

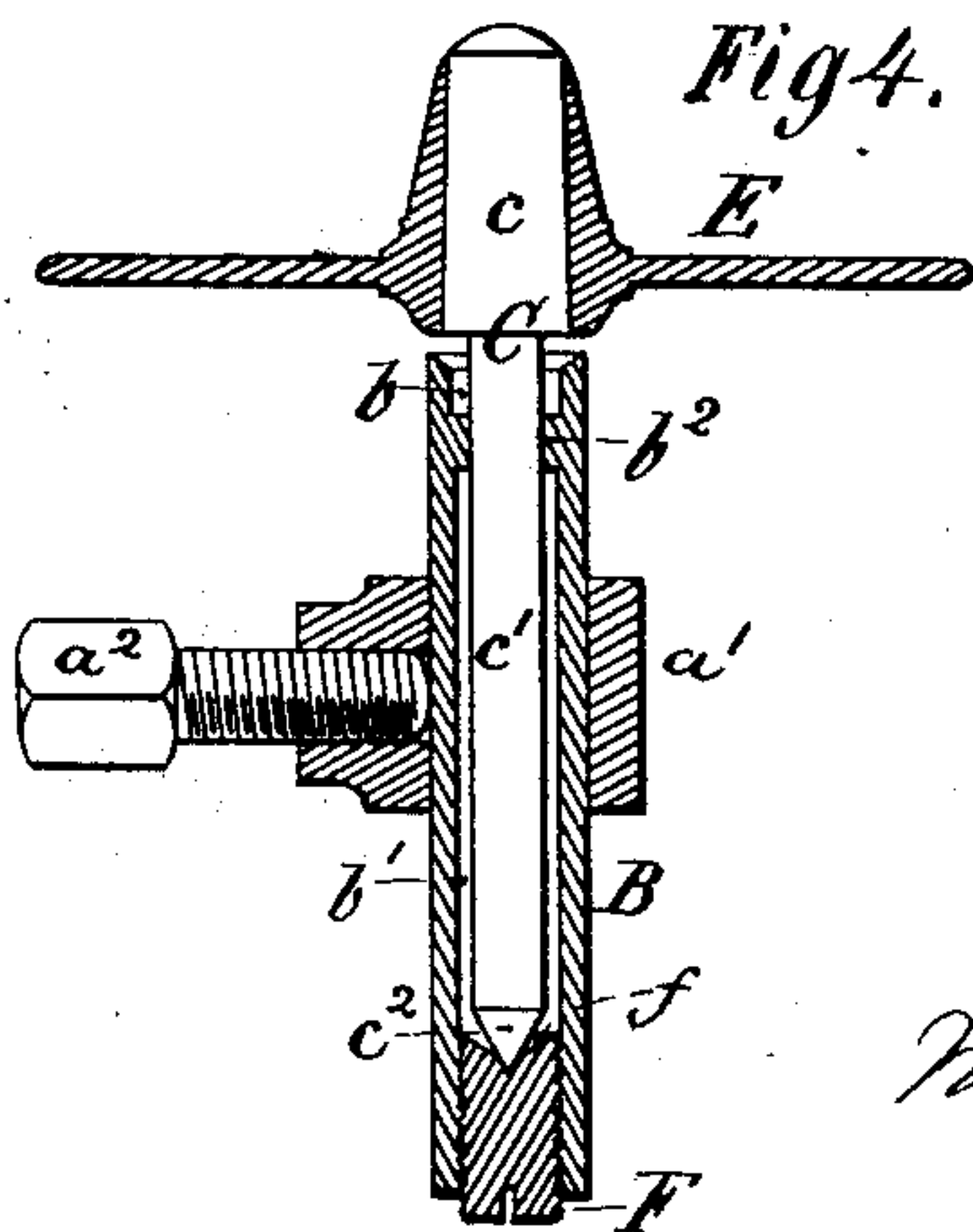
