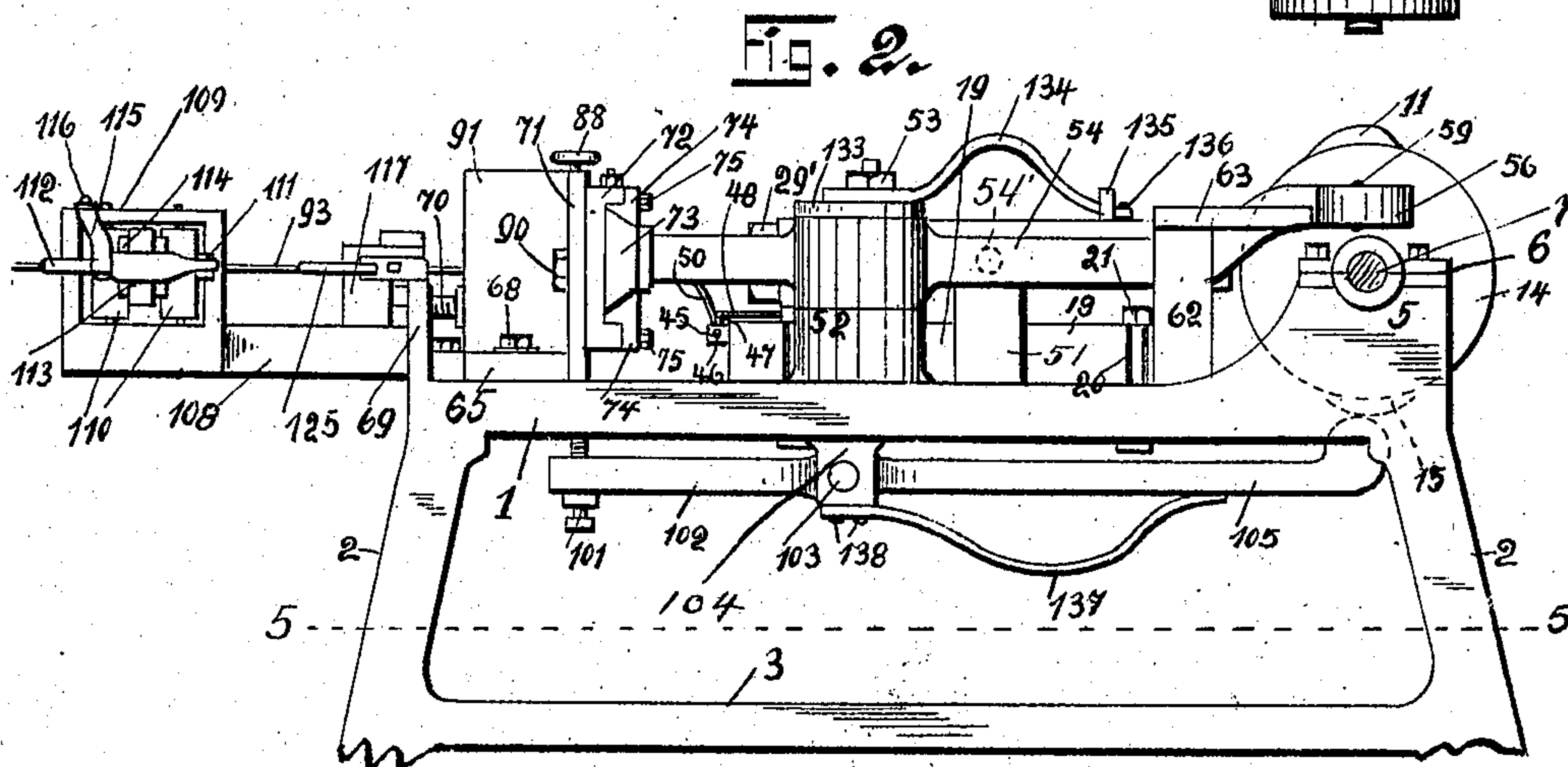
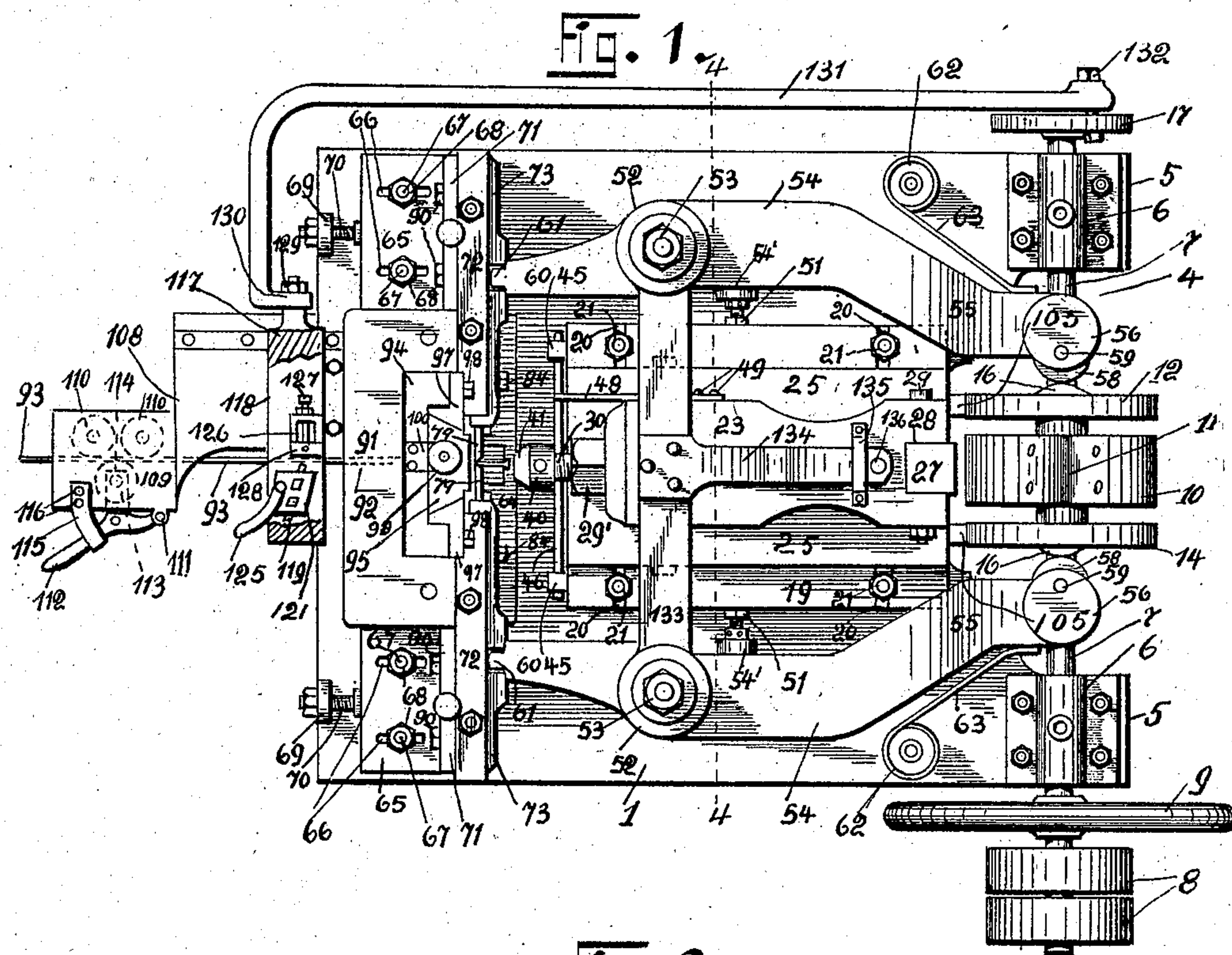


No. 815,305.

