

No. 845,071.

PATENTED FEB. 26, 1907.

F. FETTBACK.

MACHINE FOR MANUFACTURING BOXES FROM PASTEBOARD OR THE LIKE.

APPLICATION FILED JULY 27, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

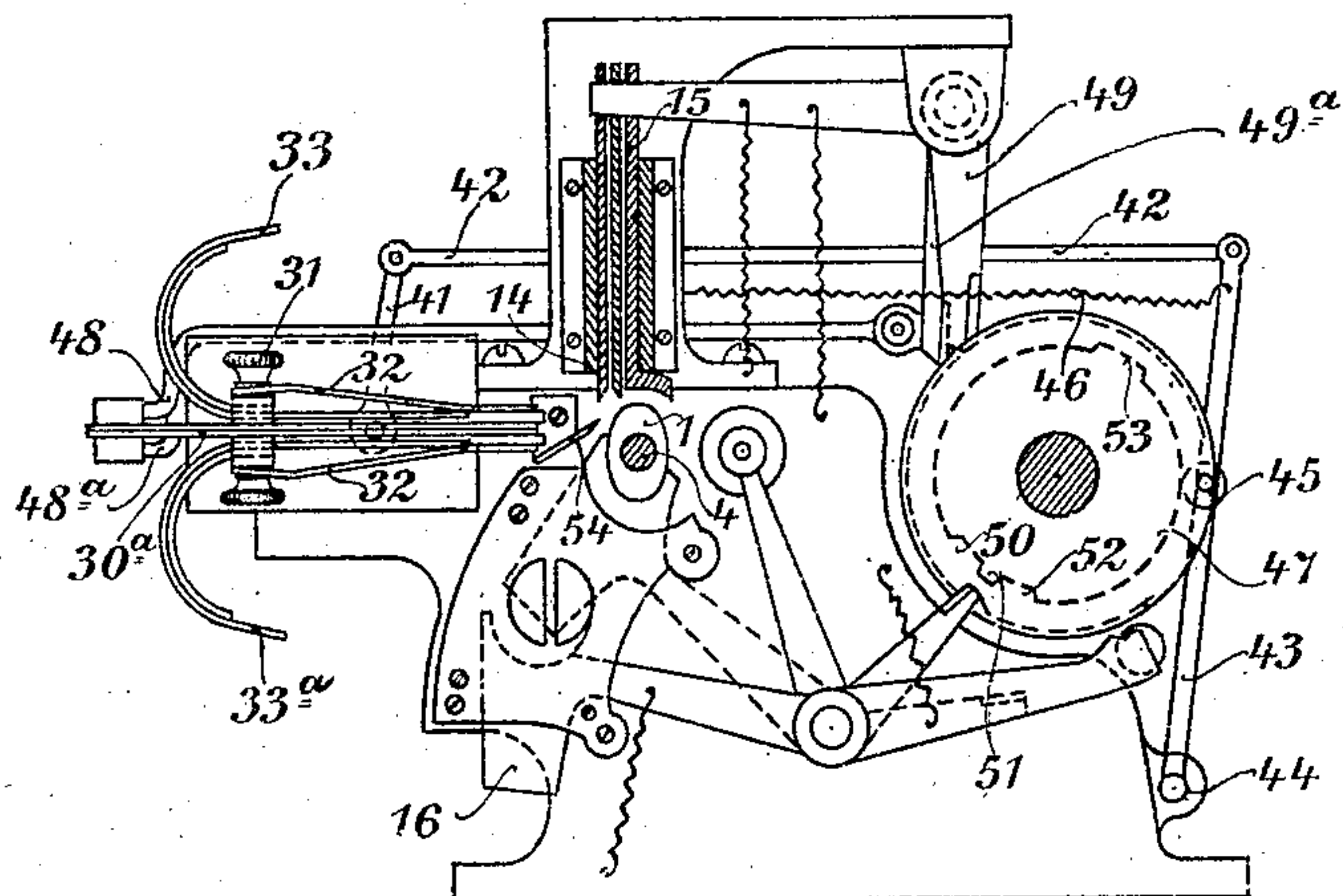


Fig. 8.

