

No. 607,338.

Patented July 12, 1898.

L. S. BROWN.
PNEUMATIC RAILWAY SIGNAL.

(Application filed Jan. 19, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

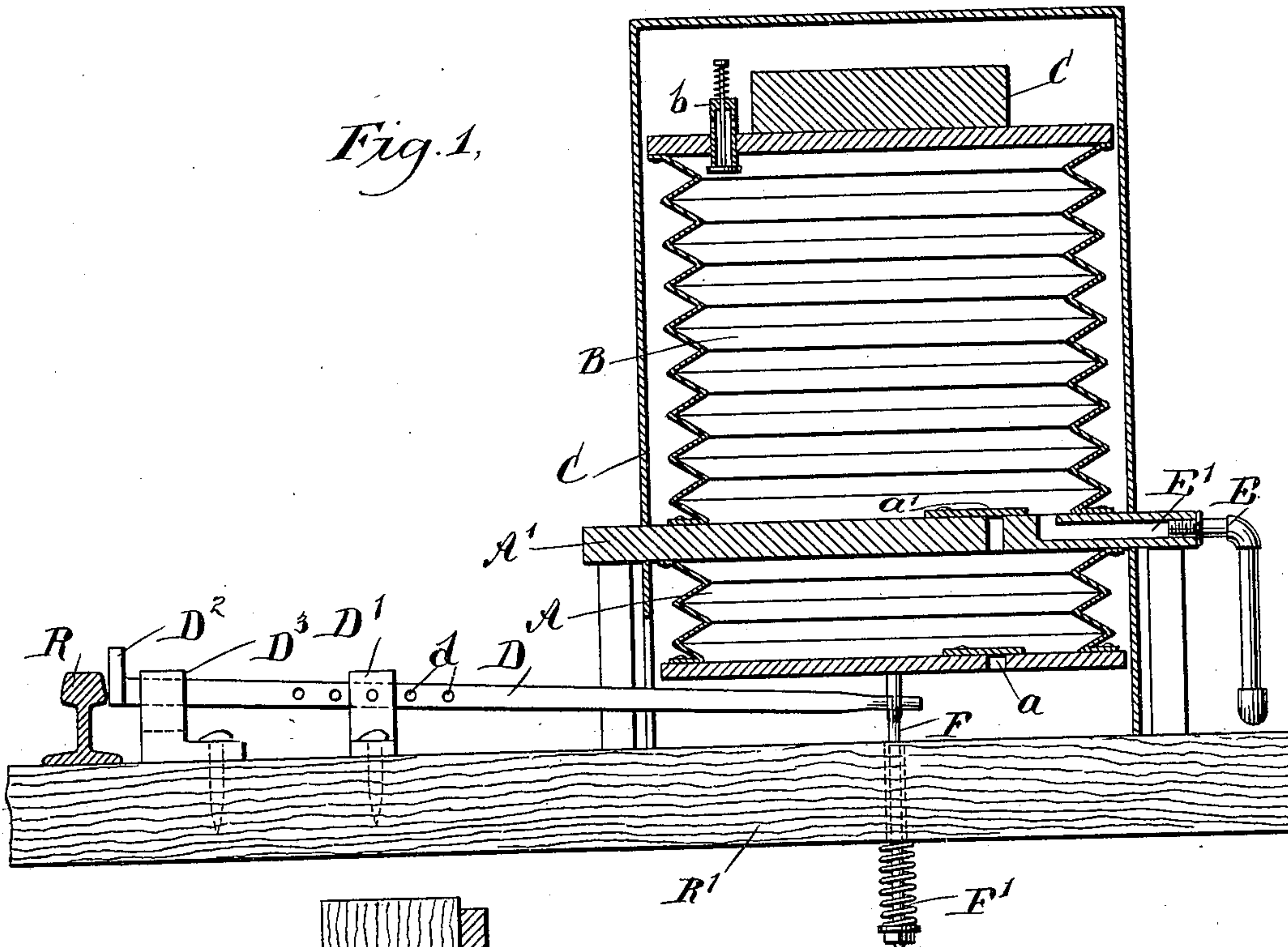
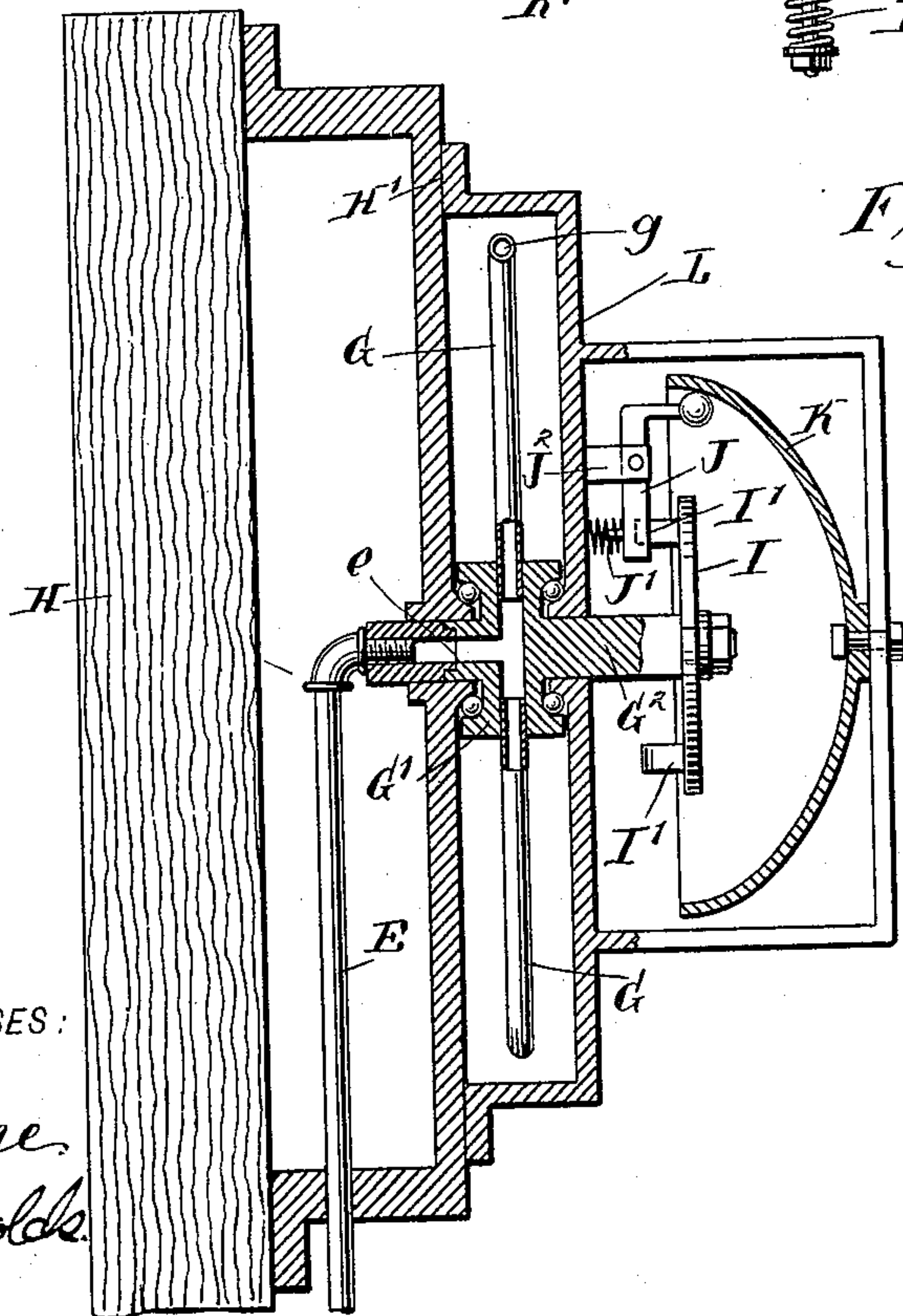


