

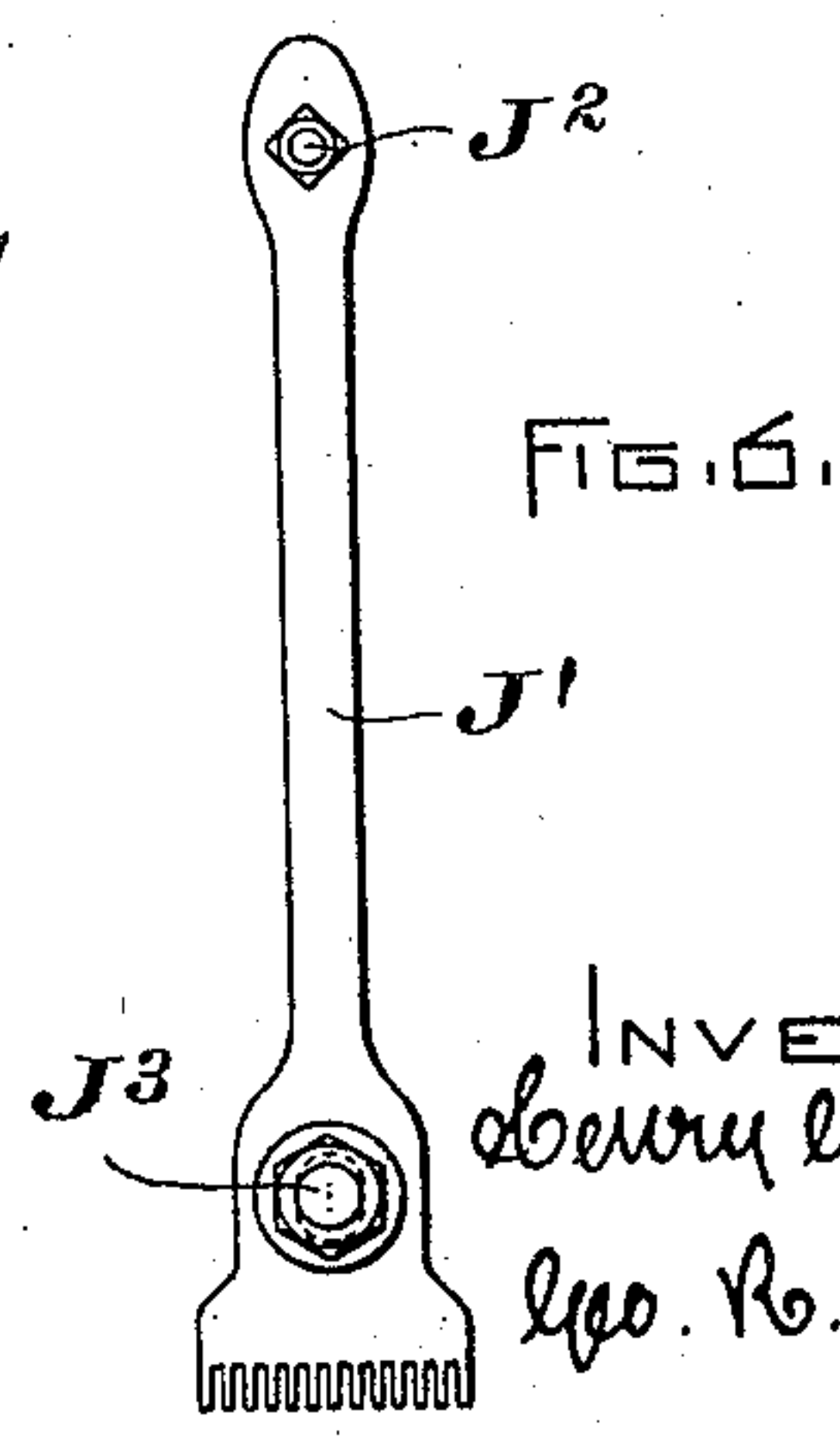
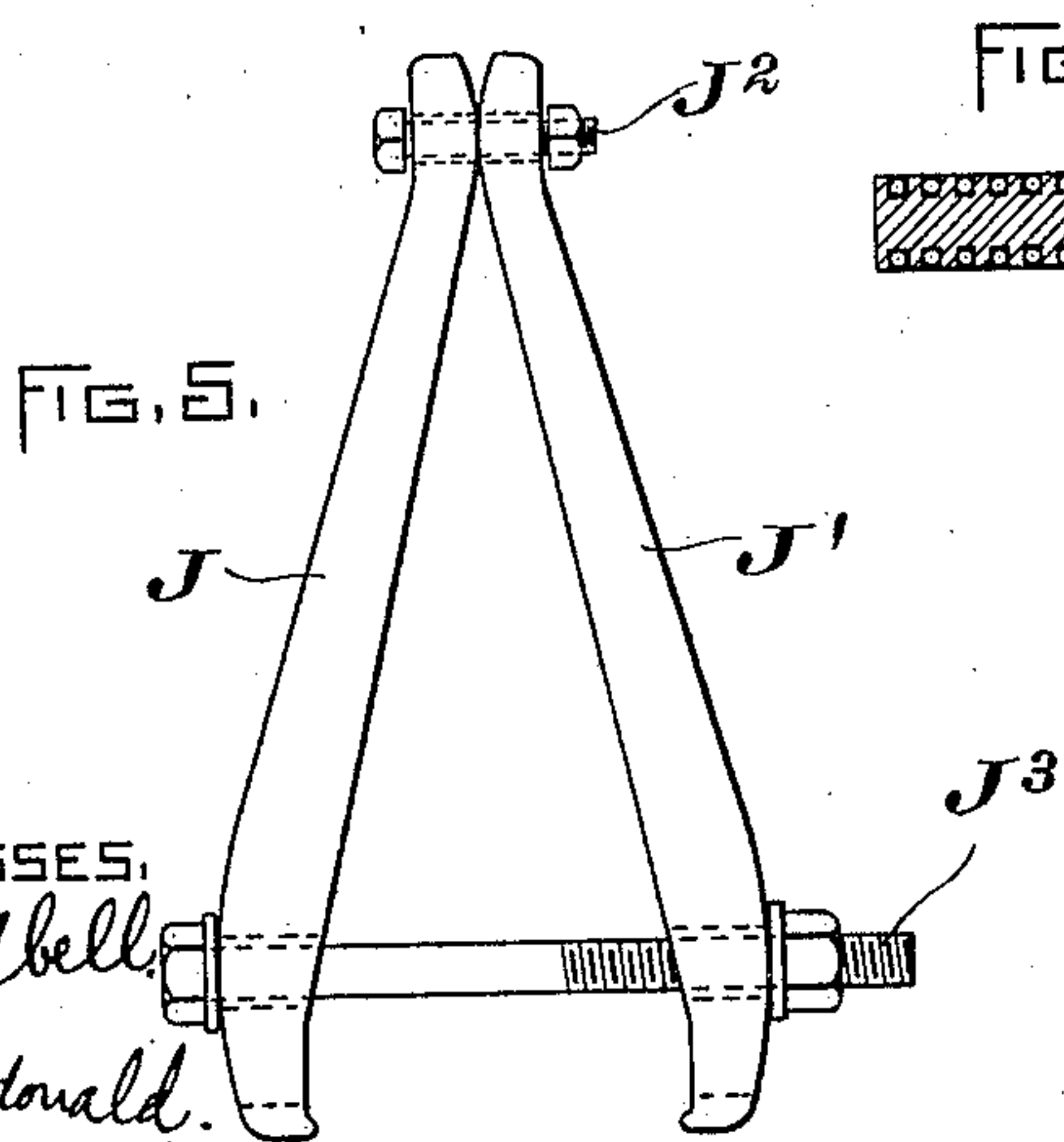
