

No. 620,982.

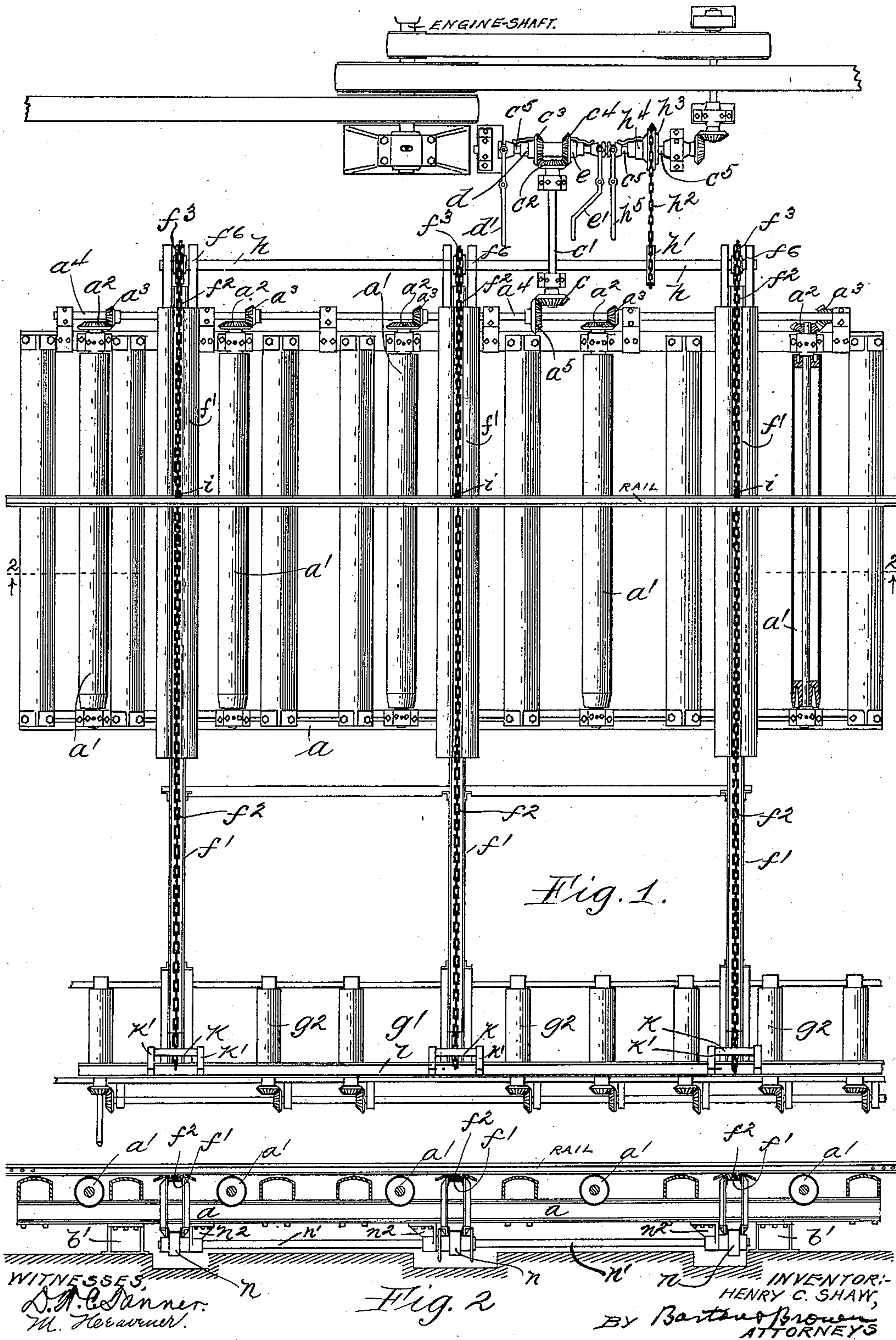
Patented Mar. 14, 1899.

H. C. SHAW.
ROLL AND TRANSFER TABLE.

(Application filed Feb. 21, 1898.)

