

(No Model.)

E. TYRRELL & M. S. SHIPLEY.

MACHINE FOR SPIRALLY WINDING METALLIC STRIPS.

No. 312,590.

Patented Feb. 17, 1885.

Fig. 1.

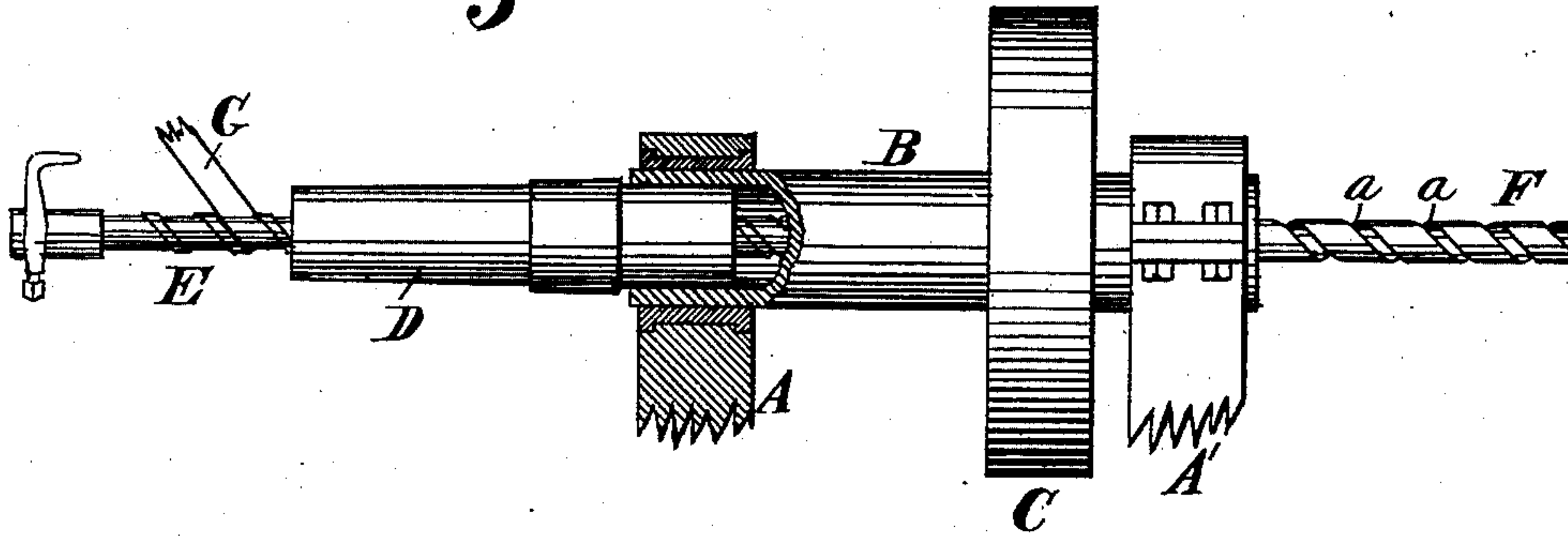


Fig. 2.

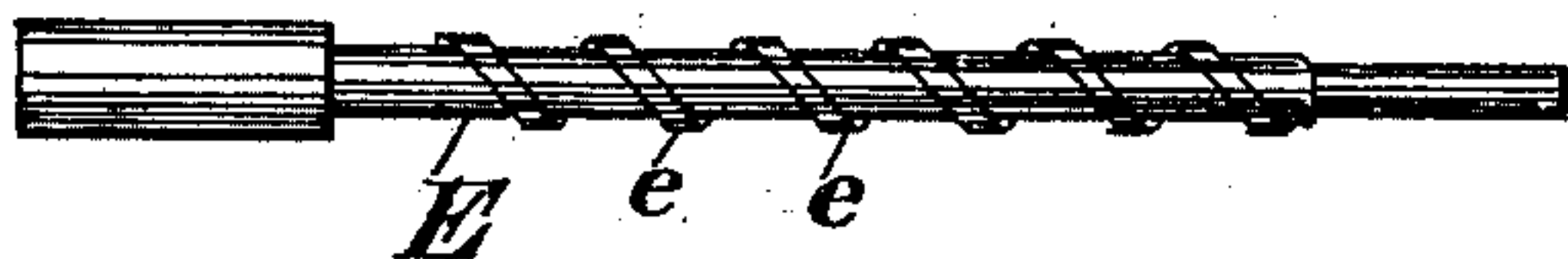
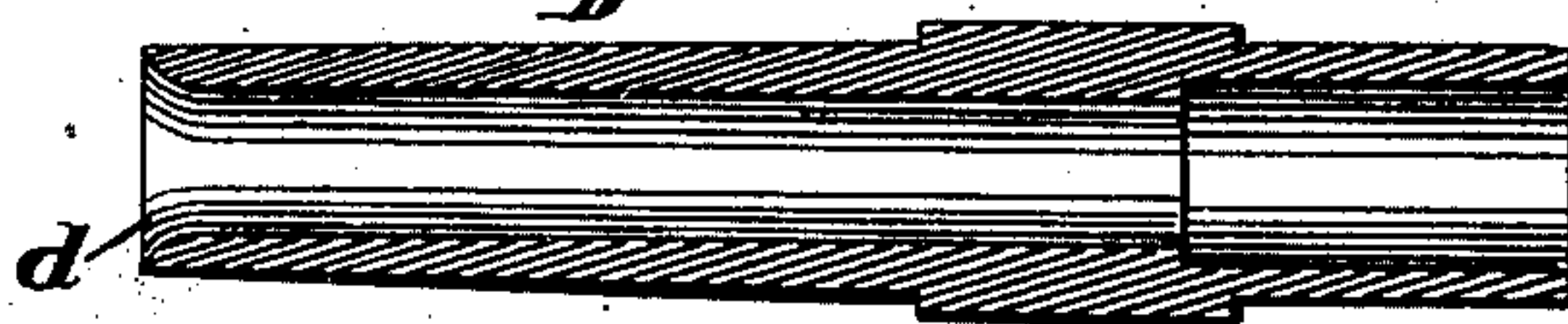