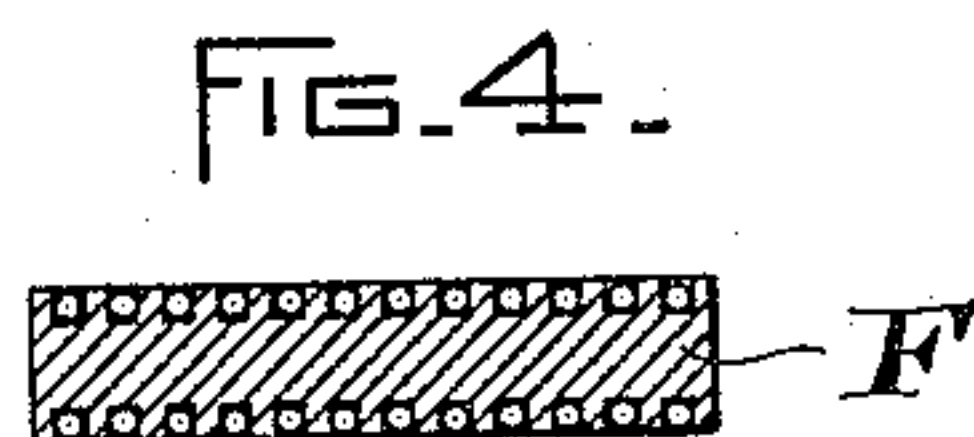
