

No. 731,252.

PATENTED JUNE 16, 1903.

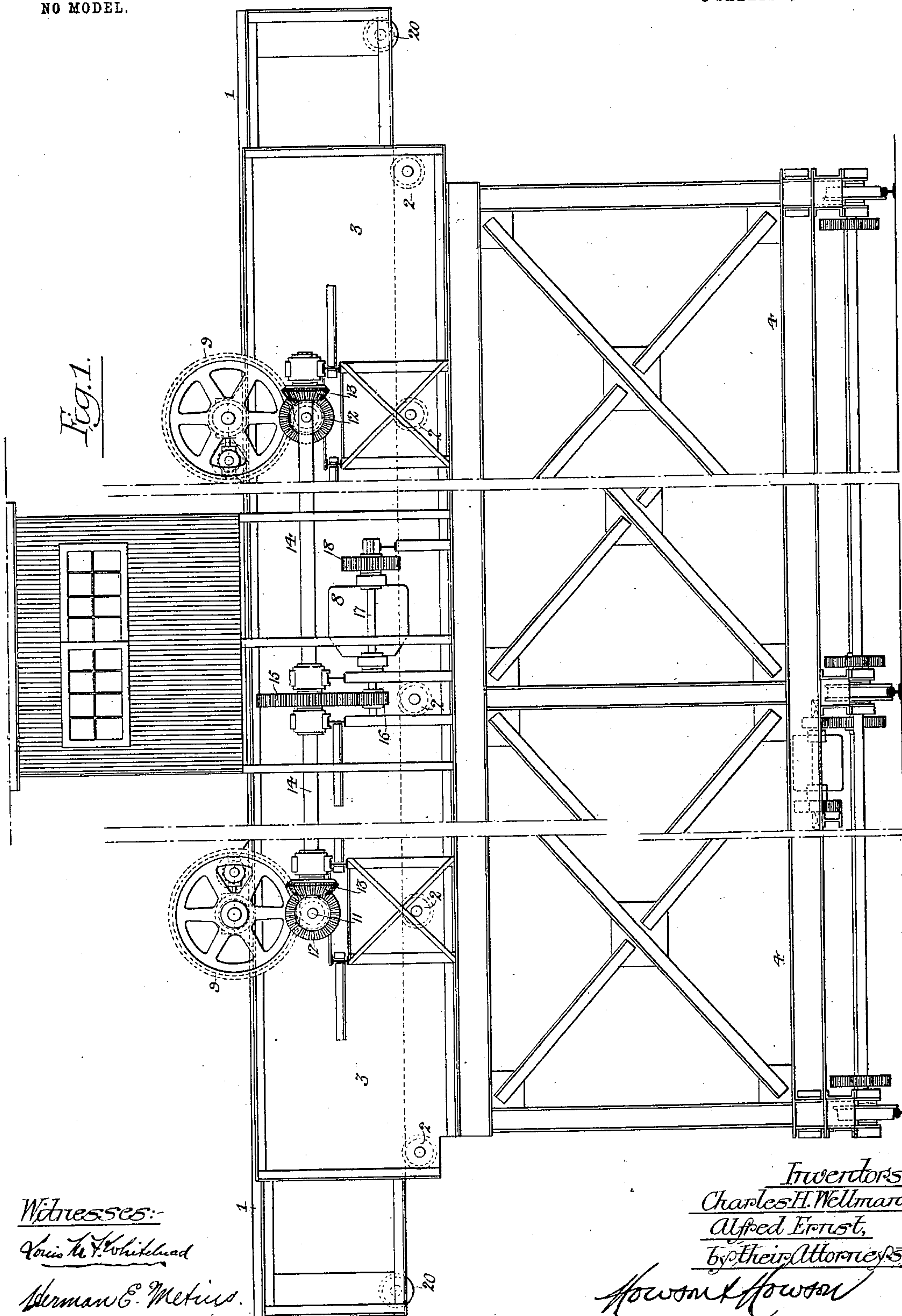
C. H. WELLMAN & A. ERNST.
APPARATUS FOR PUSHING COKE FROM COKE OVENS.

APPLICATION FILED MAY 21, 1902.

3 SHEETS—SHEET 1.

NO MODEL.

Fig. 1.



