

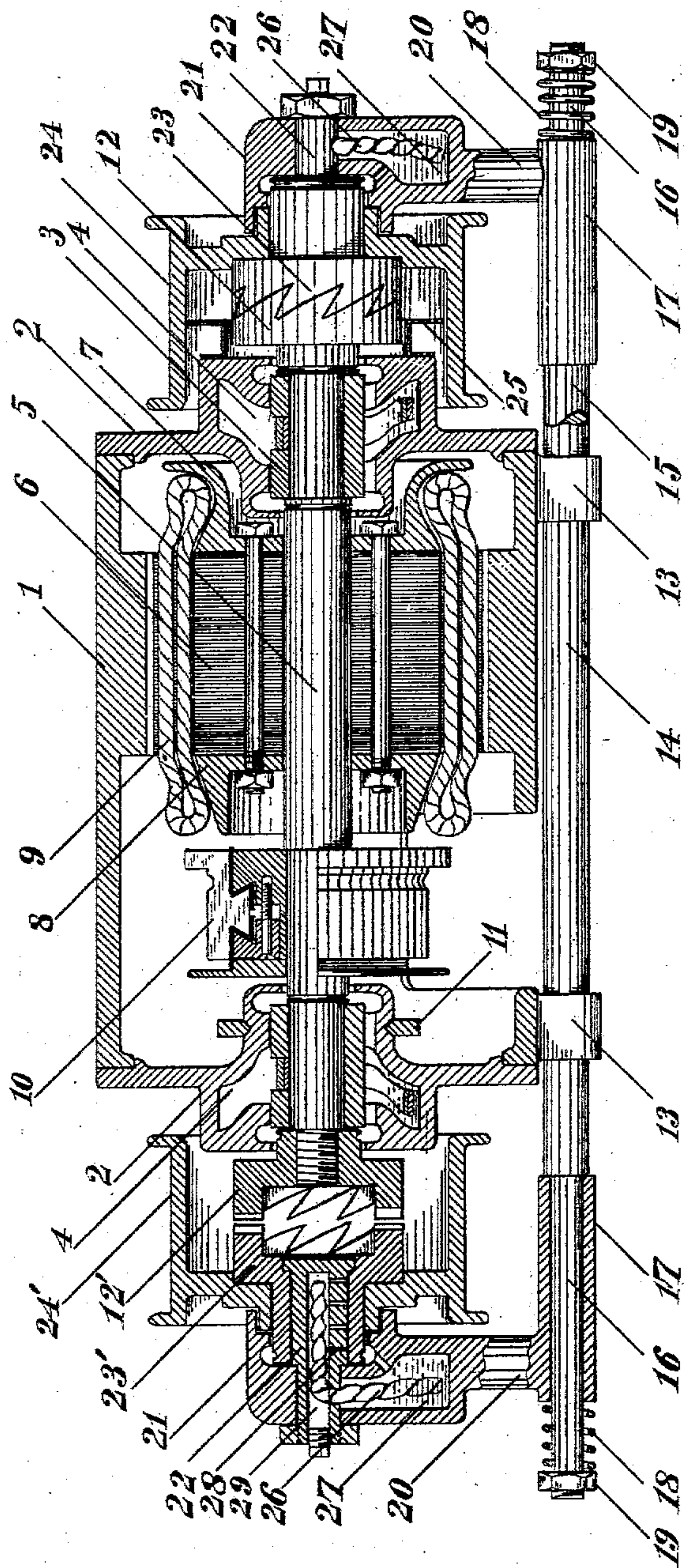
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J. L. CREVELING.  
DYNAMO DRIVING MECHANISM.

APPLICATION FILED NOV. 29, 1902.

NO MODEL.



WITNESSES:

*W. H. Squire*  
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# UNITED STATES PATENT OFFICE.

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## DYNAMO DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 721,025, dated February 17, 1903.

Application filed November 29, 1902. Serial No. 133,302. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. CREVELING, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Dynamo Driving Mechanism, of which the following is a specification, reference being had to the drawing forming a part thereof.

My invention pertains to that class of dynamo driving mechanism used for driving the armature of the generator in one direction only irrespective of the direction of the movement or rotation of the driving member, and has for its particular object to produce a generator and driving-gear applicable for train-lighting by electricity generated by power taken from the motion of the train. In this class of apparatus the direction of rotation of the driving member obviously changes with the direction of the motion of the train, and while the mechanism shown in the drawing is of this particular type it is applicable to any generator driven alternately by one or the other of two pulleys revolving in opposite directions, one being in operative communication with the armature-shaft and the other running as an idler, the selection of which shall be the operative and which the idle pulley being automatic and determined by the respective rotations of the said pulleys. A convenient method of rotating the said pulleys in opposite directions by the motion of the train is shown and described in Patent No. 709,848, granted to me September 23, 1902. Therefore the particular means whereby the power is transmitted from the axle or other moving part of the car to the pulleys forming no part of my present invention are omitted in this application.

