No. 668,885. Patented Feb. 26, 1901.

F. SCHNEIDER.

SELF PLAYING STRINGED MUSICAL INSTRUMENT.

(Application filed June 1, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

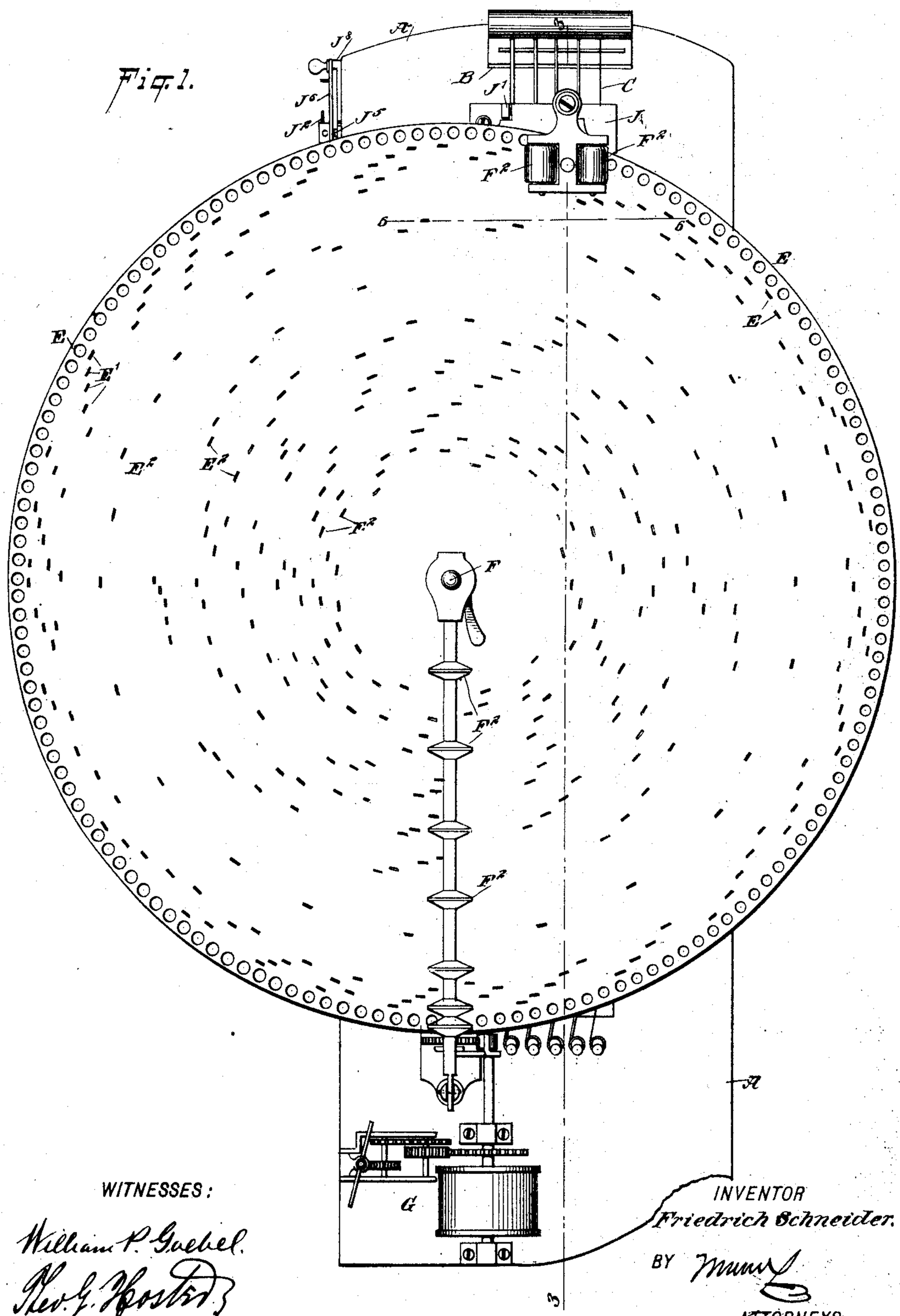

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Fig. 2.

