(No Model.) 2 Sheets—Sheet 1.

E. L. WARREN & A. LADD.

ART OF DRAWING WIRE.

No. 318,062. Patented May 19, 1885.

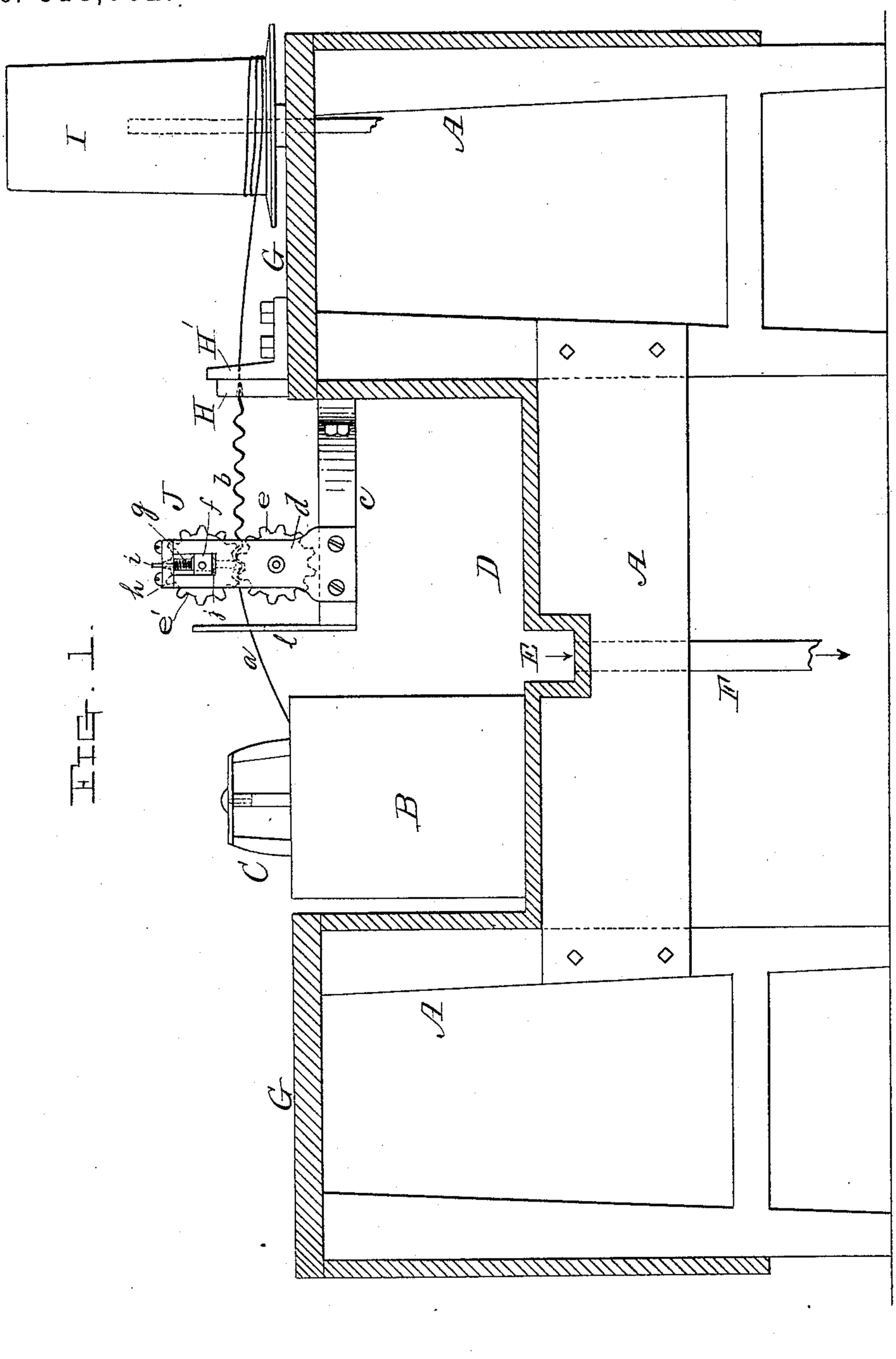

FIG. 1.

Witnesses;
Walter B. Nourse.
Lucius W. Briggs.

Inventors;
Edward L. Warren
Albert Ladd
By A. A. Barker, Atty.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 1.

