

No. 721,628.

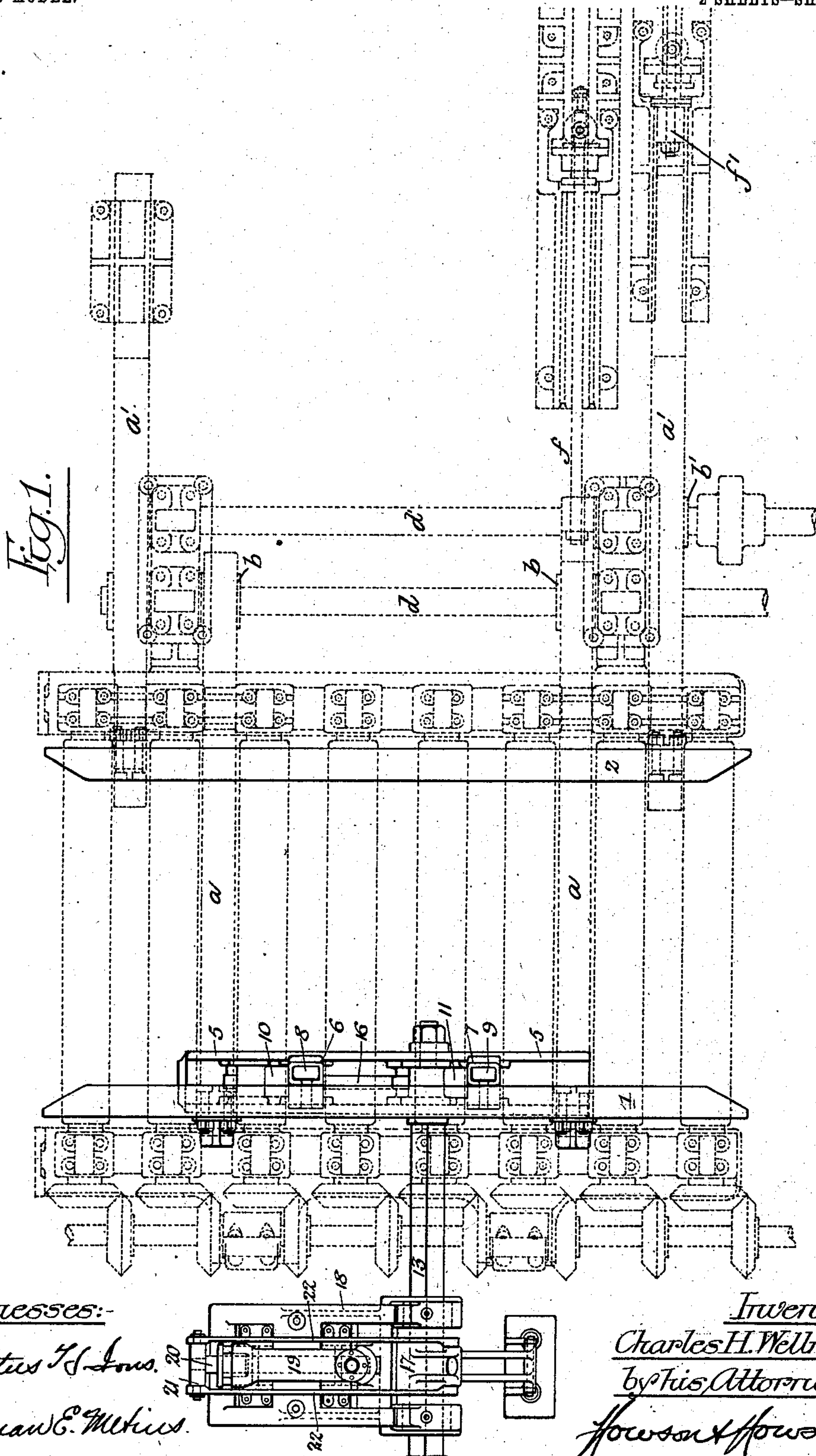
PATENTED FEB. 24, 1903.

C. H. WELLMAN.
MANIPULATOR FOR FEED TABLES OF ROLLING MILLS.

APPLICATION FILED NOV. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

John H. Jones.
Herman E. Melius.