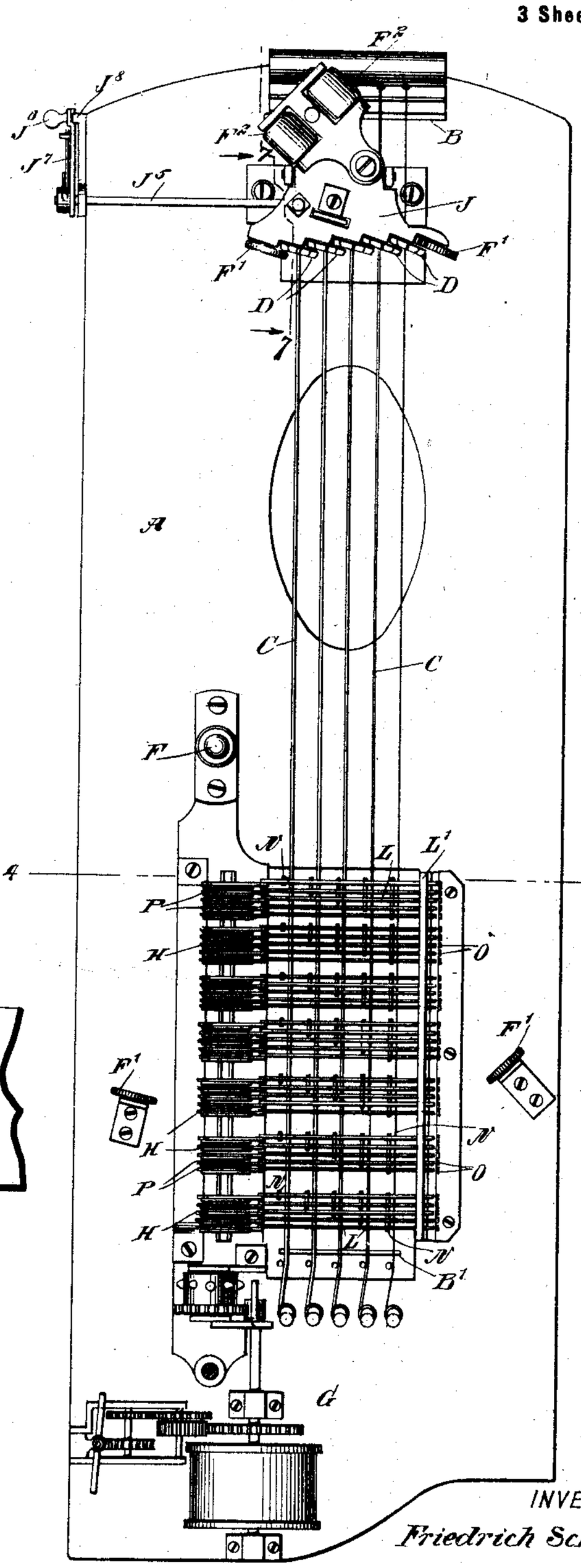
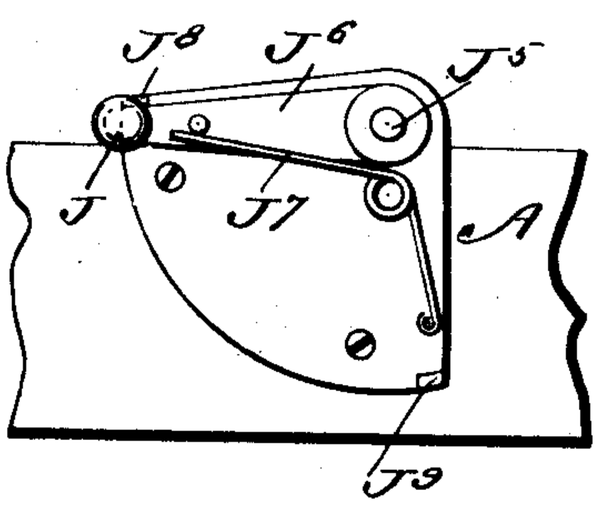


Fig. 8.



