

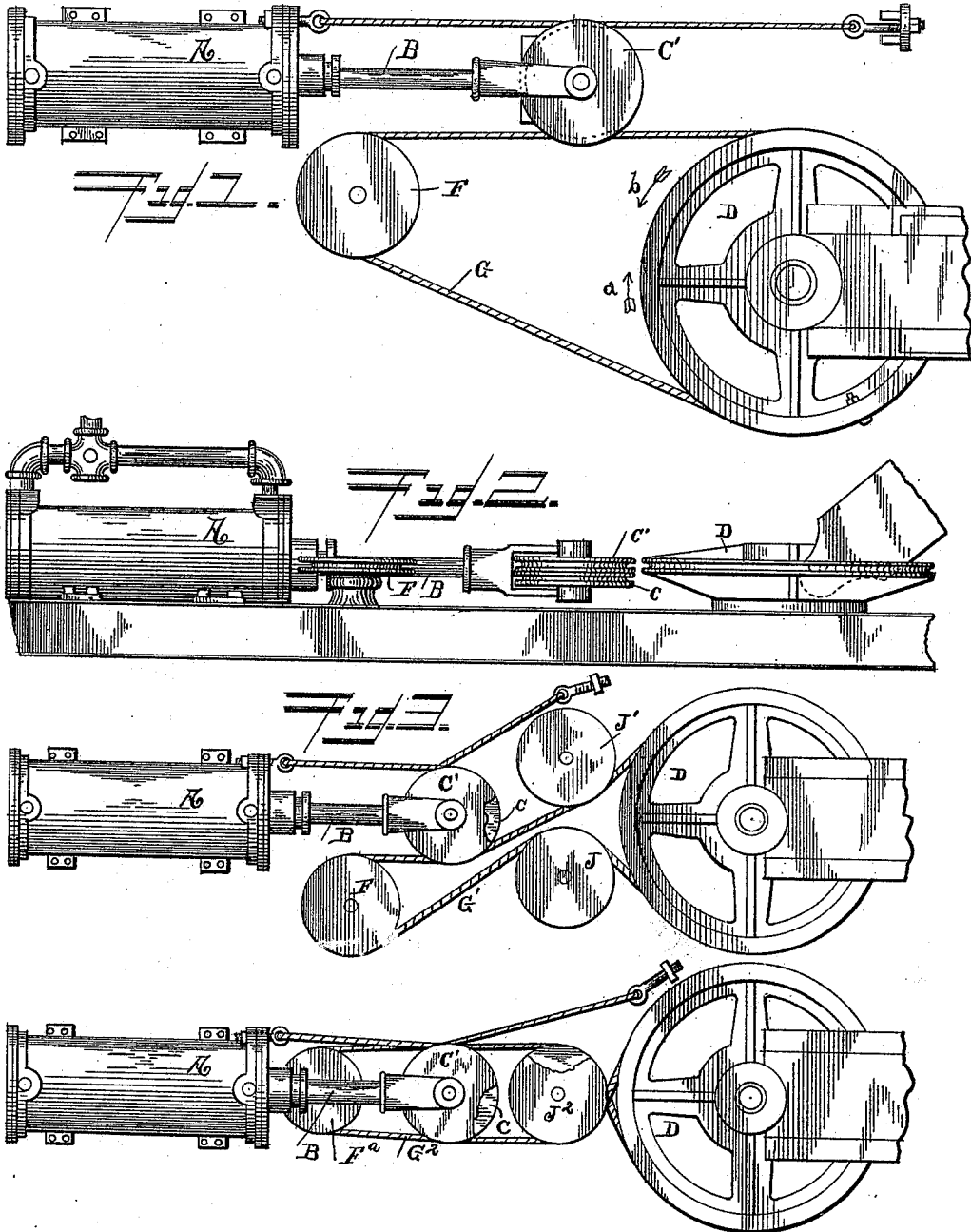
(No Model.)

2 Sheets—Sheet 1.

W. J. BENNETTS.
CRANE OR DERRICK.

No. 470,538.

Patented Mar. 8, 1892.



WITNESSES
C. S. Frye
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Fig. 4.

