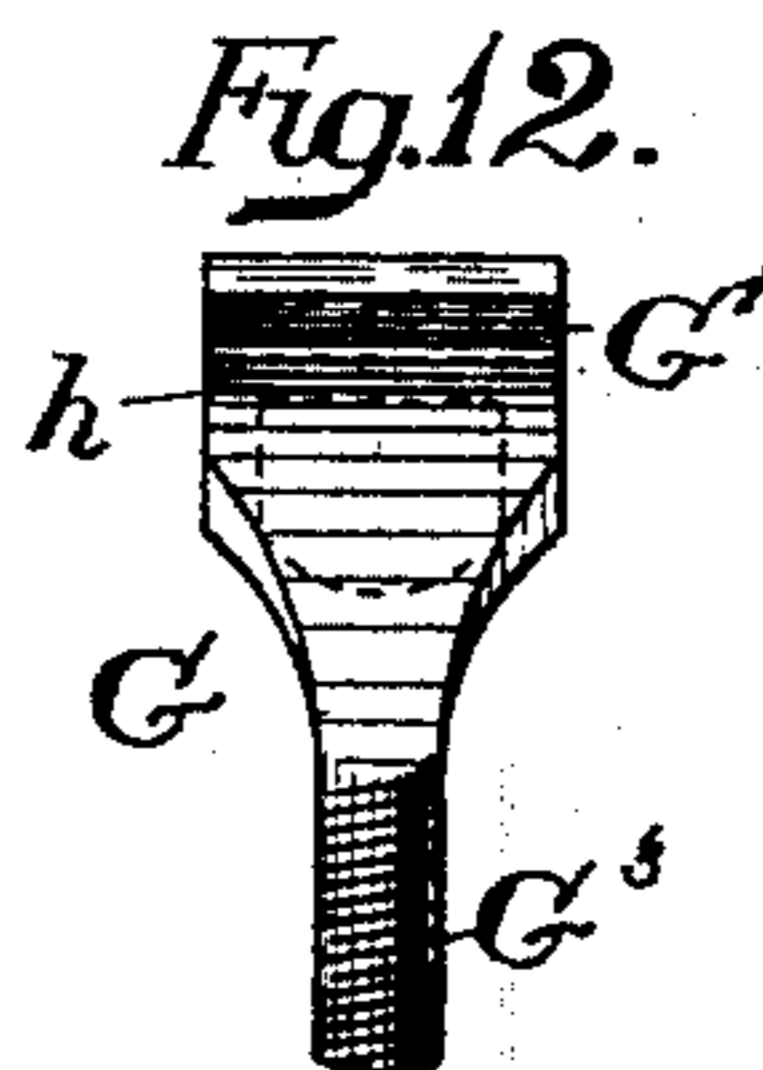
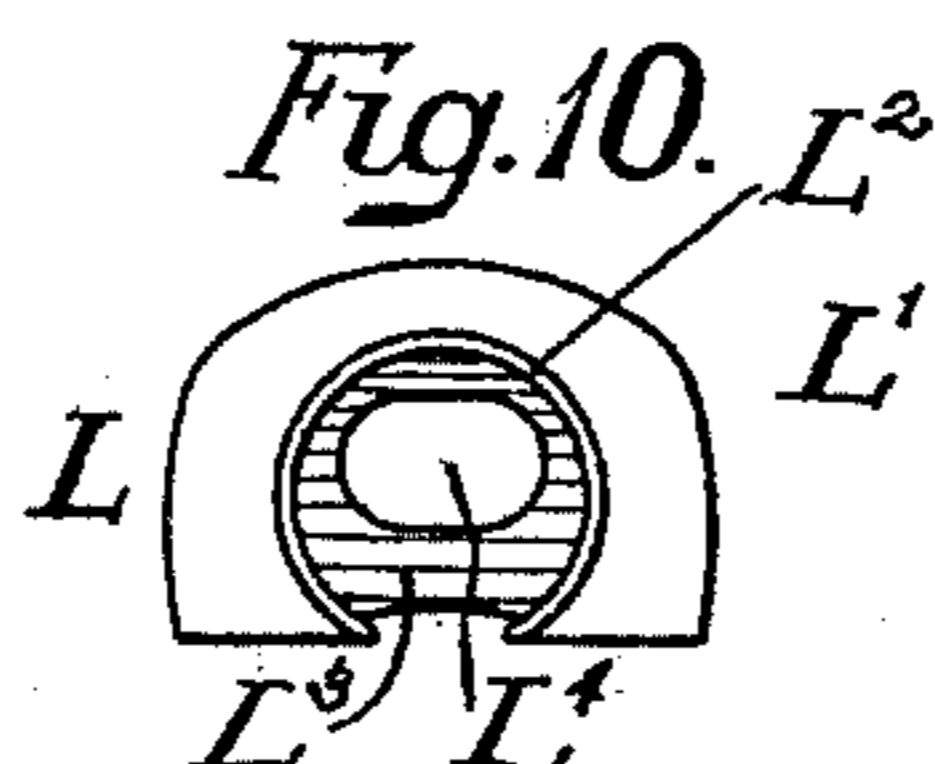
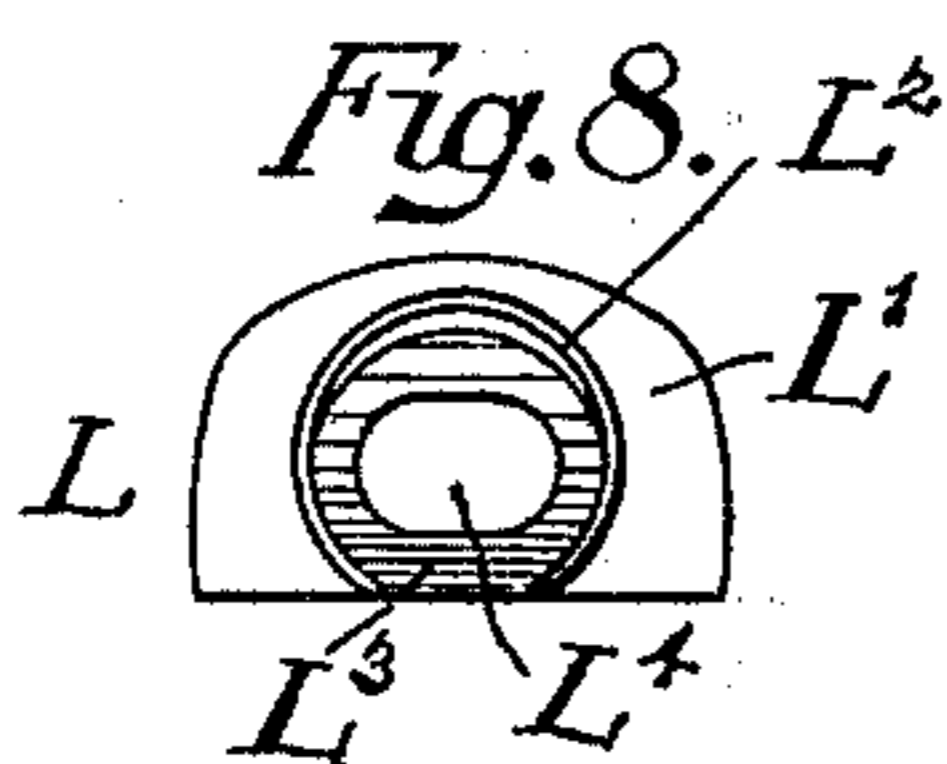
