

(No Model.)

J. LEIGH & C. L. CLARKE.

MACHINE FOR COILING WIRE AND THREAD IN THE MANUFACTURE OF
INDUCTION AND RESISTANCE COILS.

No. 305,939.

Patented Sept. 30, 1884.

FIG: 3.

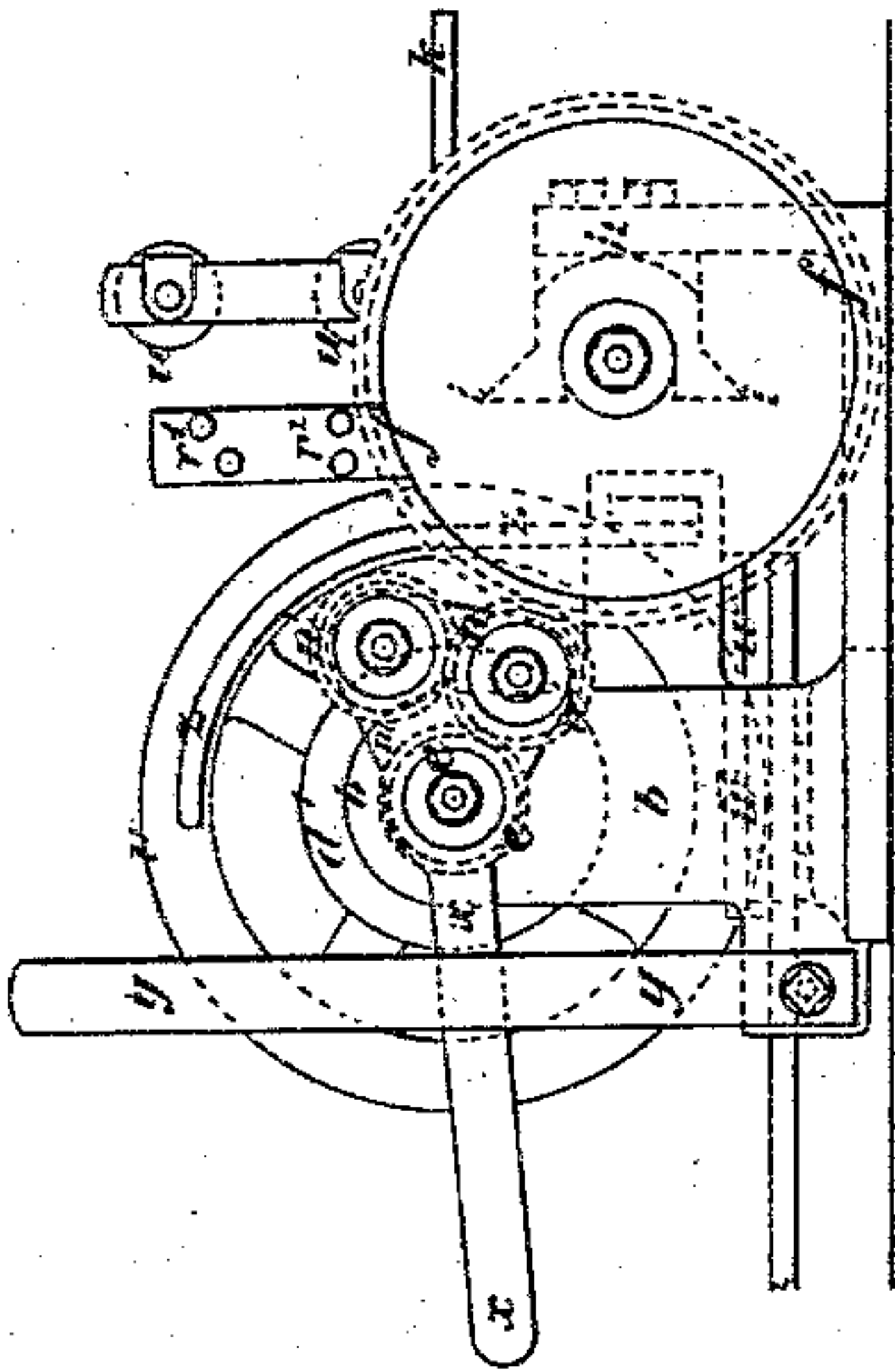


FIG: 4.

