

(No Model.)

6 Sheets—Sheet 1.

M. LOCHMANN.

DYNAMOMETER FOR MECHANICAL MUSICAL INSTRUMENTS.

No. 536,091.

Patented Mar. 19, 1895.

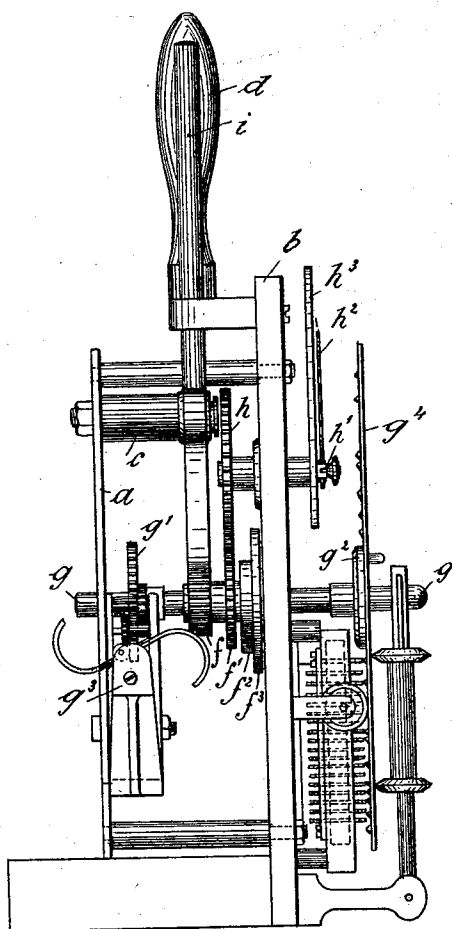


Fig. 1.

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Robert Emmett.

Inventor.
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By James L. Norris.
Atty.

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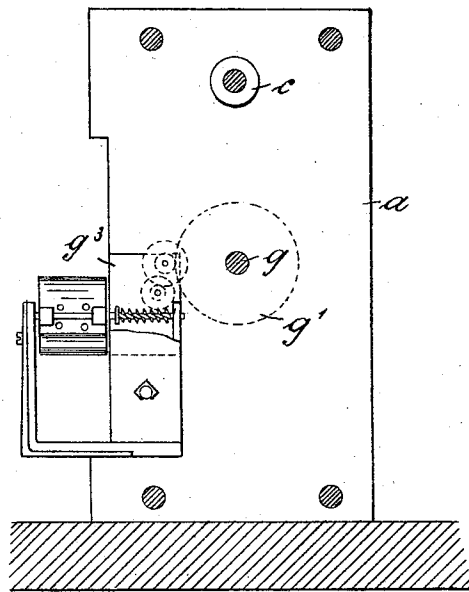


Fig 2.

Witnesses,
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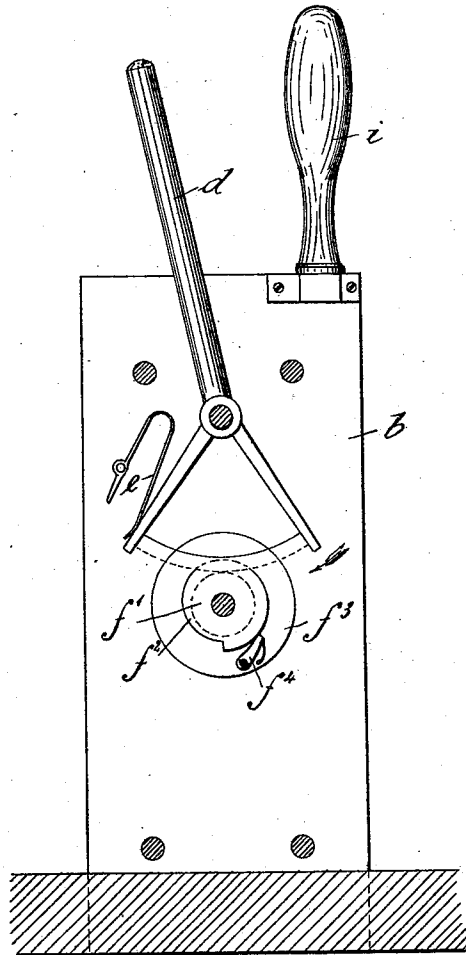


Fig 3.

