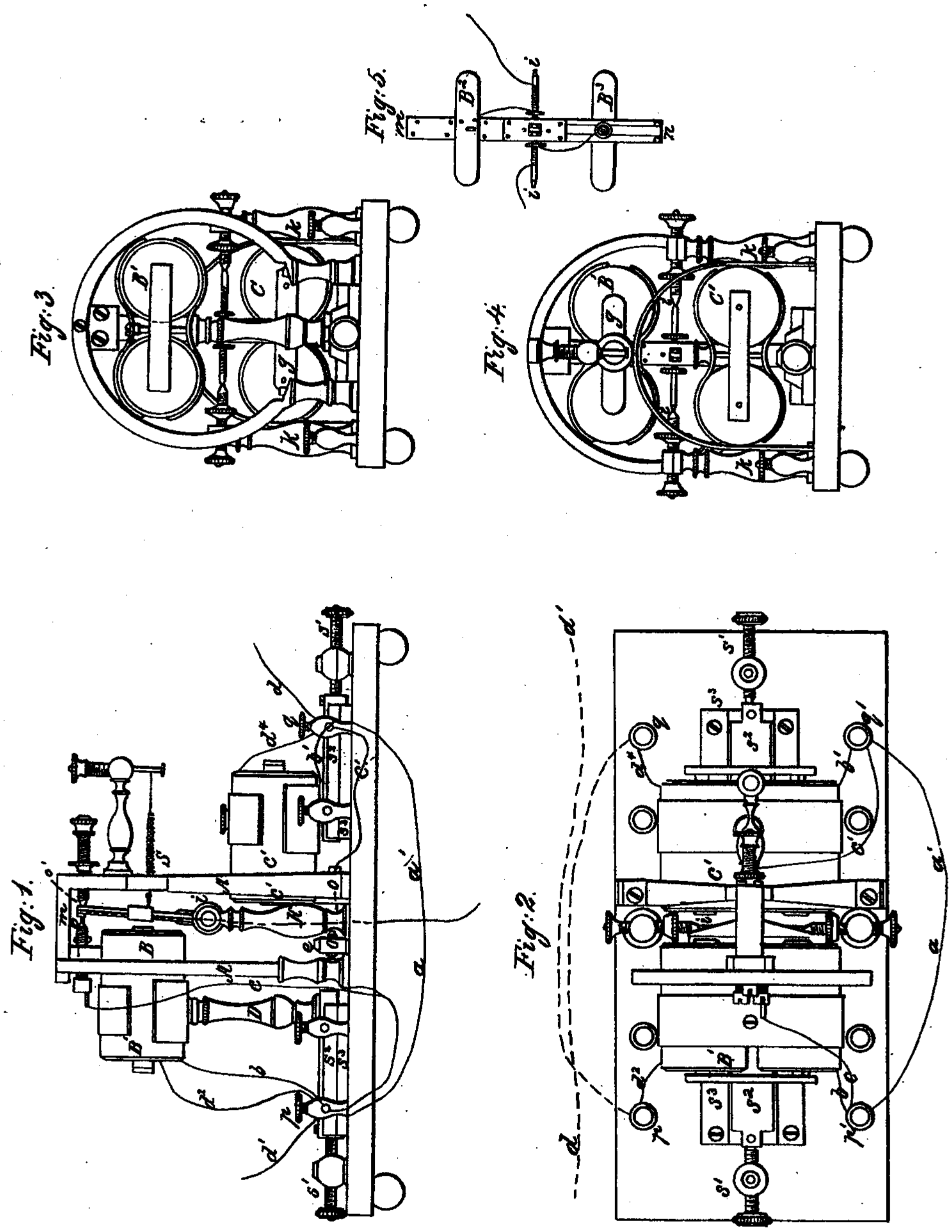
2 Sheets—Sheet 1.

W. A. PEASLEE.

Telegraphic Repeater.

No. 13,655.

Patented Oct. 9, 1855.



