2 Sheets—Sheet 1.

F. COOK & H. SHAW.

Bale-Tie.

No. 200,700. Patented Feb. 26, 1878.

Fig. 1.

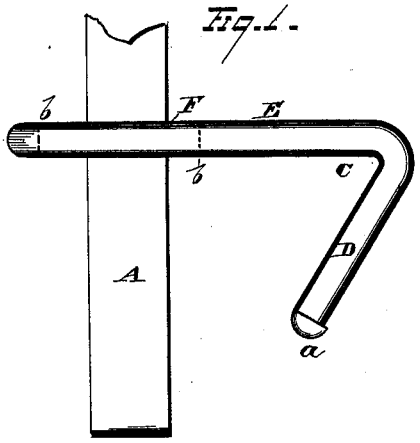


Fig. 2.

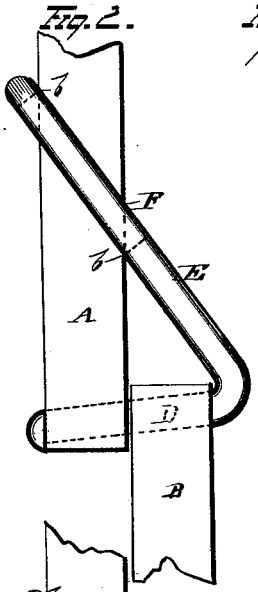
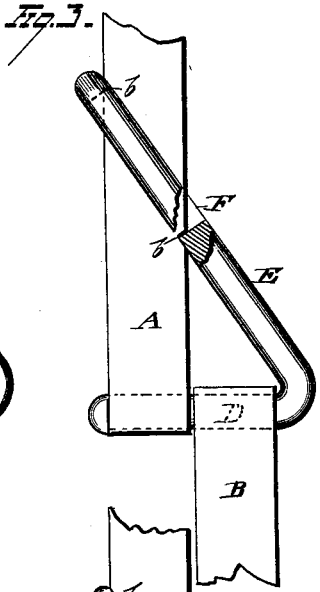


Fig. 3.



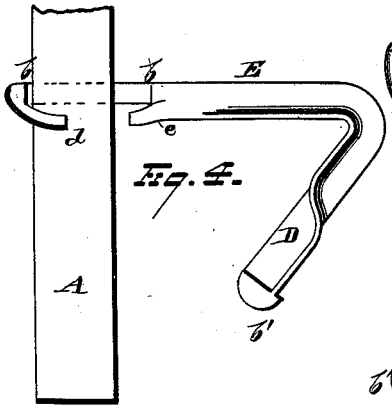


Fig. 4.

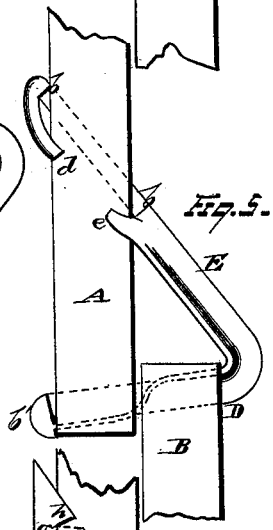


Fig. 5.

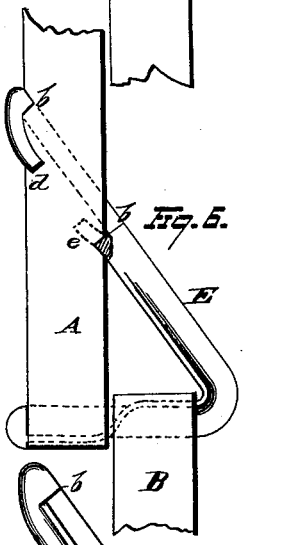


Fig. 6.

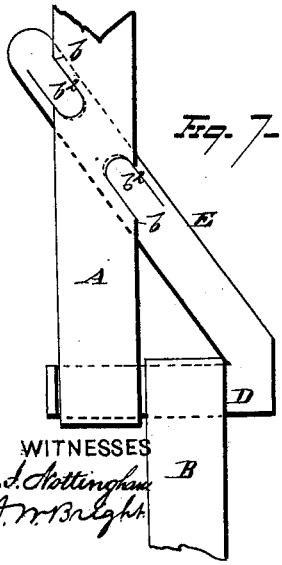


Fig. 7.

