

(No Model.)

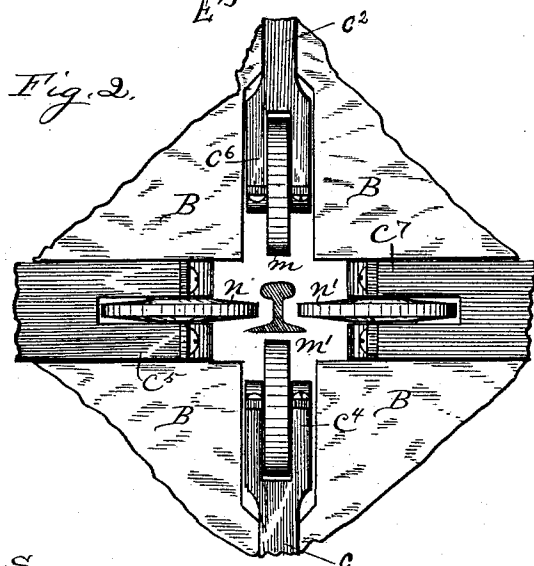
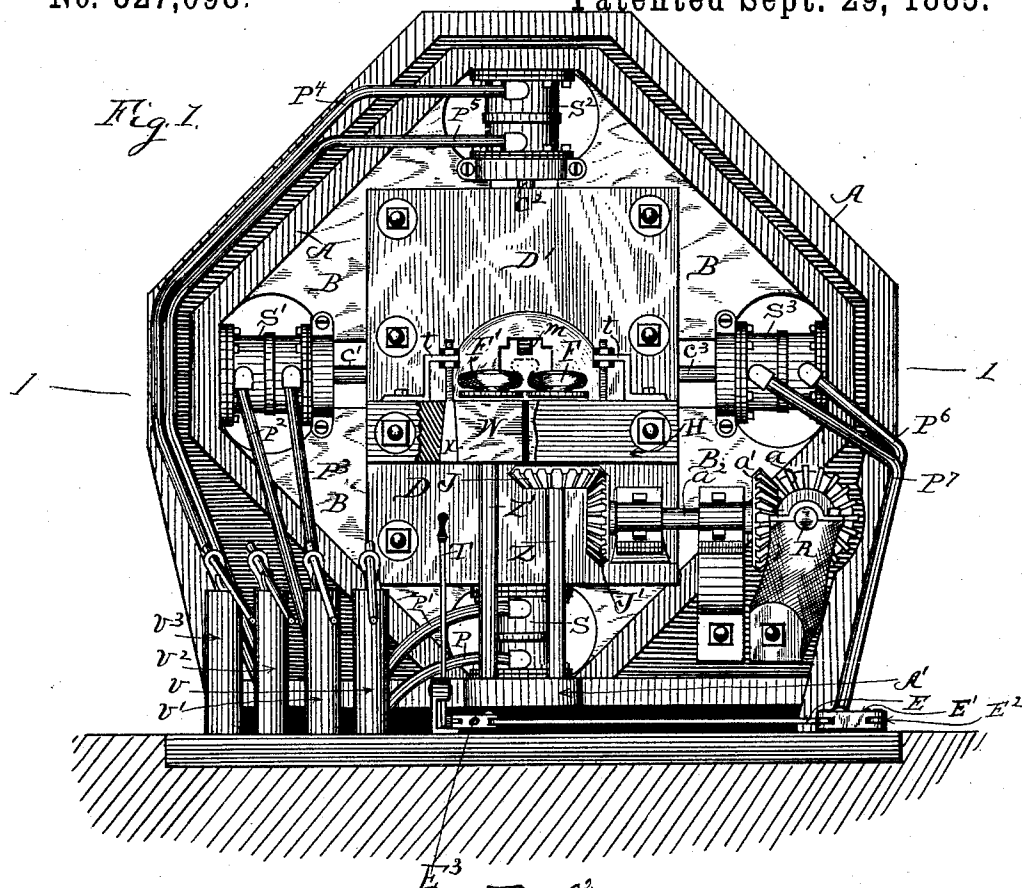
2 Sheets—Sheet 1.

M. L. O'BRIEN.

MACHINE FOR STRAIGHTENING RAILROAD RAILS.

No. 327,098.

Patented Sept. 29, 1885.



