

H. P. WILSON.
Machine for Splicing and Twisting Wire.
No. 218,414. Patented Aug. 12, 1879.

Fig. 1

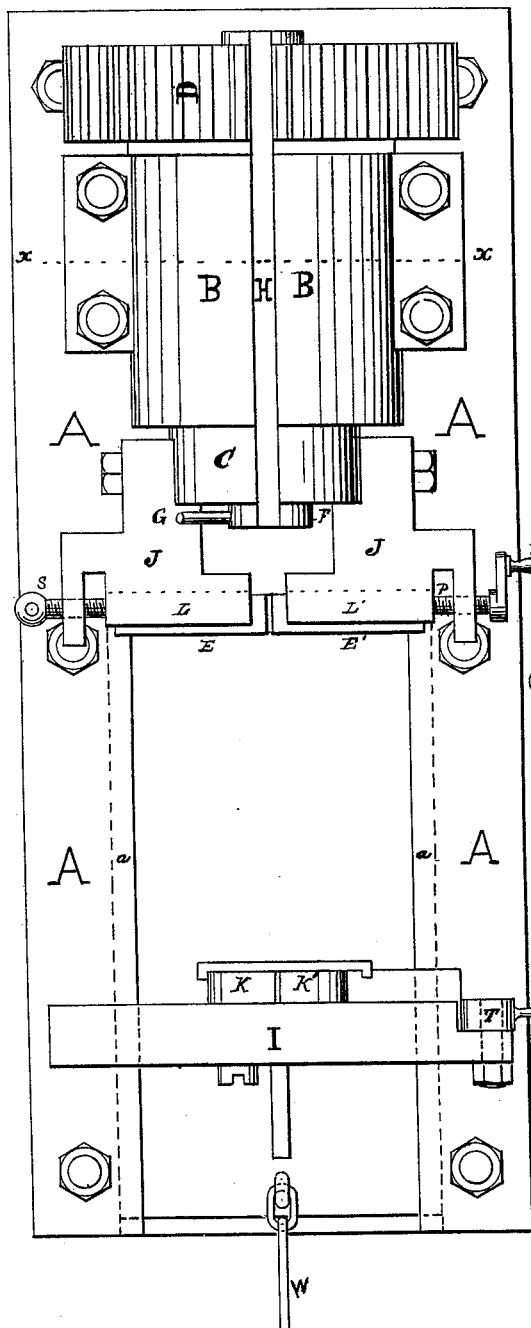


Fig. 2

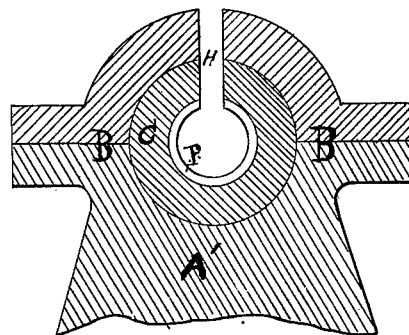


Fig. 3

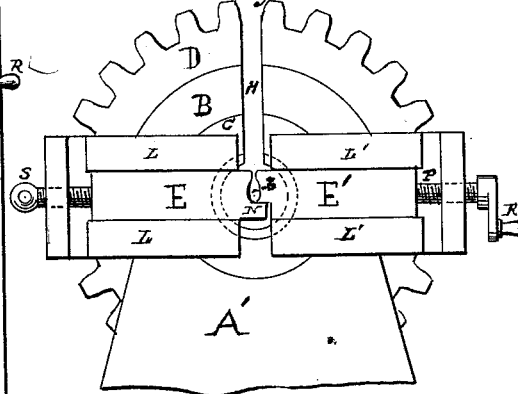
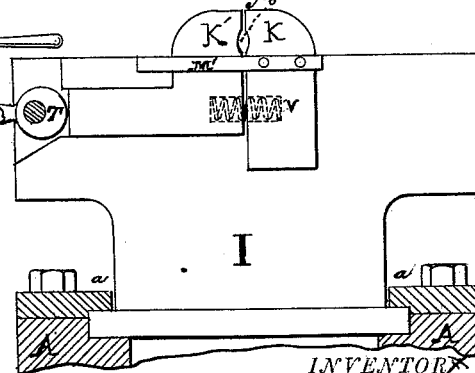


Fig. 4



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY P. WILSON, OF NEW YORK, N. Y., ASSIGNOR TO WASHBURN & MOEN MANUFACTURING COMPANY, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SPLICING AND TWISTING WIRE.

Specification forming part of Letters Patent No. **218,414**, dated August 12, 1879; application filed November 16, 1877.

