

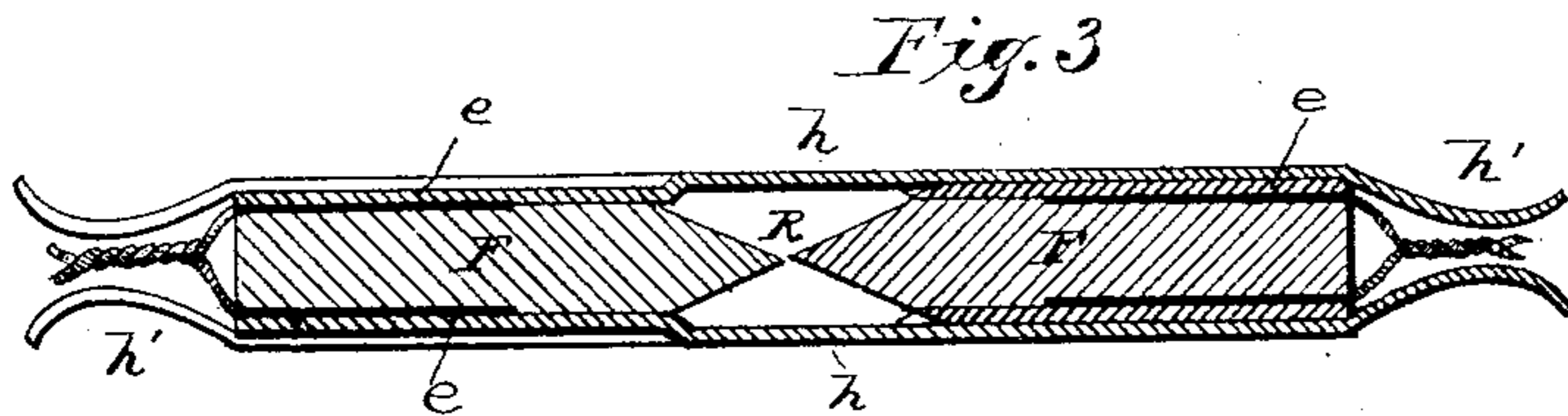
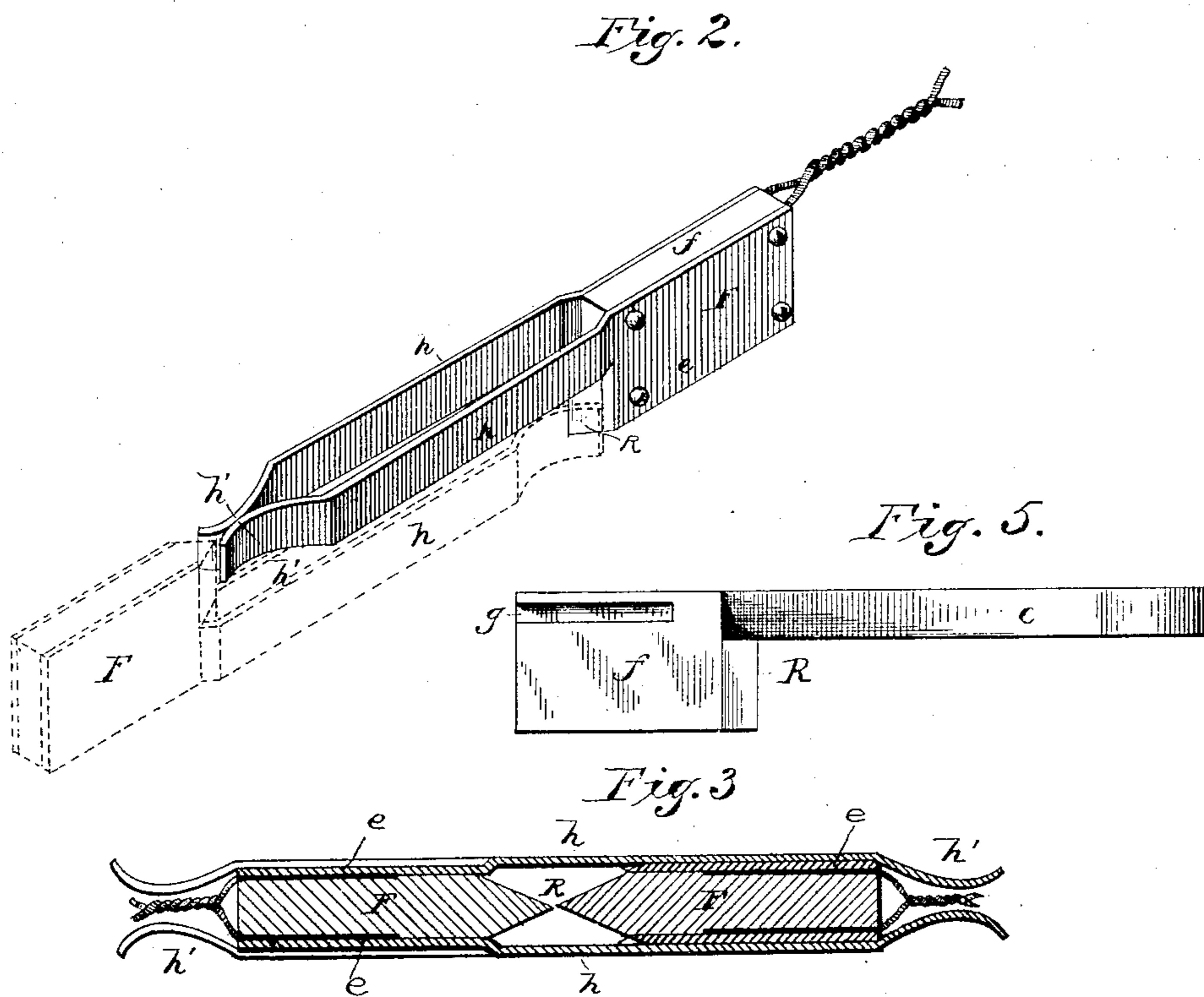