Witnesses:

Charles H. Wellman

Alfred Ernst

Inventors
Charles H. Wellman
Alfred Ernst
by their Attorneys

Howson & Howson

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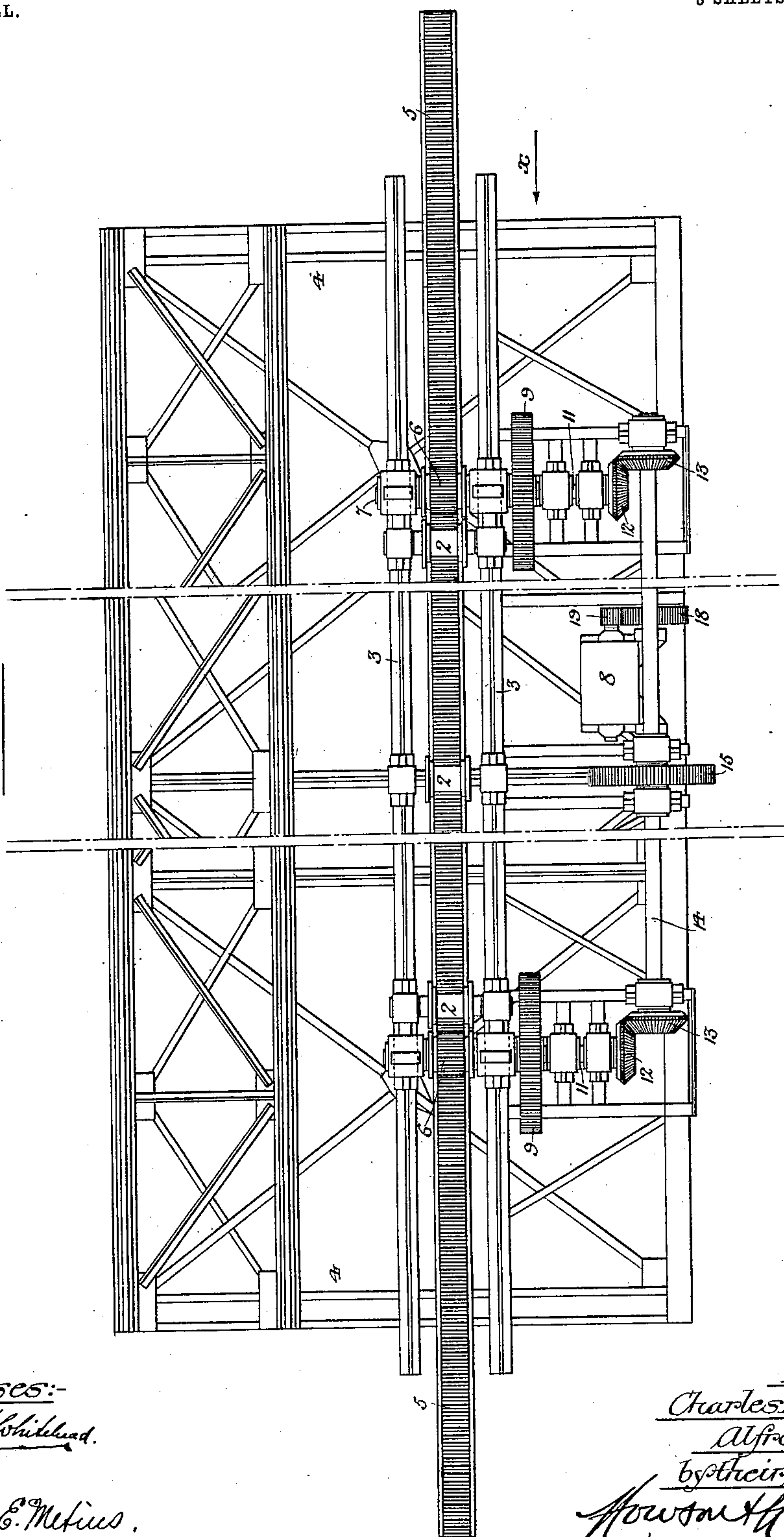
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:-

