No. 609,872. Patented Aug. 30, 1898.

D. M. CAMPBELL.

BALE TIE.

(Application filed Jan. 27, 1898.)

(No Model.) 2 Sheets—Sheet 1.

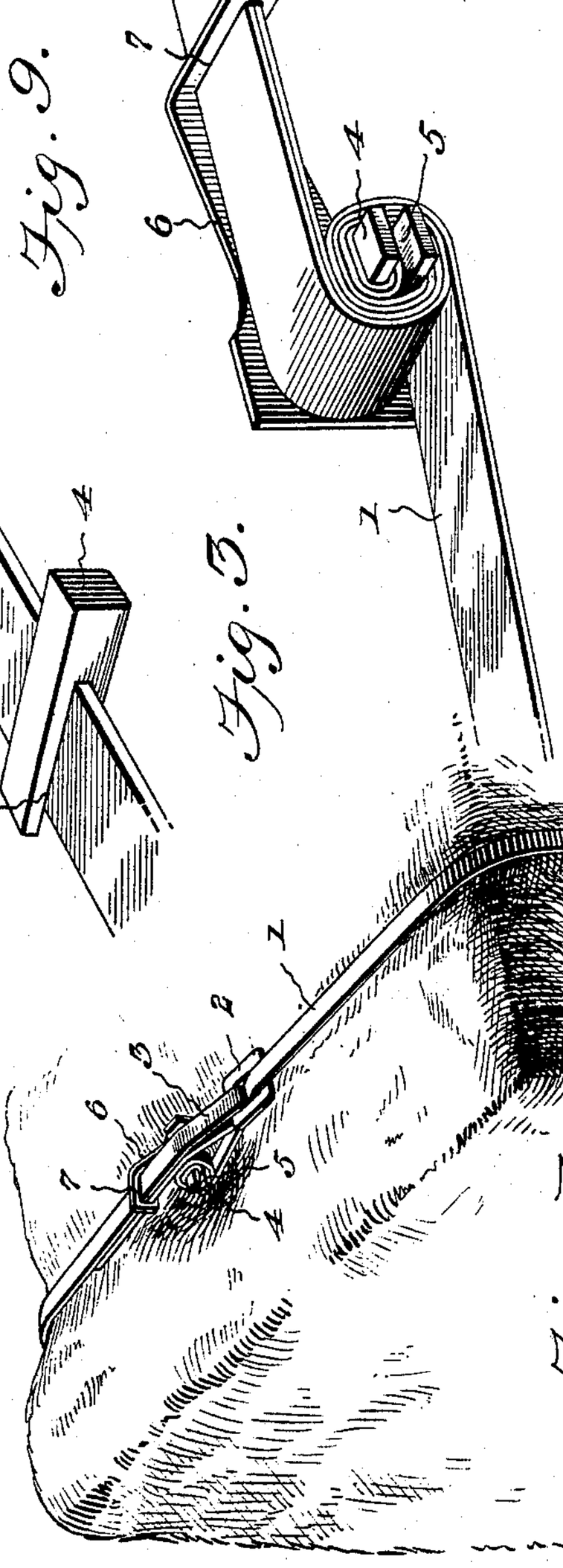

Fig. 9.

Fig. 3.

Fig. 10.

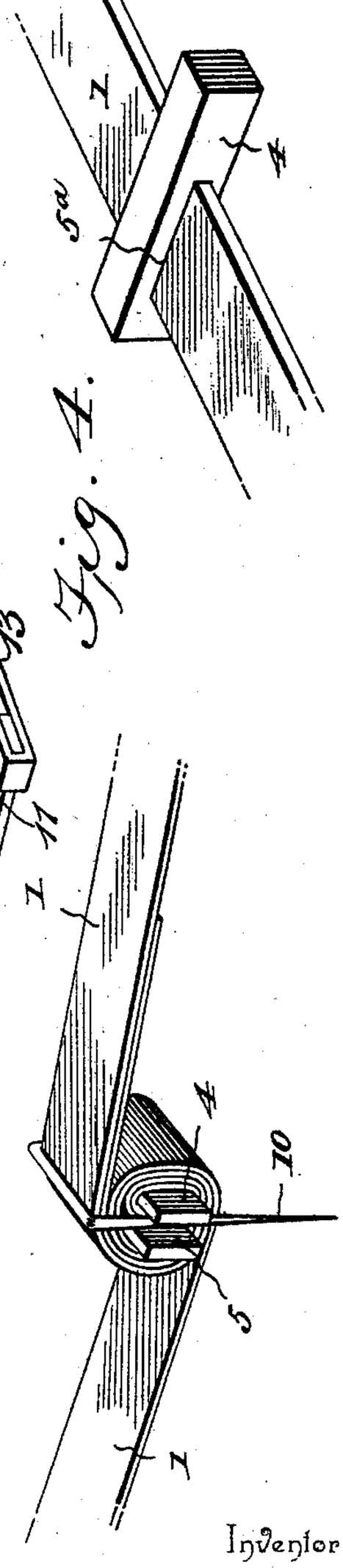

Fig. 4.

