

(No Model.)

5 Sheets—Sheet 1.

J. A. COULTAUS.
HOSE WINDING MACHINE.

No. 419,320.

Patented Jan. 14, 1890.

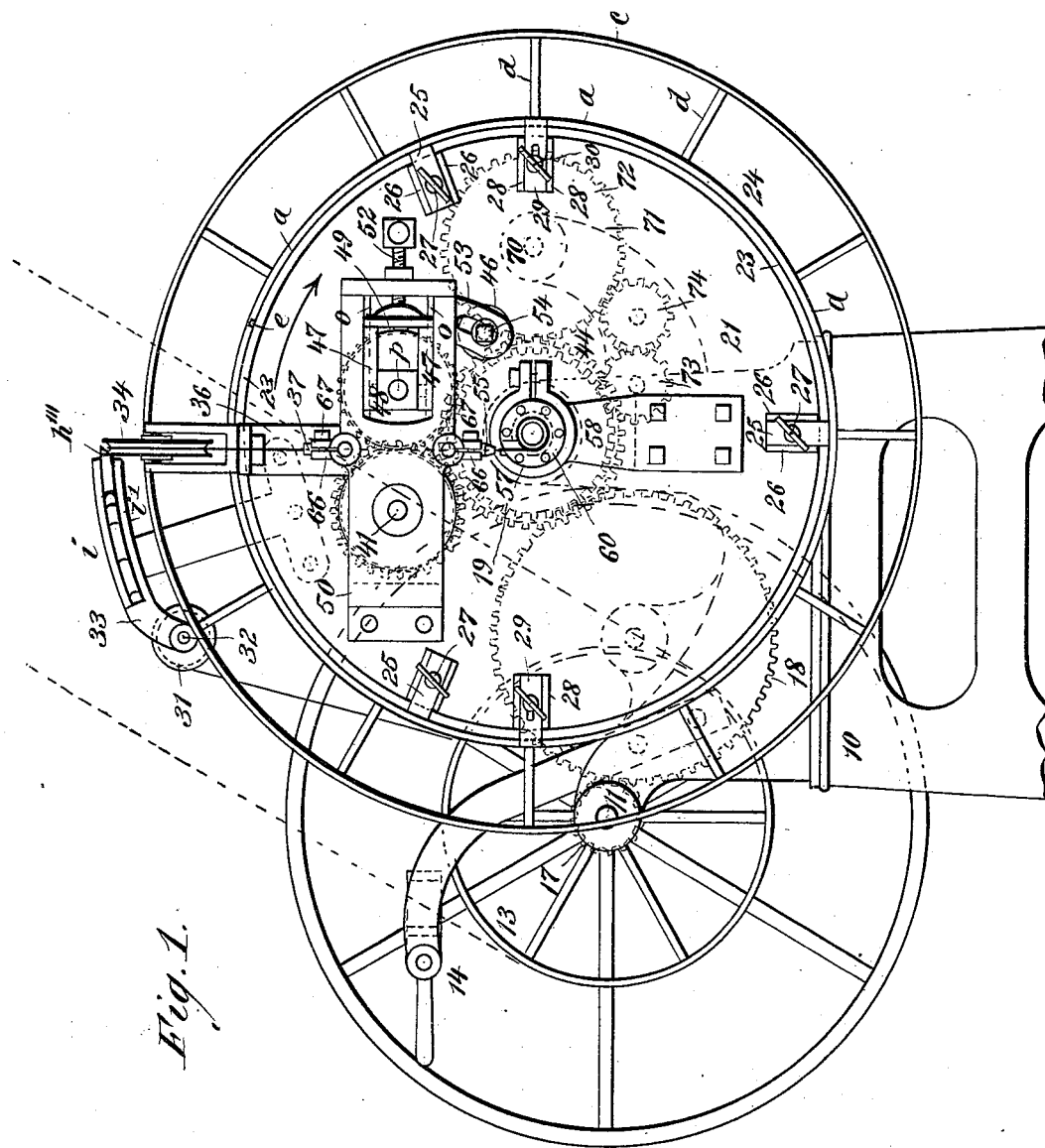


Fig. 1.

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INVENTOR:

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ATTORNEYS.

