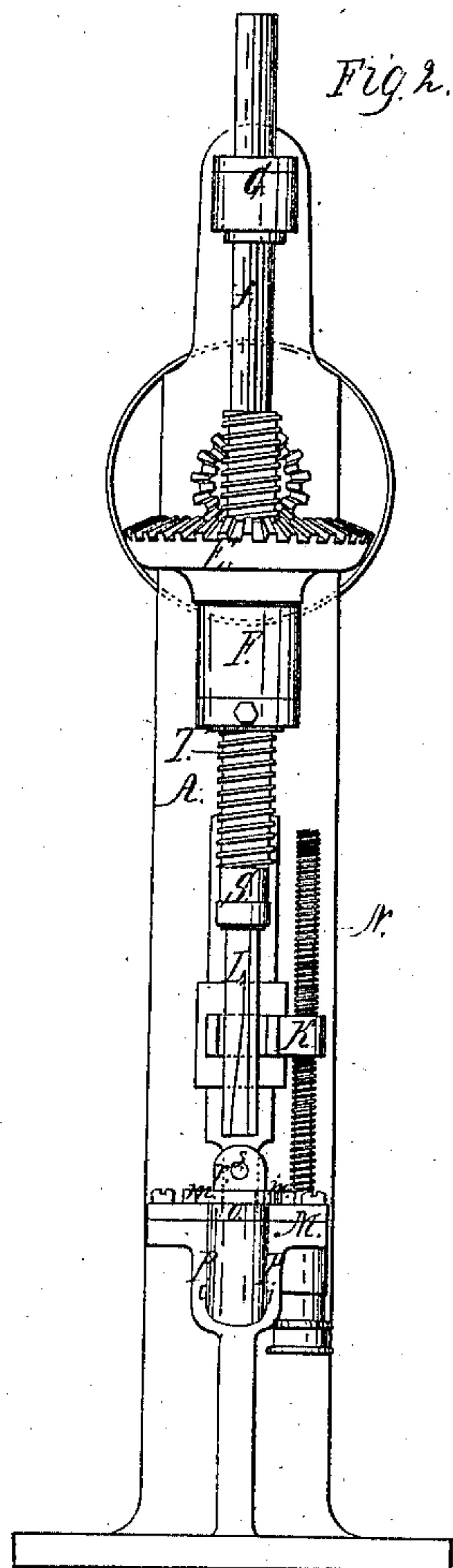


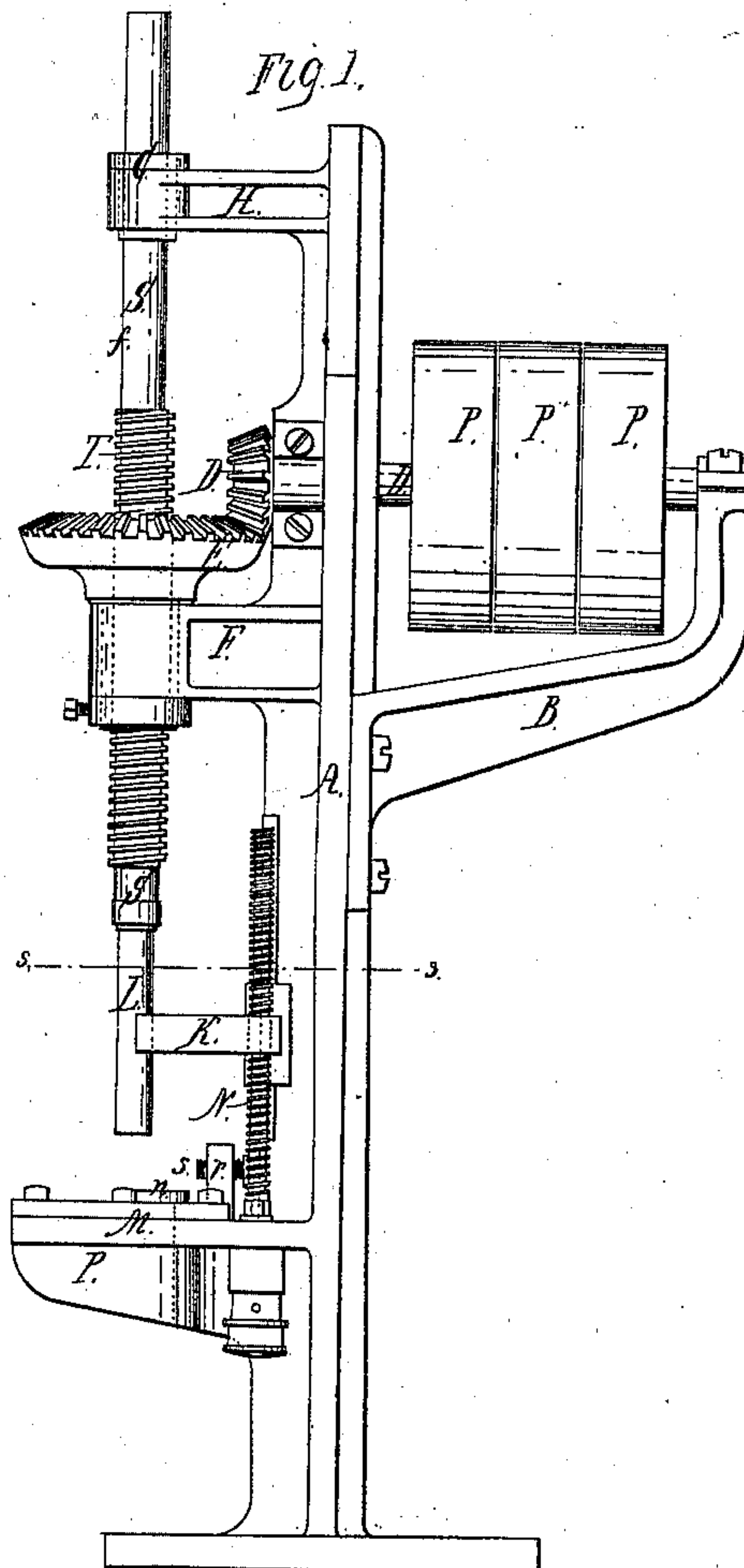
*P. G. Gardiner,*  
*Making Coiled Springs.*

