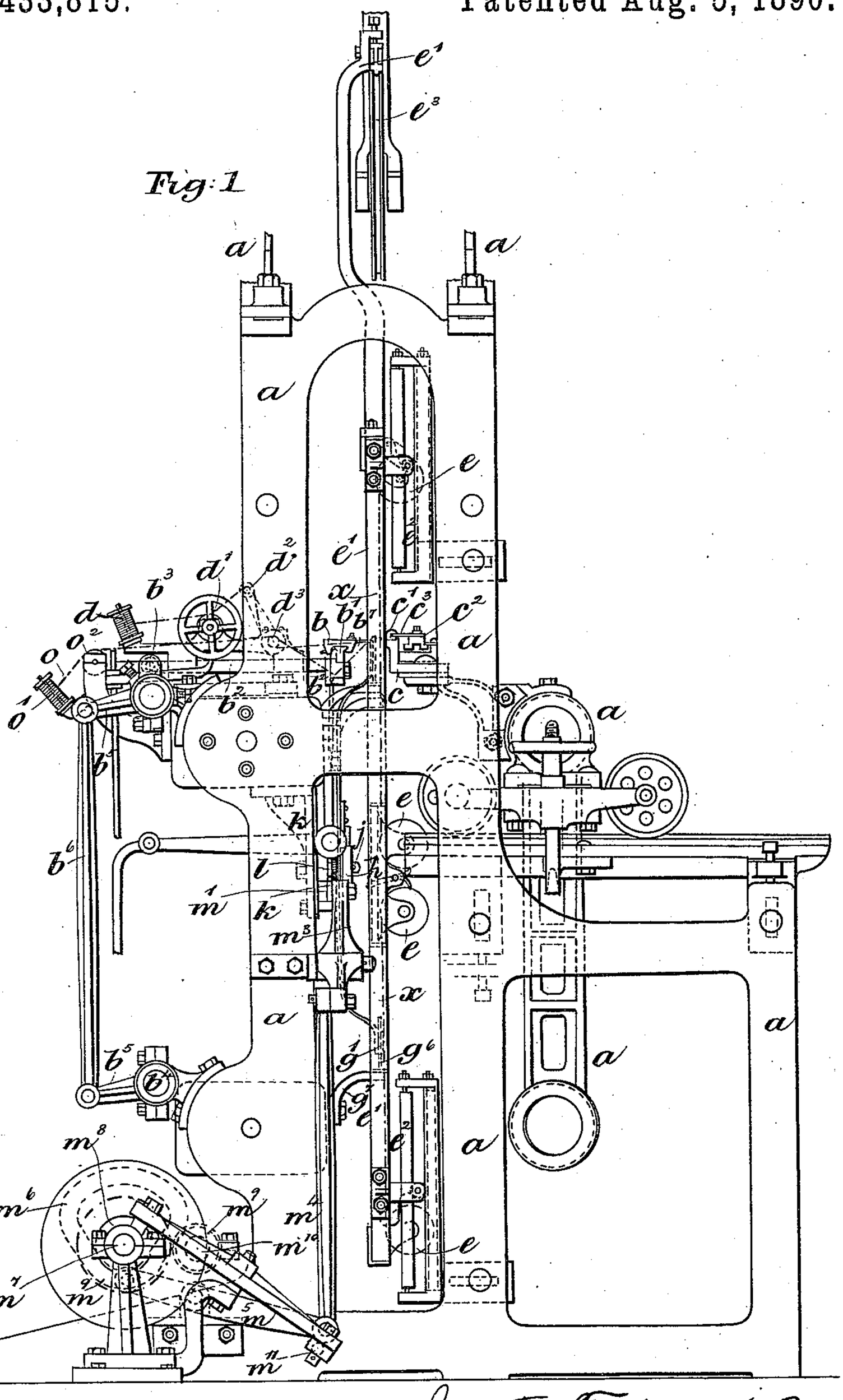
(No Model.) 5 Sheets—Sheet 1.

