

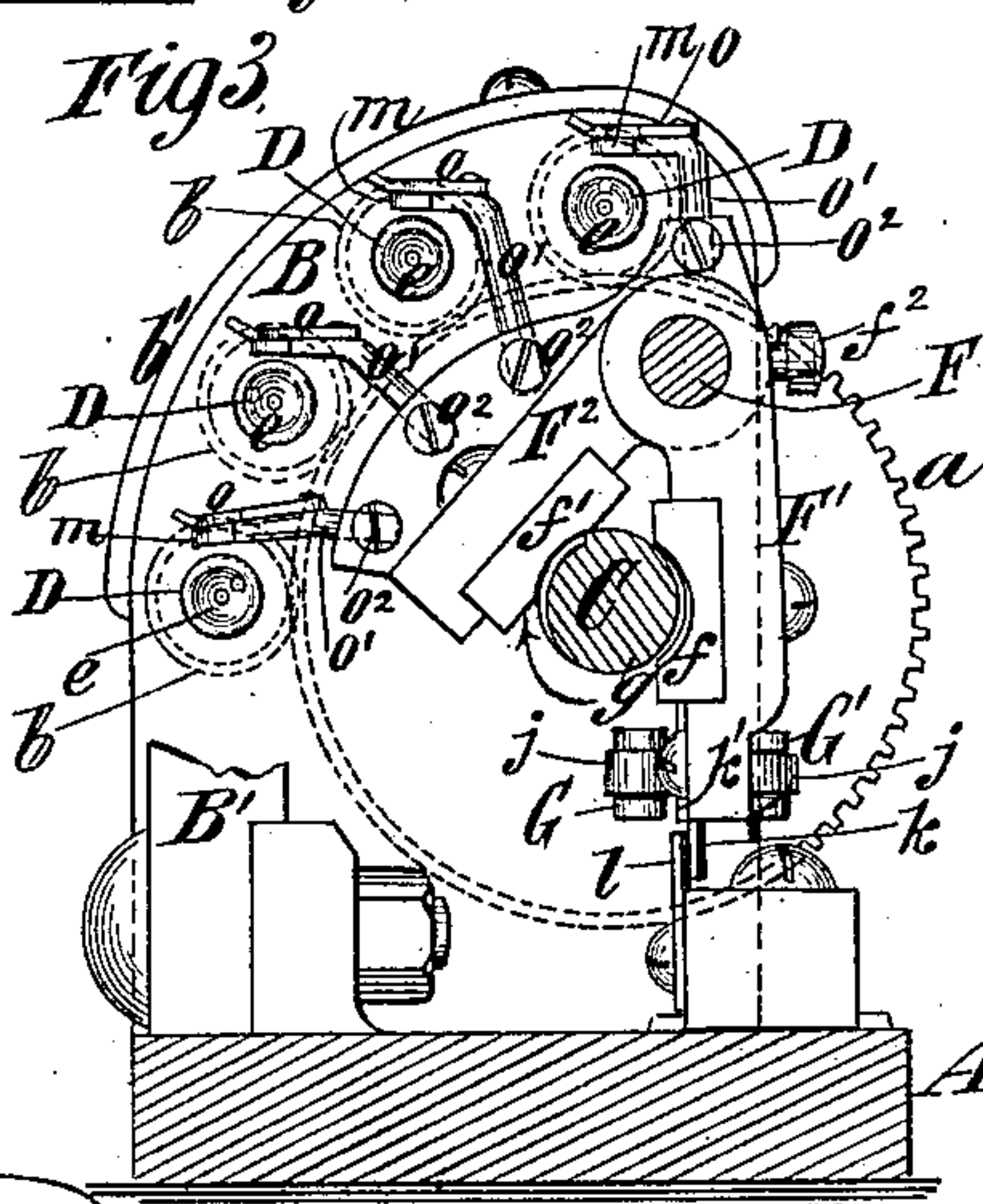
