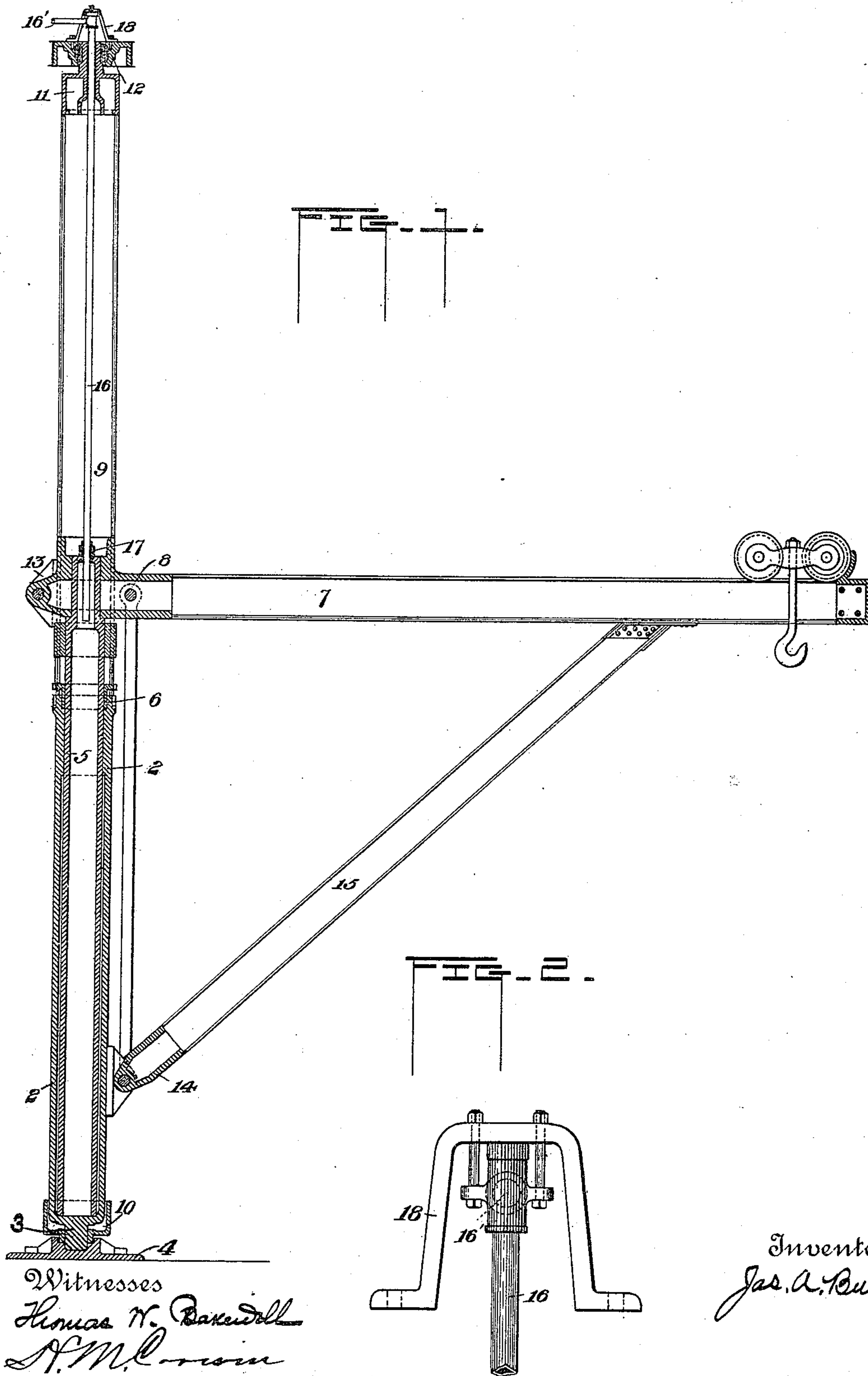


(No Model.)

J. A. BURNS.
CRANE.

No. 464,705.

Patented Dec. 8, 1891.



UNITED STATES PATENT OFFICE.

JAMES A. BURNS, OF HOMESTEAD, PENNSYLVANIA.

CRANE.

SPECIFICATION forming part of Letters Patent No. 464,705, dated December 8, 1891.

