

W. BENJAMINOWITSCH.
PAPER FEED MECHANISM.
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943,622.

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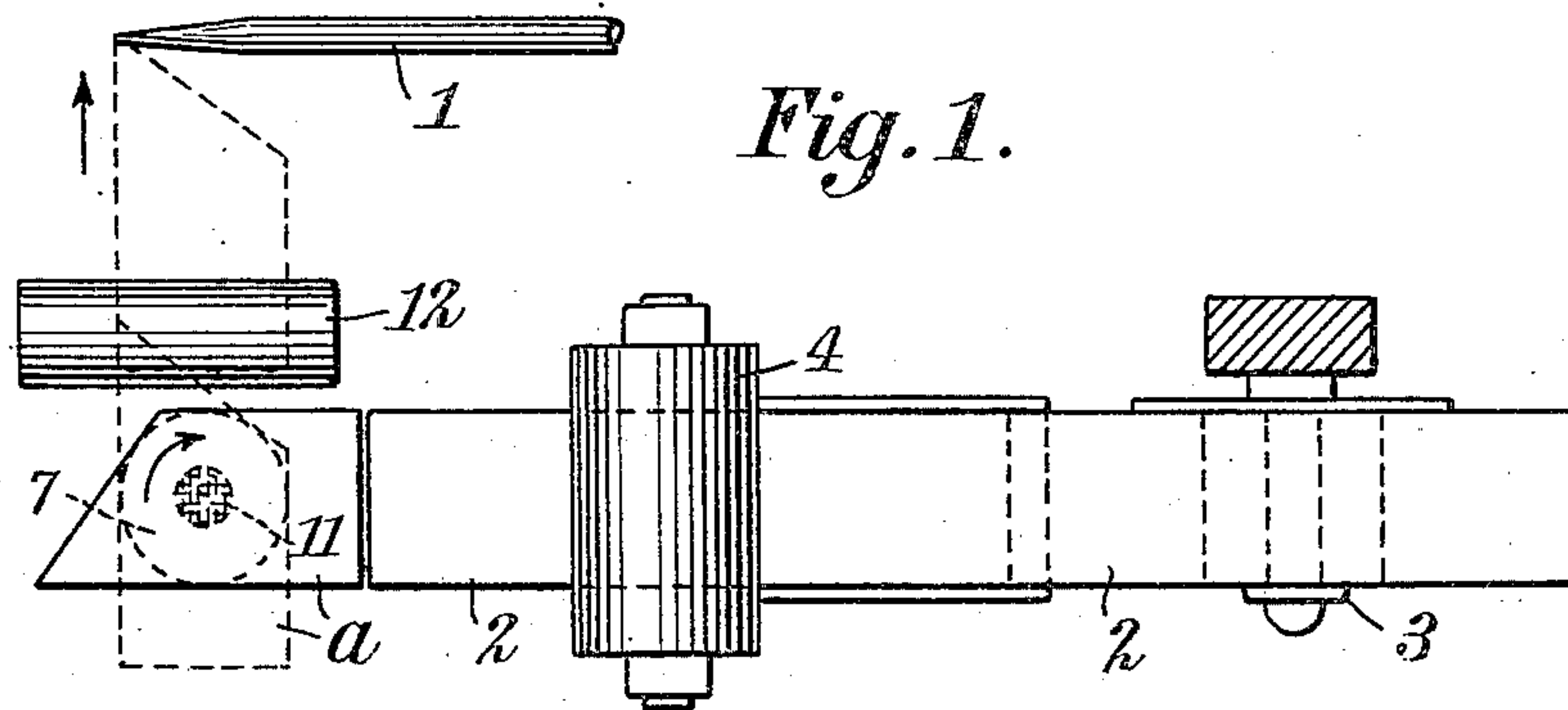


Fig. 1.

