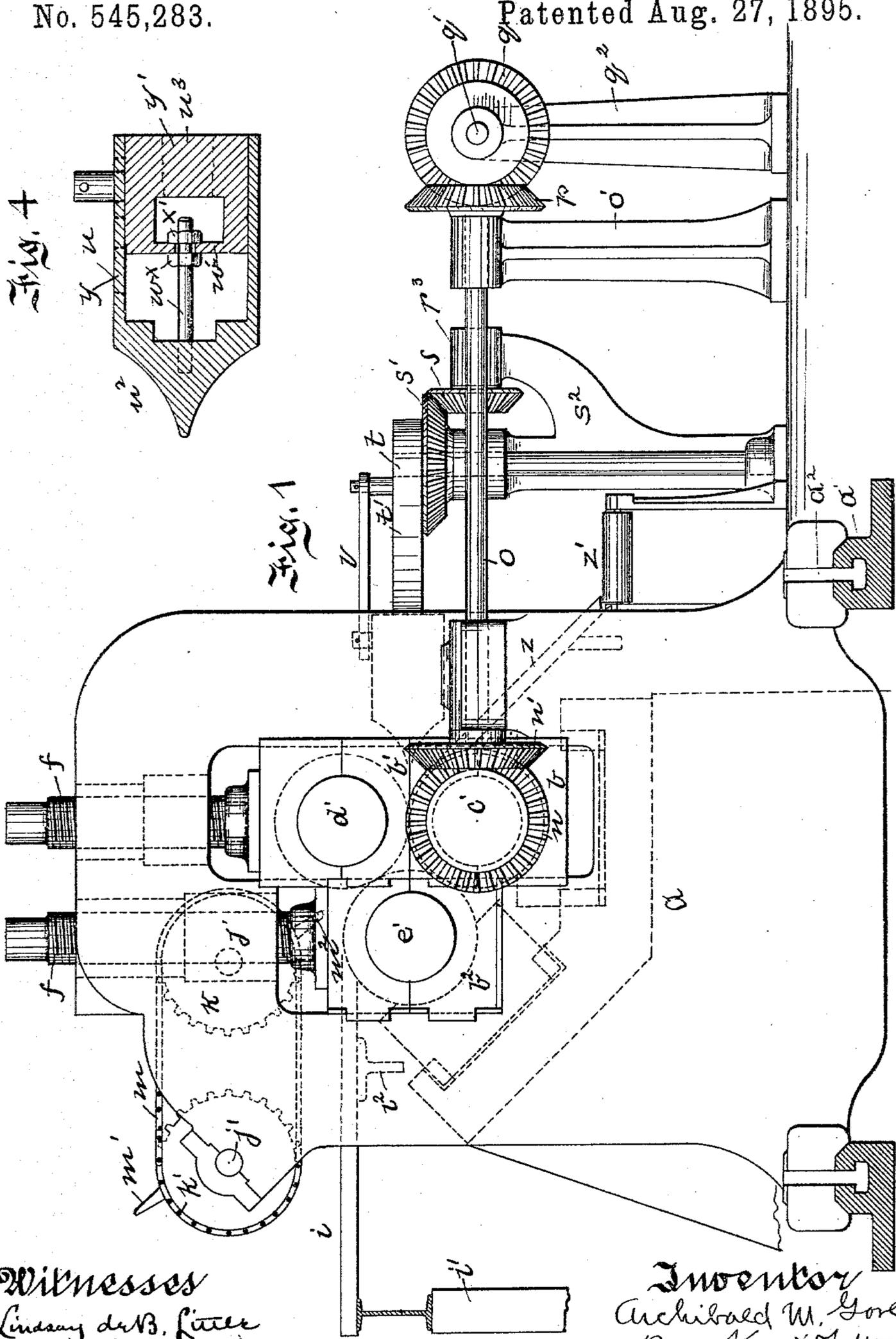


A. M. GORE.
APPARATUS FOR STRAIGHTENING RAILS.

No. 545,283.

Patented Aug. 27, 1895.



Witnesses
 Lindsay de B. Luce
 J. R. Cooke

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(No Model.)

