(No Model.) 2 Sheets—Sheet 1.

O. ZABEKOW.

MECHANICAL MUSICAL INSTRUMENT.

No. 290,726. Patented Dec. 25, 1883.

Fig. 1.

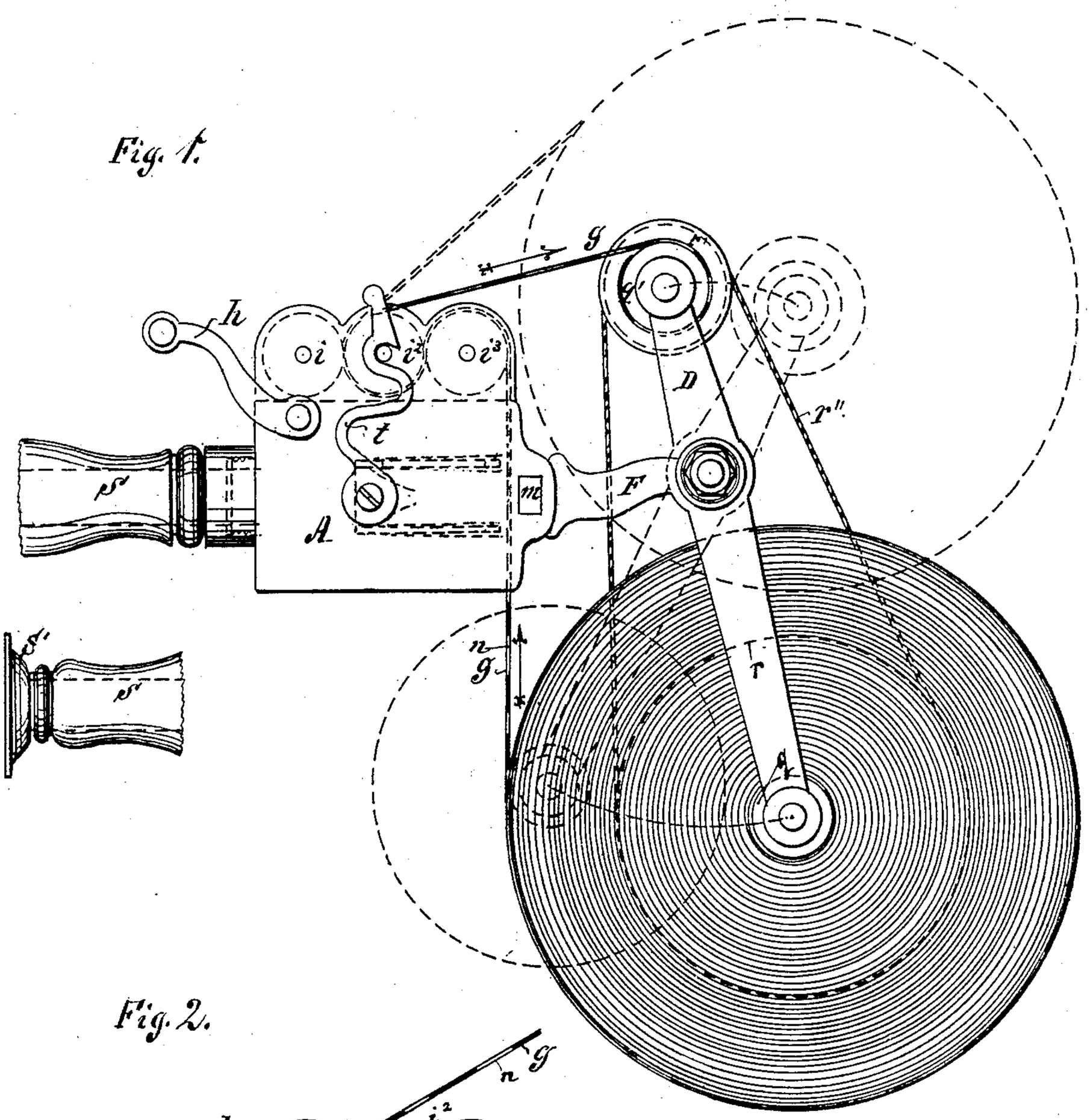
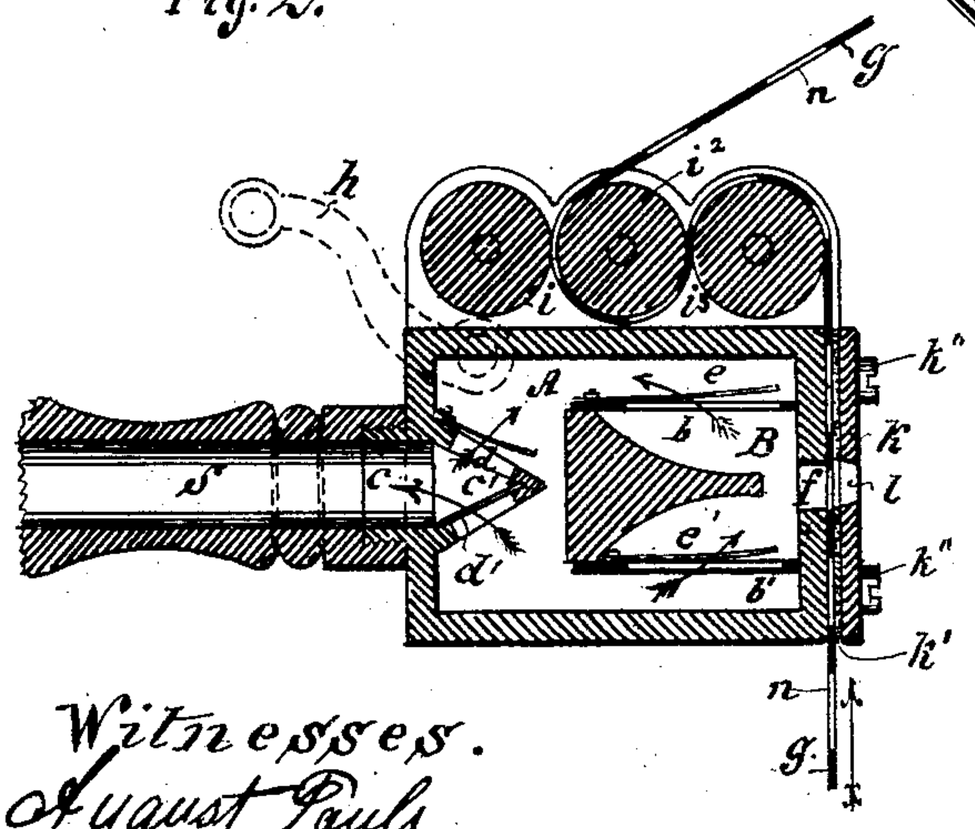


