

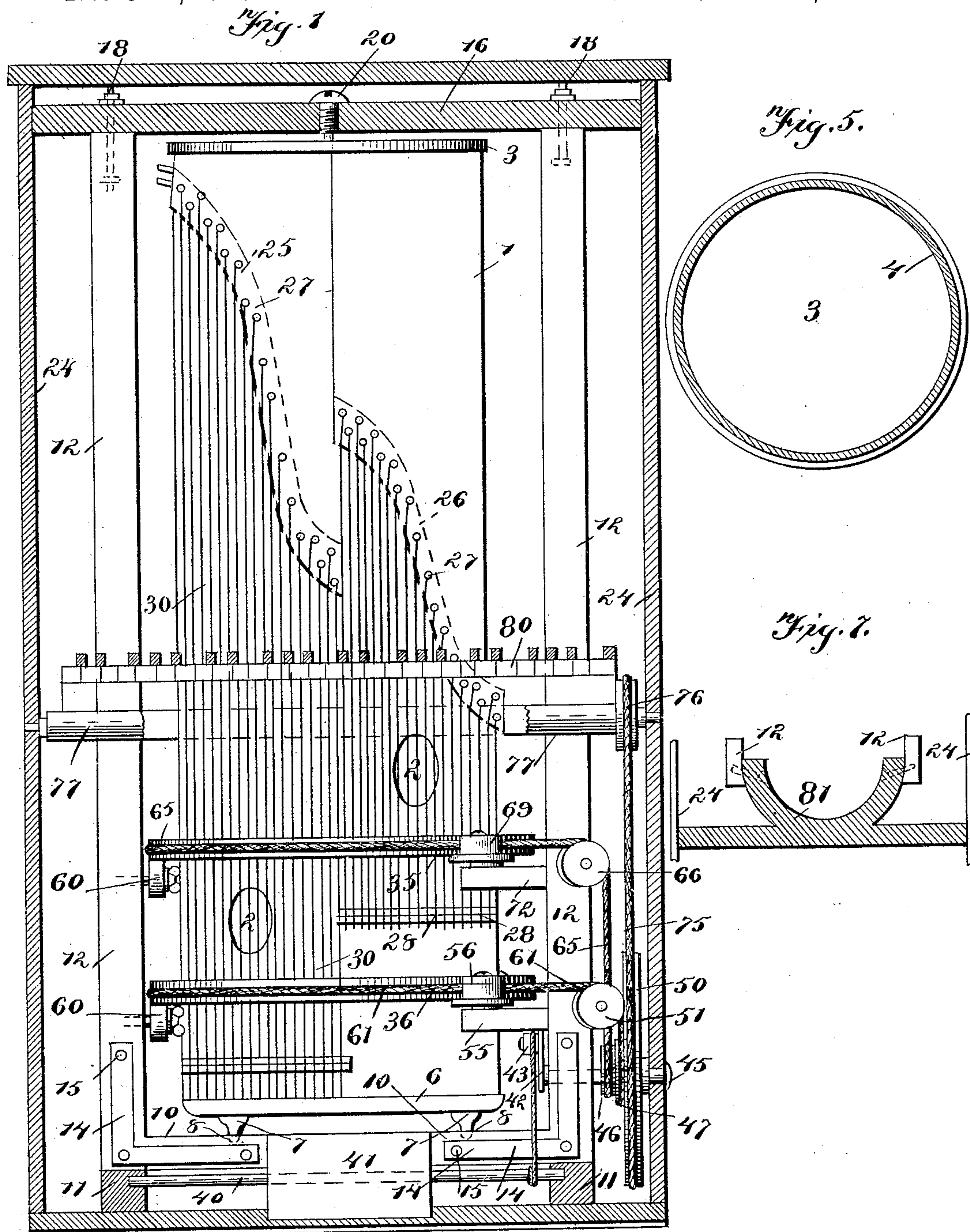
(No Model.)

3 Sheets—Sheet 1.

J. BAUMGARTNER.
MUSICAL MACHINE.

No. 572,287.

Patented Dec. 1, 1896.



