

(No Model.)

M. WUERPEL.
RAILWAY SIGNAL.

No. 330,859.

Patented Nov. 17, 1885.

Fig. 3.

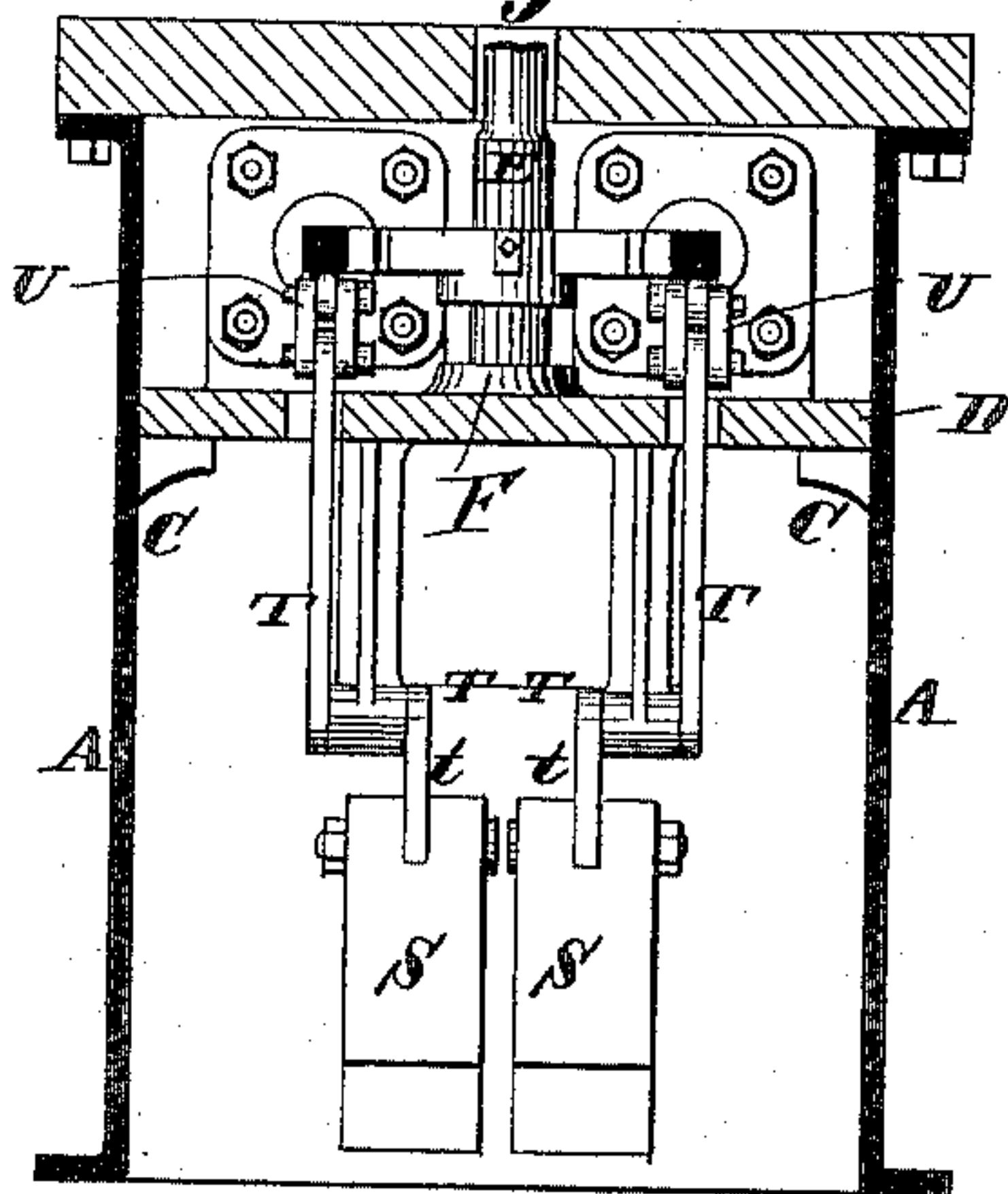


Fig. 4.

