

E. S. LENOX.

Improvement in Wire Bale-Ties.

No. 128,803.

Patented July 9, 1872.

Fig. 1.

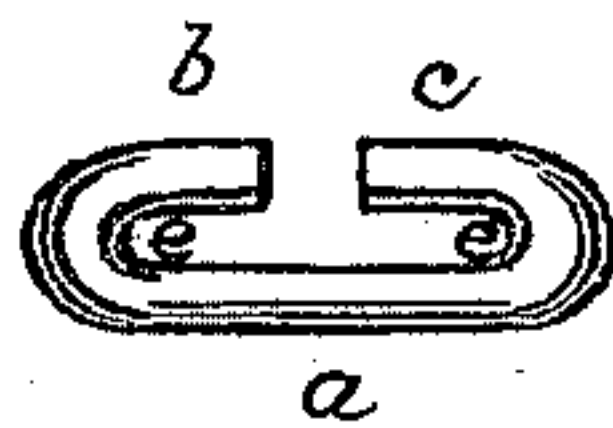


Fig. 2.

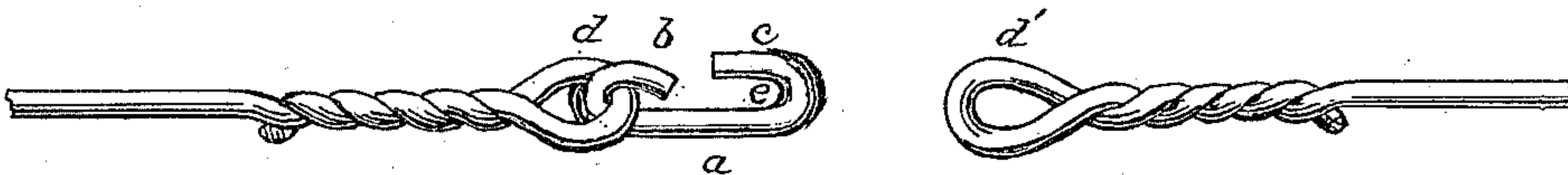


Fig. 3.

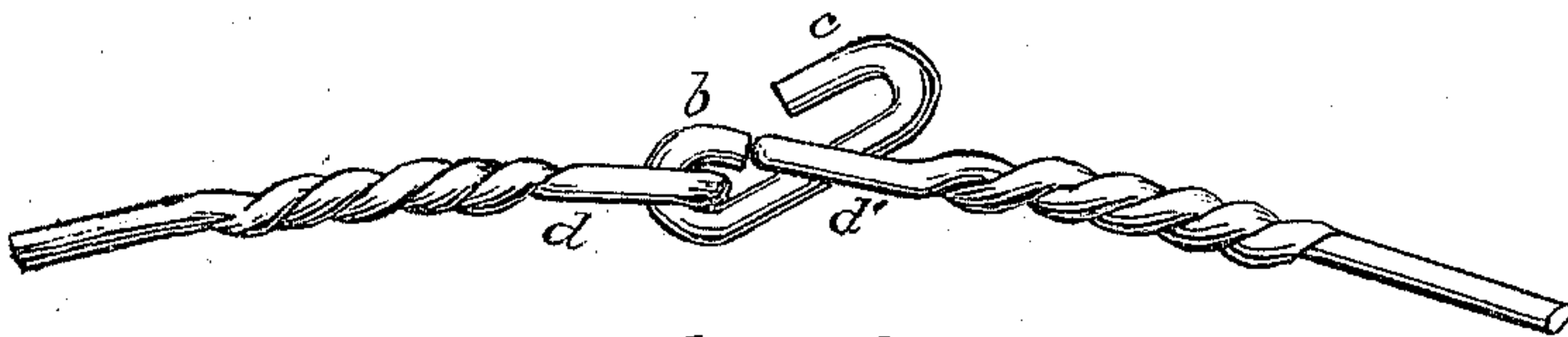
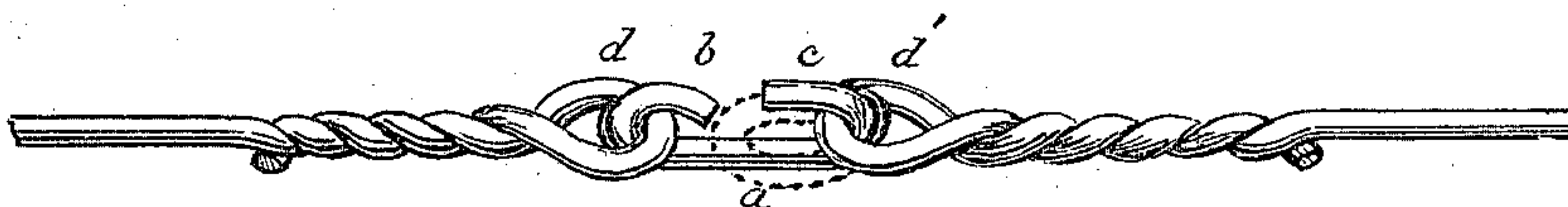


Fig. 4.

Witnesses:

Chas. M. Jones.

Inventor

E. S. Lenox

Per Burke Fraser & Good,  
attys



## UNITED STATES PATENT OFFICE.

EDWIN S. LENOX, OF NEW YORK, N. Y.

