

(No Model.)

W. G. SCOTT.

INTERLOCKING RAILWAY POINT AND SIGNAL APPARATUS.

No. 506,266.

Patented Oct. 10, 1893.

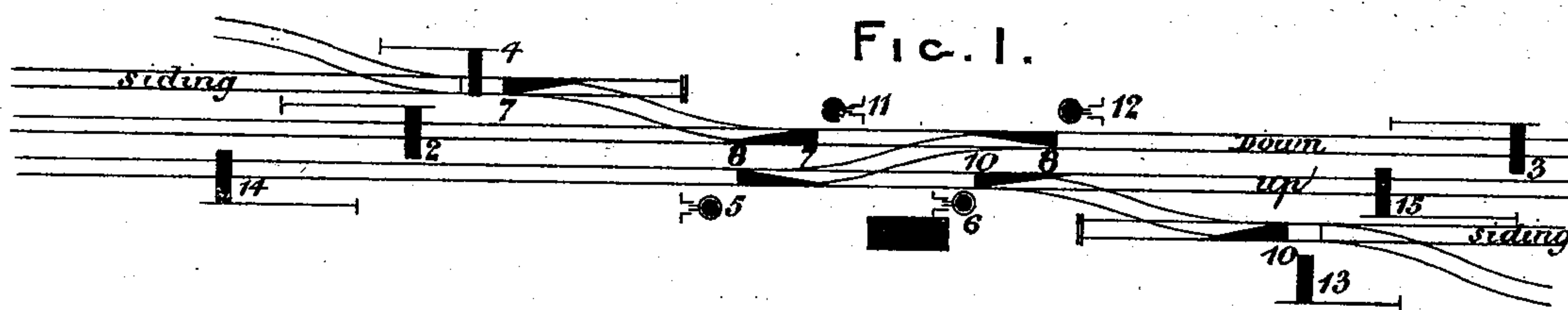