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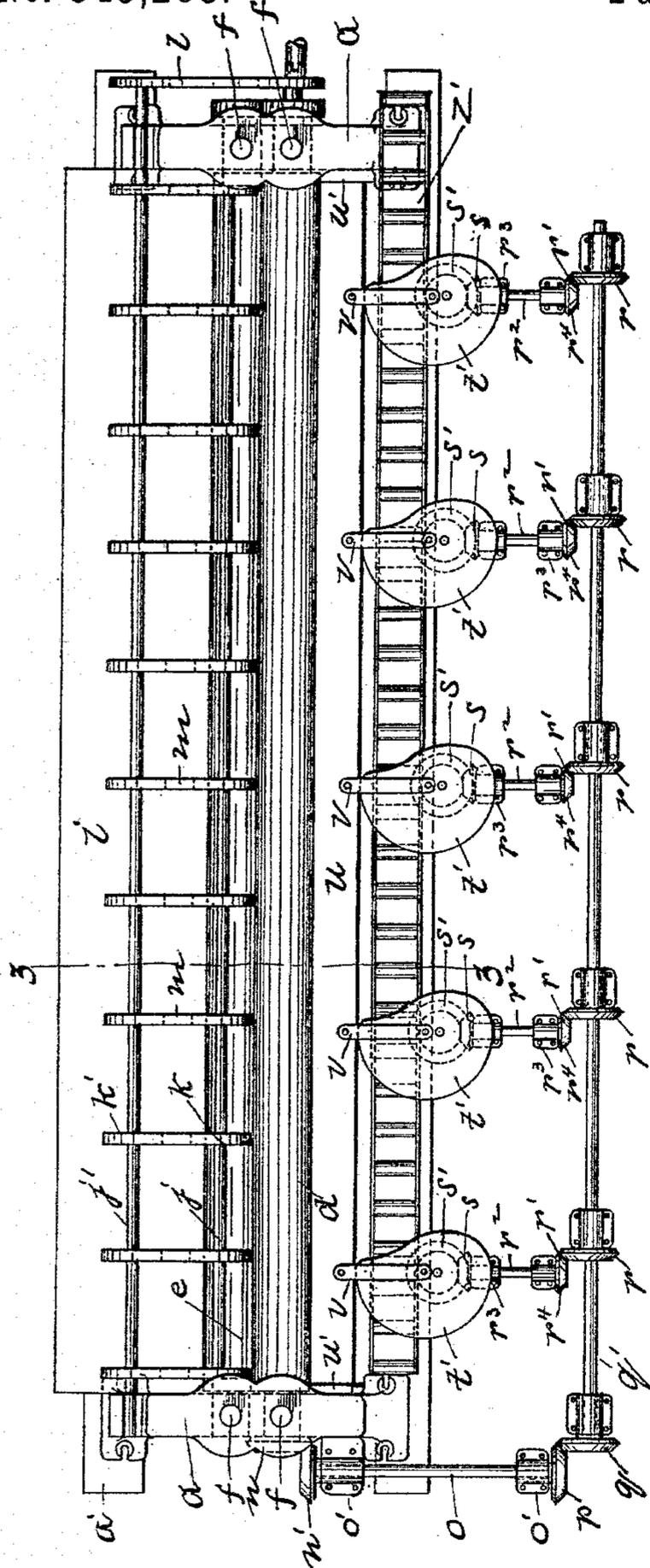


Fig. 2.