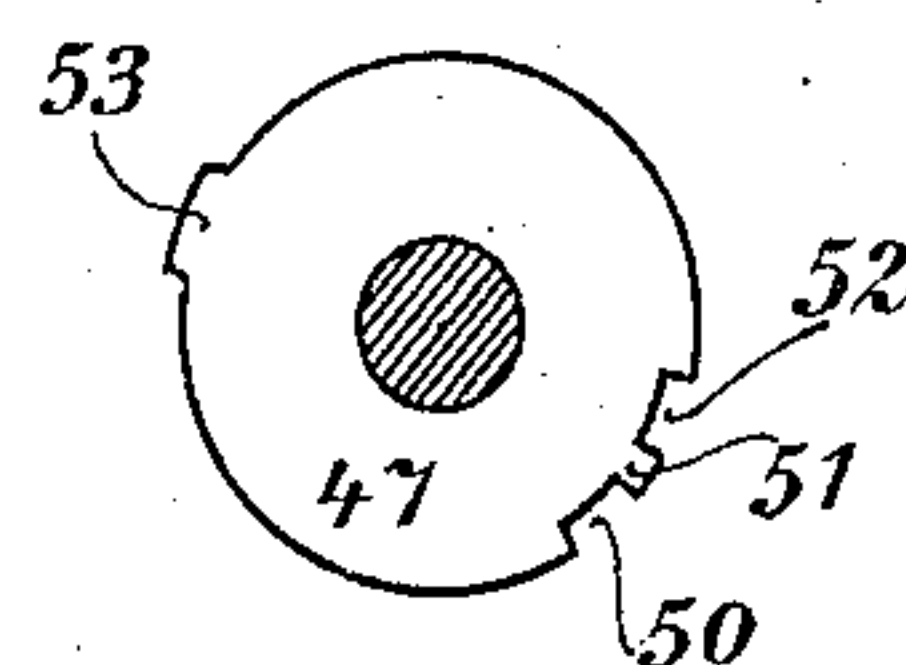


Fig. 4.

