

No. 768,540.

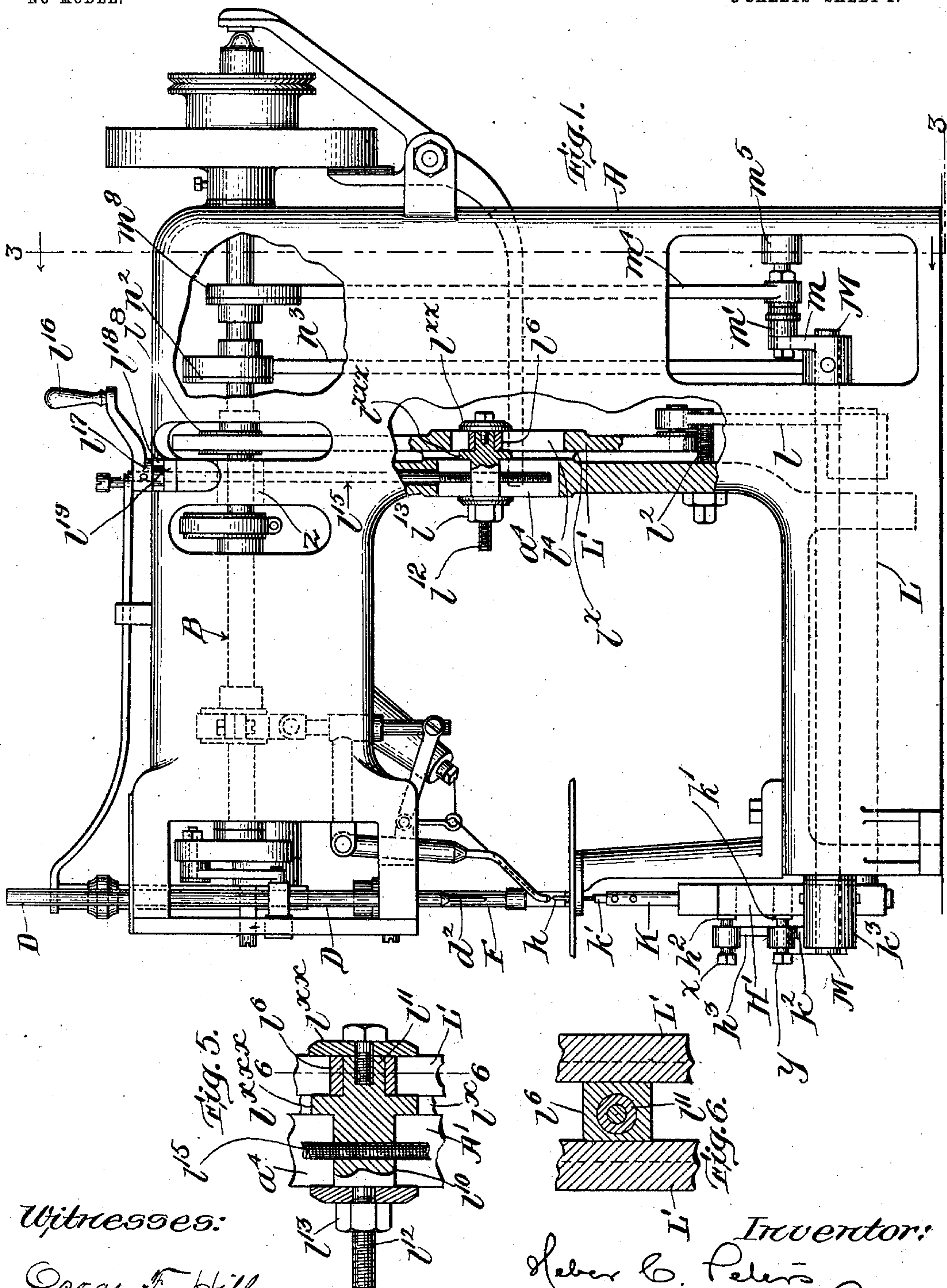
PATENTED AUG. 23, 1904.

