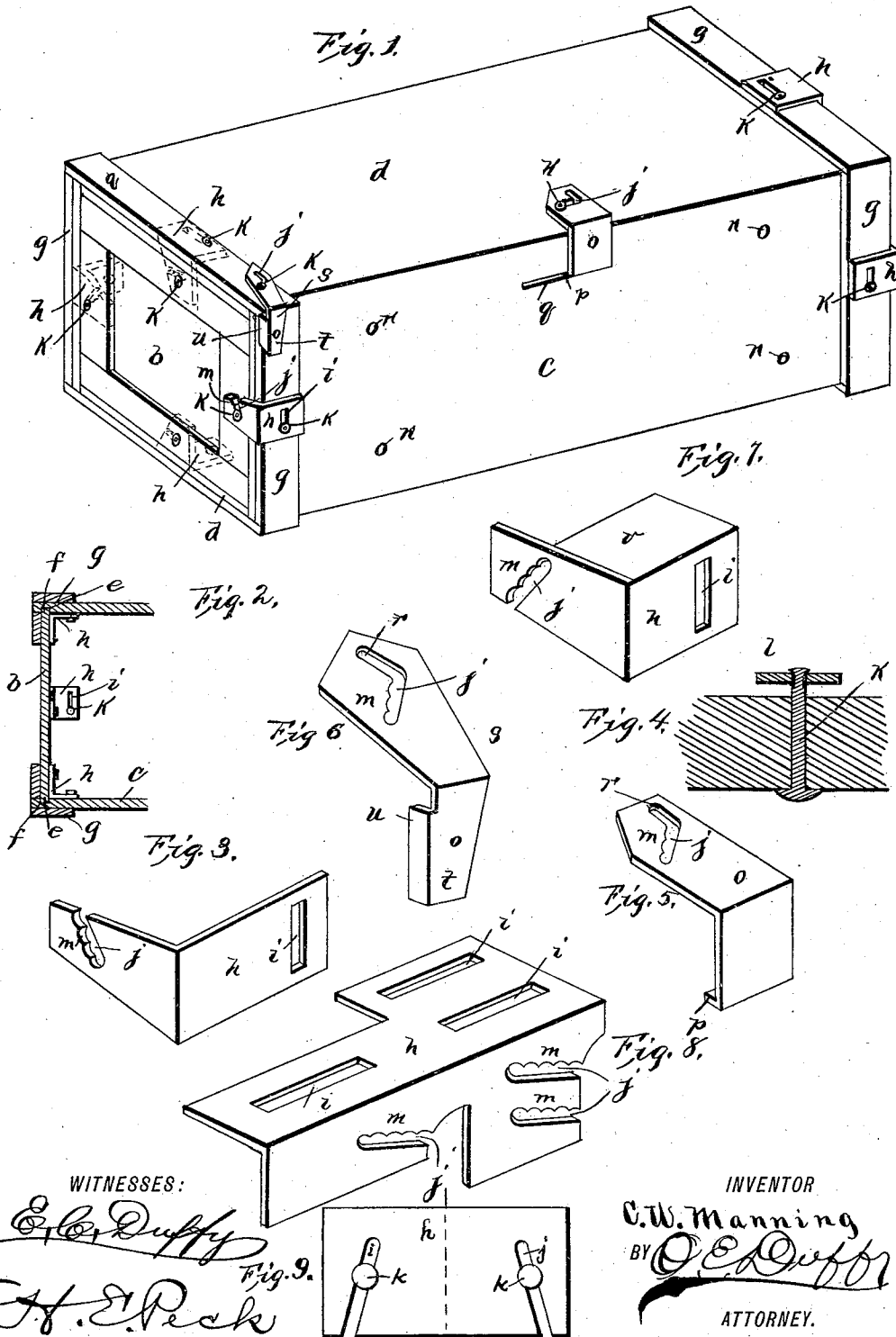


C. W. MANNING.
BOX AND FASTENING.

Patented May 17, 1892.



UNITED STATES PATENT OFFICE.

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BOX AND FASTENING.

SPECIFICATION forming part of Letters Patent No. 475,129, dated May 17, 1892.

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To all whom it may concern:

Be it known that I, CHARLES W. MANNING, of Graham, in the county of Tazewell and State of Virginia, have invented certain new and useful Improvements in Boxes and Fastenings; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in boxes and fastening devices therefor.

The object of the invention is to provide an improved construction of box which can be readily and easily put together or taken apart and which is exceedingly cheap in construction.

The particular object of my invention is to provide improved fastening devices exceedingly simple in construction and strong and durable, and which can be easily and quickly manufactured and placed on the market at a very low figure, and which will also serve to strengthen the article to which they are applied.

