

No. 891,796.

PATENTED JUNE 23, 1908.

C. COOPER.  
STEEL DERRICK AND EXCAVATING MACHINE.  
APPLICATION FILED NOV. 4, 1907.

2 SHEETS—SHEET 1.

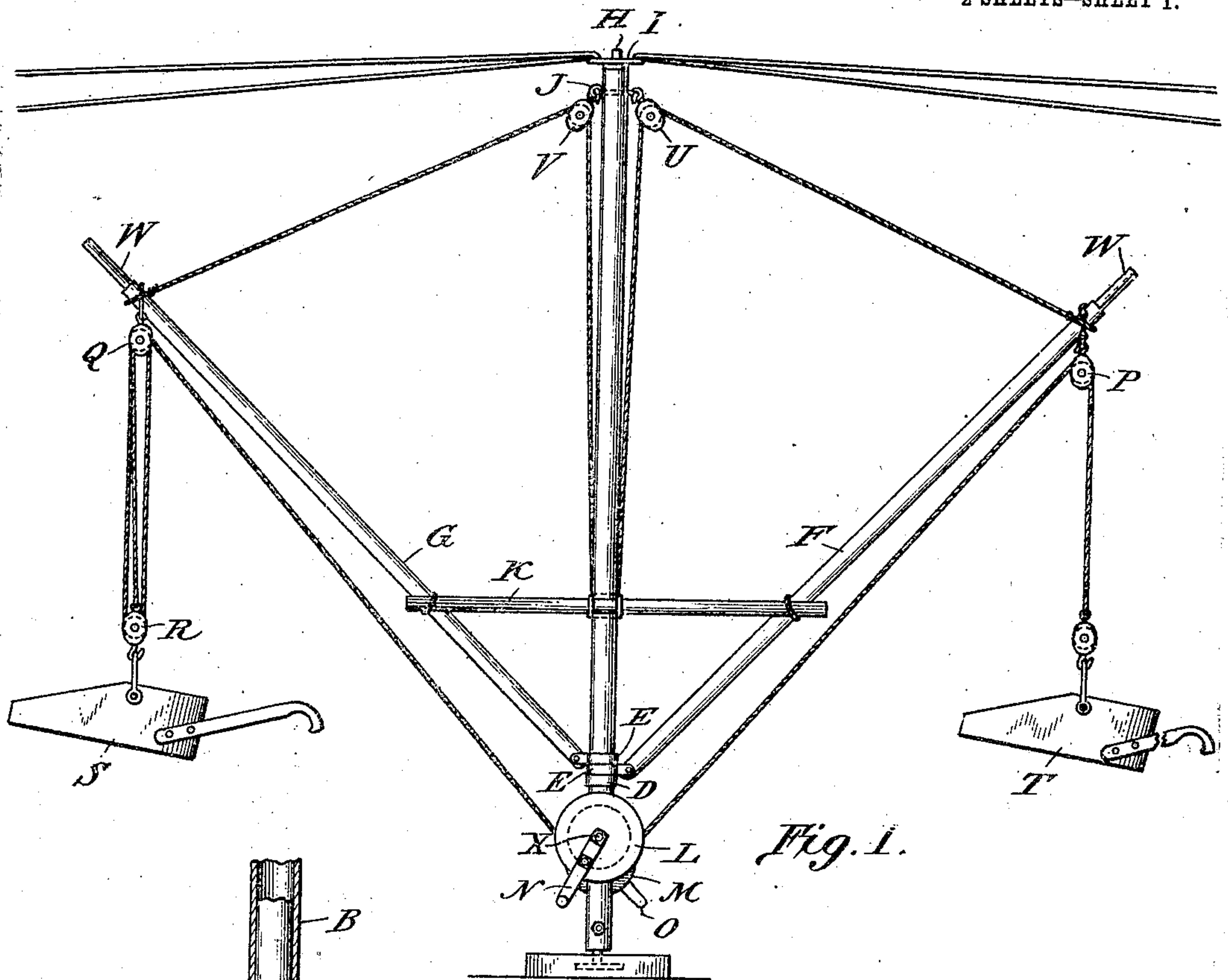


Fig. 1.

