J. FLINN.
Wire-Ladder.

No. 200,524. Patented Feb. 19, 1878.

Fig. 1

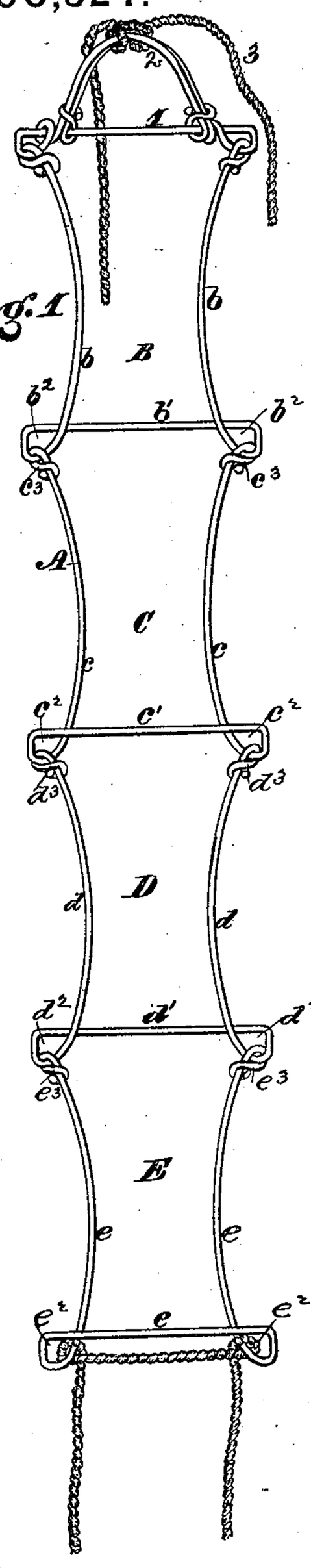

Fig. 2

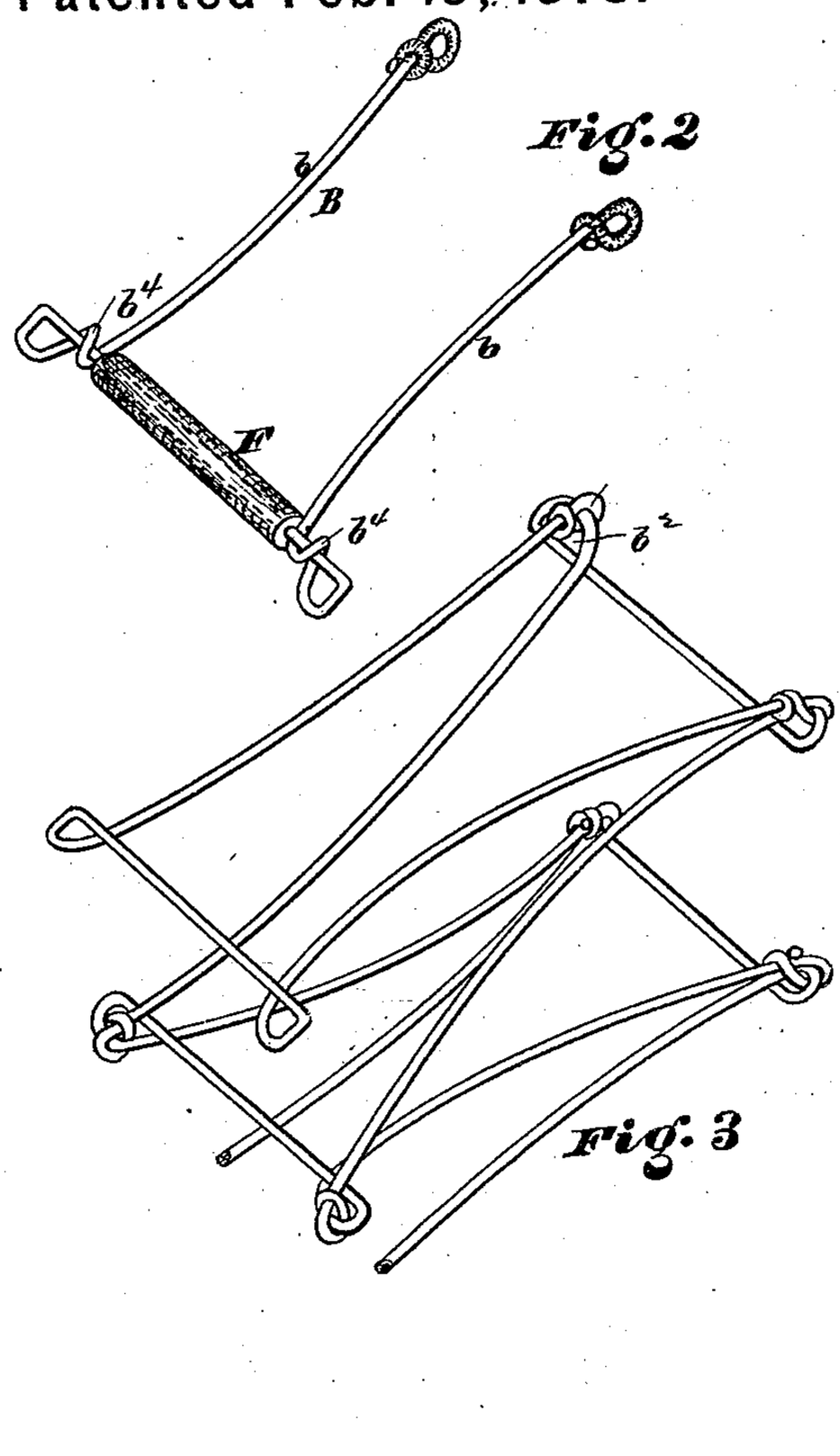

Fig. 3

Fig. 4

Witnesses
Saml. S. VanSchoonen
Jos. B. Connolly

By

Inventor
John Flinn,
Connolly Bros.,
Attorneys

UNITED STATES PATENT OFFICE.

JOHN FLINN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN WIRE LADDERS.

Specification forming part of Letters Patent No. **200,524**, dated February 19, 1878; application filed April 28, 1877.

To all whom it may concern:

Be it known that I, JOHN FLINN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wire Ladders; and I 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, in which—

Figure 1 is an elevation of the ladder; Figs. 2 and 3, detail perspectives. Fig. 4 is a side elevation, showing the ladder folded.

My invention has for its object to construct a light and strong wire ladder, which can be compactly stowed and easily transported.

My improvements consist in the peculiar manner of constructing and uniting the links of which said ladder is composed so as to permit the same to fold snugly one upon the other, said construction also insuring strength and security when the ladder is opened or extended for use.

Each of the links of which the ladder is formed is constructed of one piece of spring-steel wire, which is doubled or bent to provide a step or round with two sides. The bends at the junctions of the sides form eyes. The eyes thus formed on each link afford means for connecting the links with each other, the extremities of the sides of one link being passed through the eyes of the link next to it, as hereinafter more fully described.

Referring to the accompanying drawing, A designates the wire of which the links are formed, said links being lettered B C D, &c. The wire of each link is bent to form two sides, *b b* or *c c*, &c., and a round or step, b^1 or c^1. The bend at the junction of the sides and round forms eyes b^2 or c^2. Through the eyes b^2 the ends of the sides *c c* are passed, said ends being then turned over or looped, and then wrapped or twisted around the sides, as shown at c^3.

The ends of the sides of each link are passed through the eyes of the next adjacent link in the manner described, thus forming a ladder of links united by hinges or joint-connections.

