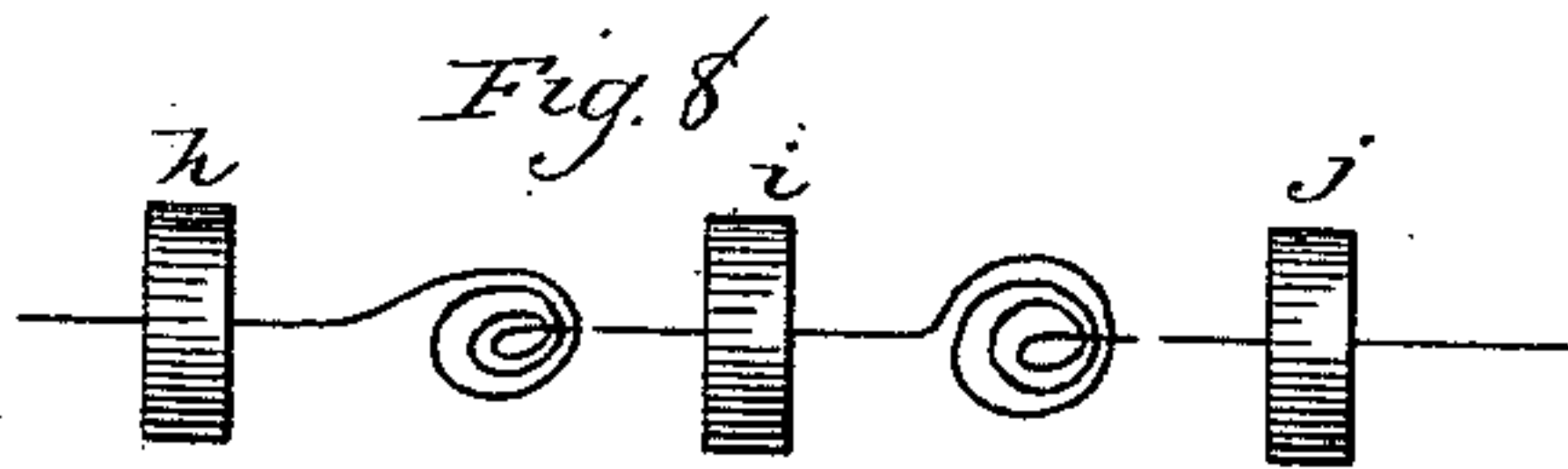
