

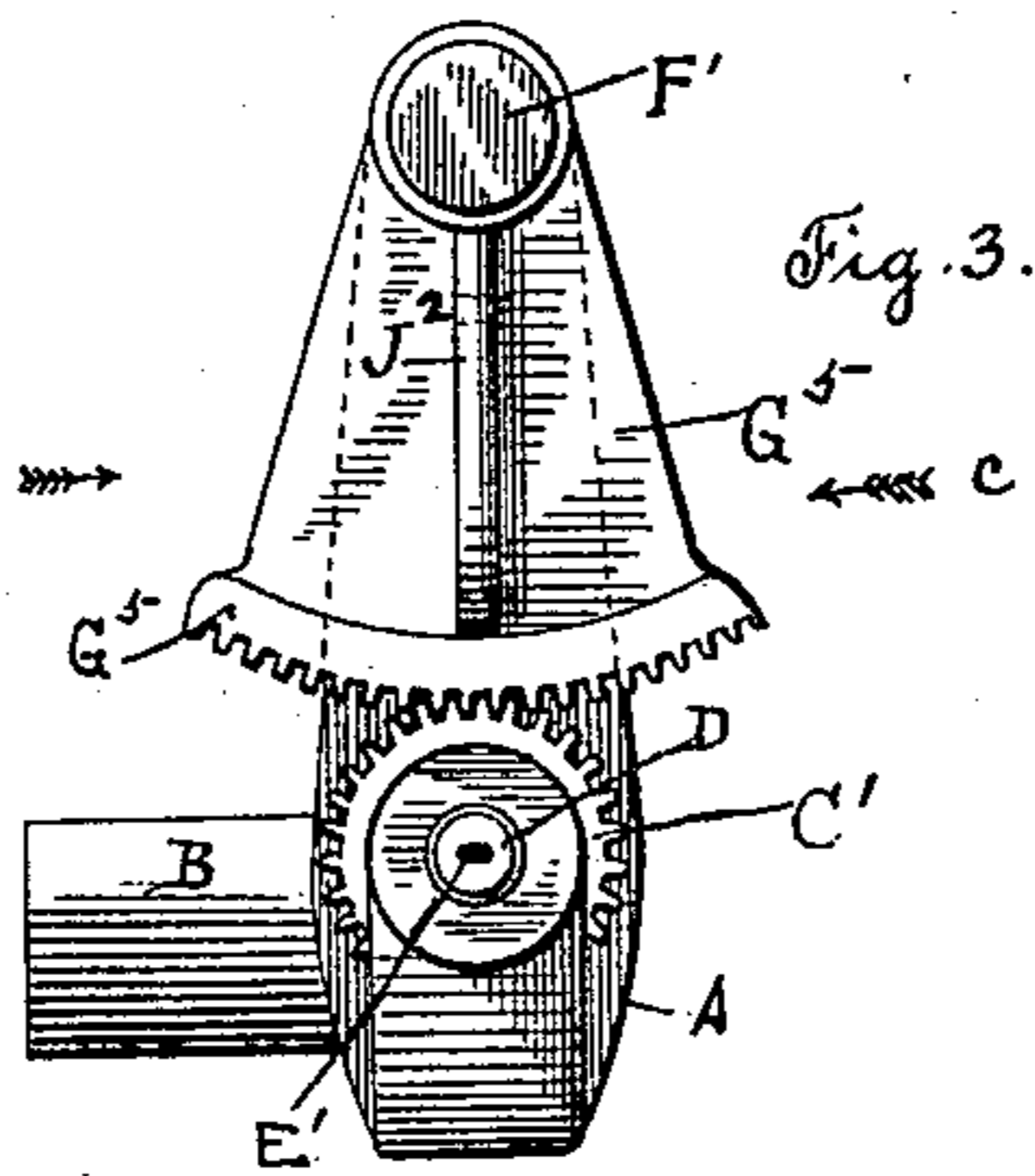