(No Model.)

2 Sheets—Sheet 1.



No. 620,982.

Patented Mar. 14, 1899.

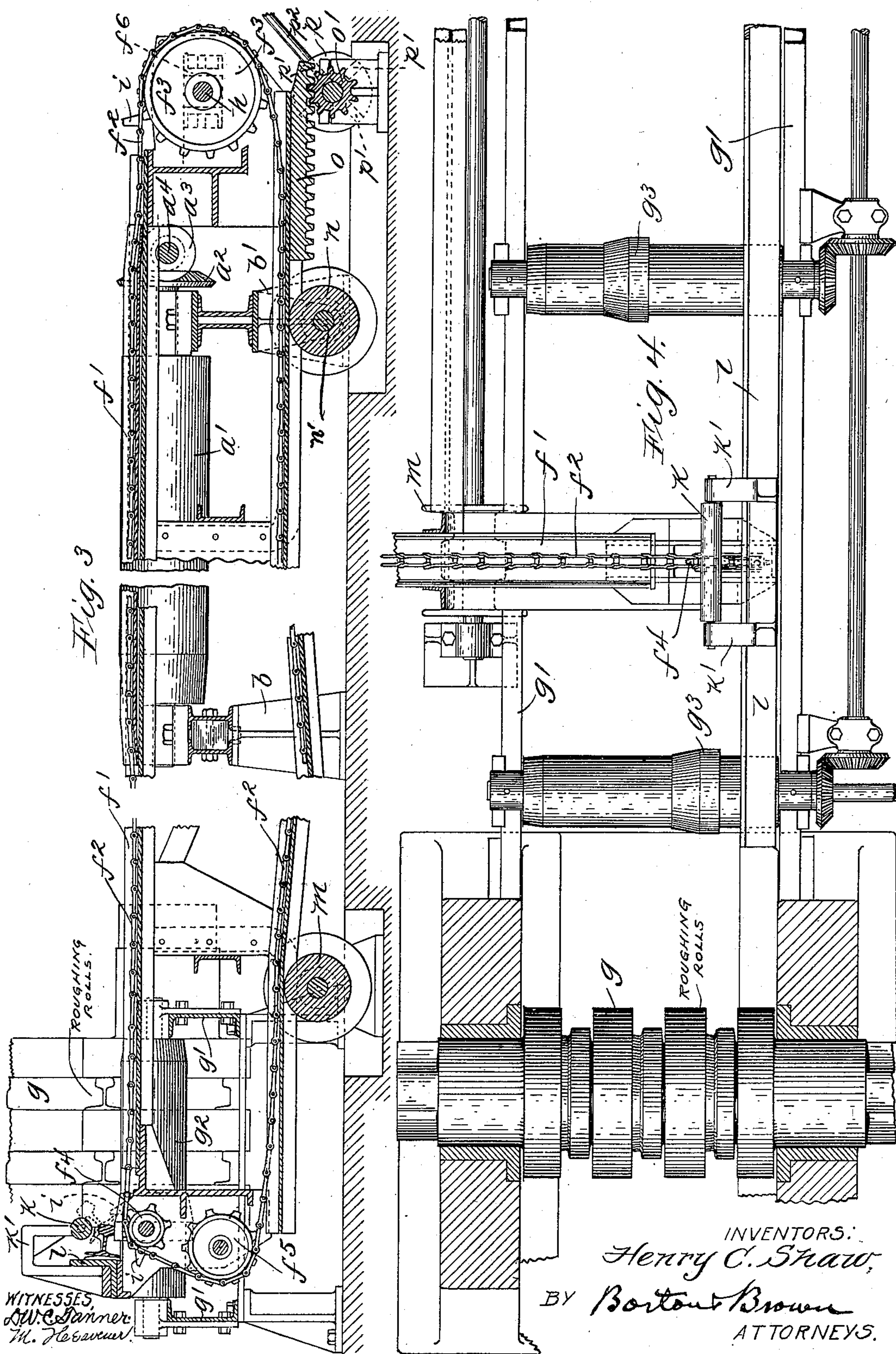
H. C. SHAW.

