(No Model.) 3 Sheets—Sheet 1.

L. STOCKER.

MECHANICAL MUSICAL INSTRUMENT.

No. 590,918. Patented Sept. 28, 1897.

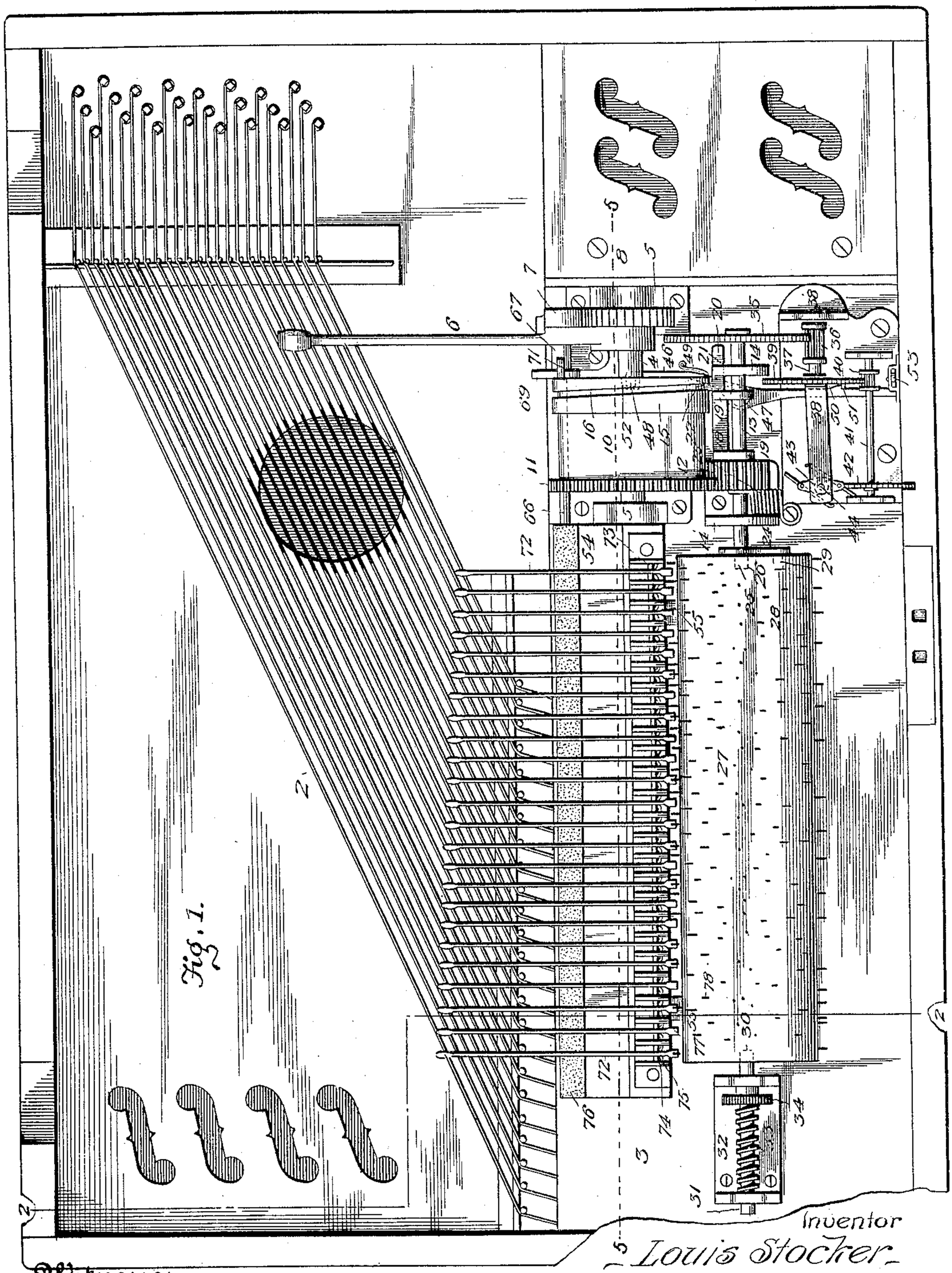

Fig. 1.

