No. 681,276. Patented Aug. 27, 1901.

C. VAN DER STRAETEN.

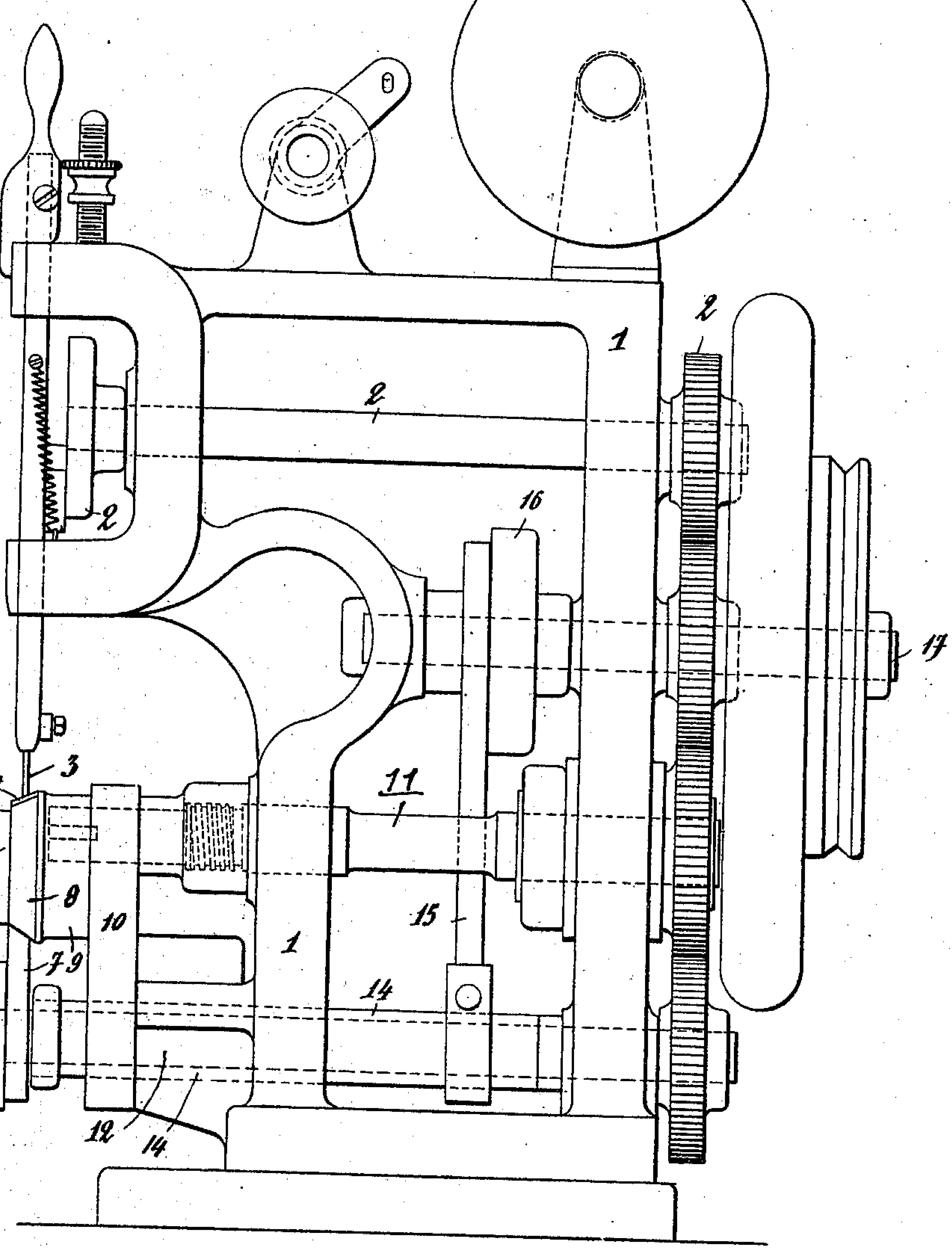
FEEDING MECHANISM FOR SHOE SEWING MACHINES.

(Application filed Dec. 4, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

Fig. 2.

