No. 789,642. PATENTED MAY 9, 1905.

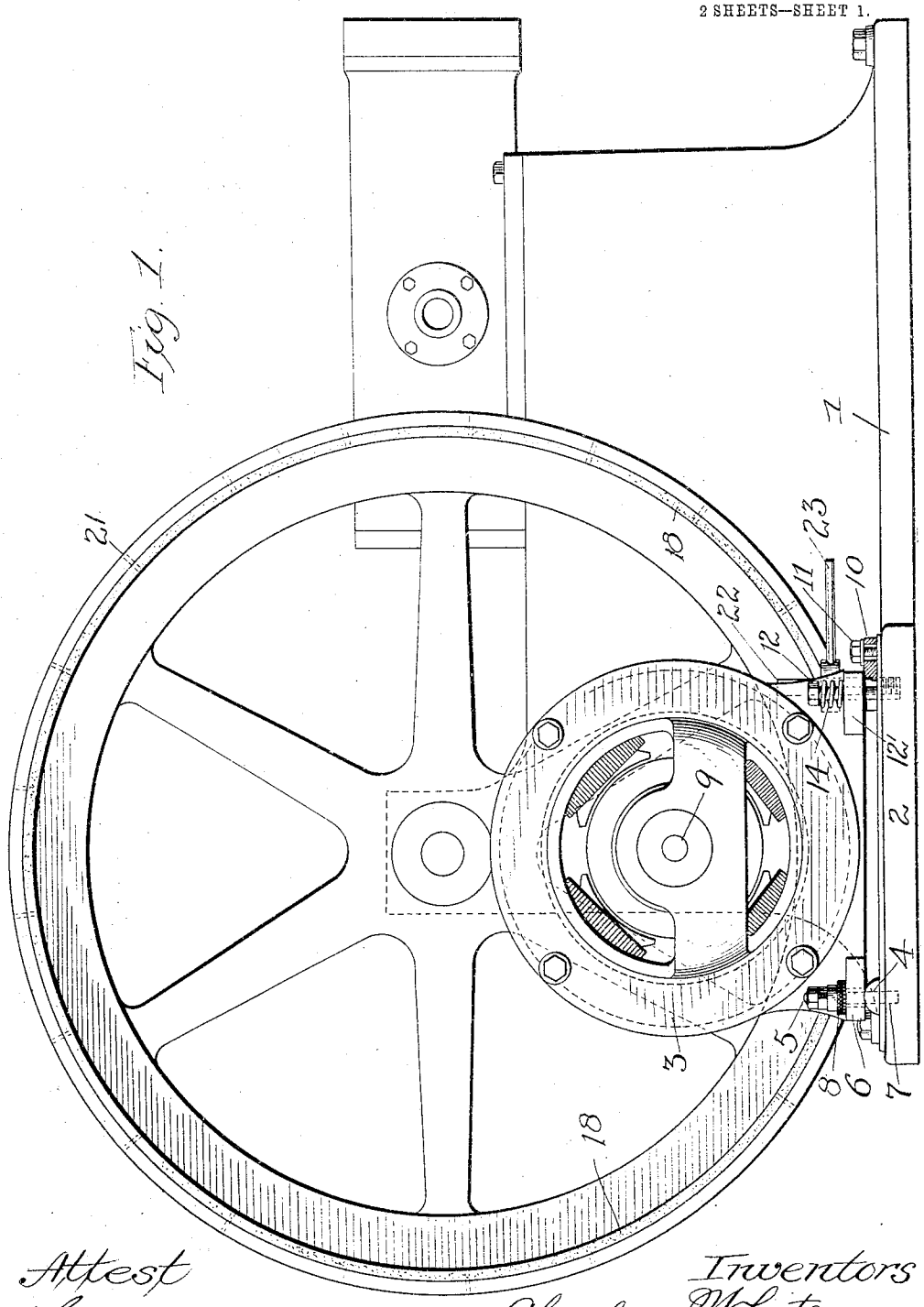
C. WHITE & A. R. MIDDLETON.

POWER TRANSMISSION.

APPLICATION FILED FEB. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Attest
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2 SHEETS—SHEET 2.