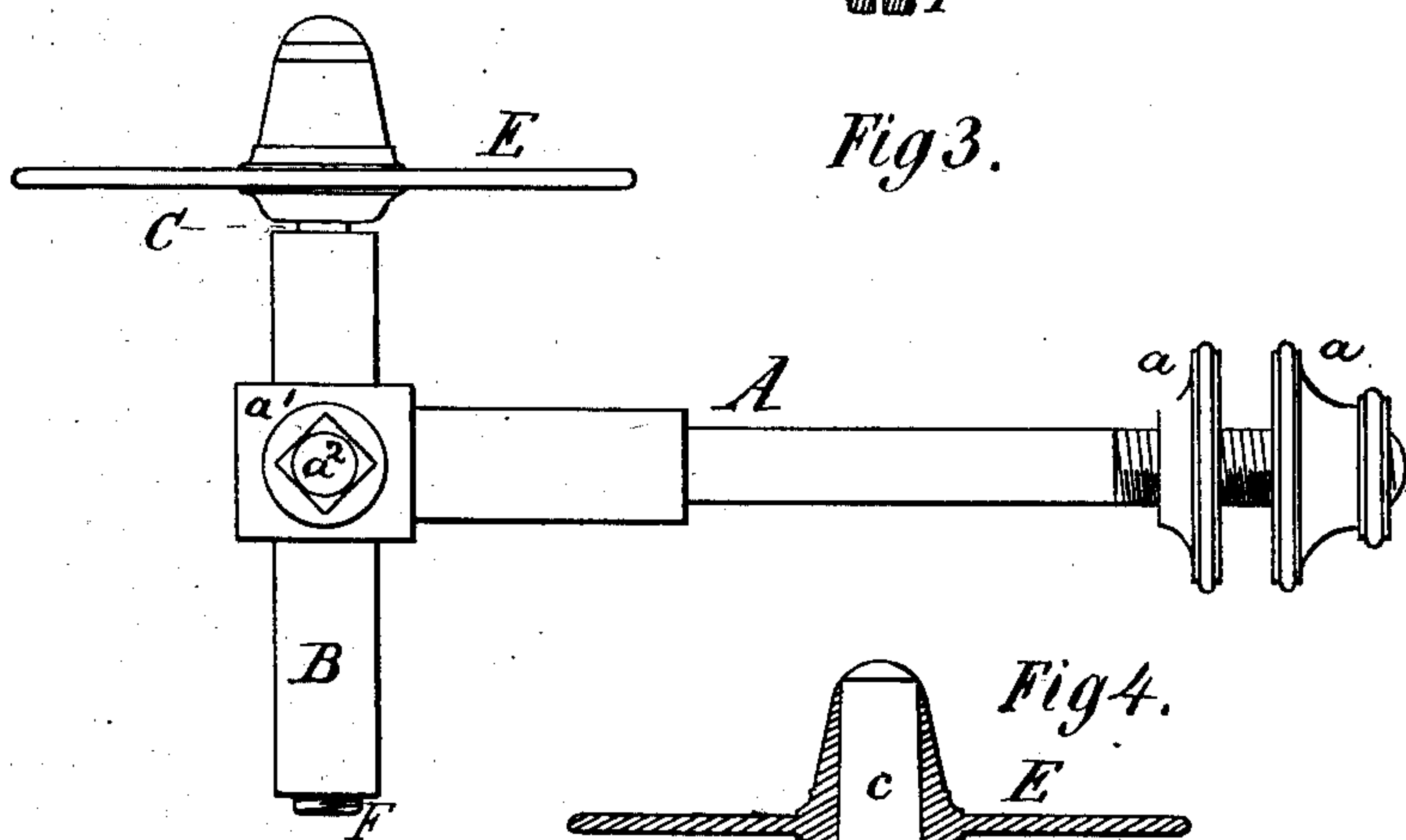