These objects are accomplished by and this invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a perspective of the box constructed after my invention and provided and held together by my improved fasteners. Fig. 2 is a section of one end of the box. Figs. 3, 4, 5, 6, 7, 8, and 9 are detail views showing various constructions of fasteners.

The box shown in the drawings consists of the two heads *b* and the four sides *c c* and *d d*. The heads have the projecting edges *e*, preferably formed by securing cleats across their outer edges, and the sides have the transverse grooves *f* at their ends to receive such edges. The transverse strips *g* of the two sides *d* are longer than and project over the edges of the sides *c*; but the sides *c* are longer than sides *d*, so that the sides *d* fit between the edges of the sides *c*. By means of this construction the sides and heads of the

box can be fitted together and removably locked together by the fasteners *h*, each fastener preferably consisting of the flat piece of metal bent at a suitable angle, preferably a right angle. This piece of metal is fitted upon an edge or corner of the box so as to extend upon two sides or upon a head or side of the box.

The opposite portions of the fastener are provided with transverse slots *i* and *j*. These slots are not parallel with each other, but their inner ends are located nearer each other than their outer ends. Rivets *k* are passed through the blocks at such points that they will enter the slots *i j*, and these rivets at their outer ends have shoulders, as shown, and the washers *l*, fitted down on said shoulders, and are secured thereon, as usual, by upsetting the end of the rivet. The rivets pass through said slots and the washers are located at the outer faces of the fasteners, so that the fastener-plates can slide laterally the length of the slots. The slot *i* is preferably closed at its ends and straight, as shown, thereby confining the fastener-plates to the box by means of the rivet. The other slot *j* preferably opens through one edge of the plate and is inclined inwardly toward the bend or angle of the plate, and the outer edge of the slot is preferably corrugated or formed irregular, as shown at *m*. By means of this construction when a fastener-plate is moved laterally in one direction the rivet in slot *j* passes out of such slot, thereby releasing the fastener-plate from that particular rivet and allowing the two sides to be separated, the fastener-plate being retained to one of the sides or heads of the box by means of the rivet passing through the closed slot *i*.

When the sections of the box or other article have been fitted together, they are locked by moving the fasteners laterally in the direction opposite to that in which they are moved when being released or unlocked and so that the rivet will enter the open ends of slots *j*, and the inclined corrugated edges *m* of such slots will engage the rivets as the plate is forced laterally and the rivet is moved toward the inner end of such slot, and will thereby draw the rivet and the section which carries it tightly against the section to which the opposite end of the plate is confined, there-

by drawing them firmly together and rigidly locking them in this position by means of the irregular or corrugated edge *m*, which prevents independent lateral movement of the plate and the section carrying the rivet in the locking-slot of such plate. The fact that the inner ends of the slots *i* and *j* are nearer each other than their outer ends causes the sections to which the respective ends of the plates are secured to be drawn toward each other when the plate is moved in one direction and to be moved apart when the plate is moved in the opposite direction.

A box such as shown is provided with any suitable number of these fasteners *h* at the exterior and interior of the ends of the box, as shown, so that the entire box can be most strongly and rigidly locked together to form a box of the utmost durability and strength, the fastener being preferably confined to the sides by the rivets passing through the cleats *g* at the ends of such sides, so that the locking-slots *j* will engage the rivets *k*, secured to the heads. By means of this arrangement all the sides are drawn tightly against the heads. All these boxes, crates, or other articles, when intended for shipping and then to be returned afterward, are provided in their sides and heads with holes *n*, as shown in Fig. 1, so that when being returned to the shipper the box can be knocked down and the sides and heads thereof closely packed side by side and then tied together by strings or cords.

To secure additional strength, auxiliary devices can be provided—such as lid-fastener *o*, consisting of the bent metal plates such as before described. The lower arm or edge, instead of having a slot, is provided with the inwardly-bent edge *p*, adapted to enter a slit *q* or to bite into the side of the box. The upper and opposite end of the plate is provided with the inclined slot *j*, having its outer edge corrugated or formed irregular, as shown at *m*. The rivet *k* passes up through the side of the box forming the lid and slot *j* and has the washer *l* on its upper end, as before described, to confine the plate on the rivet. In this instance the slot *j* is closed and is extended outwardly at its outer end a sufficient distance to permit the edge *p* to clear the slot *g* and side of the box, when the fastener-plate is moved outwardly, so that the rivet enters said outwardly-extended end *r* of the slot *j*. When it is desired to additionally secure the lid by this fastener, it is pressed inwardly, so that the rivet engages the inclined corrugated edge of the slot *j*, thereby drawing edge *p* into slot *q* and holding the parts in this position. A suitable corner-fastener *s* can also be provided, as shown in Figs. 1 and 6. This fastener has the slot *j* with extended end *r*, as just described with fastener *o*, and bent downwardly-extending end *t* to fit the side of the box, with the lip *n* bent out at right angles from said end *t* to fit the edge of the box, and the end *t* or lip *n* can be provided with one

or more openings to receive nails for securing it. Thus when the plate *s* is passed into locking adjustment it tightly draws the two sections together.

