

L. A. ALEXANDER.
COMMUTATOR ASSEMBLING DEVICE.
APPLICATION FILED MAR. 3, 1917.

1,272,176.

Patented July 9, 1918.
2 SHEETS—SHEET 1.

Fig. 1.

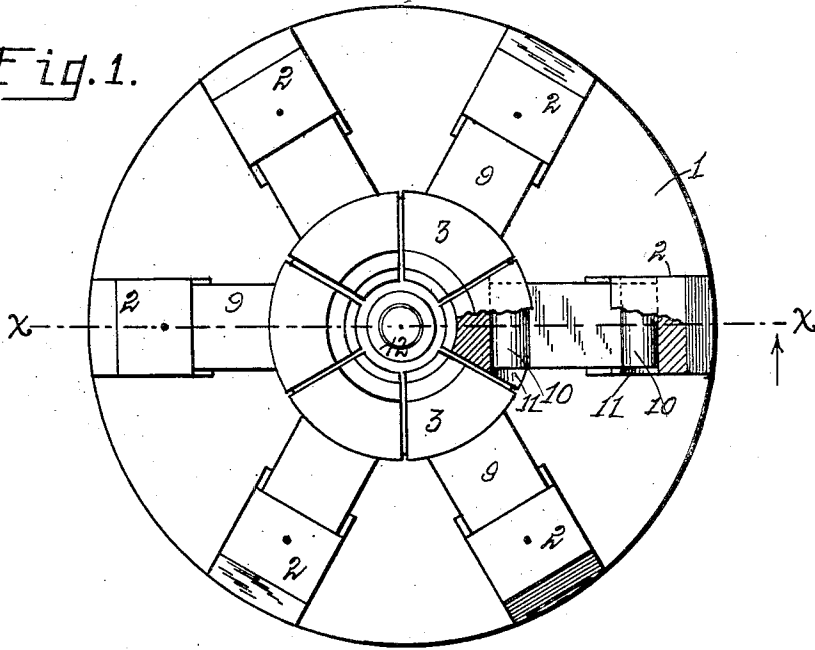
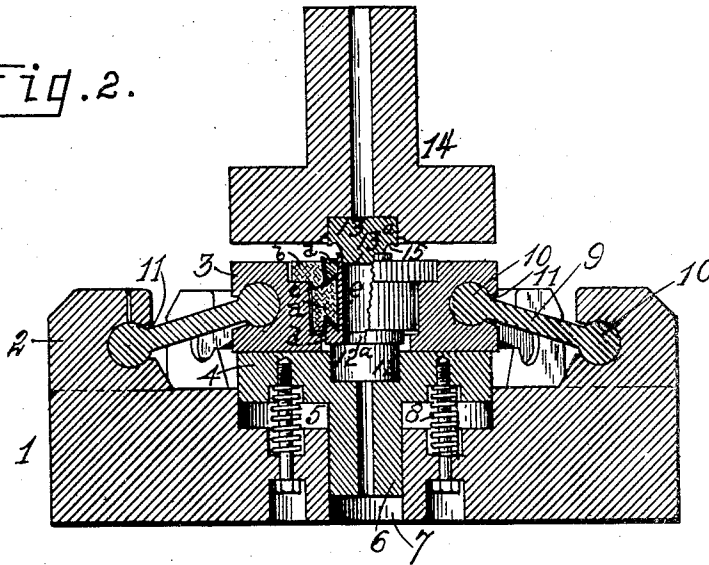


Fig. 2.



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Fig. 3.