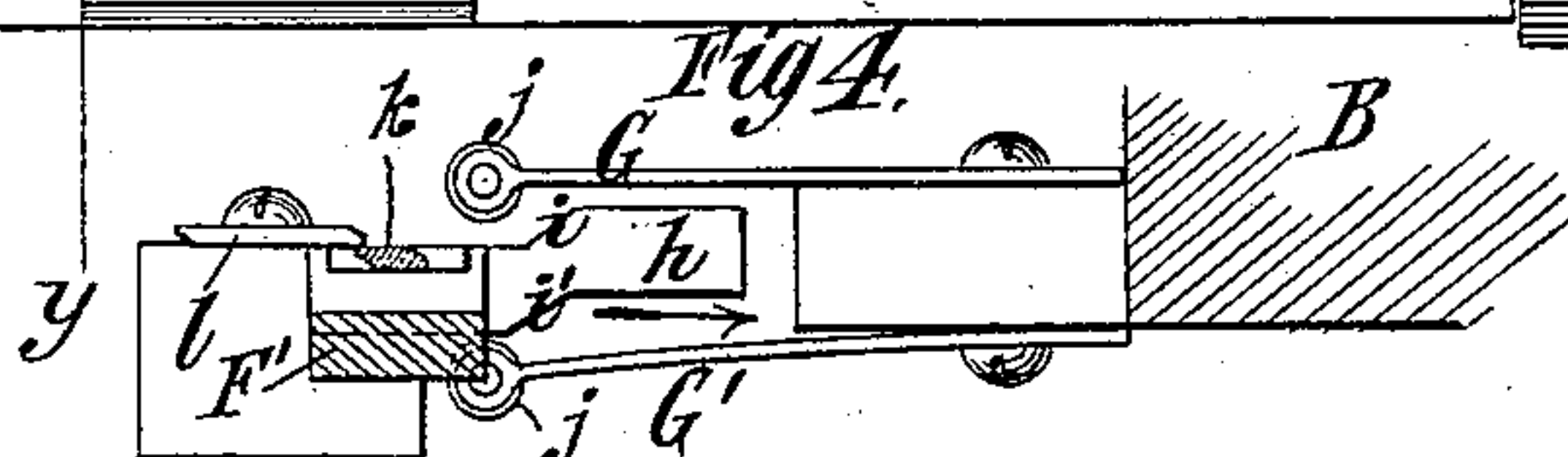
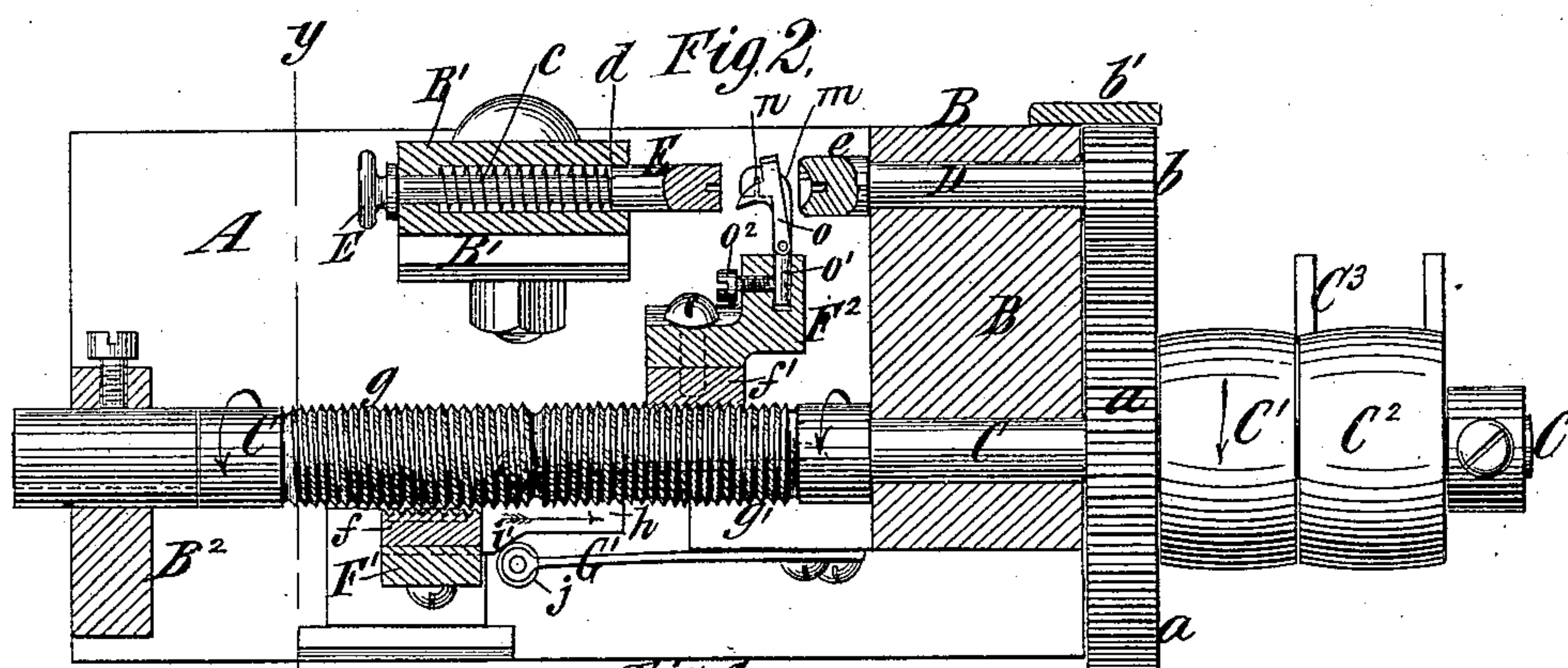
