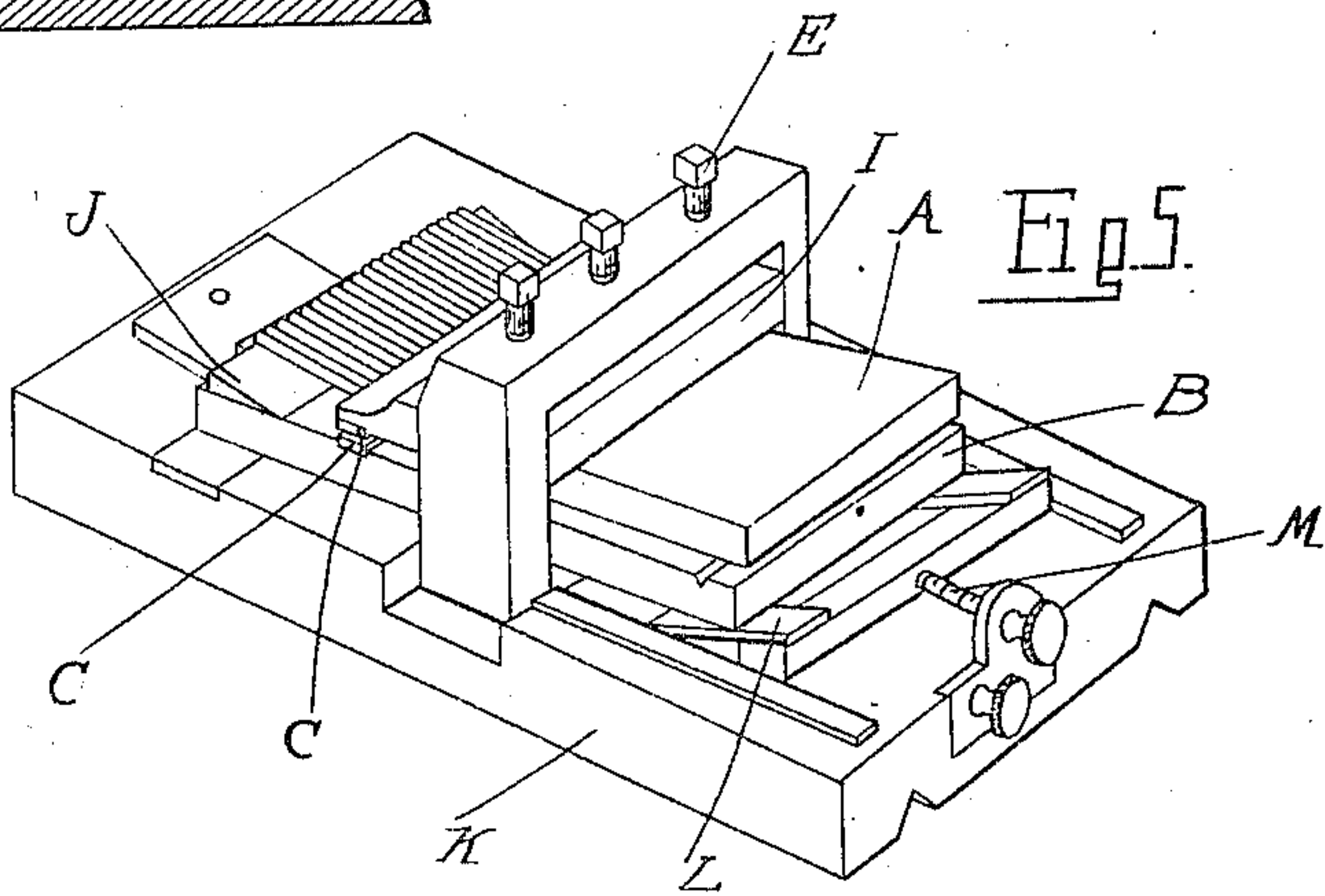