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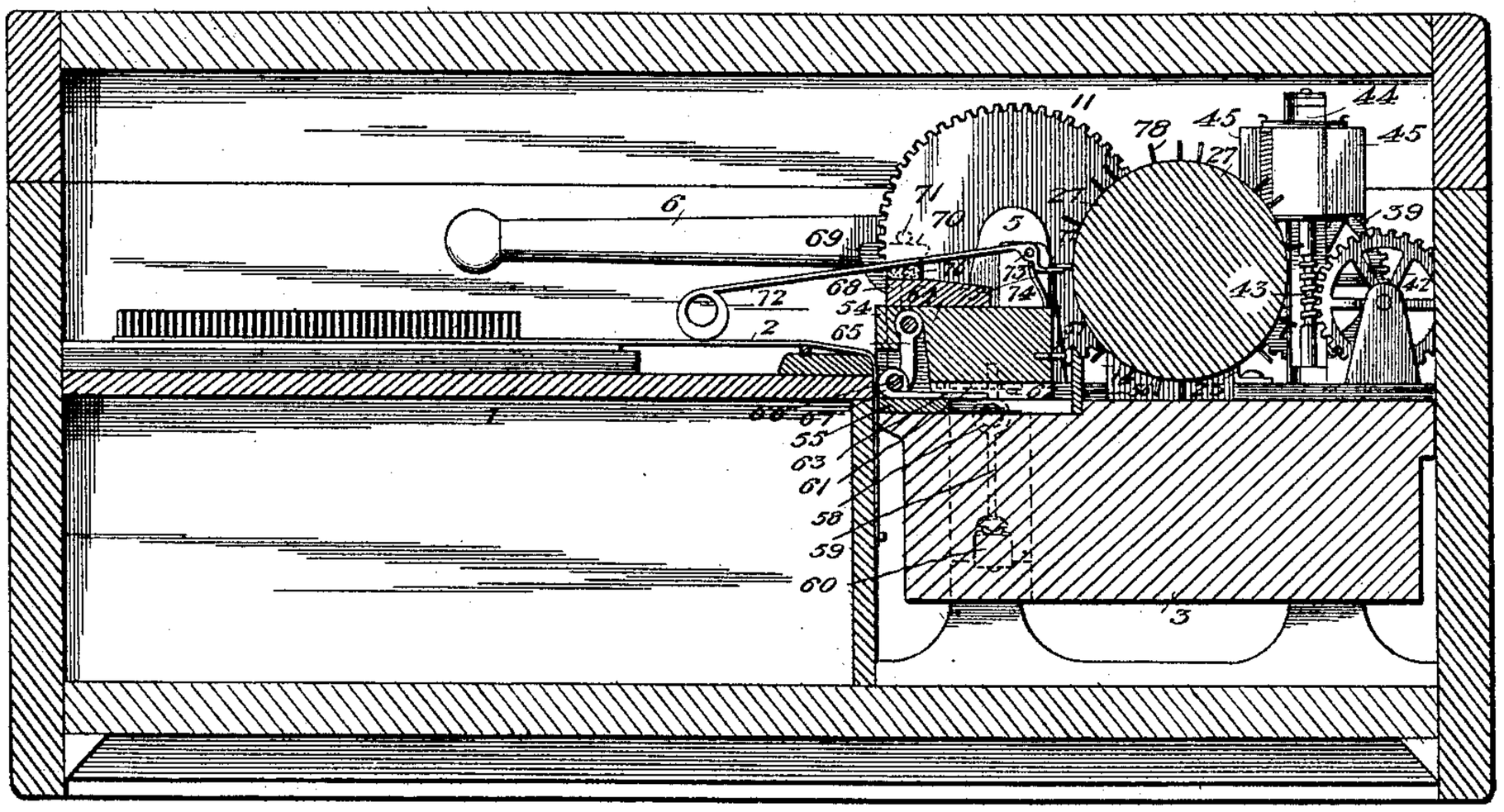

Fig. 2.