Fig. 9a.

Fig. 7.

Inventor
Douglas M. Campbell

Witnesses
E. F. Monroe
O. E. Keyl

By his Attorneys,
C. A. Snow & Co.

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D. M. CAMPBELL.

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(No Model.) 2 Sheets—Sheet 2.

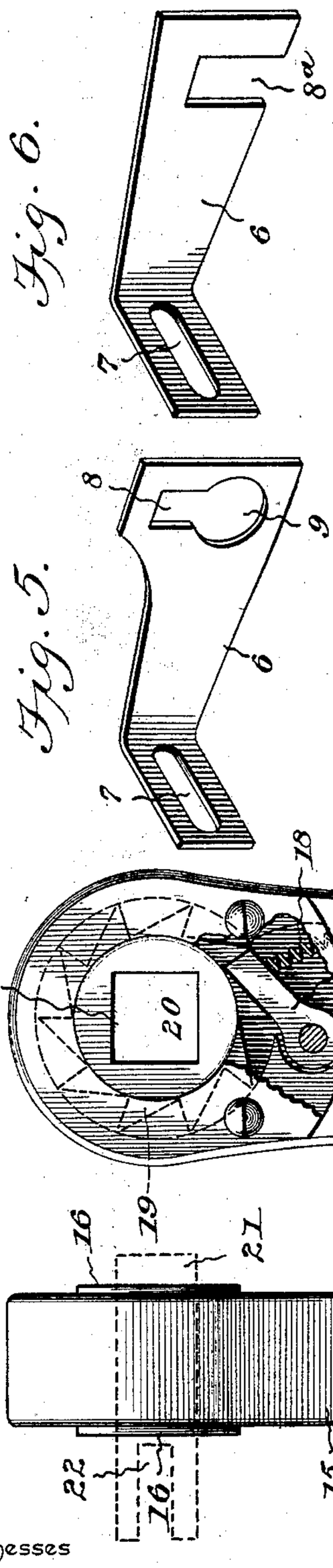

Fig. 6.

Fig. 5.

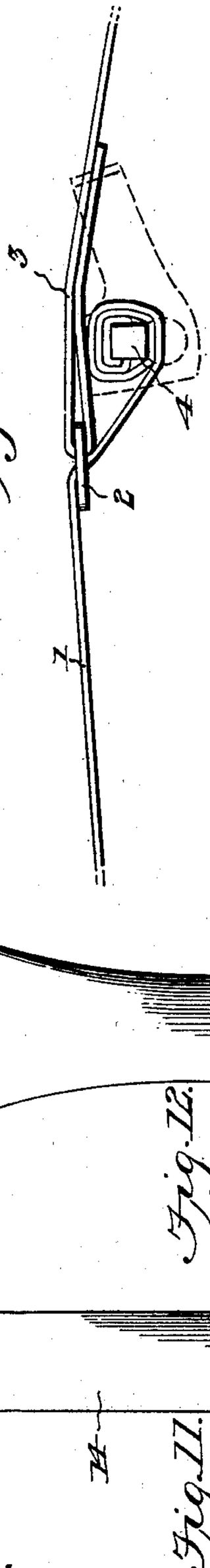

Fig. 2.