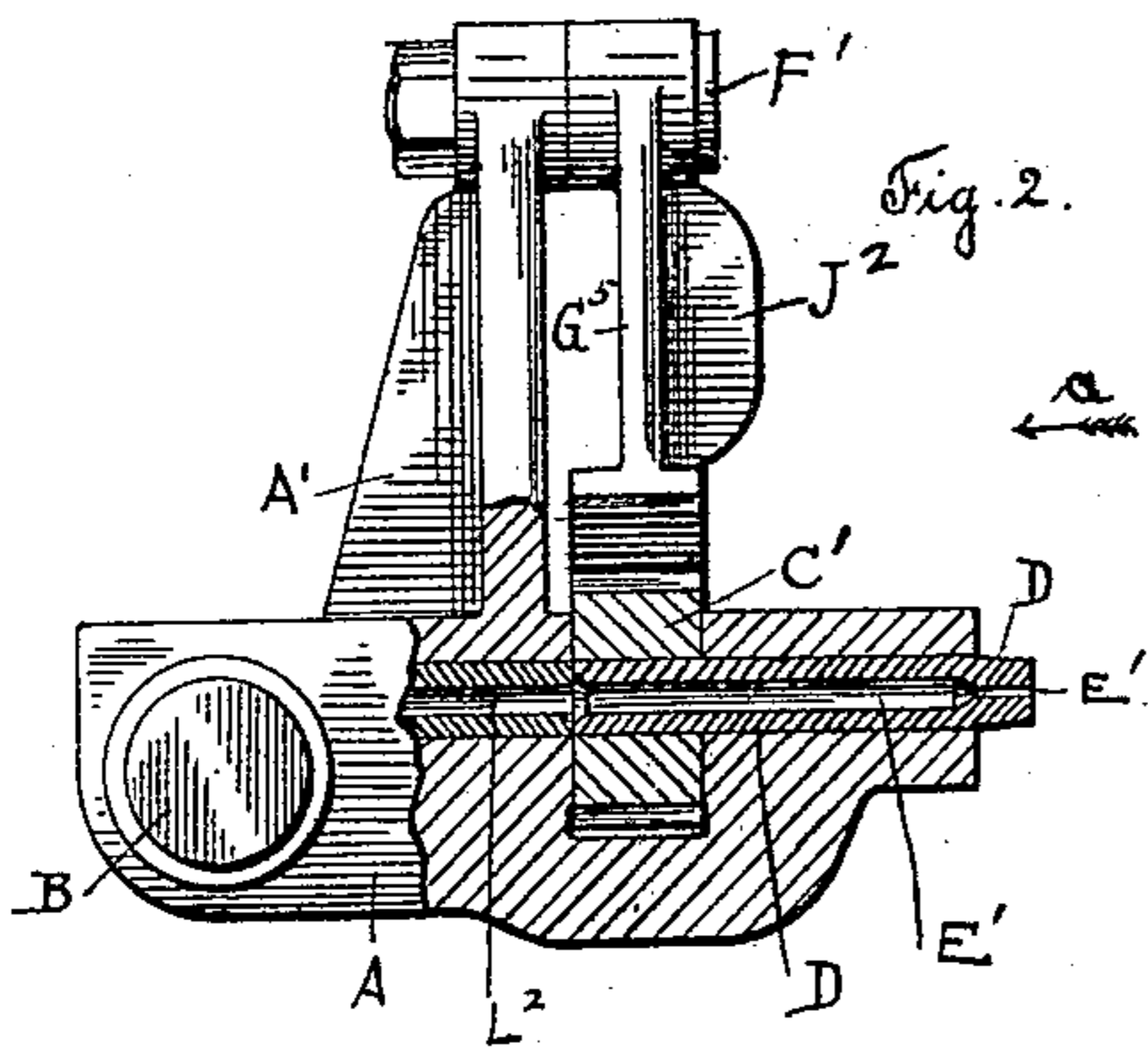
