

(Model.)

2 Sheets—Sheet 1.

A. PETTENKOFER.

REVERSIBLE FEED MECHANISM FOR SEWING MACHINES.

No. 426,737.

Patented Apr. 29, 1890.

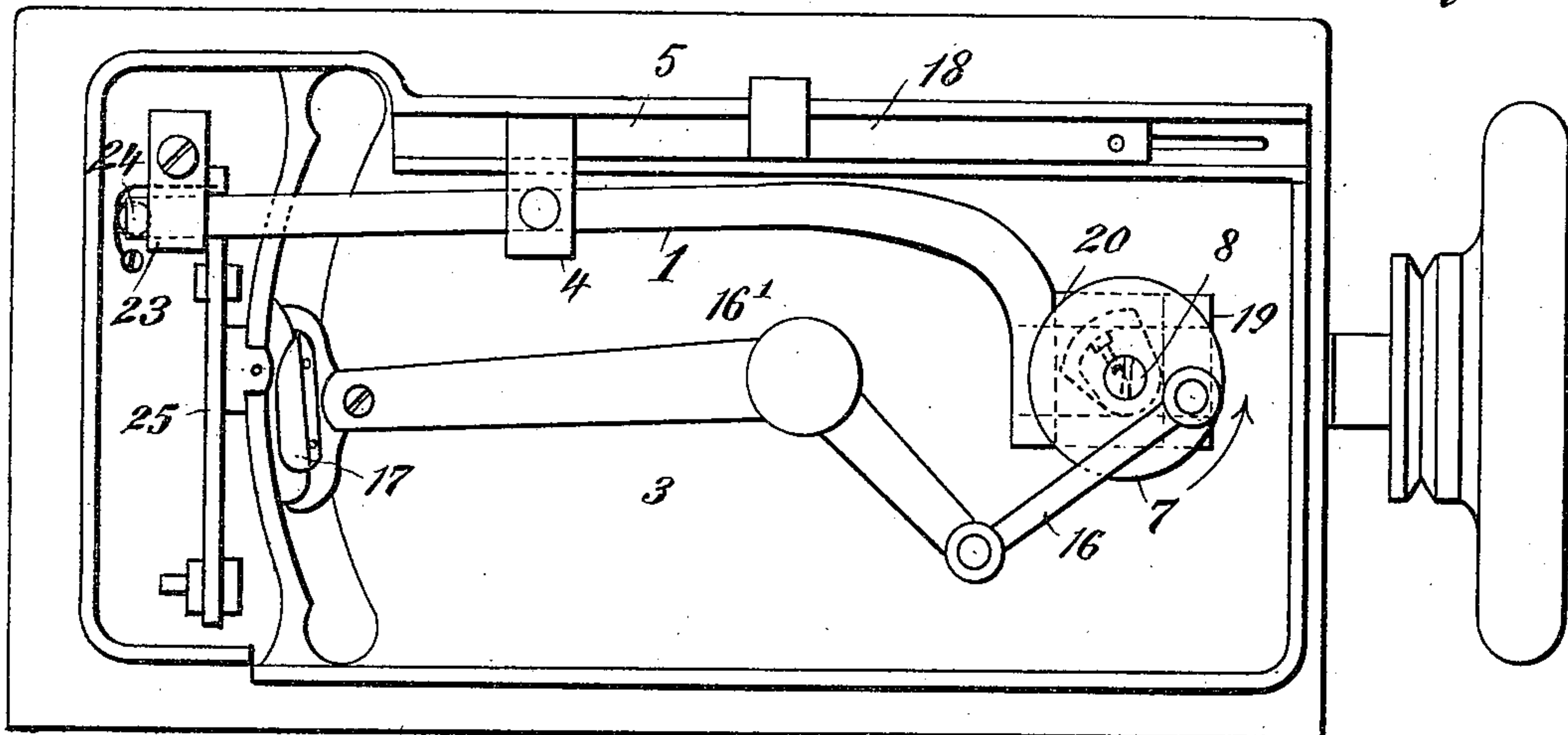
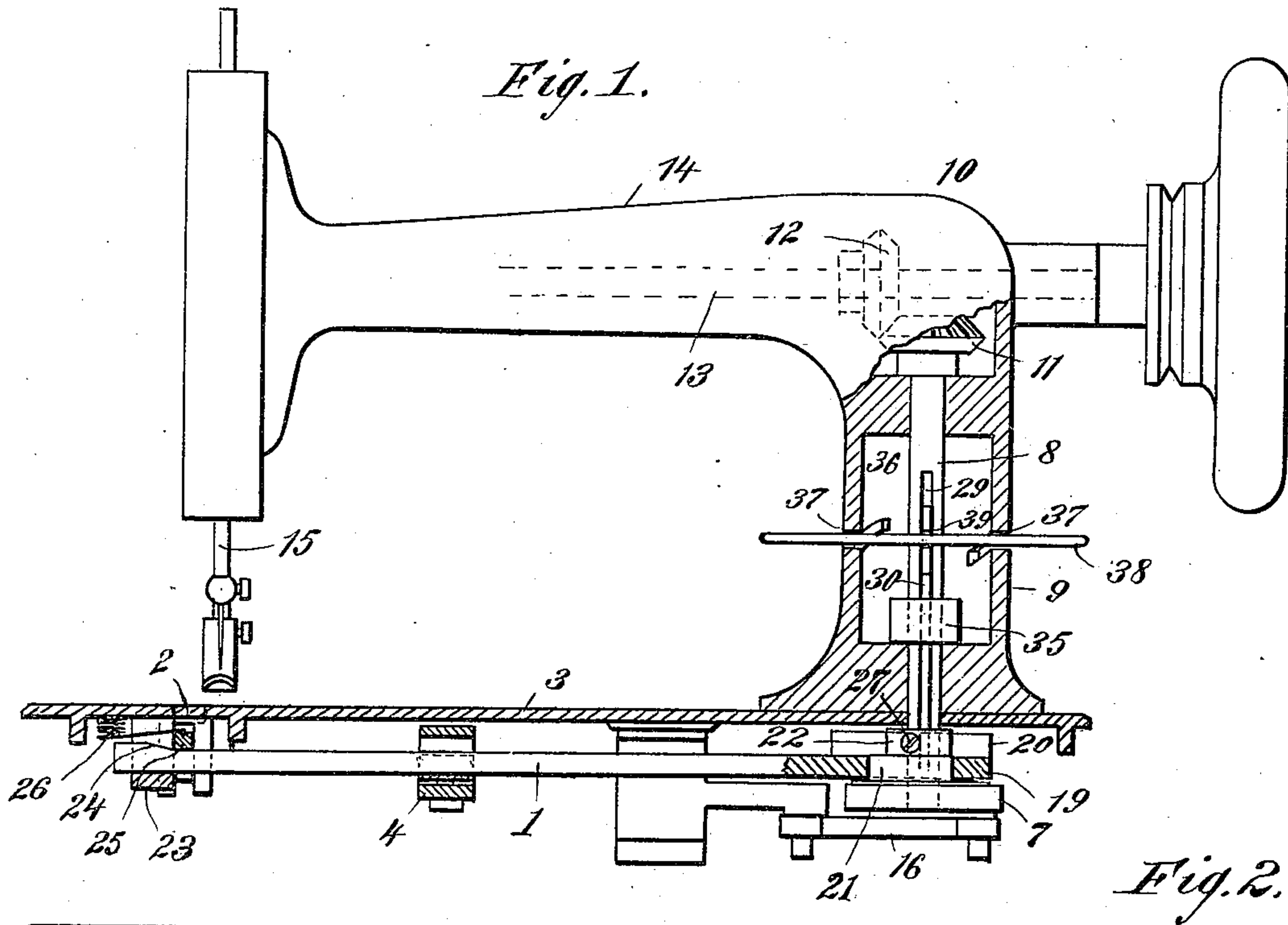