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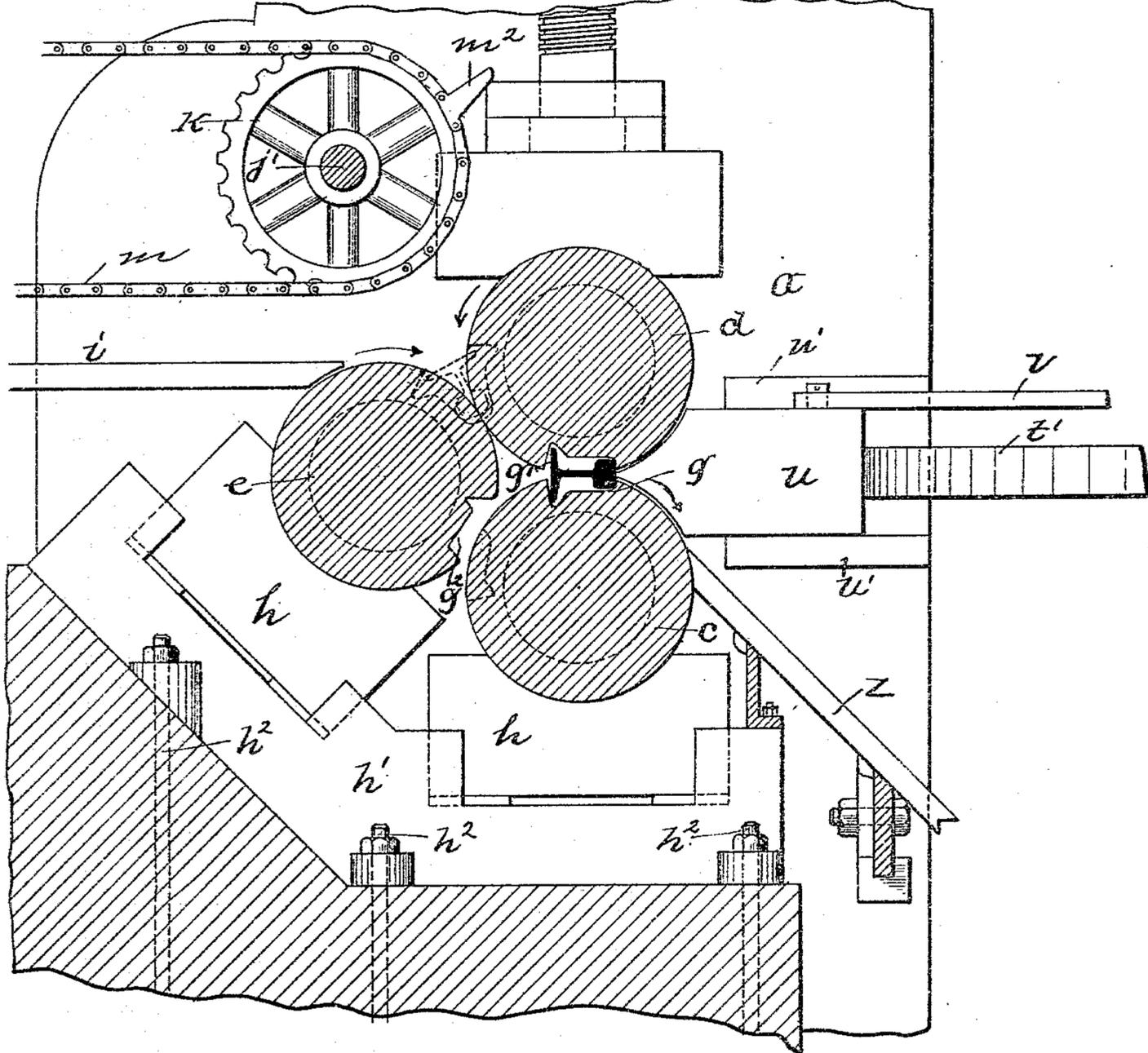


Fig. 5.

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UNITED STATES PATENT OFFICE.

ARCHIBALD M. GORE, OF BRADDOCK, PENNSYLVANIA.

APPARATUS FOR STRAIGHTENING RAILS.

SPECIFICATION forming part of Letters Patent No. 545,283, dated August 27, 1895.

Application filed December 21, 1894. Serial No. 532,529. (No model.)

To all whom it may concern:

Be it known that I, ARCHIBALD M. GORE, a resident of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Straightening Rails; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to apparatus for straightening rails, rods, bars, &c., its object being to provide a form of apparatus for straightening rails in which the rail is subjected to a pressure at all points along its length at the same time.

My invention comprises, generally stated, the feeding of a rail to a roll having a suitable groove extending lengthwise thereof, bringing a second roll having a corresponding groove therein into position with reference to the groove in said first-mentioned roll as to impart a pressure to the flanges and head of the rail along its entire length, and again bringing a third roll having a corresponding groove therein into coincidence with the groove in said second roll, and again imparting a pressure to the flanges and head of the rail and discharging the rail straightened therefrom.

To enable others skilled in the art to make and practice my invention I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is an end view of my improved apparatus; Fig. 2, a plan view; Fig. 3, an enlarged sectional view on the line 3 3, Fig. 2; and Fig. 4 is an enlarged cross-section of the presser used in connection with my invention.

Like letters indicate like parts in each of the figures.

