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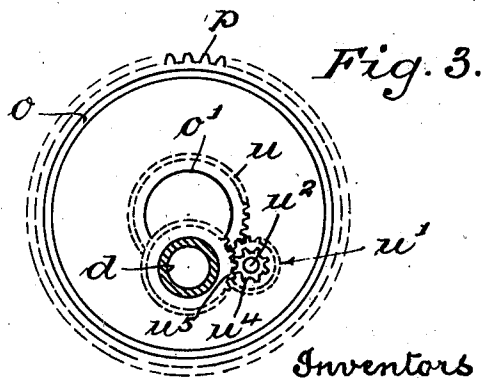
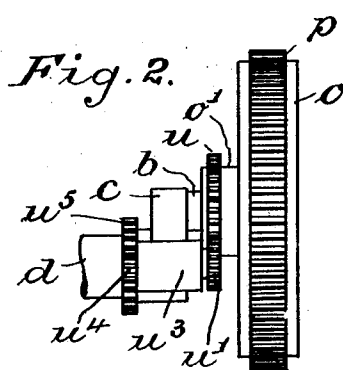
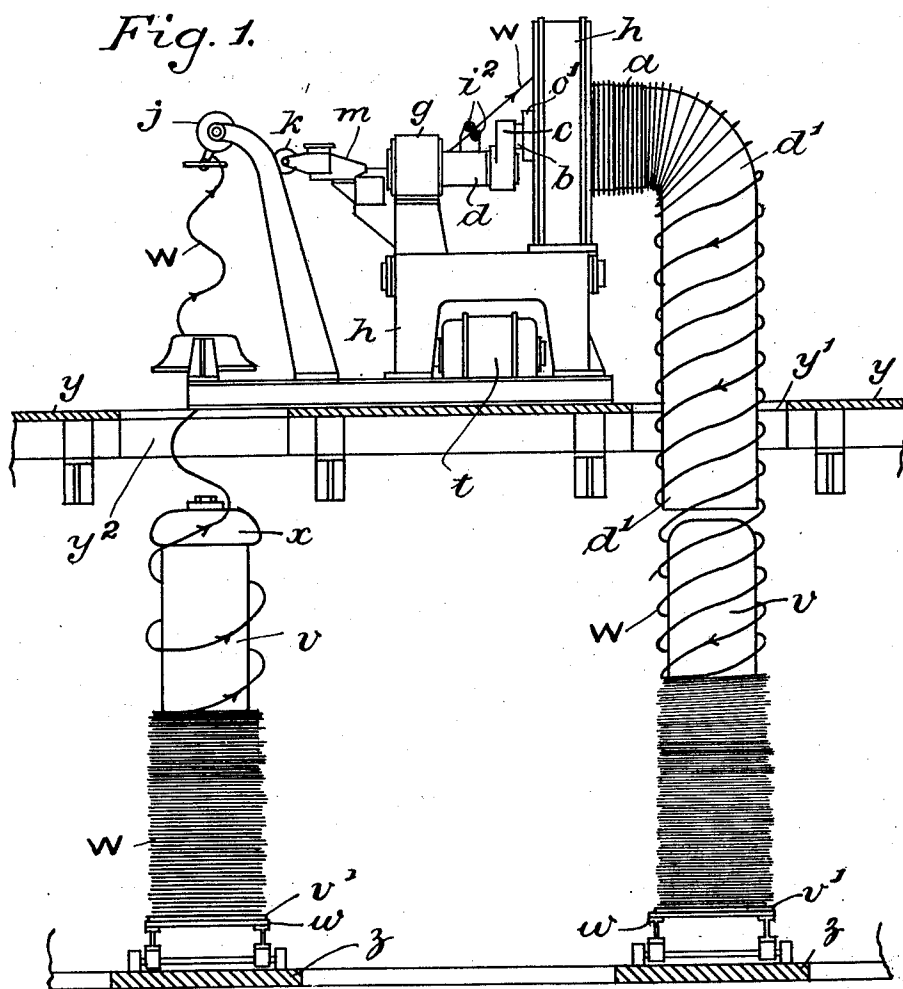
C. A. BARRON ET AL

