

(No Model.)

L. BIRCKHEAD.

CRANE FOR EXCAVATING MACHINES.

No. 356,742.

Patented Feb. 1, 1887.

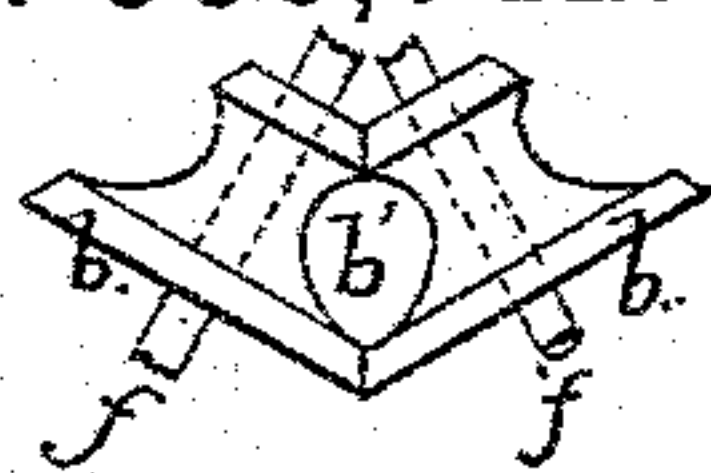


Fig. 6.

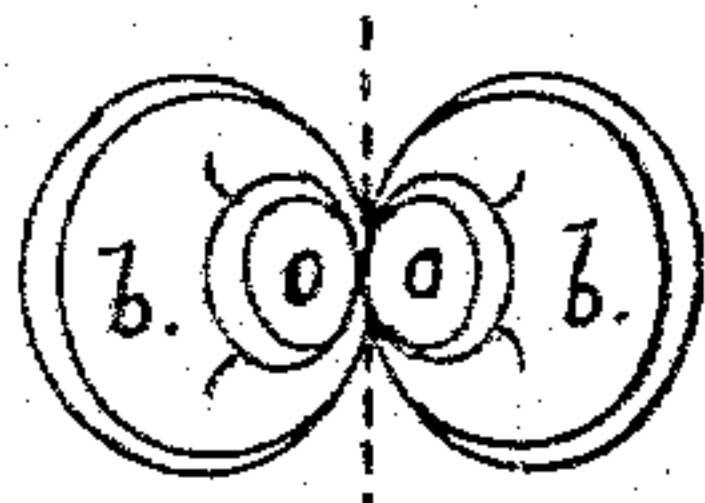


Fig. 7.

