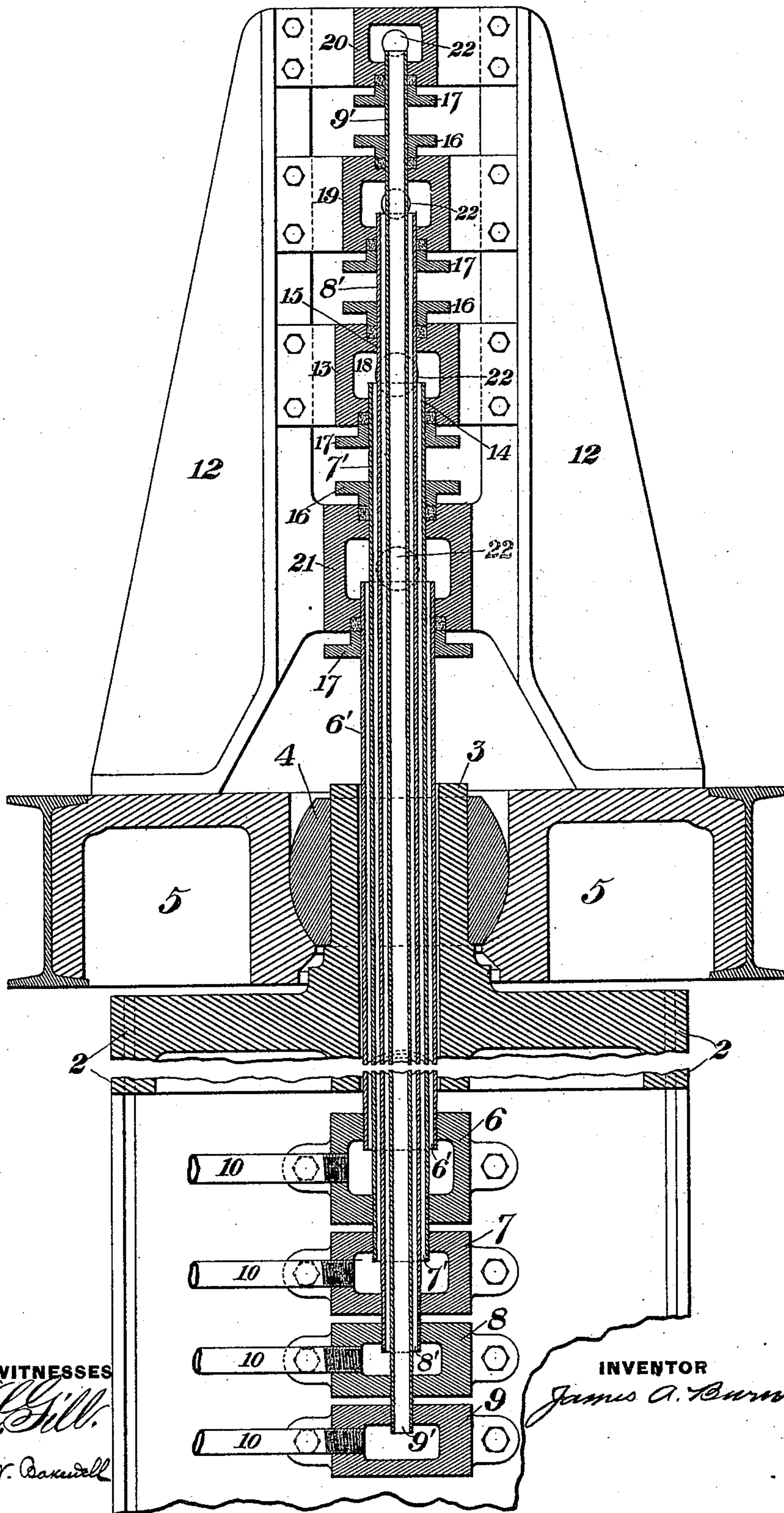


(No Model.)

J. A. BURNS.
FLUID CONNECTION FOR CRANES.

No. 464,707.

Patented Dec. 8, 1891.



WITNESSES
N. L. Gill.
Thomas W. Baxendell

INVENTOR
James A. Burns.

UNITED STATES PATENT OFFICE.

JAMES A. BURNS, OF HOMESTEAD, PENNSYLVANIA.

FLUID CONNECTION FOR CRANES.

SPECIFICATION forming part of Letters Patent No. 464,707, dated December 8, 1891.

Application filed April 22, 1891. Serial No. 389,919. (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 Fluid Connections for Cranes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, which shows in vertical section the top journal and water connections of my improved crane.

The object of my invention is to provide means by which water or other motive fluid may be conducted to the rotatory mast of a crane to supply power for operating the usual crane-motors, which may include the main lifting-motor of the crane and other auxiliary motors carried by the crane and adapted to lift or shift its burden. The difficulty of supplying motive fluid will be apparent when it is considered that the mast of the crane rotates and the connections must be arranged so as to accommodate themselves to such rotation.