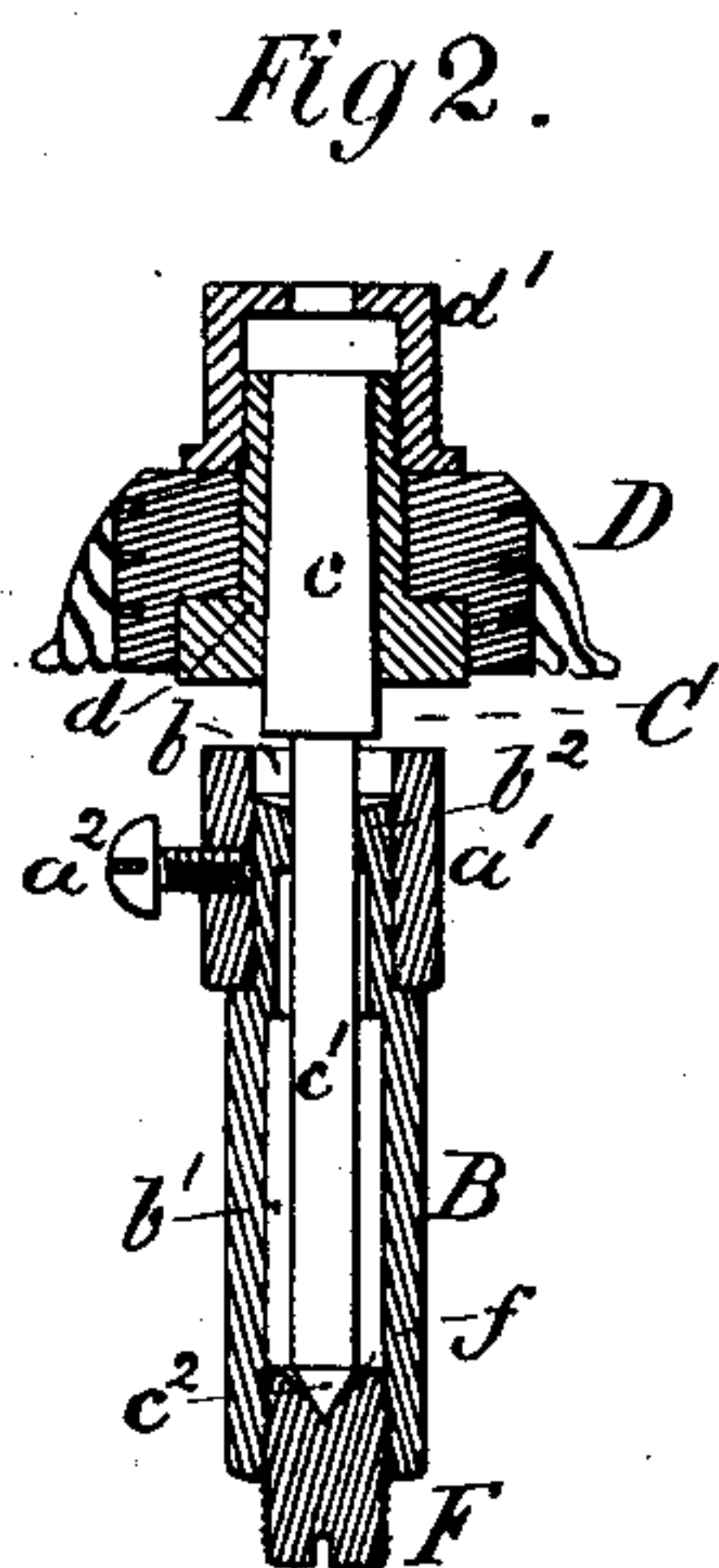