PATENTED MAR. 13, 1906.

J. K. NEUBAUER.
NAIL MAKING MACHINE.
APPLICATION FILED AUG. 15, 1904.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 3.

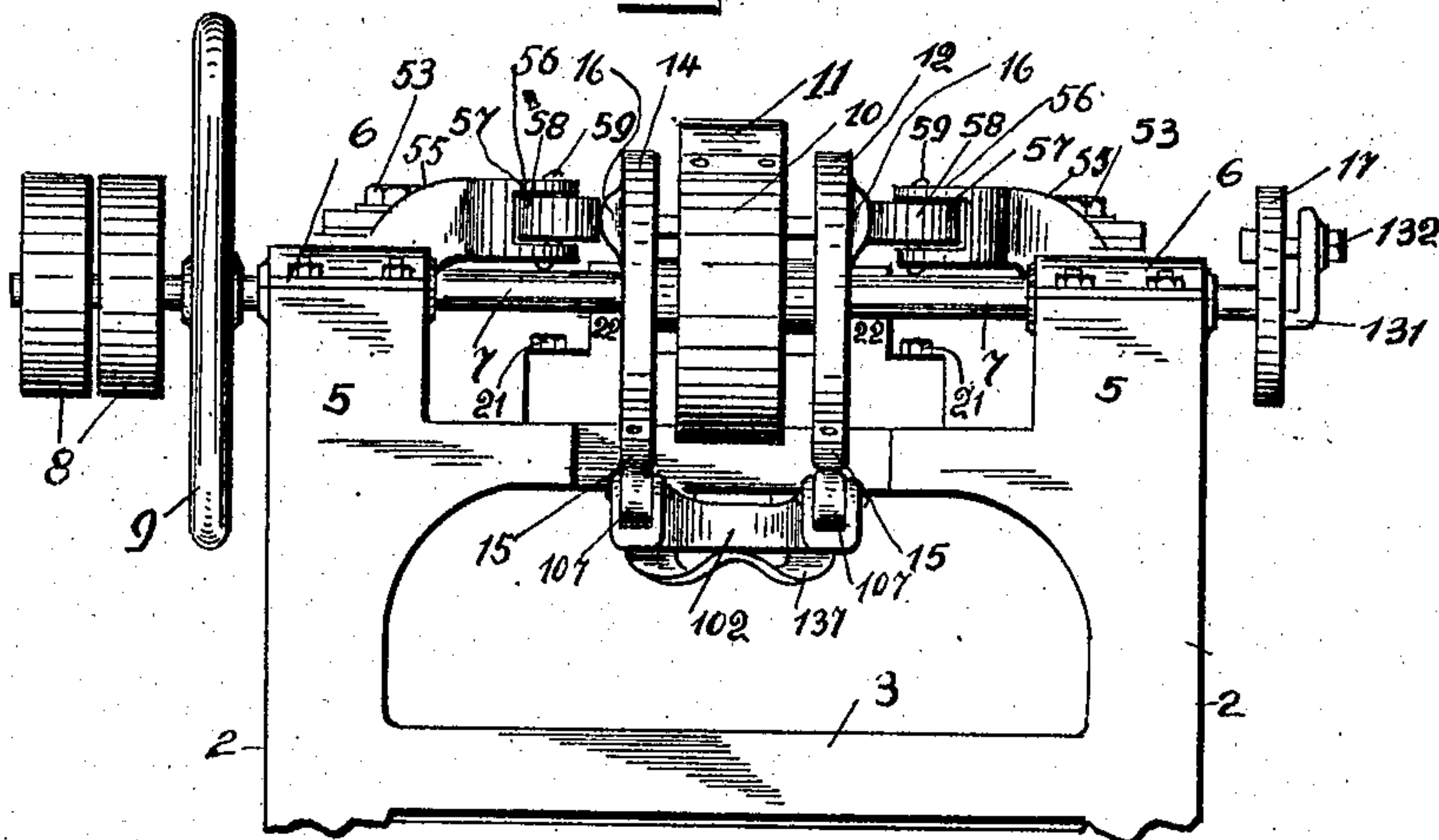


Fig. 4.

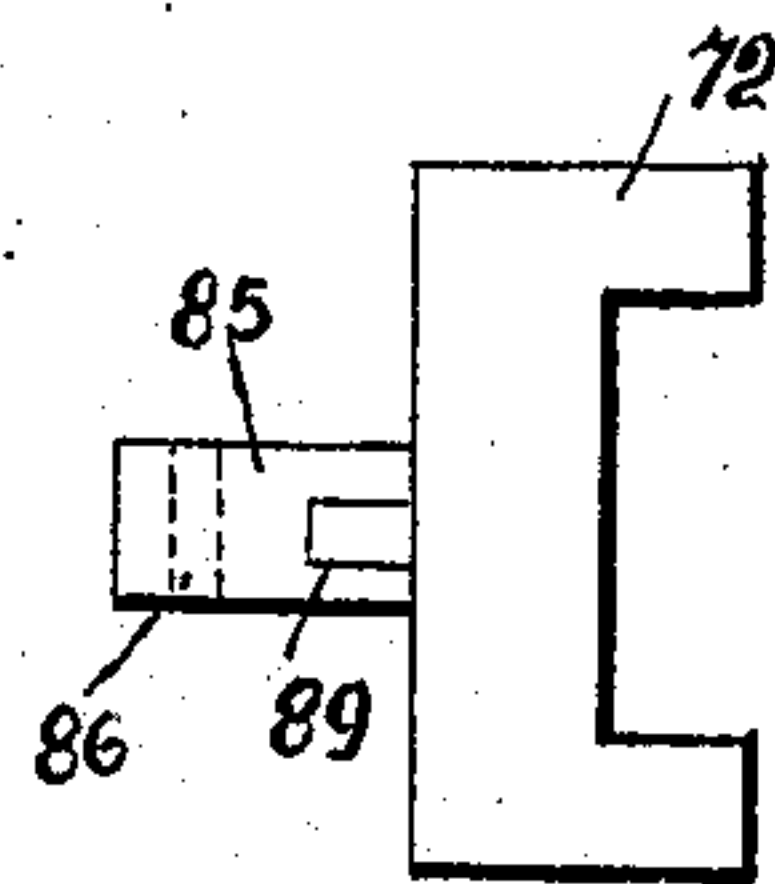
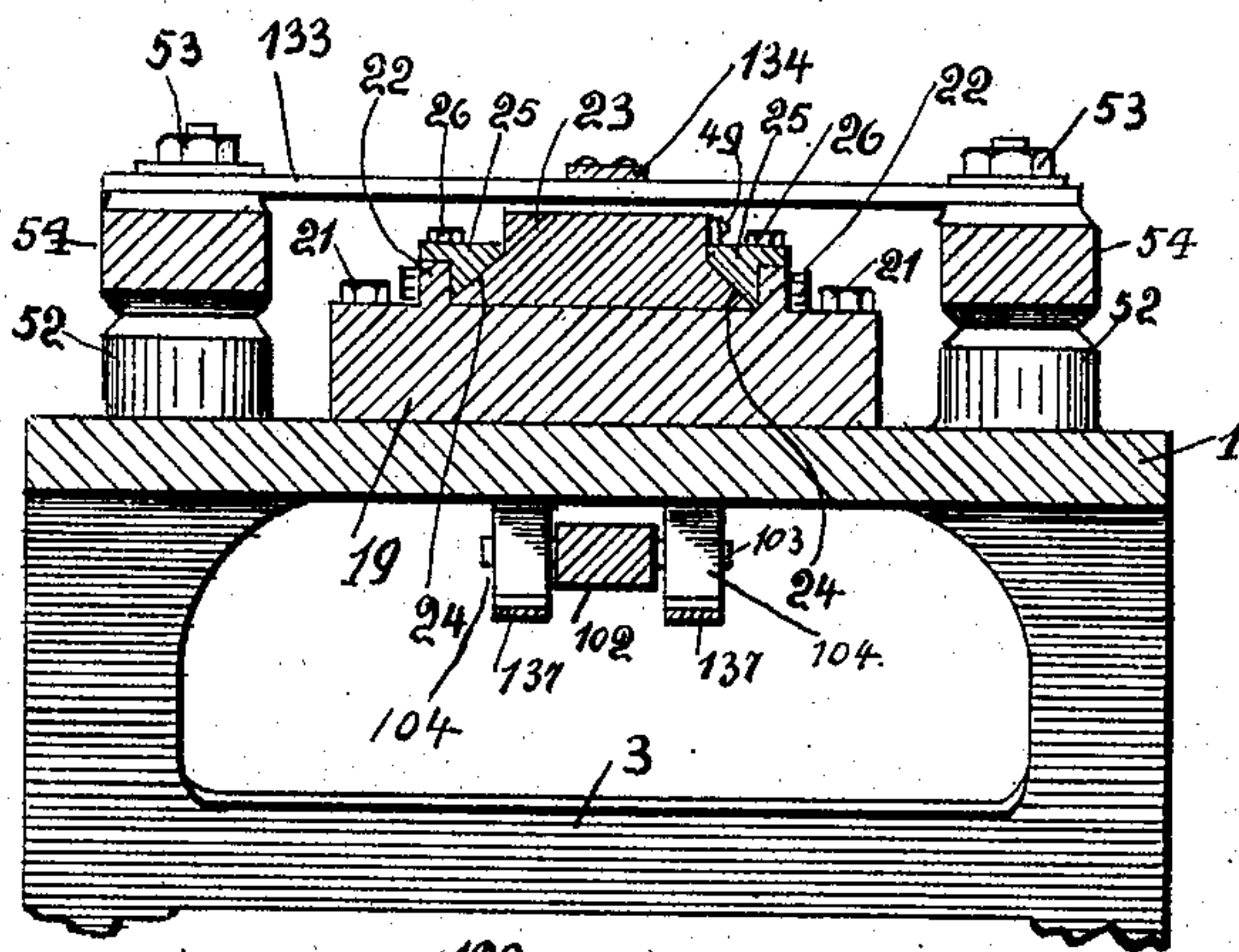