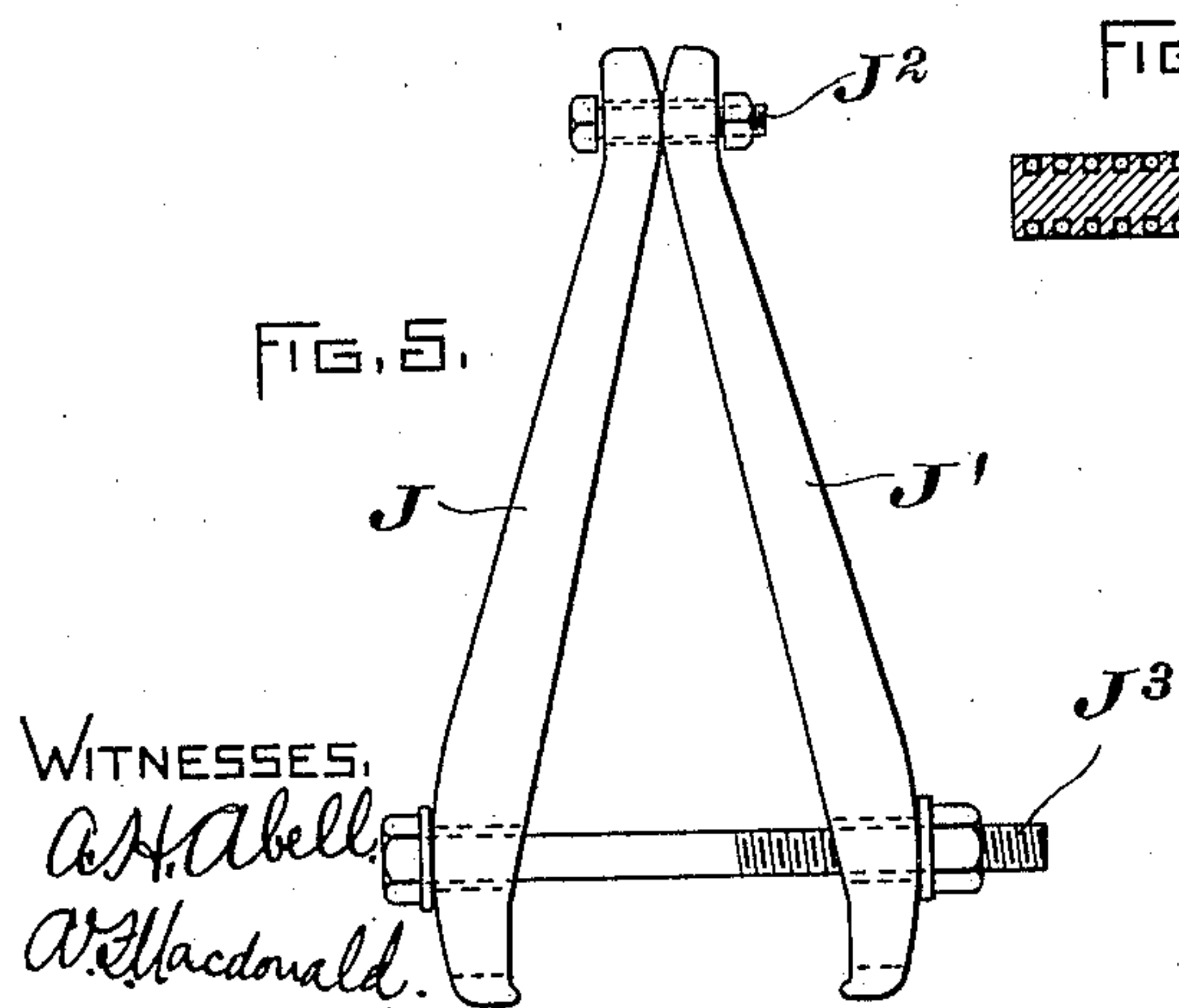
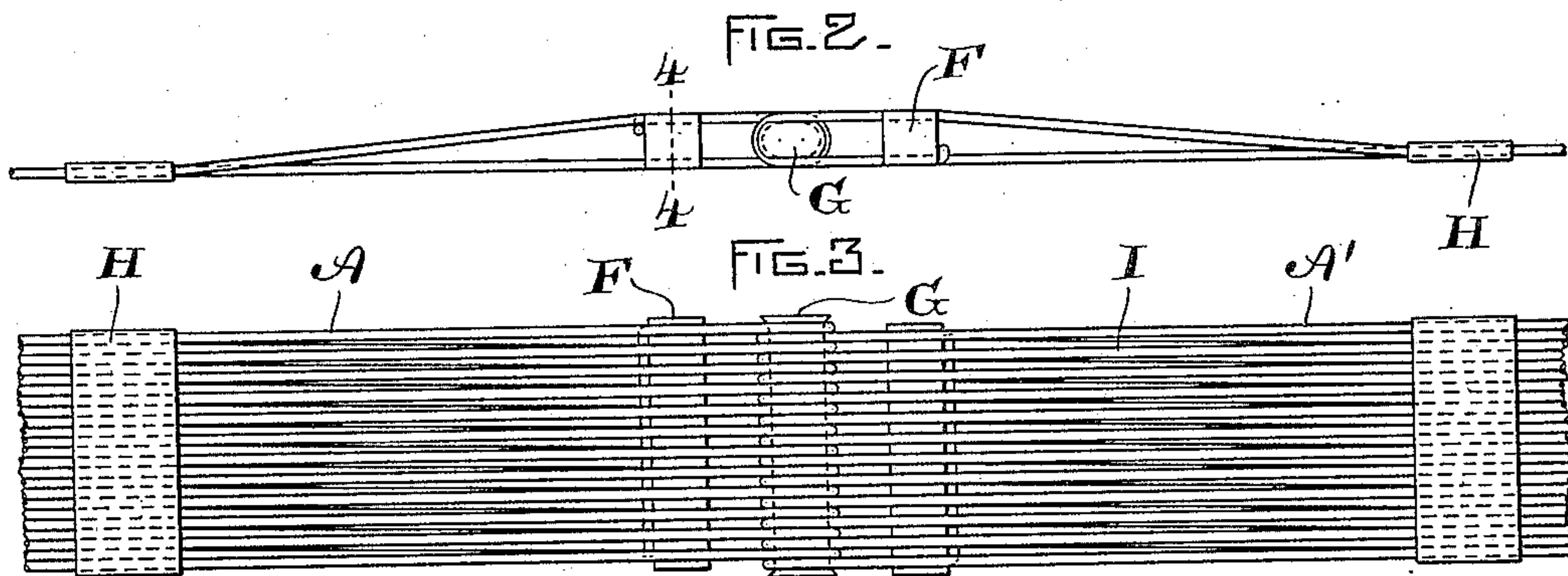
