

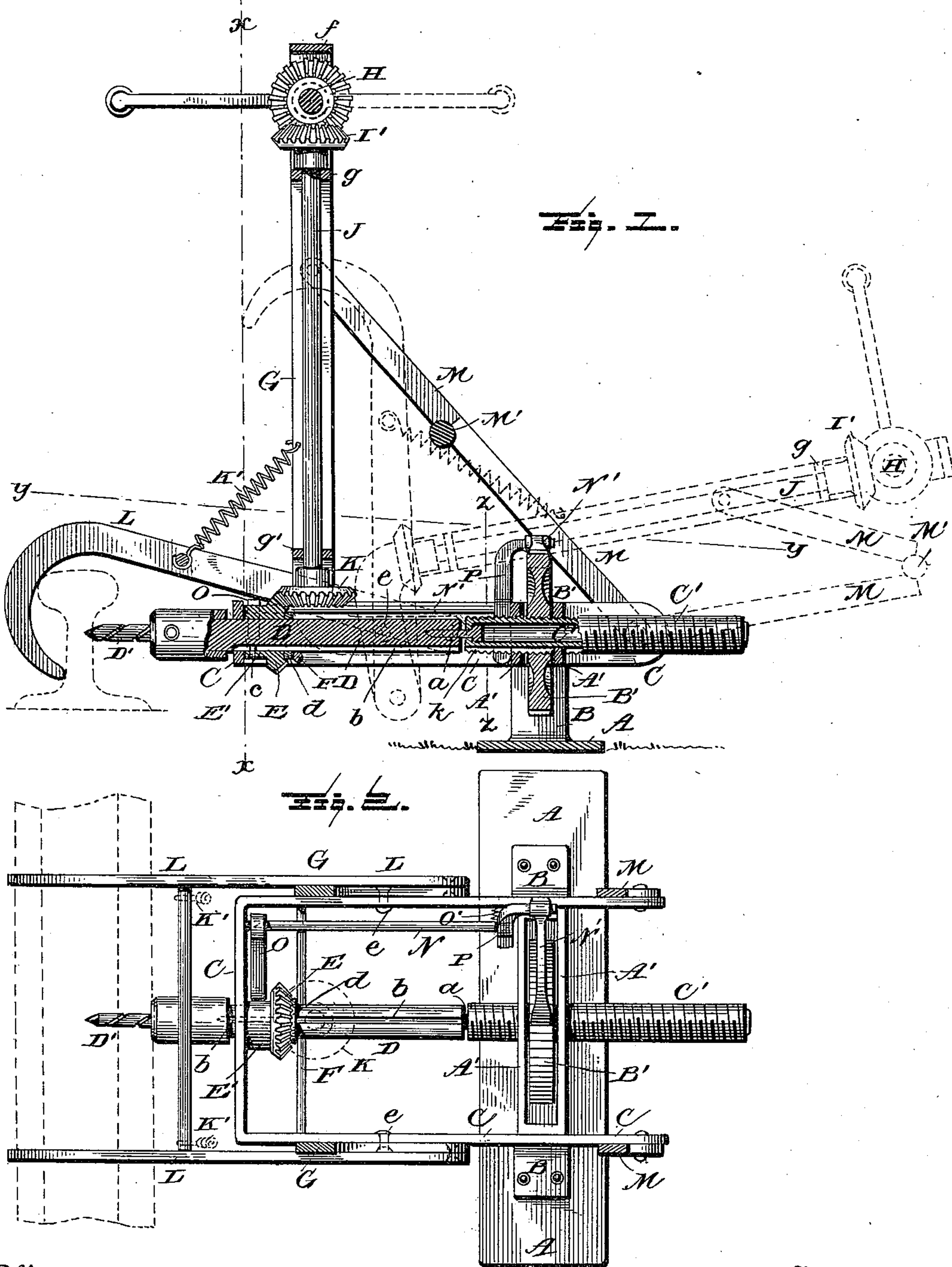
(No Model.)

2 Sheets—Sheet 1.

A. R. PAULUS.
RAILWAY TRACK DRILL.

No. 428,516.

