No. 651,342. Patented June 12, 1900.

E. D. CARR.

COMMUTATOR TRUING DEVICE.

(Application filed Mar. 7, 1900.)

(No Model.) 2 Sheets—Sheet 1.

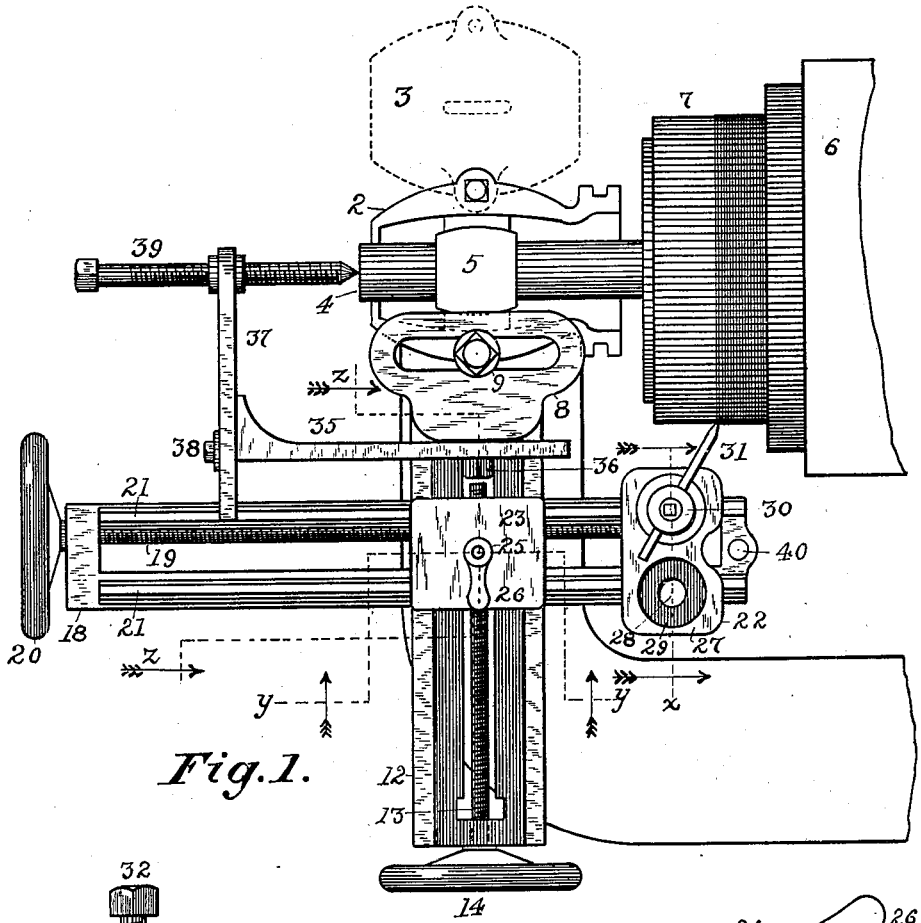

Fig. 1.

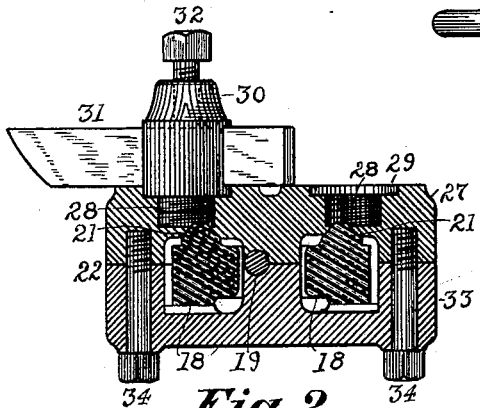

Fig. 2.

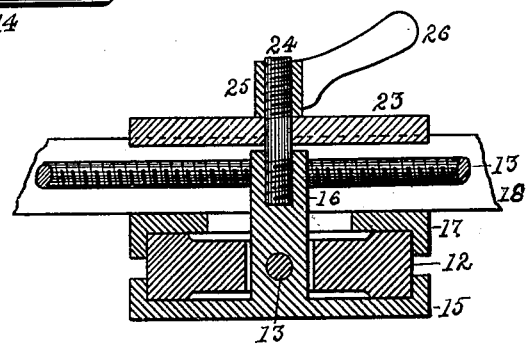

Fig. 3.