The fasteners *s* and *o* are intended for use on certain kinds of boxes, and more particularly when the fasteners *h* are only used on the interior of the box.

Fig. 7 illustrates the form of fastener *h* for use at corners, of which one end, preferably the end having the inclosed slot, is extended laterally and bent over, as at *o*, to form and fit the corner and the bent-over portion *v* fitting the other side. This form of fastener *o* (shown at Fig. 7) can be very efficiently employed for holding down a covering or lid, and also for holding together two sides.

Fig. 8 shows a fastener-plate provided with series of parallel slots *i* and also series of parallel locking means *j*. This construction of fastener is adapted to various purposes where great strength is required. The plate, as shown, can be extended in length.

Where two sections are intended to fit together edge to edge to form continuations in the same plane, as shown in Fig. 9, flat straight fastener-plates are employed having the inclined slots to receive the rivets on the sides of the sections. These flat sections are particularly useful for attaching lids having downwardly-extending flanges or portions of the sides rigid therewith. It should be noted that these fastener-plates are struck up from the single piece of flat metal; that the slots *i* can be opened at one end, if desired; that the slots *i* can be inclined instead of the slots *j*, or that both slots can be inclined toward each other, or that both slots can be formed with or without the corrugated irregular edges.

The knockdown packing-box shown can be constructed at a minimum cost, and all the parts thereof are interchangeable.

These fasteners can be applied for use on many articles—such as chicken-coops, organ-boxes, furniture, sewing and other machine boxes, piano and organ boxes, and in the construction of bee-hives, out-houses, portable cottages, and kitchen or extension tables.

If desirable, lids or covers can be fastened by hinges at one edge and by these fasteners at the opposite edge.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The knockdown box consisting of the separate sections, locking means to unite such sections, comprising a fastening-plate having the inclined slot with the corrugated edge, the rivet passing through said slot and rigid with the box-section and loosely confining said plate to the section, said plate being bent at an angle to fit the opposite side of the box and having the intumed biting-edge *p*, substantially as set forth.

2. The corner-fastener consisting of the

plate bent at an angle to fit two sides of a box at a corner, one end of the plate having a side wing or edge extending at an angle to fit the third side at the corner, as set forth, one end of the plate having the inclined locking-slot, substantially as set forth, and the rivet or pin passing through such slot to hold the plate, as described.

3. A fastening device consisting of the plate, a transverse slot near one end thereof to receive the rivet rigid with a section, and an inclined locking-slot near the opposite end of such plate opening through one edge of the plate, as and for the purposes set forth.

4. The combination, with two separate sections, of the knockdown structure, rivets passing through such sections and having the washers, and a fastening-plate having a slot through which one of the rivets passes, and a locking-slot to receive the other rivet and corrugated or formed irregular at one of its longitudinal edges, said slots having their inner ends nearer together than their outer ends, as and for the purposes set forth.

5. The knockdown box consisting of the separate heads and sides, the ends of the sides and the heads being so formed that the heads removably fit in the inner faces of the sides and all the parts of the box can be separated and packed parallel and tied, the angular corner-fastening plates having the inclined slots, and the rivets on the sides and heads to enter said slots, as set forth.

6. The knockdown box consisting of the separate heads and sides removably fitted together, the angular fastening-plates loosely confined to the sides and extending over the heads and provided with the open inclined locking-slots, and the rivets or pins secured

on the heads to enter said slots and lock the parts together, as set forth.

7. The fastener-plate having a closed slot for movably securing the plate, and an inclined locking-slot opening through an edge of the plate and corrugated along its outer edge, substantially as described.

8. A knockdown box consisting of separable heads and sides, the exterior angular corner-fastening plates provided with the inclined slots and pins secured to the heads and sides to enter said slots, and the interior angular corner-fastening plates having the inclined slots and inwardly-projecting pins to enter said slots, whereby the box is exteriorly and internally braced and fastened.

9. A fastening-plate having the transverse slots nearer together at their inner than at their outer ends, and rivets secured to two sections to enter said slots, having the shoulders at their ends on which the washers fit and are secured to lie against the outer faces of the plate.

10. The herein-described metal fastening-plate provided with the slots nearer together at their inner ends than at their outer ends, the outer end of one of said slots opening through an edge of the plate and said slot having its longitudinal side edge provided with a series of adjacent recesses or notches, as described, and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES W. MANNING.

Witnesses:

J. A. GREERER,
C. W. GREERER.