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PATENTED FEB. 24, 1903.

S. T. & C. H. WELLMAN.
MANIPULATOR FOR FEED TABLES OF ROLLING MILLS.

APPLICATION FILED FEB. 19, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

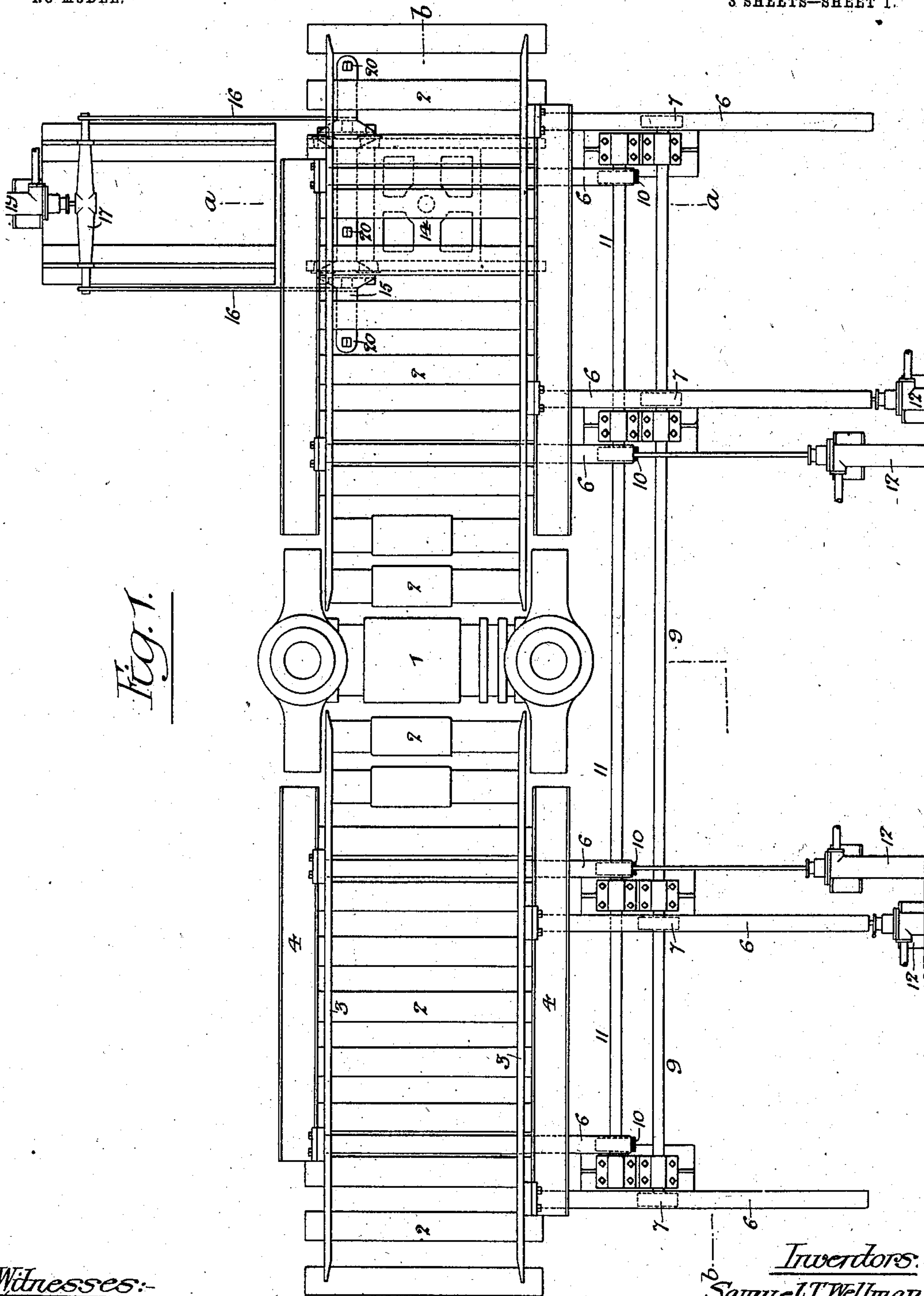


Fig. 1.

