

(No Model.)

4 Sheets—Sheet 1.

C. F. McGLASHAN.

RAILWAY TRAIN TELEGRAPH.

No. 261,370.

Patented July 18, 1882.

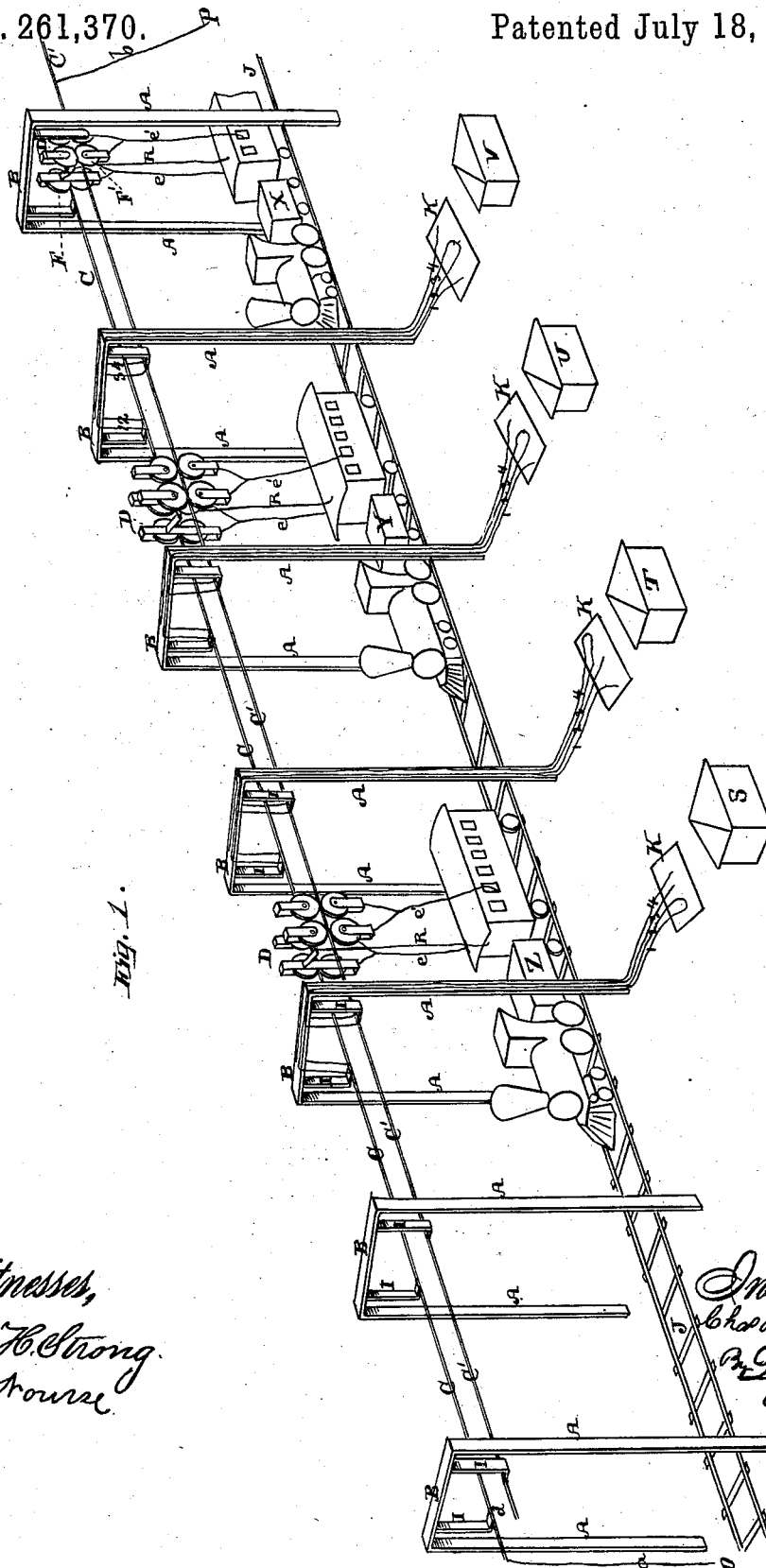


Fig. 1.