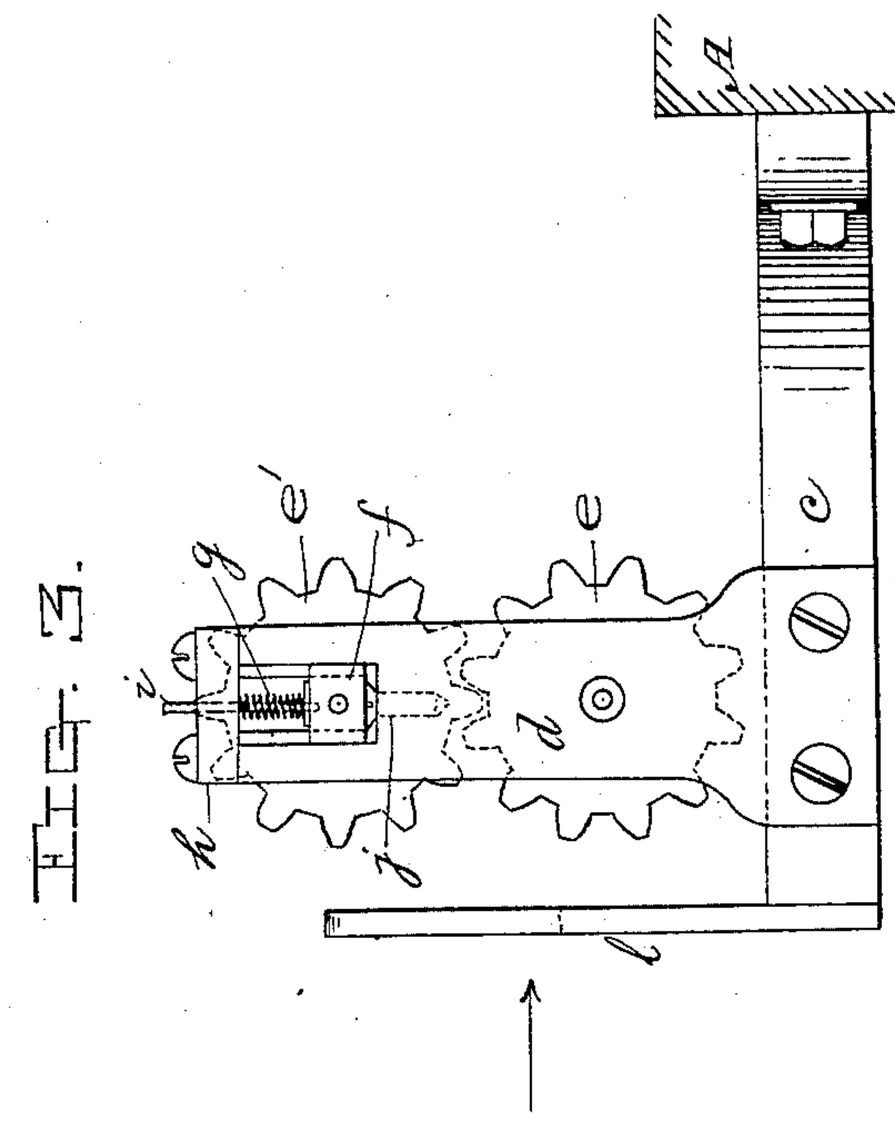
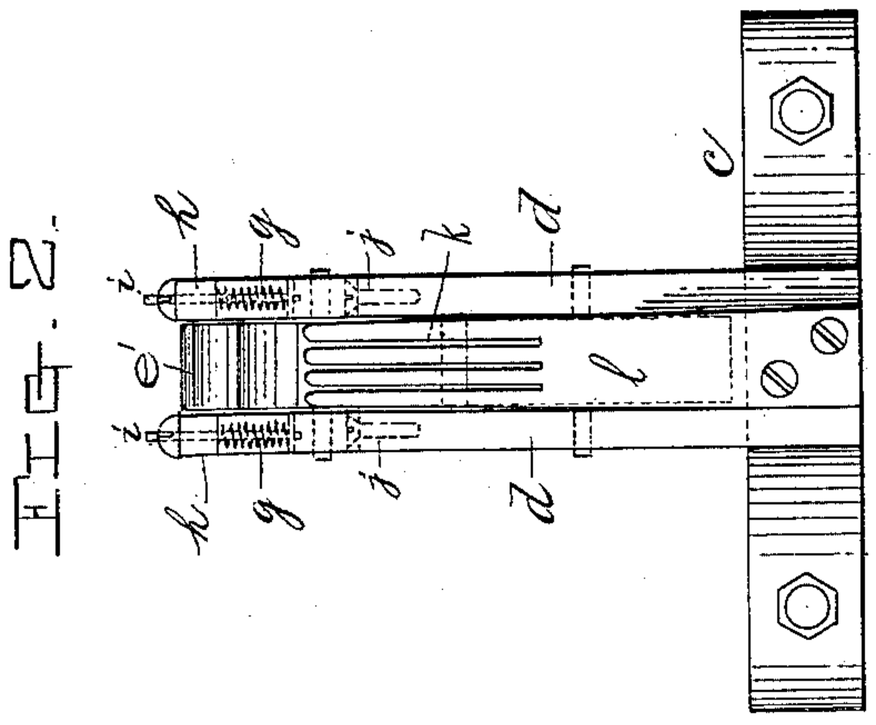


FIG. 2.



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Albert Ladd.
By A. A. Baker Atty.

UNITED STATES PATENT OFFICE.

EDWARD L. WARREN AND ALBERT LADD, OF WORCESTER, MASS.

ART OF DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 318,062, dated May 19, 1885.

Application filed February 24, 1885. (No specimens.)

