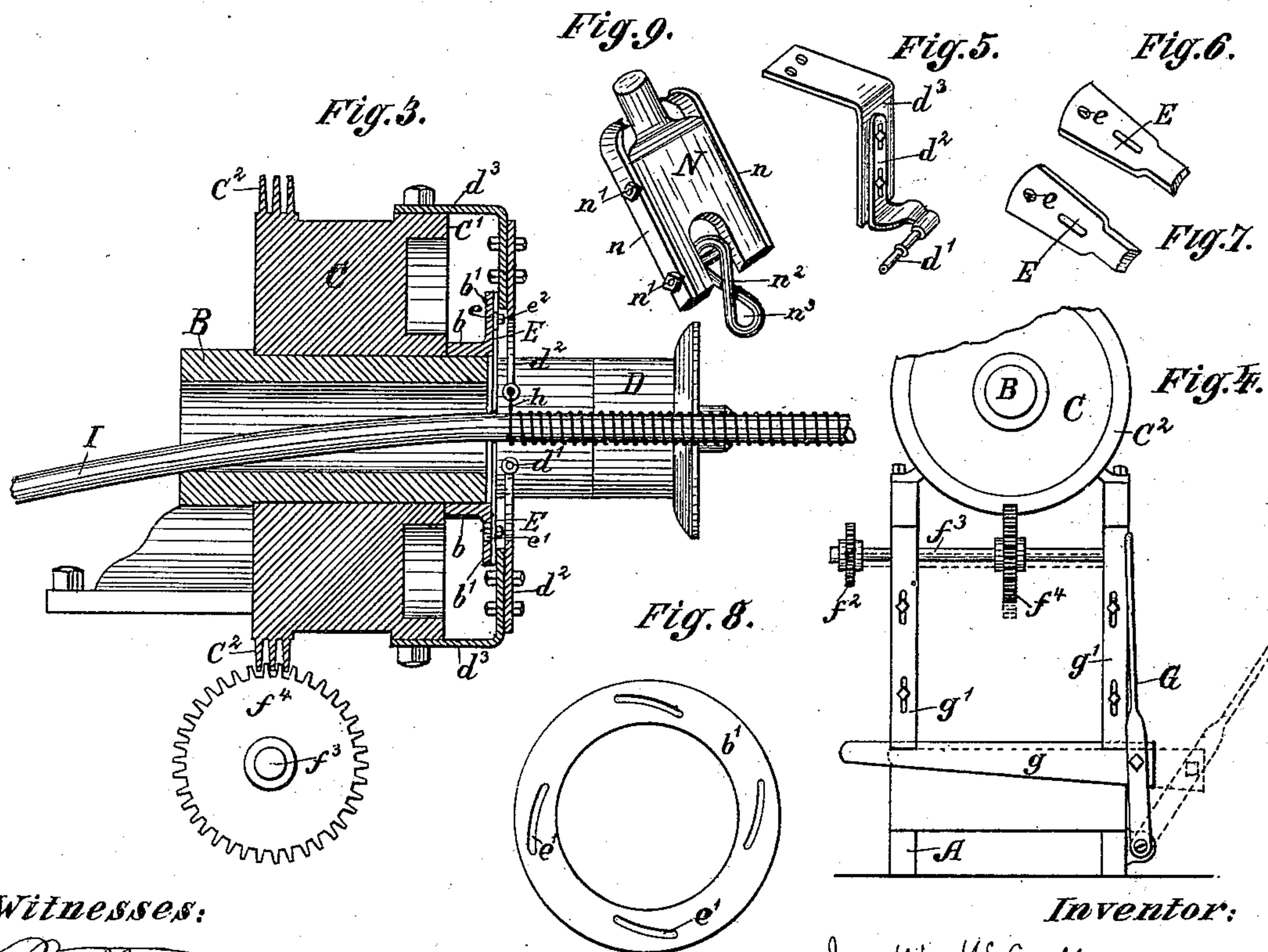