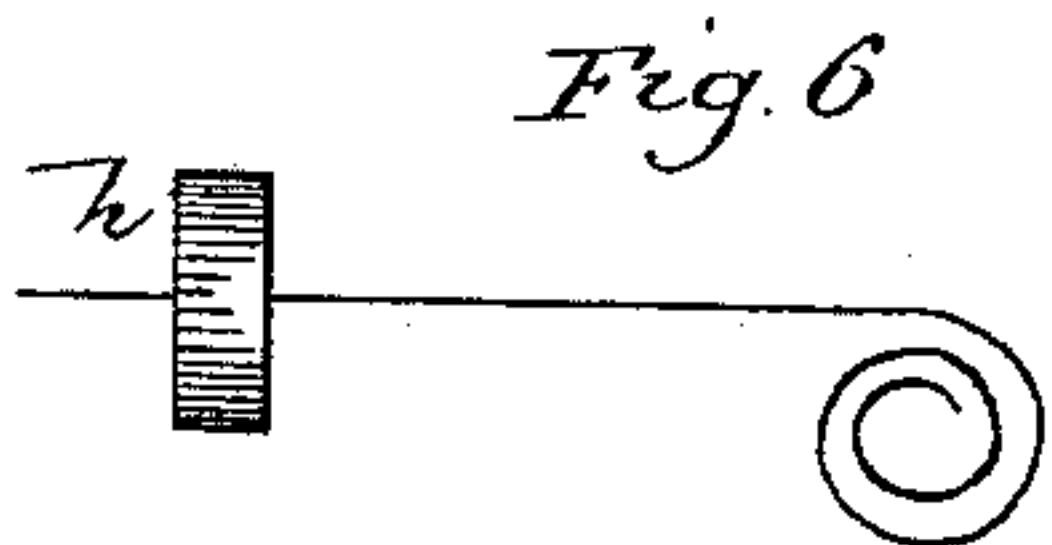
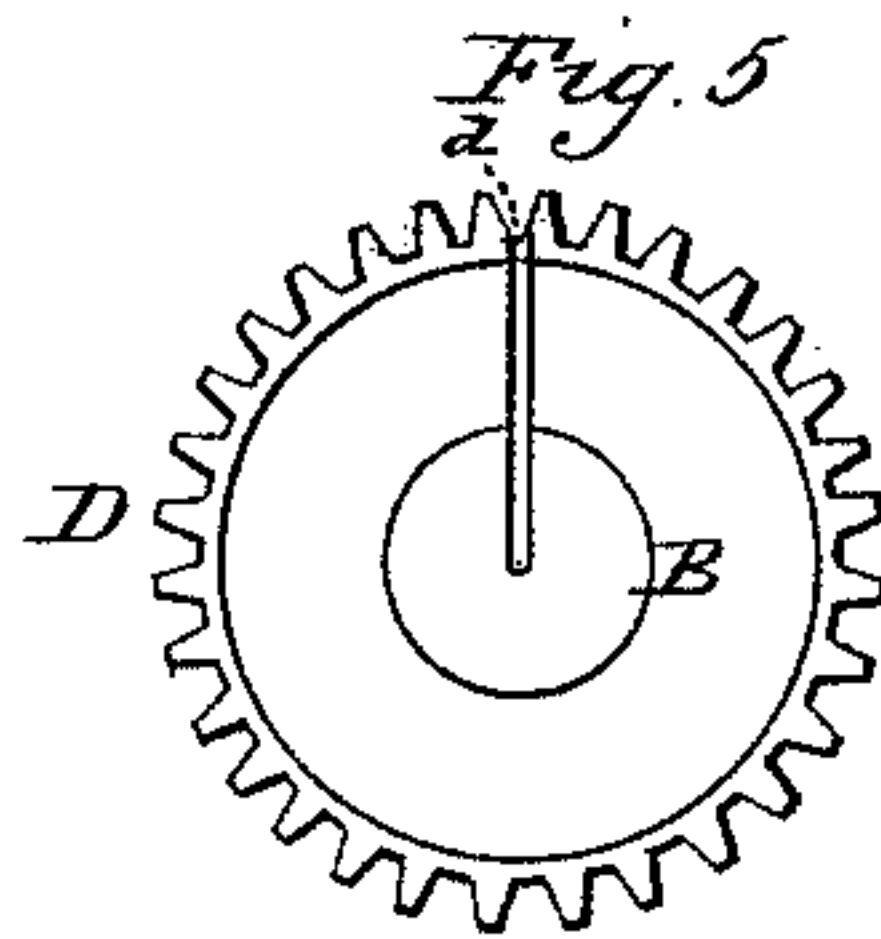