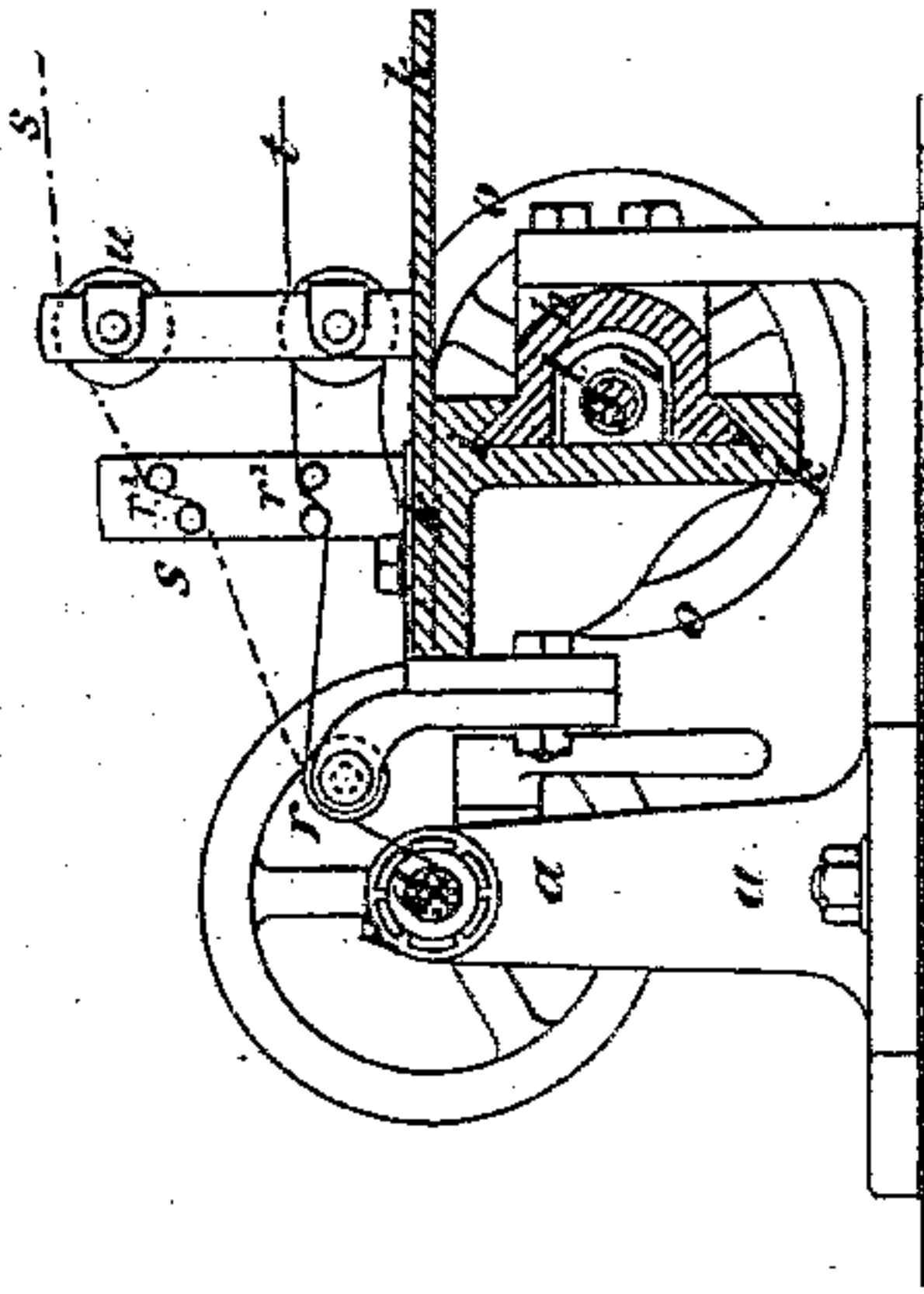


FIG: 1.

