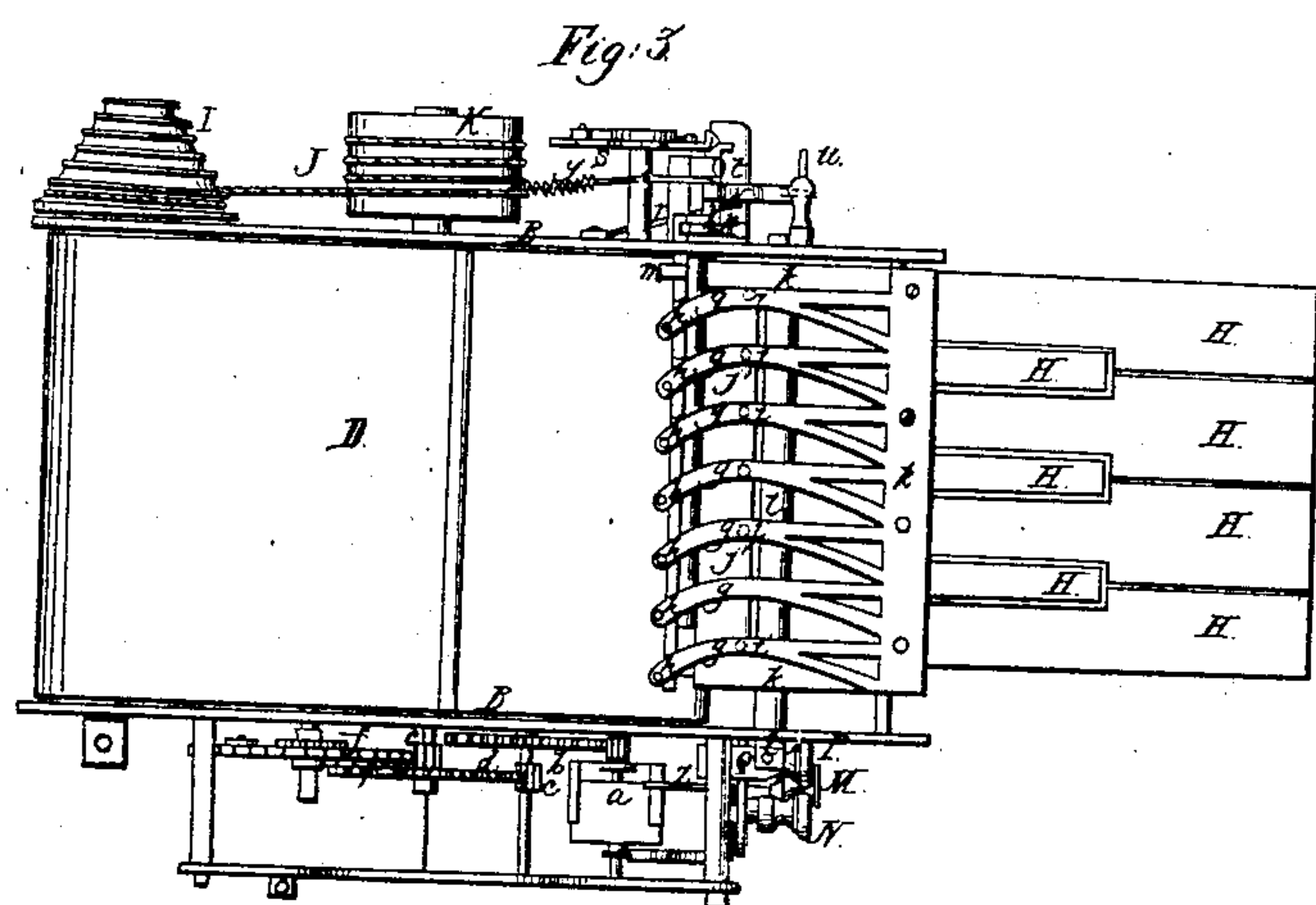
