

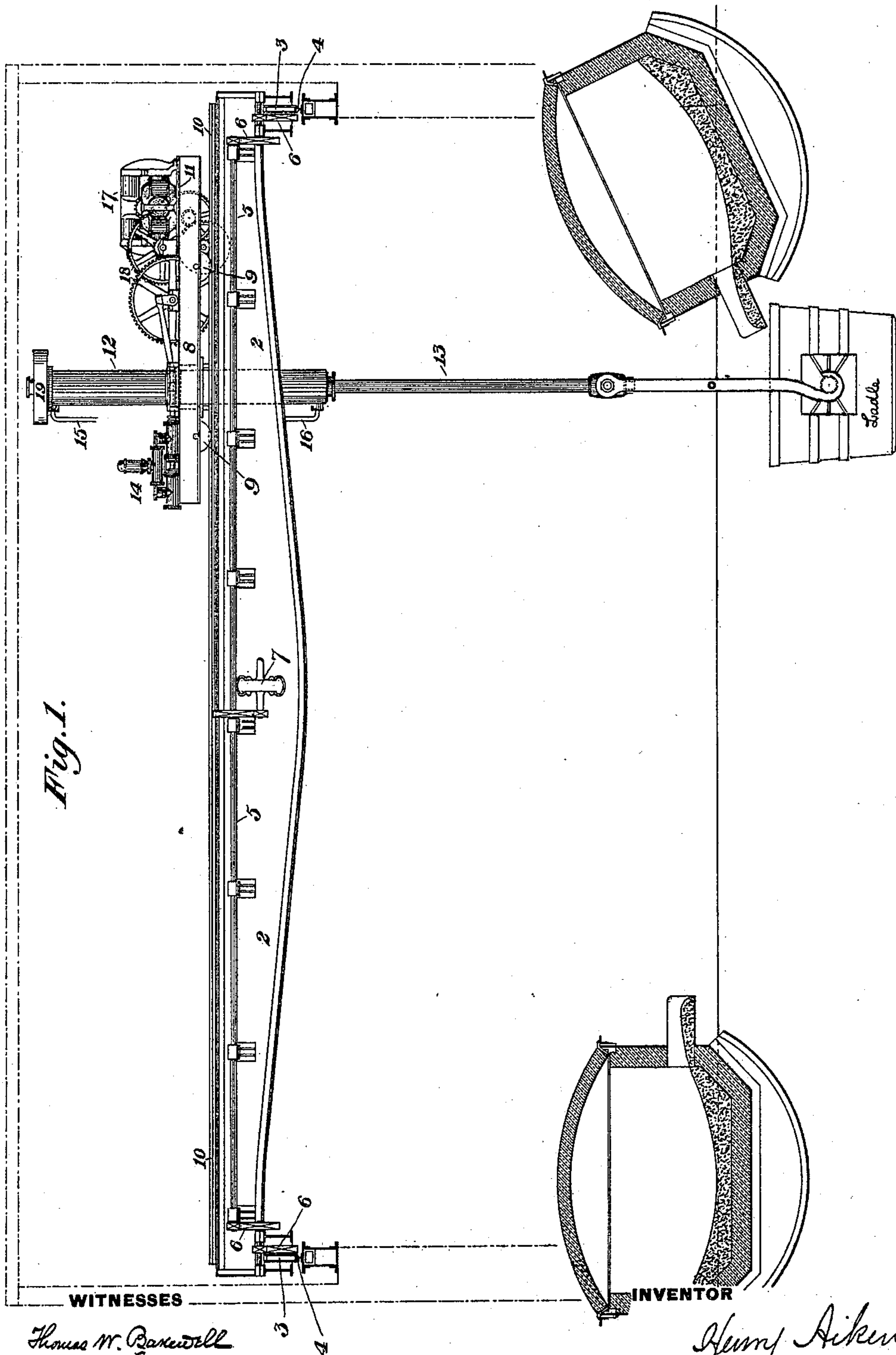
(No Model.)

2 Sheets—Sheet 1.

H. AIKEN.
CRANE.

No. 491,933.

Patented Feb. 14, 1893.



Thomas W. Baxendell
H. L. Gill.

Henry Aiken.

