

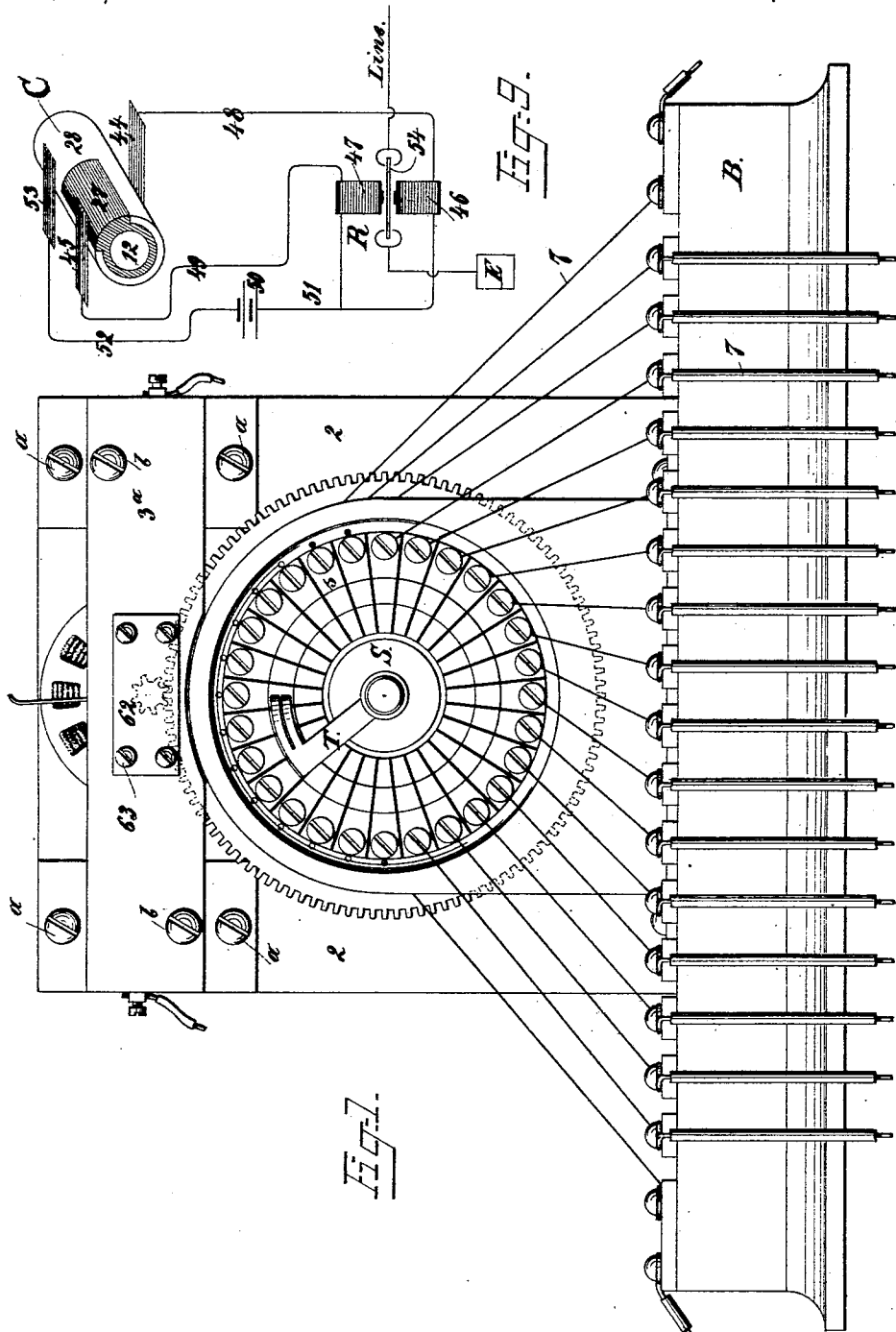
(No Model.)

4 Sheets—Sheet 1.

J. BURRY.
TRANSMITTER.

No. 541,149.

Patented June 18, 1895.



Witnesses
S. J. Palmer
Paula Bracem.

