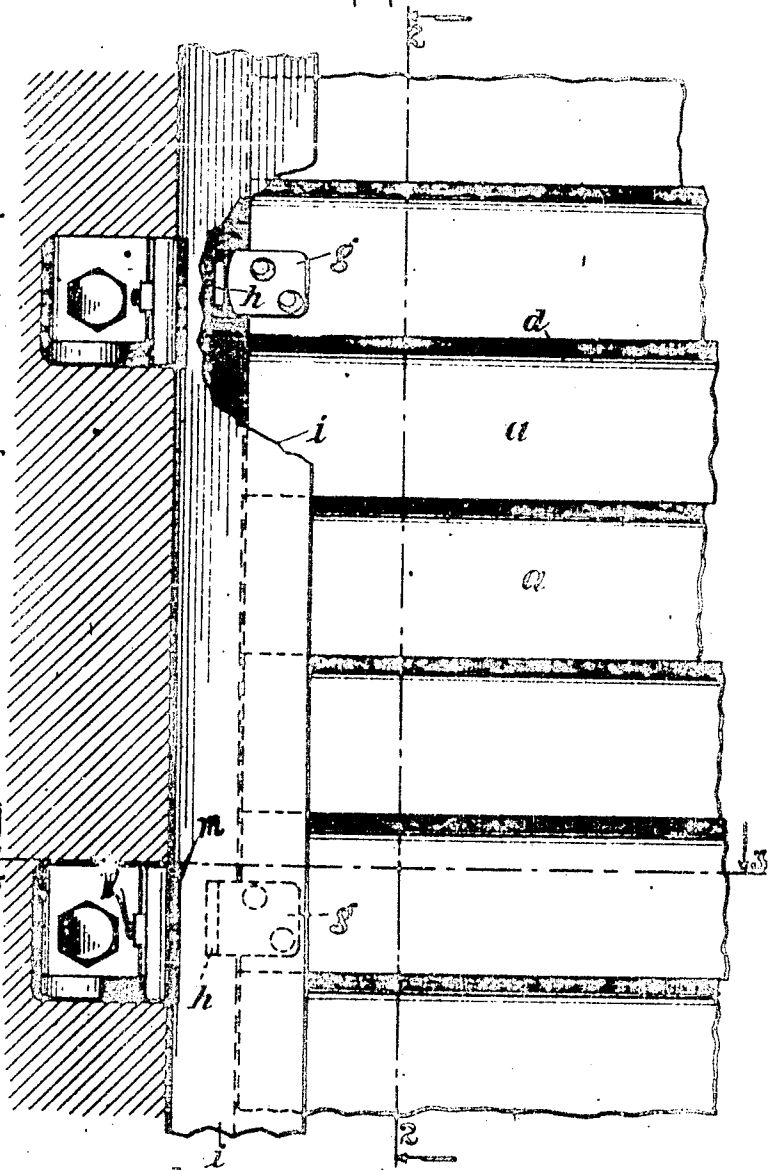


Fig. 4.



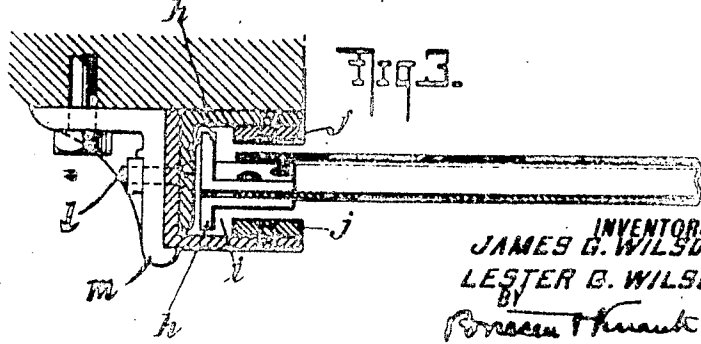
Fig. 5.



WITNESSES:

G. V. Kassinus
 Chas. Shilow

Fig. 3.



INVENTORS
 JAMES G. WILSON
 LESTER G. WILSON
 BY
 Borden & Thwait
 ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES G. WILSON AND LESTER G. WILSON, OF LARCHMONT, NEW YORK.

FLEXIBLE OR ROLLING METALLIC SHUTTER.

949,789.

Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed May 23, 1908. Serial No. 434,530.

To all whom it may concern:

Be it known that we, JAMES G. WILSON and LESTER G. WILSON, both residents of Larchmont, Westchester county, State of New York, have jointly invented a new and useful Improvement in Flexible or Rolling Metallic Shutters, of which the following is a specification.

This invention relates more particularly to the formation of the hinged joint, connecting adjacent slats, whereby is secured increased efficiency in working of the hinged connection without undue friction and without undue noise.

It also relates to an improved construction and arrangement of the runways for guiding the vertical movement of the shutter.