Witnesses.

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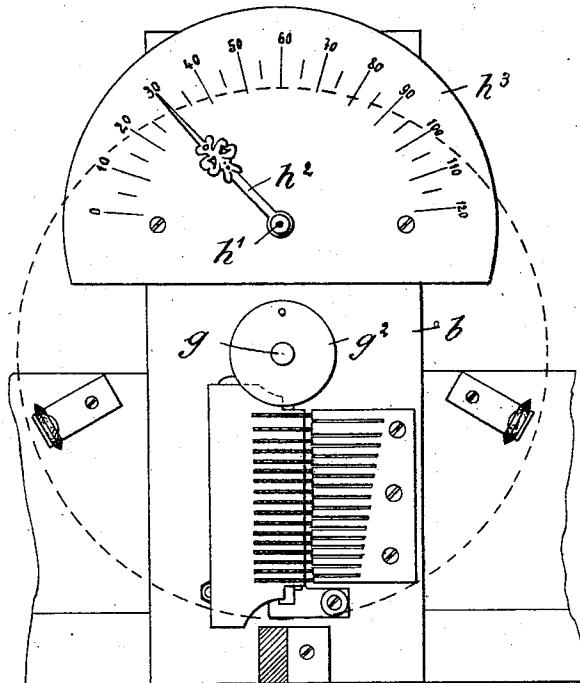


Fig 4

Witnesses.
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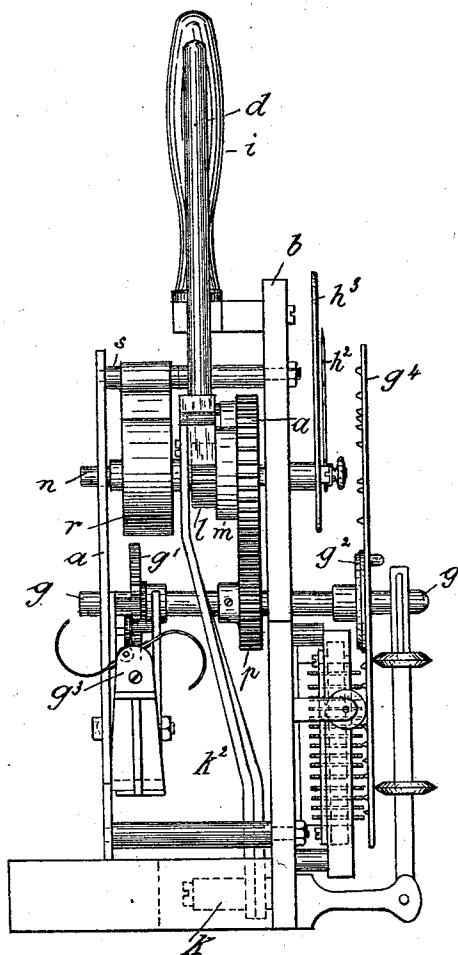


Fig 5

Witnesses:
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Albert G. Smith

Inventor:
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(No Model.)

