

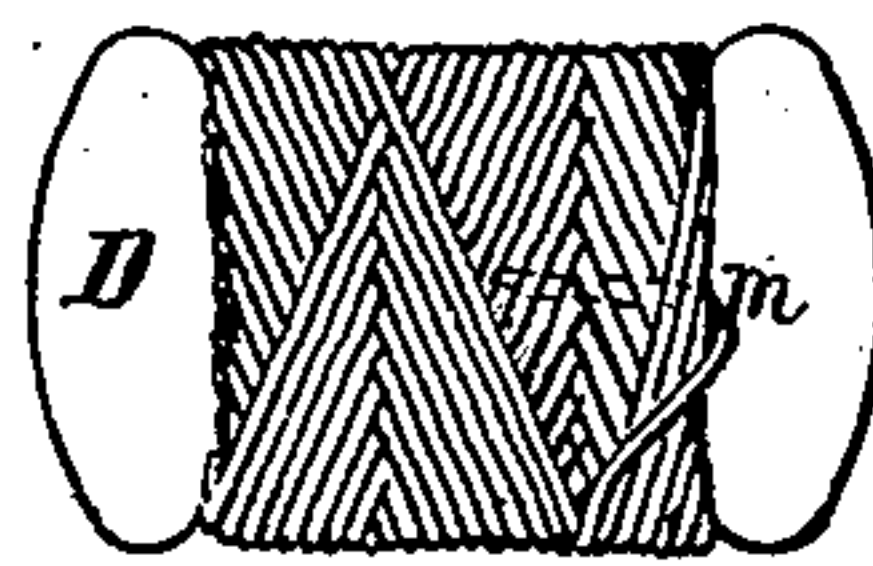
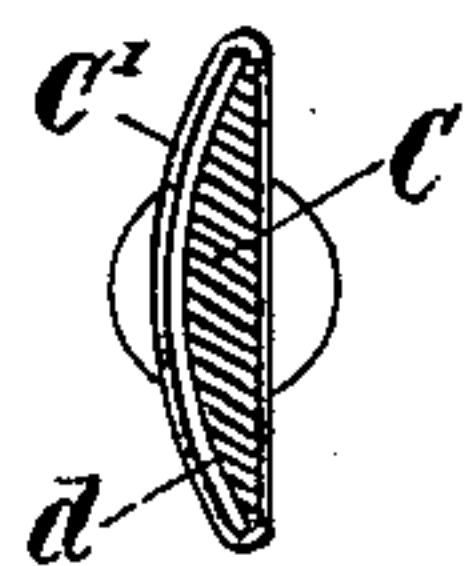