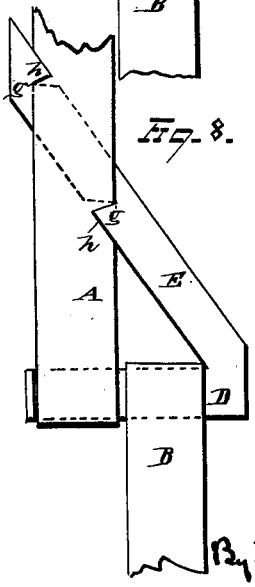


Fig. 8.

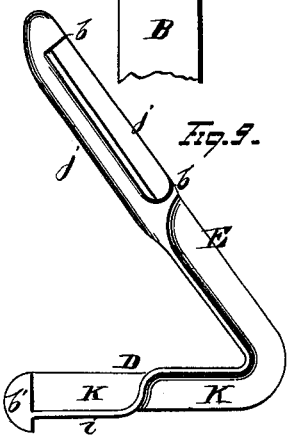


Fig. 9.

WITNESSES

Ed. S. Nottingham

A. M. Bright

INVENTOR

Frederic Cook

and

Henry Shaw.

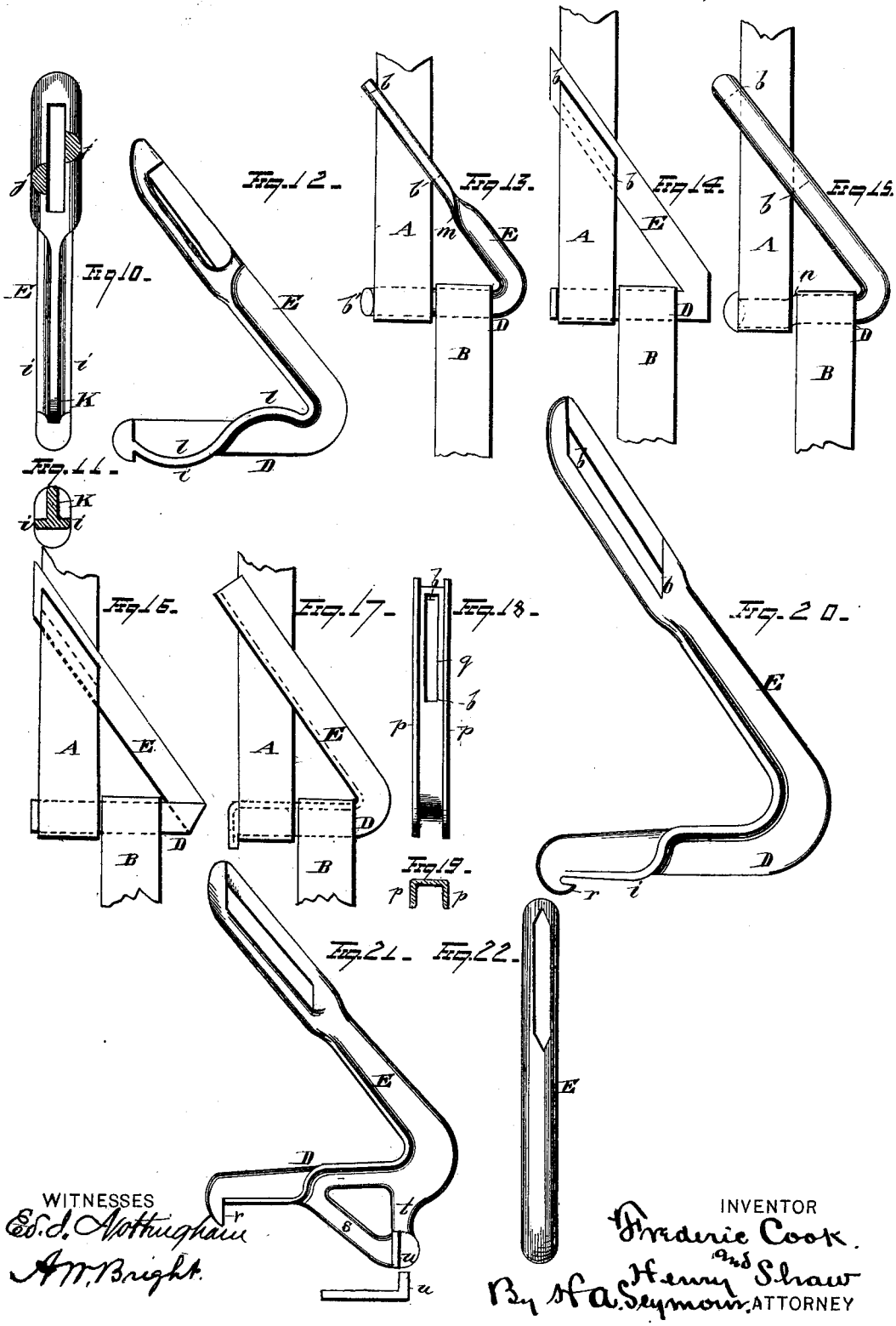
By H. A. Seymour ATTORNEY

2 Sheets—Sheet 2.

F. COOK & H. SHAW.

Bale-Tie.