6 Sheets—Sheet 6.

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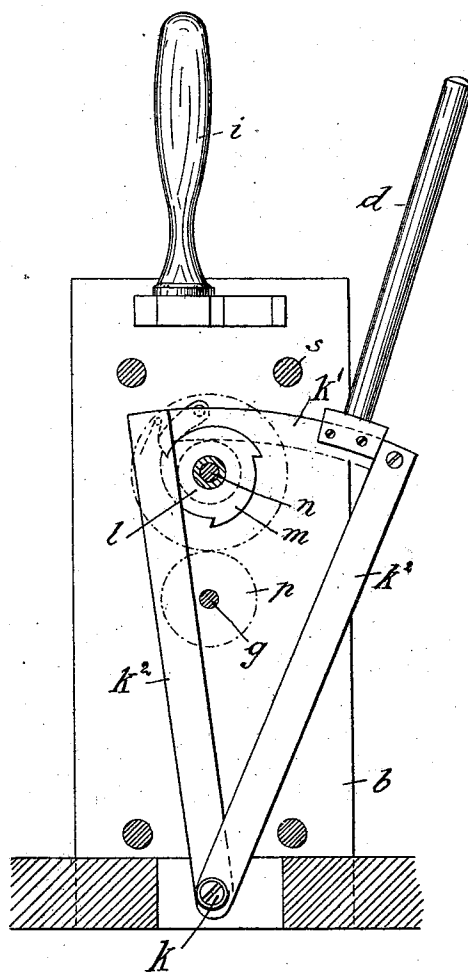


Fig 6

Witnesses.

J. L. Meyers Jr.
Albert Everett

Inventor.

Max Lochmann.
By James L. Norrie.
Atty.

UNITED STATES PATENT OFFICE.

MAX LOCHMANN, OF LEIPSIC-GOHLIS, GERMANY, ASSIGNOR TO KRAFT
BEHRENS, OF SAME PLACE.

DYNAMOMETER FOR MECHANICAL MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 536,091, dated March 19, 1895.

Application filed March 20, 1894. Serial No. 504,444. (No model.)

To all whom it may concern:

Be it known that I, MAX LOCHMANN, a subject of the King of Prussia, German Emperor, residing at Leipsic-Gohlis, in the Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Dynamometers for Mechanical Musical Instruments, of which the following is a specification.

This invention relates to a dynamometer, adapted to be connected with the sound producing mechanism of a mechanical musical instrument in such a manner, that the said mechanism is not set in operation until a predetermined amount of power or energy has been generated or stored and that the power or work thus accumulated constitutes the source whence the musical mechanism derives its motion.

The invention will be best understood by reference to the six figures in the accompanying drawings.

Figure 1 is a side elevation of the complete apparatus; Fig. 2, an inside elevation of the rearward plate, with the flier and gearing fitted thereto; Fig. 3, a similar inside elevation of the front plate, illustrating the operation of the charging or winding lever and the locking or stop device; Fig. 4, a front view of the complete apparatus, after removal of the note plate; Fig. 5, a complete side elevation of a modified arrangement, and Fig. 6 an inside view of the front-plate shown in Fig. 5.

The improved mechanism is constructed as follows:—In the frame *a b*, there is pivoted, at *c*, a tension or charging lever *d*, provided with a toothed segment, and combined with a spring *e* (Fig. 3). The spring *e* has one end attached to the plate *b* and its other end in bearing contact with the segment *d'* of the lever *d* so that by movement of said lever in the proper direction the pressure exerted by the segment will produce the required tension of the spring for storing power to set the musical instrument in operation. The toothed segment is in gear with the wheel *f*, which is rigidly connected with another gear wheel *f'* and with the ratchet wheel *f''*. This combination of the two gear wheels and one ratchet wheel is arranged to revolve bodily upon the spindle *g*, and when in a certain

position, is connected with the locking disk *f''* by the pawl *f''*. To the spindle *g* are rigidly connected the gear wheel *g'*, on one side, and the disk or flange *g''*, on the other side; the gear-wheel *g'* engaging with the flier-gearing *g''*, while the disk or flange *g''*, together with the spindle-end, is adapted to carry the note plate *g''*. The gear-wheel *f'*, engages with the gear-wheel *h* secured to the spindle *h'*, which also carries an index-hand *h''* adapted to rectify the amount of power or energy developed by pointing to a corresponding figure on a scale provided for the purpose. Upon the front-plate *b* are arranged the parts appertaining to the musical mechanism proper, and also the handle *i*, which is mounted on a stud in direct line with the lever *d* and affords the necessary support when power is applied to the mechanism.

