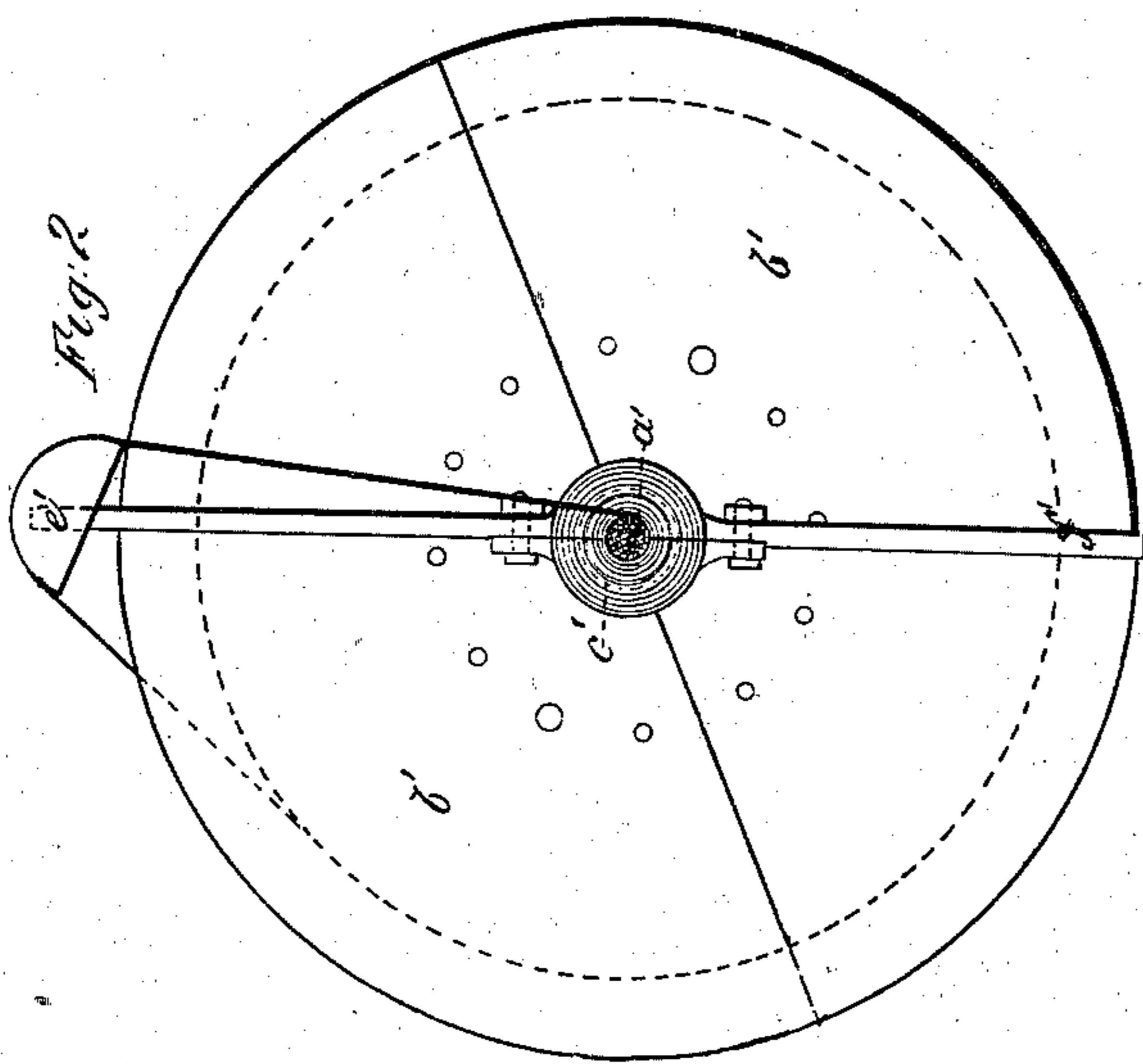