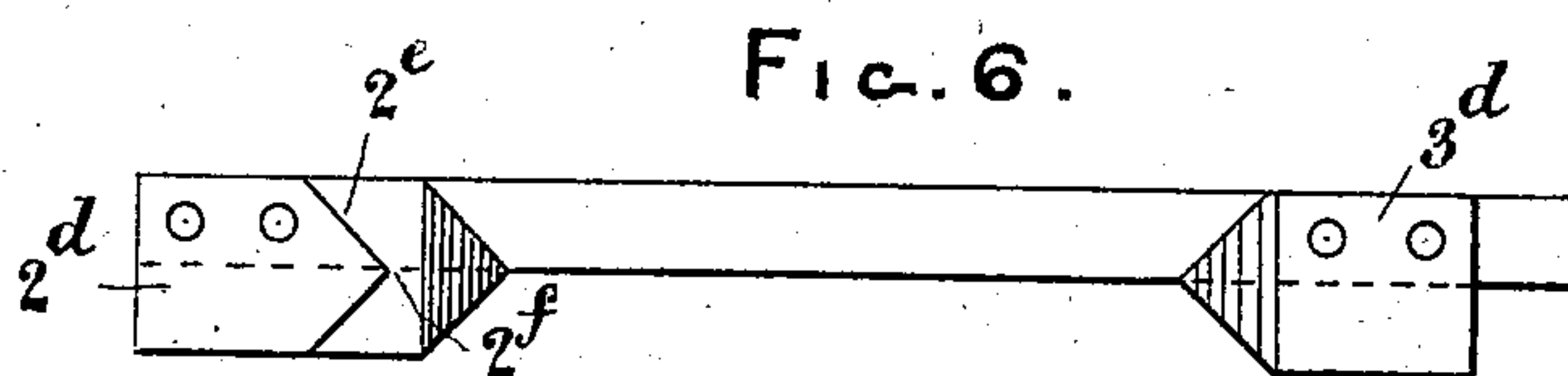
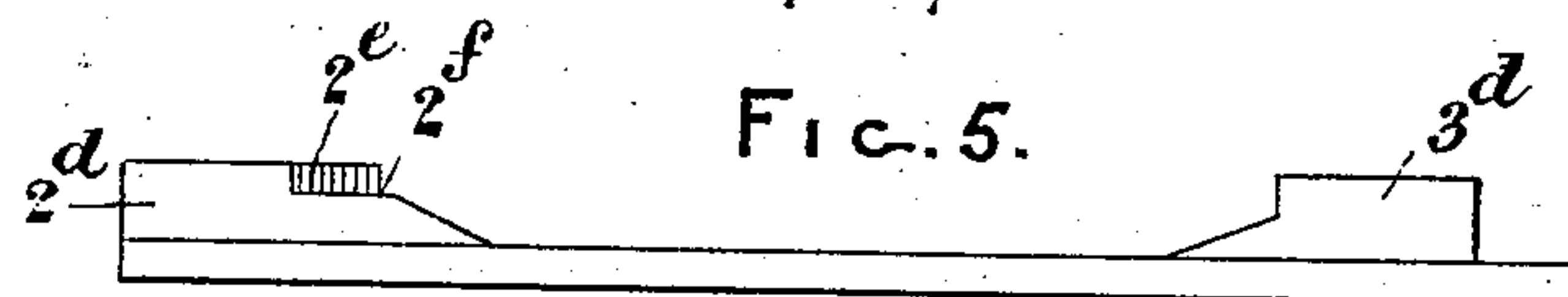
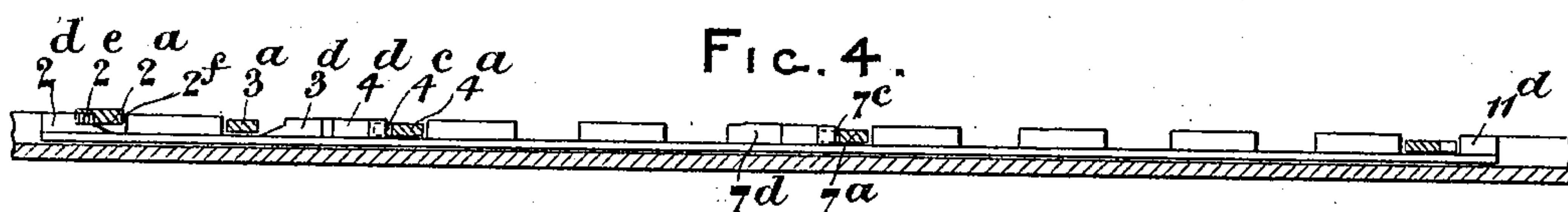
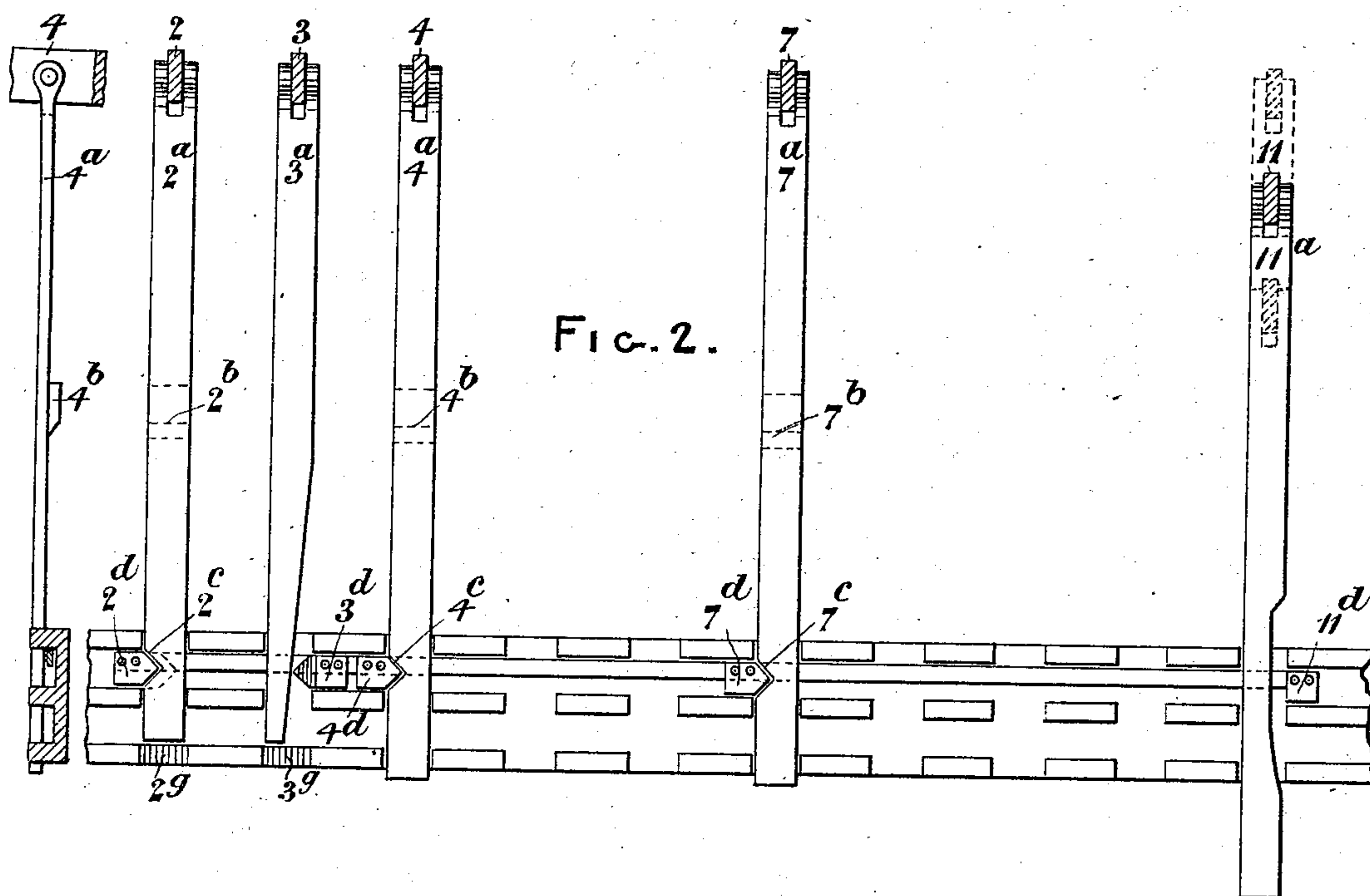