2,127,989

WIRE DRAWING MACHINE

Filed Feb. 16, 1937

3 Sheets-Sheet 1



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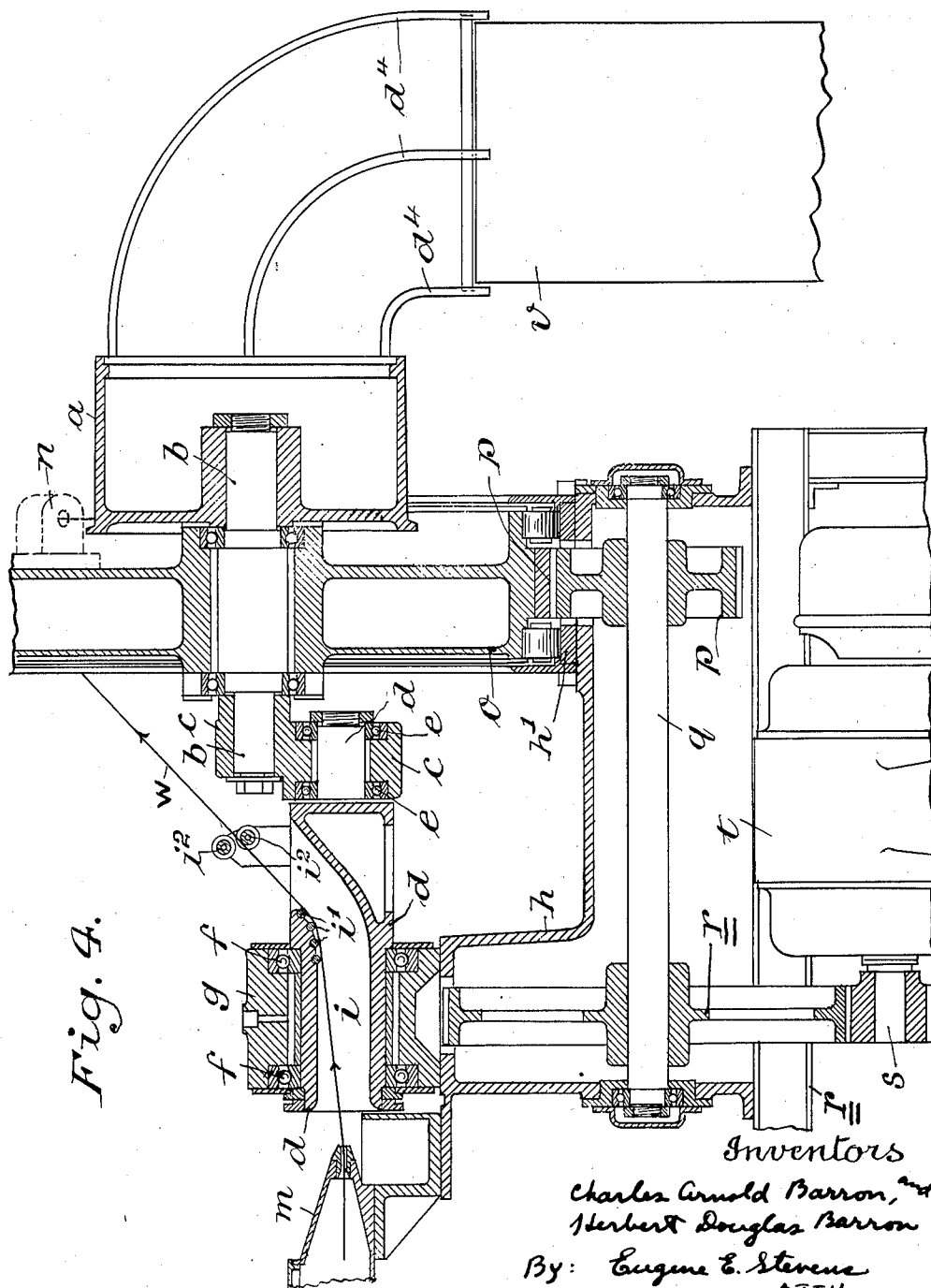
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Fig. 5.