Inventor
John Burry
By his Attorneys
Wileox & Parkes

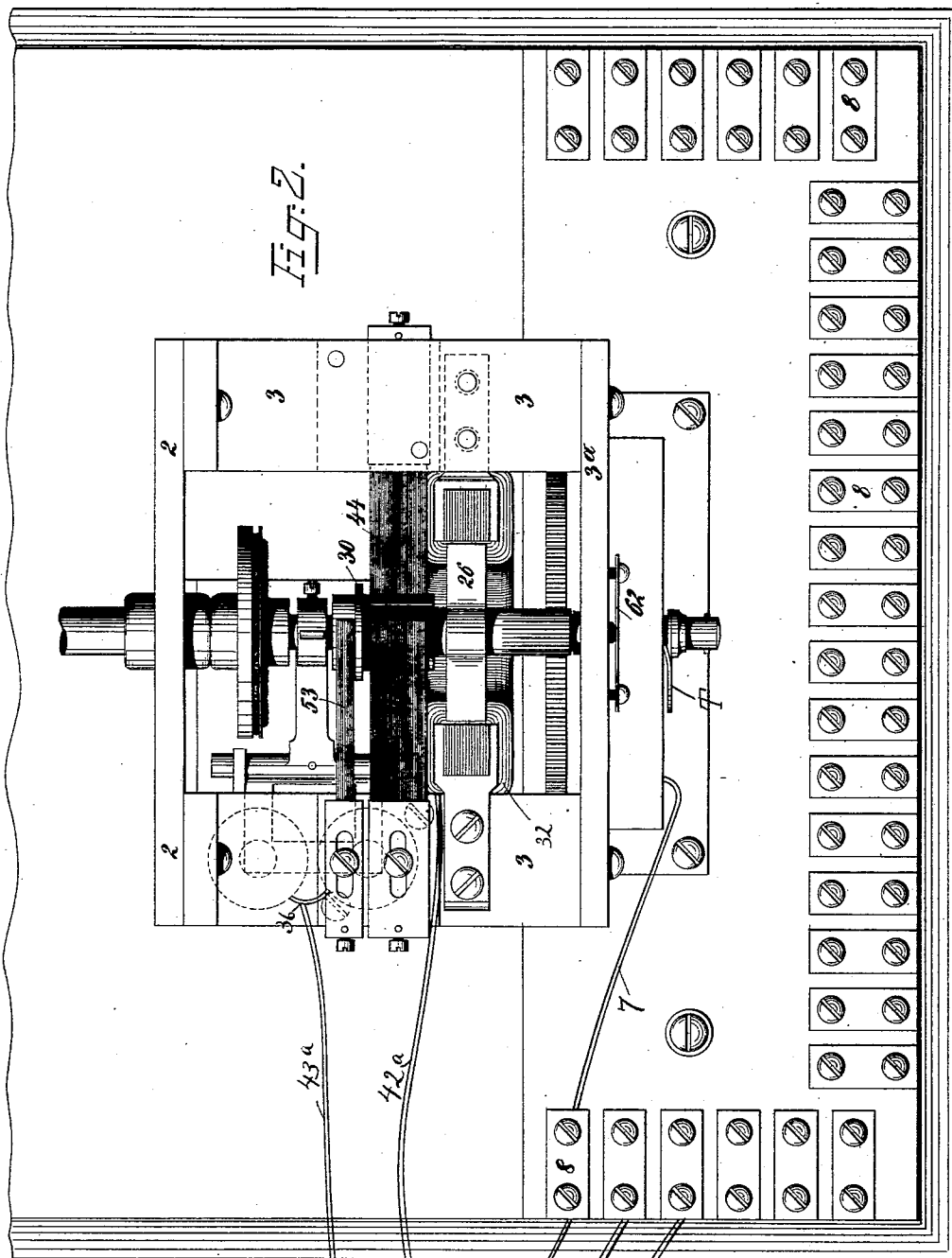
(No Model.)

4 Sheets—Sheet 2.

J. BURRY.
TRANSMITTER.

No. 541,149.

Patented June 18, 1895.