The drawing shows a longitudinal sectional view of a generator and driving-gear embodying my invention.

Referring to the drawing, 1 represents the field frame or casing of the dynamo or generator, which is of a salient consequent four-pole type designed to be as flat as possible and for this reason shows no field-winding in the drawing.

The casing 1 is provided with suitable end flanges 2, carrying suitable bearings 3, surrounded by the oil-chamber 4, from which the journals may readily be lubricated by suit-

able means, as the wick shown. These bearings support the armature-shaft 5, carrying the core-disks 6, which are firmly held in place by the spiders 7 and 8, forming the armature, the slots of which carry the coils, as indicated by 9.

10 represents the commutator from which the current is collected, as by means of suitable brushes, (not shown,) which may be supported as by the brush-rocker, (indicated at 11.)

One end of the armature-shaft 5 carries the clutch members 12, while the opposite end of the armature-shaft is provided with the clutch member 12'. The dynamo-case 1 is provided with four bosses, two of which are marked 13. The two shown in the section carry the rod 14, which is free to move in a longitudinal direction. The two not shown carry the rod 15, a portion only of which is shown, in a like manner. These rods have contracted portions 16, upon which are fitted the sleeves 17 in such manner as to have longitudinal motion thereon and are held in the positions shown in the drawing by the springs 18 and nuts 19. These sleeves carry the pillars 20, which support the heads 21, which carry the studs 22, upon which are revolubly mounted the clutch members 23 and 23'. Mounted on the said clutch members and revolving therewith are the driving-pulleys 24 and 24'.

The heads 21 are provided with oil-cavities 27, from which oil is fed to the pulley-journals, as by wicks 26, which communicate with the oil-cavities and the cavity 29 within the stud and suitable apertures to the journal, as indicated at 28.

Any suitable dust-guard may be used to prevent dust from entering the bearings, a convenient form being indicated in the drawing by 25. Any suitable dust-guards may also be applied to the other exposed journals, and it will be noticed that in all cases provision is made for returning excess oil from the journals to the oil-cavities.

The operation of my improved generator driving-gear is as follows, taking the various parts as in their respective positions indicated in the drawing: Supposing that the pulley 24 be so revolved that its uppermost rim is passing away from the observer and that the uppermost rim of the pulley 24' is



simultaneously moving in a direction toward the observer, pulley 24 will cause the clutch member 23 to rotate in the same direction as the pulley, which being engaged with the clutch member 12 will cause the armature-shaft to rotate therewith, thus imparting motion to the armature in such direction as to cause its uppermost part to be driven away from the observer. Pulley 24' will cause the clutch member 23' to revolve with it; but these members will run idly and entirely out of engagement with the clutch member 12' so long as the pulleys rotate in the direction mentioned above, the clutch member 23 being held firmly into the clutch member 12, owing to the torque and particular shape given the teeth of the said clutch members. Should the pulleys 24 and 24' have their respective directions of rotation reversed, the clutch member 23 will back away from the clutch member 12, the teeth performing the function of a screw, and thus move the head 21 and its support, together with rods 14 and 15 and members supported thereby, in a right-handed direction. This will cause the clutch member 23' to engage with the clutch member 12', and owing to the particular shape of the teeth used by their engagement will act to further move in a right-handed direction, causing entire disengagement of the clutch members 12 and 23. The pulley 24' now rotating in such direction that its uppermost rim is passing away from the observer and having its clutch member 23' engaged with the clutch member 12' will impart rotation to the armature in the same direction as when the two pulleys were rotating in the reverse direction, as outlined above. If at any time in the process of reversal the points of the teeth of the clutch members should come in contact—in other words, should they get out of "phase," so to speak—the springs 18 will allow the sleeves 17, together with the members supported thereby, to yield sufficiently to pass the points of the teeth and then press the clutches into proper engagement.

From the foregoing it is obvious that the armature will always rotate in a uniform direction, and repeated reversals in direction of the driving-gear will merely cause the above-outlined operations to be repeated. It is also obvious that the pulley running as an idler will be entirely disengaged from the armature-shaft, and running upon its own independent stud-bearing, the contact portions of said bearing will not be subjected to a velocity of revolution greater than the number of revolutions made by the pulley itself, the revolution of the armature-shaft in the opposite direction thereto having no connection whatever with the revolution of the pulley.

I do not limit myself in any way to the particular details of construction or form indicated in the drawing, which merely shows one form of apparatus comprehending my

invention as at present employed by me; nor do I limit myself to any particular means whereby the pulleys driving the armature derive their revolution, it being sufficient that there be a plurality of pulleys and that their direction of rotation be not uniform.

