

(No Model.)

F. J. BERNARD.  
MECHANICAL MUSICAL INSTRUMENT.

No. 550,154.

Patented Nov. 19, 1895.

Fig. 1.

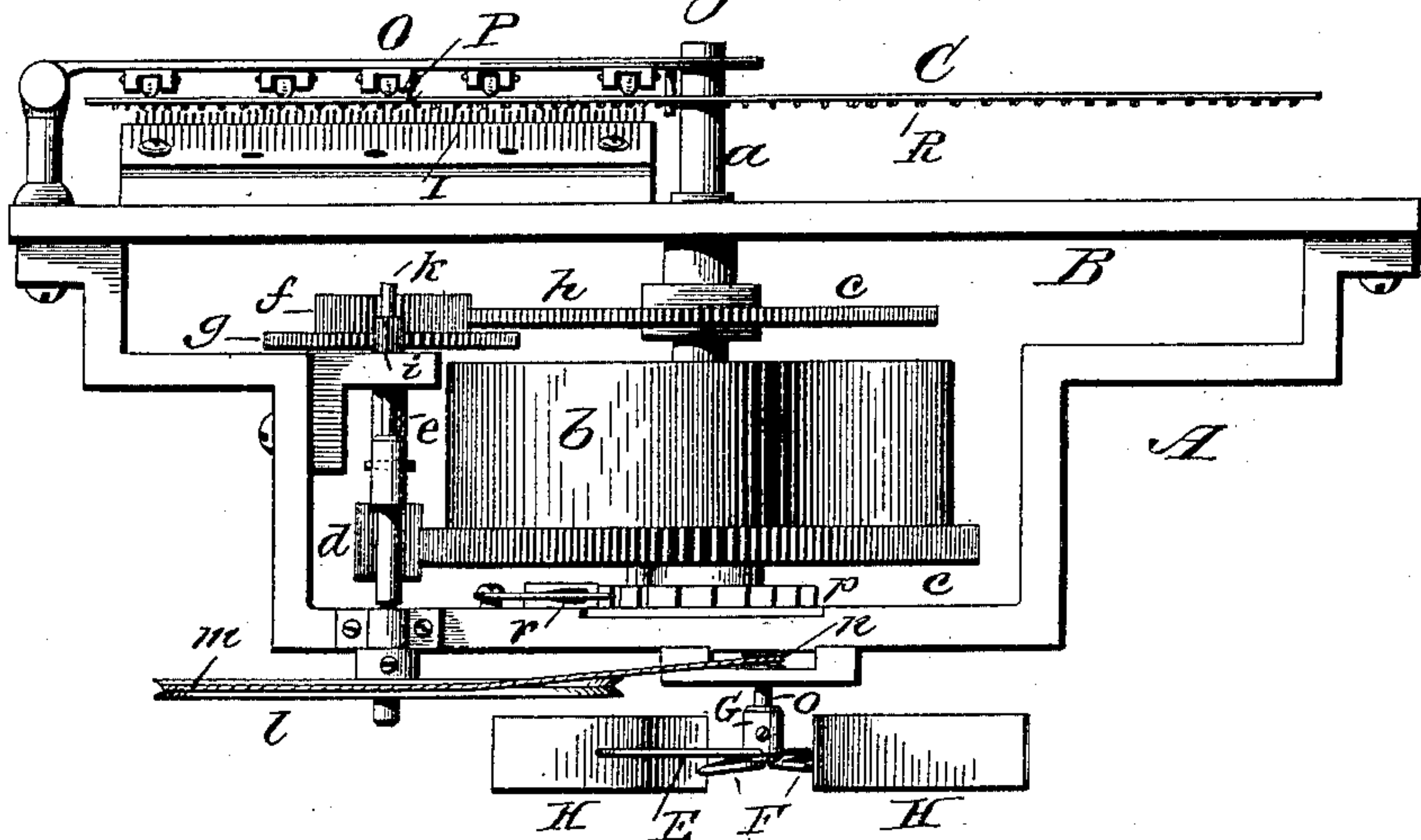


Fig. 2.