No. 200,700. Patented Feb. 26, 1878.



WITNESSES

Ed. L. Wotherspoon

A. M. Bright

INVENTOR

Frederic Cook.

and Henry Shaw

By H. A. Seymour. ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERIC COOK, OF NEW ORLEANS, LOUISIANA, AND HENRY SHAW, OF WAVELAND, MISSISSIPPI.

IMPROVEMENT IN BALE-TIES.

Specification forming part of Letters Patent No. **200,700**, dated February 26, 1878; application filed February 20, 1878.

To all whom it may concern:

Be it known that we, FREDERIC COOK, of New Orleans, parish of Orleans, and State of Louisiana, and HENRY SHAW, of Waveland, in the county of Hancock and State of Mississippi, have invented certain new and useful Improvements in Bale-Ties; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improvement in bale-ties.

The object of our invention is to provide a bale-tie of such construction that the locking-bar may be outwardly swung to allow the looped ends of the bands to be secured together side by side, and when so secured the end walls of the slot formed in the diagonal brace which extends from one end of the locking-bar shall bite on the edges of the band, and thus prevent the movement of said diagonal brace when the strain is exerted on the tie.

Another object of our invention is to form the diagonal brace of a bale-tie adapted to swing to and from the edge of the band in such a manner that said brace may be readily attached to any portion of the band.

Our invention consists, first, in a bale-tie adapted to be adjustably secured to one end of the band by means of a diagonal brace, the latter constructed in such a manner that it will bite on both edges of the band when strain is exerted on the locking-bar by the looped ends of the band, the latter being arranged side by side.

Our invention further consists in a bale-tie consisting of a locking-bar provided with a diagonal brace, the latter adapted to be attached to any portion of the band and secured against displacement by moving the locking-bar toward the edge of the band.

In the accompanying drawings, Figure 1 is a plan view of our improved tie in position for securing the looped ends of the band. Fig. 2 represents the position of the tie before the required strain has been exerted thereon. Fig. 3 shows the position of the tie and bands when secured to a bale. Fig. 4 is a plan view of tie provided with an open slotted diagonal brace in position for receiving the ends of the bands. Fig. 5 shows the tie with locking-bar inserted in the loop of the band. Fig. 6 is the tie complete. Figs. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 are modifications.

A and B are the looped ends of a bale-band. C is a bale-tie, consisting of the locking-bar D and diagonal brace E, made of cast or wrought metal, as desired. The locking-bar D is provided with a head, *a*, to prevent the lateral displacement of said bar when the bands are secured. The diagonal brace E is formed with a slot, F, which is of greater length than the width of the band. The end walls *b b* of slot F are preferably formed at right angles to the length of the brace E, as represented in the drawing. The object in forming the walls *b b* at right angles to the length of the brace E is that, when the locking-bar is inserted through the looped ends A B, it will not seat itself fairly in the loop A of the band end to which the brace is attached before the pressure is released from the bale, but will rest on a slight inclination, as clearly shown in Fig. 2.

When the locking-bar is in this position, it will be observed that the sharp biting-edges of the walls *b b* of slot F rest against the edges of the band. When pressure is released from the bale, and the strain due to the expansive force of the compressed cotton is exerted on the tie, the locking-bar is drawn down snugly in the looped end A, and the biting-edges of the walls *b b* embed themselves in the edges of the band, as shown in Fig. 3, thus firmly securing the diagonal brace against any movement on the band end to which it is attached. This form of tie secures the maximum strength of the metal employed in the construction of the tie. The diagonal brace receives the strain exerted on one of the band ends, and, as the brace is firmly locked to the opposite end of the band, the latter receives the full strain. Hence the strength of the tie is dependent only on the strength of the bale-bands employed.

It is evident that the angle or form of the walls *b b* may be changed; and still accomplish the desired result, and hence we do not limit ourselves to the exact construction shown

and described, as the invention consists, broadly, in the diagonal brace provided with a slot, the end walls of which are adapted to bite or pinch the edges of the band when the tie is locked on the bale.