Witnesses:-

Frank L. A. Graham
Herman E. Metius

Inventors:

Samuel T. Wellman
Charles H. Wellman,

by their Attorneys;
Howson & Howson

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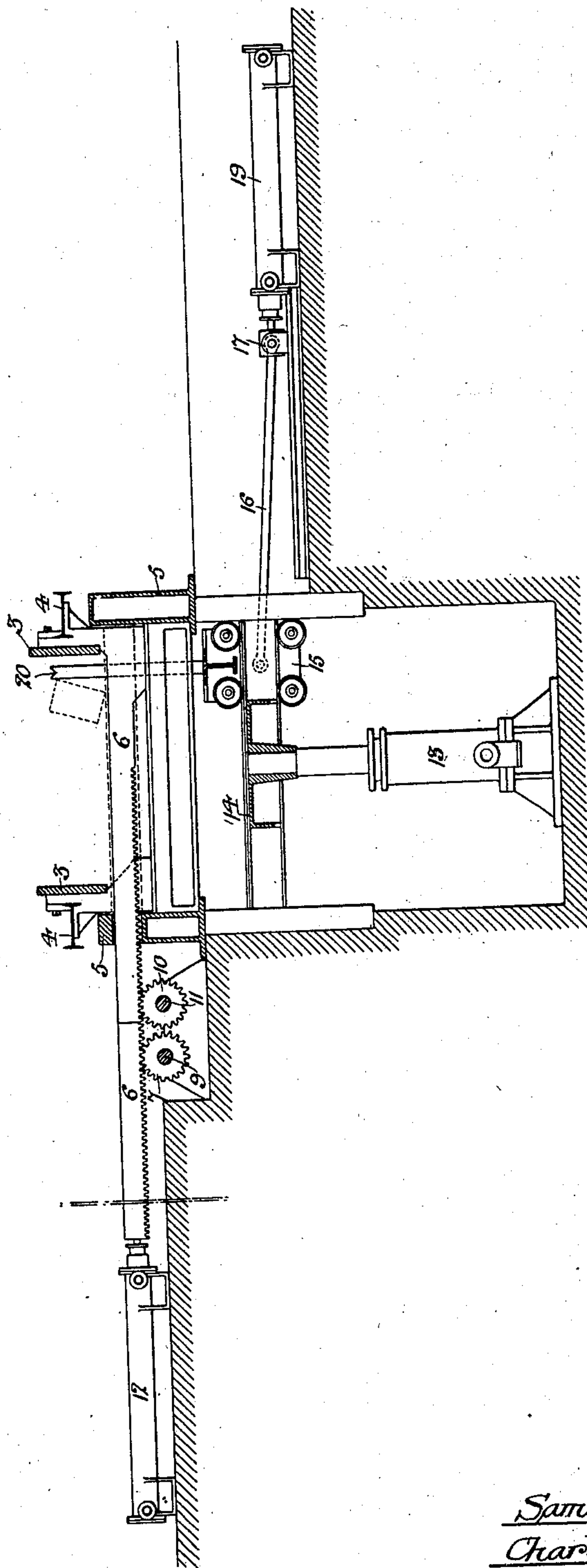
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3 SHEETS—SHEET 2.

NO MODEL.

Fig. 2.



Witnesses:-

Frank L. A. Graham.

