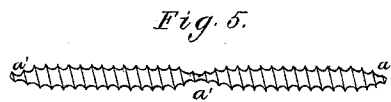
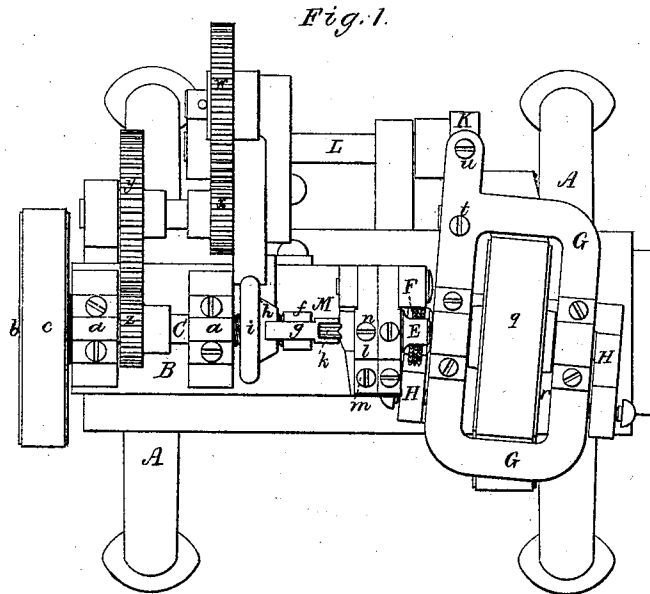


C. H. THURSTON.
Machines for Making Double-pointed Screws for
Knobs.

No. 145,136.

Patented Dec. 2, 1873.



Witnesses.
S. W. Piper
L. H. Hildner

C. H. Thurston.
by his attorney.
R. L. Day

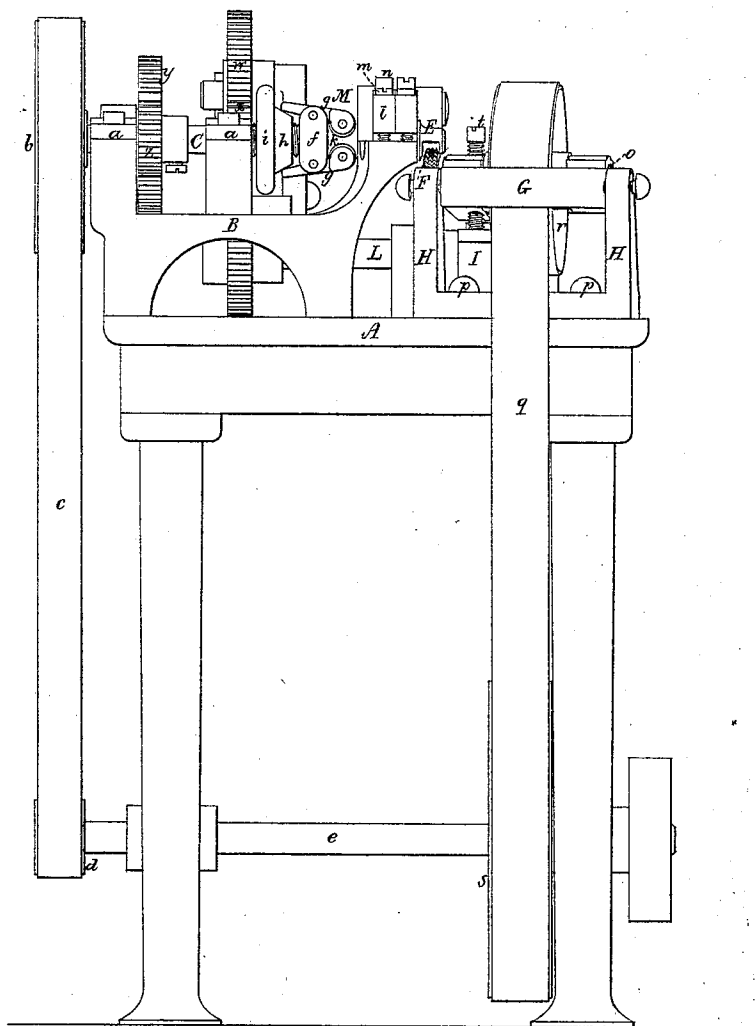
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Fig. 2.