Fig. 15.

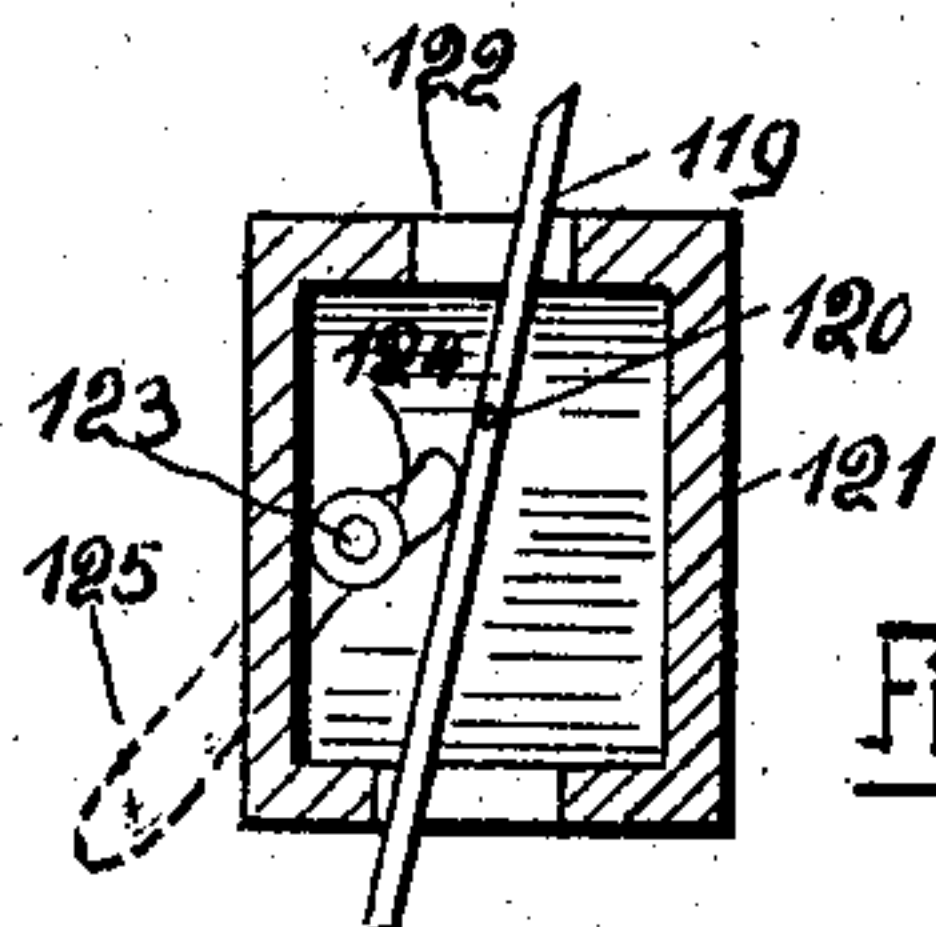


Fig. 14.

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3 SHEETS—SHEET 3.

Fig. 5.