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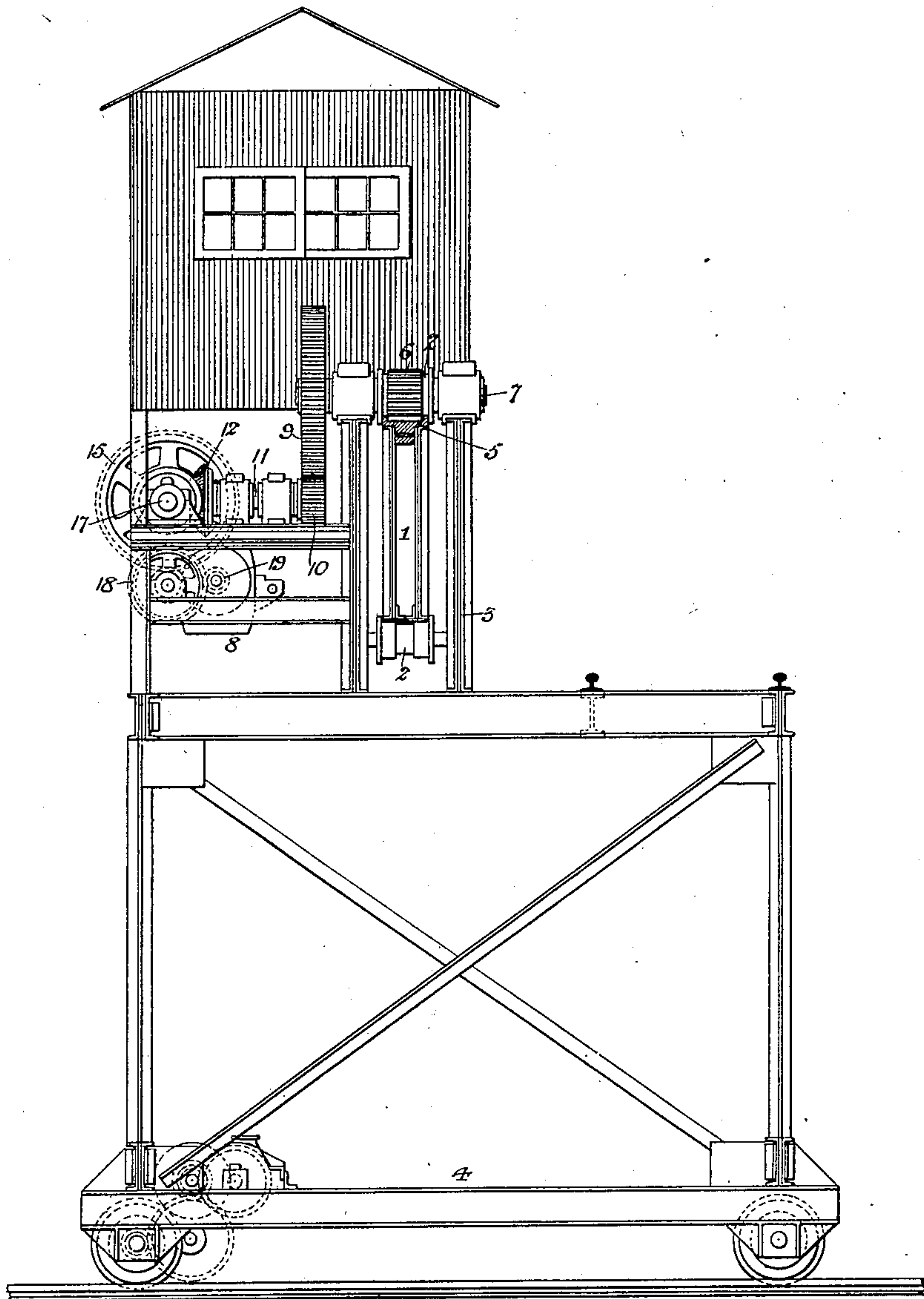
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses:-

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UNITED STATES PATENT OFFICE.

CHARLES H. WELLMAN AND ALFRED ERNST, OF CLEVELAND, OHIO,
ASSIGNORS TO THE WELLMAN-SEEVER-MORGAN ENGINEERING COM-
PANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

APPARATUS FOR PUSHING COKE FROM COKE-OVENS.

SPECIFICATION forming part of Letters Patent No. 731,252, dated June 16, 1903.

Application filed May 21, 1902. Serial No. 108,357. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. WELLMAN and ALFRED ERNST, both citizens of the United States, and residents of Cleveland, Ohio, have invented certain Improvements in Apparatus for Pushing Coke from Coke-Ovens, of which the following is a specification.

Our invention relates to a power-actuated pusher-bar or ram for ejecting a mass of coke from a coke-oven, the object of our invention being to so construct such a pusher-bar or ram as to render the same double-acting—that is to say, capable of ejecting the coke from either of two rows of ovens facing each other.

