

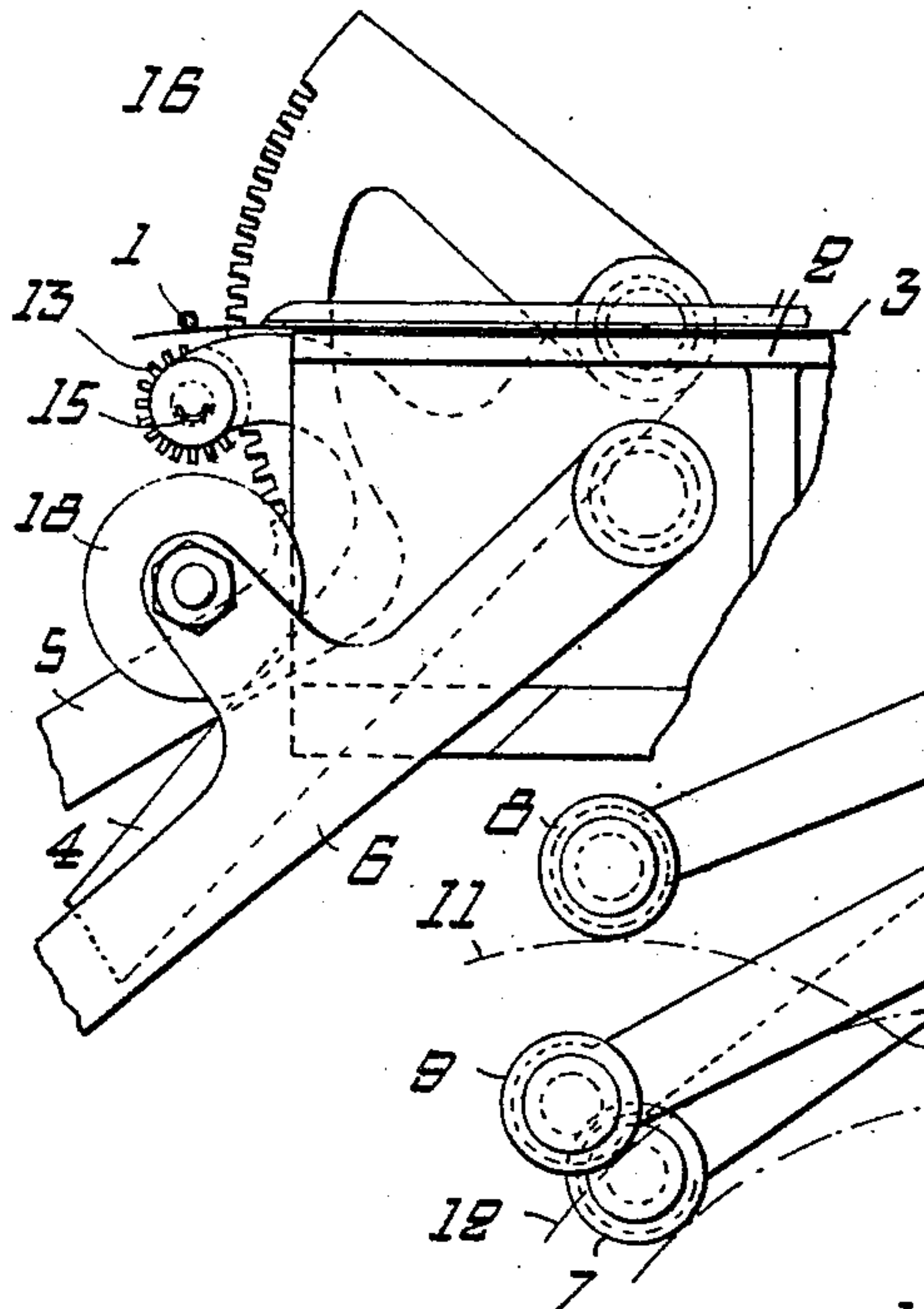
L. LINDELÖF.  
MACHINE FOR PRODUCING SPIRAL MOUTHPIECES FOR CIGARETTES.  
APPLICATION FILED NOV. 30, 1908.

999,048.