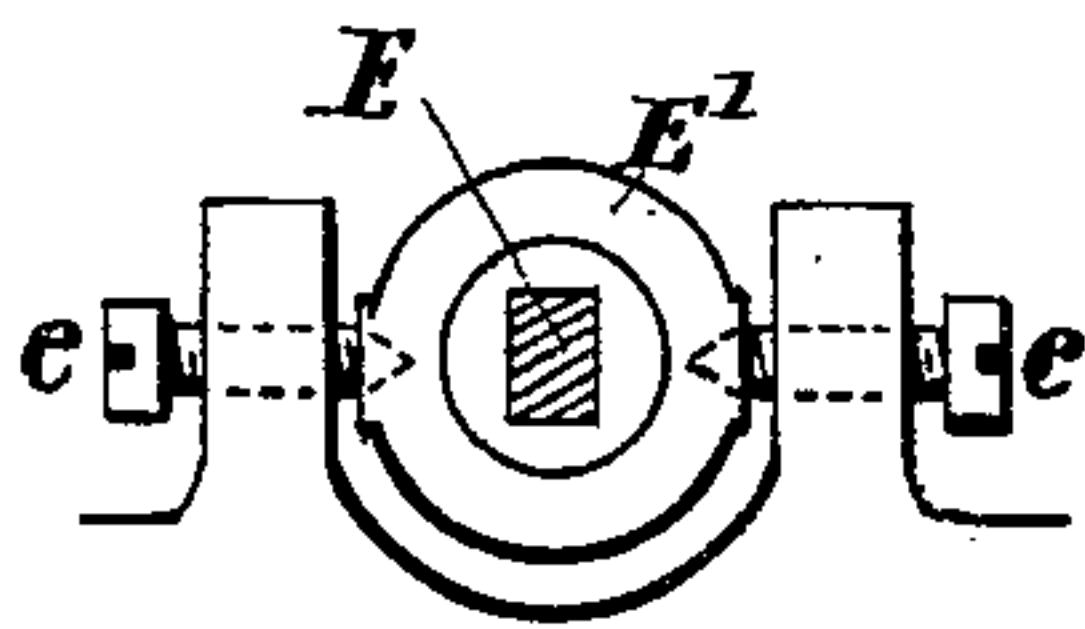
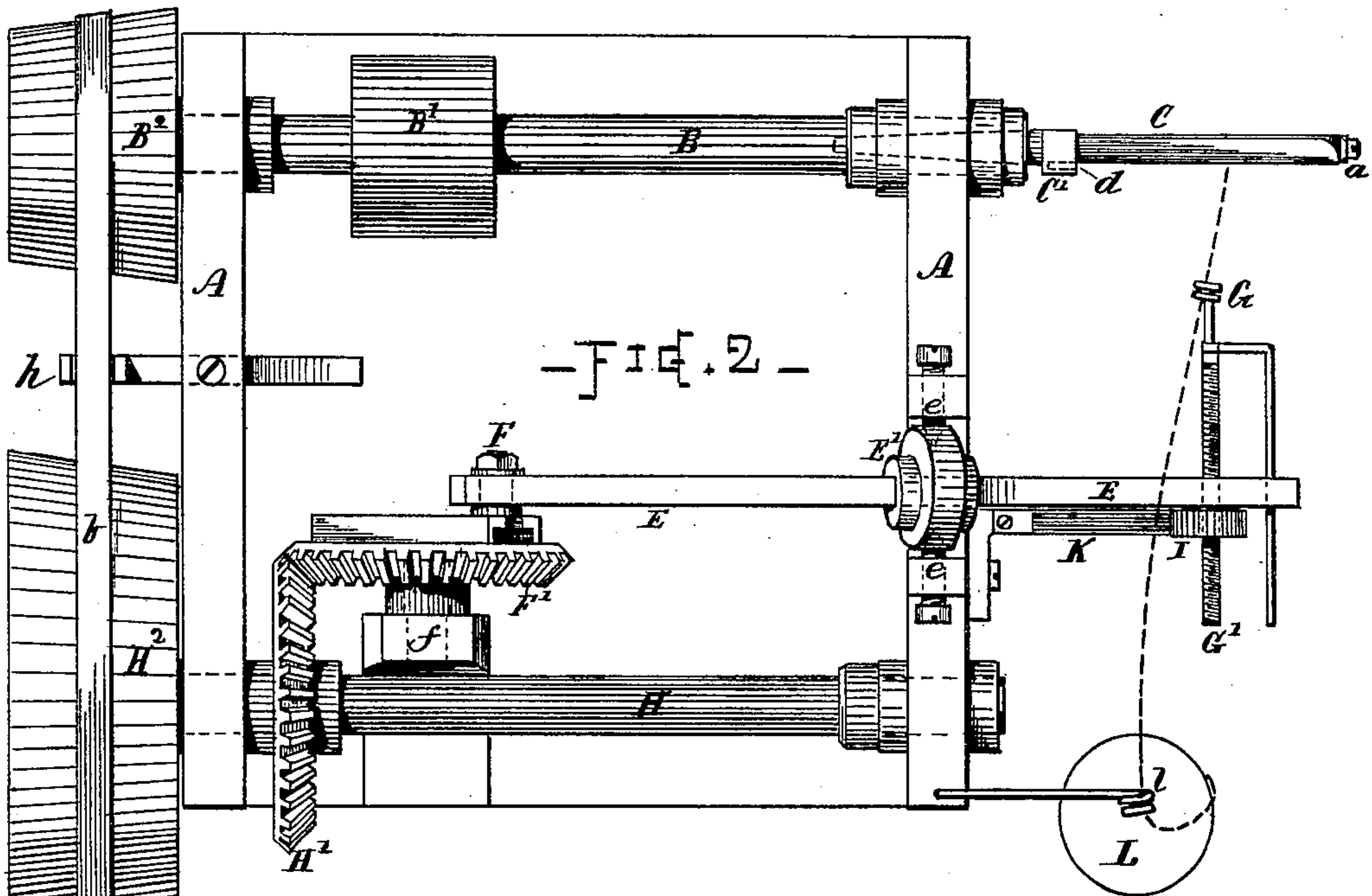