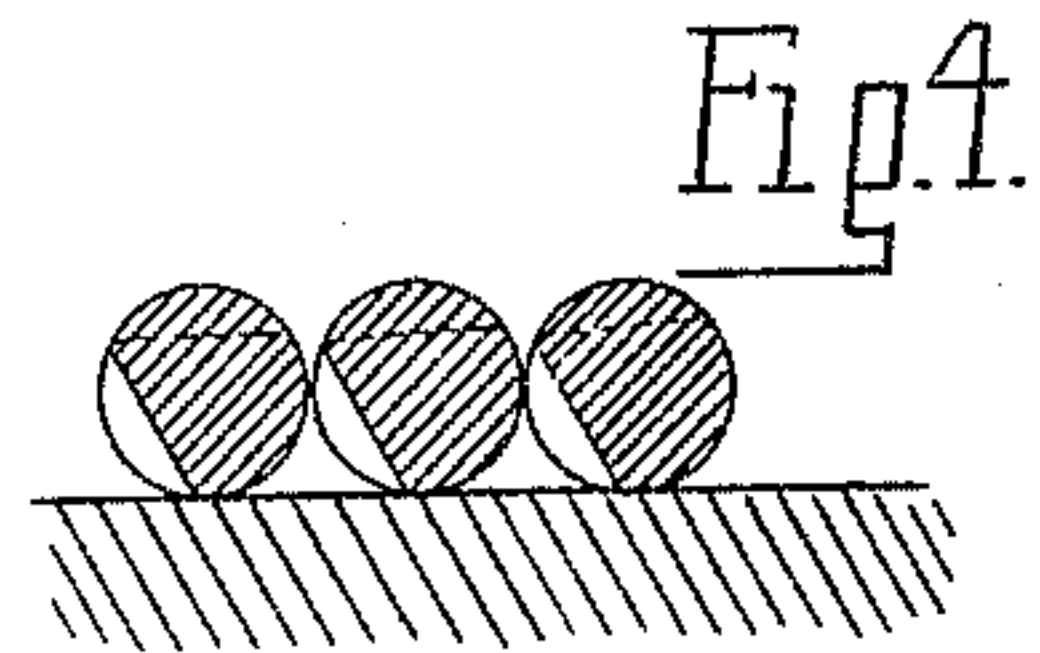
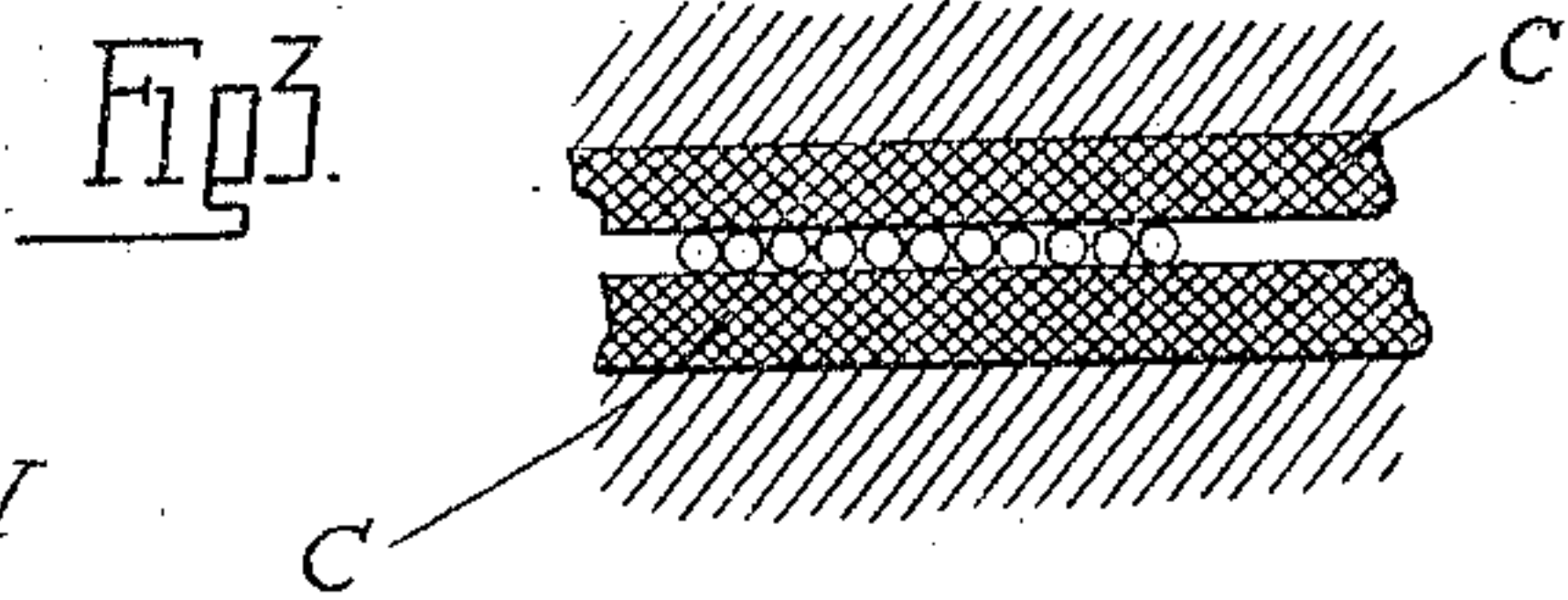