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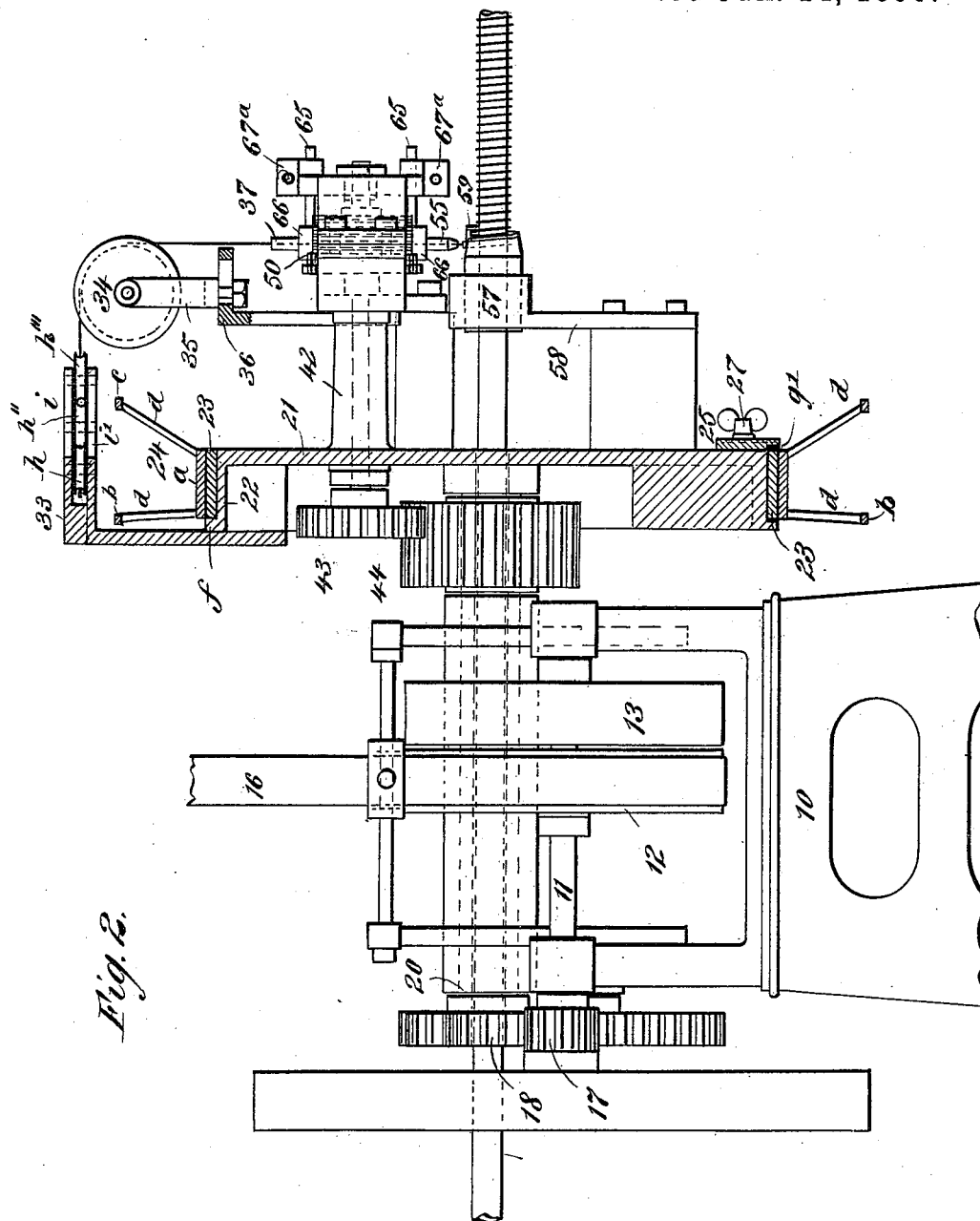


Fig. 2.