F. J. PERRY.

EMBROIDERING MACHINE.

No. 433,815. Patented Aug. 5, 1890.

Fig. 1



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EMBROIDERING MACHINE.

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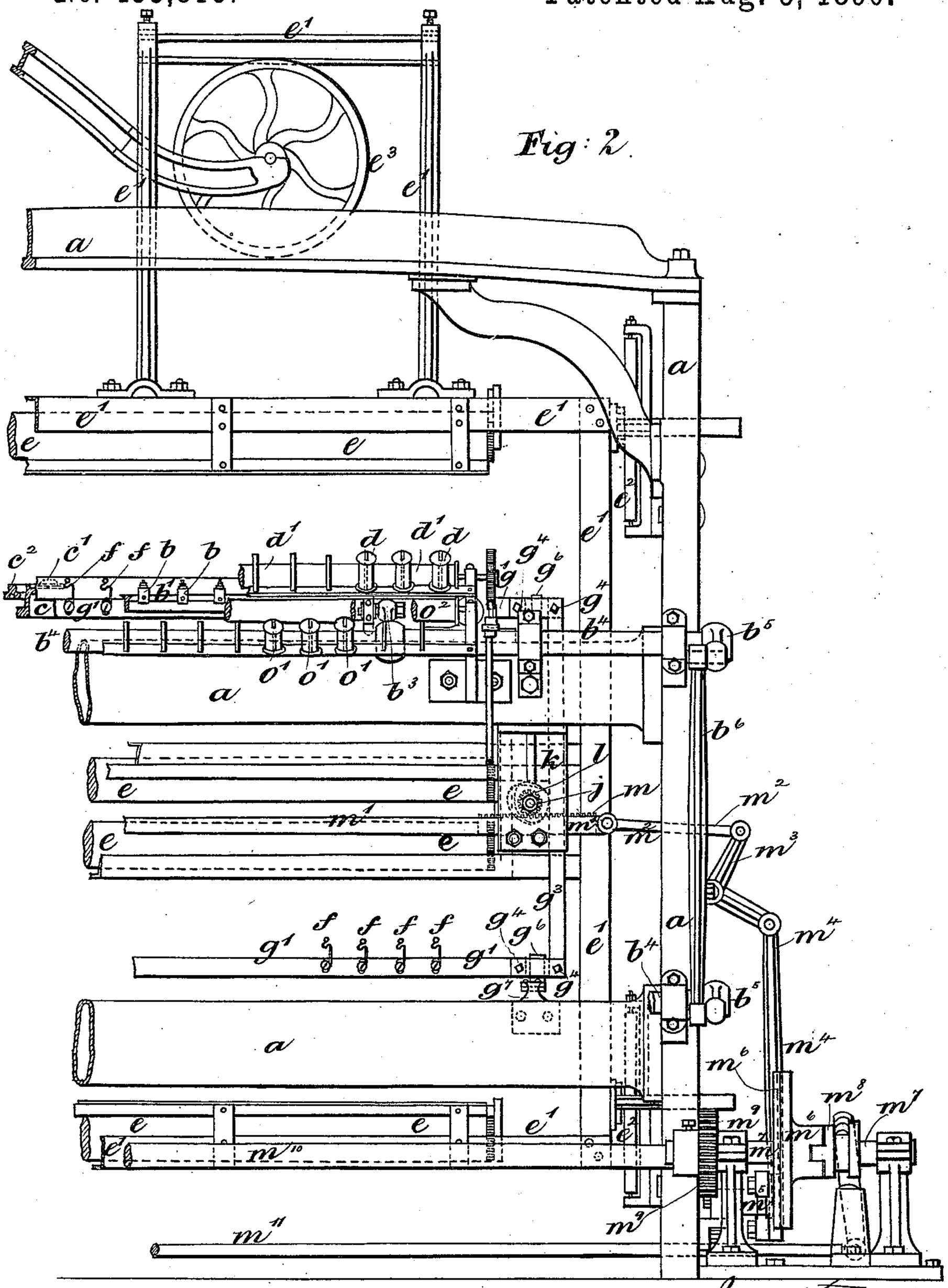
Fig: 2.