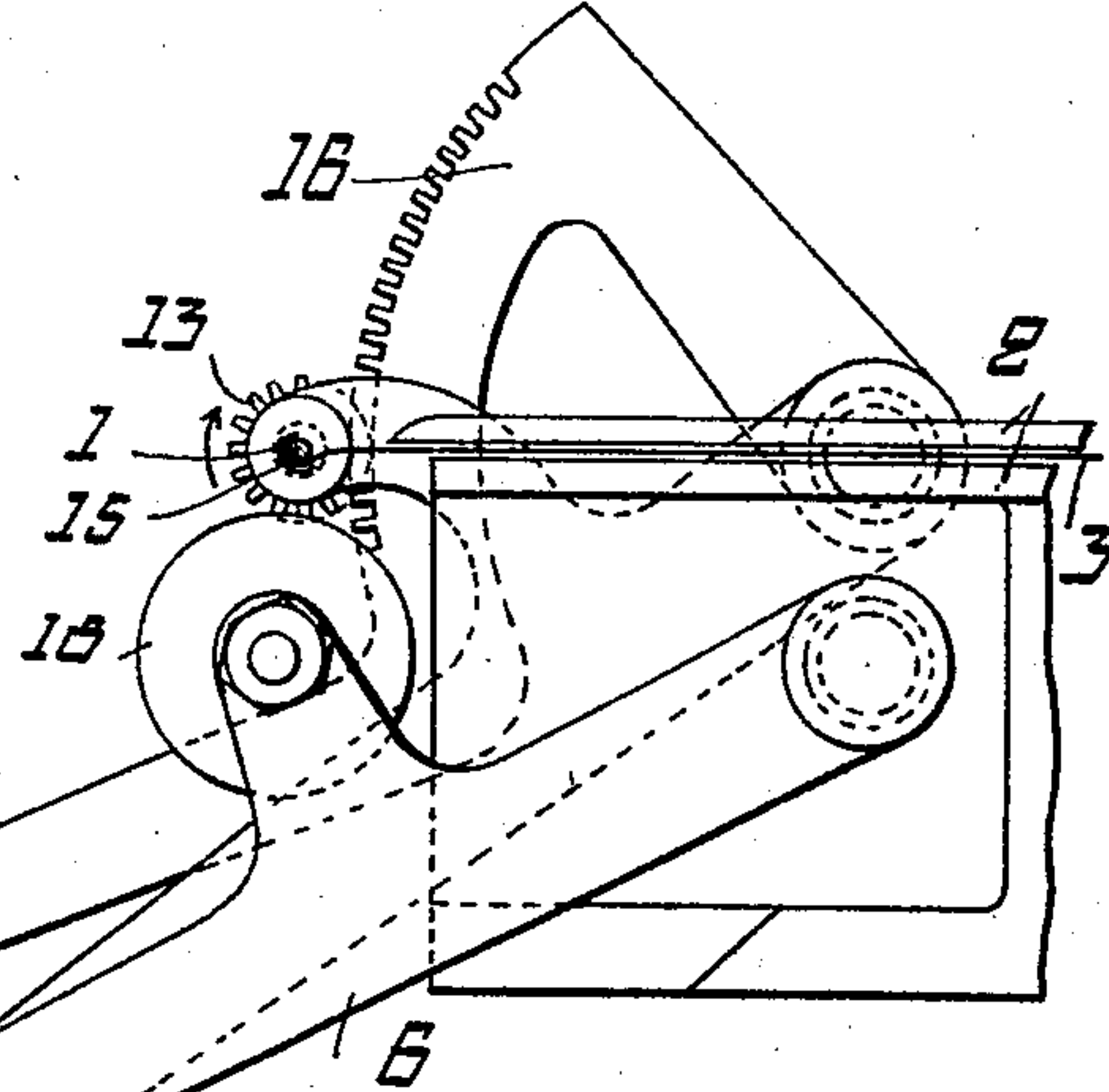
Patented July 25, 1911.

