

(No Model.)

2 Sheets—Sheet 1.

L. CAMPICHE.
MUSICAL INSTRUMENT.

No. 418,681.

Patented Jan. 7, 1890.

Fig. 1.

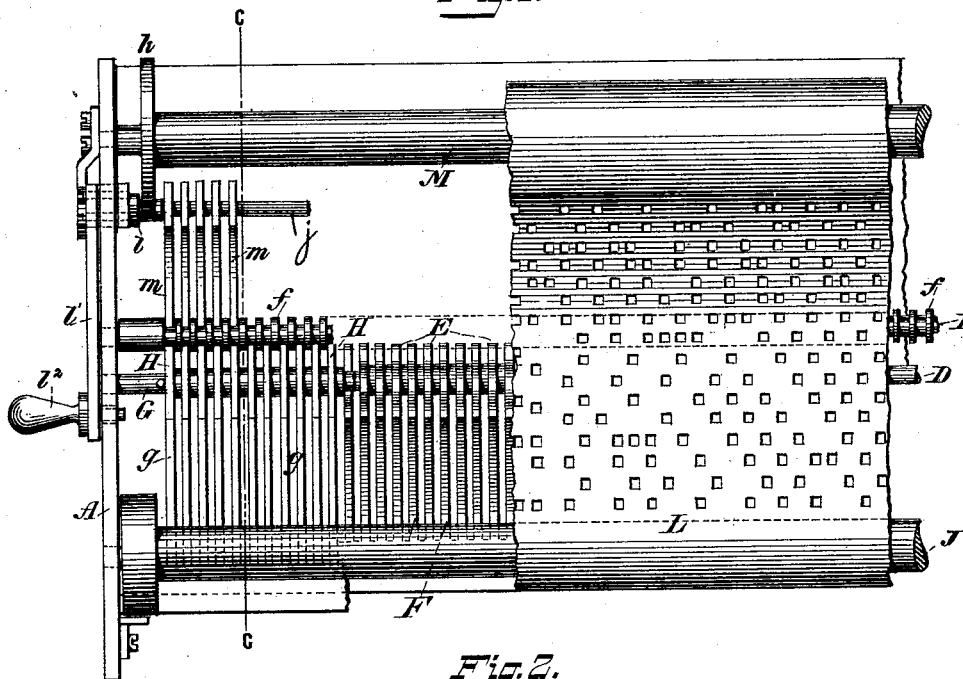
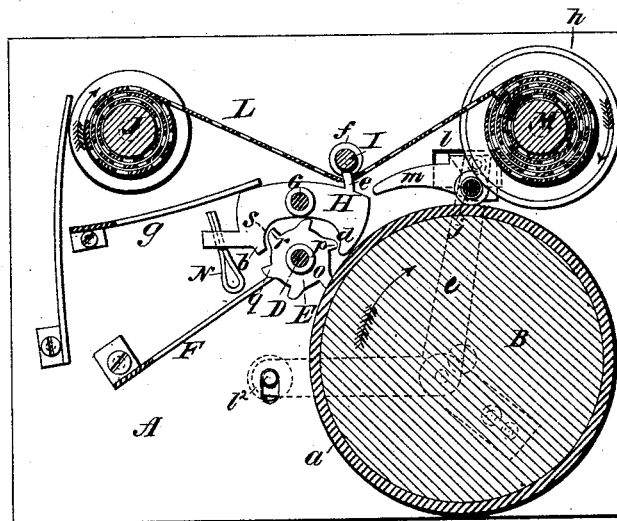


Fig. 2.



WITNESSES:
Gustave Dietrich
T. F. Bourne

INVENTOR
Louis Campiche
BY *Brisson, Steele & Mautz*
ATTORNEYS

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2 Sheets—Sheet 2:

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Fig. 3.

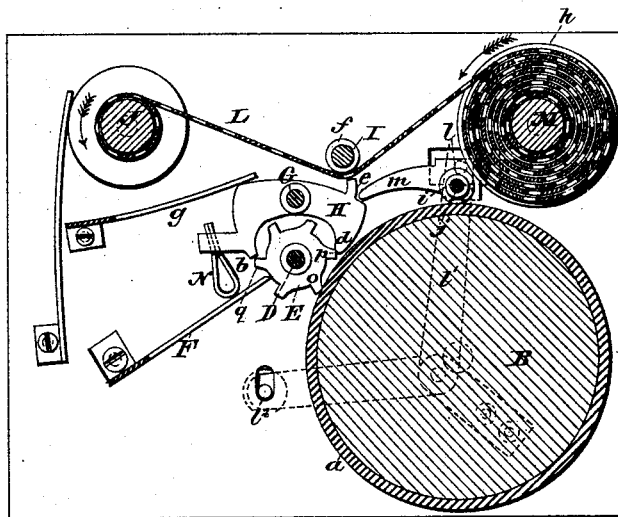


Fig. 4.