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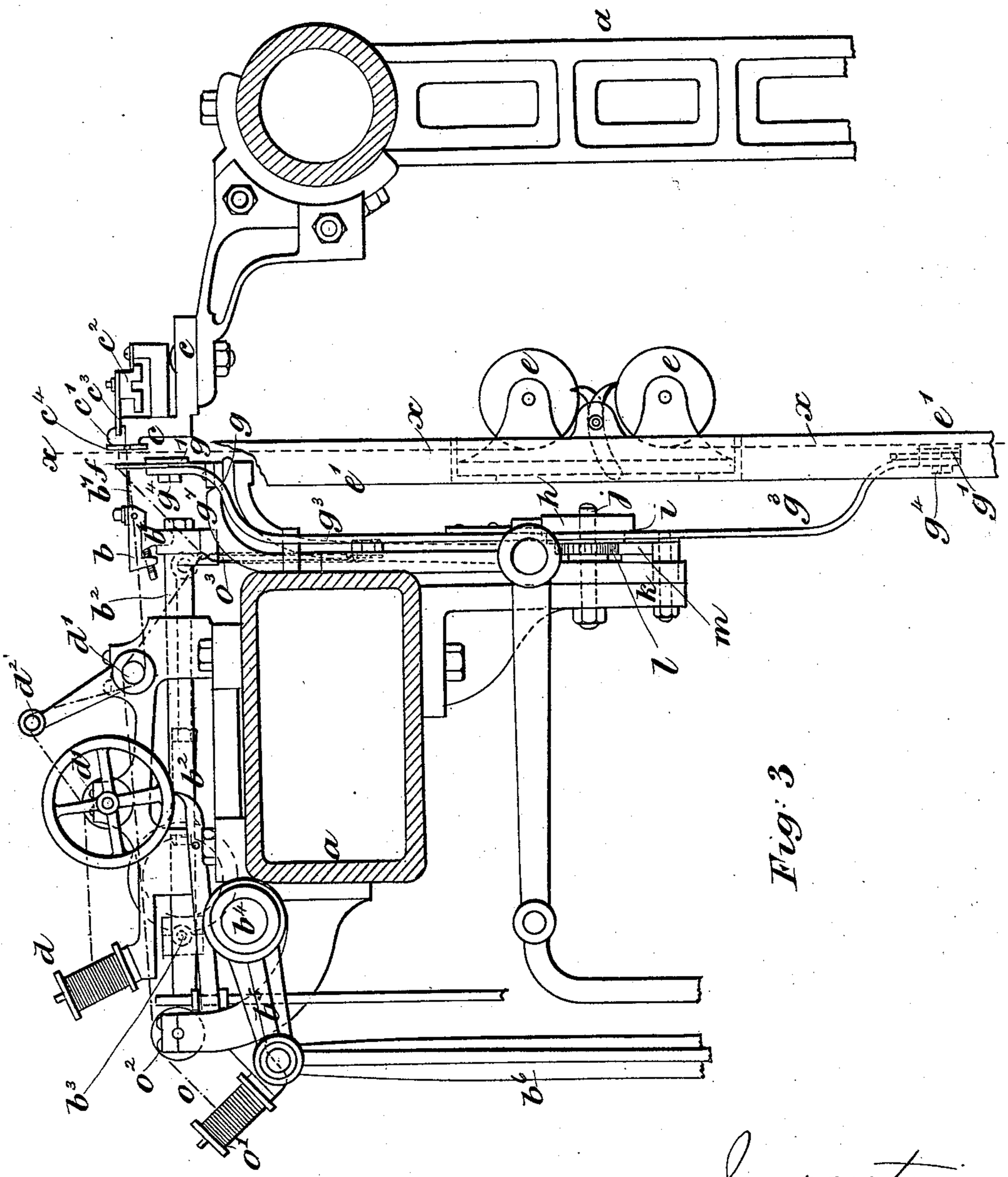

Fig. 3

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EMBROIDERING MACHINE.