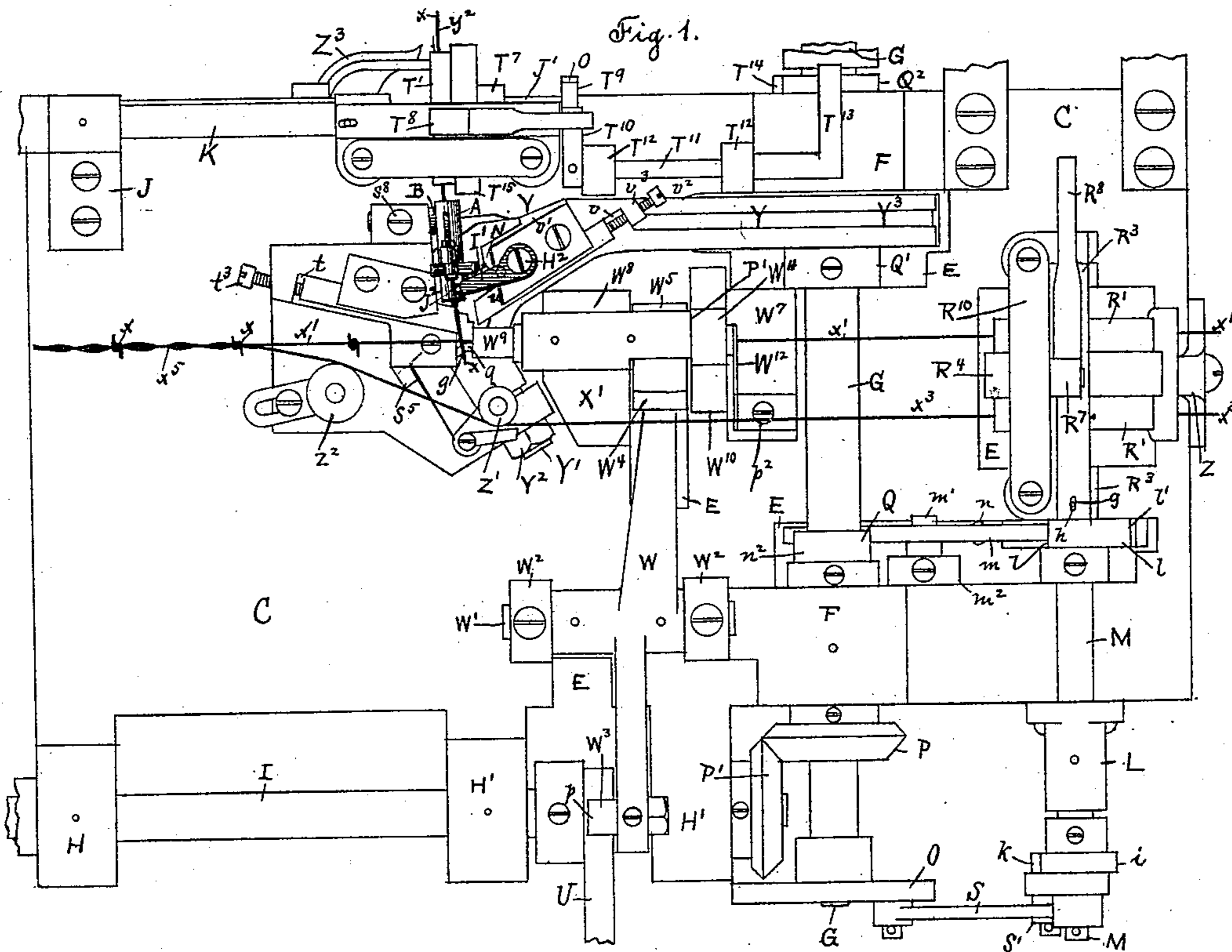
(No Model.)