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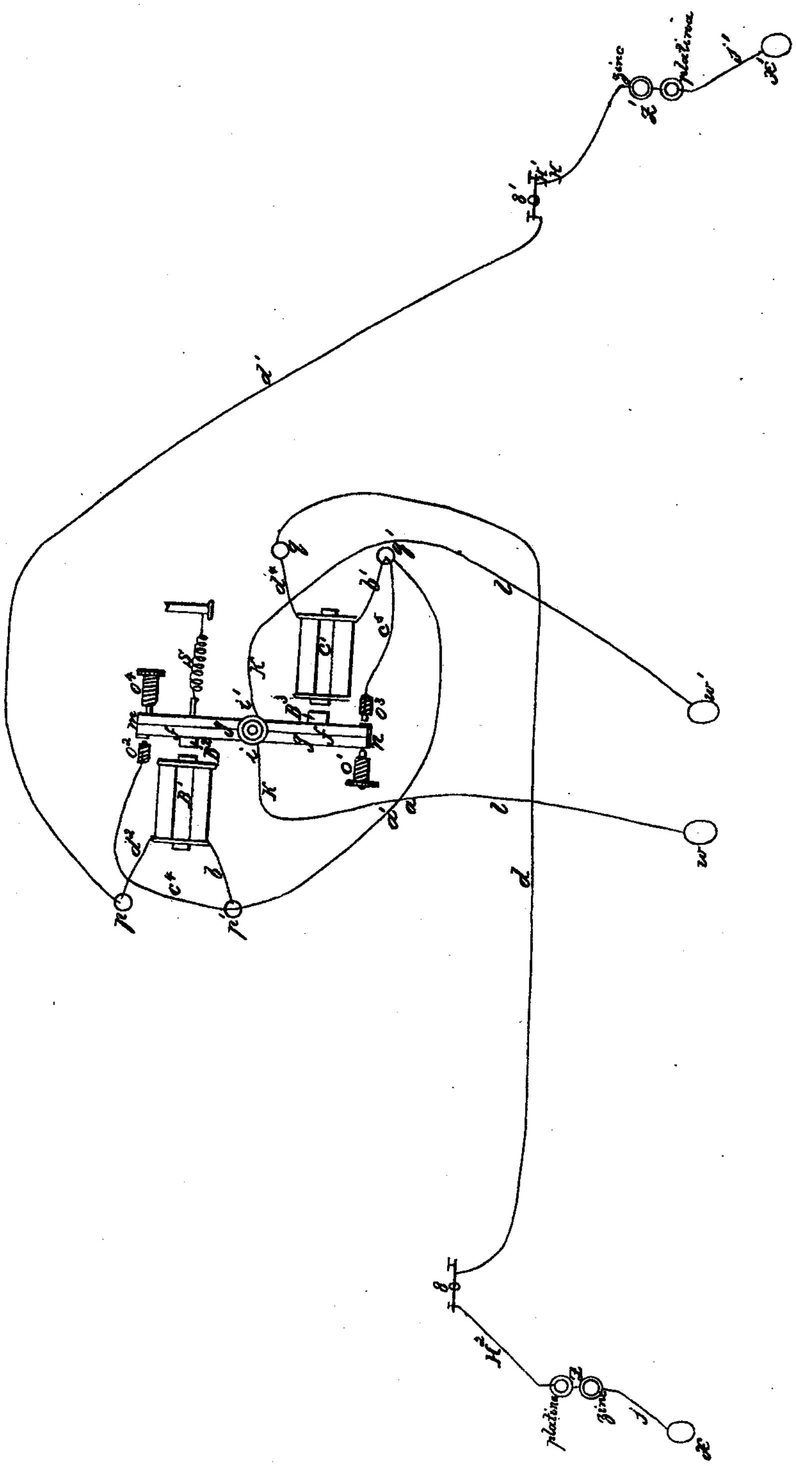

UNITED STATES PATENT OFFICE.

W. A. PEASLEE, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN TELEGRAPHS.

Specification forming part of Letters Patent No. **13,655**, dated October 9, 1855.

To all whom it may concern:

Be it known that I, WASHINGTON ABRAM PEASLEE, of Indianapolis, in the county of Marion and State of Indiana, have invented an Improvement in Instruments for Telegraphic Purposes; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all the other things before known, and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1 is a side elevation. Fig. 2 is a ground plan; Figs. 3 and 4, end views; Fig. 5, detached view of the armature-lever; Fig. 6, diagram of circuits, &c.

My invention consists in placing two receiving electro-magnets, in combination with an armature-lever having ground-connections, in a main telegraph-circuit, so as to form two separate circuits, and the transmission of signals from either one of the circuits so formed to the other without the use of other agency than the power of the batteries in the main circuit.

Fig. 5 is an armature-lever, made of ivory or other non-conducting material balanced upon axles i i'. Upon one side of the armature-lever is a metal lining, f, touching one of the axles, i, and extending from the axle i to the top of the armature-lever, m, and upon the opposite side of the armature-lever is a similar metal lining, f, touching the other axle, i', and extending from the axle i' to the bottom of the armature-lever n.

Upon the armature-lever are metal arms B^2 B^3, B^3 being slightly the heaviest, which, with respect to each other, are upon opposite sides of the armature-lever and at equal distances from the axles i i'. The pivots of the axles i i' of the armature-lever rest in standards K K. The upper and lower ends, m and n, of the armature-lever vibrate between the points o^2 o' and o^3 o^4. The points o' o^4 are of non-conducting material. The points o^2 o^3 are of metal. The points o^2 o^4 are supported on the frame A A, independent of the standards K K, and the points o^3 o' are in separate standards fastened to the platform of non-conducting material 7′.

