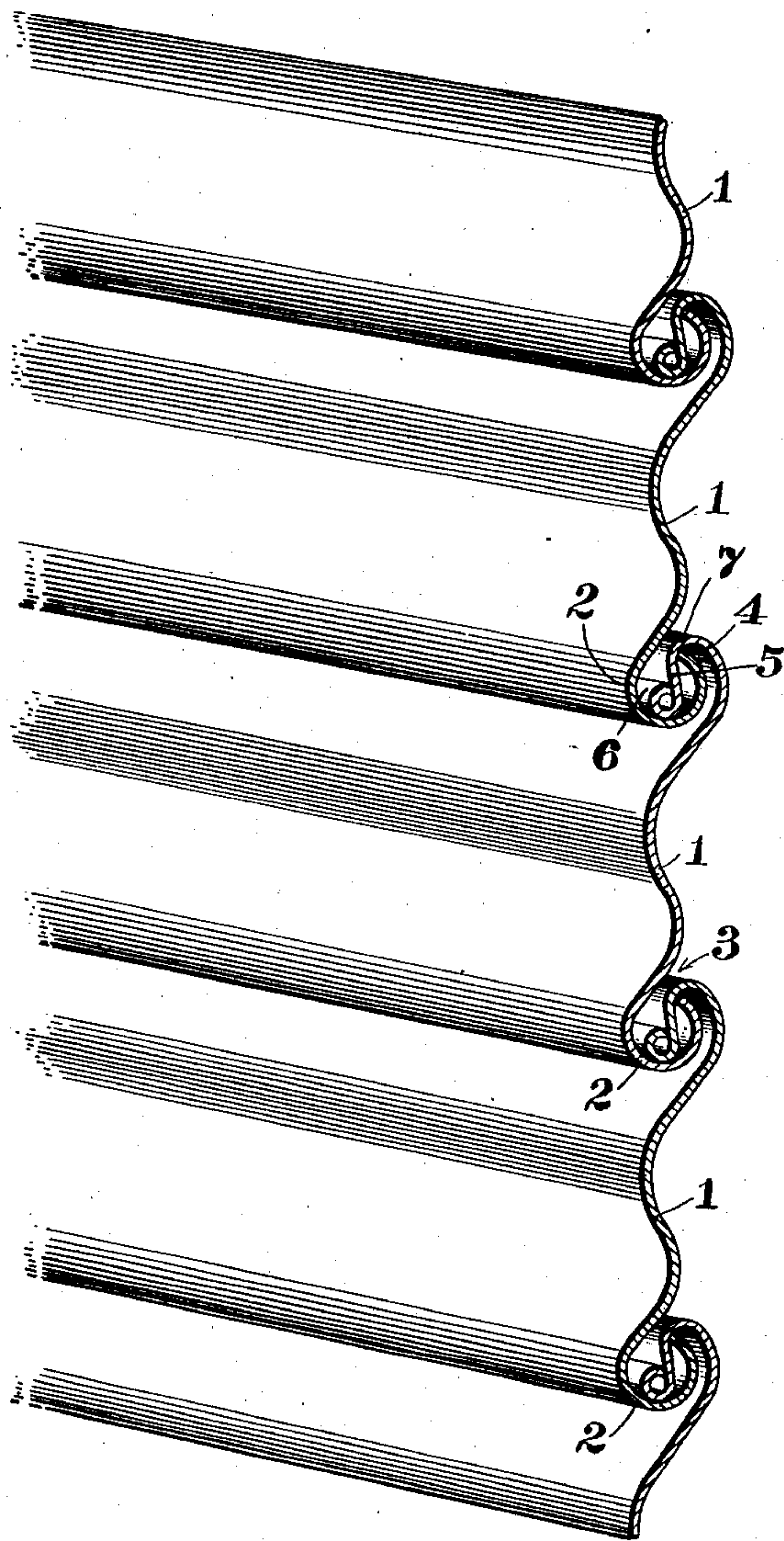


No. 746,307.

PATENTED DEC. 8, 1903.

P. EBNER.
ROLLING SHUTTER.
APPLICATION FILED MAY 8, 1903.

NO MODEL.



Witnesses
Ralph A. Shepard.
H. C. Shepard.

Inventor
Peter Ebner.
By *R. C. Shepard.*
Attorney

UNITED STATES PATENT OFFICE.

PETER EBNER, OF COLUMBUS, OHIO, ASSIGNOR TO COLUMBUS STEEL ROLLING SHUTTER COMPANY, A CORPORATION OF WEST VIRGINIA.

ROLLING SHUTTER.

