(No Model.) 2 Sheets—Sheet 1.

H. F. HAMBRUCH.

KEY BOARD PLAYER FOR MUSICAL INSTRUMENTS.

No. 371,450. Patented Oct. 11, 1887.

Fig. 1.

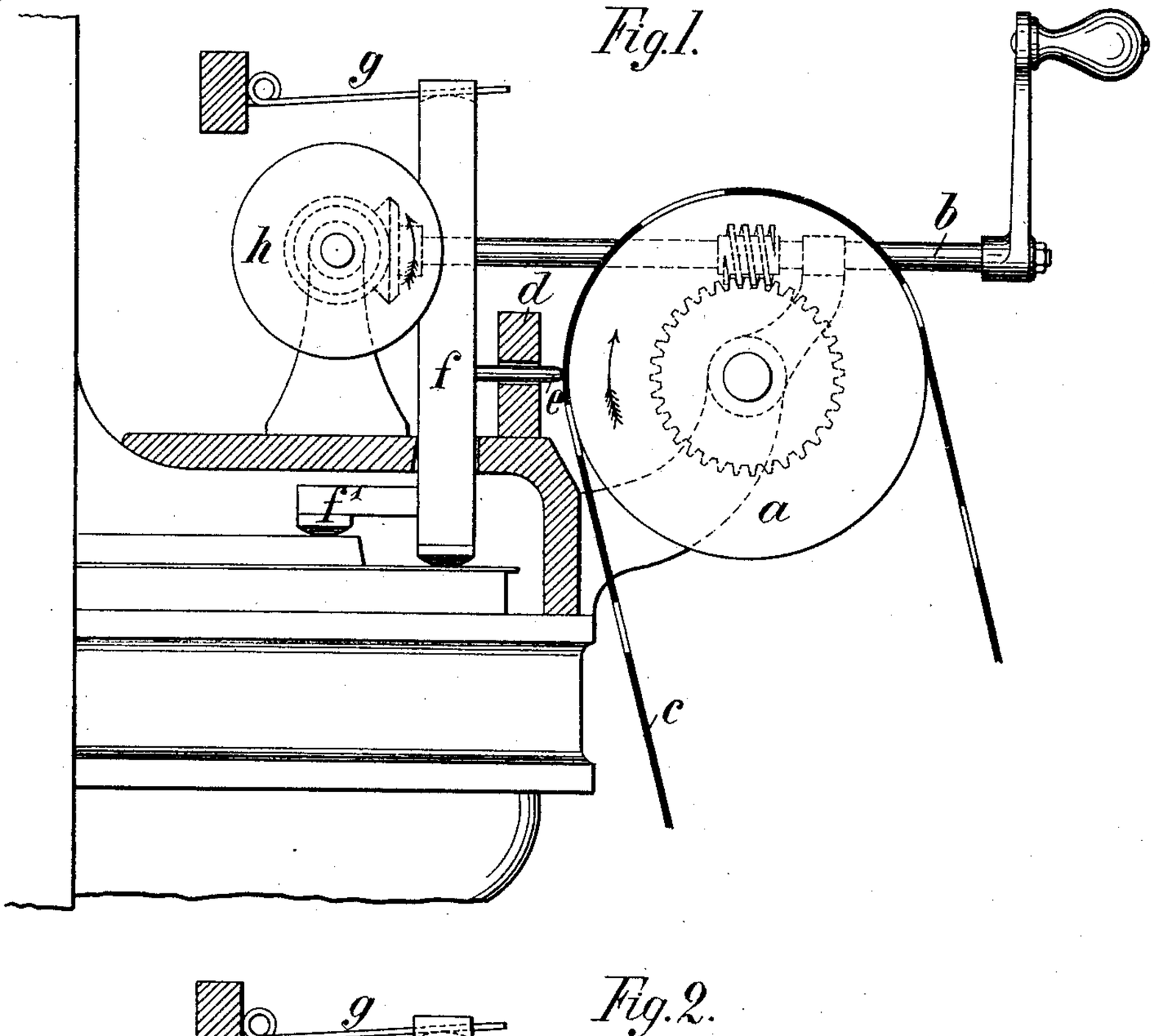
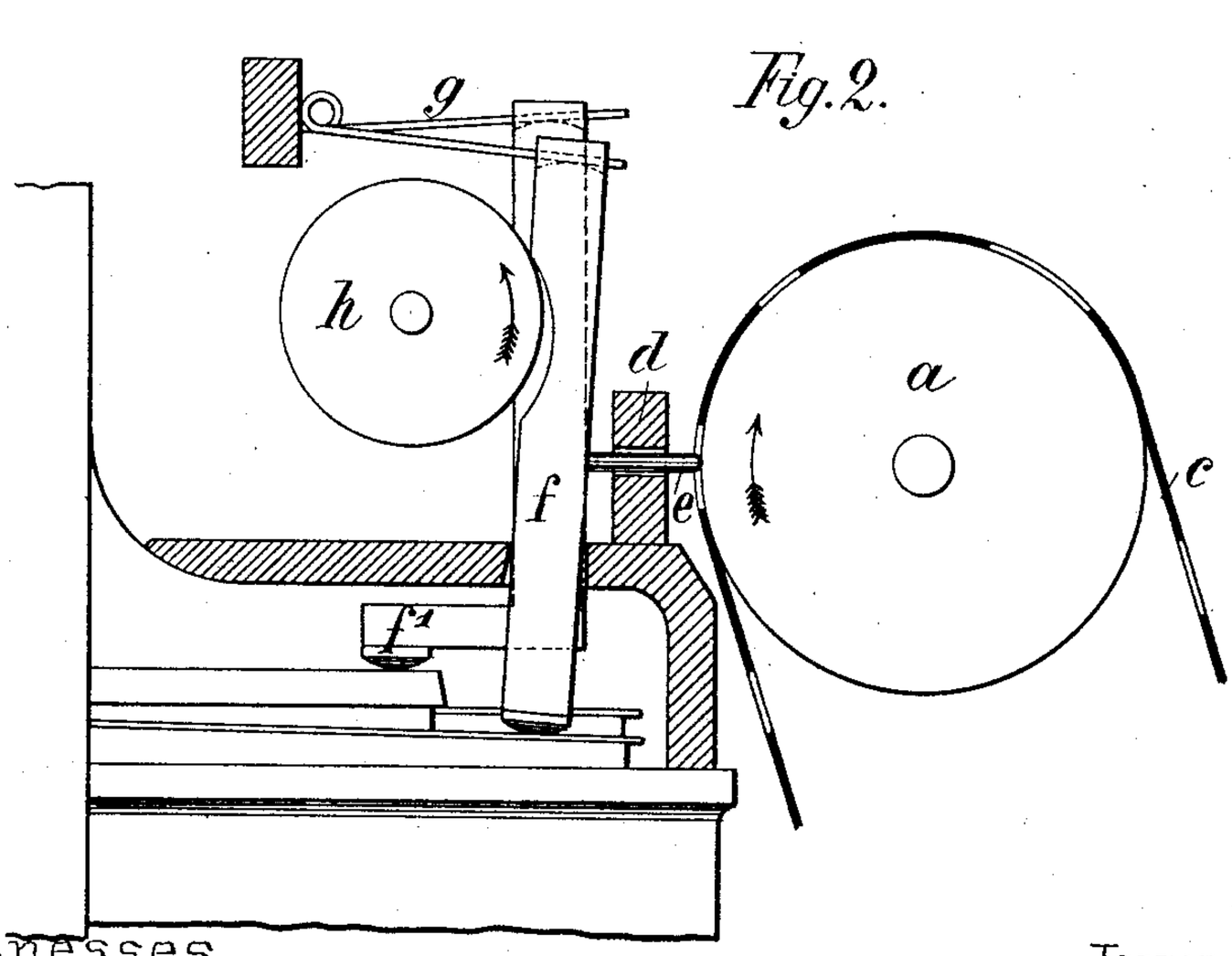


Fig. 2.



Witnesses,
C. F. Beer
Jos. Barnard.