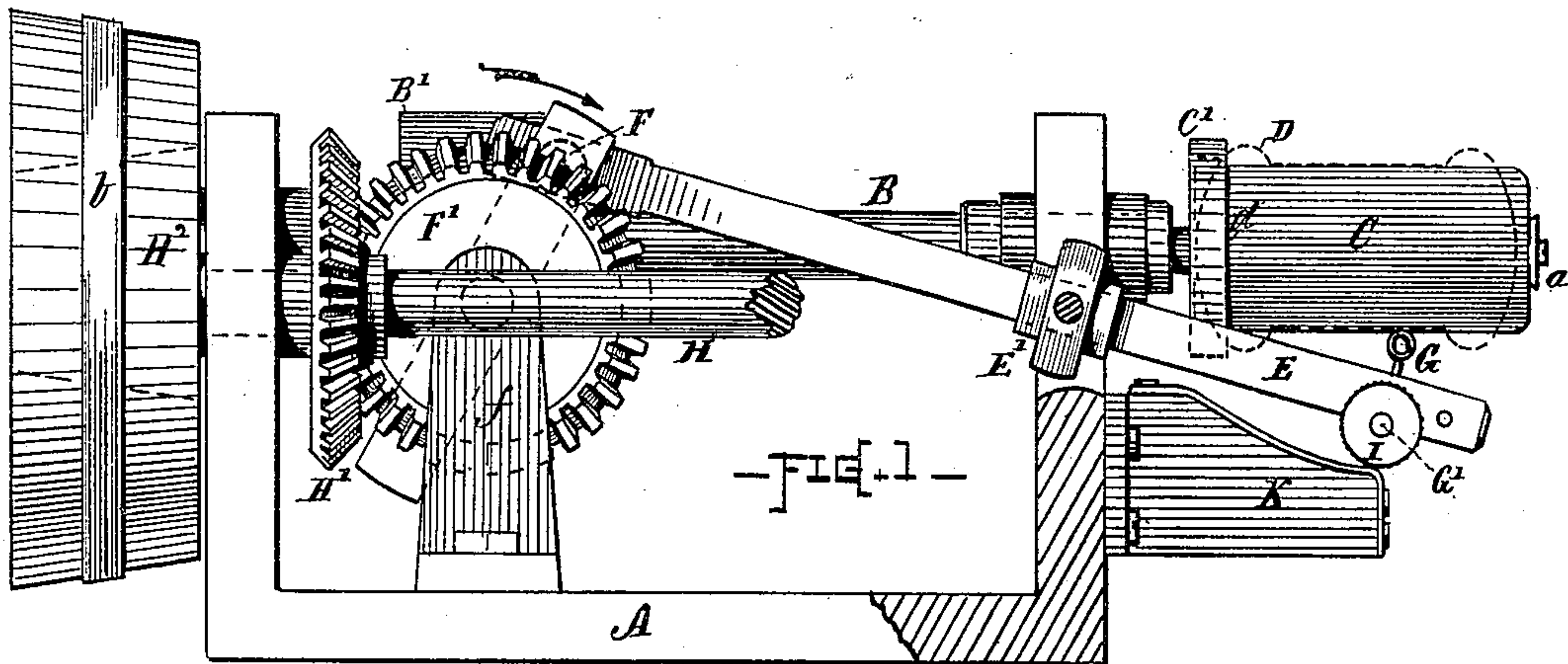
(No Model.)