ROLL AND TRANSFER TABLE

(Application filed Feb. 21, 1898.)

(No Model.)

2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

HENRY C. SHAW, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
MCKENNA STEEL WORKING COMPANY, OF MILWAUKEE, WISCONSIN.

ROLL AND TRANSFER TABLE.

SPECIFICATION forming part of Letters Patent No. 620,982, dated March 14, 1899.

Application filed February 21, 1898. Serial No. 671,058. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SHAW, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Roll and Transfer Tables, (Case No. 3,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a roll and transfer table, and more particularly to a roll and transfer table for manipulating railway-rails in a rolling-mill.

In an application of David H. Lentz, Serial No. 659,479, filed November 22, 1897, is disclosed a rolling-mill wherein two furnaces are employed in connection with a series of rolling-machines, said rolling-machines being adapted to receive rails from either of said furnaces, so that rails may be received from one of said furnaces while the rails in the other furnace are being heated. Each of said rolling-machines is shown as having a plurality of passes, so that after one pass has been distorted by use the rails may be entered between one of the other passes without necessity of changing the rolls. The roll and transfer table forming the subject of this application was designed primarily to be placed between the furnaces of this rolling-mill and to do the work of receiving rails from either furnace and transferring the same to that particular pass of the roughing-rolls in which they were to be entered.

In accordance with my invention the transferring mechanism consists of a receiving roll-table having driven rollers adapted to receive, support, and convey a rail along said table and a transfer table or frame associated with said receiving roll-table, said transfer-table consisting, essentially, in a series of ways extending from said receiving-table to a table in front of the roughing-rolls, and means, preferably a series of endless chains carrying dogs thereon, being provided for engaging the rail as it lies upon the receiving-table and carrying it along said ways to the table in front of the roughing-rolls. Driven rollers are preferably provided upon this table, said

rollers being adapted to carry the rail and put the same into one of the passes of said roughing-rolls. It is necessary to enter the rail between the roughing-rolls while resting upon its side—that is, upon the head and one edge of the flange—and since it comes from the furnace in an upright position resting upon the flange it is necessary to turn it upon its side somewhere between the furnace and the roughing-rolls.

My invention provides means for automatically turning the rail upon its side as it is carried along the transfer-table. The dogs which push the rail along the ways of the transfer-table engage it by the flange portion thereof, and preferably near the foot of the transfer-table I provide a suitable stop, which may be a roller, said stop being mounted so that the head of the rail will abut against it as the rail is carried along the ways, and as the motion of the flange portion of the rail is continued the result will be to turn the rail upon its side, so that it will rest on the head and the edge of the flange, whereupon the rail is freed from its engagement with the stop and may continue its journey along the ways. Means are provided for automatically stopping the rail when it reaches a position opposite that pass in the roughing-rolls into which it is to be entered, the dogs carried by the endless chains of the transfer-table being preferably automatically disengaged from the rail at this point.

A further feature of my invention consists, in combination with the above mechanism for automatically stopping the travel of the rail, of means for adjusting said mechanism to cause the same to stop the rail opposite any one of the passes of said roll-train.

I will explain the details of my invention more fully with reference to the accompanying drawings, in which—

Figure 1 is a plan view of a roll and transfer table embodying my invention. Fig. 2 is a sectional view thereof on line 2 2 of Fig. 1. Fig. 3 is a longitudinal section thereof, some of the middle parts of the transfer-table being broken away in order to make as large a view as possible within the limits of the sheet. Fig. 4 is a plan view of a corner of

the transfer-table, showing the lower roughing-roll and a portion of the roll-table which is in front of the same.

Similar parts are designated by similar letters of reference throughout the several figures.