No. 433,815. Patented Aug. 5, 1890.

Fig. 4.

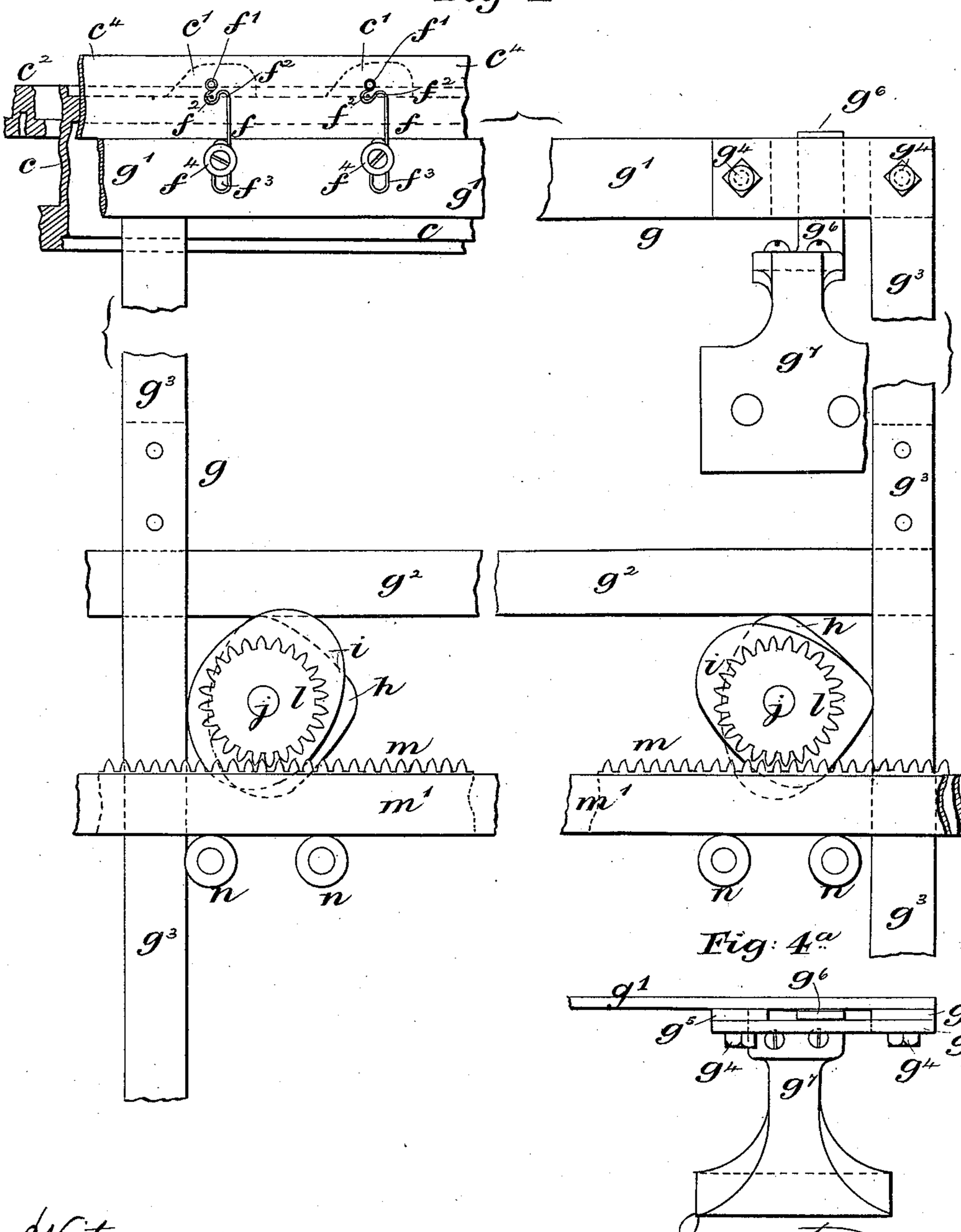

Fig. 4ª

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No. 433,815. Patented Aug. 5, 1890.