Fig. 2.



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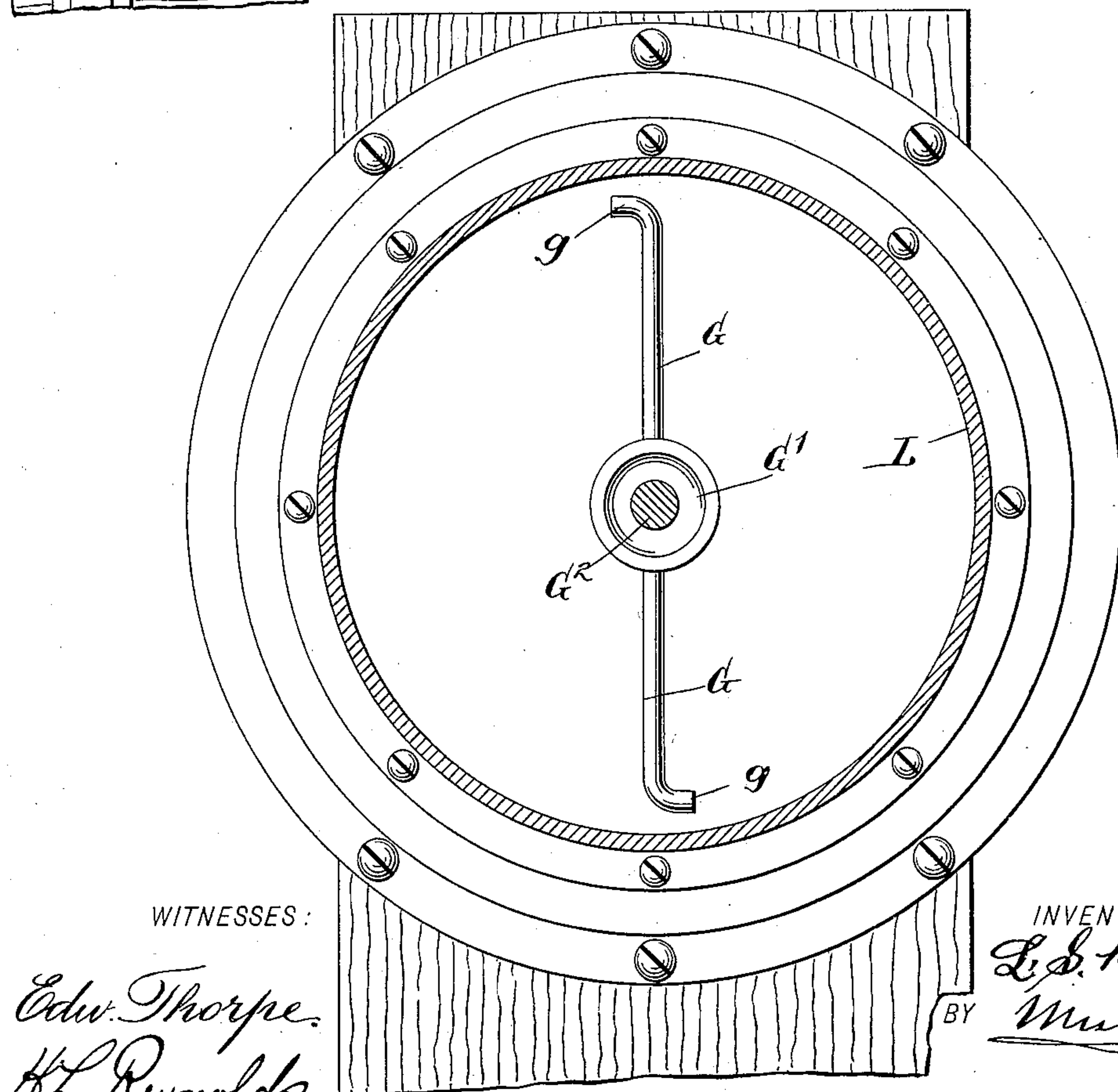
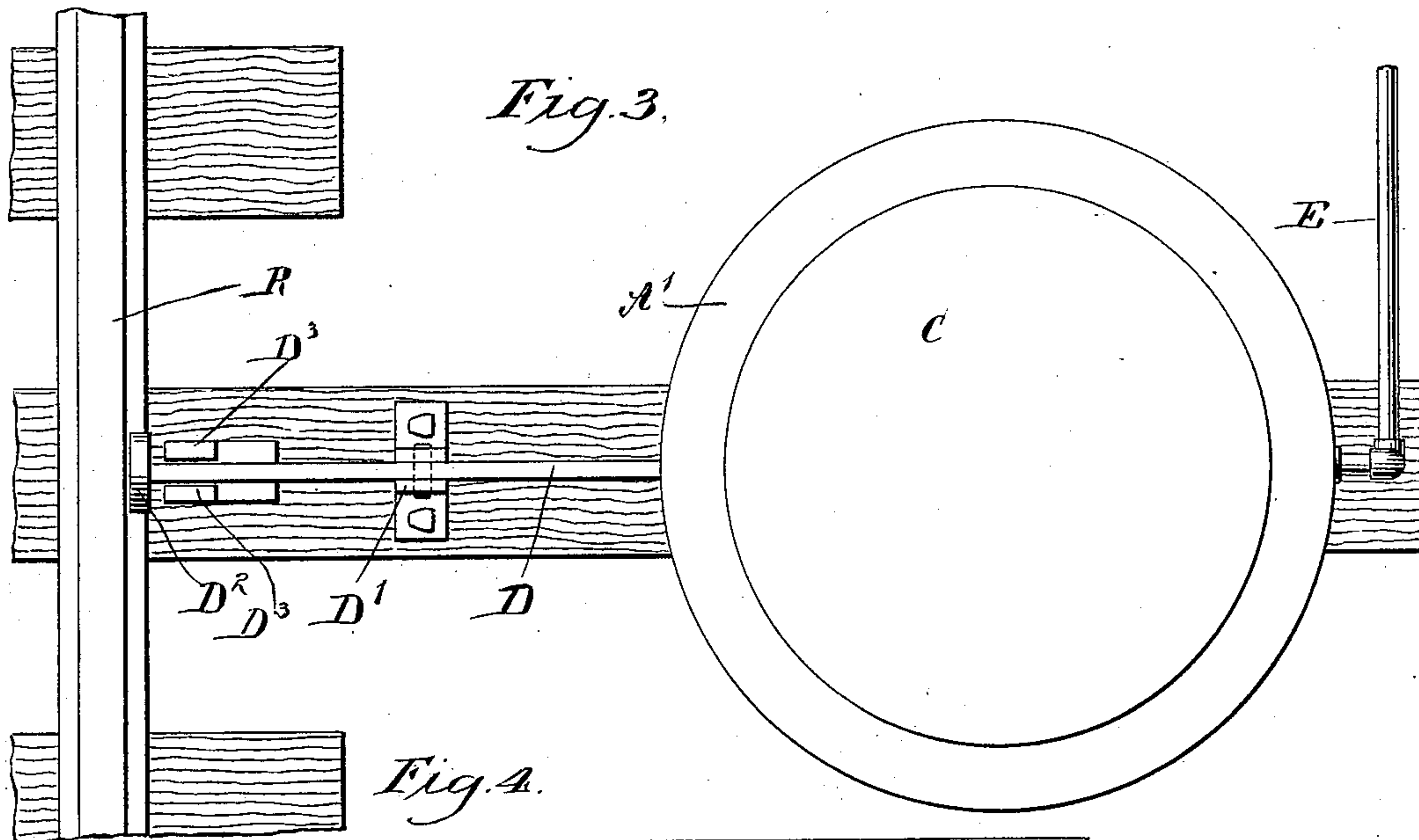