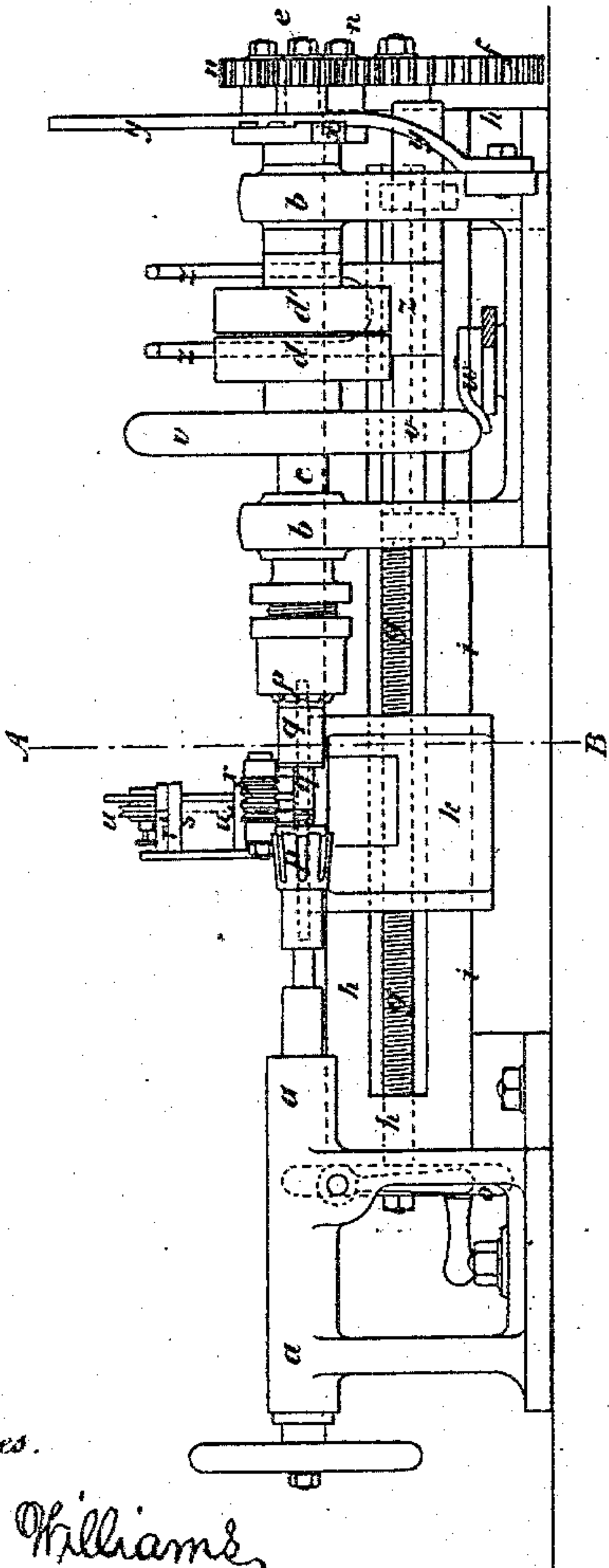
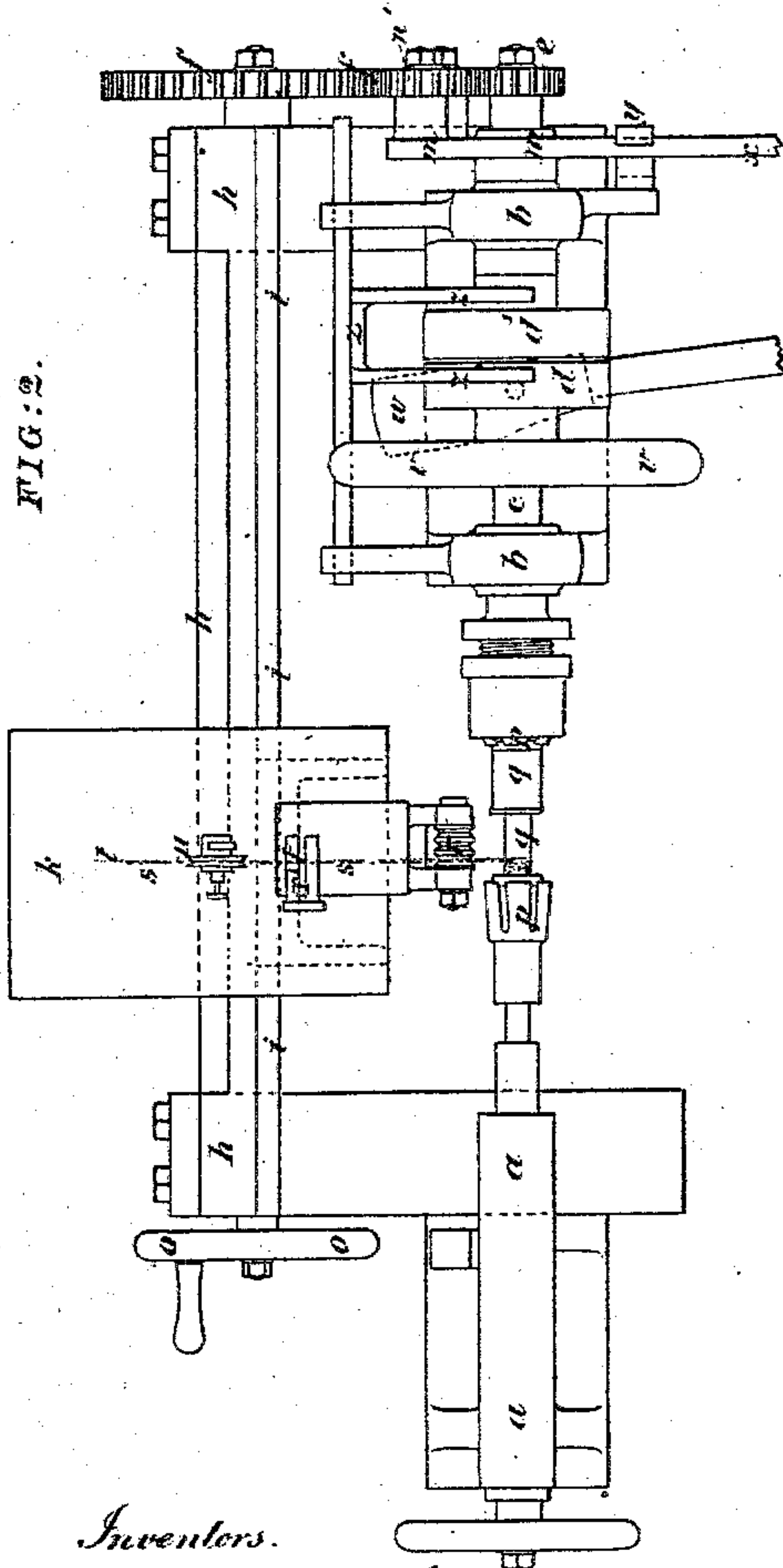