Fig: 5

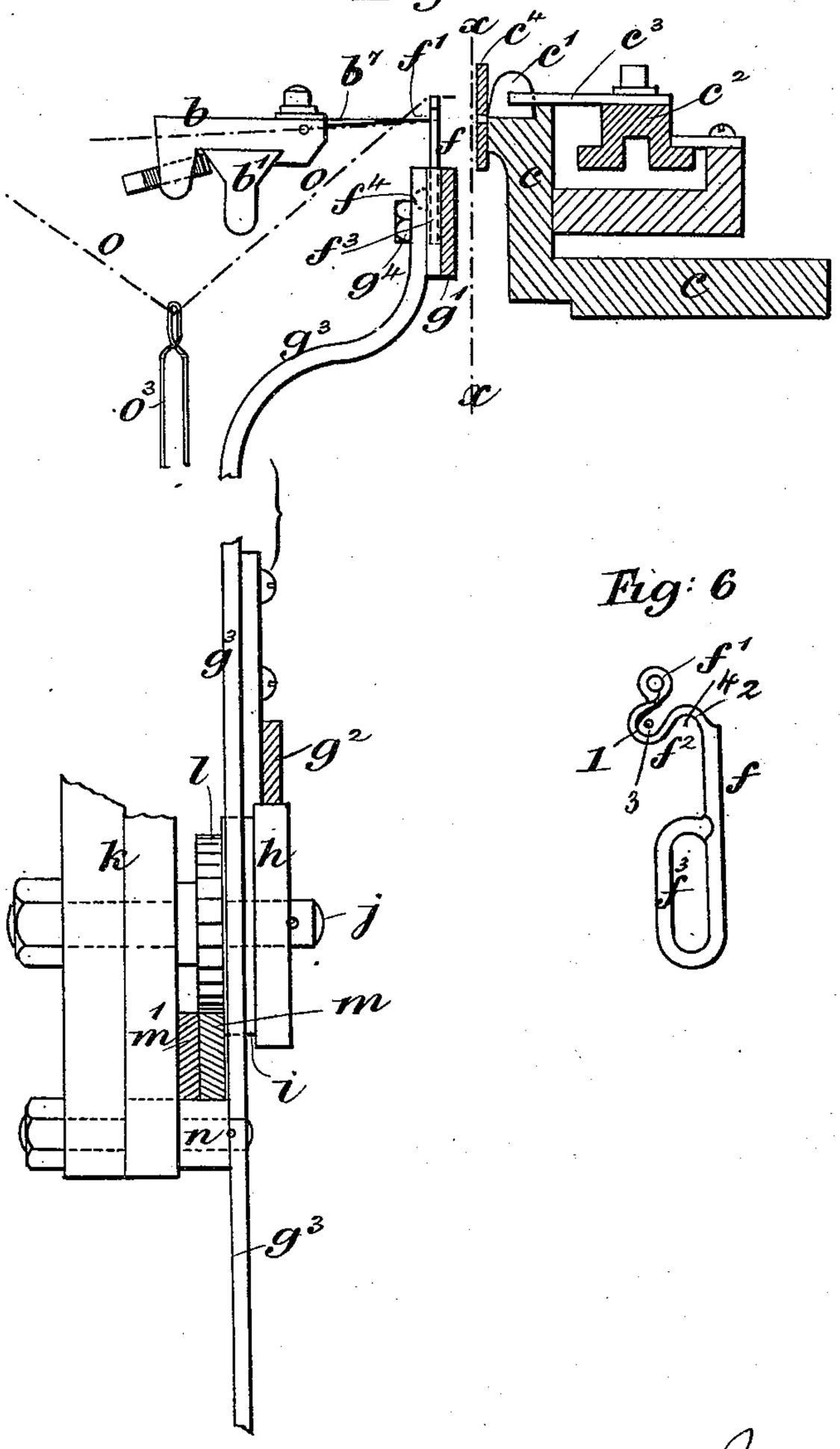

Fig: 6

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UNITED STATES PATENT OFFICE.