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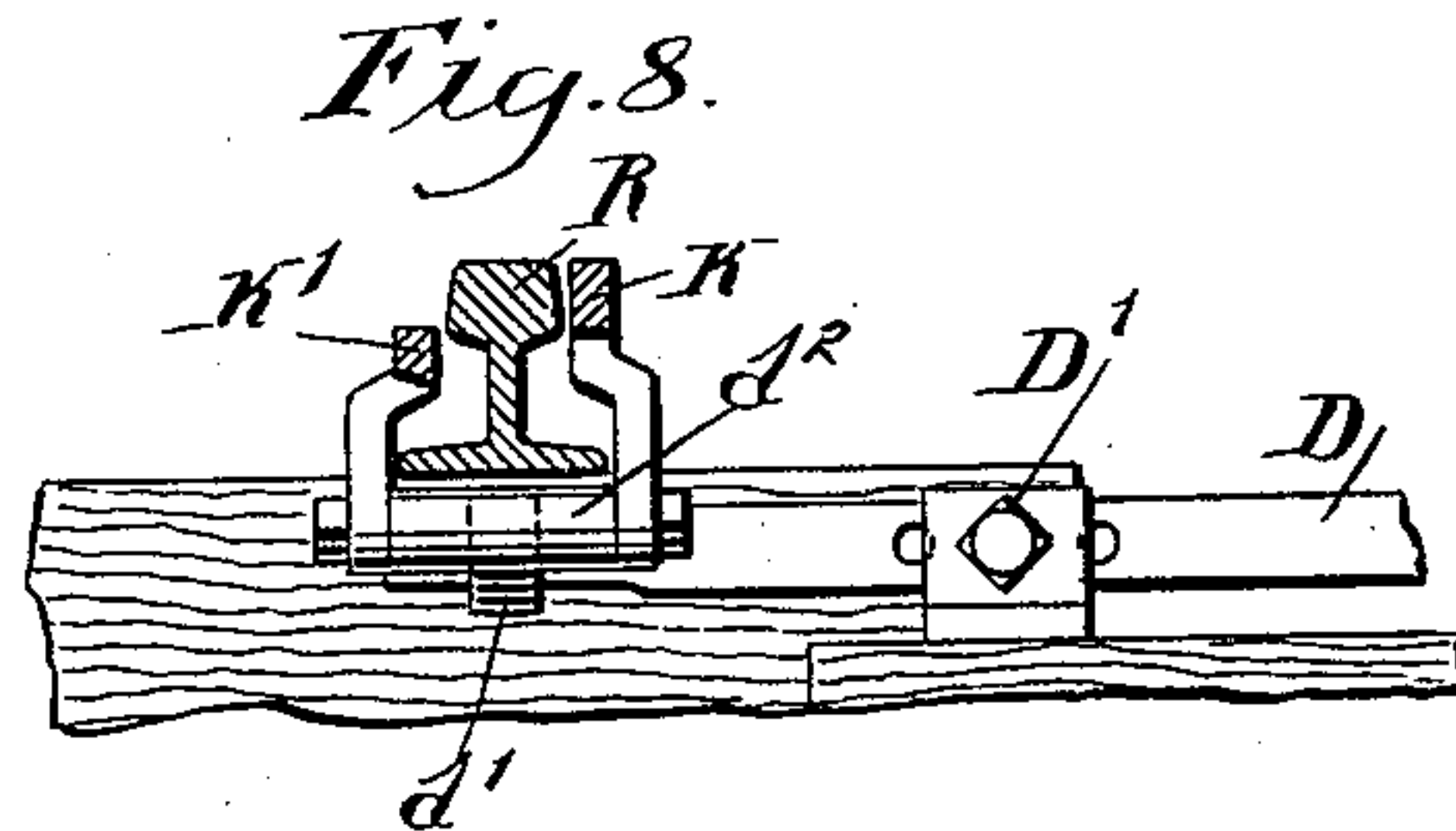
