2 Sheets—Sheet 1.

W. J. LEWIS.

Machine for Coiling Wire and Rods.

No. 229,718. Patented July 6, 1880.

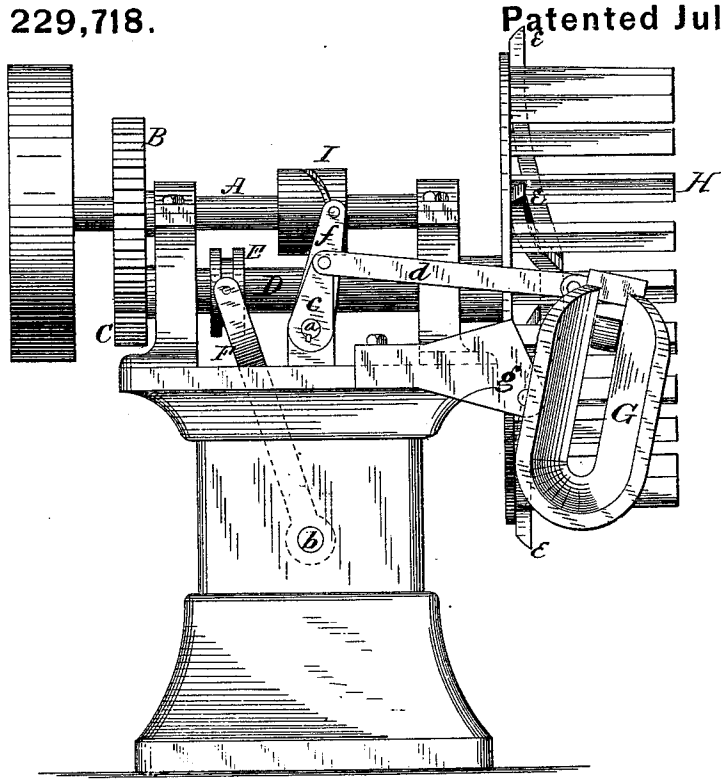


Fig. 1.

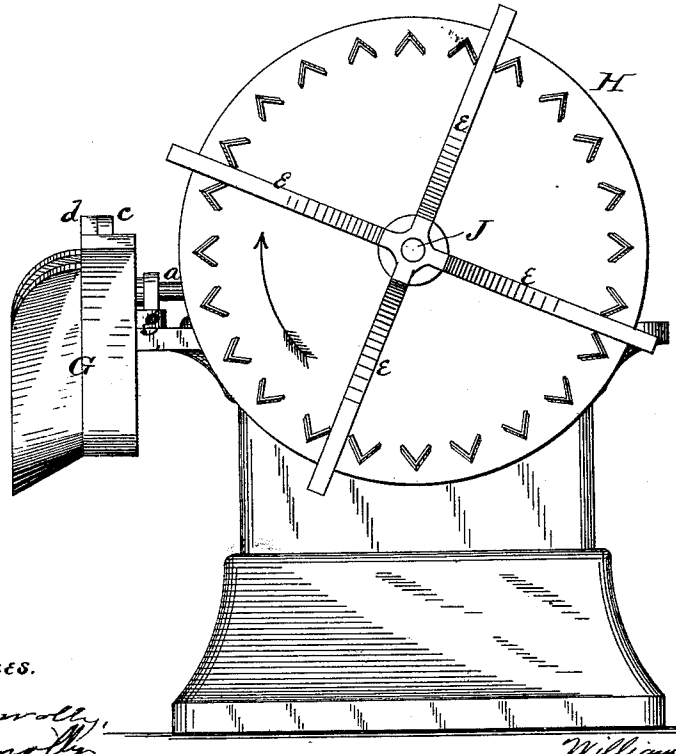


Fig. 2.

Witnesses.
A. Connolly,
A. Connolly.

William J. Lewis,
by Connolly Bro's & McTighe Inventor,
Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

W. J. LEWIS.

Machine for Coiling Wire and Rods.

No. 229,718. Patented July 6, 1880.

Fig. 3.