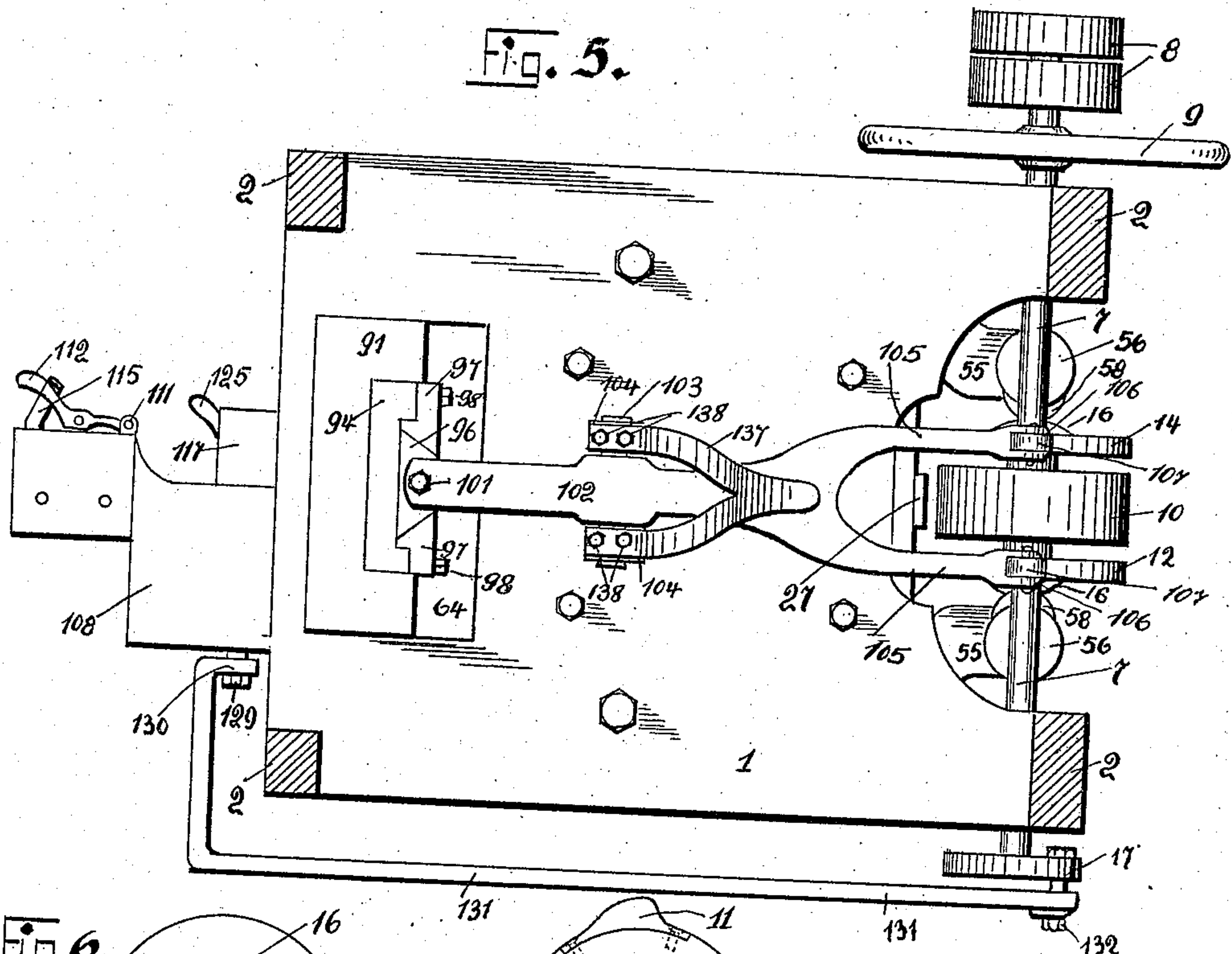


Fig. 6.

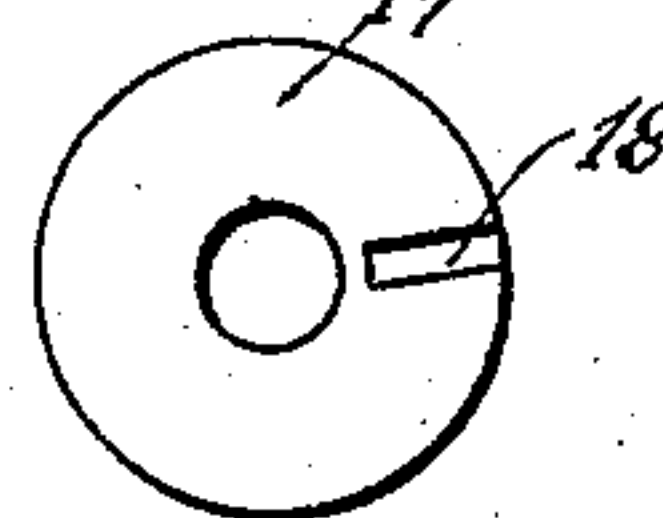
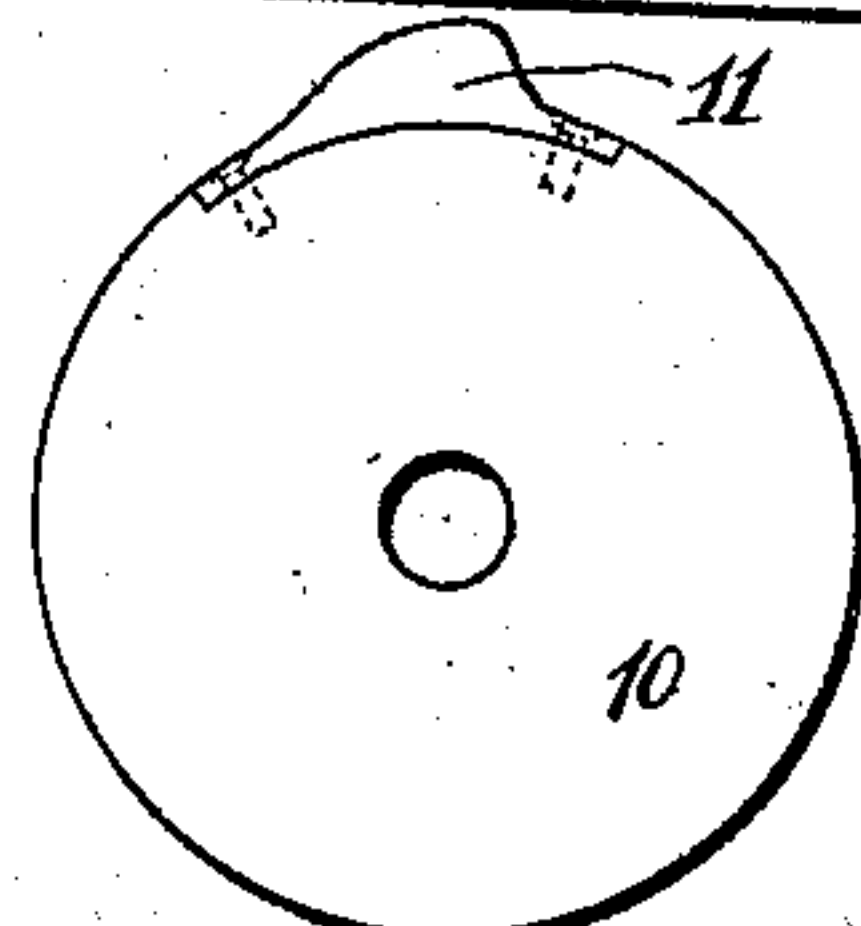
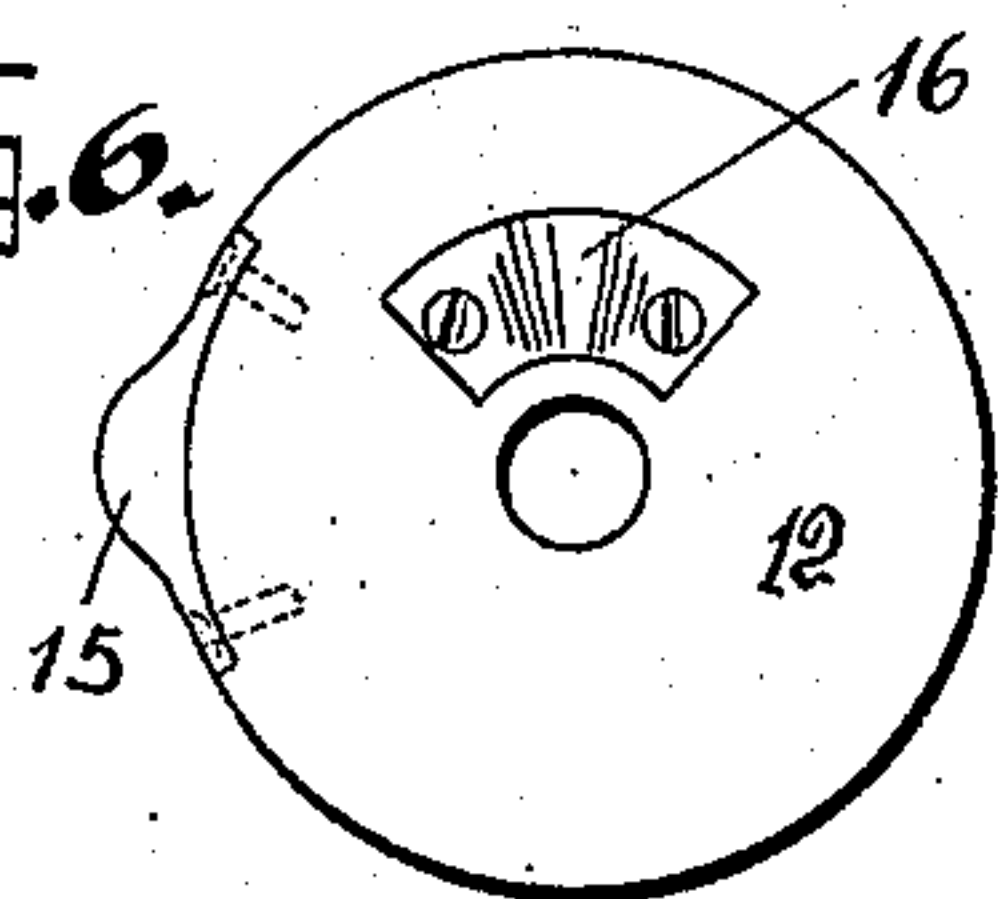


Fig. 9.