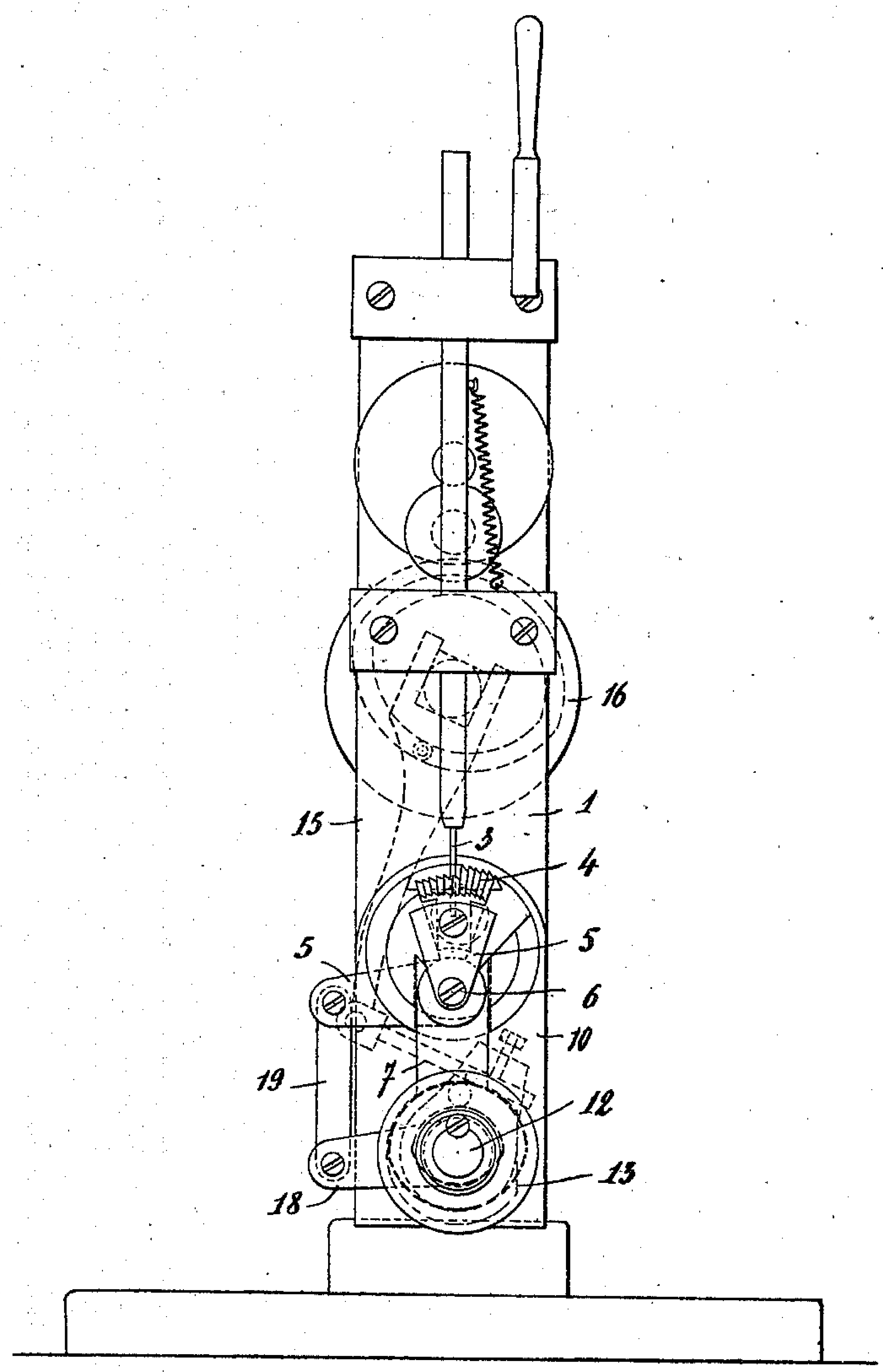


Fig. 3.

