

# UNITED STATES PATENT OFFICE

2,126,528

## APPARATUS FOR CONTINUOUS WIRE DRAWING

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Application March 9, 1937, Serial No. 129,799

2 Claims. (Cl. 242—80)

My invention relates to the drawing and the coiling of wire, more particularly to a device which provides a means for the easy removal of a finished coil of wire without the necessity of interrupting the progress of the wire or the stopping of the wire drawing machine, thereby saving the time so lost to production.

In the usual method of drawing wire, it is necessary to stop the wire drawing block to permit the removal of the finished coil of wire, causing an interruption in the production, for the time required for this removal. At the modern speeds of wire drawing, this loss of time will amount to fifty per cent or more of the total operating time for medium and coarse gages of wire drawing.

There is also a definite limit to the weight of the finished coil that may be drawn and the speed of drawing, the weight being limited by the capacity of the block, the speed being limited by the tangling of the wire due to centrifugal force at the upper part of the coil.

One of the objects of this invention is to produce a device that will eliminate these delays so that the wire drawing may be uninterrupted.

A further object of my invention is to produce a device that will be able to coil wire in any commercial sizes at a speed limited only by the characteristics of the metal being drawn and by the durability of the drawing dies and also to provide means to procure coils of any desired weight.

My invention comprises a plurality of coilers of the laying type, a shear, and means for directing the strand of wire into the shear and simultaneously transferring this wire from one coiler to another without interrupting the progress of the drawn wire. I may use in combination with the above, a set of pinch rolls for maintaining tension on the wire coming off the drawing block and to feed the end of the wire, after the wire has been severed by the shear, into the coilers.

I am aware that wire machines have been operated with a continuous wire drawing head in which the wire was laid on a stationary auxiliary block by means of a rotating arm. The principle of continuous heads of this type is such that they require mechanical construction that is inherently not suitable for drawing at modern speeds of wire drawing, and in addition, if the machine is made of practical dimensions at the speed required, the wire is subjected to bends around small pulleys, injuring the physical characteristics of the wire.

With that device there is constant liability of

the tangling of the coil unless an operator is constantly arranging the strands of wire as they are laid on the block, due to the wire being pushed along a stationary horizontal block by the pressure of the strand of wire against the fillet of the block.

My device is mechanically suitable for operation at the highest practical speed of drawing, permits the use of guide pulleys large enough to avoid injury to the physical characteristics of the wire, and is not subject to tangling.

The foregoing and other features of my invention will now be described in connection with the accompanying four sheets of drawings forming part of this specification in which I have represented my device in its preferred form, after which I shall point out in the claims those features which I believe to be new and of my own invention.

In the drawings:—

Figure 1 is a side elevation of my device, with the drive and drawing head of a wire drawing machine shown in dotted lines on the right side of the figure.

Figure 2 is a side elevation at right angles to that shown in Figure 1.

Figure 3 is a plan view showing the arrangement of my coil carriers and their relative movement.

Figure 4 is an elevation of a coil carrier in modified form.

Figure 5 is an enlarged detailed section along the line 5—5, Figure 2.

Figure 6 is an enlarged detailed section along the line 6—6, Figure 1.

Figure 7 is a detail of a revolution counter which I may employ.

Figure 8 is a part section of my transfer device along the line 8—8, Figure 6.

In the carrying out of my invention I utilize a capstan 11 of any commercial wire drawing machine 12 having a power shaft 13 and clutch 14 by means of which the capstan 11 may be stopped or revolved at will.

The finished drawn wire 20 is led around guide pulleys 21—22 of large diameters into a combined feed, shear and transfer device contained in the housing 23 and thence through the guide pipes 24 or 25 into their corresponding laying coiler 34 or 35.

The mechanism in the housing 23 and the coilers 34—35 are all driven synchronously with the wire drawing block 11 by means of the belts and pulleys 40, 41, 42, 43, 44, 45, as shown, or I may use an alternating current generator (not