

(No Model.)

2 Sheets—Sheet 1.

E. W. WHITLOCK.
TUBE COILING MACHINE.

No. 280,983.

Patented July 10, 1883.

Fig. 1.

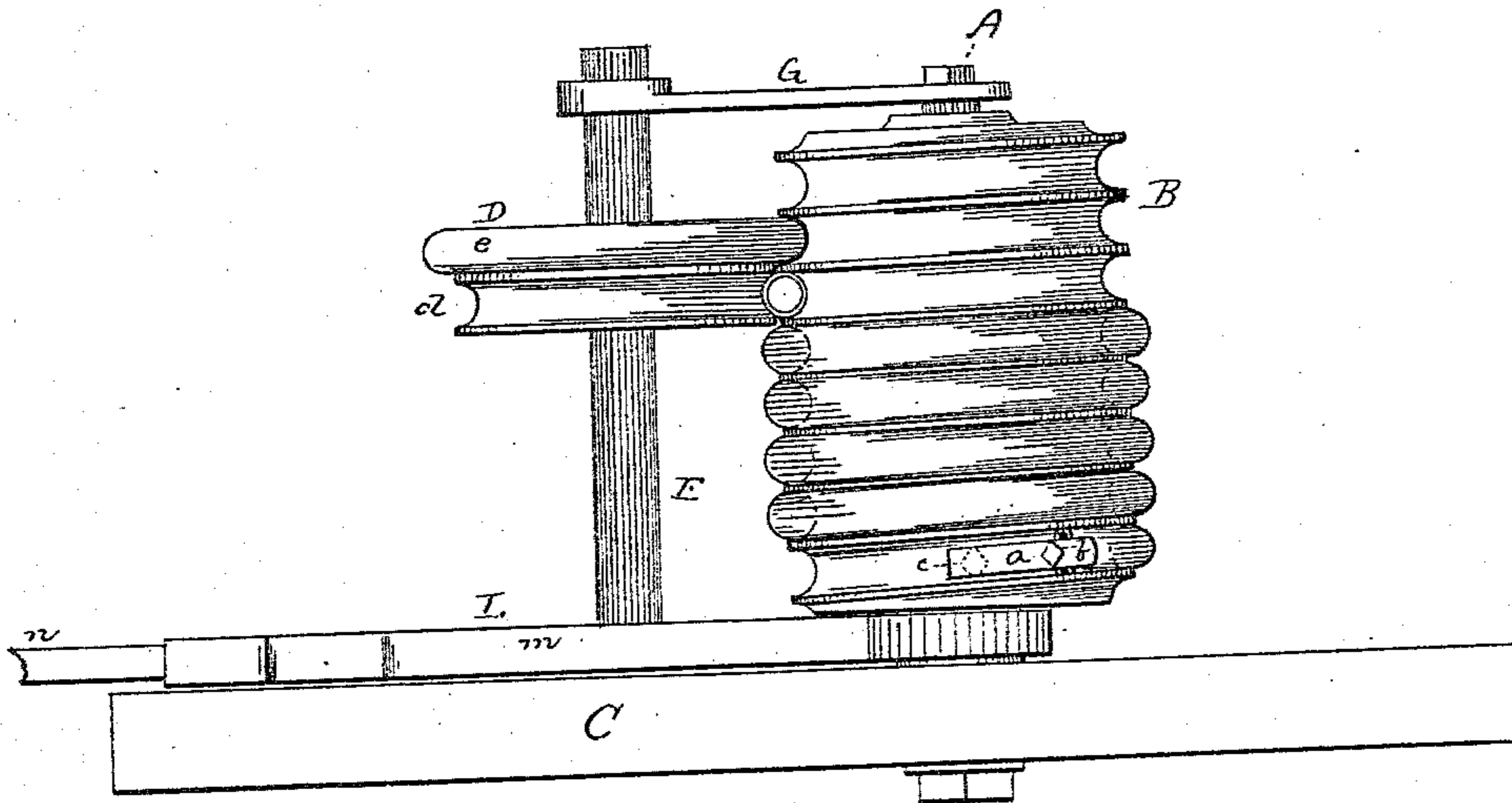


Fig. 3.