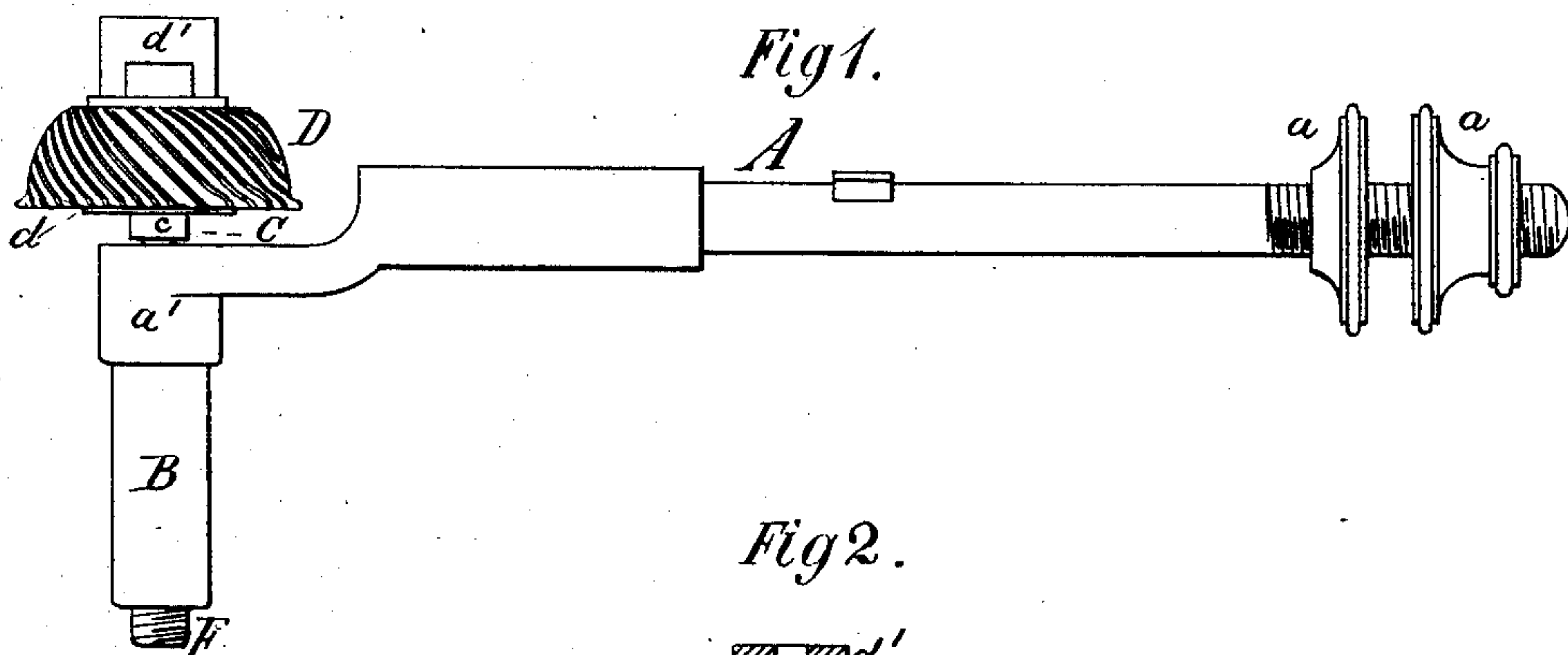
(No Model.)