Witnesses
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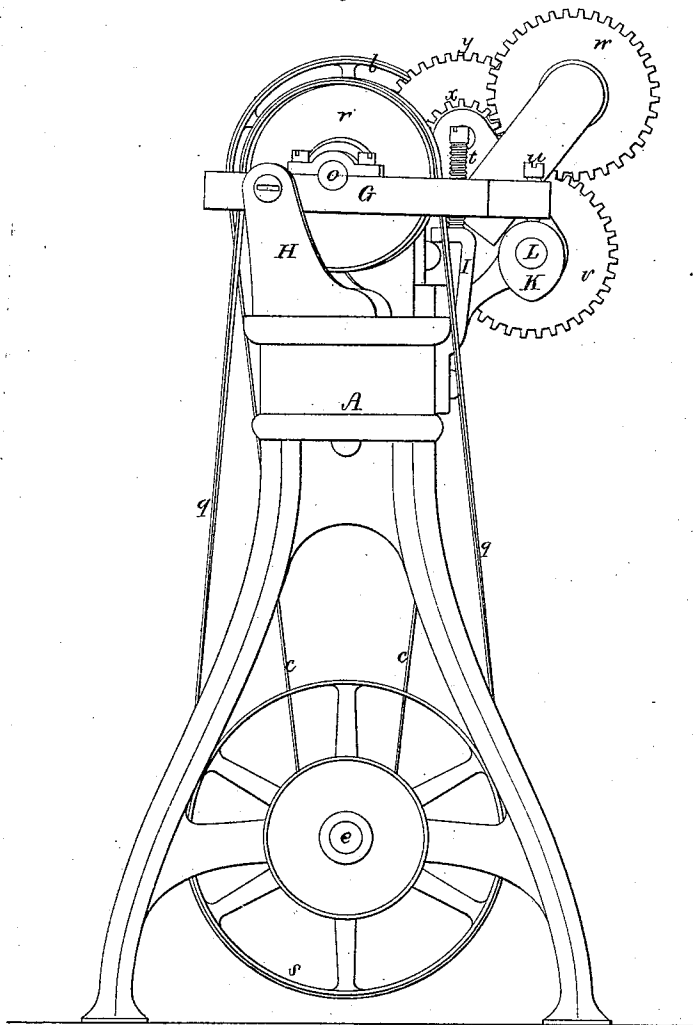
C. H. Thurston
by his attorney
R. H. Ledy

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Fig. 3.