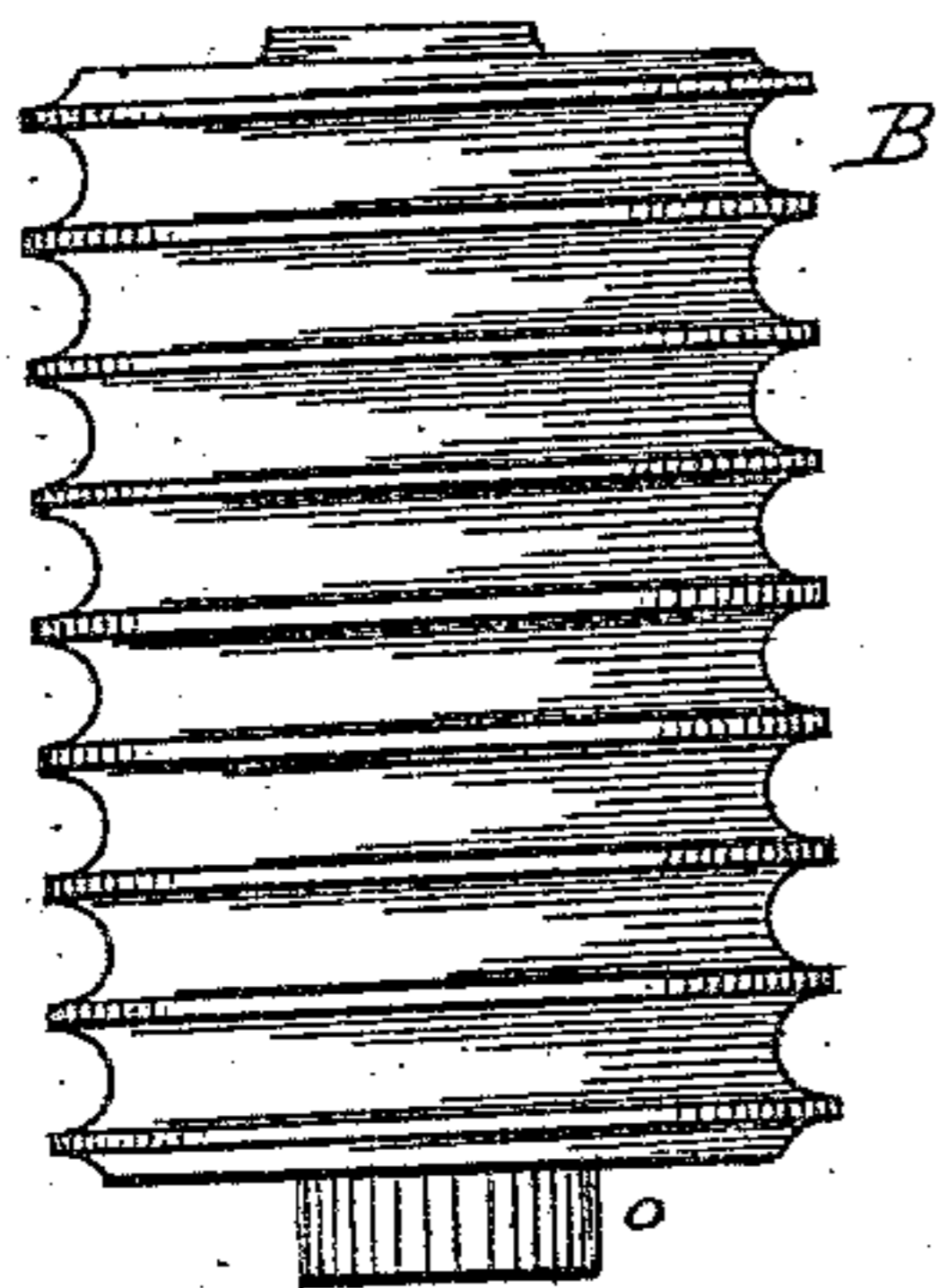


Fig. 2.

