

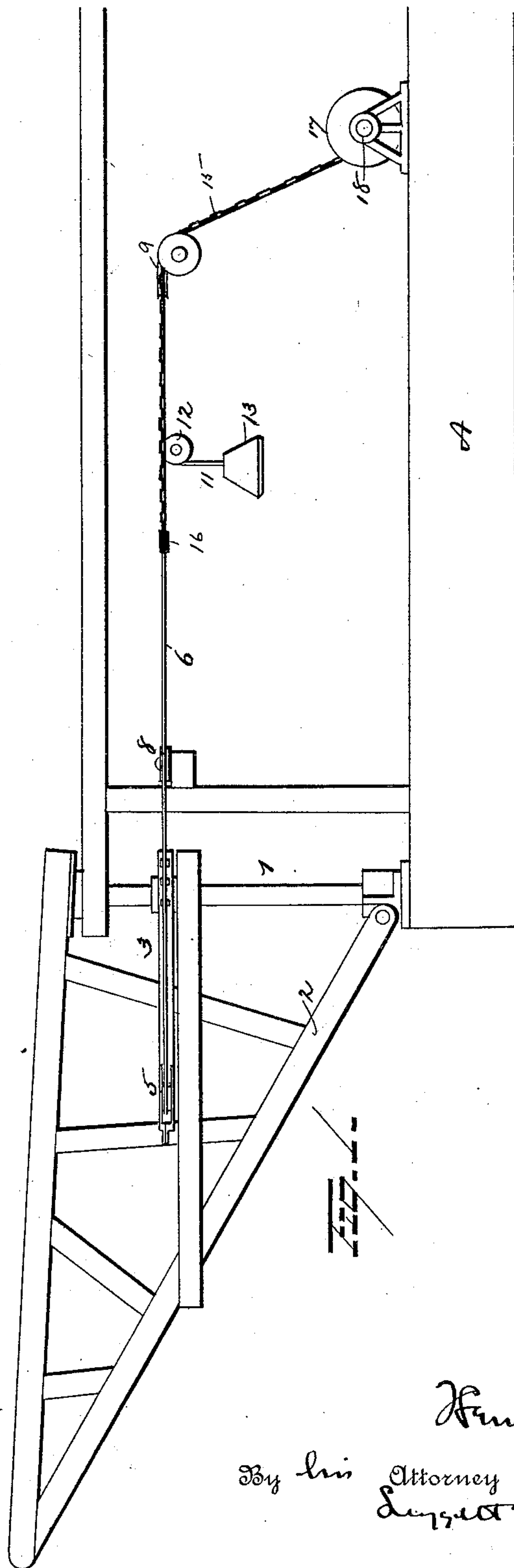
(No Model.)

2 Sheets—Sheet 1.

H. M. BARNHART.
CRANE.

No. 410,870.

Patented Sept. 10, 1889.



