

No. 699,393.

Patented May 6, 1902.

J. KEMMER, JR.
TIME INDICATOR FOR PHONOGRAPHS.

(Application filed May 27, 1901.)

(No Model.)

Fig. 1.

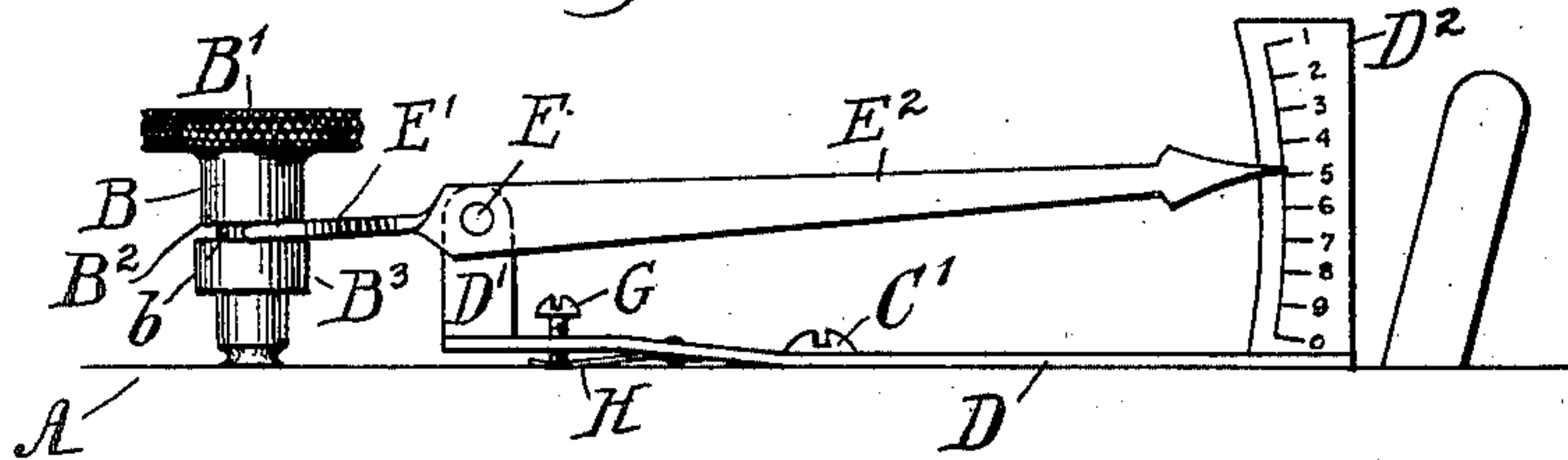
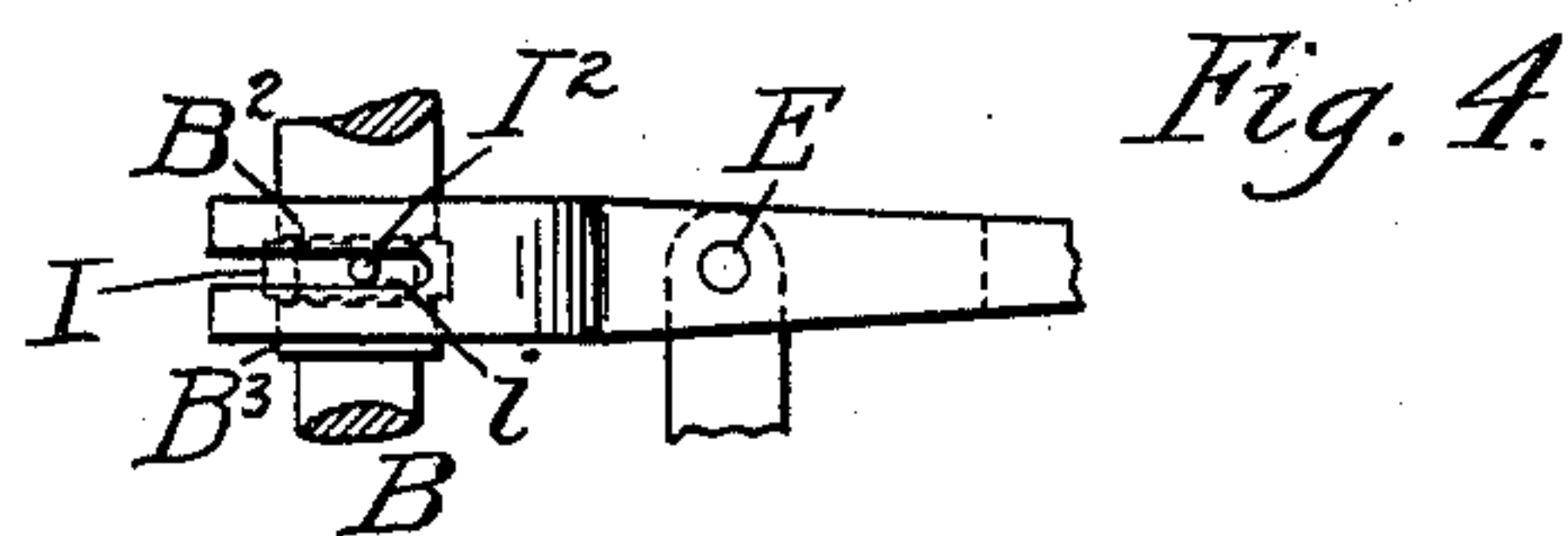
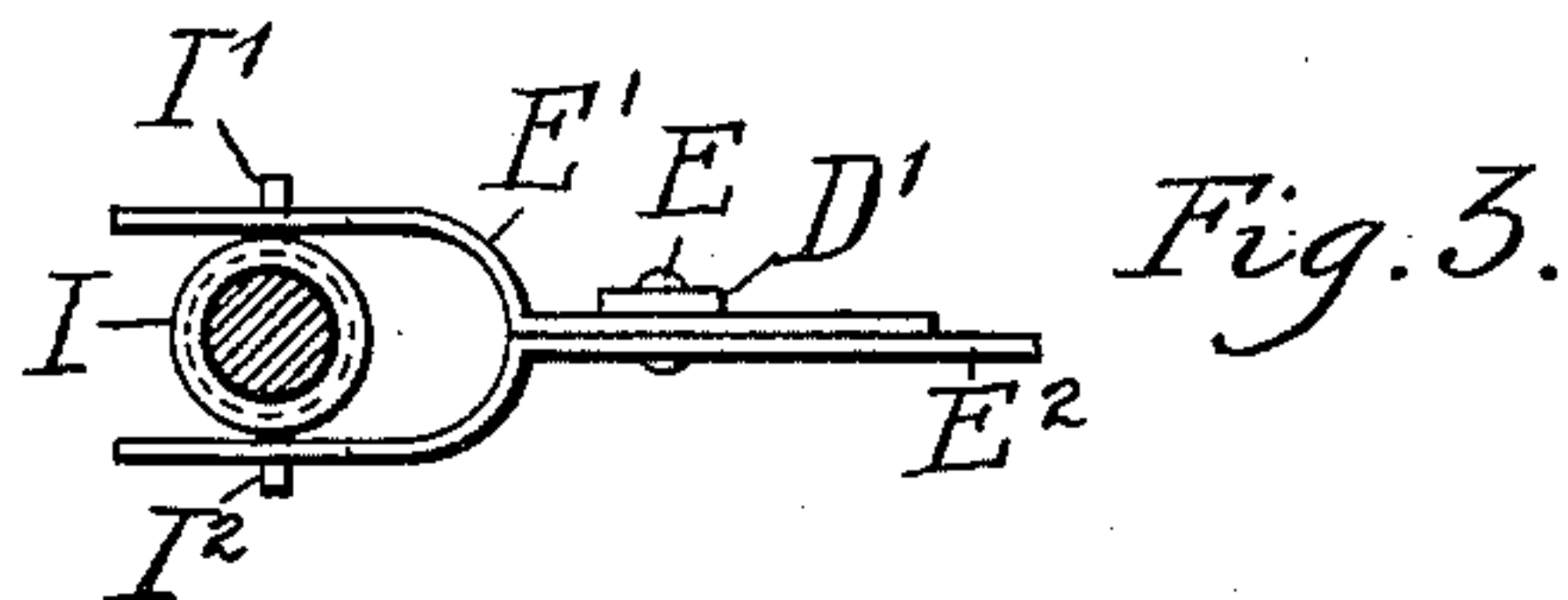
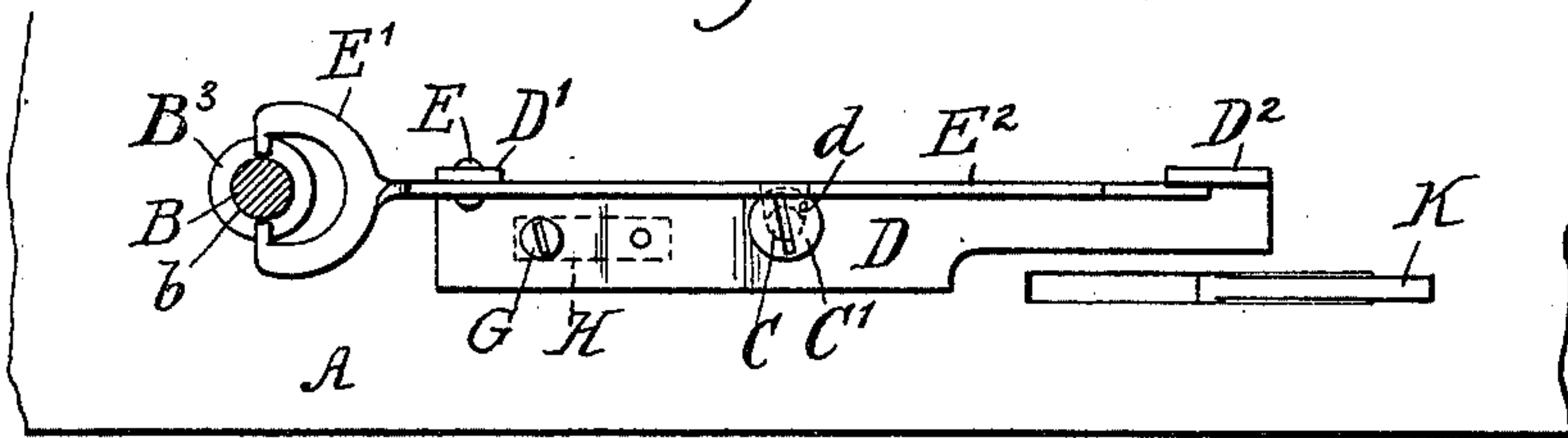


