(No Model.) 2 Sheets—Sheet 1.

G. W. McCLURE.

INGOT MANIPULATOR.

No. 578,415. Patented Mar. 9, 1897.

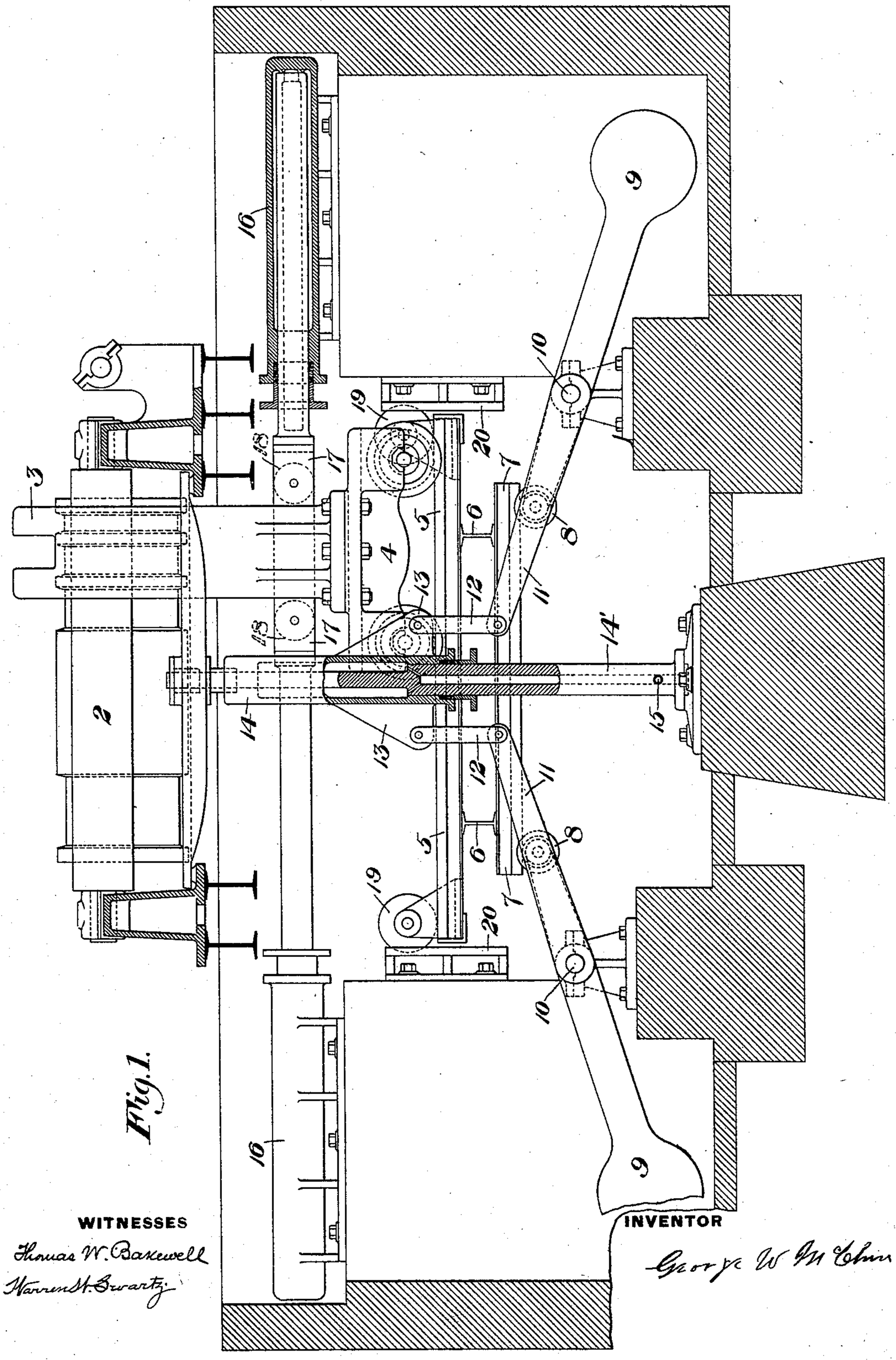

Fig. 1.