Fig. 3.



Fig. 4.



Attest

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EDWARD TYRRELL AND MORRIS S. SHIPLEY, OF CINCINNATI, OHIO.

MACHINE FOR SPIRALLY WINDING METALLIC STRIPS.

SPECIFICATION forming part of Letters Patent No. 312,590, dated February 17, 1885.

Application filed April 5, 1884. (No model.)

To all whom it may concern:

Be it known that we, EDWARD TYRRELL and MORRIS S. SHIPLEY, citizens of the United States, both residents of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Spirally Winding Metal into Tubular Forms, of which the following is a specification.

Our invention relates to an improved machine for spirally winding metal into tubular form.

The primary object of our invention is to construct spirally-slotted tubes such as are used in pen, tooth-pick, and pencil cases for adjusting the point; but other spirally-wound metal—such as springs—can be advantageously formed in our improved winding-machine, all of which will be fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a side elevation, partly sectional, showing our improvement. Fig. 2 is a plan view of the shaping-mandrel. Fig. 3 is a central vertical section of the same. Fig. 4 is a central vertical section of the boring-cylinder.

A A' represent posts or brackets carrying journal-boxes.

B represents a hollow shaft journaled in said bearings.

C represents a driving-pulley for revolving hollow shaft B.

D represents a revolving cylinder which is secured to the hollow sleeve B, preferably by a frictional joint. It, however, may be key-seated or secured in a chuck.

E represents a mandrel which is preferably rigidly secured to any firm supporting device, and projects concentrically within cylinder D. It is provided with a spiral thread, *e*.

The improved machine shown is represented in proper form and condition for winding thin sheets of metal into spirally-grooved tubes F, such as are usually employed as a regulating-screw inside of a pencil-case. The thread *e* is of the proper width to form the spiral groove *a*, and of a depth corresponding to the thickness of the strip of metal to be wound into the spiral tube. The mouth of

sleeve D is flaring or beveled, as represented at *d*, Fig. 4, to facilitate the feeding of the metal strip.

G represents a strip of metal which is fed between the thread *e* of the mandrel into the open or beveled mouth of cylinder D. Shaft B is revolved at a rapid speed, and the bore of cylinder D is preferably slightly conical, having its largest diameter at the commencement of the straight passage at *d*. The strip of metal G is compressed slightly by the bore of the revolving cylinder D, and rapidly drawn around the mandrel E, between the spiral *e*, and is compressed into a tubular form, F, as shown in Fig. 1. The slightly-conical form is for the purpose of giving the proper set and draft to the metal, so that it will pass through as fast as it is wound. The strip of metal G should be slightly thicker than the depth of the spiral *e*, so as to slightly compress or squeeze the metal, which gives it a set. Soft brass is preferably used in forming these spiral tubes.

The action of the tool is such as to compress and temper the brass, give it the proper elasticity, and harden it to retain the form shown.

It is obvious that other forms of spirally-wound metal may be spun in the same manner by changing the size and proportion of the spirals *e* on the mandrel E; and springs may be wound in the same manner by having the properly-formed spirals.

We do not desire to limit ourselves in the use of the tool here shown and described to any specific form.

A great advantage is obtained in the use of this tool: First, the spiral product is very rapidly and cheaply made; second, a new article or product is obtained—to wit, a tempered grooved tube, F—formed of a single piece of metal wound endwise in spiral form.

The length of spiral thread *e* may be varied, its object being to give both shape and set to the metal strip.

An inferior modification of our winding device would be to have the cylinder D fixed and the mandrel E revolve within the cylinder; but this would require a roll or spool of metal to be fixed to revolve with the mandrel, so as to be fed through the cylinder without

twisting or binding of the metal, and such form of construction is covered by the first clause of claims herein.

We do not herein claim the tempered grooved tube formed of a single piece of metal wound endwise in spiral form, as such will constitute the subject-matter of a separate application for Letters Patent.

We claim—

10 1. A tool for spirally winding metal, composed, substantially, of the spiral-threaded mandrel E, concentrically combined within the cylinder D, substantially as specified.

15 2. A device for winding strips of metal in tubular shape, composed, substantially,

of the cylinder D, revolving concentrically around a spiral-threaded mandrel, E, substantially as specified.

3. The combination of the revolving cylinder D, having the flaring mouth *d*, and the spirally-threaded mandrel E, concentrically held within the cylinder, substantially as specified.

In testimony whereof we have hereunto set our hands.

EDWARD TYRRELL.
MORRIS S. SHIPLEY.

Witnesses:

EDWARD BOYD,
M. E. MILLIKAN.