

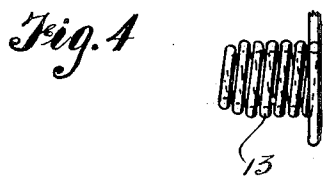
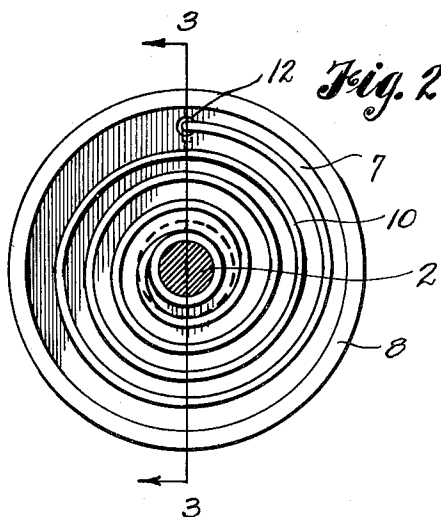
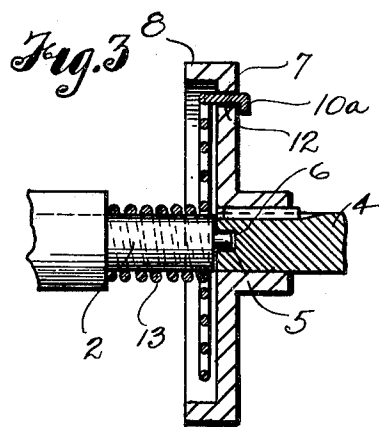
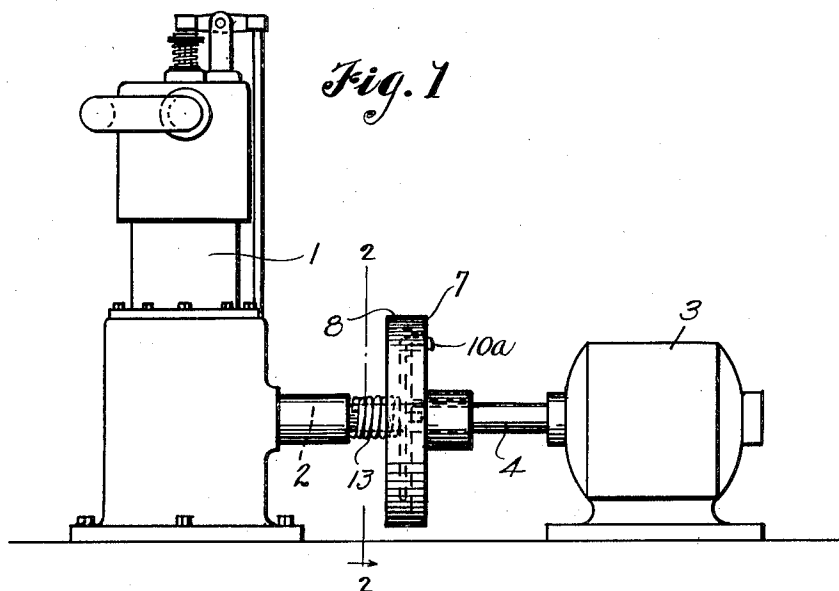
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2,061,827

DRIVING CONNECTION

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2,061,827

DRIVING CONNECTION

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1 Claim. (Cl. 192—41)

This invention relates to improvements in driving connections, and it has reference more particularly to a yielding, or shock absorbing, connection that is especially designed as a means for driving an electric generator from an engine of the internal combustion type. It is to be understood, however, that the connection may successfully be employed for other uses.

Explanatory to the present invention, it will here be stated that when a current generator used for lighting purposes is driven by a direct connection with an internal combustion engine having one or two cylinders, there will be a noticeable flicker in the light produced by reason of the fact that the successive impulses of the engine are transmitted to the generator and the operation of the latter is not steady, but flickers in accordance with the impulses.

In view of the above it has been the object of the present invention to provide an improved driving connection between the engine and generator shafts whereby the impulses of the engine are absorbed to such an extent that there will be no noticeable flicker in the light produced.

It is also an object of the present invention to provide a driving connection as above stated which acts also as an automatic clutch to release the generator for coasting when the engine is stopped, but which will automatically become effective as soon as the engine is started up.