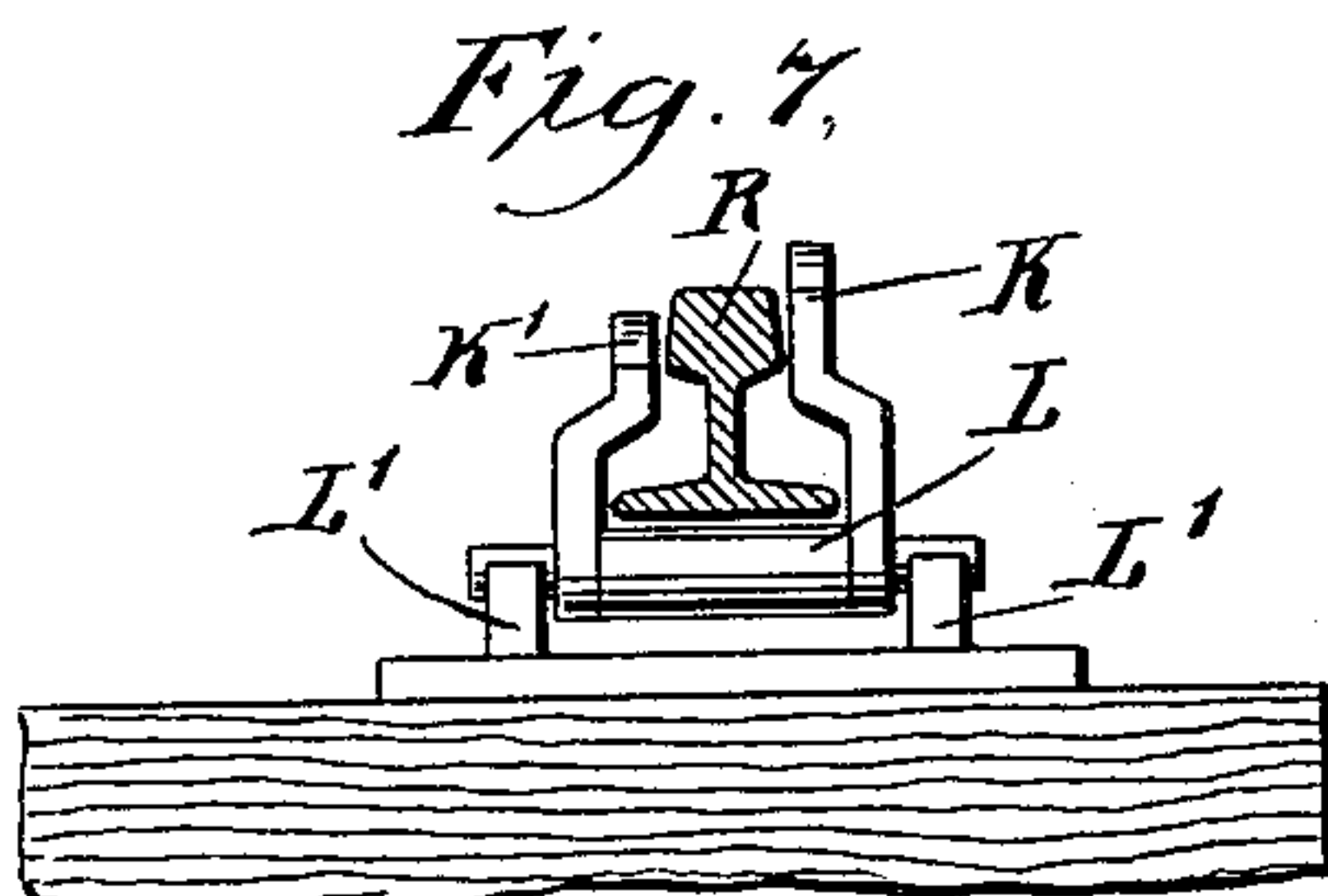
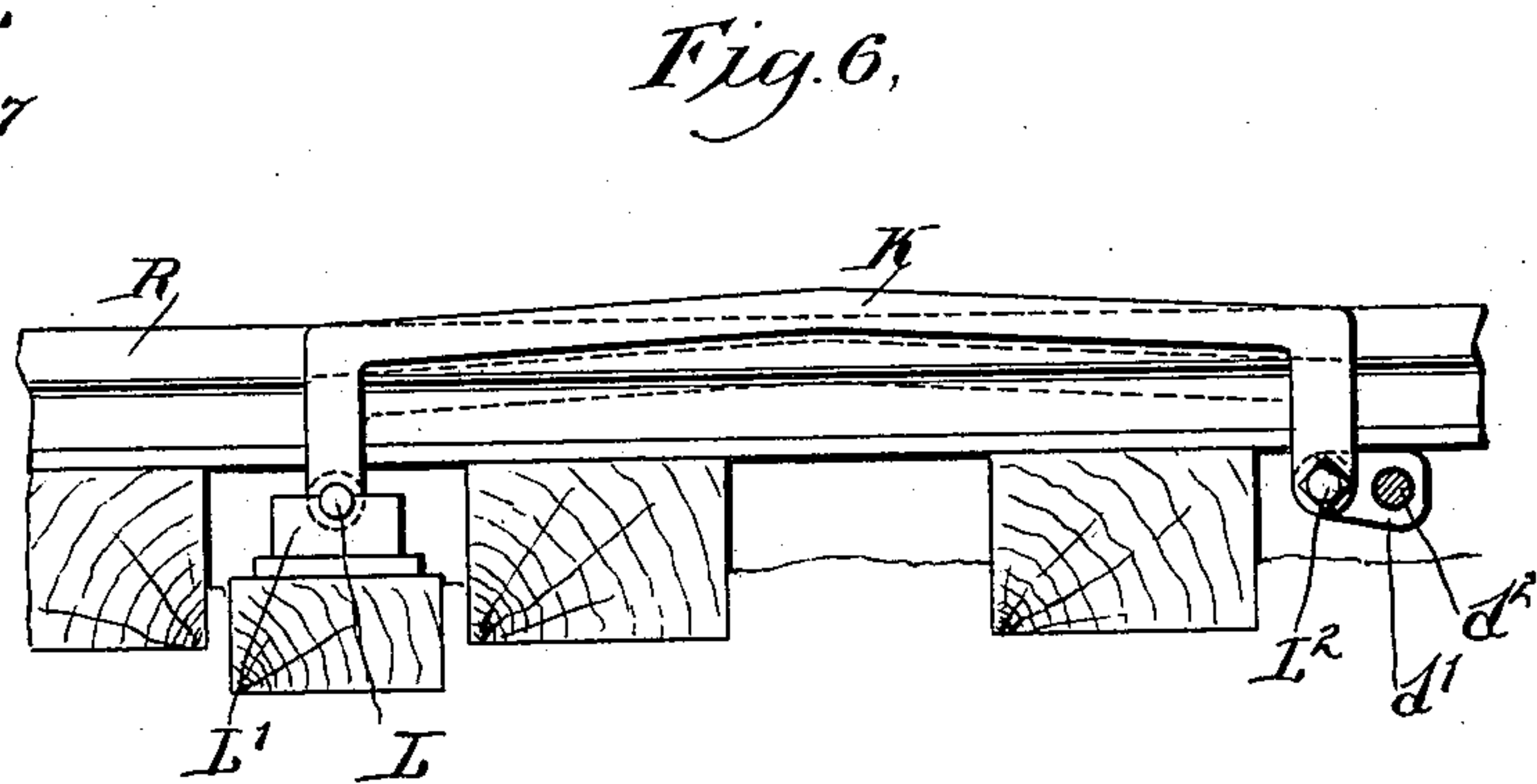