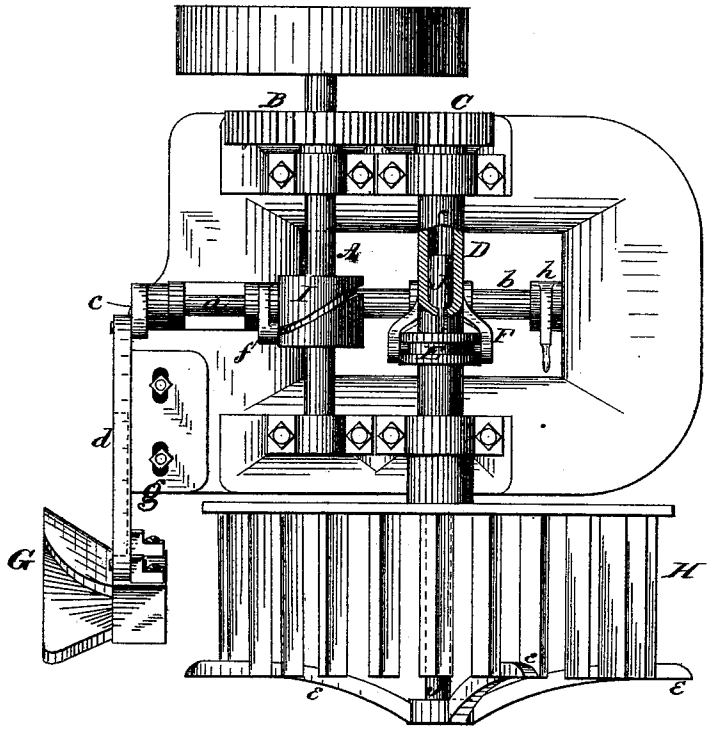
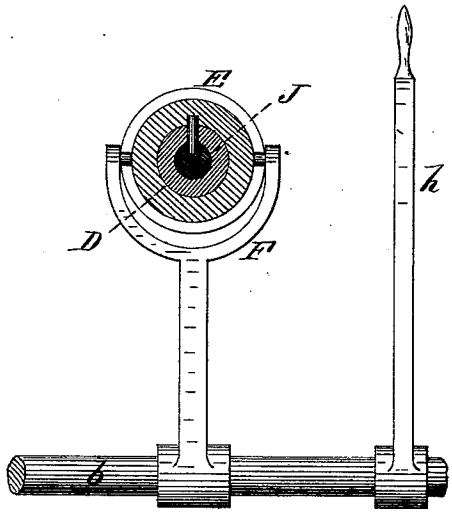


Fig. 4.



Witnesses.
A. Connolly
N. Connolly

William J. Lewis,
Inventor.
by Connolly Bros & McFeyle Att'ys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM J. LEWIS, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR COILING WIRE AND RODS.

SPECIFICATION forming part of Letters Patent No. 229,718, dated July 6, 1880.

Application filed November 18, 1879.

To all whom it may concern:

Be it known that I, WILLIAM J. LEWIS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machinery for Coiling Wire and Rods; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation of the machine. Fig. 3 is a top view of the same. Fig. 4 is a detail view.

This invention relates to machinery for coiling wire and rods in wire-mills as they emerge from the roll-train.

Such machinery usually consists of a reel revolved by power and provided with a stripper for throwing off the coil when wound; but the coil is apt to become unwound more or less while being ejected from the machine, and still more in cooling, and the machine being always in motion, difficulty arises in inserting a new wire for coiling.

I propose to do away with these difficulties; and to these and other ends my invention consists in the construction and arrangement of parts, all as hereinafter fully described and claimed.

More particularly, my invention is as follows: Journaled in bearings upon a suitable table or bed is a shaft, A, receiving motion by means of a belt and pulley or otherwise. On shaft A, I construct a collar, I, with a diagonal groove cut in its face, as shown. Journaled on the table, at right angles to shaft A, but somewhat below it, is a rock-shaft, *a*, fitted with the two cranks *f* and *c*. Crank *f* has a stud or pin projecting into the groove in the collar I, so that as collar I revolves the crank *f* is given an oscillatory movement to and fro, and likewise crank *c*. A pitman, *d*, is fitted to the wrist of crank *c*, and at the outer end is pivoted to the upper end of the guide G, which at a point below is pivotally suspended on a bracket, *g*, so that when the pitman reciprocates it vibrates the guide G. The guide is of an elongated-U shape and flaring.