Fig. 3.

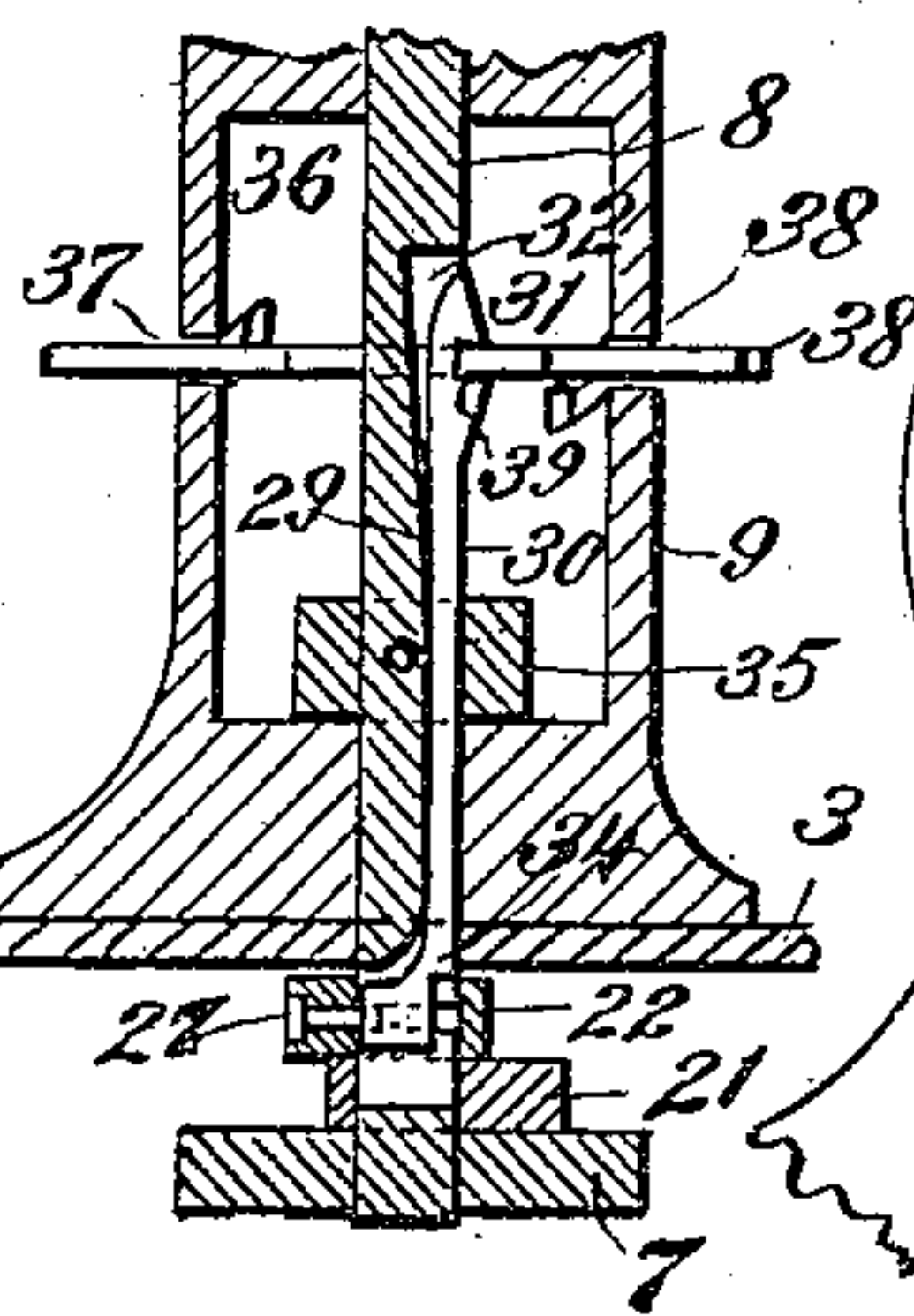
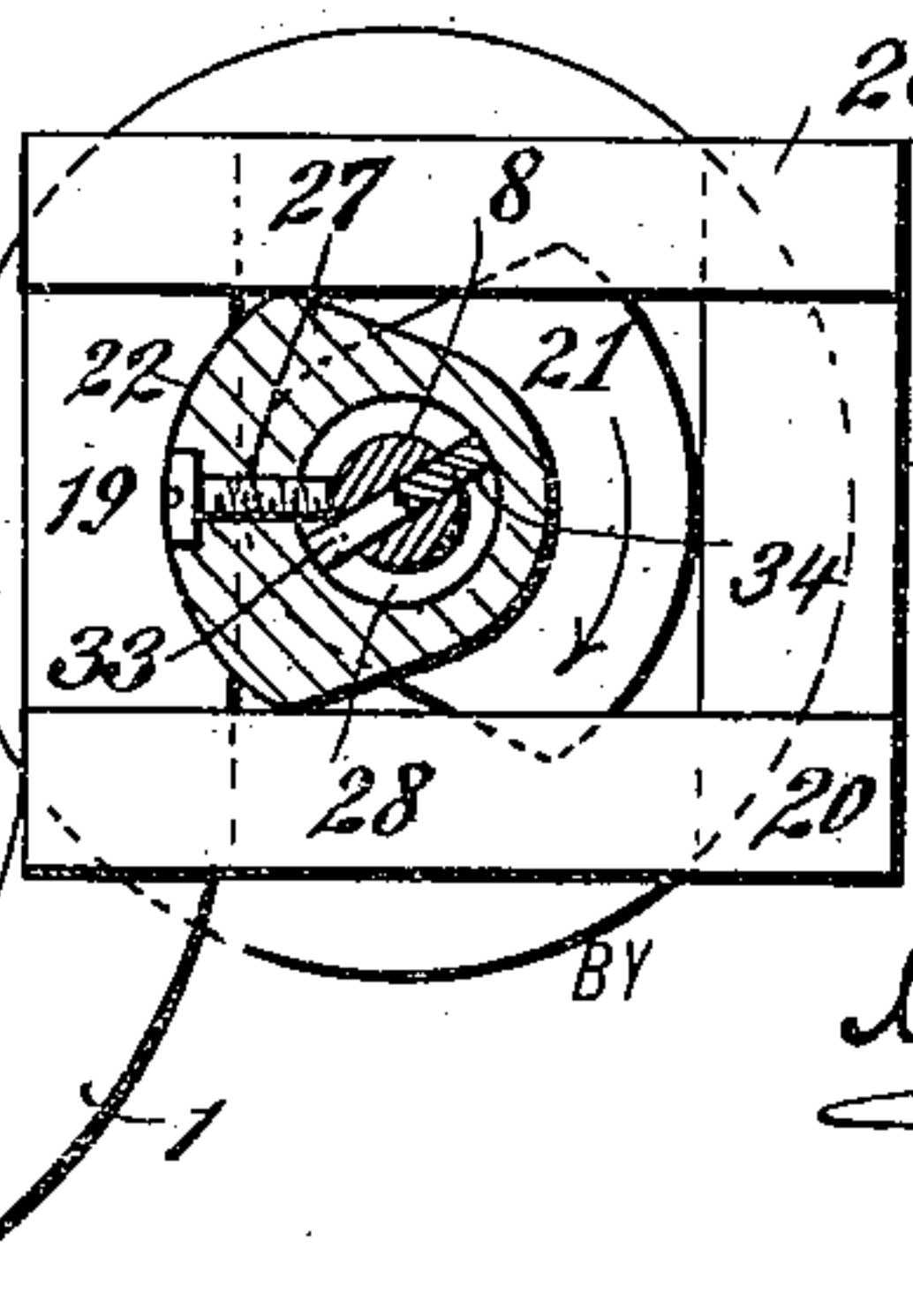