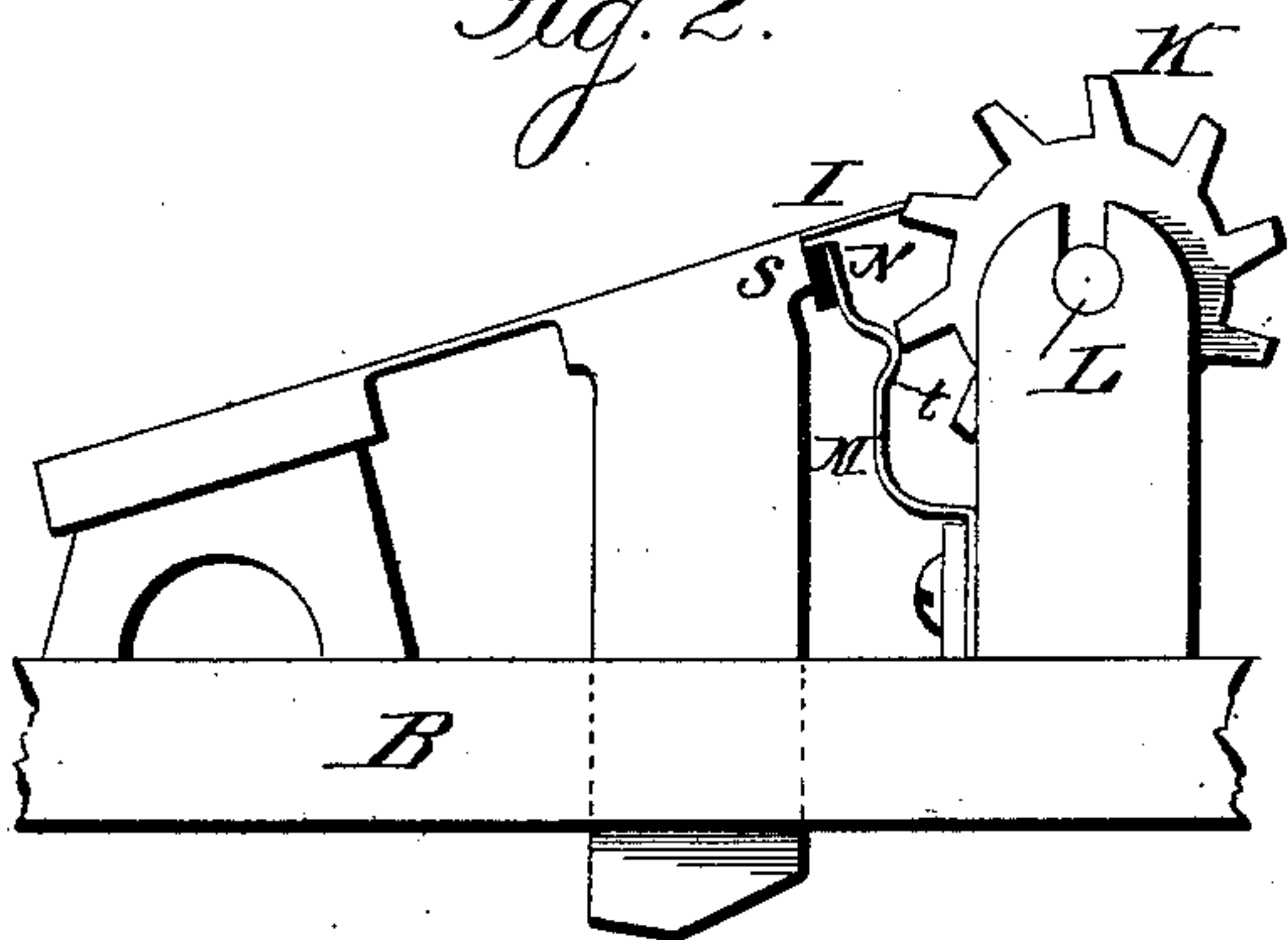


Fig. 3.

