

June 9, 1926.

1,588,039

D. J. MONOSMITH

DEVICE FOR FACILITATING INSTRUMENT SETTINGS

Filed Sept. 22, 1924

2 Sheets-Sheet 1

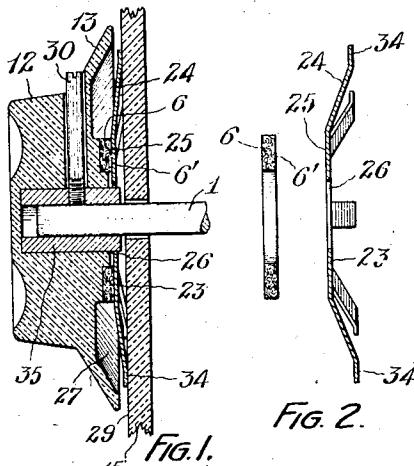


FIG. 1.

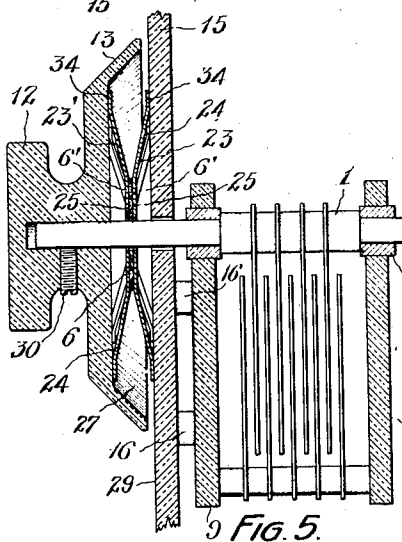


FIG. 5.

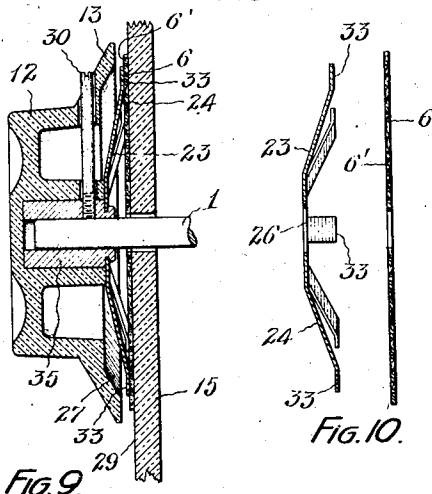


FIG. 9.

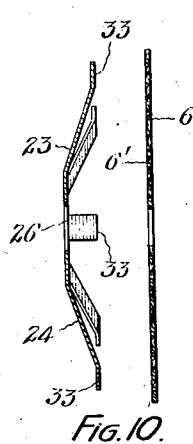


FIG. 10.

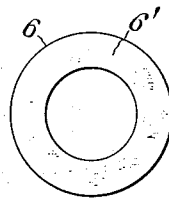


FIG. 3.

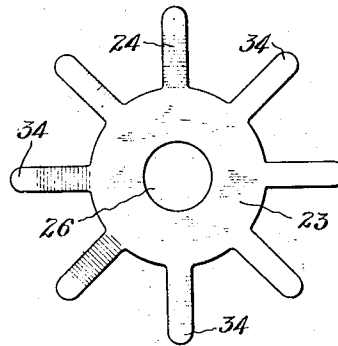


FIG. 4.

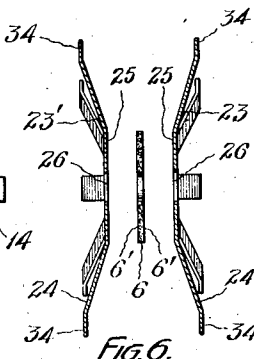


FIG. 6.

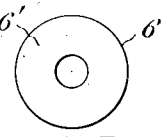


FIG. 7.