Witnesses
V. E. Hodges

Inventor
Henry M. Barnhart

By *his* Attorney
Lyons & Lyons

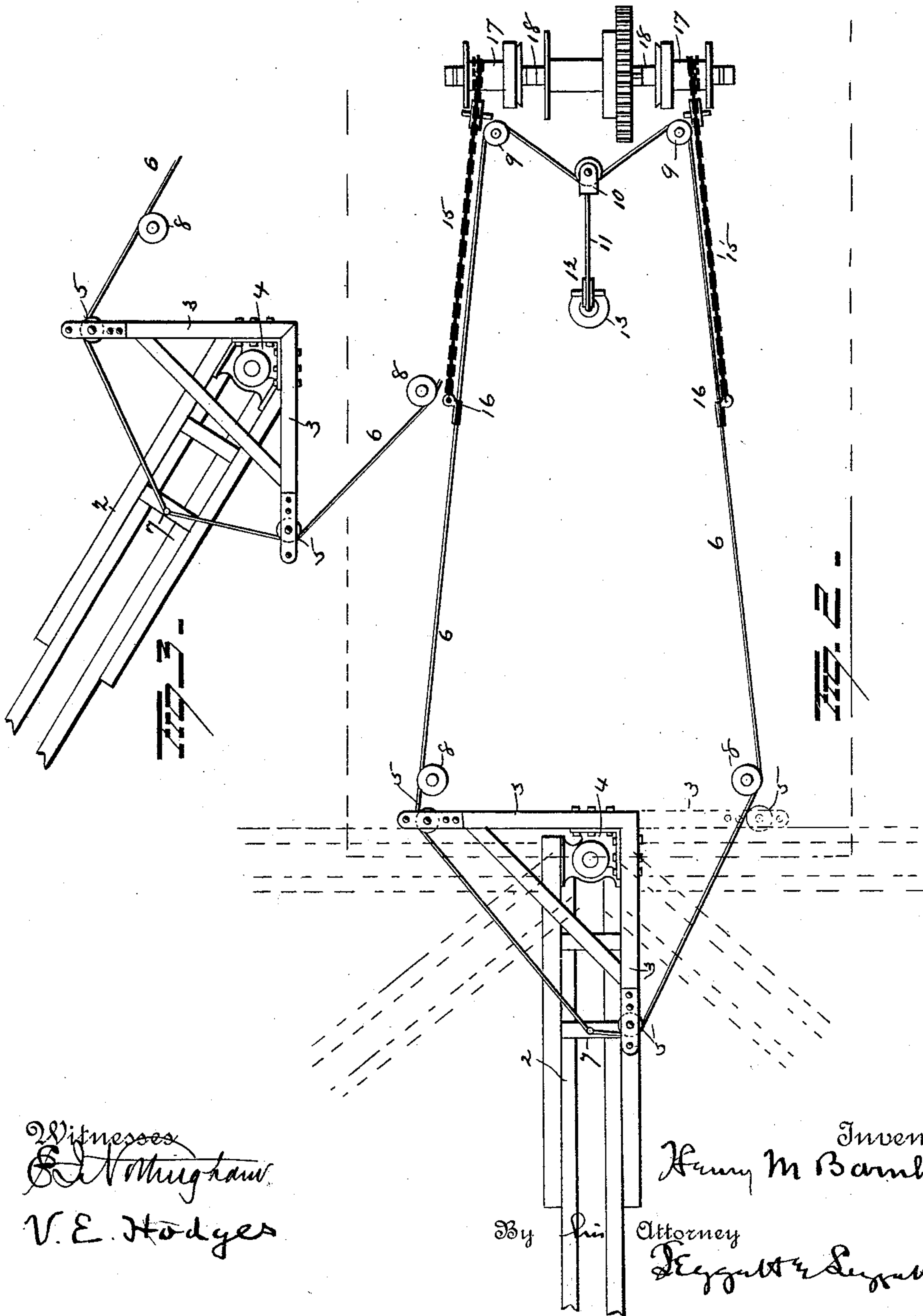
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E. V. Mingham
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Inventor
Harry M. Barnhart
By *Attorney*
Deeg & Deeg

UNITED STATES PATENT OFFICE.

HENRY M. BARNHART, OF MARION, OHIO.

CRANE.

SPECIFICATION forming part of Letters Patent No. 410,870, dated September 10, 1889.

Application filed June 3, 1889. Serial No. 313,011. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. BARNHART, of Marion, in the county of Marion and State of Ohio, have invented certain new and useful
5 Improvements in Attachments for Cranes; 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.

10 My invention relates to an improvement in attachments for swinging cranes.

The object is to provide increased facilities for swinging and controlling traveling cranes and in effectually overcoming dead-centers;
15 and it consists in a pair of swinging arms capable of being lengthened or shortened and adapted to support a controlling-cable in such a manner that the greatest power is derived and dead-centers are overcome.

20 It further consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation. Fig. 2 is a plan view, and
25 Fig. 3 is detached view, of a portion showing one position of the crane.

