L. CANFIELD.

FASTENER AND TIGHTENER FOR CYLINDRICAL SPIRAL WIRE-COILS IN BED-BOTTOMS, &c.

No. 194,330. Patented Aug. 21, 1877.

Fig. 1.

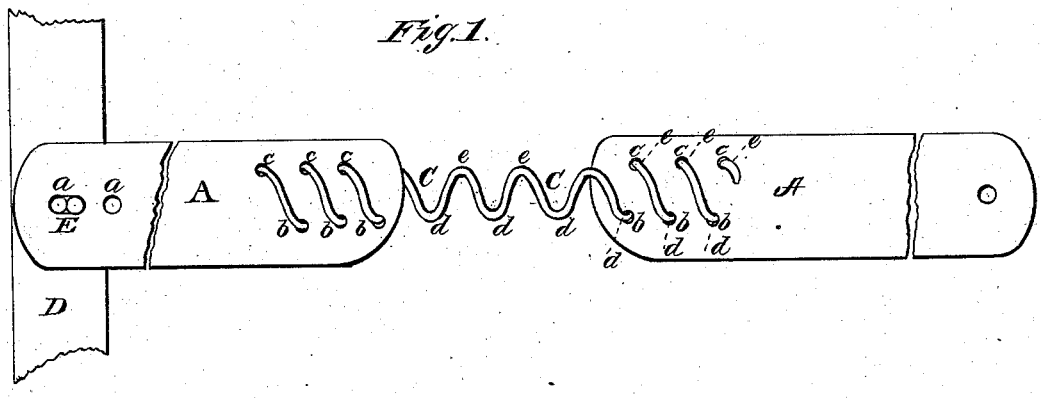
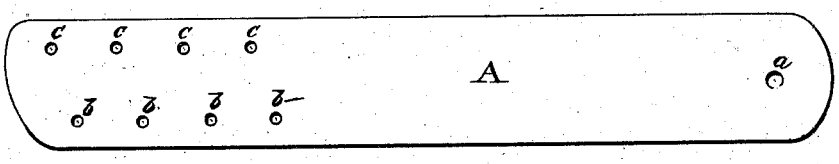


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN FASTENER AND TIGHTENER FOR CYLINDRICAL SPIRAL WIRE COILS IN BED-BOTTOMS, &c.

Specification forming part of Letters Patent No. **194,330**, dated August 21, 1877; application filed March 31, 1877.

To all whom it may concern:

Be it known that I, LOCKWOOD CANFIELD, of the city of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented a new and Improved Fastener and Tightener for Cylindrical Spiral Wire Coils, which is fully set forth in the following specification and accompanying drawing.

The principle of my invention consists in so arranging a series of holes of proper size in a plate of metal or other suitable material that by turning a cylindrical spiral wire coil on its axis the coil can be twisted into and through these holes successively, and thus securely held. The plate is attached to whatever the coil is to be connected and fastened. The invention depends on a mathematical correspondence between the coil and the distances and relative locations of the holes.

In the drawing, Figure 2 is the fastener and tightener ready for use. Fig. 1 is the coil and the fastener joined and actually applied and fastened.

A is the fastener. *a a* are the holes through which the fastener is attached, for instance, to a beam or bar; *b b* and *c c*, the holes into which the coil is inserted. The coil is C C. *d d* and *e e* are corresponding points in the coil—that is, *d* is distant from *d* and *e* is distant from *e* one circle or revolution of the coil, as hereinafter explained. D is the beam or other article to which the coil is to be fastened, and E the pin driven through *a*. Measuring always from center to center of the holes and of the wire, the perpendicular distances from *b* to *c* and from *d* to *e* are equal.

I construct and practically apply my invention as follows: I take an oblong piece of strap-iron, steel plate, or other suitable material, and at one end of it I punch, in a straight line along its length and midway from its sides, two or more holes, large enough to admit a screw, pin, or spike of the requisite strength to hold securely the fastener and the coil. At the other end two parallel rows of holes are made lengthwise of the fastener and to any distance desirable. The holes should be large enough to permit an easy passage of the wire as it is spirally twisted through them. The holes in each row along the fastener must be placed at equal distances, and so that the distance between any two adjacent holes in the same row is equal to the distance between any two points on the coil, between which points the wire has spirally described three hundred and sixty degrees, as, in the drawing, from *b* to *b* is the same as from *d* to *d* or from *e* to *e*. The holes in the two rows are not opposite to each other, but are alternately placed in zigzag order of regular character, corresponding with what may be called the "obliquity" of the coil. In the drawings, for example, the angle formed by a line from *b* to *c* with a line from *c* to *c* is the as the same angle formed by a line from *d* to *e* with a line from *e* to *e*, or with the axis of the coil. These angles, of course, will vary as the coil is open or close.

I have now stated the general rule which teaches how to construct the fastener, and have shown the practical application of the rule. The rule is always the same, though its application will vary according to circumstances. The fastener may be attached to the beam D temporarily or permanently. For some purposes I prefer to attach it temporarily, making the hole large enough to take the fastener off over the head of the pin. The holes for the pin should be in or nearly in a line midway between the prolonged lines of the rows of holes for the coil, as the strain is then even. The coil is tightened, if it slackens, either by taking the fastener off the pin E and drawing it up one or more holes, or by twisting the coil farther into the holes *b c* by revolving it on its axis. The former way is simpler and easier, and I often prefer the temporary attachment to D for that reason. The coil is always connected with the fastener, when ready for use, by inserting the end of the coil into the hole nearest to the end of A and twisting the coil through the holes as far as is desired.

I claim, then, as my invention—

1. The fastener and tightener A, having the single row of holes *a* and the parallel rows of holes *c b*, in combination with the

spiral coil C, the holes *c b* being of suitable size to receive the wire of the coil, and also being arranged to agree with the diameter and pitch of the coil, whereby the coil can be inserted into the fastener, substantially as described.

2. The combination of the coil C C and the fastener A, having the holes therein corresponding to the coil, substantially as and for the purpose above described.

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