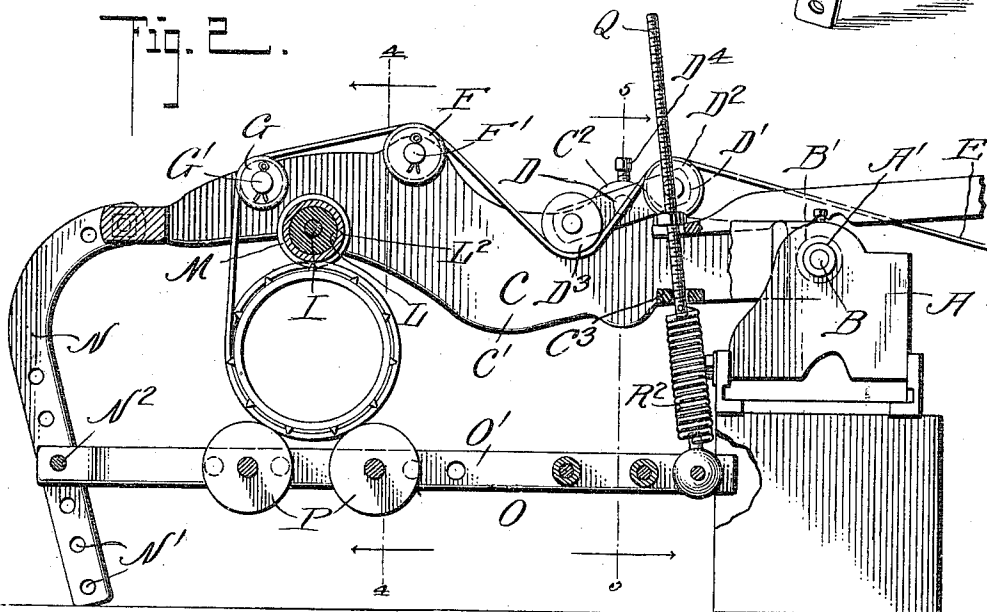
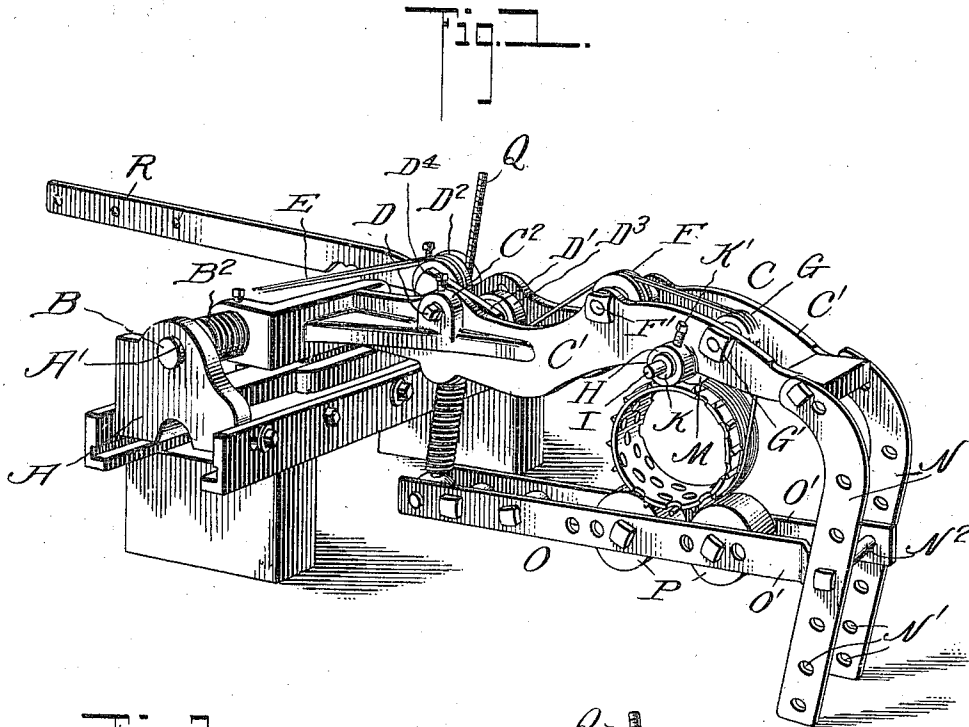


J. N. JOHNSON.
WIRE WINDING MACHINE.
APPLICATION FILED FEB. 18, 1908.

972,623.