Fig. 2.



Witnesses.
August Pauls
J. Gemmel, Jr.

Inventor.
Otto Zabekow
per Henry & Baldwin
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

O. ZABEKOW.

MECHANICAL MUSICAL INSTRUMENT.

No. 290,726. Patented Dec. 25, 1883.

Fig. 3.

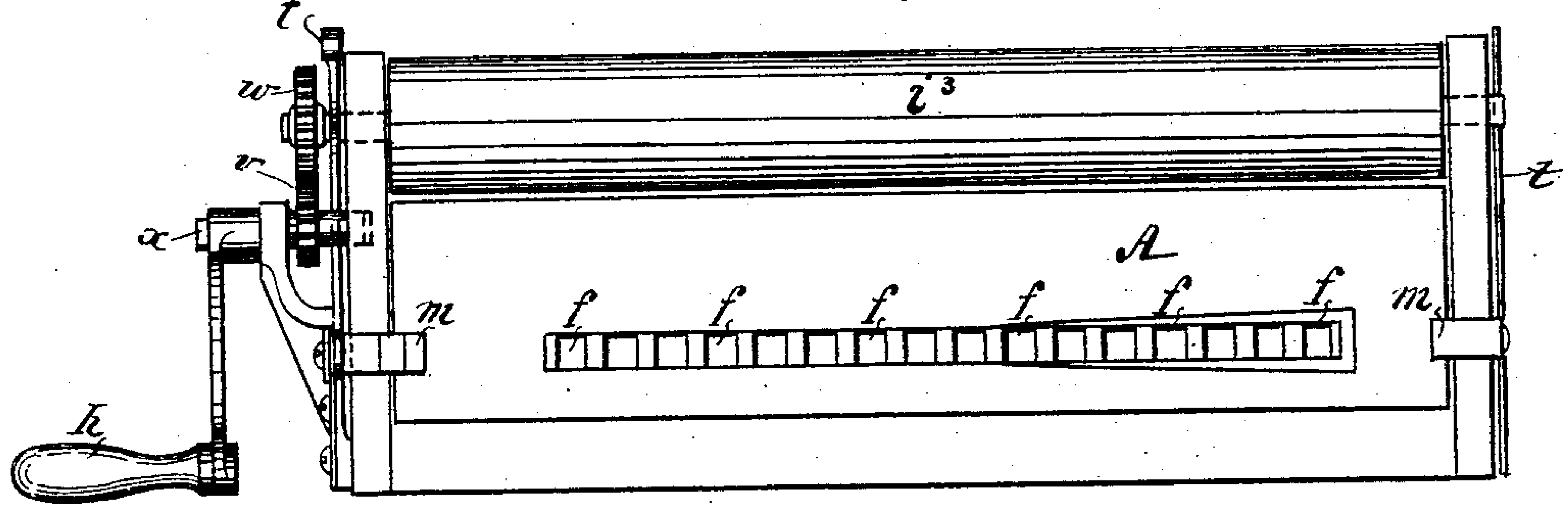


Fig. 6.