Witnesses

Geo. E. Truch.
J. E. Rosser

Inventor

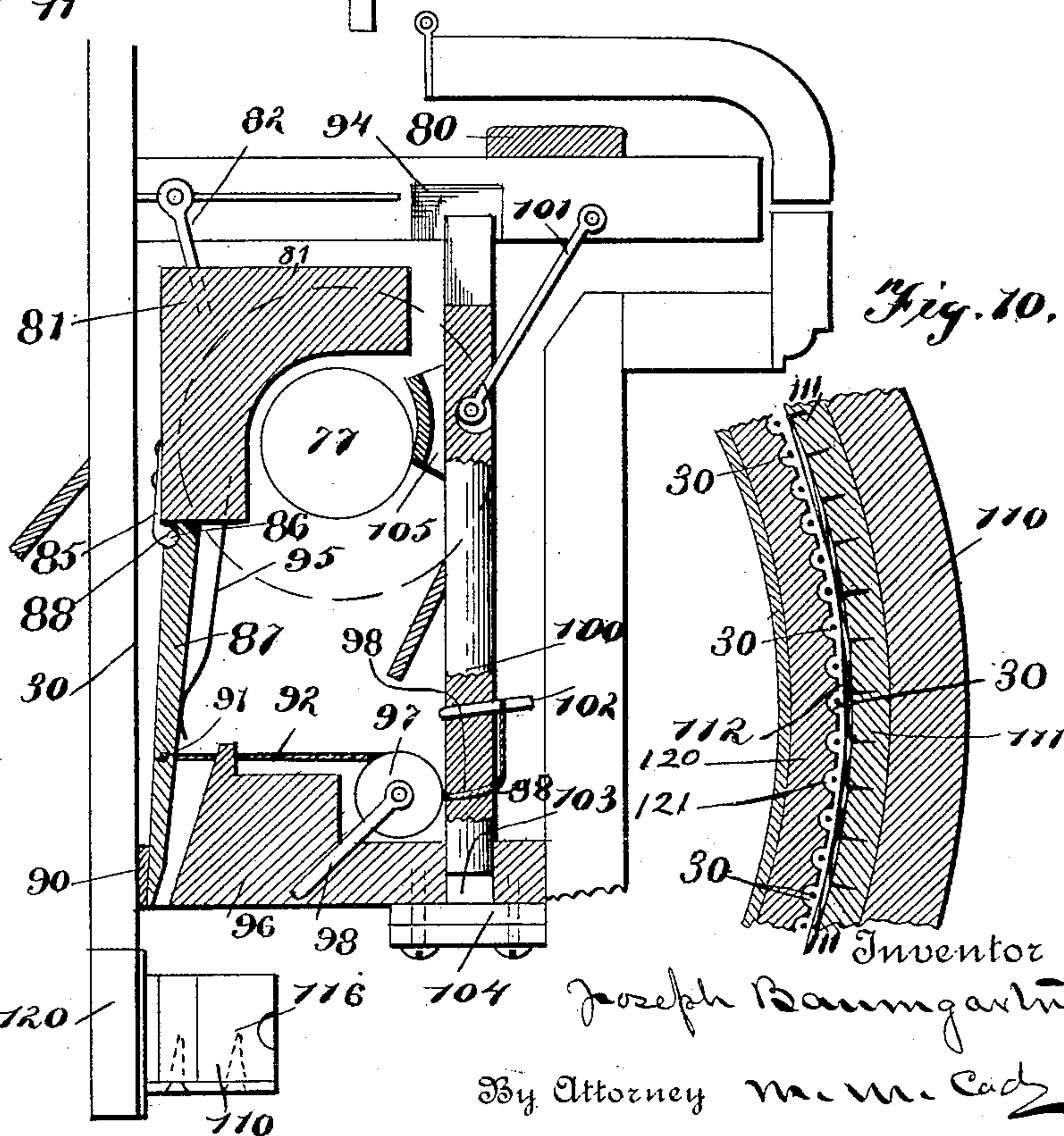
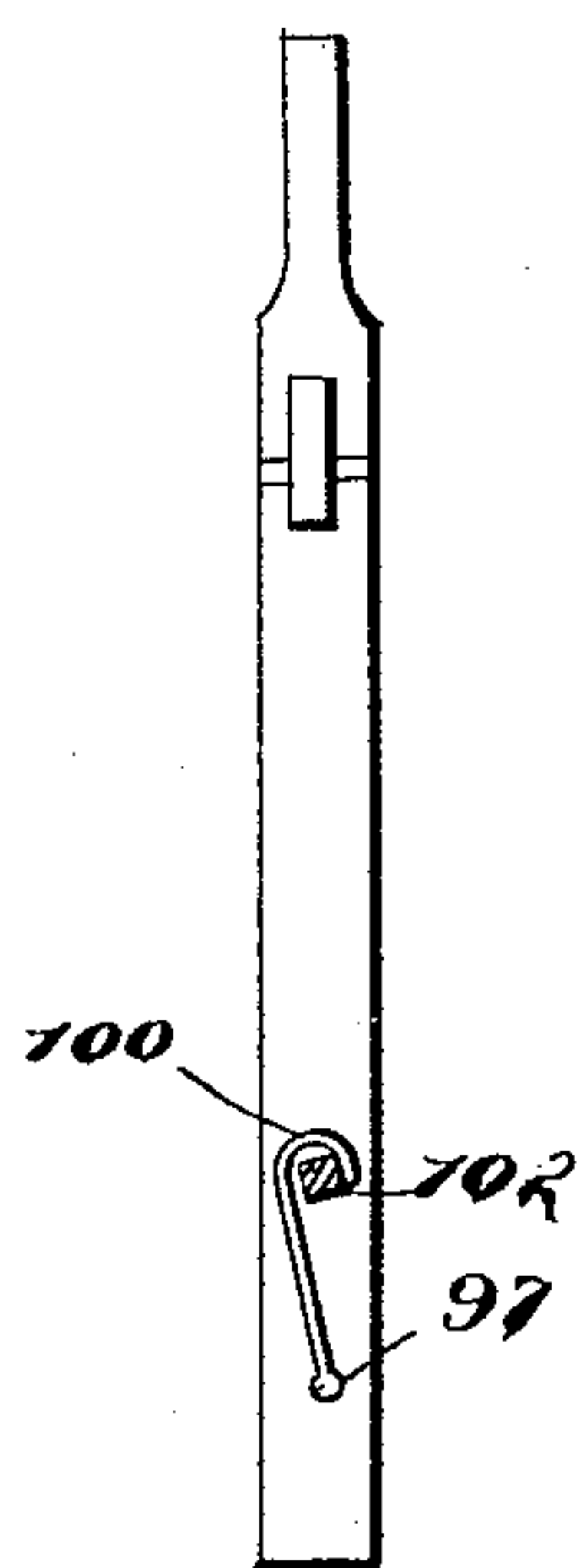