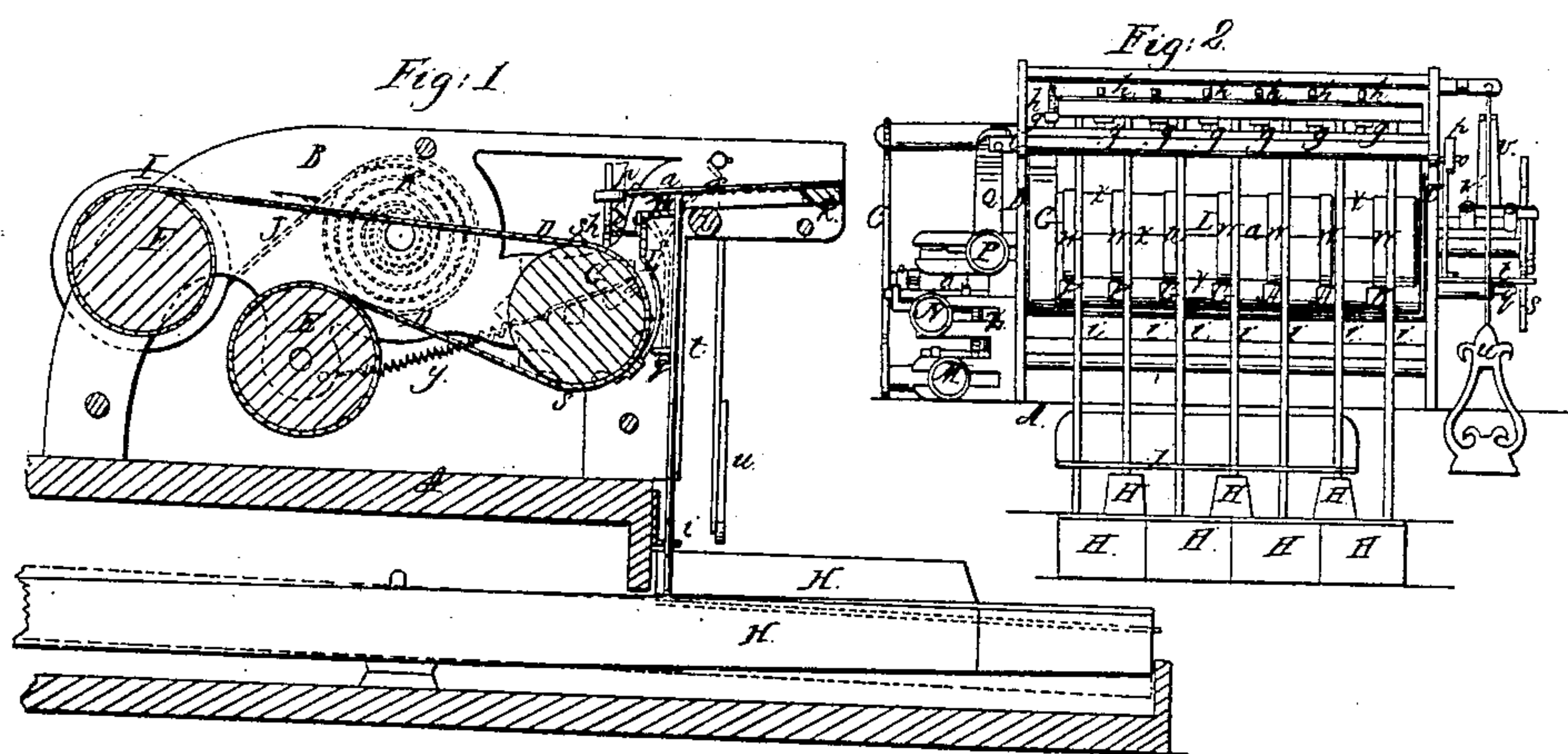