Patented Oct. 11, 1910.

2 SHEETS-SHEET 1.



Witnesses

Oliver M. Holmes
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Inventor

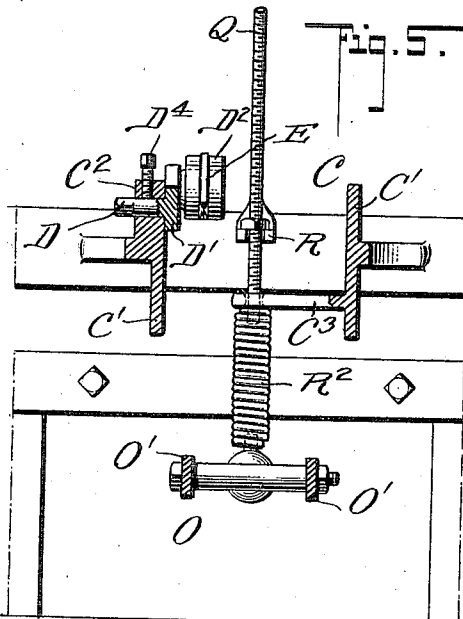
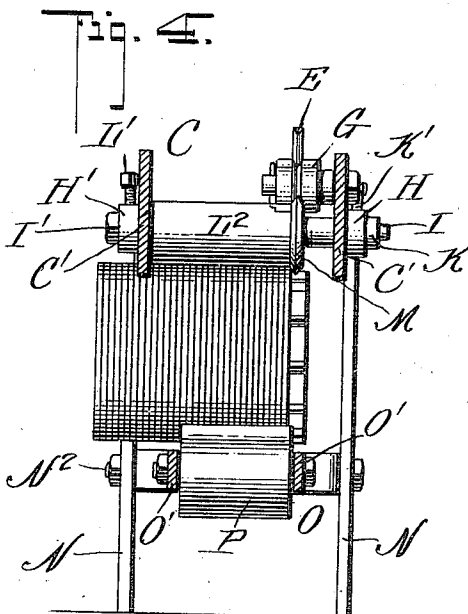
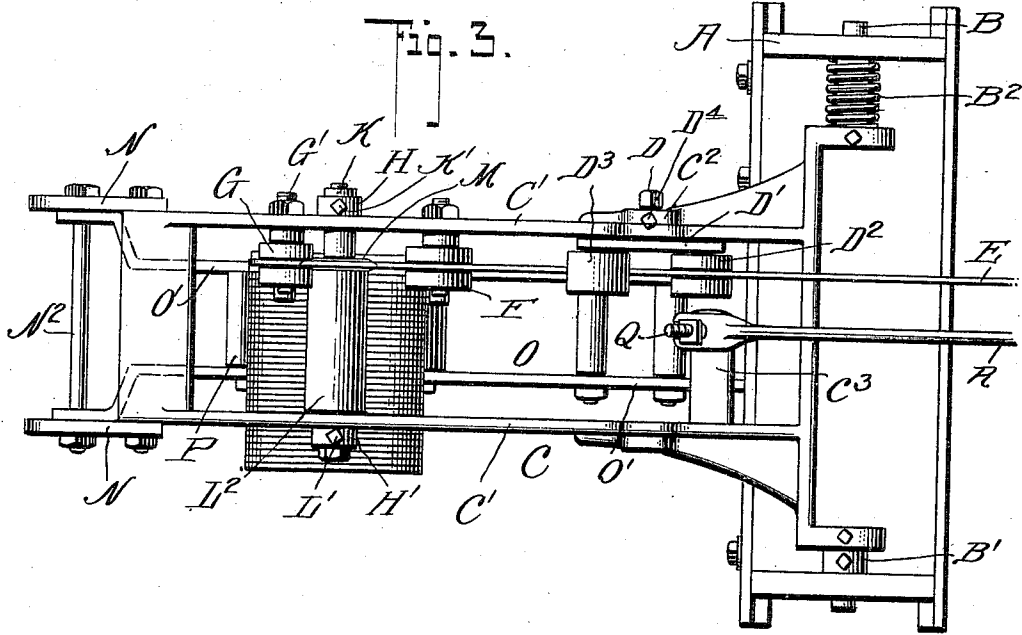
By J. N. Johnson,
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Attorneys

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UNITED STATES PATENT OFFICE.