2 Sheets—Sheet 1.

J. D. CURTIS.  
MANUFACTURE OF BARBED FENCE WIRE.

No. 470,746.

Patented Mar. 15, 1892.



Witnesses  
Chas. F. Schmeltz.  
Chas. Short Jr.

Inventor  
John D. Curtis,  
By his Attorney  
John C. Dewey

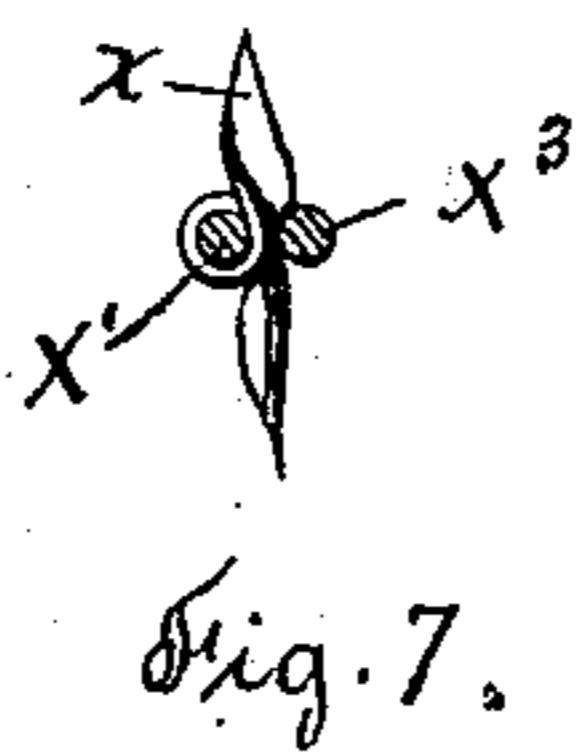
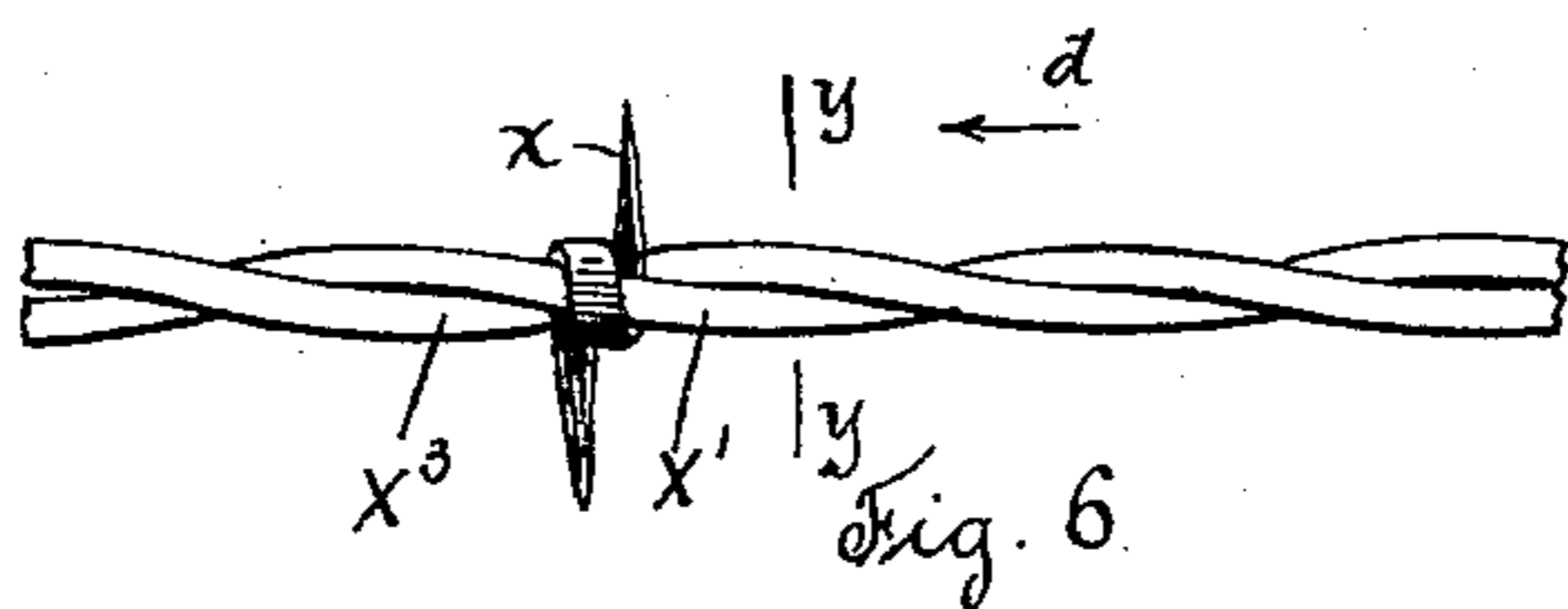