Referring now to the drawing, 2 represents a block or casting fixed to the top of the mast of the crane. The upper end 3 of this casting, which is cylindrical in form, constitutes the top journal of the crane and is journaled in a suitable bearing 4 in the top steadiment 5. Below the casting 2 is a series of separate chambers or boxes 6, 7, 8, and 9, secured to the crane-mast in vertical order in the axial line of the crane-journal and provided with lateral pipes 10, leading to the supply or exhaust ports of the several motors. The water connections hereinafter described are designed to form water-passages from these chambers 6 7 8 9 to and from points of supply and exhaust of the crane. To this end I employ four vertical pipes 6', 7', 8', and 9', arranged concentrically within each other and terminating at different levels above and below the crane-journal. Below the crane-journal the pipe 6' extends through the block 2 to the chamber 6, into which it is screwed. The pipe 7' extends through the pipe 6' and is screwed to the lower end of the chamber 6 and the upper end of the chamber 7. The pipe 8' extends through the pipe 7' and is screwed to the lower end of the chamber 7 and the upper end of the chamber 8, and the

pipe 9' extends through the pipe 8' and is screwed to the lower end of the chamber 8 and the upper end of the chamber 9. In connecting these pipes and chambers I first screw the chamber 6 to the end of the pipe 6' and then screw the pipe 7' into the lower end of said chamber. Next the chamber 7 is screwed on the end of the pipe 7' and the pipe 8' is screwed to its lower end, and so the pipes and boxes are connected in succession.

12 is a frame or casting fixed in position above the top bearing of the crane, and secured thereto, by bolts or otherwise, is a box 13, which forms the bearing for two of the pipes 7' and 8', having at its lower end a passage 14, in which the pipe 7' fits, and at the upper end a passage 15, in line therewith, through which the pipe 8' passes. At the upper end of the passage 15 is a cavity adapted to receive a packing ring and gland 16, and at the lower end of the passage 14 is a chamber adapted to receive a packing ring and gland 17. In the box 13 is a chamber 18, into which the end of the pipe 7' opens. Above the box 13 are similar boxes 19 and 20, separated from the box 13 and from each other by intervening spaces and fixed to the frame 12. The pipe 8' extends into the box 19 and terminates therein, and the pipe 9' extends through said box into the top box 20, in which it terminates in like manner as described with reference to the box 13. Packing rings and glands 16 17 are also provided for these boxes to seal the joints around the pipes; but the top box need have no opening at the top. Below the box 13 is a box 21, which affords a bearing for the pipes 6' and 7', and in which the pipe 6' terminates. This box also is provided with glands and packing-rings 16 and 17, and, if desired, may be formed integrally with the frame 12, as shown. Each of the boxes 13, 19, 20, and 21, being secured to the frame 12, is stationary and is provided with a water inlet or outlet pipe 22, leading to the places of supply or exhaust of the crane.

When the parts are thus constructed and arranged, the water will pass through the pipes 22 to the chambers in the respective boxes above the crane-journal, and will thence pass through the pipes 6' 7' 8' 9' to the chambers 6, 7, 8, and 9, and thence through the pipes 10 to the several crane-motors, or from

the motors in the reverse direction, accordingly as the passages are used for supply or exhaust. The crane-mast is perfectly free to rotate on its vertical axis, and as it rotates the several pipes will rotate with it in their respective boxes. When water-pressure is admitted to the lifting-cylinder of the crane, it will cause the mast to lift a little, and as the pipes are not fixed to the upper water-boxes this vertical motion is freely permitted. A most effective and simple series of water connections is thus afforded. One of the advantages of this arrangement is that there is no difficulty in getting access to the packing of the pipes for the purpose of renewing or adjusting the same. Thus to get access to the packing of any of the upper boxes it is necessary only to remove the glands of that box without disturbing the others. Each box, being separate from the others, can be replaced independently. Leaking at the joints is easily detected, and there is no danger of the escape of water from one to the other. With reference to the water boxes or chambers below the crane-journal there are like advantages. The chambers are separate, the joints are readily accessible, and the parts are easily coupled together.

It will be understood that, although I have shown the parts arranged to afford only four water-passages, additional passages may be provided by adding other upright pipes and correspondingly increasing the number of boxes above and below the crane-journal.

In a prior patent application, Serial No.

372,639, filed November 25, 1890, I describe and claim water connections for cranes in many respects similar to the subject of the present application. The points of difference are concisely indicated in the following claims. 40

I claim—

1. In fluid connections for rotating mechanism, the combination of pipes arranged within each other and opening at different levels, water boxes or chambers encircling the pipes at their openings and separated from each other by intervening spaces, and separate packing-glands also encircling the pipes and serving to pack the joints of the boxes or chambers, substantially as and for the purposes described. 45 50

2. In fluid connections for rotatory cranes, the combination, with the crane-journal, of a frame situate above the same, pipes arranged within each other, extending through the journal and opening at different levels, water boxes or chambers encircling the pipes at their openings, secured to the frame, and separated from each other by intervening spaces, and separate packing-glands also encircling the pipes and serving to pack the joints of the boxes or chambers, substantially as and for the purposes described. 55 60

In testimony whereof I have hereunto set my hand this 16th day of April, A. D. 1891. 65

JAMES A. BURNS.

Witnesses:

THOMAS W. BAKEWELL,
W. BAKEWELL.