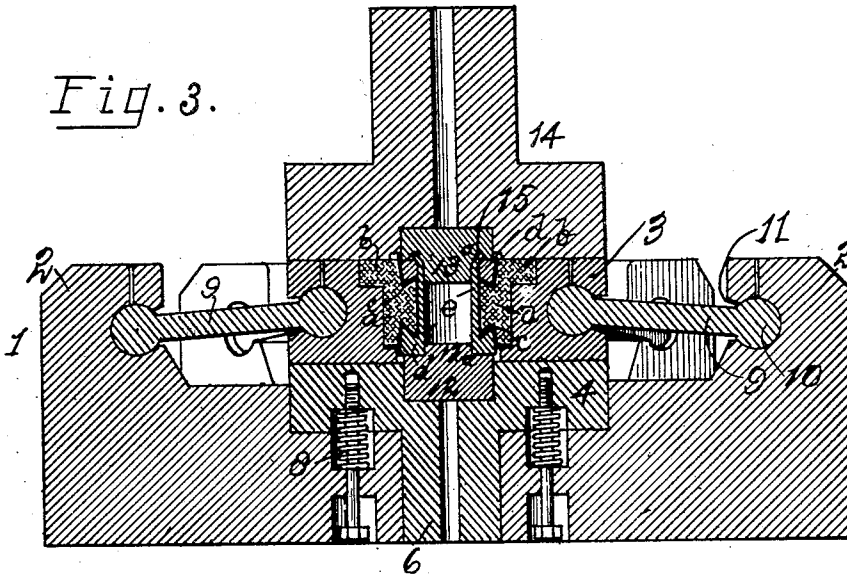
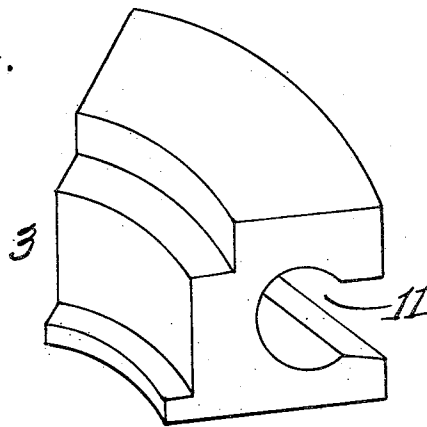


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS A. ALEXANDER, OF TOLEDO, OHIO, ASSIGNOR TO THE TOLEDO COMMUTATOR CO.,
OF TOLEDO, OHIO, A CORPORATION OF OHIO.

COMMUTATOR-ASSEMBLING DEVICE.

1,272,176.

Specification of Letters Patent.

Patented July 9, 1918.

Application filed March 3, 1917. Serial No. 152,290.

To all whom it may concern:

Be it known that I, LOUIS A. ALEXANDER, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Commutator-Assembling Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to the assembling of segmental commutator-bars and their associated parts, and its object is to provide devices for centering and compressing and fixedly securing these parts radially and longitudinally in their proper relation.

To these ends, my invention consists of the devices, construction and arrangement of parts hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1, is a top-plan view of my device, seen from beneath the plunger, hereinafter referred to; Fig. 2, a central vertical sectional elevation of the same, taken on line *x-x*, Fig. 1, showing the plunger in elevated position and the commutator-parts assembled and held in position to be operated upon; Fig. 3, the same, with the plunger in its lower position and with the commutator-parts compressed into and fastened in their proper and final relation, and Fig. 4, a perspective outline of one of the radially movable jaws hereinafter referred to, detached.

Like letters and numerals of reference indicate like parts throughout the drawings.

In the drawings, 1 is a base from the top of which springs a circularly arranged series of short stout pillars 2, cast or formed, preferably, integral with the base. 3—3 are jaws, in the present instance, for illustration, six in number, which constitute true equal segments of a strong flat ring or cylinder. The segments 3 rest and move radially upon the smooth flat top of a follow-block 4 which fits with a working fit in recess 5 in the top of the base 1 and which is provided on its under side with a member, 6, which moves vertically in a socket 7 in the base 1. The follow-block 4 is held normally elevated by springs 8 interposed between the base and the follow-block.

9—9 are toggle-bars the opposite ends of which are provided with heads, as at 10, to form bearing-portions. The pillars 2 and the jaws 3 are disposed in corresponding radial vertical planes and have opposed corresponding recesses 11 for the reception of and engagement with the heads 10 of the toggle-bars.

The inner faces of the segmental jaws 3 are recessed to correspond to and to receive the outer surface of an assembled collection of commutator-bars *a*, including the radial commutator-arms *b*. These commutator-bars are notched at each end, in the usual manner, as at *c*, for the reception of clamping-rings *d*. In the present instance, for illustration, the lower clamping-ring *d* is integral with an internal commutator-sleeve *e*. In the center of the top of the follow-block is seated an anvil 12 having a raised boss 12^a which fits into the lower end of the sleeve *e*. 13 is an anvil-portion seated in the center of and carried by a ram 14 which is actuated by any suitable press. The anvil 13 has a downwardly projecting central boss 13^a co-axial with the anvil 12 and adapted to enter the upper end of the sleeve, the boss being encircled by an undercut groove or channel 15.

