

No. 649,783.

Patented May 15, 1900.

M. VON WATZESCH.
WIRE DRAWING MACHINE.

(Application filed Jan. 3, 1899.)

(No Model.)

Fig. 1.

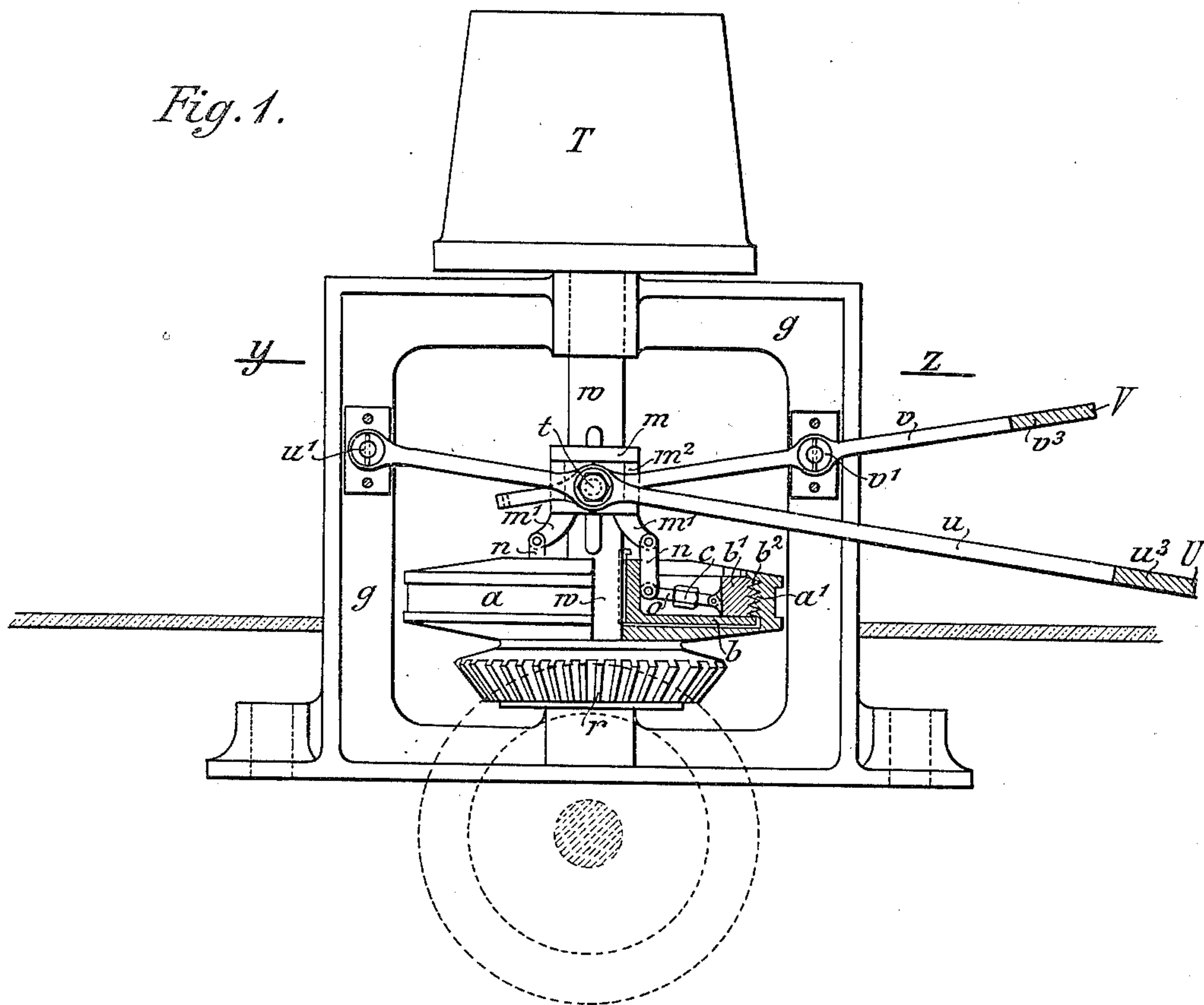
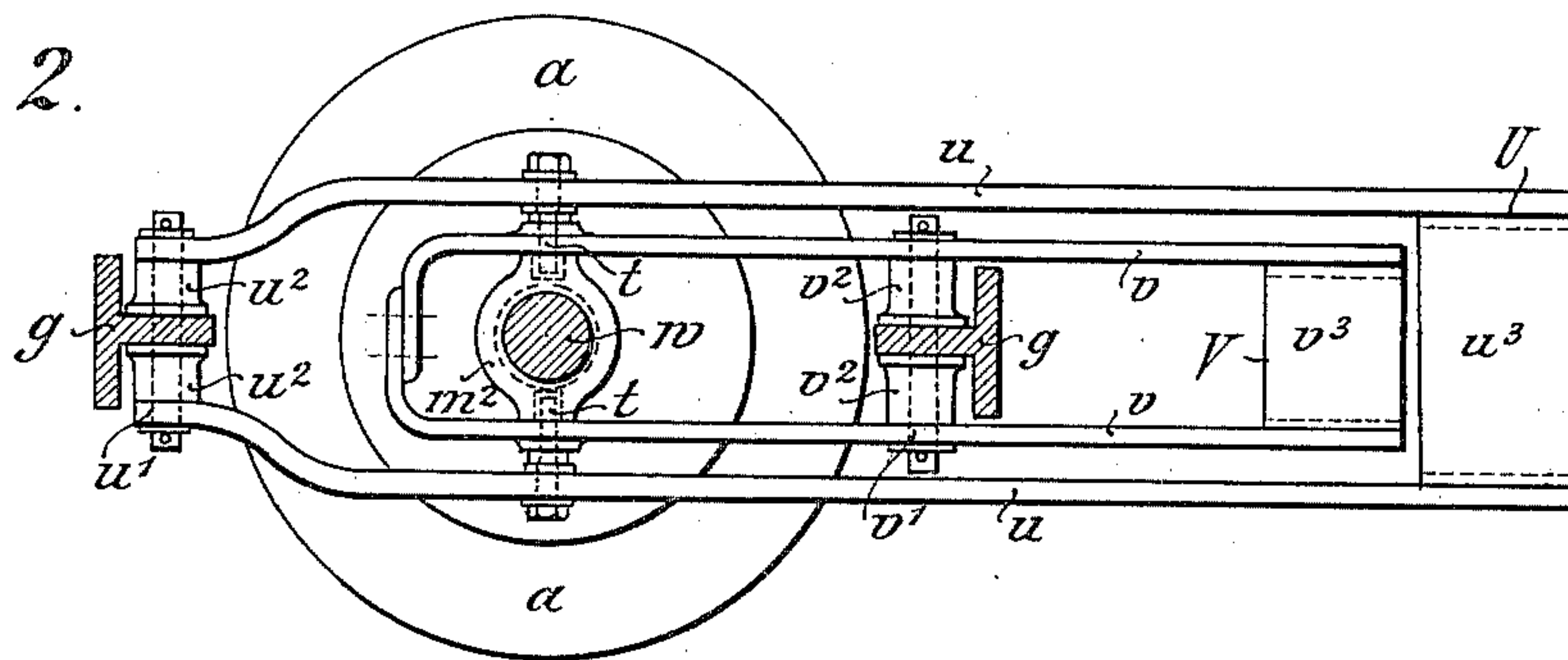