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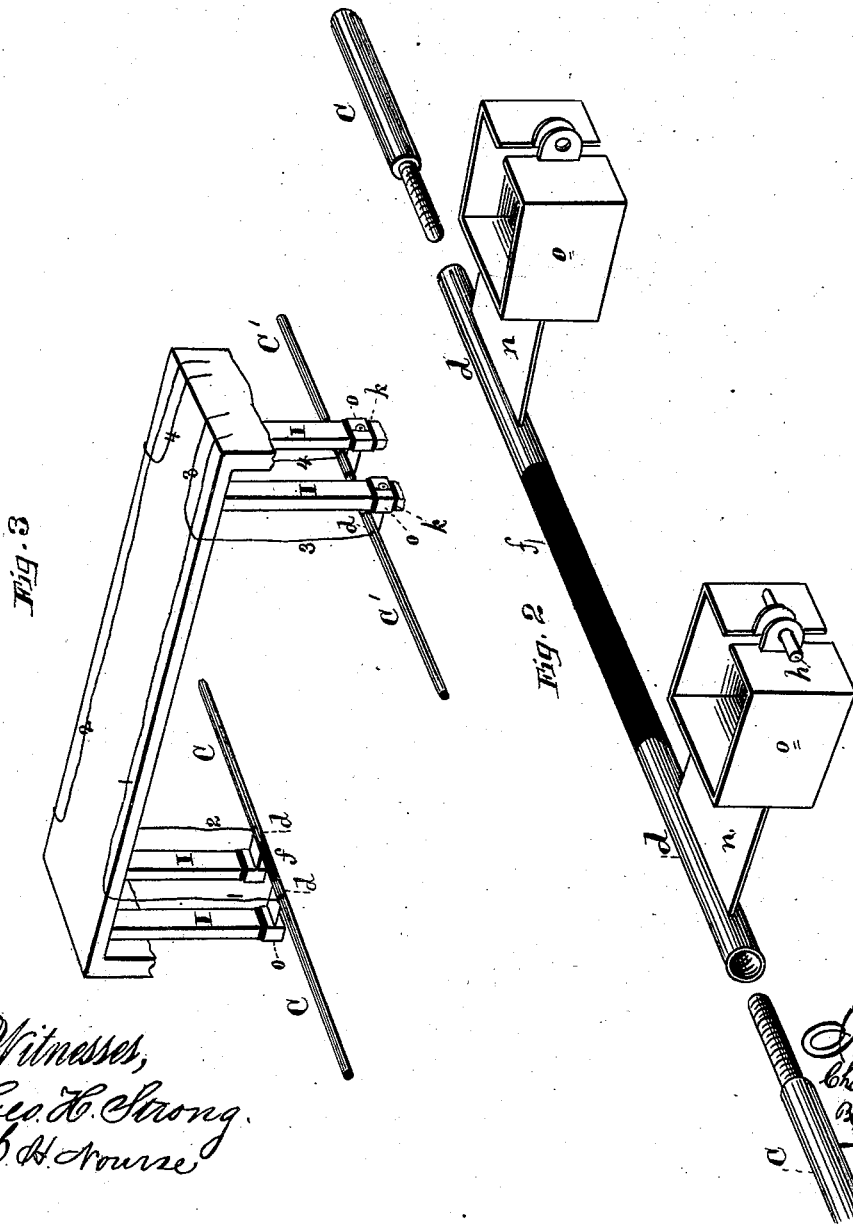
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# UNITED STATES PATENT OFFICE.

CHARLES F. McGLASHAN, OF SANTA BARBARA, CALIFORNIA.

## RAILWAY-TRAIN TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 261,370, dated July 18, 1882.

Application filed February 21, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. McGLASHAN, of the city and county of Santa Barbara, State of California, have invented a Railway-Train Telegraph; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a means for establishing telegraphic communication with a number of moving railway-trains and with any number of intervening stations at the same time and with the same current of electricity; and it consists in establishing two electric wires suitably supported and insulated, by means of which, and through suitable and peculiar connections, the circuit of electricity is conducted back and forth from one wire to the other through the moving trains and the stations, as will be more fully seen hereinafter.

My present invention is an improvement upon that for which Letters Patent of the United States No. 247,571, dated September 27, 1881, were granted to me. Therein I show a means for establishing telegraphic communication with a single moving train or car by means of two wires; but these means are inadequate for my present purpose, which is to telegraph not only to one car, but to any number of trains, as well as to all intervening stations, at the same time and with the full current of electricity.

I am aware of the existence of Letters Patent No. 231,552, dated August 24, 1880, issued to Jos. R. Finney, for a means for telegraphing railway-trains, whether moving or stationary, and any of the telegraph-stations along the line of the railroad. He employs a single main wire, upon which the main portion of the current remains, a small part, however, by peculiar connections, being allowed to leak from the main wire through the instruments in the car or station. These means, as he acknowledges, involve a different mode of operating the entire telegraph-line, the principal change being in the connection of the wires at the stations with the main line, the instruments, and the ground. My invention involves no such change in the connections, nor in the instruments, these remaining the same as are now in use. My entire current of electricity passes through each train and station along the route, entering from one of the two main

wires and leaving by the other, being enabled to do this by means of certain traveling trucks accompanying the trains and ordinary telegraphic switches at the stations.