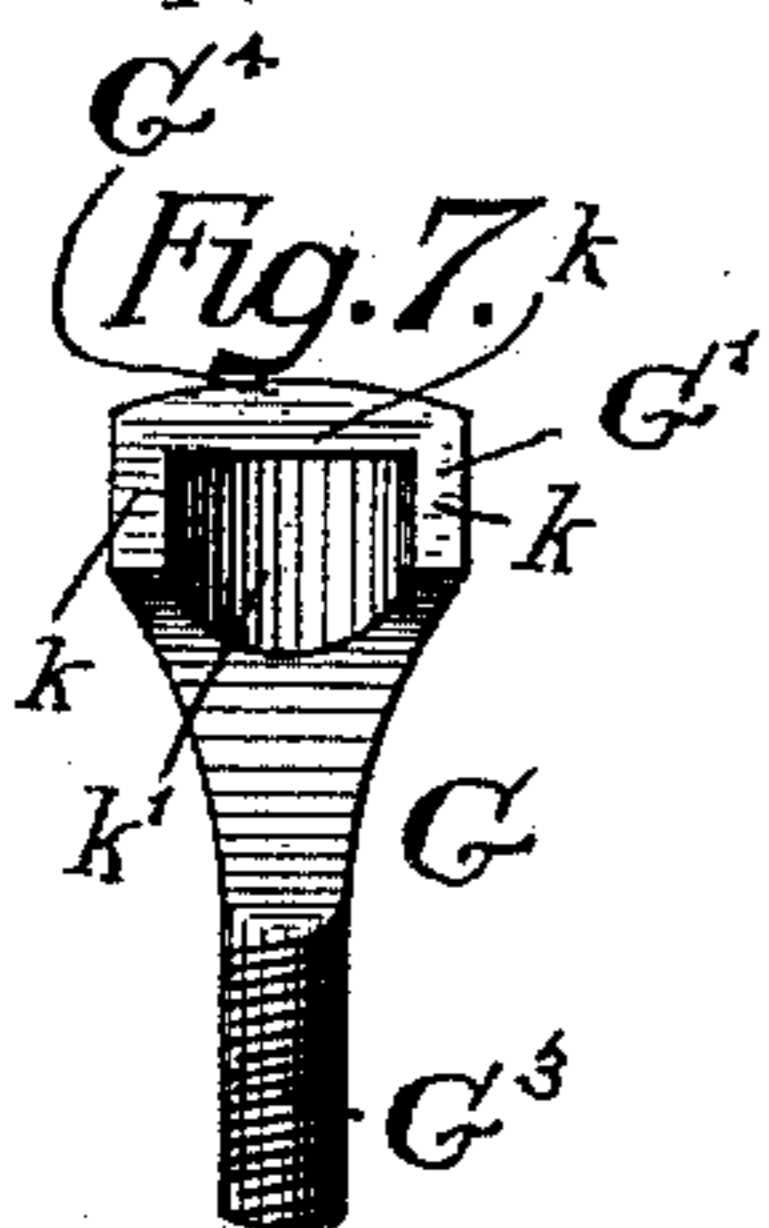
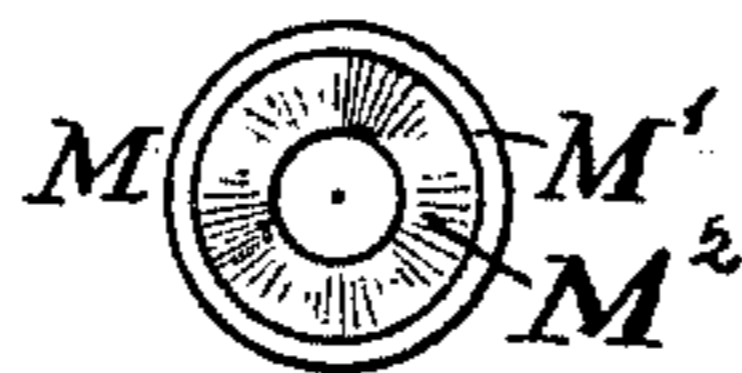
