C. P. S. WARDWELL.

Wire Straightening Machines.

No. 166,953. Patented Aug. 24, 1875.

Fig. 1.

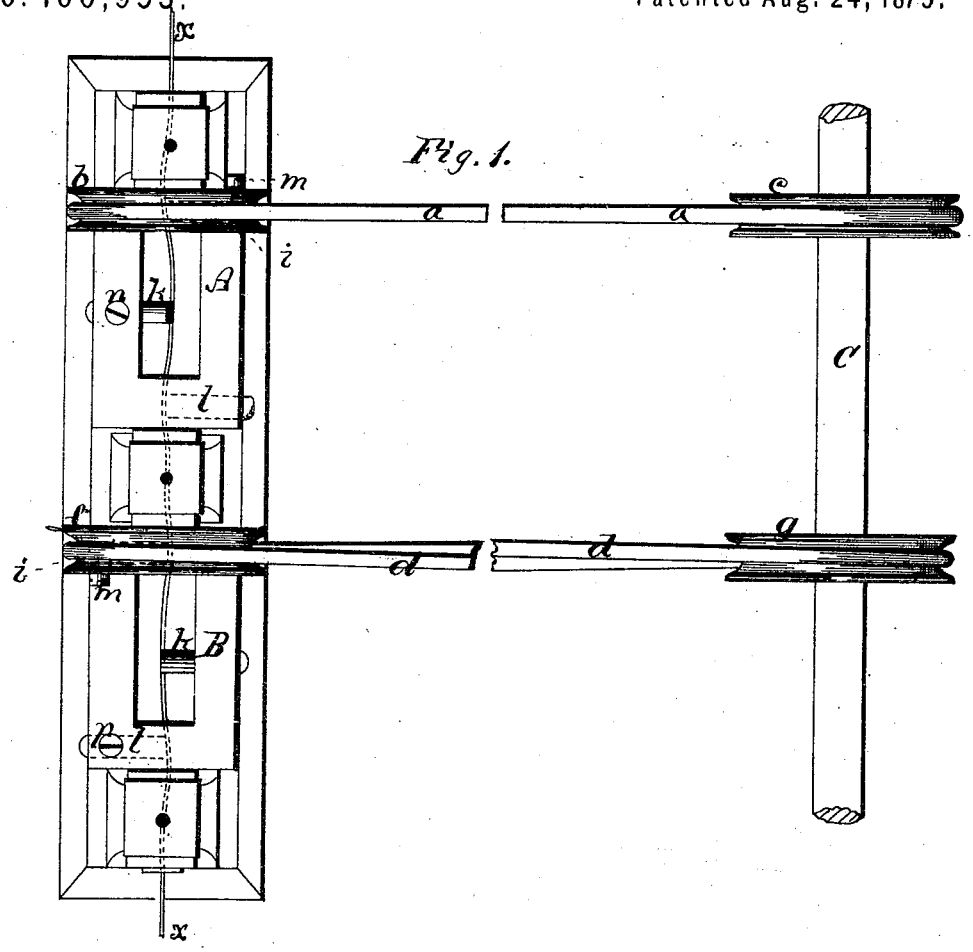
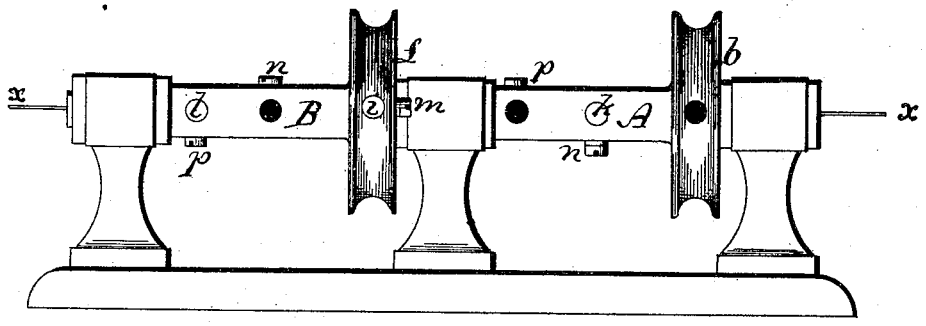


Fig. 2.



WITNESSES

E. W. Gallaher.
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UNITED STATES PATENT OFFICE.

CHARLES P. S. WARDWELL, OF LAKE VILLAGE, NEW HAMPSHIRE.

IMPROVEMENT IN WIRE-STRAIGHTENING MACHINES.

Specification forming part of Letters Patent No. **166,953**, dated August 24, 1875; application filed February 27, 1875.

To all whom it may concern:

Be it known that I, CHARLES P. S. WARDWELL, of Lake Village, in the county of Belknap and State of New Hampshire, have invented an Improved Wire-Straightening Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a top view of the machine; Fig. 2, a side view of the same.

Like letters designate corresponding parts in all of the figures.

My invention is an improvement on wire-straighteners, such as shown and described in Thomas Sands' Letters Patent, dated February 23, 1863, for a machine for making machine knitting-needles.

That device is equivalent to one of the parts, as represented at A in the accompanying drawings.

The great defect in that device arises from its continually revolving in one direction, thereby twisting the wire to a considerable extent, and making it unfit for many purposes, such as for the use of needle-making.

The nature of my invention consists in combining with a straightener, A, revolving in one direction, of another straightener, B, revolving in the opposite direction, the revolutions of the two straighteners being at equal, or nearly equal, speeds, or such that the twisting action of one straightener shall fully counteract that of the other straightener, whereby the wire is left by, and comes from, the straighteners not only perfectly straight, but without any twist whatever. The two straighteners also produce a more complete and perfect straightness than one can effect.

In the drawings, the additional straightener B is shown as placed exactly in axial line with the first straightener A, and the wire *x* runs through the axial center of both in holes made large enough to admit the wire. A band or belt, *a*, goes from a pulley, *b*, on the straightener A, to a pulley, *c*, on a driving-shaft, C, situated in any suitable position in relation to the machine, and a band or belt, *d*, goes from a pulley, *f*, on the straightener B, to a pulley, *g*, on the driving-shaft C. But one of the bands or belts, as *d*, in this case, must be crossed, as shown, so as to drive the straightener B in the direction opposite to that of the straightener A.

It is, however, not essential, though preferable, to drive both straighteners by the same driving-shaft.

Of course, the pulleys *b c* are, respectively, equal to the pulleys *f g;* or the connection is otherwise made so as to produce equal, or nearly equal, speeds in the two straighteners.

Each straightener has three pins, or equivalent parts, *i k l*, projecting inward, so as to bear at their inner ends against the wire and press it alternately in opposite directions a little beyond a straight line, as indicated; and the pins are held, respectively, by set-screws *m n p*, so as to adjust their positions, and the amount of deviation from a straight line which they produce on the wire.

By means of this adjustment of the pins, the twisting action of the straighteners can be varied without changing the speed of the straighteners. Thus, the greater the deviation of the wire from a straight line, the greater the twisting action of the straightener, so that if one straightener twists the wire more than does the other, its middle pin *k* is drawn out a little, or the middle pin of the other straightener is moved in a little farther. By this means the adjustment is easily made perfect.

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

The combination of two wire-straighteners, A B, revolving in opposite directions, operating substantially as and for the purpose herein specified.

Specification signed by me this 19th day of February, 1875.

C. P. S. WARDWELL.

Witnesses:
O. H. KEY,
JOS. W. WARDWELL.