Witnesses
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Charles Brasen

Inventor
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By his Attorneys
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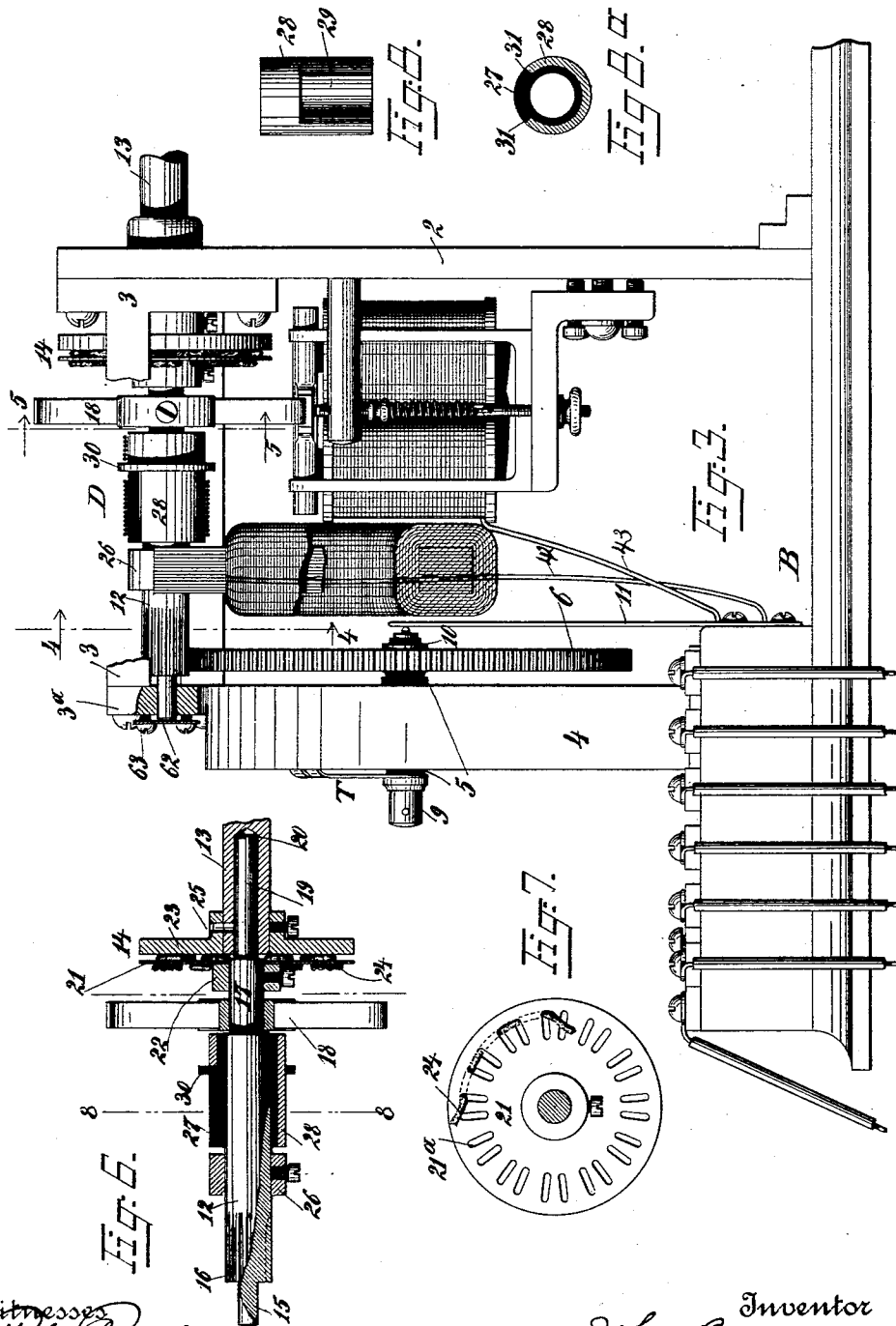
(No Model.)

4 Sheets—Sheet 3.

J. BURRY.
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No. 541,149.

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Witnesses
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Charles Brasseur

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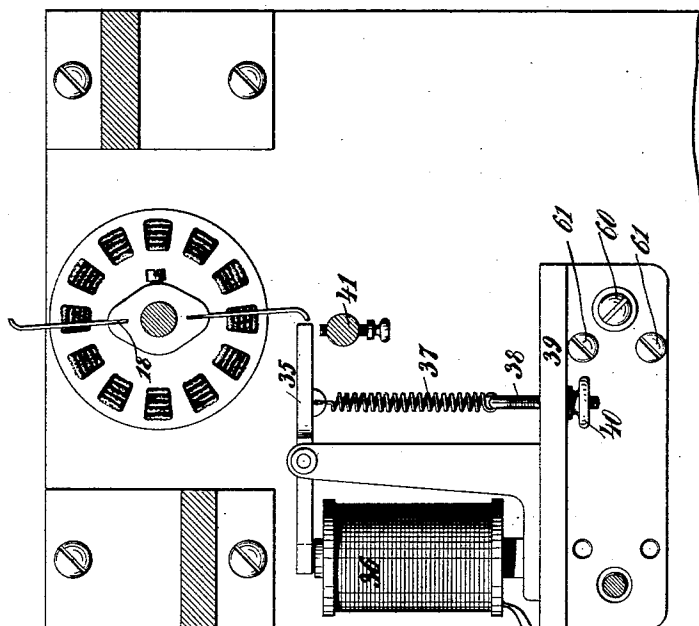


Fig. 5.