WITNESSES

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INVENTOR

George W. McClure

(No Model.)

2 Sheets—Sheet 2.

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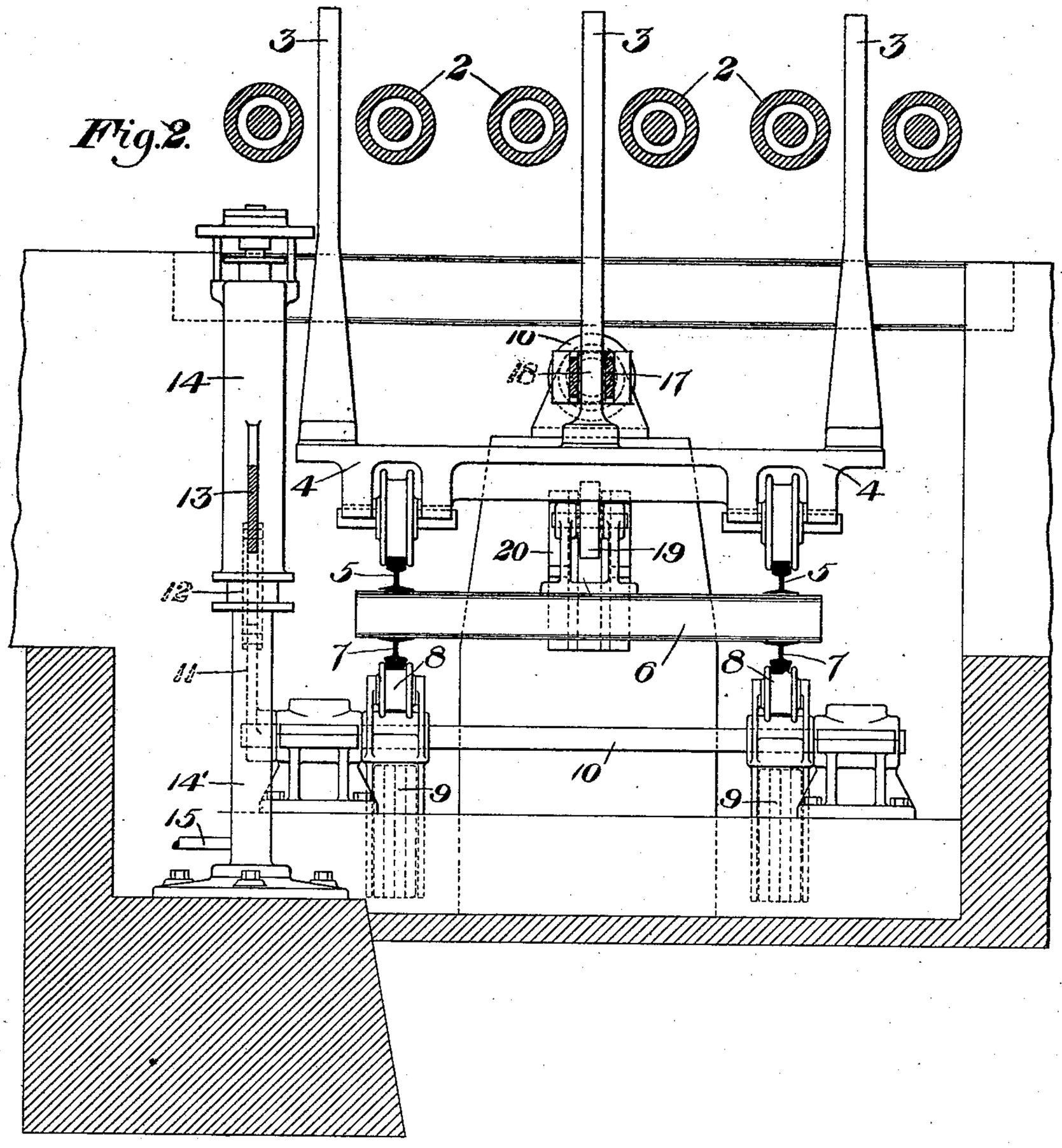
Fig. 2.



WITNESSES

Thomas W. Bakewell

Warren H. Swartz

INVENTOR

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UNITED STATES PATENT OFFICE.