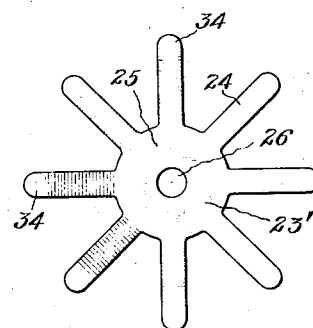


FIG. 8.

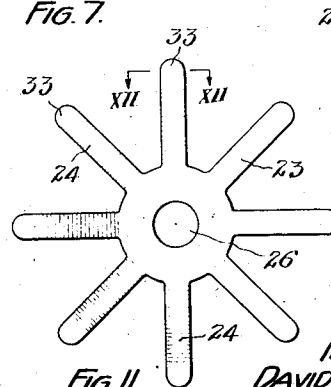


FIG. 11.



FIG. 12.

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June 8, 1926.

1,588,039

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DEVICE FOR FACILITATING INSTRUMENT SETTINGS

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2 Sheets-Sheet 2

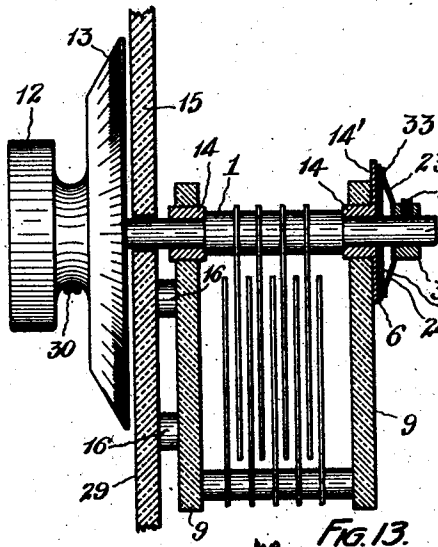


FIG. 13.

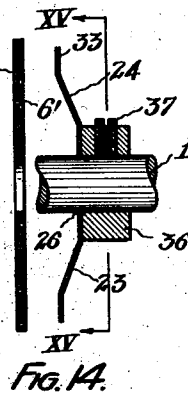


FIG. 14.

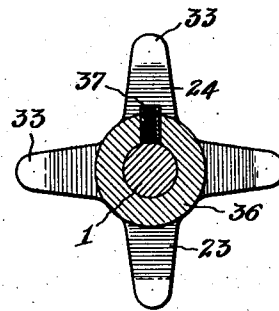


FIG. 15.

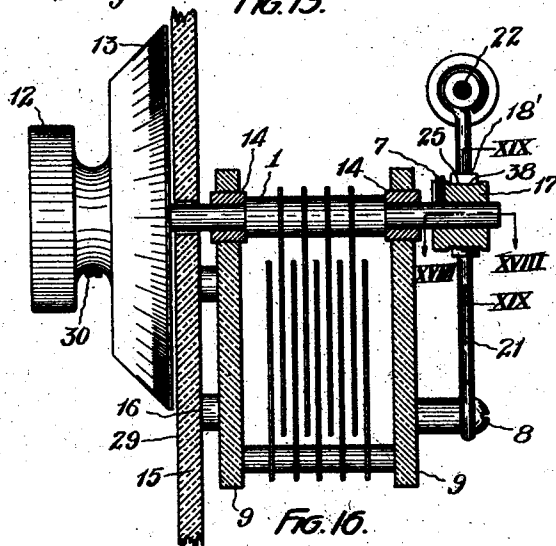


FIG. 16.

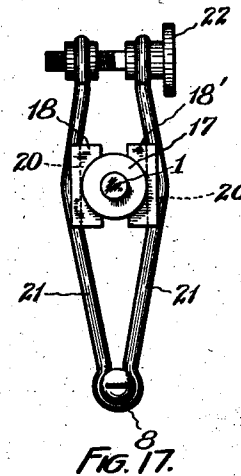


FIG. 17.