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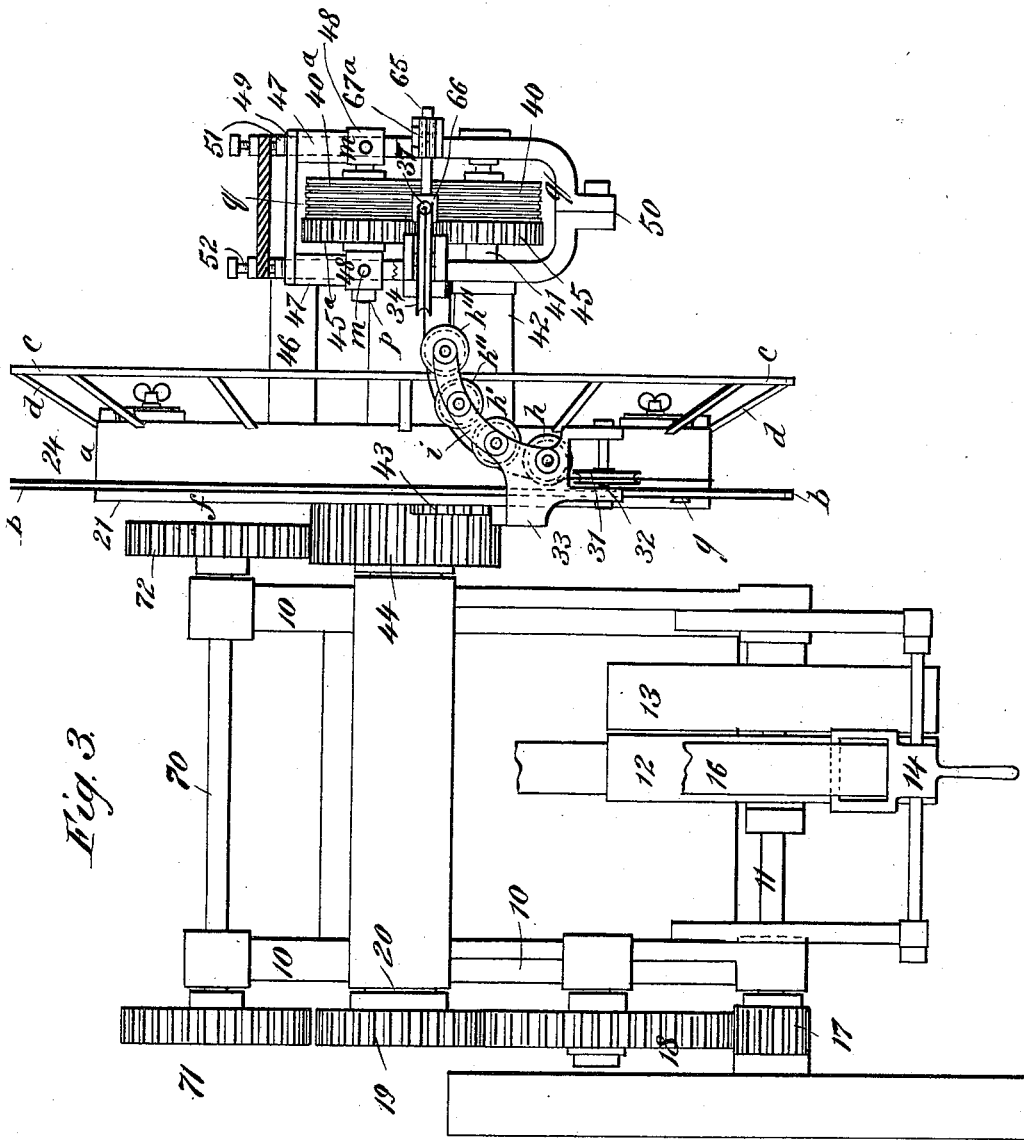


Fig. 3.