H. B. HORTON.
MUSICAL REGISTER.

No. 13,946.

Patented Dec. 18, 1855.



UNITED STATES PATENT OFFICE.

H. B. HORTON, OF AKRON, OHIO.

MACHINE FOR REGISTERING MUSIC.

Specification of Letters Patent No. 13,946, dated December 18, 1855.

To all whom it may concern:

Be it known that I, H. B. HORTON, of Akron, in the county of Summit and State of Ohio, have invented a new and useful machine for registering musical sounds produced by a pianoforte or other instrument played by keys, to be employed as an aid to music composers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a vertical section of the machine taken parallel with the keys of the instrument to which it is supposed to be attached. Fig. 2, is a front view of the same, and Fig. 3, a top view of the same,

Similar letters of reference indicate corresponding parts in the several figures.

A, is a bottom board and B, B, C, small standards, which constitute the framing of the machine, carrying all the moving parts.

D, is a sheet or roll of paper, cloth or other material of a width equal to the whole or any portion of the keys of the instrument. One end of this roll is secured to a roller E, and the other to a roller F, of the same size, the said roll being of any desired length and passing on its way from the roller E, to the roller F, partly around a third roller G, at the front part of the machine. The bottom board A, is so placed upon the top of the instrument that the roller G, will stand just behind the exposed parts of the keys H, H. The axle of the roller E, is to be provided with a crank for the purpose, before setting the machine in operation, of unwinding the sheet from the roller F and winding it on the said roller E. The axle of the roller F, carries a fusee I, and the movement of the said roller produced by the unwinding of the sheet from it, winds up on the said fusee, a cord or chain J, from a spring box K, containing a spring, which, when liberated— turns the roller F, to wind back the sheet from the roller E, in the direction of the arrow shown in Fig. 1. The velocity of the movement of the sheet, when being moved by the action of the spring, is regulated by a fly a, see Figs. 2 and 3, which is driven by a train of gearing b, c, d, e, f, from the roller E. This fly is capable of being expanded or contracted to meet with greater or less resistance from the air and thus to diminish or increase the velocity of the movement of the sheet according to the time chosen by the player. Above the roller G

is placed a number of light bar springs or flexible metal bars g, g, corresponding with the number of notes and keys on the instrument, said springs being attached to a light frame k, k, attached to a shaft l, which slides through the standards B, B. Each one of these springs carries a marking point h, standing over the roller G, the said marking points being adjustable by a screw, so that when the spring is free, the point may press as hard as desired upon the sheet. The marking points, except while their respective keys are depressed by the player are held up from the sheet by means of the keys acting upon them through light upright rods i, i, of wood or other material placed between the springs or flexible bars g, g, and the keys, and working in guides j, j', the former of which is attached to the bottom board and the latter to the frame k, k.

The sheet D, if not of paper should be of suitably prepared cloth and the points h, of such character as to mark upon the preparation on the cloth. In playing, the player by the act of depressing the keys will liberate the springs g, g, and allow the points h, h, to come in contact with the sheet and as the sheet moves, strokes or dashes, thus, — — will be produced upon it by the contact of the points, the length of the strokes being according to the time the key remains depressed, and thus indicating the length or value of the notes and correctly registering the note played. The division of the music into bars is effected by what I term the "bar marker" which consists of a metal rod o, attached by a rigid attachment at one end to the frame k, k, and having near the opposite end a broad pointed marking piece m, which stands above and near the edge of the sheet D, and over the roller G, the said rod having sufficient elasticity to keep the marking piece raised up so as not to touch the sheet. Above the unattached end of the rod o, is situated the head of a hammer p, which turns on a pivot q, and has a spring r, applied to it in such a manner that, when at rest, it holds the hammer head a little above the rod o. This hammer has attached to it near its center of motion a plate t, which is acted upon at regular intervals by a star cam s, on the axle of the roller G, in such a manner as to raise and let fall the hammer. The hammer in falling acquires momentum enough to overcome the spring r, and falls low enough to strike the rod o, and bring the marking piece m, suddenly down upon the

sheet. The hammer instantly after recoils and allows the marker to rise. This sudden movement of the bar marker is necessary as the point is of such form as to make a dash transversely to the dashes representing the notes, in order to make proper distinction between bars and notes and if this broad point remained in contact with the sheet any time, it would extend the mark in the direction of the notes. As this hammer receives motion always in the same ratio to the roll, the marks made by the bar marker must always be at equal distances apart.