J. HARGRAVES.

MACHINE FOR WINDING YARN UPON CARDS OR PAPERS.

No. 245,373.

Patented Aug. 9, 1881.



-FIG. 3-

-FIG. 4-

-FIG. 5-

WITNESSES-

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UNITED STATES PATENT OFFICE.

JAMES HARGRAVES, OF ASHLAND, MASSACHUSETTS.

MACHINE FOR WINDING YARN UPON CARDS OR PAPERS.

SPECIFICATION forming part of Letters Patent No. 245,373, dated August 9, 1881.

Application filed March 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES HARGRAVES, of Ashland, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Winding Yarn upon Cards or Papers; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a simple and convenient mechanism for winding thread, cord, or yarn upon pieces of cardboard or papers, and for similar purposes, the operation being effected in such manner that the yarn or thread will be laid with its loops or strands crossed or intermeshed, the winding producing a peculiar braid-like appearance, while binding together the loops or strands upon the card, so as to prevent the loosening or tangling of the yarn during its use; also, to provide such support for the card while winding that the yarn will be tight and close thereon after the card is removed from the machine; also, to afford facilities for proper adjustment of the mechanism for winding different styles and sizes of cards or winders. I attain these objects by the mechanism illustrated in the drawings and hereinafter described.

Figure 1 is a part elevation and part sectional view, showing my improved mechanism. Fig. 2 is a plan view of the same. Fig. 3 is a detached view, showing the oscillating bearing for the guide-rod. Fig. 4 is a transverse sectional view of the spindle or winding-head; and Fig. 5 is a view of a card of yarn, showing the arrangement in winding the loops or meshes thereon.

In the drawings, A denotes the frame, of any suitable form, for supporting the operative parts of the machine.

B denotes the winding-shaft, supported to revolve in suitable bearings on the frame A, and provided with a pulley, B', for the driving-belt, by which the machinery receives its motion. Stopping and starting devices of any suitable kind may be employed in connection with the driving devices.

C denotes the spindle or winding-head, mount-

ed at the end of the shaft B and arranged to revolve therewith. Said head C is made in the form of a broad plate, one of its sides being flat and the other curved or rounded, as the segment of a cylinder, the width thereof being the same, or nearly the same, as the cards upon which the yarn is to be wound. A band or rim, C', is formed about the inner end of the head C in such manner as to leave a small groove or recess, d, along the curved side of the head, into which the end of the card D is inserted for supporting it in place while winding on the yarn, the card thus being caused to spring or bend around the curved surface of the head, and occupying some less width than when straight and flat. The position of the card is indicated by dotted lines on Fig. 1.

A small button or hook, a, is attached to the outer end of the head C, for holding and severing the thread or yarn when discharging the filled card from the spindle.

The spindle-head C is, in the present instance, provided with a tapered stem or shank, which fits into a corresponding opening in the end of the shaft B, (see dotted lines, Fig. 2,) and thus secures the parts together, while permitting convenient detachment and interchange with winding-heads of different style and sizes.

E denotes the traveler-bar which carries the yarn, guiding it onto the winder and governing the arrangement of the meshes or loops as they are laid upon the card. Said bar reciprocates through the oscillating bearing E' as its inner end, which is connected to the crank or wrist-pin F, moves around with the action of the revolving wheel or gear F'. The outer end of the bar E is furnished with an eye, G, through which the yarn is rove, and by which it is guided onto the winding devices. The crank-pin F is made adjustable to give more or less throw or movement to the bar E, as desired. The gear F' is supported on a suitable stud and bracket, f, and is operated by a bevel-gear, H', on the shaft H, the latter receiving its motion from the shaft B by means of the coned pulleys B² H² and the connecting-band b, arranged as indicated. By adjustment of the band b along the cones the relative speed of the winding-head and yarn-guiding devices can be varied. This may be effected by a suitable band guide or shipper, h. The bearing

E', through which the rod E slides, is supported by pointed centers *e e*, so that it can rock or oscillate with the movement of said rod as the crank F swings around its circle of motion.

