(Model.) 2 Sheets—Sheet 1.

# W. B. HAYDEN.

## MACHINE FOR COILING WIRE RODS.

No. 250,528. Patented Dec. 6, 1881.

*Fig. 1.*

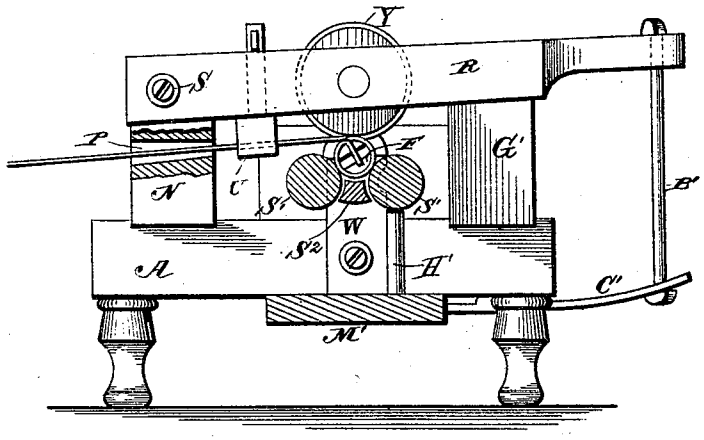
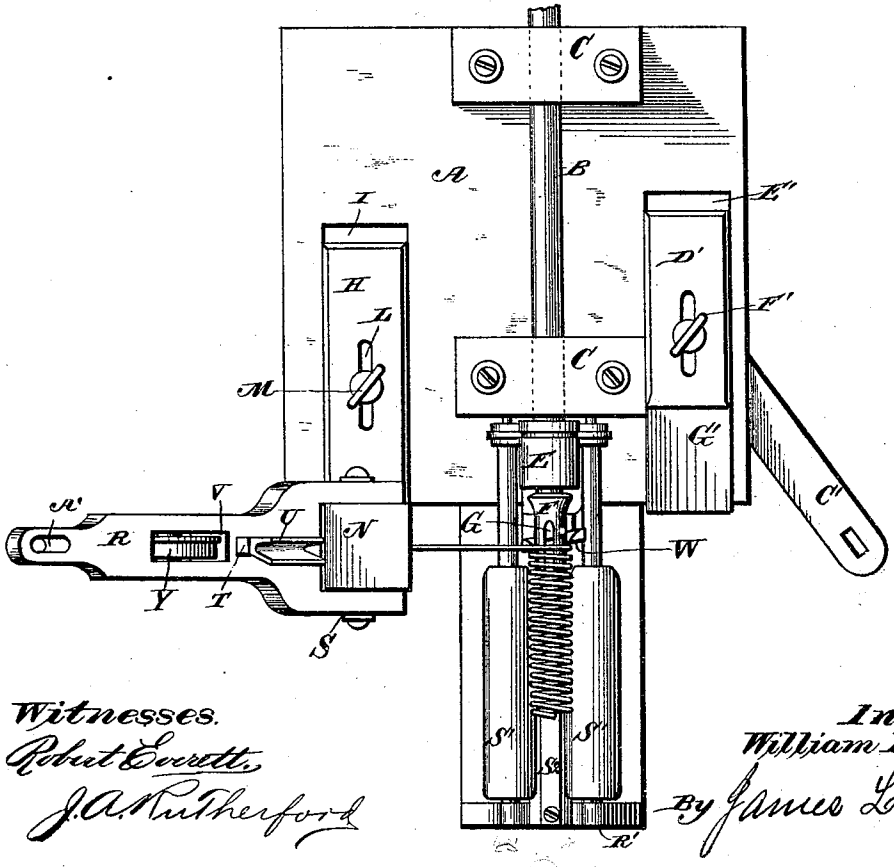



*Fig. 2.*




Witnesses.
Robt Everett.
J. A. Rutherford

Inventor.
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(Model.) 2 Sheets—Sheet 2.

# W. B. HAYDEN.

## MACHINE FOR COILING WIRE RODS.

No. 250,528 Patented Dec. 6, 1881.

Fig. 3.