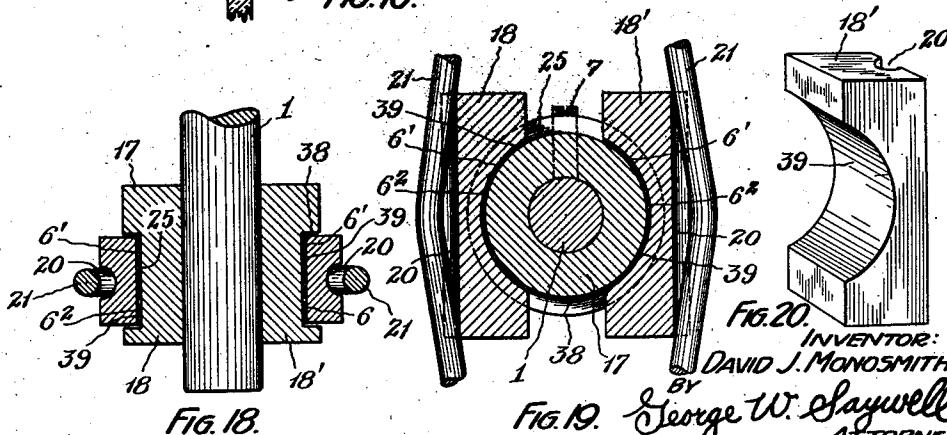


FIG. 18.

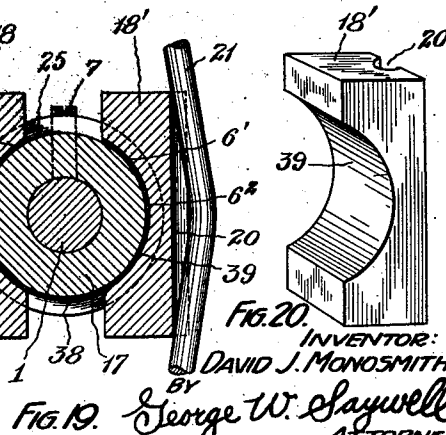


FIG. 19.

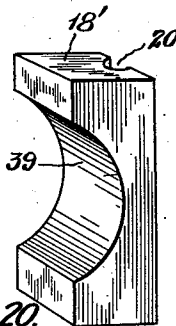


FIG. 20.

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UNITED STATES PATENT OFFICE.

DAVID J. MONOSMITH, OF SPENCER, OHIO, ASSIGNOR TO THE MONOSMITH BROTHERS COMPANY, OF SPENCER, OHIO, A CORPORATION OF OHIO.

DEVICE FOR FACILITATING INSTRUMENT SETTINGS.

Application filed September 22, 1924. Serial No. 738,992.

My invention relates to devices for facilitating instrument settings and particularly to devices of this character that provide means for obtaining both a coarse and fine adjustment of manually-operated adjustable instruments, without the necessity of removing the hand from the adjusting handle or knob. This improved device is applicable for use with many forms of instruments that are subject to manual adjustment, and is particularly serviceable for use with wireless telegraph and telephone instruments. I shall hereinafter describe in detail applications of the improved device to variable condensers, which applications are also illustrated in the accompanying drawings.

I will now discuss briefly the advantages of this device. Taking the specific case of a variable electrical condenser for radio use, we often find that the bearings of the instrument do not operate smoothly, but operate with a jerky unsteady movement, particularly for very slight movements, making fine tuning very difficult. The bad effects of this irregular movement can be obviated by adding a resistance to movement that increases rapidly as the velocity of the movement increases. In this invention, I make use of a peculiar property of certain types of resistance contacts, the resistance of which, to slippage, increases as the rate of slippage increases, but not to the extent shown by a very viscous liquid, which is described and claimed in my patent application Serial No. 714,261, filed May 19, 1924. However, the resistance to increase in speed of movement between the contact surfaces is sufficient to be of material assistance in the fine adjustment of the instrument to which it is applied. There is a decided practical advantage in the use of special resistance surfaces over that in the employment of a very viscous liquid, one reason being that a very viscous liquid has a tendency to harden and after a time to become inoperative, and another is that the viscous liquid has a high temperature coefficient of viscosity which is a detriment.