H. C. PETERS.
FEED MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAY 8, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

Oscar F. Hill
Alvin Farr

Inventor:
Hester C. Peters
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Attorneys.

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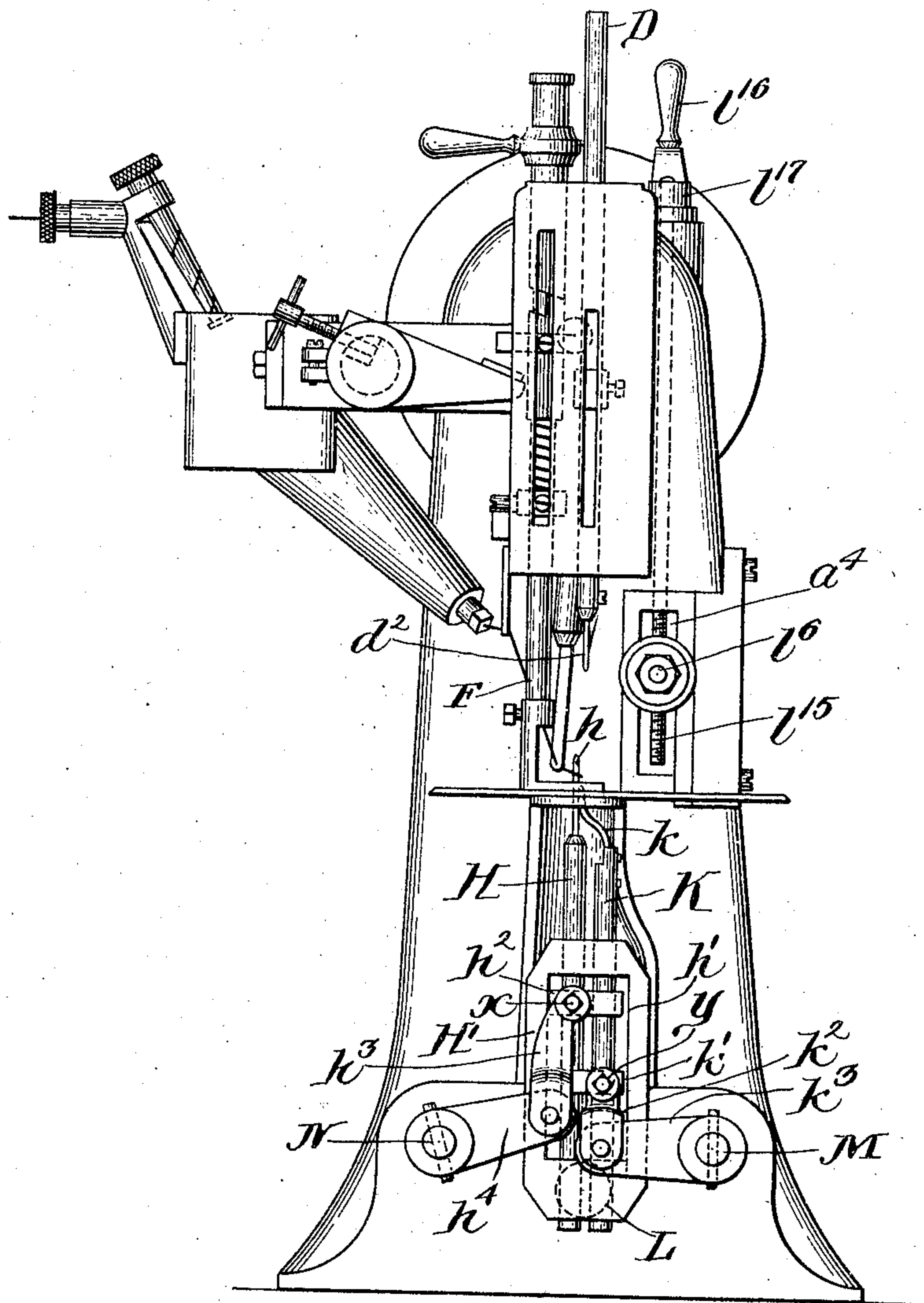


Fig. 2.