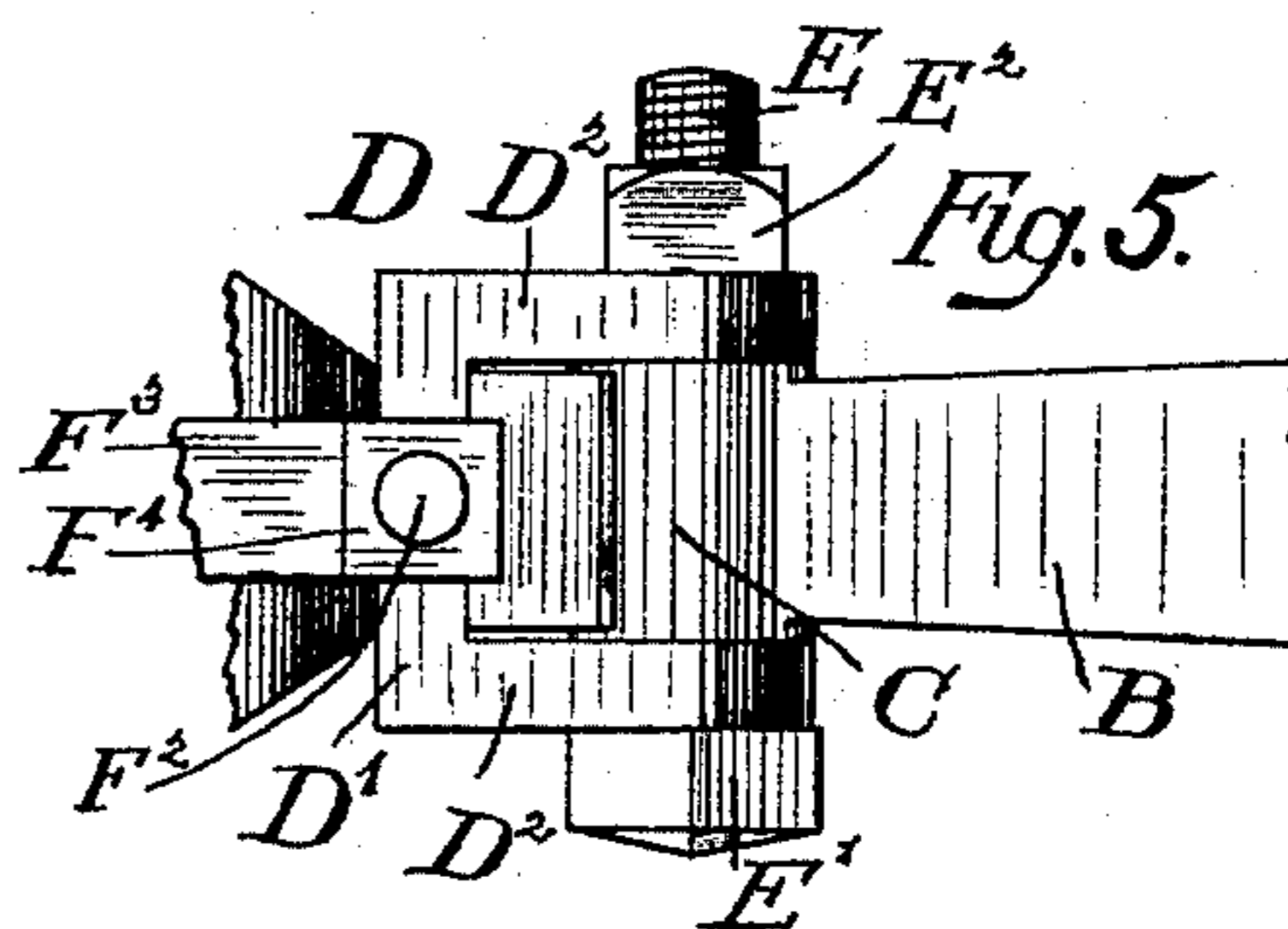
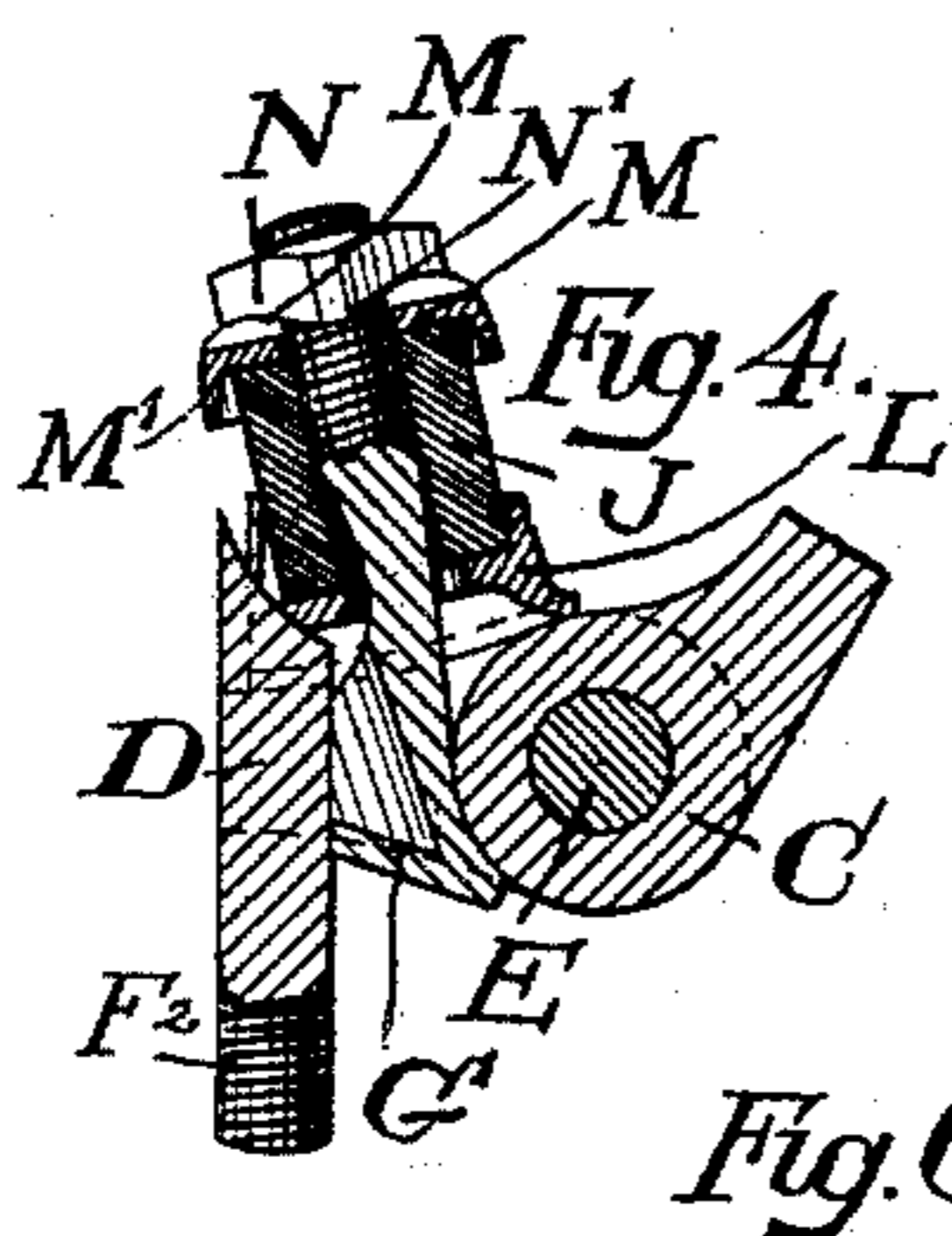
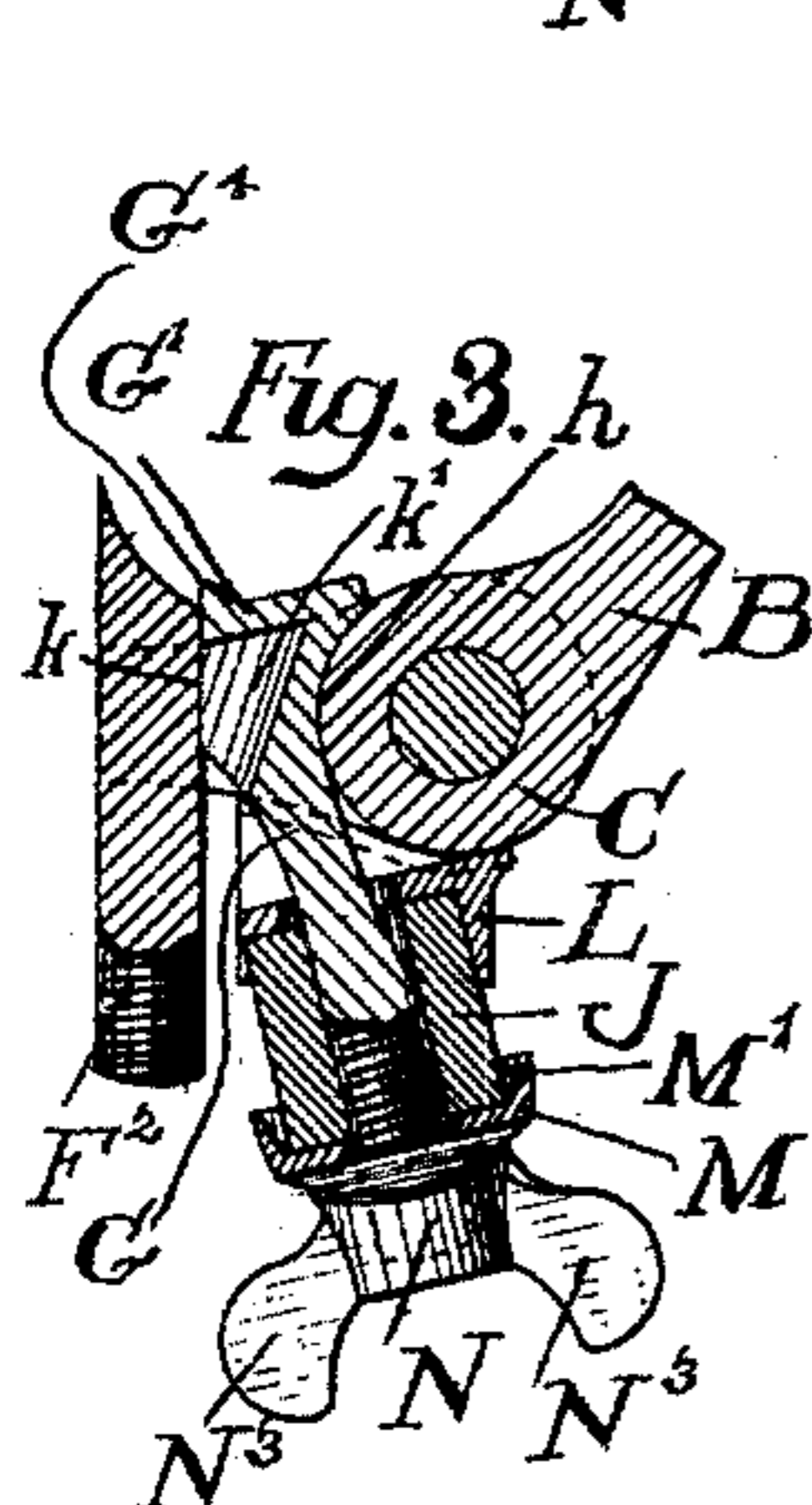
