

**No. 665,876.**

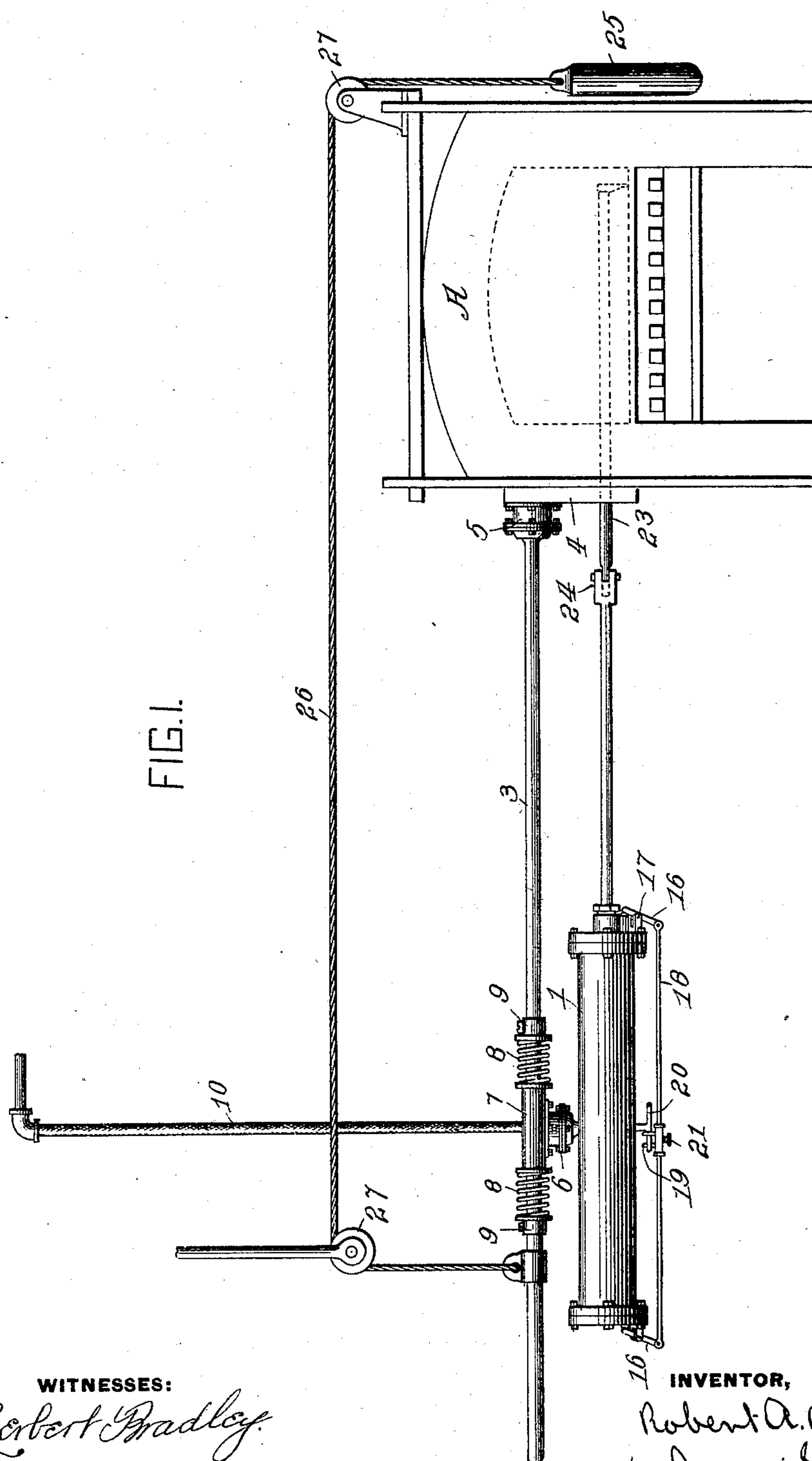
**Patented Jan. 15, 1901.**

**R. A. CARTER.**  
**PUDDLING MECHANISM.**

Application filed Nov. 9, 1898.)

(No Model.)

**2 Sheets—Sheet 1.**



**WITNESSES:**

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**Att'y.**





# UNITED STATES PATENT OFFICE.

ROBERT A. CARTER, OF PITTSBURG, PENNSYLVANIA.

## PUDDLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 665,876, dated January 15, 1901.

Application filed November 9, 1899. Serial No. 736,381. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT A. CARTER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Puddling Mechanism, of which improvements the following is a specification.

The invention described herein relates to certain improvements in mechanism for puddling iron, and has for its object the employment of a motor for reciprocating the puddling bar or hood, the motor being so mounted as to permit of its being shifted vertically and horizontally, thereby rendering it possible to reach all portions of the metal with the bar or hook.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is an end elevation of a puddling-furnace having my improvements applied thereto. Fig. 2 is a sectional elevation of the puddling mechanism. Fig. 3 is an underside plan of the power-cylinder. Fig. 4 is a sectional plan view, and Fig. 5 is a transverse section on a plane passing through the valve mechanism.