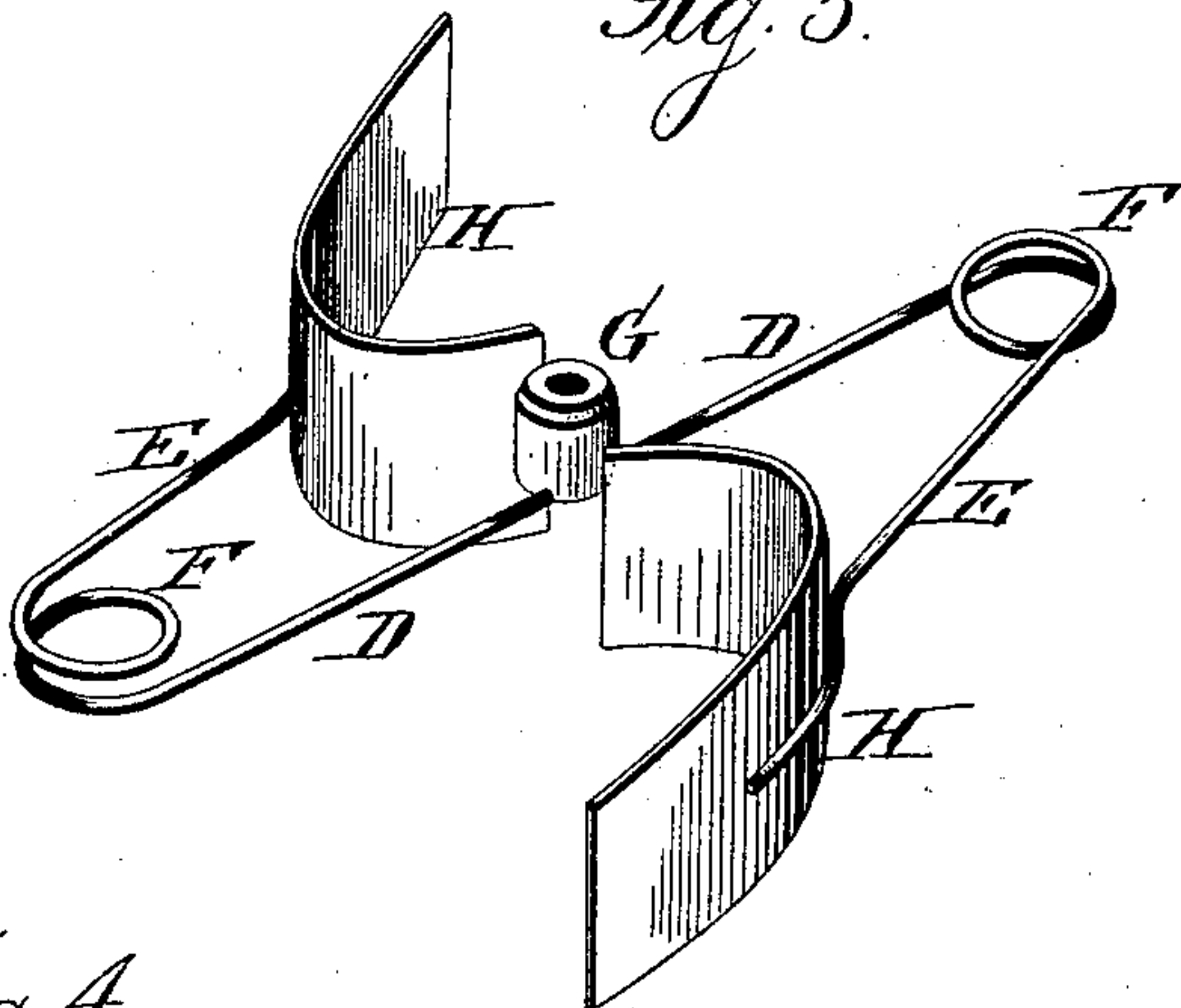
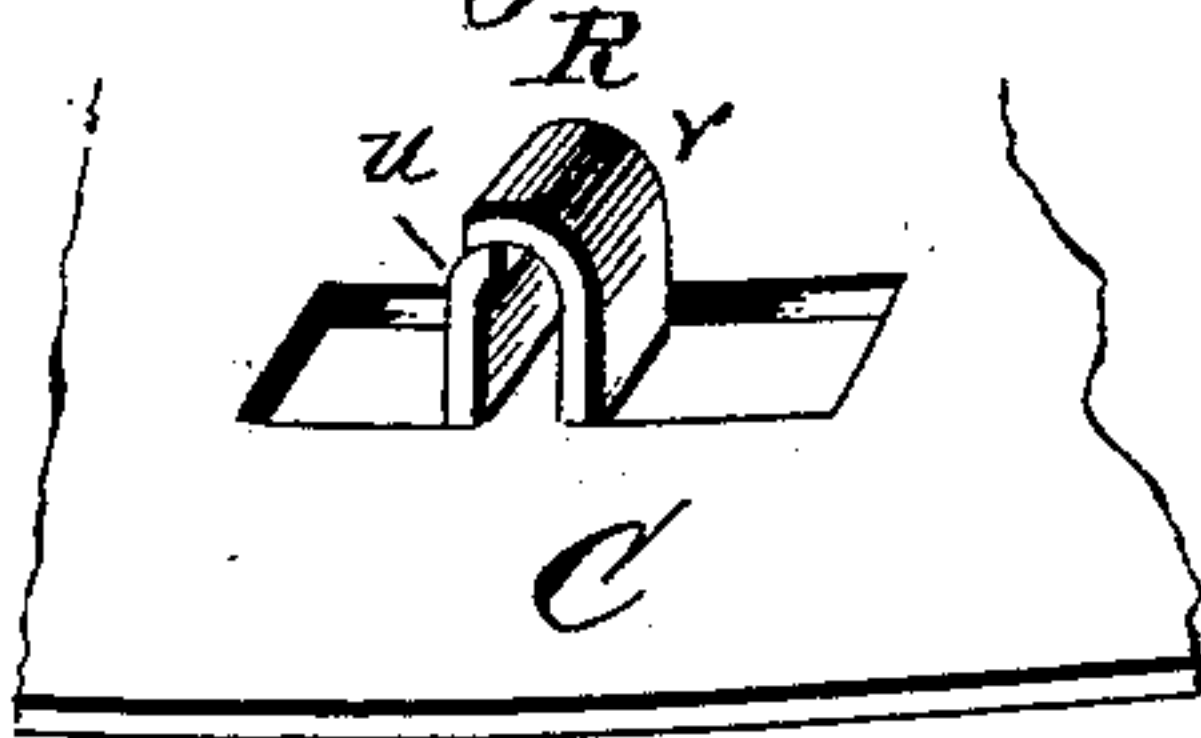