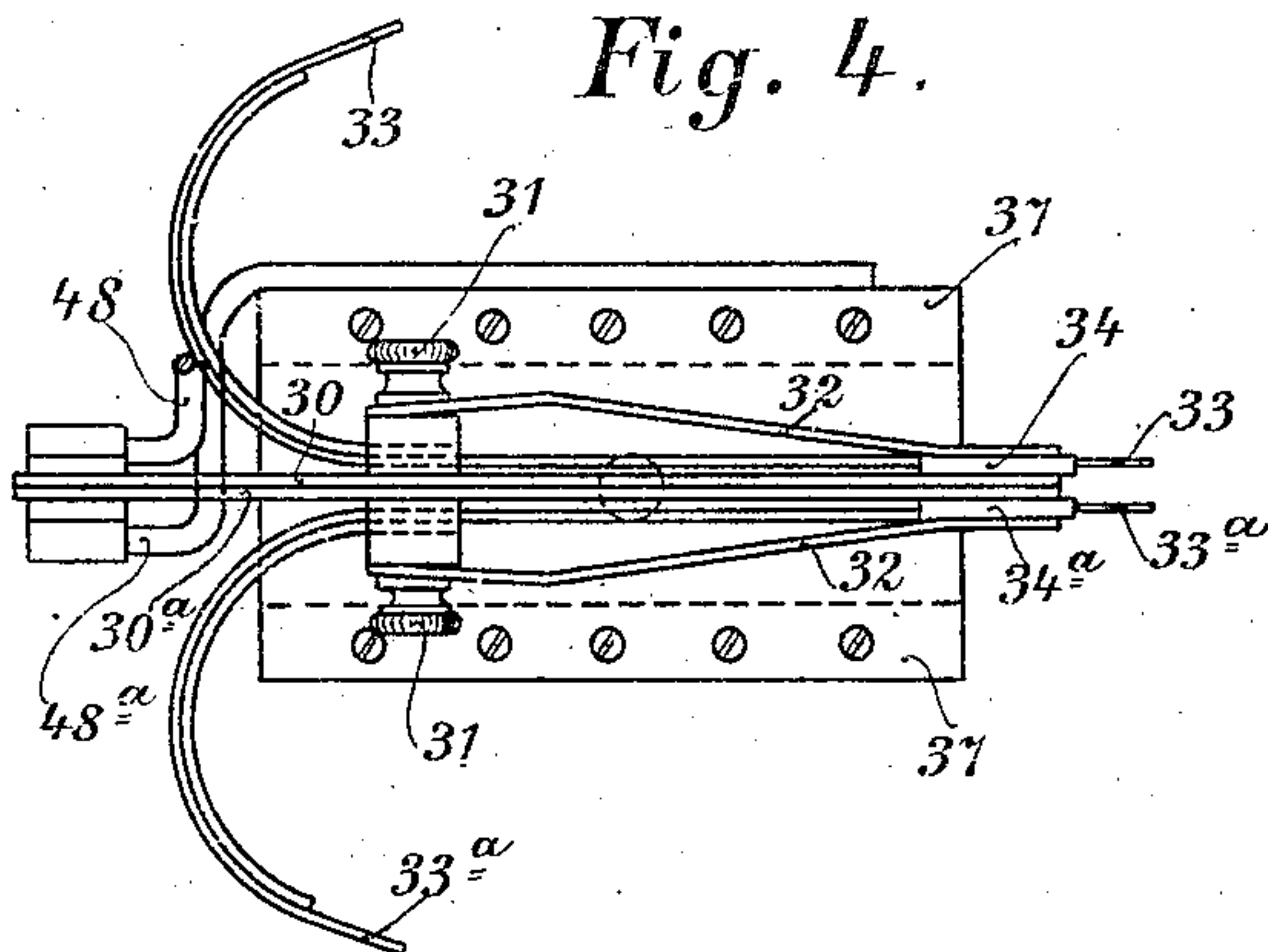


Fig. 5.

