

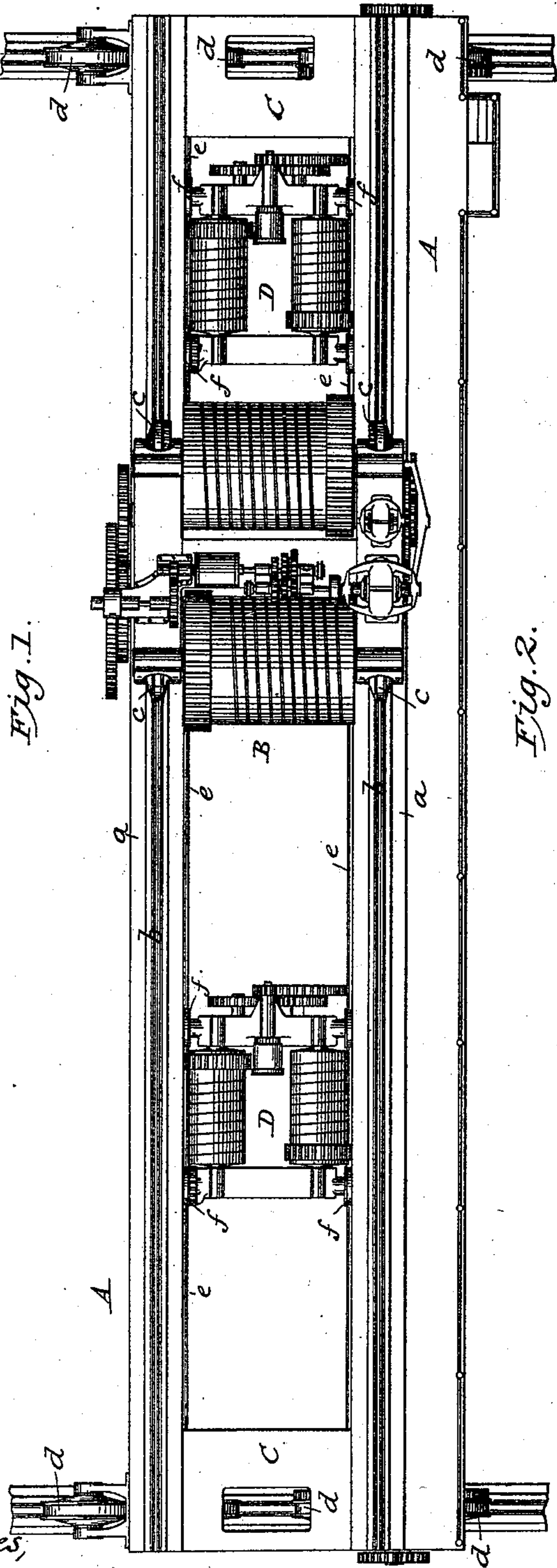
(No Model.)