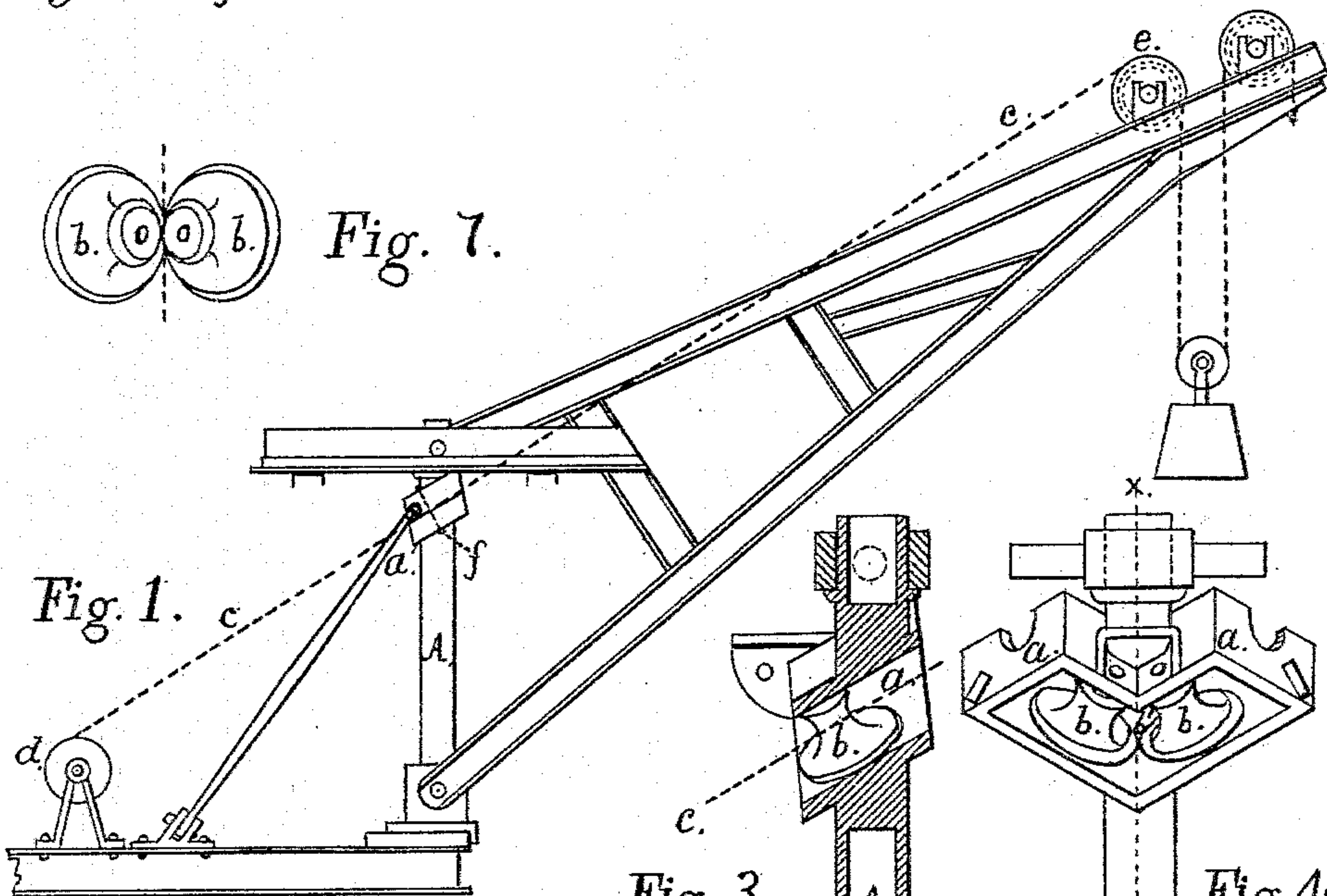


Fig. 1.

Fig. 3.

Fig. 4.

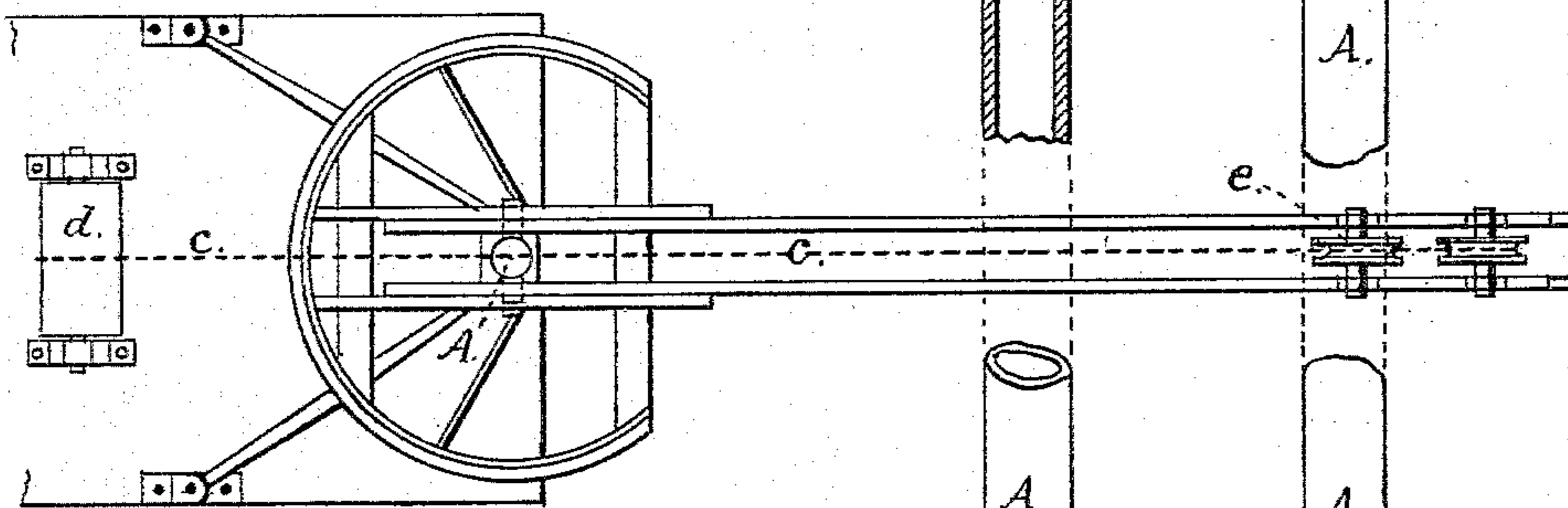
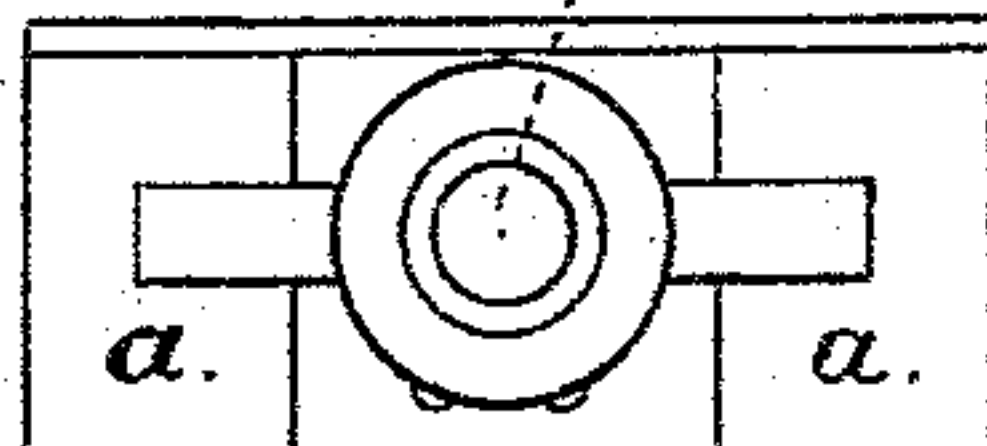