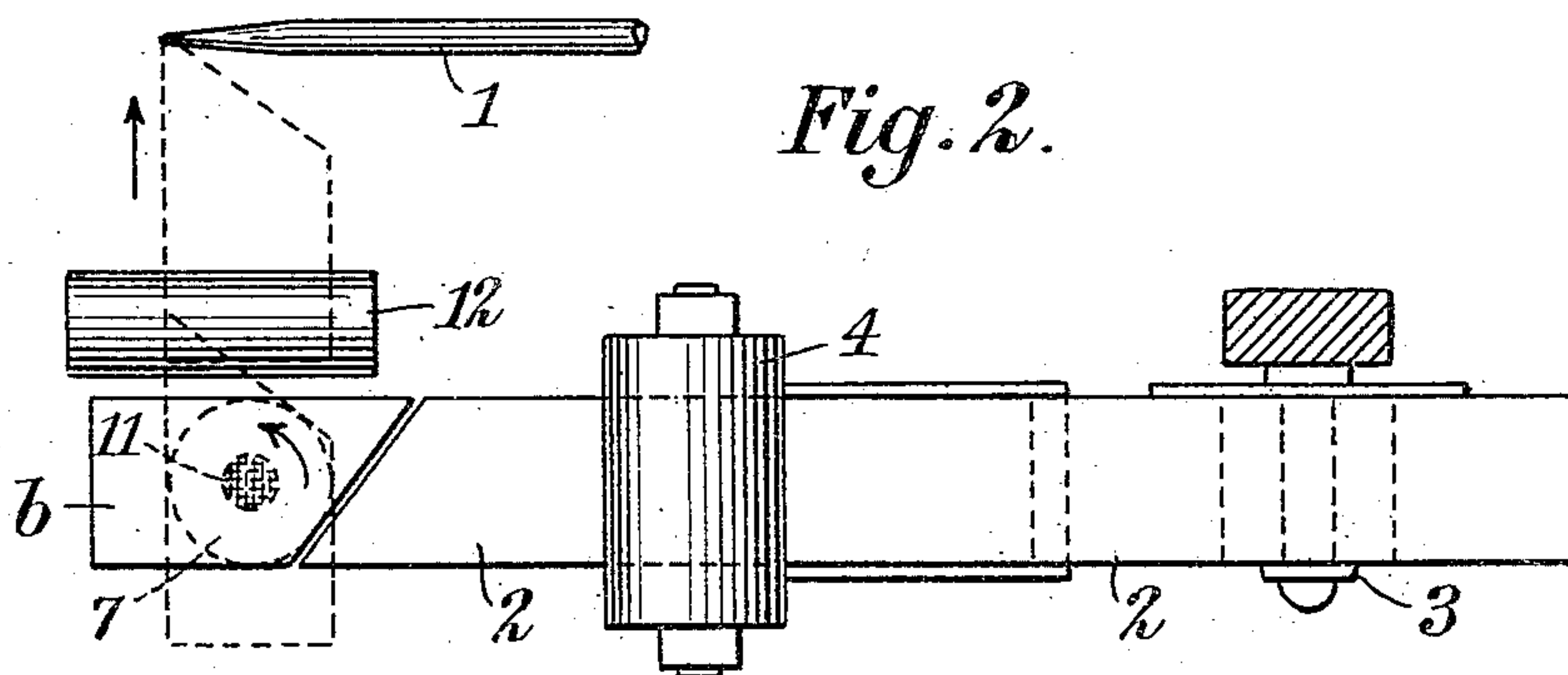


Fig. 2.

