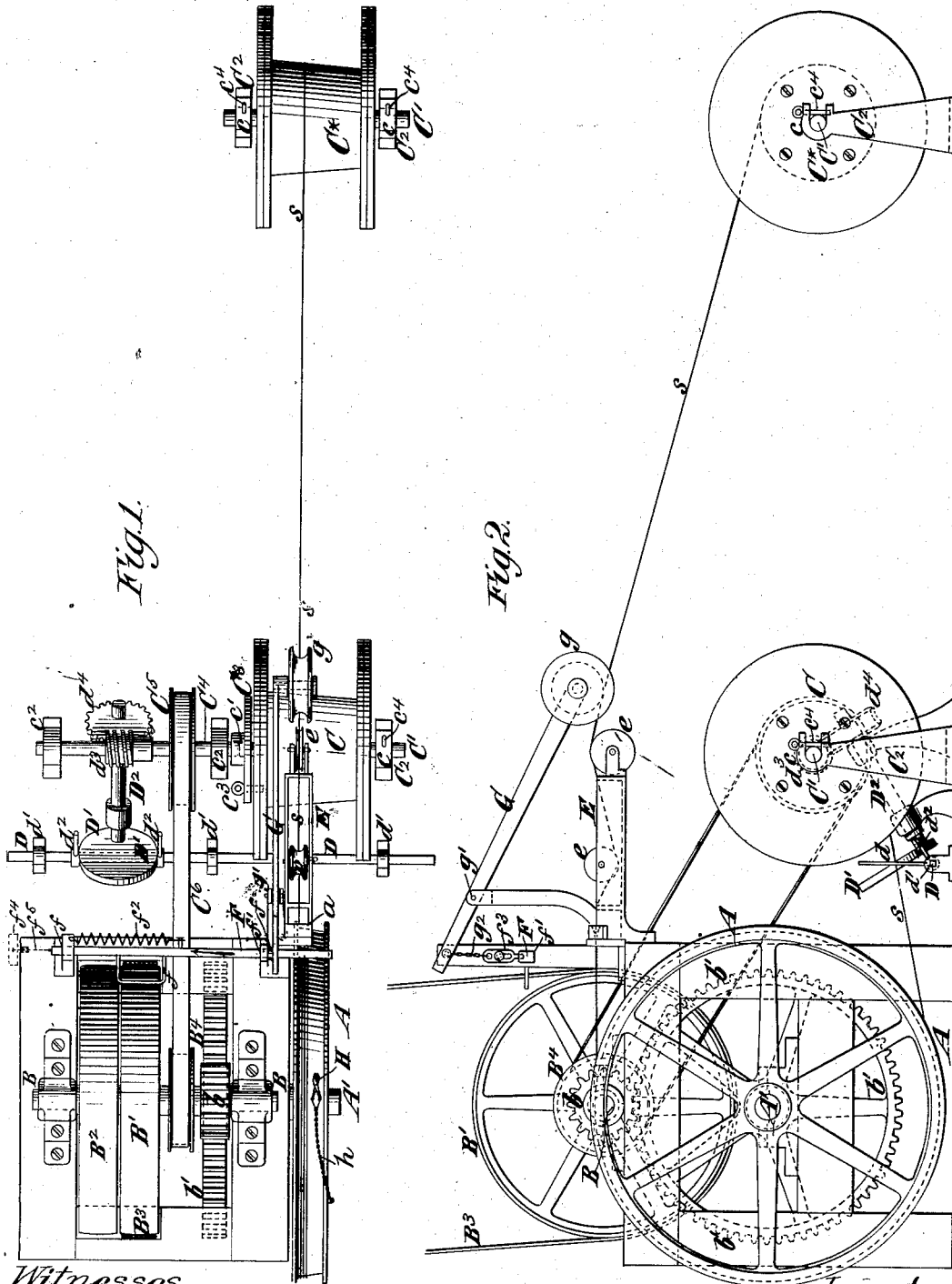


(No Model.)

G. G. BLAKESLEE.
WIRE DRAWING MACHINE.

No. 382,861.

Patented May 15, 1888.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE G. BLAKESLEE, OF WATERBURY, CONNECTICUT.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 382,861, dated May 15, 1888.

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To all whom it may concern:

Be it known that I, GEORGE G. BLAKESLEE, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Wire-Drawing Machines, of which the following is a specification.

Heretofore the drawing of wire has been conducted in a rather crude manner, as compared with the state of perfection to which other manufactures have advanced. There has commonly been no traverse for laying the wire uniformly across the length of the drum or reel upon which it is taken up after each drawing operation, and an attendant has had to be constantly on hand to stop the machine in case of the wire breaking or running out.