The operation of my device is as follows: The commutator-bars, together with their usual associated insulating devices and the internal sleeve and clamping-rings, being assembled and fitted loosely within the annular space formed by the recesses in the inner faces of the jaws 3, the ram 14 is caused to descend. The downwardly projecting portion of the anvil 13 enters the upper end of the sleeve *e*. The ram continues to descend, overcoming the upward stress of the springs 8, pressing downwardly the jaws 3 and the follow-block 4 until it strikes the bottom of its recess 5. This movement swings the inner ends of the toggle-bars downwardly and inwardly so that the bars lie nearly in a horizontal plane, thus powerfully pressing the segmental jaws 3 toward their common center, thus pressing the several members of the commutator radially toward the vertical axis of the device and setting up and trueing and centering the several parts of the commutator. As the ram descends, the groove 15 receives the upwardly projecting end of the internal sleeve *e*, the groove being of such shape in cross-section that the

end of the sleeve is peened outwardly and over and upon the upper clamping-ring *d*. Now the several parts of the commutator are squeezed into and rigidly secured in their proper operative relation. As the ram 14 retreats the springs 8 force upwardly the follow-block which carries with it the jaws 3 which are, by the upward swing of the inner ends of the toggle-bars, now retracted, thus releasing the commutator from the grasp of the jaws, permitting the removal of the commutator, and placing the device in position for a repetition of the operation.

Having described my device, what I claim and desire to secure by Letters Patent, is—

1. In a commutator assembling device, a series of circularly arranged segmental jaws, the inner faces of said jaws being recessed to collectively conform to the outer circumference of a commutator, means for applying axial pressure upon such commutator, and means disposed between the points of application of such axial pressure for radially projecting into closed relation and for retracting into open relation said jaws.

2. In a commutator assembling device, a series of circularly arranged segmental jaws, the inner faces of which are recessed to collectively conform to the outer circumference of a commutator, a press arranged to apply end-pressures upon such commutator, and devices located between the points of application of said end-pressures for radially projecting and retracting said jaws simultaneously with the movement of the press.

3. In a commutator assembling device, a series of circularly arranged segmental jaws having inner faces recessed to collectively conform to the outer circumference of a commutator, and to provide a central opening for the reception of such commutator, press-members operatively disposed at opposite ends of such opening, and means disposed intermediate said press members for radially actuating said jaws in harmony with the movement of said press-members to impart simultaneous radial and end pressures upon such commutator.

4. In a device of the described character, a base, a follow-block carried by the base, a series of circularly arranged segmental jaws movable radially upon the follow-block, toggle-arms connected with the base and with the jaws and a ram co-axial with said jaws and said follow-block.

5. In a device of the described character, a base, a follow-block on the base, a series of circularly arranged jaws radially movable upon said follow-block, the inner faces of said jaws being recessed to conform to the outer circumference of a commutator and to provide a central opening for the reception of such commutator, converging arms which connect said jaws with the base, a ram, an anvil-member carried by the ram and having a centrally projecting boss, a like anvil-member carried by the follow-block said ram, jaws, follow-block and anvil-members being co-axially disposed, the arrangement being such that the jaws and the follow-block move in harmony with the ram.

6. In a device of the described character, a recessed base, a spring-supported follow-block mounted in said recess and arranged to move into contact with the bottom of such recess, a series of circularly arranged jaws radially movable upon said follow-block, the inner faces of said jaws being recessed to conform to the outer circumference of a commutator and to provide a central opening for the reception of such commutator, converging arms which connect said jaws with the base, a ram, an anvil-member carried by the ram and having a centrally projecting force, a like anvil-member carried by the follow-block, said ram, jaws, follow-block and anvil-members being co-axially disposed, the arrangement being such that the jaws and the follow-block move in harmony with the ram.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS A. ALEXANDER.

Witnesses:

LOUIS JACOBSON,
S. N. SLOAN.

It is hereby certified that in Letters Patent No. 1,272,176, granted July 9, 1918, upon the application of Louis A. Alexander, of Toledo, Ohio, for an improvement in "Commutator-Assembling Devices," an error appears in the printed specification requiring correction as follows: Page 2, line 85, claim 6, for the word "force" read *boss*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of July, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl. 29—84.