

(No Model.)

4 Sheets—Sheet 1.

D. T. BOUND & C. A. BOONE.

TIME SIGNAL.

No. 279,696.

Patented June 19, 1883.

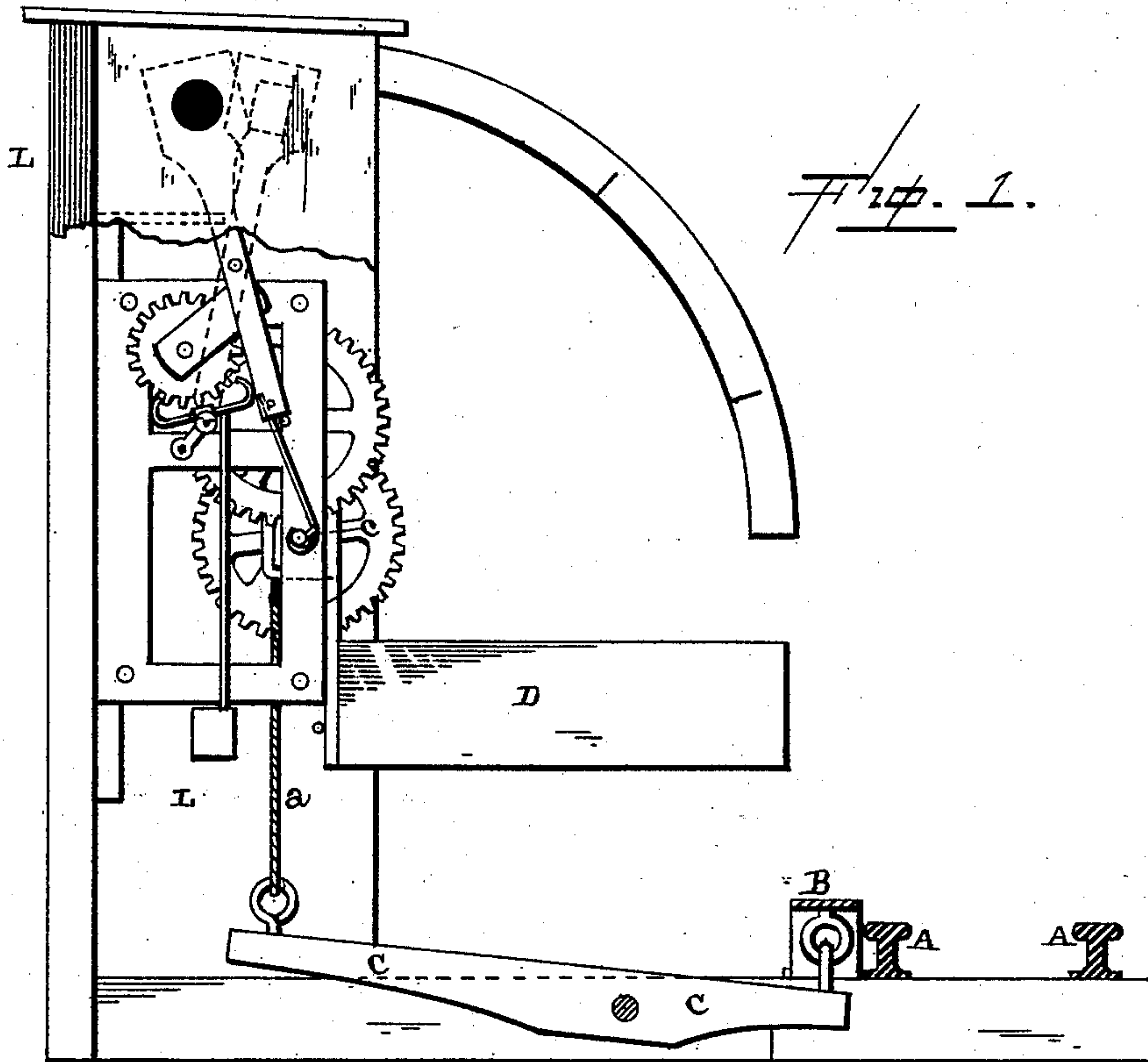
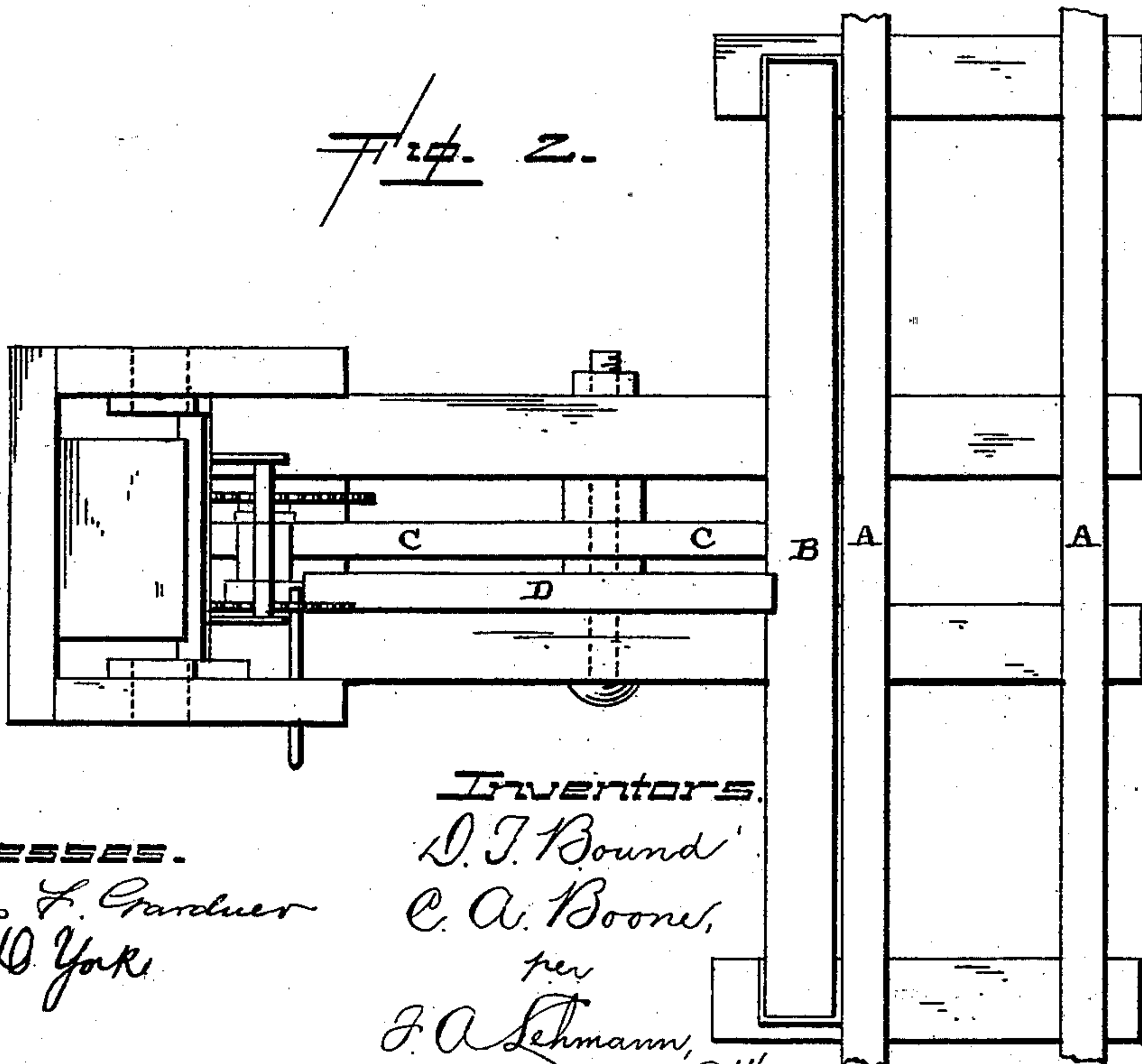


