

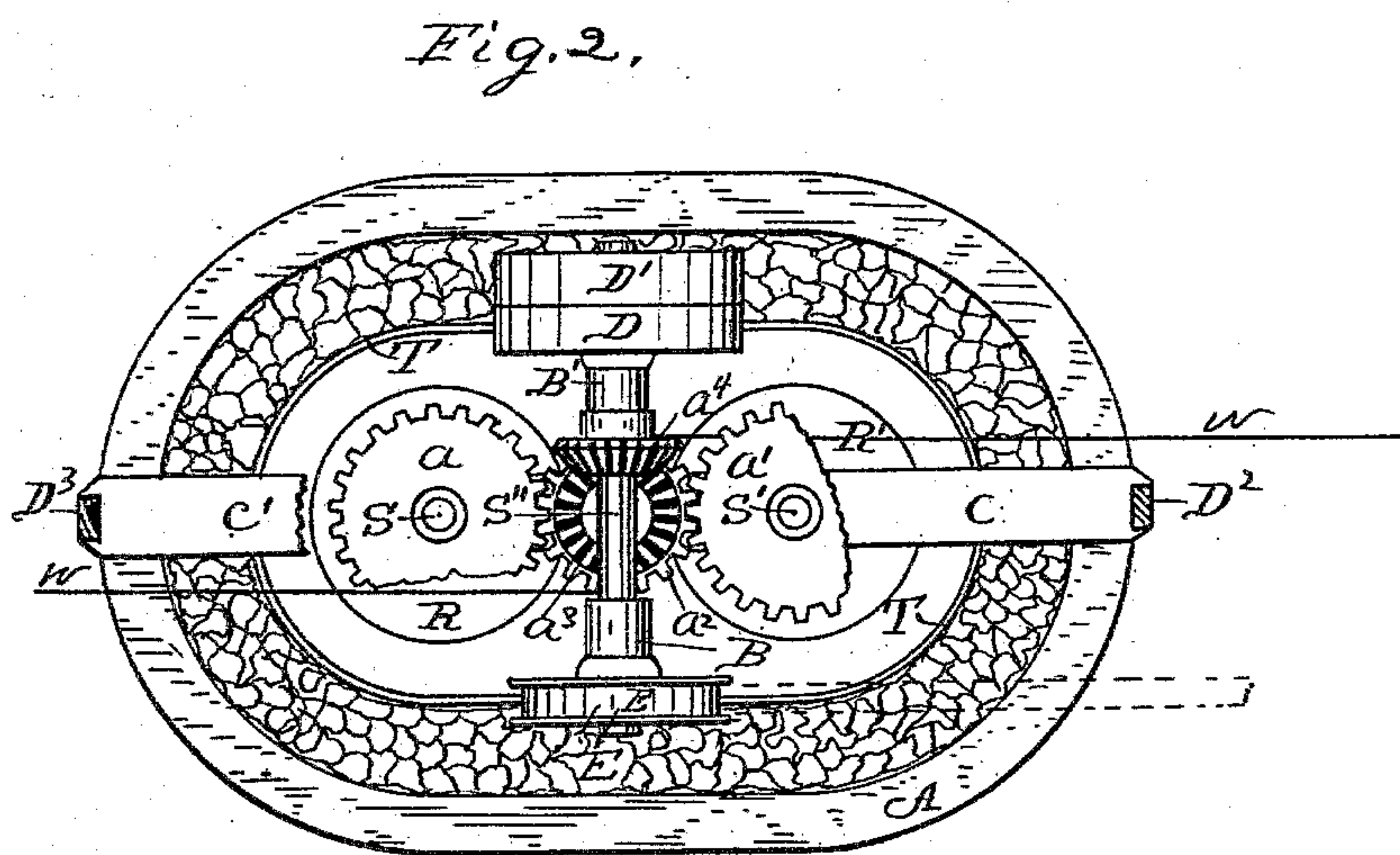
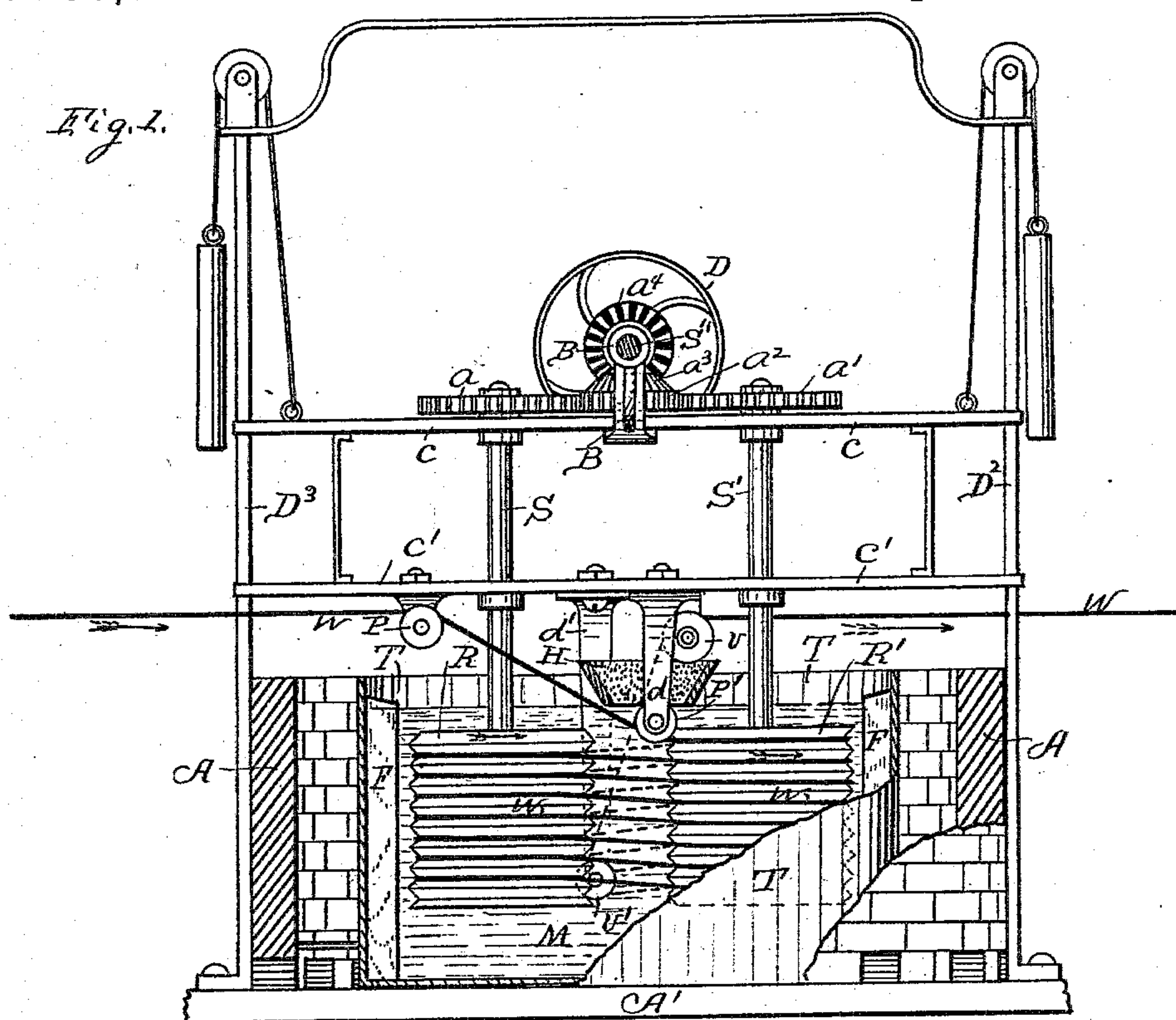
(No Model.)