Inventor:

Charles H. Wellman,
by his Attorneys;

Howson & Howson

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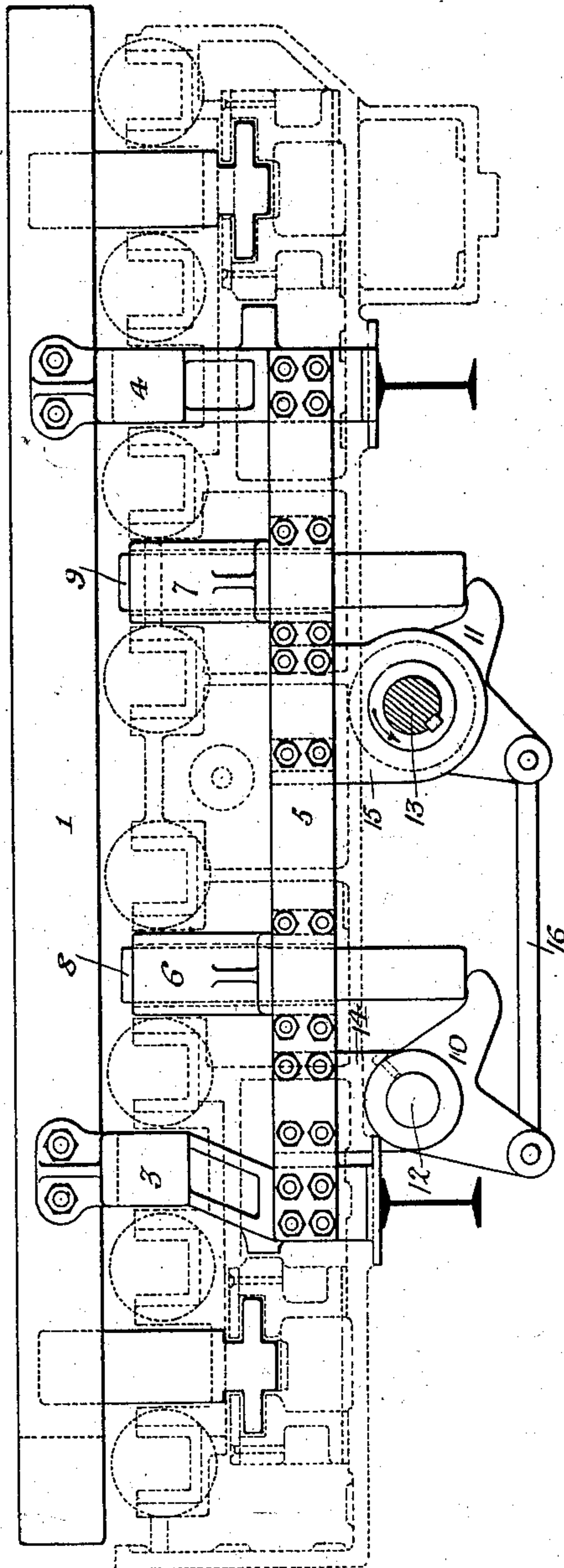
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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:-

Titus H. Gross
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Inventor:-

Charles H. Wellman,

by his Attorneys;

Houston & Fowler

UNITED STATES PATENT OFFICE.

CHARLES H. WELLMAN, OF CLEVELAND, OHIO, ASSIGNOR TO SAMUEL T. WELLMAN, OF CLEVELAND, OHIO, AND JULIAN KENNEDY, OF PITTSBURG, PENNSYLVANIA, TRUSTEES.

MANIPULATOR FOR FEED-TABLES OF ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 721,628, dated February 24, 1903.

Application filed November 8, 1902. Serial No. 130,533. (No model.)

To all whom it may concern:

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

My invention consists of certain improvements in the manipulator for the feed-table of a rolling-mill set forth in the application for patent filed by Samuel T. Wellman and Charles H. Wellman on the 19th day of February, 1902, Serial No. 94,754, the object of my invention being to provide simpler and more effective means than those shown and described in said application for effecting the turning of the ingot, bloom, billet, or slab upon the feed-table.

In the accompanying drawings, Figure 1 is a plan view illustrating in dotted lines the elements of a feed-table with parallel guide-bars and mechanism for moving the same from and toward each other similar to those set forth in the application before referred to and also illustrating in full lines a manipulator in accordance with my invention, and Fig. 2 is a view of the same partly in side elevation and partly in longitudinal section.

The invention forming the subject of the application before referred to consisted in combining with the roller feed-table of a rolling-mill certain longitudinal guide-bars 1 and 2, mounted above the rollers and capable of being moved from and toward each other by means of suitable power mechanism similar to that illustrated by dotted lines in Fig. 1, but which it will not be necessary for me to fully describe in this specification, as it forms no part of my present invention. I may say, however, that in said apparatus the guide-bar 1 is connected to racks a , which engage with pinions b on a shaft d , one of the racks a being connected to the piston-rod f of a power-cylinder, whereby the rack may be reciprocated, the pinions b and shaft d serving to transmit this reciprocating movement to the other rack a . In like manner the guide-bar 2 is connected to racks a' , which mesh with pinions b' on a shaft d' , one

of the racks a' being connected to the piston-rod f' of a power-cylinder.