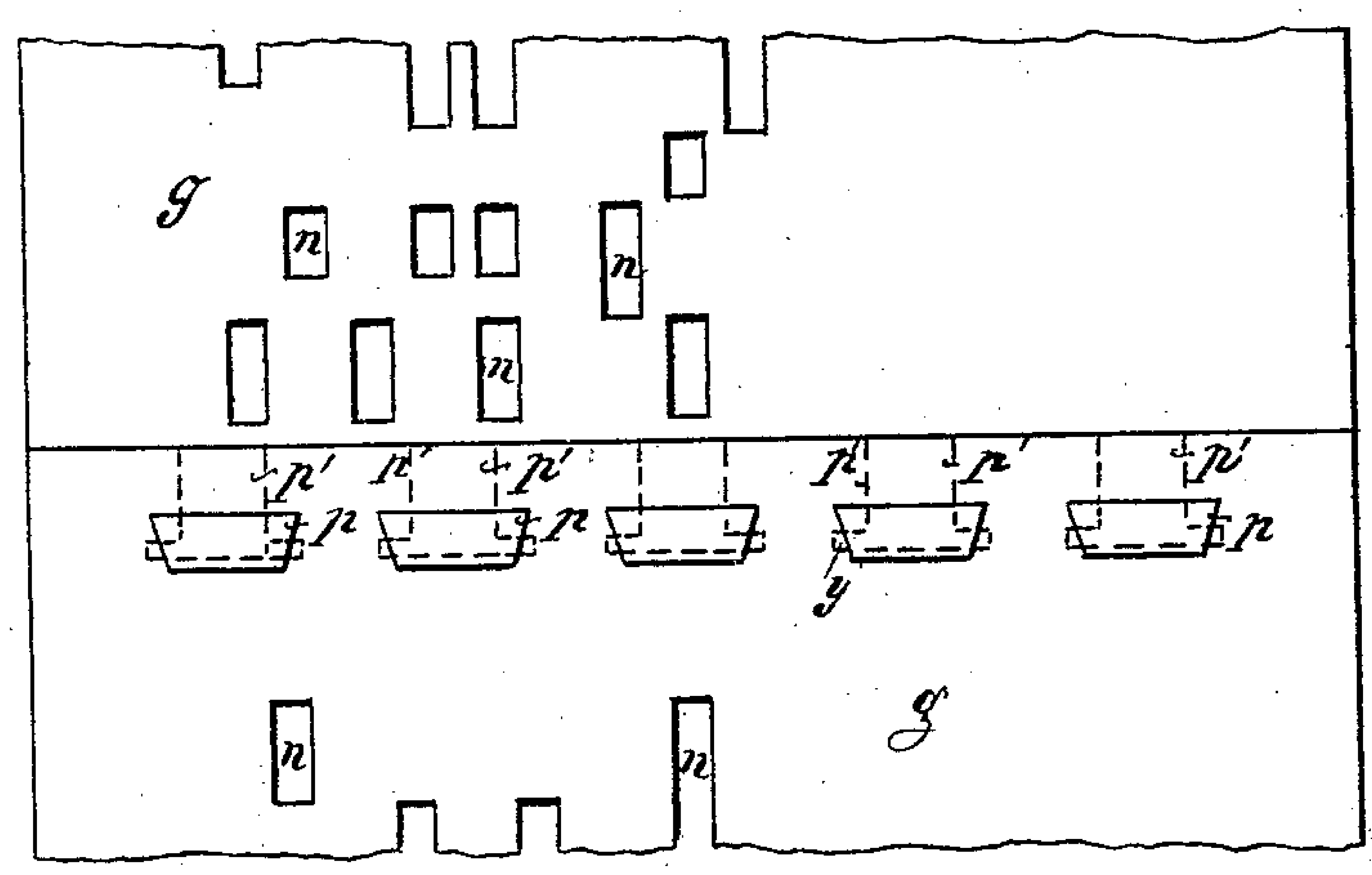


Fig. 4.