*N<sup>o</sup> 16,916.*

*Patented Mar. 31, 1857.*



*Fig. 2.*

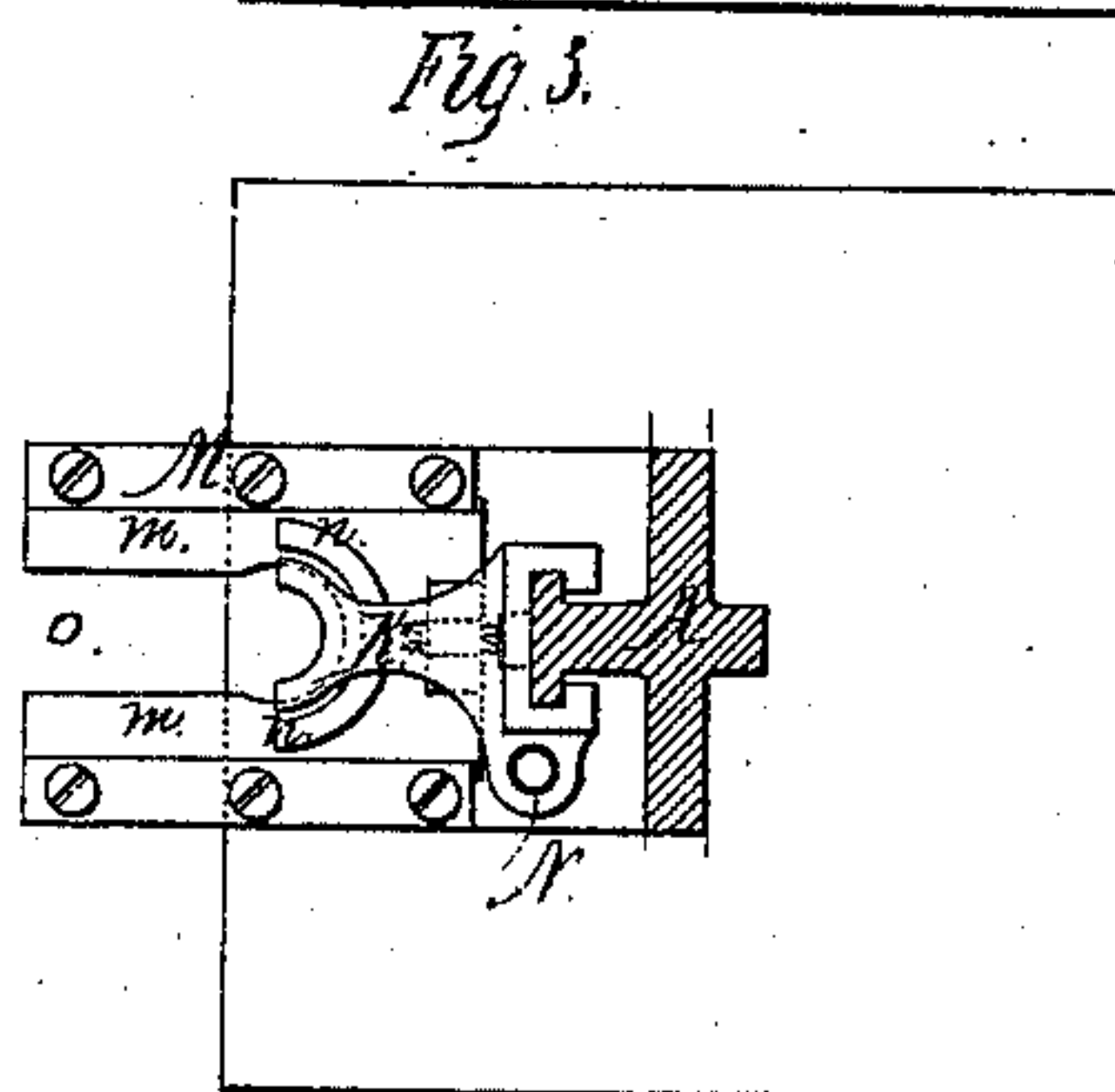


*Fig. 1.*

*Fig. 5.*



*Fig. 4.*



*Fig. 3.*

*Witnesses,*  
*E. H. H. H.*  
*Richard Morris*

*Inventor*  
*P. G. Gardiner*



# UNITED STATES PATENT OFFICE.

PERRY G. GARDINER, OF NEW YORK, N. Y.

MACHINE FOR DISENGAGING RAILWAY-CAR SPRINGS FROM MANDRELS.

Specification forming part of Letters Patent No. 16,916, dated March 31, 1857.

*To all whom it may concern:*

Be it known that I, PERRY G. GARDINER, of the city, county, and State of New York, mechanical engineer, have invented a new and useful machine for disengaging the cone-mandrel from the conical coil of steel adhering to the mandrel after being formed and coiled in the coiling-machine invented by me, and described in my specification for the Letters Patent for said machine, and also for turning back into place (or breaking off, as the case may be) the small piece of steel which has been bent nearly to a right angle upon the inner end of the steel plate by the first turn of the mandrel in the aforesaid coiling-machine; and I do hereby declare the following to be a full and exact description of my said machine and of the manner of operating the same, reference being had to the accompanying drawings, making part of this specification.

In the drawings, Figure I represents a side view or elevation. Fig. II represents a front view or elevation. Fig. III is a section at the line 2 3. Figs. IV and V are views of the disengaging-spindle.

In all the figures like letters represent like parts.

A is a narrow upright frame, which serves to support the other parts. It is provided with an arm, B, attached to the back of the frame, near the upper part, having suitable bearings for the driving-shaft D to run upon. On this driving-shaft are two fast pulleys, P P, and one loose pulley, P', to communicate the proper motions to the machine and for stopping it.