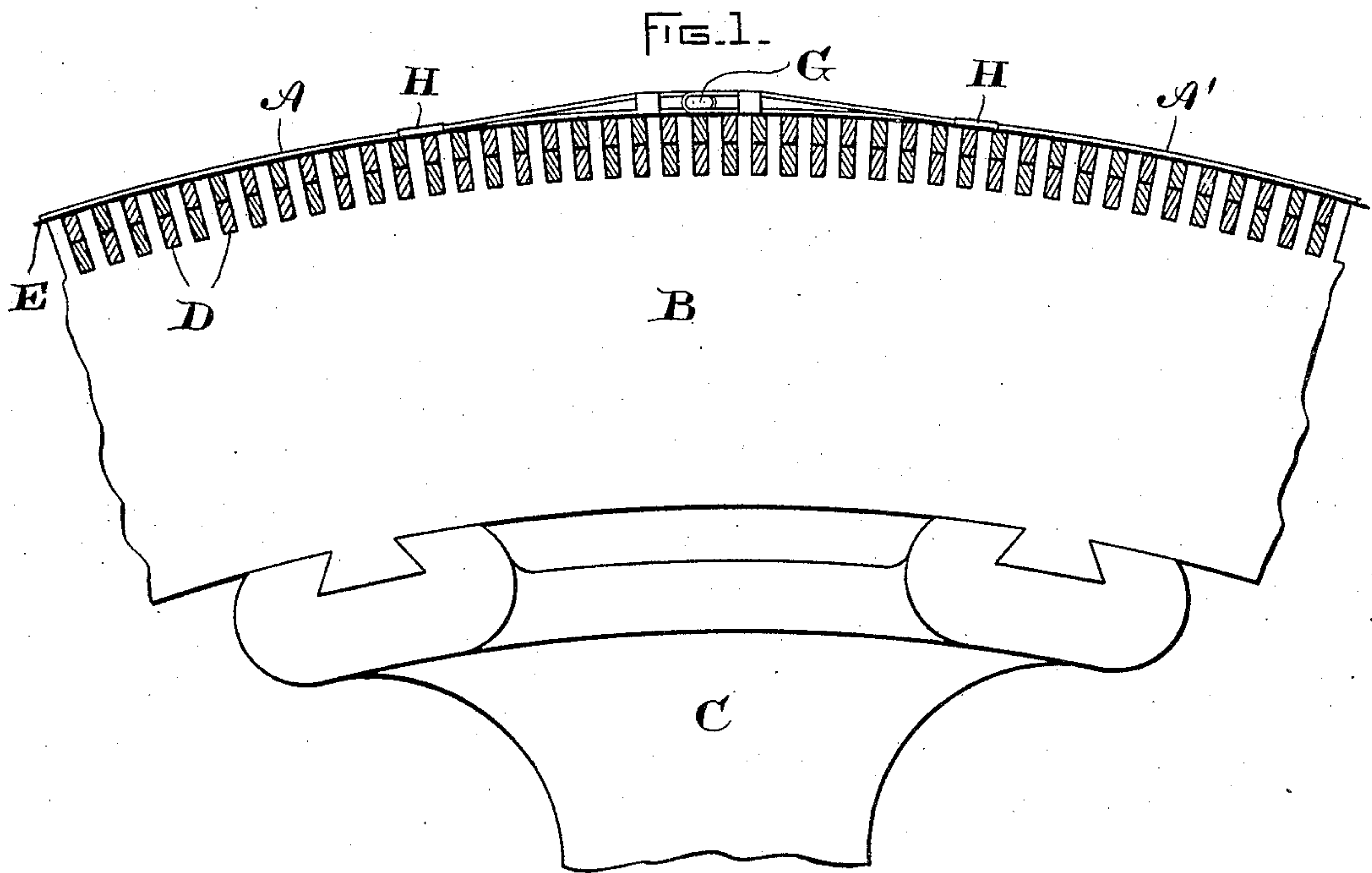
(No Model.)