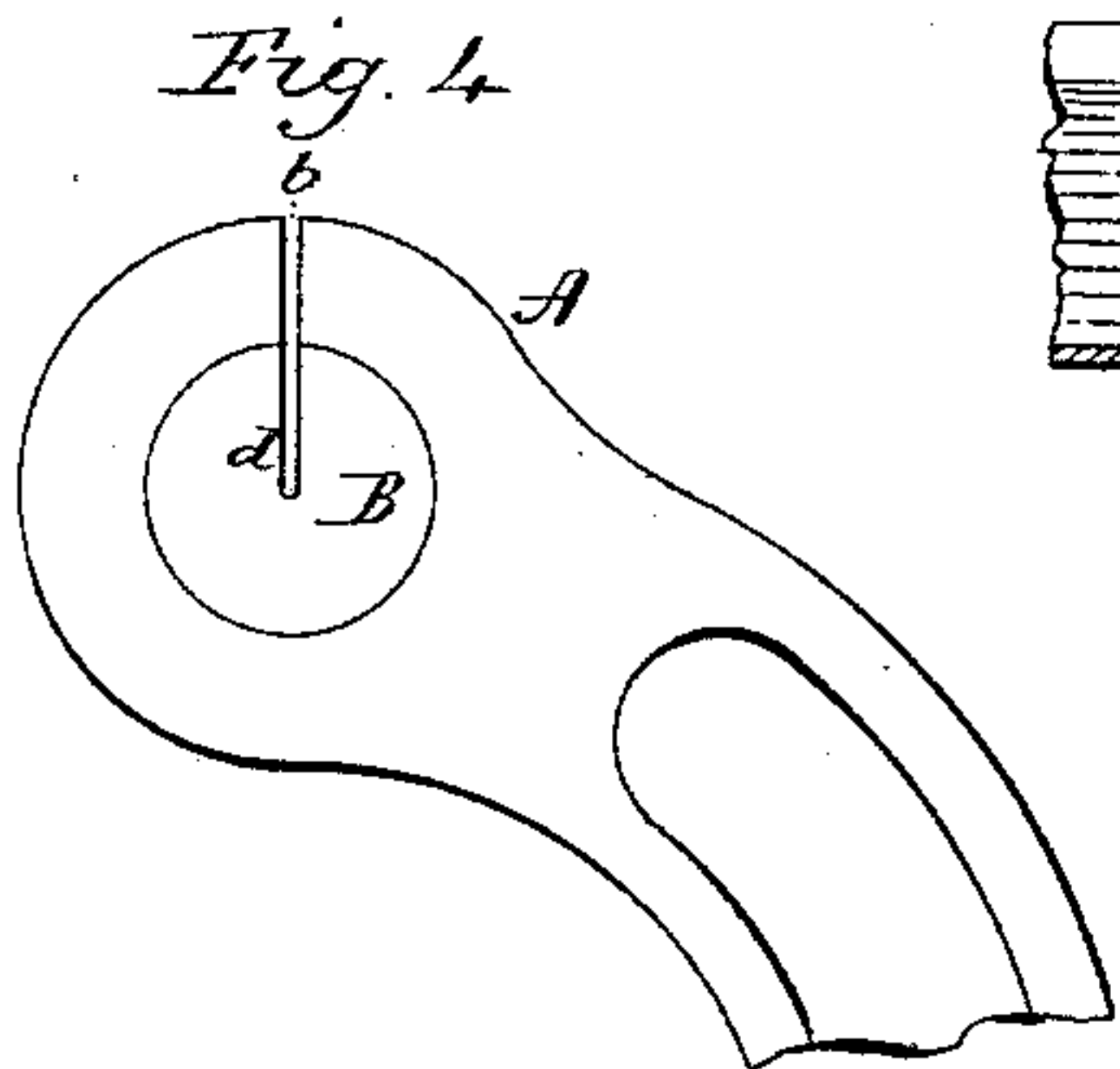