FIG: 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR COILING WIRE AND THREAD IN THE MANUFACTURE OF INDUCTION AND RESISTANCE COILS.

SPECIFICATION forming part of Letters Patent No. 305,939, dated September 30, 1884.

Application filed June 12, 1881. (No model.) Patented in England August 22, 1881, No. 3,652; in France February 22, 1882, No. 147,479, and in Austria April 20, 1883, No. 7,599.

To all whom it may concern:

Be it known that we, JOHN LEIGH and CHARLES LEIGH CLARKE, subjects of the Queen of Great Britain and Ireland, and residing at Manchester, in the county of Lancaster, have invented an Improved Machine for Coiling Wire and Thread in the Manufacture of Induction and Resistance Coils, (for which we obtained a patent in Great Britain, No. 3,652, dated August 22, 1881,) of which the following is a specification.

This invention consists of a machine designed, principally, for coiling wire and thread side by side in forming induction and resistance coils according to our invention for which we have obtained Her Majesty's Letters Patent in Great Britain, No. 2,229, dated June 1, 1880.

In the annexed drawings, which form part of this specification, Figure 1 is a front elevation of our improved coiling-machine. Fig. 2 is a plan view, Fig. 3 an end view, and Fig. 4 a vertical section, of the same, through about the line A B, Fig. 1.

Upon a suitable frame or bed we mount a tail-stock, *a a*, and head-stock *b b*, (somewhat similar to a lathe,) the fixed head-stock *b b* being provided with a revolving spindle, *c c*, fitted with fast and loose pulleys *d d'*.