3 SHEETS-SHEET 1.

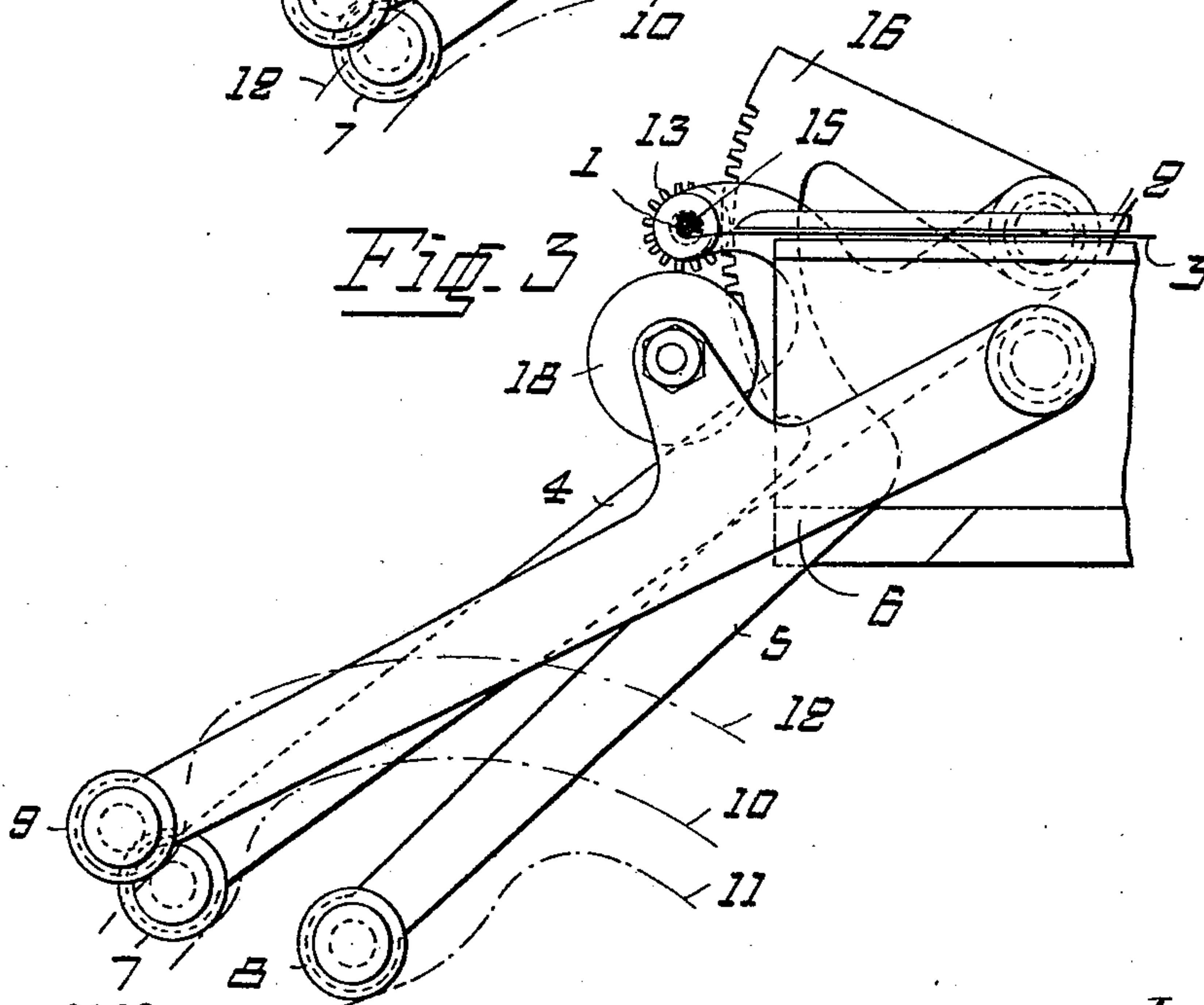
*Fig. 1*



*Fig. 2*



*Fig. 3*



Witnesses

*Aug. Lundberg*  
*Fred. Nordström*

Inventor

