B. O. SWAIN AND J. S. TIMMONS.

DEVICE FOR REDUCING THE INSULATING STRIPS OF COMMUTATORS.

APPLICATION FILED APR. 2, 1919.

1,359,288.

Patented Nov. 16, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

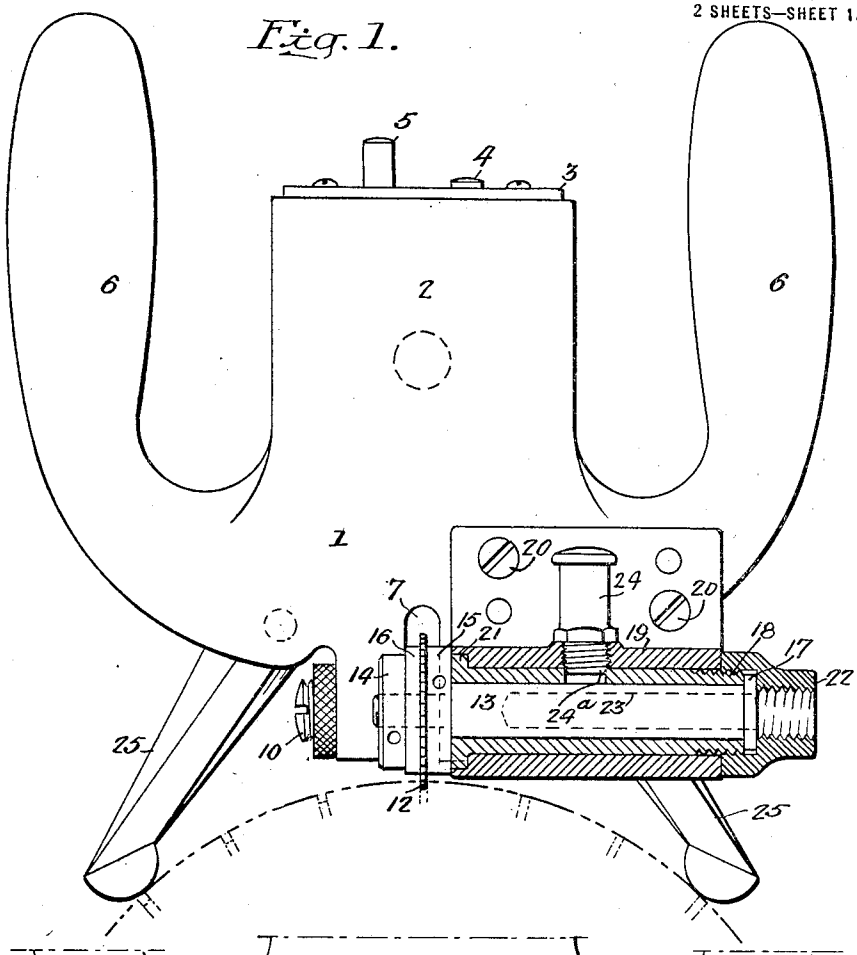


Fig. 2.

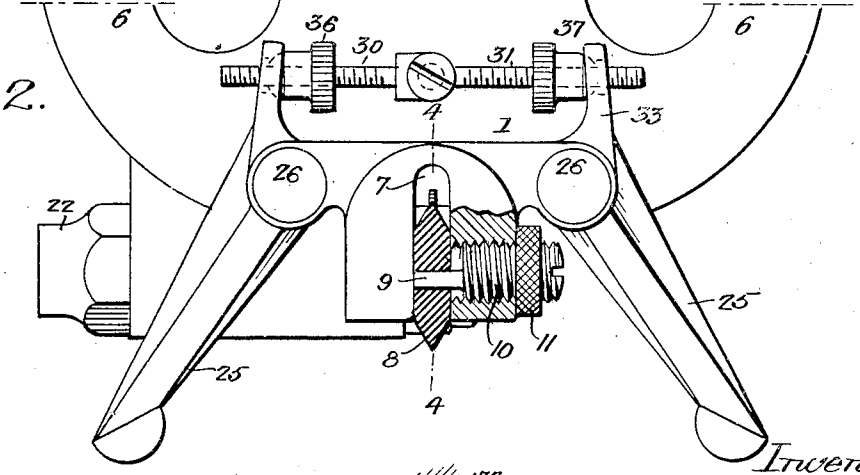
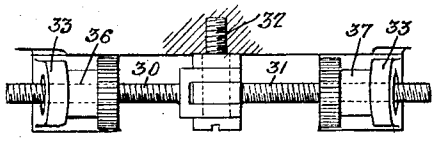


Fig. 8.