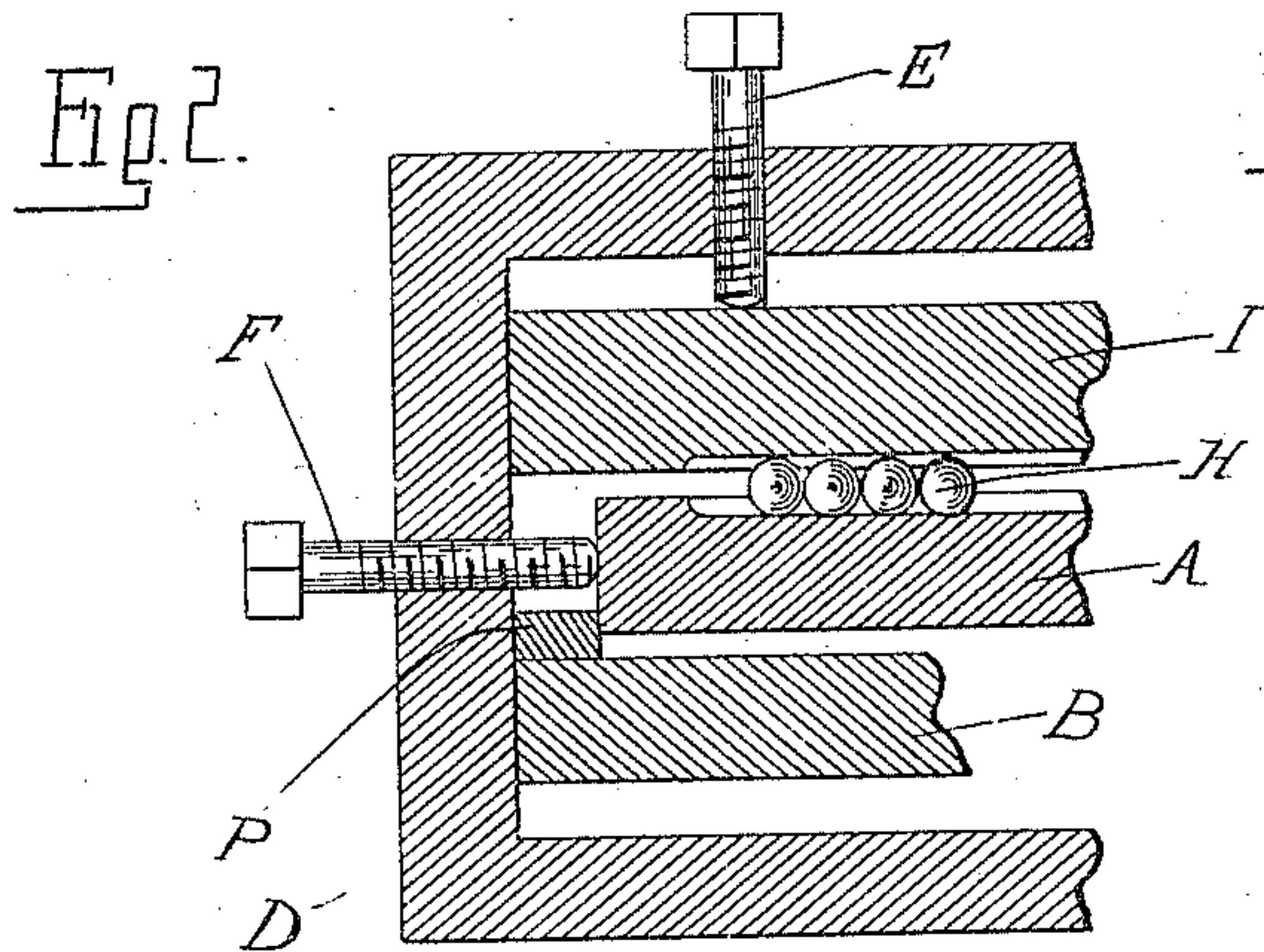