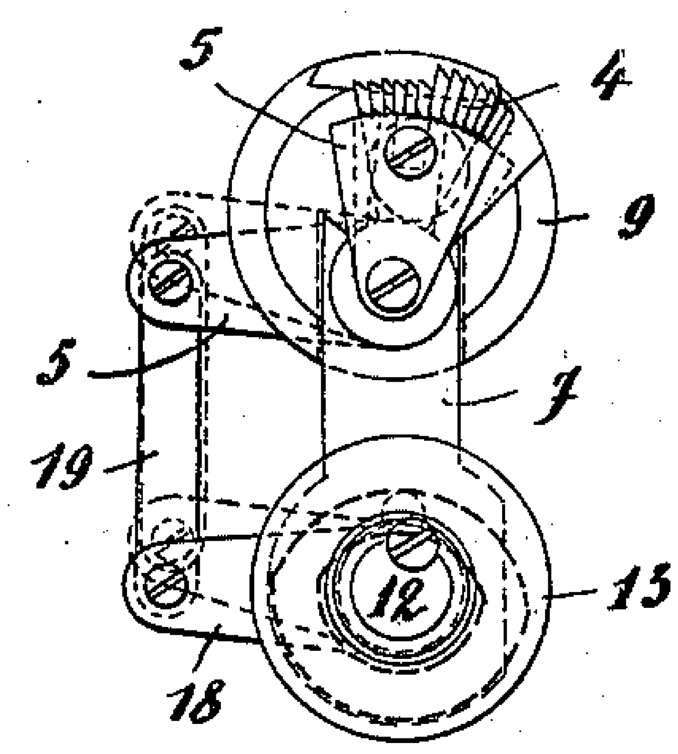
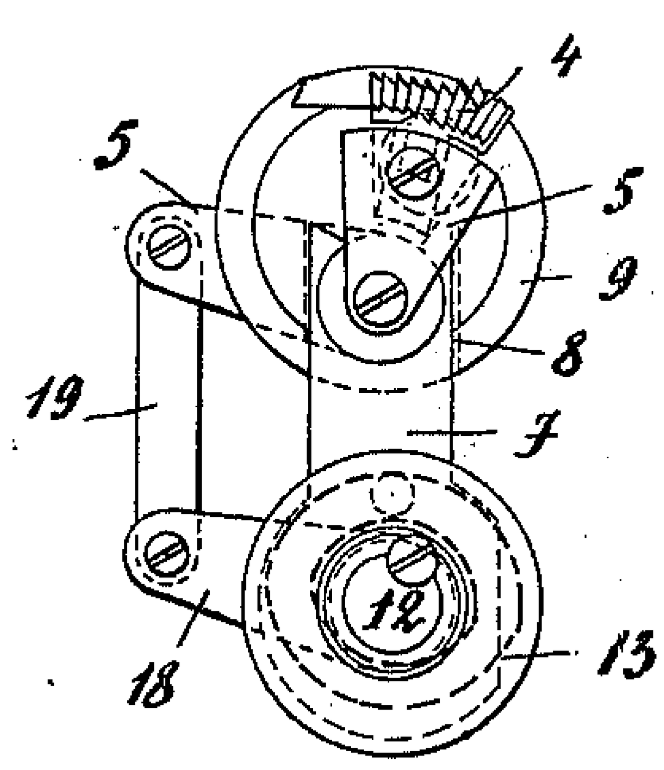


Fig. 4.



