H. A. MARVIN.

WIRE DRAWING MACHINE.

APPLICATION FILED MAY 4, 1915.

1,178,331.

Patented Apr. 4, 1916.

3 SHEETS—SHEET 1.

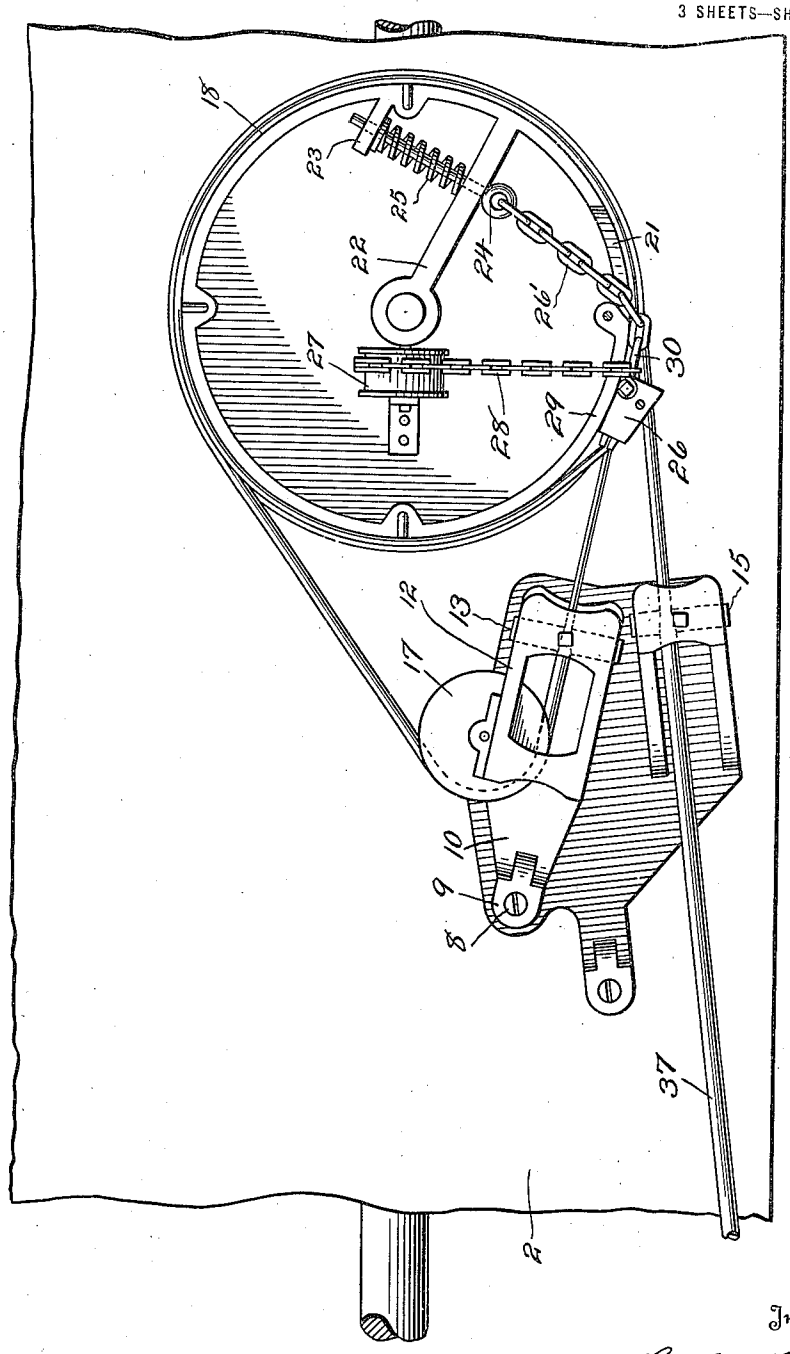


Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

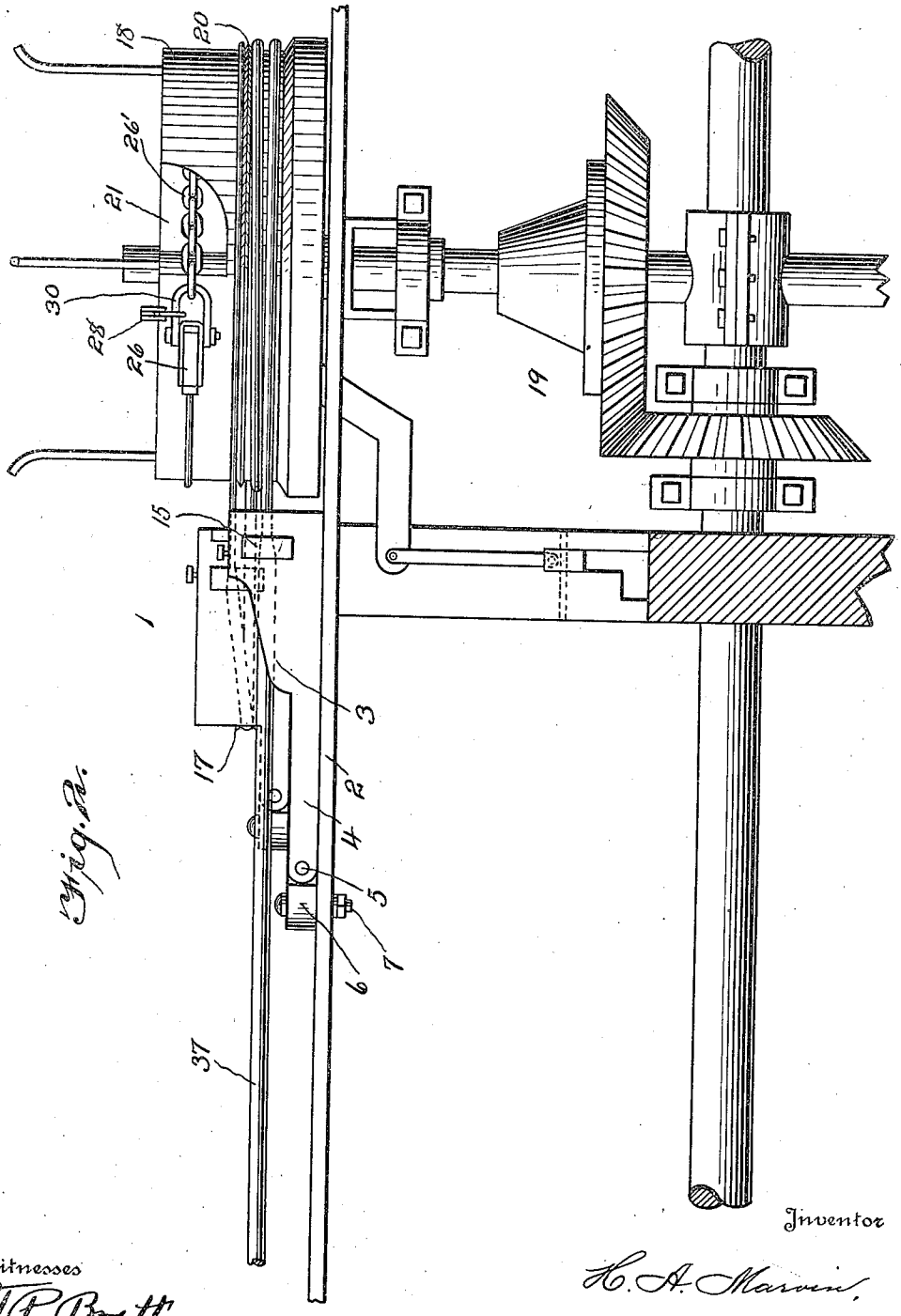


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 4.