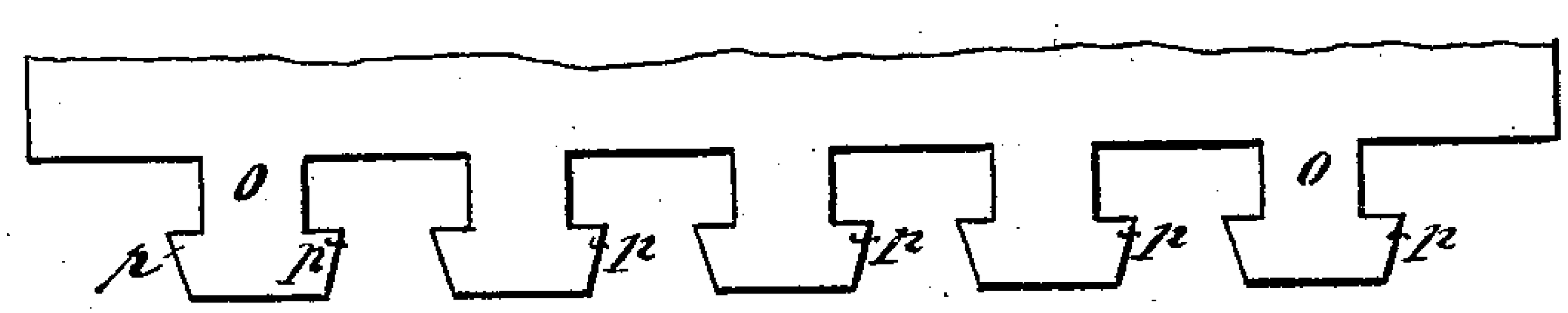
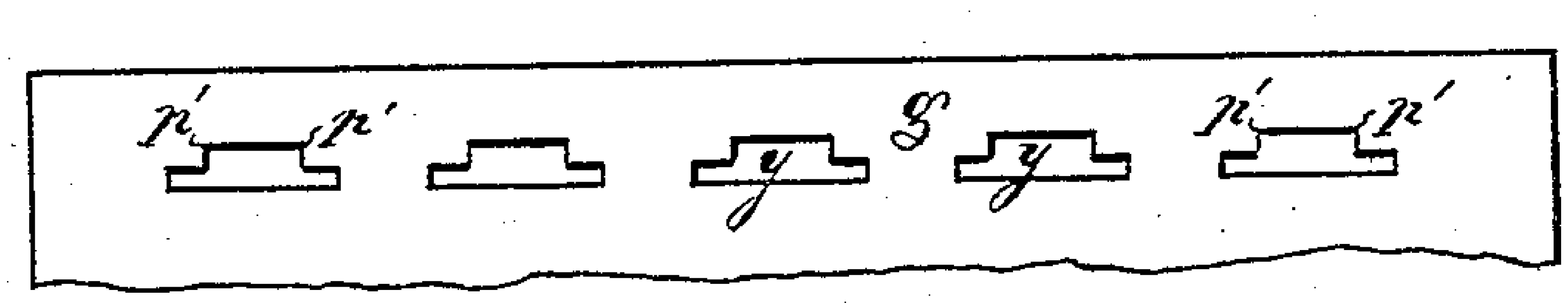


