

(No Model.)

2 Sheets—Sheet 1.

H. T. STOCK.

RAILROAD DITCHING AND EXCAVATING MACHINE.

No. 273.631.

Patented Mar. 6, 1883.

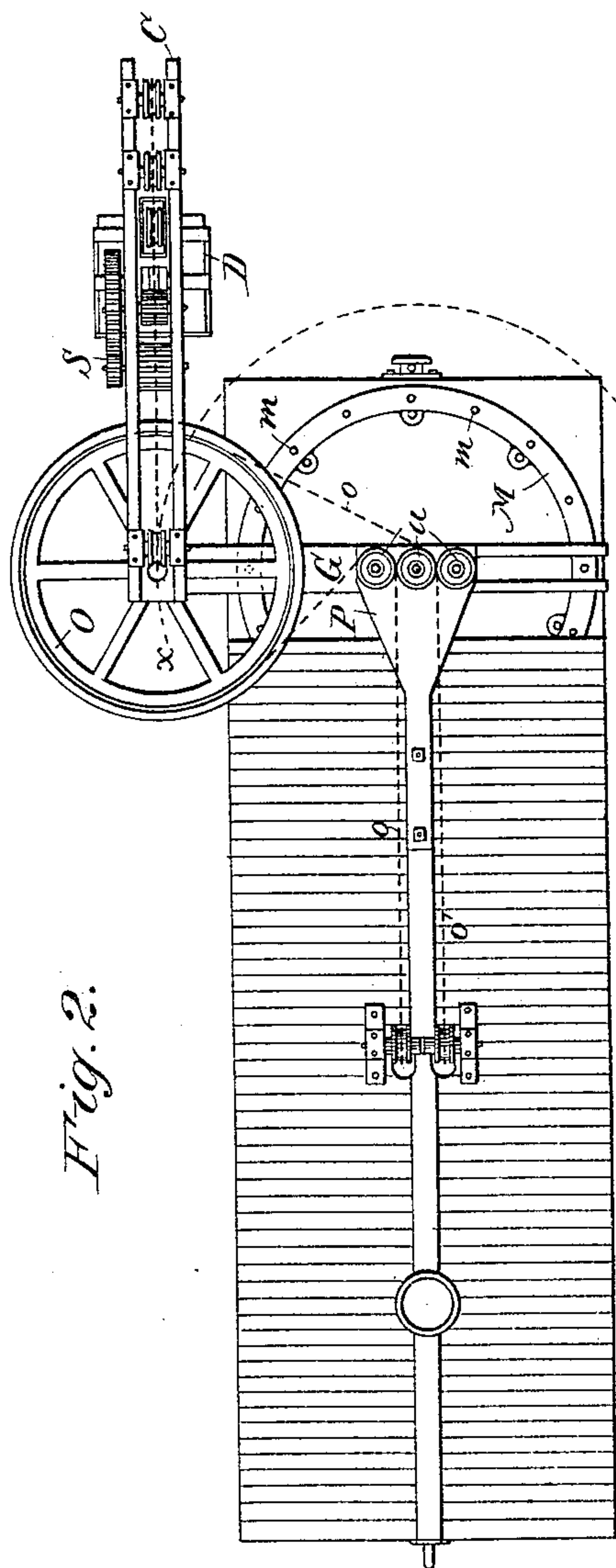


Fig. 2.