Referring to the accompanying drawings, Figure 1 represents a general perspective view. Figs. 2 and 3 are enlarged details. Fig. 4 shows a perspective section between two stations. Fig. 5 is a detail. Figs. 6 and 7 are modifications. Fig. 8 is a detail of Fig. 7.

In Fig. 1 let A A represent a series of posts or supports extending between the terminal stations *g* and *P* of a railway and erected upon both sides of the track *J*. Across the tops of posts *A* extend cross-beams *B*, from which are suspended the arms *I I*. Encircling the bottoms of these arms are metal bands *o*, Figs. 2 and 3, between which and the arms is a layer or band of some insulating material, *k*, such as gutta-percha. The band *o* is clasped upon the arm by means of the bolt *h*, and is provided upon its inner side with a plate, *n*, which extends inwardly horizontally, and carries a metallic tube, *d*, the ends of which are provided with right and left hand threads, in usual manner of such joints.

*C C'* are wires or rods. These consist of sections extending between the posts *A*, each section being screwed into the end of the joining tube *d*, threads being made upon their ends for this purpose, Fig. 2. The tube *d* is the same in diameter as the wires *C C'*, and when thus connected all the sections of wire and the connecting-tubes form smooth continuous wires, as shown.

In Fig. 1 let *S T U V* represent telegraphic stations along the line of the road.

Between the terminus *P* and station *V*, let *X* designate a moving train, and let *Y* represent another between stations *V* and *U*, and *Z* another between stations *T* and *S*.

Adapted to travel upon the wires *C C'* is the truck *D*. This truck is in most respects similar to the truck illustrated and described in my former patent above referred to. This truck, Fig. 4, instead of four wheels, has eight, the additional four being but a reduplication of the first, and connected to form one truck. It is composed of the side standards, *E E'*, having vertical slots *m*, in which are journaled the groove-faced wheels *F F'*. The outer walls of the standards are severed, as shown at *r*, so

that the plates *n* extending from arms I may be easily passed. The standards E E' are connected by means of the arms G, which are bolted to a central block. H. This block is made of some non-conducting substance, preferably gutta-percha, and by its intervention between the two sides of the truck each side is insulated from the other. The wheels F F' are made with the inner flanges of their peripheries or faces longer than the outer, Fig. 5, so that the one above almost touches the one below, which better insures continuous contact with the wires C C', as explained in my previous patent, and the inleading and out-leading wires *e e'* are attached to the standards E' E, respectively, and lead down to the instrument in the car or train, as therein explained. These wires may lead down to the train either in the rope R, connecting the truck with the car, by means of which said truck accompanies the train, or may lead down separately. A wire, *b*, from station P connects with C', and a wire, *a*, from station O connects with C. Thus far the telegraphic communication does not differ from that which I have heretofore shown. The current passing up *b* to the main wire C' finds no escape therefrom at the other end, and consequently is taken off by the wheels F' and passes through standards E' and wire *e'* to the instrument in car X, thence up wire *e*, through standards E and wheels F, to main wire C, and through wire *a* to station O. But in order to telegraph to station V, I must have some means of taking the electricity from wire C, and this I do by cutting the said wire as follows:

At each of the stations here shown the wires C C', instead of forming continuous conductors, are broken and some non-conductor inserted between their ends. Thus in Figs. 2, 3, and 4, instead of having a single depending arm, I, there are two, with two of the connecting-tubes *d*. The ends of the wires come into each tube from the outer sides, while between the two is a gutta-percha cylinder, *f*, of the same diameter as the wires and tubes *d*. Thus while the wires C C' are maintained continuous for track purposes they are broken for telegraphic purposes. This is done at each station. From the severed ends of the wires C C' the wires 1 2 3 4 lead down to the telegraphic instruments and switch-boards K of the several stations. The current of electricity I have just described as being upon wire C will, when it reaches the cut-off at station V, pass down wire 2 to the station V. By means of the switch K it passes to wire 3 and up again to the main wire C', beyond the cut-off. It then follows along wire C' until it meets the truck of train Y, when it passes down through said train, as it did in the case of train X, and comes up again to wire C; thence, because of the cut-off *f*, down wire 2 to station U, up wire 3 to wire C'. There being no train between stations U and T, it continues upon wire C' to station T; thence down wire 4 to said station, and up wire 3 to main wire C' again. It then

passes down through train Z and up to wire C, then down wire 2 to station S, and, there being no more stations between S and the terminus, it is carried back up wire 1 upon C again, and thence down *a* to the terminus O. This can all be accomplished by ordinary switches upon the telegraphic instruments at the stations; and by thus carrying the spark back and forth any combinations of trains and stations may be communicated with.