In the modification represented by Figs. 5 and 6, the winding-lever *d* is pivoted at *k* and rigidly connected with a toothed segment or segmental rack *k'* and two arms *k''*. The toothed segment *k'* engages with a pinion *l*, which in its turn, is rigidly connected with the ratchet wheel *m* and spindle *n*. Upon this spindle *n* is revolvably mounted a gear-wheel *o*, combined with a pawl, and engaging with the gear-wheel *p*, secured to the spindle *g*. The said spindle *n* also carries an index or pointer *h''* and is connected with a clock-work mainspring *r* secured to the stay-rod *s* of the frame. The remaining parts of this modification are exactly the same as in the form of apparatus illustrated in Figs. 1 to 4.

The structural distinction between the two forms described (Figs. 1 to 4 and Figs. 5 and 6) is, that in the first, the charging or tension lever has a direct influence upon the main spindle *g*, while in the second arrangement, the power produced is transmitted to the main spindle through the agency of intermediate gearing.

Another feature to be described in connection with this mechanism, in both forms, is the flier or fan *g''*, the wings of which are adapted to regulate the operation of the mechanism, as, whenever the normal number of revolutions per unit of time is exceeded, the said wings open or spread out in the radial

direction, under the impulse of centrifugal force, and thereby increase the resistance of the air.

The operation of the improved apparatus is as follows:—By pressing the tension lever *d* against the stationary handle *i*, a suitable tension is produced in the spring *e* and the gear wheels *f*, *f'*, and ratchet wheel *f*², are so operated that the hand or pointer *h*² moves a certain distance upon the dial or scale. When sufficient power has been applied, the pawl *f*⁴ engages with the ratchet wheel *f*², and the musical box immediately begins to play. It will thus be understood that by selecting a ratchet wheel and tension spring, suitably proportioned both in size and power, and regulating the whole arrangement accordingly the amount of power requisite for setting the musical instrument in operation may be varied at pleasure. During the time occupied by the musical box in completing the performance of a melody, the tension lever returns to its initial position. Should the power applied to it be insufficient to set the musical mechanism playing, the lever, on being released, will also go back to its original position, but without producing any effect whatsoever upon the sound producing parts.

In the modification shown in Figs. 5 and 6, the displacement of the tension lever serves to wind up the main spring *r*, and when sufficient power has been applied to it, the pawl drops into engagement with the ratchet wheel *m*, whereupon the musical box directly commences to play, as in the first mentioned arrangement.

The power-index *h*² in all cases participates in the movements of the tension lever, and indicates the amount of energy expended or power produced, upon the scale or dial against which it moves. Unless sufficient power is

applied, the said lever, when released, will simply recede without starting the musical box. The construction of the sound-producing or musical mechanism proper is optional, and instead of causing the lever *d* to act on a spring, which subsequently yields the motive power for the musical instrument, it may be arranged to draw up a weight or in other known ways store up motive power.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of the frame *a b* provided at the top with the vertical handle *i*, the spindle *g* mounted in said frame, the note plate *g*⁴ carried by said spindle, the vertically projecting hand lever *d* arranged in line with the handle *i* and having a segment geared with the note plate spindle, a spring arranged to be acted on by said hand lever to store power for operating the spindle and note plate, and indicating mechanism actuated from the note plate spindle, substantially as described.

2. The combination of the frame *a b* provided with the vertical handle *i*, the spindle *g* mounted in said frame and carrying the note plate *g*⁴, the hand lever *d* arranged in line with the handle *i* and having a segment geared with the note plate spindle, a spring arranged to be acted on by said hand lever to store power for operating the spindle and note plate, the scale *h*³ having an index *h*² actuated from the spindle, and the flier *g*⁵, substantially as shown and described.

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

MAX LOCHMANN.

Witnesses:

K. BEHRENS,
RUD. E. FRICKE.