Patented May 20, 1890.



Witnesses

L. C. Hills
E. H. Bond

Inventor

Aaron R. Paulus,

By *his* Attorney

Chas. H. Fowler,

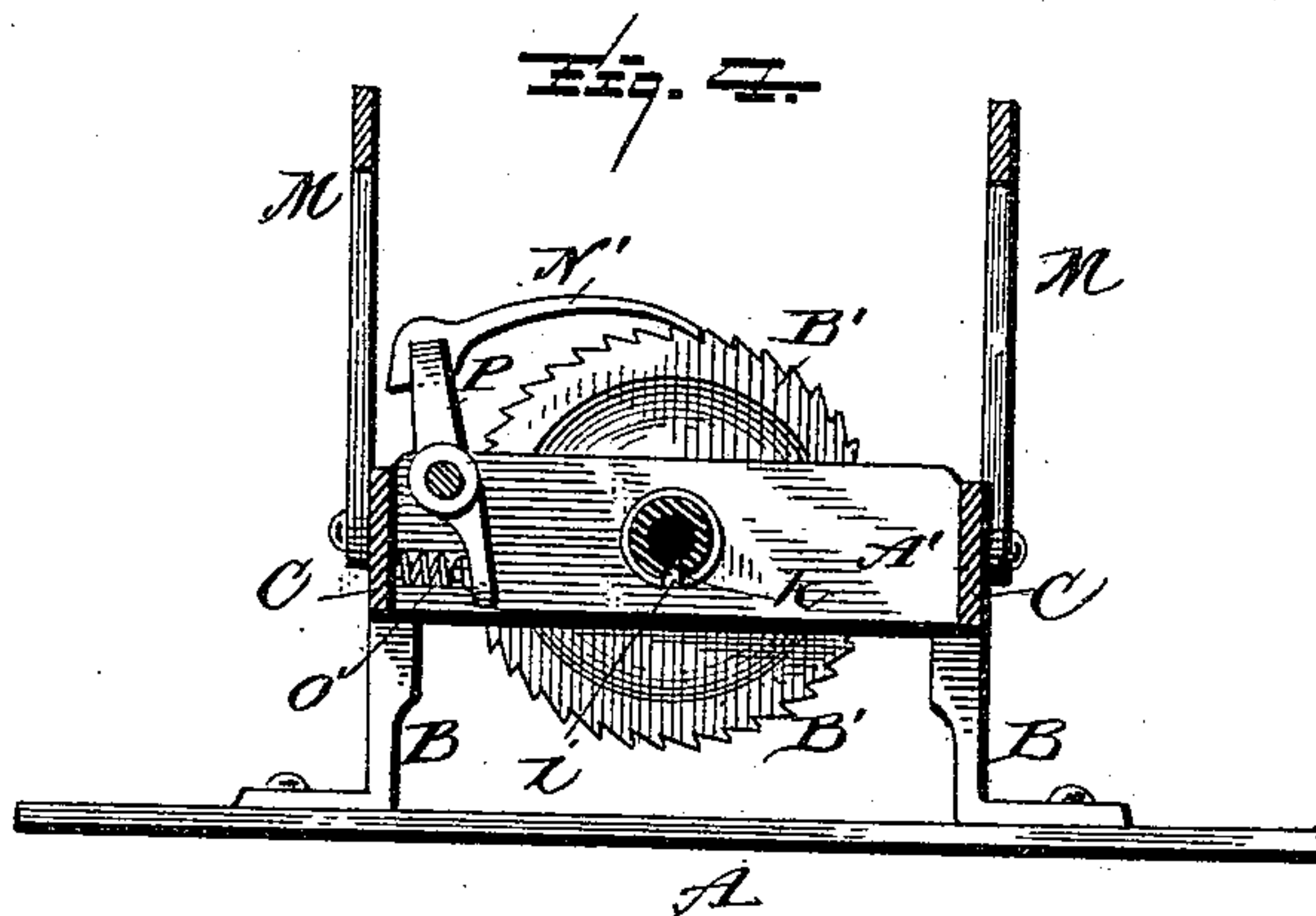
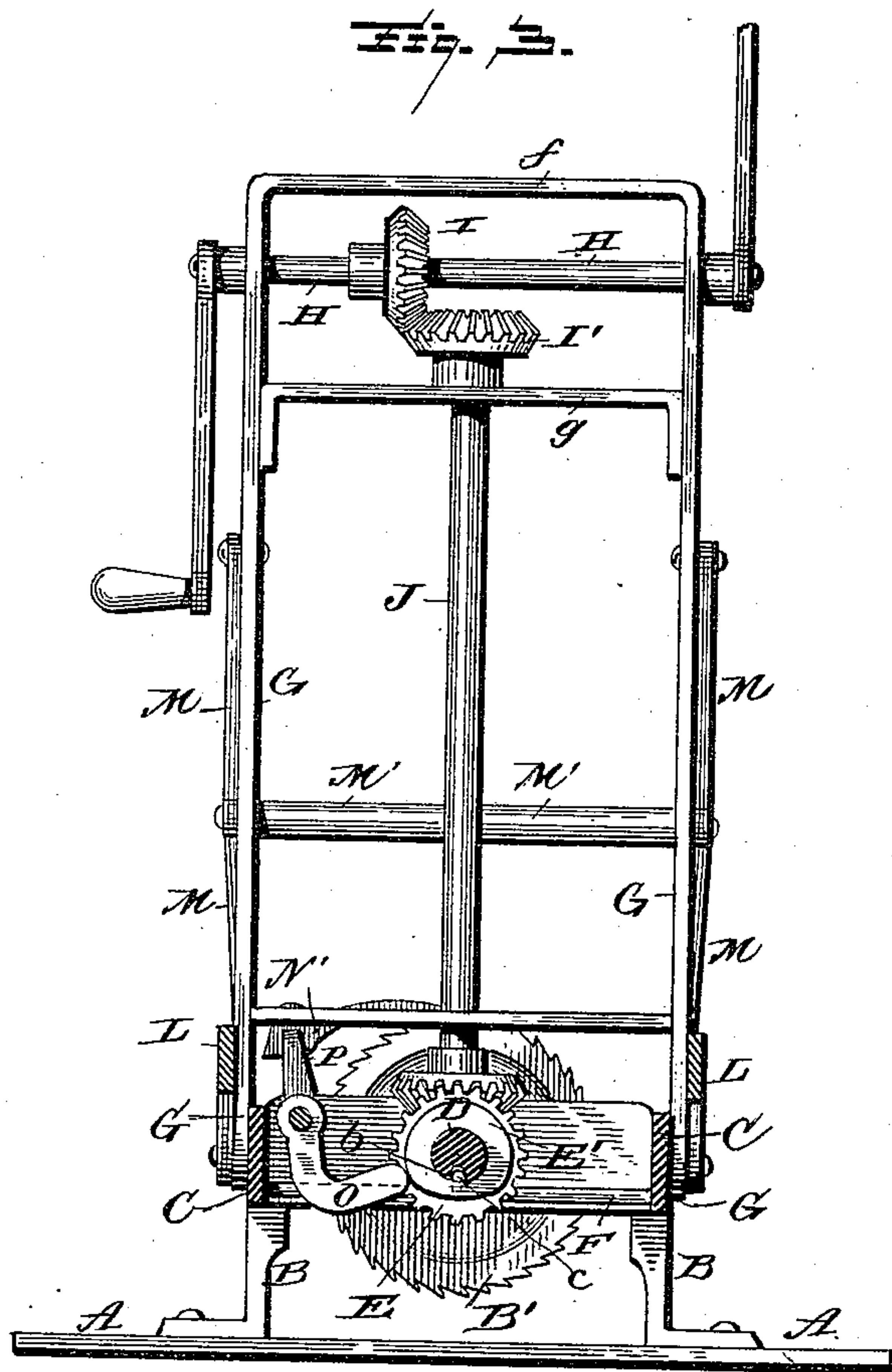
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UNITED STATES PATENT OFFICE.

