E. H. CARROLL.

WIRE DRAWING MACHINE.

APPLICATION FILED JULY 11, 1906.

1,000,492. Patented Aug. 15, 1911.

Fig. 1.

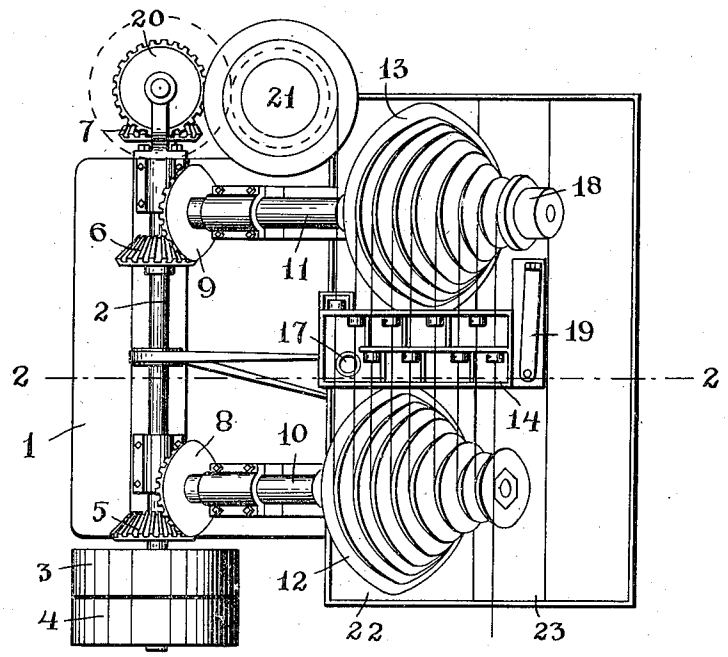
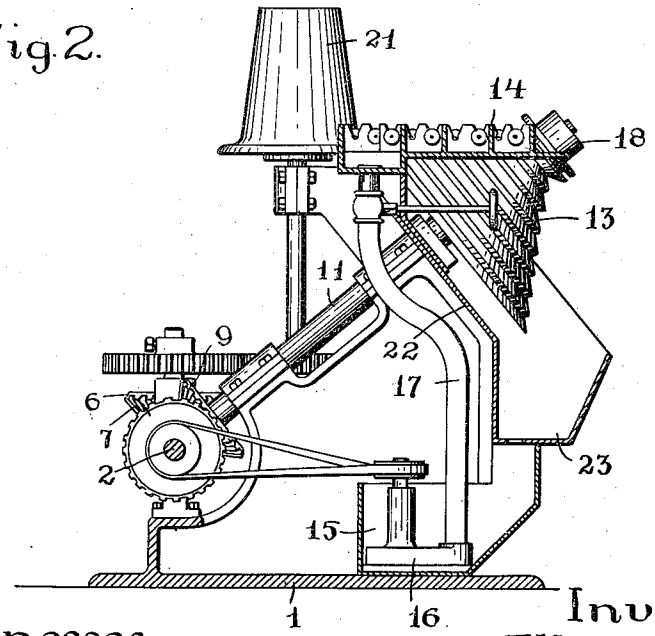


Fig. 2.



Witnesses

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ELBERT H. CARROLL, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO MORGAN CONSTRUCTION COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WIRE-DRAWING MACHINE.

1,000,492. Specification of Letters Patent. Patented Aug. 15, 1911.

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To all whom it may concern:

Be it known that I, ELBERT H. CARROLL, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Wire-Drawing Machines, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 is a top view of a wire drawing machine embodying my invention, and Fig. 2 is a sectional view on line 2—2, Fig. 1.

Similar reference letters and figures refer to similar parts in the different views.

My invention relates to an improvement in that class of wire drawing machines in which the wire is drawn through several successive dies in a continuous operation, and it consists in the construction and arrangement of parts as hereinafter described and pointed out in the annexed claims.

Referring to the accompanying drawings 1 denotes the framework of the machine in which is journaled a horizontal driving shaft 2, provided with tight and loose pulleys 3, 4, and having bevel gears 5, 6 and 7 attached to the shaft 2. Engaging the bevel gears 5 and 6 are bevel gears 8 and 9 held on inclined shafts 10 and 11 journaled in the framework of the machine. The shafts 10 and 11 carry conical wire drawing capstans 12 and 13 which are supported at a separate horizontal plane from the plane of the horizontal driving shaft 2 and are provided with the usual V-shaped circumferential grooves.