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APPARATUS FOR GALVANIZING AND COATING WIRE.

No. 296,742.

Patented Apr. 15, 1884.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR GALVANIZING AND COATING WIRE.

SPECIFICATION forming part of Letters Patent No. 296,742, dated April 15, 1884.

Application filed October 29, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, BELVILLE A. GRANT, a citizen of the United States of America, residing at Lockport, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Apparatus for Galvanizing and Coating Wire, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation, having a portion of the furnace and vat broken away to view the interior; and Fig. 2, a plan view on the top.

This invention relates to certain improvements in an apparatus for galvanizing or coating wire, either with zinc or other material; and the improvements consist, principally, in the means employed for passing the wire through the molten zinc or other material, which I will fully explain in the following specification and claims.

Referring to the drawings, A represents an oval-shaped brick furnace, within which stands a similar-shaped vat, T, for holding the molten zinc. A space is left all around between the said furnace and vat for the fuel, which, for this purpose, is usually coke. The vat T contains a pair of drums, R and R', on the lower ends of the vertical shafts S and S', to which they are firmly keyed or fastened. These drums R and R' have their peripheries provided with a series of annular grooves, in which the wire *w* travels. The vertical shafts S and S' are properly boxed in the frame *c* and *c'*, in which they rotate by means of the pinions *a* and *a'*, firmly keyed thereto, and driven by the spur-pinion *a*<sup>2</sup>, located between them from the bevel-gear *a*<sup>3</sup> and *a*<sup>4</sup>, *a*<sup>3</sup> being integral with spur-pinion *a*<sup>2</sup>. The bevel-pinion *a*<sup>4</sup> is keyed to shaft S'', which rotates in the boxes B and B', attached to beam *c*. A fast and loose pulley, D and D', is attached to one end of said shaft, to the fast pulley D of which the power is applied to drive the drums R and R', while the other end of said shaft S'' is provided with the pulley E, which is for the purpose of operating a spool or reel to take up the wire *w* after it leaves the vat, and not necessary to be shown. The frame *c* and *c'* supports all the working parts of the device, and

is arranged to slide up and down between the ports D<sup>2</sup> D<sup>3</sup>, which guide it, and the weight of which frame and all its attachments is nearly counterbalanced by cords and weights, as shown in Fig. 1, to render it easy to elevate and lower the said frame *c c'* with its attachments.