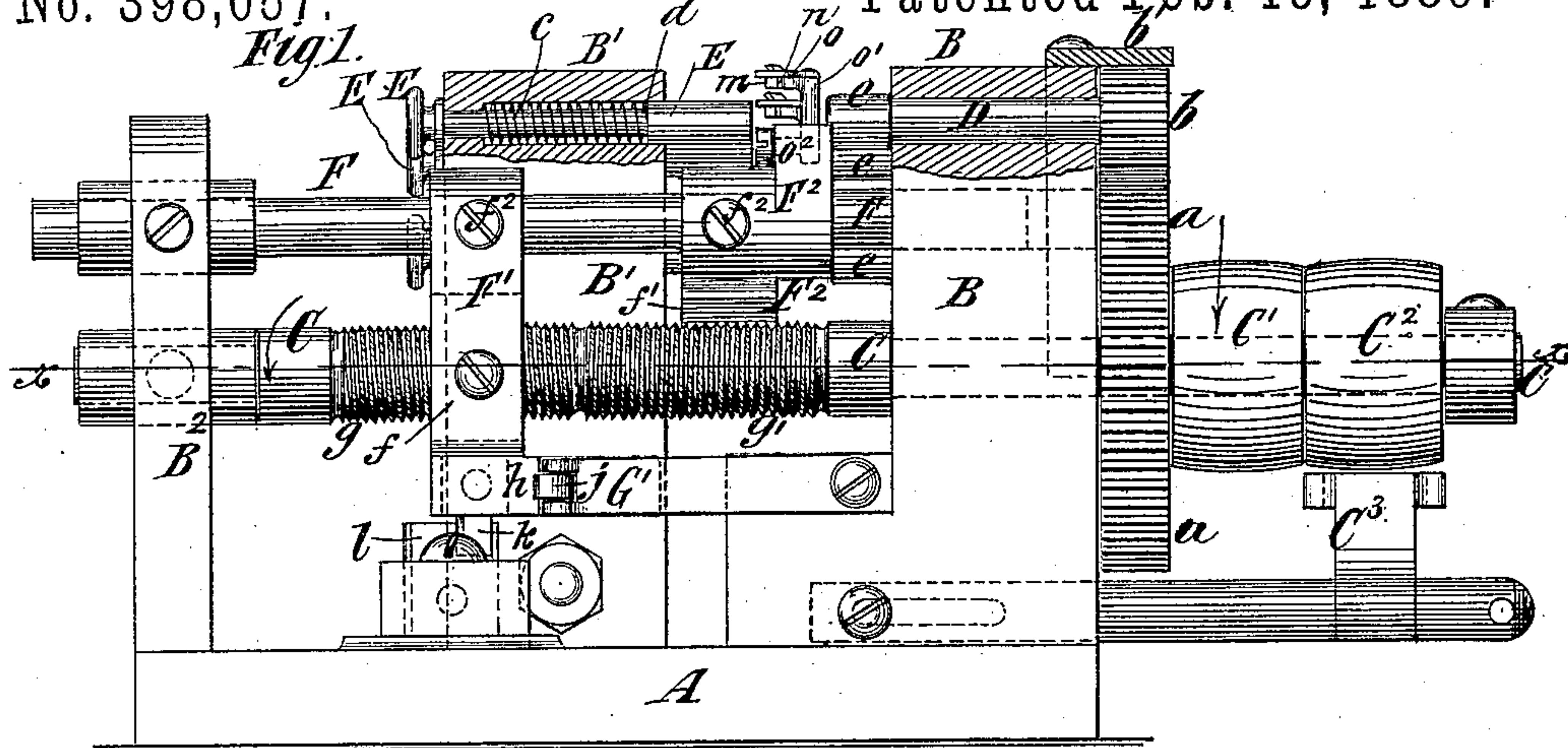
(No Model.)