In Fig. 4, A and B are the band ends. D represents the locking-bar, provided with a diagonal brace, E. Locking-bar D is preferably formed with an enlarged end, b', which serves to prevent the lateral movement of said bar when it is secured in place on the bale. Diagonal brace E is provided with the hooks *d e*, between which there is sufficient space to allow the brace to be attached to any part of a band. A represents one end of a band. The brace E is attached to the band end A by turning said brace at or nearly at right angles with the band, and then inserting the band between the hooks *d e*, as represented in Fig. 4. When the locking-bar is turned toward the edge of the band, as illustrated in Fig. 5, it operates to change the relative position of the hooks and edges of the band to such an extent that the hooks *d e* serve to secure the brace to the band. The locking-bar D is adapted to be inserted through the loops A B, when arranged side by side, as illustrated in Fig. 6, and thus effectually secure both ends of the band.

It will be observed that a portion of the strain exerted on the loop B is sustained by the diagonal brace, which bears on the farther edge of the opposite loop A. This action of the strain serves to keep the brace in its proper position, and when the tie is secured, as shown in Fig. 6, it is impossible to detach the diagonal brace from the band without first releasing the locking-bar from the looped ends A B. Our improved form of tie is adapted to be readily secured to any portion of the band without the necessity of passing the looped end of the same through a slot formed in the tie, and the very movement required to lock the opposite looped ends of the band together also serves to lock the diagonal brace securely to the band. The end walls *b b* of the open slot in the diagonal brace are adapted to bite or pinch the edges of the band when the tie is secured on the bale, as represented in Fig. 6.

Fig. 7 represents a modification. In this instance the tie is preferably formed of wrought-iron, and the diagonal brace E′ provided with the raised lips b^2, which overlap the edges of the band when the tie is secured, and thus prevent the lateral displacement of the brace from the end of the band. When the tie is locked in place the diagonal brace is firmly wedged to the band at the points *b b*. Fig. 9 also illustrates another modified form of construction embodying our invention. The diagonal brace E is formed with the V-shaped band-slots *g*. When the brace is turned at right angles to the band there is sufficient space between said slots to admit of the band between the same; and when the locking-bar A is swung toward the edge of the band the portions *b* of the band adjacent to said slots overlap the edges of the band and retain the same in place.

The V-shaped slots *g* cause the diagonal brace to become firmly wedged to the band when the locking-bar is inserted in the loops on both ends of the band.

Figs. 9, 10, and 11 represent a cast-metal cotton-bale tie embodying our invention, said tie being formed without coring in the process of casting. In this instance the locking-bar D is formed with side flanges *i*, which lead from the lower edge of the outer end of said locking-bar to a point near its center, where they extend to the upper edge of the bar in a diagonal direction, and from thence to the slotted portion of the diagonal brace E. The outer end of the locking-bar is provided with an enlarged shouldered head, b^1. The upper end of the diagonal brace is formed without the necessity of coring by locating the bars *j* without the same vertical plane, so that a diagonal slot is formed; and hence the coring is effected by the sand in the process of molding.

The end walls *b b* of the diagonal slot are located at right or acute angles to the length of the brace, in order that the edges of said walls may bite on the edges of the band when the tie is secured in place.

Fig. 10 represents an edge view of the diagonal brace, and Fig. 11 a transverse section of the locking-bar shown in Fig. 9. When the band ends are secured to the tie last described, the strain is relieved from the inner edges of the bands and transferred to the central portions thereof, thus preventing the tearing or cutting of the bands, and enabling the latter to withstand a greater strain than would be the case were the strain exerted on the edges of the band.

The web K is of sufficient width to impart the necessary strength to sustain the transverse strain exerted on the bar D. The flanges *i* afford a firm bearing for the band ends.

A bale-tie constructed in accordance with the plan shown in Figs. 9, 10, and 11 is of very light weight and small first cost, as the metal is disposed in such a manner as to secure its maximum strength, and, as coring in casting is avoided, the cost of manufacture is considerably lessened thereby.

Fig. 12 represents a bale-tie similar to that shown in Fig. 9, with the exception of the locking-bar D, which latter is provided with side flanges *i*, forming reverse curves or arcs of a circle, *l*, the object being to prevent any strain on either edges of the opposite looped ends of the bands, but cause the strain to be exerted on the central portions of the band.

Fig. 13 represents a wrought-metal tie manufactured from oval wrought-iron bars. The outer end of the locking-bar D is provided with a hook, b^1, to prevent any lateral movement of the bar when the tie is secured on the bale. The diagonal brace E is twisted at *m*, so that the slot may be formed in the widest

portion of the brace. The end walls *b b* are adapted to bite on the edges of the band when the tie is locked on the bale.