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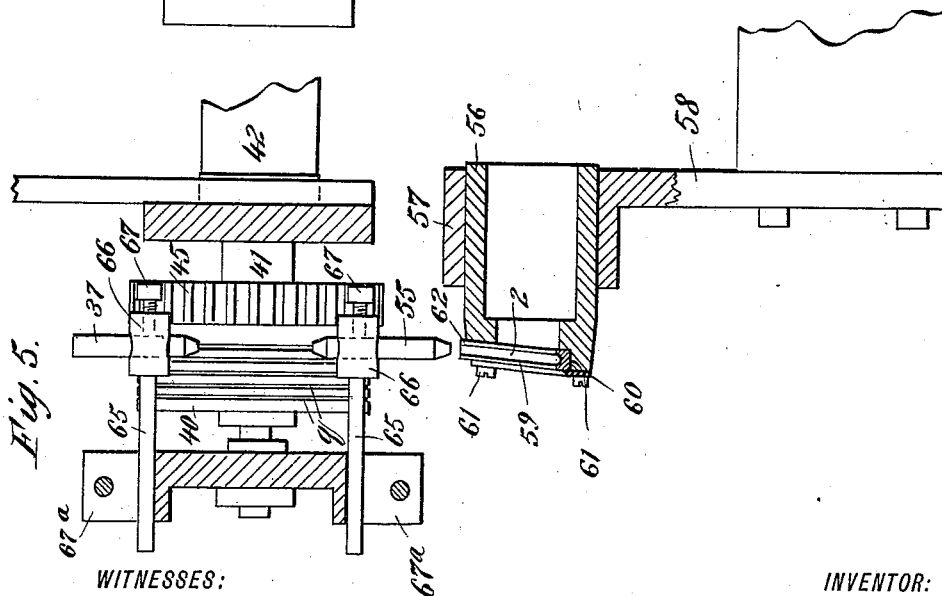
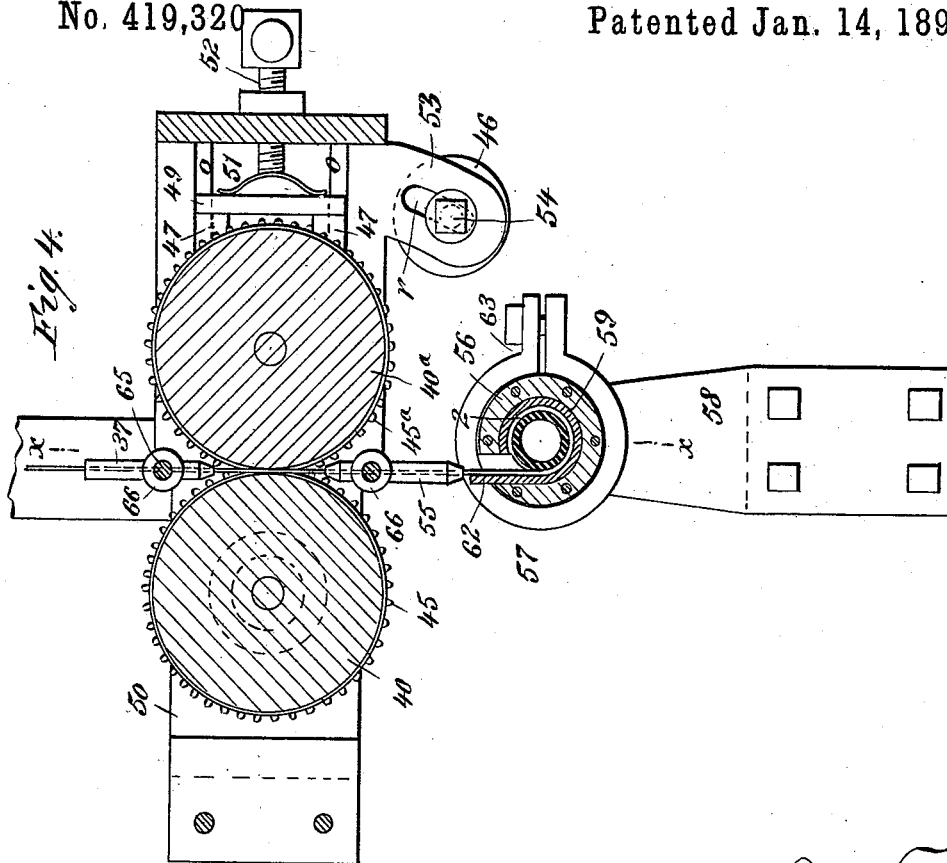
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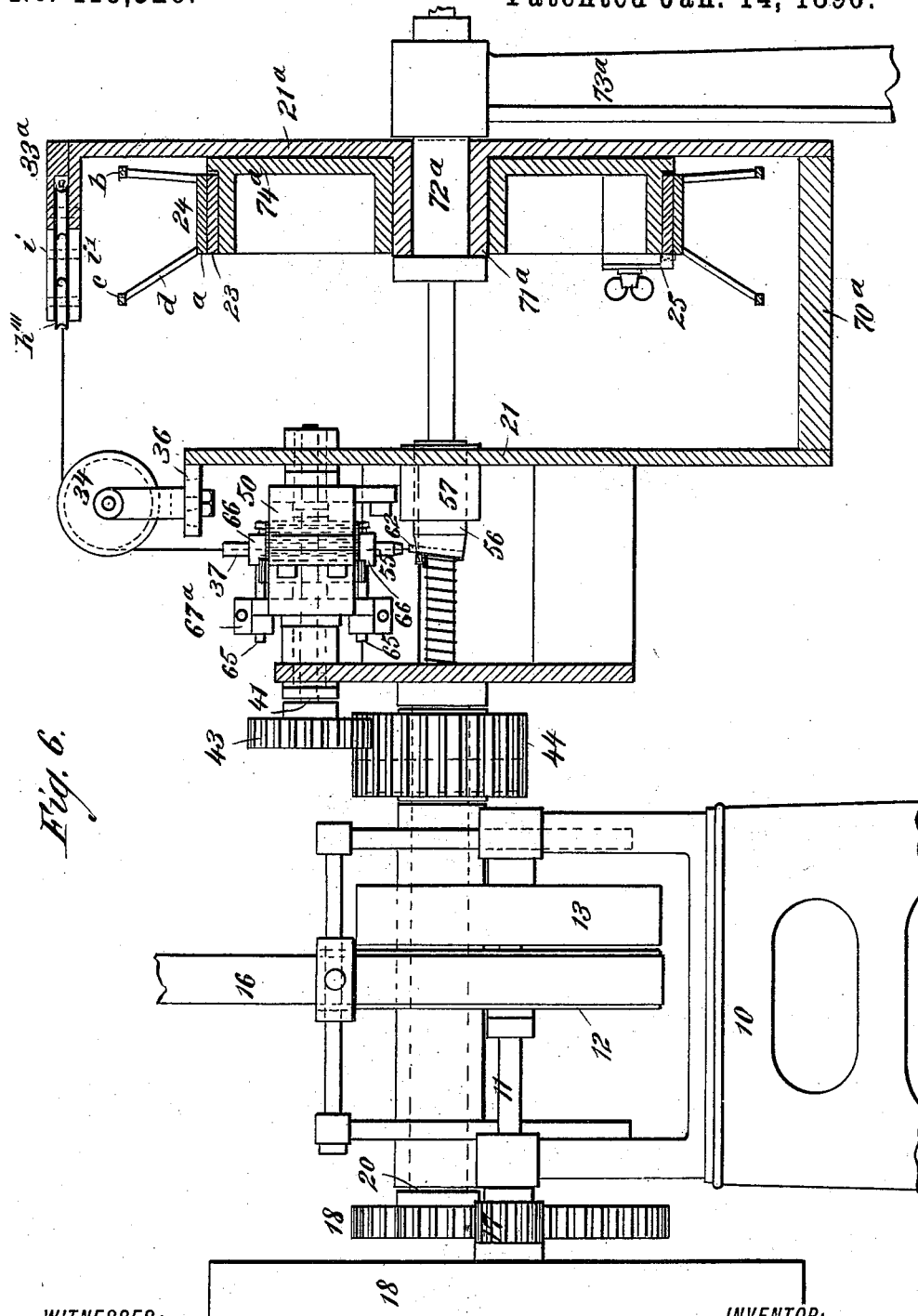
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Patented Jan. 14, 1890.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH A. COULTAUS, OF BROOKLYN, ASSIGNOR TO THE WATERBURY RUBBER COMPANY, OF NEW YORK, N. Y.