In the accompanying drawings, Figure 1 is a side view of a coke-oven pusher constructed in accordance with our invention. Fig. 2 is a plan view of the same; and Fig. 3 is an end view looking in the direction of the arrow *x*, Fig. 2.

Coke-ovens are sometimes arranged in two rows or batteries facing each other on opposite sides of a gangway in which the charging and pushing mechanism is located, and it has heretofore been customary in serving ovens of this character to provide the pusher with two rams, one movable in one direction for ejecting the mass of coke from one row of ovens and the other movable in the opposite direction for ejecting the coke from the other row of ovens. In our machine, however, we use a double-ended ram of such construction that it can be projected from either side of its carrying structure and can therefore be used to eject the mass of coke from the ovens of either row.

In the drawings, 1 represents the pusher-bar, which is in the present instance in the form of a hollow beam or girder mounted between upper and lower sets of grooved or flanged rollers 2, which are carried by suitable bearings in a rigid frame 3, mounted upon a truck or carriage 4, which is provided with wheels running upon rails in the gangway between the two rows of ovens. This truck or carriage is also by preference provided with driving mechanism whereby it

can be caused to traverse said rails so as to carry the pusher-bar 1 from oven to oven of the row. By this means the pusher-bar 1 is rigidly supported so far as any vertical movement is concerned and is firmly and positively guided in its horizontal movements.

Secured to the top of the pusher-bar is a rack 5, which meshes with pinions 6, carried by shafts 7, mounted in suitable bearings upon the top of the structure 3, two of these pinions being shown in the present instance, although more than this number may be employed, if desired. By moving these pinions in one direction, therefore, the pusher-bar 1 can be caused to move to the right, so as to eject the coke from an oven of the right-hand row, or by reversing the direction of rotation of the pinions the pusher-bar can be projected to the left and caused to eject the coke from an oven of the left-hand row. Each of the shafts 7 is driven by means of an electric or other motor 8 through the medium of any suitable system of gearing, preferably of such character as to multiply the power of the motor. In the present instance each of the shafts 7 has a spur-wheel 9, which meshes with a spur-pinion 10 on a shaft 11, the latter having a bevel-wheel 12, which meshes with another bevel-wheel 13 on a longitudinal shaft 14, provided with a spur-wheel 15, meshing with a pinion 16 on a counter-shaft 17, said shaft having a spur-wheel 18, which meshes with a pinion 19 on the armature-shaft of the motor. By thus positively and uniformly driving each of the pinions 6 from a common motor proper meshing of the pinions with the rack is insured, and when the pusher first comes into contact with the mass of coke in the oven and starts to move the same it is being driven most effectively, being then in engagement with both pinions; nor does the rack pass from under control of either pinion until a large portion of the mass of coke has been ejected from the oven. In order to facilitate the movement of the pusher through the oven, each end of the pusher-bar is by preference provided with a roller 20 for running upon the bottom of the oven.

Having thus described our invention, we

claim and desire to secure by Letters Patent—

1. The combination, in a coke-oven pusher, of a double-ended pusher-bar, a structure upon which said bar is mounted so as to be projected from either side of the machine, and means for imparting longitudinal movement to the bar, substantially as specified.

2. The combination in a coke-oven pusher, of a double-ended pusher-bar, a structure upon which said bar is mounted so as to be projected from either side of the same, and rack-and-pinion mechanism for imparting longitudinal movement to the pusher-bar, substantially as specified.

3. The combination in a coke-oven pusher, of a double-ended pusher-bar, upper and lower sets of rollers between which the bar is mounted so as to be guided in its horizontal travel, and means for imparting longitudinal movement to the pusher-bar so as to project it from either side of the machine, substantially as specified.

4. The combination in a coke-oven pusher, of a double-ended pusher-bar, a carrier upon which said pusher-bar is mounted so as to be projected from either side of the same, a rack on the pusher-bar, a series of pinions engaging said rack, and gearing whereby said pinions may be rotated in unison from a common motor, substantially as specified.

5. The combination in a coke-oven pusher, of a double-ended pusher-bar, a carrier upon which said pusher-bar is mounted so as to be projected from either side of the same, and supporting-rollers mounted upon each end of the pusher-bar, substantially as specified.

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

CHARLES H. WELLMAN.
ALFRED ERNST.

Witnesses:

C. W. COMSTOCK,
W. A. JONES.