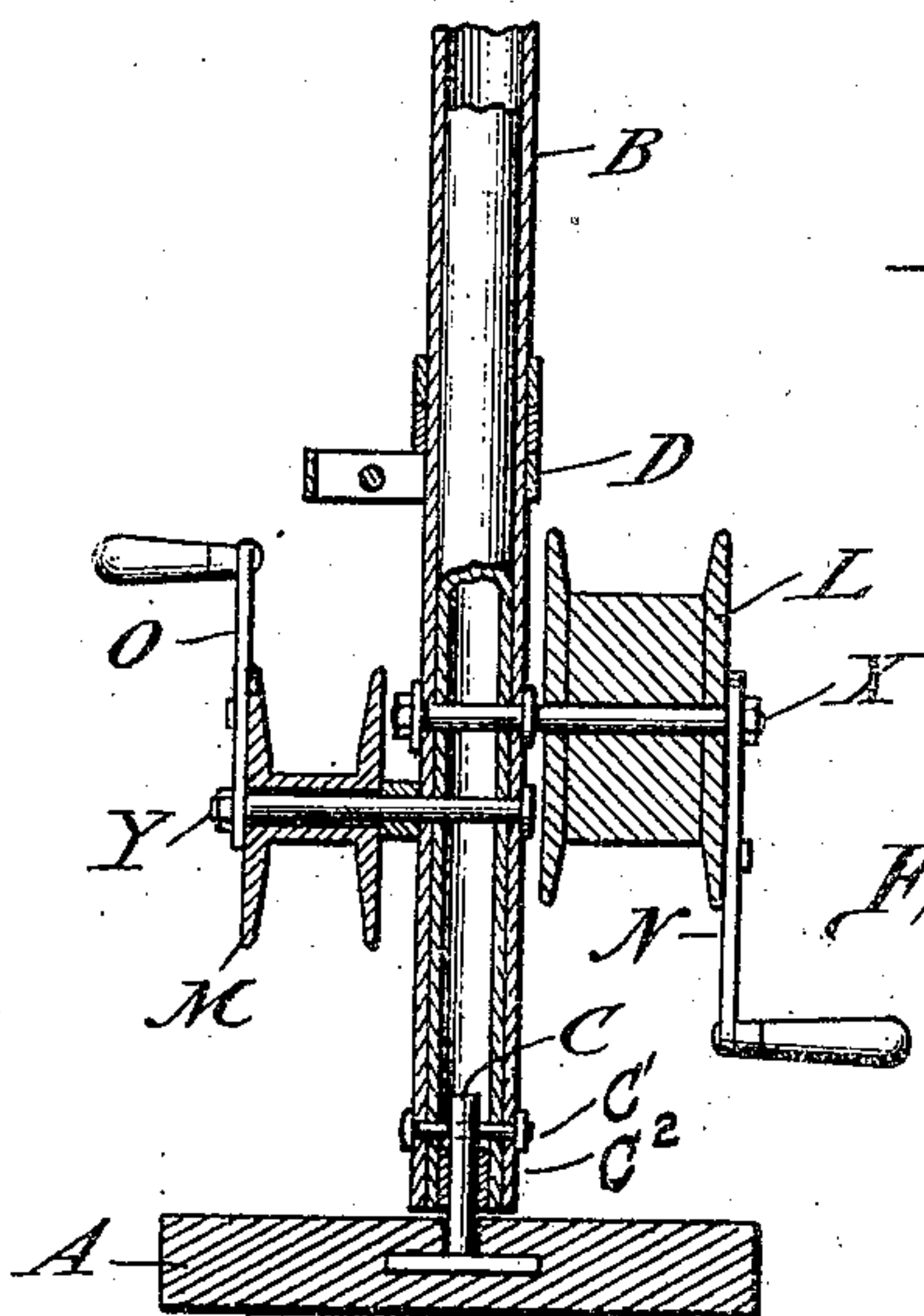


Fig. 2.