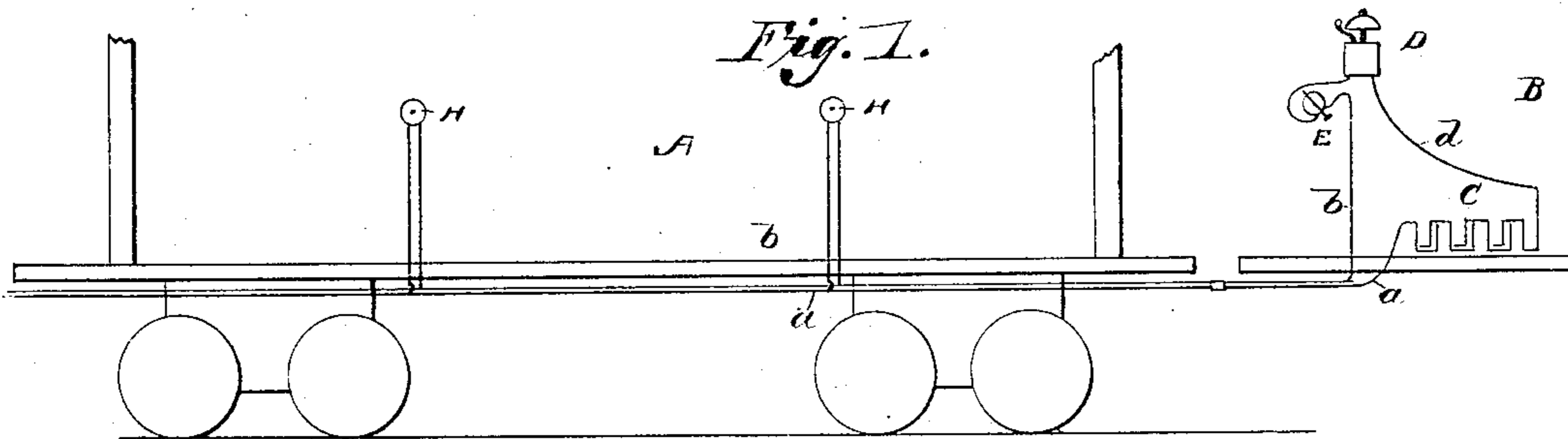
(No Model.)