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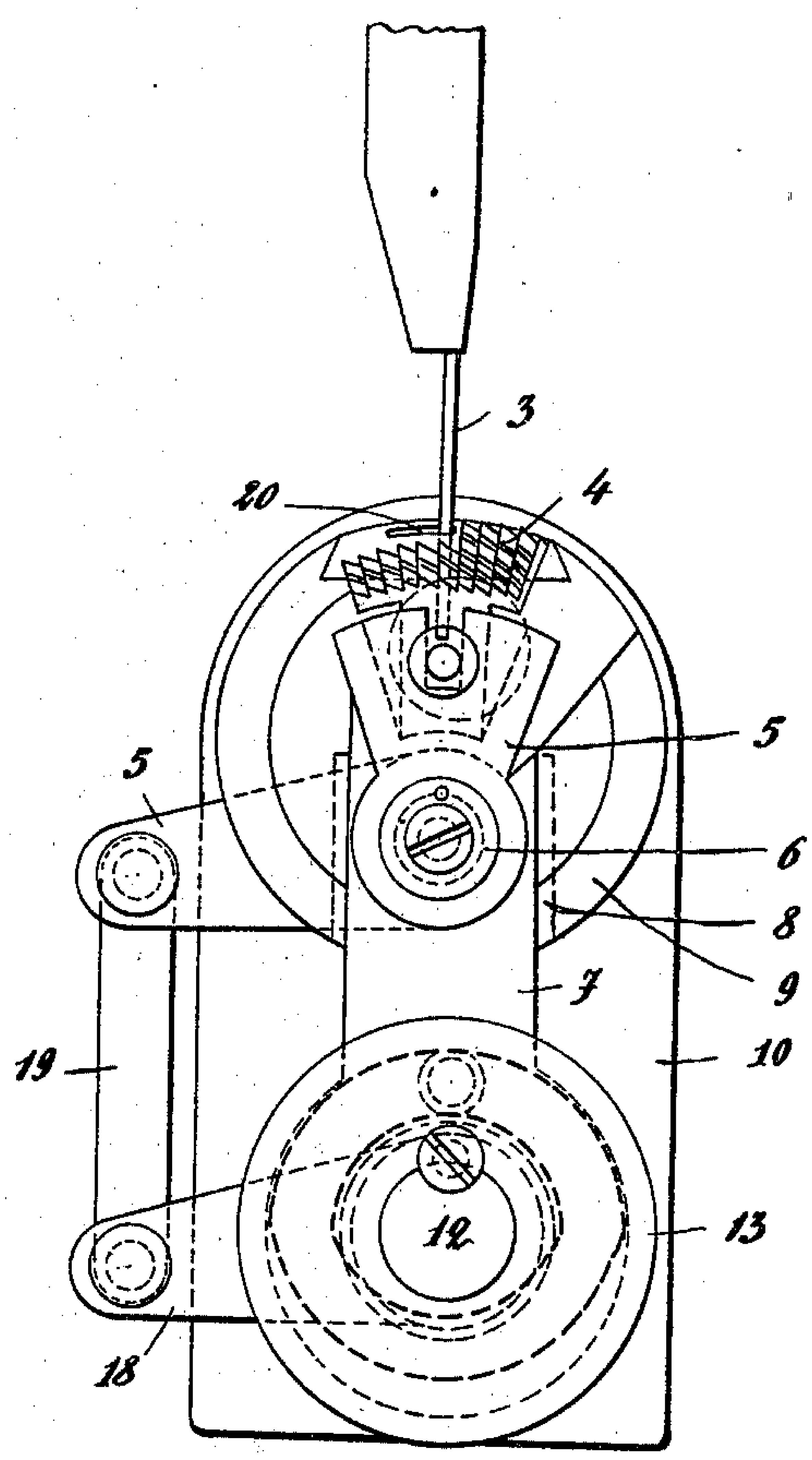
4 Sheets—Sheet 3.