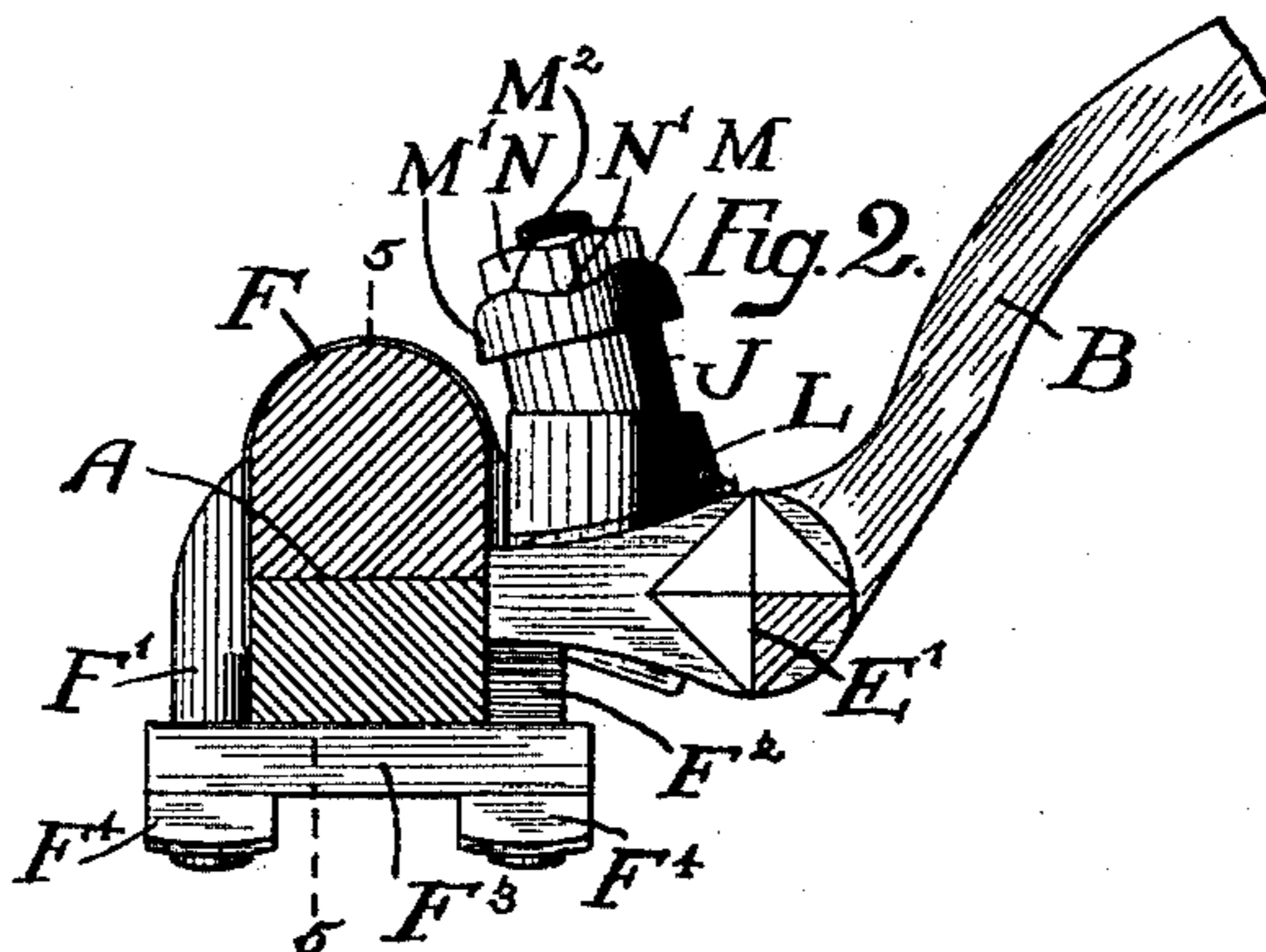
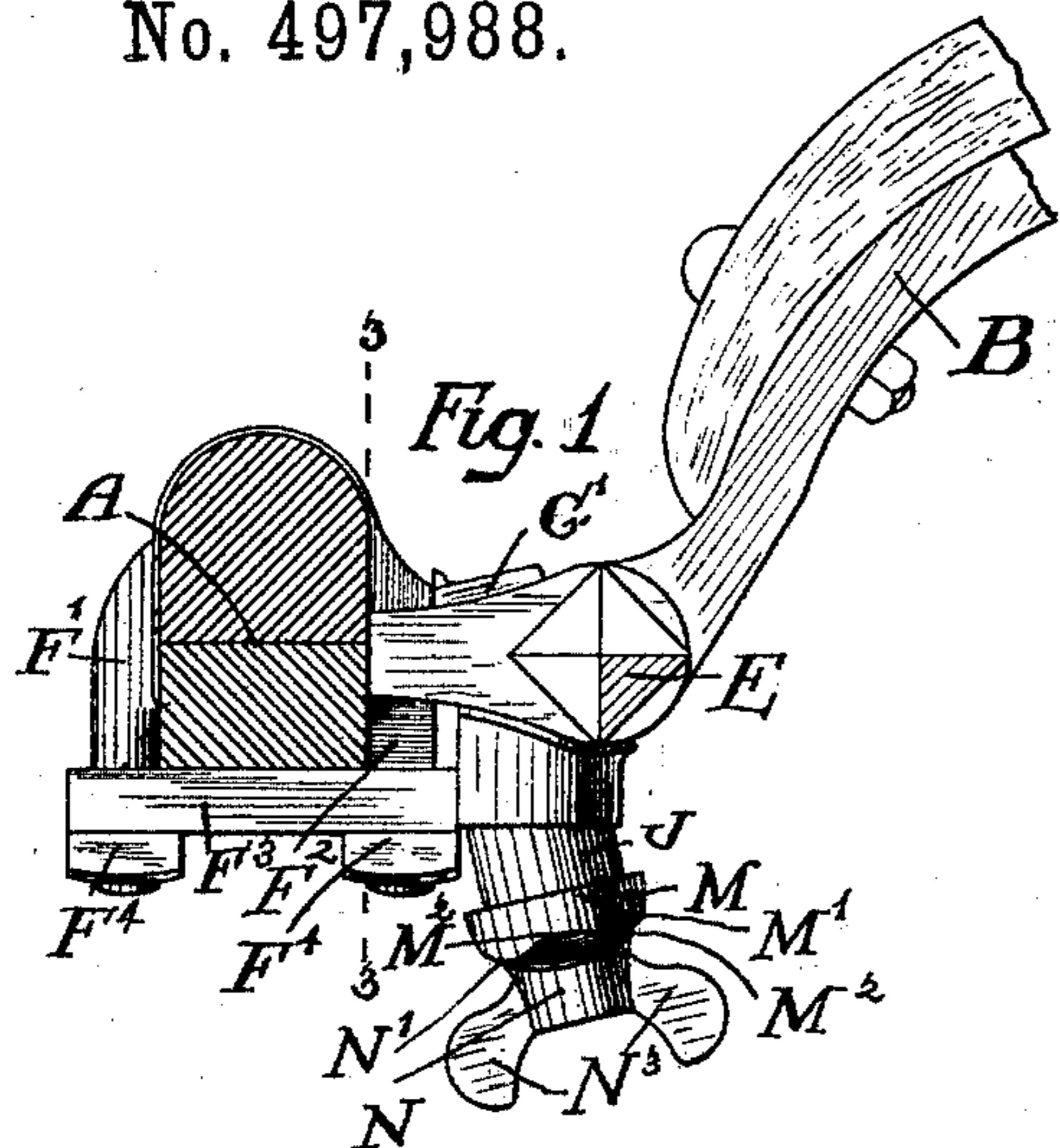