W. R. LANDFEAR.

MACHINE FOR WINDING SEWING MACHINE BOBBINS, &c.

No. 398,057.

Patented Feb. 19, 1889.



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MACHINE FOR WINDING SEWING-MACHINE BOBBINS, &c.

SPECIFICATION forming part of Letters Patent No. 398,057, dated February 19, 1889.

Application filed February 7, 1884. Serial No. 120,086. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. LANDFEAR, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Winding Sewing-Machine Bobbins, &c., of which the following is a specification.

My invention is applicable, generally, to machines for winding bobbins or spools, but is more especially intended to be embodied in machines for winding sewing-machine bobbins, the object of the invention being to provide a simple and compact machine that will wind several bobbins at once. Such a machine may be advantageously employed in a factory, where a large number of sewing-machine bobbins; or it may be employed for winding bobbins to be sold.

The invention consists in novel combinations of parts, which are hereinafter described, and pointed out in the claims.

I will first give a brief description of the machine which I have chosen to illustrate my invention. I employ a number or series of spindles arranged horizontally and in the arc of a circle, and a corresponding number of back-centers in line with the several spindles. The spindles are provided with heads or chucks which serve to carry the bobbins or spools, and the bobbins or spools are held in engagement with the spindle heads or chucks by means of the back-centers, on which the bobbins or spools turn freely at one end as they are rotated by the engagement of the spindle heads or chucks with their other ends. The several spindles arranged in the arc of a circle, as described, are geared with a driving-shaft arranged concentric to the said arc, and on said shaft are right and left hand screw-threads, which engage alternately with half-nuts to move the traverse guide-carrier back and forth as the shaft rotates. The two said half-nuts are fixed on a longitudinally-movable traverse-bar, and are adapted to be engaged alternately with opposite sides of the screw-threaded center-shaft to move the traverse guide-carrier back and forth.

In the accompanying drawings, Figure 1 is a back elevation, partly in section, of my im-

proved machine. Fig. 2 is a horizontal section thereof on the dotted line $x x$, Fig. 1, the center or driving shaft and pulleys being shown in full view. Fig. 3 is a transverse vertical section on the dotted line $y y$, Fig. 2, the back-centers and the arc-shaped stock or standard in which they are movable being broken away; and Fig. 4 is a horizontal section of certain of the parts shown in Fig. 2 in a slightly different position.