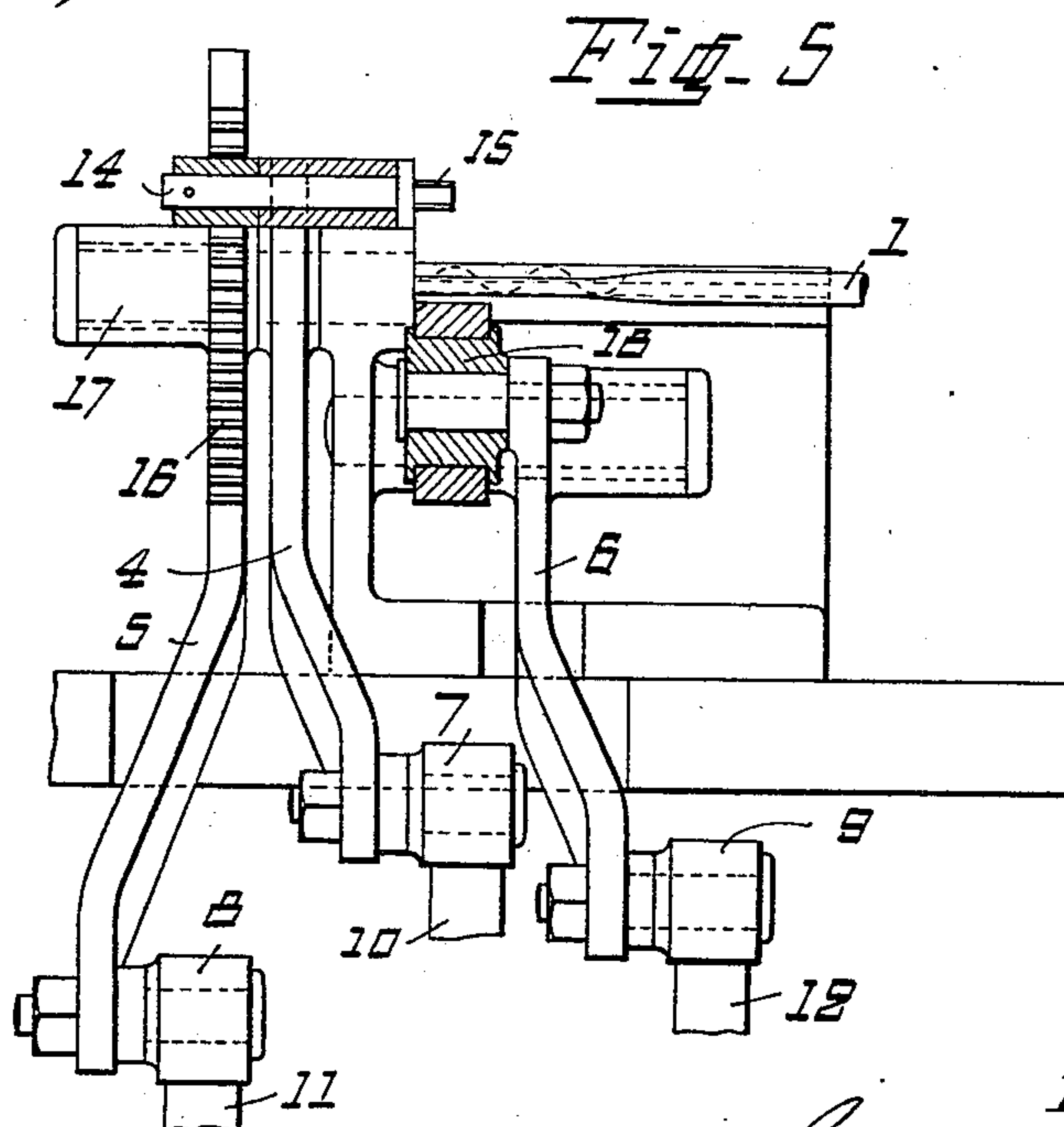
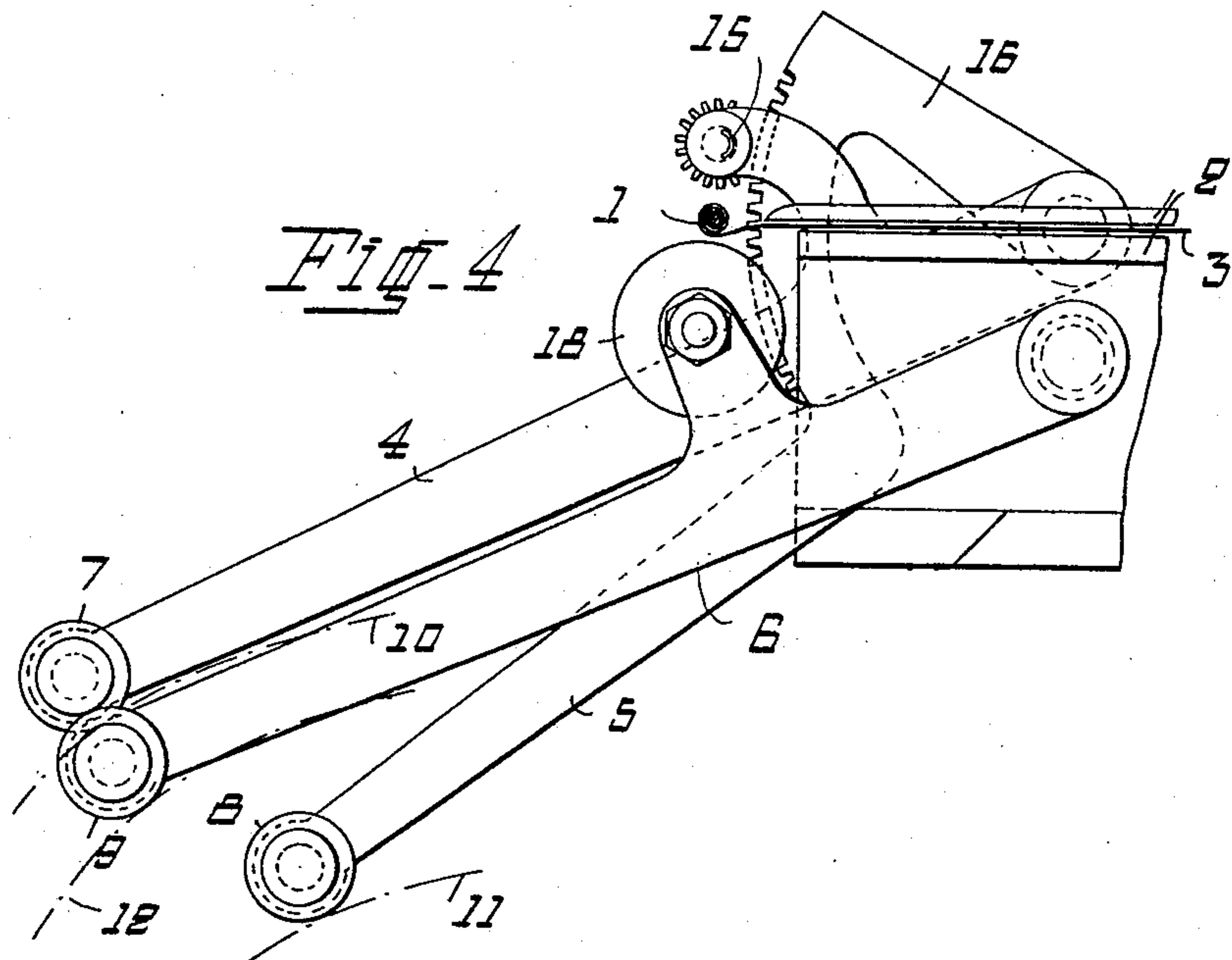
*Leonard Lindelöf*

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3 SHEETS—SHEET 2.