Inventor,
Heinrich Friedrich Hambruch,
By Paine & Ladd,
Attys.

(No Model.)

2 Sheets—Sheet 2.

H. F. HAMBRUCH.

KEY BOARD PLAYER FOR MUSICAL INSTRUMENTS.

No. 371,450. Patented Oct. 11, 1887.

Fig. 3.

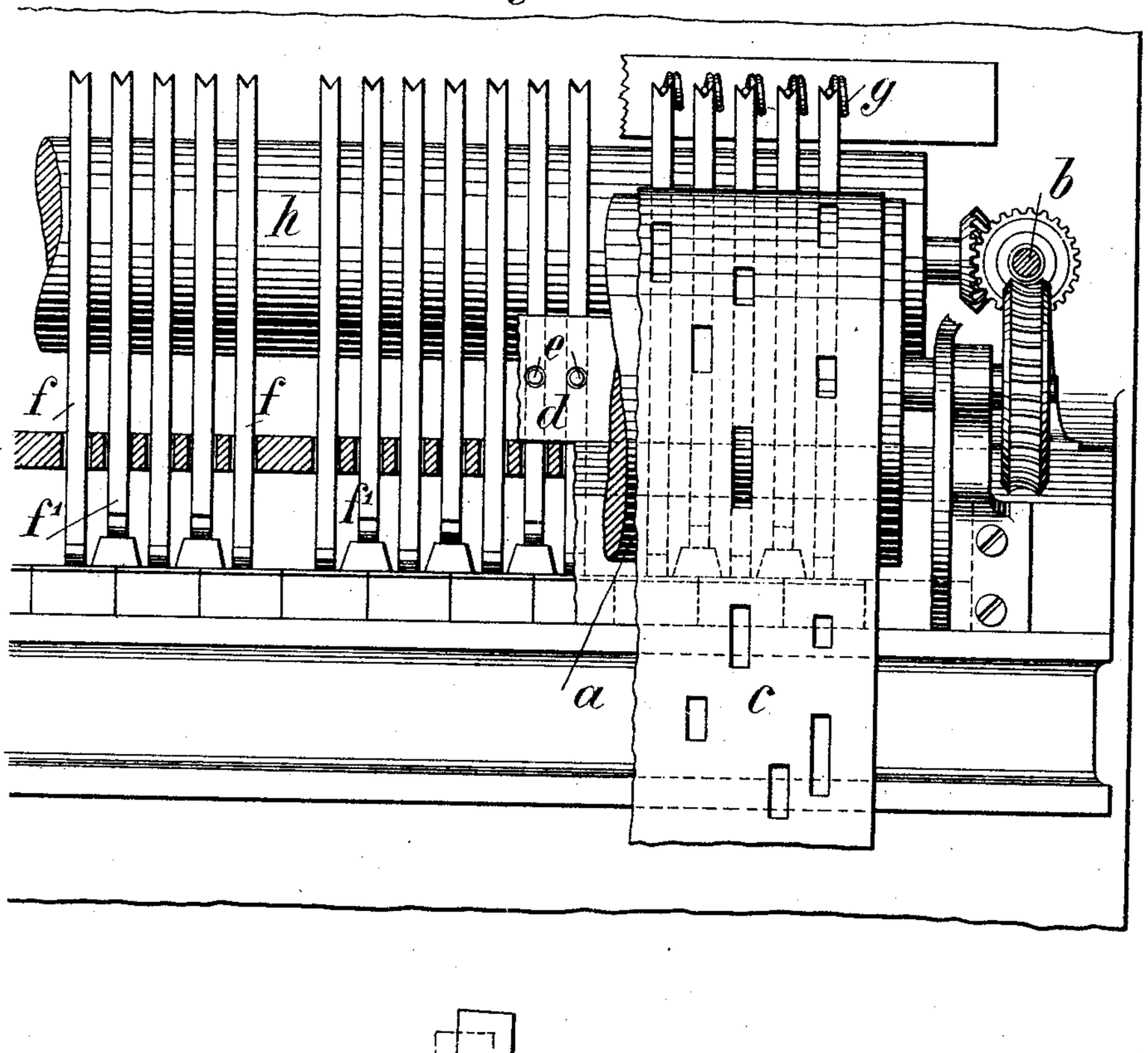
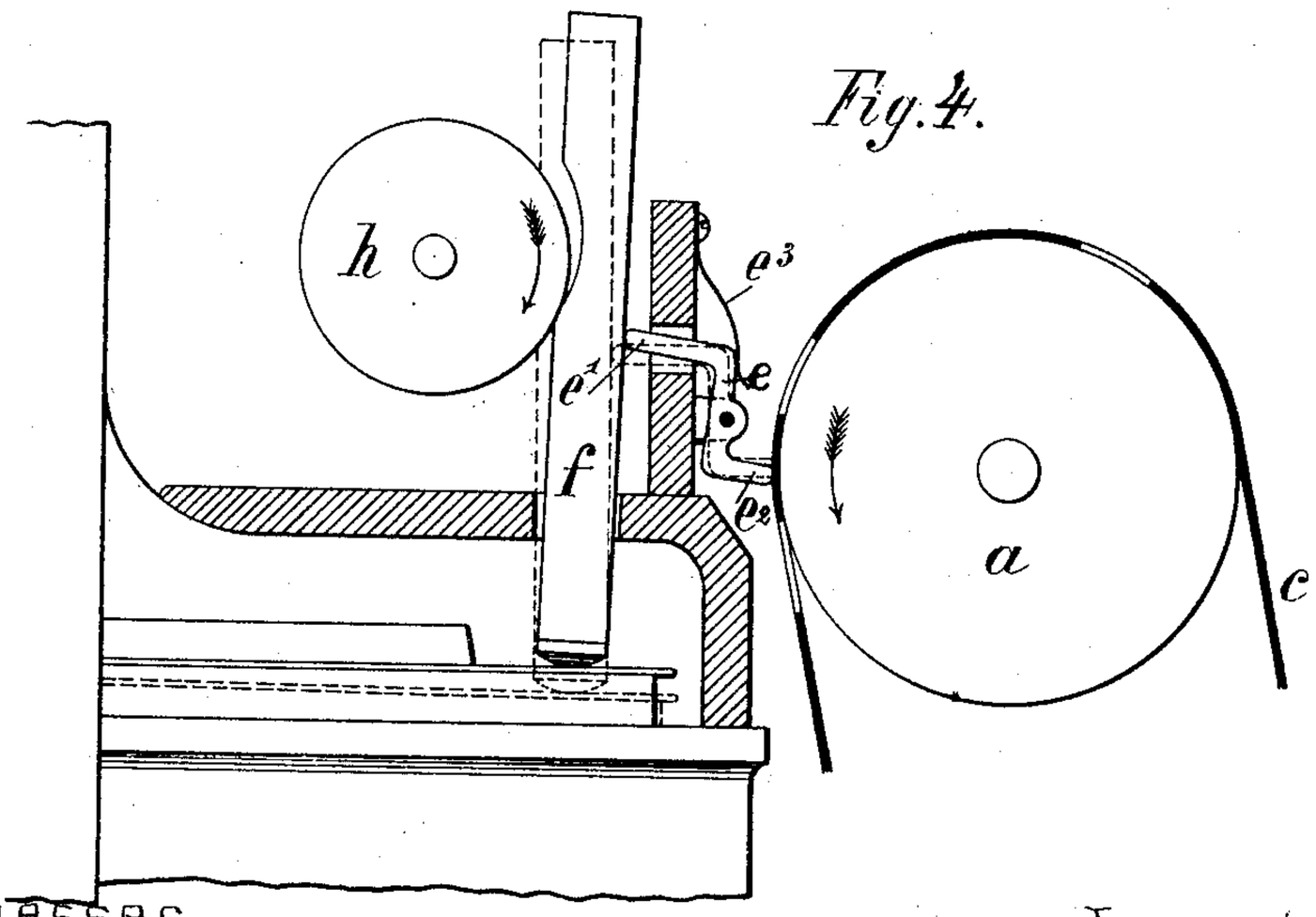


Fig. 4.