Fig. 2.

Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

LENNOX BIRCKHEAD, OF TOLEDO, OHIO.

CRANE FOR EXCAVATING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 356,742, dated February 1, 1887.

Application filed January 5, 1886. Serial No. 187,657. (No model.)

To all whom it may concern:

Be it known that I, LENNOX BIRCKHEAD, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in and relating to the Masts of Cranes in Excavating-Machines and Dredges, of which the following is a specification.

In the cranes of excavating-machines and dredges heretofore in use the hoisting rope or chain leading from the drum to the pulley at the outer end of the crane passes under and over two or more sheaves or guides attached to the mast, sometimes passing under a pulley at the bottom of the mast, thence up the entire length of the mast, either through the center or on the outside, and out over another pulley at the top of the mast, sometimes passing under a pulley near the middle of the mast, thence up and over another pulley at or near the top of the mast.

Multiplication of sheaves or pulleys and frequent bendings and twistings of hoisting ropes and chains in their course are found to result in considerable loss of power, increase of friction and strain, and undue original cost, wear, and breakage.

The object of my invention is to obviate these objections by providing such mast with sheaves or guides arranged in such manner in relation to the hoisting drum and pulley at outer end of crane that the rope or chain leading from said drum to said pulley shall run in a straight line, or, when the crane is swung, with but a single deflection. I accomplish these objects by means of the device illustrated in the accompanying drawings, made part hereof, in which—

Figure 1 is a side elevation of part of an excavator or dredge provided with my sheaves, showing the lead of the hoisting chain or rope; Fig. 2, a plan of the same; Fig. 3, a central vertical section of mast on line *x x*; Fig. 4, a view of mast from platform of excavator, showing sheaves and their housing; Fig. 5, a plan

of mast; Fig. 6, an elevation of double-beveled sheaves, and Fig. 7 a plan view of same.

Like letters refer to like parts in all the figures.

Mast A, having the usual crane and swinging circle, the mast standing fast, is provided with housing or box *a*, which I prefer to cast integral with the mast, forming an opening through the mast. In housing *a* are mounted beveled sheaves or guides *b b*, their beveled faces on either side of the groove touching and rolling against each other, or nearly so. Housing *a* and sheaves *b b* are placed at such height that when the crane is set directly ahead of the machine line *c* (representing hoisting rope or chain) leads through opening *b'*, formed by the coinciding grooves of sheaves *b b*, from drum *d* to pulley *e*, without deflection between said points. The axes *f f* of sheaves *b b* are inclined toward each other, as in Fig. 6, and are also inclined toward drum *d* at such an angle that when line *c* is deflected by the swinging of the crane to the right or left said line must fall into and run smoothly along the groove of the corresponding sheave, thus dispensing with the train of sheaves and pulleys encountered, usually, between drum *d* and pulley *e*, and avoiding their attending objections, above stated.

Having described my invention and its mode of operation, what I claim, and desire to secure by Letters Patent, is—

The combination of mast A, drum *d*, rope or chain *c*, and pulley *e*, with sheaves *b b*, said sheaves being placed in mast A at such height and angle that said chain shall run from said drum to said pulley *e*, without any deflection, when the crane is set straight ahead, and with but a single deflection when the crane is swung to either side, substantially as shown and described, for the purposes specified.

LENNOX BIRCKHEAD.

Witnesses:

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