B is a pair of helices supported by the standard D, and is above the axles of the armature-lever and opposite the metal arm B^2.

C′ is a pair of helices supported by the slide S^2, and is below the axles of the armature-lever and opposite the lower metal arm, B^3. The helices C′, in relation to the helices B′, being on the opposite side of the armature-lever, the helices B′ and C′ are placed near enough the arms B^2 and B^3 to attract them when the helices B′ and C′ are magnetized.

7′ is a platform of non-conducting material. S^3 S^3 are metal plates made fast to the platform 7′. S^2 S^2 are movable slides, which rest in dovetailed grooves in the metal plates S^3 S^3, and support the standard D and the helices C′. S′ S′ are set-screws, and take hold of the slides S^2 S^2. By the use of these screws S′ S′ the helices B′ and C′ may be advanced toward or removed from the metal arms B^2 B^3 of the armature-lever, as may be necessary.

d d' are the main wires leading from the batteries into the metal standards p q. d^2 d^4 are small wires leading from the standards p q to the helices B′ C′. b b' are small wires leading from the helices B′ C′ to the metal standards p' q'. C^4 C^5 are wires leading from the standards p' q' to the metal points o^2 o^3. l l are wires leading from the ground to the metal standards K K. a' a' is a wire connecting the standards p' q'.

In diagram, Fig. 6, x x' are ground-plates. Z Z′ are batteries. 8 8′ are break-circuit keys. d d' are the main wires leading from the break-circuit keys to the standards p q. d^2 d^4 are wires leading from the standards p q to the helices B′ C′. b b' are wires leading from the helices B′ C′ to the standards p' q'. a' a' is a wire connecting the standards p' and q'. c^4 c^5 are wires leading from the standards p' q' to the metal points o^2 o^3; g g, the armature-lever; B^2 B^3, the metal arms attached to the armature-lever; o' o^4, the non-conducting points, representing the armature-lever resting against them when balanced in its perpendicular position. i i' represent the axles of the armature-lever. k k represent the metal standards; l l, wires leading from the standards k k to the ground-plates w w'. B′ C′ represent the helices. H represents a wire leading from the zinc pole of the battery Z′. j' represents a wire leading from the platina pole of the battery Z′ to the ground-plate x'. H' represents a point of the break-circuit key, which is connected with the main wire d'; j, a wire leading from the zinc pole of the battery Z to the ground-plate x; H^2, a wire leading from the platina pole of the battery Z to the break-circuit key which is connected with the main wire d.

Operation: Diagram No. 6 represents the batteries, ground-connections, main wires, helices, vibrating armature-lever, &c., ready for operation, with the circuit broken at the point H' of the break-circuit key 8'. It being understood that the battery Z', having its platina pole connected with the ground by the wire j' to the ground-plate x', must have a ground-connection for its zinc pole also, to complete its circuit and bring it into action. But this is not the case, as is represented in the diagram No. 6, the wire H, leading from the zinc pole of the battery Z', not being connected with the point H' of the break-circuit key 8'; consequently the battery Z' is inactive. The battery Z, being connected to the ground-plate x by the wire j' leading from the ground-plate x to the zinc pole of the battery Z, which is connected with the break-circuit key 8 by the wire H^2, leading from the platina pole of the battery Z to the break-circuit key 8, the main wire d being in connection with the break-circuit key 8, and the metal standard q and standard q being connected with the helices C' by the wire d^4, and the helices C' being connected to the metal standard q' by the wire b', and the standard q' being connected with the metal standard p' by the wire a' a', and the standard p' being connected with the helices B' by the wire b, and the helices B' being connected with the metal standard p by the wire d^2, and the standard p being connected with the break-circuit key 8' by the main wire d', the point H' of the break-circuit key 8' being the terminus of the unbroken connections leading from the platina pole of the battery Z and having no ground-connection at the point H'; consequently the battery Z is inactive also. The point H', being the representative of the platina pole of the battery Z, being brought in connection with the wire H leading to the zinc pole of the battery Z', the platina pole of the battery Z' being connected with the ground-plate x' by the wire j', the circuit is complete, having the zinc pole of the battery Z connected with the ground-plate x, and the platina pole of the battery Z' connected with the ground-plate x'. The circuit now being complete the current passes from the zinc pole of the battery Z, which is connected with the ground-plate x to the platina pole of the battery Z' that is connected with the ground-plate x', charging and forming magnets at the same time of the helices B' and C'. The helices B' and C' being placed near enough to the metal arms B^2 B^3 of the vibrating armature-lever so as to attract the metal arms B^2 B^3 with equal force, the armature-lever is drawn from its perpendicular position (where it rests, touching the non-conducting points o' o^4) against the metal points o^2 o^3, the metal points o^2 o^3 being connected by the wires c^4 c^5 with the main circuit d d' at the metal standards p' q'.