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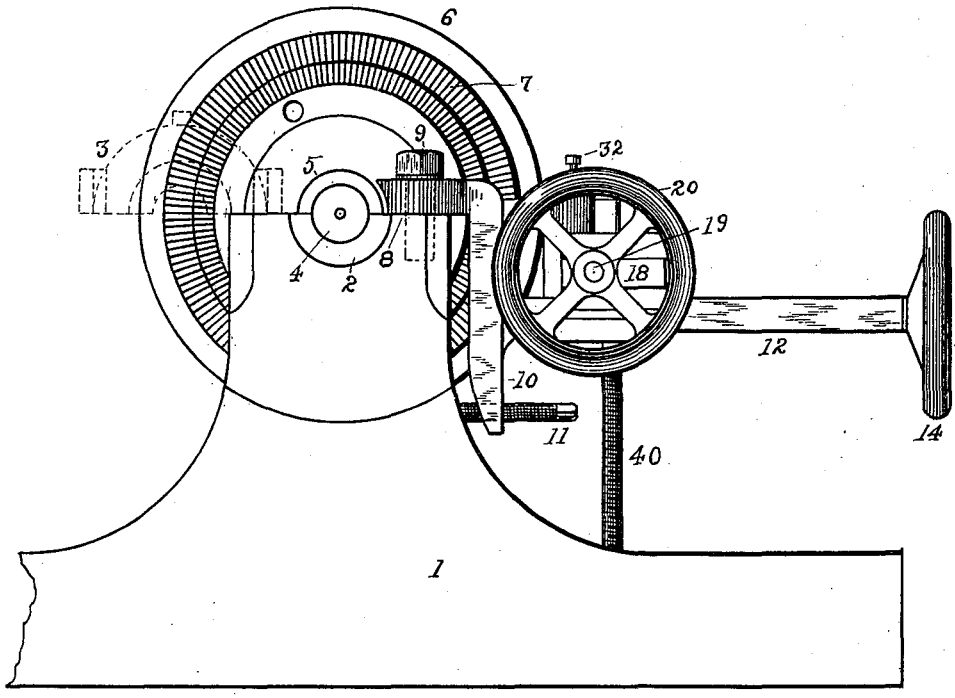

Fig. 4.

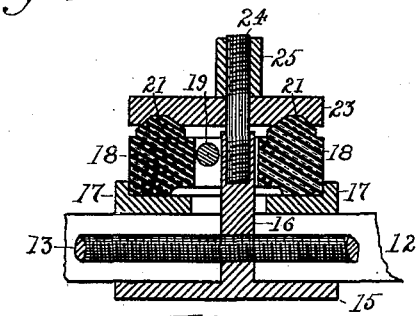

Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

EDGAR D. CARR, OF AKRON, OHIO.

COMMUTATOR-TRUING DEVICE.

SPECIFICATION forming part of Letters Patent No. 651,342, dated June 12, 1900.

Application filed March 7, 1900. Serial No. 7,680. (No model.)

To all whom it may concern:

Be it known that I, EDGAR D. CARR, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Machines for Truing Commutators, of which the following is a specification.

My invention has relation to the production of a machine for the easy, rapid, and accurate truing or turning of the face of commutators used on dynamos and electric motors.

One object of my invention is to produce a simple and effective device which can be readily applied to the frame or housing of the dynamos or motors and which will accurately true the face of the commutator without removing the armature from its journals; and its further object is to so design the attaching mechanism that the apparatus will be capable of nearly-universal use and fit substantially any style of dynamo or motor.

To the aforesaid objects my invention consists in the peculiar and novel construction, combination, and arrangement of the various parts hereinafter described and then specifically claimed, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different views, Figure 1 is a plan of my machine; Fig. 2, a section, enlarged, at the line X X of Fig. 1; Fig. 3, a section, enlarged, at the line Y Y of Fig. 1; Fig. 4, a side elevation with certain parts omitted; Fig. 5, a section, enlarged, at the line Z Z of Fig. 1.