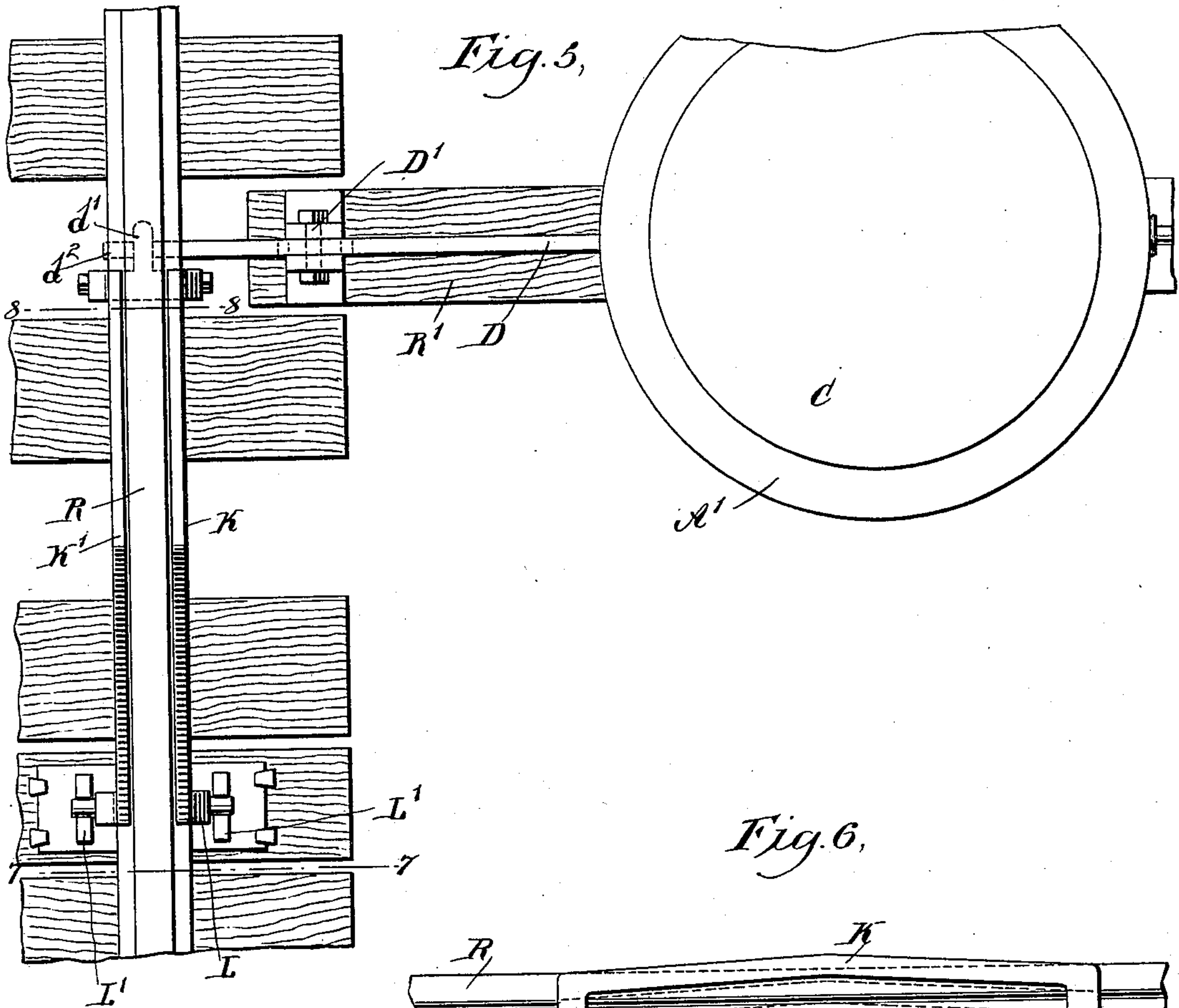
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