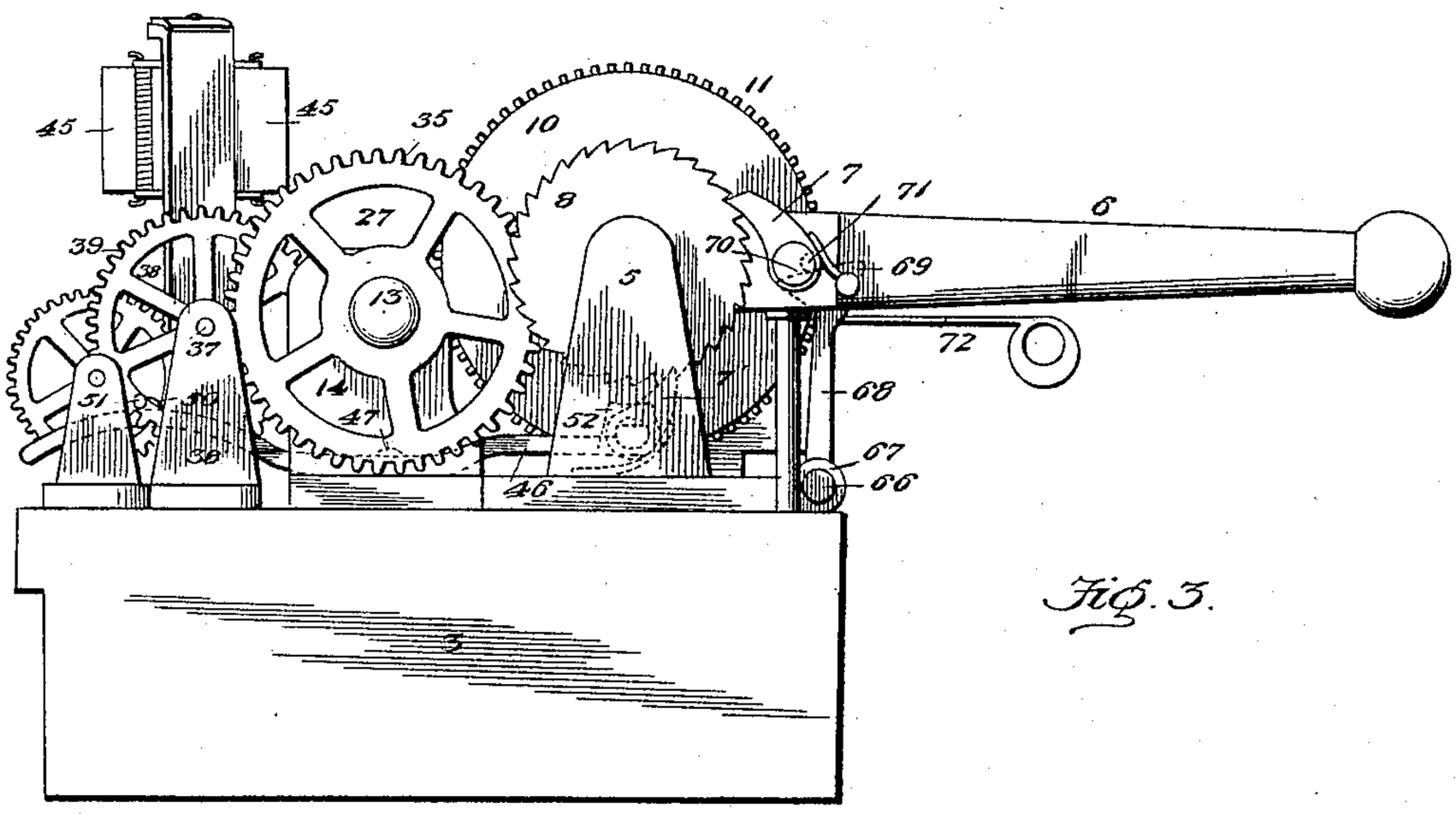

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

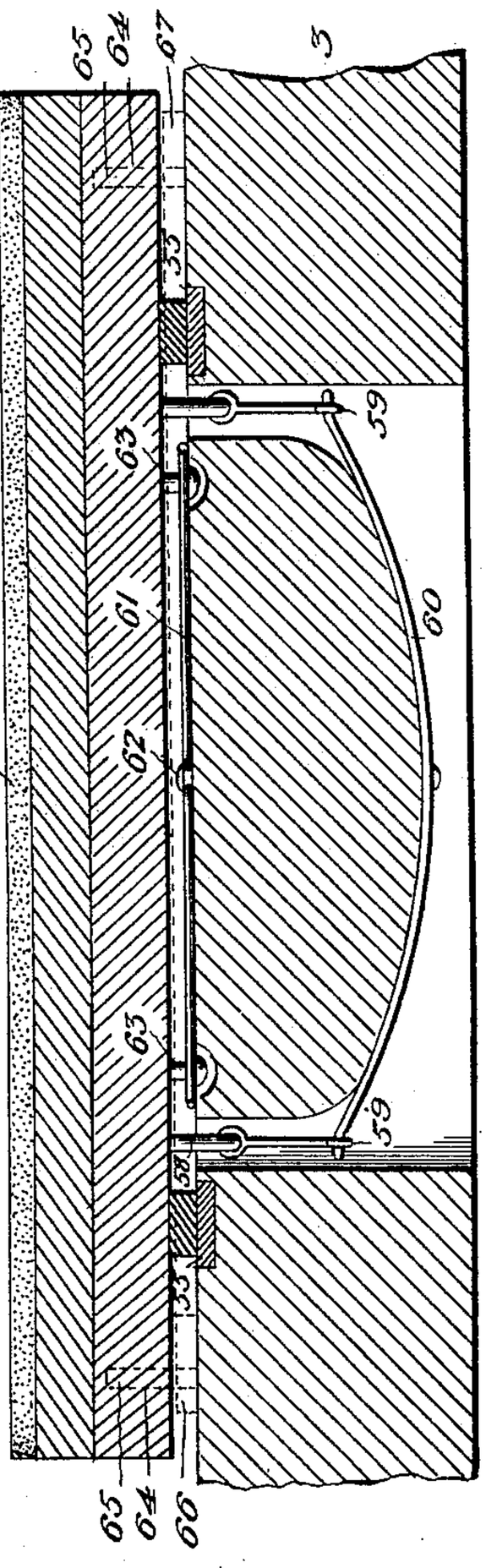


Fig. 7.

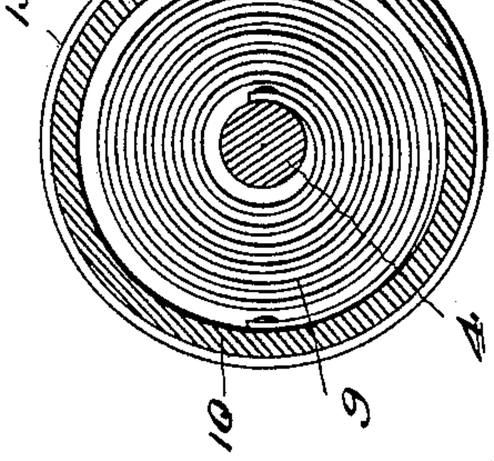


Fig. 6.

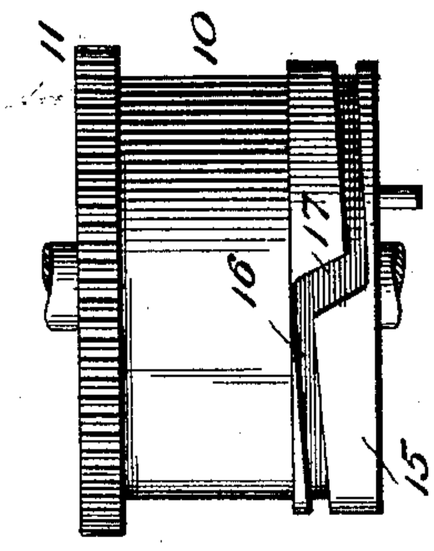
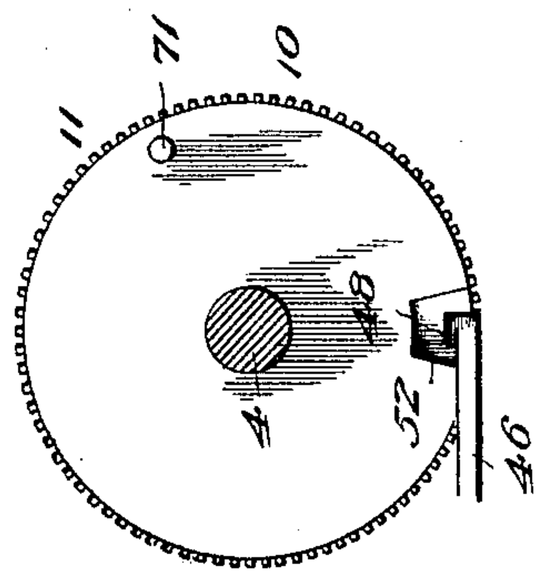


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

LOUIS STOCKER, OF KNOXVILLE, TENNESSEE.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 590,918, dated September 28, 1897.