In the drawings, *a* represents the housings, which are secured to the bed-plate *a'* by means of the bolts *a²*. These housings are made sufficiently massive for the purpose of the invention, and within said housings are supported the brasses *b*, *b'*, and *b²*. Journaled in the brasses *b* are the necks *c'* of the bottom roll *c*, and journaled in the brasses *b'* are the necks *d'* of the top roll *d*, while in front of the said rolls *c* and *d* is the roll *e*, having its neck *e'* journaled in the brasses *b²*. The bottom roll *c* runs in line with the driving-shaft of the engine and is driven

thereby in the ordinary way, and said roll is connected by suitable gearing with the other rolls *d* and *e*, whereby said rolls are driven in the directions indicated by the arrows. The rolls *d* and *e* are adjusted by suitable adjusting-screws *f*, passing down through the top of the housings *a* in the ordinary manner. These rolls *c*, *d*, and *e* may be formed of cast-iron, steel, or wrought-iron, as may be desired. The rolls *c*, *d*, and *e* are formed with the grooves *g* *g'* *g²*, respectively, said grooves extending approximately the entire length of the rolls and of such shape when in conjunction with each other as to form substantially the shape in cross-section of the rail to be straightened. Bearing-blocks *h* are provided for the rolls *c* and *e*, said bearing-blocks resting on suitable bed-plates *h'*, secured to the bed-plate by means of the bolts *h²*. These bearing-blocks *h* may be arranged at suitable intervals. Located in front of the roll *e* and at such height as to deliver the rails to said roll is the table *i*, said table being supported by the standards *i'* and the beam *i²* just above the table *i*. Journaled in suitable bearings in the housings are the shafts *j* *j'*, said shafts having secured thereto at suitable intervals the sprocket-wheels *k* *k'*, respectively. The shaft *j'* is connected up with the top roll *d* by means of the sprocket-chain *l* and is accordingly driven thereby. The sprocket-wheels *k* *k'* are connected by the chain *m*, the said chain having formed thereon the fingers *m'* at suitable distance apart.

Mounted on one end of the bottom roll *c* is the bevel-gear *n*, said gear meshing with the bevel-pinion *n'* on the shaft *o*, journaled in suitable standards *o'*. The outer end of the shaft *o* is mounted therein, and the bevel-pinion *p*, which meshes with a bevel-pinion *q*, mounted on a shaft *q'*, is journaled in suitable standards *q²*. This shaft *q'* extends along in the rear of the rolls practically the entire length thereof, and at intervals on said shaft *q'* are the bevel-pinions *r*, said pinions meshing with the bevel-pinions *r'* on the shaft *r²*, said shafts being journaled in suitable bearings *r³*. On the outer ends of the shaft *r²* are the bevel-pinions *r⁴*. On the inner ends of the shafts *r²* are the bevel-pinions *s*, which mesh with the bevel-pinions *s'*, journaled in suitable standards *s²*. Mounted on

studs t on the pinions s' are the cams t' , said cams being adapted to move in contact with the presser u . This presser u extends substantially the entire length of the rolls and is mounted on suitable guides u' , in which it is adapted to slide to and fro. Pitmen v are connected to the presser u and to the cam t for the withdrawal of said presser, as will hereinafter be more fully shown. This presser u is composed of the conical member u^2 and the plug member u^3 . This plug fits within the hollow body of the conical member u and is connected thereto by means of the bolts w , which is cast in the said conical member u^2 and passes through a wall w' in said plug u^3 . Nuts $x x'$ on each side of the wall w' provide means for withdrawing said conical member with the said plug u^3 or advancing said conical member, as may be desired. Openings $y y'$ are provided in said plug u^3 and the conical member u^2 , whereby access may be had to said nuts $x x'$. In the rear of the bottom roll c is the discharge-table z , supported in any suitable way, and at the bottom of said discharge-table are the revolving rollers z' , driven by suitable mechanism, for the purpose more fully hereinafter set forth.