987,237.



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UNITED STATES PATENT OFFICE.

MATHEW M. KERR, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT DENTAL MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADJUSTABLE WORK-HOLDER.

987,237.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed June 18, 1908. Serial No. 439,161.

To all whom it may concern:

Be it known that I, MATHEW M. KERR, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Adjustable Work-Holders, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to machines for grinding or otherwise fashioning small metallic rods, and has more particular reference to machines for manufacturing the so called "dental broaches" or small reamers used in dentistry.

It is the object of the invention to obtain a construction of adjustable work holder with which the work may be easily performed upon a large number of rods, and which is capable of simultaneously rotatively adjusting said rods with great accuracy.

To this end the invention consists in the construction as hereinafter set forth.

In the drawings—Figure 1 is a longitudinal section through the work holder in operative relation to the grinder, indicated in dotted lines; Fig. 2 is a cross section on line $x-x$, Fig. 1; Fig. 3 is an enlarged section on line Y—Y, Fig. 1; Fig. 4 is a further enlarged section on line Z—Z, Fig. 1; and Fig. 5 is a perspective view.

In the manufacture of dental broaches or reamers it is usual to grind a small wire shank into a polygonal section and then to twist the ground portion into spiral form. This grinding must be performed with great nicety and where each shank is ground individually considerable time is necessary for the operation. I have, therefore, devised a multiple or gang holder for the shanks to be ground, which is constructed as follows:

A and B are two metallic clamping plates, and between which the shanks to be ground are placed. Each of these plates is provided with a facing strip C of suitable material, having a slightly yielding and resilient nature, such for instance as vulcanized fiber.

D is a yoke embracing the plates A and B and provided with screws E for clamping the plates together, and adjusting screws F for laterally moving the upper plate A. Thus if a series of shanks to be ground are arranged side by side, with their ends between the facing strip C of the plates A

and B, these shanks may all be clamped by tightening the screws E. At the same time an adjustment of the screws F will move the plate A and cause a simultaneous rolling or rotary adjustment of each of the shanks of the series. In order to facilitate this adjustment, and to reduce the friction caused by the sliding of one plate over the other, I preferably provide ball bearings. As shown, G are balls arranged in transverse grooves near the rear ends of the plates A and B, and H are balls arranged in transverse grooves respectively in the plate A and a superposed clamping plate I against which the screws E bear.

The plate B extends forward of the plate A to form a bed against which the projecting portions of the shanks may bear. I preferably also provide means for placing a slight tension upon the projecting ends of the shanks, and to this end a thin wedge J is inserted between the shanks and the plate B.