To all whom it may concern:

Be it known that I, HENRY P. WILSON, of the city and State of New York, have invented certain new and useful Improvements in Machinery for Splicing or Twisting Wires Together, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to machinery for splicing wire together for baling or other purposes by twisting the ends together in such a way that the splice is as strong as any other part of the wire, the object being to utilize short pieces of wire which would otherwise be wasted; and consists, first, in providing the jaws of the vises with coinciding notches, to hold the wires at the extremities of the splice each in intimate contact with its partner wire during the process of twisting the same, and also providing said vises with a rest or stop at and coinciding with the bottom of the gripe formed by said notches, to prevent the wires forming the splice from passing downward beyond said gripe when being introduced into the vise; second, in attaching one of the above-mentioned vises to a hollow revolving shaft, said shaft being provided with a longitudinal opening throughout its entire length, to admit of the passage of one of the partner wires to its interior, a corresponding opening being made in its gear-wheel, and also in the cap of its bearing, and also provided with an adjustable gate, which may be manipulated so as to close said opening, confine the wire within the interior of the shaft, and prevent it from interfering with the driving mechanism during the process of twisting the wires together forming the splice.

In the drawings, Figure 1 is a plan of the apparatus or machine. Fig. 2 is a vertical cross-section through the line *x x* of Fig. 1. Fig. 3 is an inward elevation of the head-block and its operating mechanism. Fig. 4 is an inward elevation of the tail-block and its vise.

A is the bed of the machine or apparatus; A', the head-block, carrying the operating mechanism; B, the bearing, carrying the hollow shaft; C, the hollow shaft or spindle; D, the gear-wheel secured to shaft C; E, the fixed

jaw in revolving vise-stock J; E', the movable jaw in same; F, the tube or gate for closing opening H; G, the handle or lever operating tube or gate F; H, the slot or opening into interior of shaft C; I, the tail-block, carrying vise or jaws K K'; J, the revolving vise-stock on shaft C; K, the fixed jaw of vise in tail-block I; K', the movable jaw in same; L L', ways or guides, carrying jaws E E'; M', rest or stop in tail-block vise; N, rest or stop in revolving vise; P, adjusting-screw operating jaw E'; R, handle operating screw P; S, set-screw confining jaw E; T, cam-disk operating jaw K'; V, spring between jaws K K'; W, weighted cord attached to tail-block I; *a a*, ways carrying tail-block I; *b*, elliptical gripe in jaws E E'; *b'*, elliptical gripe in jaws K K'.

Similar letters refer to similar parts in the different figures.

At one end of the bed A is securely fastened the head-block A'. To this head-block is firmly secured the bearing B, through the cap of which is cut a longitudinal opening. Within this bearing is accurately fitted the hollow shaft C, carrying and rigidly fastened at its outward end to the gear-wheel D, into the teeth of which the driving mechanism engages. Throughout the whole length of this shaft an opening similar to the opening in the bearing is made, and a radial opening is made through the gear-wheel D from its periphery to and coinciding with the opening in the shaft C.

Fitted within and revolving with this shaft, and extending throughout its whole length and a little beyond its inward extremity, is the tube F. This tube has also an opening extending throughout its whole length, corresponding to the opening in the shaft, and is provided at its inward end with a lever or handle, G, by the manipulation of which it may be revolved, to the end that the opening in the hollow shaft may be closed, confining the wire within the shaft and preventing it from interfering with the operation of the driving mechanism during the process of twisting the wires together.

To the inward end of the shaft C is securely fastened the vise-stock J J, carrying the ways L L' L' L', into which are fitted the grasping-

jaws E E'. In each of these jaws is cut a coinciding semi-elliptical notch, and jaw E is provided with a stop or rest, N, at the bottom of its notch, which stop coincides with and matches into the offset formed in jaw E', parallel with the plane of the bottom of its notch.

At the outer end of jaw E is the set-screw S, securing or confining the jaw firmly in its place in the ways.

At the outer end of the jaw E' is the adjusting-screw P, which, passing through the vise-stock, terminates in a handle, R, and is so attached or swiveled to the jaw E' that by turning the handle the jaw may be moved forward toward the jaw E, thus grasping the wires within the elliptical gripe *b*, so formed while being twisted or drawn back and away from jaw E, to permit of the withdrawal of the completed splice, the ways, jaws, and adjusting-screw forming a vise, the stop or rest N preventing the wires dropping below the notch when being adjusted or when the jaws are asunder, the elliptical gripe *b* forcing together and holding the wires firmly in contact with each other during the process of twisting or splicing, thus permitting the splicing together of wires of different diameters or gages, which could not be done if held between plane or rectilinear surfaces, as in an ordinary vise.