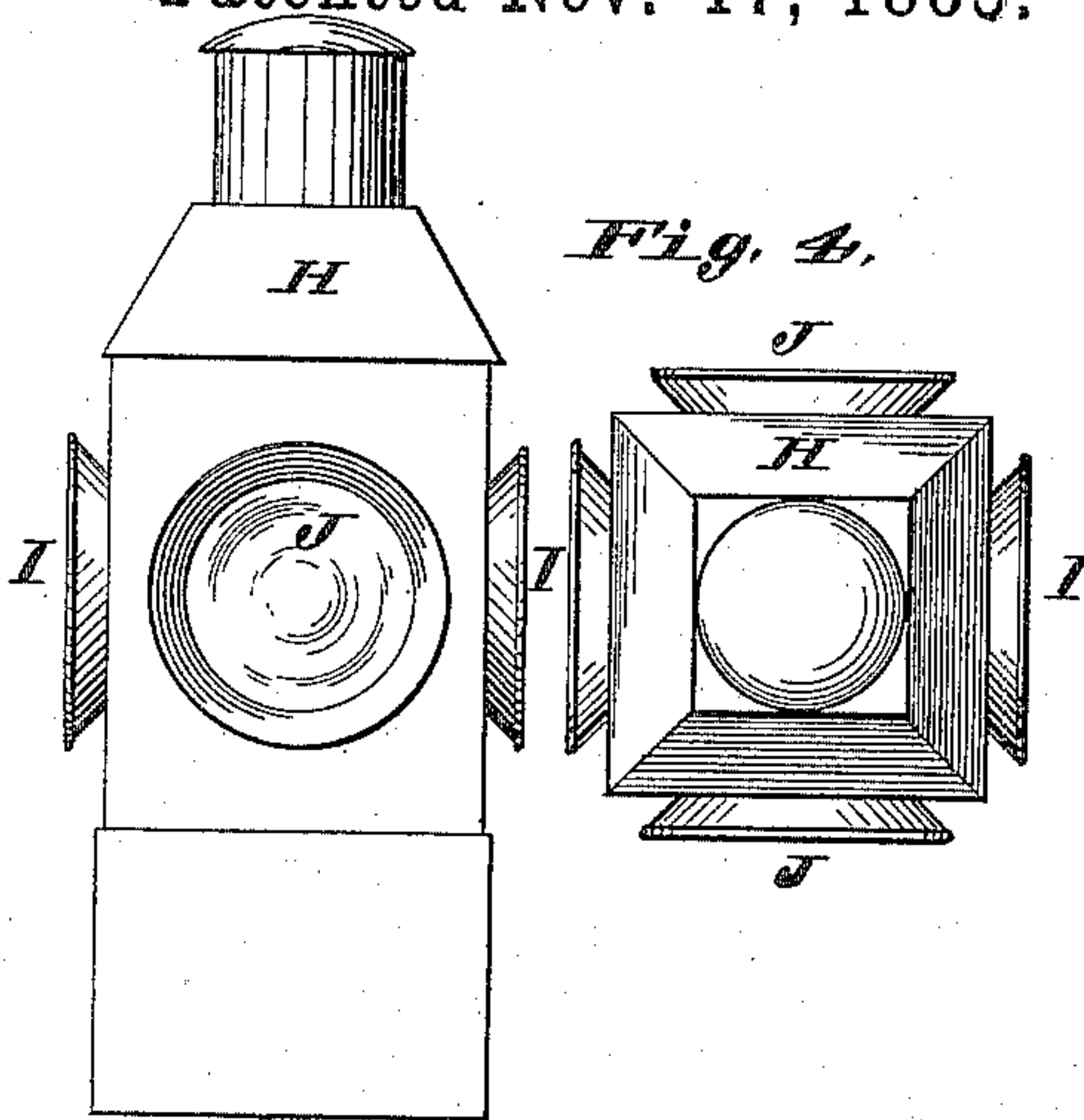


Fig. 1.