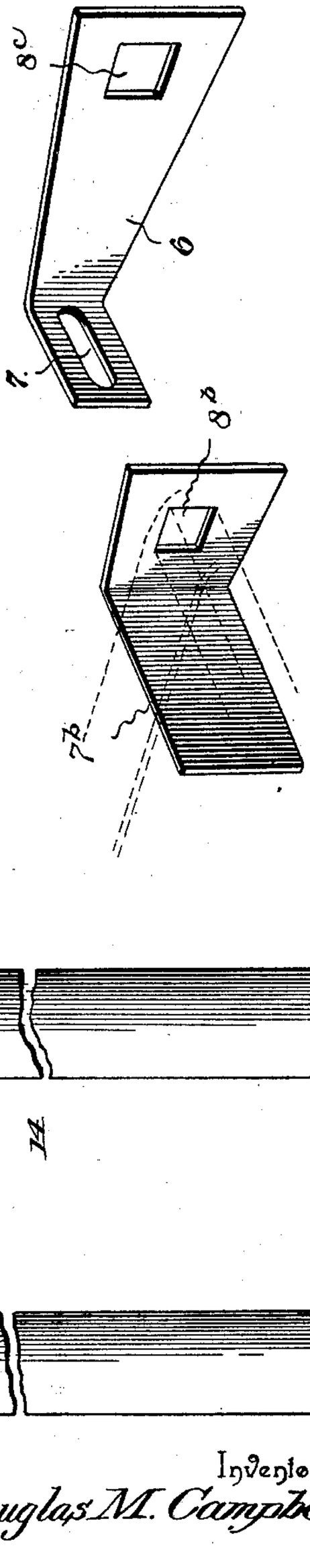

Fig. 8.

Fig. 7.

Fig. 12.

Fig. 11.

Inventor
Douglas M. Campbell

Witnesses
E. N. Mowry
[illegible]

By his Attorneys,
Church & Co.

UNITED STATES PATENT OFFICE.

DOUGLAS M. CAMPBELL, OF HOUSTON, TEXAS, ASSIGNOR OF ONE-FOURTH TO SINCLAIR TALIAFERRO, OF SAME PLACE.

BALE-TIE.

SPECIFICATION forming part of Letters Patent No. 609,872, dated August 30, 1898.

Application filed January 27, 1898. Serial No. 668,190. (No model.)

To all whom it may concern:

Be it known that I, DOUGLAS M. CAMPBELL, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented a new and useful Bale-Tie, of which the following is a specification.

My invention relates to bale-tie-fastening devices, and has for its object to provide a simple, strong, and efficient tie which may be applied with facility to a cotton-bale or an equivalent package.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a portion of a bale, showing a tie constructed in accordance with my invention applied in the operative position thereto. Fig. 2 is an edge view of the tie. Fig. 3 is a detail view of the key detached. Fig. 4 is a similar view of a slightly-modified construction of key. Fig. 5 is a detail view of the lock detached. Figs. 6, 7, and 8 are similar views of modified forms of the lock. Fig. 9 is a view of a tie formed by the use of the key without the buckle and adapted for use when the frictional contact of the band with the buckle is undesirable, as when the bale is to be put under excessively heavy tension. Fig. 9ª is a view of a similar construction and arrangement of parts wherein the key is held from unwinding by means of a staple. Fig. 10 is a similar view showing another modified form of key adapted particularly for use independently of the buckle and provided with a staple locking device. Fig. 10ª is a detail view in perspective of the form of key and lock illustrated in Fig. 10, the band being omitted. Fig. 11 is a side view of a key-winding tool adapted for use in connection with the parts of my improved tie. Fig. 12 is a face view, partly in section, of said tool.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In Figs. 1 and 2 I have shown in connection with a band 1 a slotted buckle 2, around one side of which the contiguous extremity of the band is folded to form a loop 3, the other end of the band being extended through the slot or opening of the buckle and being engaged by a key 4, upon which said band is coiled under the loop 3 by turning the key. Any suitable means may be employed for turning the key to form the loop—such, for instance, as the winding-tool illustrated in Figs. 11 and 12 and which will hereinafter be described. The key which is illustrated in Figs. 1 and 3 is of cross-sectionally angular construction to fit in the socket of the winding-tool, the length of said key being greater than the width of the band, and, furthermore, said key is provided with an open-ended slot 5 to adapt it to be applied longitudinally or by an endwise movement thereof to the band. In Fig. 4 I have illustrated a slightly-modified form of this key wherein the slot 5ª is closed at its ends, thereby necessitating the application of the key to the band in a direction parallel with the latter.

Obviously the key is allowed to remain in engagement with the coil formed thereon when the tightening of the band has been completed, the winding-tool being disengaged from said key, and under ordinary circumstances, wherein the tension of an ordinary degree is applied to the band, the frictional contact of the surface of the coiled portion of the band with the looped portion thereof is sufficient to prevent the uncoiling of the first-named extremity and the slipping of the looped extremity. I have found it desirable, however, under conditions necessitating a severe tension upon the band to employ in connection with the key a lock 6, preferably having a sliding connection with the body portion of the band and being fitted thereon prior to the engagement of the extremities of the band with the buckle and key and having its free end constructed to interlock with the extremity of the key.

The lock which is illustrated in Figs. 1 and 5 is slotted at 7 to fit slidingly upon the body portion of the band and is provided at its free end with an angular seat 8 to engage the projecting portion of the key, said seat communicating with an enlarged and rounded opening 9, in which the key may be rotated in the operation of coiling the band.

