J. G. SMITH.

Machines for Coiling Wire.

No. 153,387. Patented July 21, 1874.

Fig. 1.

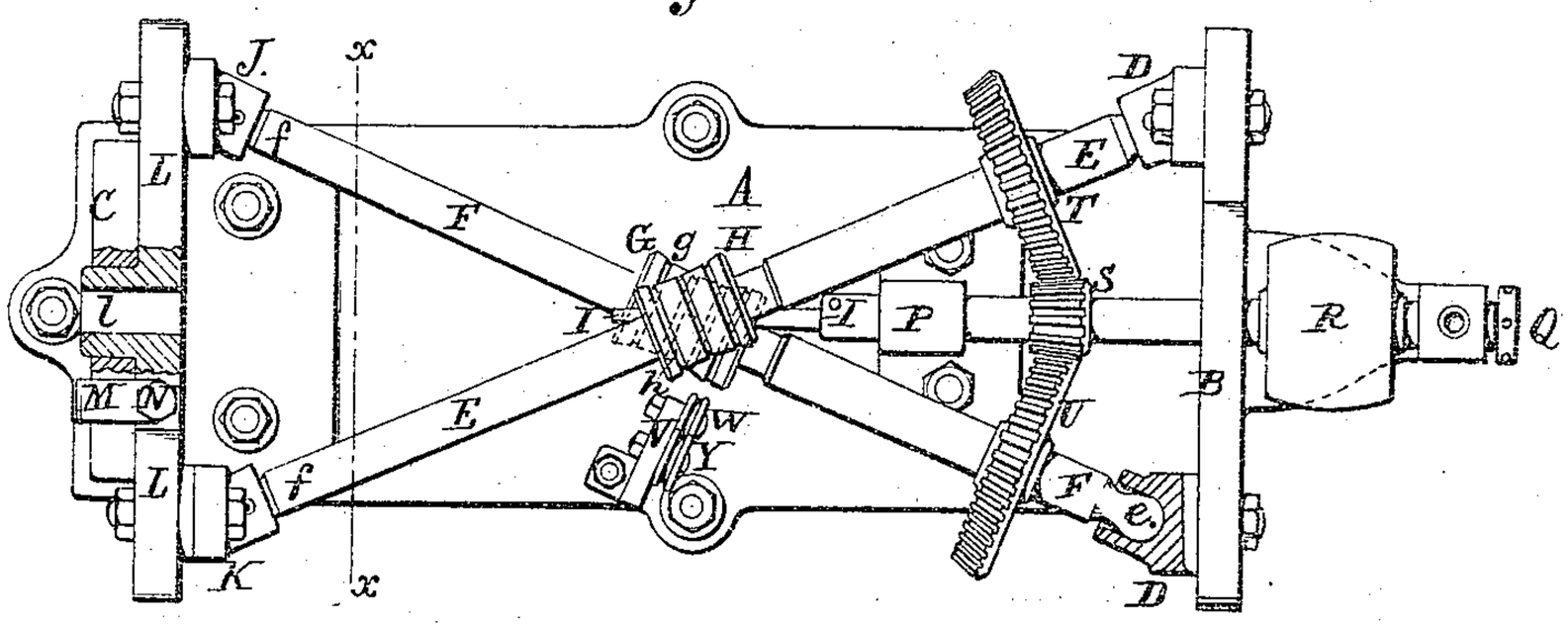


Fig. 2.