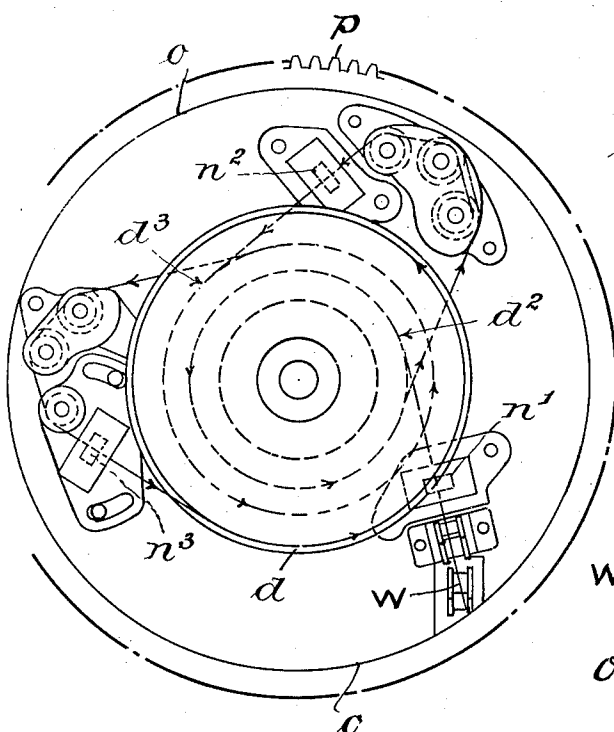
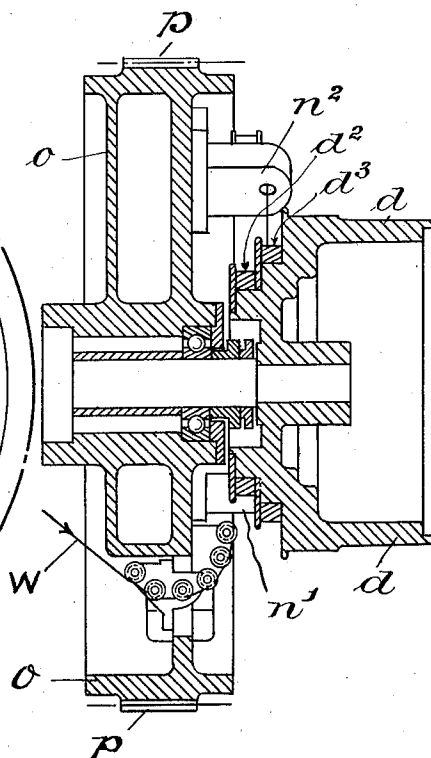


Fig. 6.



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UNITED STATES PATENT OFFICE

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WIRE-DRAWING MACHINE

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Barron, Preston, EnglandApplication February 16, 1937, Serial No. 126,097
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11 Claims. (Cl. 205—16)

The invention relates to wire-drawing machines and particularly to that type of machine in which the drawing is effected by traversing a die-holder about a stationary receiving drum.

5 An object of the invention is to provide an improved construction of machine of the type referred to which will permit in a novel manner of the drawing operation being a truly continuous one.

10 A further object is to make provision for receiving drawn wire from the stationary drum.

A further object is to make provision for the employment of a plurality of dies so that at each rotation of the die-holder the wire is drawn two or more times.

15 Other objects will become apparent from the following description of the improved machine which will be given with the aid of the accompanying drawings.

20 In these drawings,

Fig. 1 is a side elevation of a machine according to the invention arranged for working in the preferred manner;

25 Figs. 2 and 3 are details showing, in elevation and end view respectively, means for driving positively the offset part or spindle employed in the machine and hereinafter referred to;

Fig. 4 is a sectional side elevation of the machine on an enlarged scale.

30 Fig. 5 is an end elevation; and

Fig. 6 a sectional side view illustrating a die-holder provided with a plurality of dies, in this instance three.

Referring to the drawings, *a* represents a stationary receiving drum mounted on a spindle *b*. This spindle *b* is connected by an arm or crank-block *c* with a spindle or part *d*, the axis of which is parallel to and appropriately offset from that of the spindle *b*.

40 The spindle or part *d* is supported at one end by bearings *e, e*, in the block *c*, and at the other end by bearings *f, f*, in a pedestal *g* supported on the machine frame *h*.

45 The offset part or spindle *d* has an axial bore *i* extending from its rear end and towards its front end this axial bore is as shown in Fig. 4 curved outwardly through the wall of the spindle. Guide pulleys *j* are provided at the outlet end of the bore *i* for the wire to run over.

50 The wire *W* to be drawn is led over guide pulleys *j* and *k*, through a soap box *m*, through the bore *i* and through guide pulleys *i², i²*, carried by spindle *d* to the die holder *n* which is carried by a member *o* rotatably mounted on the stationary drum spindle *b* and shown as being driven by

gears *p, p*, shaft *q* and gears *r, r*, from the shaft *s* of a motor *t*. A housing *h'* supported on the machine frame serves to support and locate the member *o*.