2 Sheets—Sheet 1.

H. G. REIST.
BINDING BAND FOR ARMATURES.

No. 577,148.

Patented Feb. 16, 1897.



WITNESSES:
A. H. Abell,
A. MacDonald.

INVENTOR,
Henry H. Reist,
Geo. R. Blodgett,
Att'y.

(No Model.)

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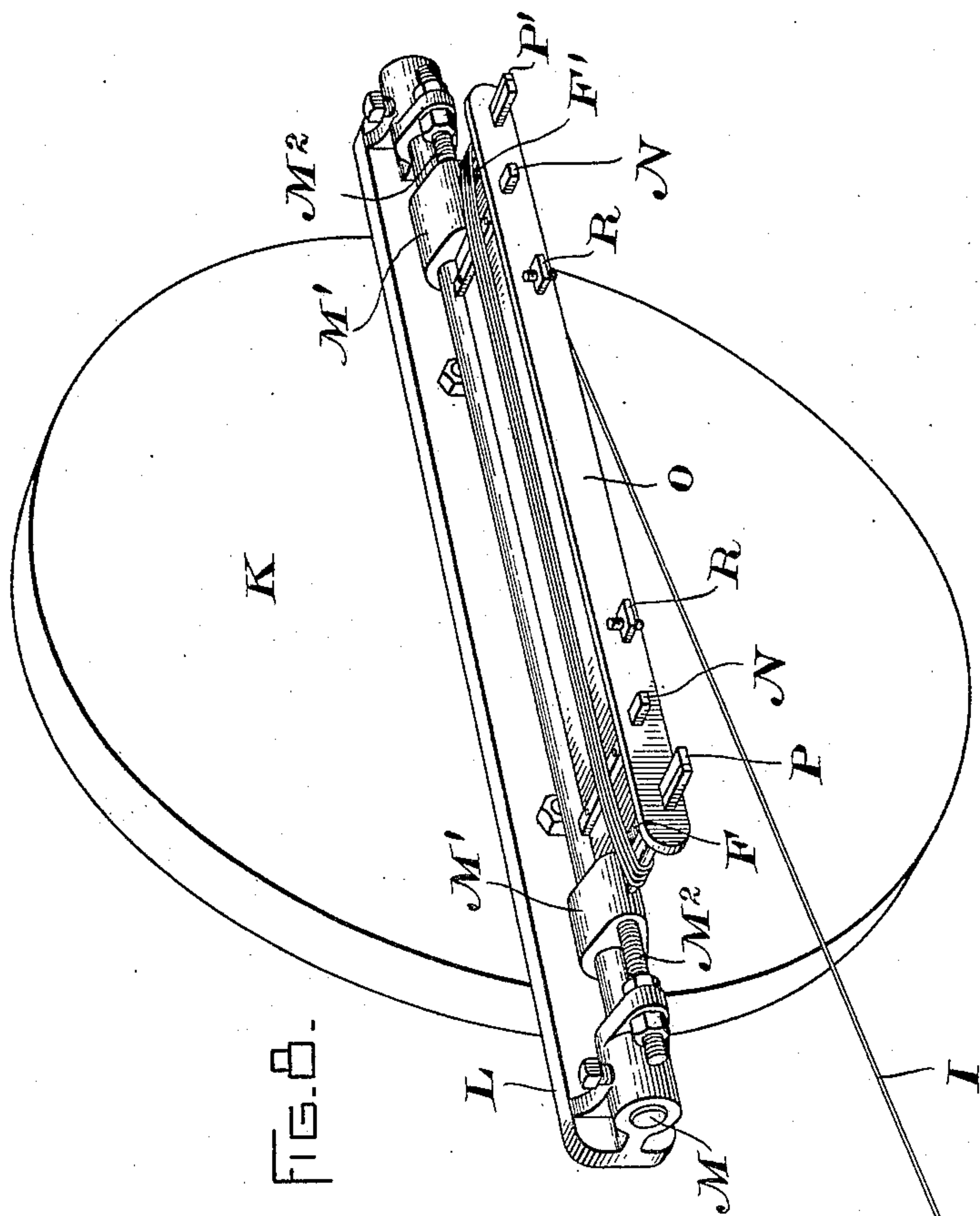


FIG. 6.