A spur-wheel, B, is keyed on the shaft A, and this meshes with a pinion, C, on a shaft, D, running parallel with shaft A. Shaft D is tubular throughout, and at its outer end carries the reel H. Shafts D and A thus revolve together; but the gearing is such that D has greater speed than A. A circumferentially-grooved collar, E, is fitted to slide on shaft D, and is moved thereon, when required, by means of a crank, F, whose bifurcated end embraces collar E and has studs or pins projecting into its groove. Crank F is keyed on a rock-shaft, *b*, in the base of the table, and this shaft is provided with either a hand-lever, *h*, or a treadle, so that by operating said lever or treadle the collar E will move accordingly on the shaft D. Inside shaft D is a second shaft, J, to which the collar E is rigidly attached by a connecting-pin which plays in a long slot in the tubular shaft D, and thus the inner shaft, J, partakes of the motion of collar E. To the outer end of shaft J is attached the stripper, which consists of a number of radial arms, *e e e e*, which sweep backwardly so as to describe a cusp or a cone in revolving. The reel H is made up of a series of V-shaped arms, the wide portions being toward the axis.

Operation: The wire is passed through the guide G, which is below the axis of the reel, and the flaring slits formed by the V-arms of the reel afford it an easy entrance, and thus the wire is locked without difficulty. The reel continues revolving, but the wire is compelled by the vibrating guide to assume a zigzag course thereon, and thus the successive convolutions form, as it were, an interlocking system, which will not unwind when released from the reel, besides making a broader coil than usual. When coiled, the workman operates the lever or treadle *h*, and this causes the stripper *e e e e* to push the coil off the reel, and the conical form of the stripper prevents the coil from catching on anything in its fall.

While I have described a particular means of vibrating the guide, I do not confine myself to such, as other means can be readily adopted. Again, the exact relations of the respective parts may be varied—as, for instance, the diagonal groove in the collar I may be replaced by an undulating cam-groove, so as to give the guide a more rapid vibration.

In these machines the wire or rod is coiled direct from the roll-train while still hot enough to be difficult to handle. While in this condition a long rod will be readily guided laterally, it is found to be more difficult to guide it to a definite vertical height. Hence I construct the flaring guide G of an elongated-U shape, so that there will be plenty of room for the proper vertical delivery of the initial end of the wire or rod.

I am aware that it is common to make winding-reels with peripheral arms or rods parallel with the axis; but my reel is given a special form. The peripheral arms are V-shaped in section, the apex of the V being on the outside. Thus constructed, the sides of two arms present a converging space, narrowing down to a mere slit finally at the base of the V's. Thus, with a given number of arms, each having a sharp, or comparatively sharp, edge, and the sides forming directive surfaces, no difficulty is met with in effecting the entrance of the wire or rod into the reel. With the ordinary round or square arms, in order to have the wire lock itself by striking diagonally behind one bar and in front of the next, the bars should be and are close together, and then it is difficult to effect the entrance of the wire between the arms of the reel while the latter is in rapid rotation; but the V-shaped arms entirely obviate these difficulties. The apices of the V's may be far apart and the bases close together, and thus the wire is easily inserted, and the proximity of the bases effects a sudden bend of the wire end as it emerges between the arms. The guide before described being placed below the axis of the reel, the wire end goes in toward the under half of the reel, which is thus always traveling toward the end to be inserted, and the wire is almost certain in every case to obtain an entrance. When, as is usually the case, the guide is on a level with the axis or above it, the arms pass by with such great rapidity comparatively that frequently the wire buckles up and is rendered useless for its purpose.

What I claim as my invention is as follows:

1. In a wire or rod coiling machine, an elongated-U-shaped guide having a flaring front and parallel sides.

2. In a coiling-machine, the combination of the reel, the shaft A, collar I, having cam-groove, studded crank *f*, shaft *a*, crank *c*, pitman *d*, and pivoted guide G, substantially as described.

3. In a coiling-machine, the combination of tubular shaft D and reel H with the collar E, shaft J, and stripper *e e e e*, substantially as shown.

4. In a coiling-machine, a reel, H, composed of V-shaped arms having their broad portions facing the axis, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM J. LEWIS.

Witnesses:

JAMES J. MCTIGHE,

T. J. MCTIGHE.