O. S. HERTZOG.

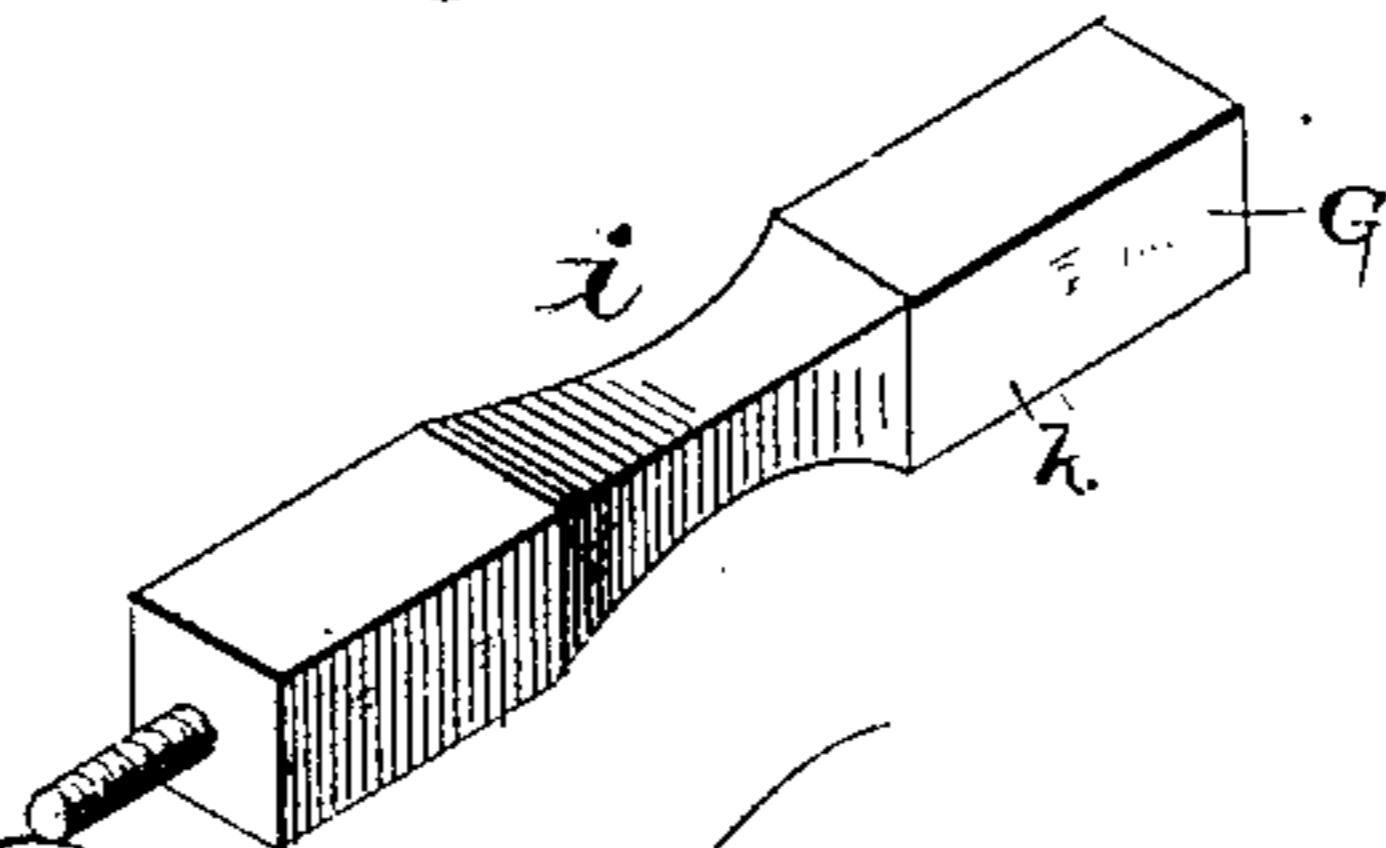
ELECTRIC RAILWAY SIGNAL.

No. 318,186.

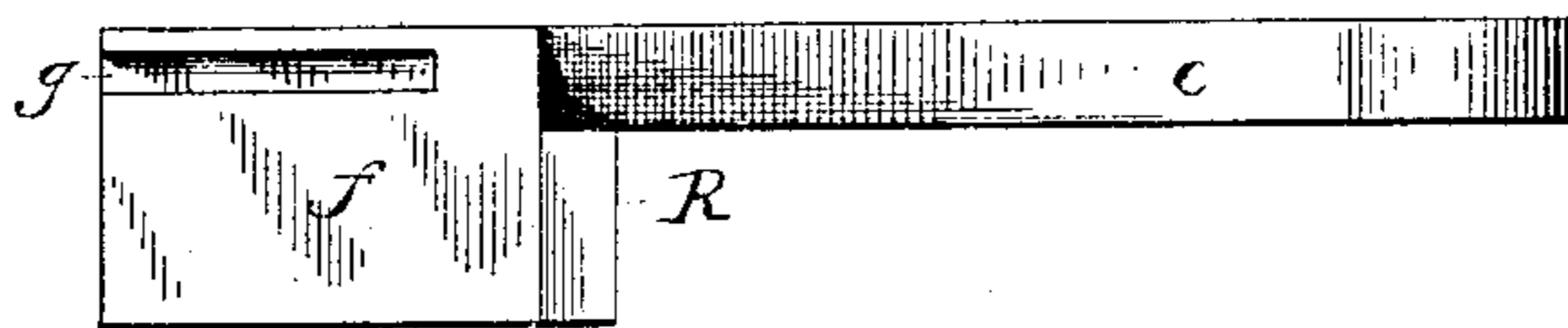
Patented May 19, 1885.