Fig. 2.



Witnesses.

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(No Model.)

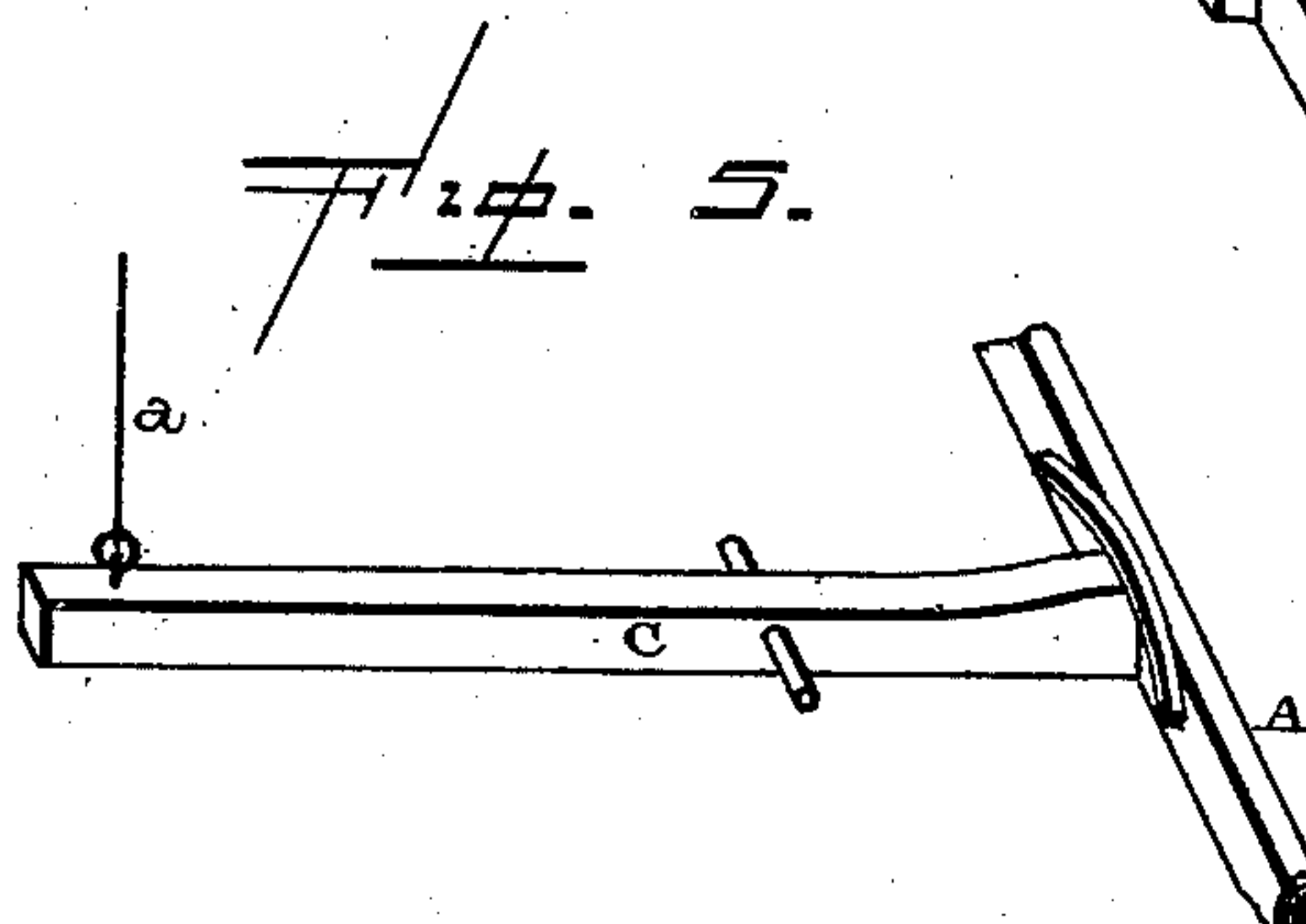