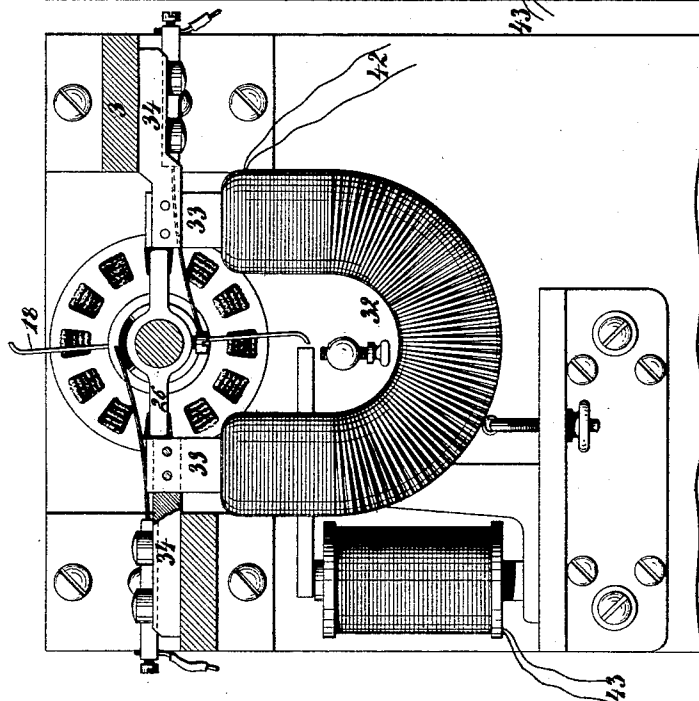


Fig. 4.

Witnesses
J. P. Palmer
Charles Bassett

Inventor
J. Burry
By *W. H. Parker*
W. H. Parker

UNITED STATES PATENT OFFICE.

JOHN BURRY, OF NEW YORK, N. Y.

TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 541,149, dated June 18, 1895.

Application filed October 23, 1893. Serial No. 488,893. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURRY, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Transmitters, of which the following is a specification.

This invention relates to telegraph transmitters of the well-known sunflower type, and more particularly to the mechanism for operating the trailer which coacts with the sunflower; the objects of the invention being to control the action of the trailer with certainty; to increase the speed of transmission; to simplify the construction and increase the endurance of such machines; and other objects, as will appear hereinafter.

To these ends, the invention consists of a driving shaft adapted to be constantly rotated, the trailer, and the sunflower, combined with mechanism comprising a clutch for connecting the rotating shaft and the trailer, an electro-magnet and its rotatory projecting-pole armature for controlling said clutch, the said poles during their rotation approaching and receding from the poles of the magnet. In the preferred form of the invention, the said rotating armature is so placed with relation to the magnet that it is moved in a direction at right angles to its plane of rotation for the purpose of disconnecting the members of the clutch in whole or in part. In addition to the foregoing electro-magnetic trailer-controlling devices, there may be used a mechanical stop for the same, consisting of arms moving with the pole-armature and an electro-magnetically operated detent-device. By preference, the said arms are resilient in their nature.

The invention also comprises a transmitter combined with a line-relay whose armature is moved in both directions by electro-magnets which are under the control of the transmitter; and other combinations of devices, all hereinafter described and more particularly pointed out in the concluding claims.

The preferred form of the invention is shown in the drawings accompanying this specification, and forming part hereof, in which—

Figure 1 is an elevation of the transmitter at the sunflower end thereof. Fig. 2 is a plan

view thereof, the means for operating the driver-shaft not being shown. Fig. 3 is a side elevation, partly in section, of the transmitter, the driver-shaft-operating means being omitted as before. Fig. 4 is a sectional view in the direction of the arrows and taken on the plane indicated by the line 4 4 in Fig. 3. Fig. 5 is a like view taken on the plane indicated by the line 5 5 in Fig. 3. Fig. 6 is a view, partly in section, of the driving-shaft shown in Figs. 2 and 3. Fig. 7 is a side view of one form of the filling-carrier of the friction clutch shown in Figs. 1, 4, and 5. Fig. 8 is a view of part of a switch on the driving-shaft. Fig. 8^a is a section on the line 8 8 in Fig. 6. Fig. 9 is a diagrammatic view showing the electrical connections whereby the transmitter controls the circuit of the line.