Witnesses,
C. L. Bell
Job Barnard,

Inventor,
Heinrich Friedrich Hambruch
By Paine Lord,
Attys.

UNITED STATES PATENT OFFICE.

HEINRICH FRIEDRICH HAMBRUCH, OF HAMBURG, GERMANY.

KEY-BOARD PLAYER FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 371,450, dated October 11, 1887.

Application filed July 22, 1887. Serial No. 244,987. (No model.) Patented in Germany March 26, 1886, No. 38,342, and in France March 30, 1886, No. 175,115.

To all whom it may concern:

Be it known that I, HEINRICH FRIEDRICH HAMBRUCH, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements in Mechanism for Playing Pianos, Organs, and Similar Musical Instruments, (for which I have secured Letters Patent in Germany No. 38,342, dated March 26, 1886, and in France by Letters Patent No. 175,115, dated March 30, 1886,) of which the following is a specification.

The invention relates to improvements in mechanism for playing pianos, organs, and similar musical instruments; and the objects of my improvements are to make use in such mechanism of changeable sheets of card-board, metal, or other suitable material provided with perforations in accordance with the tunes to be played, and to obtain by means of the said mechanical means only a performance of the tunes very like to the production of a good artist. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figures 1 and 2 are end views of the mechanism, in different positions of the working parts, partly shown in section. Fig. 3 is a front view thereof. Fig. 4 shows a modification.

Similar letters refer to similar parts throughout the several views.

The drum *a*, rotated by means of a worm or shaft, *b*, and a worm-wheel, carries a sheet, *c*, of card-board, metal, or other suitable material, which is provided with perforations according to the tune to be played. By the rotation of the drum *a* the sheet *c* is moved forward steadily. A drum, *h*, parallel to drum *a*, is rotated pretty rapidly by bevel-gears, also operated by the crank-shaft *b*.

Between drum *h* and drum *a*, Figs. 1, 2, and 3, the vertical beaters *f*, which serve to strike the keys when pressed downward by springs *g*, are arranged. The beaters striking the black keys are provided with suitably-shaped arms *f'*. The beaters *f* are pressed against the drum *h* as long as the pins *e*, moved in their guide *d* and touching on one side the tune-sheet *c*, do not meet the holes in sheet *c*. Thus the drum rotates in cavities of the levers *f*, shaped in such a manner as to fit the circumference of drum *h*. The shape of the cavity in beater *f* and the direction of rotation of the drum *h* will therefore cause the lifting of the beaters against the action of the spring *g*, Fig. 1.

As soon as a pin *e* meets a hole in sheet *c* the respective beater *f* is able to move from the drum toward the guide *d*, and to strike the key by the action of its spring *g* and remains resting thereupon until the pin *e* is moved backward by the body of the tune-sheet *c*. Then the curved part of the beater *f* and the rotation of the drum *h* will work again and lift the beater *f*. The "holding out" (the periods of vibration) of a single tune can be easily determined by the length of the holes in sheet *c*.

The arrangement shown in Fig. 4 is a modification of the above-described one. The pressing down of the beater *f* is accomplished by the drum *h* rotating in a direction opposite to that which will be required in the former arrangement as soon as the arm e^2 of the bent lever *e* strikes a hole of the sheet *c*, and will enter it by action of spring e^3. The arm *e'* of the lever will then engage the beater *f* with the drum *h*, which will bring down rapidly the key. The lifting of the beater *f* is done by the action of the key itself as soon as the solid part of the tune sheet disengages the lever *e'* e^2 from the beater, which will move freely, as it is no longer pressed against the drum *h*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In mechanism for mechanically playing keyed musical instruments, the combination of the tune-sheet *c*, moved by drum *a*, the lever *e*, and the beaters *f*, provided with cavities to engage with a drum, *h*, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 30th day of April, 1887.

HEINRICH FRIEDRICH HAMBRUCH.

Witnesses:
DIEDRICH PETERSEN,
ALEXANDER SPECHT.