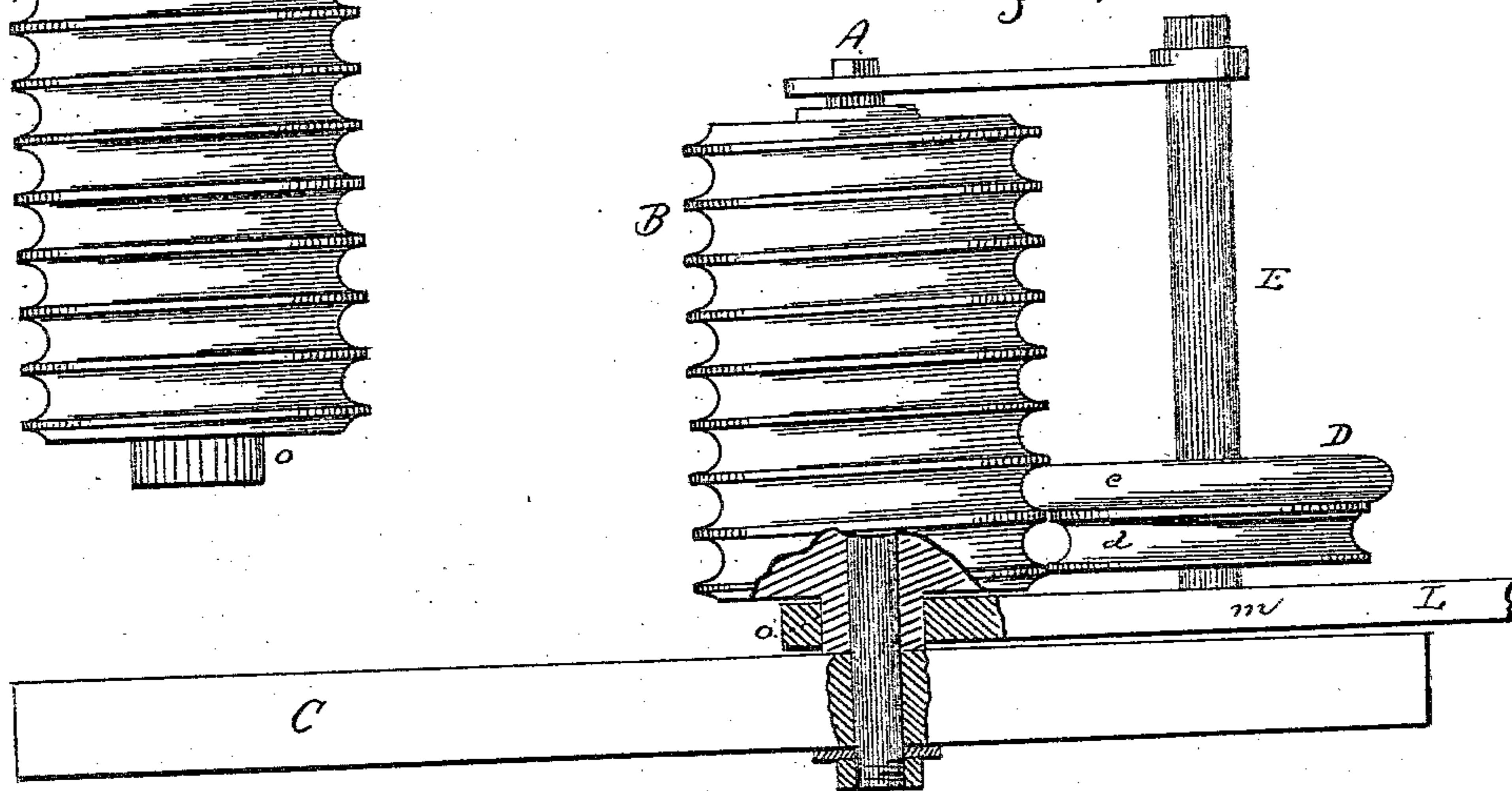
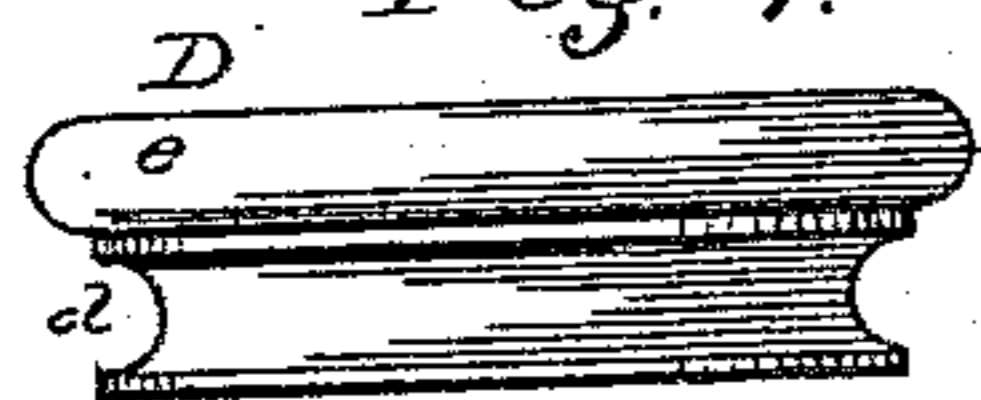


Fig. 4.