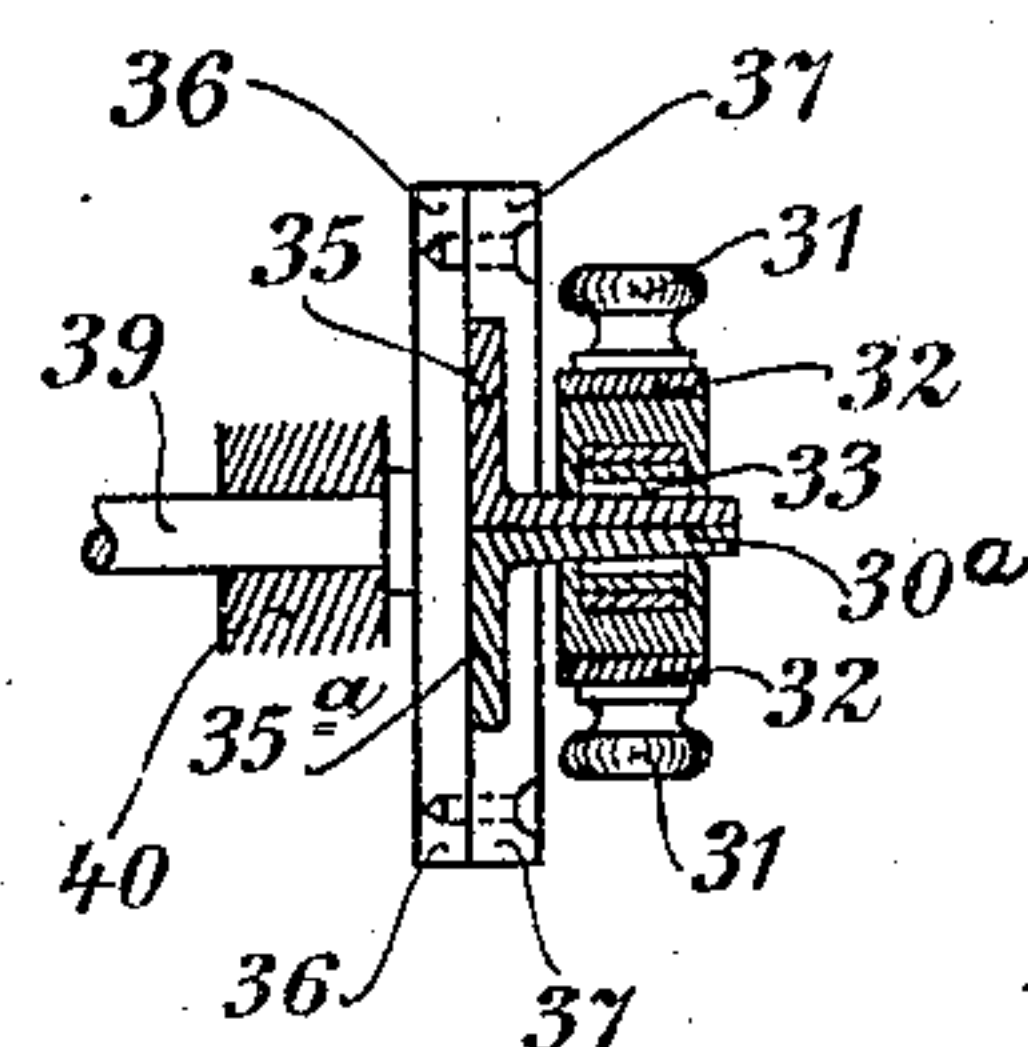


Fig. 7.