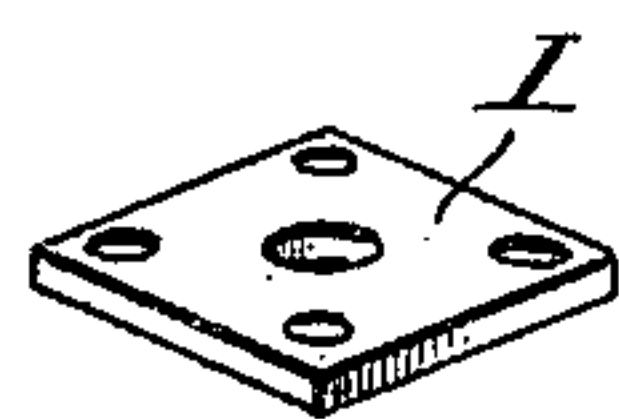


Fig. 3.

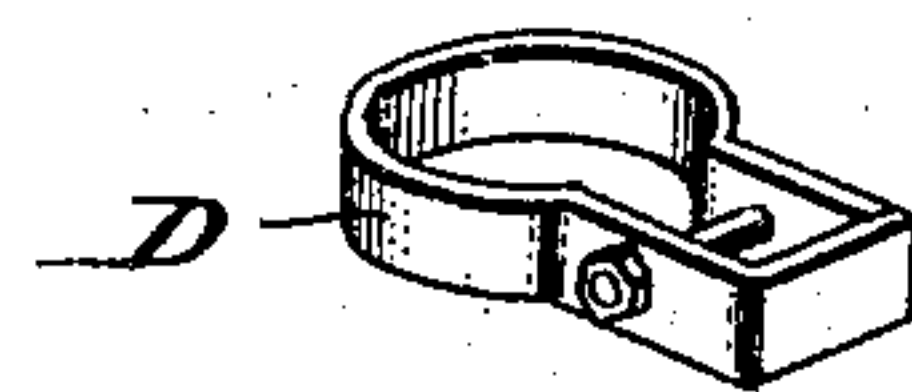


Fig. 4.