Witnesses
S. W. Piper
L. S. Miller

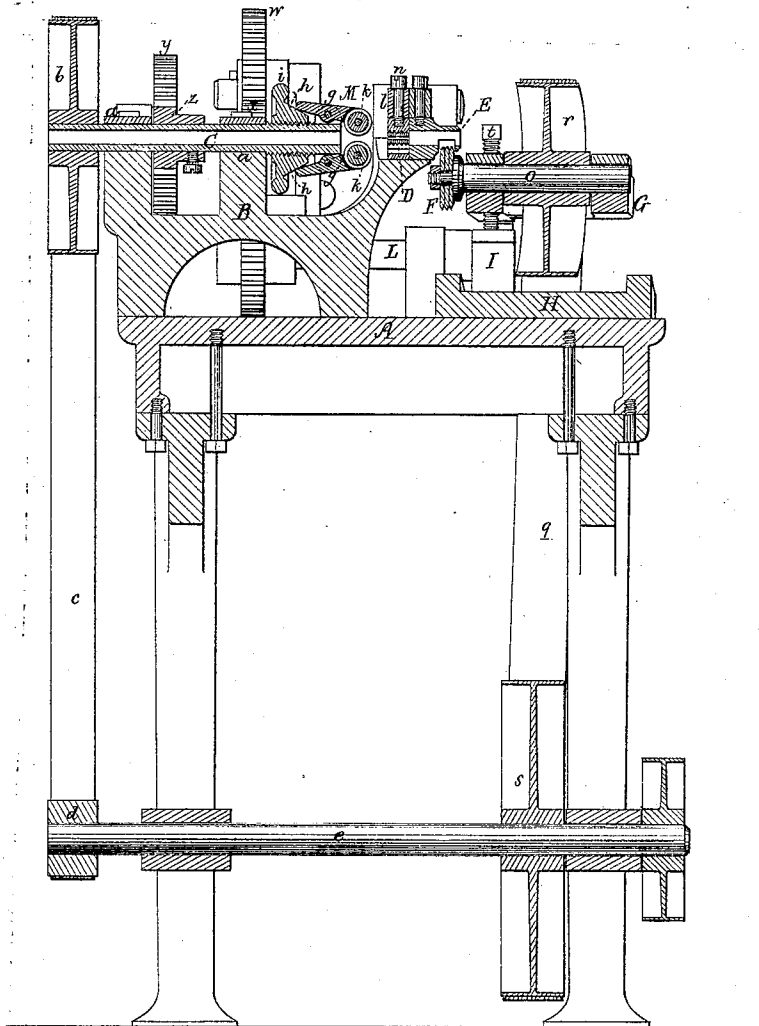
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R. C. Ledy

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Fig. 4.



Witnesses.
S. W. Piper.
L. H. Miller.

C. H. Thurston.
by his attorney.
R. H. Eddy.

UNITED STATES PATENT OFFICE.

CHARLES H. THURSTON, OF MARLBOROUGH, NEW HAMPSHIRE, ASSIGNOR
TO HIMSELF AND JAMES H. FOWLER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING DOUBLE-POINTED SCREWS FOR KNOBS.

Specification forming part of Letters Patent No. **145,136**, dated December 2, 1873; application filed
October 22, 1873.

To all whom it may concern:

Be it known that I, CHARLES H. THURSTON, of Marlborough, of the county of Cheshire, of the State of New Hampshire, have invented a new and useful Machine for Manufacturing Knob Attachments or Short Screws provided with gimlet-points at their opposite ends; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a front elevation, Fig. 3 an end elevation, and Fig. 4 a longitudinal and vertical section, of such machine. Fig. 5 represents a piece of wire as formed with such knob attachments by the machine.

Such machine consists mainly of a combination composed of the following elements, viz: First, a tubular arbor, and a mechanism applied thereto for so holding the wire as not only to cause it to be revolved with the arbor while the latter may be in revolution, but to admit of such wire being drawn forward or advanced in the meantime by the screw-die; second, a screw-die or means of advancing or drawing forward the wire at a regular speed through the tubular arbor; third, a wire supporter or guide; fourth, a milling or screw-thread-cutting wheel; fifth, the cutter-wheel-shaft-supporting lever and its operative cam, the said tubular arbor, cutter-wheel, and cam being provided with mechanism, substantially as hereinafter described, for operating them.

In the drawings, A denotes the main supporting-frame of the machine, it being furnished with a puppet or standard, B, for sustaining the tubular arbor C, the wire-advancer D, and guide E. The arbor C, supported in boxes *a a*, has on its outer end a pulley or wheel, *b*, about which and another pulley or wheel, *d*, an endless belt, *c*, runs, the wheel *d* being fixed upon a driving-shaft, *e*, arranged in the frame in manner as shown.