*Fig. 4.*



*Fig. 5.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

OSCAR S. HERTZOG, OF BLUE ROCK, PENNSYLVANIA.

## ELECTRIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 318,186, dated May 19, 1885.

Application filed November 8, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR S. HERTZOG, a citizen of the United States, residing at Blue Rock, in the county of Chester and State of Pennsylvania, have invented a new and useful Improvement in Electrical Signaling Apparatus for Railway-Trains, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to electrical signaling apparatus for railway-trains; and it has for its object to provide improved means for this purpose, whereby the proper signal may be given to the engineer on duty, and thus dis-  
15 pense with the use of the ordinary bell-and-cord arrangement now in common use.

A further object of the invention is to provide a superior and effective coupling for connecting the wires of the several cars of the  
20 train, so as to complete the electric circuit, said coupling being so arranged and adapted that should the cars separate the circuit will be closed to ring the bell, and thus signal the engineer not to proceed until the proper and  
25 necessary connections have been made.

With these ends in view the invention consists in certain details of construction and combination of parts, as hereinafter set forth, and particularly pointed out in the claims.

30 In the accompanying drawings, Figure 1 is a side elevation, partly in outline, of a car and a portion of the engineer's cab, showing the arrangement of the apparatus thereon. Fig. 2 is a detail view of the wire coupling. Fig. 3 is a longitudinal section showing the  
35 coupling of the wires of one car connecting with the coupling of the next car. Fig. 4 is a detail view of the support attached to both ends of each car, and Fig. 5 is an inner side  
40 view of one of the springs of the coupling.

Like letters are used to indicate corresponding parts in the several figures.

Referring to the drawings, A designates the body of a car having the covered or insulated  
45 wires *a b* run the full length of the car, under the floor thereof, and terminating at each end. The locomotive, with the cab B, is also provided with the insulated wires *a b*, extending from its rear and beneath the floor, one of the wires,  
50 *a*, connecting with the "open-circuit" battery C, and the other wire, *b*, connecting with the button-switch E, and also with the bell D,

which may be either vibrating or single stroke. A wire, *d*, serves as connection between the bell and the battery, so as to complete the  
55 circuit. The ends of the wires *a b* at the rear end of the locomotive and at each end of the car are provided with the couplers F, which consist of the rectangular sides *e e*, between  
60 which is secured a body portion, *f*, of some suitable non-conducting material. The sides of the body portion are formed with longitudinal grooves to receive projecting pockets  
65 *g*, provided on the inner faces of the sides *e*, which pockets receive the uncovered ends of the said wires *a b*, soldered or otherwise fixed therein. The front end of the body portion  
is cut out to form a head, R, beveled off to a point, for the purpose hereinafter described.

Projecting from the sides *e*, at the forward  
70 end and integral therewith, are springs *h h*, which have their extreme ends bent inward at *h'*, and then diverging outward. In their normal positions the springs come together at the point *h'*, and as each spring connects with  
75 one of the wires of the circuit this contact serves to close the circuit, and when the springs are held apart the circuit is open along the entire train.

For the purpose of holding the springs  
80 apart at the end of the train to keep the circuit open, I provide the supports G at each end of the car, said supports consisting of the contracted central portion, *i*, and enlarged heads *k*. When the cars are properly con-  
85 nected together, the coupler at the rear end of the locomotive is connected with the front coupler of the adjoining car in the manner shown in Fig. 3, the rear coupler of the first car connecting with the front coupler of the  
90 second car, and so on through the cars of the entire train.

As seen in Fig. 3, the ends of the springs of one coupler are passed over the projecting head R of the next coupler, extend along the  
95 full length of the latter, and vice versa. Each pair of the springs *h* at the ends *h'* fit around the rear portion of the sides *e*, so as to hold the coupler together, and yet allow automatic uncoupling when the cars separate. The con-  
100 tact of the springs of the coupler F of one car with the sides *e* of the coupler F of the adjoining car and of the several cars completes the circuit of the entire train. The rear car

of the train should have its rear coupler sprung around its support G at the rear end of the car to keep the springs *h* separated and the circuit open, and thus the bell will ring only when the circuit is closed by the means stated.