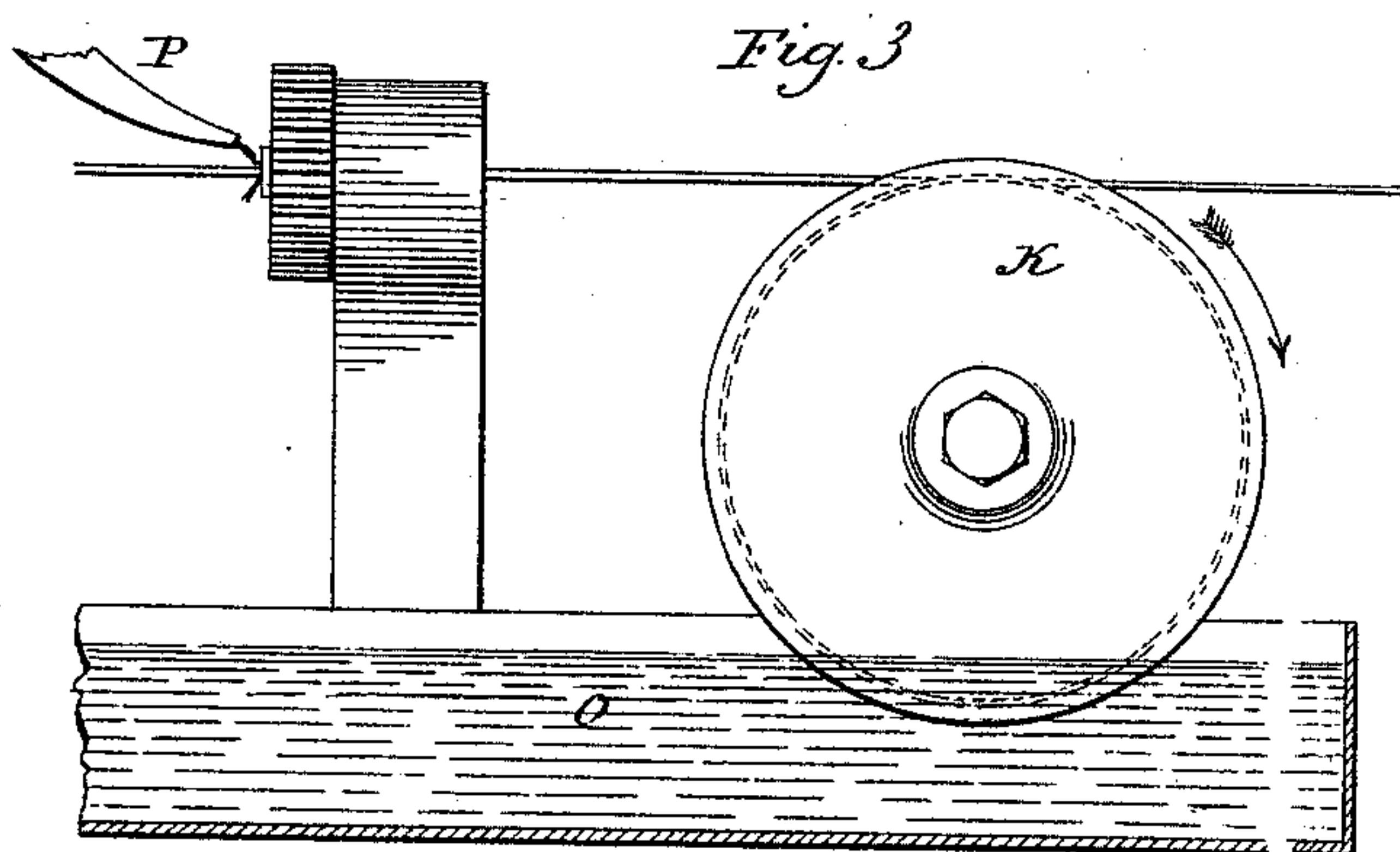
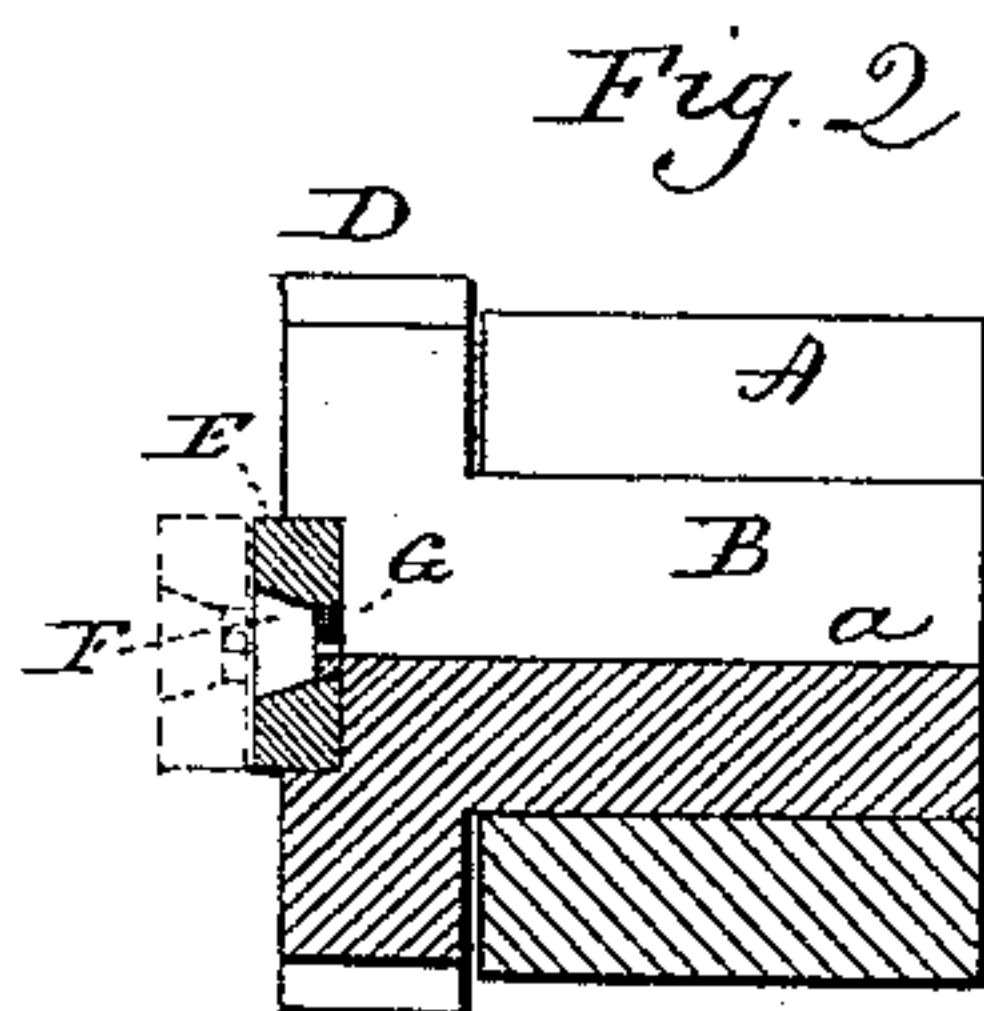