P, P', *v*, and *v'* are sheave-wheels, supported by proper hangers from the frame *c'*, which pulleys or sheave-wheels are for the purpose of conducting the wire in and out of the vat, as shown. The inner sides of the vat T are provided with vertical flanges or ribs F F, for the purpose of preventing the molten metal M from rotating with the drums.

H is a hopper for holding sand, and so arranged that the wire *w* passes up through its bottom and up through the sand to clean it and free it from too much coating.

The manner of operating the device is as follows: The wire *w* to be galvanized or coated is caused to enter the vat T in the direction of the arrow, passing over sheave P; thence over sheave P'; thence around both of the drums R and R' in their annular grooves, as shown in Fig. 1; thence over sheaves *v* and *v'*, out of the vat, off to a spool or reel, (not necessary to be shown, but to be operated by the pulley E to take up the wire as fast as it passes off the drums.) The grooves in the drums prevent the wire, on its journey through the vat, from coming in contact with itself and sustaining it, so it will not all fall off the drums, and holds it apart, so it can be thoroughly galvanized. The drums are not intended to come in contact with the interior of the vat, but are intended to be entirely submerged in the molten galvanizing or coating material, as shown in Fig. 1. When power is applied to the band-wheel D, as stated, and rotary motion is given to the drums R and R', they draw the wire into and propel the wire through the molten metal until it finally has passed a long distance through the molten metal and emerges up through the sand-hopper H, over sheave *v*, and out to the take-up, which takes it as fast as the drums deliver it through the vat.

It has been usual heretofore, in order to so galvanize or coat the wire, to simply draw the wire once through the molten metal, in consequence of which the wire did not stay a suf-



ficient length of time in it to become thor-  
 oughly coated, while by this device the wire  
 is caused to travel a very long distance back  
 and forth, and from the top to the bottom, and  
 5 then from the bottom to the top of the molten  
 metal, which gives the wire the benefit of pass-  
 ing through all degrees of temperature of metal,  
 and also tends, by the movement of the wire  
 and the rotation of the drums, to keep the metal  
 10 evenly heated, so as to perform the best results.

This device may be used as well to paint the  
 wire as to galvanize it with zinc. In that case  
 of course the heat would be dispensed with,  
 and the vat filled with paint. The wire can  
 15 be caused to travel a greater or less distance  
 through the vat by simply diminishing or aug-  
 menting the number of its coils around the  
 drums. Fig. 1 represents the greatest amount  
 of wire that can be at one time in the vat as it  
 20 passes around the drums in each groove, which  
 are so arranged as to alternate with each other  
 with relation to each drum, so it is practicable  
 to conduct the wire from the top to the bottom  
 of the drums, as shown.

25 The object of arranging the drums R and  
 R' so they can be elevated out of the vat is to  
 render it easy to place the wire on, as shown,  
 while the drums are out of the molten metal,  
 and also to avoid leaving the drums and wire  
 30 in the vat and molten metal when the metal  
 is permitted to become cool or during stoppage  
 of the machinery.

By this process and by means of this device  
 a much better result can be obtained than by  
 35 any ordinary method in use, and a much thick-  
 er, smoother, and more durable coating given  
 the wire than has heretofore been done.

Any number of drums may be used, and  
 their grooves be as shown or spiral; or the  
 40 drums may be formed of a series of sheave-  
 wheels standing side by side, and the drums

may stand in any position in the vat that is  
 practicable. The other smaller sheave-wheels  
 for conducting the wire to and from the drums  
 may be substituted by shoes, if desired, and 45  
 the sand may be substituted by any material  
 that will answer the purpose.

Having thus described my invention, what  
 I claim as new, and desire to secure by Letters  
 Patent, is as follows, to wit: 50

1. The combination of the furnace A, vat  
 T, having the vertical projecting ribs or flanges  
 F F, vertical grooved drums R and R', shafts  
 S and S', sliding frame *c c'*, ports D<sup>2</sup> and D<sup>3</sup>,  
 pinions *a a' a''*, sheaves P and P', *v* and *v'*, 55  
 bevel-gear *a<sup>3</sup>* and *a<sup>4</sup>*, shaft S'', and pulleys D  
 and E, all adapted to operate as and for the  
 purpose set forth.

2. In a wire-galvanizing apparatus, the  
 grooved drums R and R', and the means where- 60  
 by said drums are rotated within the vat T in  
 the molten galvanizing metal M, to propel the  
 wire *w* through the galvanizing material, in  
 combination with the vat T, substantially as  
 set forth. 65

3. The combination of the vat T, having the  
 vertical ribs or flanges F, grooved drums R  
 and R', shafts S and S', sliding frame *c c'*, ports  
 D<sup>2</sup> D<sup>3</sup>, pinions *a a' a''*, and sheaves P, P', *v* and  
*v'*, as and for the purpose set forth. 70

4. In a wire-galvanizing apparatus, the com-  
 bination of the vat T, vertical grooved rollers  
 or drums R and R', adapted to rotate within  
 the vat T, and the means described for rotat-  
 ing and holding said drums in a vertical posi- 75  
 tion, as and for the purpose set forth.

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Witnesses:

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