Referring to the drawings, 1 is the housing of an ordinary dynamo, provided at the top of its upright portion with a journal-box 2, the lid 3 of which is swung around and here is shown in dotted lines. In the journal-box 2 is an armature-shaft 4, mounted in a pivoted inner bearing 5, and on the shaft 4 is an armature 6 and a commutator 7.

Thus far the description will be appropriate for any of the ordinary forms of dynamos or motors in common use. It has been difficult to devise some manner of attaching a truing device which will fit the many forms of housing used by different machines; but it has been found that nearly all use a journal-box with a lid and which lid is held down by two or more bolts, which enter the housing adjacent to the axis of the armature-shaft, and hence I have decided, as shown in the drawings, to remove the lid of the box by removing the bolt and then using the same bolt or one having a heavier head to attach my device to the dynamo. With this in view the drawings show the lid swung to one side and its position indicated in dotted lines only, as it takes no part in the operation of the truing mechanism.

The main part of my device on which the balance of the machinery is supported consists of a slotted head 8, arranged to lie flat on the lower half of the journal-box 2 and to be rigidly fastened there by a cap-bolt 9 passing through the slot and entering the hole in the box usually occupied by the bolt for holding down the lid. Depending from the rear of the head 8 is an arm 10, in the lower end of which is a set-screw 11, passing through the arm and arranged to encounter the side of the housing 1, with the object of affording more rigidity to the depending arm 10 during the truing process. Extending from the rear of the arm 10 horizontally is a long slotted arm 12, through which slot extends centrally and longitudinally a screw-threaded shaft 13, terminating at its free outer end in a hand-wheel 14, by which it is turned. The outer edges of the arm 12 are slightly raised above the middle portion surrounding the slot to form ways for a carriage to slide on and which is made up as follows: Under the arm 12 is a plate 15, with upturned sides to embrace the arm 12 and having in its upper central part a post 16, extending through the slot in the arm, and through which post passes the screw-shaft 13, the post being threaded to cause it to move to or from the hand-wheel 14 as the latter revolves the shaft 13. On the upper face of the ways on the arm 12 is a similar plate 17, with downturned sides to embrace the sides of the arm 12, and this plate 17 has upturned edges on the two sides at right angles to the arm 12. (See Figs. 3 and 4.) The upturned edges in the plate 17 form the bottom and outside ways for an arm 18, sliding at exactly right angles to the arm 12. This arm 18 is slotted longitudinally and through the slot; but to one side of its transverse center

is a screw-shaft 19, passing through the end of the arm 18 and terminating in a hand-wheel 20, by which it is turned. On the upper face of the arm 18 are two raised ridges 21, on which slides a tool-carriage 22, to be described. On these ways or ridges 21, which have sloping sides, and directly above the plates 15 and 17 is a top plate 23, provided with grooves to fit the ways 21 on its under face and substantially flat on top. Through the plate 23 passes a screw 24, the lower end of which is firmly screwed into the post 16 of the plate 15, and on the upper end it has a nut 25, with a handle 26 for convenience of the operator. It is apparent from the foregoing that plates 15 and 17 will slide along the arm 12 as directed by the screw 13, and plate 17 bears with it the arm 18, and it in turn carries the plate 23. At the same time the arm 18 has a free sliding motion transverse to arm 12 between the plates 17 and 23. Now in order to arrest both of these sliding operations and firmly clamp them in a determined place the operator turns the nut 25 by the handle 26 down onto the face of plate 23, which simultaneously draws up plate 15 by means of the screw 24 and post 16, thus tightly clamping together the arms 12 and 18 with the plates 15, 17, and 23.