The eyes of the links are made sufficiently large to permit the knots or twists b^3 c^3, &c., to rest in them when the ladder is folded, as shown in Fig. 4, thus permitting said links to come snugly together.

The sides of the links may curve toward each other, as shown, or may be made straight, if desired.

At the end of the ladder there should be a cross-piece, 1, with loop 2 for the attachment of a rope, 3, or other fastening device, by means of which said ladder can be secured in position by tying or otherwise.

For greater security an additional turn may be given to the wire after the eyes are formed, thus passing once around the rounds, as shown at b^4 c^4 d^4, before passing up to form the sides. This prevents the rounds from spreading or springing away from the sides when stepped on, and also stiffens the rounds, so as to prevent their bending injuriously under any extra heavy weight.

To avoid the unpleasant sensation produced by the contact of cold metal with a bare foot, as also to give a larger treading-surface and one which will be more secure than smooth metal, I employ gum tubing F as a covering for the rounds.

What I claim as my invention is—

1. The hinged or pivoted links B C D, &c., composed each of a single piece of wire, bent to produce sides *b c d* and rounds b^1 c^1 d^1, eyes b^2 of the hinged joints c^2 d^2 being formed at the junction of the sides and round, and loops c^3 d^3, &c., at the upper ends of the sides of each link, substantially as shown and described.

2. The combination of hinged or pivoted links B C D, &c., each of said links being constructed of a single piece of wire, bent to form sides *b c d* and rounds b^1 c^1 d^1, with loops c^3 d^3, &c., at the upper ends of the sides, and eyes b^2 c^2, &c., at the junction of the sides and round of each link, the ends of one link being passed through the eyes b^2 c^2 d^2 of the next, and twisted, as shown at b^3 c^3 d^3, and said eyes being enlarged sufficiently to permit said

twists to rest therein, as shown, and the links to be snugly folded upon each other, substantially as shown and described.

3. The improved folding ladder, consisting of a series of bent or U-shaped wire links, having eyes at their angles and loops at their ends, by which they are hinged together and adapted to fold one upon the other, as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of April, 1877.

JOHN FLINN.

Witnesses:
M. DANL. CONNOLLY,
CHAS. F. VAN HORN.