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ANTI-RATTLER FOR THILL COUPLINGS.

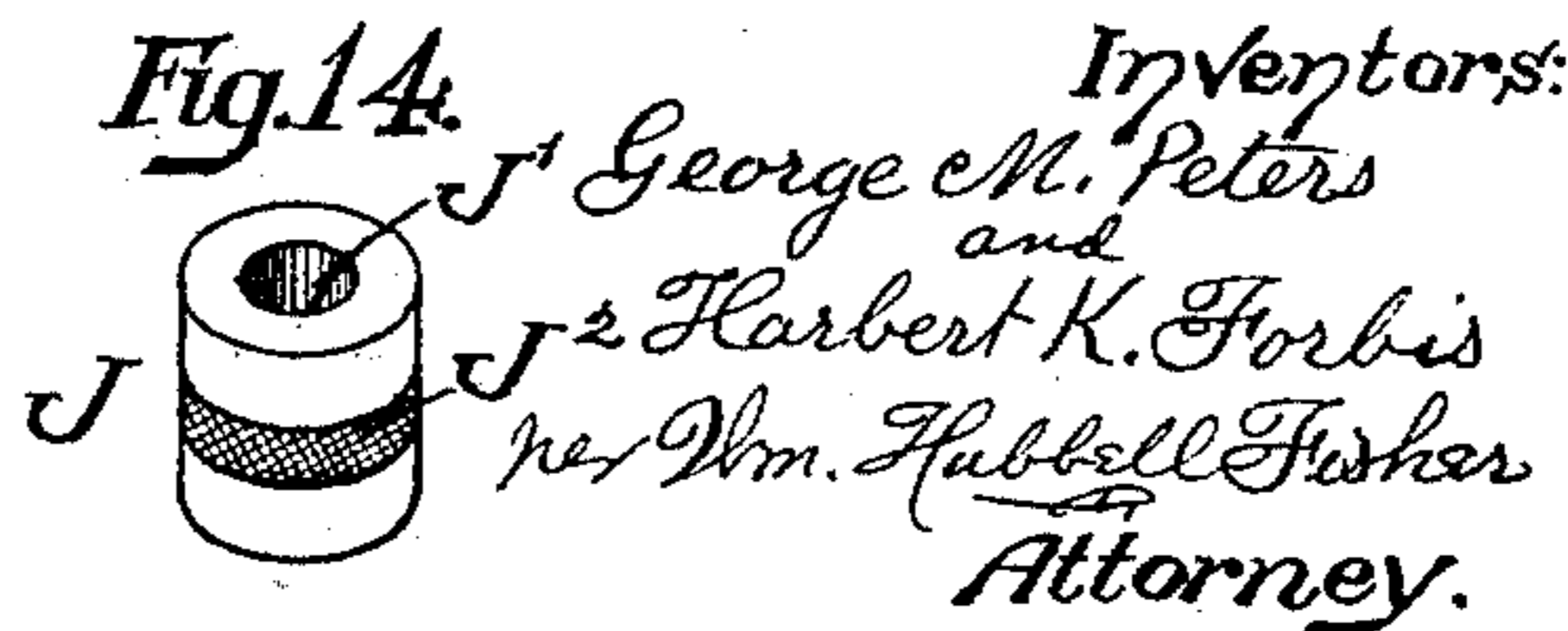
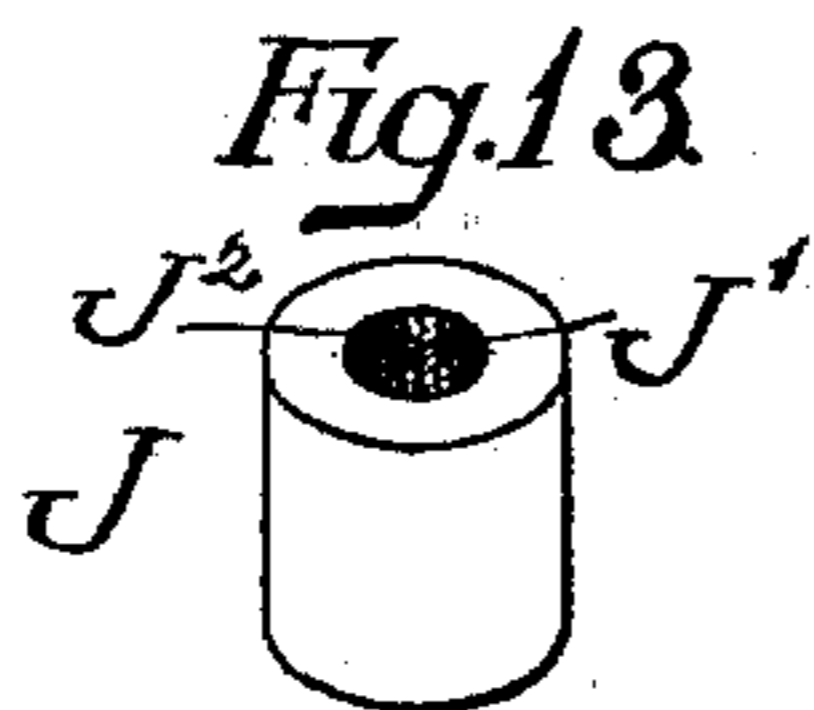
No. 497,988.