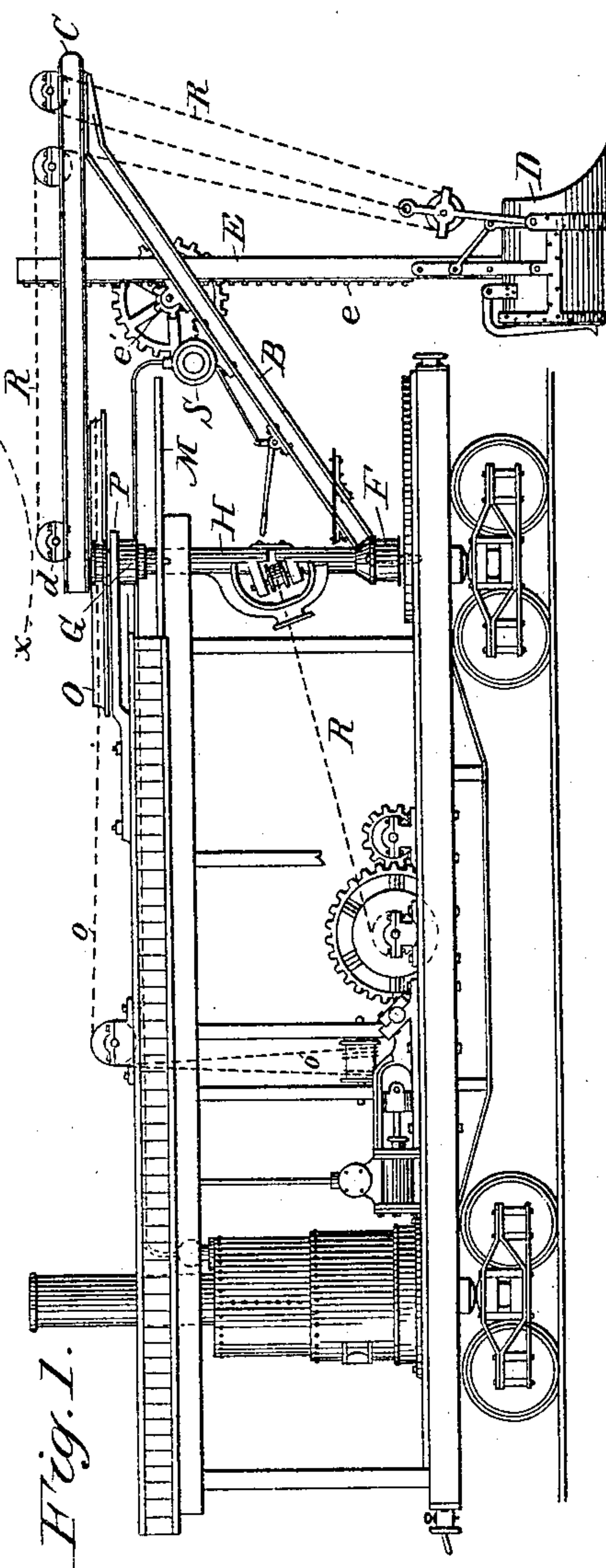


Fig. 1.

Witnesses.

H. H. Brown.

Wesley Royce

Inventor.

H. T. Stock
By H. H. Hall
His atty.

(No Model.)