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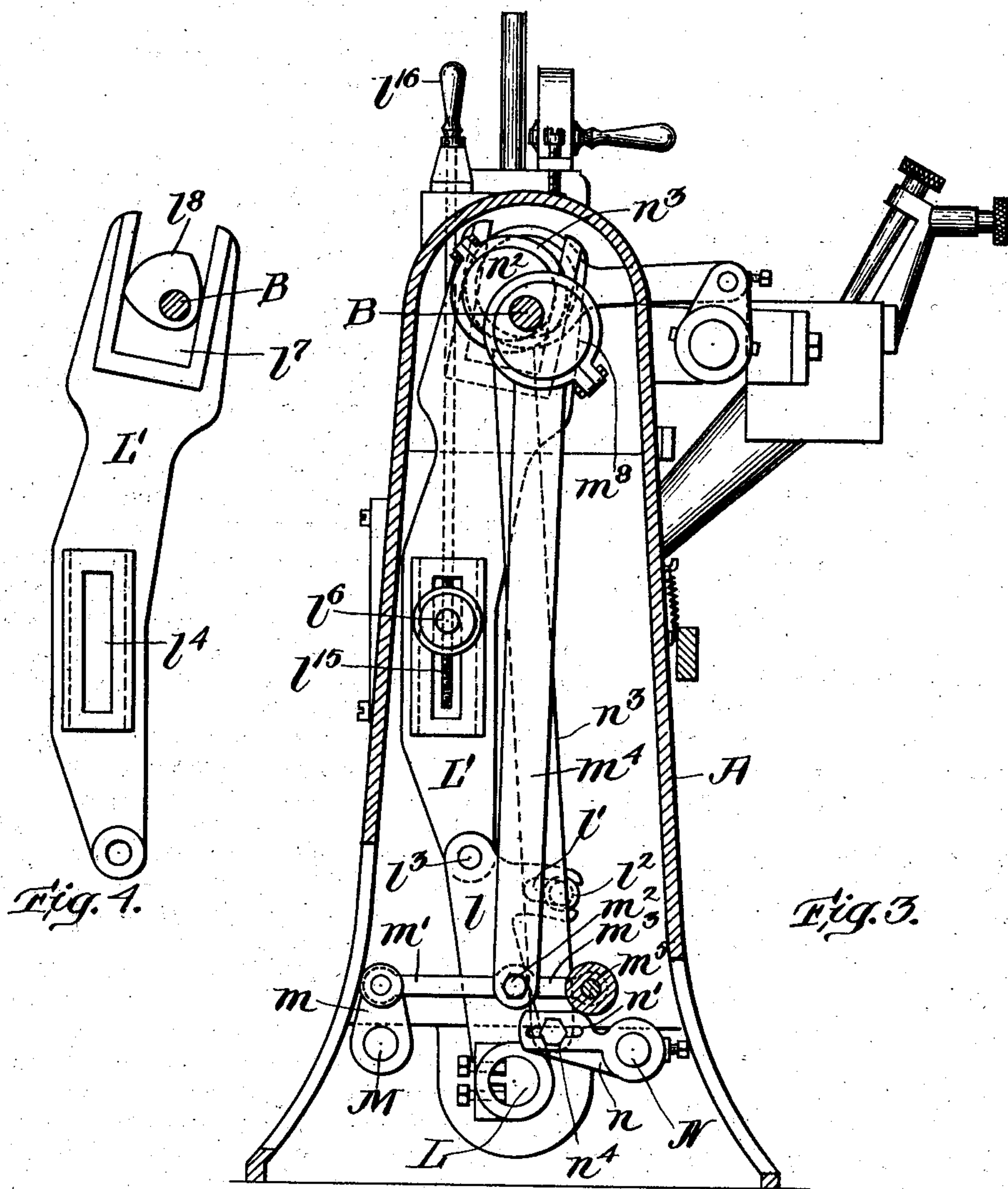
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UNITED STATES PATENT OFFICE.

HEBER C. PETERS, OF ST. LOUIS, MISSOURI.

FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 768,540, dated August 23, 1904.

Original application filed April 1, 1897. Renewed January 17, 1900, Serial No. 1,759. Divided and this application filed May 8, 1902. Serial No. 106,446. (No model.)

To all whom it may concern:

Be it known that I, HEBER C. PETERS, a citizen of the United States, residing at St. Louis, State of Missouri, have invented a certain new and useful Improvement in Feed Mechanisms for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Referring to the accompanying drawings, Figure 1 shows in front elevation, partly in section, a sewing-machine having applied thereto my improved feed mechanism. Fig. 2 is a view thereof in elevation looking from the left-hand side in Fig. 1. Fig. 3 is a view in vertical section on the plane indicated by the dotted line 3-3, Fig. 1, looking in the direction indicated by the arrows adjacent the ends of said line. Fig. 4 shows the feed-lever and the operating-cam therefor in elevation. Figs. 5 and 6 show details of the means of adjustment in connection with the feed-lever.

My invention is designed more especially for employment in connection with sewing-machines in which hooked or barbed needles are used, although it does not necessarily restrict the use to machines of this precise class, and the machine wherein I show the invention embodied in the accompanying drawings is a wax-thread machine.

In the drawings illustrating the principle of my invention and the best form in which I have contemplated applying that principle, A is the frame, and B is the driving-shaft, the latter being journaled suitably in the frame. At d^2 is the awl, one being shown, although a plurality thereof may be used in practice in customary manner, and D is the awl-bar, which is arranged to be actuated from the driving-shaft B in any approved manner. The presser-foot bar is shown at F, and in practice the same is combined and operated in usual manner. Needle-bar H, carrying in this instance a single needle h , but which may be provided with a plurality of needles, if so desired, as will be readily understood by all skilled in the art, is adapted to reciprocate vertically in the oscillating carrier or "needle-post" H', forming part of the end of the needle-post rocker-shaft L. This carrier has an opening h' , and within the opening there is a block h^2 , through

which the needle-bar H passes. Block h^2 is rigidly attached to the needle-bar H and is loosely jointed to a link h^3 , an end portion of which is jointed to the rocker-arm h^4 . K is a cast-off bar provided with one or more cast-offs k , according to the number of needles and awls with which the machine is equipped. This cast-off bar passes through and is rigidly connected with a block k' , mounted within the opening h' of the oscillating carrier H'. Block k' is loosely jointed to a link k^2 , which is loosely jointed to the rocker-arm k^3 . Block k^2 , rigidly affixed to the needle-bar H, has a forked lateral projection toward the cast-off bar K, and the fork has a sliding contact with the cast-off bar K, so as to assist in steadying the needle-bar during its endwise reciprocation. The block k' , rigidly affixed to the cast-off bar K, has a forked lateral extension toward the needle-bar H, and the fork has a sliding contact with the needle-bar H, so as to assist in steadying the cast-off bar during its endwise reciprocation. The upper end of the carrier or needle-post H' is provided with bearings through which the needle-bar H and the cast-off bar K play when they are moved endwise. The needle-post shaft L is journaled in frame A and is provided (see Fig. 3) toward its rear end with a crank-arm l , which has a lateral projection, in the edge of which there is a reentrant recess l' , this recess receiving between its side walls an alining-screw l^2 , projecting from frame A. The upper end of crank-arm l is loosely jointed at l^3 to a swinging lever L' , this lever having a lengthwise-extending slot l^4 , Fig. 4, to receive its adjustable fulcrum l^6 . The upper end of lever L' has a recess l^7 , the opposed side walls of which are engaged by a cam l^8 on the driving-shaft B.