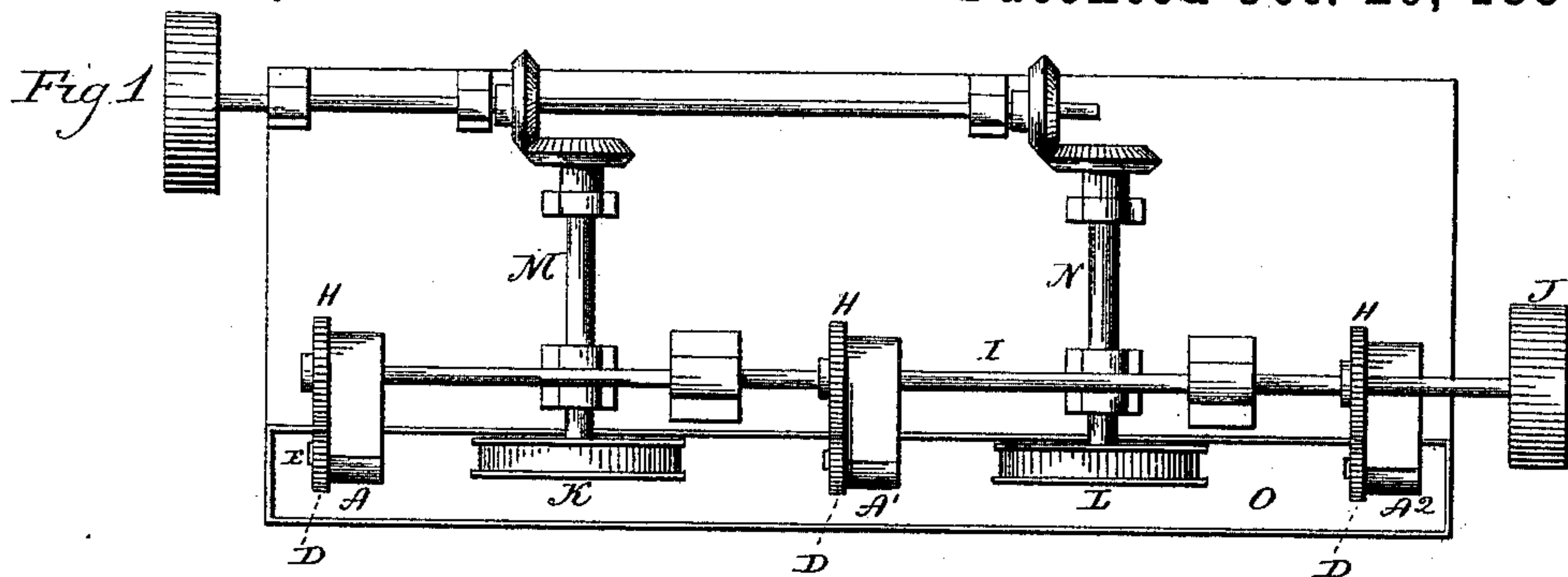