W is a bevel-wheel fast on the end of the driving-shaft D, working into the bevel-wheel E, running upon and sustained by the bearing F, fast upon the upright frame A.

The spindle S is provided with a screw-thread, T, working through the bevel-wheel E, having a corresponding female screw, and the upper end of the spindle slides through the bush G upon the arm H. This upper portion of the spindle has a feather, *f*, working into a corresponding groove in the bush G, by which arrangement the spindle is prevented from turning round, and receives, through the action of the bevel-wheel E upon the thread T, a vertical motion up or down, as required.

Into the lower part of the spindle S the disengaging-tool L is fixed. This tool is of the

exact diameter of the straight part of the mandrel upon which it is to act, and is of a similar external shape with the mandrel in reverse. At the bottom of the tool L is a circular recess to fit the end of the mandrel. Upon the side of the tool is a groove or slot, *l l l*, Figs. IV and V, which runs straight and vertical a distance equal to the length of the slot in the mandrel, as shown at *l' l''*, Fig. V, and from this point the slot *l* gradually inclines from a perpendicular line, as shown in Fig. V, from *l'* to *l'''*.

M is a platform or rest upon the frame A, having an opening in the middle, as shown at O, Figs. II and III. This opening is circular at its throat, and the center of which circular part is directly under the center of the disengaging-tool L. Underneath the platform, and on either side of the opening are two arms or brackets, P P, which are made to correspond with the sides and circular part of the platform M. A movable plate is inserted into the platform, around the upper interior edge of the platform, so as to be drawn in or out. This movable plate is seen at *m m*, Figs. II and III. The semicircular part of this movable plate is raised by a rim slightly above the surface of the platform, as seen at *n n*, Figs. I and III, and it has a back piece, *r*, through which is a screw, *s*, for adjusting its position, and through it the position of the cone-mandrel which is to be placed upon it.

K is a guard and guide for holding straight the mandrel and disengaging-tool, and it is adjustable up or down by means of the screw N, operating in a female screw in K, and passing through the arm M. When the cone-mandrel is taken out of the coiling-machine above referred to, the coil adheres tightly to it and must be disengaged, so as not to injure or alter the shape of the coil, and that part of the steel plate which is in the slot of the mandrel must be either turned back or removed. To effect this double object is the business of this machine and of the disengaging-tool L. The cone-mandrel, with the coil attached, immediately on being removed from the coiling-machine, is set perpendicularly into the semicircular space O of the platform M, the base of the cone resting upon the adjustable plate *m*, and the mandrel and cone must be always so placed that the slot in the mandrel will be exactly in line



with the straight part of the slot in the disengaging-tool L. To secure accuracy in this, a small hole is drilled in the side of the cone near its base, into which a small pin inserted in the center of the throat of the semicircular rim *nn* fits, the whole being so placed that always when it meets the pin it will bring the slots of the mandrel and of the tool L into the same line.

For the purpose of holding the mandrel steady, a raised band or flange upon the mandrel a short distance from the base of the cone is made, and this flange fits into recesses on either side of the lower part of the platform M, near its contact with the arm P. The cone-mandrel being placed in the machine upon the sliding plate *mm*, with the slot of the mandrel and the lower part of the slot of the disengaging-tool L exactly in line, the tool L, being forced downward by the operation of pulley P upon the shaft D, forces the straight part of the mandrel through the cone in a straight line until the

slot is cleared of the steel plate, when that part of the steel plate which was in the slot of the mandrel meets the inclined part of the slot *ll''* of the disengaging-tool L, and by this inclined part is either turned back out of the center of the coil or is broken off. The straight part of the mandrel is thus pushed through and disengaged from the cone, and the coil is then easily taken from the cone without injury and in a complete state for tempering and annealing.

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

The peculiar construction of the disengaging-tool L and the manner of constructing the platform M, when operating in connection with spindle S, for detaching the coil in the manner herein described.

P. G. GARDINER.

Witnesses:

J. B. STAPLES,  
RICHARD WINNE.