FREDERICK JAMES PERRY, OF NOTTINGHAM, ENGLAND.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,815, dated August 5, 1890.

Application filed February 6, 1890. Serial No. 339,409. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK JAMES PERRY, lace manufacturer, of Nottingham, England, a subject of the Queen of Great Britain, have invented certain new and useful Improvements in Embroidery-Machines, of which the following is a specification.

The invention has for its object improvements upon that class of multiple-needle embroidery-machines in which thick or other embroidery-threads which cannot pass through the eyes of the needles are stitched to the fabric, being embroidered by means of the ordinary embroidery-needles, which are caused to pass alternately on one side and then on the other side of such thick thread. Heretofore such thick or extra embroidery-thread was passed through an eye near the edge of a rotating carrier, which also had a central hole for the passage therethrough of the ordinary needle and its thread, and such rotating carrier was in the form of a toothed wheel, which received rotary motion by means of a reciprocating toothed rack. This construction of apparatus is somewhat expensive, is limited in its application, and obstructs the view of the work as it progresses.

Now, my present invention consists of an improved and simple construction of thick or extra embroidery-thread carrier and means for carrying and operating the same, whereby I am enabled to use any class of thick or extra embroidery-thread, can drive the machine at a considerable speed, and enable a better view of the work to be obtained as it progresses.

In the accompanying drawings, Figure 1 is an end view, and Fig. 2 is a front view, of parts, showing my present invention applied to a "Swiss embroidery-machine." Fig. 3 is a cross-section, drawn to a larger scale, of parts thereof. Fig. 4 is a front elevation showing my improvements and the ordinary embroidery needle and shuttle drawn half full size. Fig. 4^a is a detail top view of the carrier-frame. Fig. 5 is a cross-section of the parts shown in Fig. 4, and Fig. 6 is a separate view of one of the carriers drawn full size.

In all the figures like parts are indicated by similar letters and figures of reference.

I would here remark that I have shown only so much of the machine as will clearly illustrate the class of machine to which I refer and the method of applying my invention thereto.

a a represent parts of the frame of the machine.

b b are needle bars or leads fixed to bars b', carried by guide-bars b^2, which are connected to levers b^3, fixed on a shaft b^4.

In the machine represented in the drawings there are two sets of embroidery-instruments of a precisely similar character and acting simultaneously on the fabric. There are therefore two shafts b^4, to which other levers b^5 are fixed, which are connected together by links or connecting-rods b^6. Motion is given to one or other of the shafts b^4 in the ordinary manner.

b^7 is a needle.

c is the bar on which the shuttle-race is formed.

c' are shuttles.

c^2 is the bar for giving motion to the shuttles c' through the medium of the drivers c^3.

d d are the bobbins for supplying ordinary embroidery-thread to the needles, which thread is conducted from the bobbins d d around rollers d', over the bar d^2, under the bar d^3, and thence through holes in the leads or bars b to the needles.

The fabric to be embroidered is carried by and strained between rollers e e, supported in a frame e', which carries the fabric x in a vertical position between the needles b^7 and the face c^4 of the shuttle race or bar c, and such frame e' is guided vertically by vertical roller-guides e^2, and is supported at the top of the machine on rollers e^3, and such frame e' is operated by means of a pantograph, (not shown,) to move the work in any required vertical or horizontal direction, according to the pattern to be produced, as is well understood.

The parts above described are common to this description of embroidery-machine, and the moving parts are operated by cams and levers in any ordinary manner.