Witnesses

*Aug. Vorenberg*  
*Fredr. Nordyö.*

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*Lennart Lindelöf.*

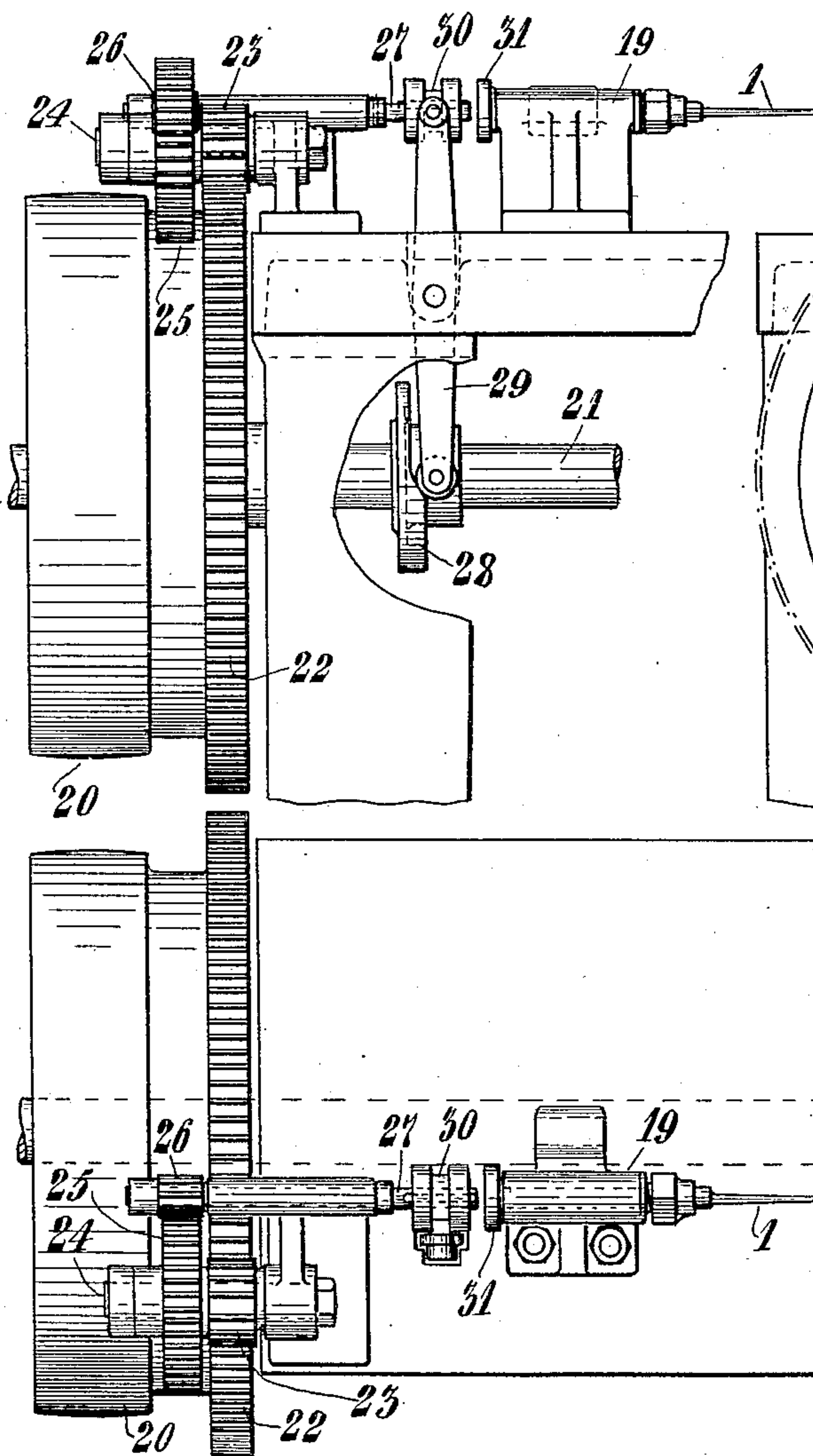
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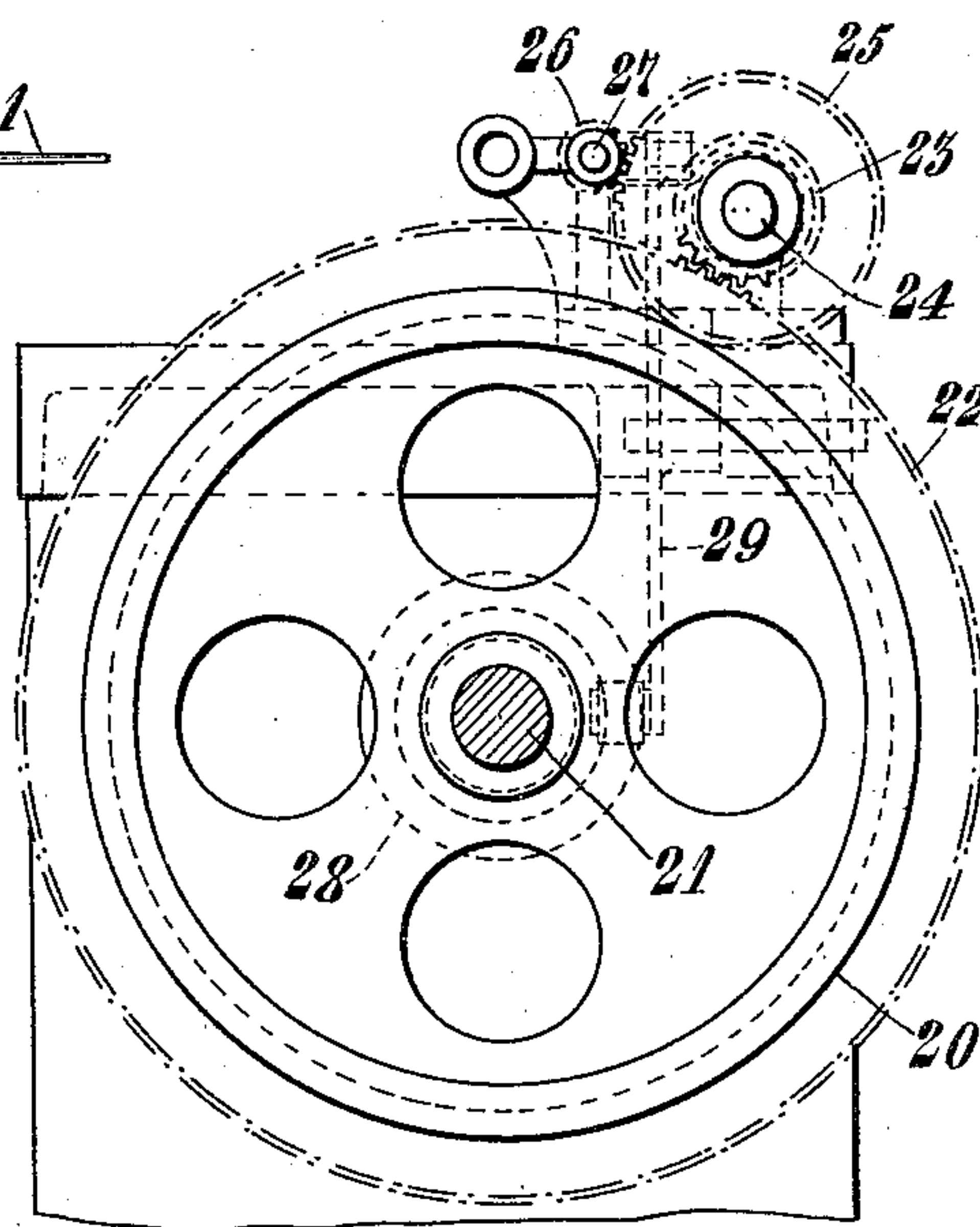
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3 SHEETS-SHEET 3.