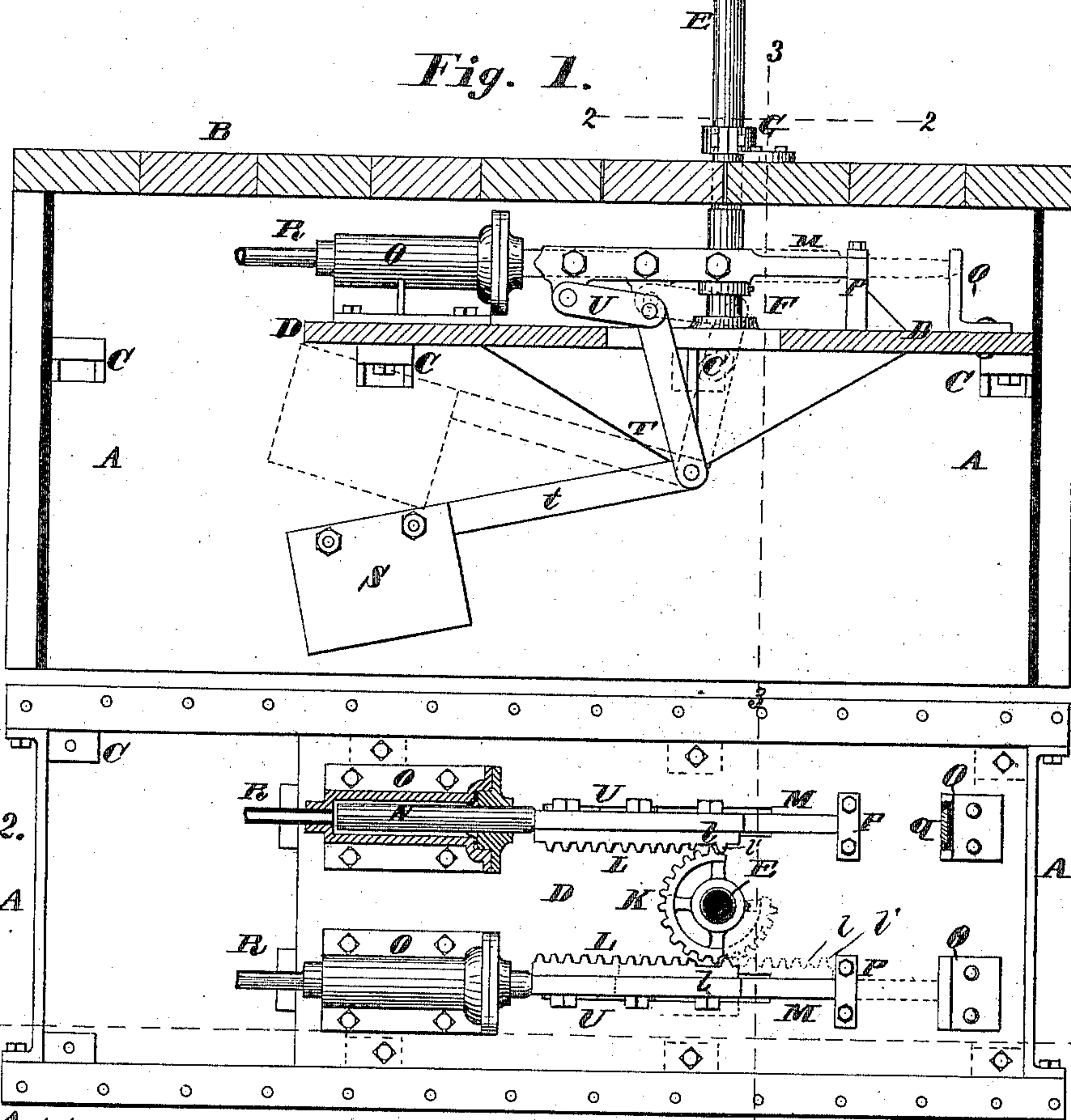
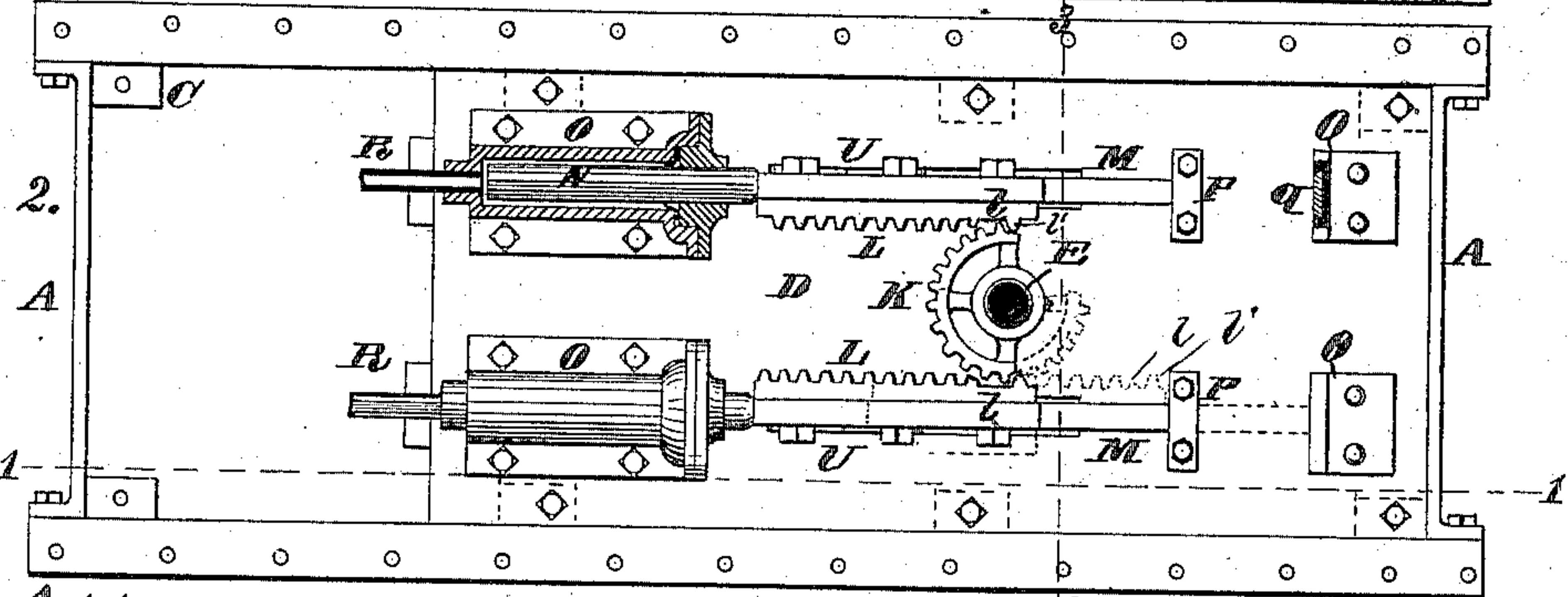


