

No. 616,776.

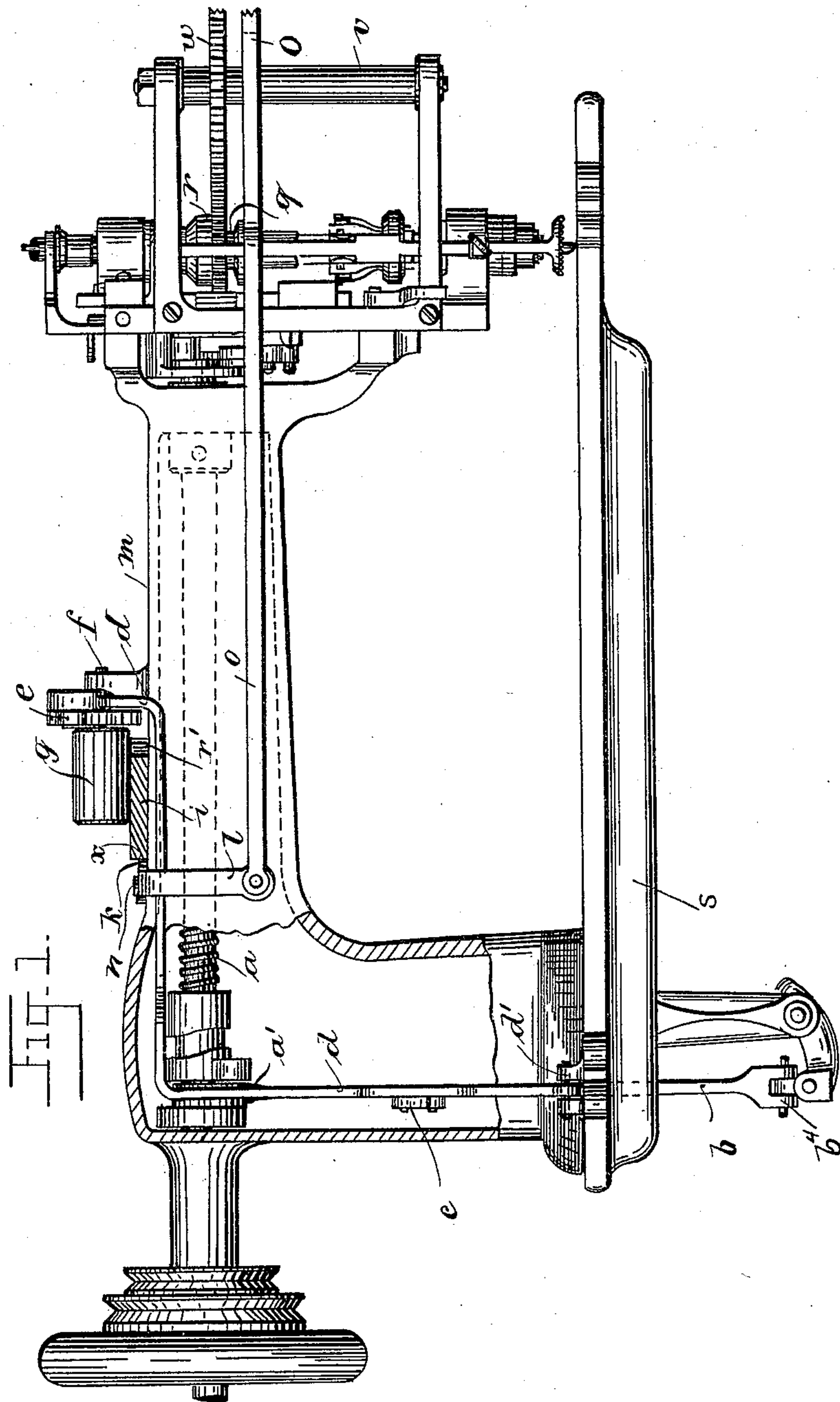
Patented Dec. 27, 1898.

R. EDER & G. STEIN.
EMBROIDERING MACHINE.

(Application filed July 30, 1897.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

John E. Wilson,
Rey C. Bowen.