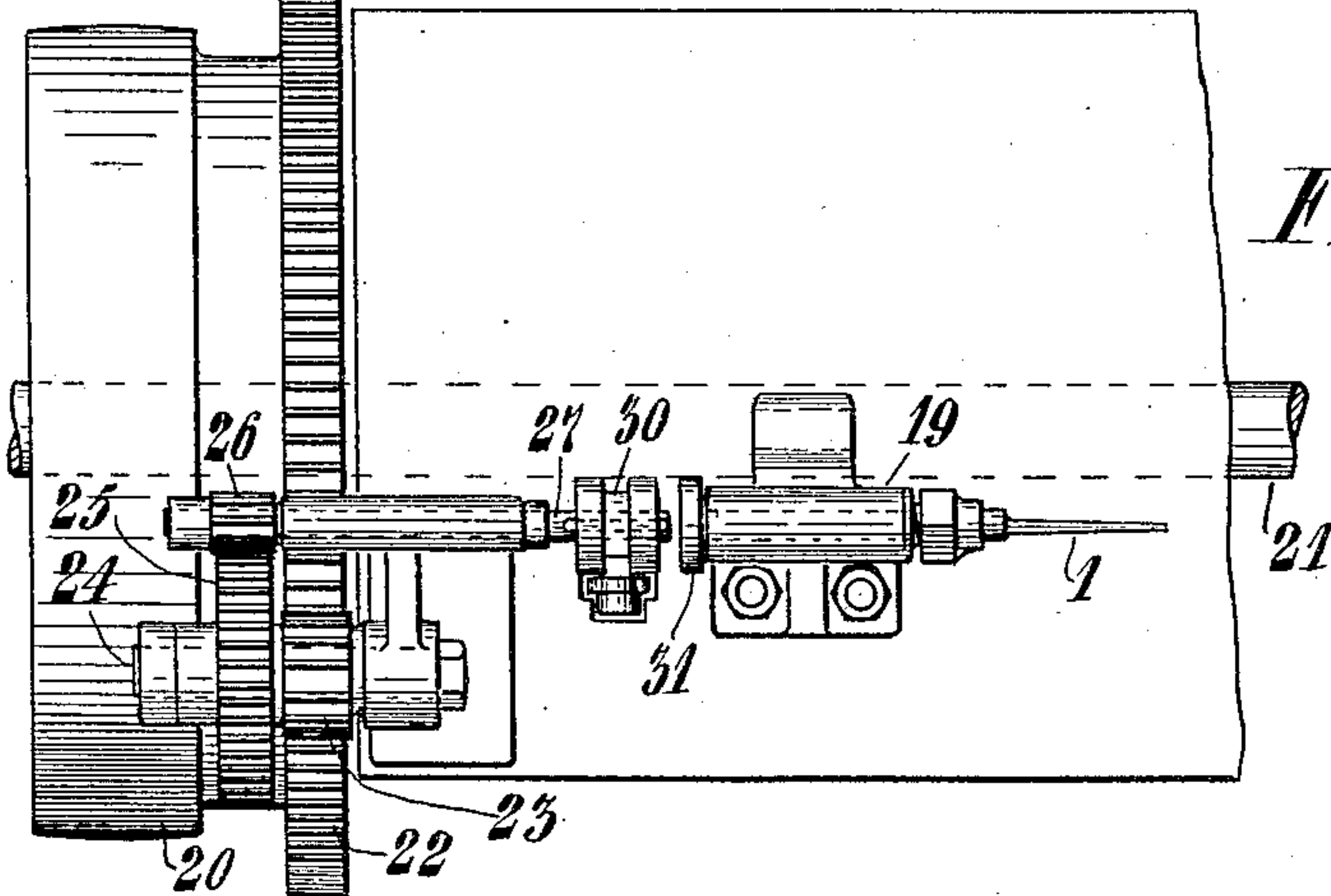
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