I will describe the operation of my invention as applied to the straightening of an ordinary railway-rail having the supporting-flanges and the head connected by a vertical web. The rail to be straightened is placed upon the table i in such position that fingers m' on the chain m will come into contact with said rail and advance it along said table to the rolls. The said fingers m' will advance said rail evenly and carry it from the table onto the roll e just as the groove g^2 in said roll is at such position as to receive one of the flanges and part of the head of said roll. Meanwhile the roll d has revolved until its groove g' falls into coincidence with the groove g^2 of the roll e , whereupon said groove g' receives the portion of the roll not taken up by the groove g^2 , and as both of said rolls continue to revolve they completely inclose the rail along its entire length in said coincident grooves g' and g^2 in such manner that a pressure is exerted upon the flanges and head of said rail throughout its entire length. As the rolls d and e continue to revolve, the grooves g g^2 separate; but in the meantime the bottom roll c has revolved until its groove g is in position to receive that portion of the rail recently held within the groove g^2 of the roll e , so that said groove g , in conjunction with the groove g' of the top roll d , again incloses the rail and subjects it to a second pressure. When the rail is thus inclosed by the grooves g and g' of the rolls c and d , as shown in Fig. 3 of the drawings, the presser u is advanced by means of the mechanism hereinbefore described, so as to press the head of the rail while it is inclosed by the grooves g and g' of the rolls c and d . The presser u , however, withdraws immediately upon the further revolution of the rolls c and d , so that

as said rolls continue to revolve they discharge the rail onto the discharge-plate z , whence it falls onto the revolving rollers z' , which carry it off.

In the above operation the rail is subjected to a pressure at all points throughout its entire length at the same time, and a rail is straightened at each revolution of said rolls. It is apparent that the rolls may be adjusted to suit the different sections of the rail, while the conical member u^2 of the presser u may also be adjusted to correspond to the height of the rail to be straightened.

I do not confine myself to any particular form of rail, as the form of the grooves can be changed to suit different forms of rails, rods, bars, and angle-iron.

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

1. In apparatus for straightening rails, rods, &c., the combination with suitable housings, of two or more parallel rolls mounted therein and having longitudinal grooves formed therein, said grooves being adapted to coincide with each other during the revolution of said rolls, substantially as and for the purposes set forth.

2. In apparatus for straightening rails, rods, &c., the combination with suitable housings, of two or more parallel rolls mounted therein and having longitudinal grooves formed therein, said grooves being adapted to coincide with each other, and mechanism for feeding a rail thereto, substantially as and for the purposes set forth.

3. In apparatus for straightening rails, rods, &c., the combination with suitable housings, of two or more parallel rolls mounted therein and having longitudinal grooves formed therein, said grooves being adapted to coincide with each other, a table in front of said rolls, and mechanism for carrying the rail from said table into said grooves, substantially as and for the purposes set forth.

4. In apparatus for straightening rails, rods, &c., the combination with suitable housings of two or more rolls mounted therein and having longitudinal grooves formed therein, said grooves being adapted to coincide with each other, a table in front of said rolls, sprocket wheels mounted above said table, chains on said sprocket wheels, and fingers on said chains adapted to feed a rail from said table to said groove, substantially as and for the purposes set forth.

5. In apparatus for straightening rails, rods, &c., the combination with suitable housings, of a bottom roll, a top roll, and a roll in front of said rolls, said rolls having longitudinal grooves formed therein, and mechanism for driving said rolls, whereby the grooves on said top and front rolls are brought into coincidence with each other, and the grooves in said top and bottom rolls, substantially as and for the purposes set forth.

6. In apparatus for straightening rails, rods, &c., the combination with suitable housings,

of a bottom roll, a top roll, and a roll in front
of said rolls, said rolls having longitudinal
grooves formed therein, and mechanism for
driving said rolls, whereby the grooves on said
5 top and front rolls are brought into coinci-
dence with each other, and the grooves in said
top and bottom rolls, and a reciprocating
presser in the rear of said rolls, substantially
as and for the purposes set forth.

10 7. In apparatus for straightening rails, rods,
&c., the combination with suitable housings,
of a bottom roll, a top roll, and a roll in front
of said rolls, said rolls having longitudinal
grooves formed therein, and mechanism for
15 driving said rolls, whereby the grooves on said

top and front rolls are brought into coinci-
dence with each other, and the grooves in said
top and bottom rolls, a cam in the rear of said
rolls, a presser mounted in suitable guides in
the rear of said rolls, said cam being adapted 20
to move in contact with said presser, and a
pitman connecting the said presser to said
cam, substantially as and for the purposes set
forth.

In testimony whereof I, the said ARCHIBALD 25
M. GORE, have hereunto set my hand.

ARCHIBALD M. GORE.

Witnesses:

ROBT. D. TOTTEN,
ROBERT C. TOTTEN.