I do not lay any particular stress upon whether the action of the resistance elements is called a lubricating action or a friction action. To some it may appeal as one action

and to others as the other action. The principle of my improved device, in the abstract, is an increasing resistance to an increasing rate of slippage, no matter what the concept of the action may be to any particular mind.

The several figures illustrate various modifications involving the same general principle of a resistance sliding contact between two surfaces, one of which is smooth or polished and the other formed of some material which affords a smooth steady slippage, for instance, a surface coated with zinc stearate. As an alternate construction, two prepared surfaces face to face may be used instead of one prepared surface and one smooth surface, depending in this instance how the two surfaces are prepared, that is, at least one of the prepared surfaces should be smooth as, for instance, smooth card board coated with zinc stearate.

The annexed drawings and the following description set forth in detail certain means embodying my invention, such disclosed means constituting, however, but a few of the various forms by which the principle of the invention may be illustrated.

In said annexed drawings:

Figure 1 represents a vertical longitudinal section through a graduated dial and panel to which one form of my invention has been applied, and showing a fragment of the shaft of the instrument to be adjusted or tuned;

Figure 2 represents a vertical section through a prepared disc and a spider used in the assembly shown in Figure 1;

Figure 3 represents an elevation of the same prepared disc;

Figure 4 represents an elevation of the same spider;

Figure 5 represents a vertical longitudinal section of a graduated dial and the instrument to be adjusted or tuned, to which has been applied a second form of my invention;

Figure 6 represents a vertical section of two spiders and a prepared disc used in the assembly shown in Figure 5;

Figure 7 represents an elevation of the disc shown in Figures 5 and 6;

Figure 8 represents an elevation of one of the spiders used in the assembly shown in Figures 5 and 6;

Figure 9 represents a vertical, longitudinal section through a graduated dial and panel to which a third form of my invention has been applied, and showing a fragment of the shaft of the instrument to be adjusted or tuned;

Figure 10 represents a vertical section through the prepared disc and spider in the assembly shown in Figure 9;

Figure 11 represents an elevation of the spider shown in section in Figures 9 and 10;

Figure 12 represents a plan section on line XII—XII of Figure 11;

Figure 13 represents a longitudinal vertical section of an instrument to be tuned, showing a form of my improved device as an attachment installed at the rear of the instrument, a graduated dial being shown in elevation;

Figure 14 represents a vertical longitudinal section through the prepared disc and spider with shaft and attached collar, used as shown in the assembly drawing of Figure 13;

Figure 15 represents a vertical cross section on line XV—XV of Figure 14;

Figure 16 represents a vertical longitudinal section through an instrument to be tuned, showing a second form of the improved device attached to the rear end of the shaft of the instrument, the graduated dial being shown in elevation;

Figure 17 represents an end elevation of the resistance device taken at right angles to the view shown in Figure 16;

Figure 18 represents an enlarged plan section on the line XVIII—XVIII of Figure 16;

Figure 19 represents an enlarged vertical cross-section taken on the line XIX—XIX, Figure 16; and

Figure 20 represents a perspective of one of a pair of block elements shown in Figure 19.