Fig. 4.



WITNESSES:

Donn Fitchell
C. Bedgwick

INVENTOR

A. Pettenkofer

Munn & Co.

ATTORNEY

(Model.)

2 Sheets—Sheet 2.

A. PETTENKOFER.

REVERSIBLE FEED MECHANISM FOR SEWING MACHINES.

No. 426,737.

Patented Apr. 29, 1890.

Fig. 5.

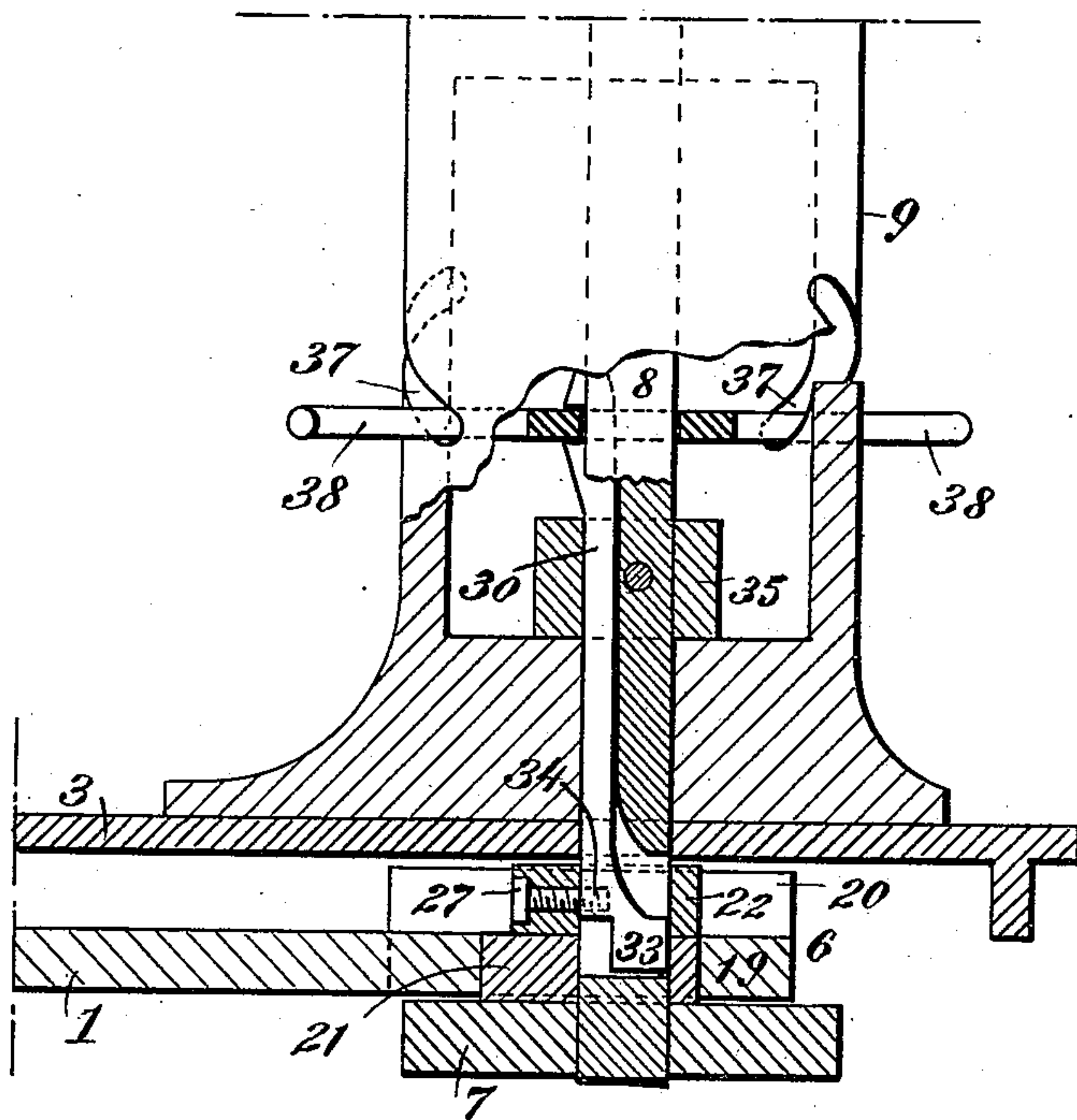
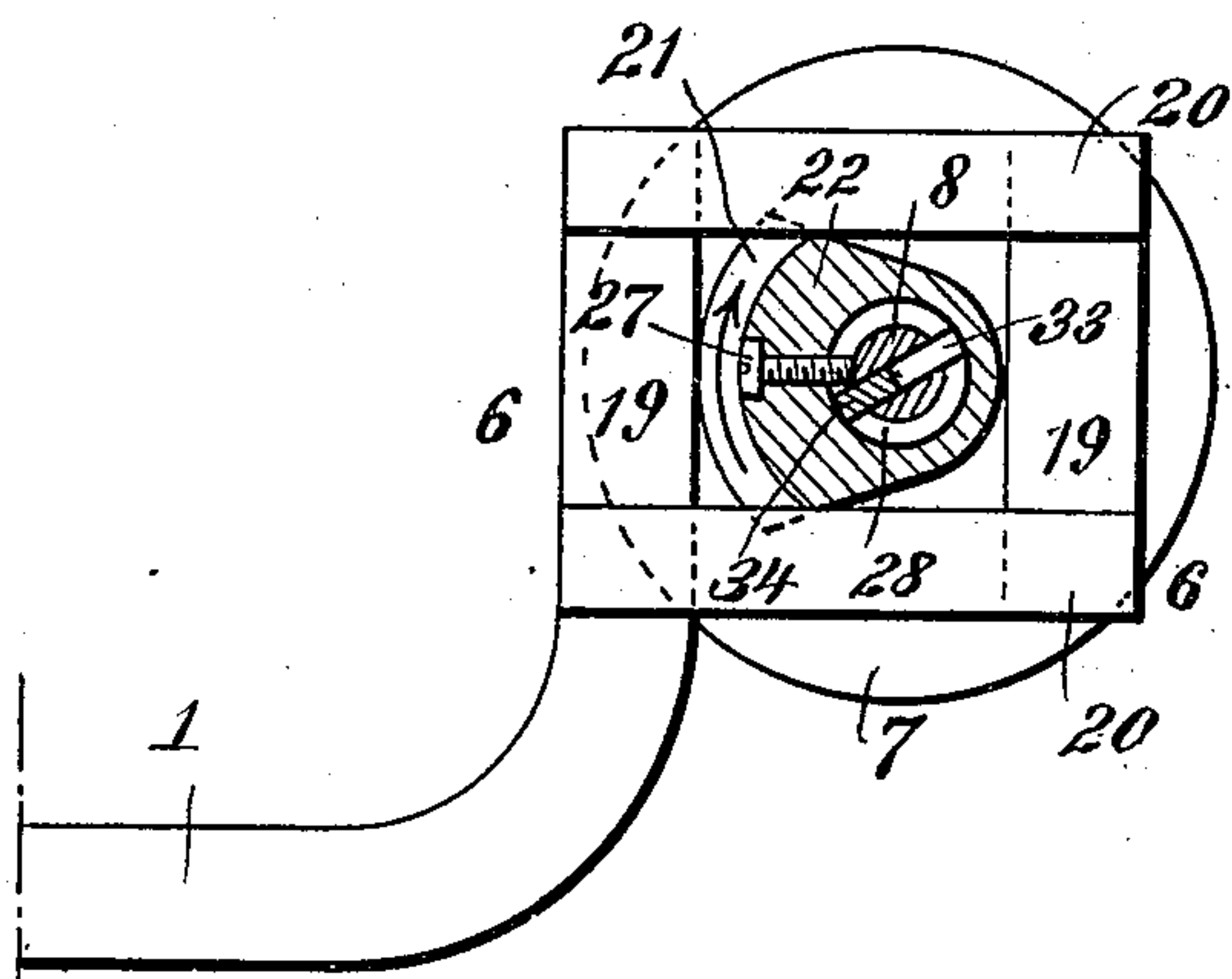