(No Model.)

W. WALLACE.  
MODE OF DRAWING WIRE.

No. 413,988.

Patented Oct. 29, 1889.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM WALLACE, OF ANSONIA, CONNECTICUT.

## MODE OF DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 413,988, dated October 29, 1889.

Application filed February 18, 1889. Serial No. 300,232. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WALLACE, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new  
5 Improvement in Wire-Drawing; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the  
10 same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a plan view of a wire-drawing machine, showing three reducing-dies; Fig. 2, a longitudinal section through one of the  
15 bearings, revolving head, and die, the section cutting through the longitudinal slot in the head and bearing enlarged; Fig. 3, a front view showing a single bearing and head with one of the drums; Fig. 4, an end view of the  
20 bearing and head opposite the die; Fig. 5, an end view of the same, looking from the opposite side of Fig. 4; Figs. 6, 7, and 8, the dies as placed upon the wire.

This invention relates to an improvement  
25 in wire-drawing, and particularly to that method of wire-drawing in which the wire is drawn through several successive dies arranged in a machine so that the drawing through the said several dies is a continuous  
30 operation, such substantially as shown in Letters Patent to S. H. Byrne, June 9, 1885, No. 319,556. The successive dies diminish in diameter, according to the amount of the successive reductions to be made. Between the  
35 successive dies revolving drums are introduced, around which the wire is wound, and so that the revolution of these drums draw the wire through the next preceding die.

In introducing the wire to the machine a  
40 reduction is required to be made on the wire corresponding to each die—that is to say, it must be first pointed, introduced, and drawn through the first die to an extent to permit it to be wound around the next drum, then in-  
45 troduced to the second die and drawn through that die to an extent to permit it to be wound around the next drum, and so on through successive dies. These machines perform ten reductions, more or less, and each reduction  
50 requires a separate operation to introduce the wire. The time and labor for introduc-

ing a run of wire to the machine, it will therefore be seen, is a large item in the consideration of the cost of drawing, the machine practically standing still during this opera- 55  
tion of introduction.

The object of my invention is to avoid this standing still or rest of the machine and the difficulties which are experienced in the introduction of the wire to the machine; and  
60 the invention consists in drawing the wire through the several dies detached from the machine—first through the larger die to the extent that it will be required to give sufficient wire to run through all the dies and  
65 around the respective drums to the reel, then through each of the successive dies to the same proportionate extent, leaving the dies on the wire; then introducing the wire with  
70 the several dies thereon to the machine, each die to its own place in the machine, and as more fully hereinafter described.

In illustrating the invention I represent the machine shown and described in Letters Patent No. 367,733, granted to me August 2, 1887, 75  
and I do this because the peculiar construction of this machine permits the carrying out of the method of my present invention. This machine represents but three reducing-dies; but it will be understood that this number 80  
may be increased to any desired extent. This machine I will briefly describe.

A represents the bearing in which the first head is arranged, A' the bearing in which the second head is arranged, and A<sup>2</sup> the bearing 85  
for the third head. In Fig. 2 one of these bearings is shown enlarged.