SPECIFICATION forming part of Letters Patent No. 746,307, dated December 8, 1903.

Application filed May 8, 1903. Serial No. 156,261. (No model.)

To all whom it may concern:

Be it known that I, PETER EBNER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Rolling Shutters, of which the following is a specification.

This invention relates to rolling metal shutters, and is particularly designed to improve the form of shutter shown in the patent to Peter Ebner, No. 655,965, dated August 14, 1900. It is furthermore designed to improve the flexible joint between adjacent shutter-sections whereby the joint is rendered stronger and stiffer without interfering with the free and unrestricted hinge movement thereof, and said joint is also adapted to shed water, thereby to obviate rusting thereof, and hence materially increase the life of the shutter.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter described, shown in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings there has been shown a sectional perspective view of a rolling metal shutter embodying the features of the present invention.

The present form of shutter, like all of the rolling type, is made up of a series of slat-sections 1, each of which is substantially oblong in shape and of convolute or corrugated form.

One longitudinal edge of each shutter-section, preferably the lower edge thereof, is bent into a substantially circular or cylindrical tube or bead 2, which is disposed substantially equally at opposite sides of the longitudinal plane of the section, with the free edge of the section terminated short of the body-portion thereof, so as to render the tube substantially hook-shaped in cross-section, and thereby form a longitudinal entrance slot or opening 3 along the top of the tube, as best shown in Figure 2 of the drawings. The other and upper edge of the slat or section is bent to form a hook 4, the bill portion 5 of which is upon the opposite side of the slat from that of the free edge portion of the tube 2 and is adapted to be hooked into the lower hooked

end portion of the next-above section, as clearly shown in Fig. 1 of the drawings. It will of course be understood that one section is slid endwise into engagement with the other instead of having its hooked edge passed through the slot 3 of the other section. At the outer extremity of the bill portion 5 of the hook 4 the slat is bent into a complete tube or bead 6, which is disposed at the outer side of the bill, whereby the latter lies between the bead and the body of the slat. Furthermore, this bead is located in a position comparatively remote from the bend portion 7 of the hook 4 and bears against the lower portion of the hook portion 2 of the adjacent slat or section, whereby each slat has a bearing at two points upon the next-above slat—that is to say, the stiffening-bead 6 bears against the interior of the hook 2 at the bottom thereof, and its bend portion 7 bears against and hangs upon the free edge portion of said hook 2.

From the foregoing description it is apparent that by having the bead 6 remote from the bend portion 7 of the hook 4, so as to bear against the bottom of the hook 2, said hook 4 is materially stiffened and strengthened and the joint is rendered very strong and durable without interfering with the free and unrestricted hinge movement thereof. Furthermore, by having the hook 2 disposed equally at opposite sides of the plane of the slat-section the convolute intermediate portion of the slat overhangs the slot 3, and thereby forms a water-shed to direct water laterally outward, and thereby prevent the same from entering the hinged joint. This is a material feature of the present invention, as it prevents rusting of the joint, and hence protects it.

What is claimed is—

1. A rolling shutter, embodying loosely-connected slats, one slat having its edge portion bent into substantially tubular shape which is disposed substantially equally at opposite sides of the plane of the slat, with the free edge of the slat terminated short of the body of the slat to form a longitudinal slot, the engaging edge of the adjacent slat being bent into the form of a hook, the bill of which passes through the slot aforementioned, and terminates in a bead remote from the bend of

the hook and bearing against the interior of the first-mentioned hook.

2. As a new article of manufacture, a shutter-slat having one longitudinal edge bent into
5 a substantially circular hook which is disposed substantially equally at opposite sides of the plane of the slat, the opposite edge of the slat being bent into a hook disposed at the opposite side of the plane of the slat, with
10 its bill portion extended toward the first-mentioned edge of the slat and bent into a stiffening-bead disposed at the outer side of the bill and remote from the bend of the hook.

3. A rolling shutter, embodying slat-sections which are of convolute form, the lower
15 edge of each section being bent into a substantially circular hook disposed substantially equally at opposite sides of the plane of

the slat with the adjacent convolution overhanging the slot or opening between the free
20 end of the hook and the body of the slat, the upper edge of each slat being bent into a hook disposed at the opposite side of the slat with its bill portion passed through the slot of the lower edge of the next-above slat, the
25 bill being extended downwardly and bent into a bead disposed at the outer side of the bill and normally bearing against the inner side of the bottom of the hook of the next lower hook, and the bend of the upper hook
30 hanging upon the free end of the lower hook.

PETER EBNER.

In presence of—

A. L. PHELPS,
W. L. MORROW.