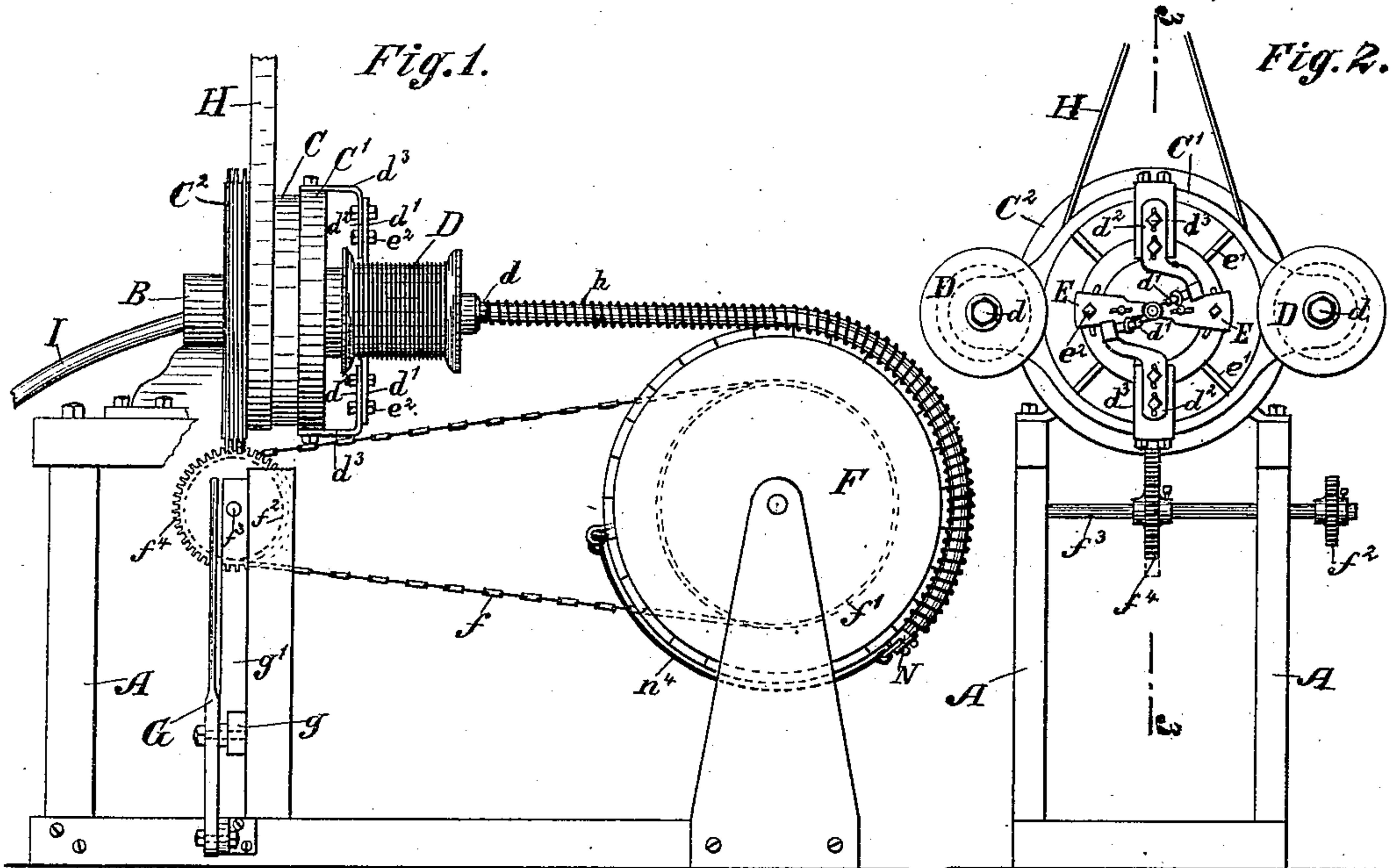