Herman C. Mettles

Inventors:-

Samuel T. Wellman,

Charles H. Wellman,

by their Attorneys

Howson & Howson

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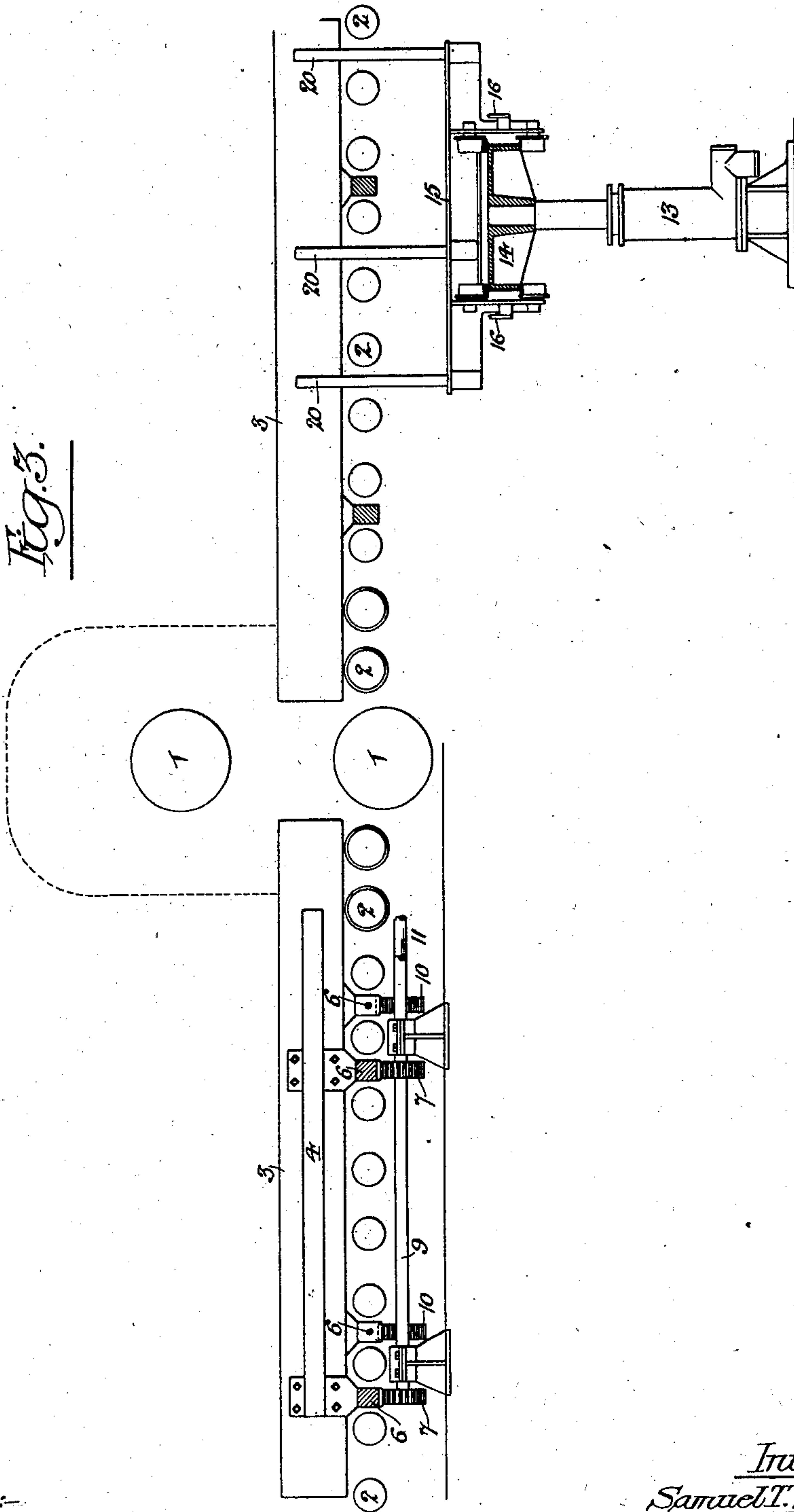
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
Frank L. A. Graham.
Herman E. Meties.

Inventors:
Samuel T. Wellman,
Charles H. Wellman,
by their Attorneys:
Hawson & Hawson

UNITED STATES PATENT OFFICE.

SAMUEL T. WELLMAN AND CHARLES H. WELLMAN, OF CLEVELAND, OHIO,
ASSIGNORS, BY MESNE ASSIGNMENTS, TO SAMUEL T. WELLMAN, AND
JULIAN KENNEDY, OF PITTSBURG, PENNSYLVANIA.

MANIPULATOR FOR FEED-TABLES OF ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 721,626, dated February 24, 1903.

Application filed February 19, 1902. Serial No. 94,754. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL T. WELLMAN and CHARLES H. WELLMAN, citizens of the United States, and residents of Cleveland, Ohio, have invented certain Improvements in Manipulators for Feed-Tables of Rolling-Mills, of which the following is a specification.

The object of our invention is to provide the feed-table of a rolling-mill with means whereby the manipulation of an ingot, bloom, billet, or slab can be readily effected, the mechanism providing for the turning of the ingot, bloom, billet, or slab on the table; also, for the support in an upright position of comparatively thin slabs whereby the latter will be properly directed to the grooves of the rolls and will have the desired square edges formed upon them by said rolls.

In the accompanying drawings, Figure 1 is a plan view of sufficient of a rolling-mill to illustrate our present invention. Fig. 2 is a transverse section of the same on the line *a a*, Fig. 1; and Fig. 3 is a longitudinal section on the line *b b*, Fig. 1.

1 1 represent the rolls of the mill, and 2 the rollers of the feed-tables on opposite sides of said rolls 1, the rolls and feed-tables being of any ordinary construction, as this forms no part of our present invention, the latter being limited to devices for manipulating and supporting the ingot, bloom, billet, or slab upon the feed-table, so as to insure the proper presentation of the same to the rolls.

Above each of the roller feed-tables are a pair of longitudinal guide-bars 3, each carried by a rigid longitudinal supporting structure 4, mounted so as to be free to slide laterally upon the fixed structure 5 of the roller-table, a part of each of these longitudinal structures 4 being a pair of racks 6, those of one structure meshing with pinions 7 upon a longitudinal shaft 9 and those of the other structure meshing with pinions 10 upon longitudinal shaft 11, parallel with the shaft 9, said shafts 9 and 11 extending longitudinally from one feed-table to the other, so that the racks employed in connection with each guide-bar 3 of each feed-table are operatively connected with the racks employed in connection with the like guide-bar of the other feed-table,

whereby corresponding guide-bars of each table are caused to move laterally in unison with each other.