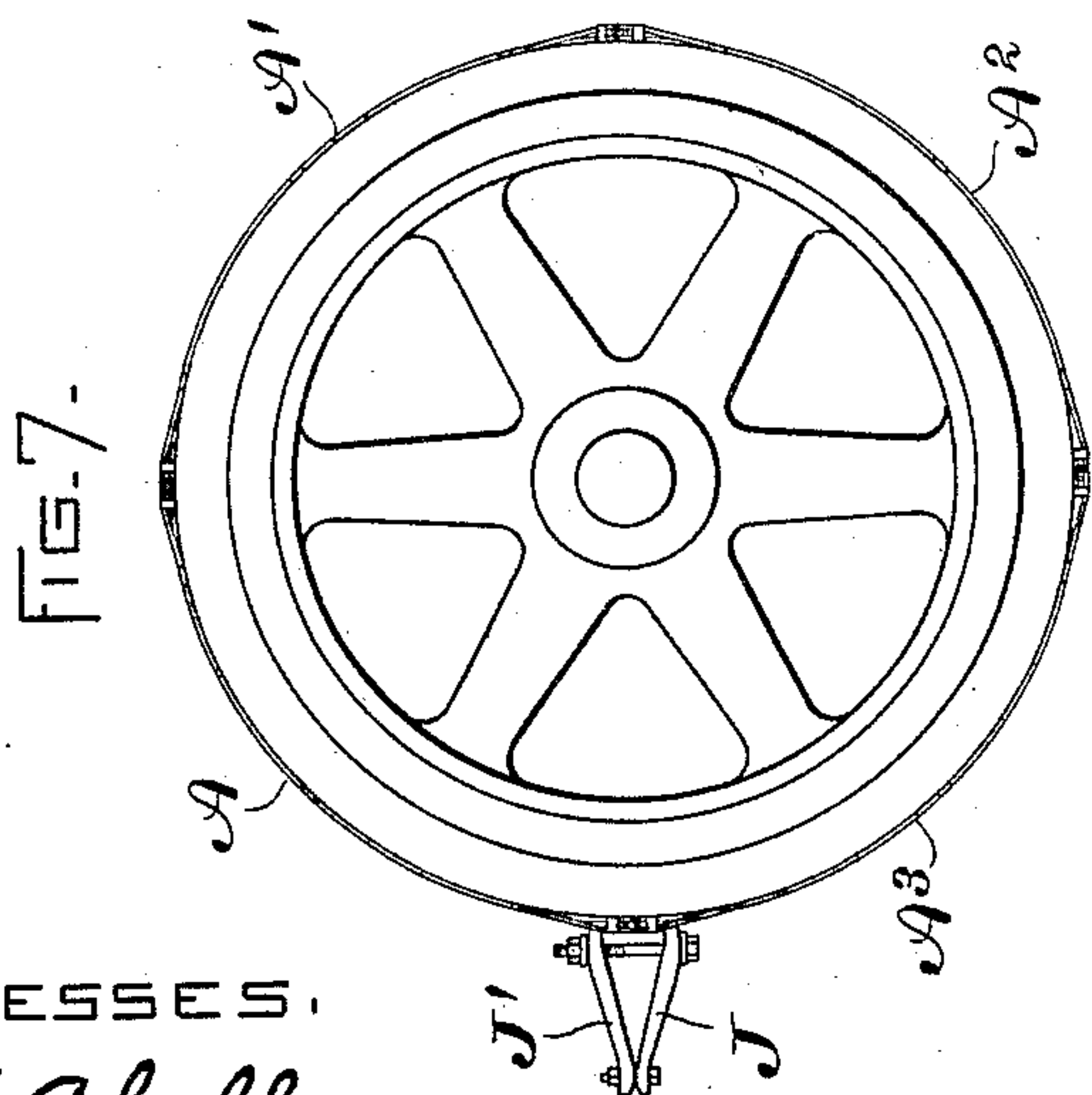
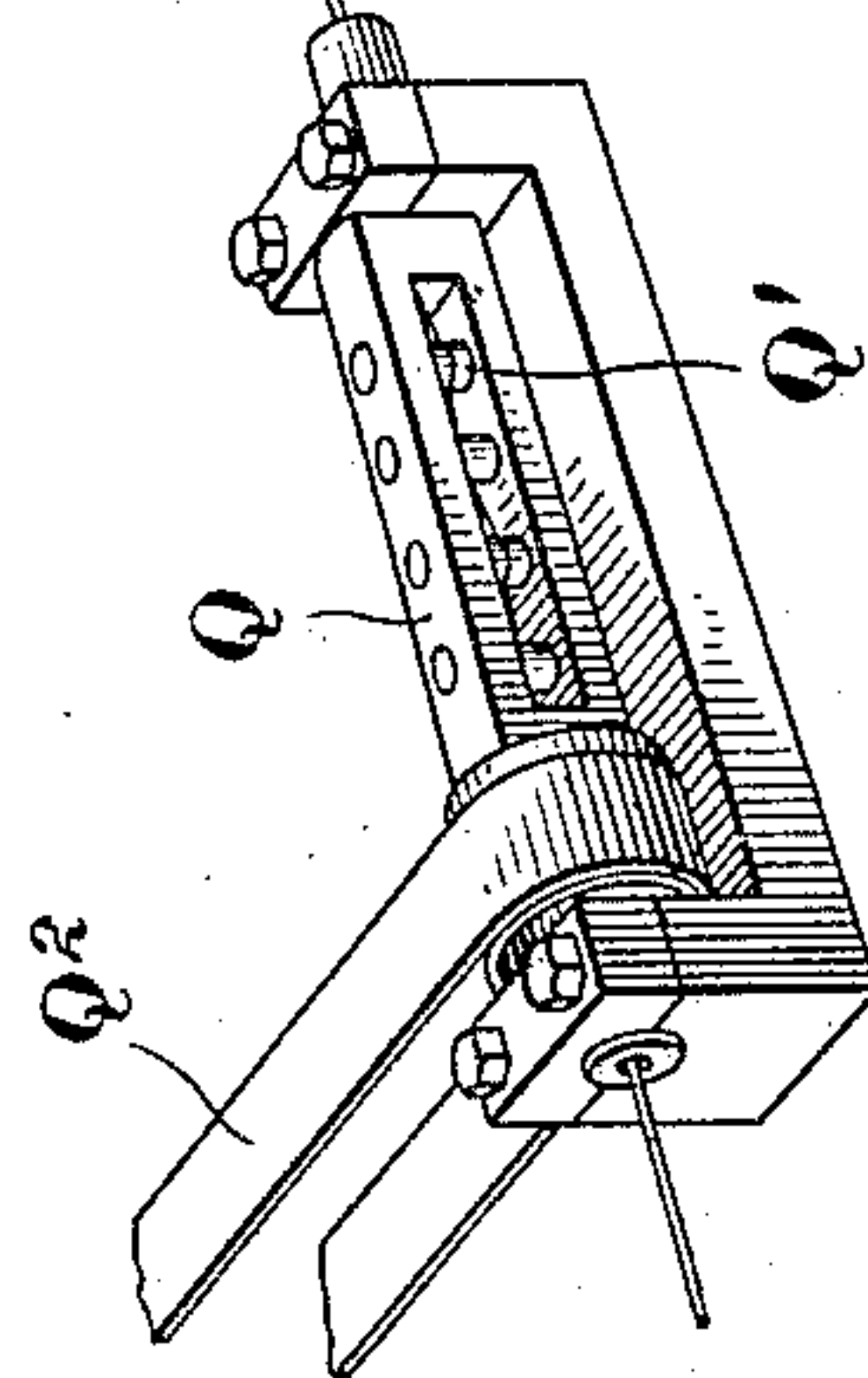