Fig. 2.



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MORITZ VON WATZESCH, OF OBERSCHÖNWEIDE, GERMANY, ASSIGNOR TO
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WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 649,783, dated May 15, 1900.

Application filed January 3, 1899. Serial No. 700,978. (No model.)

To all whom it may concern:

Be it known that I, MORITZ VON WATZESCH, a subject of the Emperor of Austria-Hungary, residing at Oberschönweide, near Berlin, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Wire-Drawing Machines, (for which Curt Weyhmann, of Berlin, has applied on my behalf for a patent in Germany on the 5th of October, 1898, and in Belgium, France, Great Britain and Ireland, Austria, and Hungary on the 6th of December, 1898,) of which the following is a specification.

My invention relates to improvements in wire-drawing machines in which a vertical shaft driven from some source transmits its revolution to the wire-drum above on which the wire drawn is to be wound; and the objects of my invention are, first, to provide for a friction-clutch between the driving-gear and the vertical shaft, so as to place the wire-drum entirely under the control of the operator; second, to provide for a lever mechanism to actuate the friction-clutch, and, third, to provide for a device for regulating said lever mechanism. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the apparatus, the friction-clutch being partly shown in section; and Fig. 2 is a horizontal section on the line yz in Fig. 1.

Similar letters refer to similar parts throughout the two views.