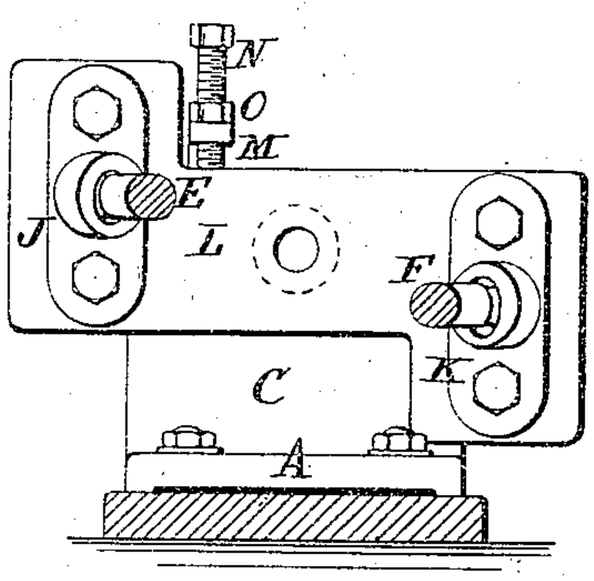


Fig. 3.

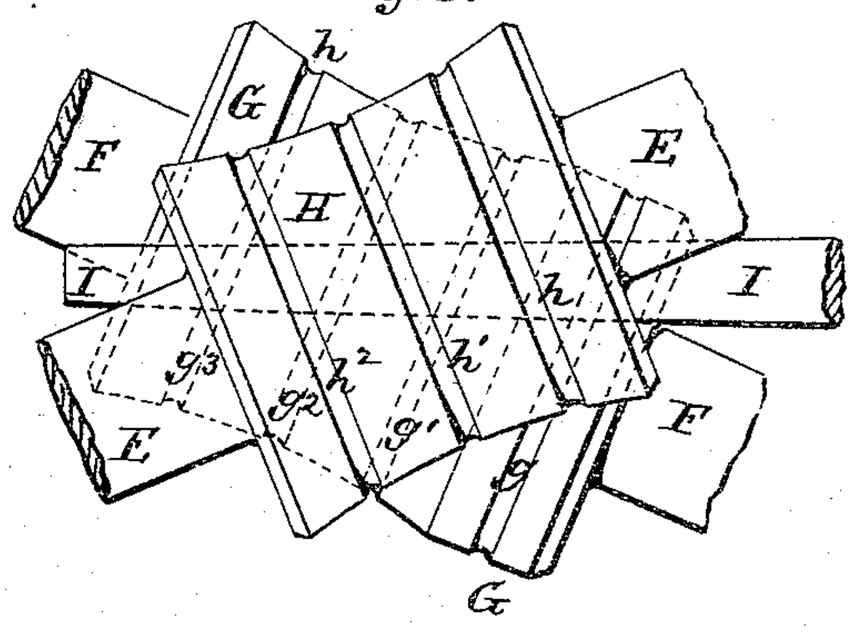
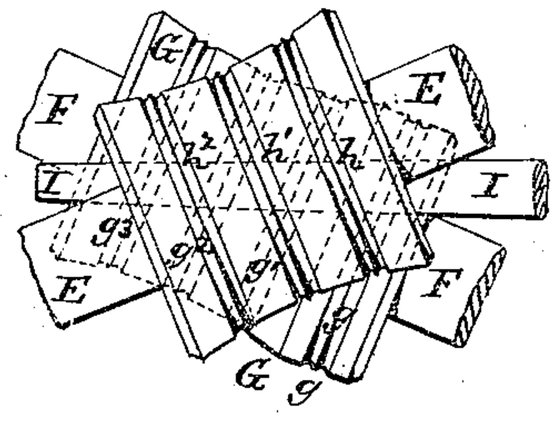


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN G. SMITH, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN MACHINES FOR COILING WIRE.

Specification forming part of Letters Patent No. **153,387**, dated July 21, 1874; application filed May 26, 1874.

CASE B.

To all whom it may concern:

Be it known that I, JOHN G. SMITH, of St. Louis, St. Louis county, Missouri, have invented a certain new and useful Improvement in Machines for Coiling Wire, of which the following is a specification:

The first part of my improvement consists in combining, with the mandrel on which the wire is coiled, two or more concave-faced rolls, circumferentially grooved and placed obliquely to the mandrel, so that each groove will be in the direction of that portion of the wire coil lying within it.