FIG. 7.



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UNITED STATES PATENT OFFICE.

HENRY G. REIST, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, OF NEW YORK.

BINDING-BAND FOR ARMATURES.

SPECIFICATION forming part of Letters Patent No. 577,148, dated February 16, 1897.

Application filed November 18, 1896. Serial No. 612,606. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. REIST, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Binding-Bands for Armatures, (Case No. 440,) of which the following is a specification.

The present invention has for one of its objects to provide a wire binding-band for armatures which can be removed when desired without impairing its usefulness, this being especially desirable, for with all other wire bands with which I am familiar it is necessary to cut and thus destroy the band in order to remove it.

The invention further has for its object to provide a binding-band simple in construction, flexible, yet at the same time possessing great tensile strength, and one comprising a number of sections, each section made of a single piece of wire.

The invention further relates to the means employed for securing the ends of the band or its sections together. It also relates to the tool employed for drawing the ends together.

In carrying out the invention a form or holder is provided upon which the sections are wound. Each section consists of a single piece of wire wound in such a manner that loops are provided at the ends. The sections are then assembled or mounted on the armature, the loops of wire in the ends of one section extending between those in the adjacent section. After the sections have been assembled keys are inserted in the spaces formed by the overlapping ends of the adjacent sections and held therein by any suitable means, as riveting over the ends, for example. To draw the ends of the sections together, a special tool is provided, consisting of two arms having teeth at their lower extremities adapted to fit between the wires near the loops and engage with space-blocks which are soldered to the wire, after which the arms are drawn together by means of a bolt.

In the accompanying drawings, attached to and made a part of this specification, Figure 1 is a partial end view of an armature. Fig. 2 is a side view of a binding-band. Fig. 3 is a plan view of the same. Fig. 4 is a sectional

view of one of the spacing-blocks, taken on line 4 4 of Fig. 2. Figs. 5 and 6 are respectively side and end views of the assembling-tool. Fig. 7 is an end view of an armature provided with a binding-band, and Fig. 8 is a machine which may be used for making the bands.

The laminated structure B is secured to the spider-arm C of the armature in any suitable manner, preferably by a dovetailed construction, as shown. The laminated portion B is provided with a number of slots in which are located conductors D. The bands are made of wire and are wound in the manner shown in Fig. 8. Mounted upon a face-plate K is a frame L, provided with extensions at its ends, in which is mounted a shaft M. Mounted upon the shaft M are adjustable collars M', adapted to be moved by means of the bolts M². The end piece O is parallel to the shaft M and is held in place by means of pieces R. At the ends are provided keys P and P', which are released when it is desired to remove the band.

The top or outer side of the band is slightly longer than the inner side on account of the loops formed at the ends of the sections and on account of the space-blocks F F'. The latter are employed to separate the ends or loops from each other and to provide means for tightening. This increase in length is obtained by inserting the pieces N in the position shown at the time the band is being wound. The space-blocks F F' are also placed in position before winding.

For straightening the wire I a frame Q is provided, having a number of small grooved rollers Q'. The frame Q, being rotated by the belt Q², tends to take out any irregularities in the wire and at the same time acts as a tension device. If at any time it is desired to wind the wire under greater tension, additional friction devices are employed.

