

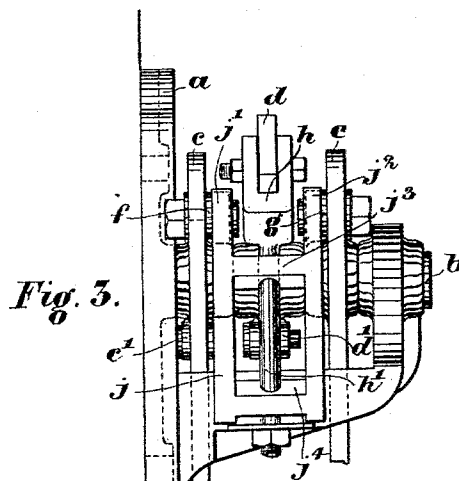
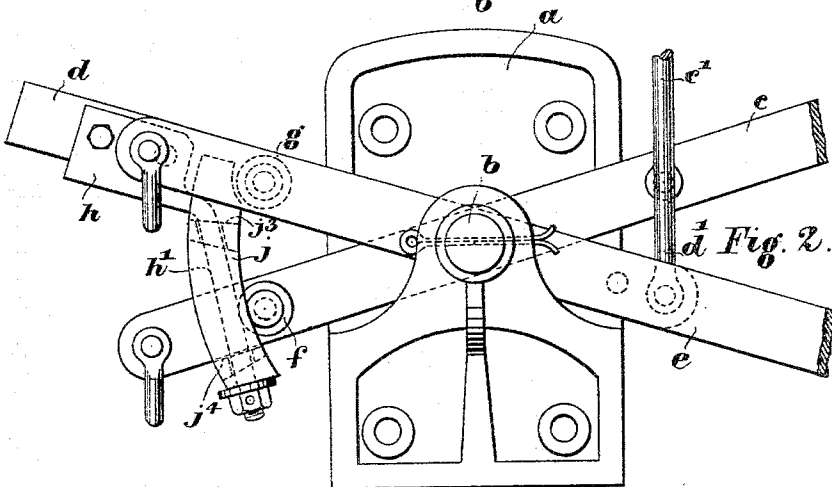
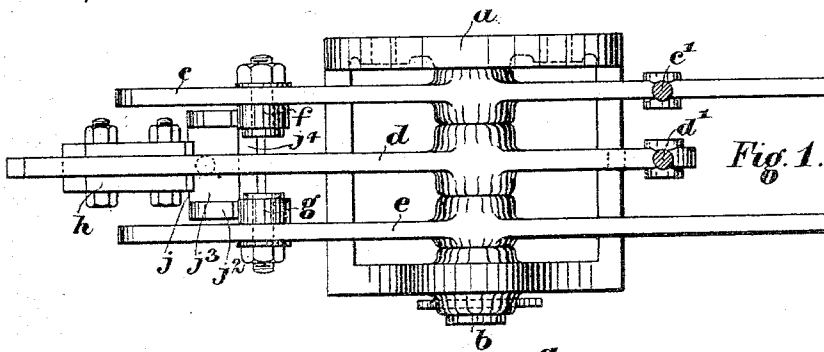
(No Model.)

2 Sheets—Sheet 1.

A. G. EVANS.
RAILWAY SIGNALING APPARATUS.

No. 531,720.

Patented Jan. 1, 1895.



Witnesses:—

Arthur Woodman.
Frederick John Baum

Inventor
Arthur C. Evans.
per
Edm. P. Donnell
Attorney.

(No Model.)

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Fig. 5.

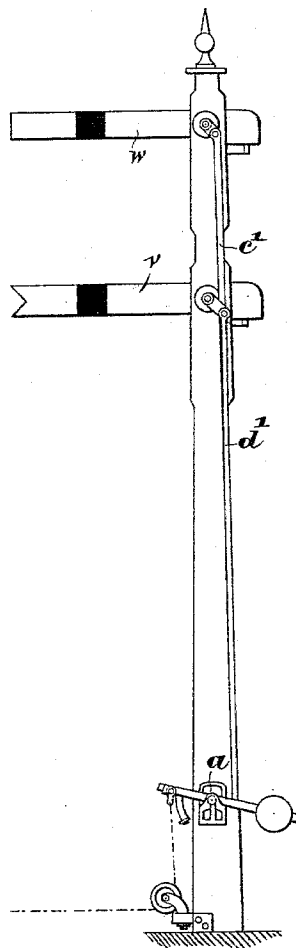
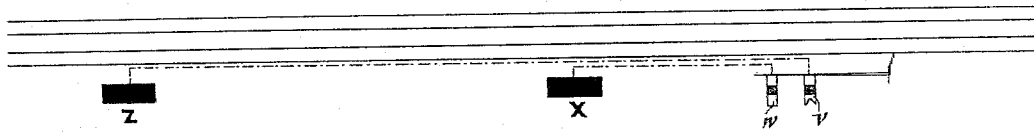


Fig. 7.

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UNITED STATES PATENT OFFICE.

ARTHUR GEORGE EVANS, OF LONDON, ENGLAND.

RAILWAY SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 531,720, dated January 1, 1895.

Application filed June 13, 1894. Serial No. 514,460. (No model.) Patented in England April 27, 1894, No. 8,382.

To all whom it may concern:

Be it known that I, ARTHUR GEORGE EVANS, a subject of the Queen of Great Britain and Ireland, residing at No. 116 Palace Chambers, Bridge Street, Westminster, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Coacting Apparatus for Railway Signaling Purposes, (for which I have obtained a patent in Great Britain, No. 8,382, bearing date April 27, 1894,) of which the following is a specification.