(No Model.)

I. W. MCGAFFEY.
MACHINE FOR WINDING WIRE UPON HOSE.

No. 334,026.

Patented Jan. 12, 1886.



Witnesses:

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IVES W. MCGAFFEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO EVERETT B. PRESTON AND GEORGE E. PRESTON, BOTH OF SAME PLACE.

MACHINE FOR WINDING WIRE UPON HOSE.

SPECIFICATION forming part of Letters Patent No. 334,026, dated January 12, 1886.

Application filed October 12, 1885. Serial No. 119,641. (No model.)

To all whom it may concern:

Be it known that I, IVES W. MCGAFFEY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Winding Wire upon Hose, of which the following is a specification.

It has heretofore been supposed necessary to support the hose in this class of machines at the point where the winding is being done by means of an internal mandrel fitting the hose well enough to prevent any collapse under the tension of the wire. (See patent to Durkee, May 26, 1885.) I have found that this mandrel is unnecessary, and that the machine may be simplified and the operation rendered much more easy by dispensing with it.

To keep the hose in form at the point where the winding is being done, I employ, instead of the mandrel, a mold or form fitting the exterior of the hose evenly upon all sides, and wind the wire upon the hose at the point, as near as may be, where it emerges from said mold in its travel through the machine. This mold or form, exerting equal force upon the hose at all points, renders the hose self-sustaining against collapse or indentation, and straightens out any portions thereof which may not be truly cylindrical before the wire is wrapped around it; and my invention consists in an exterior mold or form adapted to render the hose self-sustaining against collapse or indentation, through which the hose is passed, in connection with a winding or other suitable device for winding the wire upon the hose at or near the point where it emerges from said mold.

The accompanying drawings illustrate a machine embodying my invention. Figure 1 is a side elevation thereof. Fig. 2 is a front view of the mold and winding-head. Fig. 3 is a section upon the line 3-3 of Fig. 2. Fig. 4 is a rear elevation. Fig. 5 is a detail of the wire-guide. Figs. 6 and 7 are details of the sections making up the mold. Fig. 8 is a detached view of the ring by which the sections of the mold are adjusted, and Fig. 9 is an enlarged perspective view of the clamp for the end of the hose.

In said drawings, A represents a suitable

stand, upon which is mounted a stationary hollow shaft, B, through which the hose passes. Upon this shaft is the operating pulley C, the spool-head C', and the worm C². The spool-head carries the spools D, one or both of which can be used at a time, as desired, and which are regulated, as to the tension which they exert upon the wire, by the tightening-nut d. The winding-head also carries adjustable guides, through and by which the wire is delivered to the hose, consisting of hollow bushes or eyes d'. These guides are secured in holders d² by means of an external thread, so that by rotating them in their said holders they may be adjusted to or from the hose, as occasion requires. The pieces d² are adjustably attached to the L-shaped pieces d³, which are bolted directly to the head.

The front end of the shaft B supports a flanged cap, b, and upon this cap is the slotted ring b'. To this cap and ring are secured four or other convenient number of sections, E, (shown in detail at Figs. 6 and 7,) the inner ends of which constitute the mold or form by which the hose is kept in true cylindrical form, as already stated. They are caused to do this by concaving said ends to conform to the hose and adjusting them thereto, so that they all bear equally and evenly upon the hose, thus straightening it out if it comes to the mold either dented, collapsed, or otherwise untrue, and rendering it sufficiently rigid and self-sustaining to enable it to withstand the strain caused by the wire, which, as will be observed in Fig. 3, is applied to the hose just as it emerges from the mold, the mold being located within the spool-carrying and wire-guiding attachments of the winding-head.

The ring b' is capable of being rotated when it is desired to adjust the mold-sections to or from the center, and it is made to perform this duty by the engagement of pins e upon the mold-sections with the slots e' in the ring. After adjustment the sections are made fast by bolts e².