In winding the band a single piece of wire is employed. This is first secured to the space-block F, as shown in Fig. 3, then carried to the left around the wedges P, Fig. 8, to the farther end over the wedges P' and back again, the number of turns depending upon the strength required in the band, which is determined by the size and the speed at which the armature is to be rotated, the remaining

end being soldered to the block F'. After the band has been wound with the required number of turns the space-blocks F' F' are soldered to the wire I while mounted on the winding-frame. This insures the proper relation of the wires and the space-blocks. After the space-blocks F' F' are soldered in position (best shown in Fig. 4) the wedges P P' are removed and the pins knocked out of the piece R, permitting the end piece O to be removed, and by releasing the collar M' by means of the nut on the bolt M² the band can be removed. After removing the band the pieces H are soldered thereto at suitable intervals to hold the wires I, forming the band, in their proper relation.

In providing binding-bands for armatures it is desirable to make the band in a number of short sections, so as to evenly distribute the tension over the armature; otherwise at the point where the ends are united the armature-conductors and insulation will be under considerable pressure and the portions farther away will be somewhat loose. This is very undesirable, as it permits the conductors to move slightly, which would soon impair their insulation. In the present instance the band is shown as composed of four short sections A A' A² A³, the number, of course, depending upon the size of the armature. In order to apply the band at the required tension, a tool is provided, consisting of two arms J J', having curved upper portions secured together by the bolt J². The lower extremity of each arm is provided with an enlarged portion having teeth adapted to project between the loops or ends of the wires when mounted in position. The two arms J J' are adapted to be drawn together by means of the bolt J³.

Referring to Figs. 1 and 7, the method of applying the band will be described. The sections A A' A² are secured together by means of the keys G, which are provided with curved sides corresponding to the curved portion of the wedges P P'. At the point on the periphery where the band is to be applied insulation E is first placed in position, after which the sections of the band connected by means of the keys G are placed in position, the loops in one section alternating with those of the adjacent section. The band is of such length that the ends of A and A³ must be drawn together by means of the assembling-tool before the key G can be inserted. When the ends of the band are drawn together by the assembling-tool prior to inserting the key, the tension is somewhat greater than the normal tension of the band. This is so that the key G can be readily inserted in place. The keys G furnish a simple means for compensating for varying diameters. If the band is slightly larger than is necessary, these keys are made a little wider. The converse of this is true if the band is a little short.

When the band is applied to the armature and the assembling-tool is applied at one joint, the pressure on the armature at this point

will be somewhat greater than at other portions of the armature; but in practice I have found that this tension is soon distributed over the entire armature as soon as the armature begins to rotate.

If it is desired to apply the band with an equal tension throughout its length, the assembling-tool can be applied to each joint and keys of the proper width inserted at each joint. After the keys G are inserted in place the ends are expanded, which holds them in place. To remove the band, it is only necessary to reduce the size of the head on the key G and drive it out.

A band of this construction furnishes many desirable features. First, a wire band possesses the greatest tensile strength; second, it is easy to remove or replace; third, the construction is such that more turns may be added if desired to increase the strength without changing the design, and, fourth, the parts used in its construction are simple and no particular skill is required in its construction. The machine on which these bands are wound being the invention of another no claim is made thereto.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a removable binding-band, the combination of a number of turns of wire, loops formed at the ends of the band, and means for securing the ends.

2. In a removable binding-band for armatures, the combination of a plurality of turns formed by a single wire, loops at the ends of the band, and space-blocks separating the ends or loops and providing means for attachment when it is desired to draw the ends of the band together.

3. In a removable binding-band for armatures, the combination of a plurality of turns of wire, loops formed at the ends of the band, the loops of one end alternating with the loops of the adjacent end, and means for securing the ends together.

4. A removable binding-band for armatures, comprising a plurality of turns of wire having one side slightly longer than the other, thereby providing for the means employed in securing the adjacent ends of the bands.

5. In a removable binding-band for armatures, the combination of a number of turns of wire, space-blocks situated near the ends of the band to which the ends of the wire are secured, and pieces soldered to the band at intervals to hold the wires in place.

6. In a removable binding-band for armatures, the combination of a plurality of sections, each section consisting of a single piece of wire wound in such a manner that loops are formed in the ends, means extending between the ends of the loops for securing the sections together, and means secured to the wire of each section so that suitable assembling devices can be applied to the band for approximating the ends under tension.

7. As an article of manufacture, a remov-

able binding-band for armatures, comprising a number of loops or turns of wire wound so as to form loops at the ends of the band with space-blocks for separating the loops and providing means whereby a suitable assembling device can be attached to the band when desired to apply it to an armature.

8. An assembling-tool for wire armature-bands, comprising a pair of arms secured together at their upper ends, an enlarged lower

extremity for each arm, teeth formed in the enlarged portion, and means for drawing them together.

In witness whereof I have hereunto set my hand this 12th day of November, 1896.

HENRY G. REIST.

Witnesses:

B. B. HULL,

E. W. CADY.