2 Sheets—Sheet 1.

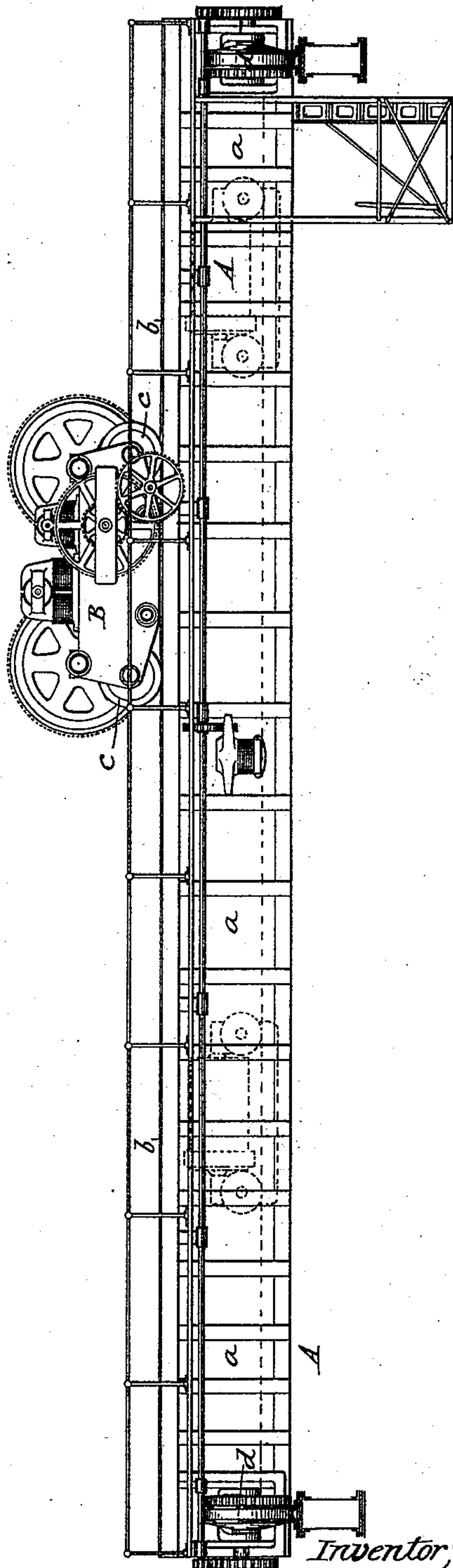
A. J. SHAW.
CRANE.

No. 528,616.

Patented Nov. 6, 1894.



Witnesses,
Sidney P. Hollingsworth
W. C. Brudine.



Inventor;
Alton J. Shaw,
by Dodge & Sons,
Attys.

(No Model.)

2 Sheets—Sheet 2.

A. J. SHAW.
CRANE.

No. 528,616.

Patented Nov. 6, 1894.

Fig. 3.