JOHN N. JOHNSON, OF HOUSTON, TEXAS, ASSIGNOR TO MAHON E. LAYNE, OF
HOUSTON, TEXAS.

WIRE-WINDING MACHINE.

972,623.

Specification of Letters Patent.

Patented Oct. 11, 1910.

Application filed February 18, 1908. Serial No. 416,603.

To all whom it may concern:

Be it known that I, JOHN N. JOHNSON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented a new and useful Improvement in a Wire-Winding Machine, of which the following is a specification.

This invention relates to machines for winding wire and particularly to a machine for coiling wire in the construction of well screens and the like.

The objects of the invention are the provision of means for forming notches in spiral or helical order or producing a spiral or helical groove in a supporting body; means for seating or coiling a wire in said notches or groove; means whereby the seat or groove is formed in advance of the coiling or seating of the wire; means for supporting the body on which the wire is wound, whereby a uniform depth of groove or seats will be had; means for regulating the depth to which the seats or grooves are cut; means for placing the wire under tension and varying such tension; and means whereby the supporting frame is centered about the work.

Finally the object of the invention is to provide means of the character described that will be strong, durable, efficient, and easy of operation, simple and comparatively inexpensive to construct, and also in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in this specification and illustrated in the accompanying drawings, wherein:

Figure 1. is a perspective view of the machine showing the wire partially coiled about a piece of pipe, Fig. 2. is a longitudinal sectional view of the same, Fig. 3. is a plan view, Fig. 4. is a vertical sectional view on the line 4—4 of Fig. 2, and Fig. 5. is a vertical sectional view on the line 5—5 of Fig. 2.

In the drawings, the letter A, designates a carriage adapted to be mounted in the slide-way of a lathe bed and to travel therealong. The carriage is provided at each end with a bearing A¹ in which the outwardly projecting trunnions B of a frame C are mounted. On one of the trunnions, a

coiled spring B² is confined, whereby the frame is held in position against a collar B¹ on the other trunnion, which collar abuts the carriage. The frame is thus pivotally mounted and may be removed when desired.

A pair of parallel arched side bars C¹, spaced apart, extend forwardly from the rear portion of the frame, one of said bars having adjacent its inner end, a bearing C² in which a trunnion D having a wrench receiving end is mounted. The trunnion D is fixed at its inner end to the central portion of a tension bar D¹ lying against the inner side of the said side bar and carrying a grooved roller D² on its rear end and a smooth roller D³ on its forward end. The roller D² has its groove, V-shaped in cross section so as to receive a corresponding shaped wire E and guide it with its broad side up and thus present this broad and flat side to the smooth periphery of the roller D³. It is obvious that by turning the trunnion D, the tension bar is swung and the rollers positioned so as to give the desired tension to the wire and in this way the tension may be varied and regulated. When the rollers have been properly positioned, the parts are fastened in place by a set screw D⁴ threaded through the bearing and impinging the trunnion.

The wire E is fed from a suitable support into the rear of the machine, passing in straight alinement to the roller D², over the same and under the roller D³, then upward and over a grooved roller F loosely confined on a stub shaft F¹ secured in one of the side bars on the arched portion thereof, then over a grooved roller G mounted on a similar stub shaft G¹, and finally down around the body about which the wire is being coiled or wound, the alinement being retained throughout the passage of the wire through the machine to the point where it enters into engagement with the body.

Opposed bearings H and H¹ are provided in the side bars at the arched portion. The bearing H receives a sleeve K which extends inward a short distance from the side bar and is locked in position by a set screw K¹; while an eccentric bushing L is mounted in the bearing H¹ and locked by a set screw L¹. This bushing extends inward and is secured on a horizontal shaft I which also passes through the sleeve K. The shaft I projects beyond the outer end of the bushing and has

a wrench receiving end by which it and the bushing may be turned after the set screw L^1 has been loosened. A gage roller L^2 is loosely mounted on the bushing and extends
5 within a short distance of the sleeve K.

On the shaft I, a revolving cutter wheel M is loosely confined between the roller L^2 and the sleeve K. This cutter wheel has a diameter greater than that of the roller so
10 as to permit the roller to bear on the previously wound portion of the body while the cutter wheel is performing its function. It will be seen that by adjusting the bushing, the roller will be raised and lowered, the
15 projection of the cutter wheel below the roller varied, and the depth of the cut gaged or regulated.