In the practice of my invention the motor (the fluid-pressure cylinder 1, with its piston 2, being a desirable form thereof) is supported by a rod 3, which has its inner end attached to a part of the puddling-furnace A, preferably to the sliding door 4, as shown in Fig. 1. The outer end of the rod 3 is movably supported by a counterweight 25, connected to the rod by a rope 26, passing over the pulleys 27, which are supported in any suitable manner. In order to permit of the shifting of the motor both vertically and horizontally, the inner end of the rod 3 is connected to its support by a universal joint of any suitable construction, the ball-and-socket joint 5 being a convenient form thereof. In order to permit of the shifting of the motor independently of the supporting rod or rail, it is connected thereto by a universal joint, preferably of the ball-and-socket type, as shown at 6. One part of the universal joint 6 is formed on or secured to a sleeve 7, adjustably mounted on the rail or rod 3, thereby permitting of the adjustment of the motor toward or from the

furnace. In order to prevent injury to the bottom of the furnace or a part of the puddling mechanism in case the point of the puddling bar or hook should catch, the motor is yieldingly held as against movement after it has been adjusted by means of springs 8, interposed between the ends of the sleeve 7 and collars 9, adjustably secured on the rod or rail 3. This construction permits of the adjustment of the motor and also provides cushions, which will prevent injury to the furnace or puddling mechanism.

While any form or construction of motor whereby to effect a uniform or manually-variable reciprocation of the puddling-tool may be used, it is preferred to employ a fluid-pressure cylinder 1 for that purpose. This cylinder has one part or member of the universal joint 6 formed on or secured thereto. Fluid, preferably air under pressure, is conducted to the valve-chamber of the cylinder by a flexible pipe 10, as shown in Fig. 1. The flow of fluid to and from the ends of the cylinder is controlled by any suitable form or construction of valve—such, for example, as that shown. This valve consists of a rotary plug 11, provided with suitable ports or passages, whereby the passages 12, leading to the ends of the cylinder, may be connected alternately to the inlet-port 13 and exhaust-port 14. The regular shifting of this valve may be effected by any suitable construction of mechanism operated or controlled by the piston or its connections. A convenient construction and arrangement of such mechanism consists of pins 15, passing the heads of the cylinder and adapted to be shifted by the piston. Levers 16 are so mounted on brackets 17 that their inner ends can be shifted by the pins 15. The outer ends of the levers are connected by a rod 18, provided with pins 19 or other devices adapted to engage and shift the handle 20 on the valve 11. This mechanism will effect the regular shifting of the valve 11; but it is at times desirable to vary the strokes of the piston, and in such cases the valve 11 is shifted by the operator, the valve being released from its operating mechanism. In order to permit this release, the pins 19 are carried by a sleeve 21, rotatably mounted on the rod 18 between the collars 21<sup>a</sup> on said rod, and is held from rotation by



a set-screw 22 or other suitable means. By turning back the set-screw the sleeve may be turned so that the pins 19 will not strike the handle 20, thereby permitting the valve to be shifted by the operator at will.

The puddling-tool 23 is detachably connected to the piston-rod in any suitable manner—as, for example, by a socket 24 on the piston-rod for the reception of the end of the puddling-tool, which is locked in position by a pin or cotter, as shown in Fig. 1.

It will be readily understood that the universal-joint connection of the motor to its supporting-rod and the similar connection between the latter and the furnace will permit of such movements of the motor that the inner end of the puddling-tool will reach all portions of the bath. By mounting the inner end of the supporting-rod 3 on the door of the furnace the rod can be raised out of the way of the workman in charging and drawing the furnace. As the outer end of the rod 3 is supported by the counterweight 25, the shifting of the rod and the motor carried thereby can be easily effected.

I claim herein as my invention—

1. In a puddling mechanism the combination of a furnace having a charging-door, a pivotally-mounted motor-support arranged in suitable proximity to the charging-door and extending forward from the furnace and a motor carried by the support for reciprocating the puddling-tool, substantially as set forth.

2. In a puddling mechanism, the combination of the door of a puddling-furnace, a motor-support pivotally connected to the door

and a motor for reciprocating the puddling-tool carried by said support, substantially as set forth.

3. In a puddling mechanism, the combination of a supporting-rod having a universally-movable connection to a suitable support, and a motor for reciprocating the puddling-tool having a universally-movable connection to said rod, substantially as set forth.

4. In a puddling mechanism, the combination of a supporting-rod having a universally-movable connection to a suitable support, a motor carried by said rod for reciprocating the puddling-tool and means for varying the stroke of the motor at the will of the operator, substantially as set forth.

5. In a puddling mechanism, the combination of a motor-support pivotally connected to the furnace, a motor carried by said support, a puddling-tool operatively connected to the motor and cushions interposed between the puddling-tool and the motor-support, substantially as set forth.

6. In a puddling mechanism, the combination of a supporting-rod, pivotally connected to the furnace, a sleeve movable along said rod, cushioning-springs arranged at the ends of the sleeve and a motor for reciprocating the puddling-tool having a universally-movable connection to the sleeve, substantially as set forth.

In testimony whereof I have hereunto set my hand.

ROBERT A. CARTER.

Witnesses:

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