To secure adjustment of the fulcrum l^6 , frame A is provided with a vertical slot a^4 , which is approximately coincident with the slot l^4 in the rocking feed-lever L' , as best seen in Fig. 1. The fulcrum l^6 is a centrally-bored block (see Figs. 5 and 6) and is mounted on a lateral extension l^{11} of fulcrum-post l^{10} , which last has flat side walls, making a sliding fit with the vertical side walls of the slot a^4 in frame A. The lateral extension l^{11} is made round and receives the rocking fulcrum-

block l^6 , which is provided with flat side walls, which contact with and slide between the opposed parallel side walls of the slot l^4 in lever L' . The fulcrum end of the fulcrum-post l^{10} is provided with the cap-piece l^{xx} , which lies over the slot l^4 and overlaps the marginal portions thereof. The forward end of fulcrum-post l^{10} is provided with a projecting threaded stud l^{12} , on which a nut l^{13} is screwed. This nut lies over slot a^4 and overlaps the marginal portions thereof. The fulcrum-post l^{10} is formed with a round or circular shoulder l^{xxx} , which lies between feed-lever L' and the opposed walls of frame A, in which the slot a^4 is made. Lever L' is formed with laterally-projecting and parallel ribs l^x on that side which faces toward slot a^4 . These ribs are parallel with the longer side walls of slot l^4 and receive between them the shoulder l^{xxx} , the said shoulder l^{xxx} having a width equal to the height of projection of the ribs l^x . By this arrangement the needle feed-lever L' is held snugly against the opposed wall of the frame-piece or lateral stationary support A' in which the slot a^4 is made. This gives to the needle-feed a steadiness of action that is very desirable and highly advantageous. The side margins of the slot a^4 and of the slot l^4 are made smooth, so that the fulcrum-post l^{10} and its fulcrum l^6 may readily be adjusted between the upper and lower ends of the slots a^4 and l^4 as desired, and to secure this adjustment a threaded spindle l^{15} is passed vertically through a threaded hole in fulcrum-post l^{10} and provided, preferably, with a suitable handle l^{16} . The spindle is provided at its upper end with a fixed collar l^{17} (an extension of which in this instance forms the handle l^{16}) above a bearing l^{18} and is also provided on the other side of that bearing with a fixed collar l^{19} . These collars bear against the bearing l^{18} , so that whichever way the spindle is rotated it keeps its position and compels fulcrum-post l^{10} to slide in the direction desired. By rotating the threaded spindle l^{15} fulcrum-post l^{10} is raised or lowered in the vertical slot a^4 , and consequently the fulcrum l^6 of the needle feed-lever L' is adjusted, thereby varying the throw of the lower end of the needle feed-lever L' and the carrier H' .

The rocker-arm h^4 , which is connected with the needle-bar H , is carried by a rocker-shaft N , which is parallel with the rocker-shaft L and is suitably journaled in the frame A. Toward the rear end of the rocker-shaft N said shaft is provided with the rocker-arm n , having a segmental slot n' struck from the center of the eccentric n^2 . Eccentric-strap n^3 extends upwardly from the rocker-arm n to eccentric n^2 on driving-shaft B. The lower end of the eccentric-strap n^3 is made adjustable at its point of connection with the rocker-arm N by means of the screw-and-nut connection indicated by the reference-letter n^4 . (See Fig. 4.) By varying the point of

connection between the eccentric-rod n^3 and the rocker-arm n an increased or diminished throw is given to the latter, and consequently the stroke of the needle is regulated, as will be plain to all skilled in the art. The cast-off, as before stated, is dependent upon the movement of the rocker-arm h^3 . This rocker-arm h^3 is fast on the rocker-shaft M , which is provided toward its rear end with a rocker-arm m , and this rocker-arm is connected by a link m' with a stud m^2 , which projects loosely through the link m^3 from the eccentric-strap m^4 , in the lower end of which the stud m^2 is made fast. The link m^3 is journaled on a stud m^5 from frame A. The eccentric-strap m^4 extends to the eccentric m^8 on driving-shaft B.

While the feed-lever is shown as a needle feed-lever, it may be used as an awl feed-lever, as will be plain to all skilled in the art, and in the claims wherein a "feed-lever" is specified I intend to include by that term either a needle feed-lever or an awl feed-lever. So, also, by the term "feed-post" in the claims I intend the carrier H' .