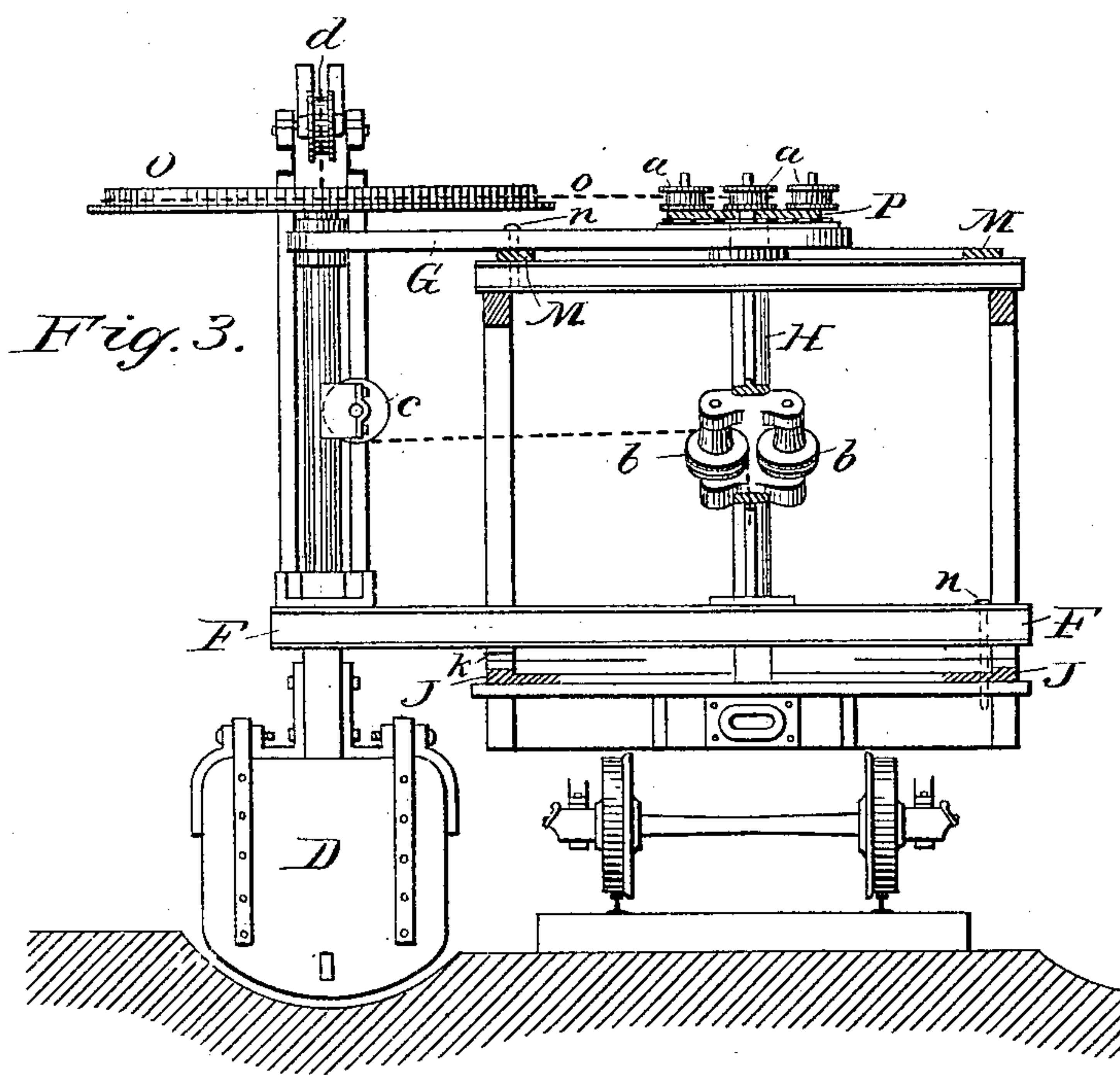
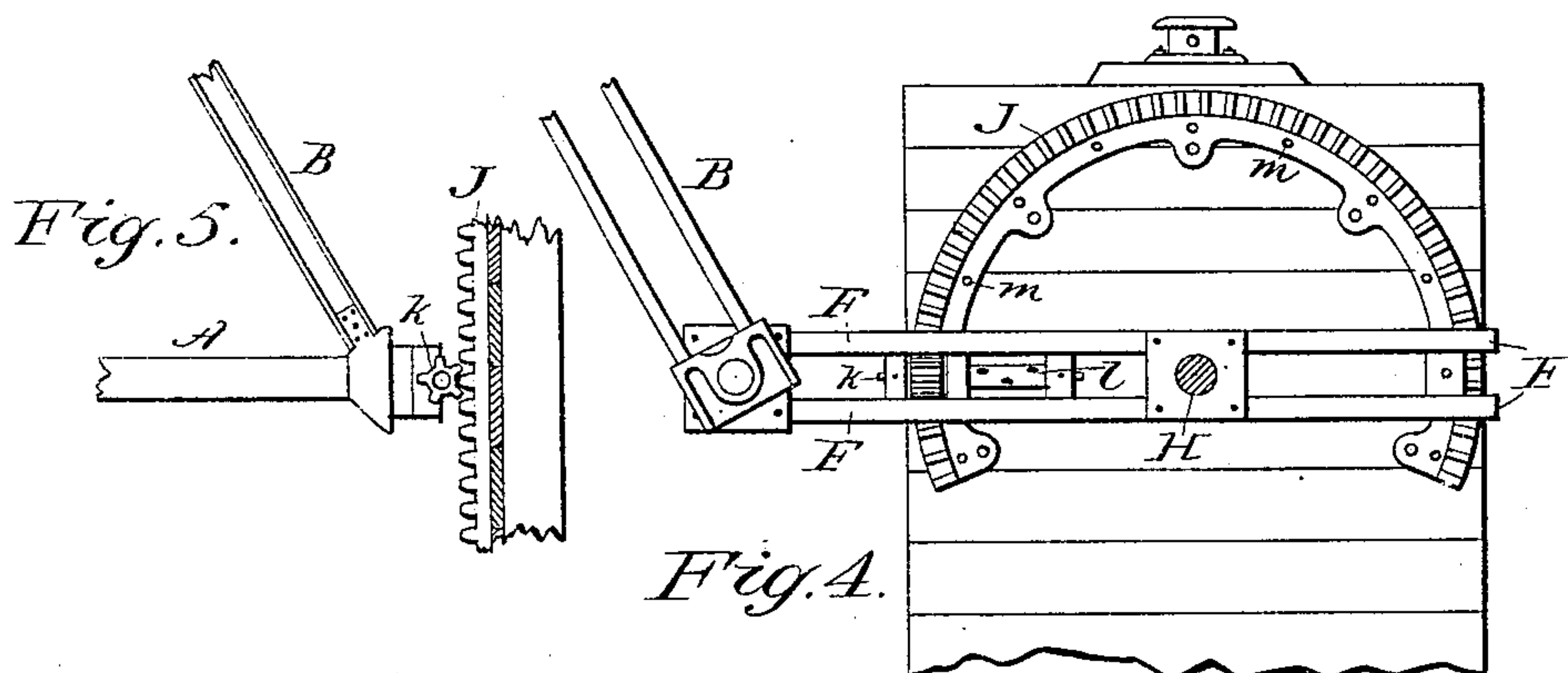
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W. H. Brown
Wesley Royce