It is evident that some means for holding the body on which the wire is coiled or wound, up to the cutter wheel, must be provided. It is also apparent that owing to the varying conditions of the body, such as longitudinal curvature, unevenness of periphery, or distorted cross sectional shape,
25 means for allowing the body to revolve in its natural course must be included. To meet these and other conditions, a standard N is pivotally secured to each side bar C^1 . These standards are provided with a series
30 of openings N^1 in which a bolt N^2 is adapted to be secured.

A frame O is disposed under the frame C and in substantial parallel relation thereto. This frame O comprises parallel side bars
35 O^1 pivotally mounted at their forward ends on the bolt N^2 and impinging the inner sides of the standards. The frame O supports between its side bars O^1 , a pair of broad face idle rollers P, separated a sufficient distance
40 to properly support in position, the body on which the wire is wound. These rollers are also disposed so as to position the body with the cutter wheel substantially over the longitudinal axis of the body. In this way
45 the body is held in proper relation to the cutter wheel.

It is understood that the body which may be several feet in length is chucked in the lathe and thus revolved. To accommodate
50 various diameters of bodies, the bolt N^2 is shifted in the openings N^1 and the frame O raised or lowered as the case may be. The wire being fed to the body as previously described is wound thereon as the body is
55 revolved.

At their rear ends the side bars of the frame O are connected by a cross rod to which the lower end of an extension spring R^2 is pivotally connected. At its upper end
60 the spring is connected to the lower end of a screw threaded rod Q. This rod at its lower end is loosely confined in an arm C^3 extending from the lower edge of one of the side bars C^1 to which it is rigidly attached. A

lever R fulcrumed on the yoke portion of the frame C extends to the rear of the machine and is bifurcated at its forward end so as to straddle the rod Q under a nut adjustable thereon. At its rear end the lever is held down by suitable means (not shown)
70 and the frame O yieldably supported. It is apparent that the nut on the rod Q should be adjusted just the same as the bolt N^2 to accommodate different diameters of bodies. The function of the lever, rod and spring is
75 to hold the body in yieldable engagement with the cutter wheel and thus should there be a depression in the body this mechanism will force the body up to the cutter wheel and preserve the uniformity of the cut; and
80 likewise should there be a bulge on the body the mechanism will permit the body to move away from the cutter wheel and preserve the uniformity of the cut. As a matter of fact the frames C and O, the standards N, the
85 spring R^2 and the rod Q form substantially a general frame surrounding or encircling the body. The lever, rod and spring substantially form means for centering this general frame upon the body. It is further to
90 be noted that the standards N being pivoted to the frame C and having pivotal connection with the frame O and the latter being pivotally supported at its rear end, the said frame O may have a limited longitudinal
95 movement, or that is a movement at right angles to the longitudinal axis of the body thus permitting the winding of a body which has a slight longitudinal curvature.

It is to be understood that the carriage A
100 is connected to the feed mechanism (not shown) of the lathe and thus carried along the slide-way or bed of the lathe, the distance between the convolutions of the wire wound on the body depending upon the
105 speed at which the carriage is moved along the lathe bed. It is obvious that the roller L^2 bearing on the wound portion of the body will hold the cutter wheel M to a uniform depth of cut and that by adjusting the bushing L the cutting wheel is adjusted toward
110 and from the axis of the body on which the wire is wound. While I have shown a body provided with external ribs it is to be understood that the machine may be used in connection with bodies having a smooth surface
115 or frames in the form of cylindrical bodies.

It is to be noted that in actual practice the body to be wound with wire is supported by the lathe and the general frame which surrounds the body while in a sense supporting the body is really a device for holding the cutter in operative relation to the body and permitting the cutter to follow the irregularities of the periphery of the body. This
125 frame of course has other functions as hereinbefore explained. It also might be proper to state that the cutter wheel M has a V-

shaped cutting edge and the wire employed is substantially V-shaped in cross section, but of course other shapes may be employed.

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

1. In a wire winding machine, a carriage and a frame mounted upon the carriage, said frame being provided with means for guiding the wire to a body, and with a cutter for grooving the body in advance of the winding of the wire.

2. In a wire winding machine, a carriage, a frame carried by the carriage for supporting a body, and means for guiding the wire to the body, together with a cutter for grooving the article in advance of the winding of the wire.