Inventors,
Benjamin O. Swain.
John S. Timmons.
by their Attorneys.
Howard & Howard

B. O. SWAIN AND J. S. TIMMONS.

DEVICE FOR REDUCING THE INSULATING STRIPS OF COMMUTATORS.

APPLICATION FILED APR. 2, 1919.

1,359,288. **Patented Nov. 16, 1920.**

2 SHEETS—SHEET 2.

Fig. 3.

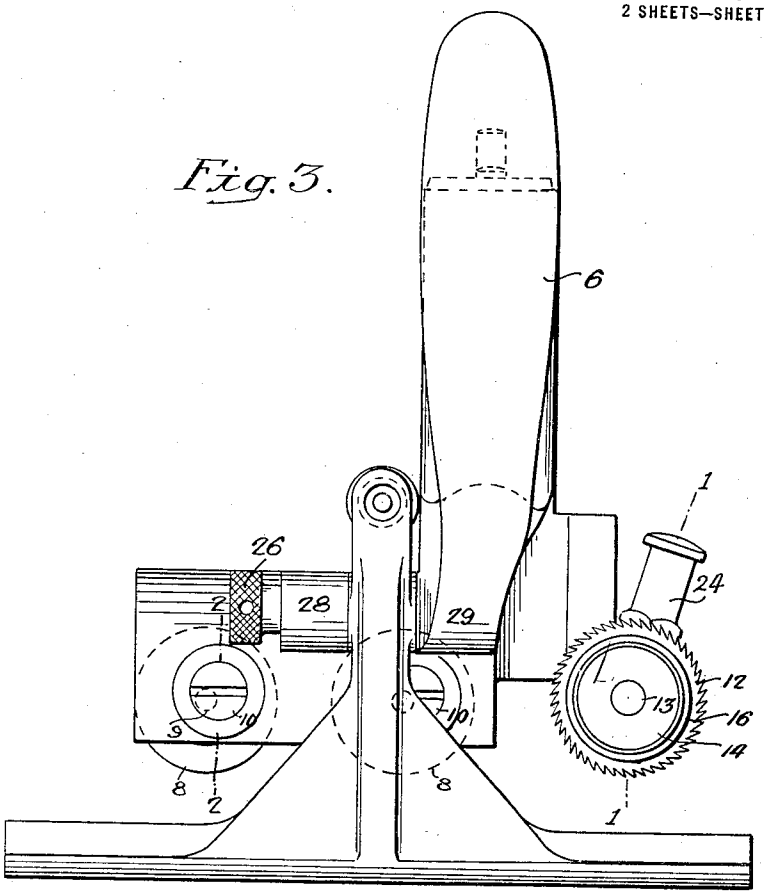


Fig. 4.

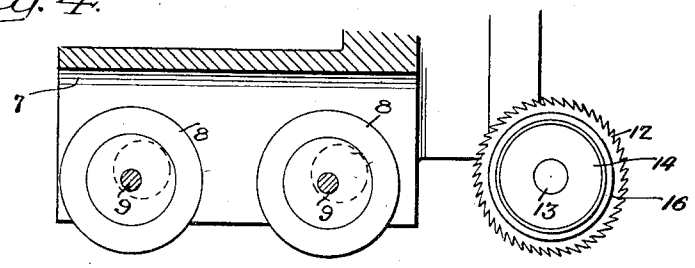


Fig. 7.

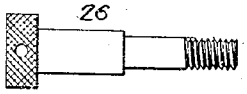


Fig. 6.