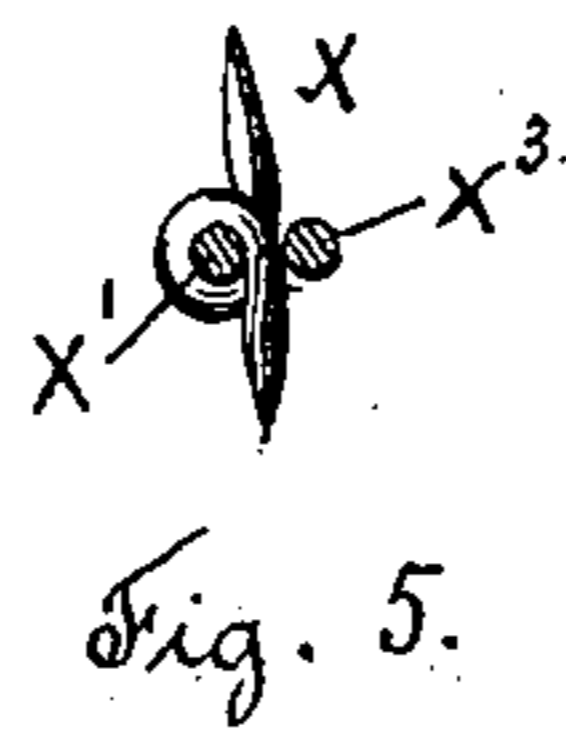
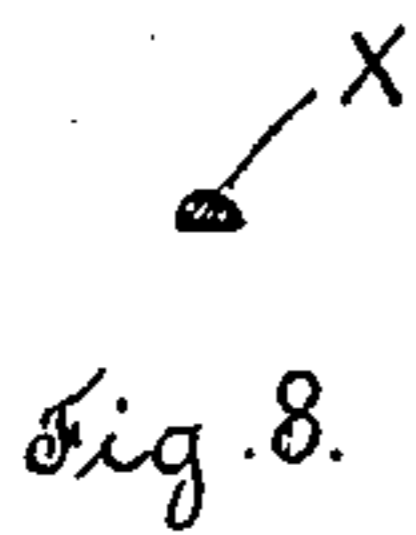
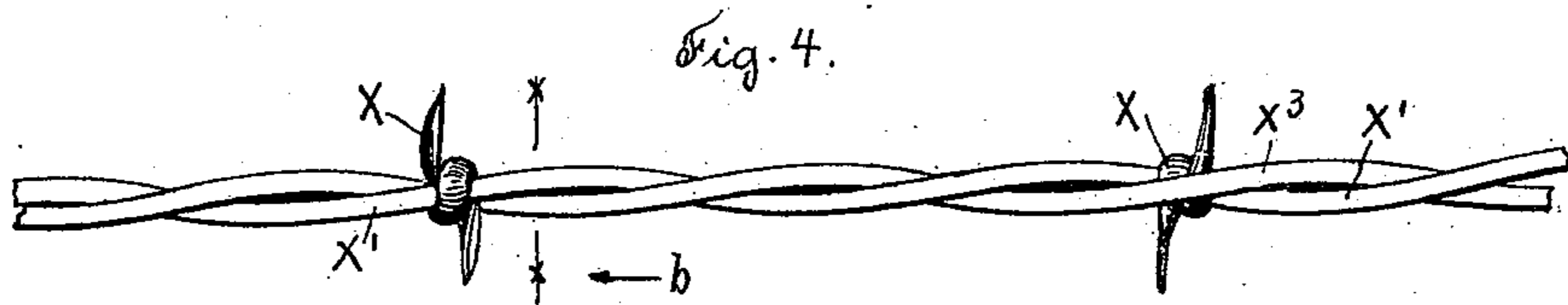
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2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

JOHN D. CURTIS, OF WORCESTER, MASSACHUSETTS.