Patented May 23, 1893.



Attest:

Henry Appleton
H. Smith.



Inventors:

George M. Peters
and
Harbert K. Forbis
per Wm. Hubbell Fisher
Attorney.

(No Model.)

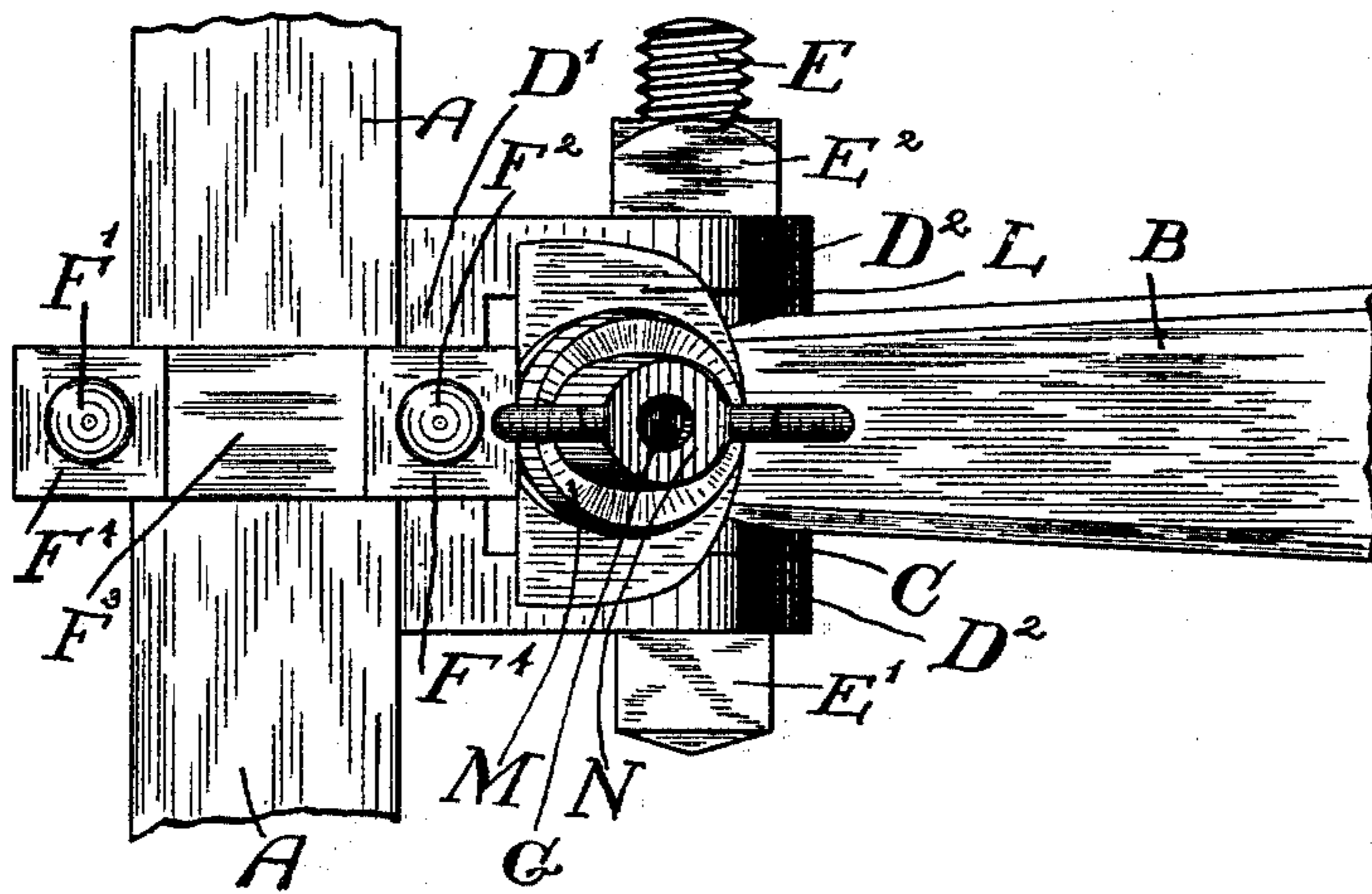
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G. M. PETERS & H. K. FORBIS.
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Fig. 16.