The vertical shaft w , carrying the wire-drum T , is pivoted in the frame g and is to be driven by the bevel gear-wheel r , mounted loosely upon it. The bevel gear-wheel r is driven from some source by means of the shaft and the bevel gear-wheel. (Indicated by the dotted lines.) Between the driving bevel gear-wheel r and the shaft w a friction-clutch is inserted, which consists in the friction-disk a , connected rigidly with the bevel-wheel r in the disk b , keyed upon the shaft w , and in several friction-jaws b' . The friction-disk a may have on its internal face annular ribs a' , and in a similar manner the friction-jaws b' may have ribs b^2 , corresponding with the recesses between the annular ribs a' . The friction-jaws b' are arranged in some known man-

ner to slide in radial directions between suitable guides provided on the disk b . On the shaft w a sleeve m is arranged to move up and down, while it is prevented from turning by suitable feathers. The sleeve m has projections or arms m' , which are connected with the friction-jaws b' by means of the rods o and the links n . The rods o are adjustable in their lengths, they being divided each into two halves, provided with right and left hand threads and provided with the nuts c , fitting thereon. The nuts c are so adjusted that the links n are caused to bear against the nave of the disk b while they are pressing the friction-jaws b' through the rods o against the rim of the friction-disk a in case the sleeve m is moved downward. Thereby the friction-clutch will be engaged to transmit the motion from the bevel-wheel r to the vertical shaft w for revolving the wire-drum T . If, on the contrary, the sleeve m is moved upward, the friction-clutch will be disengaged.

A lever V , preferably consisting in two side parts $v v$, connected at the ends and having its axle v' about in the middle, is pivoted at the frame g on the right side of the shaft w in suitable bearings $v^2 v^2$. Another lever U , preferably of a similar construction and having its axle u' at the one end, is pivoted at the frame g on the left side of the shaft w in suitable bearings $u^2 u^2$. The two side parts $u u$ of this lever U are so arranged as to leave free space for the first lever V . The lever U is connected with the sleeve m by the same pins $t t$ as the lever V . The consequence of this arrangement is that when the free end u^3 of the one lever U is lowered the free end v^3 of the other lever V will be raised, and vice versa.

For the sake of convenience in operating the apparatus the two levers U and V are preferably arranged as treadle-levers, their cross-pieces u^3 and v^3 at the free ends, respectively, serving as foot-steps. Then the operator need only press down upon either treadle for moving the sleeve m up or down. On pressing down the treadle U the operator may at his judgment exert more or less power, and thereby regulate the pressure between the friction-jaws b' and the friction-disk a , so that the friction between these parts is more

or less increased, and accordingly a larger or smaller amount of power is transmitted through the shaft *w* to the wire-drum *T*. The power transmitted may then be again decreased by pressing down more or less upon the other treadle *V*. Thus the friction-clutch is placed entirely under the control of the operator. This is an important advantage for the wire-drawing, which has hitherto not been obtained in such a highly-satisfactory manner. The known apparatus provided with a clutch-coupling—i. e., a clutch the two members of which have projections capable of engaging in recesses of the other member—is worthless because it is liable to break down and to other inconveniences, owing to the heavy shocks on throwing the clutch-coupling in and out of gear. Also the wire is very liable to breaking off or to undue strain and other damages. Another known apparatus which is provided with a disk (similar to the disk *a* in the accompanying drawings) surrounded by a brake-band, the two ends of which are connected with two levers of unequal length on an axle pivoted in a casing inclosing the whole, has been found to be unfit for the wire-drawing. The brake-band does not produce a uniform pressure between it and the disk, and hence this pressure cannot be regulated at pleasure or to a nicety according to the requirements of the wire-drawing. In all cases the speed of the wire-drum is limited and the wire-drawing is rendered difficult. My apparatus, on the contrary, is by its arrangement capable of attaining a larger speed, whereby the production of wire is in proportion increased. All shocks and all the inconveniences hitherto encountered in the wire-drawing are avoided by the new friction-clutch arrangement. The wire-drawing machine can be used for a variety of wire thicknesses and strengths. The operator will soon become accustomed to the management of the apparatus and know what pressure he should exert upon the treadles on starting and during the work for the drawing of a certain wire of any strength and description, so as to prevent the wire from being broken or damaged and to avoid undue pressure and needless sliding of the friction-clutch. From the position of the two treadles *U* and *V* the operator will know at a glance what power is being transmitted. The device for shortening and lengthening the rods *o* inside the friction-clutch will enable the operator to adjust the friction-clutch according to the wear and tear, also to the power to be transmitted. The treadle-levers *U* and *V* are preferably equilibrated, so that the sleeve *m* may remain in any position. If needful, counterweights may be placed on or connected with the treadle-levers in some known manner.