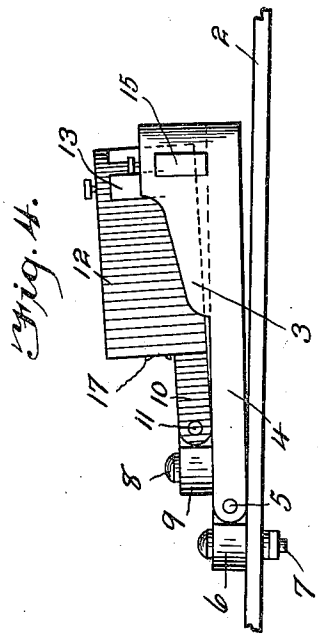


Fig. 8.

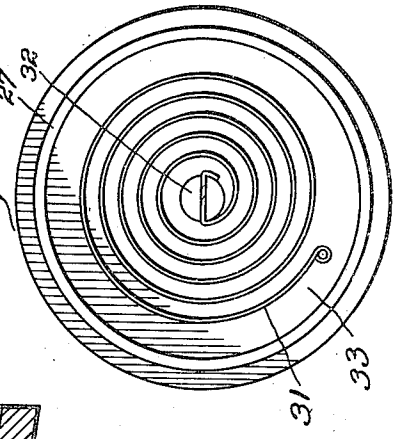


Fig. 6.

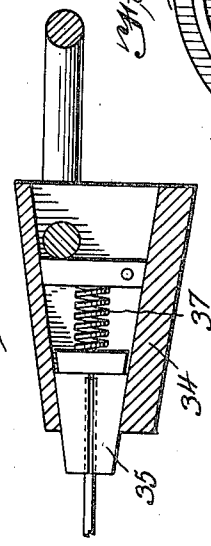


Fig. 7.

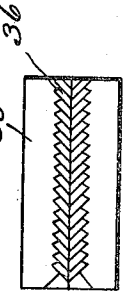


Fig. 3.

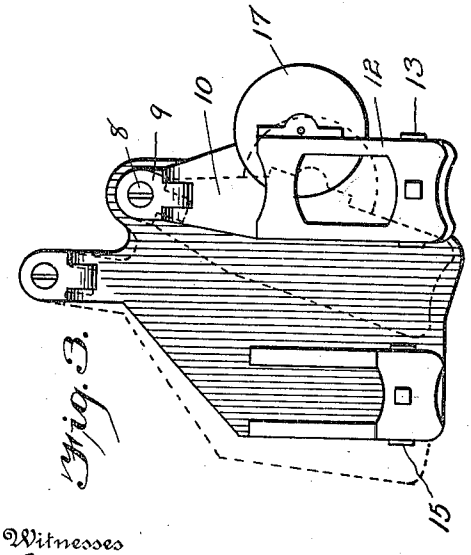
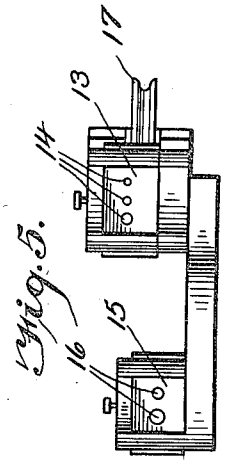


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY A. MARVIN, OF CHICAGO, ILLINOIS.

WIRE-DRAWING MACHINE.

1,178,331. Specification of Letters Patent. Patented Apr. 4, 1916.

Application filed May 4, 1915. Serial No. 25,795.

To all whom it may concern:

Be it known that I, HARRY A. MARVIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wire-Drawing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to wire drawing machines and has for its object to provide an improved device of this class wherein two or more drafts can be given to the wire at each handling thereof, and wherein provision is made for resiliently holding the wire when starting the rotation of the wire drawing block.

The invention therefore consists in the novel construction of the multiple die box and in the novel construction of the wire drawing block and its arrangement of parts, all of which will be first fully described and afterward specifically pointed out in the appended claims.

The invention further consists in the construction for drawing the first draft of the wire on the lower portion of the block below the head thereon, and threading the wire through the second die, regripping the wire and then drawing both drafts on the block.