In its general appearance, the transmitter shown herein is similar to those heretofore known and sometimes used. It consists of a suitable base B, from which rises a standard or plate 2, from one side of which the brackets 3 project, their ends being joined by a bar 3^a.

The reference *a* marks screws by which brackets 3 are secured to the standard 2, and reference *b* marks screws by which the bar 3^a is secured to the brackets 3. The brackets 3 and bar 3^a may be integral with each other and with the standard 2. An independent standard 4 also rises from the base, and carries the sunflower S, which is or may be of usual construction, with its trailer T. The shaft 9 of the trailer is insulated from the sunflower, as usual; see reference 5, and carries a gear wheel 6, separated therefrom by insulation 10. The sectors *s* of the sunflower S are electrically independent of each other and each is connected with its key in a key-board K by wires 7 and binding-posts or plates 8.

The devices above described are or may be of usual construction.

The reference D indicates the driving-shaft, which is made up of two shafts, parts, or sections, 12 and 13, joined by a friction clutch 14. This shaft is journaled in standard 2 and bar 3^a. The part 13 is bored out at 20 to receive the reduced end or journal 19 of part 12. Adjacent the journal 19, part 12 has a larger bearing 17 on which are placed the stop-arms 18 and the sleeve or collar 22, and near its

other journal, shaft or part 12 has a gear 16 which meshes with gear 6 above named. The arms and collar are rigidly secured to the bearing 17 by set-screws or otherwise. The collar 22 has attached to it, or is integral with, the disk 21 which is divided radially or has a series of slots 21^a therein. The filling or friction-material 24 is or may be of a fibrous nature, as woolen, cotton, or silk threads or yarns, and is woven with the disk 21 as shown in Fig. 7. The disk 21 is or may be of resilient material and presses toward the disk 23 which is preferably non-resilient and is secured to part 13 of the shaft. The part 12, is arranged to have endwise motion in its bearings so as to vary the friction between disks 23 and the filling 24. This endwise motion is preferably automatic. For the purpose of moving part 12 endwise in one direction a suitable spring may be employed. One such spring is shown and consists of a resilient plate 62 against which the end of part 12 bears and whose pressure may be varied or adjusted by one or more screws 63 passing through plate 62 into bar 3^a. The endwise motion of the part 12 against the force of spring 12 is secured by means of the horse-shoe electro-magnet 32 and its armature 26 which is fast on part 12. This armature 26 is formed with two arms or projecting poles (or multiples of two) and is so placed on the part or shaft 12 that when the magnet 32 is de-energized, the spring, as 62, moves it out of the line of centers of poles 33 of the magnet. This armature rotates in such wise that the line of its poles is sometimes parallel to or coincident with the line of the poles of the magnet 32, and is sometimes at right angles thereto with or without intersection therewith—that is, the inductive effect of magnet 32 on the armature 26 is to form poles in the projecting parts, which poles are fixed, so to speak, and which in conjunction with the poles of magnet 32 act powerfully to stop the rotation of said armature. When magnet 32 is energized, the armature 26 is drawn back against the force of the spring and so takes off the pressure between the elements of the friction clutch. The poles 33 (core) of magnet 32 are supported by brackets 34, (preferably of non-magnetic nature) fixed to brackets 3. They are preferably laminated, and are in one plane with the axis of shaft D; and at a distance apart sufficient to allow armature 26 freedom of motion.

Reference 25 marks an oil-hole extending through the collar or disk 23 and the wall of the bearing 20.

Upon the part of the drive-shaft connected with the trailer is placed a suitable switch. The switch C shown in the drawings consists of a ferrule 28, one side of which is cut away, as at 29, and the ferrule 27 of rubber or other insulating material placed between the ferrule 28 and part 12, and filling the cut away 29. See Figs. 6 and 8^a. A ring, 30, of insulation may separate the complete ring from the mutilated part of ferrule 28, for a purpose

hereinafter set forth. Between the sides of the cut away or mutilation of ferrule 28 and the insulation 27 are strips 31 of non-fusing metal, as platinum, to avoid the danger of fusing the metal of shaft D.