HOSE-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,320, dated January 14, 1890.

Application filed June 29, 1889. Serial No. 316,021. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. COULTAUS, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Hose-Winding Machine, of which the following is a full, clear, and exact description.

Heretofore hose-winding machines have been so organized that the hose was turned bodily at the time the wire was wound thereon; but this arrangement is open to many objections, which I obviate by causing the wire-placing tool to revolve about the hose, the hose being fed forward through the tool without turning.

In carrying out my invention I prefer to connect the wire-placing tool to a disk or frame which carries a wire reel or cage and upon which the wire-feeding rolls are mounted, mechanism for revolving the disk and for revolving the wire-feeding rolls being provided, such an arrangement being shown in the first five figures of the drawings; or the wire-reel might be carried by a second disk or frame, as shown in Figure 6; or any equivalent construction might be employed without departing from the spirit of my invention, the essential feature of which is a pair of wire-feeding rollers, a wire-placing tool, and a mechanism whereby said rollers may be revolved each about its own axis and both about the main axis of the machine, with which main axis the wire-placing tool is concentric, all as will be hereinafter fully explained, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Fig. 1 is a front view of a hose-winding machine organized to embody my preferred construction. Fig. 2 is a side view of the machine in partial section. Fig. 3 is a plan view of the machine, parts being shown in section. Fig. 4 is an enlarged sectional detail view of the wire-placing tool and the wire-feeding rollers. Fig. 5 is a sectional detail view on line *xx* of Fig. 4. Fig. 6 is a side view of a modified construction, parts being shown in section.

Referring now to the construction shown in Figs. 1, 2, and 3, 10 represents the main frame or standard of the machine, upon which frame there is mounted a driving-shaft 11, carrying a fast pulley 12 and a loose pulley 13, a belt-shifting attachment 14 being provided in order that the belt 16 may be thrown from one pulley to the other. To one end of the shaft 11 there is keyed a pinion or small gear 17, which engages an intermediate gear or idler 18, which gear or idler in turn engages a gear 19, that is keyed to a tubular shaft 20, supported in bearings carried by the frame 10. To the opposite end of the tubular shaft 20 there is secured a disk or frame 21, that is formed or provided with a flange 22. Upon the flange 22 is mounted a ring 23, preferably of brass or other metal that is easily worked to form, and upon the ring 23 I mount a cage or reel 24, said cage or reel being made up of a ring *a*, which fits upon the ring 23, and outer rings *b* and *c*, that are connected to the ring *a* by struts *d*.

In order that the rings *a* and 23 may be held to turn together, I recess the ring *a* and I provide the ring 23 with a stud or pin *e*, which enters the recess of the ring *a*, and in order that the frictional contact between the ring 23 and its support may be varied I form the flange 22 with a supplemental flange *f*, and this supplemental flange I form with dovetail recesses, in which there are blocks of leather or hide, as shown at *g*, while to the face of the disk 21, I connect clamping-blocks 25, which ride between guiding-lugs 26 and are held to the disk by set-screws 27. Between the faces of the clamping-blocks 25 and the edge of the ring 23, I place other blocks of leather, hide, or other proper material *g'*, the arrangement being such that by adjusting the set-screws so as to vary the pressure brought to bear upon the ring 23 its frictional contact with its support may be varied to suit the requirements of the case.

Any proper means may be employed to hold the cage or reel 24 from displacement; but in practice I prefer to provide the disk or frame 21 with guiding-lugs 28, between which lugs there are mounted blocks 29, that are held to place by set-screws 30, the blocks extending

beyond the ring 23, so as to overlap the edge of the cage-ring *a*.

The wire by which the hose is to be protected is wound upon the reel 24, to be delivered therefrom to a wire-placing tool, being guided in its passage from the reel by a sheave 31, that is mounted to travel upon a shaft 32, supported by a bracket 33, said bracket being connected to the disk or frame 21, the wire passing from the sheave 31 to guiding-sheaves *h h' h'' h'''*, such sheaves being journaled between curved arms *i* and *i'*, that are carried by the bracket 33, the axes of the guiding-sheaves being at about right angles to the axis of the sheave 31, as shown in the drawings.

I have illustrated a construction embodying four guiding-sheaves; but it will of course be understood that any proper number of guiding-sheaves might be employed.

From the last of the series of guiding-sheaves the wire passes to and about a sheave 34, the support 35 of said sheave being adjustably held to a bracket 36, the arrangement being such that the sheave 34 may be moved toward or from the disk or frame 21. From the sheave 34 the wire is led downward through an adjustably-mounted guiding-tube 37 to the bite of the wire-feeding rollers 40 and 40^a, the roller 40 being mounted upon a shaft 41, which extends to the rear through a sleeve 42, that is carried by the disk or frame 21, the inner end of the shaft 41 carrying a gear 43, that engages a gear 44, said gear 44 being loosely mounted on the tubular shaft 20 and being driven in a manner to be hereinafter described. The roller 40 carries a gear 45, which meshes with a corresponding gear 45^a, that is carried by the roller 40^a.