A represents an ordinary dredge-boat, in the bow of which the mast 1 is supported.
30 The crane 2 is adapted to swing around in the usual manner, to assume the various positions indicated by dotted lines in Fig. 2, as well as innumerable intermediate positions, the two extreme positions being those at right angles to the boat.

35 A pair of arms 3 3, secured together, preferably at right angles to each other, by angle-irons or similar means 4, are loosely mounted on the mast, upon which they are adapted to
40 swing into as many different positions and to the same extremes as the crane. In the extreme outer ends of these arms sheaves 5 5 are journaled, and an endless cable 6, strung over these sheaves, is attached at point 7 to
45 the crane between the arms. After passing over the sheaves 5 5 this cable is strung over sheaves 8 8 and 9 9, and between the latter a block 10 is located on the cable, and a flexible attachment 11, extending over pulley 12,
50 has a snatch-block 13 secured to its end, the weight of which exerts a continuous tension

on the cable, keeping out kinks and irregularities.

The object of the arms 3 3 is to furnish a support for the cable, which turns the crane
55 at a point where sufficient power is exerted to easily swing the crane laterally and also outside of the line of dead-centers. The contingency to be avoided is the location of the support for the cable, either in line of the
60 point of attachment with the crane and the center, about which the latter swings, or within that line, the result of either of which would be to form a dead-center which any amount of power would fail to overcome. The arms
65 3 3 prevent these dead-centers by swinging around and maintaining a point of support without this line to avoid dead-centers. As it frequently is necessary to employ cranes of
70 extraordinary length, it becomes important that the arms 3 3 should be capable of extension, because the point of attachment with the crane has to be located farther out from the mast. Importance is attached to this fea-
75 ture, as a great deal of delay and trouble are avoided in readjusting the parts. When the crane has swung the distance between the two arms 3 3, it strikes one of them and carries the two arms around with it as far as
80 they go. Of course the arms might be at different angles to each other than at right angles; but a larger angle than a right angle is to be avoided, for the reasons above stated.

The cable is moved back and forth by means of chains or similar flexible devices 15 15.
85 These chains are secured to the cable by means of clevises 16 16, and they are secured to winding-drums 17 17 on the rotary shaft 18. Said drums are furnished with clutch mechanism, (not shown,) by which one drum
90 is fastened to the shaft when turned in one direction and the other when rotated in the opposite direction. Thus the cable is always kept taut, and draft is applied alternately on one side and on the other.
95

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the
100 particular construction herein set forth; but,

Having fully described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a mast and swinging crane, of a cable attached to the latter, and arms loosely supported so as to be moved by and in advance of the crane, for the support of the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, substantially as set forth.

2. The combination, with a mast and a swinging crane mounted thereon, of an endless cable attached to the crane, and arms loosely supported on the mast on opposite sides of the crane, so as to be moved by the crane for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, substantially as set forth.

3. The combination, with a mast and a swinging crane mounted thereon, of an endless cable secured to the crane and strung over sheaves, and movable arms loosely supported on the mast for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, the said arms adapted to be moved by the derrick, substantially as set forth.

4. The combination, with a support, a mast, and a swinging crane mounted thereon, of an endless cable secured to the crane and strung over sheaves, movable arms loosely supported on the mast for retaining the cable outside of the line between the point of attachment to the crane and the axis around which the latter swings, a snatch-block for keeping the cable taut, and winding-drums for moving the cable, substantially as set forth.

5. The combination, with a support, a mast thereon, and a swinging crane supported by the latter, of a pair of swinging arms loosely supported in the mast and extending at right angles to each other, said arms having sheaves in their ends, an endless cable secured to the crane and strung over the sheaves in the arms and the other sheaves, a snatch-block for keeping the cable taut, winding-drums, and flexible devices connecting the cable to said drums, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HENRY M. BARNHART.

Witnesses:

JOHN A. WOLFORD,
JOSEPH C. HARPER.