Application filed July 14, 1890. Serial No. 358,711. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. BURNS, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cranes, 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 vertical sectional view of my improved crane, and Fig. 2 is a detail view showing the water connection at the top of the crane-mast.

In the drawings, 2 represents the upright crane-cylinder, having at its lower end a contracted foot 3, which is stepped in a socket or base-plate 4.

5 is the plunger, consisting of an upright hollow casting set within the cylinder, in which it is vertically movable and rotatory.

6 is a usual stuffing-box designed to seal the joint between the cylinder and plunger. The jib 7 is fixed to a casting 8, which fits around the upper part of the plunger, and having its seat on a shoulder thereon. The mast 9 consists of upright beams fixed at their lower ends to a collar 10, which is fitted loosely around the cylinder and bears on the base-plate 4, and fixed at their upper ends to a block 11, a reduced neck portion of which has its bearing in the usual top steadiment 12. The jib-block 8 is situated between the beams of the mast and has the usual guide-shoes 13, which bear against the beams. Other guides 14, of the usual construction, bear against the mast-beams and are connected to the usual diagonal brace 15, which extends downwardly from the jib. Water is supplied to the crane-cylinder by a fixed pipe 16, which extends vertically into the interior of the hollow plunger 5 through a stuffing-box 17 at the upper end of said plunger. Said pipe extends through the axis of the top bearing of the mast, and above said bearing is coupled to a suitable water-supply pipe 16'.

18 is a bracket of suitable construction by which the pipe 16 is upheld and fixed. The water needed to raise the plunger and jib of the crane is supplied to this pipe 16 and enters the cylinder through the hollow plunger 5, and as the plunger rises or falls the stuffing-

box 17 moves over the pipe 16 and a constant communication of the hollow plunger with the source of supply is maintained. When the mast is rotated, the plunger will turn within the cylinder and the collar 10 may revolve around the foot of the latter; or, if the frictional resistance to the turning of the mast and plunger be greater than the friction between the foot 3 and base-plate 4, the cylinder may rotate on said base-plate. This construction, although desirable and claimed by me specifically herein, is not essential to my invention as broadly claimed, since the cylinder may be fixed to the base-plate, so as to be incapable of rotation, or the mast may be fixed to the cylinder, so that both must rotate together.

In order that opportunity may be afforded to the pipe 16 to spring somewhat in the casting 11 in case any longitudinal strain is exerted on the pipe, I prefer that the passage in the casting 11, through which the pipe 16 passes, should be of a little larger diameter than the pipe, so that the pipe shall fit loosely therein, as shown in the drawings.

I do not desire to limit the invention to the connection of the supply-pipe with the plunger, since the invention can be applied to a crane having an inverted moving cylinder and a fixed plunger by arranging the pipe so that it shall enter the top of the cylinder.

The advantages of my invention will be appreciated by those skilled in the art. It has been the most common practice to supply water to a crane-cylinder by water connections at the base of the cylinder. Such connections are difficult to make and to repair, and on account of their position the joints are apt to leak, and there are other difficulties which arise from the necessity of packing the joint at the end of the cylinder, which are the sources of very considerable trouble and difficulty in the operation of the crane. For example, when the cylinder lifts somewhat from its seat (as may happen in use of a crane having a bottom water-step when the top of the jib strikes the top block of the mast) the packing is apt to be loosened or blown out. This cannot occur in use of my crane. In my invention I obviate these objections, and as the lower end of the cylinder may be closed,

as shown in the drawings, there are no water connections to make or to keep in repair at that place.

I claim—

- 5 1. In a crane having a rotatory mast and jib, the combination, with the upright crane-motor comprising the lifting-cylinder and plunger, one of which is vertically movable, of a water-supply pipe extending vertically
10 through the top bearing of the crane-mast and into the movable part of the motor through a stuffing-box at the top of the vertical axis thereof, substantially as and for the purposes described.
- 15 2. The combination of the upright cylinder and plunger, one of which is vertically mov-

able and the other of which is stepped at its base, so as to be capable of rotation, a vertical fluid-supply pipe entering the moving part at the top, and a rotatory mast stepped at its base around the stationary part of the motor and connected with the vertically-moving part of the motor, so as to rotate therewith, substantially as and for the purposes described. 20 25

In testimony whereof I have hereunto set my hand this 10th day of July, A. D. 1890.

JAS. A. BURNS.

Witnesses:

THOMAS W. BAKEWELL,
W. B. CORWIN.