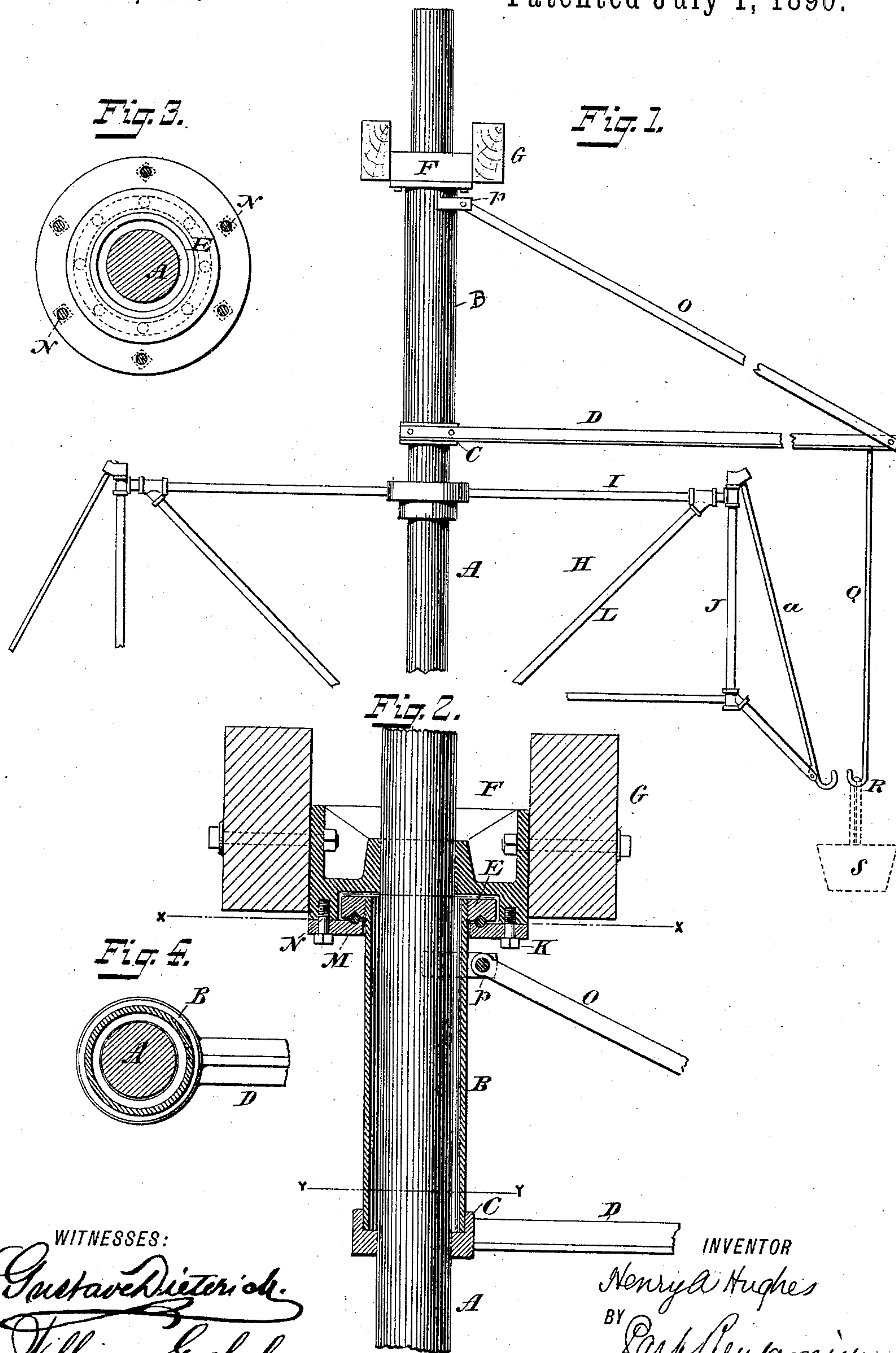


(No Model.)

H. A. HUGHES.  
SWINGING CRANE.

No. 431,116.

Patented July 1, 1890.



WITNESSES:  
*Gustave Dietrich*  
*William Goebel*

INVENTOR  
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# UNITED STATES PATENT OFFICE.

HENRY ALBERT HUGHES, OF RIO GRANDE, NEW JERSEY.

## SWINGING CRANE.

SPECIFICATION forming part of Letters Patent No. 431,116, dated July 1, 1890.

Application filed June 3, 1889. Serial No. 312,979. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY ALBERT HUGHES, of Rio Grande, Cape May county, New Jersey, have invented a new and useful Improvement in Swinging Cranes, of which the following is a specification.