M. CUMMINGS.

MEANS FOR SUPPORTING AND ADJUSTING KNITTING MACHINE BURRS, &c.

No. 244,796.

Patented July 26, 1881.



Witnesses:  
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J. F. Munson.

Inventor:  
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by his attys:  
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# UNITED STATES PATENT OFFICE.

MICHAEL CUMMINGS, OF COHOES, NEW YORK.

MEANS FOR SUPPORTING AND ADJUSTING KNITTING-MACHINE BURRS. &c.

SPECIFICATION forming part of Letters Patent No. 244,796, dated July 26, 1881.

Application filed April 22, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL CUMMINGS, a citizen of the United States, residing at Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in Means for Supporting and Adjusting Knitting-Machine Burrs, &c., of which the following is a specification.

The nature of my invention consists in the combination, with a knitting-machine burr or the presser-wheel of such machines and with the supporting-arm of a spindle to the top of which the burr or presser-wheel is attached, and of a bearing which is below the burr or presser-wheel, the said spindle and bearing being constructed in the peculiar manner hereinafter described, and the former made adjustable either with the bearing or independently of it, and the bearing affording a long balancing-support and lubricating-chambers, and the whole combination being such that the burrs and presser-wheels of knitting-machines run with very little friction, and the lubricating material is not liable to get upon the work being knitted and thereby soil it.

Figure 1 is an elevation of the burr-wheel and its mountings. Fig. 2 is a central vertical section through the same. Fig. 3 is an elevation of the presser-wheel and its mountings. Fig. 4 is a vertical central section of the same.

Similar letters refer to similar parts throughout the several views.

In the drawings, A is a supporting-arm of ordinary construction, and fastened as usual by means of a thumb-nut to the frame of a knitting-machine. The free end of the arm A is provided with a boss,  $a'$ , and set-screw  $a^2$ . The boss  $a'$  is bored through vertically, and in its bore a chambered step and lateral bearing-block B are fitted, and fastened by means of an adjusting or set screw,  $a^2$ . This block B is formed with a screw-plug bearing, F, at its lower end, which is of just the same diameter as the larger diameter of the interior of the block B, and it is adjustable up and down by means of a screw-thread formed on it and on the interior of the block, as shown. This plug is of any suitable bearing metal, and can be substituted by a new one when too much worn down. The adjustable plug-bearing F is designed for giving adjustment to the knitting-

burr or presser-wheel by means of and in the line of the axle or shaft thereof, while the set-screw  $a^2$  and the movable block B serve for giving any necessary adjustment of the parts in the boss  $a'$  of the arm A.

Above the plug-bearing F a lateral bearing,  $b^2$ , is formed in the chambered block B by reducing the diameter of the chamber of the block at the point where this bearing is formed. The bearing  $b^2$  is constructed below the extreme upper end of the block B, and by this location of this bearing annular chambers  $b$  and  $b'$  are formed for holding lubricating material, the space  $b'$  being above the bearing-plug F and the space  $b$ , above the bearing  $b^2$ . Thus each of the bearings is provided with its own oil-chamber, and a perfect lubrication of both bearings is insured.

It will be observed from the drawings Fig. 3 that the bearing-block B projects down below the boss  $a'$  of the arm A as well as extends up above it; also, that in Fig. 2 the bearing-block extends down below the boss  $a'$ , while its upper end stands slightly below the top of said boss, both constructions shown admitting of an oil-chamber,  $b$ , being formed above the bearing  $b^2$ , as well as an oil-chamber,  $b'$ , below said bearing. The constructions shown and described are to obtain a long support for the spindle of the burr or presser-wheel; also, to provide an oil-chamber of great capacity and at the same time utilize the lower portion of the bearing-block as a balancing-weight for the burr or presser-wheel, and thereby insure a more steady run of the burr during the knitting operation.

Within the bearing-block B the spindle C of a knitting-burr, D, or of a presser-wheel, E, is placed, as shown in the drawings.

If a knitting-burr of ordinary construction is applied upon the spindle it is fastened thereon by means of a bushing,  $d$ , having a conical bore which fits tightly a conical end,  $c$ , of the spindle C; but when new burrs are constructed the bushing may be dispensed with and a conical bore may be made in the burr itself, and the burr fitted directly to the conical end,  $c$ , of the spindle. With this latter mode of fitting the cap  $d'$ , which is shown above bushing  $d$ , may be dispensed with, and, in fact, it may be left off with either mode of fitting the burr



to the spindle, and an ordinary nut substituted for it, such nut screwing upon the end of the bushing, if a bushing is used, in the same manner as the cap screws thereon. In like manner the presser-wheel E is secured to the upper conical end of the spindle, frictional bind alone being the means depended upon for holding either the burr or the presser-wheel upon the spindle.