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UNITED STATES PATENT OFFICE.

GEORGE M. PETERS AND HERBERT K. FORBIS, OF COLUMBUS, OHIO, ASSIGNORS TO THE COLUMBUS BUGGY COMPANY, OF SAME PLACE.

ANTI-RATTLER FOR THILL-COUPPLINGS.

SPECIFICATION forming part of Letters Patent No. 497,988, dated May 23, 1893.

Application filed April 16, 1892. Serial No. 429,425. (No model.)

To all whom it may concern:

Be it known that we, GEORGE M. PETERS and HERBERT K. FORBIS, citizens of the United States of America, and residents of the city of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Anti-Shaft-Rattling Devices, of which the following is a specification.

The object of the invention is to produce an improved device by which the noise and vibration of thill or shaft couplings may be overcome.

In the accompanying drawings making a part of our specification, and to which reference is hereby made,—Figure 1 is a side elevation of a shaft iron, and eye and supporting clip, shackle, and a device embodying our invention and applied to said eye and clip. A transverse section of an axle located within the clip is shown in this figure. Fig. 2 is in all respects similar to Fig. 1, except that our device is shown in a position the reverse of what appears in Fig. 1. Fig. 3 is a view partly in elevation and partly in vertical section of the devices shown in Fig. 1, said section being taken in a plane a little to the side of a longitudinal axial line of the shaft iron B of Fig. 1, parts being omitted. Fig. 4 is a view in section and elevation of the device shown in Fig. 2,—the parts shown in section and elevation being respectively similar to those shown in Fig. 3. Likewise the same parts are omitted as in Fig. 3. Fig. 5 is a bottom view of the device when combined as in Fig. 2, and extending from right to left as far as the dotted line 5, 5, of Fig. 2, the axle being omitted therefrom. Fig. 6 is a view of the top of the washer. Fig. 7 is a rear view of the wedge piece. Fig. 8 is a bottom view of the abutment. Fig. 9 is a rear elevation of the said abutment in a position the reverse of that shown in Fig. 1. Fig. 10 is a view similar to that shown in Fig. 8, and showing the shape of the abutment somewhat modified to better suit its position when applied above the eye as shown in Fig. 2. Fig. 11 is an end elevation of the abutment shown in Fig. 10. Fig. 12 is a front view of the wedge piece, whose rear elevation is shown in Fig. 7. Fig. 13 is a view of the rubber sleeve and

also a combination in a preferred mode, of a material to prevent the rubber from unduly bulging. Fig. 14 shows a modified arrangement of the same means for preventing the rubber from bulging too much. Fig. 15 shows a vertical central section of an abutment and washer, and a preferred mode of combining the same with a metal spring, should the latter be employed instead of the rubber. Fig. 16 is a top plan of a modification as applied, parts only of shaft and axle being shown.

A indicates the axle made in any suitable manner. In the present illustrative instance, the axle is made, as is frequently the case, of two parts, one of which is of metal, and the other is of wood. The shaft B is provided with the usual eye C.

D indicates the usual shaft support, which is connected to and supported by the axle A, or equivalent part of the vehicle. This shaft support D has the usual central rear portion D', and the end supports D², D². The latter are each provided with a bolt hole and a suitable bolt as E passes through one of these holes, thence through the bolt hole of the eye and thence through the bolt hole of the other supporting piece D², this bolt E having head E', at one end, and a securing nut E² at the other end respectively located outside of and next to their adjacent supporting pieces.

The shaft support D is usually connected as shown to a clip F whose upper or strap portion passes around the upper side or top portion of the axle A, and its two lower portions or legs F', F², are each provided with a screw thread, and respectively pass through holes in the bar F³, located below the axle. That part of each leg F' and F² of the clip, which projects below the bar receives its respective nut F⁴, and these nuts when tightened closely, securely and rigidly fasten the clip to the axle.

Thus far all of the mechanism herein particularly described is old and well known in the art.

We will now proceed to describe our invention, its functions and use, and in so doing we will take occasion to refer to the mechanism just described in illustrating the application of our invention and its principal uses and objects.