Referring now to cam l^8 and the needle feed-lever L' , it is to be noted that the cam is fast on the driving-shaft B and is a cam of constant diameter. This is an important factor in the production of my present high-speed machine, which is adapted to carry a plurality of needles and awls and to do wax-thread work, as above stated.

The rocker-shaft L , with the attached oscillating carrier H' , is generally and conveniently termed the "needle-post rocker-shaft." By moving the screw or equivalent adjusting-stud l^2 endwise the needle-post rocker-shaft is readily moved endwise to aline the needles with the awls, and as the carrier H' is then moved laterally away from or toward the frame of the machine the studs w and y , which support the blocks h^2 and h' , play through the holes in the links h^3 and h^2 .

While I have thus described in detail the construction of the present form of machine in which the several features of my invention are embodied, I do not intend to limit my invention to matters of detail, and the constructional features described may be varied, if desired, without departing from my invention.

The operation of this present form of my machine is in general the same as that of old and well-known wax-thread sewing-machines, but in the following particulars is a substantial improvement over all prior sewing-machines known to me. By the described or equivalent construction of the needle-feed mechanism increased rigidity is given to the machine, so that it makes stitches of uniform length, because all vibrations of the parts of the needle-feed mechanism is obviated. In wax-thread sewing-machines the greatest strain on the driving-shaft comes from the operation of the needle-feed and presser-foot-lifting mechanisms, and these mechanisms are

necessarily close together. I therefore provide a rigid bearing z for the driving-shaft as close as possible to the points of attachment of the needle-feed actuating and presser-foot-lifting mechanisms. This bearing z constitutes a third bearing for my driving-shaft and is an important and novel factor in the improved operation of wax-thread sewing-machines. The adjustability of the fulcrum of the needle feed-lever is also an important and novel feature of my said machine, because by adjustment of the fulcrum the length of stitches may be varied at the will of the operator without interfering with the operation of the machine and while the machine is running at full speed.

What I claim is—

1. In a sewing-machine, the combination of a feed-lever; a driving-shaft; a feed-actuating device thereon; an adjustable fulcrum-post for the said feed-lever; a rocker-shaft; a crank-arm which connects the feed-lever with the rocker-shaft; an alining-post; a stationary frame-piece near the feed-lever; the rocker-arm having a lateral arm with which the alining-post engages; the frame-piece and feed-lever having lengthwise-extending slots, one opposite the other; the fulcrum-post being adjustably mounted through said slots and having a shoulder which contacts laterally with opposed walls of said frame-piece and feed-lever.

2. In a sewing-machine, the combination of a frame-piece; a feed device; a feed-lever; a fulcrum-post and means for adjusting the fulcrum-post; the frame-piece and feed-lever having lengthwise-extending slots, the ful-

crum-post being mounted in said slots the feed-lever having a rib at each longer side of its slot and the fulcrum-post having a shoulder fitting between said ribs and opposed walls of the frame-piece and feed-lever.

3. In a sewing-machine, the combination with a feed-rocker having a crank-arm at one extremity thereof and a feed-post at the other, and a reciprocating needle-bar and needle carried by the said post, of a slotted frame-piece, a feed-lever in operative connection with the said crank-arm and having a longitudinal slot opposed to that of the said frame-piece, a fulcrum-post fitting within the slots of the frame-piece and the feed-lever, and the screw engaging the fulcrum-post to adjust its position.

4. In a sewing-machine, the combination with a feed-rocker having a crank-arm at one extremity thereof and a feed-post at the opposite extremity thereof and a reciprocating needle-bar and needle carried by the said post, of a slotted frame-piece, a feed-lever in operative connection with the said crank-arm and having a longitudinal slot opposed to that of the frame-piece, a fulcrum-post mounted through the said slots and having a shoulder which fits between the proximate walls of the frame-piece and feed-lever, a screw engaging the fulcrum-post to adjust its position, a driving-shaft, and a feed-actuating device thereon in operative engagement with the feed-lever.

In testimony whereof I affix my signature in presence of two witnesses.

H. C. PETERS.

Witnesses:

M. E. BERGER,

H. W. KROEGER.