GEORGE W. McCLURE, OF PITTSBURG, PENNSYLVANIA.

INGOT-MANIPULATOR.

SPECIFICATION forming part of Letters Patent No. 578,415, dated March 9, 1897.

Application filed April 20, 1895. Serial No. 546,527. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. McCLURE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ingot-Manipulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, of my improved ingot-manipulator; and Fig. 2 is a transverse section of the same.

My invention relates to that class of manipulators wherein finger-bars are arranged to move between the feed-rolls and push or turn the ingot into position for the various passes of the rolls; and it consists in improved means for operating said finger-bars, as hereinafter more fully described, and set forth in the claims.

In the drawings, 2 represents the feed-rolls, and 3 the finger-bars, which may be forked or slotted, as shown, and are rigidly secured to the truck 4, which rests upon rails 5. These rails are secured to beams 6, to whose lower faces are secured the downwardly-projecting rails 7, which are parallel with the rails 5, and rest upon rollers 8. These rollers are pivoted in the ends of counterweighted levers 9, secured to transverse shafts 10, and to the outer end of each shaft is secured a lever 11, which is pivotally connected by means of a link 12 with a lug 13 upon a vertically-movable motive cylinder 14, located at one side of the pit. The stationary plunger 14′ of this cylinder is secured to the bed of the pit, as shown, and is provided with a longitudinal port 15, connected to the fluid-supply. To move the truck 4 laterally, I provide two horizontal single-acting cylinders 16 in line with each other, whose plungers are connected by a common yoke 17, which surrounds the central finger-bar and is provided with antifriction-rollers 18, arranged to make contact with either edge of the finger-bar.

To guide the beams and track supported thereon and insure their moving in a vertical plane, as well as to brace them against canting by the metal operated upon when the truck is at one side of the center, I provide rollers 19 at the ends of the rails 5, which rollers move upon plates 20, secured to the sides of the frame and rotating thereon as the manipulator reciprocates vertically.

The operation is apparent, the finger-bars being raised or lowered by the cylinder 14, while their truck is moved laterally by the motive cylinders 16.

It is desirable that the finger-bars should be made separate from the truck and fixed thereto by bolts or otherwise, so that they can be replaced if broken.

The advantages of the invention result from the peculiar connection of the motive power for raising and lowering the finger-bars, the canting of the plunger and motive cylinder being impossible, as well as from the simplicity and cheapness of the device and the perfect control of the parts.

Many variations in the form and arrangement of the parts may be made by those skilled in the art without departure from my invention, since

What I claim is—

1. An ingot-manipulator comprising oppositely-extending lever-arms, rollers mounted in stationary bearings upon said arms, a finger-bar platform resting directly upon and carried by said rollers, and means for swinging the lever-arms.

2. An ingot-manipulator comprising oppositely-extending lever-arms, rollers mounted in stationary bearings upon said arms, a platform resting directly upon and carried by said rollers, a truck movable upon the platform and carrying the finger-bars, and means for swinging the lever-arms.

3. In an ingot-manipulator, a movable truck carrying finger-bars, and a motive cylinder having actuating connections with a yoke taking about a finger-bar, substantially as described.

4. In an ingot-manipulator, a movable truck carrying finger-bars, and a motive cylinder having actuating connections with a yoke taking about a finger-bar, said yoke having antifriction-rollers pivoted therein; substantially as described.

5. In an ingot-manipulator, a movable truck carrying finger-bars, and two motive cylinders in line with each other and having their plungers connected to a common yoke taking about a finger-bar; substantially as described.

6. In an ingot-manipulator, a truck carrying

the finger-bars and movable upon a platform, pivoted levers having rollers upon which said platform rests, and rollers pivoted in the platform and arranged to roll upon fixed guides; substantially as described.

7. In an ingot-manipulator, a truck carrying the finger-bars, and movable upon a platform, pivoted arms having rollers upon which said platform rests, and a motive cylinder having links connecting its movable element to levers upon the shafts of said arms; substantially as described.

In testimony whereof I have hereunto set my hand.

GEORGE W. McCLURE.

Witnesses:

THOMAS W. BAKEWELL,

W. B. CORWIN.