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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INTERLOCKING RAILWAY-POINT AND SIGNAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 506,266, dated October 10, 1893.

Application filed March 3, 1893. Serial No. 464,581. (No model.) Patented in England January 21, 1893, No. 1,344.

To all whom it may concern:

Be it known that I, WILLIAM GEORGE SCOTT, a subject of the Queen of Great Britain and Ireland, residing at the Central Station, 5 Ranelagh Street, Liverpool, in the county of Lancaster, in England, have invented new and useful Improvements in Interlocking Levers in Railway-Point and Signal Apparatus, (for which I have obtained a patent in Great 10 Britain, No. 1,344, dated January 21, 1893,) of which the following is a specification.

My invention has reference to improvements in interlocking levers in railway point and signal apparatus, and has for its object 15 the minimizing of the chances of collisions through vehicles being forgotten while standing on passenger roads and the stop signals being lowered to admit trains from the rear section.

20 In this invention I arrange that under certain conditions the movement of the starting signal lever and the replacing of the said lever to its normal position, is necessary for the stop signal to which the starting signal applies to be operated a second time.

25 The way in which I carry out my invention is as follows:—I arrange that the normal position of the disk operating lever is in the center of the segment, each disk operating lever 30 applying to the cross-over road or to any movement in connection with points adjacent to the main line. I arrange that the movement of the cross-over road or other point lever effects the said locking on the stop signal lever, 35 but the operation of the corresponding disk signal lever from its middle position forward and its replacement to its normal position, which is midway, still leaves the stop signal locked. The natural tendency of a signal- 40 man, more especially when he is careless, is to move a lever in the forward direction for the purpose of actuating a signal, and such movement, in my apparatus supposing a portion of the train is left upon the main line, would still 45 leave the stop signal applying to that line in the locked position at "danger." If the signalman now wishes to clear his stop signal he has to perform an unusual movement of operating his switch by means of its lever and 50 operating his corresponding disk signal lever from the middle position backward and then replacing it to its middle position again be-

fore the corresponding stop signal is free to be operated a second time.

It is obvious that my invention is applicable 55 to disk signal operating levers in connection with the switch operating levers themselves, to the extent that any main line stop signal is held locked and continues to be held locked notwithstanding any movement of the switches 60 and forward movement of the corresponding disk signal levers. With my invention, as an alternative method of disposing of the train, assuming that it does not require to be 65 shunted, the section ahead at the time being clear, the operation of the starting signal lever forward and its replacing to its normal position would release the stop signal and allow it to be operated again a second time. 70 Generally, where a single cross-over road only and no other switches are provided at a block section, there would hardly be need in the ordinary circumstances of traffic working, of dividing a train and shunting a portion of it 75 through the cross-over road. The application of my invention would be of use in block sections where there are sidings, but although I describe it with reference to sidings, yet it is obvious I do not debar myself from using it 80 in connection with a single cross-over road, should such unusual movement require to be performed.

In order that my invention may be better understood and more readily carried into effect I will proceed to describe the drawings 85 hereunto annexed, in which similar numbers refer to similar parts in the several figures.

Figure 1 illustrates a diagrammatic view of a double line of railway with a siding out of each line. The numbers 2 and 3 are the stop 90 and starting signals referring to the down line. Numbers 14 and 15 are the starting and stop signals respectively referring to the up line. The siding points on the down line are operated by lever 7, the cross-over road by lever 95 8, and the siding points on the up line by lever 10. Lever 4 operates the signal out of the siding on the down line, lever 11 is the shunting signal from the down line to the down siding, lever 6 is the shunt back signal from the 100 up line to the up siding, and lever 13 is the shunt out signal from the up siding to the up line. Levers 5 and 12 are the respective disk signal levers operating the disks from

the up to the down and the down to the up lines respectively. Fig. 2 illustrates a plan of the mechanism necessary to effect these results, showing the locking trough, the tappets which are connected to the several operating levers (for the purpose of illustrating the locking in connection with the down line), and the connecting slide of the locks. Fig. 3 is a cross section of the locking trough. Fig. 4 is a longitudinal section of the locking trough, showing the relative tappet apertures and the positions of the locks and tappets. Fig. 5 is a front elevation of the special locks operating in connection with the tappets 2^a and 3^a. Fig. 6 is a plan view of Fig. 5.