Application filed April 29, 1897. Serial No. 634,469. (No model.)

To all whom it may concern:

Be it known that I, LOUIS STOCKER, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented certain new and useful Improvements in Mechanical Musical Instruments; and I do 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 has relation to improvements in the construction of mechanical musical instruments, and more particularly to that class of stringed instruments in which the strings are struck by a series of pivoted hammers tripped by pins on a barrel rotated by a spring, and the object is to provide a simple and inexpensive instrument of this class.

To this end the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference-characters indicate the same parts of the invention.

Figure 1 is a top plan view of my improved musical instrument. Fig. 2 is a sectional end elevation on the plane 2 2, Fig. 1. Fig. 3 is a right-hand elevation. Fig. 4 is an end elevation of the spring-drum gear. Fig. 5 is a transverse section on the dotted lines 5 5 of Fig. 1. Fig. 6 is a plan view of the spring-drum and gear, and Fig. 7 is a vertical cross-section of the same.

1 represents the sounding-board, provided with the usual piano-strings 2 2.

3 represents the base-block, which supports the barrel, the spring-actuated train of gearing, and the hammer-frame.

4 represents the spring-actuated driving-shaft, mounted in the standards 5 5, and 6 represents the winding-lever, on which is fulcrumed the pawl 7, engaging the ratchet-wheel 8, fixed on said shaft, and 7′ is the usual retaining-pawl, fixed on the standard 5.

9 represents the usual mainspring, incased within the barrel 10, having its inner end fixed to the shaft 4 and its outer end to the barrel.

11 represents an integral gear-wheel on the barrel, and it meshes with a pinion 12, fixed on a counter-shaft 13, journaled in the standards 14 14′.

15 represents a collar formed integral on the barrel 10, and its periphery is provided with a spiral groove 16, the ends of which are connected to and form a continuation of a short diagonal groove 17.

18 represents a horizontal bar provided with parallel lugs 19 19′, which encompass the counter-shaft 13, with the lug 19 abutting against the side of the pinion 12, and its opposite end 20 has a horizontal reciprocating movement in the guide-recess 21 in the standard 14. A pin 22, fixed in the face of this bar 18, extends into the spiral groove 16 in the barrel, which gives the bar and shaft 13 their end movement, and when the pin has arrived at the end of the spiral groove it then enters the short diagonal groove 17, which gives the bar and shaft a "quick return" to the place of starting. A coiled spring 23 is fixed to the base of the standard 14′, and its free end abuts against the pinion 12 on the side opposite to the lug 19, this spring serving to restore the shaft 13 and bar 18 to the starting-point when the pin 22 on the bar has arrived at the forward end of the diagonal groove 17.

24 represents a driving-crank fixed on the inner end of the counter-shaft 13, and it is provided with a central stud 25, which engages a central bearing 26 in the cylinder 27, and 28 represents a wrist-pin on the face of said crank, which engages a corresponding orifice 29 in the contiguous end of the cylinder to rotate it. The opposite end of the cylinder is provided with a central alined orifice 30, which receives the projecting end of the shaft 31, mounted in the bracket 32, and this shaft is provided with a spiral spring 33, which forces it into the orifice 30 in the cylinder 27 and supports it while it is rotating and at the same time being moved endwise by the counter-shaft 13.

34 represents a milled-head collar on the shaft 31 for conveniently withdrawing said shaft from the orifice 30 when changing cylinders.

35 represents a gear-wheel fixed on the outer end of the counter-shaft 13, and it meshes with an elongated pinion 36 on a shaft 37, journaled in brackets 38 38′, and 39 rep-

resents a gear-wheel also fixed on said shaft 37, and it meshes with a pinion 40 on the shaft 41, which is also provided with a worm-wheel 42, meshing with the worm-screw 43 on the vertical shaft 44, the upper end of which is provided with the spring-actuated governor-fans 45 45.