Referring to the accompanying drawings—Figure 1 is a plan view of a wire drawing machine constructed in accordance with this invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the multiple die. Fig. 4 is a side elevation of the same. Fig. 5 is a front elevation of the same. Fig. 6 is a vertical longitudinal sectional view through the wire grip. Fig. 7 is a plan view of one of the jaws of the wire grip, and Fig. 8 is an elevation of the spring windlass with one of its side plates removed.

Like numerals of reference indicate the same parts throughout the several figures, in which—

1 indicates the wire drawing machine which is mounted on a table 2.

3 indicates the multiple wire drawing die box which comprises the base 4 horizontally pivoted at 5 to the member 6 which is vertically pivoted to the table 2 at 7. It will thus be understood from reference to Figs. 3 and 4 that the die box 3 can swing horizontally on the pivot 7, and vertically on the pivot 5 so as to absolutely conform to the direction of the wire passing through the dies to prevent any horizontal or vertical bending strains from being imparted to the wire as it passes through the die.

Pivoted on the base 4 of the die box 3 at 8 is a member 9 to which a base 10 is horizontally pivoted at 11 by means of which construction the base can swing horizontally on the pivot 8 or vertically on the pivot 11 independent of the movement or position of the base 4, in the manner as is shown in dotted lines in Fig. 3 and in full lines in Fig. 4. Any number of these double pivoted bases 10 can be applied to the main die box 4 according to the number of drafts desired to be given to the wire, each base 10 carrying a die box 12 accommodating a wire drawing die 13 which is provided with varying size openings 14 so that different size wire can be handled by each of the dies 13.

The main die box 3 carries a die 15 which is provided with different size openings 16, the size of the openings decreasing in the succeeding dies 13 so that the wire is decreased in gage at each draft thereof.

Mounted on the base 10 and movable therewith is a grooved pulley 17 over which the wire passes to the die 13, in the manner as shown in Fig. 1. It will be of course understood that in duplicating these double pivoted bases 10 on the main base 4, each of said bases 10 would be equipped with a grooved pulley 17 according to the number of drafts to be given the wire.

18 indicates the wire drawing block having separate wire drawing surfaces the diameters of which are equal or substantially so, which is driven in any suitable manner as for instance by the shafts and gearing indicated at 19 in Fig. 2. The said wire drawing block 18 as shown in Fig. 2 is provided with an annular bead 20, it being understood that a separate bead 20 is provided for each draft to be imparted to the wire. The block 18 is provided with a cut-away portion 21 and in the interior thereof with a radial wall 22 and a guiding lug 23 through which wall 22 and guiding lug 23 an eye-pin 24 passes in the manner as shown in Fig. 1, a coil spring 25 being arranged on

the pin 24 and between the wall 22 and lug 23. To this eye-pin 24 is connected the grip chain 26′ to the end of which is shackled the wire grip 26.

Mounted within the block 18 is a spring reel 27 to which is secured a chain 28 which passes over the top edge 29 of the block 18, and is then secured to the shackle 30 of the wire grip 26, the said spring reel 27 being provided internally with a spiral spring 31 having its inner end connected to the stationary shaft 32 of the reel and its outer end connected to the casing 33 of the reel in the manner as shown in Fig. 8, the parts being arranged in such manner that the normal tendency of the reel 27 is to wind up the chain 28.

34 indicates the wire grips which are provided with the jaws 35 serrated at 36 which are actuated by the soil spring 37 in the manner as shown in Fig. 6.