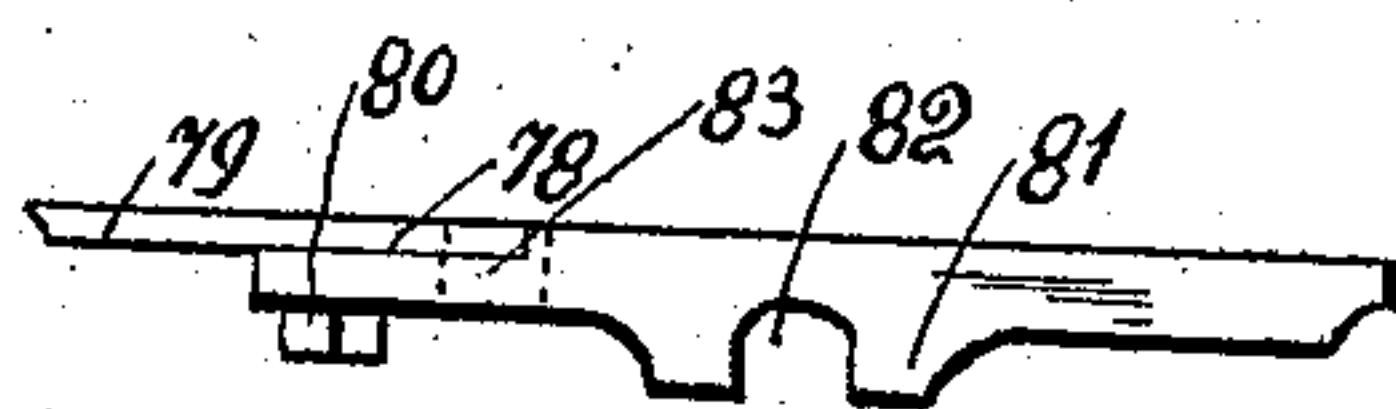


Fig. 10.

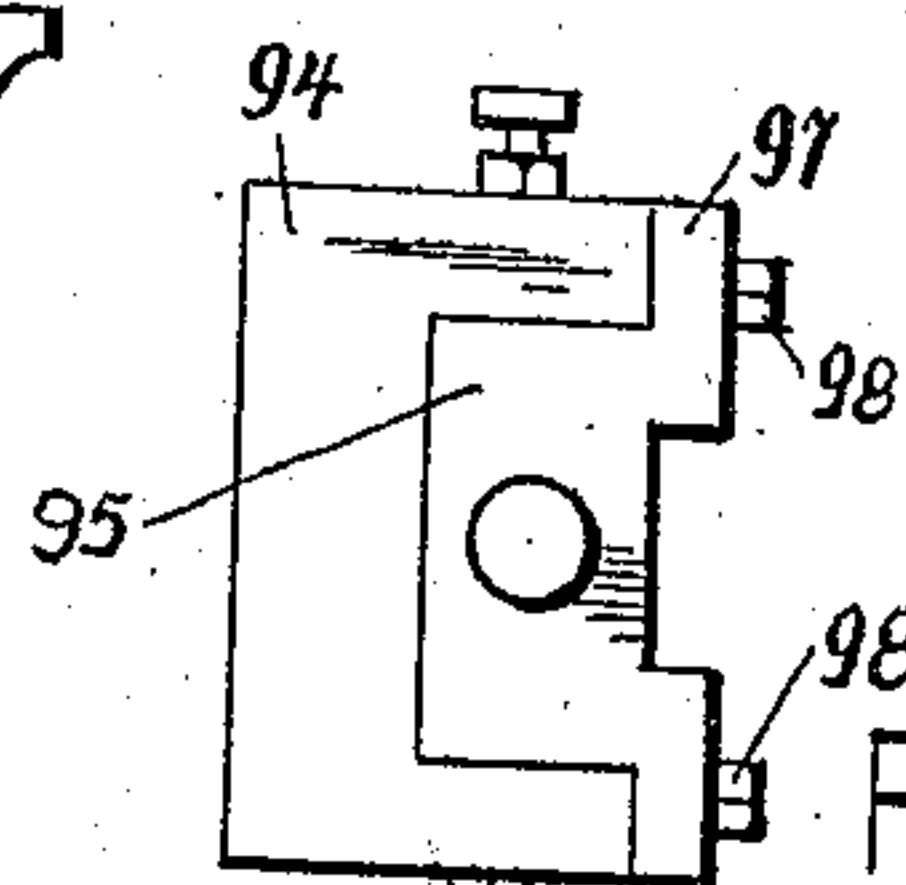


Fig. 11.

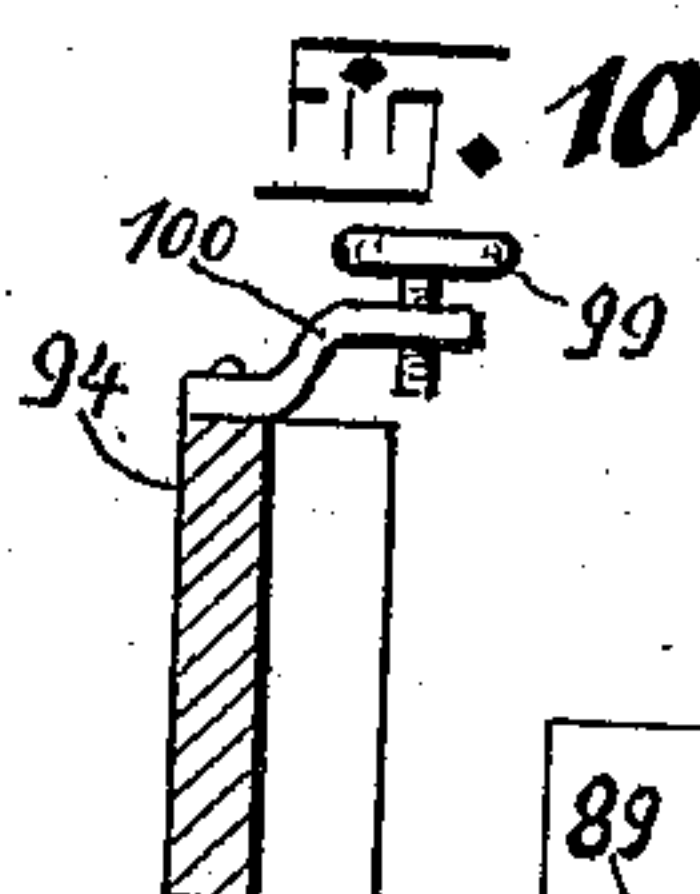


Fig. 12.