3. In a wire winding machine, a carriage provided with a support for a body, and means for guiding the wire to the body, together with means for cutting a groove in the body simultaneously with the winding of the wire.

4. In a wire winding machine, a carriage, a frame carried by the carriage for supporting a body, means for adjusting the tension of said supporting frame, together with means for guiding the wire to the body.

5. In a wire winding machine, a carriage, and a frame pivotally mounted upon the carriage and provided with means for guiding a wire to the body, means for supporting the body, together with a cutter for grooving the body in advance of the winding of the wire.

6. In a wire winding machine, a carriage and a frame mounted upon the carriage, and provided with a cutter, and means for spacing the body from said cutter.

7. In a wire winding machine, the combination of a carriage carrying a frame for supporting a body and provided with means for guiding the wire to the body, and a cutter for grooving the body in advance of the winding of the wire thereon.

8. In a wire winding machine, the combination with winding mechanism, and a cutter for grooving the article upon which the wire is to be wound, of a frame for supporting the article, together with means for adjusting the tension of said frame.

9. In a wire winding machine, a carriage, a frame mounted upon the carriage and provided with means for guiding the wire to a body, means for supporting the body, a cutter carried by the frame for grooving the body in advance of the winding of the wire, and means for spacing said body from said cutter, for the purpose described.

10. In a wire winding machine, a carriage, a frame pivotally mounted upon the carriage and provided with means for guiding the wire to the body, supporting arms carried by said frame, a supporting frame adjustably mounted between said supporting

arms and provided with rollers adapted to engage the body, means for adjusting the tension of said supporting frame, and a cutter carried by the pivoted frame for grooving the body in advance of the winding of the wire.

11. In a machine for winding wire upon cylindrical bodies having spaced radial ribs projecting therefrom, a means for notching the ribs to receive the wire, comprising a frame for encircling the ribbed cylinder, a cutting roller or wheel on one side of said frame, and means for adjusting the cutter to the ribs to notch them.

12. In a machine for winding wire upon cylindrical bodies having spaced radial ribs projecting therefrom, a means for notching the ribs to receive the wire, comprising a frame for encircling the ribbed cylinder, a cutting roller or wheel carried by said frame in operative relation to the ribs, and means for centering the frame upon the ribbed cylinder.

13. In a machine for winding wire upon cylindrical bodies having spaced radial ribs projecting therefrom, a means for notching the ribs to receive the wire, comprising a frame for encircling the ribbed cylinder, a cutting roller or wheel carried by said frame in operative relation to the ribs, means for centering the frame upon the ribbed cylinder, and means for adjusting the cutting roller or wheel toward and from the axis of the cylindrical body.

14. In a lathe attachment for winding wire on a revolving body, the combination with a carriage adapted to be moved along a lathe bed, of a frame arranged to surround the body to be wound with wire, and a cutting wheel in the frame for forming a seat in the body for the wire.

15. In a lathe attachment for winding wire on a revolving body, the combination with a carriage adapted to be moved along a lathe bed, of a frame surrounding the body and adapted to be positioned with relation to the body on which the wire is to be wound, means for feeding a wire under tension to the body, and a cutter movable in the arc of a circle about its point of support for forming a seat for the wire in the body.

16. In an attachment for winding wire on a body, a carriage, a frame associated with the carriage and adapted to be positioned with relation to the body, means for feeding a wire under tension to the body, a cutter for forming a seat for the wire in the body and associated with the frame, the cutter being arranged to move in the arc of a circle about its point of support, and means associated with the frame for bearing on the wound portion of the body for holding the cutter to a uniform depth of cut.

17. In an attachment for winding wire on a body, a carriage, a frame carried by the

carriage and arranged to surround the body,
a revoluble cutter wheel carried by the frame
for forming a seat in the body for the wire,
and means for supporting the cutter wheel
5 in the frame in uniform cutting relation to
the body.

10 18. In an attachment for wire winding
machines, a carriage, a frame connected to
the carriage, a revoluble cutter mounted on
the frame, and means for holding the cutter
to a uniform depth of cut on bodies of irreg-
ular contour.

19. In an attachment for winding wire on
a body, a carriage, a frame connected to the
carriage and arranged to surround the body, 15
a cutter wheel carried by the frame for cut-
ting a seat in the body for the wire, and
means for holding the cutter wheel to a uni-
form depth of cut on bodies of irregular con-
tour.

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Witnesses:

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