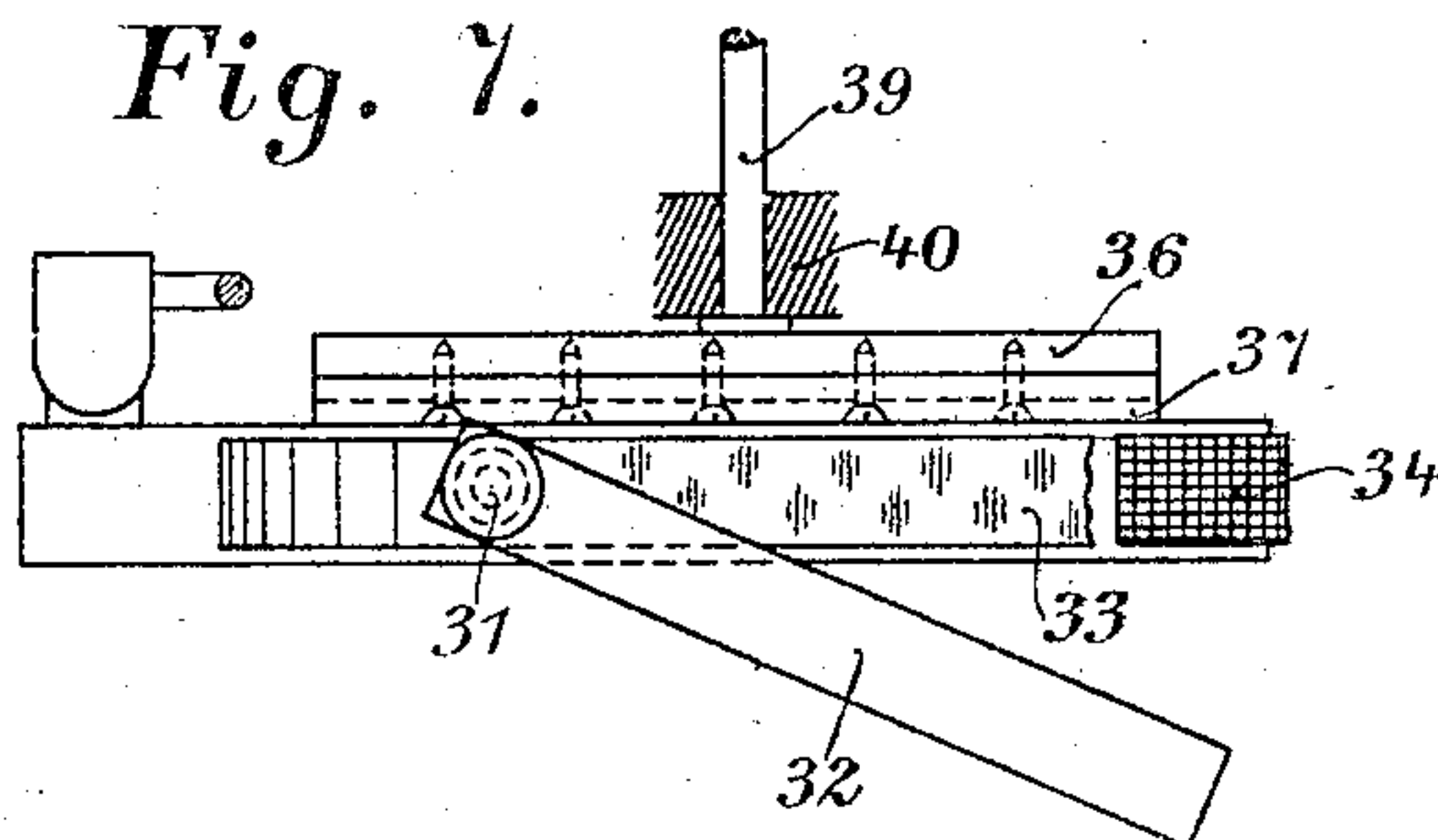
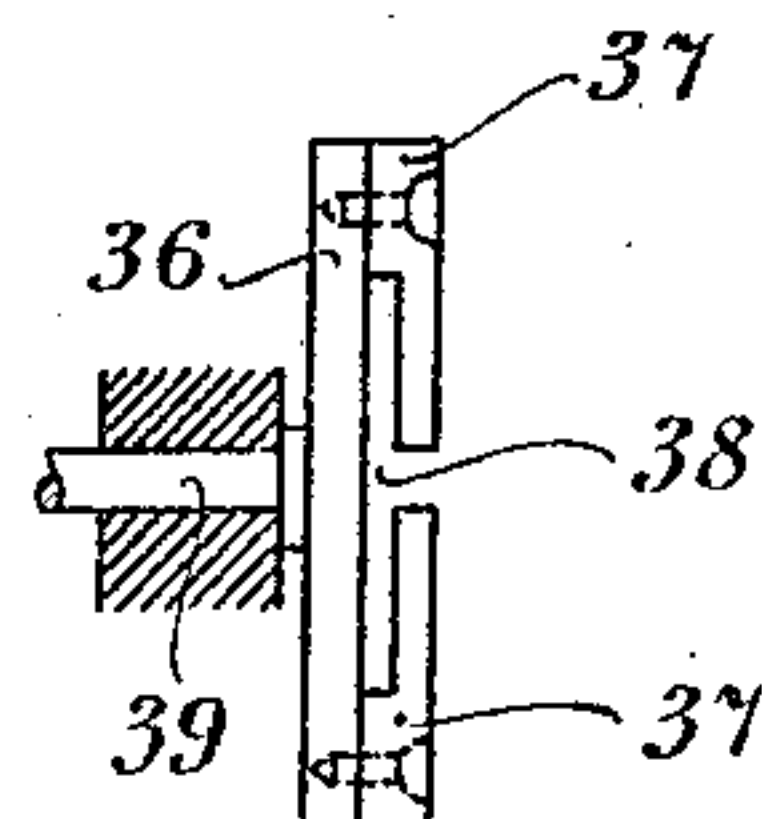


Fig. 6.