Mounted, as before stated, on the ways 21 of the arm 18 is a tool-carriage 22, made up as follows: On the upper face of the ways is a top plate 27, with grooves on its under face to conform to the upper face of the ways 21 and having in its upper face two screw-threaded openings 28, with counterbored circular openings 29 surrounding each. Into one of these (as desired for use) is screwed a tool-post 30, having an ordinary lathe cutting-tool 31, held in its transverse opening by a set-screw 32, which is designed to do the truing when brought into operative connection with the commutator. On the lower faces of the arm 18, directly under the plate 27, is a bottom plate 33, with its sides upwardly extended to meet the upper plate 27 and be fastened there by bolts 34. In the center of this plate 33 rises a projecting boss arranged to meet a depending projection from plate 27 and form in conjunction therewith a threaded opening to engage the screw 19, which, operated by the hand-wheel 20, draws the carriage 22 backward and forward across the face of the commutator. It will be noticed that the screw 19 is set to one side of the center of the arm 18, and the reason is that the post 16, rising from the plate 15 at the junction of the arms 12 and 18, occupies a position nearly central, and in order to avoid it it was necessary to place the screw 19 to one side, as in Fig. 5.

On the back face of the depending arm 10 is fastened by a bolt 36 a transverse arm 35, parallel with the shaft 4, and this arm 35 bears at its outer end a cross-arm 37, arranged to be adjustably connected therewith by a bolt 38 in a slot in the cross-arm. In the end of the cross-arm 37 is a set-screw 39, with a conical point arranged to engage the center of the shaft 4 and press firmly against it, for the reason that in most dynamos and motors the armature-shaft is allowed a slight longitudinal sliding motion which would prevent good work in truing the commutator, but, being held firmly in one place by the set-screw, all longitudinal motion is arrested. This set-screw 39 and cross-arm 37 are omitted in Fig. 4, as its entire presence in Fig. 4 would obscure other parts, and its operation is believed to be clearly shown in Fig. 1.

To afford additional rigidity to the tool-carriage, a screw 40 extends from the front yoke of the arm 18 downwardly and encounters the housing 1.

As all commutators do not revolve in the same direction, the apparatus can be readily applied to the other side of the housing, in which case the tool-post will occupy the other opening in the carriage.

This arrangement of parts permits the truing of a commutator of any length not exceeding that of the arm 18, which is made longer than is necessary for the commutator shown in the drawings, and for a longer commutator is fixed to be extended toward the dynamo's position.

I claim as my invention—

1. In a truing device for commutators, the combination of an arm arranged to be adjustably secured to the dynamo-housing at substantially a right angle with the axis of the armature-shaft, parallel guideways transverse to and arranged to slide on said arm, bearing a sliding carriage, a tool-post thereon, and a screw in said guideways to move said carriage, substantially as shown and described.

2. In a truing device for commutators, the combination of an arm arranged to be adjustably secured to the dynamo-housing at substantially a right angle with the axis of the armature-shaft, parallel guideways transverse to and arranged to slide on said arm, a screw parallel with said arm arranged to move said guideways thereon, a sliding carriage on said guideways with a tool-post, and a screw in said guideways to move said carriage, substantially as shown and described.

3. In a truing device for commutators, the combination of an arm arranged to be adjustably secured to the dynamo-housing at substantially a right angle with the axis of the armature-shaft, parallel guideways transverse to and arranged to slide on said arm, bearing a sliding carriage and tool-post and a screw to move it along said ways, of means for securing said arm and ways together at any desired position, substantially as shown and described.

4. In a truing device for commutators, the combination with an arm arranged to be adjustably secured to the dynamo-housing, and parallel guideways transverse to and ar-

ranged to slide on said arm, bearing a sliding carriage and tool-post, of an adjustable supporting device beneath said guideways, to rest on said housing and steady said ways, substantially as shown and described.

5. In a truing device for commutators, the combination with an arm arranged to be adjustably secured to the dynamo-housing at substantially a right angle therewith, and adapted to support transverse parallel guideways with a sliding carriage and tool-post of a bar connected with and depending from the end of said arm nearest the housing and provided with a screw to engage said housing and regulate the horizontal adjustment of said arm, substantially as shown and described.

6. In a truing device for commutators, the combination with an arm arranged to be adjustably secured to the dynamo-housing at substantially a right angle therewith, and adapted to support transverse parallel guideways with a sliding carriage and tool-post, of a bar connected with the first arm and transverse to it, with a cross-bar detachably secured to one end thereof, bearing at one end a pointed set-screw to press the center of the armature-shaft and having the other end arranged to be slotted to afford transverse adjustment, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

EDGAR D. CARR.

In presence of—
C. P. HUMPHREY,
C. E. HUMPHREY.