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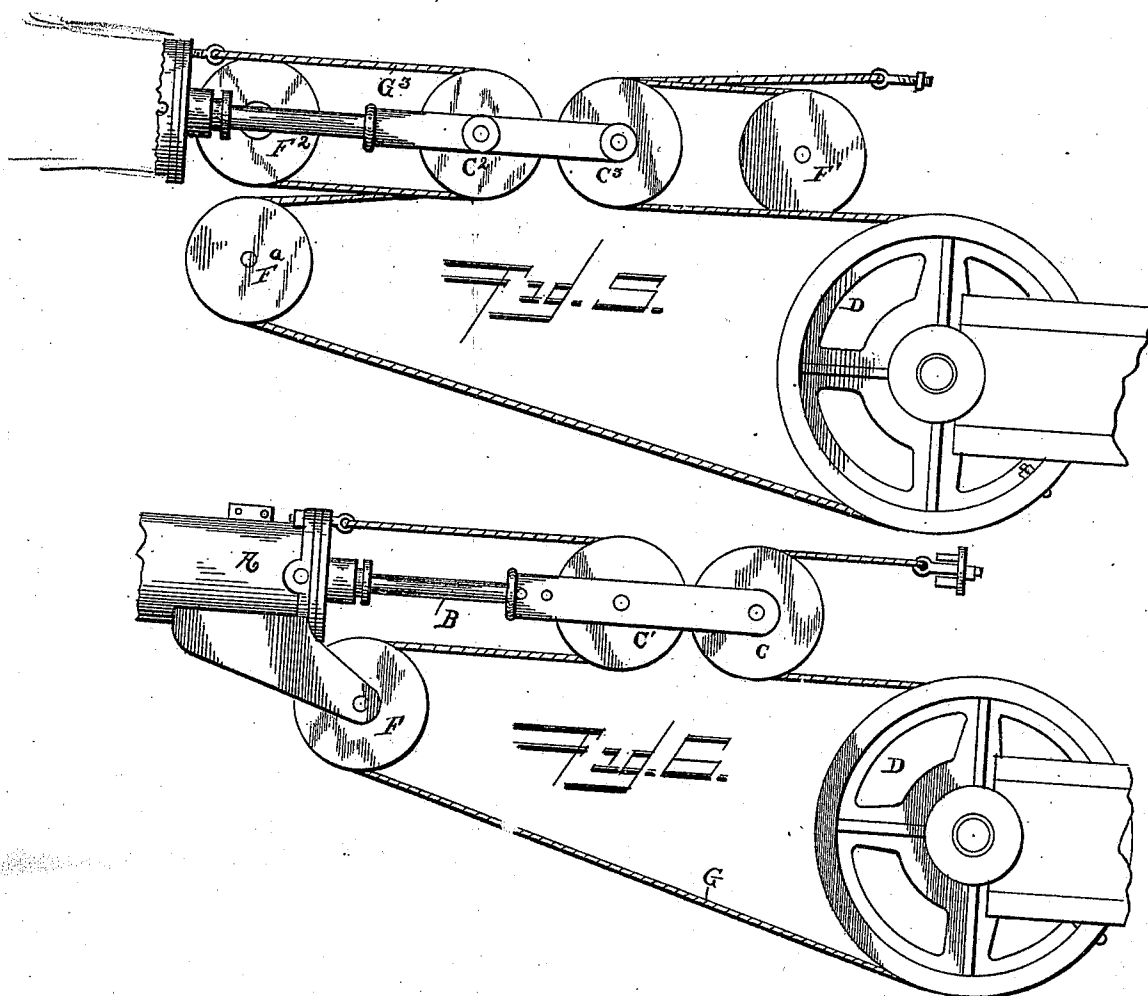
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UNITED STATES PATENT OFFICE.

WILLIAM J. BENNETTS, OF BUCYRUS, OHIO.

CRANE OR DERRICK.

SPECIFICATION forming part of Letters Patent No. 470,538, dated March 8, 1892.

Application filed September 30, 1891. Serial No. 407,291. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. BENNETTS, a citizen of the United States, residing at Bucyrus, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Cranes, Derricks, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to an improved gearing for transmitting motion from a piston-rod to a sluing-circle upon a pivot-post or other part of a crane or the like; and its novelty resides in the peculiar construction, certain novel combinations, and the adaptation of parts hereinafter described, and particularly pointed out in the claims appended.

In the accompanying drawings, Figure 1 is a top view of a piston-cylinder, piston-rod, sluing-circle, and my improved pulley-gearing for transmitting motion. Fig. 2 is a side elevation of the same, and Figs. 3, 4, 5, and 6 are plan views of modified constructions.

Referring by letter to said drawings, and more particularly to Figs. 1 and 2 thereof, A indicates a piston-cylinder of a steam crane, boom, or derrick, and B indicates the piston-rod, which is forked at its free end or provided with a rigid forked head to afford a bearing for the sheaves C C', which have their peripheries grooved and are designed for a purpose presently to be pointed out.

D indicates a horizontal pulley or sluing-circle, which is rigidly attached to the base or other suitable part of a crane, located in such a position that the axis of the piston-rod is parallel to and distant about half the diameter of the sheave C from a line tangent to the periphery of the above-mentioned sluing-circle, which is peripherally grooved, as illustrated, to seat the cable presently to be described.

Situated in about the position illustrated with respect to the piston-rod and the sluing-circle D is a stationary idler-sheave F, around which takes the cable G, which imparts motion to the said circle. This cable G, which has one end connected to the piston-head or at a point adjacent thereto, takes successively around one of the sheaves C or C',

the idler-sheave F, the sluing-circle D, to the periphery of which it is clamped or suitably secured at a suitable point, and the other sheave C or C' and has its opposite end fixedly connected at a point abreast or adjacent to the periphery of the sluing-circle.