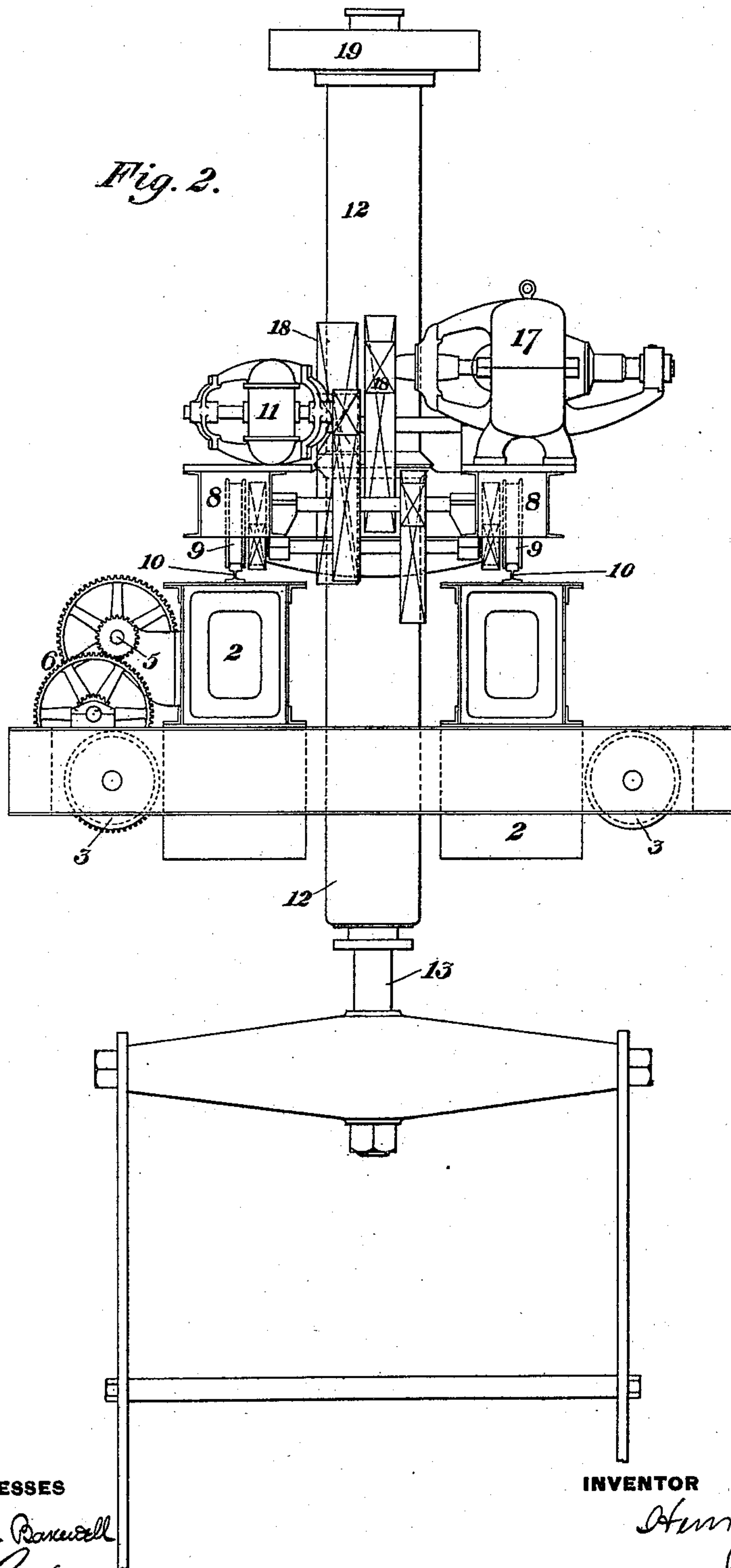
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CRANE.

No. 491,933.

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WITNESSES

Thomas W. Russell
H. L. Glee

INVENTOR

Henry Aiken

UNITED STATES PATENT OFFICE.

HENRY AIKEN, OF PITTSBURG, PENNSYLVANIA.

CRANE.

SPECIFICATION forming part of Letters Patent No. 491,933, dated February 14, 1893.

Application filed May 27, 1892. Serial No. 434,632. (No model.)

To all whom it may concern:

Be it known that I, HENRY AIKEN, of Pittsburg, 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 side elevation of a traveling crane constructed in accordance with my improvement. Fig. 2 is an end elevation of the trolley and crane-bridge.