The plates A and B are mounted upon a suitable bed plate K and are adjustable into different angular relation thereto by a suitable means, such as the wedge L moved by an adjusting screw M.

With the construction as described, to place the work to the holder the clamping screws E are first loosened and the shanks are arranged in series with their outer ends between the strips C. The screws E are then tightened and the wedge J inserted, as shown in Fig. 1. The operator then places the bed K upon suitable guides N over which it may be slid into operative relation to the grinder, indicated by dotted lines, as O. The proper angle of grinding is secured by an adjustment of the screws M which correspondingly adjust the wedge L and raise or lower the outer ends of the plates A and B. After the grinding of one face of the shanks the screws F are adjusted to move the plate A laterally. This adjustment will simultaneously revolve all of the shanks by the frictional engagement of the strips C therewith, and after the required adjustment is made the grinding operation is repeated. As all of the shanks are precisely the same diameter it is obvious that the rotation will be the same for each and consequently the work performed will be uniform. A great accuracy of adjustment may be obtained by providing gage blocks, such as P, of different widths,

which may be inserted between the edge of the plate A and the side of the yoke.

It will be understood that the shanks may be ground into polygonal sections with any number of faces desired, and that while I have described the holder as used with a grinder, it is equally well adapted for use in connection with other machines.

What I claim as my invention is:

10 1. A work holder comprising a pair of clamping plates for engaging a series of parallelly arranged shanks, and means for laterally adjusting one of said plates in relation to the other to simultaneously and

15 correspondingly rotate all of said shanks.
2. A work holder comprising a pair of plates between which a series of parallelly arranged shanks may be placed, clamping means for said plates, and means for adjusting one of said plates laterally with respect to the other plate while under clamping pressure.

3. A work holder comprising a pair of clamping plates between which a series of parallelly arranged shanks may be placed, a facing strip of slightly yieldable and resilient material for frictionally bearing upon said shanks, means for laterally adjusting one of said plates in relation to the other to simultaneously and correspondingly rotate all of said shanks, and clamping means for said plates.

4. A work holder comprising a pair of clamping plates between which a series of parallelly arranged shanks may be placed, oppositely arranged facing strips upon the respective plates, said strips being formed of slightly yieldable and resilient material, means for adjusting one of said plates laterally with respect to the other to simultaneously and correspondingly rotate all of said shanks, and clamping means for said plates.

5. A work holder comprising a pair of plates, between which a series of parallelly arranged shanks may be placed, clamping means for said plates, means for adjusting one of said plates with respect to the other, and anti-friction bearings for said adjustable plates permitting the movement thereof while under clamping tension.

6. A work holder comprising a pair of clamping plates between which a series of parallelly arranged shanks may be placed with their ends projecting beyond one of the plates, and a bearing for the projecting ends of said shanks adjustable to deflect the same laterally.

7. The combination with a pair of clamping plates between which a series of parallelly arranged shanks may be placed, one of said plates projecting beyond the clamping end of the other plate, and a wedge bearing insertible between the projecting ends of said shanks and the projecting plate.

8. The combination with a pair of plates between which a series of parallelly arranged shanks may be placed, a clamping yoke for said plates, ball bearings arranged between one of said plates and said yoke and between the said plate and the other plate, and means for adjusting the same plate laterally.

9. The combination with a pair of clamping plates between which a series of parallelly arranged shanks may be placed, of means for adjusting one of said plates laterally with respect to the other plate, a bed upon which said plates are supported, and means for adjusting said plates laterally in relation to said bed.

10. A work holder comprising a pair of vertically adjustable clamping plates for engaging a series of parallelly arranged shanks, and means for laterally adjusting one of said plates in relation to the other to simultaneously and correspondingly rotate all of said shanks.

11. A work holder, comprising means for engaging and holding in parallel relation a plurality of shanks, and means for laterally adjusting said first mentioned means adapted to simultaneously and correspondingly adjust laterally all of said shanks.

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

MATHEW M. KERR.

Witnesses:

NELLIE KINSELLA,
JAMES P. BARRY.