Fig. 5.



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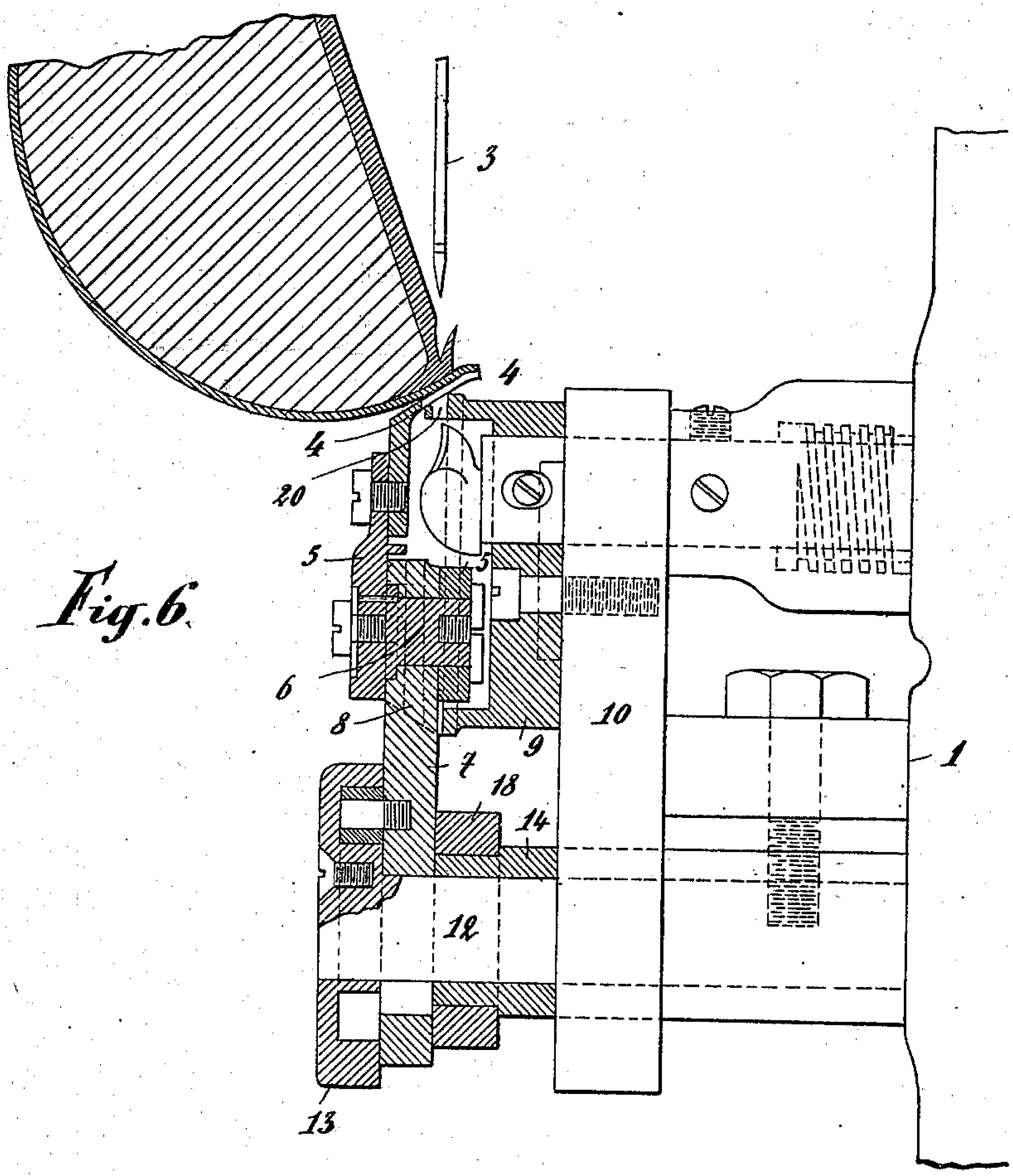