Witnesses:  
*J. J. Greenman*  
*L. O. Henderson*

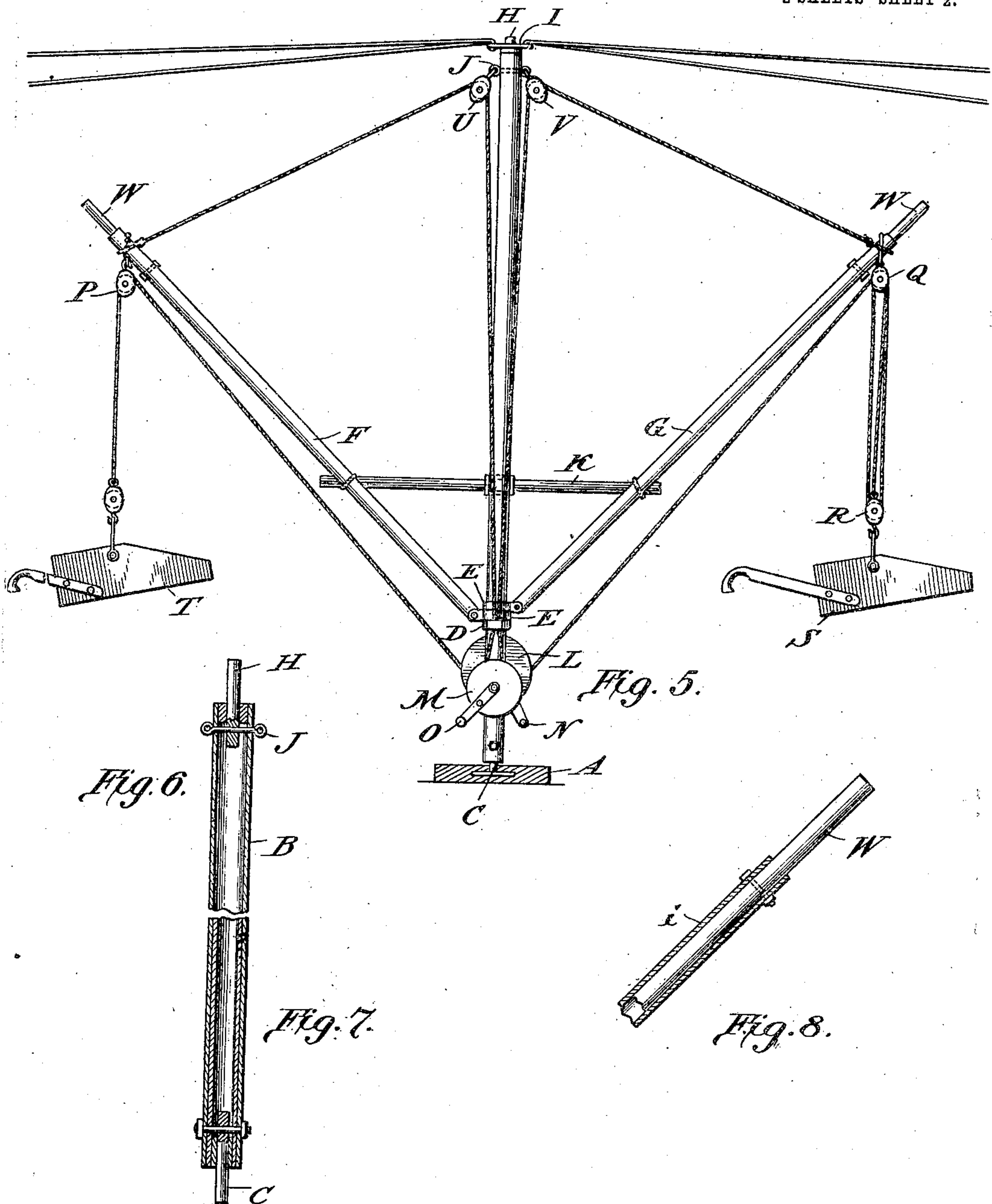
Inventor,  
*Charles Cooper*

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2 SHEETS—SHEET 2.



Witnesses:  
James  
Bohndusan

Inventor,  
Charles Cooper



# UNITED STATES PATENT OFFICE.

CHARLES COOPER, OF GARDEN CITY, KANSAS

## STEEL DERRICK AND EXCAVATING-MACHINE.

No. 891,796.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed November 4, 1907: Serial No. 400,661.

To all whom it may concern:

Be it known that I, CHARLES COOPER, a citizen of the United States, residing at Garden City, in the county of Finney and State of Kansas, have invented a new and useful All-Purpose Steel Derrick and Excavating-Machine, of which the following is a specification.

This invention relates to a steel derrick and excavating machine, and has for its object the construction of a machine of this type, in which a plurality of extensible booms are maintained in given angular relation to one another.

Another object of the invention is to provide an arrangement of ropes, pulleys and windlasses, whereby the weight of one load may be utilized to help raise other loads.

To these ends, as well as others of a minor nature, the device is constructed substantially as described hereinafter and shown in the accompanying drawings, in which

Figure 1 is a side view of the complete machine; Fig. 2 is a vertical sectional view of the lower part of the main beam, at right angles to Fig. 1, and showing the method of attaching the windlasses. Fig. 3 is a perspective view of the plate which serves for the attaching of the guys to the top of the main beam. Fig. 4 is a perspective view of clamp which is used to attach the booms to the main-beam. Fig. 5 is a view corresponding to Fig. 1, but taken from the opposite side of the derrick. Fig. 6 is a vertical section of the top of the main beam. Fig. 7 is a like view of the bottom of this beam. Fig. 8 is a section of the end of either of the booms.