Fig. 6.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

A. Pettenkofer

BY

Munn & Co.

ATTORNEYS:

UNITED STATES PATENT OFFICE.

ADOLPH PETTENKOFER, OF BROOKLYN, NEW YORK.

REVERSIBLE FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 426,737, dated April 29, 1890.

Application filed April 27, 1889. Serial No. 308,783. (Model.)

To all whom it may concern:

Be it known that I, ADOLPH PETTENKOFER, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Reversible Feed Mechanism for Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates to sewing-machines, and has for its object to provide an improvement in the feed mechanism, whereby the direction of the feed may be reversed without stopping the machine or altering the position of the material worked upon.

The invention consists in an improved construction and arrangement of parts of the feed mechanism, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is an elevation, partly in vertical section and broken away, of the upper part of a sewing-machine constructed in accordance with this invention. Fig. 2 is a plan view of the under side of the same. Fig. 3 is a vertical sectional view of a portion of the arm of the machine, showing the means for reversing the feed. Fig. 4 is an enlarged detail view, partly in horizontal section, of the feed-reversing mechanism. Fig. 5 is an enlarged detail view of the arm of the machine, partly in section, and showing the means for reversing the feed, the parts being in a reverse position to that shown in Fig. 3; and Fig. 6 is a similar view to Fig. 4, showing the cams one above the other.

In the ordinary construction of sewing-machines the feed-plate operates only to feed forward the material worked upon, so that when it is desired to reverse the direction of the line of stitching it is necessary to change the position of the material. In order to obviate this necessity, I have provided a means by which the movement of the feed mechanism may be reversed, and the feed-plate thereby caused to feed the material worked upon in a backward direction.