Fig. 6.

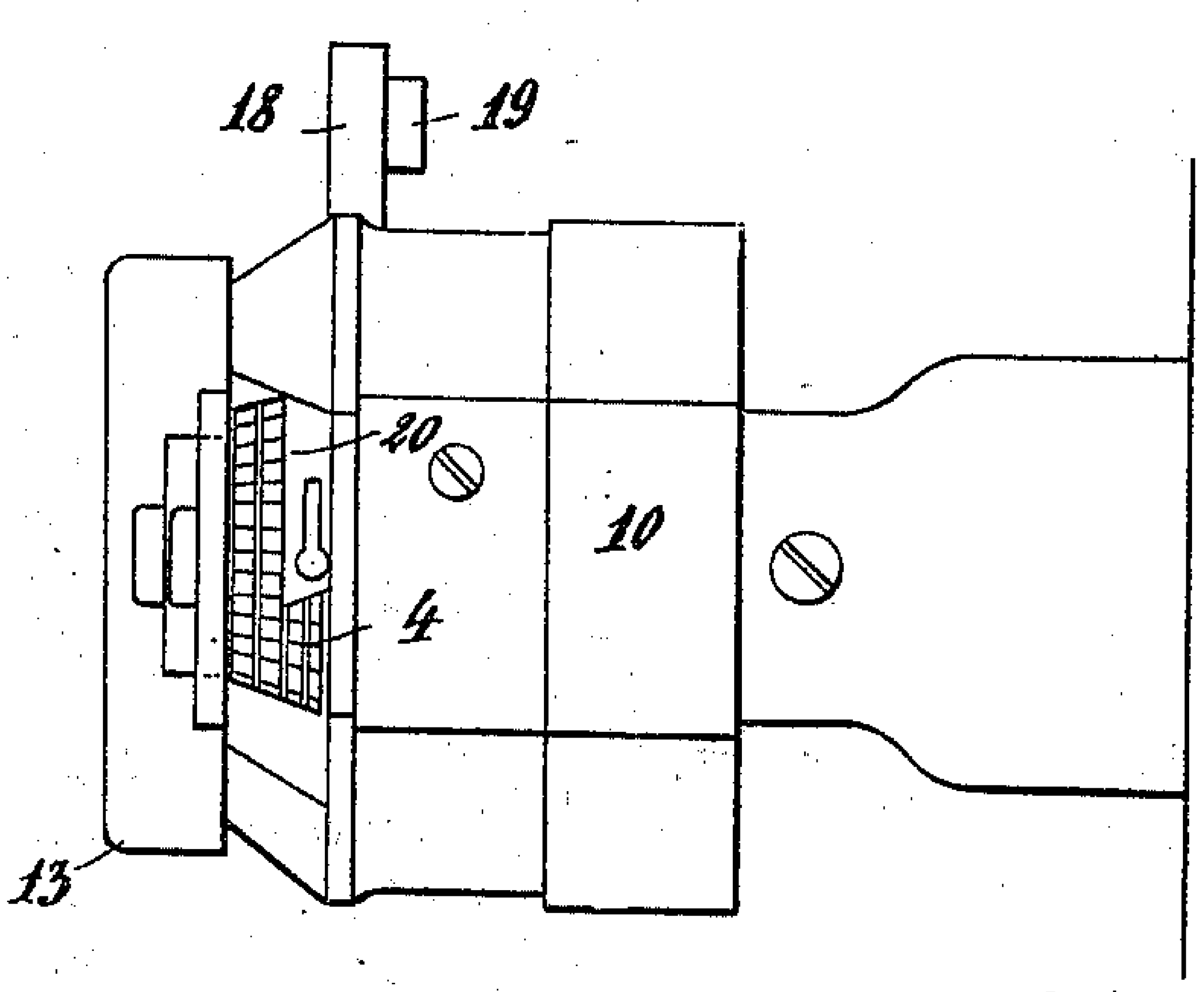

Fig. 7.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES VAN DER STRAETEN, OF BRUSSELS, BELGIUM.

FEEDING MECHANISM FOR SHOE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 681,276, dated August 27, 1901.

Application filed December 4, 1899. Serial No. 739,141. (No model.)

To all whom it may concern:

Be it known that I, CHARLES VAN DER STRAETEN, manufacturer, a subject of the King of Belgium, residing at 37 Rue de Merode, Brussels, Belgium, have invented certain new and useful Improvements in Turn-Shoe-Sewing Machines, of which the following is a specification.

This invention relates to that class of machines used for sewing the soles to the uppers of boots or shoes with a straight needle and is intended to avoid the inconveniences which are found in sewing-machines of this kind used for that class of boot and shoe sewing known as "turn-shoe work" and in which the work-carrier is generally arranged to overhang and have a circular movement. In most of these machines as formerly made the work is moved by a ring forming a complete circle and put in rotation at the desired moment by the motion of a chain or gearing. The use of the complete circle, however, prevents the feed-gear from being placed, as in ordinary sewing-machines, in such a position that its plane lies in the vertical plane of the needle of the machine. It has, on the contrary, to be placed in an oblique or overhanging plane with regard to the working plane. This defective disposition, as is well known to experts, presents great difficulties in maintaining the work on the work-holder and in the proper presentation of the work to the needle. Moreover, it frequently bends the needle over to or away from the hook, resulting in the missing of stitches or the breaking of needles or thread.

My invention consists, essentially, in the combination, with machines of this kind, of a friction feed-plate constituted by a segment of a circle having an inclined surface, this plate being mounted at the end of a horizontal work-carrier in conjunction with certain operative mechanism, as hereinafter described, and more particularly pointed out in the claim, for giving to this plate a partly-circular movement, so as to firmly maintain the work, notwithstanding the irregularities of its outlines, and to feed the work in the vertical plane of the needle. This feed-plate is actuated in such a manner that all its movements are effected while the needle is out of the work, this latter being maintained during the lowering movement and the part-circular recoil movement of the feed-plate on a shoulder placed forward of the needle and in the same vertical plane.

In the annexed drawings, Figure 1 is a view in elevation of a turn-shoe-sewing machine comprising this invention. Fig. 2 is a view in elevation of the end of this machine. Figs. 3 and 4 are end views showing the feed mechanism in two positions. Fig. 5 is an end view, on an enlarged scale, of the end of the machine; Fig. 6, a longitudinal section of the feed mechanism, showing the work in position. Fig. 7 is a plan view of the work-carrier and feed-plate.

In the drawings, 1 represents the framework of the machine, provided, as usual, with mechanism 2 for giving to the needle 3 the ordinary movement.

In conformity with my invention the feed of the machine, which is inclined, notwithstanding the horizontal work-carrier of the machine, is operated by a friction feed-plate 4, constituted by a segment of a circle having an inclined surface the plane of oscillation of which coincides with the vertical plane in which needle 3 moves. This feed-plate 4 is carried in an arm of a bell-crank lever 5, pivoted at 6 on a slide 7, which can slide vertically, as will be hereinafter explained, in slideways 8, mounted on a boss 9, carried by a bracket 10, the said boss 9 having a shoulder 20, Fig. 7, adapted to maintain the work during a part of the movement of the feed-plate 4. Through the bracket 10 and the boss 9 there passes the axle 11, carrying the thread-hook.