5 The effect of the arrangement described is that, owing to the cranked or offset position of the spindle or part *d* through the bore of which the wire is led in, the spindle *b* of the receiving drum *a* is held stationary whilst the spindle *d* itself can rotate, with the result that the wire as it travels to the die-holder is carried in a circular path about and clear of the drum spindle *b* and of the boss *o'* of the die-holding plate or member *o* which is mounted rotatably on spindle *b*.

10 If the wire being drawn is of heavy gauge, the rotary traverse motion of the die about the drum *a* and the consequent wrapping of the drawn wire on to the drum will effect, without any special driving means, the rotation of the spindle or part *d*. If the wire is of light gauge it is necessary to provide means to drive the spindle *d* in synchronism with the die holding member *o*. This, as shown in Figs. 2 and 3, can conveniently be done by providing on the boss *o'* a gear *u* and meshing said gear with a pinion *u'* on a spindle *u²* journaled in a boss *u³* integral with or carried by the crank block *c*. The spindle *u²* carries a pinion *u⁴* which meshes with a gear *u⁵* fast on the spindle *d*.

15 As the wire is wrapped about the receiving drum *a* by the rotary movement of the die holder it pushes forward along the drum the previously-formed coils. The front end of the drum is fashioned or provided with a nose *d'* which is bent to a suitable radius and has its extremity pointing vertically downwards, see Figs. 1 and 4. The coils of drawn wire, as they are pushed along the drum pass, as shown in Fig. 1, around the bend of the nose and drop down on to a vertical receiving member *v* disposed below and in axial alignment with the vertical extremity of the nose. The member *v* comprises a hollow spindle of suitable diameter having at its lower end a plate or flange *v'*. The member *v* is shown as being 20 mounted upon a wheeled truck *w*. Conveniently the truck may accommodate two or more of such members *w* side by side and suitably spaced apart.

25 When a sufficient quantity of drawn wire has assembled on the receiving member *v*, the wire is severed adjacent the nose and the running end secured temporarily to the nose.

30 The truck *w* can then be shifted to present an empty receiving member *v* below the nose and the coils of wire which have accumulated on the ver-

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tical part of the nose can then be allowed to drop down on to the new receiving member.

To secure the drawn wire on a receiving member the latter may have detachably secured to its upper end a domed cap member *x*, thus converting the said member in effect into a double-ended bobbin. A truck carrying a full member or members *v* can be positioned beneath the guide pulley *j* of another machine, in the manner shown for instance in Fig. 1, for a further drawing operation or operations.

Fig. 1 shows how the improved machine may be employed to the best advantage. It can be supported on an upper floor *y* of a building, and the trucks *w* which carry the receiving members *v* be arranged to run on a lower floor *z*. The vertical depending extremity of the nose *d'* may extend down through an opening *y'* in the upper floor as shown, to deliver the coils of drawn wire on to a receiving member in the lower room. The wire to be drawn can pass up through an opening *y''* in the upper floor. Thus a battery of wire-drawing machines can be located in an upper room and a lower room or basement constitute a wire store or warehouse.

Instead of providing only a single die, a plurality of dies may be mounted on the die-carrying member *o*, see Figs. 5 and 6. The wire *w* is led in through a die *n'* and on to a step *d''* on the drum *d*. From this step it is led through a second die *n''* on to a second step *d'''* on the drum. From the step *d'''* it is led through a third die *n'''* and from thence on to the periphery of the drum. Only two, or more than three dies may be provided, with a corresponding number of steps on the drum. Provision may be made for cooling any die or dies employed, by forming each die holder with a passage arranged in communication with a passage in the member *o*, such latter passage being in communication with a cooling liquid circulating system.

Whilst it is convenient to lead in the wire through a bore in the spindle *d* as shown it is not necessary to do so. The essential thing is that the wire must pass through or be acted upon by a guide or part carried by and suitably distant radially from the axis of the spindle *d*.

In Fig. 4 the nose of the drum *d* instead of being solid or rather tubular as in Fig. 1, is of skeleton form and constituted by curved fingers or prongs *d''* extending from the front end of the drum, the said fingers or prongs being of course suitably spaced apart around the periphery of the drum end.

