W. E. Worthen.

Shutter.

No. 20,236. Patented May 11, 1858.

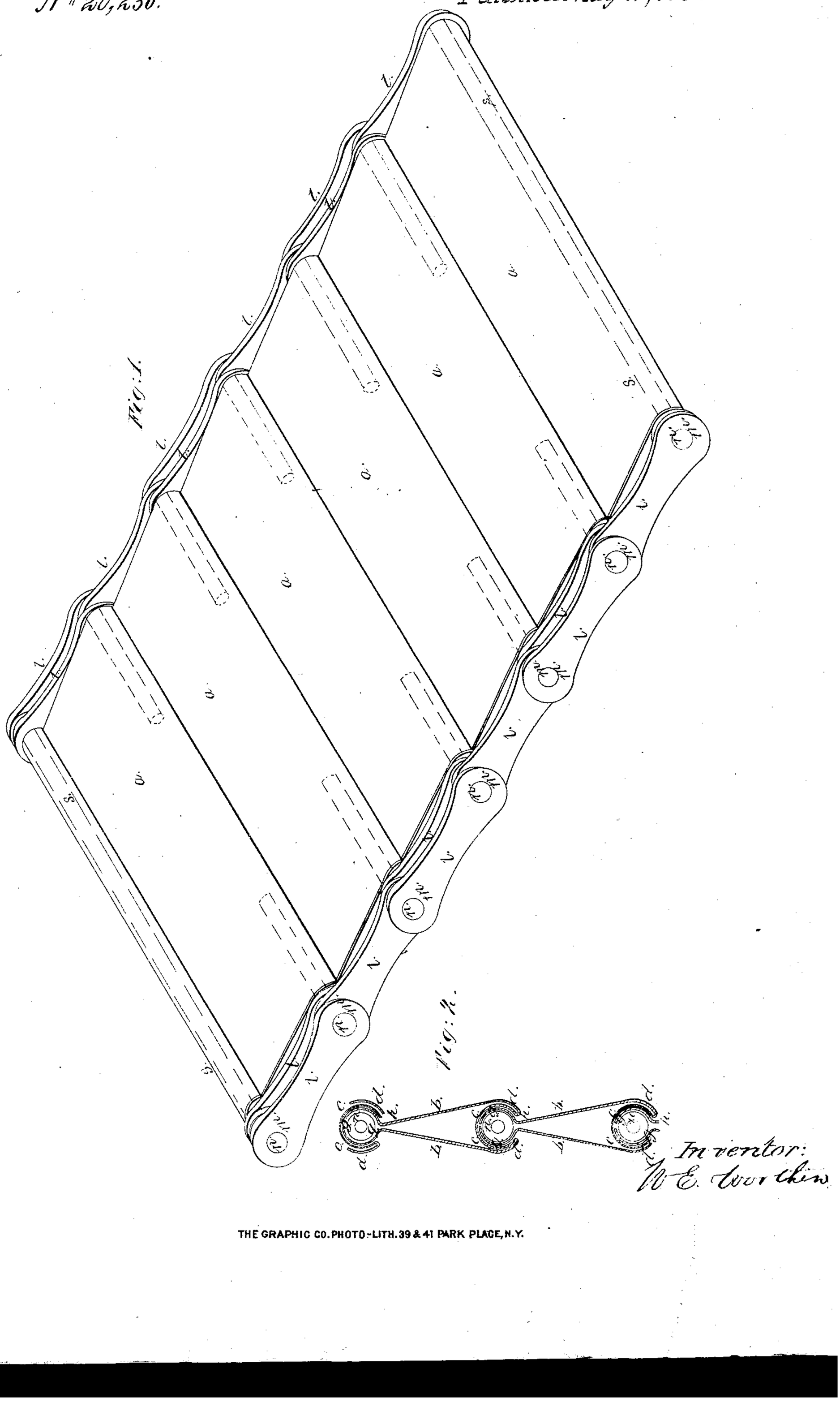

Fig: 1.

Fig: 2.

Inventor:
W. E. Worthen

UNITED STATES PATENT OFFICE.

W. E. WORTHEN, OF NEW YORK, N. Y.

METALLIC ROLLING SHUTTER.

Specification of Letters Patent No. 20,236, dated May 11, 1858.

To all whom it may concern:

Be it known that I, WILLIAM E. WORTHEN, of the city, county, and State of New York, have invented certain new and useful Improvements in what are commonly known as Revolving Shutters, being shutters which can be rolled up on a cylinder or shaft, and that the following specification, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings—Figure 1 is a perspective view of my improved shutter showing the side chains, and Fig. 2 is a section through the same.

Shutters of this class reasonably fire and burglar proof and constructed in many different ways are now in common use especially in large towns and are objectionable only on account of their great weight and expense. Other inventors before myself have with greater or less success remedied these difficulties and my invention has no strictly new object, but only seeks in a different way to attain the usual ends in what I consider a better manner.