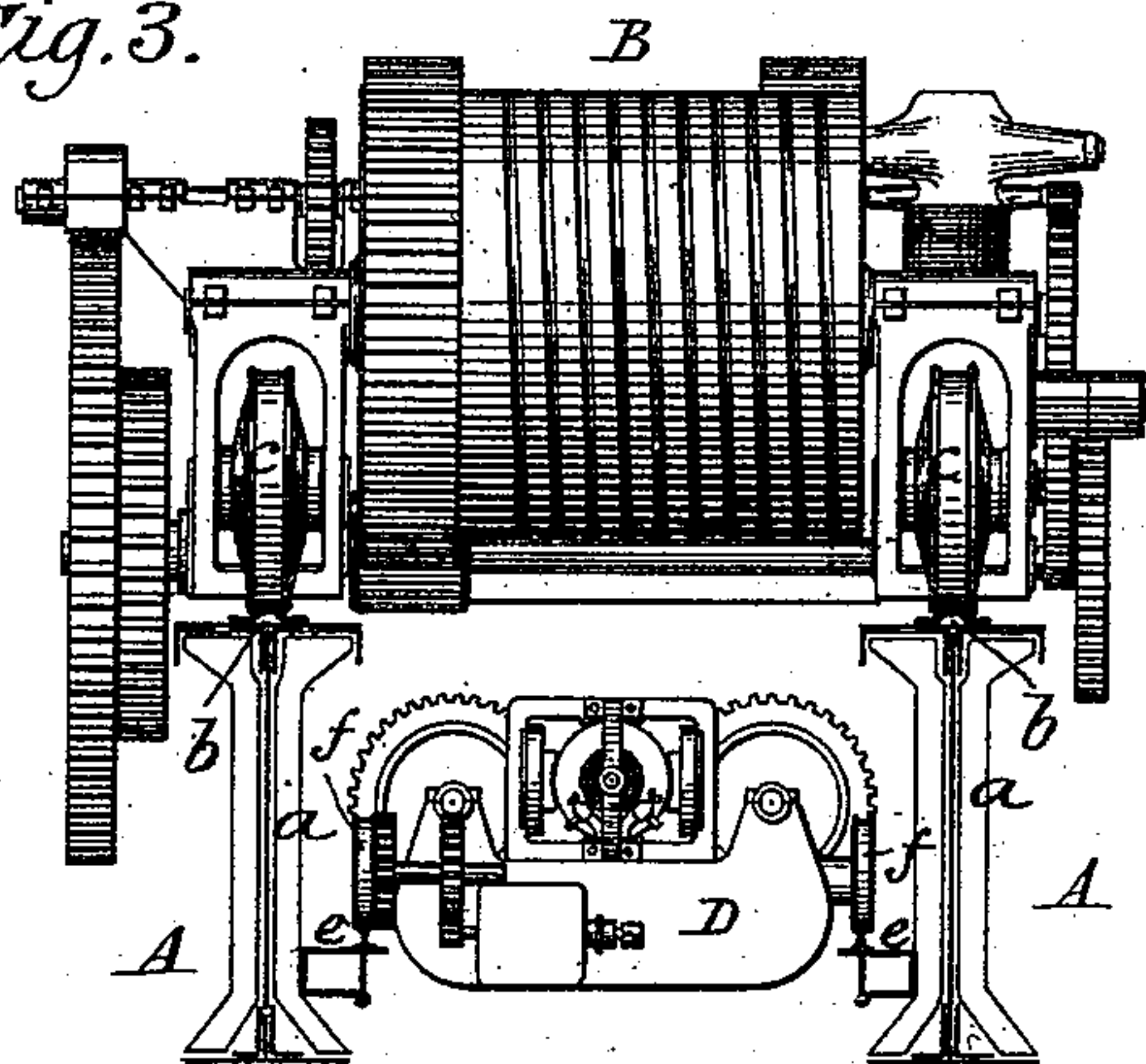


Fig. 4.