1 indicates the bar operating the feed-plate 2, mounted thereon and located in a slot in the surface-plate 3 of a sewing-machine in the usual manner, and having a rising-and-fall-

ing movement at the ends of the slot and a forward movement through the slot to feed the material forward. In order to produce these movements of the feed-plate 2, the bar 1 is pivoted between its ends to a lug or bracket 4, held by and adapted to slide in a grooved way 5, and is formed at its rear end with a yoke 6, resting on a disk-wheel 7, secured to the lower end of a vertical shaft 8. The shaft 8 extends upward through the plate 3 and the vertical portion 9 of the needle-bar arm 10, and has a bevel gear-wheel 11, meshing with a bevel gear-wheel 12 on a horizontal shaft 13, extending through the horizontal portion 14 of the arm 10, and operating the vertical needle-bar 15. The disk-wheel 7 has eccentrically connected thereto one end of a pivoted crank-bar 16, pivoted at its other end to the short arm of a bell-crank lever 16', carrying the shuttle 17, in the usual manner.

18 indicates the usual form of adjustable slide-bar for regulating the length of movement of the feed-plate.

The yoke 6 is formed with strips 19 and 20, the strips 20 being located above the strips 19 and extending crosswise thereto. Between the strips 19 is located a cam 21, rigidly mounted on the shaft 8, and between the strips 20 is located a cam 22, mounted on the shaft 8 and adapted to turn thereon. The cam 22 rests on the cam 21, and heretofore has been formed integral therewith. The outer end of the bar 1 rests on a plate 23, depending from plate 3, and has a beveled or inclined surface, upon which rides up and down the correspondingly-shaped beveled surface of the feed-carrier 25. Between the outer end of the bar 1 and plate 3 is located a spring 26, which serves by its reaction to press the feed-carrier 25 down upon the inclined plane 24. Where the cams 21 and 22 are formed integral, the action upon the bar 1 has been in the rotation of shaft 8 to cause said bar 1 to be moved forward, the bar 1 sliding in the bracket 4 and the beveled surface 24 of said bar 1 riding below the feed-carrier 25, thereby dropping the feed-plate 2 in one end of its slot. This movement is occasioned by the cam 21 acting on one of the strips 19. The bar 1 is then swung on its pivot to carry the depressed feed-plate 2

backward by the action of the cam 22 on one of the strips 20. The feed-plate 2 is then elevated in its slot by the cam 21 acting on the other strip 19, which draws the end of the bar 1 backward on the hanger 23, and the end of the bar 1 is then swung forward, carrying the elevated feed-plate 2 forward to the first position by the action of the cam 22 on the other strip 20.

It will be seen by the foregoing that the feed-plate 2 will be always carried forward in an elevated position.

In order to be able to reverse the movement of the feed mechanism and feed-plate, the cam 22, instead of being formed integral with the cam 21, is mounted to turn on the shaft 8, and has a screw 27, with its end projecting into a groove 28 in the periphery of the shaft 8. The shaft 8 is formed with a vertical slot 29, extending toward the bottom of the shaft and terminating just below the cam 22. Within the slot 29 is located a vertically-movable bar 30, having an enlarged portion or head 31, located in a recess 32 in the upper end of the slot 29, and a laterally-projecting square portion 33 at its lower end adapted to move vertically into and out of position across the groove 28 in the shaft 8. At the junction of the square portion 33 with the bar 30 the latter is formed with a shoulder 34 on the opposite side of the shaft 8, which shoulder 34 is also adapted to move vertically into and out of position across the groove 28 alternately with the square portion 33. The bar 30 is held in the slot 29 by means of a collar 35, through which the shaft 8 and bar 30 project, and is located in a chamber 36 in the vertical portion 9 of the arm 10. Extending across the chamber 36, and having its ends projecting through inclined openings 37 in the sides of the vertical portion 9, is a bar 38 for raising and lowering the bar 30, which bar 38 is connected to the bar 30 by engaging a slot 39 therein. The openings 37 are of such length and height as to permit the portions of the bar 38 extending through them to have both a vertical and lateral movement. By turning and raising or lowering the projecting ends of the bar 38 the bar 30 may be raised and lowered to move the square portion 33 and the shouldered portion 34 alternately into and out of position across the groove 28 in the shaft 8 on the opposite sides thereof.