Witnesses

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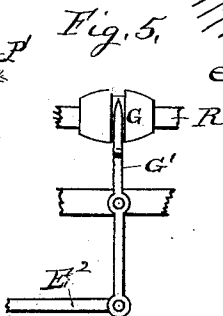
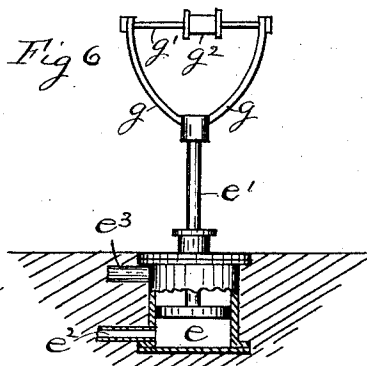
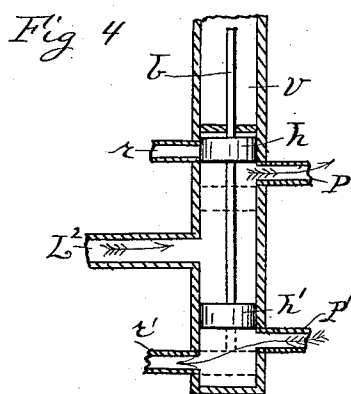
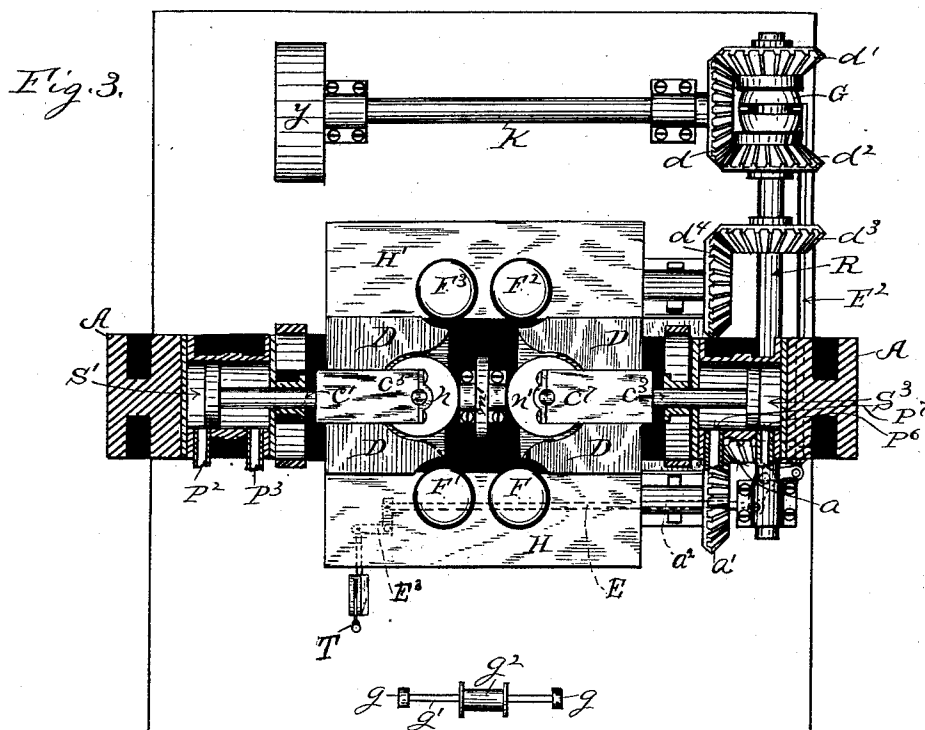
Michael G O'Brien

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UNITED STATES PATENT OFFICE.

MICHEL L. O'BRIEN, OF JOLIET, ILLINOIS.

MACHINE FOR STRAIGHTENING RAILROAD-RAILS.

SPECIFICATION forming part of Letters Patent No. 327,098, dated September 29, 1885.

Application filed October 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, MICHEL L. O'BRIEN, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in a Machine for Straightening Railroad-Rails, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation. Fig. 2 is a side view of the interior central portion of Fig. 1, showing the location of the straightening-rolls and the manner in which they are held by their respective sliding heads. Fig. 3 is a horizontal sectional view of Fig. 1 on line 1, looking downward; Fig. 4, a central vertical sectional view of the piston-regulator; Fig. 5, a side view of the friction-clutch for reversing the machine, and Fig. 6 a side view of the rail-rest for supporting the outer end of the railroad-rail.