The second part of my invention consists in forming the ends of the roll-shafts with ball-and-socket bearings, so as to allow of their adjustment to and from the mandrel by moving one end of the shafts in arcs concentric with the axial line of the mandrel.

The third part of my invention consists in the provision of an adjustable turn-plate, on which the roller-shafts have journal-bearing at one end, so that by turning the said plate the rolls have distance adjustment with the mandrel.

In the drawings, Figure 1 is a top view, with part of the front standard and turnable journal-plates broken away, to show the tubular pivot-lug of the plate in axial section. Fig. 2 is a transverse section at line *x x*, Fig. 1. Fig. 3 is a top view of the grooved rolls and mandrel, enlarged to full size. Fig. 4 is a top view of a modification reduced.

A is the head-stock, having a rear standard, B, and a front standard, C. D D are the rear boxes of the roll-shafts E F. These boxes are attached to the rear standards, and have journal-sockets of a globular form at their inner ends, giving a bearing to the ball-formed ends *e* of the shafts E F. This ball-and-socket bearing is for the purpose of allowing the adjustment of the rolls G and H in relation to the mandrel I by movement of the front ends of the shafts in the arcs of a circle concentric with a line axial to the mandrel, the roll G being below and the roll H above the mandrel. The front end *f* of the shafts have similar (globular) form to the ends *e*, and rest in similar sockets in the boxes J K. These boxes are attached to a plate, L, having a central tubular lug, *t*, turnable in a bearing in the front standard C, to adjust the rolls to the mandrel, as aforesaid. Upon the rear side of the standard C is a lug, M, through which screws a set-screw, N, whose point rests upon the top of the journal-plate L, at one side, so that by turning the screw downward the rolls are made to approach nearer to the mandrel. The set-screw has a jam-nut, O, to fix it to its adjustment. The mandrel I turns in a front bearing, P, and has a center heel-screw, Q, on which its rear end has bearing. R is a pulley carrying the driving-belt. S is a spur-pinion upon the mandrel, engaging with the two spur-wheels T U upon the shafts E F, and by which said shafts are driven with the same surface speed (about) as the mandrel, receiving motion from the mandrel. The rolls G H have a greater diameter at the ends than at the middle, as shown, so that the surfaces of the rolls are equidistant from the mandrel about their whole length. The rolls G and H have rounded circumferential grooves, in which the coil of wire upon the mandrel lies. The roll G has four grooves, $g\ g^1\ g^2\ g^3$, and that H three grooves, $h\ h^1\ h^2$. These grooves may be more or less in number, but I have found the number as above to answer the purpose with good satisfaction. V is a bracket carrying two grooved rollers, W and Y, between which the wire passes as it is drawn forward by the rotation of the mandrel and rolls. The wire is guided by the rollers W and Y, and from them extends to the groove *g*, in which it crosses the top of the roll G and around under the mandrel to the groove *h;* then around over the mandrel to the groove g^1, and is thus coiled round and round the mandrel in a spiral lying in the grooves $h^1\ g^2\ h^2\ g^3$ in the order named, and being carried forward to the point of the mandrel, from which it passes through the tubular lug *t*, (on which the plate L may be turned for adjustment, as before described.)

In the modification shown in Fig. 4, the number of grooves *h g*, &c., is doubled, so as to carry through two wires simultaneously;

and I have found this modification to answer well in practice, the two spirals being coiled simultaneously in the side of the webbing as with a single coil.

I have also used with satisfactory results three oblique rolls surrounding the mandrel, and each having a single wire-groove.

I claim as my invention—

1. The combination of the mandrel I and rolls G H, each roll being provided with one or more grooves and set obliquely to the mandrel, and geared together so as to have positive motion imparted to them, substantially as set forth.

2. The combination of the roll-shafts E F, provided with ball-joints, adjustable plate L, and mandrel I, substantially as set forth.

JOHN G. SMITH.

Witnesses:
S. M. SMITH,
ROBERT BURNS.