A represents the bearing; B, the head, which is of cylindrical shape, and the bearing of corresponding shape, as seen in Fig. 4. Each 90  
head is attached to or formed as a part of a pinion D, by means of which the head is caused to revolve.

E represents the die-block, which is arranged in a concentric cavity in the head. In the 95  
die-block the jewel F is set in the usual manner, the jewel being pierced with a hole of required diameter. The face of the die-block presents a funnel-shaped mouth G to the face of the jewel.

Concentrically through the head B is an opening a, corresponding to the hole in the 100



die, but somewhat larger in diameter, and through which the wire will run. The several heads are caused to revolve by gears H on a shaft I. The said gears correspond and work into the pinions D on the heads, power being applied to the shaft I through the pulley J or otherwise, so that a constant revolution of the heads may be maintained.

K is the drum which is arranged between the first and second revolving dies, and L the drum which is arranged between the second and third revolving dies. These drums are fixed to their respective shafts M N, the axis of which is at right angles to the axis of the dies, the drums standing so that their periphery is in line with the dies, as seen in Fig. 3, and preferably these drums run in a bath O below. Longitudinally through the bearing a narrow radial slot *b* is cut, extending to the center, as seen in Fig. 4, and through the head a like longitudinal radial slot *d* is cut, as seen in Fig. 4. The slot *d* should be between the teeth of the pinion D, as seen in Fig. 5, and so that when the slot *d* in the head registers with the slot *b* in the bearing there will be an open passage through the bearing and head to the center.

The die-block sets freely into the recess in the face of the head, so that it may be readily withdrawn when occasion requires.

Whenever it is required to remove the dies or wires from the heads, the die-block is withdrawn from the head, as seen in broken lines, Fig. 2, the wire being returned or drawn backward sufficiently far to permit this withdrawal of the die-block. Now the wire with die-block and die upon it may be lifted or taken out through the slots, and after the examination is made or the object accomplished for which it was removed the wire may be returned through the same slots and the die-block, with its die, set to place, and this removal and replacement are accomplished without cutting the wire.

The object of making the slot *b* into the head, as described, was to permit the die to be taken from its place for examination without cutting the wire.

To introduce a new run of wire to the machine, I remove all the dies from the machine and then draw the wire through the first die—as *h*, Fig. 6—to a length sufficient to pass around the several drums and through succeeding dies. This gives the first reduction; and then in like manner I introduce the wire to the second die *i*, Fig. 7, and draw the wire

through until the die *i* has approached the die *h*, leaving between the two dies *h i* sufficient wire for the first drum. Then, in like manner, I draw the reduced portion of the wire through the third die *j*, (see Fig. 8,) leaving sufficient wire between the die *j* and the die *i* for the second drum, and so on through successive dies until all the dies are on the wire. This drawing may be produced by any suitable drawing apparatus, as a common wire-block and single die-holder. After the several dies are thus applied the wire and the dies are placed in the machine, each die in its own proper seat, the slots *b* through the die-block and the gear permitting the wire to pass in with the dies.

Each machine being provided with duplicate dies, a run of wire with one set of dies arranged thereon, as I have described, may be prepared before the drawing of a previous run of wire has been completed, and so that immediately upon the completion of the drawing of such previous run of wire the dies then in the machine may be removed and the wire with the second set of dies thereon immediately introduced to the machine, so that the stopping of the machine is for a very short space of time. Then the first series of dies will be arranged upon another run of wire, in its turn to be introduced to the machine.

The difficulties which attend the drawing of the wire through the several dies while in the machine as practiced before my invention are substantially avoided. The drawing of the single dies onto the wire, under my invention, is a single operation and may be performed by unskilled labor.

As the drawing of the wire with these machines is very rapid, the introduction of new runs of wire is so frequent that the time saved by my improved method is very great.

I claim—

The herein-described improvement in drawing wire, which consists in drawing the wire into several reducing-dies while the said dies are detached from the machine in which the drawing is to be done, leaving the said dies on the wire preparatory to the introduction to the drawing-machine, substantially as described.

WM. WALLACE.

Witnesses:

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