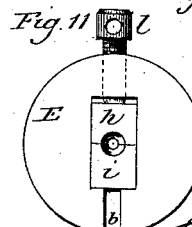
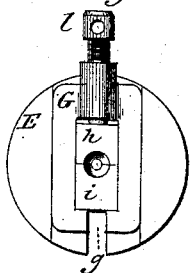
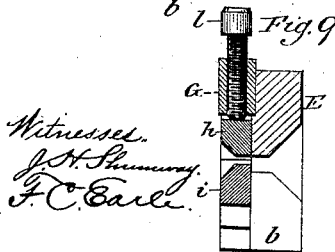
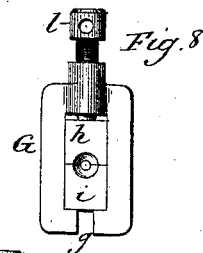
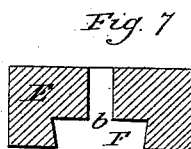
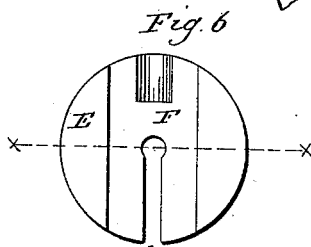
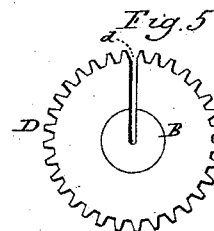
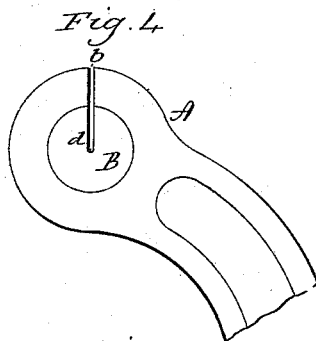
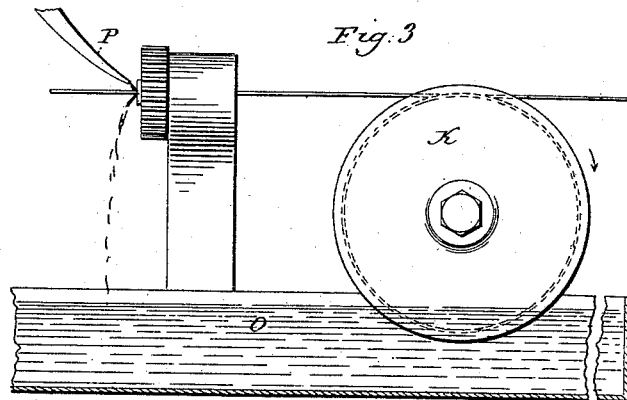
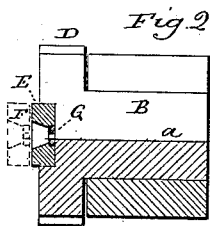
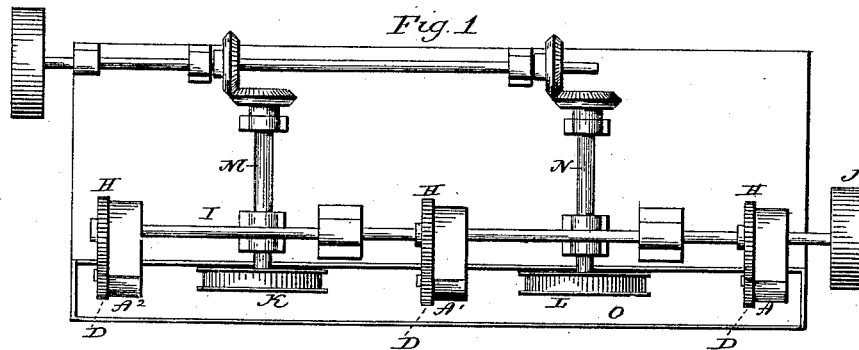


(No Model.)

W. WALLACE.  
DIE FOR DRAWING WIRE.

No. 418,095.

Patented Dec. 24, 1889.



Witnesses.  
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F. C. Earle.

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# UNITED STATES PATENT OFFICE.

WILLIAM WALLACE, OF ANSONIA, CONNECTICUT.

## DIE FOR DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 418,095, dated December 24, 1889.

Application filed February 25, 1889. Serial No. 301,012. (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 Improvement in Dies for Drawing Wire; 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 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 to which this invention is specially applicable; Fig. 2, a longitudinal section through one of the bearings, revolving head, and die of the said machine, 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 bearing and head opposite the die; Fig. 5, an end view of the same from the die side; Fig. 6, a face view of the die-block as constructed to receive the clamp; Fig. 7, a central section cutting on line *xx* of Fig. 6; Fig. 8, the clamp and dies detached from the die-block; Fig. 9, a vertical central section cutting longitudinally through the die-block and dies and diametrically through the slot *b* of the die-block, and showing side view of the adjusting-screw; Fig. 10, a face view showing the clamp and dies in the die-block; Fig. 11, a modification in the construction of the die-block, in which the clamp is made as a part of the block.