Similar letters of reference designate corresponding parts in all the figures.

A designates the base-plate or bed of the machine, on which are erected standards or supports $B B'$, which constitute, respectively, the head and tail stocks of the machine.

C designates a central driving-shaft, which is provided with fast and loose pulleys $C' C^2$ for a belt, which may be controlled by a belt-shipper, C^3 . This shaft is journaled at one end in the head-stock B and at the other end in a standard or upright, B^2 . It is intended to be rotated in the direction indicated by the arrows on the several figures.

D designates spindles, of which I employ a number or series. I have here represented four, but may employ more or less than that number. The spindles D are fitted to horizontal bearings in the head-stock B, as shown in Figs. 1 and 2, and are arranged in the arc of a circle, as shown in Fig. 3. The shaft C is concentric with such arc, and on said shaft, outside the head-stock B, is a spur-wheel, a , which engages with pinions b on said spindles D, and thus drives said spindles. A guard, b' , attached to the head-stock B, serves to cover the pinions b .

E designates the back-centers, which are arranged in the same arc as the spindles D and are in line with said spindles. Each back-center E is fitted to a bearing in the tail-stock B' , wherein it may slide longitudinally, and is impelled toward the opposite spindle D by a spring, c , arranged, as shown in Figs. 1 and 2, between a shoulder, d , on the back-center and the end of the recess or bearing wherein said back-center is held.

On the end of each spindle D is a head or chuck, e , which is constructed to engage with the end of a bobbin to drive it, and the back-center E serves simply to hold the bobbin in

engagement with said head or chuck. To take out a bobbin, the back-center E is pulled back against the force of the spring *e*, and another bobbin may then be inserted.

- 5 The spindles D and their corresponding back-centers may have male or female centers, as is desired.

A rotary spindle and a back-center have before been arranged in line for winding a bobbin; but a number or series of spindles and back-centers arranged in the arc of a circle of which the driving-shaft is the center constitute a very compact and simple arrangement which will wind bobbins very rapidly. Such arrangement is also advantageous because of the facility with which a number of bobbins can be placed in the machine at once and removed from the machine when wound.

- 20 In operating the machine the belt is shifted onto the loose pulley C², and the attendant pulls back the several back-centers and places four bobbins in the machine, the thread being clamped and held between the end of the bobbin and the spindle head or chuck *e* in the usual way. The machine is then started, and the four spindles D, with their bobbins, are rotated by the single wheel *a*, gearing with their pinions *b*. When the bobbins are full, the machine is stopped, the bobbins are all taken out and are replaced by others.

- F designates the traverse bar or rod, which is placed over the shaft C, and is adapted to slide in bearings in the head-stock B and standard B². On the traverse rod or bar F are two arms, F' F², which project downward and on opposite sides of the shaft C. The arm F', which projects behind said shaft, carries a half-nut, *f*, and the arm F², which projects in front of said shaft, carries a similar half-nut, *f'*. Upon the shaft C are right and left hand threads *g g'*, with which the nuts *f f'* may engage. These threads are of fine pitch, but in the drawings are shown coarse in order to make them more clear.

- 45 The arms F' F² are secured on the traverse-rod F by means of set-screws *f²*, and they form such an angle with each other, as best shown in Fig. 3, that when the half-nut *f* on the arm F' is in engagement with the thread *g* on the shaft C the nut *f'* on the arm F² will be held out of engagement with the thread *g'* on said shaft, and when the nut *f'* is in engagement with the thread *g'* the nut *f* will be held out of engagement with the thread *g*. As before stated, the shaft C always rotates in the direction indicated by the arrow, and in the drawings the nut *f'* is shown in engagement with the left-hand thread *g'*. Consequently the rotation of the shaft C will move the traverse rod F, with its arms F' F², toward the right hand in Figs. 1 and 2. If now the rod F is turned just enough to bring the nut *f* into engagement with the right-hand thread *g*, the shaft C will move the rod F and arms F' F² toward the left hand in said figures.