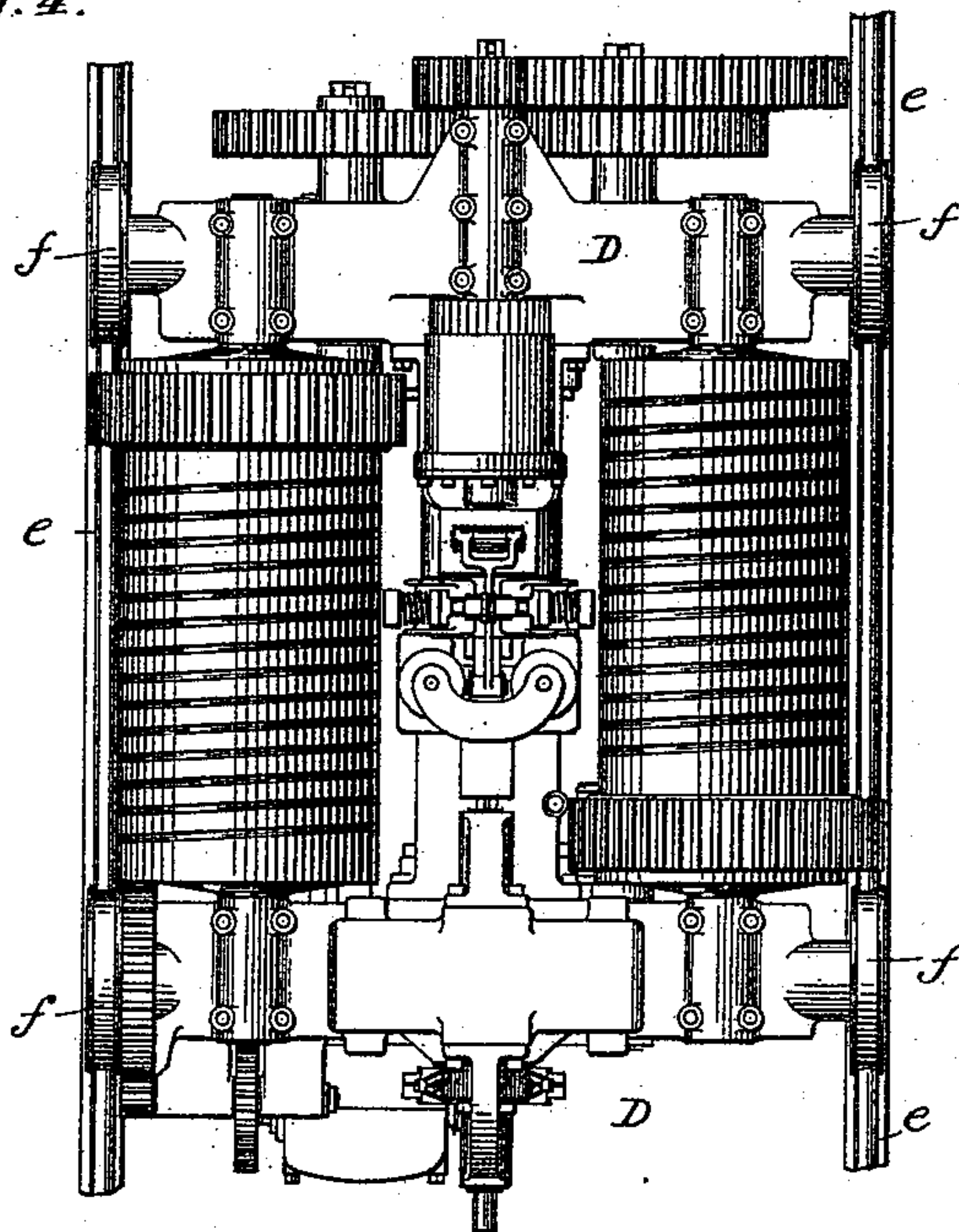
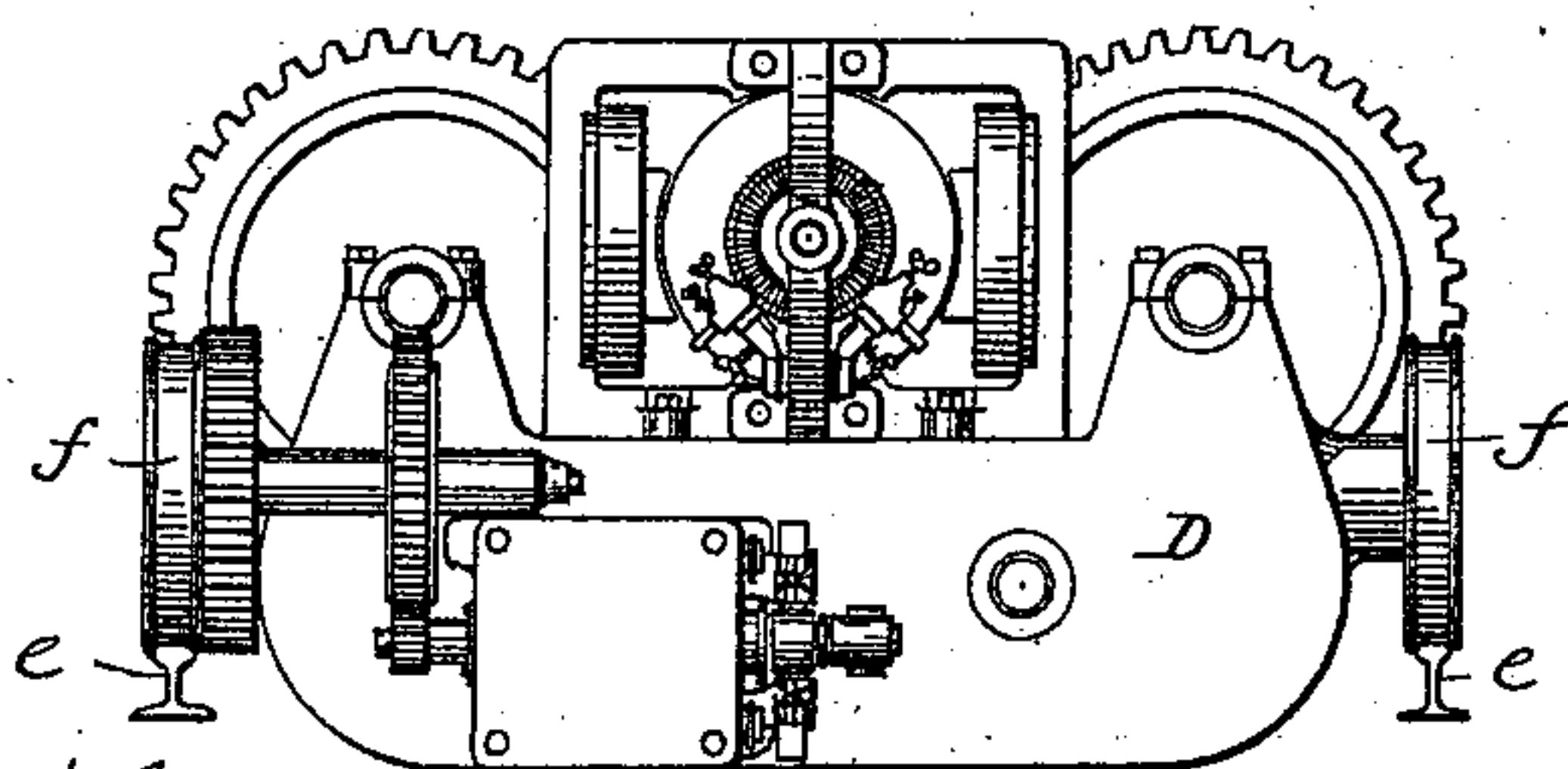