In operation when steam has been admitted into the piston-cylinder to force the piston-rod outwardly it will be perceived that the sluing-circle will be caused to revolve in the direction indicated by the arrow *a* in Fig. 1, and when the steam-valve is reversed and the piston-rod carried inward the circle will be caused to revolve in the direction of the arrow *b* in Fig. 1 and resume its normal or primary position. The peculiar gearing described intermediate of the piston-rod and the sluing-circle not only transmits motion from said rod to the circle, but converts the reciprocatory motion of the rod into a revoluble motion, whereby the employment of a single cylinder and piston-rod for sluing or swinging a crane is rendered practical and the disadvantage resulting from the space taken up by two cylinders and piston-rods is obviated.

In Fig. 3 of the drawings I have illustrated a construction especially designed for use when but a narrow space can be afforded for the placement of the piston-cylinder, crane-base, &c. In this construction the piston-rod B is arranged radially with respect to the sluing-circle D, and two stationary idler-sheaves J J' are provided between the end of the piston and the sluing-circle to guide the cable in opposite directions, as will be presently perceived. The cable G' in this latter construction is connected at one end to the cylinder-head or at a point adjacent thereto, and is then successively carried around one of the sheaves C or C', the idler F, one of the stationary idler-sheaves J, the sluing-circle D, the other stationary sheave J', one of the sheaves C or C', and is connected at its opposite end at a suitable point, approximately as illustrated.

In Fig. 4 of the drawings I have illustrated another construction designed for use when but a narrow space can be afforded for the placement of the piston-cylinder, crane-base, &c. In this construction the piston-rod B is arranged radially to the sluing-circle D, and

two stationary idler-sheaves J^2 , which are mounted one upon the other, are provided between the end of the piston and the said sluing-circle to guide the cable in opposite directions. In this latter construction the idler-sheave F^a is preferably mounted beneath the piston-rod B, as illustrated.

The cable G^2 in Fig. 4 is connected at one end to the cylinder-head or at a point adjacent thereto, and is then successively carried around one of the sheaves C or C' , carried by the piston-rod, the idler F^a , one of the stationary idler-sheaves J^2 , the sluing-circle D, the other stationary sheave J^2 , the other sheave C or C' , and is connected at its opposite end, approximately as illustrated.

In Fig. 5 of the drawings I have illustrated a construction to be used when it is desirable to locate the piston-cylinder and its gearing a greater distance to one side of the sluing-circle than could be accomplished through the medium of the gearing illustrated in Figs. 1 to 4. In this construction four sheaves C^2 C^3 are mounted in the fork of the piston-rod, and in addition to the idler-sheave F^a another idler-sheave F' is provided abreast of the sluing-circle and having its center approximately in line with the piston-rod, and still another idler-sheave F^2 adjacent to the sheave F^a and either above or below the piston-rod, with its center approximately in line with the piston-rod. In this latter construction the cable G^3 is attached at one end to the cylinder-head or at a point adjacent thereto, and is then successively carried around one of the sheaves C^2 , the idler F^2 , the other sheave C^2 , the other idler F^a , the sluing-circle D, to a suitable point of the periphery of which it is attached, one of the sheaves C^3 , the idler F' , the other sheave C^3 , and is connected at its opposite end at a suitable point, approximately as illustrated.

In Fig. 6 of the drawings I have illustrated a construction which is similar to that shown in Figs. 1 and 2, with the exception that instead of the sheaves in the forked head of the piston-rod being mounted one upon the other they are mounted in the same plane and are arranged tandem, as illustrated.

By the gearing and arrangement of the ca-

bles as described it will be seen that the crane can only be slued a part of a revolution. When, however, I desire to slue the crane completely around, I pass the cable completely around the sluing-circle in addition to the amount shown and attach the cable to the periphery of said circle at a suitable point.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gearing for transmitting motion from a piston-rod to a sluing-circle, substantially as described, the combination, with the sluing-circle, the piston-cylinder, the reciprocatory piston-rod, and the sheaves carried by the said piston-rod, of the idler-sheave arranged adjacent to the piston-cylinder, and the cable connected at one end to the piston-head and taking successively around one of the sheaves carried by the piston-rod, the idler-sheave, the sluing-circle, and the other sheave carried by the piston-rod and having its opposite end fixedly connected at a suitable point, substantially as and for the purpose set forth.
2. In a gearing for transmitting motion from a piston-rod to a sluing-circle, substantially as described, the combination, with the sluing-circle, the piston-cylinder, the reciprocatory piston-rod, and the sheaves carried by the said piston-rod, of the idler-sheave arranged adjacent to the piston-cylinder, the idler-sheaves arranged adjacent to the periphery of the sluing-circle, and the cable connected at one end to the piston-head and taking successively around one of the sheaves carried by the piston-rod, the idler-sheave adjacent to the piston-cylinder, one of the idler-sheaves arranged adjacent to the sluing-circle, the sluing-circle, the other idler-sheave arranged adjacent to the sluing-circle, the other sheave carried by the piston-rod, and having its opposite end fixedly connected at a suitable point, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. BENNETTS.

Witnesses:

WM. S. NICHOLLS,
A. RINKER.