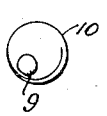
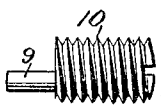


Fig. 5.



Inventors,
Benjamin O. Swain
John S. Timmons,
by their Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

BENJAMIN O. SWAIN, OF PHILADELPHIA, PENNSYLVANIA, AND JOHN S. TIMMONS, OF NEW YORK, N. Y.

DEVICE FOR REDUCING THE INSULATING STRIPS OF COMMUTATORS.

1,359,288. Specification of Letters Patent. Patented Nov. 16, 1920.

Application filed April 2, 1919. Serial No. 287,097.

To all whom it may concern:

Be it known that we, BENJAMIN O. SWAIN and JOHN S. TIMMONS, citizens of the United States, and residents of Philadelphia, county of Philadelphia, State of Pennsylvania, and New York city, county of New York, State of New York, respectively, have invented certain Improvements in Devices for Reducing the Insulating Strips of Commutators, of which the following is a specification.

Our invention relates to certain improvements in the device for reducing the insulating strips of commutators, as set forth in the patent granted to us on the 3rd day of November, 1914, No. 1,116,158.

One object of our invention is to arrange the guide runners so that they will move more in the arc of a circle when adjustments are necessary.

A further object of the invention is to provide means for adjusting the guide wheels so as to regulate the depth of cut and so that they will properly bear upon the side walls of the slots.

A still further object of the invention is to locate the switch so that it can be operated by the thumb of either hand, while the tool is manually held and to design the spindle and its bearings so that it can be readily removed and replaced when necessary.

In the accompanying drawings:

Figure 1 is a front view, the spindle bearing being in section on the line 1—1, Fig. 3;

Fig. 2 is a rear view, partly in section, on the line 2—2, Fig. 3;

Fig. 3 is a side view;

Fig. 4 is a longitudinal sectional view on the line 4—4, Fig. 2;

Figs. 5 and 6 are detached views of the eccentric adjusting screw;

Fig. 7 is a detached view of one of the clamping studs; and Fig. 8, is a detached plan view showing the adjusting screws for the runners.

The invention relates to a machine for reducing the height of sheets of mica, or other hard, non-resisting insulating materials, which are placed between the segments of a commutator, as set forth in the above mentioned patent.

Referring to the drawings, 1 is the body of the cutting device having a central, upright portion 2 in which is located the electric switch 3 having the push buttons 4 and 5. At each side of the portion 2 and cast integral with the body 1, in the present instance, are handles 6, which are so proportioned in regard to the switch that the thumb of each hand can push down a button without releasing the grasp upon the handles.

7 is a longitudinal slot in the under side of the body portion 1 and located in this slot are the guide wheels 8, which rotate freely on the eccentric pins 9 of the screws 10 adapted to threaded openings in the body portion and held in position, after adjustment, by nuts 11. On turning the screws 10 the wheels 8 can be raised or lowered in the slot so as to regulate the depth of cut. The wheels are beveled, as shown, and the beveled surfaces rest against the edges of the slots. When the cutting disk becomes worn its diameter is reduced and the guide wheels are adjusted accordingly.

The cutting disk 12 is secured to a spindle 13 by a nut 14 adapted to a reduced threaded portion of the spindle and is held between disks 15 and 16. The spindle has a head 17 at its outer end which bears against a bushing 18 mounted in the bearing 19 secured to the face of the body 1 by screws 20, or other fastenings. The bushing has a flange 21 at the forward end adapted to a recess in the bearing and takes the thrust of the disk 15. The outer end of the bushing is threaded and a coupling cap 22 is adapted to this threaded portion and has an internal portion threaded for the shaft casing, the stem of the shaft extending into the opening 23 in the spindle 13, shown by dotted lines in Fig. 1.

24 is an oil cup which extends into the opening 24^a in the bushing and holds the bushing against rotation. This construction allows for the ready removal and replacement of the spindle and bushing, as well as the cutting disk.