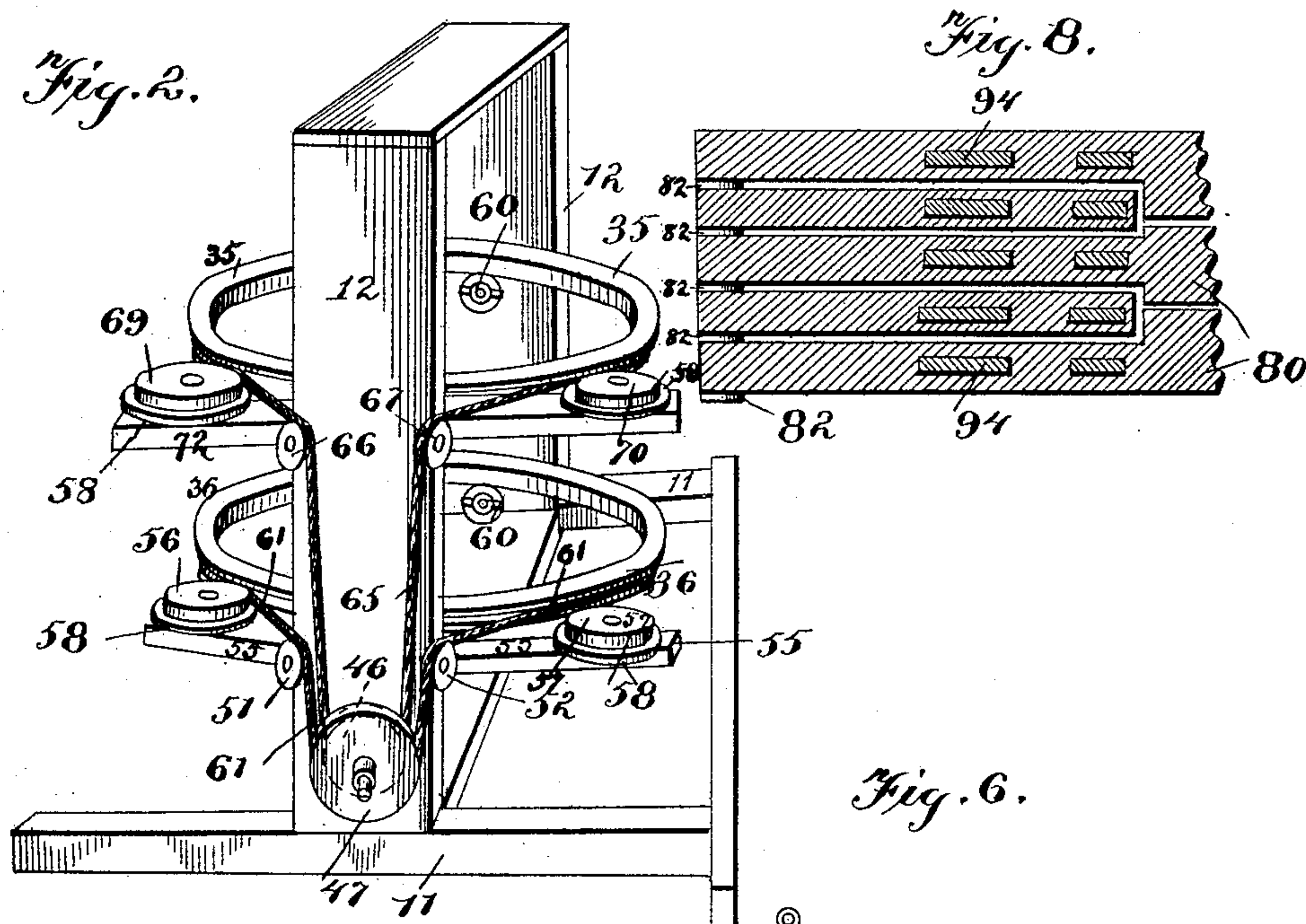
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3 Sheets—Sheet 2.