My invention relates to a new construction of crane-arm and support. The crane-arm is secured to a sleeve or tube, which tube is suspended at its upper end and which incloses a vertical shaft. The sleeve and consequently the crane-arm have a horizontal rotary motion.

The invention is more particularly designed for use in connection with the diffusion apparatus patented to me December 25, 1888, No. 395,145, and is intended to support the baskets of cane while they are being swung from arm to arm of the circular frame, illustrated in said patent, for the purpose of placing them in successive cells of the battery. The outer crane saves the necessity of the workman lifting the baskets from one swinging bracket to another, and so economizes time and labor.

In the accompanying drawings, Figure 1 is a side elevation of my improved crane, the said figure showing also a portion of the apparatus represented in my former patent, No. 395,145, in order to show the relation of my present invention to said apparatus. Fig. 2 is a vertical section of the rotary supporting-sleeve and its bearing. Fig. 3 is a transverse section on the line X X of Fig. 1. Fig. 4 is a transverse section on the line Y Y of Fig. 1.

Similar letters of reference indicate like parts.

I will first describe the parts which are common to my present invention and that illustrated in my prior patent, No. 395,145, indicating such parts by the same letters of reference as are employed in the drawings of said prior patent.

A is a vertical shaft, which has free up and down motion. Upon said shaft is a circular frame-work H, consisting of radial members I, vertical members J, horizontal circumferential members; (not shown,) and diagonal girders L. This frame-work carries around its circumference a number of swinging brackets *a*, and these brackets are provided with hooks, as shown. When the shaft A is rotated on its vertical axis, the frame-work H and con-

sequently the brackets *a* are carried around with it, and hence objects—such as baskets of sugar-cane supported on the hooks of the brackets *a*—may thus, by the raising and lowering of the shaft A, be lifted into or out of a circular series of cells disposed around the shaft, or move from one cell to another, in order to transport the baskets from one bracket *a* to another.

The crane which forms the subject of my present invention is used, and the construction of this crane is necessarily such that it will remain fixed in position, while the supporting-shaft A for the frame-work H has free vertical motion through it.

Referring now to the construction of the crane proper, B is a sleeve, which loosely encircles the vertical shaft A. The end of said tube is fixed in a collar C, in which the shaft A freely turns and which supports the radial crane-arm D. To the upper end of the tube B is secured a collar E, forming a flange.

F is a sleeve-bearing, which is bolted to the beams G. On the under side of said bearing is secured by bolts K the annular plate M. On the upper side of said plate M and on the under side of the collar E are sockets, which receive metal balls N. These balls receive the weight of the sleeve B and crane and form a friction-bearing. O is a tie, which extends from a bracket P, secured to tube B, to the extremity of the crane-arm D. At the end of the crane-arm is a suspended bar Q, terminating in a hook R, which supports the basket S, dotted lines. The shaft A passes freely through the bearing F in collar C, and may be raised or lowered without disturbing the position of the crane, and the crane-arms may be swung horizontally around the shaft A as a center, the tube B turning in the sleeve-bearing F.

I claim—

1. The combination of the vertically-movable shaft A, the independently-supported sleeve B, rotary upon said shaft, a crane-arm supported by said sleeve, and a crane-arm supported by said shaft, substantially as described.

2. The combination of the vertically-movable shaft A, a crane-arm supported by said shaft, the independently-supported sleeve-

bearing F, the sleeve B, inclosing said shaft and rotary thereupon and supported by said bearing F, and the crane-arm D, supported by said sleeve, substantially as described.

5 3. The combination of the vertically-movable shaft A, a crane-arm supported by said shaft, the independently-supported sleeve-bearing F, having the detachable annular plate M, the sleeve B, having flange E resting  
10 upon said plate M and rotary thereon, and the crane-arm D, supported by said sleeve, substantially as described.

4. The combination of the vertically-movable shaft A, a crane-arm supported by said  
15 shaft, the independently-supported sleeve-bearing F, having the detachable annular

plate M, the sleeve B, provided with flange E, resting upon said plate M and rotary thereon, friction-balls interposed between said flange E and plate M, and crane-arm D, supported  
20 by said sleeve, substantially as described.

5. The combination of the vertically-movable shaft A, a crane-arm I, rigidly supported thereon, swinging bracket *a* at the extremity of said arm I, independently-supported sleeve  
25 B on said shaft, and a crane-arm D on said sleeve, the said sleeve B and the arm D being disposed on said shaft above said arm I.

HENRY ALBERT HUGHES.

Witnesses:

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