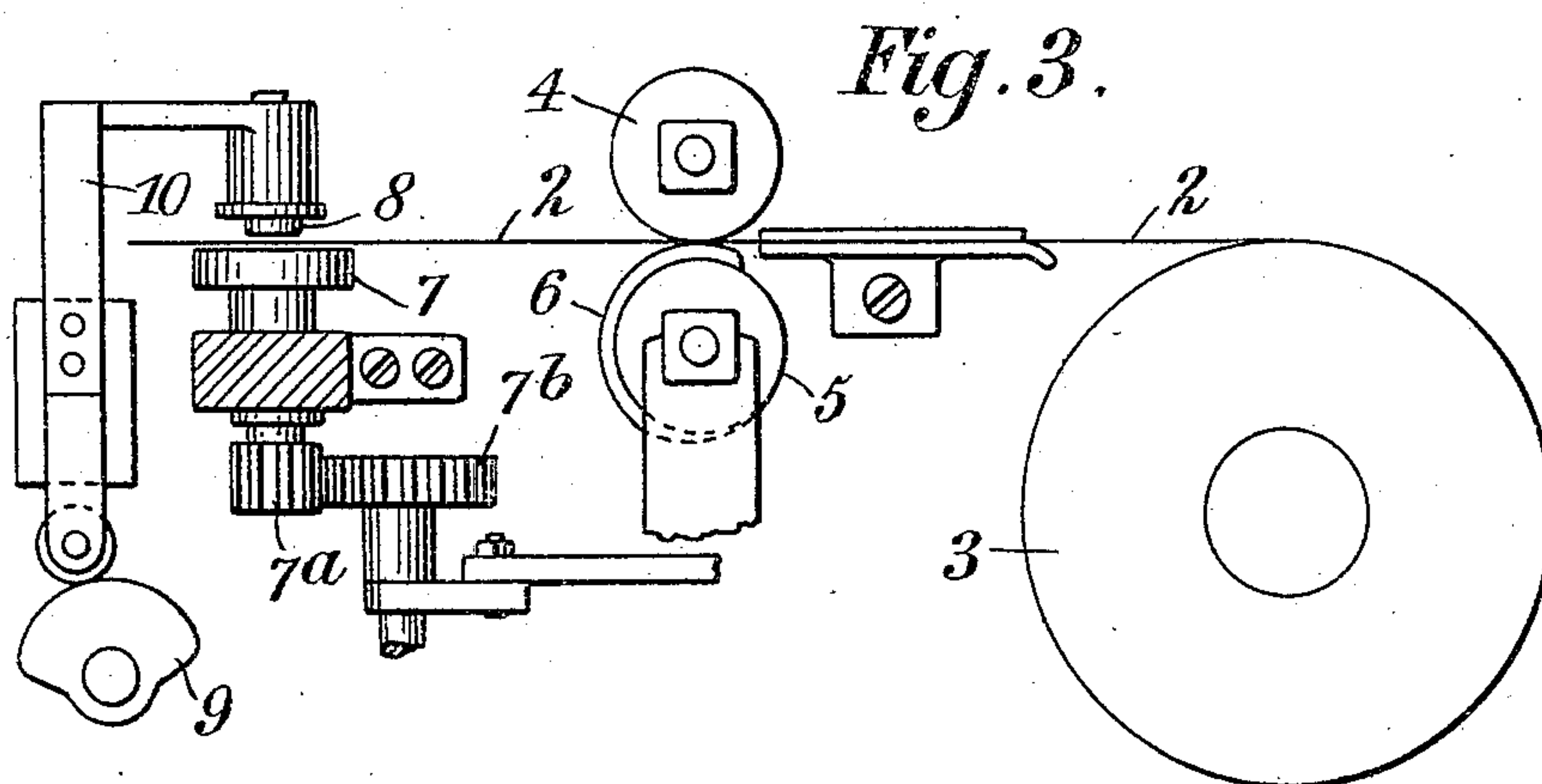


Fig. 3.

WITNESSES:

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PAPER-FEED MECHANISM.

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To all whom it may concern:

Be it known that I, WOLFF BENJAMINOWITSCH, a subject of the Czar of Russia, residing in Berlin, in the Empire of Germany, have invented certain new and useful Improvements in Paper-Feed Mechanism, of which the following is a specification.

In the manufacture of paper spirals in cigarette mouth-piece forming machines and the like, obliquely cut pieces of cardboard are employed. If these are to be cut without waste from a band it is indispensable that the inclined edges of successive pieces of cardboard should be situated on opposite sides. This circumstance has hitherto been overcome by supplying say the first piece of cardboard directly to the winding mandrel point forward and turning the second piece of cardboard, the point of which was directed rearward, through 180° in the horizontal plane, so that its point also was directed forward, that is to say toward the winding mandrel, so that it could then be fed in the same manner as the first for forming the paper spiral. In this method of manufacture it is an essential condition that the paper band should be fed at right angles to the longitudinal axis of the mandrel, as is usual in the formation of the ordinary mouthpiece spirals.

The object of the present invention is to overcome in another manner the difficulties arising in feeding obliquely cut pieces of cardboard; in the first place the paper is not fed, as heretofore at right angles to the longitudinal axis of the winding mandrel, but parallel therewith and every piece of cardboard and not every second piece as hitherto, is rotated through 90° (and not 180°) in the horizontal plane. With this object each piece of cardboard is conducted onto a rotatable table, where it is preferably clamped in two places whereupon the table is rotated and carries it through 90° in such a manner that the point of the piece of cardboard is directed forward, that is to say toward the winding mandrel. The direction in which the table and the cardboard situated upon it are rotated, is different for each succeeding piece, that is to say the first piece may be rotated toward the right hand, say, and the second to the left hand.

The invention is illustrated diagrammat-

ically in the accompanying drawing in which—

Figure 1 is a plan view of the paper feed mechanism during the rotation of the first piece of cardboard with point directed forward. Fig. 2 is a similar illustration during the movement of the second piece of cardboard with edge cut at right angle directed forward, and Fig. 3 is a side elevation of the paper feed mechanism partly in section.

In the drawing, 1 is the winding mandrel of any appropriate kind and 2 is the strip of paper unwound from the roll 3. As shown in the drawing, the path of the feed of the strip of paper and the longitudinal axis of the winding mandrel are parallel one with the other. The paper strip is fed in the known manner by feed rolls 4, 5, the latter of which is provided with a feed surface 6 of variable length which determines the length of the feed. The cutting of the strip of cardboard used for the formation of the paper spiral is effected either by means of a knife or shears situated obliquely of the path of the paper web and one at right angles thereto, or by two inclined knives and one arranged at right angles, or finally by means of one knife or shears only which is adapted to be directed alternately obliquely of and at right angles to the web of paper.