The object of my invention is to render the machine more automatic in its action and to overcome the defects above named, and particularly to provide for the repeated drawing of wire in large coils, often much more than one hundred pounds in weight, without great labor in lifting the wire.

The invention consists in novel combinations of parts hereinafter described, and particularly pointed out in the claims, whereby the desired results are secured.

In the accompanying drawings, Figure 1 is a plan of a machine embodying my invention, and Fig. 2 is a side view of such machine.

Similar letters of reference designate corresponding parts in both figures.

Referring first to the machine proper, A designates a winding-drum on which the wire is wound sufficiently to give the wire such a hold upon the drum or wheel as will suffice for drawing the wire through the die *a*. This drum or wheel, which is mounted upon a shaft, A', is operated by suitable gearing and power-transmitting devices. As here represented, B is a counter-shaft, which, by means of a pinion, *b*, and a wheel, *b'*, is geared with the shaft A', so as to drive it at a reduced speed and with proportionately greater power. Upon the counter-shaft B are fast and loose pulleys B' B'', which receive a driving-belt, B''. After the wire is drawn through the die *a* from the winding drum or wheel A, it passes to a take-up drum or reel, C, on which it is wound. The

axis or shaft C' of this drum or reel is fitted to a suitable bearing, *c*, in a standard, C'', at one end, and at its opposite end is shown as slipped into a socket, *c'*, in a driving disk or plate, C'', which is upon a shaft, C', for driving the reel or drum C. The shaft C' is mounted in stationary bearings *c''*, and the plate or disk C'' is shown as provided with a locking pin or bolt, *c'''*, which may be inserted in one of several holes in the head of the drum or reel C, in order to drive the same. I have represented the bearing *c* as open on the rear side, as shown best in Fig. 2, and the reel-shaft C' is secured in said bearing, as here shown, by a locking-pin *c''''*. When the reel or drum C has been filled to the required degree with wire, it may be removed by taking out the locking-pin *c''''* and the bolt or pin *c'''*, which drives it, and then swinging the shaft C' laterally out of its bearing *c*; or, if desired, the axle or shaft C' may be loose in the reel or drum C, and may be withdrawn lengthwise therefrom when it is desired to remove the reel or drum.

In order to lay the wire (designated by the letter *s*) uniformly across the length of the reel or drum C, said wire is conducted through a fork or guide, *d*, upon the horizontally-reciprocating traverse-bar D. This traverse-bar D is fitted to suitable guides or bearings, *d'*, wherein it may be reciprocated, and, as here represented, the reciprocating motion is imparted to the bar by a cam, D', which is on a diagonal shaft, D'', and operates in a bearing or between bearings *d''* upon the bar D. As here represented, the cam-shaft D'' is operated from the take-up drum-shaft C' through a worm, *d'''*, and the worm-wheel *d''''*; but the traverse-bar D may be operated by other mechanism. Upon the shaft C' is a pulley, C', which receives a belt, C'', driving from a pulley, B', upon the counter-shaft B, and this belt should rotate the shaft C' and the take-up drum or reel C at a speed which will always be sufficient to take up the wire *s* as fast as delivered from the winding-drum A; and as the drum C increases in size, by reason of the wire wound upon it, the driving-belt C'' will slip, but will always drive the drum at a speed to insure the wire being kept taut between the winding-drum A and the take-up drum C.

The wire s is taken from a reel, C^* , placed at a little distance to the right of the machine in the drawings, and which may be a duplicate of the take-up drum C , which is positively driven. The shaft C' of the delivery-drum C^* is fitted to bearings c in small standards C' , and, as here represented, such bearings are slotted at the back, so as to permit the removal of the shaft C' from them when desired, and the shaft is held in the bearings by locking-pins c' . The drums C and C^* are interchangeable, and after the entire length of wire has been unwound from the drum C^* and wound upon the drum C they are reversed in position, the drum C^* being placed in the bearings, which are now occupied by the drum C , and the wire is again subjected to a drawing operation and rewound upon the drum C^* .

A lubricant is usually applied to the wire s before its passage through the die a , and I have here shown a trough or box, E , for lubricant, and guide-rollers e , whereby the wire s is properly directed to pass through the lubricant.