One of the racks 6 of each guide-bar structure is connected to the piston-rod of a hydraulic or other power-actuated cylinder 12, whereby the guide-bars 3 of each feed-table may be caused to move from and toward each other, said guide-bars being susceptible of either joint or independent operation, whereby they may be caused to move the ingot, bloom, or billet laterally in either direction across the rollers of the feed-table, so as to direct it to any desired portions of the rolls 1 or may be moved as closely together as desired in order to support in an upright position upon the feed-table a comparatively thin slab, thereby feeding the same accurately to the grooves of the rolls and insuring the production of the desired square edges upon said slab by the action of said grooved portions of the rolls.

Other means than the power-cylinders 12 can, of course, be employed for imparting movement to the guide-bars 3, the power-cylinders being preferred as the most convenient and effective means for the purpose.

One of the feed-tables is provided with a manipulator consisting of means for imparting a quarter-turn or successive quarter-turns to an ingot, bloom, billet, or slab upon the feed-rollers independently of the guide-bars 3, and, if desired, both of the feed-tables may be provided with such means.

In a pit beneath the feed-table is mounted a power-cylinder 13, the piston-rod of which is provided with a cross-head 14, suitably guided, so as to move vertically beneath the feed-table, and on this cross-head is mounted so as to be free to move laterally a wheeled truck or carriage 15, which is connected by pivoted rods 16 to a cross-head 17, suitably guided at one side of the feed-table and connected to the piston-rod of a power-cylinder 19, whereby it may be moved laterally, so as to impart corresponding lateral movement to the truck or carriage 15, whatever may be the position of vertical adjustment of the cross-head 14, upon which said carriage is mounted.

Projecting upwardly from the carriage 15

and between rollers 2 of the feed-table are a series of fingers 20, constituting the members of the manipulator which act upon the metal under treatment, these fingers being preferably notched at their upper ends, the length of these fingers being such that when the cross-head 14 is in its lowermost position the tops of the fingers will be below the level of the tops of the rollers 2, and hence will not interfere with the free longitudinal movement of an ingot, bloom, billet, or slab over the same. When, however, the fingers are raised beneath such ingot, bloom, billet, or slab adjacent to one edge of the latter, that edge will be lifted, and in the case of an ingot, bloom, or billet the same will be turned over upon the feed-rollers 2, so as to present fresh sides of the same to the action of the rolls 1, or in the case of a slab the same will be lifted from a flat to an upright position, in which upright position it can be maintained by the proper adjustment of the guide-bars 3.

Owing to the fact that the fingers 20 have lateral as well as vertical movement they may be caused to act upon the ingot, bloom, billet, or slab to impart lateral movement thereto independently of the action of the guide-bars 3.

Other means than the power-cylinders 13 and 19 may be employed for imparting vertical movement to the cross-head 13 and lateral movement to the carriage 15, power-cylinders, however, being preferred.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. The combination of a feed-table of a rolling-mill, with longitudinal guide-bars and supporting structures whereby said bars are mounted above the feed-table, racks on said supporting structures projecting laterally beyond the feed-table, and shafts one for each bar, said shafts being arranged alongside of but laterally beyond and parallel with the feed-table and having pinions engaging said racks, substantially as specified.

2. The combination of the opposite feed-tables of a rolling-mill, guide-bars mounted above each of said feed-tables, mechanism whereby each guide-bar of each table can be moved laterally from and toward the other while still remaining parallel with each other and with a line at a right angle to the axes of the rolls, and connecting devices whereby corresponding guide-bars of the opposite tables are caused to move in unison, substantially as specified.

3. The combination of the opposite feed-tables of a rolling-mill, guide-bars mounted above each of said feed-tables, supporting structures for said guide-bars, projecting racks on said supporting structures, and two shafts, one having pinions engaging with the racks of one of the guide-bar structures of each table, and the other having pinions engaging with the racks of the other guide-bar structure of each table, substantially as specified.

4. The combination of the feed-table of a rolling-mill, with vertically-movable fingers for turning on its edge a slab resting upon said table, and guide-bars movable laterally from and toward each other for engaging and supporting the upturned slab, substantially as specified.

5. The combination of the feed-table of a rolling-mill, with fingers for turning on its edge a slab lying upon said table, said fingers being mounted so as to have both vertical and lateral movement, and guide-bars movable laterally from and toward each other, for engaging and supporting the upturned slab, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL T. WELLMAN.
CHARLES H. WELLMAN.

Witnesses:

C. W. COMSTOCK,
HERBERT S. GLIDDEN.