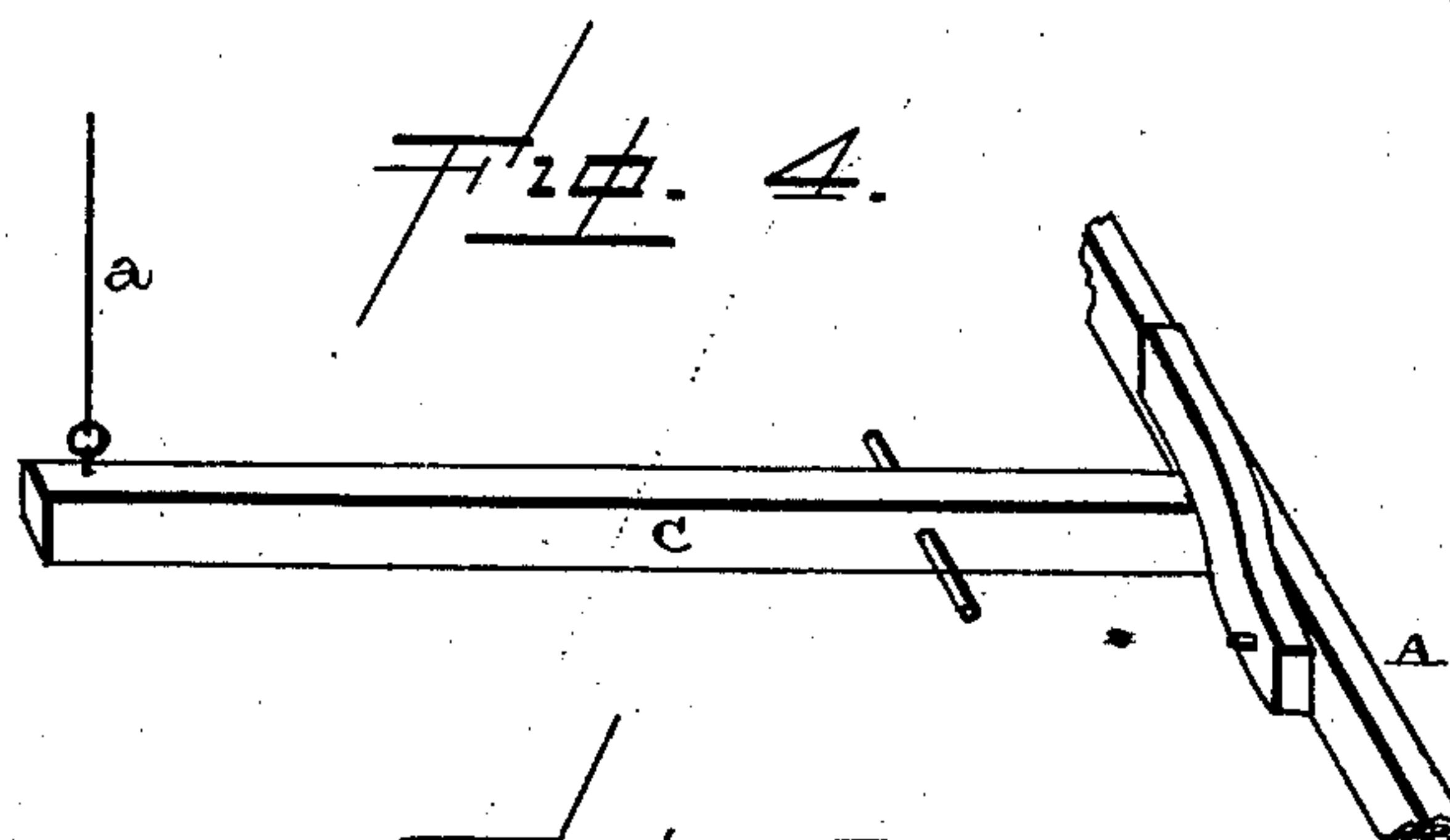
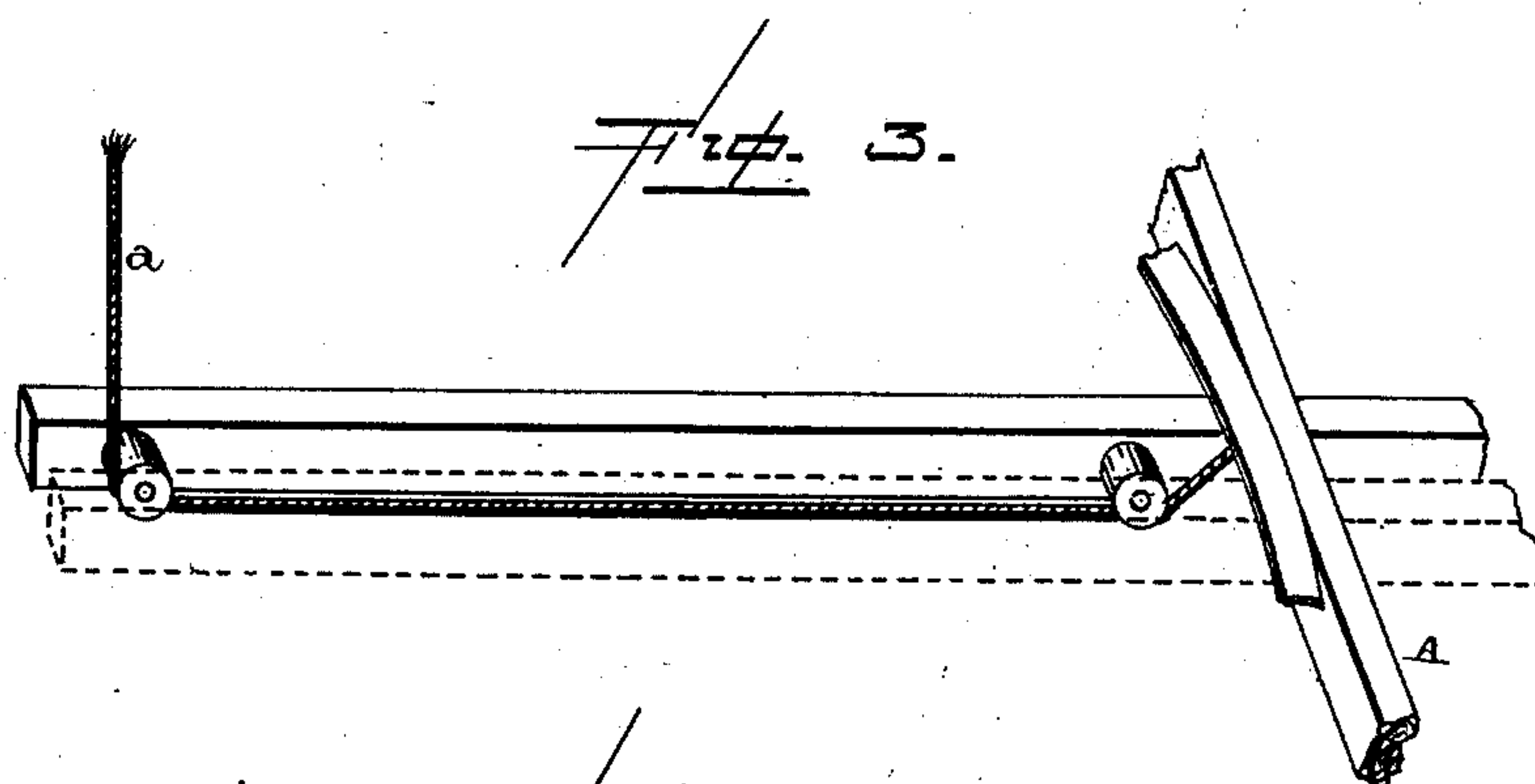
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(No Model.)