Fig. 5.



Witnesses,
Sidney P. Hollingsworth
Chas B. Underhill

Inventor:
Alton J. Shaw
by *Dodges Bros.*
Attys.

UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF MUSKEGON, MICHIGAN, ASSIGNOR TO THE SHAW ELECTRIC CRANE COMPANY, OF SAME PLACE.

CRANE.

SPECIFICATION forming part of Letters Patent No. 528,616, dated November 6, 1894.

Application filed June 7, 1894. Serial No. 513,846. (No model.)

To all whom it may concern:

Be it known that I, ALTON J. SHAW, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Cranes, of which the following is a specification.

My invention relates to cranes, and consists broadly in combining with the bridge thereof two independent trolleys, each equipped with hoisting mechanism, one of said trolleys being placed in a higher plane than the other, so that they may pass and repass without interference, except at such times as the hoisting chain of the upper trolley may be depending within the path of the lower trolley.

The invention further consists in a novel construction of the lower trolley, whereby I am enabled conveniently to place the same within a limited space between the main girders of the bridge.

The object of my invention is to enable the crane more efficiently to handle and manipulate the loads which it is called upon to carry, and to permit it to carry separate and independent loads or objects when required.

In the accompanying drawings,—Figure 1 is a top plan view; Fig. 2, a side elevation; Fig. 3, a vertical transverse section of a crane embodying my invention; Fig. 4, a top plan view; and Fig. 5, an end elevation of the lower trolley.

In the drawings I have represented the crane as equipped with electric motors, and such I prefer to use, but the invention is in no sense restricted thereto, but covers and includes broadly two independent trolleys carried by the same bridge, one in a higher plane than the other, the two adapted to move past each other in or upon the bridge. The description therefore will omit all details as to the construction and arrangement of the driving mechanism, as this may be varied at will and to any extent. So too, the particular manner of constructing and trussing the bridge is immaterial.

Referring again to the drawings, A indicates a crane bridge, comprising in its construction two longitudinal main girders *a a*, here represented as wrought iron or steel plate girders, built up in the usual fashion, with

broad upper and lower plates and ample angle bar stays or braces. Upon the top of each main girder *a a* is a rail *b* of any approved design, adapted and designed to receive and guide the truck wheels *c* of a main trolley B, which trolley is designed to traverse the length of the bridge and to run on the top thereof, where it may receive the full supporting strength of the bridge A. The ends of the girders *a a* may be connected by truck frames or bridge ends C of any usual or approved construction, and these may be furnished with truck wheels *d* to traverse the rails or tracks of the main runway, as is customary at the present time.