No. 572,287.

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Fig. 3.

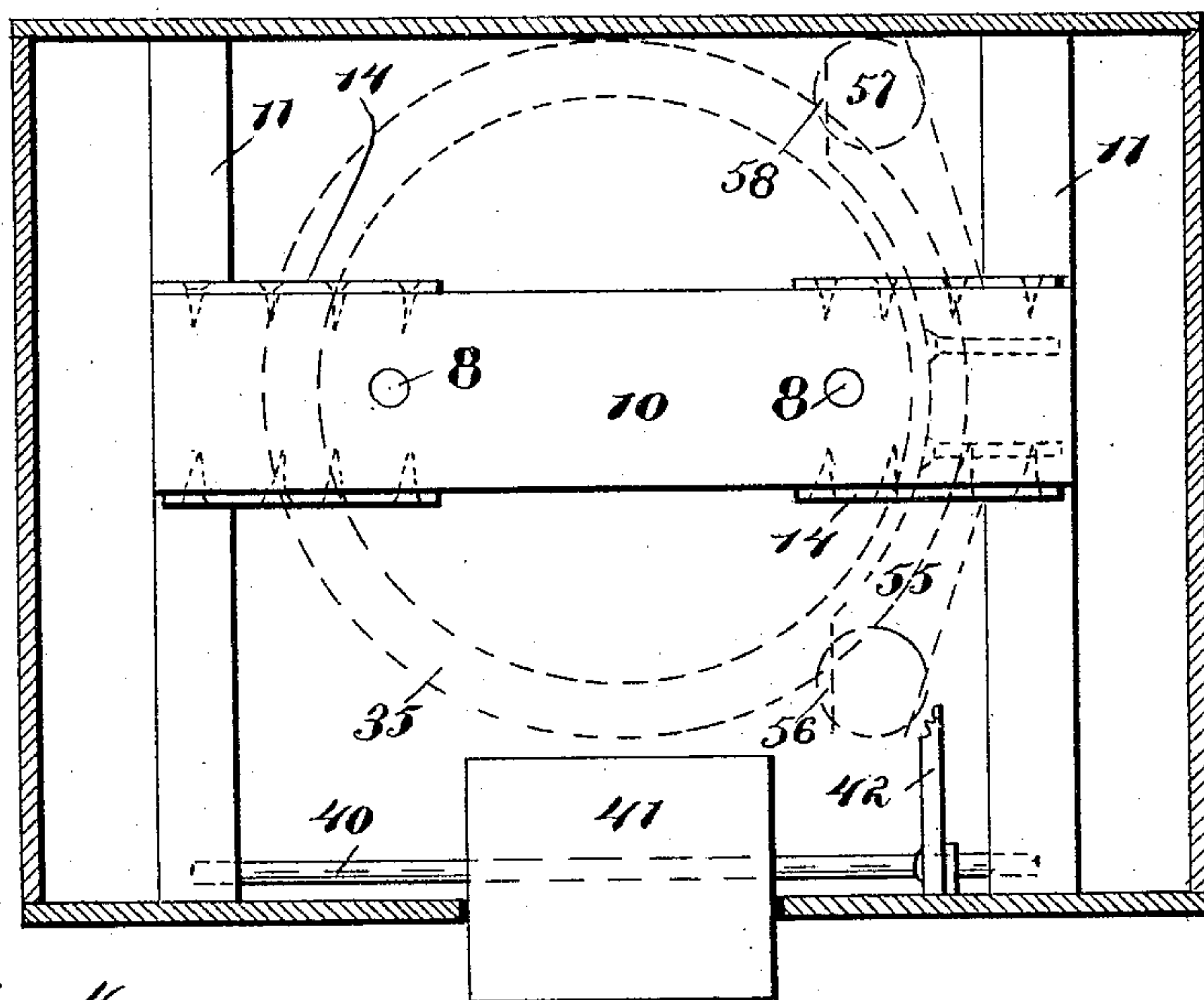