The receiving-table a is supported upon standards b b' and is provided with a series of rollers a' a' upon its top, together with a number of rib-like castings for supporting the rails upon the table in the spaces between said rollers. A bevel gear-wheel a^2 is provided upon the end of each of the rollers a' , said gear-wheels meshing with complementary bevel gear-wheels a^3 a^3 , mounted upon a common shaft a^4 . A bevel gear-wheel a^5 is mounted upon the shaft a^4 , meshing with a complementary bevel gear-wheel c , mounted at one end of a shaft c' , at the other end of which shaft is provided a bevel gear-wheel c^2 . Gear-wheels c^3 c^4 are loosely mounted upon a constantly-driven shaft c^5 , said gear-wheels meshing with the gear-wheel c^2 , one on either side thereof. Clutches d e are provided upon the shaft c^5 and are adapted to engage with the gears c^3 c^4 , respectively, to cause the same to rotate with the shaft. Levers d' e' are provided to actuate said clutches. Thus if the lever d' be manipulated to cause the clutch d to engage the bevel gear-wheel c^3 the latter will impart rotation to the shaft c' through gear-wheel c^2 , and will thus cause the rollers a' to be operated in one direction, while the rollers may be caused to rotate in an opposite direction by releasing the clutch d and manipulating the lever e' to engage the clutch e with the gear-wheel c^4 , the latter thus imparting an opposite rotation to the gear c^2 and shaft c' . Thus a rail may be drawn upon the table a from either side thereof by rotating the rollers a' in the proper direction.

The transfer-table associated with the receiving roll-table a consists of a steel framework, forming ways f' f' f' , which ways extend from the head of the table a along the top portion thereof in vacant spaces between the rollers a' a' to a table g' in front of the roughing-rolls g . This table g' is provided with driven rollers g^2 , which are adapted to engage the rail from the ways f' and enter it into the roughing-rolls, and I will designate this table as the "entering" roll-table.

As shown most clearly in Fig. 3, each of the ways f' of the transfer-table is provided with an endless chain f^2 , which passes over a sprocket-wheel f^3 at the head of said table and over two sprocket-wheels f^4 f^5 at the foot thereof. The sprocket-wheels f^3 f^3 f^3 are mounted upon a common shaft h , which is journaled to rotate in bearings f^6 , provided in the ends of the ways f' . A sprocket-wheel h' is also provided upon the shaft h , over which a sprocket-chain h^2 is passed, said sprocket-chain also passing over a sprocket-wheel h^3 , loosely mounted upon the constantly-driven shaft c^5 . A clutch h^4 is pro-

vided upon the shaft c^5 , rotating therewith, and a manual lever h^5 is connected with said clutch, so that the clutch may be caused to engage with the sprocket-wheel h^3 to rotate the same with the shaft. The movement of the endless chains f^2 f^2 f^2 may thus be controlled at will by the manipulation of the lever h^5 . A number of dogs i are provided upon the chains f^2 , which are adapted upon movement of said chains to engage with the flange of a rail which may be drawn across said ways upon the receiving-table and carry the same along the ways to the entering roll-table.

By reference to Fig. 3 the means for turning a rail upon its side in condition to enter the roughing-rolls will be readily understood. A roller k , forming a stop, is mounted upon a standard k' above each of the ways f' , preferably near the foot of the ways, as shown. As the dogs i engaging the edge of the flange of the rail move it along the ways the head of the rail is stopped by the rollers k , and the first result of this is to tip the rail up, as shown in dotted lines in Fig. 3, and then as the flange continues its travel the rail is turned on its side. After the rail is turned over and reaches the end of the ways f' the sprocket-chain takes a downward slant over the wheel f^4 , the dogs thus sliding off the flange of the rail and automatically disengaging themselves therefrom. This construction is quite a valuable feature, for the rail is thus always arrested in its movement along the ways at exactly the same place whether the operator stops the movement of the chains f^2 at the proper instant or not. All danger of catching or breaking the chains is thus obviated.

An angle-iron l is provided along the foot of the transfer-table, which serves as a positive stop for the rail and a guide to direct it into the roughing-rolls.

As illustrated in Figs. 3 and 4, the roughing-rolls are provided with three passes, as described in the application of Lentz hereinbefore mentioned, and I will now proceed to describe the means which I have provided for stopping the rail upon the entering roll-table opposite any one of these passes.