I shall give a brief description of the prepared surface before going into detail as to the construction and operation of the device. The desired surface may be prepared from a number of materials and in a large variety of forms. My preferred method is to take smooth card board and coat the surface with zinc stearate or a mixture of zinc stearate and finely powdered graphite. While the preferred materials are as described above, almost any material having a reasonably smooth surface may be coated with, for instance, zinc stearate, and give very good results. The object is to provide a surface that will produce a smooth slippage and offer increasing resistance as the speed of slippage increases. This increase in the resistance ceases upon the application of a certain maximum force to the operating knob 12 of the instrument being adjusted. The increase in resistance

from the starting torque (the force necessary to overcome the dead friction) to the velocity of rotation of the operating knob 12 for ordinary coarse adjustment is about four-fold, when the device is in ordinarily good working condition. When the device is working with better than average results, the increase in resistance, over the stated range, may be as high as ten-fold.

Figure 1 represents a graduated dial 13 made of a non-metallic material with a cylindrical hub or insert 35 for the purpose of receiving a set screw 30. Hub 35 protrudes from the inner surface of the dial into chamber 27 sufficiently to serve as a guide or retainer for a spider 23. Spider 23 is provided with a central circular opening 26, this opening allowing the end of hub 35 to pass through with a loose fit, thus holding spider 23 in place when the device is assembled. The inner surface of the dial 13 is also provided with an annular shoulder to hold a circular washer 6 in place, said washer having a special surface 6' prepared with zinc stearate, as hereinbefore described, all as shown in Figure 1. The spider 23 is preferably a stamping of some springy material as thin sheet spring brass or steel and is formed with several arms 24. One side of the inner circular flat body part of the spider is smooth or polished and is designated by numeral 25. The arms or spring members 24 of the spider are bent at an angle to the body part and away from the smooth surface 25, as shown in Figure 2. Any number of arms to the spider may be used, but a spider of eight arms is here illustrated since a large number of arms reduces the distortion of the surface 25, due to the better distribution of the strain of the arms on the inner disc portion of the spider. The device as illustrated in Figure 1 is assembled by placing washer 6 in position in chamber 27 of dial 13 with prepared surface 6' exposed and then placing the spider 23 with the smooth surface 25 in contact with the prepared surface 6' of the washer 6, then inserting the shaft 1 of the instrument in hub 35 and pressing dial 13 into position compressing or tensioning springs 24 and holding dial 13 in position by tightening set screw 30. Spider feet 34 in contact with surface 29 of panel 15 do not, in the ordinary use of the device, slip on the surface 29 of panel 15. The adjustment effect is secured by the action of smooth surface 25 slipping over the prepared surface 6', these two surfaces being held in contact by the tension of springs 24. The correct pressure of contact is determined by experiment, but in practice, there is a wide latitude of pressures that will give satisfactory operation. The peculiar property of the resistance action between the surfaces 6'

and 25 is that the resistance increases rather rapidly with slight increase of the rate of slippage between the said surfaces, but this resistance does not increase indefinitely with the increased rate of slippage but soon reaches a maximum so that both the coarse or quick adjustment and the precise or fine adjustment of the device can be effected through the slipping of the surfaces 6' and 25 without any auxiliary action of the feet 34 slipping on the surface 29 of the panel 15, as made use of in my patent application Serial No. 714,261, filed May 19, 1924. To reiterate this action in other words: A strong torque on the dial 13 through the turning of the integral finger knob 12 will cause the dial 13 to rotate rapidly for rough adjustment, so that both precise and quick adjustments are effected by the slippage of surface 25 over surface 6' without any special auxiliary coarse or quick adjustment means. It may be noted that in some instances the spider feet 34 will slip when the dial is rotated rapidly and an extreme resistance is offered between the prepared surface 6' and the smooth surface 25, but this is merely incidental and not a vital part of the invention nor is it essential to the proper operation of the device. The foregoing sentence applies also to the construction shown in Figure 5 but not the other constructions shown in Figures 9, 13 and 16.

Figure 5 represents a modification of the form shown in Figure 1. In this form two spiders 23 and 23' are used with the smooth surfaces 25 facing each other with washer 6 having prepared surfaces 6' compressed between the smooth surfaces 25. The feet 34 of spider 23' press against the inner surface of the dial 13 and the feet of spider 23 press against panel 15. Spider 23' rotates with the dial 13 and spider 23 remains stationary, the slippage taking place on the smooth surfaces 25 and the prepared surfaces 6' of the washer 6. This form can also be used with only one prepared surface 6' on the washer 6.