This invention relates to an improvement in dies for drawing wire, adapted to be used in machines in which several successively-reducing dies are introduced in line with each other with revolving drums between them, around which the wire runs, and so that the said drums serve to draw the wire through the next preceding die, each succeeding die making an additional reduction in the wire. This method of drawing is fully shown and described in Letters Patent of the United States, granted to me August 2, 1887, No. 367,733.

In order to the clear understanding of my present invention, I will illustrate and briefly describe the said machine.

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 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 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. Concentrically through the head D is an opening *a*, corresponding to the hole in the 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 axes of which are at right angles to the axes 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 Figs. 4 and 5, and through the head a like longitudinal radial slot *d* is cut. 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 firmly in the recess in the face of the head, but 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 is accomplished without cutting the wire.

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

The removal of the die-block, as I have described, permits the wire to be taken from the head; but the die cannot be removed from the wire.

It frequently occurs that it is desirable to renew or repair one of the dies during the operation of drawing. In such case the die can only be removed by cutting the wire, and then when the die is renewed or replaced a reintroduction of the wire from this new die onward through the succeeding dies is necessary. This removal and introduction of dies for renewing or other purposes involves a great loss of time in the running of the machine. The object of my invention is to avoid this loss of time by constructing the die so that it may be removed without cutting the wire; and the invention consists in constructing the die in two parts, the divisions being central and in the plane of the axis of the die, and means for supporting and clamping the two parts firmly together in the die-block, the die-block having a radial slot running to its center, through which the wire may pass into the block, and as more fully hereinafter described.

Under the best construction of my invention I make the clamp separate from the die-block. The die-block *E*, Figs. 6 and 7, is constructed with a groove *F* diametrically across its face, preferably of a dovetail shape, as seen in Fig. 7, and centrally in this groove through the head the slot *b* is formed, the same as in the die-block described in reference to the preceding figures. The clamp *G*, Fig. 8, is in the form of a frame, and of a size corresponding to the groove *F* in the die-block, and so that it may set therein, as seen in Fig. 9. One end of the frame is constructed with an opening *g* through it corresponding to the groove *d* in the die-block. The die is made in two parts *h i*, as seen in Figs. 8 and 10. The one part *i* rests upon the shoulders at the open end of the clamp, and at the other end a set-screw *l* is introduced to bear upon the part *h*, and so as to force the two parts firmly together and as if they were a solid die. The clamp and die thus constructed are introduced together into the groove *F* of the die-block *E*, as seen in Figs. 9 and 10, and then the die-block may be set in place in the head, as before described. Now, if it be re-

quired to remove the dies while the machine is in operation, or the wire in the machine, the set-screw *l* is withdrawn, so as to leave the two parts of the die free. Then those two parts are drawn from their holder or clamp and readily separate, and should it be required to take the wire from the die-block and head, the slot through the die-block and the corresponding opening in the clamp permit such removal of the wire. The dies are replaced by closing them together around the wire and setting them into the clamp, then bringing the two parts together by means of the set-screw, as before described. Under this construction the dies may be removed, repaired, or changed without stopping the machine for any considerable length of time.

While I prefer to employ the clamp to hold the dies as a construction independent of the die-block, the die-block itself may have the clamp, as seen in Fig. 11, the die-block being constructed with a central recess, into which the parts *h i* of the die are set, and a set-screw through the periphery of the die-block onto the dies, as clearly seen in Fig. 11. I prefer the independent clamp for the reason that it will be self-centering on the wire—that is to say, when set into the die-block it will be free for a limited amount of radial movement, so as to bring the die to the actual center of the die-block in revolving, but the parts of the die arranged in the die-block, as seen in Fig. 11, may with care be centrally adjusted.

I am aware that dies for drawing wire have been made in two parts and clamped together in a block, and therefore do not claim, broadly, such construction of the wire-drawing dies.

I claim—

1. In a wire-drawing machine, substantially such as described, the detachable die-block *E*, having a radial slot opening to its center and constructed with a recess to receive the wire-drawing die, the wire-drawing die arranged therein, the said die constructed in two parts divided in the plane of its axis, and means, substantially such as described, for clamping the two parts of the die together in the said recess, substantially as described.

2. In a wire-drawing machine, substantially such as described, the die-block *E*, constructed with a diametrical groove on its face, and with a central radial slot *b*, a clamp *G*, constructed to set into the said groove in the die-block, and the drawing-die made in two parts *h i*, set into said clamp and with the set-screw to hold the two parts of the die together within the clamp, substantially as described.

WM. WALLACE.

Witnesses:

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W. C. BARCLAY.