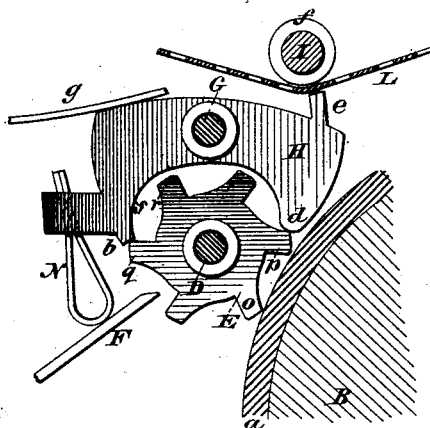


Fig. 5.

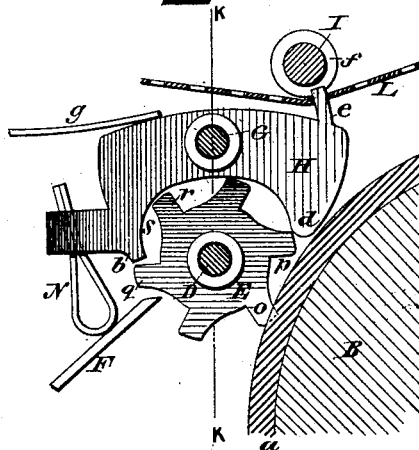
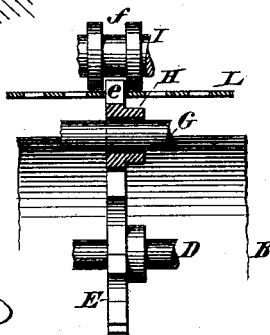


Fig. 6.



WITNESSES:

Gustave Dieterich.
J. F. Bourne.

INVENTOR

Louis Campiche

BY Briesen, Steele & Mantz

ATTORNEYS

UNITED STATES PATENT OFFICE.

LOUIS CAMPICHE, OF STE. CROIX, SWITZERLAND, ASSIGNOR TO MERMOD FRÈRES, OF SAME PLACE.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 418,681, dated January 7, 1890.

Application filed May 8, 1889. Serial No. 309,964. (No model.)

To all whom it may concern:

Be it known that I, LOUIS CAMPICHE, of Ste. Croix, Switzerland, have invented an Improved Musical Instrument, of which the following is a specification.

The object of my invention is to utilize perforated strips or sheets of paper or the like to cause comb-teeth or prongs to be vibrated to produce musical sounds.

The invention consists in the combination of a sounding tooth or prong and a toothed wheel to engage said tooth or prong, with an escapement or pawl to permit said toothed wheel to be intermittently turned, means for turning said wheel, and a perforated strip or sheet of paper or the like for engaging said escapement or pawl to permit it to be moved, so that the toothed wheel can be turned to vibrate the tooth or prong.

The invention further consists in the novel details of improvement and combinations of parts that will be more fully hereinafter set forth, and finally specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein Figure 1 is a partly broken top view of a portion of a musical instrument constructed according to my invention. Fig. 2 is a vertical cross-section on the plane of the line *c c*, Fig. 1. Fig. 3 is a similar view to Fig. 2 showing the parts in different positions. Figs. 4 and 5 are enlarged detail sectional views showing the parts in different positions; and Fig. 6 is a vertical longitudinal section on the plane of the line *k k*, Fig. 5.

Referring now to the accompanying drawings, the letter A represents a portion of a suitable box or frame in which the mechanism of the musical instrument is carried. Within the box A is a horizontal cylinder or roller B, that is journaled at its ends in suitable bearings, and said roller is preferably provided with a covering *a* of elastic material—say, for instance, rubber or the like. The cylinder or roller B may be driven by a crank or by any other suitable mechanism or motor—such, for instance, as that used in ordinary musical boxes for turning the pin-barrel.