The construction shown in Figure 9 still further differentiates from the form shown in Figure 1. In Figure 9 the spider 23 is rigidly fastened to insert 35 and positively rotates with the dial 13. The outer ends of arms 24, shown particularly in Figure 12, have smooth or polished surfaces 33 which, when assembled, press against the prepared surface 6' of disc 6. Disc 6 is circular and somewhat larger in diameter than the spider 23 and is mounted over shaft 1 and against surface 29 of panel 15 with the prepared surface 6' facing the dial 13. Disc 6 may be secured to panel 15 or left free to rotate. In the latter case it will usually creep under the action of the spider feet 33 on the surface 6' as the dial 13 is rotated. The arms 24 of spider 23 are bent

at a sufficient angle to the flat central body part of the spider to give the feet 33 the desired pressure against the surface 6', when the dial 13 is pressed into position on shaft 1 and locked with set screw 30.

Figure 13 represents a vertical longitudinal section through a variable electric condenser with a graduated dial 13 attached to the condenser shaft 1 which extends through panel 15. In this modification the device is attached at the rear end of the condenser shaft 1. Otherwise, the construction shown in Figure 13 is very similar to the one shown and described under Figure 9. The rear shaft bearing 14 is expanded at the rear end to form a plate 14'. Spider 23 is rigidly fastened, as by solder, to collar or hub 36. Spider arms 24 are bent as indicated in Figure 14 and the resistance contact feet 33 are smooth or polished. To assemble the device: Slip washer 6 over shaft 1, place in contact with, or fasten to flange 14' with prepared or coated face 6' away from flange 14'. Pass collar 36 over shaft 1 and press spider member into position with the desired pressure contact between resistance surfaces 6' and 33 and lock collar or hub 36 on shaft 1 with set screw 37. The characteristics of operation of this modification of the device are practically the same as described under Figure 9.

Figure 16 represents a vertical longitudinal section through a variable electric condenser with a graduated dial 13 attached to the condenser shaft 1 which extends through panel 15. This modification of the device is also attached at the rear of the condenser shaft 1. In this design the resistance surfaces are cylindrical and concentric with shaft 1. Collar 17 is cylindrical with a shallow rectangular groove 38 cut around its periphery, the bottom of the groove being smooth or polished to form resistance surface 25, the collar 17 being secured to shaft 1 by set screw 7. Blocks 18 and 18' are cut to fit the width of groove 38 as indicated in the several Figures 16-17-18-19 and 20. Resistance blocks 18 and 18' are rectangular in cross-section and one face is slightly less in width than the width of the groove 38 and in this face is cut a transverse segmental circular groove 39 slightly larger than the convex surface of groove 38 in collar 17. In the opposite face of block 18 is cut a small longitudinal groove 20 to receive compression rods 21. In order to provide the special resistance surface 6' the concave transverse segmental grooves 39 in resistance blocks 18 and 18' are lined with some material as cork or leather 62 and the surface 6' which comes in contact with convex surface 25 is treated with some special resistance substance, as zinc stearate. The resistance surfaces 6' and 25 are held in contact by the action of compression rods

21 which rest in grooves 20 of blocks 18 and 18'. These rods 21 also serve to prevent blocks 18 and 18' from rotating with the shaft 1. Adjustable tension screw 22 on compression rods 21 provides means for controlling the amount of resistance between resistance surfaces 6' and 25. The compression rods 21 are anchored to frame 9 of the variable condenser by screw 8, the condenser being spaced by members 16 from the panel 15 to which it is attached by screws (not shown).