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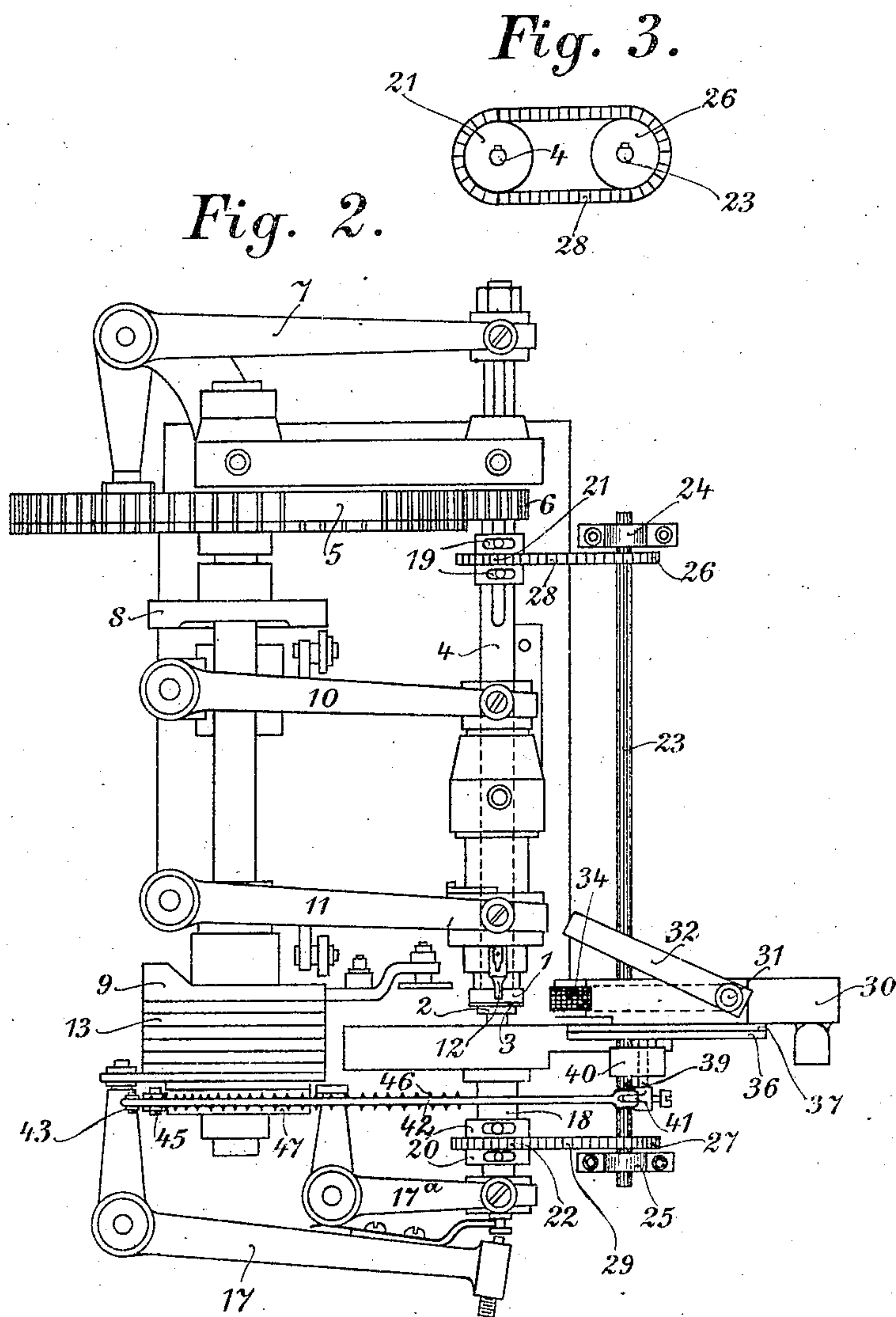
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANZ FETTBACK, OF HANOVER, GERMANY.

MACHINE FOR MANUFACTURING BOXES FROM PASTEBOARD OR THE LIKE.