Fig. 5.



Witnesses.
August Pauls
J. Gemmel, Jr.

Inventor.
Otto Zabekow
per Henry E. Roeder
Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

OTTO ZABEKOW, OF BERLIN, GERMANY.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 290,726, dated December 25, 1883.

Application filed April 11, 1883. (No model.) Patented in France July 19, 1882, No. 150,197.

To all whom it may concern:

Be it known thatI , OTTO ZABEKOW, a citizen of Germany, and a resident of the city of Berlin, in Germany, have invented a new and useful Improvement in Mechanical Musical Instruments, of which the following is a specification.

The nature of my invention consists in the manner of supporting and operating the perforated music sheet or band, whereby the instrument can be made larger and of greater extent, to enable the production of long pieces of music.

In the accompanying drawings, Figure 1 represents a side elevation of my improved harmonica. Fig. 2 is a cross-section of the same. Fig. 3 is an end view of the same. Figs. 4 and 5 represent ends of two cards or bands before being attached together, and Fig. 6 shows the cards connected together.

Similar letters represent similar parts in all the figures.

A is a wind-chamber, having at one end the single opening *c* and at the other end the reed-cells B, of any desired number, closed above and below by the reed-boards *b b'*, with their reeds *e e'*. The reeds *e* and *e'* of each cell are exactly of the same tone. The upper reed, *e*, being operated when the air or wind is drawn through the cells B into the wind-chamber, and the reeds *e'* operating when the air or wind is blown into the wind-chamber A and the cells B, as indicated by the arrows. Each cell has a hole or opening, *f*, Figs. 2 and 3, through which the air or wind may escape or enter.

Inside of the single opening or mouth-piece *c* a small chamber, *c'*, is arranged, with two or more openings, *d d'*, closed by induction and eduction valves.

To the opening *c* a hollow handle, *s*, may be attached, with a mouth-piece, *s'*, at its end, for the purpose of holding the instrument by said handle to the mouth of the operator.

Against the end of the instrument or chamber A a board or band, *g*, is made to pass, held close against the chamber by a plate, *k*, provided with a soft lining, *k'*. This plate *k* is supported on the chamber by bolts *k''* and pressed against the board or band *g* by springs *m m*, arranged at the ends, so as to hold the board or band *g* tight against the end of the chamber A. The band or board *g* is provided with a series of holes or openings, *n*, Fig. 6, whereby while passing the cell-holes *f* the same will be alternately opened or closed, as may be required. The plate *k* is provided either with a long slit or opening, *l*, extending across all the openings *f*, or with a number of openings exactly opposite each opening *f*, so that when one of the openings *n* of the band *g* passes an opening *f* a free and clear opening for the passage of the air or wind will be obtained from or to the cells B.