The hose is drawn through the machine by a receiving-reel, F, which is positively operated by power communicated through the sprocket-chain f and pulleys f' f² and shaft f³, the latter carrying one of said pulleys, and also the gear f⁴, which meshes with the worm C².

If it is desired to stop this reel at any time, it may be done by pulling the lever G and the wedge g , to which it is attached, to the position shown in dotted lines in Fig. 4, thereby
5 allowing the standards g' , in which the shaft f^3 is supported, to drop sufficiently to free the gear f^4 from engagement with the worm.

The machine is operated by the belt H. The wire with which the hose is wound is lettered
10 h , and the hose I. By making the wire-guides and the hose adjustable the machine is adapted to wire different sizes of hose. The end of the hose is connected to the winding-reel by a clamp consisting of a short round plug, N,
15 which fits inside the hose, and the clamping-jaws n , secured to the plug by the clamping-bolts n' . The outer end of the plug, upon which the clamping-jaws fit, may preferably be square or rectangular in shape, and form a
20 better bearing for the clamping-jaws. As the plug which fits inside the extreme end of the hose and resists the pressure of the clamping-jaws is cylindrical, the clamping-jaws will not press the hose out of true cylindrical shape.
25 A hook, n^2 , provided with an eye, n^3 , is attached to one of the clamping-bolts, n' , and a rope or chain, n^4 , secured in this eye at one end, is attached to the reel at its other end by a hook or otherwise.

30 The guide-eye or hollow bush d' , through which the wire is fed to the hose, should be adjusted to deliver the wire tangentially to the hose—that is to say, this bush d' should be adjusted to stand at a tangent to the circum-
35 ference of the hose. It should also be observed that after hose is wound with wire the wire causes the hose to maintain its true cylindrical shape, and for this reason the wire upon the wound portion of the hose aids the mold
40 in keeping the hose in cylindrical shape at the point where the wire is applied or being wound upon it.

I do not herein claim the art or process of winding wire directly upon externally-sup-
45 ported hose, as that forms the subject of a previous application filed by me under date of July 27, 1885, and numbered 172,769.

I claim—

50 1. The machine for winding wire upon hose, consisting of an exterior mold or form adapted to render the hose self-sustaining and rigid,

and forming the only support therefor, in combination with a winding-head rotating around said mold and acting to lay the wire directly on the hose immediately after it has emerged
55 from the mold, substantially as specified.

2. The machine for winding wire upon hose, consisting of an exterior mold adapted to render the hose self-sustaining and rigid, and forming the only support therefor, in combination with a winding-head rotating around
60 said mold and acting to lay the wire directly on the hose immediately after it has emerged from the mold, and positively-actuated feeding devices, substantially as specified. 65

3. In a machine for winding wire upon hose, the combination of a stationary mold or form for the hose, a winding-head for laying the wire upon the hose as it passes out of said mold, and a positively-actuated receiving-reel,
70 substantially as and for the purpose set forth.

4. In a machine for winding wire upon hose, the combination of a mold or form for the hose, consisting of adjustable sections E and a winding-head having adjustable guides for the wire,
75 substantially as specified.

5. In a machine for winding wire upon hose, the combination, with the winding-head, of a mold or form for rendering the hose rigid and self-sustaining, consisting of adjustable sec-
80 tions E, substantially as specified.

6. In a machine for winding wire upon hose, the combination, with the hose-receiving reel and its driving-chain, of the gear f^4 , supported in bearings which may be lowered, as set forth,
85 and the worm C^2 , substantially as specified.

7. In a machine for covering hose with wire, the combination, with the mold and the winding devices, of an interior support for the end of the hose, substantially as specified. 90

8. The combination, in a hose-winding machine, of a hose-receiving reel, and a clamp for connecting the hose to the reel, consisting of a short interior plug, N, and jaws n , substantially as specified. 95

9. The combination, with the winding-head, of the laterally-adjustable bush or eye d' for guiding the wire, substantially as specified.

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Witnesses:

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