The stop-arms 18 are preferably of resilient metal and, together with a suitable stop, as 35, act as an auxiliary of the electro-magnetic stop composed of electro-magnet 32 and its armature 26. The pivoted stop 35 normally lies out of the path of stop-arms 18, and is moved into such path by the electro-magnet 36. The stop 35 forms, or carries, the armature of electro-magnet 36. This magnet 36 is or may be carried by a support 39 fixed to the base or to standard 2. A spring 37 normally holds stop 35 against screw 41 which is adjustable in a stationary part. The tension of spring 37 may be adjusted by the screw 38 and nut 40 in a well-known manner. The electro-magnets 32 and 36 are respectively electrically connected in series or in multiple with the spring 11, which bears against the end of the shaft 9 of the trailer, as by wires 42, and 43. These magnets 32 and 36 are also connected by wires 42^a and 43^a, respectively with the before mentioned key-board.

The arms 18 and armature 26 are preferably about at right angles to each other, and are so geared with the trailer that the axis of armature 26 approaches the line of centers of poles 33 as the trailer runs onto a sector s, and is in such line of centers, shaft 12 having moved endwise against spring 62 when the trailer is in the middle of the sector. (See Figs. 1 and 4 for the last-named positions of the parts.) Hence, whenever the key is depressed, and the trailer gets on the corresponding sector s, the magnets 32 and 36 are energized, and at the same time, the armature 26 draws shaft 12 endwise, thus opening clutch 14, while an arm 18 strikes the raised stop 35 as the axis of armature 26 reaches the line of centers at poles 33, and the over-running of the shaft 12 is very quickly taken up. The resiliency of the arms 18 thus aids in checking the rotation of shaft 12 and prevents shock. When the circuit through the electro-magnets 32 and 36 is broken, spring 62 closes the clutch 14, and shaft 12 begins to rotate again, as shaft 13 is constantly rotating.

The means whereby the devices thus far described control the line circuit will now be described.

Referring to Figs. 2, 3, 4, 5, and 9, references 44, and 45 indicate brushes bearing on the commutator or switch C, preferably at opposite sides thereof.

The reference R marks a relay composed of electro-magnets 46, 47, between which the armature 54 moves. This relay is or may be constructed as in my Letters Patent, dated December 5, 1893, and numbered 510,156. An electric conductor 48 joins brush 44 and magnet 46, and a like conductor 49 connects brush 45 and magnet 47. The magnets 46, 47 are connected with one pole of a suitable gen-

erator, as a battery 50, by wires 51, while the other pole of the battery is connected by wire 52 with a brush 53 which coacts with the ring portion of the ferrule 28. The brush 53 may be separated from the cut away 29 by the ring 30 hereinbefore mentioned.

From the described construction it results that the current from battery 50 passes through the electro-magnets 46, 47 alternately and so moves armature 54. As armature 54 forms part of a line circuit, there is a break and make therein for every movement of said armature from one to the other of magnets 46, 47. The line circuit may be used to operate suitable printing telegraph instruments, which will print every time the trailer T is stopped.

The support 39 is or may be attached to the base B or to a standard 2 by one or more screws 60 which pass through it and engage threaded holes in the base or standard, while it may be adjusted in various positions by means of screws 61 which engage threaded holes in the support 39 and whose ends bear against the base or standard as the case may be.

The section 13 of the drive-shaft is held against endwise motion (in at least one direction) by suitable means, as the collar of disk 23 and the standard through which the shaft passes.

The brushes 44, 45 and 53 are or may be composed of wires which bear flatwise on the commutator. These brushes are shown as being carried by slides 65 held in place by slots 66 and screws 67, while they are connected with conductors 48, 49, 53 by binding screws or posts 68.

While the two-arm armature 26 is shown as making one-half turn while the trailer T crosses a sector s, it is obvious that it may have four arms and be so geared to the trailer T as to make one-quarter turn while the trailer crosses a sector; and other proportions may be used.

Again, so far as certain features of this invention are concerned, either of the two magnets 32, 36 and its coacting parts may be omitted, as the remaining one will still control the clutch, but the use of both is preferable as greater speed of transmission results. In so far as other features of the invention are concerned, other forms of clutch may be used without departing from the invention. Many other changes in details may be made without departing from the spirit of this invention. Thus, both shafts 12 and 13 may be capable of motion toward and from each other to vary the friction of the clutch 14.

The shaft 13 is driven by any suitable motor, as by an electric motor placed directly on or geared thereto.

The armature 26 may be fixed to one member of the clutch, and said member be splined to its shaft so as to be capable of endwise or longitudinal motion thereon.

The clutch-mechanism herein shown, but

not claimed, is claimed in my application for Letters Patent filed on the 16th day of April, 1894, Serial No. 507,795.