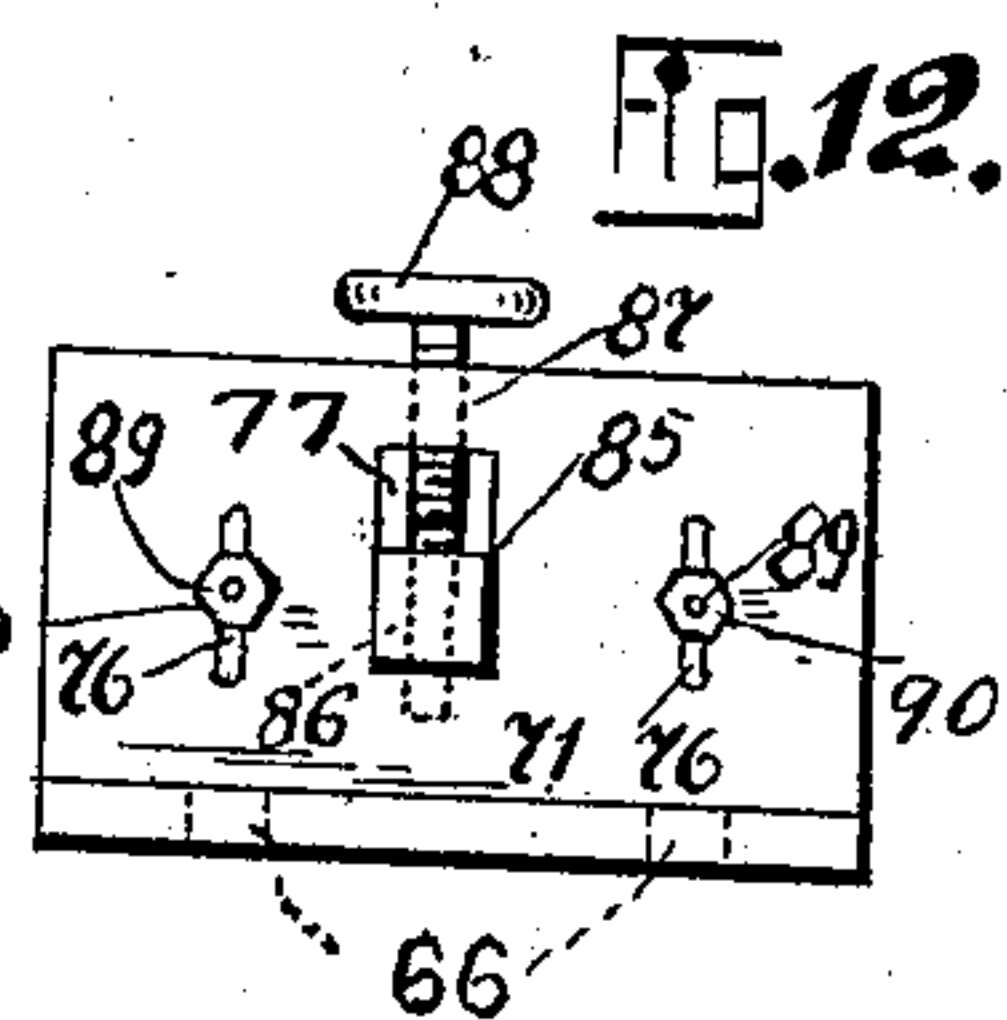
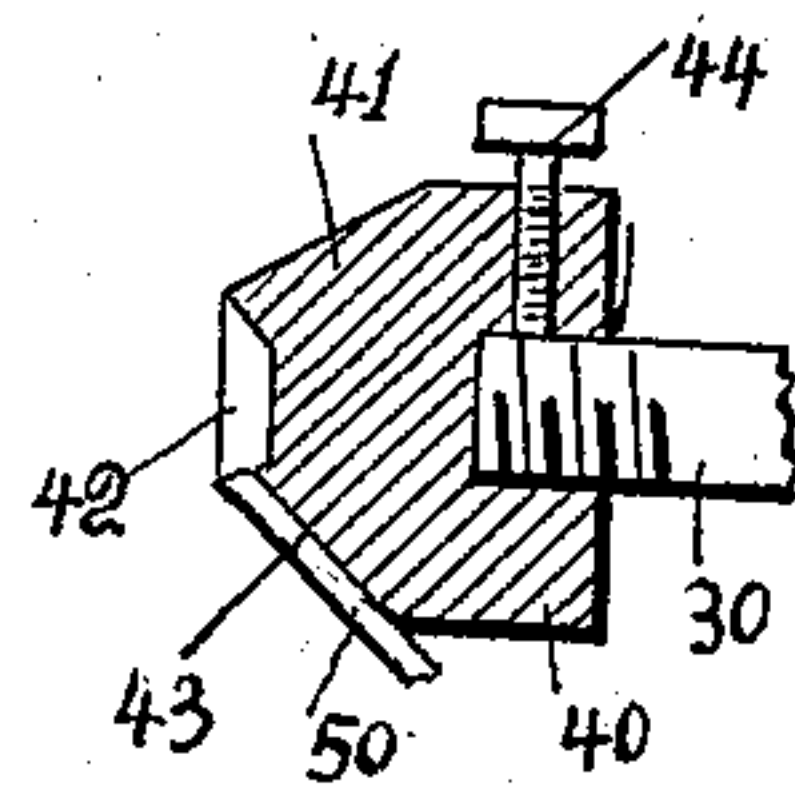


Fig. 13.



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UNITED STATES PATENT OFFICE.

JULIUS K. NEUBAUER, OF RANKIN, PENNSYLVANIA, ASSIGNOR TO R. SCHWARTZ, OF RANKIN, PENNSYLVANIA, AND I. SCHWARTZ, OF McKEES ROCKS, PENNSYLVANIA.

NAIL-MAKING MACHINE.

No. 815,305.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed August 15, 1904. Serial No. 220,792.

To all whom it may concern:

Be it known that I, JULIUS K. NEUBAUER, a subject of the Emperor of Austria-Hungary, residing at Rankin, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Nail-Making Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to nail-making machines, and more particularly to that type of machines which relates to forming wire nails; and the object of this invention is to provide novel means for feeding a piece of
15 wire into said machine, heading the piece of wire, and then cutting and simultaneously pointing the end of the wire to form nails of desired lengths.

20 The invention further resides in the combination and arrangement of parts that will be hereinafter more fully described in detail, and in the drawings accompanying this application I have illustrated the preferred embodiment of my invention as I intend to construct the same, yet I do not care to limit
25 myself to the specific means shown for accomplishing the desired results, nor do I care to confine myself to any special-sized machine, but may construct the same for producing wire nails of different weights.

30 In the several views of the drawings like reference characters designate corresponding parts throughout the several views, in which—

35 Figure 1 is a top plan view of my improved machine. Fig. 2 is a side elevation of my improved machine, a portion of the frame being broken away. Fig. 3 is a rear elevation of the same. Fig. 4 is a vertical sectional view taken on the line 4 4 of Fig. 1. Fig. 5 is a
40 transverse sectional view of the machine, taken on the line 5 5 of Fig. 2. Figs. 6, 7, and 8 are detail side elevation views of cam-wheels employed in connection with my improved machine. Fig. 9 is a top plan view of
45 one of the knife-holders. Fig. 10 is a detail view of the adjusting-screw of the upper gripping-block. Figs. 11 and 12 are detail views of parts of the construction. Fig. 13 is a vertical sectional view of the forming head. Fig.
50 14 is a horizontal sectional view of the wire-grip of the feed mechanism, and Fig. 15 is a detail view of one of the guide-plates.