5 The yarn-guide G is located as shown, and is made adjustable transversely to the bar E. In the present instance it is furnished with a screw-threaded stem, G', on which is arranged a nut, I, which works in connection with an
10 inclined or curved bracket or arm, K, projecting from the frame, and provided with a suitable friction-surface upon which the nut I strikes, and is turned upon the screw G' as the bar E performs its movement, thus automatically
15 moving the guide-eye G toward or from the winding-head during the process of winding the yarn thereon. This automatic adjustment of the guide-eye G may be omitted in practice when the quantity of yarn run onto a single
20 card is small; but where a large amount is to be wound at a single run the automatic adjustment of the eye is useful in properly shaping or building the cop or ball.

Suitable measuring mechanism may be com-
25 bined with the winding devices and operated from one of the shafts, B or H; but as such mechanism forms no part of my present invention it is not herein shown and described.

In the operation of this machine the yarn,
30 which is led from the spool or bobbin L through a suitable guide, *l*, is passed through the guiding-eye G and thence onto the winding-head C. The card D is placed in position, as indicated, with its end retained in the recess *d*,
35 and the machine being started, the yarn is wound around the card and head together, the movement of the bar E and its eye G imparting the proper form and order of laying the meshes, which may be as shown in Fig. 5, or
40 such modification of pattern as results from the different adjustments of the parts of the machine. When a sufficient quantity is wound onto the card the yarn is passed under the button *a*, and the card and yarn drawn off from
45 the end of the spindle-head. The button *a*, in severing the yarn, draws the end thereof under the other portion, as indicated at *m*, Fig. 5, thus leaving the cop or ball finished and fast-
50 ened. After the card is removed from the head it is straightened from the curved form which

it had while on said head, and this flattening by increasing the width gives tension on the yarn and causes it to hug closely to the card, making a neat and desirable package.

What I claim as my invention, and desire to 55 secure by Letters Patent, is—

1. The spindle or winding-head formed with one curved or cylindrical side, and provided with a groove or recess for supporting a card or paper winder, substantially as hereinbefore 60 set forth.

2. The combination, with a spindle or winding-head adapted for supporting and revolving a card, of a yarn-guide adapted for carrying the yarn in a circular or elliptical course, the 65 guiding-eye moving in a plane parallel, or nearly so, with the axis of said spindle, and a crank-actuating mechanism for imparting motion to said yarn-guide, substantially as set forth.

3. The combination, substantially as hereinbefore described, of the operating-shaft B, the spindle or winding-head C for supporting a card or winder, the yarn-guide G, the reciprocating guide-rod E, the oscillating bearing E', 75 the crank F, and means for operating said crank from the shaft B, substantially as set forth.

4. The combination, substantially as hereinbefore described, of the spindle or winding-head C, the revolving shaft B, the reciprocating guide-rod E, the yarn-guiding eye G, provided with a screw-thread and nut, I, and an actuating-arm, K, or device adapted for automatic adjustment of said guiding-eye toward or from said winding-head, for the purpose set 85 forth.

5. The combination, with the winding-shaft B, card-supporting spindle or head C, and the reciprocating yarn-guide rod E, of the adjustable crank-pin F, gears F' H', shaft H, coned 90 pulleys B² and H², and band *b*, arranged for operation substantially as and for the purposes set forth.

Witness my hand this 15th day of March, A. D. 1881.

JAMES HARGRAVES.

Witnesses:

CHAS. H. BURLEIGH,
ORRIN B. CHAFFEE.