Fig. 4.

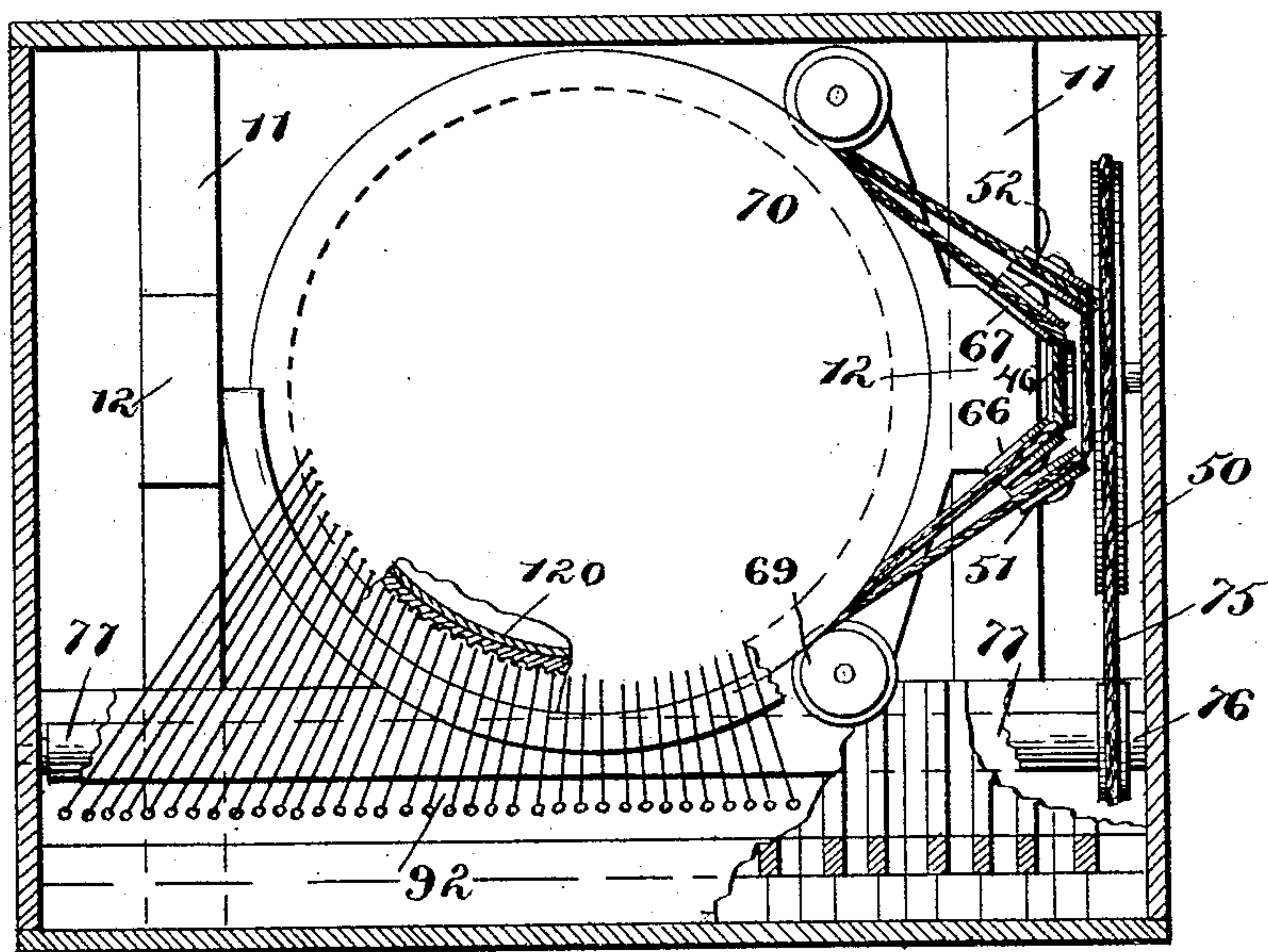
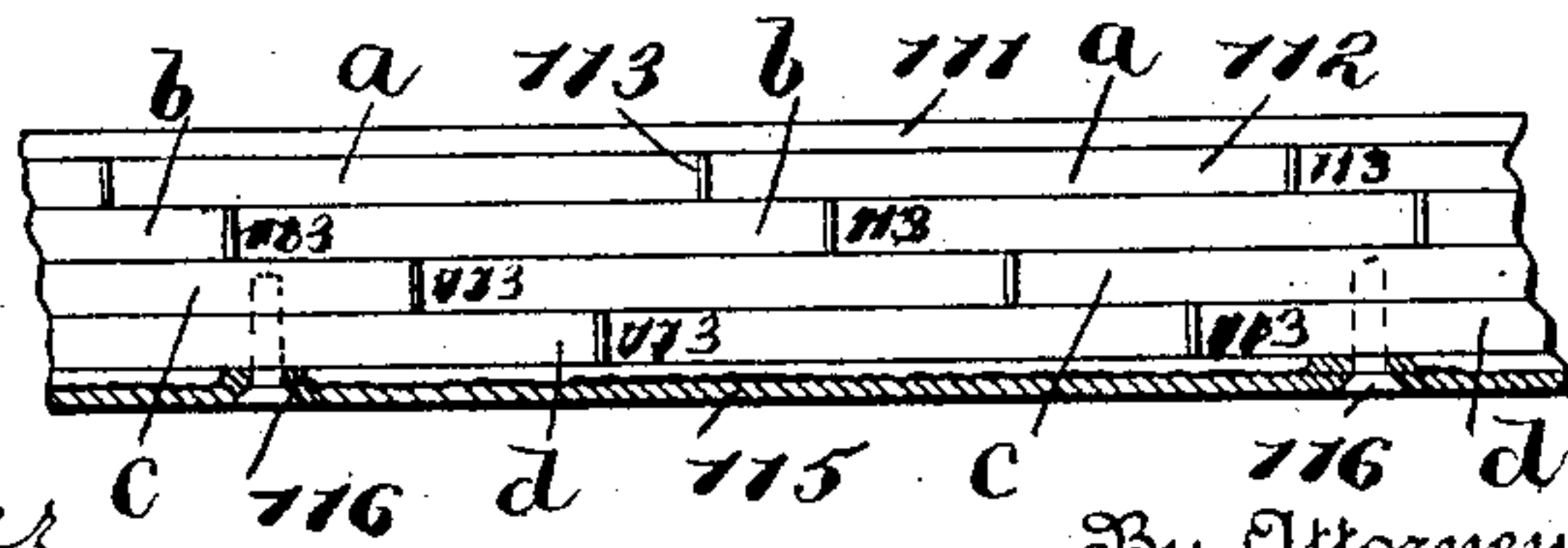