Obviously when the driving-belt B^3 is shifted upon the loose pulley B^2 the driving drum or wheel A will no longer be rotated and the machine will be stopped, and consequently the belt B^3 may be considered as a shifting driving device. For shifting the belt I have represented a shipper consisting of a sliding bar, F , having a fork or loop, f , for a belt, and it is fitted to slide in suitable guides, f' . In order that this shipper shall operate automatically when released, I employ a spring, f^2 , for moving it in a direction to shift the belt B^3 from the fast pulley B^1 onto the loose pulley B^2 , and I employ a locking-bolt, f^3 , or catch for engaging the bar F and holding it with the spring under tension and in a position for the belt B^3 to run upon the pulley B^1 . This locking-bolt or catch is shown best in Fig. 2, and it is obvious that when the catch f^3 is withdrawn the shipper-bar F will be moved in the direction of the arrow thereon by the spring f^2 and will shift the belt to the loose pulley B^2 . In lieu of the spring f^2 , I may employ a weight, f^4 , connected by a cord or chain, f^5 , with the bar F , as shown by dotted lines in Fig. 1, and it is obvious that this weight for shifting the bar F automatically in one direction is in the combination in which it is used the full equivalent of the spring f^2 .

In order that the breaking or running out of the wire s shall automatically shift the belt B^3 , I employ a bearer or roller, g , which rides upon the wire, as shown in Fig. 2, and which is here represented as carried by a lever, G , which is fulcrumed at g' , and has its opposite end connected by a cord or chain, g^2 , with the catch or locking-bolt f^3 . When the machine is in operation, the catch or locking-bolt f^3 is in engagement with the shipper-bar F , and the roller or bearer g is sustained by the taut wire s ; but as soon as the wire breaks or runs out the roller or bearer g and the lever G , by which it is carried, drop, drawing the catch or lock-

ing-bolt f^3 out of engagement with the shipper-bar F , and thereupon said bar is shifted by the spring f^2 or equivalent weight to shift the belt B^3 to the loose pulley B^2 and stop the machine.

In starting the machine, the end of the wire is first reduced in size, so as to enter and just pass through the die a , and is then grasped by any ordinary tongs or devices attached to the winding-drum A . As shown in Fig. 1, I may employ a pair of tongs or nippers, H , attached by a chain, h , to the drum A . The machine is then operated until the wire is wound several times upon the drum A —that is, a sufficient number of times to give the drum a hold upon it by the friction of its coils thereon, and its end is then passed through the traverse-guide d and to the take-up drum C . The end of the wire may be secured in the take-up drum C by insertion in a hole or notch in the drum, as is usual, and when this has been done the tongs H may be removed from the winding-drum A and the drawing operation proceeded with until the entire length of wire has been passed through the die a .

I am aware of United States Patent No. 319,556, dated June 9, 1885, and also of German Patent No. 35,443, dated October 8, 1885, and do not seek to include in my invention anything shown and described in them. The mounting of the delivery drum or reel C^* and take-up drum or reel C interchangeably in their bearings is very important, because after the wire has been unwound from one and drawn and wound on the other they have simply to be reversed in position and the wire again drawn and wound on what was the delivery-drum in the previous drawing operation. The full reel or drum C may by the aid of inclined skids be rolled out of its bearings and transferred to the bearings now holding the delivery reel or drum C^* by a mere boy and without lifting.

In drawing wire by my machine I do not lift the coil of wire from the take-up drum and transfer it to a drum or rotary reel, from which to again pass it through the die, as is usual in drawing wire; but I make the delivery and take-up drums or reels interchangeable in their bearings, and thus provide for readily handling very heavy coils of wire.

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

1. The combination, in a wire-drawing machine, of a delivery reel or drum, C^* , from which the wire is taken, and a take-up reel or drum, C , bearings wherein said reels or drums are interchangeably supported, so that they may be changed one for another at each drawing operation, a die through which the wire is drawn, a winding-drum, A , whereby the wire is drawn through the die and from which the wire is taken by the take-up reel or drum, and a slipping driving device for the said take-up reel or drum, substantially as herein described.

2. The combination, in a wire-drawing ma-

chine, of a reel or drum from which the wire is taken, a die through which the wire is drawn, a winding-drum, a take-up drum or reel for the wire, and a traverse-guide, and mechanism, substantially as described, for reciprocating said guide, substantially as herein set forth.

3. The combination, in a wire-drawing machine, of a reel or drum from which the wire is taken, a die through which the wire is drawn, a winding drum or reel, a take-up drum or reel and slipping driving mechanism for operating it, a shifting driving device for the winding-drum, a shipper operating automatically when released to shift the driving device, a catch for holding the shipper retracted, and a bearer riding on the wire and connected

with the catch to withdraw the latter when the bearer falls, substantially as herein described.

4. The combination of the delivery drum or reel C, the box E for lubricant, and its guiding-pulleys, the winding-drum A and gearing for driving the same, the reciprocating traverse-bar D, the take-up drum C, the belt-shipper F and its actuating-spring or equivalent weight, the catch f^3 , and the stop-motion lever G, supported by the wire and connected with the catch, substantially as herein described.

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Witnesses:

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