This invention relates to certain improvements in hydraulic railroad-rail straighteners, which improvements are fully set forth and explained in the following specification and claims.

Referring to the drawings, A represents the main frame of the machine, and stands vertically on a proper floor or foundation. (Shown in Fig. 1.) B is a plate or web that fills said frame centrally, and is provided with openings for the reception and support of the water-cylinders S S' S² S³, and slots radiating from the center toward each cylinder and forming guideways for the sliding heads c¹ c⁵ c⁶ c⁷ to reciprocate in, as shown in Fig. 2. These sliding heads are respectively attached to the working piston-rods c c' c² c³ of said cylinders, and are severally provided on their outer ends with the straightening-rolls m m' n n' boxed therein, as shown in Fig. 2. When said sliding heads are reciprocated by means of the said piston, they may severally be brought to bear against the rail on any side of it, as the operator may desire, and as may be required to straighten the rail. Each piston, with its sliding head and straightening-roll, is operated independently from the other.

The side plates, D and D', which are the same on either side of the machine, serve to hold in said several sliding heads by being bolted to the sides of plate B, as shown in

Fig. 1, where it covers the parts behind it. It is removed in Fig. 2 to show these sliding heads and their straightening-rolls and their relation to each other and to the rail.

On either side of the machine are located feed-rolls F, F', F², and F³. The rail is fed into the machine by and between the feed rolls F and F', from which they pass between the feed-rolls F² F³ out of the machine. These feed-rolls are keyed to the upper ends of vertical shafts Z and Z', Fig. 1, which are journaled in step-boxes A' at their lower ends, and are journaled near their upper ends in the platforms H and H', bolted to the sides of the machine. One of said shafts, Z, is provided with a miter-gear, J, to mesh with miter-gear J'. These feed-rolls are driven by means of a belt on pulley y, through the medium of shafts a², R, and K and miter-gears d d' d³ d⁴ a a' J J', a plan of which is shown in Fig. 3.

A reverse motion may be given this gearing by means of a friction-clutch, (shown in Figs. 3 and 5,) which is constructed as follows: Miter-gears d' and d² are loose on shaft R. Their hubs on their facing sides are hollowed to receive a sliding cone, G, feathered on shaft K between said miter gears. This cone is operated in either direction on said shaft by means of the forked lever G² forked over it in an annular groove, as shown particularly in Fig. 5, by means of the lever T, Fig. 1, through the medium of rods E' E² and bell-cranks E and E³. By shifting said cone in either direction it will, by its frictional contact with said miter-gears, lock either one, respectively, to the shaft, and through the medium of miter-gear d drive shaft R in either direction, at the will of the operator, to run the rail in either direction through the machine, so that if it were discovered that the rail had not been thoroughly straightened on its way through the machine the machine could be reversed and the rail returned to straighten it thoroughly.

The shape of the feed-rolls is such that the space between them will conform to the web and tread of the rail, as shown in Fig. 1, and the rail is supported between and in said rolls partially by means of its tread resting on flanges forming a part of the rolls, as shown in said figure. The shafts Z Z' bearing said feed-rolls are provided with sliding journal-

boxes in the platforms H and H', so their distance apart may be adjusted by means of a wedge, *x*, (shown in Fig. 1.) behind said boxes. Said wedges are adjusted vertically to move the sliding boxes of shafts Z Z' by means of their passing up through the bracket-standards *t*, and having their upper ends screw-threaded to receive a pair of set-nuts, as shown in said figure. By turning said nuts said wedge *x* may be adjusted vertically, and thus move the feed-rollers to or from each other, as may be desired.

The several straightening-rolls are operated to be brought in contact with the rail on either of its four sides, at the will of the operator, by means of the several hydraulic cylinders S S' S² S³, and their pistons connected with said several sliding heads. These four cylinders and their operating parts are all alike, so that it is not necessary to describe more than one, and for convenience I will describe the lower one, S, and its operating parts.