Within the cars are arranged circuit-closers H, of any suitable construction and at convenient distances apart, which may be operated to close the circuit and ring the bell D within the cab, as before stated. It will be understood that the insulated wires *a b* of the circuit run the entire length of each car, beneath the floor thereof, and have the couplers F F at each end of the wires and at opposite ends of the cars, the latter also having the supports G at each end thereof. Thus each car will be complete in itself, so that in attaching new cars or separating one of the cars from the train it is only necessary to connect or disconnect the couplers F, as the case may be.

I have not shown any special construction of circuit-closer, and therefore description of the same seems to be unnecessary, as it is of the usual form, connected by two branch wires with the wires *a b* of the electric circuit. Should the rear car be detached from the rest of the train, the couplers of the preceding car will be uncoupled from the coupler of the detached car, so as to come together at *h'*, which contact closes the circuit and rings the bell in the cab. This incessant ringing will be constantly kept up until the rear coupler of the present last car of the train is sprung around its own rear support G, to separate the springs *h* and open the circuit. By this means when the car is detached, either accidentally or otherwise, the coupling of the wires of one car with that of the adjoining car will be separated, causing the automatic closing of the circuit, and the consequent ringing of the bell to warn the engineer of the fact. It will also be understood that since the circuit is always open the operation of the circuit-closers within the several cars effects the closing of the circuit and the ringing of the bell to signal the engineer to stop or proceed, according to any prearranged code of signals which may be adopted. The coupling is automatic in its workings, is placed near the air-brake hose and in the same style, so that the connection between the trains may be made at the same time that the air-hose is coupled.

By means of my improved apparatus the bell-cord is done away with and the signaling is made more reliable.

The button-switch E may be employed by the engineer to stop the incessant ringing of the bell after he has been signaled that the train has parted, and he can also test the circuit from the engine to see if all the cars are properly coupled with the signal-wires, by simply pushing the button over on the switch and closing the circuit, and if all the cars are properly connected and the last coupler

on the rear end of the train in its proper support the bell will not ring; but if the bell does ring he will then know that something is wrong and should be attended to before proceeding.

The battery should be placed in a warm place in the cab, so as to prevent freezing, and also having a battery in each car, the latter should be properly fitted with the wires and circuit-closers before attaching to locomotive.

In attaching the supports to the cars I purpose to use any suitable means—such as a bail or yoke secured to the under side of the car-floor and suspending the supports beneath the same, so as to be in convenient reach to attach the couplers F; or the construction shown in Fig. 4 may be adopted, in which is seen a threaded projection of the support screwing into a portion of the car-truck. These features of construction may be varied without departing from the spirit or scope of the invention.

The reason that two supports are used for each car is so that should either one or the other end of the car become the rear of the train a support will be there for the coupler to connect with and hold the springs of the coupler apart.

Having described my invention, I claim—

1. In an electrical signaling apparatus for railway-trains, the combination, with the bell or other alarm, of the battery, electric-circuit wires, couplers attached on the ends of the wires, and having springs *h* formed therewith and bent inward at *h'*, to provide a contact-point in closing the circuit, and supports G, secured to each end of the car, and comprising the contracted middle portion, *i*, and the enlarged head *k*, arranged and operating as described, whereby the spring *h* may be clasped over the head *k* to the middle portion, *i*, so as to be separated from each other, and thus hold the circuit open along the entire line, as set forth.

2. In an electrical signaling apparatus, the combination, with the train having the bell or other alarm, the battery and electric-circuit wires arranged along each car of the train, of the couplers for connecting the wires of each car, consisting of the metallic sides *e*, formed with pockets *g*, to receive the uncovered ends of the wires, and springs *h*, projecting from the sides and bent inward so as to come together at *h'*, and supports attached to each end of the car, which supports have a contracted middle portion and enlarged heads or ends, the springs of one car fitting over the projecting heads of the coupler of the succeeding car, and bearing against the sides to complete the system, arranged and operating so that when a car separates from the train the springs slip over the projecting heads of the couplers and come together to close the circuit and ring the bell, as and for the purpose set forth.

3. In an electrical signaling apparatus, the

combination, with the bell or other alarm, of the battery, electric-circuit wires, and couplers attached to the ends of the latter and comprising the body portion *f*, having a beveled head, *R*, and the sides *e e*, secured to the  
5 body portion, and provided with springs *h*, bent inward at *h'*, to provide a contact-point in closing the circuit, the said springs passing over the head *R*, and extending the entire

length of the sides, so as to be separated from each other, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

OSCAR S. HERTZOG.

Witnesses:

E. E. BOWER,

W. S. APPLETON.