Inventors:

R. Eder.
G. Stein.
by Wilkinson & Fisher
Attorneys.

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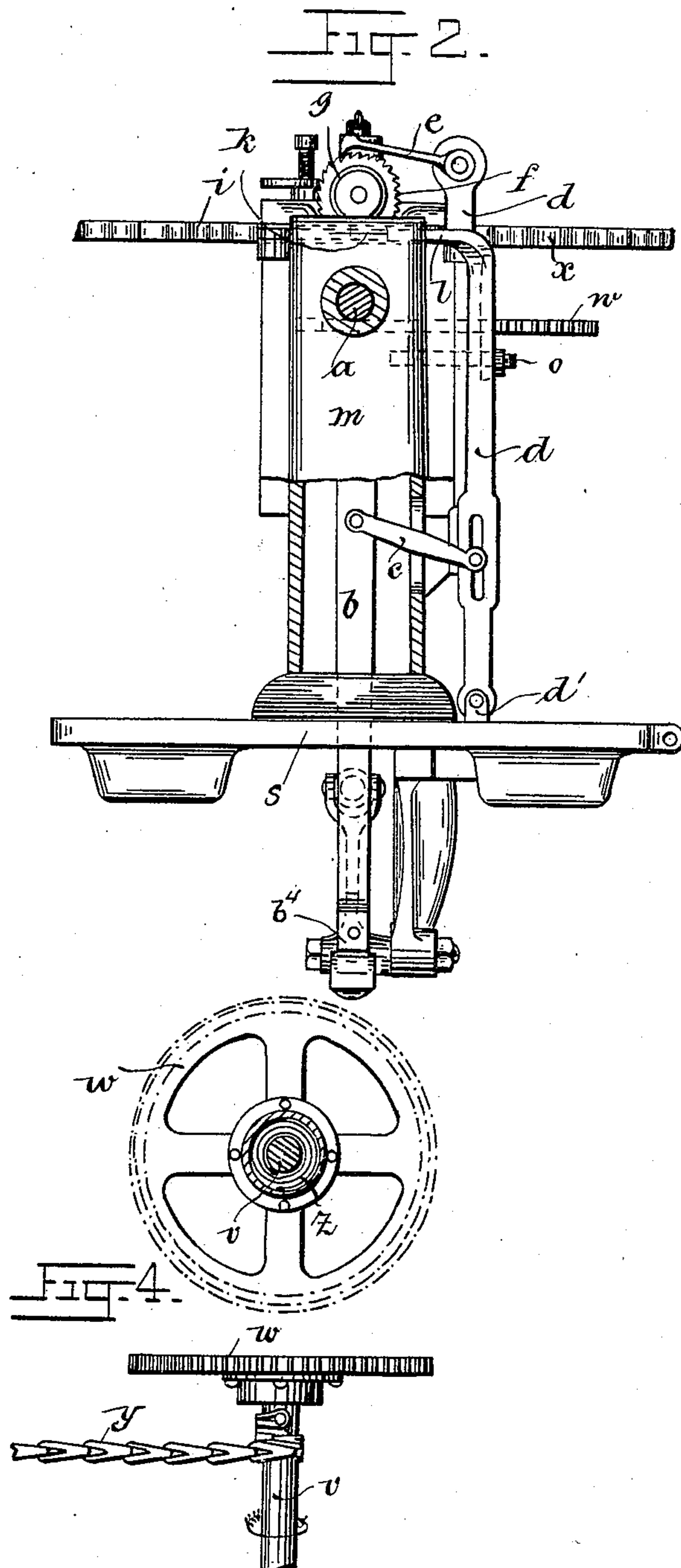
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Witnesses:
John L. Wilson
Percy C. Bowen

Inventors:
R. Eder
G. Stein
by *Wilkinson & Fisher*
Attorneys:

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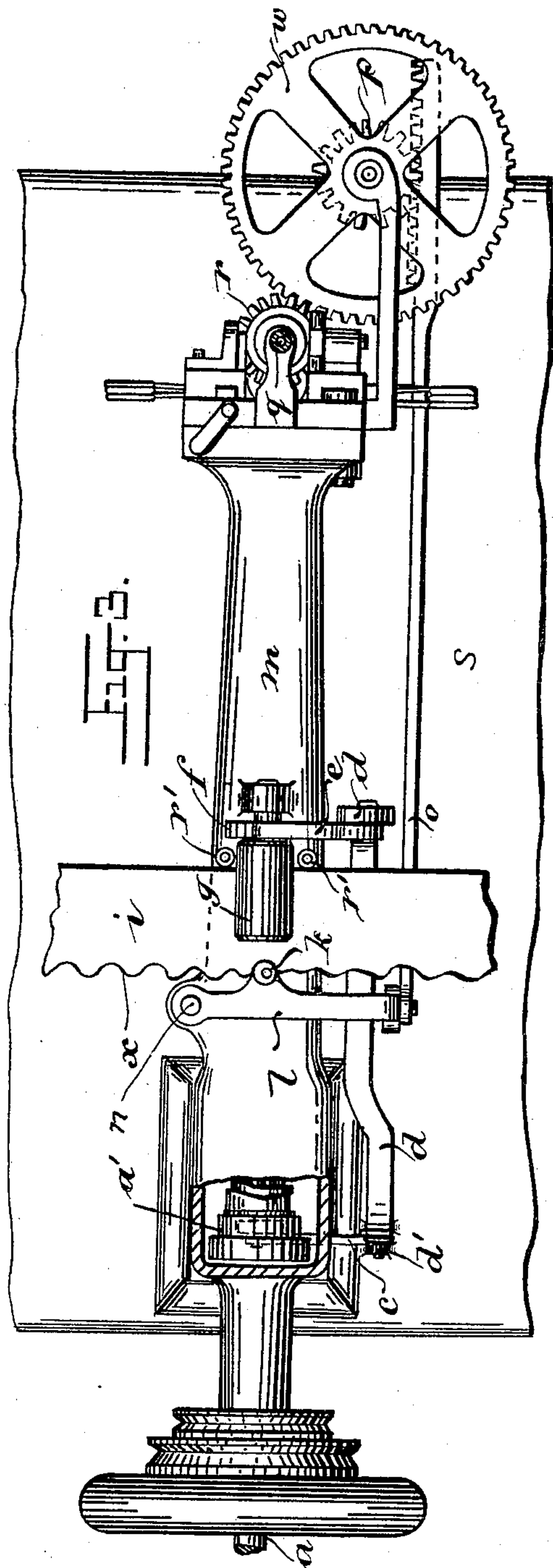
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Witnesses:

John C. Tulsoy

Percy C. Bowen.

Inventors:

R. Eder.
G. Stein.

by Wilkinson & Fisher
Attorneys.

UNITED STATES PATENT OFFICE.

REINHOLD EDER, OF WEISSENSEE, AND GOTTHILF STEIN, OF BERLIN,
GERMANY.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 616,776, dated December 27, 1898.

Application filed July 30, 1897. Serial No. 646,549. (No model.)

To all whom it may concern:

Be it known that we, REINHOLD EDER, mechanic, residing at Weissensee, near Berlin, and GOTTHILF STEIN, engine-builder, residing at Berlin, Germany, subjects of the German Emperor, have invented certain new and useful Improvements in Sewing and Embroidering Machines, (for which we have obtained patents in Germany, No. 94,373, dated December 17, 1895, and in Great Britain, No. 12,044, dated May 15, 1897;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention consists in certain improvements in or additions to combination sewing and embroidering machines which render embroidery-stitching of a complicated nature very much more simple than has hitherto been the case.

In sewing-machines with embroidering attachments as up to this time used it has been found impossible to sew ornamental patterns of a close and complicated nature and arranged in rows with anything like accuracy owing to the movement of the carrier feeding the work forward being communicated by the operator of the machine. As such work is at times of a very minute nature and it is so important that regular rows should be the result, a very able worker is needed to operate the work-carrier, and such operators are extremely rare. Now this invention is a contrivance, hereinafter more fully described, whereby a movement both of a forward and backward and a curvilinear nature is communicated to the work-carrier wholly and solely through the machine on which the work is accomplished, the scope and number of those movements and the shapes of the embroidery and stitchings being perfectly unrestricted. This movement of the work-carrier or feed-plate is effected in such a manner that the requisite change in the same is brought about accurately by the progressive motion of a former or pattern-strip.

The invention is illustrated in the accompanying drawings, wherein the same parts are indicated by similar letters throughout the several views.

Figure 1 represents a side elevation of our invention as applied to a machine. Fig. 2 represents an end elevation of the parts shown in Fig. 1 as seen from the left in said figure, the driving-shaft being cut off to better illustrate the invention. Fig. 3 represents a top plan view of the parts shown in Fig. 1. Fig. 4 represents a detail view of a modified arrangement for communicating to the carrier a motion corresponding to that of the pattern-strip or former.