Fig. 4 shows an ordinary piston-regulator, the cylinder V of which extends up through the floor, as shown in Fig. 1, so a lever may be attached to its upper end, to which lever is attached the regulator-piston rod *b*. The pipes P and P' connect cylinder S with the cylinder V of said piston-regulator. L² is the supply-pipe, and *r* and *r'* are the discharge-pipes. When the regulator-piston *b* is in the position shown in Fig. 4 water will pass through pipe P and elevate the driving-piston of cylinder S, and the dead-water will be discharged through the pipes P' and *r'*. When said regulator-piston is reversed, the water will flow through pipe P' into cylinder S, and the dead-water below said driving-piston will escape through pipes P and *r*, so that sliding head *c*⁴ on driving-piston *c* of cylinder S may be reciprocated in either direction to bring its straightening-roll *m'* in contact with the bottom of the rail or not at pleasure.

Four piston-regulators, V V' V² V³, are shown in Fig. 1, all connected by their respective water-pipes with their respective cylinders to reciprocate their respective sliding heads with their straightening-rolls at the will of the operator, who stands near the levers, which are on the top of said regulators, so they are all within his reach and can be operated instantly and at will to bring the straightening-rolls to bear against any part of the rail to straighten it as it is passed through the machine.

Fig. 6 shows a rail-support for the outer end of the rail, consisting of the hydraulic cylinder *e*, piston *e'*, yoke *g*, cross-rod *g'*, and sliding roller *g''*, upon which the rail is to travel. This piston *e'* may be operated by a piston-regulator—such as is shown—by connecting it thereto by means of the pipes *e'' e''*, so the roller *g''* can be adjusted vertically to properly support the rail. If the rail is crooked, the roller *g''* will slide laterally on rod *g'* to accommodate itself to the form of the

rail, and the piston *e'* may elevate or lower it for the same purpose. These rail-supports may be used on either side of the machine to support the rail, both when it enters and leaves the machine.

Two of the said straightening-rolls may be used in place of four, and the machine be adapted to permit the rail to be rolled over from side to side, so as to permit the rolls to straighten it, as specified.

The amount of pressure brought to bear against any side of the rail may be arbitrarily controlled, and be variable as the quality and size of a rail may require, or in the judgment of the operator may be necessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. The machine for straightening railroad-rails described and shown, consisting of the combination, with the main frame A, of the two horizontal cylinders S' and S³, arranged to face each other, and respectively provided with the pistons *c'* and *c''*, and sliding heads *c''* and *c'*, attached to said pistons, and having respectively on their outer ends the straightening rolls *n* and *n'*, vertical cylinders S and S², arranged to face each other, and respectively provided with the pistons *c* and *c''*, and sliding heads *c'* and *c''*, attached to said pistons, and having respectively on their outer ends the straightening-rolls *m'* and *m*, the said cylinders being set so as to face a common center, web-plate B, having guideways for said sliding heads, feed-rolls F F' F² F³, and the means described for operating said pistons and sliding heads independently of each other, consisting of the piston-regulators V V' V² V³ and their operating mechanism, to alternately bring said straightening-rolls to bear against either side of a railroad-rail, substantially as and for the purpose set forth.

2. In the machine shown and described for straightening railroad-rails, the combination, with the platform H H', of the vertical shafts Z and Z', having sliding boxes near their upper end set to slide in said platform, wedge *x*, having an extended screw-threaded upper end provided with a pair of set-nuts, standard *t*, and feed-rolls F and F', located, respectively, on the upper end of said shafts, as and for the purpose set forth.

3. In the machine shown and described for straightening railroad-rails, the combination of the miter-wheels *d*, *d'*, *d''*, *d'''*, *d''''*, *a*, *a'*, J, and J', shafts *a''*, K, and R, sliding cone G, feathered on shaft R between miter-wheels *d'* *d''*, and having an annular groove around its center, feed-rolls F F' F² F³, and forked lever G', forked over said cone in said annular groove, as and for the purpose set forth.

4. In the machine shown and described for straightening railroad-rails, the combination of the frame A, cylinders S, S', S², and S³, having the pistons *c*, *c'*, *c''*, and *c''*, and sliding

heads c^4 , c^5 , c^6 , and c^7 , attached to said pistons, and having the straightening-rolls m m' n n' on their outer ends, feed-rolls F , F' , F^2 , and F^3 , and piston-regulators V , V' , V^2 , and V^3 , and
5 their operating mechanism, whereby said straightening - rolls may be independently brought to bear against either side of a railroad-rail at a variable and arbitrary pressure, as and for the purpose set forth.

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Witnesses:

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