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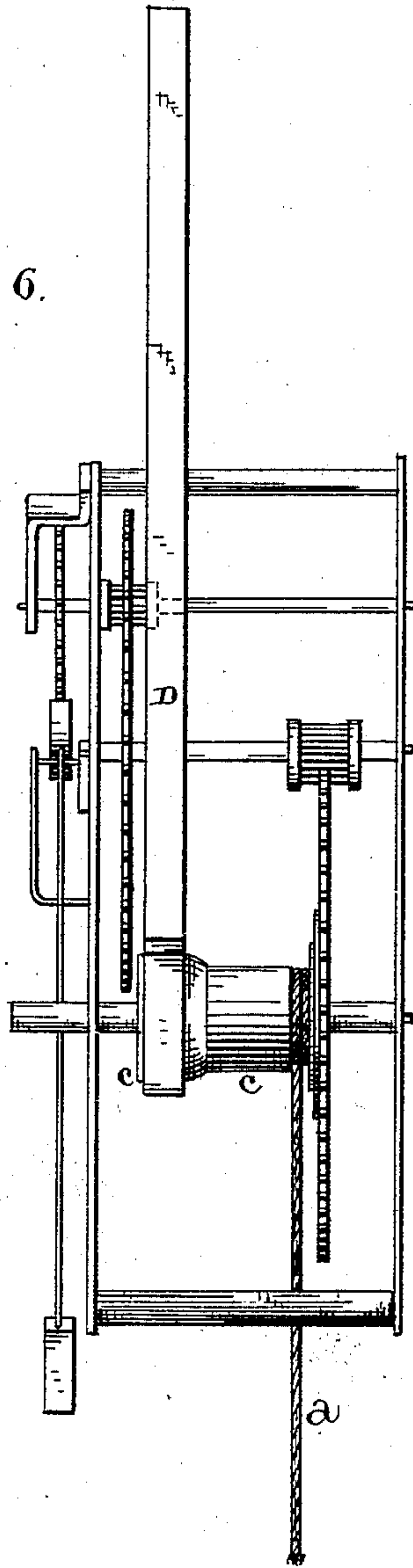
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Fig. 6.