To all whom it may concern:

Be it known that we, EDWARD L. WARREN and ALBERT LADD, both of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in the Art or Process of Making Wire; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a vertical section through an ordinary wire coating and drawing apparatus, with a crimping device shown in connection with the same for carrying out our aforesaid process, as will be hereinafter more fully explained; and Figs. 2 and 3 represent, upon an enlarged scale, an end and side view, respectively, of the wire-crimping device shown in Fig. 1.

Our invention relates to improvements in the art or process of coating and drawing wire; and it consists in crimping said wire between the coating and drawing operations by means of a suitable crimping device interposed between the coating apparatus and the dies for reducing the wire, as and for the purpose hereinafter more fully described.

To enable those skilled in the art to which our invention appertains to make and use the same, we will proceed to describe it more in detail.

In the drawings, the parts marked A represent a double frame, such as is commonly used in the process of coating and drawing wire. In Fig. 1 a cross-section of said frame is shown. It is made of sufficient length to receive a series of tubs, in which are placed the coating material and blades upon which the wire is coiled—one of said tubs, B, and blades C being shown in said figure. The tubs are placed in a sink, D, made lengthwise of the frame, which is provided with a central inclined trough, E, and outlet-pipe F for carrying off any liquor which may be spilled out of the tubs B.

Upon one of the side platforms, G, of the double frame A, opposite from the tubs B, are arranged the dies H and wire-blocks I in the usual way, said dies being suspended on the wires being treated and held against the stationary part H′ by the forward draft, the blocks I also being turned to wind up the wire and produce the aforesaid draft by connection with the usual mechanism employed for that purpose, which, being well understood, is not shown in the drawings.

The parts marked J represent a wire-crimping device for crimping the wire *a* between said device and the reducing-die H, as shown at *b* in Fig. 1 of the drawings, the purpose of which will be hereinafter described. Said crimping device J is constructed and arranged in the following manner: Upon each side of the base part *c* are formed or secured the upright standards *d d*, which are provided with suitable bearings, in which the hubs of the toothed wheels *e e′* turn. The lower wheel, *e*, turns in stationary bearings, while the upper one, *e′*, is fitted in the adjustable bearings *f*, arranged to slide up and down in suitable ways in the standards *d*. A downward pressure is produced upon said bearings by means of spiral springs *g*, arranged between the top of each bearing and the under sides of cap-pieces *h*, secured to the tops of standards *d*. The springs are in this instance fitted over vertical spindles *i*, having a base formed or secured upon the lower end of each for the springs to foot upon, and which extend up through the cap-pieces *h*. The sliding bearings *f* may be adjusted vertically by means of the screws *j*, to regulate the pressure upon the wire *a* passing between the crimping-rolls *e e′* in forming the crimps or short bends *b* in said wire. (Shown in Fig. 1.)

The wires are properly guided from the blades or spools C to the crimping-rolls *e e′* as they are drawn forward by the wire-blocks I by passing through the slots *k* formed in the guide *l*, which is secured to the outer end of the base part *c* of the crimping device.

A crimping device, J, may be used in connection with each set of blades, dies, and wire-blocks, or several wires crimped by one device, if desired, as indicated by the slots *k* in the guide *l*.

We do not limit ourselves to the construction of the crimping device hereinbefore described, as other equivalent means may be employed for imparting to the upper toothed

wheel, *e'*, an upward springing motion other than that described and shown, and the manner of guiding the wires as they move forward may be varied without departing from the principle of our invention.

Previous to our invention much imperfect wire has been produced in drawing the same down to the smaller sizes, owing to the opening in the die becoming clogged or gummed up with the coating material and surface-scale, which is removed from the wire by said process of drawing. In practice we find that the wire will run smooth and of even size for a short time, when the die then becomes clogged, as aforesaid, and said wire is reduced in size, and so continues of first one size and then another, according to the amount of refuse matter collected in said die. The above is a well-known and serious objection, especially in drawing copper and similar soft wire, it being impossible to draw the smaller sizes of wire so that they will be of uniform size and smoothness throughout their entire length.

By crimping or forming short bends *b* in the wire before it is drawn we find that the aforesaid objection is entirely obviated.

As the crimped wire is drawn forward into the reducing-die it turns and works about in the opening in said die, owing to the crimps or bends formed in the same, which rub continually and with considerable force against the sides of said opening, and thereby keep it clean and free from clogging at all times.

We have drawn considerable wire by our improved process, and find that it runs smooth and of even size throughout its entire length. We have also ascertained that by its use wire may be reduced a number of sizes smaller than by the old method, with equally as good results as the above described.

In the drawings we have represented a continuous process of coating, crimping, and drawing wire, thus crimping and drawing said wire while wet with the coating material; but, if preferred, the coating may be done by a separate operation, and the wire subsequently crimped and drawn when in a dry state without departing from the principle of our invention.

What we claim as new and of our invention, and desire to secure by Letters Patent, is—

In the art or process of making wire, crimping said wire after having been coated and prior to being drawn, to facilitate said drawing operation, substantially as shown and described.

EDWARD L. WARREN.
ALBERT LADD.

Witnesses:
ALBERT A. BARKER,
WALTER B. NOURSE.