The framework of the transfer-table f is supported upon rollers m at the foot thereof, said rollers being mounted upon stationary standards. Likewise, the head of the transfer-table is supported by rollers n n , which are mounted to rotate with a common shaft n' , said shaft being journaled to rotate in standards n^2 , supported by the stationary roll-table a . A rack o is provided upon the lower portion of the head of the transfer-table, and a pinion o' is adapted to engage with said rack. The pinion may be rotated by an adjusting-wheel p , mounted upon the same shaft therewith, said wheel having sockets p' , into which a manual operating-bar p^2 may be inserted. By rotating the pinion o' in this manner the whole transfer-table may be moved, rolling upon the rollers m n , and may thus be ad-

justed so that the angle-iron or guide *l* may be brought into the proper position to direct a rail into either of the passes in the roughing-rolls.

5 To assist in supporting the rail in a proper position upon the entering roll-table *g'*, the rollers *g*² thereof are provided with collars *g*³, which are adapted to support the head of the rail, while its flange rests on the surface of
10 the roller proper.

It will be observed that with the roll and transfer table of my invention the manipulation of a heated rail may be accomplished with very little manual aid, it being only necessary
15 to operate the three levers *d'*, *e'*, and *h*⁵, which are so situated that one attendant may reach all of them.

It will be apparent to those skilled in the art that many modifications may be made in
20 the machine illustrated without departing from the spirit of my invention, and I do not therefore desire to be understood as limiting myself to the precise construction of that particular embodiment of my invention;
25 but,

Having thus described one form thereof, I claim as new, and desire to secure by Letters Patent, the following:

1. The combination with a roll-table adapted
30 to receive heated rails from a furnace, of a transfer-table associated with said roll-table, said transfer-table extending from the roll-table to a position opposite a roll-train, said roll-train having a plurality of passes
35 therein, means for moving said rail from the roll-table along said transfer-table, mechanism for automatically stopping the movement of said rail as it reaches a position opposite the roll-train, and means for adjusting said
40 mechanism to cause the same to stop the rail opposite any one of said passes in the roll-train, substantially as described.

2. The combination with a transfer-table adapted to receive a rail in an upright position, of endless chains on said transfer-table,
45 means for causing said endless chains to travel along the transfer-table, dogs carried by said endless chains adapted to engage the flange of said upright rail and move it along
50 the transfer-table, and a stop, as *k*, adapted

to engage the head of the upright rail while the flange is moved by said dogs, whereby the rail is turned upon its side as said dogs continue their travel, substantially as set forth.

3. The combination with a transfer-table,
55 of a shaping roll-train associated therewith, said shaping roll-train having a plurality of passes, endless chains on said transfer-table, dogs upon said endless chains adapted to engage the flange of a rail and move the same
60 along the transfer-table, stops, as *k*, adapted to engage the head of the rail as it is being moved, whereby the rail is turned upon its side, mechanism for automatically stopping
65 the movement of said rail as it reaches a position opposite the roll-train, and means for adjusting said mechanism to cause the same to stop the rail opposite any one of the passes of said roll-train, substantially as described. 70

4. The combination with a roll-train having a plurality of passes therein, of a roll-table adapted to receive a heated rail in an upright position, a transfer-table associated
75 with said roll-table and adapted to receive a rail therefrom, said transfer-table extending from the roll-table to a position in proximity to said roll-train, endless chains upon said transfer-table, means for causing the move-
80 ment of said chains along the same, dogs carried by said chains adapted to engage a rail and move the same in an upright position along said transfer-table, a stop adapted to engage the head of the rail as it is being moved
85 along said transfer-table, whereby the rail is turned upon its side as it continues its movement along said transfer-table, means for automatically disengaging said dogs with the rail as the latter reaches a position opposite
90 one of the passes in said roll-train, and means for bodily moving the transfer-table to cause a rail to be stopped opposite any one of the passes in said roll-train, substantially as described.

In witness whereof I hereunto subscribe my
95 name this 12th day of February, A. D. 1898.

H. C. SHAW.

Witnesses:

JAMES SHERRAN,

ALBERT J. HENNING.