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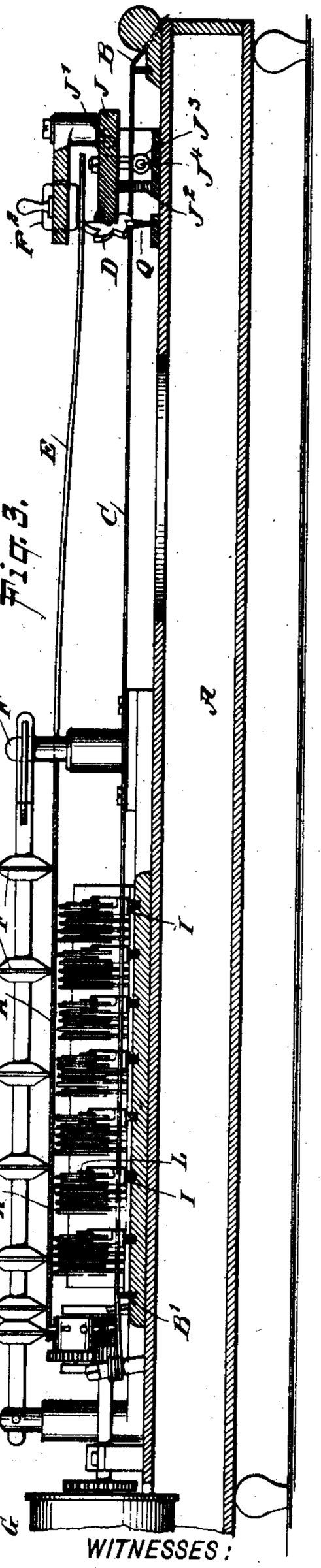

Fig. 3.

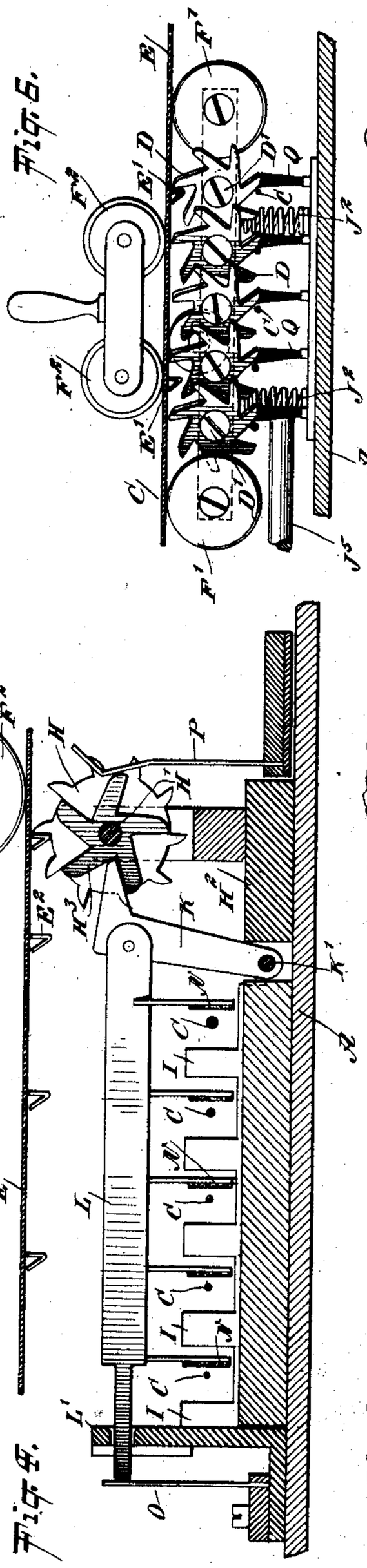

Fig. 6.