When the machine is ready to be operated to feed the material worked upon forward, the cam 22 extends over the top of the cam 21, so that their cam-edges are parallel, and the end of the screw 27 bears against the shouldered portion 34 of the bar 30. (See Figs. 5 and 6.) As the shaft 8 revolves, the cams 21 and 22 thereon successively act on their strips 19 and 20 to impart through the bar 1 the proper forward feed movement to the feed-plate 2, as hereinbefore explained.

When it is desired to reverse the forward movement of the feed, the bar 30 is raised by

means of the bar 38, which brings the squared projecting portion 33 into position across the groove 28 and raises the shouldered portion 34 out of position across the groove 28 and out of the way of screw 27. In the continued movement of the shaft 8 and cam 21, the cam 22 not being held by the shouldered portion 34 bearing against the end of screw 27, the cam 22 lags behind until it is brought into the position relative to cam 21, as shown in Fig. 4, with the end of screw 27 bearing against the square projecting portion 33. In the further continued movements of cam 22 and 21 they operate on the bar 1 to cause the movement of feed-plate 2 to be reversed.

The square projecting portion 33 and the shouldered portion 34 at the lower end of bar 30 are in effect locking-lugs located in different planes on the opposite side of bar 30, and serve as stops for the screw 27, to alternately hold the cam 22 in position to cause the feed mechanism to feed forward or backward. The bar 30 may be also vertically raised and lowered and held in adjustable position by any suitable means.

It will be seen that by means of this invention the feed mechanism of a sewing-machine may be readily reversed, so that the position of the material worked upon does not have to be shifted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the feed-bar of a sewing-machine, of the shaft which operates the feed-bar, having a cam for moving the feed-bar lengthwise and a cam for vibrating the feed-bar automatically adjustable about the shaft, and a locking device for releasing and locking the automatically-movable cam in adjusted circumferential position on its shaft in reversing the movement of the feed mechanism, substantially as shown and described.

2. A vertical shaft for operating the feed-bar of a sewing-machine, having a bevel gear-wheel at one end and a cam at the other end to give the lengthwise movement to the feed-bar, and a cam for vibrating the feed-bar, said cam being automatically movable about the vertical shaft, and a locking bar and handle for releasing and locking the movable cam in circumferential position on the vertical shaft to reverse the movement of the feed mechanism, substantially as shown and described.

3. The feed-bar-operating shaft 8, formed with the bevel gear-wheel 11 at one end and the cam 21 at the other end for giving lengthwise movement to the feed-bar, the circumferential groove 28 adjacent to cam 21, the cam 22 for vibrating a feed-bar mounted to turn on shaft 8, and having a screw 27 projecting into groove 28, the slot 29, extending below cam 22, the bar 30, vertically movable in slot 29 and having a lateral projection 33, and a shoulder portion 34 in a different plane

from projection 33, which are movable in and out of position across the groove 28, and a handle 38, connected with the bar 30, substantially as shown and described.

- 5 4. The combination, with the feed-bar 1 of a sewing-machine, having the yoke 6, consisting of the lower and upper cross-strips 19 and 20, of the vertical feed-bar-operating shaft 8, extending through a chamber 36 in arm 10, 10 having lateral elongated slots 37, inclining downwardly and upwardly in opposite directions in the walls of the chamber 36, the shaft 8, having the cam 21 at its lower end located between the strips 19, a circumferential 15 groove 28, located adjacent to cam 21, a vertical slot 29, extending downward below the groove 28, a cam 22, located on the shaft 8

above the cam 21, movable about the shaft 8, and having a pin or screw projecting into the groove 28, a vertically-movable bar 30, located in the slot 29 and having the lateral projection 33 at its lower end, and the shouldered portion 34 in a higher plane than the projection 33 and on the opposite side of the bar 30, the projection 33 and shouldered portion 34 being movable alternately into and out of position across the groove 28, and the operating-bar 38, extending through the elongated slots 37 and connected to the bar 30, substantially as shown and described.

ADOLPH PETTENKOFER.

Witnesses:

JOSEPH PETTENKOFER,
AUGUST PETTENKOFER.