For short pieces of music, cards provided with the required holes or openings *n* may be drawn by hand between the end of the chamber A and the plate *k* past the openings *f*. For larger pieces of music, when the band *g* necessitates some length, rollers *i i² i³* are arranged on top of the chamber A, having suitable gear-wheels, *w*, at one end, meshing into each other, the wheel *w* at the end of the roller *i*, meshing into a pinion, *v*, attached to a shaft, *x* operated by a crank, *h*. (See Fig. 3.) By this arrangement a regular motion can be given to the band *g*, of any desired speed. The rollers *i* and *i³* are supported in bearings fixed to the chamber A, and the roller *i²* is supported in movable levers *t*, to enable this roller *i²* to be easily removed when the band *g* is desired to be changed. The upper end of the band *g* is passed over the roller *i³* below and around the roller *i²*, and is then allowed to fall down free as the band is drawn past the end of the instrument and past the openings *f*, the roller *i* acting as a friction-roller, to insure the regular motion of the band *g*.

For very long pieces of music, when the band *g* is of necessity of such a length as to make the falling or hanging down of the same inconvenient, levers D are arranged on each side of the machine, turning freely on centers in suitable brackets, F. The ends of these levers carry rollers *q* and *q'*, as well as pulleys *r* and *r'*, over which latter a flexible belt or cord, *r''*, passes, to communicate motion from one to the other, and through the same to the rollers *q* and *q'*. The long band *g* in this case is wound upon the lower roller, *q*, and after passing the end of the instrument and around the rollers *i³* and *i²*, as above de-

scribed, its end is attached to the upper roller, q', and, as the band g is removed from the roller q, is gradually wound upon the roller q'.

To obtain a band g of any desired length, shorter pieces are connected together as follows: The end of one of the short pieces has tongue-pieces o o attached, parallel for some distance, having at their ends projections p at each side. (See Fig. 4.) The end of the other card or band has corresponding openings, y, the upper part of said opening being of a width from p' to p' corresponding with the width of the tongue-piece o on the other card or band, and the lower part of said opening y being of a width to allow the projections p p and the tongue-pieces o to pass freely through. Fig. 6 shows the ends of two cards or bands connected together where the projecting ends of the tongue-pieces o, after being passed through the elongated part of the opening y, are moved slightly upward until the side projections, p p, are held by the edge of the upper part, p' p', of said opening y.

The operation of this instrument will be readily understood. When air or wind is blown into or drawn out of the wind-chamber A, either the reed e or e' in any one of the cells B will produce the desired tone. When, by the passage of the card or band g, an opening n in said band will come opposite the opening f, and, as before described, the tones of both reeds e e' in each cell being exactly alike, the same sound or tone will be produced whether the air or wind is blown into the air-chamber A or drawn out of the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a harmonica adapted to be operated by a perforated music-sheet, the combination, with the band or music-sheet g, of the rollers i i^2 i^3, gearing w, pinion v, crank h, and movable levers t, said rollers i and i^3 being supported in fixed bearings on the instrument, and the roller i^2 being carried in suitable recesses or bearings in the levers t, attached to the side of the instrument, and capable of being easily removed, to pass the band g below and around the same, as and for the purpose described.

2. In combination with the band g and rollers i i^2 i^3, the swinging levers D D, with rollers q q' and pulleys r r', connected by an elastic belt or cord, r'', arranged to operate in the manner and for the purpose substantially as set forth.

OTTO ZABEKOW.

Witnesses:
WILHELM FEADE,
RUDOLPH FISCHER.