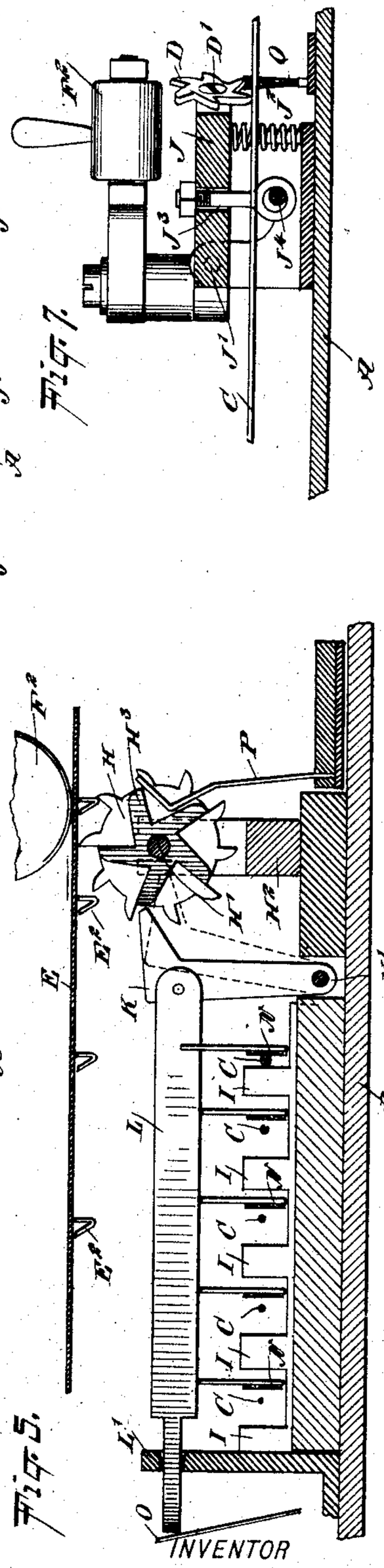

Fig. 7.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

FRIEDRICH SCHNEIDER, OF LEIPSIC, GERMANY, ASSIGNOR TO OSCAR SCHMIDT, OF NEW YORK, N. Y.

SELF-PLAYING STRINGED MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 668,885, dated February 26, 1901.

Application filed June 1, 1900. Serial No. 18,708. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH SCHNEIDER, a subject of the King of Saxony, and a resident of Leipsic, Saxony, Germany, have invented a new and Improved Self-Playing Stringed Musical Instrument, of which the following is a full, clear, and exact description.

The invention relates to self-playing stringed musical instruments, such as banjos and the like, and in which the strings are mechanically picked and fingered for obtaining the desired pitch.

The object of the invention is to provide a new and improved self-playing or mechanically-actuated stringed musical instrument which is simple and durable in construction and arranged to require but little power for driving the note-sheet uniformly and for causing the latter to easily and harmoniously operate the device for picking the strings and the device for fingering the strings perfectly to produce the desired music with comparatively few strings stretched over a sounding-board.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a like view of the same with the note-sheet removed and parts in section. Fig. 3 is a longitudinal sectional elevation of the same on the line 3 3 in Fig. 1. Fig. 4 is an enlarged cross-section of the fingering device, the section being on the line 4 4 in Fig. 2; and Fig. 5 is a like view of the same with the parts in a different position. Fig. 6 is an enlarged cross-section of the improvement on the line 6 6 in Fig. 1, illustrating more particularly the picking device; and Fig. 7 is a sectional side elevation of the same on the line 7 7 in Fig. 2, and Fig. 8 is a rear side elevation of the device for changing the position of the picker star-wheels relatively to the strings.

On a sounding-board A are located bridges B B′, over which are stretched a plurality of strings C, preferably such as are used on guitars, mandolins, banjos, or the like, and the strings are mechanically picked at or near the bridge B by a picking device consisting, essentially, of picking star-wheels D, actuated directly by a set of note projections E′ on a note-sheet E. The latter is mounted to turn with a post F as the center, the under side of the note-sheet resting on supporting-rollers F′, rollers F^2 engaging the top of the sheet, so as to hold the same in proper position. The note-sheet E is either rotated by hand or by a power-actuated driving mechanism G, of any approved construction. On the note-sheet E is arranged a second set of note projections E^2 for actuating a fingering device located near the other bridge B′ and provided with fingering star-wheels H, directly engaged by the second set of note projections E^2 on the note-sheet E. The fingering device serves to automatically press the strings C against frets I, rising from the sounding-board at one side of the strings, as is plainly shown in Figs. 4 and 5. When the note-sheet is rotated, it actuates the picking star-wheels and the fingering device in harmony, so that the pitch of a string is first changed, according to the tone to be produced, immediately previous to the corresponding picking star-wheel picking its particular string.