Upon the shaft 41 of the roller 40 there is mounted a frame 50, the other end of the frame being supported by a stud 46, carried by the frame or disk 21. The frame 50 is formed with ways *o*, upon which there are mounted sliding strips 47, that are apertured to receive the trunnions *m* of bearings 48, in which the journals *p* of the roller 40^a ride; and in order that the rollers 40 and 40^a may be held in yielding contact I provide a bar 49, which bears upon the strips 47, and in connection with the bar 49, I arrange springs 51, which are borne upon by adjusting-screws 52, this arrangement providing for the holding of the wire-feeding rollers in yielding contact, and at the same time providing for any tilting of the roller 40^a incident to the use of wire of varying diameter. In the peripheral faces of the rollers 40 and 40^a, I form a series of graduated grooves *q*. The connection between the frame 50 and the stud 46 is established by means of a projection 53, that is formed with a circular slot *r*, said slot being concentric with the axis of the roller 40, there being a binding-bolt 54, which passes through the slot *r* and engages a threaded aperture formed in the stud, this arrangement being adopted in order that the

wire may pass from the bite of the wire-feeding rollers in a direct line to the peripheral face of the hose that is being operated upon, it being understood that different-sized hose may be wound upon this machine.

From the rollers 40 and 40^a the wire passes through an adjustably-mounted guiding-tube 55 and thence to the wire-placing tool, which said wire-placing tool consists of a tubular support 56, that is adjustably held by a yoke 57, said yoke being carried by a bracket 58, that is secured to the disk or frame 21. The extending end of the tubular support 56 is a spiral incline, and against such end there is held a spiral ring 59, formed with an inner groove 2, the ring 59 being held to the support 56 by a retaining-ring 60, through which there are passed bolts 61, which engage the support 56.

As just stated, the tubular support is adjustably held by the yoke of the bracket 58, this adjustment being necessary in order that the extending end 62 of the ring 59 may be brought into line with the set of grooves in the wire-feeding rolls through which the wire is passing, the required adjustment being secured by providing the yoke with a binding or set screw 63, which may be loosened to permit of the adjustment of the support, and it is for a like reason that the guiding-tubes 37 and 55 are adjustably mounted, such adjustment being secured by providing rods 65, having socketed heads 66, within which the tubes are held by set-screws 67, the rods 65 being held by clamps 67^a, that are carried by the frame 50.

With a machine such as the one above described it is necessary that the speed of the feeding-rollers 40 and 40^a should be such that the required amount of wire will be delivered to the hose, and it will of course be understood that this speed would vary with the sizes of hose that are to be wound.

To impart to the rollers 40 and 40^a the required speed, I provide a shaft 70, that is mounted in bearings formed in the frame 10, and to this shaft I secure gears 71 and 72, the gear 72 engaging the loosely-mounted gear 44, which, as before stated, engages the gear 43, that is carried by the shaft of the feeding-roller 40, and in order that the shaft 70 may be driven I provide gears 73 and 74, that are studded to the frame 10, the gear 73 being engaged by the gear 19 and engaging the gear 74, which gear 74 engages the gear 71, the intermediate gears between the gear 19 and the gear 43 being so proportioned as to drive the roller 40 at the required relative speed.

In operation the hose is passed into the tubular shaft 20 and carried thence through the support 56 and the ring 59, said ring and its support constituting the wire-placing tool, the wire being at this time fed into the groove 2 of the ring 59. Then if the machine be started, so that the disk or frame 21 will be turned in the direction of its arrow, the wire will be wound spirally upon the hose and the

hose will be forced forward bodily through the wire-placing tool, as will be readily understood.

In Fig. 6 I illustrate a construction wherein the cage or reel 24 is supported upon a supplemental disk or frame 21^a, said frame being rigidly connected to the disk or frame 21, such connection being established in any desired manner—as, for instance, by a cross-plate 70^a. The frame or disk 21^a is provided with a hub 71^a, which rides upon a tubular support 72^a, that is carried by a standard 73^a, and upon the hub 71^a is mounted a disk or frame 74^a, upon which the ring 23 rests, the reel or cage being carried by the ring 23, as hereinbefore set forth, the guiding-sheaves *h*, *h'*, &c., in this instance being journaled in a bracket 33^a, carried by the disk or frame 21^a.

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

1. In a hose-winding machine, the combination, with a wire-placing tool that is apertured to provide for the passage of the hose, of wire-feeding rollers arranged to bear upon the wire and force it to the placing-tool, and mechanism, substantially as described, whereby said rollers may be revolved each upon its own axis and both about the central axis of the machine.