In Figs. 2 and 4, 2^a, 3^a, 4^a, 7^a and 11^a are tappets attached to the levers 2, 3, 4, 7 and 11, which operate respectively the down stop, the down starter, the signal out of the down siding, the down siding points, and the shunt back signal into the down siding from the down main. These are the levers necessary to illustrate the interlocking in connection with the down line; the interlocking of the up line would be analogous in all respects.

2^b, 4^b, 7^b, are pawls, respectively, upon the tappets 2^a, 4^a, 7^a, the beveled part being as shown in Fig. 3.

2^c, 4^c, 7^c, are notches, respectively in tappets 2^a, 4^a, 7^a. The tappet 3^a is beveled or tapered from the portion attached to the lever to its end. The tappet 11^a is, in accordance with the normal position of its signal lever, midway, and it is practically straight at each end and having a flat bottomed recess provided with beveled ends upon one side of it and at that part of it which passes through the locking trough.

2^d is a lock of a shape as shown in elevation and plan, Figs. 5 and 6, the tappet normally resting about the bevels 2^c and upon the ledge 2^f.

3^d is a lock of a design shown in elevation and plan, Figs. 5 and 6. 4^d and 7^d are ordinary locks, but are of such a height as to be below the under side of the tappet when the tappet is in its pulled over position raised by the pawls 4^b and 7^b. The same applies to the lock 2^d when the lever 2 is pulled over.

11^d is an ordinary square lock.

2^e and 3^e are blocks inserted in the apertures in the side of the locking trough in line with the tappets 2^a and 3^a. In the normal position of the tappet 2^a such block does not obstruct the forward movement of the tappet 2^a, but in the normal position of the tappet 3^a the block 3^e does obstruct the passage.

The action of this mechanism is as follows:—
When 2^a is operated the bevel 2^c thrusts out of the notch the lock 2^d; by that movement

the bevel upon the lock 3^d is moved under the tappet 3^a raising the said tappet 3^a clear of the block 3^e; the lock 4^d is drawn out of the notch 4^c; 7^d is drawn out of the notch 7^c; and 11^d is drawn into contact with the tappet 11^a. The pawl 2^b on the tappet 2^a in the pulled over position of the said tappet, acts so that should the starting tappet 3^a be operated while the said home signal tappet 2^a is pulled over, the lock 2^d would be moved and would pass under the tappet 2^a. Upon now replacing the tappet 2^a, the tappet would drop when the notch 2^c came opposite the beveled portion of the lock 2^d preventing the lock 2^d from being operated a second time until tappet 3 had been replaced, that replacing giving the freedom for the lock 2^d to be thrust out by tappet 2^a, as before described.

The tappet 7^a operates in exactly the same manner and has exactly the same result as regards the interlocking mechanism, as tappet 2^d itself, except that it can be released by the backward movement of the tappet 11^a. Referring to the tappets 4^a and 7^a, it will be observed that the forward motion of these levers will lock the tappet 2^a, that the forward movement of 11 can have no effect upon releasing the said tappet 2^a; but it is obvious that, assuming 11^d to be in the recessed portion of the tappet 11^a, that as the tappet 11^a is moved backward it would operate 11^d and so draw the locks into their normal position releasing 2^a.

What I do claim as my invention, and desire to secure by Letters Patent, is—

In interlocking apparatus for railway point and signal levers, the combination, with a locking trough provided with the blocks 2^e and 3^e; of a longitudinally sliding bar provided with the beveled and pointed lock 2^d, the beveled lock 3^d, and the locks 4^d, 7^d, and 11^d; the down stop signal tappet provided with the notch 2^c and arranged behind the stop 2^e; the down starter signal tappet beveled at its end and operating in connection with the lock 3^d; the down siding exit signal tappet provided with the notch 4^c engaging the lock 4^d; the down siding points tappet provided with the notch 7^c engaging the lock 7^d; and the siding shunt back signal tappet 11^a provided with a flat bottomed recess beveled at one end and engaging the lock 11^d, substantially as and for the purposes set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

W. G. SCOTT.

Witnesses:

THOS. PRATT,

WM. HOWES,

Clerks.