In the modified construction of lock in Fig. 6 the free end thereof is provided with a seat 8^a, which, however, is extended laterally to and is open at the side edge of the lock.

In Fig. 7, which shows another modification of the lock, the seat 8^b is fitted upon the key and the inwardly-bent arm 7^b extended under the band, while in Fig. 8 the seat 8^c is of simple angular construction to fit the end of the key.

The conditions under which I prefer to use the lock for preventing the uncoiling of the band are those wherein it is desirable to dispense with the buckle in order to dispense with the friction incident to drawing the band therethrough, as when the compression of the bale is to be accomplished by the tension applied to the band.

In Fig. 9 I have shown a key similar to that illustrated in Figs. 1 and 3, the slot of the key being engaged with the overlapping extremities of the band and then being twisted in a manner similar to that hereinbefore described. The subsequent unwinding of the key is prevented by means of a lock similar to those hereinbefore described.

In Fig. 9^a a tie constructed identically with that shown in Fig. 9 is illustrated; but instead of the lock 6 the key is held from backward rotation by means of a staple 10.

Figs. 10 and 10^a show a modified construction of key 11 provided with terminal spurs or extensions 12, adapted subsequent to the winding operation to be engaged by a sliding lock or keeper 13, which, as described in connection with the other forms of locks, is adapted to be fitted upon the band prior to the application of the extremities of the latter to the key. The body portion of the key 11 is disposed transversely with relation to the spurs 12 and is slotted, as shown at 11^a, to receive the extremities of the band in a manner analogous to that described in connection with the forms of my invention illustrated in Figs. 1 to 9^a, inclusive.

It is obvious that any desired form of winding device may be employed in connection with the key above described; but that form which I have found efficient for the purpose is illustrated in Figs. 11 and 12, wherein the shank 14 is provided with a head 15, forming a bearing for a revoluble key-socket 16, rotary motion being communicated from the head to the key-socket by means of a pawl 17, actuated by a spring 18 and a ratchet 19 on the key-socket. The socket is provided with an angular opening or key-seat 20 for the reception of the key 4.

An important advantage of the construction shown and described resides in the fact that a bale of which the ties have become displaced or broken, thus releasing the bale and allowing it to expand during shipment or at the wharves awaiting shipment, may be rebound by means of the tie and tightening device set forth. In other words, the device which I have shown and described is adapted for rebinding a bursted bale without returning the same to a press, such return often involving considerable expense, especially when the bale is on its way to its destination.

The advantage of the form of my invention illustrated in Figs. 9, 9^a, and 10 resides in the fact that both ends of the band are simultaneously engaged and coiled, whereby the band is taken up from both directions, and consequently with a given number of turns of the key double the length of the band is wound upon the key as would be coiled thereon if only one end of the band were engaged, as shown in Fig. 1. Furthermore, the difficulty of winding is reduced by reason of drawing the band from both directions, and hence a greater density of bale is secured.

In winding the key illustrated in Fig. 10 I employ a bit 21, (illustrated in Fig. 11,) constructed substantially similar to the key 4, with a longitudinal open-ended slot 22 for engagement with one side edge. By engaging the slot of the bit with the edge of the key shown in Fig. 10 the latter may be turned to coil the band, the arms or extensions of said key also coiling as the winding operation is accomplished, but being adapted to be subsequently straightened out for engagement by the lock 13.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A bale-tie comprising a band, a key engaged with the band and rotatable to coil the same therearound, and a lock fitted upon the band and engaged with the key to prevent reverse rotation thereof, substantially as specified.

2. A bale-tie comprising a band, a slotted key engaged with the band and rotatable to coil the same thereon, and a lock fitted upon the band and engaged with the key, substantially as specified.

3. A bale-tie comprising a band, a slotted key engaged with the band and rotatable to coil the same thereon, and a lock mounted to slide on the band and provided with a key-seat, substantially as specified.

4. A bale-tie comprising a band, a slotted key engaged with the band and rotatable to coil the same thereon, and a lock fitted to slide on the band, and having an open-ended key-seat, substantially as specified.

5. A bale-tie comprising a band, a slotted buckle through which the extremities of the band extend, and a slotted key engaged with one extremity of the band, and adapted to be turned to coil the same, substantially as specified.

6. A bale-tie comprising a band, a cross-

sectionally angular slotted key engaged with the band and rotatable to coil the same thereon, and a lock fitted upon the band and provided with an angular seat to engage a projecting end of the key, substantially as specified.

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

DOUGLAS M. CAMPBELL.

Witnesses:
T. H. STONE,
C. GRUNEWALD.