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4 Sheets—Sheet 4.

D. T. BOUND & C. A. BOONE.

TIME SIGNAL.

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Fig. 7.

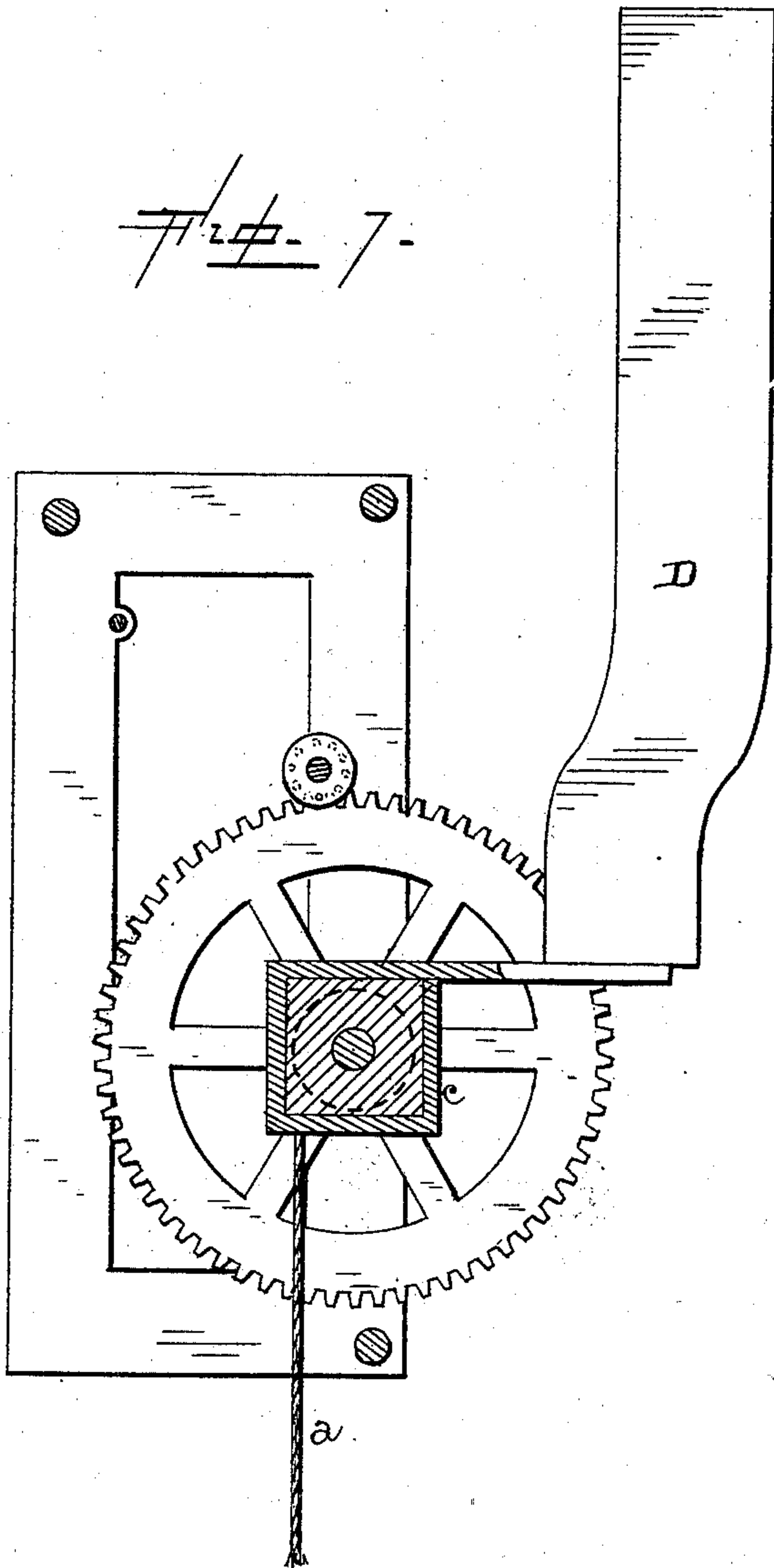
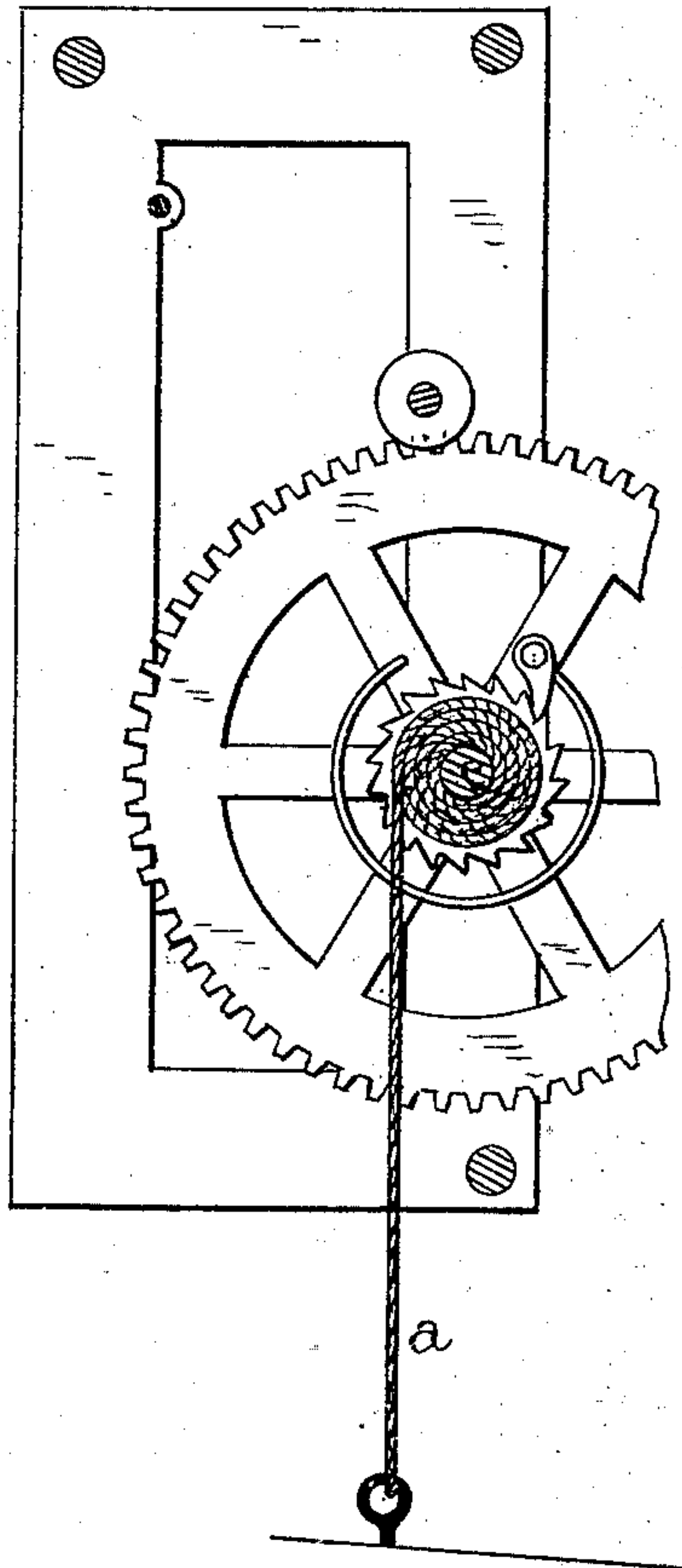


Fig. 8.



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UNITED STATES PATENT OFFICE.

DAVID T. BOUND AND CHARLES A. BOONE, OF SHICKSHINNY, PA.

TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 279,696, dated June 19, 1883.

Application filed February 9, 1883. (No model.)

To all whom it may concern:

Be it known that we, DAVID T. BOUND and CHARLES A. BOONE, of Shickshinny, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Railroad-Signals; and we 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to an improvement in railroad-signals; and it consists in the combination of a suitable lever, spring, or other device which is to be applied to the inner or outer side of a railroad-rail to be acted on by the wheels of the car or locomotive, suitable connecting devices, and a clock-work to which is attached an arm which is made to drop downward by the passage of a train, car, or locomotive, and which is then returned by the clock mechanism to a vertical position within a regulated time, as will be more fully described hereinafter.