To put my invention into practice, I con-

struct a suitable framework for supporting the different mechanisms required to form a
55 wire nail. The table or framework as preferably constructed is formed of a casting having a top 1 and depending legs 2 2, these legs being braced by integral braces 3. The end
60 of the top of the table, which will be hereinafter referred to as the "rear" end, is cut away, as designated by the reference-numeral 4, and in forming the table I provide upon
65 the rear end at each side of the cut-away portion enlarged bosses 5 5, and secured upon the top of these bosses are bearing-
70 blocks 6 6, in which is journaled a main operating-shaft 7. Upon the one end of the operating-shaft 7 are mounted pulley-wheels 8
75 8, one being loose on the shaft and the other tight on the shaft, and between these pulley-wheels and the table is mounted a suitable
fly-wheel 9. The pulleys 8 8 are employed, whereby a belt may pass over the same and
transmit motion to the nail-making machine
from any suitable source of power.

Centrally between the bearing-blocks 6 6 and upon the shaft 7 is secured the main cam-wheel 10, which is provided with a cam-block
80 11, the object of which will be hereinafter more fully described. At each side of the main cam-wheel 10 and upon the main operating-shaft 7 are arranged the double cam-wheels 12 and 14. These cam-wheels, one of
85 which is illustrated in Fig. 6 of the drawings, carry a peripheral cam-block 15, and upon the outer side of each wheel are secured the cam-blocks 16. Upon the end of the shaft 7 opposite the pulley-wheels 8 is secured a wheel
90 17, having formed therein a slot 18, and the object of this wheel and slot will be hereinafter referred to. Mounted upon the top of the table and centrally thereof is a plate 19,
95 this plate being slotted upon its sides, as indicated at 20, whereby the same may be adjusted upon the top of the table and rigidly held in its adjusted position by the bolts and
nuts 21 21. The plate is provided longitudinally of its length with upwardly-extending
100 flanges 22 22, forming a guideway for the header-plunger, which will now be described. The header-plunger, as designated by the reference-numeral 23, is provided with beveled
105 sides 24 24, and overlying these beveled sides of the header-plunger are the guide-blocks 25 25, which are secured by bolts 26 to

the upwardly-extending flanges 22 22, these guide-blocks permitting the header-plunger to slide within the guideway. The rear end of the header-plunger is provided with a block 27, which sets in a slot 28, formed in the end of the plunger, said block 27 being held therein by a bolt and nut 29, and this construction is employed, whereby the block 27 may be removed when it has become worn and a new one placed therein. The forward end of the plunger is provided with a boss 29', in which is secured the screw-threaded shank 30 of the header 40, said header having a tapered end 41, which is provided with a recess 42, and in the tapered end is formed a slot 43, which communicates with the recess 42. The header 40 is adjustable upon the screw-threaded shank 30 and is held by a screw 44. The plate 19 upon its forward end and at each side is provided with lugs 45 45, said lugs having formed therein apertures in which is rotatably mounted a shaft 46, this shaft being provided with a crank 47, that is pivotally connected to a rod 48, which is secured, as indicated at 49, to one side of the plunger 23. Carried by the shaft 46 directly beneath the header 40 is an upwardly-extending arm 50, which lies within the slot 43 of the header, and the end of the arm is adapted to extend slightly into the recess 42, the object of which will be more fully described in the operation of the machine. The plate 19 upon each side is provided with the bearing-blocks 51 51.

The reference-numerals 52 52 designate two standards, one of which is arranged at each side of the plate 19, preferably near the forward end thereof, and pivotally mounted upon the standards 52 52 by the threaded pins and nuts 53 53 are the oscillating arms 54 54, these arms being actuated by the cam-wheels 12 and 14. The rearwardly-extending portion of the arms 54 54 are bent inwardly, as indicated by the reference-numeral 55, and the end of each arm is provided with an enlarged portion 56 56, which is cut away, as indicated at 57, to receive wheels 58 58, which are rotatably mounted upon the pins 59 59, carried by the enlarged portions of each arm. The forward end of each arm is tapered, as designated by the reference-numerals 60 60, and are contracted to form a lug 61, the object of which will be hereinafter more fully described. Upon the top of the table, and preferably near the edges of the rear end of the table, are mounted standards 62 62, and to these standards are secured springs 63 63, the loose ends of which are adapted to bear against the inwardly-bent ends of the arms 54 54, as clearly shown in Fig. 1 of the drawings. Upon the inside of each of the arms 54 54 are provided the screws 54' 54', which are employed to limit the oscillating movement of the arms 54 54, these screws being adapted to bear against the bear-

ing-blocks 51 51 when being adjusted and said bearing-blocks extending upwardly to a level with the said arms 54 54, as shown in Fig. 2.

The forward end of the table has its top cut away, as indicated by the reference-numeral 64, this cut-away portion being formed centrally of the width, but adjacent the forward end of the table, and at each side of the cut-away portion and upon the top of the table are mounted blocks 65 65, said blocks being provided with slots 66 66, through which screw-threaded pins 67 protrude and have secured upon their ends nuts 68 68, whereby when said nuts are loosened the blocks may be adjusted longitudinally of the length of the table. To facilitate the adjustment of the blocks 65 65, the forward end of the table is provided with the upwardly-extending arms 69 69, through which pass the screw-bolts 70, the ends of these bolts being adapted to bear against the edges of the blocks 65 65, and by rotating said screw-threaded bolts when the nuts 68 have been loosened the blocks may be moved along the top of the table. Each one of the blocks 65 65 is provided with a vertical wall 71, and to said walls are secured the guide-plates 72, these guide-plates being similar in construction to the guide-plate 19, and in said guide-plates are adjustably mounted the knife-holders 73 73. The knife-holders are held within the guide-plates 72 72 by the guide-blocks 74 74, which are secured to the guide-plates by the bolts 75 75. The vertical walls 71 of each one of the blocks 65 are provided with slots 76 76 (reference being had to Fig. 12 of the drawings) and with a slot 77. The knife-holder, as illustrated in Fig. 9 of the drawings, comprises a block which upon its rear side and at one end thereof is cut away, as indicated at 78, to receive a knife 79, this knife being secured in the cut-away portion by a bolt 80 passing through the knife-holder and screwing into the knife. The opposite side of the knife-holder is provided with an enlarged portion, being provided with a recess 82, into which is adapted to protrude the lugs 61 61 of each of the arms 54. To provide for the adjustment of the knives 79, I have mounted the knife-holders whereby they may be vertically and transversely adjusted in respect to the top of the machine. Each one of the knife-holders is provided with a slot 83 near its one end, through which a bolt 84 passes, and by loosening said bolt the knife-holders may be longitudinally adjusted within the guide-plates 72. To adjust the knife-holders or knives vertically, I have provided each one of the guide-plates with an outwardly-extending arm 85, said arm being provided with a screw-threaded aperture 86, this arm being adapted to protrude through the slot 77 of the vertical wall 71. Communicating with the slot 77 is an aperture

87, in which is located a thumb-screw 88, that passes down through the screw-threaded aperture 86 of the arm 85. To insure a positive engagement between the vertical wall 71 and the guide-plate 72, I have provided the rear face of the guide-plate with the stub-bolts 89, which protrude through the slots 76 and have secured on their outer ends nuts 90 90.

Between the blocks 65 65, carried by the top of the table, and upon the forward edge of the opening or cut-away portion 64 is mounted a channel-block 91, which is provided with an opening 92, through which the stock wire 93 is adapted to pass. In the channel-block 91 is mounted a guide-plate 94, this guide-plate being similar in construction to the guide-plates 19 and 72 with the exception that the guideway of said plate is vertical, and in said guideway are mounted the gripping-blocks 95 and 96, said gripping-blocks being retained in the guideway by the guide-blocks 97 97, which are similar to the guide blocks or plates 72, and they are retained in their position by the screw-bolts 98 98. The upper gripping-block is adjustably mounted within the guideway and is adjusted therein by a thumb-screw 99, which is carried by an overhanging bracket 100, supported from the guide-plate 94. The lower gripping-block 96 is adjustably connected by a nut and bolt 101 to the forward end of a bar 102. This bar is mounted upon a pin 103, journaled in the depending brackets 104 104, carried by the underneath side of the top of the table. The rear end of the bar 102 is bifurcated, forming arms 105 105, and the end of each arm is slotted, as indicated at 106, whereby a wheel 107 may be rotatably mounted therein. These wheels 107 at predetermined times are engaged by the cam-blocks 15 15 of the wheels 12 and 14, respectively.