Ordinary relays and ground-wires may be used at the stations and in the trains, the ground-wire in the trains being attached to the iron axles and communicating with the rails.

Although I have here shown the two main wires C C', upon which my invention depends, as being sustained from posts upon both sides of the track, I do not wish to be confined to this manner. It is obvious that I may support them in other ways without changing the principle of my invention, which depends upon having two main wires. Thus in Fig. 6 I show a modification of my invention. The main wires C C' are supported from posts A upon only one side of the road, and are carried one above the other. They are suitably insulated at the posts and broken at the stations. The truck D, in order to conform to this position of the wires, is somewhat modified in form. Here the two sides are arranged one above the other, properly joined, but insulated from each other at the middle by the blocks H H, as shown. From these separated upper and lower portions proceed the wires *e e'* through a rubber tube, R, in which they are coiled, to the side of the car W and to the instrument within.

A bracket, M, from the side of the car may be constructed to hold the tube R out, and thus prevent any side strain upon the traveling truck D. The two parts of the truck D, being insulated from each other, will permit the passage of the current from one wire to the other through the car, as in the case I have first described.

The object of the rubber tube M, in which the insulated wires *e e'* are coiled, is to prevent sudden jerks and jars at starting and stopping and draw the truck D steadily along by a constantly yielding yet uniform strain.

Another modification of the manner of supporting the main wires C C', I show in Fig. 7. Here they are supported from the inner groove of the ordinary T-rail of the track. A rubber plug, *b*, is let into the rails, and the connecting-tubes *d* have a shank or pin, *a*, which is inserted firmly in the plug *b*. The wires C C', which are, as heretofore described, screwed into the tubes *d*, are thus inserted. They are in other respects similarly constructed to those I have first shown. Against these insulated main wires thus suspended from the side of the T-rail the metallic wheels F under the car touch. Wires connect the wheels with the instruments in the car.

It will be seen from what I have heretofore shown that, while in my former patent I show

a means for telegraphing to a moving train by means of two insulated main wires and a traveling truck, I have herein shown that by the employment of said truck or its equivalent for preserving contact with the main wires and the establishment of two main wires cut at the several stations, as described, and by the use of telegraphic switches, I can communicate with any number of moving trains and intermediate stations.

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

1. In an apparatus for telegraphic communication between a number of moving railway-trains and any number of intermediate stations, two insulated main wires—one wire connected at one end with one terminal battery and the other wire at its opposite end with another terminal battery—in combination with a traveling truck connected electrically with the moving train and in contact with the main wires, said main wires being severed at the stations, and connecting wires from the severed ends passing to the instruments in the stations and connected with each other by switch-boards, substantially as set forth.

2. The means for establishing telegraphic communication with a number of railway-trains in motion and with any number of intermediate stations at the same time, consisting of the battery-wires *ba*, the insulated main wires *CC'*, cut or broken at the several stations, and having their severed ends connected by wires 1 2 3 4 with the switch-boards *K* of the telegraphic instruments in said stations, and the traveling trucks *D*, with their central insulating-blocks, *H*, and insulated wires *ec'*, connecting the traveling trucks with the moving trains, substantially as herein described.

3. In a system of telegraphy for communicating with moving railway-trains and any number of intermediate stations at the same time, the combination of two main wires insulated and connected suitably with terminal batteries, said wires being severed at each station and their several ends insulated from each other, suitable inleading and outleading wires from the several ends of the main wires, telegraphic switches to which said inleading and outleading wires are conducted, and traveling trucks upon said main wires, connected with and accompanying the moving trains, and having inleading wires passing to and from said trucks and trains, substantially as herein described.

4. The posts *A A*, with their top beams, *B*, and double depending arms *I*, in combination with the main wire, *C C'*, secured to the arms and insulated therefrom, as shown, said wires being severed at the double arms *I* and connected by the insulating-cylinder *f*, substantially as and for the purpose herein set forth.

5. The posts *A A*, with their top beams, *B*, and depending arms *I*, in combination with the main wires *C C'*, secured to the arms, and insulated therefrom by means of the bands *o*, plate *n*, connecting-tube *d*, and insulating-strip of gutta-percha, *k*, substantially as and for the purpose herein described.

6. The combination herein of a moving car, the main wires *C C'*, and a traveling truck, *D*, moving upon said wires, and connected with the car by means of a rubber tube, *R*, substantially as and for the purpose herein described.

In witness whereof I hereunto set my hand.

CHARLES F. McGLASHAN.

Witnesses:

R. M. DILLARD,  
G. R. TEBBETTS.