D is a horizontal bar or shaft that extends parallel with the cylinder B, and upon the shaft D are a series of toothed wheels or disks E, placed side by side, the teeth of which wheels or disks E are adapted to engage and actuate comb teeth or prongs F, which produce the musical sounds. The teeth of the disks or wheels E are adapted to engage the cylinder B, or the covering *a* upon the same, and to be turned by said cylinder, as indicated in Figs. 2, 3, 4, and 5.

G is a horizontal shaft parallel with the shaft D, and placed preferably above the same, as shown, and upon the shaft G are hung or journaled a series of escapements or pawls H, (there being one pawl H for each toothed wheel or disk E,) each pawl engaging its respective disk, as hereinafter explained.

Each escapement or pawl H is provided with two projections *b d*, that are adapted to engage the teeth on opposite sides of the respective disks or wheels E, as shown in the drawings. Each escapement or pawl H carries a projection *e*, that is adapted to enter a groove *f* in a roller or shaft I, that extends parallel with the cylinder B, as indicated in Figs. 1 and 2, there being one such groove *f* for each escapement. Each escapement or pawl H is provided with a spring *g*, that tends to move the projection *e* into the groove *f*, as will be understood by reference to Figs. 4 and 5; but other means than the wheel E could be used for vibrating the teeth or prongs F.

J is a horizontal drum or roller journaled in suitable bearings in the frame A, upon which is or may be wound a perforated strip or sheet L, of paper or other suitable material, through the perforations of which the projections *e* on the escapements H are adapted to pass when brought in line with the same. The perforated strip or the like L passes under the grooved roller or shaft I, and is wound upon a suitable horizontal roller M, journaled in suitable bearings in the frame A.

The roller M is preferably driven by the cylinder or roller B, and for this purpose the roller M is provided with a suitable disk or friction-wheel *h*, that is adapted to contact or gear with a suitable friction-roller *i*, that

is adapted to come between the roller or cylinder B and the disk *h* of the roller M, so that the revolution of the cylinder or roller B will be communicated to the roller M through the medium of the friction-roller *i*; but the roller M may be otherwise driven, if desired. The friction-roller *i* is pivotally carried by a rod *j*, that is secured to one arm of a lever *l*, that is pivoted to the frame A, as more clearly indicated by dotted lines in Figs. 2 and 3. The lever *l* in the drawings is shown as a bell-crank lever, and at one end is provided with a stud or thumb-button *l'*, by which said lever can be rocked so as to cause the friction-roller *i* to contact the rollers B M, as in Fig. 2, and to be moved out of contact therewith, as in Fig. 3. The rod *j* extends across the box and carries one or more fingers *m*, each of which is adapted to engage one or more escapements or pawls H to prevent its movement when the roller *i* is moved out of contact with the rollers B M, as indicated in Fig. 3. In order to support the rod *j* at both ends, an additional lever similar to the lever *l* (not shown) may be used at the end of the machine opposite to that shown in Fig. 1. Each escapement or pawl H carries a damper or the like N, that is adapted to engage its respective prong or tooth F to modify or otherwise affect the vibration of the same.

The operation of the musical instrument above described is as follows: The perforated strip L is first placed in position, as shown in Fig. 2—that is, extends from the roller J to the roller M and under the grooved roller I. The mechanism is now started by rotating the cylinder B in the direction of the arrow *a*³ in Fig. 2, and the friction-roller *i* moved into contact with the cylinder B and disk *h*, so as to turn the roller M to carry the perforated strip L along. The unperforated part of the strip L holds the projections *e* on the escapements or pawls H out of the respective grooves *f*, as indicated in Fig. 4. As the strip L moves forward and a perforation comes in line with a projection *e* on an escapement or pawl H, said projection will pass through said perforation, being impelled by the tension of the spring *g*, as indicated in Fig. 5. As shown in Fig. 4, when the projection *e* is held out of the groove *f* by the unperforated part of the strip L, two teeth *o p* of the wheel or disk E come in line with the periphery of the cylinder B, whereby the rotation of the cylinder will not turn the wheel or disk E. At this time the projection *p* of the wheel E engages the projection *d* of the escapement H, while the projection *b* of the escapement H engages the tooth *q* of the wheel E, thereby holding the wheel E stationary. When the projection *e* passes through the perforation in the strip L, as before stated, the movement of the escapement H by the spring *g* causes the projection *b* to press upon the tooth *q* and thereby to turn the wheel E slightly and to cause the tooth *o* to engage the cylinder B, as indicated in Fig. 5.