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH BAUMGARTNER, OF DUBUQUE, IOWA.

MUSICAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,287, dated December 1, 1896.

Application filed April 7, 1896. Serial No. 586,609. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BAUMGARTNER, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Musical Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to musical machines with special reference to violins having piano action, in which the strings are controlled and operated through connection with the piano-keyboard and the sound is produced by contact of the strings with an endless traveling bow.

In the following specification and accompanying drawings the essential features and details of my construction and mode of operation are fully shown and described.

Figure 1 is a side elevation of the sounding-board with strings attached, with two bows in position and means for operating the bows, also of the frame and a section of the cabinet. Fig. 2 is a perspective of the frame and bows with means for operating the same. Fig. 3 is a plan view of the lower portion of the instrument. Fig. 4 is another plan view slightly above the plane of Fig. 2. Fig. 5 is a view of the under side of the top plate. Fig. 6 is a side view of a single key with its attachments operated thereby. Fig. 7 is a top view of a plate shown in Fig. 6 to which the hammer-handles are attached. Fig. 8 is a bottom view of a number of keys. Fig. 9 is a side view of a rod shown in Fig. 6. Fig. 10 is a top view of a portion of the bow with protector for strings, and Fig. 11 is an inside view of a portion of the bow.

Like letters and figures of reference denote corresponding parts in all of the drawings.