The spindle C, below its head  $c$ , is formed with an extension,  $c'$ , below the burr D. This extension is cylindrical in form, except at its lower end, where it is in form of an inverted cone, as shown at  $c^2$ . The cylindrical part  $c'$  of the spindle fits the bearing  $b^2$  of the block B, while the cone end  $c^2$  fits in a conical seat,  $f$ , formed in the plug-bearing F, as shown. All around the part  $c'$  of the spindle (see Fig. 4) a space, as at  $b$  and  $b'$ , is formed within the block B, and into this space, or the chambers  $b$   $b'$ , lubricating material is placed, and the same is entirely below the knitting-burr or presser-wheel, and no chance for it to get upon the burr or presser-wheel proper is possible.

In order to adapt the bearing-block to some knitting-machines in use it may be necessary to make the bearing-block B with a reduced diameter at the point where it fits the bore of the boss  $a'$ , as shown in Fig. 2, and also to reduce the diameter of the oil-chamber of said block at the point mentioned, as also shown in said figure. This mode of adapting the bearing-block to the boss  $a'$  enables me to retain a large oil-chamber between the bearing  $b^2$  and the plug-bearing F; but where the bore in boss  $a'$  is large enough the block B will be made of uniform diameter from end to end, as shown in Fig. 4 of the drawings.

The invention which I have herein described renders knitting-machines far more perfect in their operation than heretofore, in that the burr or presser-wheel can be balanced, the spindle run with less friction, and the burr or wheel itself adjusted by its own axle independently of the bearing-block, and the burr, spindle, and block all adjusted together as circumstances may require; and my said invention can be readily adapted to that description of knitting-machine wherein the burrs and presser-wheels revolve on fixed studs set in the arms A and fastened by set-screws by removing the studs and burrs from the arms, then taking the burrs off the studs and fitting them to the spindles C by boring a true and suitable tapering hole through them. This done the improved bearing-blocks B are fitted to the bosses of the arms A, and fastened by the set-screws  $a^2$ . The old machines thus changed can

have the burrs or the presser-wheels adjusted to the needles, first, by the bearing-block B being set as near as possible in the proper relation to the needles; and, second, by means of the screw-plug bearing F.

The advantages gained by my invention of combining the burrs or the presser-wheels of knitting-machines with spindle shafts having two separated bearings,  $b^2$  and F, in a bearing-block, B, formed with an oil-space,  $b'$ , or chambers  $b$  and  $b'$ , and situated entirely below the burrs, and provided with adjusting-screws  $a^2$  and F, are, first, a great reduction of friction in the operation of the burr-wheels and presser-wheels, which, according to careful observation, compares as one twelve-hundredth to one one-hundred-and-twenty-fifth foot-pound in the old and improved construction, this being equal to a reduction of nine hundred per centum; second, it insures cleanliness, as all the lubricating material is kept in the bearing-block B, and at the same time the facilities for adjusting the burr or wheel by its shaft, as well as by the bearing-block, are preserved.

Prior to my invention a knitting-burr provided with a stud-bearing and stud-shaft, and lubricated from below the burr by means of a side chamber and horizontal channel-way, had been devised; but this construction does not run with little friction, nor is there any means by which the burr can be adjusted by its shaft as well as by its bearing. There also had been devised, prior to my invention, improved bearing-blocks with oil-chambers and having separated bearings for spindles; but these differ somewhat in construction from my bearing-block, and there was not combined with the same a knitting-burr or a presser-wheel of a knitting-machine, and the results which I secure from the combination could not therefore be attained.

What I claim as my invention, and desire to secure by Letters Patent, is—

A knitting-burr or presser-wheel of a knitting-machine, a revolving spindle, C, which has a conical end,  $c^2$ , in combination with a bearing-block, B, provided with an oil-chamber,  $b'$ , and separated bearings  $b^2$  F, the latter of which is an adjustable-screw plug, and with a knitting-machine arm, A, provided with a boss,  $a'$ , having a set-screw,  $a^2$ , substantially as and for the purpose described.

Signed in the presence of two subscribing witnesses.

MICHAEL CUMMINGS.

Witnesses:

JAMES FORMAN,  
DAVID KEEFFE.