No. 845,071.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed July 27, 1906. Serial No. 328,126.

To all whom it may concern:

Be it known that I, FRANZ FETTBACK, manufacturer, a subject of the German Emperor, and residing at Hanover, Germany, have invented new and useful Improvements in or Relating to Machines for Manufacturing Boxes from Pasteboard or the Like, of which the following is a specification.

This invention relates to a machine for manufacturing boxes of any cross-section other than circular by winding successively a strip of material provided with glue on one side round a winding-core, the bottom of the box being held between the front face of the winding-core and an abutment. Such machines have hitherto only been employed in manufacturing boxes of circular cross-section, and the winding-core and abutment have hitherto been connected by the members of a clutch-coupling coming into engagement when the said cores are pushed against each other for working, each half of the coupling being indirectly connected to the core and the abutment. Hitherto the coupling member connected with the driven core has been controlled by a spring, so that in the event of a slight twisting of the core and the abutment, and therefore also of the two coupling members relatively to each other, the latter came into engagement with each other only after the driving-core had rotated to a certain extent corresponding to the width of a tooth of the coupling, and then the abutment was caused to participate in the rotation. It is true that such a twisting of the cores relatively to each other could occur in existing devices by an accidental rotation of the driven core mounted loose in its bearing—say in the event of the paper strip sticking fast; but it was in devices of such a type entirely immaterial, as since such machines were only employed for the manufacture of round boxes, and were therefore provided with cores of circular cross-section, their shifting or twisting relatively to each other did not affect the working.

Now according to the present invention a machine is provided for the manufacture of boxes of oval and similar cross-section, and in such a machine even a slight twisting of the core and abutment relatively to each other would be a very serious drawback. To obviate this defect, the means for transmitting the movement from the core to the abutment are according to this invention of such construction as to obtain a permanent con-

nection, more particularly avoiding the use of a coupling that has to be first thrown into gear. The means employed for transmitting this movement preferably comprise chains and sprocket-wheels with the insertion of an auxiliary shaft. Further, for the purpose already mentioned the feeding device for the winding-strip according to the present invention is of a special construction or constructed to receive a separate drive.

In machines already constructed for the manufacture of boxes of circular cross-section the point at which the winding-strip left the guide-plates, more particularly with reference to the point of cutting off the ready wound-up strip, used to be fixed once for all, as the circumstances did not alter. In the manufacture of boxes which are oval in cross-section, however, the distance between the point at which the winding-strip leaves the feeding device and the point at which it comes on the winding-core or on the box-bottom held by the same is changed several times during one revolution, so that in order to insure a uniform winding and a proper superposition of the strip in layers it has been found advisable to give the feeding device an oscillating movement, by means of which the strip is delivered tangential to the winding-core. In this way the adjustment of the winding-strip above or on the cutting-support can be easily effected when the knife is on the point of being brought into operation. Further, the feeding devices for the winding-strip are designed for the purpose stated in such a manner so that the bottom strip and also the upper one, which is generally a colored covering-strip, are brought to the winding-core in practically parallel adjacent paths. By so arranging the feeding device its construction is rendered more compact and can thus be the more easily oscillated.

A construction of machine according to this invention is illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 is an elevation of a part of such machine; Fig. 2, a plan of the complete machine, and Figs. 3–8 detail views.

1 indicates the winding-core, and 2 the abutment or plunger, between which the bottom plate 3 is taken up. The core 1 is connected to a spindle 4, which is intermittently rotated by means of toothed wheels 5 and 6, driven from the line-shaft and periodically moved in longitudinal direction by a

lever mechanism 7. Levers 10 and 11, driven by cam-disks 8 and 9, effect the movement and setting of the finger 12, holding the winding-strip, while cam-disks 13 actuate, by means of corresponding levers, the cutter 14, the pressing-finger 15, and the feeding-slide 16. The levers 17 and 17^a, driven by cam-disks, advance the spindle 18 and the abutment 2 secured to it.