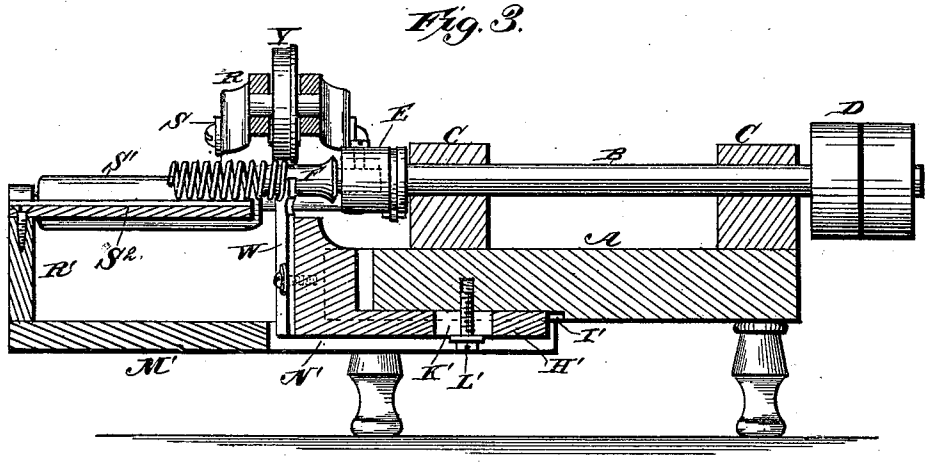



Fig. 4.

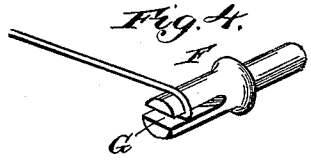



Fig. 6.

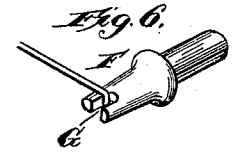



Fig. 7.

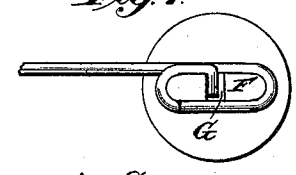



Fig. 5.

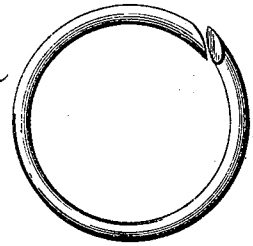


Fig. 8.

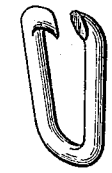
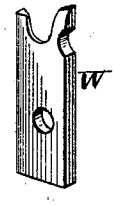


Fig. 9.




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# UNITED STATES PATENT OFFICE.

WILLIAM B. HAYDEN, OF COLUMBUS, OHIO.

## MACHINE FOR COILING WIRE RODS.

SPECIFICATION forming part of Letters Patent No. 250,528, dated December 6, 1881.

Application filed July 26, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. HAYDEN, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented new and useful Improvements in Machines for Coiling Wire Rods from which to manufacture chain-links, rings, &c., of which the following is a specification.

This invention relates to certain improvements in apparatus for winding metallic wires or rods into spiral coils, either circular, elliptical, or other shapes in cross-section, and it is especially designed for the preparation of wires or rods for the manufacture of rings or links for chains, rings for hames, and for other purposes.

The objects of my invention are to provide certain means whereby a wire or rod may be wound circularly, elliptically, or in any other shape in transverse section, to be alternately formed into rings or chain-links, as more fully hereinafter specified. These objects I attain by the apparatus and mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a view, partly in forward elevation and partly in vertical transverse section, of my apparatus; Fig. 2, a top view of my improved machine; Fig. 3, a longitudinal vertical section of the same; Fig. 4, a detached view of the former employed for the construction of the circular rings; Fig. 5, a detached view, showing a ring cut from the wire or rod as circularly wrapped; Fig. 6, a detached view of the former for wrapping the wire oval in cross section; Fig. 7, a front view of the said former; Fig. 8, a detached perspective view of a link cut from the ovally-wrapped wire, and Fig. 9 a detached view of one of the guides for directing the wire or rod forward from the former.

The letter A indicates a strong table, of metal or other material, upon which the working parts of my apparatus are mounted.

B indicates a horizontal shaft, journaled in the pillow-blocks C, secured to the table. The said shaft, at its rear end, is provided with a crank or pulley, D, or other means, by which it may be rotated, and the forward end is provided with a chuck, E, for the reception of the shank of a former, F. The said former consists of a short tapering mandrel of metal, which is cylindrical, elliptical, or other shape in cross-section, according to the configuration to be given to the wire or rod. The forward end of the former is slotted, as indicated by the letter G, in order to seize and hold the end of the wire or rod.

The letter H indicates an adjustable slide, located in a longitudinal recess, I, in the top of the table at one side of the horizontal shaft. The said slide is slotted longitudinally, as indicated by the letter L, and through said slot passes a clamping-screw, M, by means of which the slide may be secured in any desired position. The forward end of the slide is provided with a block, N, having a guide-aperture, P, through which the rod or wire is passed to the former.