On the outer end of the spindle *cc* is keyed a spur-wheel, *e e*, opposite to which (but not in gear with it) is another spur-wheel, *f f*, keyed onto the end of a screwed spindle, *g g*, mounted in a fixed frame, *h h*, at the back of the head and tail stocks, and this frame has two horizontal parallel V-slides, *i i*, on which moves a carriage, *k k*, provided with a nut, *l l*, traveling on the screwed spindle *g g*, and moving the carriage *k k* to the right or left, according to the direction in which the screwed spindle *g g* is driven.

Upon a swinging bracket, *m m*, are mounted two small carrier-pinions, *n n'*, in gear with each other, and so arranged that (according to the position of the bracket *m m*) the spur-wheel *e e* can communicate motion to the spur-wheel *f f* on the end of the screwed spindle *g g*, either

through the first pinion, *n*, only, as shown, or through both pinions, or that both shall be out of gear. It will be evident that as these pinions *n n'* are geared together, and hence revolving in opposite directions, the screwed spindle *g g* will be driven either forward or backward, according to which pinion is thrown into gear, and that when in the intermediate position, with both carrier-pinions *n n'* out of gear, the screwed spindle *g g* will remain stationary. The screwed spindle *g g* is also provided with a hand-wheel, *o o*, by means of which (when out of gear) it can be turned in either direction.

The inner ends of the spindles of the head and tail stocks are fitted with suitable spring (or other) chucks, *p p*, for the purpose of holding the heads of the bobbin *q q* on which the coil is to be made.

To the carriage *k k*, before named, is attached the guide *r r*, over which the wire *s s* and thread *t t* pass to the bobbin. This guide is in the form of a fine V-grooved roller, and revolves as the wire and thread pass over it. The wire and thread are wound on separate bobbins placed in a frame at the back, (not shown on the drawings,) and each is carried through a separate "tension," *u u*, (similar to that of a sewing-machine,) and then between two glass rods, *r' r'*, or direct to the guide *r r*, from whence they pass, side by side, onto the bobbin *q q* in the form of a coil.

In forming an induction-coil with this apparatus the attendant first puts on the bobbin *q q* a layer of paraffine paper, and having fastened the ends of the wire *s s* and thread *t t* to one end of the bobbin, (or to the central disk,) he first gives the screwed spindle *g g* a turn by hand by means of the hand-wheel *v v*, so as to give the guide *r r* a slight "lead" and bring the wire *s s* and thread *t t* side by side. He then puts one of the carrier-pinions *n n'* in gear by means of a lever, *x x*, and moves the strap onto the fast pulley *d* by means of the strap-fork *z z*, which will set the head-stock spindle *c c* and bobbin *q q* revolving and move the guide *r r* from one end of the bobbin to the other,

or from the center to one end, so as to form a single coil. As soon as the coil has arrived at the end of the bobbin he moves the strap onto the loose pulley *d'* and applies a brake, *ww*, with his hand or otherwise, and at the same time a second attendant puts both carrier-pinions *n n'* out of gear, thus stopping the movement of the bobbin and the guide simultaneously. The first attendant then winds on a paraffine or plain paper, and his assistant; bringing the other carrier-pinion into gear and the strap onto the fast pulley *d*, winds on another coil in the reverse direction, and so on alternately till the coil has assumed the required diameter.

y y is a spring-catch for holding the lever *x* in position, so as to keep either of the pinions *n n'* in gear with the wheel, or both of them out of gear, as may be required.

We claim as our invention—

1. The herein-described machine for coiling wire and thread simultaneously side by side, said machine consisting of a frame, head and tail stocks, and mechanism for rotating the

bobbin, with a feed-screw and operating devices therefor, and a carriage adapted to be traversed by said screw and having mounted thereon a guide for the wire and thread, and two separate tension-regulators, *u u*—one for the thread and the other for the wire—substantially as described.

2. The combination of the frame, head and tail stocks, and rotating devices for the bobbin, with a carriage and mechanism, substantially as described, for traversing the carriage, the latter being provided with a guide, *r*, consisting of a revolving V-grooved roller and two separate tension-regulators, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN LEIGH.

CHAS. L. CLARKE.

Witnesses:

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