The next part of the machine is the griper or mechanism for holding the wire or rod so as not only to cause it to be revolved with the arbor C, but to admit of it being advanced by the advancer. The said griper is shown at M, and may be described as follows: At the front

or inner end of the tubular arbor C is a cross-head, *f*, to which the levers *g g* are pivoted. The tails of such levers rest against the circumference of a conic frustum, *h*, projecting from one side of a hand-wheel, *i*. Such wheel and frustum screws upon the arbor. The lesser arms of the levers carry two friction-wheels, *k k*, each of which has an angular or V-shaped groove in and around its circumference, a section of one of such wheels being shown in Fig. 6, and an edge view in Fig. 7. The wire to be operated on is passed through the bore of the arbor C, and thence between the two grooved wheels *k k*, after which the frustum *h* is to be screwed against the tails of the levers, so as to cause the wheels *k k* to clamp the wire. From thence the wire passes into and through the advancer D and the guide E. Thus it will be seen that the griper M consists of the cross-head *f*, the levers *g g*, their V-grooved wheels *k k*, and the frustum *h* and hand-wheel *i*, applied to the arbor C, and arranged together in manner as shown.

Such advancer D is like a die for cutting male screws. In other words, it is a block of metal having a female screw cut through it, the block being supported on the puppet B and clamped down upon it by an arm, *l*, which is pivoted to the puppet B, and with a clamp-screw, *m*, that goes down through the arm and screws into the puppet. The advancer is further held in place by a screw, *n*, which goes through the arm and screws into the advancer.

In line with the advancer, and next to it, is the guide E, which is a tube held in place by means or mechanism like that employed for sustaining the advancer. The guide E has an opening through one side of it, as shown in Fig. 4, to enable the milling or screw-thread-cutting wheel F to enter the tube and operate on the rod. This wheel F, arranged as shown, is fixed on the end of an arbor, *o*, which is supported by a slotted lever, G, formed as shown, and pivoted to an adjustable standard, H. This standard rests on the main frame A, and is held thereto by set-screws *p p*, which go through slots in the base of the standard and screw into the frame, the whole being so as to admit of the cutter-wheel being adjusted to the proper obliquity to the rod to cut the

grooves for the formation of its helical thread. An endless belt, *g*, running around a wheel, *r*, fixed on the arbor *o*, and another wheel, *s*, fixed on the driving-shaft, serves to give rotary motion to the wheel *r*, and thereby cause the cutter-wheel to be revolved. Two screws, *t u*, screw down through the lever *G*, the inner one at its lower end resting upon the top of a standard or post, *I*, arranged as shown. The lower end of the outermost screw comes directly over the periphery of a cam, *K*, fixed upon a shaft, *L*, arranged and supported as shown, such shaft being provided with a train of gears, *v w x y z*, for imparting rotary motion to it from the arbor *C*, all being as represented.

In the operation of this machine, the wire to be converted into duplex-pointed screws or "knob attachments," is run through the tubular arbor *C*, thence between the grooved wheels *k k*, and thence into the advancer. The arbors *C* and *o* being in revolution, the rod will be revolved and screwed into and through the advancer, which will draw it forward at the requisite speed, and while it may be passing through the guide the cutter-wheel will perform the office of cutting the helical grooves for the formation of the screw-thread. At a proper time the cutter-wheel will be raised upward, so as to reduce the wire, as shown at *a'* in Fig. 5, in a

manner to form two gimlet-points, projecting in opposite directions from each other, the wire being nearly or quite cut through by the operation. As fast as each section of the wire may pass out of the guide it will drop therefrom. To insure the section being severed or broken from the rest of the wire, a stationary deflector or inclined plane may be fixed on the top of the lever *G*, and so arranged that the section in advancing may at the proper time be forced in contact with the deflector and be bent aside, so as to break away from the next section in rear, which may be in the act of being formed.

In the above-described machine, I claim as my invention as follows, viz:

1. The combination of the tubular arbor *C*, the griper *M*, the advancer *D*, the slotted guide *E*, the screw-cutting wheel *F* and its shaft-supporter *G*, and the operative cam *K*, all being arranged, and provided with operative mechanism, substantially as described.

2. The combination constituting the griper *M*, such consisting of the V-grooved wheels *k k* and the levers *g g*, the cross-head *f*, the conic frustum *h*, and the wheel *i*, all being as set forth.

CHAS. H. THURSTON.

Witnesses:

R. H. EDDY,
J. R. SNOW.