The letter R indicates a lever fulcrumed at S to the said block, and so arranged as to extend transversely across the front of the table above the former. The said lever is slotted, as indicated by the letter T, and is provided with an adjustable guide, U, which is adapted to bear upon the wire or rod on its way to the former. The said lever is also slotted at V, and in said slot is journaled a flanged roller, Y, directly over the former, the object of which is to bear upon the wire and hold it closely against the former, the flange directing the wire to and against a guide, W, causing the wire to be projected forwardly as it is coiled upon the former. The lever, at the end opposite its fulcrum, is bifurcated or forked, as indicated by the letter A′, and is provided with a link, B′, by means of which it may be connected with a spring, C′, in order to hold the said lever and cause its guide and roller to bear with a yielding pressure upon the wire or rod. This rod B′ can be screw-threaded at its upper end and provided with a suitable nut or clamp thereon, whereby the rod can be held in adjustment in the slot.

The letter D′ indicates an adjustable slide similar to the slide H, and located in a longitudinal recess, E′, on the opposite side of the horizontal shaft. This slide is slotted and held in position by a set-screw, F′, and at its forward end is provided with a block, G′, which steadies the end of the lever R. The guide W is secured to the forward end of an adjustable slide, H′, at a slight angle to the axial

line of the former. The slide H′ is located in a recess, I′, on the bottom of the table, and is slotted at K′ and held in position by means of a set-screw, L′.

The letter M′ indicates an extension projecting forwardly from the table and secured to the bottom thereof. This extension is provided with a slot, N′, forming ways for the adjustable slide H′. The said extension at its forward end is provided with a vertical standard, R′, having bearings for the journals at the forward ends of the guide-rollers S′. The rear journals have their bearings in the forward pillow-blocks of the horizontal shaft, and the said journals are provided with friction-rollers, bearing against the periphery of the chuck, by means of which they are rotated. The said guide-rollers are parallel with the axial line of the former, and as the coil revolves keep it in shape and cause it to revolve with the former after the end has left the slot, as is necessary in forming coils cylindrical in shape.

The operation of my invention is as follows: The wire is passed directly from the rolls through the aperture in the block at the forward end of the adjustable slide, then under the guide and roller of the lever, and is secured in the bifurcated or forked end of the former or mandrel. Upon rotating the shaft the wire is coiled upon the former, and the coil as formed is constantly pushed forward by the guide W.

When an elliptical or any other shaped coil other than cylindrical coils are to be formed the guide-rollers S′, for receiving the coil from the frame or mandrel, are dispensed with, and in lieu thereof the coil revolves in a longitudinal trough or guide-way, $S^2$, which is supported by the frame-work of the machine. In this arrangement the mandrel or former revolves the coil, even after the bent end of the latter has left the bifurcated end of the former or mandrel, such revolution resulting from the elliptical form of the coil.

The links or rings, when cut from the elliptical or circular coil, are of the form shown in Figs. 5 and 7, the particular form, of course, depending upon the shape of the former, and when the coil is so cut up, which may be done by hand or by machinery, the severed parts of each link or ring are welded or otherwise united together ready for use.

The feeding of the rods directly from the rolls which produce the wire or rod to the former or mandrel may be accomplished by connecting the rolls and the machine by a trough, and hence, as the machine is automatic in its nature, skilled labor is not essential, and the cost of manufacturing links, rings, &c., for the objects specified will be materially lessened.

Having fully described my invention, what I claim is—

1. In combination with the shaft and the slotted former, the adjustable slide and guide-block, the lever fulcrumed to said slide and provided with a guide and flanged roller, and the spring and connecting-link, whereby the lever is held and the guide and flanged wheel pressed against the wire or rod, substantially as specified.

2. In combination with the adjustable slide and guide-block, the lever and former mounted on the rotary shaft, the adjustable slide and block for steadying the lever, substantially as specified.

3. In combination with the former mounted on the rotary shaft, the flanged wheel journaled in the lever, and the guide W, arranged directly below the former and mounted on an adjustable slide, whereby the coil is projected forward, substantially as specified.

4. The combination, with the former, of the revolving rollers S′, mounted in front of a wire-coiling machine to receive the wound coil after it has left the former, as and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM B. HAYDEN.

Witnesses:
A. CORNWALL,
A. C. CORNWALL.