Having thus described the several parts of this invention its operation is as follows—The rod 37 being conveniently arranged on a spool or the like (not shown) passes to the die 15 in the main die box 3 and from the die 15 to the block 18 on the surface thereof below the annular bead 20. The wire encircles the block three or four times and passes therefrom to the grooved pulley 17 on the double pivoted base 10, and from said pulley 17 the wire passes through the die 13 to the block 18 in the manner as shown in Figs. 1 and 2. From this construction it will be seen that when the wire is passed through the second die 13 and regripped both drafts are drawn on the block at one time. As the wire of the first draw is coarser than that of the second draw, and consequently draws faster, the said faster drawn wire on the lower portion of the block loosens thereon until the tension on the two drafts is equal and the drawing continues. The wire being gripped in the grip 26 and the block being initially started, a sudden strain is not imparted to the wire tending to break the same, for the reason that the grip chain 26 being resiliently connected by means of the eye-pin 24 and a coil spring 25, but a resilient draft is imparted to the wire so that the wire is resiliently or gradually drawn through the die upon initial rotation of the block 18. As the wire is being wound upon the block 18 the spring reel 27 which takes up the chain 28 causes said chain to raise the wire grip 26 to the top of the block 18 so as to hold the same out of the way of the wire passing on to the block 18 so as to facilitate the operation of the device.

From the foregoing description taken in connection with the accompanying drawings it will be seen that the double pivoted construction of the base of the main wire drawing die and the double pivoted construction of the base of the succeeding wire drawing die permits a free horizontal and vertical movement of the bases and dies independently one of the other, so that the dies are at all times maintained directly in the line of draft on the wire irrespective of the number of drafts provided for, while it will be seen that my construction of the block 18 and its parts prevents the usual tendency of the wire to break upon the initial rotation of the said block, and further provides for the raising of the wire grip out of the path of the wire to the block 18.

Having thus fully described the invention it is of course apparent that the same is susceptible to immaterial changes and modifications, and I consider myself clearly entitled to all such changes and modifications as fall within the limit and scope of the appending claims.

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

1. A wire drawing machine, including a horizontally and vertically pivoted die box, a die therein, a second horizontally and vertically pivoted die box carried by said first mentioned die box, a smaller die for said last mentioned die box and a wire drawing block including two separate surfaces for receiving the wire from said dies, the circumferences of said separate surfaces being equal to provide for a loosening of the faster drawn wire from said first mentioned die on the wire drawing block until the tension of the two drafts is equal, substantially as described.

2. A wire drawing machine, including a horizontally and vertically pivoted die box, a die therein, a second horizontally and vertically pivoted die box carried by said first mentioned die box, a die for said last mentioned die box, and a vertically disposed wire drawing block having a lower portion to receive the wire from said first mentioned die and an upper portion to receive the wire from said second mentioned die, the circumferences of said two portions being equal, the whole arranged in such manner that the faster drawn wire from said first mentioned die loosens on the said lower portion of the said wire drawing block until the tension of the two drafts is equal, substantially as described.

3. A wire drawing machine, including a horizontally and vertically pivoted die box, a die therein, a second horizontally and vertically pivoted die box carried by said first mentioned die box, a die for said last mentioned die box, said last mentioned die having a wire drawing aperture therein smaller than that of the first mentioned die, so that the wire drawn from said first mentioned die is coarser than that drawn from the second mentioned die and draws faster, a wire drawing block having a lower portion for receiving the coarser drawn wire from the

first mentioned die and an upper portion for receiving the finer drawn wire from the second mentioned die, the circumferences of the said two portions of the said wire drawing block being equal so that the coarser drawn wire from the first mentioned die will loosen on the said lower portion of the said wire drawing block until the tension of the two drafts is equal, substantially as described.

4. A wire drawing machine, including a die box and a die, a second die box and a die in combination with said first mentioned die box and die, the die of said second mentioned die box having therein a wire drawing aperture smaller than that of the die of the first mentioned die box, so that wire drawn from said first mentioned die is coarser than that drawn from said second mentioned die and draws faster, a wire drawing block having two portions, one of which receives the faster drawn wire from the first mentioned die, the other of which receives wire drawn from said second mentioned die, the circumferences of the said two portions of the wire drawing block being equal so that the said faster drawn wire from the first mentioned die will loosen on its portion of the wire drawing block until the tension of the two drafts is equal, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

HARRY A. MARVIN.

Witnesses:
HENRY S. CULVER,
STANLEY L. WILKINSON.