AARON R. PAULUS, OF VILLISCA, IOWA.

RAILWAY-TRACK DRILL.

SPECIFICATION forming part of Letters Patent No. 428,516, dated May 20, 1890.

Application filed March 13, 1890. Serial No. 343,766. (No model.)

To all whom it may concern:

Be it known that I, AARON R. PAULUS, a citizen of the United States, residing at Villisca, in the county of Montgomery and State of Iowa, have invented certain new and useful Improvements in Railroad-Track Drills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in railroad-track drills; and it has for its object, among others, to provide a simple and efficient device for the purpose of boring the rails and for permitting the throwing back of the clutch-arms which hold the device to the rail during its operation to let the train pass, and then readily thrown into place again.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a vertical longitudinal section through my improved machine. Fig. 2 is a horizontal section on the line $y y$ of Fig. 1. Fig. 3 is a vertical section on the line $x x$ of Fig. 1. Fig. 4 is a vertical section on the line $z z$ of Fig. 1.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a suitable base-plate, adapted to rest upon the ground and be held there in any suitable manner. From this base-plate rise the standards B, formed with or to which is rigidly secured the substantially U-shaped frame C, the ends of which extend to the rear of the standards, as shown clearly in Fig. 2. Between these standards and between the parallel bars of the frame C there is supported a slotted plate or parallel arm A', between which works the ratchet-wheel B', said wheel being threaded upon the shaft C', which is also passed through the parallel portions of the plate or arms A', as seen best in Fig. 1. This shaft at

its inner end is connected with the tool-holder D by means of a swivel-connection a , as seen best in Fig. 1, so as to allow the said tool-holder to revolve independent of the said shaft. This tool-holder at its other end is suitably supported in the cross-bar of the frame C, as shown best in Fig. 2, and at its end is provided with any well-known means for holding the drill or other tool D', as shown in Figs. 1 and 2.

The tool-holder D is provided with a longitudinal slot b , as seen best in Figs. 2 and 3, and E is a bevel-pinion carrying a cam or eccentric E', as seen best in Fig. 3, the said eccentric being provided with a pin c , which works in the longitudinal slot of the tool-holder, as seen in Fig. 3. The inner face of this bevel-pinion has a washer d , as seen in Fig. 1, and F is a stay-rod connecting the two parallel portions of the frame and bearing on this washer, as shown in said Fig. 1, to prevent endwise displacement or movement thereof and of the pinion.

Rising from the frame C, and pivotally connected therewith, as at e , are the uprights G, connected at their upper ends by the cross-bar f and at a short distance from the top by the cross-bar g , as seen best in Fig. 3. Suitably journaled near the upper ends of these uprights is the cross-shaft H, provided with crank-handles upon the ends, which ends extend outside the uprights, as shown in Fig. 3, and on this shaft is a bevel-pinion I, which meshes with the bevel-pinion I', which is carried by the upper end of the vertical shaft J, which has bearings in the cross-bar g and in the cross-bar g' , connecting the uprights near their lower ends, as seen in Fig. 3. The lower end of this vertical shaft carries a bevel-pinion K, designed to mesh with the bevel-pinion E on the tool-holder, as seen in Figs. 1 and 3.

L are hooked arms pivotally connected to the side bars of the frame C and connected with the uprights by means of the springs K'.

M are jointed arms or toggles, pivotally connected at one end to the extended ends of the side bars of the frame C, and at the other end pivotally connected to the uprights, as shown, being hinged near their longitudinal centers, as seen best in Fig. 1. A cross-bar M' is provided at the joint to strengthen the same.

N is a rock-shaft extending lengthwise of the frame and supported in suitable bearings therein, and at its forward end this rock-shaft carries an arm O, which is rigid thereon, and has its free end arranged in the path traversed by the cam E', so that as the said cam revolves on its shaft the said arm is moved, and upon the opposite end of this rock-shaft there is an arm P, the upper portion of which carries a pivoted pawl N', designed to engage the teeth of the ratchet-wheel B', as seen best in Figs. 2 and 4, the other end of the said arm being connected with the frame by a spring O' to normally keep the pawl from engagement with the ratchet-wheel. The shaft C' is provided with a longitudinal slot k, in which works a pin l on one of the cross-bars A'.