In the drawings, 1 designates a sounding-board, which is made of a circular shape and has one or more holes 2 in its side. It is secured at the top to a plate 3 (shown in Fig. 5) within a circular groove 4 on the under side of said plate. At the base it is secured in a similar manner to a plate 6. Said plate 6 is supplied with two or more feet or standards 7, which engage with indentations 8 in a sill

10. The sill 10 is securely fastened into two horizontal beams 11, and into these beams 11 are mortised at their lower ends two uprights 12. Said uprights are further secured by right angle-plates 14, rigidly bolted to the sill 10 by the bolts 15. At the top of the uprights 12 there is securely bolted a horizontal girder 16 by bolts 18, and the sounding-board is stayed at the top by one or more screws or bolts 20 through the girder 16 into the plate 3. In this manner it will be seen that the sounding-board is securely held in a vertical position. The rear and sides with part of the front are inclosed in a cabinet 24. The upper portion of the cabinet may be inclosed by a door, (not shown,) hinged at one end to the upper part of the cabinet 24 and reaching down to or nearly to the keys, presently to be described.

Within the sounding-board 1 are secured two rigid bars 25 26. (Shown in Fig. 1 in dotted lines.) Into these bars 25 26 are secured pins 27, which project through the sounding-board 1, and to these pins are secured the strings 30, the longer or heavier strings to the pins on the bar 25 and the shorter or finer strings to the pins on the bar 26. The other ends of the longer strings are secured to similar pins in the plate 6 and the shorter strings to pins in a plate 28. I prefer to use the strings only upon half of the sounding-board and set them, as I have described, in a semicircle.

Around the lower portion of the strings 30 are set two traveling bows 35 and 36. (Shown in Figs. 1 and 2 and presently to be described.) These bows are operated by the following means: Into the beams 11 is journaled a rocking shaft 40, having rigidly attached thereto a foot-treadle 41. To the right side of said rocking shaft is rigidly secured an arm 42, which is pivoted at its upper end to a crank 43 on the inner end of a shaft 45. Upon the shaft 45 is set a cone-pulley 46 47 upon the outer side of the upright 12, and upon the outer end of the shaft 45 is also hung a balance-wheel 50. To one corner of the upright 12 is pivoted a pulley 51 and upon the opposite corner is pivoted a second pulley 52. (Shown in Fig. 2.) To the inner side of the upright 12 is secured a bar 55, which extends a short distance on either side of the upright

12, and to the upper surface near the ends of this bar are pivoted two wheels 56 57. The wheels 56 and 57 are flanged on their lower edge at 58 for the purpose of guiding the bow 36 and making it always travel in a horizontal plane. Upon the inner side of the opposite upright 12 is pivoted a small wheel 60, upon which the bow 36 travels. For the purpose of turning the bow 36 an endless belt 61 travels over the pulley 51, bearing against the wheel 56, around the bow 36, bearing against the wheel 57, over the pulley 52, and around the cone-pulley 47.

The bow 35 is operated, the same as bow 36, by an endless belt 65 passing around the cone-pulley 46, up over the pulleys 66 and 67, similar to the pulleys 51 and 52, and bearing against wheels 69 and 70, similar to wheels 56 and 57, set upon the bar 72, and around the bow 35.

Around the balance-wheel 50 travels the endless belt 75, which passes over a pulley 76 and operates the roller 77, which is journaled into opposite sides of the cabinet, the object of which roller will presently appear.

A convenient mode by which to operate the strings and bring them in contact with the bow or release them therefrom is shown in Fig. 6. Beneath the rear of the keys 80 runs a rigid bar 81, (shown in Fig. 7,) which is secured at the curved ends to the upright 12 and to the opposite sides of the cabinet and projects over the roller 77. To this bar 81 are pivoted at its rear the keys 80 by eye-bolts 82. (See Fig. 8.) At the lower end of 81 is fastened a hinge 85, having the projections 86. The hammer-handle 87 is hollowed out at 88 to engage with the projections 86. At the lower end of said handle is attached the hammer 90 for engagement with the strings 30. A short distance above the hammer is an eyebolt 91, to which a cord 92 is attached at one end. To the lower end also of 81 is fastened a leaf-spring 95, which is adapted to engage the rear of the hammer-handle 87 and constantly force the strings 30 away from the bow. Just in the front of the hammer is set a longitudinal block 96. A wheel 97 is pivoted to an arm 98, which is securely fastened into the block 96. An upright rod 100 extends from a recess 94 in the under side of the keys 80 to a recess in the block 96.