The apparatus shown and described may be modified as far as the constructive details are concerned. The ribs *a'* *b'* of the friction-disk *a* and the friction-jaws *b'*, respectively, may be replaced by smooth faces. The num-

ber of the friction-jaws *b'* may be chosen at pleasure. The driving gear-wheel *r* is shown as a bevel-wheel; but it may be a common gear-wheel or a pulley, and so on. In addition to the nut *c* counter-nuts may be provided on each rod *o*. The construction of the connection between the two levers *U V* and the sleeve *m* may be altered.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a wire-drawing machine, the combination with a friction-clutch on the wire-drum shaft, of a sleeve mounted movably on said shaft above said friction-clutch and connected with the latter by suitable means for engaging and disengaging the same, a first lever pivoted on the one side of said shaft, the one end of which engages in said sleeve and the other end of which is provided with a treadle to be pressed down for shifting said sleeve in the one direction, and a second lever pivoted on the other side of said shaft and consisting of two side parts, which surround said first lever leaving free space for same and engage in said sleeve, while the free ends are connected near the treadle of said first lever by a treadle to be pressed down for shifting said sleeve in the opposite direction, substantially as set forth.

2. In a wire-drawing machine, the combination with a friction-clutch for transmitting the power from the driving gear-wheel to the wire-drum shaft, of a sleeve mounted movably on said shaft for engaging and disengaging said friction-clutch, and two levers placed in the same vertical center plane and pivoted on opposite sides of said shaft and arranged to engage by the same pins in said sleeve, while their free ends are provided with treadles near each other, so that on pressing the one treadle downward the other treadle will move upward and vice versa, substantially as set forth.

3. In a wire-drawing machine, the combination with a friction-clutch for transmitting the power from the driving gear-wheel to the wire-drum shaft, of a sleeve mounted movably on said shaft for engaging and disengaging said friction-clutch, a first lever pivoted on the one side of said shaft, the one end of which engages in said sleeve by pins and the other end of which is provided with a treadle to be pressed down for shifting said sleeve in the one direction, and a second lever pivoted on the other side of said shaft and consisting of two side parts, which surround said first lever leaving free space for same and engage in said sleeve by the same said pins, their free ends being connected near the treadle of said first lever by a treadle to be pressed down for shifting said sleeve in the opposite direction, substantially as set forth.

4. In a wire-drawing machine, the combination with the frame and the drum-shaft, of gearing to impart movement to the shaft, a clutch through which said movement is transmitted, and two levers fulcrumed on the frame,

the fulera of the levers being at opposite sides of the shaft, and the levers having connection with the clutch and being extended laterally beyond the frame both in the same direction.

5 5. In a wire-drawing machine, the combination with the frame and the drum-shaft mounted therein, of gearing serving to impart movement to the shaft, a clutch through which said movement is transmitted, and two levers fulcrumed on the frame and extended laterally
10 beyond the frame both in the same direction, the fulera of the levers being at opposite sides of the shaft, and the levers having pivotal connection with the clutch to control the same,
15 the axis of which connection is common to both levers.

6. In a wire-drawing machine, the combination with the drum-shaft, of gearing serving to impart movement thereto, a clutch through
20 which such movement is transmitted, and two levers fulcrumed at opposite sides of the shaft and having connection with the clutch, to control the same, the levers being extended both in the same direction, and being approximately at the same level and each lever being
25 provided with a treadle, permitting an operator to stand with one foot on each treadle.

7. In a wire-drawing machine, the combination with the drum-shaft, of gearing serving to impart movement thereto, a clutch through
30 which such movement is transmitted, and two levers pivotally connected with the clutch, the axes of such connection being common to both levers, and the levers having separate and independent fulera, at approximately the
35 same level, whereby the movement of one lever causes an opposite movement of the other lever.

8. In a wire-drawing machine, the combination with a frame, of a drum-shaft mounted
40 intermediately therein, gearing for driving the shaft, a clutch through which the movement of the gearing is transmitted to the shaft, and two levers fulcrumed on the frame at opposite sides of the shaft, the fulera of the levers
45 being essentially in the same plane, and the levers having pivotal connection with a part of the clutch at a point common to both levers, the levers being extended from the frame both in the same direction.

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