Fig. 2.



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UNITED STATES PATENT OFFICE.

MORRIS WUERPEL, OF ST. LOUIS, MISSOURI.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 330,859, dated November 17, 1885.

Application filed December 13, 1884. Serial No. 150,253. (No model.)

To all whom it may concern:

Be it known that I, MORRIS WUERPEL, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Railway-Signals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a longitudinal section at 1 1, Fig. 2. Fig. 2 is in the main a top view of the apparatus with the top of the case removed and the signal-staff cut off at 2 2, Fig. 1, one of the rams being in horizontal axial section, and one of the plunger-stops being also in horizontal section. Fig. 3 is a transverse section at 3 3, Figs. 1 and 2. Fig. 4 is a top view of lantern.

A is the case or box giving bearing to the parts of the signal and containing the operating mechanism.

B is the cover of the case or box, which I prefer, in general, to make of wood, but do not confine myself to any particular material.

C are lugs projecting from the inner sides of the case.

D is a table or shelf extending from side to side of the case and bolted to the lugs. These lugs are so arranged that the table can be fastened in a reverse position, or, in other words, turned end for end in the case where circumstances may require. The lower end of the signal-staff E is stepped at F on the table D, and has also bearing in a box, G, fixed to the top B. The lantern H has four bull's-eyes, two of which—I I, for example—may indicate "danger," and the other two—J J—may indicate, respectively, different positions of the switch. Fast upon the signal-staff is a cog wheel or segment, K, which is engaged by two cog-racks, L L, which are upon two plunger-rods, M M, whose plungers N work in ram-cylinders O. Each cog-rack L has a short tooth or teeth, l, so that the racks, when in their normal position, (see Fig. 2,) are out of engagement with the cog-segment, so that either rack may move forward and operate the signal without affecting the other rack.