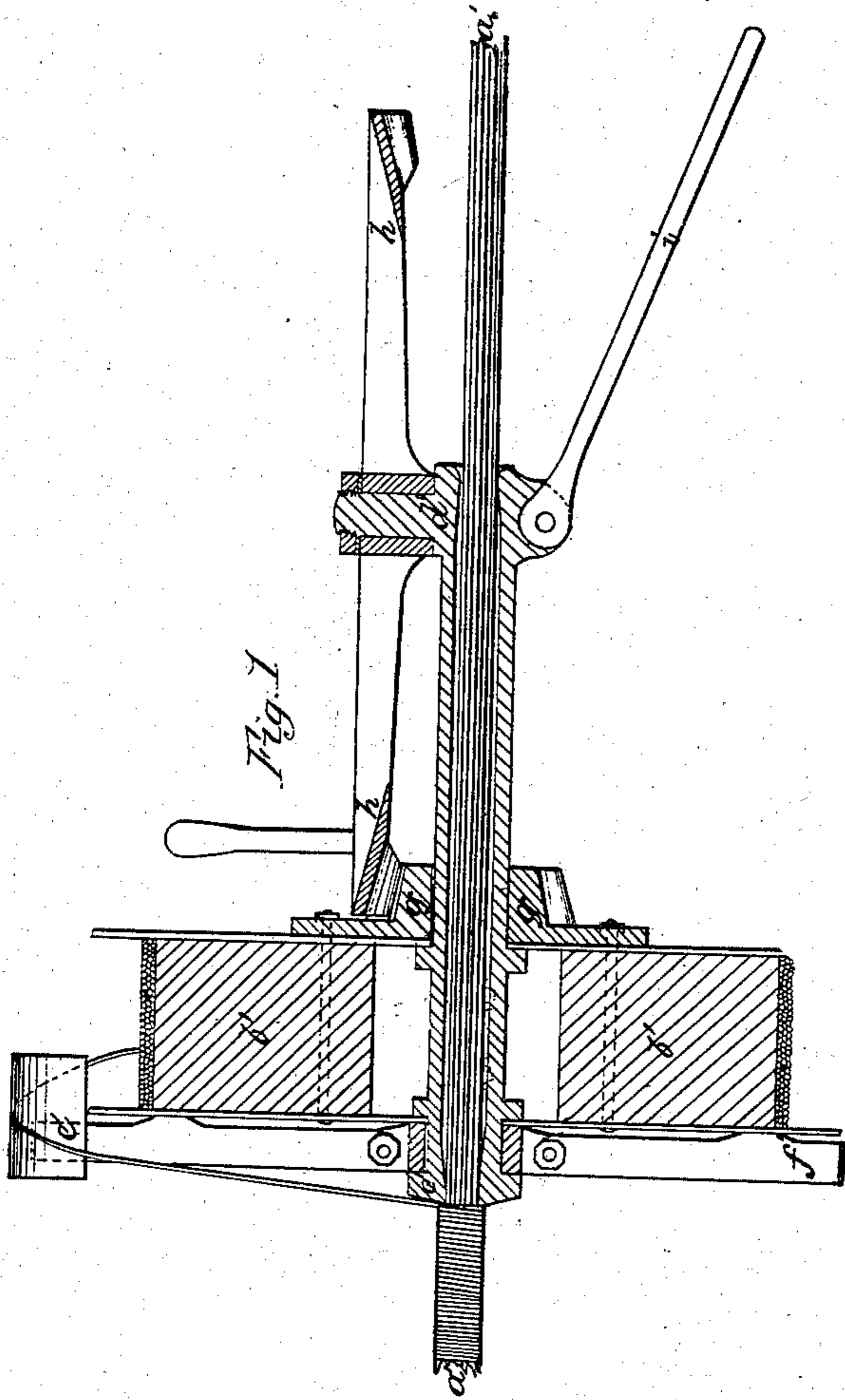