Bolted or otherwise made fast to the inner faces of the main girders *a a*, are rails *e* located near the lower chord of said girders, as shown in Fig. 3. These rails are designed to receive and guide truck wheels *f* of a second trolley D, which is designed to be of lighter construction than the main trolley B, and to travel wholly within the space between the main girders *a*, or at least at so low a level as readily to pass beneath the main trolley B.

The truck wheels of the trolley D being grooved or flanged, and seated upon the rails *e*, tend to prevent spreading of the girders *a a*, and thus the supplemental or lower trolley subserves in addition to its main purpose that of stiffening or tying together the girders of the bridge. This, however, is purely incidental and comparatively immaterial, since the construction is in all cases such as to insure the proper rigidity and stiffness under all working conditions.

If desired, there may be a plurality of trolleys on the upper track, or a plurality of trolleys on the lower track, or on both, as found expedient.

Inasmuch as the running block and chains of the main trolley when depending from the hoisting drum thereof, would preclude the passage of the lower trolley and restrict its travel to the space beyond or at one side of the chain, it will be found convenient in many cases to employ two of the lower trolleys in order that either may be used at will according to the location of the work to be handled thereby.

Where only one trolley is used on the lower

track, it possesses material advantages over a second trolley placed upon the upper track, because it is possible to bring its hoisting chain and block much closer to those of the main hoisting drum than can be done in the case of two trolleys on the main track.

In handling many objects it is important to have in addition to the means for lifting and carrying the main load, some supplemental means or device for tipping, turning, or manipulating the load, or for maintaining its horizontality or any given angle of inclination. In all such cases the supplemental trolley is of great importance, and it becomes especially efficient when capable of running under the main trolley and bringing its hoisting chain close to that of the main trolley. When the two lighter trolleys are provided for the lower track, this facility of work and manipulation is increased, and the efficiency of the crane as a whole is greatly enhanced.

As above stated, the invention is applicable to trolley cranes of all sorts, whether the bridge be movable or stationary, and whatever may be the power employed for propelling the machinery, whether electric, pneumatic, steam power, rope transmission, hydraulic, or other.

It is desirable to make the spread or separation of the girders *a a* as slight as practicable, with due regard to stiffness and strength of the bridge, and when these girders are spaced their ordinary distance apart, it is difficult to put the hoisting machinery of the lower trolley in such compact shape as will enable it to be used entirely within the bridge. I find, however, that this end may be attained by placing the hoisting drum with its length in the direction of travel of the trolley, or in other words, lengthwise of the bridge. This is especially convenient when two hoisting drums are used.

In Fig. 4 I have shown in top plan, and in Fig. 5 in end elevation, a trolley suited for use within the bridge structure.

I am aware that it is not new broadly, to arrange the hoisting drum or drums of a

crane trolley lengthwise of said trolley, or in the direction of its travel, this idea being very old and common, broadly considered; but by combining this idea with that of placing the trolley wholly within the bridge or between its main girders, I am enabled to attain a useful result otherwise difficult if not impossible of attainment. In all other particulars the trolley may be of any approved description.

Having thus described my invention, what I claim is—

1. In combination with a bridge or support, two trolleys, each provided with hoisting apparatus and carried by said bridge, one trolley being placed in a lower plane than the other, whereby it is adapted to pass beneath said other trolley, substantially as set forth.

2. In combination with a bridge or support, a main trolley mounted upon the upper side thereof, and a second trolley mounted within the bridge or support and adapted to pass beneath the upper trolley, said trolleys being each provided with hoisting apparatus.

3. In combination with a bridge or support and a trolley mounted and movable upon its upper surface, two independent trolleys carried by said bridge in a plane beneath the main trolley, whereby they are adapted to pass under the main trolley and to work on both sides of the main hoisting chain while the latter is in use, each of said trolleys being furnished with hoisting apparatus.

4. In combination with the girders *a a* of a bridge, provided with rails *e e*, a trolley mounted upon said rails and adapted to travel between the girders, the hoisting drum or drums in said trolley being arranged lengthwise of the trolley or in the direction of its travel, substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ALTON J. SHAW.

Witnesses:

F. W. BABCOCK,
T. C. AKIN.