LEWIS SIFFORD BROWN, OF COLUMBUS, OHIO, ASSIGNOR TO HIMSELF AND
JACOB C. JENNINGS, OF SAME PLACE.

PNEUMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 607,338, dated July 12, 1898.

Application filed January 19, 1898. Serial No. 667,165. (No model.)

To all whom it may concern:

Be it known that I, LEWIS SIFFORD BROWN, of Columbus, in the county of Franklin and State of Ohio, have invented a new and Improved Pneumatic Railway-Signal, of which the following is a full, clear, and exact description.

My invention relates to an improvement in pneumatic railway signaling apparatus comprising an air-pumping apparatus operated by the passage of the car-wheels and a distant air-motor operated by the air thus pumped and sounding a bell.

The invention consists of certain features which will be hereinafter described and particularly claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross-sectional elevation through the air-pumping mechanism. Fig. 2 is a cross-sectional elevation through the motor and the bell. Fig. 3 is a plan view of the air-pumping mechanism. Fig. 4 is a section taken through the motor-casing at right angles to the view shown in Fig. 2. Fig. 5 is a plan view, and Fig. 6 a side elevation, of a modified construction of the means for operating the bellows; and Figs. 7 and 8 are cross-sectional elevations taken upon the lines 7-7 and 8-8 of Fig. 5.

The air-pumping mechanism consists of the device shown in Figs. 1 and 3, in which a lever D is shown as pivoted at one side of the outer rail R of the track upon a bracket D', secured to the upper surface of the outer end of the ordinary tie or of a special tie R', which extends to an increased distance outside the track, as shown in Figs. 1 and 5. The inner end D² of the lever D is formed for engagement by the tread of the wheels of the train and is located close to the outer face of the rail R. Upon each side of this end of the lever are placed guides D³, which will prevent the lateral displacement of the lever.

For convenience in adjusting the stroke of the lever it is provided with a series of pivot-holes d, by which the length of a stroke may be adjusted. This is accomplished by mov-

ing the bracket D', upon which the lever is pivoted, and changing the pivot-pin from one hole a in the lever to the other. The opposite end of the lever is connected to a rod or link F, which is attached to the under surface of a bellows A. Said rod or link is engaged by a spirally-coiled spring F', placed beneath the ordinary tie or the tie R', and is adapted to hold this end of the lever down and the opposite end up, where it will be engaged by the car-wheels.

The bellows A is provided with flexible sides of ordinary construction and with the usual inlet and exit valves a and a'. Above the partition A', forming the upper surface of the bellows, is an air-reservoir B; which is formed with flexible sides which fold in the manner of an accordion. Upon the upper end of this air-reservoir is placed a weight C, which when the bellows is not operated will by its descent soon drive all the air out of the reservoir. In the upper end of this reservoir is provided a relief-valve b, of any usual or convenient construction, having its upper end projecting where it will engage the upper surface of the casing C, surrounding the reservoir, and be opened thereby to relieve the reservoir of excess of pressure whenever it is inflated to such a point as to bring the valve-stem in contact with the casing.