To guide the wire being fed to the machine and to provide means whereby the wire at predetermined times may be fed into said machine, I provide an outwardly-extending arm 108, which upon its outer end carries a bracket 109, and in said bracket are journaled the rollers 110 110, these rollers being journaled vertically within the bracket 109. The bracket carries a lug 111 upon its one side, and to said lug is pivotally connected a lever 112, this lever being provided with inwardly-extending arms 113 113, in which is journaled a vertical roller 114. The wire 93 is adapted to pass between the rolls 110 and 114, and to normally hold the roll 114 in engagement with the wire I have provided the depending spring 115, which is secured to the top of the bracket, as indicated at 116, and is adapted to engage the lever 112 and prevent the outward movement of said lever. Between the bracket 109 and the block 91 is mounted the mechanism for feeding the wire at predetermined times to the machine, this mechanism consisting of an arm 117, which

is slotted, as indicated at 118, and the arm is slidably mounted upon the outwardly-extending arm 108. In the slot 118 of said arm is mounted part of the feeding mechanism for the wire 93, which consists of a gripping-bar 119, that is pivoted, as indicated at 120, in a casing 121, said casing being secured in slot 118 by any suitable means, and the casing is slotted upon its inner side, as indicated at 122, whereby the gripping-bar may protrude therethrough and engage the wire as it passes through the slot 118. Vertically mounted in the casing 121 is a pin or shaft 123, having formed integral therewith a cam-shaped lug 124. The upper end of the shaft 123 protrudes through the casing 121 and has connected thereto a curved lever 125, the object of which will be hereinafter more fully described. In the slot 118 opposite the casing 121 is mounted a bracket 126, through which passes a screw-bolt 127, carrying upon its one end a block 128, and the wire 93 is adapted to pass between the casing 121 and the block 128.

The arm 117 is contracted upon its one end to form a pin, and secured upon this pin by a nut 129 is the end 130 of the substantially L-shaped rod 131. This rod extends rearwardly along the one side of the machine and is adjustably secured by a bolt and nut 132 in the slot 18 of the wheel 17.

The reference-numeral 133 designates a brace which is secured to the top of the standards 52 52, said brace extending across the machine, as clearly illustrated in Figs. 1 and 4 of the drawings. Centrally secured to said brace is a spring 134, this spring being bent downwardly to engage under a strap 135, carried by the plunger 23, and the end of the spring is secured, as indicated at 136, to said plunger.

The reference-numeral 137 designates a V-shaped spring which is secured, as indicated at 138, to the depending brackets 104 104, said spring engaging the rear end of the bar 102, as illustrated in Fig. 5 of the drawings.

The operation and manner of manipulating my improved machine for forming wire nails is as follows: The wire from which the nails are made is fed between the rolls 110 and 114, the wire being passed through the slot 118 of the arm 117, through the opening 92 of the block 91, and to such a position that it will be gripped by the upper and lower gripping-blocks. We will assume that the machine is in such a position that these blocks will grip the wire, and upon motion being transmitted to the main operating-shaft 7 said shaft is revolved, carrying with it its numerous wheels, one of which—namely, the cam-wheel 10—will revolve, causing the cam-block 11 to strike the block 27, carried by the rear end of the plunger 23. As said wheel revolves the plunger will be moved forwardly until the header 40 has struck the end of the

wire and formed a head. A further revolution of the shaft releases the plunger 23, and the spring 134, which has been contracted, will expand and return said plunger to its normal position. Should the headed end of the wire which has been headed have a tendency to adhere to the header and substantially in the recess 42, which forms the head of the nail, the rearward movement of the plunger will, through the medium of the rod 48, shaft 46, and arm 50, release the end of the wire or the head of the nail from the recess 42 of the header, the rearward movement of the plunger causing the shaft 46 to revolve and move the arm 50 outwardly to disengage the head of the nail from the header. While this operation is taking place the wire has been held between the upper and lower gripping-blocks, this being facilitated by the cam-blocks 15 15 of the wheels 12 and 14 respectively engaging the rollers 107 and 107, carried by the bifurcated bar 102, and as the cams engage the rollers the forward end of the bar 102, which is connected to the lower gripping-block, will be held upwardly, causing the lower gripping-block to engage the upper stationary gripping-block. When the shaft 7 revolves to release the plunger, a further revolution releases the bar 102, and a still further revolution will, through the medium of the wheel 17, reciprocate the rod 131, this movement of the rod carrying the arm 117 rearwardly, and the gripping-bar 119 will travel over the surface of the wire until the arm 117 has been carried such a distance as will be permitted by the crank connection of the rod 131 in the slot 18 of the wheel 17, at which time the rod 131 will be carried rearwardly, and the gripping-bar 119 will impinge against the wire 93 and carry it forward with the movement of said arm 117, to which the bar 131 is connected. The gripping of the bar 119 against the wire 93 is facilitated by the adjustable block 128, which may be adjusted to cause said gripping-bar to firmly grip the wire; but for any reason or other should the gripping-bar fail to grip the wire the lever 125 may be swung to cause the cam-shaped lug 124 to engage the gripping-bar 119 and further force said gripping-bar into engagement with the wire 93. The amount of wire carried into the machine by the mechanism just described is governed by the position of the rod 131 within the slot 18 of the wheel 17, the slot 18 and the bolt and nut 132 being provided, whereby the rod 131 may be adjusted within the slot 18, and it

will be seen by this construction that different lengths of wire may be fed into the machine for different lengths and weights of nails. The wire having been headed and fed into the machine, the arms 54 54 are actuated by the cam-blocks 16 16, carried by the sides of the wheels 12 and 14, respectively, and as said cam-blocks strike the rollers 58 58 the rear end of the arms 54 54 will be moved outwardly or spread apart, this movement causing the forward ends 60, carrying the lugs 61 61, to move inwardly, and as said lugs lie in the recesses 82 82 of the knife-holders said knife-holders carrying the knives 79 will be moved inwardly and the sharp tapered edges of the knives will sever the wire 93, simultaneously pointing the same, which is facilitated by the beveled cutting edge of the knives. Upon the wire being sheared the desired length it drops through the opening 64 of the top 1 of the table and may descend into a suitable receptacle placed therebeneath to receive the same. As the shaft 7 continues to revolve the rollers 58 58 pass from off the cam-blocks 16, and the springs 63 63 will return the arms 54 54 to their normal position, and the operation just described will again be repeated.

It will be observed from the foregoing description, taken in connection with the drawings, that the majority of the mechanism employed by me to form wire nails is adjustable, I employing these adjustable features whereby the mechanism may be adjusted to produce different sizes and weights of nails with as great a rapidity as desired.

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

The combination in an organized nail-making machine, of gripping means, a reciprocating plunger, a header carried by said plunger and having a concavity in its head and a slot leading into said concavity, with an ejector seated in said slot and adapted to slide in the same and eject a nail from the head of the plunger on the return movement of the plunger, and means operable by the return movement of the plunger for effecting the sliding movement of the ejector in the slot.

In testimony whereof I affix my signature in the presence of two witnesses.

JULIUS K. NEUBAUER.

Witnesses:

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K. H. BUTLER.