Other objects of the invention reside in the details of construction and in the combination of parts and in their mode of operation as will hereinafter be described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated wherein—

Fig. 1 is a view in side elevation of an engine and generator that have a driving connection embodied by the present invention.

Fig. 2 is a face view of the driving spiral taken on the line 2—2 in Fig. 1.

Fig. 3 is an enlarged cross-sectional view of the connection on the line 3—3 in Fig. 2.

Fig. 4 is a view illustrating the reducing of the diameter of the coil portion of the connecting means to cause it to firmly grip the driving shaft.

Referring more in detail to the drawing—

1 designates what may be any of the ordinary types of internal combustion engines having a driving shaft 2 operated by connections not herein illustrated with the piston of the engine; it being understood that the reciprocating action of the piston is converted into rotary motion in

the shaft. 3 designates an electric current generator of the ordinary type with a driving shaft 4 axially aligned with the engine shaft 2.

In Fig. 3 the shaft 2 has been shown as having a pilot or guide 5 at its end operating freely within a socket 6 in the adjacent end of the shaft 4, but this is not essential to operation of the invention.

Keyed on the shaft 4 is a wheel, or disk, 7 having a peripheral flange 8 extending to one side, and confined within the wheel is a spring wire spiral 10 of several convolutions, which at its outer end has a hook 10a attached to the wheel by projection through a hole 12 in the wheel. At its inner end, the spiral is formed into a coil 13 that extends along the adjacent end of the shaft 2. The coil is loosely fitted to the shaft and at the end of the coil the windings thereof are just slightly decreased in diameter to cause them to lightly grip the shaft when the shaft is rotated in the direction in which the coil is wound; that is, in its normal driving direction. However, by reason of the direction of winding, the coil will slide freely on the shaft when the latter is rotated in a direction relatively opposite to the direction of the generator shaft, such for instance, as occurs when the engine is stopped and the generator continues to rotate at a faster rate than the rate of rotation of the engine shaft. The coil portion should have sufficient turns so that it will hold firmly to the driving shaft by tightening thereon; it being understood that when the end of reduced diameter grips the shaft only lightly this will cause the several turns of the coil to progressively tighten and grip the shaft, to such an extent that a positive driving connection is made possible. It has been demonstrated by actual test that this coil portion will grip and effect a driving connection even though operating in oil.

It is to be understood that the disk or wheel 7 serves not only as a means for attachment of the spiral to shaft 4 but also operates as a fly wheel to give inertia to the generator. Thus, in the event that the generator rotor is light in weight, the fly wheel supplies the necessary inertia to insure steadiness of operation.

Assuming the device to be so constructed, it is apparent that when the engine is started, the shaft 2 will be rotated in its normal driving direction. The coil portion 13 will by reason of the drag of the turn of reduced diameter, grip the shaft 2 and through the several convolutions of the spiral will cause the generator shaft to be rotated. The impulses of the engine transmitted

from the piston to the shaft 2 will be absorbed in the spiral and there will be only a steady driving force applied to the generator. If the engine is stopped, the generator is permitted to coast until it comes to a stop of its own accord. This is by reason of the fact that as soon as the speed of rotation of the generator shaft exceeds the speed of the engine shaft, the coil 13 will have the tendency of unwinding on the shaft 2, and this unwinding causes a slight increase in its diameter whereby its clutching property is nullified. In this use, the connection acts both to absorb shock and also as an automatic clutch whereby no strain is placed on the connection incident to the stopping of the engine. In the event that there should be an expansion of the spiral resultant to a sudden stopping of the engine before the coil could release its grip, the flange of the disk 7 acts as a stop to restrict the unwinding tendency of the spiral.

It is to be understood that the present illustration is descriptive of only one of the various uses

to which the present device may be applied. Also, that it may be reversed in its application to the shafts by proper direction of winding of the coils.

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

The combination with a driving shaft and a driven shaft in alinement therewith, of a driving connection comprising a disk axially fixed on the driven shaft, a flat spiral spring of a plurality of convolutions fixed at its outer end to the disk and terminating at its inner end in a coil of a plurality of turns formed about the end of the driving shaft in a loose fit, with the end turns of the coil slightly gripping the shaft whereby to effect a tightening action of the coil under driving action of the shaft, and an automatic loosening of the coil incident to a relative reverse turning of the driven shaft; said disk having a peripheral flange extended to limit the expansion of the spiral.

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