The object of our invention is to cause each train to drop a signal-arm, which is slowly made to return to its position, and which, by the position it is in, will show trains coming along in the same direction and on the same track, within a certain regulated time, how long since the last train, car, or locomotive passed the signal in advance of them, and thus prevent trains running in the same direction and upon the same track running into one another from behind.

Figure 1 is a side elevation of our invention complete. Fig. 2 is a plan view of the same. Figs. 3, 4, 5 show different details of construction. Fig. 6 is a detail view of the clock mechanism. Figs. 7 and 8 are detail views.

A represents the railroad-track, and B a spring which may be placed either inside or outside of one of the rails, in a line therewith, and sufficiently near to be operated by the wheels of a car, train, or locomotive passing along the track. Fastened to the under side of the spring is a pivoted lever, C, which is connected at its inner and longer end, by means of a cord, wire, or chain, *a*, with a drum, *c*, upon the lower shaft of a suitable

train of wheels or clock-work. This train of wheels or clock-work serves no other purpose than to regulate the time in which the arm D shall rise upward. Were it not for this clock-work the arm D would be jerked back into place as soon as the spring B was released from the tread of the wheels. The signal-arm D is fastened to the drum *c*, and, when left free to move, drops downward to a horizontal position. This clock mechanism is provided with a short escapement, so that the clock-work will begin to operate each time that the spring is operated by the passage of a train. When the spring is forced downward the outer end of the lever C is depressed and its inner end is raised upward, which upward movement causes the wire, cord, or chain *a* to slacken on the pulley. This allows the signal-arm D to drop downward toward the track from its own weight. As soon as the spring is released from the wheels of the passing train the whole tension of the spring is exerted in drawing the outer end of the lever upward, and this causes a steady pull or pressure upon the drum of the clock-work, so as to start the clock-work in operation. The moment the clock-work begins to move, the signal-arm begins to rise upward along a graduated arm, upon which the number of minutes are marked. The time required for the arm to rise from the horizontal position into which it dropped at the passage of the train until it assumes a vertical position will be regulated at will; but as the signal rises up along the graduated arm it shows in minutes how long it has taken it to reach that point. Another train running upon the same track and in the same direction in passing the signal is shown at a glance that the train that preceded it is so many minutes ahead, provided the signal-arm has not reached a vertical position. If the signal-arm has reached a vertical position, the engineer sees at a glance that the track is clear ahead of him to such an extent that there is no likelihood of running into the rear of the train on ahead.

This mechanism will be placed inside of a suitable frame-work, L, inside of which will be placed a stand for a lamp, and the frame-work will be perforated upon opposite sides in a line with the track, so that the light from the lantern will show through. Pivoted inside of

the frame L is a suitable frame-work, which may be provided with colored glasses, and which glasses may be moved by clock-work, so as to gradually move over the holes. The engineers are then notified at night by the colored glasses as to whether there is any danger of a collision on ahead.

Instead of a rigid lever being connected to the spring, a cord, wire, or chain may be used, which will have one end connected directly to the under side of the spring in the same manner as the lever, and then passed along under two guiding-pulleys, and has its upper end attached to the drum. In case it should not be desired to use either the lever or the cord, a rod or lever may be pivoted upon one side of the rail and have one of its ends extend above the rail a sufficient distance to be acted upon by the wheels. This pivoted lever or rod will rest upon the top of a weighted lever, similar to the one shown in Figs. 1 and 2, and this weighted end of the lever in rising upward will act in the same manner as the spring. In

case it is not desired to use a spring or another operating-lever, a single lever will be used, and this lever will have its outer end weighted, so that when it is forced downward by the passage of a train this weighted end will operate the clock-work to cause the arm to slowly rise into position again.

Having thus described our invention, we claim—

The combination of the operating-lever C, connecting cord, chain, or wire *a*, drum *c*, around which the cord is wrapped, and to which the signal-arm is secured, and a clock mechanism for regulating the time within which the signal-arm shall be raised, substantially as shown.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID T. BOUND.

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Witnesses:

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WILLARD L. POST.