The invention is not restricted in any way as regards the cutting-off of the pieces of cardboard. Preferably the dividing mechanism is located immediately behind the feed rolls 4, 5, but may have any other desired position. In all cases, however, the division is effected in such a way that no waste is caused. As already stated, it is essential in such a method of manufacture that the inclined edges of two succeeding pieces of cardboard should be oppositely directed. Now in order to bring these pieces of cardboard into such a position that they may be fed directly to the winding mandrel for forming the paper spiral, a small table 7 is employed, this table being adapted to be rotated through at least 90° in both directions by means of gear wheels 7^a 7^b or other appropriate mechanism. Above the table 7 clamping mechanism is preferably provided, which may consist of a small plate 8 which is raised and depressed under the influence of

an arm 10 acted upon by a cam 9 in such a manner that the piece of cardboard fed onto the table 7 is alternately clamped and released. In order to prevent the cardboard
5 from shifting the surface of the table may be roughened at 11.

Now assuming that, as shown in Fig. 1, the first piece of cardboard *a*, which for the sake of example is cut from the strip with a
10 right-angled cut, is fed onto the table 7 in such a manner that its tapered edge is directed forward, when the sheet of cardboard has been clamped by the plate 8 upon the table 7 the latter is rotated in the direction
15 indicated by the arrow in Fig. 1 that is to say toward the right hand, through an angle of 90°, until the point of the sheet of cardboard *a* is directed toward the point of the winding mandrel and the longitudinal axis
20 of this sheet of cardboard is at right angles to the longitudinal axis of the mandrel. It will of course be understood that slight departures from this position are immaterial. When the correct position for feeding to the
25 winding mandrel has been reached, the clamping device 8 is raised thus releasing the piece of cardboard *a* which may then be fed to the winding mandrel by means of special feed rolls 12 in the direction indi-
30 cated by the arrow in Fig. 1. The second piece of cardboard *b* which now lies with its rectangular edge forward is divided from the band with an oblique cut as shown in Fig. 2. This piece of cardboard is then fed
35 onto the table 7, clamped by the device 8, whereupon the table 7 is again rotated through 90° or approximately 90°. This time, however the rotation is in the opposite direction, that is to say toward the left hand,
40 as shown in Fig. 2. The point of the piece of cardboard *b* is directed toward the winding mandrel after this rotation precisely like that of the piece *a*, so that the longitudinal axis of this piece *b* is also at right angles to the longitudinal axis of the winding man-
45 drel. This piece of cardboard may then be fed to the winding mandrel by means of the feed rollers 12 in the direction indicated by the arrow, for the purpose of forming the
50 paper spiral. The third piece of cardboard, which lies in exactly the same way as the piece *a*, in Fig. 1, is then rotated in the manner described by rotating the table 7, through a right angle and then fed forward, after
55 which the several operations are repeated.

From what has been stated it will be understood that, contrary to what is the case with the known mechanism, each piece of cardboard is rotated through an angle of
60 90°, this rotation being either to the right hand or to the left according as the point or the rectangularly cut edge is situated in front. It will be obvious that when the piece of cardboard has been rotated, the

point or the rectangularly cut edge must
65 project beyond the edge of the table 7 to such an extent that the piece of cardboard when released from the clamping device 8 can be fed forward to the winding mandrel
70 by the feed rollers. In order that the point and the band of the cardboard may be able to pass between the feed rollers 12 freely during this rotation, it is preferable that the upper or the lower roller should be periodically raised and lowered by appropriate
75 means, say by means of a cam plate, so that during the rotation an opening of sufficient width may exist between the feed rollers 12 to permit of the penetration between them of the edge of the cardboard, and when the ro-
80 tation of the piece of cardboard is completed the feed rollers are brought together and are then able to feed forward to the winding mandrel the cardboard which has now been released from the clamping device. 85

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

1. In a paper feed mechanism such as described, the combination of means to ini-
90 tially feed pieces of paper, an oscillating table adapted to receive the pieces from the feeding means, means for turning said table alternately in opposite directions through an angle of substantially only 90°, and
95 means for removing the pieces from the table.

2. In a paper feed mechanism such as described, the combination of means to ini-
100 tially feed pieces of paper, an oscillating means adapted to receive the pieces of paper from the feeding means, means for turning said oscillating means alternately in opposite directions through an angle of substantially 90°, and means for removing the
105 pieces from the oscillating means.

3. In a paper feed mechanism such as described, having means for supporting pieces of cardboard, means for turning said sup-
110 porting means at an angle of substantially 90° only, alternately in opposite directions.

4. In a paper feed mechanism, the combination, with a mandrel, of means for feed-
115 ing pieces of cardboard in a direction parallel to the axis of the mandrel, a table adapted to receive the pieces from the feeding means, means for turning said table alternately in opposite directions through an angle of substantially only 90°, and means
120 for removing the pieces from the table.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

WOLFF BENJAMINOWITSCH.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.