2. In a hose-winding machine, the combination, with wire-feeding rollers formed with grooved peripheral faces, of a revoluble wire-placing tool provided with a spiral guiding-groove and apertured to provide for the passage of the hose, substantially as described.

3. In a hose-winding machine, the combination, with the wire-feeding rollers and the wire-placing tool formed with a spiral guiding-groove, of mechanism, substantially as described, whereby said rollers may be revolved each upon its own axis and both about the axis of the wire-placing tool, substantially as described.

4. In a hose-winding machine, the combination, with the wire-feeding rollers each formed with a series of graduated wire-receiving grooves, of an adjustably-mounted wire-delivery tube and an adjustably-mounted wire-placing tool formed with a spiral groove, substantially as described.

5. In a hose-winding machine, the combination, with the wire-feeding rollers formed with grooved peripheral faces, of yieldingly-mounted bearings in which the journals of one of the rollers ride, a wire-placing tool formed with a spiral guiding-groove, and mechanism, substantially as described, whereby the wire-feeding rollers may be revolved each upon its own axis and both about the axis of the wire-placing tool, substantially as described.

6. In a hose-winding machine, the combination, with a supporting disk or frame and a means for revolving the same, of a cage or reel held in frictional contact therewith, guiding-sheaves carried by the frame or disk,

wire-feeding rollers, a frame arranged in connection with said rollers, said frame being adjustably connected to the supporting-disk, a means, substantially as described, for revolving the feeding-rollers, and a wire-placing tool connected to the supporting-disk, substantially as described.

7. The combination, with a wire reel or cage, of a disk or frame on which the reel or cage is mounted, wire-feeding rollers carried by the disk or frame, a wire-placing tool, and an operating mechanism, substantially as described.

8. The combination, with a supporting disk or frame formed with a flange 22 and an abutment or flange *f*, of a ring 23, held in frictional contact with the abutment of flange *f*, a wire reel or cage mounted upon the ring 23 and held to turn therewith, feeding-rollers and a wire-placing tool carried by the supporting disk or frame, and an operating mechanism, substantially as described.

9. The combination, with a supporting disk or frame formed with a flange 22 and a flange or abutment *f*, of a ring 23, contact-blocks *g*, fitted in the flange *f*, blocks or plates 25, adjustably connected to the supporting disk or frame, contact-blocks *g'*, arranged in connection therewith, a wire cage or reel mounted upon and held to turn with the ring 23, feeding-rollers and a wire-placing tool carried by the supporting disk or frame, and an operating mechanism, substantially as described.

10. In a hose-winding machine, the combination, with a supporting disk or frame and a means for revolving the same, of a wire-feeding roller the shaft of which is journaled in bearings carried by the frame or disk, a frame 50, supported at one end by the wire-feeding-roller shaft and adjustably connected at the other end to the supporting disk or frame, a second wire-feeding roller that is journaled in bearings carried by the frame 50, intermeshing gears carried by the roller-shafts, a roller-driving mechanism, and a wire-placing tool, substantially as described.

11. In a hose-winding machine, the combination, with a supporting disk or frame and a means for revolving the same, of a wire-feeding roller the shaft of which is journaled in bearings carried by the frame or disk, a frame 50, supported at one end by the wire-feeding-roller shaft and provided at the other end with a slotted projection 53, a stud or standard 46, a set or binding screw which passes through the slot of the projection 53 and engages the stud or standard 46, a second wire-feeding roller that is journaled in bearings carried by the frame 50, intermeshing gears carried by the roller-shafts, a roller-driving mechanism, and a wire-placing tool, substantially as described.

12. In a hose-winding machine, the combination, with a hollow shaft and a means for driving the same, of a disk or frame 21, that

is rigidly connected to the hollow shaft, a wire-placing tool, a bracket by which said tool is supported, said bracket being connected to the disk or frame 21, a wire reel or cage
5 carried by the disk or frame 21, a gear 44, loosely mounted on the hollow shaft, a means for driving said gear, a feeding-roller, a gear 43, carried by the roller-shaft, said gear being engaged by the gear 44, a second feed-

ing-roller, intermeshing gears carried by the feeding-rollers, guiding-sheaves, substantially as described, over which the wire passes, and tubes 37 and 55, substantially as described.

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Witnesses:

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