By the use of two racks, L, engaging the pinion K on opposite sides of the staff E, the mechanism required to present either one of the side signals, J, to the approaching train is

very much simplified. For example, if but one of such racks were employed it would be necessary to turn the staff forty-five degrees in order to present one of the signals J, while it would be necessary to turn it one hundred and thirty-five degrees in the same direction in order to present the other. This would of course require some stop mechanism for stopping the rotation of the staff when the desired signal had been brought to the front, and in a device actuated from a distance through the medium of fluid contained in pipes this stop mechanism would doubtless have to be of a somewhat complicated construction. The use of two rack-bars, substantially as described, will therefore enable the production of a device the mechanical construction of which is very simple, but at the same time absolutely certain in its operation.

The plunger or rack rods work in guide-boxes P. The outward movement of the rods is arrested by stop-posts Q, having a pad, q, of soft metal or other suitable material to receive the impingement of the end of the rod.

R is a pipe, through which air, steam, water, or other medium enters the ram-cylinder to cause the advance of the plunger and cog-rack. On the retreat of the plunger the air or other medium escapes from the cylinder through the pipe R. I show no device for causing these movements of the rams, because these devices constitute no part of the invention, and such devices are well known. For example, the pipe connecting the ram with the source of pressure may be provided with an ordinary three-way cock, which, when turned one way, will place said ram in communication with the fluid under pressure, and when turned the other way will be placed in communication with the external atmosphere. As soon as the plunger is relieved from pressure in the cylinder, it is forced backward by a weight, S. This weight is upon the arm t of a bell-crank lever, T, whose other arm is connected by a link, U, with the rack or plunger rod M. The weight being connected with the staff E through the medium of these parts of the device, it will be seen that the signal is always returned thereby to "danger" when the plunger is relieved from pressure in the cylinder. This position of the parts is shown in all the

figures of the drawings, while the advanced position of one of the plungers, and consequent elevation of its weight, are shown by broken lines in Figs. 1 and 2. It will be observed
5 that after the staff G has been returned to the position shown in Fig. 2 it will be held against rotating at random in either direction by the tooth *l'* at the end of the rack L, while the mutilation at *l* permits it to be rotated freely by
10 either of the two rack-bars.

I claim as my invention—

1. The combination, with a wheel or segment upon a railway-signal staff, of two cog-racks engaging said wheel or segment, for the
15 purpose set forth, and having one or more teeth removed partially or wholly at *l*, for the purpose set forth.

2. The signal-operating rack-rod M, wheel or segment K, and stop Q, substantially as and
20 for the purpose set forth.

3. In a railway-signal, the combination, with the signal-staff having a cog wheel or segment secured thereto and a weight for returning said signal to its normal position, of a pair of re-
25 ciprocating rack-bars located on the respective sides of said staff and adapted to be engaged with said cog-wheel at the will of the operator, substantially as and for the purposes set forth.

4. The combination, with the rotary staff of

a railway-signal having a cog wheel or seg- 30
ment secured thereto, as explained, of a pair of reciprocating rack-bars located on the respective sides of said staff, and each provided with a mutilated portion, whereby the rota-
tion of said cog wheel or segment by one of 35
said racks is prevented from moving the other, as set forth.

5. The combination, with the staff G, having the cog wheel or segment K secured thereto, as described, of the rack-bars L, located on 40
the respective sides of said staff, each having a mutilated portion, *l*, and a tooth, *l'*, beyond said mutilated portion, substantially as and for the purposes set forth.

6. The combination, with the signal-staff G, 45
having the cog wheel or segment K secured thereto, of the racks L, located on the respective sides of said staff and having the mutilations *l* and the teeth *l'*, the weight S, for holding said racks normally retracted, and means 50
under the control of the operator for forcing either of said racks forward for changing the signal, as explained.

MORRIS WUERPEL.

Witnesses:

SAML. KNIGHT,
GEO. H. KNIGHT.