Referring to Figs. 1, 2, and 3, loosely connected to the oscillating lever *b*, which is jointed at its lower part *b*⁴ to the machine-base *s* and which has a swaying movement imparted to it by means of an eccentric *a*' on the main shaft *a*, is a connecting-link *c*. The other end of this link *c* is connected to a rocking lever *d*, fulcrumed at *d*' to the machine-base. One end *d*² of this rocking-lever *d* has pivoted to it a ratchet-pawl *e*, which latter engages the teeth of a ratchet-wheel *f*, fixed to the face of a cylinder or roller *g* or its equivalent, which latter is supported by a shaft standing out from an extension of the machine-arm. By means of the oscillating motion of the lever *b*, actuated from the eccentric *a*', as aforesaid, the cylinder or roller *g* is caused to continually revolve, the mechanism *c*, *d*, *e*, and *f*, above described, intervening to connect the movement. The cylinder or roller *g* is arranged to traverse a former or pattern-strip *i*, disposed transversely upon the top face of the machine-arm *m*, the edge *x* thereof being shaped to the figure of the embroidered stitching upon the work. Working against the edge of this pattern-strip or former *i* and arranged so as to follow the shape of the same is a roller *k*, carried by a lever *l*, which is arranged horizontally upon the machine-arm *m* and has its fulcrum at *n*. By means of the pattern-strip *i* receiving its movement from the cylinder or roller *g* and through the intervention of the roller *k*, which latter keeps close to the projections and depressions on the edge *x*, (which correspond to the embroidered pattern to be stitched,) a swaying motion is imparted to the lever *l*. Attached to the one end of the lever *l* is a reciprocating bar *o*, having rack-teeth upon one end which gear with the toothed wheel *p*, fast

upon a shaft *v*, supported within suitable bearings standing out from the machine-arm. Over this toothed pinion *p* and over the same axis is a large toothed wheel *w*, which gears
 5 with a small toothed wheel *g*, fixed upon the work-carrier shaft, so that the said carrier moves in accordance with the reciprocating bar *o* and is governed by the former or pattern-strip.

10 In place of the reciprocating bar *o*, above described, a chain may be substituted, the said chain being attached, respectively, to the one end of the lever *l* and to the axis *v* of the large toothed wheel *w*. Fitted to the toothed
 15 wheel *w* is a volute spring *z*, which tends to move it in the direction of the arrow, as shown in Fig. 4. The spring *z* winds the chain *y* upon the shaft, and the lever *l* unwinds it. Thus by means of the follower-
 20 roller *k*, applied to the edges of the pattern-strip and the reciprocating bar *o* of the chain *y* and spring *z*, every change in the motion produced by the pattern-strip is mechanically and accurately transmitted to the work-car-
 25 rier.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

30 1. In a sewing and embroidering machine, the combination with the driving-shaft, and a pattern-strip for controlling the movement of the carrier; of an oscillating lever operated by the rotation of the said shaft; a rock-
 35 ing lever operated by said oscillating lever, and carrying a ratchet-pawl; and a cylindrical roller adapted to make contact with said pattern-strip, and having a ratchet-wheel fast therewith adapted to be engaged by said pawl
 40 on the rocking lever, substantially as described.

2. In a sewing and embroidering machine, the combination with the driving-shaft, and a roller adapted to make contact with the
 45 pattern-strip and having a ratchet-wheel fast therewith; of an oscillating lever mounted

eccentrically upon said driving-shaft; a rocking lever pivotally connected thereto; and a pawl carried by said rocking lever adapted to engage the ratchet-wheel on said roller, substantially as described.

50 3. In a sewing and embroidering machine, the combination with the driving-shaft, and a roller adapted to make contact with the pattern-strip and having a ratchet-wheel fast therewith; of an oscillating lever mounted
 55 eccentrically upon said driving-shaft; a rocking lever pivotally connected thereto; a pawl carried by said rocking lever adapted to engage the ratchet-wheel on said roller; a piv-
 60 oted lever; a roller carried by said pivoted lever and adapted to follow the outline of said pattern-strip; gearing for operating the work-carrier; and connections between said gear-
 65 ing and said pivoted lever, whereby the said gearing is operated by the motion of said piv-
 70 oted lever, substantially as described.

4. In a sewing and embroidering machine, the combination with the driving-shaft, and a roller adapted to make contact with the
 70 pattern-strip and having a ratchet-wheel fast therewith; of an oscillating lever operated by the rotation of the said shaft; a rocking
 75 lever operated by said oscillating lever, and carrying a ratchet-pawl adapted to engage the ratchet-wheel on said roller; a pivoted
 80 lever; a roller carried by said pivoted lever and adapted to follow the outline of said pattern-strip; a reciprocating rack-bar jointed to said pivoted lever; a pinion meshing with
 85 said rack-bar; and gearing between said pinion and the work-carrier, substantially as described.

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

REINHOLD EDER.
 G. STEIN.

Witnesses:

HENRY HASPER,
 W. HAUPT.