The picking star-wheels D are located over the strings and are mounted to turn on pivots D′, extending radially and a different distance from the post F, and the note projections E′ for the several picking star-wheels are arranged in concentric circles and squarely engage the top teeth of the picking-wheels to turn the latter for the lowermost teeth to pick the strings. The pivots D′ are held on a frame J, pivoted at J′ on the sounding-board A, and pressed upward by springs J^2, (see Fig. 6,) said frame J being connected by a link J^3 with an eccentric J^4 on the end of a shaft J^5, journaled in suitable bearings on the sounding-board. The outer end of the shaft J^5 is provided with a handle or crank-arm J^6, adapted to be taken hold of by the player to impart a turning motion to the shaft J^5, so as to cause the eccentric J^4 to swing the frame downward or upward and bring the

lowermost teeth of the picking star-wheels in more or less engagement with the strings to cause the picking star-wheels to pick the strings with more or less force, according to the will of the player. The handle J^6 is pressed on by a spring J^7 and is free to oscillate between stops J^8 J^9, attached to the side of the sounding-board A, as shown in Figs. 5 and 6.

Normally the crank-arm J^6 rests against the stop J^8, the frame J being in such position that the lowermost teeth of the star-wheels pick the strings very lightly when the star-wheels are turned by the note projections E'. When it is desired to pick the strings with more force, the player swings the handle J^6 downward to cause a downward swinging of the frame J, so that the lowermost teeth of the picking star-wheels engage the strings with more force when the wheels are turned by the note projections E'.

The fingering device is constructed as follows: The star-wheels H are loosely and independently journaled on a rod H', held on a carrier H^2, and arranged lengthwise of the strings at one side thereof. Each star-wheel H has its star H^3 arranged for engagement at the side toward the strings by an arm K, being pivoted at the carrier H^2 and connected with a bar L, arranged transverse of the strings and above the same, as is plainly indicated in Figs. 4 and 5. Each bar L is mounted to slide in a bearing L', attached to the sounding-board A, and each bar is provided with a depending finger-piece N for engaging the string C and pressing the same sidewise against a fret I. As shown, each string is adapted to be pressed by seven finger-pieces against seven frets located a proper distance apart to permit of changing the pitch of the string by half-tones; but I do not limit myself to this particular arrangement, as the same may be varied without deviating from the spirit of my invention.

On the outer end of each bar L presses a spring O to return the proper finger-piece N and arm K and release the string from the fret I on the next turning of the star-wheel by the following note projection. The star H^3 of the star-wheel is engaged at its under side by a spring-tongue P, attached to the carrier H^2, and this tongue P serves a two-fold purpose—namely, first, to assist the first note projection E^2 to turn the star-wheel H and its star H^3 and swing the arm K to move the bar L, with its finger-piece N, and press the string against the corresponding fret I to change the pitch of the string immediately previous to the picking star-wheel picking the string, and, second, to retard the return movement of the bar L, finger-piece N, and arm K for releasing the string when the second or following note projection E^2 imparts another turning movement to the star-wheel H and its star H^3. When this movement takes place, the arm K swings back and the arm L slides back by the action of the spring O.

By reference to Figs. 4 and 5 the two positions of the several parts mentioned are plainly indicated, it being understood that the spring-tongue P is provided with a V-shaped end P' for pressing one tooth to assist in turning the star-wheel H and for acting against the next following tooth to retard the turning of the star-wheel when the latter is turned by the second note projection, as above described.

It is understood that one note projection E^2 on the note-sheet serves to turn the star-wheel, so as to cause the finger-piece to move and press the strings against the frets, and the next following note projection E^2 turns the star-wheel to allow the finger-piece to release the string.

If it were not for the spring-tongue P, the bar L, with its finger-piece, would suddenly fly back by the action of the spring and the tension of the pressed string and would cause an undesirable vibration of the string and an uneven movement of the note-string and a consequent irregular sounding of the strings by the picking device actuated by the note-sheet.

It is expressly understood that the spring-tongue is a very important feature of my invention, as it serves to assist in moving the finger-piece and pressing the string against its fret to retard the return movement of the finger-piece, so as to prevent undue vibration of the string and uneven movement of the note-sheet, as above described.