J. A. ROEBLING.  
WRAPPING MACHINE.

No. 2,720.

Patented July 16, 1842.



# UNITED STATES PATENT OFFICE.

JOHN A. ROEBLING, OF SAXONBURG, PENNSYLVANIA.

METHOD OF AND MACHINE FOR MANUFACTURING WIRE ROPES.

Specification of Letters Patent No. 2,720, dated July 16, 1842.

*To all whom it may concern:*

Be it known that I, JOHN A. ROEBLING, civil engineer, of Saxonburg, in the county of Butler, State of Pennsylvania, have invented a new and Improved Mode of Manufacturing Wire Ropes; and I do hereby declare that the following is a full and exact description.

The nature of my improvements consists: In the process of attaching to the ends of the single wires, which are drawn up for the formation of a rope or strand, equal weights, to be suspended freely over small sheaves or pulleys, for the support of which a frame is erected at the end of the rope walk. While thus all the wires are subjected to a uniform tension, and can at the same time contract and expand with the changes of temperature, they may be twisted into a rope or strand, in the manner, commonly employed in the manufacture of hemp ropes. Three or more strands, thus formed, may again be drawn up, tension weights applied to their ends and the whole twisted into a thick rope. As all the wires and strands of a rope, made in this manner, will receive a uniform tension, the greatest strength will be obtained, which can be produced by the same amount of material, when united into a solid bar. My second improvement is the method or methods, I apply for preventing the twist of the fibers of the individual wires, during the process of "laying." This is effected by attaching to the end of each wire or strand a piece of soft annealed wire, which at the same time supports the tension weight. The consequence is that while the rope is twisted, the individual twist of the single wires will run into the annealed wires, and leave the elastic wires of the rope itself uninjured. Or instead of using an annealed wire, I connect the end of each wire or strand to a small swivel, which is held by a small line or rope, which passes over the pulley and supports the tension weight. The swivels, when lubricated with oil, will by their own revolutions allow the wires or strands to turn freely and easily.

Another part of my improvements consists in the construction of a wrapping machine for the formation of a perfect and continuous wrapping.

The following description with reference to the accompanying drawing will convey a correct idea of its construction:

In Figure 1, A, represents a frame of

wood which supports the sheaves and weights by which the wires are to be stretched;  $f, f, f$ , are wires, or strands which are to be laid into a rope, and these are attached to swivels  $e, e, e$ , from which ropes or chains  $d, d, d$ , extend over sheaves  $b, b, b$ ; the weights  $c, c, c$ , serving to keep the wires or strands in a state of equal tension. Fig. 2 is a longitudinal section and Fig. 3, a front view of the wrapping machine.

$a' a'$  represents a wire rope or cable in a horizontal position or nearly so, well stretched and supported at intervals.

$C' C'$  is a reel for receiving the strands of annealed wire, which are to form the wrapping. This reel as well as all other parts of the machine consists of two equal parts (except the driving wheel) so that the machine may be attached to the rope and again removed. The reel is made of wood, about 5 inches broad, 15 inches in diameter (for an "inch" rope) and inclosed by two circular sheet iron plates, which project as rims over the circumference of the wooden cylinder, for the purpose of confining the wire.

$c' d'$  is a cast iron tube or hull which incloses the rope, but leaves some space around, except at the mouth  $c'$ , where it fits very close, and squeezes the rope into a round cylinder, there being a head, or hub, formed at  $C'$ , against which the wound wire bears as it passes from the reel; at  $d'$  it fits the rope but loosely. This hull consist likewise of two parts held together by flanches and screws. The circular plates including the reel, fit the hull exactly, so that the reel may revolve around it freely, the hull serving as its axle and remaining stationary.

$e' f'$  is an iron bar, which forms a collar at the middle, by means of which it revolves around the hull  $c' d'$ , independently of the reel. In revolving, this bar slides over the face plate of the reel. To the one end  $e'$  a wooden block of a half circular shape is attached, over which the wrapping wire has to slide in passing from the reel to the rope. While the reel is revolving in the same direction in which the wrapping has to be laid around the rope, the block  $e'$  is driven on a little in advance of the reel by the strain of the wire itself, furnishing the wire for the wrapping. The tightness of the wrapping depends upon the strain of the wire, which can be regulated by screwing the collar of the bar up. The arm  $f'$  of this bar serves to balance the other arm.

*g g* is a conical pinion made in two parts and screwed to the reel.

*h h* is a driving wheel which causes the pinion and the reel to revolve about four times, while it turns once. This gearing is applied for the purpose of improving the speed and rendering the motion uniform. The driving wheel is turned by means of a crank by one man, who at the same time holds with the other hand the handle *i* for the purpose of balancing the weight of the driving wheel. The whole machine slides over the rope in advance of the wrapping and is pressed on by the action of the wire itself, which motion is facilitated by greasing the rope.

What I claim as my original invention and desire to secure by Letters Patent is:

1. The process of giving to the wires and strands a uniform tension, by attaching them to equal weights which are freely suspended over pulleys during the manufacture, as described above.

2. The attaching of swivels or of pieces of annealed wire to the ends of the single wires or to the several strands, during the manufacture of a rope, for the purpose of preventing the twist of the fibers, as described above.

3. The manner of constructing the wrapping machine, the head *c'*, of the hull *c', d'*, around which the iron bar *e', f'*, revolves by means of its collar, embracing the wire rope firmly and bearing against the wire which is being wound upon it; said bar bearing against the face plate of the reel for the purpose and in the manner herein shown, and the respective parts of which are combined and arranged, as above described, and illustrated by the accompanying drawing, so as to adapt it to the particular purpose of winding wire upon wire ropes.

JOHN A. ROEBLING.

Witnesses:

THOS. P. JONES,  
D. H. MORSELL.