Fig. 4.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 550,154, dated November 19, 1895.

Application filed October 8, 1894. Serial No. 525,223. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK J. BERNARD, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Mechanical Musical Instruments; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

My invention consists in the construction of the teeth upon the note-sheet, whereby the ends of the pieces of metal from which the teeth are formed are made to overlap and thus give increased strength at a point where it is needed most, as will be more fully described hereinafter.

Figure 1 of the drawings is a side elevation of the operating parts of a mechanical musical instrument embodying my improvements; Fig. 2, a side elevation on an enlarged scale, showing the damping device, the metal tongues or reeds, and the toothed wheel for operating them; Fig. 3, a detail view in perspective, on an enlarged scale, of the governor; Fig. 4, a detail view in perspective and on an enlarged scale showing one of the pins or lugs formed in the metal music-sheet.

In the accompanying drawings I have shown in Fig. 1 only such parts of a mechanical musical instrument as will enable a proper understanding of my invention, the usual bracket for supporting the several parts being shown at A. This bracket, which may be of any suitable construction, has connected to it a plate B, and through this plate extends a shaft *a*, which extends through a drum or casing *b* for containing a flat coiled spring as the motive power for operating the gearing which imparts motion to the note-sheet shown at C. The upper portion of the shaft *a* is entirely independent of the lower portion, to which the spring and ratchet are attached. The drum or casing *b* has a suitable toothed gear *c*, which meshes with a pinion *d* upon a shaft *e*, said shaft at its upper end having double gear-wheels *f g*. The gear-wheel *f* meshes with a large gear-wheel *h*