To the key 80 and rod 100 is pivoted the arm 101. Through the lower end of the rod 100 is a hole 98, and upon the front side of said rod is a pin 102, to which the cord 92 is attached at one end, passing down the front of the rod 100 through the hole 98 and over the pulley 97 and attached to the eyebolt 91 in the hammer-handle, the object of which will presently appear. At the base of the rod 100 is a recess 103 in the block 96, and beneath it is a cushion 104 for the purpose of preventing any rattle when the rod 100 is forced down. To the rear of the rod 100 is placed a shoe 105, concave on its inner face and adapted to engage the roller 77. The

center of this shoe 105 is set in a plane slightly above the horizontal plane of the axis of the roller 77 for the purpose to appear hereinafter.

The bows 35 and 36 (see Figs. 10 and 11) are preferably made in the following manner: Within a rigid circle of wood 110 is snugly fitted a narrow strip of wood 111, to which the hair 112 is fastened in strips *a b c d* by the staples 113. These staples are placed at intervals along each strip, forming the hair of the bow in its entirety to very nearly a circle. The wood part 110 and 111 is secured to a circular plate of iron 115 by screws 116.

Around the sounding-board 1 and between the strips and the board is secured a strip 120, having upon its outer face recesses 121, in which the strings are pressed out of contact with the hair of the bow. This strip 120 is upon the same horizontal plane with the bow 35, and a similar strip is set in the same plane with the bow 36.

The manner of operating my device is as follows: The operator places his foot on the treadle 41 and by this movement turns the shaft 40, which revolves the bows 35 and 36 in the manner hereinbefore set forth, and at the same time revolves the roller 77 by the endless band 75 passing over the balance-wheel 50 and the pulley 76. After the bows are started the operator presses the keys 80, which forces down the arm 101, and by it the rod 100 is pressed a little forward and downward, bringing the shoe 105 against the outer side of the roller 77. The revolving roller draws down the rod 100 to the cushion 104. This movement downward draws the cord 92, attached to the handle 87, and pulls the hammer 90 away from the string 30 and allows it to come out of the recess 121 against the traveling bow, and the sound is produced by the action of the traveling bow upon the strings. As soon as the key 80 is released the spring 95 forces the hammer back against the strings 30 into the recess 121 out of contact with the hair of the bow, at the same time drawing the cord 92 and raising the rod 100 to its normal position.

It will be manifest that other convenient modes of operating the strings and bringing them into contact with the hair of the bow, and also for causing the bows to travel in a circular manner, may be employed without departing from the spirit of my invention.

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

1. In a musical instrument, a circular stationary sounding-board, one or more sets of strings applied vertically thereto, one or more circular bows which are provided on their inner edges with hair arranged in strips and adapted to rotate horizontally around said strings and board and means for moving the strings in and out of contact with said bows, as and for the purposes shown.

2. In a musical instrument, a circular sounding-board, one or more sets of strings applied

thereto, one or more circular rotating bows which surround the board and strings and a mechanism for rotating the bows, combined with keys, an endwise-moving rod for each 5 key, a shoe connected to each rod, a hammer for each rod, means for connecting each rod to its hammer and a revolving roller for operating the rods and hammers, substantially as shown.

10 3. In a musical machine, a circular sounding-board two sets of strings of unequal length applied thereto, two rotating bows, endless belts which operate the bows, guide-wheels or pulleys for guiding the belts, a revolving 15 roller and a mechanism for operating both the bows and the roller, combined with keys, an intermediate connecting mechanism, and hammers for operating the strings, as and for the purposes shown.

20 4. In a musical instrument, the operating-keys, an endwise-moving rod, connected to each key, a shoe connected to each rod, and which serves to force the rod downward; a support for the hammers, a spring-actuated 25 hammer for each rod, and means for connecting the hammer to its rod, combined with a revolving roller with which the shoes engage,

a circular sounding-board, strings applied thereto, rotating bows provided with hair upon their inner edges and a mechanism for operat- 30 ing both the bows and the roller, substantially as set forth.

5. In a musical instrument, a circular vertical sounding-board, strings attached there- 35 to, one or more circular bows adapted to rotate around said sounding-board and strings, and means for bringing each string in and out of contact with the bow, consisting of key 80, post 100, cord 92, hammer 87, with string 95 40 all combined to operate substantially as described and shown.

6. In a musical instrument, a circular vertical sounding-board, suitable strings secured to said board, one or more circular bows ro- 45 tating around said board and strings, and means substantially as described for rotating said bows, as and for the purposes shown.

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

JOSEPH BAUMGARTNER.

Witnesses:

M. M. CADY,
J. E. ROSSER.