On the spindle 4, as well as on the spindle 18, which are formed at their ends into the core 1 and abutment 2, are mounted in bearings 19 and 20 sprocket-wheels 21 and 22. These sprockets are mounted upon feathers, so that the spindle can move axially relatively to the wheels, but must rotate with them. Further, in front of the machine is mounted in brackets 24 25 a spindle 23, carrying a second pair of sprocket-wheels 26 27, which are connected by chains 28 29 to the wheels 21 22. Owing to this arrangement any movement of the spindle 4 or of its core 1 is transmitted to the spindle 18 and the abutment 2, so that the elliptical cores cannot move relatively to each other. As will be understood, the chains and sprocket-wheels could be replaced by toothed wheels or other suitable gearing.

The feeding device for the two winding-strips (the winding-strip proper and the covering-strip) is constructed according to this invention in the following manner: A plate 30 30^a of known construction carries suitable spring-blades 32, the tension of which can be altered by means of screws 31. The blades 32 press down the strips or bands 33 and 33^a, and at the front end the plate 30 30^a is provided with a perforated sliding surface 34. The plate 30 30^a is inserted, by means of flanges 35 35^a, into a slot 38, formed by connecting together the plates 36 and 37. In this way the guiding of the winding-strip 33 33^a in an approximately parallel path is insured.

The plate 36 is connected to a supporting-pin 39, mounted in the machine-frame 40 and carrying an arm 41, to the end of which is pivoted a link 42. The other end of the rod 42 is connected to a lever 43, which is pivoted at 44 to the frame of the machine and carries a roller 45, pressed by a spring 46 against a cam-disk 47. The cam 47 is provided with a number of recesses or projections, which when the cam is rotated cause the lever 43 to oscillate, the said oscillating movement being transmitted by the links 42 and arm 41 to the strip-feeding plates 30 30^a. By suitably arranging the cam-surfaces on the disk 47 the raising or the lowering of the perforated ends 34 34^a of the plate 30 30^a about the pivot-pin 39 can be regulated as

desired, the adjustment of the feeding device being effected, according to the shape of the box to be produced and to the moments of the winding of the paper strip or strips on the core, in such manner as to obtain a uniform winding and a given tension of the strips required to make the various strip layers to adhere firmly to each other. At the same time the well-known device for shifting the strip-feeding plates, consisting of rods 48 48^a, engaging with the plates 30 30^a, and of the levers 49 49^a, driven by the cam 13, could be used together with the oscillating device, so that a composite movement is obtained.

In the construction illustrated the cam-disks 47 are provided only with recesses 50 52, between which is arranged the projection 51, and they are also provided with a projection 53. The parts 50 51 52 are intended to set the strips only for winding the first layer on the core, the other layers being wound up without the feeding device being adjusted. The object of the projection 53 is to bring about the lowering of the feeding device, so that the strip comes to lie on the cutting-support 54 at the moment when the knife 14 is lowered for cutting.

The device described can be used for manufacturing boxes of any cross-section other than circular, as it is merely necessary to arrange the inclines of the cam 47 to produce the required shape. As already stated, the well-known shifting device for the strips can coöperate with the turning device in such manner that the different movements supplement each other or combine to a resultant movement, more or less corresponding to the cross-section of the box.

What I claim is—

1. In a machine for making boxes, a core, combined with a plunger arranged opposite thereto, and means for intergearing the core with the plunger, substantially as specified.
2. In a machine for making oval boxes, an oval core and an intergeared plunger opposite thereto, combined with means for feeding paper strips, and means for oscillating said feeding means, substantially as specified.
3. In a machine for making oval boxes, an oval core and an intergeared plunger arranged opposite thereto, combined with a pair of feed-plates, a pin to which the feed-plates are secured, and means for oscillating said pin, substantially as specified.

Signed by me at Hanover, Germany, this 4th day of June, 1906.

FRANZ FETTBACH.

Witnesses:

HENRY J. FULLER,
LEONORE RASCH.