

(No Model.)

H. FRANK.
WIRE BAND FOR BOXES.

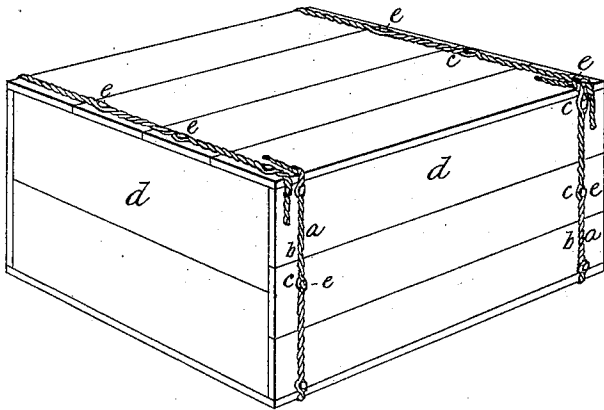
No. 304,308.

Patented Sept. 2, 1884.

Fig. 1



Fig. 2



Witnesses

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per
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UNITED STATES PATENT OFFICE.

HIMAN FRANK, OF NEW YORK, N. Y., ASSIGNOR TO THE TWISTED WIRE BOX STRAP COMPANY, OF SAME PLACE.

WIRE BAND FOR BOXES.

SPECIFICATION forming part of Letters Patent No. 304,308, dated September 2, 1884.

Application filed June 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, HIMAN FRANK, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Wire Bands for Boxes, &c., of which the following is a specification.

This invention relates to wire bands for boxes, and is an improvement on the invention covered by the United States Letters Patent to W. Haeckel, No. 246,672, dated September 6, 1881, which is for a wire band composed of twisted-wire strands, and having eyes or openings for the reception of the nails formed by outward bends of the strands, the twist being in one direction throughout the whole length of the band. It is essential in bands or fasteners for boxes which are provided with eyes or openings for the reception of nails that all the lines or openings be in one plane; otherwise difficulty is experienced in applying the bands to boxes, &c. To insure this alignment of the eyes in bands composed of twisted strands of wire is the object of this invention, which end I attain by twisting the wires in opposite directions in the alternating sections of the bands between the eyes or openings, so any tendency of an uneven twist due to one of the strands being harder than the other, or from other causes, which would throw the eyes out of line, in a progressive manner, in one direction, if a continuous twist in one direction be made throughout the whole length of the band, is counteracted by this reverse twisting of the alternate sections, for the difference between the planes of two consecutive eyes will be very slight, and as this change of plane is reversed in each alternate eye all of them are practically in one plane. This double-twisted wire band has also an advantage in its application for any torsional or side strain which would tend to free it from the nails passed through the eyes, will twist it on one side of the nails as much as it untwists it on the other, so that the liability of this class of band becoming loose is lessened.

In the accompanying drawings, Figure 1 represents a portion of a twisted-wire band made

according to my invention, and Fig. 2 illustrates the application of such bands to a box.

To make the bands with a double twist, the strands *a* and *b* are twisted together in the first section in a right-hand direction; they are then spread apart so as to form the eye or opening *c*, and are brought together again, and in the second section are twisted in a left-hand direction, and are then spread apart in the same plane as before to form the eye *c'*, when a right-hand twist is again given the strands in the next succeeding section to the eye *c''*, and so on throughout the whole length of the band, alternately twisting them in opposite directions and spreading them apart in the same plane to form the eyes. Now, it will be observed, that should the eye *c'* be out of line with the eye *c* by reason of one of the strands *a* or *b* being harder than the other one, or from any other cause, such variation in the planes of *c* and *c'* will be very slight, as the distance between them is small, and a similar variation will occur between *c''* and *c'*, but *c''* will be twisted out of line in the opposite direction to *c'*, and will consequently be in the same plane with *c*, and the next eye in plane with *c'*, and so on throughout the whole length of the band. Thus any variations in the quality or properties of the two strands will not materially affect the alignment of the eyes. A single wire is shown used in each of the strands. It is evident that two or more may be used, if desired, without affecting the principle of the invention.

The manner in which the bands are to be used is clearly shown in Fig. 2, *d* representing a box; *a b*, the duplex twisted bands, and *e* the nails passing through the eyes *c*, by which they are secured to the box.

I do not claim, broadly, a wire band composed of twisted strands and provided with retaining-eyes, as described and claimed in the before-mentioned Letters Patent; but

What I claim, and desire to secure by Letters Patent, is—

1. A band for binding boxes, composed of twisted wires, with eyes or openings formed between the strands, the twist in the alter-

nating sets of sections being in opposite directions, substantially as set forth.

2. A band composed of wire strands having a right-hand twist for a short distance, then an eye formed by outward bends of the strands, then a left-hand twist for a short distance, then another eye formed by outward bends of the strands, and so on, substantially as set forth.

3. In a band for binding boxes, the combination of the wires *a* and *b*, twisted together in a right-hand direction, bent outwardly to form the eye *c*, and then twisted together in a

left-hand direction, bent outwardly in the same plane as before to form the eye *c'*, and then again twisted together in a right-hand direction, and so on, substantially as set forth.

In testimony whereof I have hereunto set my hand, at New York, county and State of New York, this 16th day of June, A. D. 1884.

HIMAN FRANK.

Witnesses:

ALFRED SHEDLOCK,
H. D. WILLIAMS.