46 represents a stop-lever fulcrumed on a stud 47 on the frame, and its inner end is formed with a dog 48, which rests against the edge of the side of the barrel 10 and is held in this position by the spring 49. While in this position, a pawl 50 on the opposite end of said lever is held out of the path of a projecting pin 51 on the face of the gear-wheel 39.

52 represents a notch or recess formed in the side of the barrel and in line with the dog 48, so that when the notch arrives in line with said pawl the spring 49 forces it into said notch, which throws the opposite end of the lever into the path of the pin on the gear-wheel 39 to stop the action of the cylinder, which is arranged and so geared with reference to the barrel as to revolve about three times to one revolution of the barrel and play one or more complete airs. When the carriage has been withdrawn, the barrel slides back to its original position, after which the carriage returns to the position required to start another air or tune. The springs 60 61 hold the carriage down to its place on the rails 55, but do not interfere with the sliding movement.

53 represents a vertical thumb-lever, the lower end of which abuts against the free end of the stop-lever 46, and it may be thrown to one side to prevent the dog on the opposite end of said stop-lever from engaging the notch in the barrel, and thus permit the air to be repeated indefinitely.

54 represents the hammer-carriage, and it consists of a longitudinal rectangular block resting upon two rails 55 55, the forward ends of which are formed with vertical brackets 56 56, against which the heads of the adjusting-screws 57 57 abut and which serve to limit the parallel movement of said carriage with reference to the cylinder.

58 58 represent screw-eyes fixed to the bottom of the carriage, and 59 59 represent short rods connecting said eyes with the opposite ends of a leaf-spring 60, secured to the under side of the base-block 3. A horizontal spring 61 is fulcrumed on a stud 62 in the base-block, and its opposite free ends engage the pins 63 63 on the opposite ends of the bottom of the carriage to hold it into contact with the brackets 56 56.

64 64 represent vertical orifices in the bottom of the carriage, which receive the vertical arms 65 65 on the longitudinal shaft 66, journaled in brackets 67, secured to the base-block, and its outer end is provided with a vertical arm 68, terminating in a horizontal V-shaped dog 69, having a beveled edge 70, which normally projects into the path of the pin 71, fixed in the side of the barrel 10, and which is adapted to force the arm away from the barrel, oscillate the shaft 66, and through the medium of the arms 65 65 withdraw the carriage from the barrel at the end of an air.

72 represents the hammers, independently fulcrumed on the longitudinal shaft 73, mounted in the brackets 74, fixed on the carriage, and 75 represents individual springs, one for each hammer, to normally hold them in contact with the cushion-felt 76 on the carriage. Each hammer is provided with an integral flattened finger 77, which projects into the path of the radial pins 78 on the cylinder 27, and as the cylinder revolves the pins press down the appropriate fingers, which, when released, cause their hammers to strike the strings and play an air corresponding to the arrangement of the pins on the cylinder.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

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

1. A mechanical musical instrument, comprising a series of musical strings, a rotating cylinder provided with a series of arbitrarily-arranged radial pins, a carriage adapted to travel to and from said cylinder, and a series of hammer-arms fulcrumed on said carriage, and having their inner ends projecting into the path of said pins, and their outer hammer-heads arranged vertically above said strings, substantially as and for the purpose set forth.

2. A mechanical musical instrument, comprising a series of musical strings, a rotating cylinder provided with radial pins, a traveling carriage, a series of hammer-arms mounted on said carriage and adapted to be projected into and withdrawn from the path of said pins on the cylinder, a spring-actuated train of gearing, and means substantially as described for imparting a rotary movement to said cylinder and a reciprocating movement to said carriage, as and for the purpose set forth.

3. A mechanical musical instrument, comprising the barrel 10 provided with the spiral groove 16, the ends of which communicate with the diagonal groove 17, the bar 18 mounted contiguous to said barrel, and provided with a pin 22 projecting into said grooves, the cylinder 27, and intermediate means whereby said barrel imparts a rotary and an end movement to said cylinder, substantially as shown and described.

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

LOUIS STOCKER.

Witnesses:
G. SCHEITLIN,
W. T. CRAIG.