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

1. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, and a rotatory projecting-pole armature which controls said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

2. In a transmitter, the combination with a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, and a projecting-pole armature rigid with one member of said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

3. In a transmitter, the combination with a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet and a rotatory projecting-pole armature controlling said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

4. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet, and a projecting-pole armature rigid with one member of said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

5. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, a rotatory projecting-pole armature which controls said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, a stop-arm or arms rigid with one member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

6. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, a projecting-pole armature rigid with one member of said clutch;

said poles approaching and receding from the poles of said magnet during the rotation of the armature, a stop-arm or arms also rigid with said clutch, and an electro-magnetically operated detent-device coacting with said arms, substantially as described.

7. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet, a projecting-pole armature controlling said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, a stop-arm or arms rigid with one member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

8. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet, a projecting-pole armature rigid with one member of said clutch, said poles approaching and receding from the poles of said magnet during the rotation of said armature, a stop-arm or arms rigid with said member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

9. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, a rotatory projecting-pole armature which controls said clutch, said poles approaching and receding from the poles of said magnet during the rotation of said armature, a resilient stop-arm or arms rigid with one member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

10. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, an electro-magnet, a projecting-pole armature rigid with one member of said clutch, said poles approaching and receding from the poles of said magnet during the rotation of said armature, a resilient arm or arms rigid with said member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

11. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet, a rotatory projecting-pole armature controlling said clutch, said poles approaching and receding from the poles of said magnet during the rotation of said armature, a resilient arm or arms rigid with one member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

12. In a transmitter, the combination of a

sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, an electro-magnet, a projecting-pole armature rigid with one member of said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, a resilient arm or arms rigid with said member of said clutch, and an electro-magnetically operated detent-device for said arms, substantially as described.

13. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, one member of said clutch being capable of movement toward and from the other member, said clutch being normally operative to drive the trailer, an electro-magnet, and a projecting-pole armature therefor rigid with said to-and-fro movable member of the clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, the line of said armature-poles being normally out of the line of the magnet-poles, whereby the armature and attached member of the clutch are drawn away from the other member of the clutch and stopped whenever the magnet is energized, substantially as described.

14. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating the trailer, a clutch connecting said shafts, said second shaft and its member of said clutch being capable of motion toward and from the other member, said clutch being normally operative to drive the trailer, an electro-magnet, and a projecting-pole armature therefor fixed on said second shaft, the poles thereof approaching and receding from the poles of the magnet during the rotation of said armature, and the line of poles of said armature being out of the line of poles of said magnet, whereby the magnetic pull moves the member of the clutch carried by the second shaft away from the other member, substantially as described.

15. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, one member of said clutch being capable of movement toward and from the other member, said clutch being normally operative to drive the trailer, an electro-magnet, a projecting-pole armature therefor rigid with said to-and-fro movable member of the clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, the line of said armature-poles being normally out of the line of magnet-poles, a stop-arm or arms rigid with said to-and-fro member of said clutch, and an electro-magnetically operated detent-device for said arms, whereby the armature and attached member of the clutch are drawn away from

the other member thereof and stopped whenever the magnet is energized, substantially as described.

16. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, a second shaft operating said trailer, a clutch connecting said shafts, said second shaft and its member of said clutch being capable of movement toward and from the other member, the clutch being normally operative to drive the trailer, an electro-magnet, a projecting-pole armature therefor fixed on said second shaft, said poles approaching and receding from the poles of said magnet during the rotation of the armature and the line of said armature-poles being normally out of the line of the magnet-poles, a stop-arm or arms fixed on said second shaft, and an electro-magnetically operated detent-device for said arms, whereby the member of the clutch carried by the second member of the clutch is drawn away from the other member thereof and the trailer stopped whenever the magnet is energized, substantially as described.

17. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with clutch-including mechanism connecting said shaft with said trailer, one member of said clutch being capable of movement toward and from the other member and said clutch being normally operative to drive the trailer, an electro-magnet, a projecting-pole armature therefor rigid with said to-and-fro movable member of the clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, the line of said armature-poles being normally out of the line of the magnet-poles, a resilient stop-arm or arms rigid with said to-and-fro movable member of said clutch, and an electro-magnetically operated detent-device for said arms, whereby the armature and attached member of the clutch are drawn away from the other member thereof and stopped whenever the magnet is energized, substantially as described.

18. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a clutch connecting said shafts, said second shaft and its member of said clutch being capable of motion toward and from the other member and the said clutch being normally operative to drive the trailer, an electro-magnet, a projecting-pole armature fixed on said second shaft, said poles approaching and receding from the poles of the magnet during the rotation of said armature, and the line of poles of said armature being out of the line of the poles of said magnet, a resilient stop-arm or arms fixed on said second shaft, and an electro-magnetically operated detent-device for said arms, whereby the armature, the shaft and attached member of the clutch are drawn away from the other member thereof and stopped whenever the magnet is energized, substantially as described.

19. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer, a friction clutch connecting said shafts, an electro-magnet, and a rotatory projecting-pole armature which controls said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

20. In a transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating the trailer, a disk upon one of the said shafts, a filling-carrier upon the other shaft, a filling in said carrier bearing against said disk, an electro-magnet, and a rotatory projecting-pole armature which controls said clutch, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

21. In a telegraph transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating said trailer said second shaft being capable of motion endwise, a disk on one of said shafts, a filling-carrier on the other shaft, a filling in said carrier bearing against the disk and forming a clutch which is normally operative to drive the trailer, an electro-magnet, and a projecting-pole armature fixed on said second shaft, said poles approaching and receding from the poles of said magnet during the rotation of the armature, whereby the armature and trailer are brought to rest whenever the magnet is energized, substantially as described.

22. In a telegraph transmitter, the combination of a sunflower, a trailer therefor, and a rotating driving shaft, with a second shaft operating the said trailer said second shaft being capable of motion endwise, a disk on one of said shafts, a filling-carrier on the other shaft, a filling in said carrier bearing against the disk and forming a clutch which is normally operative to drive the trailer, an electro-magnet, and a projecting-pole armature fixed on said second shaft with its line of poles out of the line of poles of the said magnet, the poles of the armature approaching and receding from the poles of said magnet during the rotation of the armature, and being drawn with the shaft and attached member of the clutch away from the driving shaft and its member thereof whenever the magnet is energized, substantially as described.

23. In a transmitter, the combination of a sunflower and its trailer, with a sectional driving-shaft, a clutch connecting said sections, horse-shoe electro-magnet 32, armature 26, resilient arms 18, electro-magnet 36, and its stop-armature 35, substantially as described.

24. In a transmitter, the combination of a

sunflower, its trailer, a one-piece shaft geared to said trailer and having arms rigid therewith, a rotary driving-shaft, one of said shafts being bored to receive the end of the other, a
5 friction clutch connecting said shafts, and means for coacting with said arms to stop said one-piece shaft and the trailer, substantially as described.

25. In a transmitter, the combination of a
10 sunflower, its trailer, a one-piece shaft geared to said trailer and having arms rigid therewith, a rotary driving-shaft having a bore to receive the end of said one-piece shaft, a friction clutch connecting said shafts, and means
15 for coaction with said arms to stop said one-piece shaft and the trailer, substantially as described.

26. In a telegraph transmitter, the combination of a sunflower, a trailer therefor, a two-
20 section driving shaft, a friction clutch connecting said sections, an armature and a switch on that section connected with the trailer, an electro-magnet controlling said armature, electric connections from said magnet
25 to the trailer, brushes bearing on said switch, a relay having oppositely arranged electro-magnets, an armature between said magnets, and independent electrical connections from the brushes to said opposing magnets, sub-
30 stantially as described.

27. In a transmitter for telegraphic purposes, the combination of oppositely placed electro-magnets, an armature between them, a rotary shaft having a switch, brushes bear-
35 ing flatwise thereon, a source of electrical en-

ergy, electric connections from said source to said switch, and electric connections joining said brushes and said electro-magnets pair by pair independently of each other, whereby the circuits through said brushes are opened
40 and closed by the revolutions of the shaft, and the oppositely placed electro-magnets are charged and discharged alternately, and the armature is moved, substantially as described.

28. The combination of shafts 12 and 13, the
45 shaft 12 having longitudinal play in its bearings, the spring 62 pressing shaft 12 toward shaft 13, horse-shoe electro-magnet 32, its armature 26 secured to shaft 12 at a point be-
50 tween the line of centers of the poles of magnet 32 (when the same is inactive) and shaft 13, a friction clutch joining shafts 12 and 13, a sunflower, and its trailer, substantially as described.

29. The combination of rotatory shaft 12, the
55 switch C thereon, the brushes 41, 45 and 53 bearing on said switch, the opposing electro-magnets 46 and 47, the armature between them, a source of electrical energy, and elec-
60 tric conductors 48, 49, 51 and 52, all substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 17th day of October, 1893.

JOHN BURRY.

Witnesses:

RICHARD W. BARKLEY,
O. A. CAMPBELL.