In connection with the laterally-movable guide-bars 1 and 2 was employed a vertically-movable carriage having bars or fingers for turning over or lifting upon edge on the feed-rollers the ingot, billet, bloom, or slab resting thereupon, and my present invention consists of a novel means for effecting the latter result.

Depending from the bar 1 are a pair of hangers 3 and 4, which carry at their lower ends a longitudinal frame 5, and to the latter are secured upwardly-projecting guides 6 and 7 for a pair of vertically-sliding bars or fingers 8 and 9, the latter projecting below the frame 5 and being acted upon by bell-crank levers 10 and 11, which are secured, respectively, to shafts 12 and 13, said shafts being mounted so as to be free to swing in hangers 14 and 15, depending from the frame 5.

The bell-crank levers 10 and 11 have other arms, which are connected by a link 16, whereby the levers are compelled to move in unison.

The shaft 13 is extended beyond the frame 5, and this projecting portion of the shaft is squared or otherwise so formed that it can slide to and fro in but cannot turn independently of an arm 17, which is mounted so as to be free to rock in a structure 18, disposed at one side of the fixed table. Upon said structure 18 is also mounted a hydraulic or other power cylinder 19, having a piston-rod or plunger 20 with cross-head 21, which is connected, by means of links 22, to the arm 17, so that when the piston-rod or plunger 20 is projected from the cylinder 19 the arm 17 will be caused to swing in one direction and will thereby partially rotate the shaft 13 in the direction of the arrow, Fig. 2, and cause the lifting of the bars 8 and 9, movement of the shaft in the opposite direction being caused by any suitable form of spring or weight acting upon the arm 17.

In the operation of the device the bar 1 is adjusted laterally in respect to an ingot, bloom, billet, or slab resting upon the rollers of the feed-table, so that the bars 8 and 9

when raised will engage the under side of the ingot or other body near one edge of the same, and hence will lift that side of the ingot or other body so as to partially turn the same upon the rollers. This action may be such that the ingot or other body when turned over toward the bar 2 will be confined between the same and the bars 8 and 9, and thereby prevented from falling back into its original position on the rollers of the table, this operation being of especial advantage in the case of slabs which have been rolled comparatively thin and which when turned up on edge will not remain in that position unless held on each side.

By mounting the carrier for the manipulator-bars 8 and 9 upon one of the longitudinal guide bars or rails 1 special mechanism for effecting the lateral movement of said carrier becomes unnecessary, thereby simplifying and correspondingly cheapening the construction of the device.

Although I have shown the manipulator as being provided with two bars 8 and 9, it may, if desired, have more than this number of bars with corresponding increase in the number of operating-levers therefor, or, on the other hand, the manipulator may in some cases have but one bar, and the minor details of the manipulator may also be varied in many different ways without departing from the main feature of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in a manipulator for rolling-mill feed-tables of a laterally-movable longitudinal guide-bar, a vertically-movable bar or bars and a carrier guiding the same and connected to said longitudinal guide-bar, and movable laterally therewith, substantially as specified.

2. The combination in a manipulator for rolling-mill feed-tables, of a laterally-movable longitudinal guide-bar, one or more vertically-movable bars, a carrier guiding the same and connected to the longitudinal guide-bar, and lifting devices mounted upon said carrier and

acting upon said vertically-movable bar or bars, substantially as specified.

3. The combination in a manipulator for rolling-mill feed-tables, of a vertically-movable bar, a laterally-movable carrier in which said bar is guided, a lifter for the bar mounted in a hanger on said carrier, a lifter-shaft projecting laterally beyond the carrier, and a laterally-fixed power device for rocking said shaft, substantially as specified.

4. The combination in a manipulator for rolling-mills, of a series of vertically-movable bars, a carrier in which said bars are guided, a series of connected lifters one for each bar, said lifters being mounted in hangers on said carrier, a shaft projecting laterally from one of said lifters, and a laterally-fixed power device for rocking said shaft, substantially as specified.

5. The combination in a manipulator for rolling-mill feed-tables of a laterally-movable longitudinal guide-bar, a vertically-movable bar, a carrier guiding the same and connected to said longitudinal guide-bar and movable laterally therewith, a lifter mounted in a hanger on said carrier and having a laterally-projecting shaft, and a laterally-fixed power device for rocking said shaft, substantially as specified.

6. The combination in a manipulator for rolling-mill feed-tables, of a laterally-movable longitudinal guide-bar, a series of vertically-movable bars, a carrier guiding the same and connected to said longitudinal guide-bar, and movable laterally therewith, connected lifters, one for each of said vertical bars, mounted in hangers on said carrier, a laterally-projecting shaft of one of said lifters, and a laterally-fixed power device for rocking said shaft, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES H. WELLMAN.

Witnesses:

G. W. BURRELL,
C. W. COMSTOCK.