Inventor.
H. T. Stock
By Howard Hall,
His Atty.

UNITED STATES PATENT OFFICE.

HOSEA T. STOCK, OF TOLEDO, OHIO.

RAILROAD DITCHING AND EXCAVATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,631, dated March 6, 1883.

Application filed August 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, HOSEA T. STOCK, of the city of Toledo, Lucas county, Ohio, have invented a new and useful Improvement in Railroad-Ditching Machines and Excavators, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to a device designed for railroad-excavating work, as well as for making and cleaning ditches along railway-tracks. The machine is mounted in and upon a railroad-car, and is provided with the engines, boilers, hoisting machinery, chains, swinging crane, shovel or dipper, and its handle usually found in excavating-machines.

The objects of my invention are, first, to provide such machine with mechanism by means of which its crane, with its shovel or dipper, may at pleasure be easily and quickly shifted from side to side, or to the front of the machine, in order that the crane may be brought to overhang, or nearly so, the ditch upon which the work is to be performed, so that ditching may be done on both sides of the track with the same crane, and so that the machine may also be used for ordinary excavating-work; second, to provide such machine, in which the crane is swung by the ordinary chain and horizontal wheel or "swinging circle," with a device by means of which such chain may be kept equally taut and made to run uniformly from the fixed hoisting machinery or drum in any position to which the crane may be shifted; (in this specification I use the terms "shifting" and "swinging" as applied to the crane in different senses, the former denoting the moving of the crane relatively to the car bodily from point to point, the latter meaning the motion of the crane upon its own mast or center;) third, to provide such machine with a device by means of which the chain or rope designed to pull the dipper upward and forward and to lower the same shall, at whatever point to which the crane may be shifted, "lead" from its drum or hoisting apparatus without entanglement, rubbing, or undue twist; and, fourth, to provide means for securing the longitudinal thrust and travel to and fro of the shovel-beam or dipper-handle uniform in any position to which the crane of the machine may be shifted. I attain these objects by the

mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my device. Fig. 2 is a plan of the same above its roof. Fig. 3 is a cross-section through the machine behind the crane. Fig. 4 is a plan of the mechanism designed for shifting the crane, and Fig. 5 is a view of a portion of the same.

Similar letters refer to similar parts throughout the several figures.

A is the mast, B the jib or brace, and C the tie or boom, of the crane. The crane is provided with a shovel, scoop, or dipper, D, having a handle, E. The mast of the crane at bottom rests upon a stout arm or support, F, and at top the mast enters and is held upright by the arm or support G.

H is a stationary post. At bottom post H passes through arm F, and at top passes through piece G, thus forming a pivot or fulcrum for radial arms G and F, both of which pieces, carrying with them the crane, rotate horizontally, describing the arc xx .

On the floor of the machine, under the piece F, is secured a segmental rack or frame, J, having teeth or cogs on its upper side, the center of its circle being post H. Pinion k , attached to arm F, engages the rack J, and may be revolved by means of levers inserted in the holes in shaft l of pinion k , causing the pinion to travel around segmental rack J, carrying with it the radial arms F and G and crane A B C and its appendages, thus bringing the crane to a working position at any desired point on the dotted line x . I do not, however, limit my invention to this method of rotating pinion k , as equivalent means will readily suggest themselves to persons skilled in the art.

Under the swinging support G is secured to the roof a segmental bar, M. J and M form supports and ways for arms F and G. Arms F and G are provided with holes m , which coincide with corresponding holes in J and M. By inserting pins n in these coincident holes the radial arms F and G are securely held in any position to which they may be shifted.