The reservoir is provided with a passage E', connected with the air-supply pipe E, leading from the air-pumping mechanism to the bell or signaling mechanism. This bell is located at some distance from the air-pumping mechanism.

Upon a suitable post H or other convenient support is mounted a casing H', which receives the signal-pipe E and forms one side of a ball-bearing support for the revolving wheel, which forms the air-motor. This wheel consists of a hub G', the axis of which at one end is hollow and is joined to the pipe E by a suitable air-tight joint, as shown at e. To the hub E are connected radial arms G, which are formed as tubes having their outer ends g bent in a tangential direction. As the air escapes from the openings in the outer ends of these tubes it will drive the wheel around in the well-known manner.

To the outer end of the solid end G^2 of the axis is connected a disk I, which is provided with one or more projecting lugs or arms I' , adapted to engage one end of the pivoted 5 striker J, said striker being pivoted upon a bracket J^2 .

The motor is incased in a casing L, which is formed with a chamber containing the bell K, supported in such position that the striker 10 will be operated to strike the bell when the striker is engaged by the revolving lugs I' upon the disk I. As shown in the drawings, these lugs engage the striker in such a manner as to force it away from the bell, and the 15 striking of the bell is due to the recoil of the spring J' , attached at one end to the striker and at the other end to the casing L. It is obvious that this construction may be reversed, if desired, the striking being accomplished by positive and direct action of the 20 lugs I' and the recoil secured by the action of the spring. With this device a car or train approaching a crossing or other point where it is desired to locate a signal will automatically operate the signal, giving warning of the 25 approach of the train.

In Figs. 5 to 8, inclusive, a modified construction of the bellows-operating mechanism is shown. In this instance two bars K and 30 K' are mounted alongside the rail, one upon each side thereof. The bars K and K' are joined together at each end by bolts L and L^2 , which extend beneath the rail and connect with downwardly-extending arms upon the 35 bars K and K' . The bolts bind the two bars together, so that they are practically a single bar, the movement of one corresponding with the movement of the other. The bolt L, connecting one end of the bars, is pivotally 40 mounted upon a block L' , placed beneath the rail. The other ends of the bars are connected by the bolt L^2 , and said bolt is formed with a side extending arm d' , which is provided with a hole or slot adapted to receive 45 the end d^2 of the lever D. The lever D is mounted, as previously described, for operating the bellows A.

The outer bar K has its upper surface at a greater elevation than that of the inner bar 50 K' . Said outer bar K is adapted to be engaged and depressed by the tread of the car-wheels, while the inner bar K' is adapted to be engaged and depressed by the flanges of the wheels. This renders it necessary that the 55 inner bar should be at a lower elevation than the outer bar, the difference between the elevations corresponding with the depth of the flanges on the car-wheels. The use of the two bars in this manner makes more certain

the engagement of the bars by the passing 60 train than if one bar only were used. Where only one bar is used, it might be possible that the tread of the wheel would not be of sufficient width to engage the bar. When 65 the two bars are used, it is certain that one or the other will be engaged by the car-wheels.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A railway signaling apparatus, comprising an air compressing or pumping device actuated by the passage of the train, a reaction wheel connected to the pumping apparatus and revolved by the escape of the air, an arm revolving with said wheel and having projections thereon, a bell and a striker engaged 75 by the projections on said arm to cause it to strike the bell, substantially as described.

2. A railway signaling apparatus, comprising an air compressing or pumping device actuated by the passage of the train, a reaction wheel connected to the pumping apparatus and revolved by the escape of the air, a disk revolving with said wheel and having side projecting lugs or arms, a bell surrounding 85 said disk, and a spring-controlled striker having a part thereof in the path of said lugs and engaged thereby to strike the bell, substantially as described.

3. A railway signaling apparatus, comprising an air compressing or pumping device actuated by the passage of the train, an air-supply pipe leading therefrom, a reaction wheel composed of hollow arms having tangential openings at their outer ends and having a hollow axis connected with the air-supply pipe, a disk revolving with said wheel and having side projecting lugs or arms, a bell surrounding said disk, and a spring-controlled 100 striker having a part thereof in the path of said lugs and engaged thereby to strike the bell, substantially as described.

4. In railway signaling apparatus, a pump-operating mechanism, comprising two connected bars lying one on each side of the 105 track-rail and pivoted at one end, the bar upon the inner side of the rail being at a lower elevation than the other bar, and adapted to be engaged and depressed by the flanges of the car-wheels, and the other bar being 110 adapted to be depressed by the treads of said wheels, and an operating-lever connected to the swinging ends of said bars, substantially as described.

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Witnesses:

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