Ground-connections are formed between the helices B' C' through the wires c^4 and c^5 leading from the metal standards p' q' to the metal points o^2 o^3, the metal points o^2 o^3 being in contact with the metal linings f f of the armature-lever, and the metal linings f f in connection with the metal axles i i', and the metal axles i i' in connection with the metal standards K K, and the standards K K being in connection with the ground-plates w' w by the wires l l, two separate and distinct circuits are complete, the batteries Z and Z' being separated by the ground-connections, and these ground-connections being complete at x and w' and at w and x'. The current from the battery Z then passes from the zinc pole that is connected with the ground-plate x to the ground-plate w', which is now the terminus of the platina pole of the battery Z, which remains active in consequence of the zinc and platina poles having their respective ground-connections at the ground-plates x and w'. The current from the battery Z' also passes from its zinc pole, that is connected with the ground-plate w, which is now the terminus of the zinc pole of the battery Z', to its platina pole, that is connected with the ground-plate x'. The battery Z' also remains active in consequence of the zinc and platina poles having their respective connections with the ground at the ground-plates w and x', the helices B' being in the circuit actuated by the battery Z', and the helices C' being in the circuit actuated by the battery Z, the helices B' and C' having been previously placed sufficiently near the metal arms B^2 B^3 of the armature-lever, so as to require the power of both helices B' and C' to draw the armature-lever from its perpendicular position against the metal points o^2 o^3, the power of the helices B' not being sufficient in itself for such purpose without the aid of the helices C', and the power of the helices C' being insufficient for such purposes without the aid of the helices B'; but the helices B' and C' retain the armature-lever in its position against the points o^2 o^3 until the circuit of the battery Z' is broken again by separating the point H' of the break-circuit key 8' from the wire H leading to battery Z', which, as soon as done, destroys the attractive power of the helices B', and the helices C' not being able to retain the armature-lever in its position against the points o^2 o^3 by its power of attraction alone. The weight of the armature-lever at the arm B^3, being equivalent to a spring in this case, causes it to leave the metal points o^2 o^3 and resume its perpendicular position against the non-conducting points o' o^4, thereby breaking the ground-connections with the ground w and w', and thereby enabling the helices B' and C' to assist each other as soon as the point H' comes in contact with the wire H, making the connections between the batteries Z and Z', as heretofore described and explained.

S in Fig. 1 and Diagram 6 is a coil-spring connected with the armature-lever, and so adjusted as to draw back the armature-lever against the points o^4 o' with a force greater than the attraction of either electro-magnet, but less than the sum of their attractions. If the axles i i' enter the armature-lever at a point not in the center of gravity of the armature-lever, but between the center of gravity and the side of the armature-lever facing the helices B′, or if the arm B^3 be made heavier than the arm B^2 and the center of gravity thereby thrown between the points where the axles i i' enter the armature-lever and the side of the armature-lever facing the helices C′, the preponderance of the armature-lever will be between the axles and the side of the armature-lever facing the point o^4 and helices C′, and the spring S might not be required, as the preponderance above described would be equivalent to a spring and cause the armature-lever to fall upon the points o^4 o'; but in this use of the armature-lever without the spring S the helices B′ C′ must be so adjusted as to their distance from the armature-lever by the use of screws s' s' as that the attractions of the two magnets, acting in conjunction, shall draw the armature-lever from the points o^4 o' against the points o^2 o^3, and that when but one of the magnets is acting upon the armature-lever it shall fall from the points o^2 o^3 against the points o^4 o'.

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

The mode herein described of dividing a long line of telegraph into two sections and transmitting signals from either section to the other—viz., by means of two receiving electro-magnets at an intermediate station, the helices of which are interposed in the line of main wire, one after the other, said magnets acting in conjunction upon an armature-lever, or its equivalent, which, by the motion produced by the attraction of the magnets, makes contact of a ground wire or wires with the main line between the two helices, and the said receiving electro-magnets and armature-lever being combined with a spring, or other equivalent force, adjusted so as to draw back the armature-lever with a force greater than the attraction of either electro-magnet, but less than the sum of their attractions, or any combination of apparatus operating in substantially the same manner.

WASHINGTON ABRAM PEASLEE.

Witnesses:

JNO. G. DAVIS,

J. C. ALLEN.