## IMPROVEMENT IN WIRE BALE-TIES.

Specification forming part of Letters Patent No. 128,803, dated July 9, 1872; antedated June 22, 1872.

## SPECIFICATION.

I, EDWIN S. LENOX, of the city, county, and State of New York, have invented an Improvement in Fastenings for Wire Bale-Bands, of which the following is a specification:

My invention relates to the manner of forming that class of fastenings which connect the two ends of wire bands for securing bales of cotton, hay, or other like materials; and consists in a link formed from a straight piece or section of wire by bending the two ends in a direction toward each other in such a manner as to upset or increase the amount of metal on the concave side of the bent part to present greater resistance to the eye of the wire band while the fibers of the intermediate part of said link are not disturbed, and the tensile strength of the metal is preserved; and it further consists in the arrangement of the terminal ends of the fastening-link for preventing the accidental disconnection of the band.

Figure 1 shows the link alone; Fig. 2, the same, with one end permanently connected with the band; Fig. 3, with both ends of the band connected by this device. Fig. 4 shows the security of the fastening against accidental disconnection.

The method of constructing these connecting-links is as follows: Take any ordinary drawn wire of suitable size, which is preferably of a little greater diameter than that of the wire band with which it is designed to be used. This is cut in sections of requisite lengths, say, of two inches or thereabout. These sections are then placed in a bending-machine, adapted to the purpose, which will gradually bend the two opposite ends into semicircular form, as at *b c*, each end being bent in the same lateral direction relatively to the intermediate unbent portion *a*. The bending must be effected gradually and in such a manner as not to break the continuity of the fibers on the convexed side, which has the effect to condense, upset, and increase the amount of metal on the concaved side, which effects the object of my invention—viz., to give increased strength to the bent portions which receive the strain and friction of the eyes of the band, and preserve the normal strength of the intermediate portion of the link. The pieces bent as described present the appearance of a straight chain-link with a section

from one of its sides removed, and are applied to the band by engaging one bent end with the eye *d* of the latter and clinching the end sufficiently to retain it, the other end being left free until the band is applied to the bale. As ordinarily made the hooks of these fastenings are hammered or bent with a sudden force, which is injurious to the metal, rendering them deficient in strength where it is most required; but in the construction of my improved fastening a machine is employed which admits of the collection or aggregation of the metal at the concaved part, while lamination or disintegration of the convexed side is prevented. The fixed end of the link instead of being swaged down close in connecting it with the eye *d* is left partially open to an extent a little less than the diameter of the wire composing the eye on the free end of the band, the effect of which is that in case of jar or concussion the eye abuts against the fixed end *b* of the link, as shown in Figs. 3 and 4, throwing the other end *c* up into such a position as to prevent the probability of disengagement, and allowing it to resume its normal position again after the disturbing cause is removed. In this fastening the tension is exerted mainly on the straight part *a* of the link and lengthwise of the fibers, which portion has not been disintegrated or had its cohesion impaired by bending or torsion in forming the link. The metal, therefore, in the part *a* retains its original tensile strength; and if any part were weakened in the making it would be the bends *e e*; but, it will be observed, that they are simply semicircular curves in one direction, the forming of which does not subject the metal to torsion or disintegration, but, on the contrary, gathers or "upsets" the metal, producing an increase of substance on the inner side of the curves where the eyes rest, thus adding to the strength at that point.

In other forms of wire ties the metal has not only been subjected to injury by complex and tortuous bending while making, but their shape is such that the strain to which they are subjected by use, which is often very great, is exerted in a direction counter to that of the fibers of the wire, which tends to untwist and separate them, destroying much of their cohesive strength; while in my device the continuity of the wire with the direction of the



greatest strain is preserved, and by this means the greatest durability and strength are obtained, enabling smaller-sized wire to be employed, and thereby a saving of cost effected. This form of fastening is rendered the most convenient for use from its loose but permanent connection with one eye, while the opposite end is free for coupling or disengaging, and not being liable to be lost may be used many times over.

Wire bands of this description are liable at times to become accidentally unfastened by the falling of a bale from a wagon or other elevation, and compressing the side next the fastening sufficiently to allow the hook to fly out of the eye at the moment of concussion. The peculiar construction of my fastening prevents the hook being disengaged from such a cause. When a sudden blow occurs with sufficient force to overcome the tension on the band and loosen the hook, the eye *d'* as it approaches its opposite comes in contact with the clinched end *b*, as indicated by dotted lines in Fig. 3, thereby sliding under and raising

the free end of the hook, as shown in Fig. 4, retaining it in a position which prevents their entire separation and insures the re-engagement of the hook as soon as the disturbing force is removed.

I claim as my invention—

1. A wire bale-band fastening formed of the link *a b c* in combination with the eyes *d d'* of the band, all constructed and operating substantially as herein set forth.

2. In a wire bale-band fastening formed of a section of wire, the ends of which are bent toward each other in the same lateral direction, I claim the curved ends *b* and *c* bent at the angle described relatively to the straight portion *a*, substantially as shown and described, and for the purposes set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDW. S. LENOX.

Witnesses:

K. N. JONES,

J. FRASER.