The block A upon which the derrick rests is preferably of wood, having a T-shaped slot extending approximately to its center, and containing in this slot a rectangular reinforcing plate. This plate is preferably of steel and has for its purpose to apply the compressive stress to the wood over a considerable area. The main beam B consists in a pipe or steel tube in the base of which is secured a spindle C, the latter being retained by means of a bolt C' and a babbitt filling C<sup>2</sup>. The beam may be strengthened throughout part or all of its length by an internal tube as shown in Figs. 2 and 7.

D designates a clamp which is adapted to support the booms F and G. This clamp has formed upon one side a projecting part,

as shown in Fig. 4, the purpose of which will be hereinafter explained.

E—E are the usual clamps for attaching the booms to the main beam.

In the top of the beam B is inserted a spindle H which is retained therein by a double I-bolt J, which in turn supports the blocks V and W.

I represents a top plate that fits down over the spindle, and serves for the attachment of the derrick guys, as shown.

K designates a suitable cross-bar, preferably of pipe, which is clamped to the main beam B and chained to booms F and G. This cross-bar maintains the booms in given angular relation and may obviously be adjusted up or down the main beam.

Referring more particularly to Figs. 1 and 2, L represents what I term an equalizer, and M a snub-windlass, which are pivotally mounted upon the main beam by bolts. Upon the outer face of the equalizer is secured a handle N, this handle being attached to the respective bolt by a nut X and to the drum by a key, as shown. A handle O is similarly secured to the snub-windlass by the nut Y and a key.

P represents a single block, and Q a double block secured by chains to booms F and G, respectively.

S and T designate the excavating buckets.

In the outer end of each of the swinging booms is placed a supplementary telescoping section W whereby the boom may be lengthened.

A rope or cable is attached to the bucket T and extends upward through pulley P then downward around the equalizer, then up through block Q, and terminating in the block and tackle Q—R, R being in this case a single block. Obviously, other arrangements of block and tackle may be made. Thus a double block may be substituted for the single block R.

I prefer to have a small supplementary cable (not shown) extend from R up to a block similar to Q and arranged at the same point (but not shown) then down and around the snub-windlass. This cable will serve to help raise the bucket S as will be obvious. It is also clear that when bucket S is once raised, its weight in descending will help lift bucket T, and vice versa. Adjusting ropes or cables extend from the outer ends of the booms up over the corresponding blocks U and V, and



down through the loop or projecting portion of the clamp D to the windlass M. The clamp thus operates as a rope guide.

Having now described my invention, what  
5 I claim and desire to secure by Letters Patent is:

1. In a device of class described, a main beam, a base therefor, having an internal reinforcing plate adapted to be inserted from  
10 the side to directly support said beam, a pair of vertically adjustable extensible booms pivotally mounted on said main beam and having hoisting means at the extremities thereof, said hoisting means having rope con-  
15 nection with an equalizer mounted on the main beam.

2. In a device of the class described, the combination with the main beam, of two ex-

tensible booms pivotally mounted thereon, a rope guiding clamp secured to the main  
20 beam and supporting said booms, a cross-arm mounted on the main beam and secured to said booms and being adapted to maintain said booms in given angular relation, an equalizer and a snub windlass mounted on  
25 opposite sides of the main beam, the former being adapted to raise balanced loads and the latter being adapted to adjust said booms.

And this specification is signed and dated at Garden City, in Finney county, in the  
30 State of Kansas, on this 22nd day of October 1907.

CHARLES COOPER.

Witnesses:

JOHN A. LITTLER,  
WILLIAM C. PEARCE.