With reference to the mechanism here described by which the crane is shifted from point to point, I do not confine my invention to the means of shifting the crane in the arc of a circle, as obviously a straight rack and pinion, or their equivalents, may be employed to move

the crane from side to side of the car in a straightline, though I prefer the method shown, as affording a simpler way of connecting the digging and swinging apparatus by chains, &c., with the fixed drums and engines.

O is a horizontal wheel or swinging circle provided for swinging the crane. o is a chain leading from a drum, (actuated by the steam-engines of the machine,) and passing around the periphery of the wheel O, causing the wheel O to turn, carrying with it the crane to the right or left, according to the direction in which the chain o is wound up and paid out.

a a a are horizontal pulleys or guides between which chain o passes, as shown in Fig. 2. Guides or pulleys a are supported upon and braced by piece P, which rests at one end upon the upper end of the gudgeon of post H, (which also serves as an axle for the middle pulley, a,) and at its other end upon the roof of the machine, leaving space between P and the roof for the arm G to swing through. By this arrangement the chain o at all times runs to its proper groove on wheel O, and is nearly equally taut at any position to which the crane may be shifted.

R is the rope or chain designed to pull the shovel or dipper upward and forward. In order that this chain R may accommodate itself to the varying locations of the crane, it passes from its drum to two pulleys or guides, b b, on post H, thence between the guides b b, through post H to pulley or guide c, thence up through the center of the hollow mast A and out over pulley d to the usual connections and attachments. Mast A is fixed upon the radial arms F and G, and does not swing with the crane. Hence the groove of the pulley c, in shifting the crane, is always toward the opening between pulleys b b, so that chain or rope R must run uniformly without rubbing or becoming entangled or unduly twisted.

In order to accomplish the operation of forcing or digging the excavator D downward, and to control the longitudinal motion of the shovel-beam E, the same is provided with toothed rack e, which engages pinion e'. To overcome the difficulty of communicating motion to the rack and pinion e e' upon a shifting traveling swinging crane by means of the fixed stationary engines of the machine, I provide the crane with a small reversible engine, S, which may be actuated by either steam or compressed air supplied through a flexible tube. Upon the shaft of engine S is a pinion, s, which engages a cog-wheel fixed on the same shaft with pinion e'. By means of this arrangement the excavator D may be raised or lowered with as much or little force or speed as may be required, in whatever direction the crane may be swung or to whatever point the crane may be shifted upon its segmental track.

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

1. A railroad ditching or excavating machine provided with a crane, A B C, and excavator E D, arranged to be shifted from side to side, or to the front of its car, substantially as shown and described, for the purposes set forth.

2. In a railroad ditching or excavating machine, the horizontally-rotating radial arms or supports F and G, in combination with post H, crane A B C, and excavator D, substantially as shown and described, for the purposes set forth.

3. The combination of the radial arms F and G and rack and pinion j k with crane A B C.

4. The combination and arrangement of post H, radial arms F and G, crane A B C, and the segmental tracks and supports J and M, substantially as shown and described, for the purposes set forth.

5. The combination of radial arms G and F and crane A B C with excavator D, substantially as shown and described, for the purposes set forth.

6. The combination of crane A B C and excavator D with radial arms F and G, post H, and segments J and M, substantially as shown and described, for the purposes set forth.

7. The combination of the crane A B C with radial arms F G, post H, rack and pinion j k, segment M, sockets m, and pins n, substantially as shown and described, for the purposes set forth.

8. The arrangement of pulleys or guides a a a, chain o, and swinging circle O, substantially as shown and described, for the purposes set forth.

9. The combination of circle O and chain o with pulleys or guides a a a and support or brace P, substantially as shown and described, for the purpose set forth.

10. The combination of the radial arms F and G, circle O, and chain o with pulleys a a a and support or brace P, substantially as shown and described, for the purpose set forth.

11. The combination of chain R with pulleys or guides b b c d and the hollow mast A, substantially as shown and described, for the purpose set forth.

12. In a railroad ditching or excavating machine, the combination of crane A B C, arranged to be shifted from side to side, or to the front of its car, with engine S, excavator D, and handle or beam E, substantially as shown and described, for the purposes set forth.

13. In a railroad-ditching machine, the combination of post H, horizontally-rotating arms F G, segmental supports J M, crane A B C, excavator D, and handle or beam E with engine S, substantially as shown and described, for the purposes set forth.

HOSEA T. STOCK.

Witnesses:

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