At the lower end of the arm F' is a hori-

zontal projection, *h*, which is formed with inclines or cam-surfaces *i i'* on opposite sides, and which moves between two springs, G G', as the arm F' is traversed back and forth, and as best shown in Fig. 4. These springs are provided with rollers *j* at their ends.

On the arm F' is a downwardly-projecting tongue, *k*, which is formed on the lower end of a plate, *k'*, secured to the front of said arm, and just below said arm is an upwardly-projecting stationary abutment or cam, *l*, the thickness of which is sufficient to cause the engagement and disengagement of the nuts *f f'* with and from the screws *g g'*, by reason of the tongue *k* passing on one side or the other of said cam or abutment *l*. As the arm F' and its horizontal projection *h* move to and fro between the springs G G', the cam-surfaces *i i'* act alternately on the said springs, cramping one or the other as the direction of movement is changed, and as soon as the tongue *k* passes the stationary abutment or cam *l* the spring thus cramped or deflected throws the arm F' toward or away from its screw *g*, and so produces the engagement of the nut *f* with said screw or its disengagement therefrom.

The arm F' and its projection *h* are represented in the drawings as moving in the direction of the arrows, Figs. 2 and 4, the nut *f* being out of engagement with the screw *g*. As clearly shown in Fig. 4, the incline *i'* has acted on the spring G' and holds it under tension. As soon as the edge of the tongue *k* passes the edge of the cam or abutment *l* the spring G' will move the arm F' toward the screw *g*, and will thus move the nut *f* into engagement therewith and free the nut *f'* from the screw *g'*. The direction of movement of the traverse-bar F and its arms will thus be reversed and the tongue *k* will pass on the front side of the cam *l*, which will thus hold the nut *f* in engagement with the screw *g*. As the movement toward the left continues, the incline *i* will act upon and deflect or cramp the spring G, thus producing a force which will move the arm F' backward and free its nut *f* from the screw *g* as soon as the tongue *k* passes the left-hand edge of the cam *l*. In order to guide the tongue *k* positively on one side or the other of the cam *l*, the edges of both are beveled, as shown, and thus the certainty of the tongue passing on the proper side of the cam *l* is insured. In Fig. 4 the tongue *k* is indicated by dotted section-lines.

The arm F² constitutes the carrier for the thread-guides to produce the necessary traverse. These guides may be of any suitable kind, and as many are employed as there are spindles D and back-centers E. As here shown, each guide consists of a plate or piece, *m*, in which is a notch, *n*, for the thread, and to which is pivoted a latch or keeper, *o*, for holding the thread in the notch. Each guide has a stem, *o'*, which is secured in the carrier by a set-screw, *o²*, as shown in Fig. 2.

When the machine is used to wind bobbins

for the sewing-machines in use in a factory, the quantity of thread is not important, and the attendant may stop the machine and take out the bobbins when the quantity of thread wound is thought to be sufficient; but when used for winding bobbins or spools to be put up for sale any ordinary and suitable stop-motion may be used to stop the machine when a definite quantity of thread is wound on the bobbins.

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

1. The combination, with the spindles D and back-centers E, arranged in the arc of a circle, of the spindle-driving shaft C, concentric with said arc and provided with right and left hand threads $g g'$, gearing for driving said spindles from said shaft, the traverse-rod F, with its arms $F' F^2$, and their nuts $f f'$, engaging with said threads on the said driving-

shaft, and guides, one for each spindle, all carried by the single traverse-rod, substantially as herein described.

2. The combination, with the spindles and back-centers D E, arranged in the arc of a circle, of the concentric right and left hand threaded driving-shaft, the traverse-rod F, and its arms $F' F^2$, having nuts $f f'$, engaging each respectively with one of the threads of the driving-shaft, thread-guides, one for each spindle, all carried by the one traverse-rod, the projection h , having cam-surfaces $i i'$, and a tongue, k , all carried by one of the arms of the traverse-rod, the springs G G', and the stationary cam or abutment l , all substantially as herein described.

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