## MANUFACTURE OF BARBED FENCE-WIRE.

SPECIFICATION forming part of Letters Patent No. 470,746, dated March 15, 1892.

Application filed May 23, 1891. Serial No. 393,846. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN D. CURTIS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Barbed Fence-Wire; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to the manufacture of two-strand two-pointed barbed fence-wire with the barbs coiled on one of the strands, and the strands twisted together; and the object of my invention is to improve upon the manufacture of barbed wire of the class above referred to as now ordinarily made, with barbs made from round wire coiled on one of the fence-strands, and to produce a barbed wire with barbs made from half-round wire or from wire non-circular in cross-section coiled around one of the fence-strands, and having their points twisted in a direction at right angles to the axis of the barb or the length of the fence-strands.

My invention consists in my improved method of manufacturing barbed fence-wire of the description above mentioned, the important feature of which is the twisting of the projecting points of the barbs in a direction at right angles to the axis thereof, and in the means for carrying out said feature of my invention. The twisting of the projecting points of the barbs stiffens the coil of the barb and attaches the barb firmly to the fence-strand, and causes the edge of the barb-points to be presented to resist pressure and bending.

In carrying out my invention and manufacturing the barbed fence-wire the means for twisting the points of the barbs, as above described, may be combined with any of the ordinary and well-known automatic machines now in general use for manufacturing the ordinary two-pointed barbed wire with the barbs made from round wire and coiled around one of the strands.

In the drawings I have shown the means or mechanism for twisting the points of the barbs

combined with the well-known Stover barbed fence-wire machine, which was patented May 29, 1883, No. 278,624, and to which patent reference is hereby made for a detail description of the construction and operation of said machine. The said Stover machine, without my improvements, is adapted to automatically manufacture a two-strand barbed fence-wire, having a two-pointed wire barb made from round wire, known as the "Glidden" barb, combined with one of the strands.

Referring to the drawings, Figure 1 is a plan view of a Stover barbed-fence machine corresponding to Fig. 2 of the Stover patent referred to, with my improvement attached thereto. Fig. 2 is a sectional detail, on an enlarged scale, of the additional twisting mechanism. Fig. 3 is an end view of the mechanism shown in Fig. 2, looking in the direction of arrow *a*, same figure. Fig. 4 is a plan view, full size, of a section of barbed fence-wire of my improved manufacture having half-round wire barbs. Fig. 5 is a cross-section on line *xx*, Fig. 4, looking in the direction of arrow *b*, same figure. Fig. 6 is a plan view, full size, of a section of barbed fence of my improved manufacture having flat barbs. Fig. 7 is a cross-section on the line *yy*, Fig. 6, looking in the direction of arrow *d*, same figure; and Figs. 8 and 9 are cross-sections of the half-round barb-wire and the flat barbstrip, respectively.

In the accompanying drawings I have designated the several parts of the machine (shown in Fig. 1) by the same letters of reference as are used in Fig. 2 of said Stover patent, and reference is hereby made to said patent for a detail description of the construction and operation of the several parts of the machine shown in Fig. 1.

It is only necessary to describe herein the operation of those parts of said Stover machine shown in Fig. 1, which are directly connected with the twisting mechanism used in this instance to twist the points of the barbs, as above described, so that those skilled in the art to which my invention belongs will clearly understand the construction and operation of said twisting mechanism.

It will be understood, as above stated, that the barb wire or strip from which the barbs are made is non-circular in cross-section, and

preferably a half-round wire or a flat wire or strip.