Supported on the framework of the machine between the capstans 12 and 13 is the usual die box 14 provided with the customary dies placed in alinement with the circumferential grooves, in the usual manner. The inclination of the shafts 10 and 11 is of such a degree that the tapering sides of the capstans stand approximately in horizontal and vertical planes and the bottom of the die box 14 is therefore horizontal to correspond with the horizontal surface of the capstans 12 and 13. The die box 14 is also supplied with a lubricating liquid from a trough 15 below the capstans 12 and 13 by means of a pump 16 which forces the liquid through the pipe 17 into the die box 14, the overflow from which is received in the trough 15. The capstan 13 is provided with a drawing block 18 and the usual swinging die holding bar 19 to assist in reducing the end of the wire in diameter when it is strung upon the capstans. The bevel gear 7 engages a gear 20 by means of which the wire drawing block 21 is driven.

The operation of stringing the wire upon the wire drawing capstans at the beginning of the operation of wire drawing is accomplished in the usual way, the end of the wire being pointed and passed through the largest of the dies placed on the swinging bar 19, and then wound upon the block 18. As the size of the wire is reduced it is wound upon the capstans 12 and 13 in the circumferential grooves and through the dies in the die box 14. The inclination of the shafts 10 and 11 by raising the capstans above the plane of the shaft 2, as has been described, brings the sides of the capstans into approximately horizontal and vertical planes, thereby greatly increasing the ease and rapidity of the winding by the operator over the former methods of winding in wire drawing machines of this class, in which the wire capstans are placed on horizontal shafts in the same plane as the driving shaft 2. By this former method the stringing of the capstans by the operator was a laborious and difficult matter, since considerable distance separated the largest grooves in the capstans from the outside of the machine. By my improved method of mounting the capstans on inclined shafts, I bring the lower side of the capstans approximately vertical at the front of the machine and within easy reach of the operator. I am also enabled to bring the upper surface approximately horizontal and I can therefore employ a die box whose bottom is horizontal, and the bottoms of each section in the same plane.

Beneath bases of the conical capstans 12 and 13 is an inclined apron 22 over which the overflow of the lubricating material from the die box 14 is conducted to the trough 15, through the trough 23. The inclination of the capstans causes the lubricating material to flow from the smaller ends toward the larger ends of the capstans and be delivered upon the apron 22, thereby preventing the overflow from interfering with the hands of the operator in stringing the capstans.

I claim:

1. In a wire drawing machine, the combination of a pair of conical wire drawing capstans having straight sides from the bot-

tom to the top with circumferential grooves, with the opposite sides substantially at an angle of ninety degrees to each other, and with the axes of said capstans inclined to bring the lower side vertical, thereby bringing all the grooves of the capstan at the front of the machine.

2. In a wire drawing machine, the combination with a pair of conical wire drawing capstans having straight sides from the bottom to the top with circumferential grooves, said capstans mounted to bring the upper side horizontal, of a die box between said capstans with its bottom horizontal, and means for driving said capstans, said capstans formed with the opposite sides substantially at an angle of ninety degrees to each other, whereby the lower sides of said capstans, mounted with the upper side horizontal, are approximately vertical, thereby bringing all the grooves of the capstan at the front of the machine.

3. In a wire drawing machine, the combination with the framework of the machine, of a pair of wire drawing capstans having circumferential grooves of gradually increasing diameter, with the smaller end of said capstans toward the front and with the upper side of said capstans in approximately the same horizontal plane, a die box supported on said framework between said capstans in a plane parallel with the plane of the upper side of said capstans, and means for driving the capstans.

4. In a wire drawing machine, the combination with the framework of the machine, of a pair of wire drawing capstans having circumferential grooves of gradually increasing diameter and the smaller end of said capstans toward the front, said capstans having their axes inclined to bring the lower side toward the front, but with said inclination arranged to bring the upper side of said capstans in approximately the same horizontal plane, a die box supported on said framework between said capstans in a plane corresponding to the upper side of said capstans, and means for driving said capstans.

5. In a wire drawing machine, the combination with a pair of conical wire drawing capstans with circumferential grooves, with said capstans arranged to bring the plane of the upper line of said grooves approximately the same and horizontal, of a die box in a corresponding horizontal plane, thereby allowing the flow of liquid in said die box toward the front, and means for driving said capstans.

6. In a wire drawing machine, the combination with the framework of the machine, of a pair of conical wire drawing capstans with circumferential grooves, mounted on inclined shafts, a die box supported on said framework between said capstans in one horizontal plane, with the plane of the upper side of said capstans arranged to correspond with the plane of said die box, thereby bringing the lower side of said capstans toward the front.

7. In a wire drawing machine, the combination with the framework of the machine, of a pair of conical wire drawing capstans with circumferential grooves, mounted on inclined shafts, a die box supported on said framework between said capstans in one horizontal plane, with the plane of the upper side of said capstans arranged to correspond with the plane of said die box, thereby bringing the lower side of said capstans toward the front, and an inclined apron below the bases of said capstans to receive the overflow of lubricating material from said die box.

Dated this sixth day of July 1906.

ELBERT H. CARROLL.

Witnesses:

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