In operation the parts are in the position in which they are represented by full lines in Fig. 1, the drill there being shown as just about acting on the rail. The rotation of the shaft H causes the bevel-pinion I thereon to revolve, and this meshing with the bevel-pinion I' on the shaft J conveys motion to the bevel-pinion K, which in turn imparts motion to the tool-holder, and as the cam revolves it imparts motion to the pawl, which at each revolution of the cam turns the ratchet-wheel one tooth. As the ratchet-wheel turns, it, engaging the threads of the screw-shaft C', revolves the said shaft and advances the drill toward the rail. The reverse movement withdraws the drill. Should it happen that while a hole is being drilled a train should come along, all that is necessary to do is to break the joint in the toggles M and throw back the parts into the position in which they are shown by dotted lines in Fig. 1, leaving the drill still in place, so that the work may be at once resumed after the train has passed by simply throwing the parts back into the position in which they are represented by full lines in said Fig. 1.

The slots in the tool-holder and shaft C' permit longitudinal movement of the said parts, and yet hold the wheels thereto.

What I claim as new is—

1. The combination, with the drill, of the operating mechanism therefor and pivoted holding-arms constructed to be thrown back with a portion of the operating mechanism. as set forth.

2. The combination, with the frame and the drill-holder, of the screw-shaft and intermediate devices for revolving said shaft by the movement of the drill-holder, as set forth.

3. The combination, with the frame and the drill-holder, of the screw-shaft, the ratchet-wheel thereon, a pawl engaging the said wheel, and a cam on the drill-holder, adapted to actuate said pawl, substantially as specified.

4. The combination, with the frame and the drill-holder, of a cam carried by the drill-holder, a pawl, a rock-shaft carrying the pawl, and an arm on the rock-shaft, actuated by

engagement of the cam, substantially as specified.

5. The combination, with the frame and the drill-holder, of the screw-shaft connected with the drill-holder by a swivel-connection, a ratchet-wheel on the screw-shaft, and a pawl engaging the ratchet-wheel and actuated by the movement of the cam, as set forth.

6. The combination, with the frame and the drill-holder, of the screw-shaft connected with the drill-holder by a swivel-connection, a ratchet-wheel having screw engagement with the screw-shaft, a rock-shaft, an arm on one end thereof engaging the cam, and a pawl on the other end engaging the ratchet-wheel, as set forth.

7. The combination, with the screw-shaft having longitudinal slot, of the cross-bars A', a pin thereon, engaging the said slot, and a ratchet-wheel having screw engagement with the shaft, substantially as specified.

8. The combination, with the frame, the drill-holder, and the bevel-pinion thereon and carrying a cam, of the screw-shaft, the ratchet-wheel thereon and movable relatively to the length thereof, the operating mechanism for said bevel-pinion, the rock-shaft, the arms thereon, and the pawl carried by one of the said arms, substantially as specified.

9. The combination, with the frame and the drill-holder, of the upright frame pivoted to the support of the drill-holder, the toggle-connection between the upright and horizontal frames, and the hooked arms carried by the horizontal frame, substantially as specified.

10. The combination, with the horizontal frame, of the drill-holder, the uprights pivoted to the horizontal frame, the shaft and pinions carried by the said uprights, the bevel-pinion on the drill-holder, and the toggle-connection between the uprights and the frame, substantially as specified.

11. The combination, with the frame and the drill-holder and the bevel-pinion thereon, of the washer and the cross-stay rod bearing against said washer, substantially as specified.

12. The combination, with the base-plate, the frame C' thereon, and the drill-holder and screw-shaft connected by a swivel-connection, of the ratchet-wheel having screw engagement with the screw-shaft, the bevel-pinion and cam on the drill-holder, the rock-shaft, the arms thereon, the pawl carried by one of said arms, and the operating devices for the said bevel-pinion, substantially as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

AARON R. PAULUS.

Witnesses:

H. C. STODDARD,
J. B. WALLACE.