Referring to Fig. 1 of the drawings, the wire strands  $x'$  and  $x^3$  are fed in under the rolls  $R'$  at the rear of the machine, and one of said strands  $x'$  passes through the barb coiling or wrapping spindle  $W^9$ . The barb wire  $x$  is fed in under the roll  $T'$ , and, instead of passing through the guide  $s^2$ , as shown in Fig. 2 of said Stover patent, it passes through the guide  $A$  of the twisting mechanism, (see Fig. 1,) which is substituted for the guide  $s^2$  of said patent. The free end of the barb-wire  $x$  is fed forward under the main wire  $x'$  and over the turning-finger  $q$  of the wrapping-spindle  $W^9$ , and is coiled or wrapped, preferably, once around the main wire  $x'$  by the revolution of the spindle  $W^9$  and finger  $q$ . After the free end of the barb-wire  $x$  has been wrapped around the main wire  $x'$  the movable cutter  $u$ , supported in the top of the angular rocking part  $Y$ , is operated and cuts off the barb-wire  $x$  upon an acute angle, leaving a sharp-pointed projecting barb. The main wires  $x'$  and  $x^3$  are then fed forward preparatory to the wrapping of another barb around the wire  $x'$ , as fully described in said Stover patent, to which reference is hereby made.

I will now describe the construction and operation of the twisting mechanism used in this instance to give a twist to the points of the barbs in a direction at right angles to the axis of the barbs, and which is shown by dark lines in Fig. 1 in its proper relative position, and in detail views in Figs. 2 and 3.

The guide  $A$  is provided with a stud  $B$ , extending out from one side at the rear part thereof, which is secured in its bearing by means of a set-screw  $s^8$ , and by means of said set-screw  $s^8$  the guide  $A$  may be adjusted in its bearing as desired. The guide  $A$  has a longitudinal hole  $L^2$  therein, as shown in Fig. 2, through which the barb-wire  $x$  extends, and said guide  $A$  is cored out at its front end in the upper part thereof, and into said cored-out part fits a pinion  $C'$ , which is fast on the hollow shaft  $D$ . Said shaft  $D$  has its bearing in the front end of the guide  $A$  and serves as a shaft for the pinion  $C'$ . A central longitudinal hole  $E'$  in the shaft  $D$  corresponds in size to the central longitudinal hole  $L^2$  in the guide  $A$ , except at the front end of said shaft  $D$  the hole  $E'$  is reduced in size and made non-circular in cross-section, as shown in Fig. 3.

In the upper end of the arm  $A'$ , extending up from the upper surface of the guide  $A$ , is pivoted on a pin  $F'$  the upper end of the segment-gear  $G^5$ , which is adapted to mesh with and operate the pinion  $C'$ , as shown in Fig. 3.

Upon the top of the rocking part  $Y$ , carrying the movable cutter  $u$ , is secured, by a screw  $H^2$  in this instance, a rigid arm  $I'$ , the outer end of which on the forward movement of the cutter  $u$  is adapted to engage the ear or projection  $J^2$  on the segment-gear  $G^5$  and move said segment-gear  $G^5$ . This causes the

pinion  $C'$  and shaft  $D$  to revolve and twist the barbed wire, in this instance after the free end thereof is wrapped or coiled around the wire strand and before the same is severed or cut off by the cutter  $u$ . A spring  $N$  is in this instance connected with the segment-gear  $G^5$  and with a stationary part of the machine, and serves to draw back the segment-gear  $G^5$  and revolve the pinion  $C'$  and shaft  $D$  in the opposite direction after the barb-wire is cut off by the cutter  $u$ , and upon the withdrawal of the cutter preparatory to the feeding forward of the barb-wire for another barb.

By means of the non-circular hole  $E'$  in the end of the twisting shaft or spindle  $D$  the barb-wire is held at the point where it passes through said non-circular opening, and the revolution of the shaft  $D$  will twist the barb-wire before it is cut off. The return revolution of the shaft  $D$  will allow the barb-wire to untwist back of the guide  $A$ , but the twist at the point where the barb-wire is cut off is set and will remain in the barb-wire, and said twisted end will form the free end of the barb-wire to be fed forward and wrapped or coiled around the wire strand. It will thus be seen that in the completed barb each end will be twisted.