G indicates the wedge bar, one end portion G' of which is of a wedge shape when viewed at the side, and the other end portion is contracted and provided with a screw thread G³.
 5 The wedge shape of the end portion G' of this wedge piece G is well shown in Figs. 3 and 4. The forward side of the portion G' is concavely curved so as to fit against eye C of the shaft, the surface of said curve being in direct contact with a considerable portion of the periphery of the eye C substantially as shown in Figs. 3 and 4. The rear face of the said portion G' is flat, and preferably in a plane which if continued some distance beyond the free end of portion G' would meet and cross the longitudinal axis of the wedge piece G. On the upper rear edge of the hook wedge piece or bolt G is a small flange, or lip, or extension G⁴. The object of this extension
 20 is to provide an additional bearing and rear support as the front surface of the wedge piece opposite the eye C wears away, and the wedge piece settles lower or is drawn farther between the eye C and the opposing surface F². For economizing metal, the central portion of the face k is recessed leaving a recess k'.

The free end of portion G' is larger from front to rear than the distance from the rear surface of the eye C to the face of the piece or leg F² supporting the same. Consequently when the end G³ of the wedge piece G is inserted between the said eye C and the piece F², and passed on, the wedge piece G cannot
 35 wholly pass between the eye C and piece F², but the portion G' will there wedge fast, in substantially the position shown in Figs. 3 and 4. A piece J of rubber made of a suitable size is now located in conjunction with said wedge piece G, and the preferred form thereof is that of a sleeve substantially as shown in Figs. 1, 2, 3, 4 and more particularly in Figs. 14 and 15. The sleeve is passed onto the wedge piece G, the portion G³ being passed
 40 through the central opening J' of such sleeve.

In order to properly maintain the rubber J in position and enable it to most effectively operate, we provide an abutment L, and construct the latter as follows: It has an outlying flange L', the latter curving upward toward its outer edge, thereby causing the upper side of the abutment L to be dished. The abutment or binding washer L has a cup shaped flange L², but this flange is omitted and the
 55 cup is open at one side. The floor of the washer has an opening L⁴. The rubber sleeve J lies on the wedge piece G, and its upper end fits closely within the recess L⁵ formed by the flange L² of the abutment.

60 Upon the end portion G³ of the wedge piece G and below the rubber J is a washer M, having an upwardly projecting flange M' forming a recess into which fits the lower end of the rubber J. The lower surface of this washer M has an elevation or elevations M² of suitable shape, for engaging a counter part recess or recesses in the nut N, which latter

is screwed onto the rod G³ of the wedge piece G below washer L. A preferred description of such elevations are radial ones with sloping edges, so that the elevations and the recesses between them unite with each other in gently curved lines, substantially as shown in Figs. 1, 2 and 3 of the drawings, the said elevations being there indicated by the letter
 75 M². The elevations N' and intervening recesses of the nut N are likewise curved. In this way the nut can be readily turned against the washer. The latter, owing to the friction existing between it and the stationary rubber, will remain stationary. When the nut has been sufficiently tightened upon the washer, the elevations and depressions of the washer M will respectively engage the depressions and elevations N' of the nut N and hold the
 85 nut in the place where it was located. For convenience of manipulation, the nut N may be provided with the thumb-wings N³.

In practice, the wedge piece is first located between the eye C and face of the leg or piece
 90 F², and between the arms or extension supports D², D², the portions G², G³ of said piece G projecting below the said eye. The abutment L, rubber J, washer M and nut N are then located in succession upon the wedge
 95 piece as heretofore specified. The nut N is then turned forcing the washer M, rubber J and abutment L upward, and pressing the abutment L against the under surfaces of eye supporting pieces D². The nut is tightened
 100 still more, by screwing it upward on the wedge piece, thereby compressing the rubber J, and causing the upper or wedge portion G' of the wedge piece G to be drawn forcibly downward and the latter in turn draws down the eye C,
 105 so that the eye C rests and bears hard upon the upper side of the eye bolt E. The wedge piece G at the same time also presses the eye C forward against the bolt E. The elasticity of the rubber through the agencies mentioned,
 110 continually tends to keep the eye C down on the bolt, and prevents vibration or rattling.

When desired, the locking device may be reversed, substantially as shown in Fig. 2, thereby pressing the eye up and forward
 115 against the bolt E. Such an arrangement of our device is not as desirable as the one shown in Figs. 1 and 3, and moreover omits one important feature of our invention, to wit:—the arrangement of a device so as to press the
 120 eye down and forward on the eye bolt E.

The rubber sleeve J has a tendency to unduly bulge when compressed by the nut N between the washer M and abutment L. Such tendency may be prevented by what is another feature of our invention, viz:—with the rubber sleeve J' an inner lining J² of canvas is combined (see Fig. 13). This lining prevents the rubber from unduly crushing down and together in the direction of its longitudinal axis, and yet does not prevent the
 130 rubber from exerting its elasticity. This canvas also prevents the rubber from unduly bulging outward and away from the bolt.

Another mode of accomplishing the result just above mentioned is shown in Fig. 14, where the rubber strip has a narrow strip or girdle of canvas J², located in or on the periphery of the rubber, and at or near midway between the ends of the rubber J. Canvas inclosing the rubber for its entire length prevents the rubber from properly acting.

When desired, other descriptions of elastic substances than the rubber J may be employed. One other such description is shown in the drawings under Fig. 15, and consists of a spiral spring J S, located between the abutment L and washer M, the ends of the spring respectively fastened onto the abutment and the washer in a suitable manner, one mode of making such fastening being shown in the said Fig. 15 of the drawings.

With the exception of that feature of invention which relates to drawing the eye C down rather than up, all of the features of our invention are advantageous whether the device is applied as shown in Fig. 1, or as in Fig. 2.

A very desirable advantage resulting from our invention is that the wedge piece G can be inserted, and the anti rattling device applied without removing the shaft or pole eyes as C from the shackles or supporting pieces as D.

What we claim is—

1. The combination with the thill coupling eye, of the shaft support and the coupling

bolt, the wedge bar entering between said eye and support, said wedge having a screw-threaded stem, the inclosing cups one at each end of said stem, the rubber sleeve on said stem inclosed between the said cups, and the nut, engaging said stem at the end opposite the wedge piece and serving to compress the rubber sleeve between the two inclosing cups, all substantially as described.

2. The combination with the thill coupling eye, shaft support, and bolt of the integral metallic wedge piece extending between the eye and support, said wedge piece having a longitudinal recess in one face and having a screw threaded stem, a nut on said stem, and an elastic packing interposed between the shaft support and nut, all substantially as described.

3. The thill coupling eye, bolt, and support, the wedge piece interposed between the eye and support and having a screw-threaded stem, the cupped pieces on this stem one of which has a bearing against the shaft support, the rubber washer on said stem provided with a strengthening band, and the nut engaging the outer one of the cup pieces, all combined substantially as described.

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