Fig. 14 represents a wrought-metal tie made of flat iron bars or bands. The diagonal brace E is provided with an elongated slot to allow of the insertion of the band. The ends *b b* of the slot are wedge-shaped in form, that the brace may be securely interlocked with the band when the tie is locked in place.

Fig. 15 represents a tie made of round wrought-iron, the locking-bar D of which is slightly bent at *n*, in order that strain may be relieved from the inner edges of the band. The diagonal brace E has a slot formed thereon for the insertion of the band, and the walls *b b* of said slot bite on the edges of the band, the same as in the forms of ties heretofore described.

Fig. 16 represents a flat tie like that shown in Fig. 14, with the single exception that the bar or band of which it is composed is bent over on itself at *o*, to form the bend between the locking-bar and diagonal brace.

Figs. 17, 18, and 19 represent a bale-tie made either of cast or wrought metal, of U shape in cross-section, as illustrated in Fig. 19. This form of tie insures great strength, proportioned to the weight of metal employed. The side flanges *p* are of sufficient width to sustain the required transverse strain, and the slot *q* on the diagonal brace E is made through the central portion of the tie. The end walls *b b* are formed with sharp edges, in order that they will bite on the edges of the band when the tie is secured in place.

Fig. 20 represents another modification embodying our invention. In this form of construction the diagonal brace E is provided with an elongated slot having end walls *b b*, which are adapted to bite on the edges of the band when the tie is locked on the bale. The locking-bar D is formed with side flanges *i*, as hereinbefore described, while the outer end of the bar D is provided with a hook, *r*, which extends any desired distance beneath the band-seat formed on the outer end of the locking-bar, and serves the purpose of rendering the displacement of the bar an impossibility, regardless of the distortion of the diagonal brace due to excessive strain exerted thereon.

Fig. 21 is another modification, wherein the locking-bar D is constructed with a diagonal strengthening-brace, *s*, which extends from near the center of the locking-bar to an arm, *t*, depending from the curved portion of the tie. *u* is a raised flange formed at the juncture of the brace *s* and arm *t*. The outer end of the locking-bar is provided with a depending flange, V.

It will be observed that one end of the band is held securely in place by means of the slot in the diagonal brace E and the flange *v* on the locking-bar, while the other looped end is also prevented from twisting the bar, owing to the flange *u* engaging the side of said end at a point below its seat on the locking-bar. This form of construction serves to impart additional transverse strength to the locking-bar, and, as it effectually counteracts any tendency of the twisting of said bar, it is a valuable form of tie for withstanding heavy strains on the band.

Fig. 22 is a view of a modified form of slot in the diagonal brace. Instead of the brace being provided with walls *b b*, as heretofore shown and described, the end walls may be wedge-shaped or of equivalent form, as represented in the drawing, so that when the tie is secured in place on the bale, and pressure brought to bear on the bale-tie, the edges of the band will be firmly wedged or pinched within the wedge-shaped slots formed in the diagonal brace.

The ties hereinbefore described may be made either of cast metal, wrought-iron, Bessemer or other forms of steel, as may be found most expedient in practice.

From the foregoing it is evident that many different forms of ties provided with closed or open slotted diagonal braces may be devised which will embody the spirit of our invention, and hence we do not limit ourselves to any particular form of tie; but,

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A bale-tie the locking-bar of which is secured to the band by means of a slotted diagonal brace the end walls of which are formed to bite or pinch the edges of the band when the tie is secured on the bale, substantially as set forth.

2. A bale-tie provided with a locking-bar and diagonal brace, the latter having a slot for the reception of the band, the end walls *b b* of said slot being formed and adapted to bite the edges of the band when the bands are secured on the bale, substantially as set forth.

3. A bale-tie consisting, essentially, of a locking-bar provided with a diagonal brace which is adapted to be attached to any portion of the band, and secured against displacement by inserting the locking-bar through the opposite loops of a band when said loops are arranged side by side, substantially as set forth.

4. A bale-tie consisting, essentially, of a locking-bar provided with a diagonal brace, which is furnished with hooks, lips, or projections, arranged to admit of the band when the locking-bar is swung outwardly, and to overlap the edges of the band when the locking-bar is inserted through the opposite loops of a band when said loops are arranged side by side, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 18th day of February, 1878.

FREDERICK COOK.
HENRY SHAW.

Witnesses:
HENRY A. SEYMOUR,
FRANK O. MCCLEARY.