Fig. 2.



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TIME-INDICATOR FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 699,393, dated May 6, 1902.

Application filed May 27, 1901. Serial No. 62,045. (No model.)

To all whom it may concern:

Be it known that I, JOHN KEMMER, Jr., a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented a certain new and Improved Time-Indicator for Phonographs, of which the following is a specification.

It is common to provide means by a screw at an easily-accessible point in the front of the instrument, whereby the rate at which the mandrel carrying the record-cylinder is revolved may be increased or diminished. I will describe my invention as applied to an instrument having such provision in the form of the ordinary adjusting-screw.

I provide means whereby the rising and sinking of the screw in making the adjustment of the speed is magnified, technically multiplied, and indicated on a graduated scale. In what I esteem the most complete form of the invention the scale and the means for multiplying the motion are carried on a separate piece with provisions for easily attaching and detaching at will. I provide simple means for adjusting slightly to make the range of indications higher or lower at will.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a front elevation, and Fig. 2 a plan view. The remaining figures show details of a modification, Fig. 3 being a plan view, and Fig. 4 a side elevation.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the base-flange of an ordinary phonograph instrument of the well-known Edison type.

B is the timing-screw, having the ordinary milled head B'. There is also on this screw a boss B² under its head and a permanently set collar B³. I will designate the groove between the boss B² and the collar B³ by *b*. There is the ordinary screw C, tapped in the flange A in the position represented, having a head C' with a plane under face.