The strings are damped immediately after being picked and sounded by brushes Q, extending upwardly from the sounding-board, to normally engage the strings, so that when the string is picked by a tooth of the picking star-wheel the string is moved from the brush, and when the string returns by its own tension it moves in contact with the brush and is thus damped.

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

1. A self-playing musical instrument, comprising a sounding-board, strings stretched over the same, picker star-wheels, one for each string to pick the same, a fingering device having star-wheels, and a note-sheet having two sets of note projections, one for actuating the picker star-wheels and the other for actuating the fingering star-wheels, as set forth.

2. A self-playing musical instrument, comprising a sounding-board, strings stretched over the same, picker star-wheels, one for each string to pick the same, a fingering device having star-wheels, a note-sheet having two sets of note projections, one for actuating the picker star-wheels and the other for actuating the fingering star-wheels, and means for changing the position of the picker star-wheels to the strings, to pick the latter with more or less force, as set forth.

3. A fingering device having a movable

member for moving the finger-piece of the device, and a spring having means to assist in moving the said finger-piece against the string to press the latter upon the fret and to retard the finger-piece upon a release movement, as set forth.

4. A fingering device for stringed musical instruments, comprising a movable finger-piece for pressing a string upon a fret, means for moving the finger-piece, and a spring device for assisting in moving the finger-piece to press its string upon the fret and for retarding the finger-piece upon a release movement, as set forth.

5. A fingering device for stringed musical instruments, comprising a spring-pressed bar mounted to slide and having a finger-piece for pressing a string against a fret, a pivot-arm pivotally connected with said bar, an intermittently-rotated star-wheel for imparting a swinging motion to said arm in one direction, and a spring-tongue for pressing one of said movable parts and arranged to assist in moving the finger-piece to transport the string to the fret, and to retard the return movement of the finger-piece, as set forth.

6. A fingering device for stringed musical instruments, a fret disposed at one side of a string, a spring-pressed bar mounted to slide transversely of the string, and having a finger-piece, a pivot-arm pivotally connected with the free end of said bar, and an intermittently-rotated star-wheel for imparting a swinging motion to said arm in one direction, substantially as shown and described.

7. A fingering device for stringed musical instruments, a fret disposed at one side of a string, a spring-pressed bar mounted to slide transversely of the string, and having a finger-piece, a pivot-arm pivotally connected with the free end of said bar, an intermittently-rotated star-wheel for imparting a swinging motion to said arm in one direction, and a spring-tongue for pressing said star-wheel, for assisting in moving the finger-piece and transporting the string to a fret, and for retarding the return movement of the finger-piece, as set forth.

8. A self-playing stringed musical instrument, comprising a sounding-board, strings stretched over the same, a picking device for picking said strings, and a fingering device for fingering the strings, and comprising spring-pressed bars movable transversely of the strings, finger-pieces on said bars, for pressing the strings against the frets, frets arranged at the sides of the strings, pivot-arms pivotally connected with said bars, and star-wheels for actuating said arms, as set forth.

9. A self-playing stringed musical instrument, comprising a sounding-board, strings stretched over the same, a picking device for picking said strings, a fingering device for fingering the strings, and comprising spring-pressed bars movable transversely of the strings, finger-pieces on said bars, for pressing the strings against the frets, frets arranged at the sides of the strings, pivot-arms pivotally connected with said bars, star-wheels for actuating said arms, and spring-tongues engaging said star-wheels, to assist in moving the finger-pieces and transport the strings to their frets, and to retard the return movement of the finger-pieces, as set forth.

10. A self-playing stringed musical instrument having upright frets, and means for pressing the strings sidewise against the frets, as set forth.

11. A self-playing stringed musical instrument having a body over which the strings are stretched, and a set of frets for each string and extending upward from the body to one side of the string, as set forth.

12. A self-playing stringed musical instrument having a body over which the strings are stretched, a set of frets for each string and extending upward from the body to one side of the string, and finger-pieces arranged to move transverse of the strings to press the same transversely against the strings, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRIEDRICH SCHNEIDER.

Witnesses:
SIEGMUND WEISS,
JOHN LAVY.