It will be seen from the foregoing that we have provided wire-drawing plant which, for the first time in the wire-drawing art can correctly be described as continuous in its operation, since not only does it provide for continuity in the actual drawing of the wire, but it solves the problem of dealing with the drawn wire without which, of course the continuity of drawing would be a useless step. In all wire drawing machines hitherto constructed it has been necessary either to load the machine with a length of wire before commencing the drawing operation or it has been necessary to stop the machine at intervals in order to remove the drawn wire. With our machine, a stoppage only becomes necessary when the die or dies employed call for renewal.

The invention not only reduces to a minimum the cost of drawing wire but, owing to the long lengths of drawn wire it is possible to obtain, the cost of after-treatment of the wire is considerably reduced.

Where after-treatment of the wire by tinning, galvanizing or other processes is required the wire, as it leaves the receiving drum, may pass directly to plant for the carrying out of such process or processes instead of being allowed to accumulate in the form of coils on a receiving member, the bent nose of the drum being omitted if not required.

The actual details of construction and arrangement of the parts employed in carrying out the invention may vary from the particular embodiment illustrated and described within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a wire drawing machine, a stationary receiving drum, wire drawing means, means for traversing said drawing means in a circular path about said drum, a spindle on which the drum is mounted and means for holding said spindle stationary, an arm fast on said spindle, a rotatable spindle having its axis offset from that of the stationary spindle and its end journaled in the arm fast on the stationary spindle, and a guide carried by and offset radially from the axis of the rotatable spindle, by which guide the wire to be drawn is engaged on its way to the drawing means.

2. In a wire-drawing machine according to claim 1 a die-carrying member provided with a plurality of dies through which the wire is passed in succession, and a stationary receiving drum having a series of steps of gradually increasing diameters on to which the wire passes in succession from the several dies.

3. A wire-drawing machine comprising a die-carrying member and means for supporting rotatably and for driving the same, a stationary spindle passing axially and loosely through said die-carrying member, a wire-receiving drum fast on one end of said stationary spindle, an arm fast on the other end of said stationary spindle and having an opening in which is journaled one end of a hollow spindle having an opening in its wall, the axis of which hollow spindle is parallel to but offset from that of the stationary spindle, and means for supporting rotatably said hollow spindle.

4. A wire-drawing machine according to claim 3 having means for driving the hollow spindle in synchronism with the die-carrying member.

5. A wire-drawing machine according to claim 1 wherein the wire is wrapped by the traversing of the wire drawing means about one end of the receiving drum, the opposite end of said drum having a curved nose terminating in a downwardly-extending vertical extremity.

6. A wire-drawing machine according to claim 1 wherein the wire is wrapped by the traversing of the wire-drawing means, about one end of the receiving drum, the opposite end of said drum having a curved nose terminating in a downwardly-extending vertical extremity and a removable wire-receiving member being disposed vertically beneath and in alignment with the vertically depending extremity of the nose of the stationary drum.

7. A wire-drawing machine according to claim 3 wherein the wire is wrapped, by the rotation of the die-carrying member, about one end of the stationary wire-receiving drum the opposite end of said drum having a curved nose terminating in a downwardly-extending vertical extremity.

8. A wire-drawing machine according to claim 7

3 wherein the wire is wrapped, by the rotation of the die-carrying member, about one end of the stationary wire-receiving drum, the opposite end of said drum having a curved nose terminating in a downwardly-extending vertical extremity and a removable wire-receiving member being disposed vertically beneath and in alignment with the vertically depending extremity of the nose of the stationary drum.

10 9. A wire-drawing machine according to claim 1 wherein the wire is wrapped by the traversing of the wire-drawing means, about one end of the receiving drum, the opposite end of said drum having a curved nose terminating in a downwardly extending vertical extremity and a wire-receiving member supported on a wheeled truck being positioned beneath and in alignment with the vertically depending extremity of the nose of the stationary drum.

10. A wire-drawing machine according to claim 3 wherein the wire is wrapped by the rotation of the die-carrying member, about one end of the stationary wire-receiving drum the opposite end of said drum having a curved nose terminating in a downwardly extending extremity and a wire-receiving member supported on a wheeled truck being positioned beneath and in alignment with the vertically depending extremity of the nose of the stationary drum.

11. In a wire-drawing machine according to claim 3, said die-carrying member having a plurality of dies through which the wire is passed in succession, and said stationary receiving drum having a series of steps of gradually increasing diameters onto which the wire passes in succession from the several dies.

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