From the above description, in connection with the drawings, the operation of the twisting mechanism above described for twisting the barb-wire  $x$ , after the free end thereof has been coiled around the main fence-wire  $x'$  and before the barb-wire is severed or cut off by the movable cutter  $u$ , will be readily understood by those skilled in the art, and is as follows: After the free end of the barb-wire  $x$  has in this instance been wrapped or coiled once around the main wire  $x'$  by the coiling or wrapping spindle  $W^9$  and the finger  $q$  thereon the movable cutter  $u$ , through the operation of the rocking part  $Y$ , is moved forward to cut off the barb-wire. The operation of the rocking part  $Y$  causes the arm  $I'$ , fast on said part  $Y$ , to move the segment-gear  $G^5$  in the direction of the arrow  $c$ , Fig. 3, causing the pinion  $C'$  to be revolved and also the shaft  $D$ , on which shaft said pinion  $C'$  is fast. The revolution of the shaft  $D$  will cause the barb-wire  $x$  to be twisted where it is held by the non-circular opening  $E'$  in the end of the shaft  $D$  before the cutter  $u$  touches the barb-wire to sever or cut it off. After the barb-wire has been cut off by the cutter  $u$  the rocking part  $Y$  returns to its former position, carrying the arm  $I'$ . The spring  $N$  draws back the segment-gear  $G^5$  and causes the pinion  $C'$  and twisting-shaft  $D$  to be turned back to their first position preparatory to the twisting of the barb-wire again, after the free twisted end has been fed forward, and wrapped or coiled around the fence-strand.

The advantages of my improvements in the manufacture of barbed fence-wire will be readily appreciated by those skilled in the art.

By making the barbs from wire non-circu-

lar in cross-section, preferably half-round or flat, only about one-half of the amount of metal contained in the round wire heretofore used in making the Glidden barb is used, thus saving about one-half of the cost of the barb-wire and making a barb of about one-half the weight of the ordinary barb, and consequently lessening considerably the weight of the barbed fencing. By giving a twist to the points of the barbs in a direction at right angles to the axis thereof I am enabled to fasten the barb securely on the wire-fence strand and to add to the strength of the barb and to make a barb with a single coil and very short points.

It will be understood that in carrying out my invention and giving a twist to the points of the barb in a direction at right angles to the axis of the barb or the length of the fence-strands I do not limit myself to the particular form or operation of the twisting mechanism shown in the drawings and above described or the particular manner of combining the same with the mechanism for coiling on the barb and the mechanism for cutting off the barb, as the same may be varied somewhat, if desired.

I do not include in this application the barbed fence-wire itself of the description above referred to, as the same is included in another application filed by me August 26, 1891, Serial No. 403,784, to which reference is hereby made.

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

1. The improvement in the manufacture of

barbed fence-wire, which consists in coiling a barb-wire of non-circular cross-section around one of the fence-strands and then twisting the barb-wire in a direction transverse to its axis, substantially as and for the purposes hereinbefore set forth.

2. In the manufacture of barbed fence-wire, the method of forming and applying the barbs, which consists in coiling a continuous barb-wire of non-circular cross-section around one of the fence-strands, then twisting said barb-wire in a direction transverse to its axis, and then cutting it off, substantially as and for the purposes hereinbefore set forth.

3. In machinery for making barbed fence-wire, the combination, with fence-strand supplying or feeding mechanism and barb-wire supplying or feeding and coiling mechanisms, of twisting mechanism arranged and operating to twist the barb-wire in a direction transverse to its axis after it has been coiled upon its fence-strand, substantially as and for the purposes hereinbefore set forth.

4. In machinery for making barbed fence-wire, the combination, with the fence-strand supplying or feeding mechanism, barb-wire supplying or feeding and coiling mechanisms, and mechanism for cutting off the barb-wire, of twisting mechanism whereby the barb-wire is twisted in a direction transverse to its axis after it is coiled upon its fence-strand and before it is cut off, substantially as and for the purposes hereinbefore set forth.

JOHN D. CURTIS.

Witnesses:

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JOHN C. DEWEY.