According to my invention I combine with each needle b^7 a carrier of peculiar construction, formed, preferably, of wire and having a stem f and the carrier-eye f', at one end

connected by a doubly-curved portion f^2 to the stem of the guide, and such carriers are formed with loops f^3 at the other end, by which, aided by screws f^4, they are fixed to bars g', fixed to the upper and lower parts of a frame g, which is guided to move in a vertical plane in any direction within certain limits. This frame g is formed with a cross-bar g^2 and vertical bars g^3, which respectively rest upon and against cams h i, which give combined vertical and horizontal motion to the said frame g in a vertical plane in such manner as to cause the carrier-eyes f' to travel around the needles b^7 first in one direction and then in the other, the motion of such carrier-eyes being so controlled by the cams h i as to cause the doubly-curved portions f^2 to travel clear of the needles b^7 in a path somewhat the shape of a spiral or scroll, so that when the carrier-eyes are in the extreme position in one or the other direction the needles shall pass through the centers of one or other of the curves 1 2 of the part f^2, which form recesses 3 4, as indicated at Fig. 6. The cams h i, of which there are two or more pairs along the length of the machine, are mounted on axes j, fixed to brackets k, and they have connected to each pair thereof a toothed pinion l. These toothed pinions l are acted upon by toothed racks m, fixed to a reciprocating bar m', which is mounted on guide-rollers n n, and is connected at one end by a link m^2 with a bell-crank lever m^3, which by a link m^4 is connected to a lever m^5, acted upon by a cam m^6, fixed on the counter-shaft m^7.

The thick or other embroidery thread or cord o, that is to be stitched to the fabric x by the ordinary embroidery-thread passing through the eyes of the needles b^7, is contained on bobbins o' and passes from such bobbins over the rollers o^2, over the bar d^3, through the eyes of the tension-wires o^3, and thence through the carrier-holes f' in the carriers to the fabric x, upon which it is stitched by the ordinary needle embroidery-thread passing alternately on each side thereof.

At any time, if required by the design, the carriers may be thrown out of action, as has already been proposed with respect to the rotary-wheel carriers, by the attendant operating the pantograph, who by the action of the foot upon a treadle (not shown) connected to the rod m^{10} throws the clutch m^8 into or out of gear with the cam m^6, thus connecting said cam with its shaft m^7, or disconnecting it therefrom, at pleasure, while the needles b^7 continue to do embroidery of the ordinary description. The counter-shaft m^7 receives rotary motion from the shaft m^{10} by the toothed gearing m^9, and said shaft m^{10} is rotated in the ordinary manner.

By the aid of my invention I am enabled to embroider with almost any thickness and character of cord, such as cannot be used with the rotating-wheel carrier heretofore in use. My improved apparatus, moreover, does not obstruct the view of the work like the rotary carrier and pinion and rack heretofore in use, which cause a considerable amount of friction and frequently cause the thick or extra braiding-cord to catch, thereby making bad work and entailing frequent stoppages. The reduced friction of my improved apparatus will also admit of the embroidery-machine being driven at a quicker rate.

I would here remark that my invention is not confined in its application to the shuttle embroidery-machine shown in the drawings; but it is also adaptable to all kinds of multiple-needle embroidery-machines driven by hand or power and worked with pantograph or jacquard, as well as to a combination of embroidery-machine with a lace-machine.

I claim—

1. The combination of the thread-carriers, each formed with a stem, a carrier-eye, and a doubly-curved portion connecting the eye to the stem, a bar to which the thread-carriers are fixed, embroidering-needles, and mechanism for causing the thread-carriers to travel first in one direction and then in the other direction around their needles in such a path as to clear the needles and carry their threads first to one side of the needles and then to the other side of the latter.

2. The combination of a thread-carrier formed with a stem, a carrier-eye, and a doubly-curved portion connecting the eye to the stem, a bar to which the thread-carrier is fixed, a needle mechanism for supporting the needle and reciprocating it, a frame to which the bar is fixed, moving in a vertical plane in any direction, having a cross-bar and vertical bars, cams on which the cross-bar rests, cams against which the vertical bars bear, axes on which the cams are fixed, having a pinion, and a reciprocating rack-bar, substantially as described.

FREDERICK JAMES PERRY.

Witnesses:

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WM. WHITTLEY,

Clerks to Notary, Nottingham.