upon the shaft *a* and the gear-wheel *g* meshes with a pinion *i* upon a shaft *k*, and upon this shaft is a large grooved wheel *l*, over which passes a belt or cord *m*, said cord connecting with a grooved pulley *n* upon a short shaft *o*. The usual ratchet-wheel *p* is employed with which engages a pawl *r*, of any preferred construction, to prevent the shaft from turning in the opposite direction, and the shaft *a* is for the purpose of winding up the spring. This gearing, which I have herein described in detail, may be variously modified or changed, as found most desirable, or any suitable clock-gearing may be employed that will serve the purpose intended, as such changes would come within ordinary mechanical skill and would in no manner affect the principle of my invention.

The grooved wheel *l* and the grooved pulley *n* and the cord *m*, which forms a connection between the two, provide the means for imparting motion to the short shaft *o*. To this shaft is connected the governor, which is represented in detail in Fig. 3, and consists of the double spring-arms D E, constructed of wire and joined by a coil-spring F.

The arms D are connected to a hub G, which is adapted to slip over the end of the shaft *o*, and held thereon by a suitable set-screw or by any other preferred means.

The arms E have suitably connected thereto wind-sails H, which sails are flat, being preferably constructed of sheet metal, and are curved, as shown, to present a surface to the wind when the governor is in motion, and the more rapid the motion the more the arms E will spread out by centrifugal action and the sails present a greater resistance to the wind and thereby governing the rotation of the shaft, to which it is connected, and regulating the motion of the gearing.

The comb I is secured to the plate B in the usual manner, and each of the teeth has depending from one edge a plate *a*<sup>3</sup>, which has a shoulder *s* formed at its top, and which has its lower end to project through a slot in the plate B. These plates may be made of any desired length, but preferably long enough to project below the under side of the plate B, and while they do not interfere with the



vibration of the teeth form means by which the vibrations may be instantly stopped. Each tooth of the comb I is operated by its respective toothed wheel K, which is loosely  
5 mounted upon the stationary shaft L and operated in its turn by the note-sheet, which is provided with teeth for that purpose.

The damping device consists of a spring-arm M, having a curved bearing-shoulder *t*,  
10 and upon its free end a damper N, of india-rubber or other soft material, which bears against the shoulder *s* of the tongue or reed to limit the vibration thereof after the note is made.

15 The teeth upon the wheel K, as they come in contact with the shoulder *t*, will force the damper against the shoulder, and after the tooth has passed the shoulder upon the spring-arm the pressure thereon will be removed  
20 and the arm of the damping device resume its normal position from contact with the shoulder upon the tongue or reed. The damping devices may be connected in place in any suitable manner, there being one for each  
25 tongue or reed.

The metal music or note sheet C has a central hole to enable it to be slipped over the upper rotating end of the shaft *a* and held  
30 down in place by a suitable hinged plate O, carrying antifriction-rollers P, which bear down upon the upper side of the note-sheet to hold it in operative position when in motion.

The pins or lugs which are preferably termed the "teeth" R, which project from the under  
35 side of the note-sheet C, consist of two sec-

tions or strips *u v*, which are punched out or struck up from the body of the metal note-sheet. The metal strips or sections are bent at right angles, or nearly at right angles, to the plane of the note-sheet and are bent  
40 around and upon each other, so that their ends will overlap, as shown in Fig. 4. It is considered advisable to have one of the sections or strips of greater length than the other, so that the joint between the two will  
45 come on the side of the tooth, and also to enable the tooth to be formed more readily. The overlapping of the ends of the sections or strips provides a tooth that possesses in-  
50 creased strength at a point where most needed and renders the tooth more effective.

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

In a musical machine, a note sheet pro-  
55 vided with teeth R, each tooth being formed of two sections or strips, one of which is longer than the other, and which have their ends overlapped, so as to give the teeth a  
60 double thickness of metal at that point where strength is most needed, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANK J. BERNARD.

Witnesses:

H. HORLBECK,  
CHAS. DAIBER.