In order to give to the feed-plate 4 the necessary movement—that is to say, from the position represented in Fig. 2 a lowering movement, a part-circular recoil movement, then an oblique rising movement, and finally a part-circular forward movement—I mount on the end of the shaft 12 a cam 13, the outline of which, as shown in Figs. 2 and 5, is calculated so as to communicate to the slide 7 (in departing from the position represented in Fig. 2) first a lowering movement, followed by a period of rest in this lowered position during the time necessary for the recoil movement, and then a rising movement, followed likewise by a period of rest. I also mount on the shaft 12 a sleeve 14, surrounding this shaft 12 for nearly the whole of its length. This sleeve 14 receives from a crank 15 and a cam 16, moved by the main shaft 17 of the machine, an alternate oscillating movement to give the feed-plate its reciprocating movement, which feeds the work. To this effect the sleeve 14 carries at the end near the cam 13 a crank 18, the end of which is connected by a rod 19 with the horizontal arm of the bell-crank lever 5. This mechanism acts in the following manner: The feed-plate 4, being in the position represented in Fig. 2, has just fed the work. The cam 13, the rotation of which is continuous, depending upon that of shaft 12, draws down the slide 7 in the slide-ways 8. Duringthis movement the crank 18 remains motionless with the sleeve 14, the driving-cam of which is inactive, the horizontal arm of the bell-crank lever 5 drops down with the pivot 6, and the bell-crank lever 5 consequently turns slightly on its pivot 6 and takes the inclined position represented in Fig. 3. The crank 18 then rises under the action of the cam 16, crank 15, and sleeve 14. The bell-crank lever turning on its pivot takes a still more inclined position, as shown in dotted lines in Fig. 3. During this movement the cam 13, continuing its rotation, has arrived at the rising period of the slide 7. This slide rising and the crank 18 again remaining stationary the pivot 6 goes up again and the horizontal arm of the bell-crank lever 5 of the clutch takes the less oblique position (shown in Fig. 4) as the feed-plate 4 comes simultaneously against the work. This movement being effected in oblique direction from behind forward, the feed-plate comes into contact with the work in the direction of its movement and initiates in a very sure manner the feed which the following movement executes in one stroke without the least slip and in a very effective manner. The cam 13 is then in the period which corresponds with a time of rest of the slide 7 in the raised position. During this period the cam 16 acts and oscillates the crank 15. The sleeve 14, and consequently the crank 18, describe a part turn. The crank 18 consequently draws down the rod 19 and the horizontal arm of the bell-crank lever 5. This bell-crank lever then revolves a fraction of a turn on its axle 6, and the feed-plate again takes the position indicated in Fig. 2, thus feeding the work.

As it will be readily understood and as represented in Figs. 6 and 7, which show the extent of the support offered by the feed-plate to the work, the special and inclined form of the feed-plate affords always to the work, notwithstanding its inclined position, a good support in the plane of action of the needle and prevents any oscillation of the work, the feed-plate constituting, properly speaking, the whole work-carrier used instead of the usual inclined work-carrier of this class of machines. Furthermore, owing to the actuating mechanism of the feed-plate comprising a double system of cams the special movement in an arc of circle of the feed-plate is obtained entirely while the needle is out of the work.

Having thus described my invention and the manner in which it may be carried into practice, I declare that what I claim is—

The combination with sewing mechanism comprising a needle adapted to be reciprocated longitudinally, of a work-feed comprising a pivoted bell-crank lever, a friction-plate constituted by a segment of a circle and carried by one arm of said lever, the said feed-plate having an inclined surface, a slide carrying this bell-crank lever, and adapted to be reciprocated parallel with the needle, a cam-shaft, a cam thereon for actuating this slide, a rod united with the other arm of the bell-crank lever, a crank adapted to communicate by means of this rod an oscillating movement to the bell-crank lever, a sleeve surrounding the cam-shaft carrying said crank and an appropriate cam for giving the necessary oscillating movement to the sleeve surrounding the cam-shaft.

In witness whereof I have signed this specification in the presence of two witnesses.

CHARLES VAN DER STRAETEN.

Witnesses:
GEORGE BEDE,
GREGORY PHELAN.