My invention relates to certain improvements in the construction and arrangement of signaling apparatus for the purpose of controlling any one or more signals by any one or more other signals, or of controlling any one or more signals from any two or more signal cabins or points of concentration.

It further relates, and which is the most common use of co-acting apparatus, to controlling any one signal, say a distant signal, by any one or more arms and from any one or more signal cabin or cabins.

My invention can be carried out by adapting the ordinary balance lever co-acting plate which has been previously used for arms that were not counter-balanced to work arms, disks and spectacles that are weighted or counter-balanced.

Briefly, the object of my invention is to produce an apparatus which will depart as little as possible from the standard forms of balance plates heretofore fixed upon signal posts so that while conforming to the regulations of counter-balanced arms, disks or spectacles, they would yet overcome certain defects now common in apparatus applied for the purposes of controlling signals. I also gain the advantage that the last lever which is worked for the purpose of lowering the controlled signal is not dependent on the wire of the first lever that is worked, that is to say, it does not tend to undo the operation performed by the first lever worked.

My apparatus also, as is usual with all co-acting apparatus, provides that in the event of a fracture of any of the connections the controlled signal flies to the "danger" attitude. Also either of the counter-balance levers on being returned to the normal attitude also re-

places the controlled signal to the "danger" attitude.

My apparatus is not dependent on weights or gravity to move the controlled signal to the "safety" attitude.

In order that my invention may be better understood and more readily carried into effect I will proceed to describe the drawings hereunto annexed, in which similar letters refer to like parts in the several figures.

Figure 1 represents a plan of my apparatus. Fig. 2 represents a front view of my apparatus with one of the balance levers in its working position. Fig. 3 represents a side view. Fig. 4 is a front view of a signal post showing the arrangement of and the connections from the apparatus to the arms. Fig. 5 is a diagram showing the connections from the cabins X and Z to the signal arms.

a is the main casting or carriage in which the balance levers themselves are supported.

b is the fulcrum or spindle on which the balance levers work.

c is the balance lever next the signal post operated by the near cabin X. This lever operates the stop signal *w* through its upright rod *c'*.

d is the intermediate lever directly connected by the upright rod *d'* to the distant arm *v*.

e is the outside balance lever operated from the distant lever in the far cabin Z.

f is a friction roller bolted to the lever *c*.

g is a friction roller bolted to the lever *e*.

h is a clip bolted to the intermediate lever *d* with a downward projection *h'* terminating in a cotter and nut. The projection *h'* forms a support for a cradle or rocking piece *j* a nut preventing the said cradle piece *j* from falling. One side *j'* is adjacent to the roller *f* and the other side *j''* is adjacent to the roller *g*. The cradle piece *j* is free to move sidewise. The cross pieces *j³* *j⁴* act as guides for the cradle, the projection *h'* passing between them and maintaining *j* in its position.

The action of my invention is as follows:—The intermediate lever *d* which directly operates the distant arm *v* can only be moved to operate the said arm by the joint action of the stop signal *w* through its lever *c* and the distant signalman in the cabin Z operating

the lever *e*. If the lever *c* operating the stop signal is worked first, in the downward action the roller *f* comes in contact with the side piece *j'* of the cradle *j* and tilts it sidewise moving the other end piece *j''* into direct connection with the roller *g* attached to the balance lever *e*, the roller then traveling down the curved edge of *j'*. By this action the stop signal *v* is deflected to the "safety" attitude. When now the signalman in the cabin Z to which the distant signal applies operates the balance lever *e*, the roller *f* being in direct connection with the side piece *j''* moves the cradle *j* downward thereby also moving the middle or intermediate lever *d* downward. Also through *j* acting on the nut attached to the projection *h'* of the piece *h* bolted to the intermediate lever *d* the action of *d* moving downward deflects the distant signal *v* to the "safety" attitude. If either of the levers *e* or *c* is replaced to the normal position the said action frees the cradle *j* and allows the intermediate lever *d* also to assume the normal attitude the distant signal arm *v* thereby being placed to "danger," by the movement of either one or other of the outside levers *c* or *e* being replaced normal. Therefore, no matter what the conditions may be in the order of action of the two signalmen X and Z my apparatus compels their joint action, as hereinbefore described, before the distant or controlled signal is given "all clear" or moved to the "safety" attitude. On the other hand either one of the signalmen may set the dis-

tant or controlled signal to the "danger" attitude independent of the other.

The apparatus as hereinbefore described is a single co-acting apparatus, but I would have it distinctly understood that I have only described this said single co-acting apparatus as a simple example as applied to one of its uses, for it is obvious that a signal may be controlled from any number of signal cabins and again that any number of signals may jointly control the action of any one or more other signals; further my invention is applicable to effecting the joint control of any one or more signals from any two or more signal cabins and effecting the joint control of any one or more signals by any one or more other signals.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In co-acting apparatus for railway signaling purposes, the friction rollers, such as *f* and *g*, arranged upon the counter-balance levers, in combination with a cradle or rocking piece such as *j* suspended from the lever of the controlled signal, the whole operating substantially in the manner, for the purposes herein described, and as illustrated in the accompanying drawings.

ARTHUR GEORGE EVANS.

Witnesses:

CHAS. ROCHE,

HARRY PETER VENN.