The guide runners 25 are pivotally mounted on the body 1, one at each side, as shown in the drawings. Each pivot is in the form of a clamping stud 26, Fig. 7, which passes through the bearings 28 and the reduced portion passes through the pivot opening in the runners. The threaded portion is adapted to a threaded opening in a bearing 29 so that, on turning the clamping

stud, the runners are held rigidly to the body portion.

In order to adjust the runners to accommodate commutators of different diameters, we pivotally connect two screw rods 30 and 31 to a screw pin 32, screwed into the body portion 1. These screw rods pass through enlarged openings in the arms 33 of the runners 25, and nuts 36 and 37 are mounted on the screw rods 30 and 31, respectively. By turning these nuts, the runners 25 can be turned on their pivots and, after adjustment, can be held by the clamp studs 26. By this construction accurate adjustment is secured.

The advantage of the guide runners lies in the radial adjustment. On large diameter commutators, the greater span of these runners gives the maximum stability, while on a small diameter commutator, these runners more nearly approach the axis of the commutator, thus assuring stability so that in either extreme the greatest stability is attained.

We claim:

1. The combination in a device for reducing the insulating strips of commutators, of a body portion; a rotating cutter mounted thereon; a guide back of the cutter arranged to travel in a kerf made by the cutter; and means for vertically adjusting the guide.

2. The combination in a device for reducing the height of the insulating strips of commutators, of a body portion having a longitudinal slot therein; two circular guides mounted to turn freely in the slot; a cutter; bearings therefor mounted on the body portion; and means for independently and vertically adjusting the guides.

3. The combination of a body portion; a cutter mounted thereon, the body portion having a longitudinal slot therein in line with the cutter; two rotary guide wheels mounted in the slot; two screws mounted in threaded openings in the body portion, each having an eccentric pin on which the guide wheels are mounted so that on turning the screws the guide wheels can be adjusted.

4. The combination of a body portion; a cutter mounted on the body portion; guides back of the cutter adapted to travel in the kerf made by the cutter; and guide runners pivotally mounted, one on each side of the body portion.

5. The combination in a device for reducing the height of the insulating strips of commutators, of a body portion; a cutter; guide runners pivotally mounted on the body portion on each side of the cutter; and means for retaining the guide runners in the position to which they are adjusted.

6. The combination in a device for reducing the height of the insulating strips of commutators, of a body portion; a cutter; guide runners pivotally mounted on the body portion on each side of the cutter; means for retaining the guide runners in the position to which they are adjusted; and means for adjusting the guide runners.

7. The combination of a body portion; a cutter mounted on the body portion; two guide wheels back of the cutter and arranged to travel in the kerf made by the cutter; two guide runners pivotally mounted on the body portion, one on each side of the cutter; a clamping stud forming a pivot; and means for clamping the runners in the position to which they are adjusted; two screw rods pivotally mounted on the body portion and extending through openings in arms projecting from the guide runners; and nuts on the rods for adjusting the runners.

8. The combination in a device for reducing the insulating strips of commutators, of a body portion; a bearing mounted on the body portion; a bushing located in the bearing, said bushing having a flange at one end and a screw thread at the other end; a spindle mounted in the bushing; a cutting disk carried by the spindle, said spindle having an opening therein for the reception of a driving shaft; and a coupling cap adapted to the threaded end of the bushing.

9. The combination in a device for reducing the insulating strips of commutators, of a body portion; a bearing mounted on the body portion; a bushing in the bearings; a spindle mounted in the bushing; a cutting disk carried by the spindle; said spindle having an opening therein for the reception of the driving shaft; a coupling cap secured to the bushing; and an oil cup screwed into the bearing and extending into an opening in the bushing, preventing the turning of the bushing in the bearing.

10. The combination in a device for reducing the insulating strips of commutators, of a body having an upright portion; a handle on each side of the upright portion; a switch mounted in the upright portion and having push buttons, the handles being so proportioned in respect to the upright portion that the switch can be operated without releasing the hold on the handles.

In witness whereof we affix our signatures.

BENJAMIN O. SWAIN.
JOHN S. TIMMONS.