Like symbols of reference indicate like parts in each.

The object of my invention is to provide a crane which shall be especially adapted for handling heavy loads of molten metal in ladles, &c. In such work it is very difficult and sometimes impossible to use chains for the purpose of upholding the metal because of the great bulk and weight of the chains made necessary by the weight of the burden and its high heat. All such difficulties are avoided in my improved crane, by the use of a lifting-cylinder and plunger for the purpose of holding and lifting the ladle or other burden; and the inconvenient and expensive water-connections necessary heretofore in cranes whose trolleys carry lifting-cylinders are avoided, by reason of the fact that I use in combination with a lifting cylinder a pump carried by the trolley and adapted to operate the same, and a motor (preferably an electric motor) for driving the pump. By means of this combination, which forms the principle feature of my invention, I secure a construction which is compact, strong and durable, and which affords safety to the workmen operating the same.

In the drawings, 2 represents the bridge or jib of a traveling crane, mounted by wheels 3 upon a track composed of rails 4, which extend through the building or yard in which the crane is to be used. Wheels upon opposite ends of the crane are connected by a shaft 5 and gearing 6, and in order to move the bridge, I employ an electric motor 7, which is supported thereby and is connected with the shaft, so that by actuating the motor, the shaft is driven and the bridge moved on its track.

8 is a trolley mounted on wheels 9 which run on rails 10 set on the crane-bridge or jib. This trolley, which is suitably constructed and braced, carries an electric motor 11, whose armature is connected by intermediate gearing with the wheels of the trolley, so that by driving the same the trolley can be moved longitudinally on its track. The trolley also carries an upright lifting-cylinder 12, having a piston-rod 13, and a pump 14 connected by pipes 15, 16, with the opposite ends of the cylinder, and actuated by an electric motor 17, which, being set on the trolley, has its armature connected with the pump by gearing 18, and serves to drive the same. The cylinder is kept continually charged with water both above and below the piston, and to lift the piston rod, the pump is actuated so as to force water from the portion of the cylinder above to the portion below the piston, and to lower the cylinder the valve is adjusted so as to connect the two parts of the cylinder and to permit the weight on the piston to displace the water from the part below to the part above. The cylinder is thus operated by forcing the water alternately from one end to the other, and in order to compensate for the slight leakage which always occurs in practice, the upper part of the cylinder is provided with a supplemental reservoir or chamber 19.

By actuation of the proper motors the crane-bridge can be moved along its track, the trolley moved on the bridge, or the pump driven to operate the lifting-cylinder. The electric current for operating the motors is supplied by dynamos or other suitable generators of electric energy, and is led to the motors by suitable cables or conductors. By these means I dispense with the inconvenient and cumbersome apparatus, such as telescopic water-connections, walking-pipes, &c., which have been used heretofore for supplying motive fluid to the motors, and render the crane-mechanism simpler, easier to operate and to keep in order, and in every way more desirable.

I do not limit myself to the exact construction of parts herein shown and described, since within the scope of the following claims these may be modified without variance from my invention.

My improvements may be applied to cranes

with rotatory jibs as well as to traveling cranes.

I do not claim herein as of my invention, the use of the motor for moving the trolley on the bridge, nor the motor for moving the bridge, but

What I claim is:—

1. In a crane, the combination with a jib or bridge, of a trolley mounted thereon, a lifting-motor comprising a cylinder and piston carried by the trolley, a pump carried by the trolley and adapted to operate the movable element of said lifting-motor, and a motor carried by the trolley and adapted to work the pump; substantially as and for the purposes described.

2. In a crane, the combination, with a trolley, of a lifting-cylinder having a piston therein, and a pump set on the trolley, connected

with the cylinder and adapted to force the water from one side of the piston to the other; substantially as and for the purposes described.

3. In a crane, the combination, with a jib or bridge, of a trolley mounted thereon, a lifting-motor comprising a cylinder and piston carried by the trolley, a pump carried by the trolley and adapted to operate the movable element of said lifting-motor, and an electric motor carried by the trolley and adapted to work the pump; substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 24th day of May, A. D. 1892.

HENRY AIKEN.

Witnesses:

W. B. CORWIN,

H. M. CORWIN.