These notches are of such a size that splices may be made of wires of a variation of several gages; but where the apparatus has been used for splicing wires of comparatively small diameters, and it is desired to splice wires of comparatively large diameters, the set-screw S is slackened or removed, the jaws taken out, and other similar jaws possessing similar grasping-notches of the desired size inserted and adjusted in their places.

At the end of the bed A, opposite to the head-block, are ways *a a*, on which travels the tail-block I, carrying a non-revolving vise or adjustable grasping-jaws K K', each possessing a semi-elliptical coinciding notch, similar to those in the jaws E E'. In this vise the jaw K is securely fastened to the tail-block, while the jaw K', traveling in guides or ways, is moved forward toward jaw K by the operation of the cam-disk T, actuated by its lever, or thrust back and away from jaw K on the release of the pressure of the cam-disk by the spring V, inserted between the jaws. These jaws, like the jaws E E', may be readily removed and replaced by others, as desired, and are also provided with a stop or rest, M', at the bottom of the notches, to prevent the wires from passing below them when the jaws are asunder, and assist in guiding the end of the splice into the elliptical gripe when the jaws are brought together as in jaws E E'.

To the rear end of the tail-block a cord, W, is attached, which, passing over a grooved wheel or pulley, terminates in a weight.

The operation is as follows: The ends of the two wires to be spliced are laid together, overlapping each other to any degree desired. The extremities of the splice are then adjusted

in the machine by turning the handle G of the tube F, and the gear-wheel D of the shaft C, until the openings in both C and F coincide with the opening through the cap of bearing B, and form the opening H, and by passing one of the wires to be spliced down through the opening so formed until it rests within the tube F, and the end of the splice next the tube lies upon the rest N, and partly within the notch of the jaw E. The handle R of screw P is then revolved, and the jaw E' moved in its ways toward the jaw E, forming the elliptical gripe *b* by the coincidence of the two semi-elliptical notches grasping, forcing together, and confining the end wire and partner wire of that portion or end of the splice. The handle or lever G of the tube F is then brought over, revolving the tube within the shaft C, closing the opening in the spindle, and confining the partner wire between the jaws E E' and the gear-wheel D within it.

The other end of the splice is then confined within the elliptical gripe *b'* of the jaws K K' in the tail-block I by moving the jaw K' in its ways toward the jaw K by means of the cam-disk T.

The power being applied by a gear-wheel or pinion to the gear-wheel D, the shaft C, carrying the vise, is thereby revolved, and the wires forming the splice twisted together. As the operation of twisting proceeds, the distance between the two extremities of the splice necessarily decreases, and the tail-block is drawn on its ways toward the revolving vise, thereby drawing the weighted pull-back cord up and over the pulley, or, if a spring is used instead of the weighted cord, bringing it into operation. This weighted pull-back cord not only steadies the tail-block during the process of twisting the wires together, but when the process is completed and the splice released returns the tail-block to its normal position, which position is regulated by the length of splice desired to be made.

When the twisting process has been completed, the driving mechanism is thrown out of gear and the apparatus stopped, the ends of the splice in the tail-block vise released, the handle G and the gear-wheel D brought over until all the openings coincide, and the splice-wire taken out.

While the whole machine as shown and described will produce the best results, I do not desire to be understood as confining myself to such construction, as there may be several modifications and changes made in some of the parts.

First, the object of closing the opening in the spindle being to keep the wire within it, and prevent it interfering with the twisting or revolving mechanism, the same can be effected by a button, slide, stop, or similar adjustable device attached and applied at or near the slot or opening to the face of the gear-wheel.

Second, instead of the jaws moving in ways, as described, jaws operating substantially the

same as those of an ordinary vise may be substituted.

Third, in splicing wires of substantially the same gage or diameter the notches may be omitted, and vises or holding or grasping devices with rectilinear faces may be used.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of bearing B, having a longitudinal opening, the hollow shaft C, also having a longitudinal opening, and the attached gear-wheel D, having a radial opening coinciding with the said opening in said shaft, the three openings forming one continuous opening into the interior of the shaft, with a movable device for closing and disclosing said opening, substantially as and for the purpose set forth.

2. The bearing B, hollow shaft C, gear-wheel

D, and a movable device for closing and disclosing the opening leading into the interior of said shaft, in combination with a revolving vise secured to said shaft, substantially as and for the purpose set forth.

3. The co-operating vises or grasping and holding devices, each possessing adjustable jaws, which are provided with notches coinciding to form an elliptical gripe when brought together, confining in close contact the wires at each end of the splice, in combination with rests or stops at the bottom of the notches to prevent the wires forming the splice from passing below said notches while the jaws of the vises are asunder.

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Witnesses:

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