The screw B is worked in the usual manner and produces the ordinary effect. Turning it up induces a retardation of the revo-

lutions of the mandrel, and consequently of the record-cylinder which is carried thereon, either for being impressed by the stylus in the "taking" of the record or for reproducing the sounds.

D is the foundation-plate of my attachment, of brass or other suitable material, preferably slightly elastic to allow of adjustment, as will presently appear. It is adapted to extend along on the flange A of the phonograph instrument and is secured thereon by the aid of a notch *d*, formed in its rear edge. To engage it for use, the screw C being sufficiently high, the plate is laid on the flange and pushed inward to receive the shank of the screw in the notch *d*. Then the screw being turned down holds it fast. The left end of the attachment D carries an upright or post D', on which is mounted by a pivot E an unequally-divided lever E' E². The short arm E' of this lever is forked, and the ends of the fork are rounded and turned inward. In applying my attachment these inwardly-turned ends are engaged in the groove *b* in the screw. The other end, the long arm E², of the lever has a greater motion proportional to its length. When the screw B is turned in one direction or the other to raise or lower it and correspondingly change the speed of the rotation of the mandrel, all in the ordinary manner, the change of position of the screw is magnified in the ratio of ten or some other ratio, according to the proportion of the lever.

D² is a taller post than the post D' and set on the opposite end of the plate D. An arc is graduated thereon, as indicated by the several numbers 1 2 3 4, &c. This corresponds to the curved motion of the long arm E².

K is the ordinary switch-lever.

There are reasons why in taking or recording a phonograph-record it may be expedient to revolve the mandrel, and consequently the record-cylinder, more rapidly on some occasions than on others, eminently to make a song of a given length exactly fill or come only a little within the length of the cylinder. It is essential to good work that the cylinder shall be revolved at exactly or very nearly the same rate in reproducing the sounds as the rate at which they were taken; otherwise the sounds given off will not only

be higher in tone if the cylinder is revolving too rapidly, but also, in accordance with the laws of production of articulate sounds, they will be less distinct. The same result, perhaps in a still greater degree in its effect in confusing and thickening the sounds, will obtain if the delivery is too slow. The necessity for attaining about the same rate of velocity in reproducing the sound as in taking the record has been long recognized. Skilful operators, recognizing quickly whether the speed with which it is started is too rapid or too slow, can arrive at the correct rate with but a few trials; but the difficulty of attaining the proper speed is a serious obstacle to the success of beginners. Too often the amateur is content to reproduce the sounds at a wrong rate, and thus fails to give the full perfection of result to be desired, even after much time and labor has been spent in endeavors to adjust the speed by trials. If care has been taken to permanently record the speed at which the mandrel was revolved in taking the record, my invention provides for attaining the adjustment instantly and with certainty.

In taking and in reproducing a record my attachment should be on the instrument and in the same condition of adjustment, which latter will be presently explained. At the close of a successful job in the manufacture of a record the position of the long arm E^2 on the scale D^2 is observed and noted on some convenient part of the record-cylinder or on the tag or card which accompanies it. The instrument may subsequently be used at various faster or slower rates and the same in reproducing; but when it comes to reproducing this particular record the operator looks at the card and seeing that it is " $6\frac{3}{4}$ " turns the screw B until the index is in the corresponding position between the marks " 6 " and " 7 ," and he knows that the speed will be right.

If the records are always made and the sounds reproduced by the same identical instrument, there is no occasion for the adjusting now to be described; but when another attachment is used on this instrument or when this attachment is applied to another instrument there may be peculiarities in the instrument or in the screw B which will carry the short arm of the lever a little higher or lower for a given rate of speed. I provide for adjusting my instrument to accommodate such conditions.

The plate D is hard sheet metal of proper thickness and will yield elastically.

G is a screw tapped through the plate D at the point represented and having a shoe H , which is adapted to press smoothly on the flange A . For ordinary work this screw is set so as to lift that portion—the left end of the plate D —a little. If it is desired to lower the pivot E , so that the indications of the lever $E' E^2$ for a given rate of speed will be lower on the scale D^2 , the screw G is turned

in one direction, thus causing the elasticity of the plate D to assert itself and lower the post D , and consequently to lower the pivot E . If, on the contrary, it is desired to raise the pivot, so that the indications shall be higher for a given sound, the screw G is turned in the opposite direction to raise that end of the plate D and the post D' and the pivot.