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Fig. 5

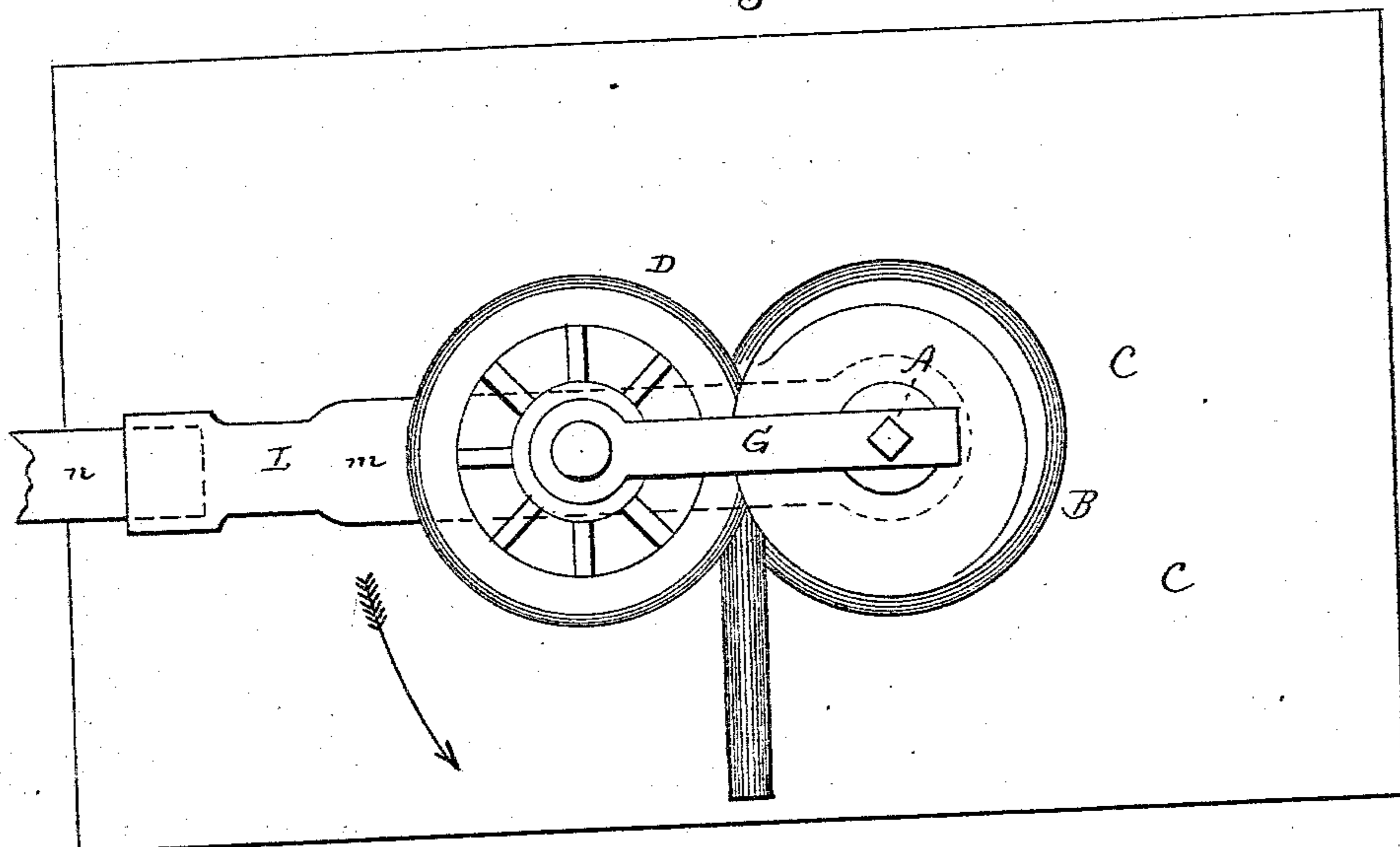


Fig. 6

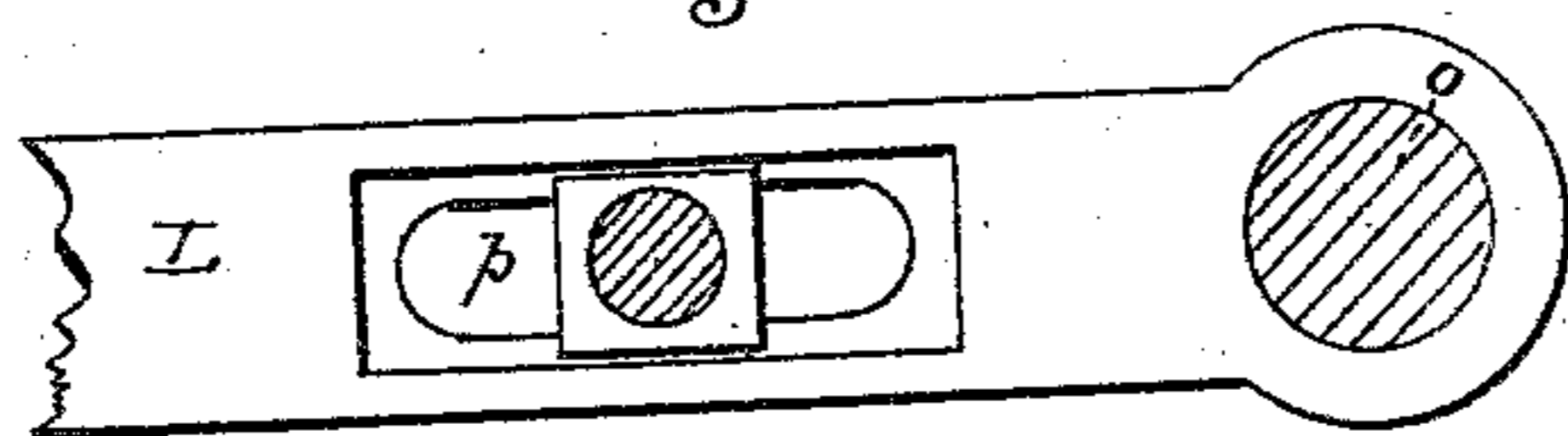


Fig. 7

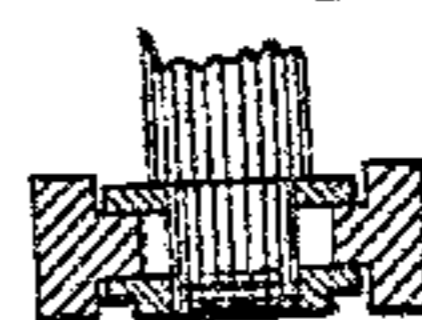
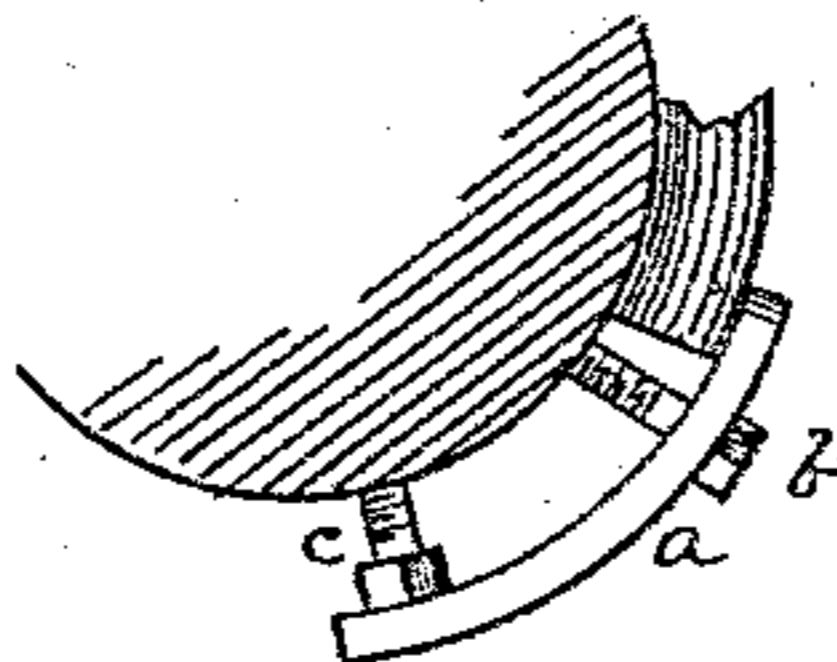


Fig. 8



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UNITED STATES PATENT OFFICE.

E. WALTER WHITLOCK, OF NEW HAVEN, CONNECTICUT.

TUBE-COILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,983, dated July 10, 1883.