All of these several modifications of the device give substantially the same control over the adjustment of the graduated scale or dial 13. The modifications shown in Figures 1, 5 and 9 have the advantage, to a great extent, of compensating for any looseness in the bearings of the instrument to be tuned and can readily be applied to an instrument that has been installed, and also are less expensive to manufacture.

I wish to direct particular attention to the advantage of the spring element whereby the sliding contact surfaces are held together. This feature, together with the set screws provided as shown, has two particular advantages:

(a) Compensates for imperfections in the mechanism so as to give a substantially constant pressure to the sliding surfaces in contact; and

(b) Provides means for adjusting the amount of contact pressure between the sliding members.

Advantage (b) will be readily understood, and as regards advantage (a), I wish to point out that, for instance, the shaft of the condenser might not be at exact right angles to the panel, or the panel might be warped, in the form of devices shown in Figures 1, 5, 9, and 13, so that the smooth action of the device could not well be maintained without the compensation provided by the spring spider.

Incorporated in the various figures and the description, is a fibrous element, given as a preferred construction, designated by the numeral 6, on which the special resistance material or compound, as zinc stearate, is coated. It is quite obvious that the zinc stearate, or any other preparation or compound, to form the surface 6', may be held in place by some other means or simply coated on the surface opposed to the smooth surface 25 without in the least departing from the fundamental principle of the invention. The fibrous element 6 is given only as a convenient means of holding the special resistance surface coating in place, and is not to be construed as necessarily the only means of accomplishing this function.

My invention also includes separate self-contained units of devices for facilitating instrument settings, which units can readily

be applied to such instruments that have already been installed, wherein the unit comprises engaging resistance elements which have the properties noted of offering only a very slight resistance to slow, easy movements of the setting means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, after which the resistance is substantially constant. Such resistance elements with said properties are adaptable for both fine and rough adjustments and in this respect differ from the viscous liquid device described and claimed in my application Serial No. 714,261, filed May 19, 1924, wherein an auxiliary friction element is utilized for the rough setting. Wherever zinc stearate is specified in the following claims, it is intended thereby to cover the equivalents of zinc stearate for the purposes noted, such as other stearates, and probably a very large number of other substances, that will give this increasing resistance to an increasing rate of slippage, with which I have not experimented or at present am not aware.

What I claim is:

1. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including engaging elements adapted to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

2. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including engaging elements adapted to offer, for fine adjustments, only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated, and to offer, for rough adjustments, a substantially constant resistance.

3. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including elements having surfaces engaging through the medium of a zinc stearate coating.

4. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; means for indicating the amount of said change; and

a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including engaging elements, of which some are connected to the changing means and some are independent of the changing means so as to be capable of slipping upon said connected elements, said elements engaging through the medium of surfaces treated so as to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

5. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; means for indicating the amount of said change; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device comprising an element connected to the changing means and an engaging element independent of the changing means so as to be capable of slipping upon said connected element, said elements engaging through the medium of a zinc stearate coating.

6. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted, said dial being formed with a resistance surface; a resistance element; and means causing said element to adhere to said support by friction, said element also having a resistance surface formed adjacent the surface upon said dial, said opposed surfaces engaging and being treated so as to offer only a very slight resistance to slow, easy movements of the dial and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

7. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted, said dial being formed with a resistance surface; a resistance element; and means causing said element to adhere to said support by friction, said element also having a resistance surface formed adjacent the surface upon said dial, said opposed surfaces engaging and one of them being coated with zinc stearate and the other ground smooth to facilitate a slipping action.

8. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted; a resistance element; means causing said element to adhere to said support by friction, a chamber being provided between said dial and said support within

which said resistance element is contained; and a second resistance element adapted to be actuated by the movements of the dial and formed with a surface coated with zinc stearate, said first-named resistance element being formed with a surface engaging the coated surface of said second-named resistance element and ground smooth to facilitate a slipping action.

9. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted; a resistance element; means causing said element to adhere to said support by friction; and a second resistance element secured to said shaft, said resistance elements engaging through the medium of surfaces treated so as to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

10. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movement of the dial; a support for the instrument to be adjusted; a resistance element; means causing said element to adhere to said support by friction; and a second resistance element secured to said shaft, said resistance elements engaging through the medium of a zinc stearate coating.

11. A unit of a device for facilitating instrument settings, comprising resistance elements having engaging surfaces treated so as to offer only a very slight resistance to slow, easy movements of one surface upon the other and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

12. A unit of a device for facilitating instrument settings, comprising resistance elements having surfaces engaging through the medium of a zinc stearate coating.

13. A unit of a device for facilitating instrument settings, comprising a pair of resistance elements having engaging surfaces, one of said engaging surfaces being coated with zinc stearate and the other surface ground smooth to facilitate a slipping action.

14. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; a first member secured to the changing means; a stationary member; a second member adapted to slide upon said stationary member; and means causing said second member to adhere by friction to said stationary member below an extreme amount of applied force, a surface of said first member being adjacent a surface of said second member, said sur-

faces engaging through the medium of a coating adapted to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

15. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; a first member secured to the changing means; a stationary member; a second member adapted to slide upon said stationary member; and means causing said second member to adhere by friction to said stationary member below an extreme amount of applied force, a surface of said first member being adjacent a surface of said second member, said surfaces engaging through the medium of a zinc stearate coating.

16. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted, a chamber being provided between said dial and said support; a spring spider disposed within said chamber whose arms adhere to the support below an extreme amount of applied force; a resistance element adapted to be actuated by the movements of the dial, the body of the spider and a surface of said element engaging through the medium of a coating adapted to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

17. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted, a chamber being provided between said dial and said support; a spring spider disposed within said chamber whose arms adhere to the support below an extreme amount of applied force; a resistance element adapted to be actuated by the movements of the dial, the body of the spider and a surface of said element engaging through the medium of a zinc stearate coating.

18. A device for facilitating instrument settings, consisting of a dial; a shaft adapted to be actuated by the movements of the dial; a support for the instrument to be adjusted, a chamber being provided between said dial and said support; a spring spider disposed within said chamber whose arms adhere to the support below an extreme amount of applied force; a resistance element adapted to be actuated by the movements of the dial and having a surface extending into said chamber and engaging the body of the spider, said surface being formed with a

zinc stearate coating and said spider body being ground smooth to facilitate a slipping action.

19. A unit of a device for facilitating instrument settings, comprising resilient resistance elements having engaging surfaces treated so as to offer only a very slight resistance to slow, easy movements of one surface upon the other and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

20. A unit of a device for facilitating instrument settings, comprising adjustable resilient resistance elements having engaging surfaces treated so as to offer only a very slight resistance to slow, easy movements of one surface upon the other and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

21. A unit of a device for facilitating instrument settings, comprising resilient resistance elements having surfaces engaging through the medium of a zinc stearate coating.

22. A unit of a device for facilitating instrument settings, comprising adjustable resilient resistance elements having surfaces engaging through the medium of a zinc stearate coating.

23. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including resilient engaging elements adapted to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

24. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including adjustable resilient engaging elements adapted to offer only a very slight resistance to slow, easy movements of the changing means and a rapidly increasing resistance as the speed is accelerated up to a certain maximum, beyond which the resistance is substantially constant.

25. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and a resilient resistance device related to the changing means so as to offer resistance to the movements of the latter, said resistance device including elements having surfaces

engaging through the medium of a zinc stearate coating.

26. A device for facilitating instrument settings, consisting of movable means for changing the instrument setting; and an adjustable resilient resistance device related to the changing means so as to offer resist-

ance to the movements of the latter, said resistance device including elements having surfaces engaging through the medium of a zinc stearate coating. 10

Signed by me this 17th day of September, 1924.

DAVID J. MONOSMITH.