I attach importance to the simplicity of the construction. Some of the advantages due to certain features of the invention may be separately enumerated as follows: First. By reason of the notched plate D d having the post D' , carrying a pivot, and the post D^2 , carrying a scale, and of the lever $E' E^2$, working on each, I am able not only to apply the indicator to ordinary instruments with little preparation, but to accomplish the ends with simple mechanism. Second. By reason of the fact that I derive the motion of the index E^2 from the slight longitudinal motion of the adjusting-screw B , I am able to traverse the index E^2 over a large graduated scale D^2 by a single piece of mechanism—the unequally-divided lever E —and avoid the complication heretofore necessary to utilize the long and clearly-divided scale. Third. By reason of the adjusting-screw G all the indications can be made higher or lower, while preserving the same ratio as before.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I prefer to make the upright portions $D' D^2$ integral with the plate D and to make the lever $E' E^2$ of a single piece of sheet metal, with the edges of the metal presented upward and downward in the long arm E^2 , but with the sheet metal twisted so that the edges shall be presented horizontally in the short arm E' . The shoe H may be omitted. Other means of adjusting the pivot up and down may be employed; but I esteem it easy to make the plate D sufficiently elastic to allow of the simple mode of adjustment described. The adjusting may be entirely omitted. The plate D should be sufficiently narrow in that portion to allow the switch-lever K to move in front of it. The plate may be much longer, so as to extend past that lever when in the stopped position. In such case the switch-lever interferes a little with facility of removal and reapplying of the attachment, and to effect such the notch d must be carefully formed to allow of releasing the plate by raising its front edge after the screw C is liberally loosened, or if there is still difficulty the screw C may be temporarily taken out to allow the attachment to be removed and reapplied.

Figs. 3 and 4 show a modification which some may prefer in the provisions for engaging the short arm of the lever with the screw. I produce a wide groove corresponding to b and insert therein a ring I , which is so closely confined between the boss above corresponding to B^2 and the collar below corresponding to B^3 that the ring I is compelled to rise and sink

with the screw, but does not turn therewith. This collar I is provided with two pins I' I². In this modification the portion of the lever corresponding to E' is made of two thick-
 5 nesses of sheet metal spread apart to form a proper fork to loosely embrace the timing-screw B. Each fork is formed with an open slot i, which receives a corresponding pin I' or I². As the screw B is turned this ring and
 10 its pins I' I² do not turn, but rise or sink. The effect is the same as with the simpler construction. The index-arm E² is carried up and down through the considerable arc required without offering any obstruction by
 15 becoming jammed and without any appreciable "lost motion." The indications on the scale are read in the same manner and with the same effect as in the other form.

Parts of the invention can be used without
 20 others.

Instead of a removable attachment the device may be a permanent attachment or the pivot E may be set in the cast-iron or other material of the machine and the other parts
 25 may be cast or otherwise produced as portions thereof.

I claim as my invention—

1. In a phonograph instrument, the separately-formed plate D and posts D' D² one carrying a graduated scale and the other a pivot,
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in combination with the lever E² and means for actuating the latter, according as the speed-timing device is adjusted, all substantially as herein specified.

2. In a phonograph instrument, a speed- 35 regulating screw arranged to serve its usual ends, in combination with a scale and with an unequally-divided indicating-lever having its short arm actuated by the longitudinal motion of said screw and its long arm moving 40 over such scale, substantially as herein specified.

3. In a phonograph instrument the graduated scale D² in combination with the index E² carried on a separate plate D D' D² with 45 the screw C C' for conveniently attaching and detaching, and means for actuating the index according as the timing device is moved, and means as the screw G for adjusting the supporting-pivot E of the index so that the indi- 50 cations may be varied as required for different instruments, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses. 55

JOHN KEMMER, JR.

Witnesses:

J. B. CLAUTICE,
 M. F. BOYLE.