Application filed January 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, E. WALTER WHITLOCK, a citizen of the United States of America, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Machines for Coiling Tubes, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a view of the machine with a tube coiled around a portion of the former, and of the bench to which the machine is fastened. Fig. 2 is a view of the machine, a part of the former, lever, bench, and nut being shown in section. Fig. 3 shows the cylindrical and grooved former, and Fig. 4 shows the grooved roller and its enlarged part. Fig. 5 is a plan view of the machine. Fig. 6 is a view of a part of the under side of the lever. Fig. 7 shows the collar near the lower end of the center shaft, the nut on the shaft and a part of the bench in section; and Fig. 8 shows the device for clamping the end of the tube to the former.

My invention relates to machines for coiling tubes, the object being to construct a machine to bend thin brass tubes, which cannot be bent on ordinary machines for coiling thick iron pipe or iron pipe of the usual thickness. To this end the invention consists in combining a stationary solid and cylindrical former having a spiral semi-elliptical groove with a grooved roller provided with an enlarged part to run in the groove of the former, and arranged on a vertical shaft carried by a revolving lever, and in other minor improvements, as the same are hereinafter more fully explained and described.

To enable others skilled in the art to understand my machine, I will give a detailed description of the same and explain its operation.

A is the center shaft, which is fastened to the bench C by a nut on its lower end. The former B is a solid cylinder, which is firmly fastened to the center shaft, or is clamped by it to the bench, so that it cannot turn. Its lower end is reduced in size and forms a journal, on which the lever L turns, as shown in Fig. 3 and in section in Fig. 2. A spiral

semi-elliptical groove is formed on its surface, the longer axis of the ellipse of which the groove forms a part pointing to the center of the former. The groove is only slightly elliptical, but sufficiently so to spring or compress, but not bend, the tube as it is forced into it. A circular piece, *a*, Figs. 1 and 8, has a hole through which a bolt, *b*, passes and screws into the former. A bolt, *c*, also screws into the former, and its head comes against the inside of the piece. This piece and the bolts form a device for clamping the end of the pipe to the former.

The roller D has the semi-elliptical groove *d*, corresponding in shape to the groove in the former, and an enlarged part, *e*, the outer edge of which is formed to fit and run in the spiral groove in the former B, and hold the groove in the roller in the proper position relative to the groove in the former, as shown in Figs. 1 and 2, and raise the roller on its shaft as it is carried round the former. The roller turns on the shaft E, the lower end of which is fastened in the revolving lever L. Its upper end is connected to the center shaft, A, by the brace G. Thus fastened, the shaft E is held parallel with the center shaft, A.

The lever L is made in two parts, *m* and *n*. One end of the part *m* fits onto the journal *o*, formed on the lower part of the former, and a socket is formed in the other end, into which the part *n* of the lever fits. The part *m* is made of iron and the part *n* preferably of wood. The part *m* has the slot *p*, by means of which the shaft E may be adjusted at varying distances from the center shaft. About the slot *p* recesses are made in the lever to allow the collar and the nut to come even with the side of the lever, as shown in Fig. 7.

For coiling tubes of different size, formers and rollers are used having grooves corresponding to the sizes of the tubes to be bent.

The several parts of my machine being constructed and arranged as above described, it is operated in the following manner: One end of the tube to be coiled is clamped to the former by the device for the purpose; and the other end is supported by an operator; or a horizontal arm may be attached to the lever for supporting the end not in the machine. The projecting end of the tube should be nearly at

right angles to the lever, as shown in Fig. 5. The tube and the lever are carried around the former until the tube is wound onto the same, the tube and the lever maintaining substantially the same angle in respect to each other during the winding of the tube on the former. The brace G is then removed and the lever is turned until the roller reaches the top of the former. It is then removed, and the coiled tube, the clamp being loosened, is turned by hand until it comes off the top of the machine.

I am well aware that many machines have been made for coiling pipes or tubes, and that grooved formers and grooved rollers form parts of the same; but

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

1. The tube-coiling machine herein described, consisting, essentially, of the center shaft, A, stationary former B, roller D, shaft E, revolving lever L, and brace G, all the said

parts constructed and combined substantially as shown and set forth.

2. In a tube-coiling machine, the roller D, provided with a semi-elliptical groove, and the enlarged part *e*, the latter formed and adapted to run in the semi-elliptical groove in the former, as shown and set forth.

3. The shafts A and E, in combination with the lever L and brace G to guide the roller D in a line parallel with the center shaft, as shown and set forth.

4. In a tube-coiling machine, the device consisting of the circular piece *a* and of the bolts *b* and *c*, screwing into the former to clamp the end of the pipe to the former, as shown and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

E. WALTER WHITLOCK.

Witnesses:

GEORGE TERRY,

A. G. HOHENSTEIN.