Witnesses

*August Anderson*  
*John H. Hamstedt*

Inventor

*Leonard Lindelöf*



# UNITED STATES PATENT OFFICE.

LEONARD LINDELÖF, OF HELSINGFORS, RUSSIA.

MACHINE FOR PRODUCING SPIRAL MOUTHPIECES FOR CIGARETTES.

999,048.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed November 30, 1908. Serial No. 465,208.

*To all whom it may concern:*

Be it known that I, LEONARD LINDELÖF, a subject of the Emperor of Russia, residing at Helsingfors, in the Grand Duchy of Finland, Russia, have invented a new and useful Machine for Producing Spiral Mouthpieces for Cigarettes, of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof.

This invention relates to machines for producing spiral mouthpieces for cigarettes.

Several attempts have been made to provide a machine for producing cigarette mouthpieces formed by a spiral whose inner part serves to prevent the tobacco of the cigarette from entering the mouthpiece. Thus, for instance, a rotary spindle or mandrel has been used having a notch or slit adapted to receive the end of the mouthpiece blank, said blank being wound around the mandrel, when the latter rotates, so as to form the desired spiral. The inner end of the spiral lying in the notch or slit of the rotary mandrel on account thereof deviates from the spiral form and thereby manifests in what manner the mouthpiece has been produced. A spiral formed by hand, on the contrary, does not show such a departure from the spiral form.

The object of the invention is to provide a machine for rolling cigarette mouthpieces of the kind hereinbefore set forth in which the spiral does not show any such deformation, so that it will be impossible to discriminate the mouthpiece from a mouthpiece formed by hand.

The invention consists, chiefly, in this that the gripping of the fore end of the blank is performed by a finger movable toward and about the winding mandrel in such a manner as to be able to press the blank against the mandrel and move with the blank a certain predetermined angle about the said mandrel, before leaving the same. In order to increase the friction between the blank and the mandrel, the surface of the latter may be suitably grooved. The surface of the finger which is adapted to press on the blank may be suitably hollowed so as to present a contact surface of substantially the same form as that of the mandrel. By this means the blank will be uniformly bent so as to assume the spiral form desired.

The invention further comprises the construction and combination of parts hereinafter more particularly described.

In the drawings, I have shown a machine embodying the invention.

Figure 1 is a front view of a part of the said machine. Figs. 2, 3 and 4 are similar views of the same machine with the parts in different positions. Fig. 5 is a side elevation and partial section of the same machine. Figs. 6, 7 and 8 are side elevation, rear view and plan view respectively of a part of the machine showing the mandrel and its connections with the rotary main shaft of the machine.

Referring to the drawings, 1 is the spindle or mandrel about which the spiral is wound. The mandrel may be provided, at its circumference, with shallow grooves adapted to produce a greater friction against the mouthpiece blank. Placed at the side of the mandrel and, preferably, level therewith is a guide 2 over which the mouthpiece blanks 3 cut to the desired form and size are fed. The mouthpiece blanks are formed as strips obliquely cut at one end, and they are always supplied with their pointed end toward the mandrel.

Pivotaly attached to the guide 2 or some other stationary part of the machine are three arms 4, 5 and 6, each carrying, at its free end, a roller 7, 8, 9, respectively. Each roller glides on a cam 10, 11, 12, respectively, and the arms 4, 5 and 6 carry the parts co-operating with the mandrel 1 for forming the spiral. The arm 4 carries a cog-wheel 13 having a finger, preferably a semicircularly bent plate 15, attached to its axle 14, the radius of curvature of said plate being such that its inner side will closely fit against the mandrel 1, when the plate bears thereon. Catching in the cog-wheel 13 is a cog segment 16 carried by the arm 5. The arms 4 and 5 are pivoted about the same pin 17 (Fig. 5) so that the cog-wheel 13 and the cog segment 16 are always in engagement with each other, independently of the relative positions of the arms. Journalled in the arm 6 is a roller 18 adapted to be moved toward the mandrel 1 or the mouthpiece blank thereon, in order to facilitate a uniform winding of the blank around the mandrel.

The bearing 19 for the mandrel 1 is shown



in Figs. 6 and 8. The power for rotating the mandrel is transmitted through a pulley 20 on the main shaft 21. Connected to the said pulley is a cog wheel 22 engaging a cog wheel 23 on a second shaft 24 (see also Fig. 7). Connected to the said shaft 24 is a further cog wheel 25 engaging a cog wheel 26 on a shaft 27 journaled co-axially with the mandrel 1.