In order that the player may be enabled to play in time to correspond with the length of the bars and preserve a proper duration of the notes, a vibrating indicator *u*, resembling a pendulum is placed in a conspicuous position at the front part of the machine deriving its motion from a fork at one extremity of a T shaped lever *v*, which is attached to a pivot *v'*, and receives a vibrating movement from the star cam *s*, aided by a spring *y*. This vibrating indicator *u*, is thus made to mark the time in accordance with the operation of the other parts of the machine.

To enable the music, as registered upon the sheet, to be read off by the player while sitting at the instrument, slots *w*, *w*, are made in a fixed plate *L*, which stands in front of and fits nearly close to the roller *G*, one slot being provided opposite every point *h* and the slot being as long or a little longer than the length of a bar. The spaces between the slots *w*, *w*, on the said plate are divided by lines *x*, *x*, extending all across the plate, the said lines representing the divisions of a bar.

The machine may be stopped at any time by the player if he desires to repeat a bar which has been registered and has arrived at a position to be visible through the slots *w*, or for any other purpose, the said stoppage being effected by sliding to the left hand a knob *M*, to which is attached a stop *z*, which arrests the fly *a*. This stop also serves to keep the machine stationary after it has been wound up and until the player is ready to commence playing. Above the knob *M* is another sliding knob *N*, which is connected with the movable portion of the expanding fly *a*. As the expanding fly has been used in clock movements and forms no part of this invention it requires no explanation. Above the knob *N*, is another sliding knob *P*, which connects by an arm *Q* with the shaft *L* for the purpose of moving the said shaft longitudinally. This movement of the shaft moves the frame *k*, *k*, with all the springs *g*, *g*, and marking points *h*, *h*, together with the upper guide *j'*, of the rods *i* *i*, thus shifting the whole of the marking apparatus, so that the points will all mark different lines to those in

which they marked before. This enables the same sheet *D*, to be used again and saves the trouble of renewing it or renewing the preparation of the surface.

I am aware that markers have been arranged below the keys of a musical instrument for the purpose of registering musical sounds upon a traveling sheet but this arrangement in which the markers were pressed down by the keys interferes with the proper operation of the keys and it is difficult to apply the registering machine below the keys on account of the want of room. These disadvantages are overcome in my machine as it is placed on the top of the instrument where there is always room for it and the markers, being simply held up by the keys which have to bear very little more than their weight, do not interfere with the free action of the keys in playing.

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

1. Attaching the markers *h*, *h*, by which the notes are registered, to light springs or flexible bars *g*, *g*, which are so supported by the keys when the latter are raised or not in operation, as to hold the points out of contact with the roll *D*, or other traveling sheet upon which the notes are registered until their respective keys are depressed, when, losing their support, the points fall or are gently pressed upon the surface of the sheet, substantially as herein set forth.

2. The within described method of operating the "bar marker", *o*, *m*, by which the bars are registered, by making it sufficiently elastic to hold its point off the sheet while it is left free and striking it down in contact with the sheet at intervals of time bearing a proper relation to the movement of the sheet by means of a hammer applied substantially as described, and operated by a cam *s*, on one of the rollers which supports and moves or is moved by the sheet.

3. The vibrating indicator *u*, arranged so as to be visible by the player and operated substantially as described and the cam *c*, on the axle of one of the rollers which drives or is driven by the sheet for the purpose of marking the time to lead or guide the player.

4. Attaching all the note markers and the bar marker, and the upper guide of the rods through which the keys support the note markers, to a frame *k*, *k*, so that the whole can be moved simultaneously in a lateral direction to mark in different lines substantially as and for the purpose herein set forth.

H. B. HORTON.

Witnesses:

MERRICK BURTON,
J. GILBERT.