The scope and character of our invention will be more clearly understood by reference to the description and claims and to the accompanying drawings where—

Figure 1 is an elevation, from the inside, of a preferred form of our improved shutter showing the runway partly broken away so as to completely disclose one of the lugs or angle pieces; but one edge or side of the shutter with its corresponding runway is shown since the construction of the other side and runway is similar. Fig. 2, is a section, looking from the right, along the line 2—2 of Fig. 1, and Fig. 3, is a section, looking from above, along the line 3—3 of Fig. 1. Figs. 4 and 5 are sectional views of the hinge portions connecting two slats.

The slats *a, a*, used in our improved shutter belong, speaking broadly, to that class, well known in the art, having a cross section of modified **S** form, in which the slats are readily made to mutually interlock or hinge by giving suitable curvatures to the margins of the slat, *i. e.*, in section, to the extreme portions of the **S**. One of the most common of such hinge shapings is that shown in Fig. 4 in which the interlocking members of any two adjacent slats are exactly alike and, in effect, formed by turning over the slat margins into nearly complete cylinders. Such a hinge, having its interacting surfaces in contact for nearly 360° has, of course, a maximum of friction and the shutter is, therefore, moved only with relative difficulty. A further characteristic feature of such a hinge is its liability to injury if struck a heavy blow, as *e. g.*, should a heavy case fall against the shutter so as to strike the hinge with one of its corners, an accident which

quite frequently happens; in such case, by reason of the close contact of the two interacting hinge members any indentation of the outer member would almost inevitably result in a corresponding indentation of the inner member and consequent partial or complete loss of flexibility. This is shown at *k*, Fig. 5. Again, in some of the earlier forms of rolling shutters the hinge connection is characterized by an edge of one slat contacting with and rubbing over a margin of the adjacent slat. Such connection is objectionable as not being water-tight, and also because of the undue chattering noise produced by the scraping of the slat edge over the contacting slat margin when the shutter is rolled up or down. In this form of hinge connection, there is not sufficient surface contact to obviate the objections mentioned. While numerous other forms of hinge members have been suggested or used they all possess the same characteristic features which have just been mentioned.

In our improved construction we give the bottom member *c*, of one slat, a very different shape from the interlocking top member, *d*, of the adjacent slat. For *c*, we begin to turn the slat edge to the inside on a curve of relatively long radius, gradually shortening this radius as we approach the edge of the slat. For *d*, we begin to turn the slat edge outwardly on a radius about the same as the shortest radius for *c*, and we maintain this radius practically constant until almost a complete cylinder has been formed. When the two slats are slid together, the upper roll *d*, that is the upper margin of the lower slat, surrounds and is concentric with the inner portion of the lower curved margin of the upper slat, that is, with the roll *c*, said concentric rolls being in sliding contact for about 180°. This surface contact of marginal surface with marginal surface provides a connection that is substantially water-tight and one which works smoothly without undue friction and without undue noise due to chattering, which is so common in rolling metallic shutters heretofore in use. Furthermore, the portion *f*, or the outer portion of the curved margin of the upper slat, surrounds at a distance and protects the adjacent concentric connected margins of both slats from indentation or other injury, which might affect the hinged joint, and sheds water below and away from the hinged connection.

To prevent the shutter being forced out of its runways or grooves by unusual shocks and pressures whether of the wind or other, we attach rigidly to each edge of the shutter
 5 angle lugs or pieces, *g*, having projecting portions, *h*, lying in a plane at right angles to the plane of the shutter; we also provide special runways, *i*, in which to operate the shutter. As shown, each runway is made up
 10 of two L sectioned irons fitted together so as to form a U to the inside of which are attached two strips, *j*, *j*, at a distance apart less than the transverse linear dimensions of a pair of lugs, *h*, *h*. These lugs constitute
 15 in-turned lips. The two L sections are secured together and to angle irons *l* by suitable means, such as the bolts *m*, and the angle irons *l* are suitably secured to the surrounding casing or wall on the outside, as
 20 shown. The shutter now makes what is practically a loose T joint at each edge with the corresponding runway so that, while perfectly free to move up and down, any lateral movement is resisted and prevented
 25 by the lugs *h*. These restraining lugs may be placed anywhere along either or both edges of the shutter and in such numbers as may seem most desirable in a given case; and they may be formed in ways quite dif-
 30 ferent from that just described, as *e. g.*, in the shape of a cylindrical bolt, slotted axially so as to slip over the shutter edge and

provided at its outer end with a disk or other "flat" approximately at right angles to its axis, and of size sufficient to engage 35 the runway.

Having now described our improvement we claim:

In a rolling metallic shutter, a plurality of slats having interlocking hinged connections along their adjacent margins, said interlocking margins being formed into concentric rolls which have a substantial portion of their marginal surfaces in sliding contact, the lower margin of the upper slat 40 being curved to the rear on a decreasing radius, and the upper margin of the lower slat being curved forward on substantially a constant radius, the inner portion of the curved margin of the upper slat being surrounded by the curved margin of the lower 45 slat and the outer portion of the curved margin of the upper slat surrounding at a distance and protecting the adjacent contacting, concentric margins of both slats. 50 55

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses, this 20th day of May 1906

JAS. G. WILSON.
 LESTER G. WILSON.

Witnesses:

W. E. DUNCANSON,
 FRITZ ZIEGLER, Jr.