Attached to the main shaft 21 is a cam 28 acting on one arm of a lever 29 journaled in the frame of the machine, the other arm of said lever being connected to a clutch part 30 adapted to slide on the shaft 27 and rotating with the same. During the continuous rotation of the main shaft the lever 29 is caused to swing so as to alternately bring the clutch part 30 into and out of engagement with a corresponding clutch part 31 connected to the mandrel 1, by which the latter is caused to rotate intermittently.

The described machine works in the following manner: When a blank 3 has been moved in the guide 2 into a position in which its pointed edge is beneath the mandrel 1, the finger 15, which instantaneously takes up the position shown in Fig. 1, is lifted toward the mandrel and thus causes the blank to bend about the said mandrel. Thereupon the cog segment 16, on account of the form of the cam 11, moves downward, and the cog-wheel 13, and thereby the finger 15, commences to turn in the direction indicated by the arrow in Fig. 2 so that the blank is wound on the mandrel. The finger 15 then takes up the positions shown in Figs. 2 and 3. When the finger has arrived in the position shown in Fig. 3, it is lifted, by the action of the cam 10 on the arm 4, from the mandrel, which in the meantime has commenced to rotate and winds the blank 3 about it (Fig. 4). Shortly before the finger 15 has receded from the mandrel, the roller 18 is lifted toward the same and then during the winding presses on the lower side of the blank so that the latter is firmly and uniformly wound.

When a spiral mouthpiece has in this manner been made, it is removed from the mandrel 1 by any suitable device. Such devices not forming part of the invention, it is thought that no description thereof is necessary. When the mouthpiece has been removed, the mandrel is ready to receive a new blank to be wound in the same manner as before.

The cams 10, 11 and 12 make one revolution for each spiral to be wound and thus cause the arms 4, 5 and 6, and thereby the working parts, to perform the same movements for each spiral to be wound. The roller 18 is not necessary for obtaining the desired result, and the said roller and the arm 6 with the roller 9 and the cam 12 may be dispensed with, if desired. The

curved finger 15 may be formed by one or more pins attached to the axle 14 at the same distance from its center.

I claim:

1. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, a rotary wheel movable with its axis toward and past the axis of the said mandrel, a finger carried by the said wheel, and means for moving the said wheel in such a manner as to cause the finger to move toward and about the said mandrel.

2. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, a cog-segment adapted to swing about a center, a cog-wheel engaging the said cog-segment and adapted to move along the periphery thereof, a finger carried by the said cog-wheel, and means for moving the cog-segment and the cog-wheel as a whole and relatively to each other in such a manner as to cause the finger to move toward and about the said mandrel.

3. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, two arms adapted to swing about the same fulcrum, a cog-wheel carried by one of the said arms, a cog-segment carried by the other arm, said cog-segment being in engagement with the said cog-wheel, a finger carried by the said cog-wheel, and means for moving the said arms in such a manner as to cause the finger to move toward and about the said mandrel.

4. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, a rotary wheel movable with its axis toward and past the axis of the said mandrel, a finger carried by the said wheel, a roller movable toward the said mandrel, means for moving the said wheel in such a manner as to cause the finger to move toward and about the said mandrel, and means for thereupon moving the said roller against the mandrel.

5. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, a cog-segment adapted to swing about a center, a cog-wheel engaging the said cog-segment and adapted to move along the periphery thereof, a finger carried by the said cog-wheel, a roller movable toward the said mandrel, means for moving the cog-segment and the wheel as a whole and relatively to each other in such a manner as to cause the finger to move toward and about the said mandrel, and means for thereupon moving the roller against the mandrel.

6. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, two arms adapted to swing about the same fulcrum, a cog-wheel carried by one of the said arms, a cog-segment carried by the other arm, said cog-seg-



ment being in engagement with the said cog-wheel, a finger carried by the said cog-wheel, a roller movable toward the said mandrel, means for moving the said arms in such a manner as to cause the finger to move toward and about the said mandrel, and means for thereupon moving the said roller against the mandrel.

7. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, two arms adapted to swing about the same fulcrum, a cog-wheel carried by one of the said arms, a cog-segment carried by the other arm, said cog-segment being in engagement with the said cog-wheel, a finger carried by the said cog-wheel, a roller movable toward the said mandrel, cams acting on the swinging arms in such a manner as to cause the finger to move toward and about the said mandrel, and means for thereupon moving the roller against the mandrel.

8. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, two arms adapted to swing about the same fulcrum, a cog-wheel

carried by one of the said arms, a cog-segment carried by the other arm, said cog-segment being in engagement with the said cog-wheel, a finger carried by the said cog-wheel, and cams acting on the swinging arms in such a manner as to cause the finger to move toward and about the said mandrel.

9. In a machine for producing spiral mouthpieces for cigarettes, the combination of a rotary mandrel, two arms adapted to swing about the same fulcrum, a cog-wheel carried by one of the said arms, a cog-segment carried by the other arm, said cog-segment being in engagement with the said cog-wheel, a finger carried by the said cog-wheel, a third swinging arm, a roller carried by the said latter arm, and cams acting on the swinging arms in such a manner as to first cause the finger to move toward and about the said mandrel and to thereupon cause the roller to move against the said mandrel.

LEONARD LINDELÖF.

Witnesses:

HJALMAR ZETTERSTRÖM,  
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."