The raising of the projection *d* by the lowering of the projection *b* meanwhile permits the tooth *p* free movement. The rotation of the cylinder B now turns the disk or wheel E so as to bring the tooth *q* into engagement with its respective prong or tooth F, and as the tooth *q* passes from and releases the tooth or prong F by the rotation of the wheel E by the cylinder B the tooth will be vibrated to produce a musical sound. While the wheel E is being turned by the engagement of its tooth *o* with the cylinder B the tooth *r* on said wheel, diametrically opposite the tooth *o*, engages the curved portion *s* of the escapement H and thereby raises that part of the escapement, and thus withdraws the projection *e* from the perforation in the strip L, as will be understood by reference to Fig. 5, which shows the tooth *r* about to engage the curved portion *s* of the escapement. When the projection *e* of the escapement H first passes through the perforation in the strip L, the damper N is brought into contact with its respective tooth or prong F, so as to stop any vibration from a previous movement of the prong, while before the tooth of the wheel E actuates the prong F the damper N is moved from contact with said prong through the raising of the escapement by the tooth *r* engaging the curved portion *s* of said escapement, to elevate the same.

It will be understood that the perforations are so arranged in the strip L that the various projections *e* on the series of escapements H will be alternately or intermittently passed through said perforations, so as to produce varying sounds of high or low pitch to play the desired air or tune.

After the strip L has been passed from the roller J to the roller M the friction-roller *i* can be moved from contact with the disk *h*, so that the strip L can be wound back upon the roller J, as indicated by the arrows in Fig. 3, so as to play the tune over again; but the strip L may be removed and replaced by another having a different arrangement of perforations to produce a different air or tune, as the case may be.

Instead of a long strip of paper to be wound on rollers, as indicated, a round or other shaped perforated plate or roller may be used to permit the projections *e* on the several escapements to be moved for the purpose of actuating the sound-producing mechanism.

Having now described my invention, what I claim is—

1. In a musical instrument, a sounding tooth or prong, and means, substantially as described, for vibrating the same, combined with an escapement or pawl H and with a perforated strip or sheet L, substantially as described.

2. In a musical instrument, the tooth F and the toothed wheel E, adapted to engage the same, combined with the escapement or pawl H, adapted to engage the wheel E, means, substantially as described, for turning the

wheel E, and with a perforated strip or plate to permit movement of the escapement, substantially as described.

3. In a musical instrument, the tooth or
5 prong F, cylinder or roller B, and toothed wheel E, combined with the escapement or pawl H, adapted to engage the wheel E, said escapement having a projection *e*, and with
10 of the escapement, substantially as described.

4. The tooth F, cylinder B, and toothed wheel E, combined with the escapement H, having projection *e*, grooved roller I, and perforated strip L, substantially as described.

15 5. The tooth F, toothed wheel E, and means, substantially as described, for turning the same, combined with the escapement H and the damper N, carried by the same, for engaging the tooth F, substantially as described.

20 6. The tooth F, toothed wheel E, and cylinder B, combined with the escapement H, spring *g* for moving said escapement, and perforated strip or plate L, substantially as described.

25 7. The tooth F, toothed wheel E, and escapement H, in combination with the cylinder B, roller M, roller *i* between the cylinder B and roller M, and means, substantially as described, for supporting and moving said

roller *i* into and out of engagement with the
30 cylinder B, substantially as described.

8. The tooth F, toothed wheel E, and escapement H, in combination with the cylinder B, lever *l*, and finger *m*, adapted to engage and hold the escapement H, substan-
35 tially as described.

9. The tooth F, toothed wheel E, and escapement H, in combination with the cylinder B, roller M, lever *l*, roller *i*, and finger *m*,
40 substantially as described.

10. The tooth F, toothed wheel E, escapement H, and spring *g*, in combination with the cylinder B, grooved roller I, rollers J M, perforated strip L, and means, substantially
45 as described, for turning the cylinder B, as specified.

11. The sounding tooth or prong F, combined with the escapement or pawl H, and with the damper N, actuated by said escapement and adapted to engage the tooth F,
50 substantially as described.

The above specification of my invention signed by me this 25th day of March, 1889.

LOUIS CAMPICHE.

Witnesses:

ELMER SCHNEIDER,
J. SCHRYHER.