The nature of the first part of my invention consists in a rolling shutter of sheet metal slats of double thickness of such configuration substantially as specified that their meeting edges shall interlock or form a partial or complete hinge substantially in the manner hereinafter set forth. And the nature of the second part of my invention consists in combining with a series of such interlocking slats as are hereinafter set forth, side chains substantially such as herein described in a manner substantially as specified.

The slat of this shutter is in so far substantially the same as one heretofore patented by me as that is double and made of thin sheet metal. These slats *a a a* are formed by proper machinery devised by me and now in operation, or by suitable hand tools, into a shape substantially like that shown in the drawings, that is to say the body or main part of the shutter is composed of two thicknesses of sheet metal, either parallel or inclined to each other as represented in the drawings at *b b* while at one edge the metal is indented inward into the shape of a portion of a cylinder as at *c c* thus forming in fact two double edges, which are afterward, bent toward, each other so as to partially complete the cylindrical form. At the other edge of the slat the metal composing each side of it, is first bent outward and then inward again so that the two single edges make up a partial cylinder as shown at *g g* whose outer periphery shall correspond nearly with the inner periphery of the partial cylinder *d c c d* on the adjoining edge of the next slat. The slats are then taken one by one and the small cylinder of one slat slipped endwise into the large cylinder of the next slat until a sufficient number are put together to make up a shutter. In bending the confining cylinder care must be taken to leave sufficient opening, to admit the neck of the confined cylinder as at *h h* to play back and forth while the shutter as a whole is rolled on a cylinder or unrolled therefrom.

Now this description and drawing will show that a shutter thus made up would have its slats hinged each to each by a hinge made up of the slats themselves and such a shutter will serve some purposes very well, but in order to secure strength and avoid derangements while the shutter is in use, I have combined with the shutter a chain located on the sides thereof. This chain has links *l* much like those of an ordinary watch chain, each link having two holes *m m;* the distance of the holes in each link from center to center being the same as from the center of one confined cylinder of a slat, to the center of that in the next slat. Into these holes to confine the links together as shown in the drawing, are fitted bolts *n n* riveted at one or both ends, or secured into place in some proper way, and these bolts are to be prolonged for some inches on that side of each chain nearest to the slat so that they may enter into the interior of the confined cylinder for some inches, (see section and dotted lines in perspective view) by this means each slat is hung to the chain and combined with it. At intervals of several slats I intend to pass these bolts entirely through the confined cylinder of a slat see dotted line at *s s* so that the same bolt, passes clear through a slat and is fastened into links at each end thus uniting both chains and the shutter proper into a whole.

The shutter thus made up either with or without the chains, is to be used as rolling or revolving shutters usually are.

The space between the two sides of any one slat may be filled with rods of wood, with cement, or plaster, by preference the

former, as they stiffen the slat and only smolder and char when exposed to heat, and the shutter may be rolled up on either horizontal or vertical shafts when used or may be so fitted as to draw into a recess at one side of the opening it is to cover, without the use of any shaft.

My shutter may be modified in many ways that will after this description occur to the skilled mechanic without departing from the principles of my invention. For instance when the chain is used, the confining cylinder need not surround this contained cylinder so far as to make an absolute hinge, but may only lock into the confined cylinder; or the two confined cylinders may be formed on one set of slats and two containing cylinders on another set, so that each alternate slat has for its edges male parts of the hinge while the other slats have female parts only. Further the slits between the meeting edges of the sheet metal that forms any one slat may be in any position in the finished slat and none of the chain bolts need pass entirely through from one chain to the other and if the hinge formed by the slats themselves be as good as shown in the drawings, the chain bolts need only enter the slats at intervals of several slats. Whether the chain be used or not the great object of the bending of meeting edges so that one shall partially surround the other, is to diffuse a strain applied to any one slat among its neighbors; but I do not claim as of my own invention broadly such a bending of the meeting edges of revolving shutter slats that one shall confine or partially confine the other, as I know that this has been done before in various ways, my invention being limited to a shutter composed of slats of double thickness of sheet metal, bent at their edges substantially as described so that the confining or embracing edge is of two thicknesses, on each side of the confined or embraced edge, and to the combination of such a shutter with a chain or chains.

I claim as of my own invention

1. A revolving shutter composed of slats of double thickness of sheet metal so formed at their edges substantially as specified that each slat shall interlock with its neighbor by being bent at the edge into a configuration substantially such as is set forth herein.

2. I claim the combination of a series of such slats having such interlocking edges substantially as described with a chain on the sides thereof, said chain being constructed and combined with the slats substantially in the manner hereinbefore made known.

In testimony whereof I have hereunto subscribed my name in the city of New York on this twenty-fifth day of February A. D. 1858.

W. E. WORTHEN.

In presence of—
J. J. ALTHAME,
WM. LEE.