Having thus described my invention, what I desire to secure and protect by Letters Patent is as set forth in the following claims, to wit:

1. The combination with a generator driven from a reversible source of power, of a driving-gear embodying in its structure clutch mechanism and cooperating pulleys, supported independent of and on opposite sides of the armature, adapted to communicate motion from one direction only to the generator irrespective of the reversals of the direction of movement of the source of power.

2. The combination of a generator whose driving power is liable to reversals and clutch mechanism and cooperating pulleys placed at opposite ends of the armature and supported independent thereof, and means whereby motion in one direction only is imparted to the armature irrespective of reversals in direction of movement of the source of power.

3. The combination of a generator provided with a movable part and a shaft, a plurality of pulleys adapted to communicate motion to the said movable part by clutch mechanism intervening between the pulleys and the shaft and means supporting said shaft independent of the pulley-supports.

4. In a system of distribution for railway-cars, the combination of a generator having a casing or frame, pulleys having independent bearings on either side of the said casing or frame, and clutch members and cooperating means intervening between the pulleys whereby the clutch members of one pulley are held entirely out of engagement while the clutch members of the other pulley are engaged.

5. The combination of a generator provided with a shaft, a plurality of pulleys with supports independent of the said shaft, and adapted to communicate motion to the movable part of the generator by clutch mechanism intervening between the pulleys and the said shaft.

6. The combination in a car-lighting system of a generator driven from a source of power liable to reversal, comprising in its structure a rotary part and a shaft driving the same, the said shaft being in alinement with pulleys placed one on each side of the said rotary part, and supported by bearings independent of the said rotary part, and clutches intervening between the said pulleys and the said rotary part.

7. The combination of a generator driven from a reversible source of power, a shaft, a plurality of pulleys in alinement with said shaft on opposite sides of the generator, and a plurality of positively-engaging clutches adapted to communicate motion to the gen-



erators in one direction only irrespective of the reversal of direction of movement of the source of power, said clutches having members supported independent of the armature-shaft.

8. A generator provided with a shaft combined with a plurality of pulleys in alinement with said shaft, and supported independent thereof, one on each side of the generator, and clutch members, each clutch member cooperating with a mate forming a part of the driving-gear of the generator and means whereby the said clutch members are engaged one from the other by reciprocal action, one clutch member being entirely disengaged while the other is engaged.

9. The combination of a dynamo-frame constituting a shaft hanger or support and a shaft and a plurality of pulleys, one on each side of the dynamo-frame, each supported independent of the dynamo-shaft and adapted to drive the armature and means intervening between the pulleys whereby the pulleys may be driven in opposite directions.

10. The combination of a generator, a frame serving as a hanger or support therefor, driving-pulleys for the said generator on opposite sides thereof, and revolving in opposite directions upon independent shafts, and a plurality of clutches, one clutch cooperating with each pulley and means whereby the movement of disengagement of one clutch causes engagement of the other.

11. The combination with a dynamo, its armature-shaft and clutch members operatively connected with said shaft, and a plurality of pulleys and cooperating clutch members operatively connected therewith, of supports for said pulleys independent of the armature-shaft.

12. The combination with a dynamo, its armature-shaft and clutch members operatively connected with said shaft, of a plurality of pulleys and cooperating clutch members operatively connected therewith, and supports for said pulleys out of contact with the armature-shaft.

13. The combination with a dynamo, its armature-shaft and clutch members operatively connected with said shaft, and a plurality of pulleys and cooperating clutch members op-

eratively connected therewith, of supports for said pulleys in alinement with but independent of the armature-shaft.

14. The combination with a dynamo, its armature and shaft and clutch members revolving with the shaft of pulleys at each side of the armature and cooperating clutch members revoluble independent of said armature-shaft.

15. The combination with a dynamo and its armature of pulleys revoluble in opposite directions, on each side of said armature, of means engaging one or the other of said pulleys with the armature depending upon the direction of rotation of the pulleys and means supporting the said pulleys independent of the armature-shaft.

16. The combination with pulleys and supports therefor of a generator having a rotating member between the said pulleys, of engaging means cooperating with the pulleys and the said rotating member and means supporting the said rotating member and independent of the pulley-supports.

17. The combination of a dynamo its armature-shaft and clutch members operatively connected therewith and a plurality of pulleys and cooperating clutch members of supports for said pulleys independent of the armature-shaft and means transmitting longitudinal motion from one of said supports to the other.

18. The combination with a generator and its armature of pulleys at opposite ends of the armature, of bearing members for said pulleys supporting the same from the sides of the pulley farthest removed from the armature.

19. The combination with the generator and its armature and pulleys at opposite ends of the armature, of bearing members for said pulleys supporting the same from the sides of the pulleys farthest removed from the armature and clutch members engaging the pulleys and armature.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN L. CREVELING.

Witnesses:

M. B. RICHMOND,  
W. N. SQUIRES.