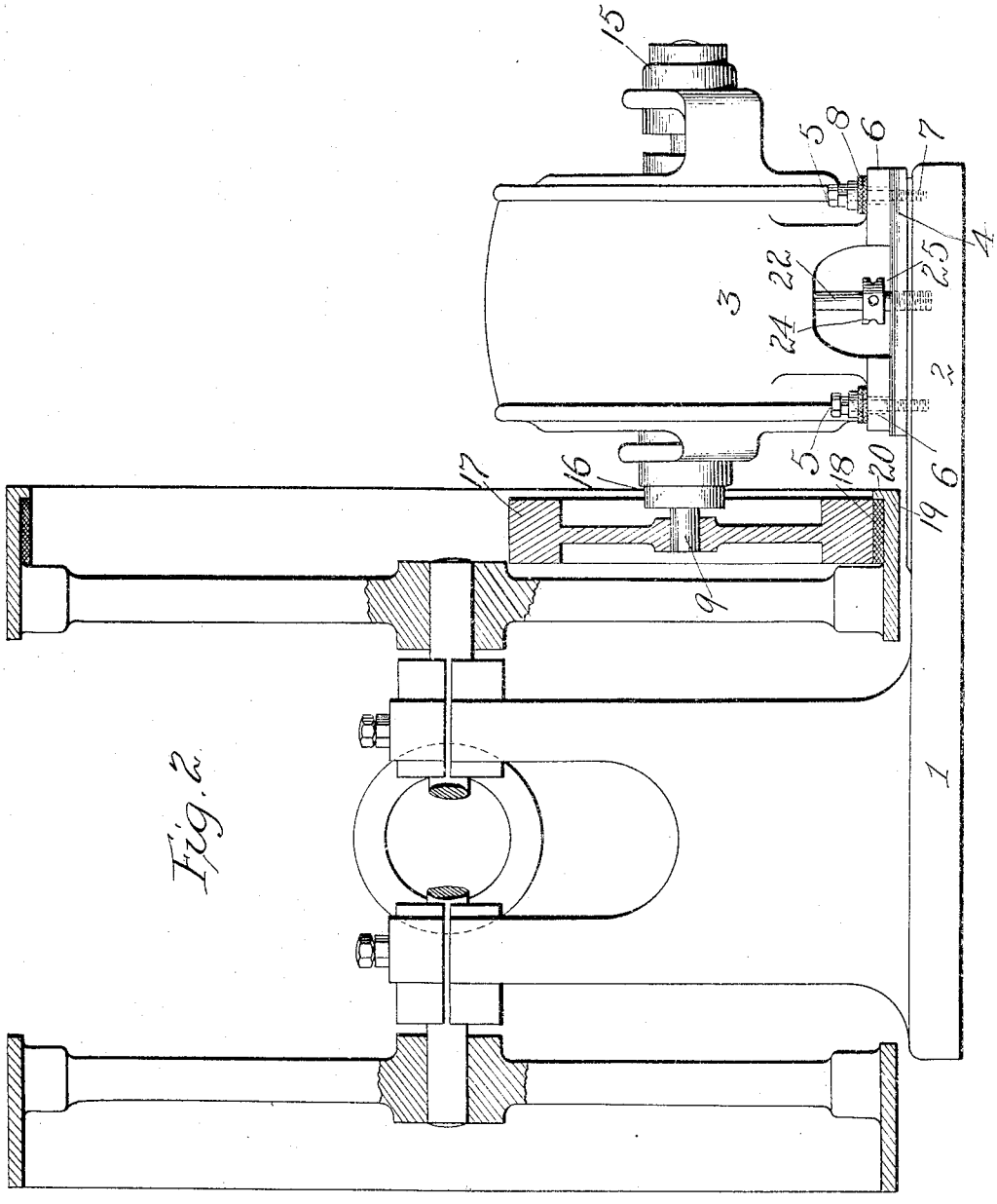


Fig. 2.

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No. 789,642. Patented May 9, 1905.

UNITED STATES PATENT OFFICE.

CHARLES WHITE AND ARTHUR R. MIDDLETON, OF BALTIMORE, MARYLAND.

POWER TRANSMISSION.

SPECIFICATION forming part of Letters Patent No. 789,642, dated May 9, 1905.

Application filed February 9, 1905. Serial No. 244,960.

To all whom it may concern:

Be it known that we, CHARLES WHITE and ARTHUR R. MIDDLETON, citizens of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Power Transmission, of which the following is a specification.

Our invention is designed to provide means whereby an apparatus to be driven—such, for instance, as an electric generator—may be connected to the engine without the interposition of a belt, the connection being made directly with the fly-wheel of the engine and being of such a character and arrangement as will relieve the driven shaft of strain and relieve it also to a great extent of friction in its bearings. We have also sought to provide such an arrangement as will be capable of quick and easy adjustment, whereby the apparatus may be set to work under full load or may be quickly disconnected from the driving member.

The invention consists in the features and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of the main parts of a gas-engine with our invention in connection therewith. Fig. 2 is an end view, partly in section, of Fig. 1.

In carrying out our invention we extend the base 1 of the engine, which is shown here as a gas-engine, but which is representative of any suitable form of driving means. The said extension projects laterally in relation to the engine, as shown at 2, and opposite the fly-wheel. On this extension of the base is supported the apparatus to be driven. We have shown this in the present case as consisting of a dynamo; but it will be understood that this is representative of any suitable form of machine to which it may be desired to transmit power through direct connection with the fly-wheel. The frame 3 of the dynamo is adjustably supported upon the extension 2 of the base, for which purpose one side of the frame rests upon a semi-cylindrical bar 4, arranged with its curved surface uppermost to afford a bearing or pivot upon which the frame of the machine may have the necessary rocking movement. This side of the machine is held down to the main base 2 by bolts 5, which pass through lugs 6 on the dynamo-frame and through the pivot-bar 4, their lower ends being screwed, as at 7, into the extension 2 of the main base. Washers 8 are interposed between the lugs 6 and nuts on the bolts, the said washer being slightly yielding in character and consisting of leather fiber or other suitable material. This pivot or rocking connection, it will be noticed, is arranged on one side of the vertical plane passing through the driven shaft 9, which in this instance carries the armature. On the other side of this dynamo-frame a rigid support is provided therefor by means of blocks, one of which is shown at 10, which are in the form of wedges adjustably secured to the base extension 2 by means of bolts 11, passing through slots in the said wedge-blocks. This side of the frame is held down upon the wedge-blocks by means of bolts 12, extending through ears or lugs 12′ on the frame and into the base 2. Springs 14 are interposed between the upper ends of the bolts and the upper side of the ears, the said springs being of stiff material and tending to force the frame of the dynamo down hard upon the supporting-pieces or wedge-blocks 10 and to exert a strong controlling influence on the frame to hold it accurately in position, the said spring augmenting the natural tendency of the weight of the machine to hold the same in proper relation to the driving element. The shaft 9 of the dynamo has its bearings in the adjustable frame at the point 15 and 16 and carries at its inner end a heavy pulley or wheel 17, which is adapted to rest at its lower side upon a ring of leather or other suitable slightly-yielding frictional material 18, riveted to the inner side of the rim of the fly-wheel, the said rim being extended, as at 19, and having a side flange 20 to better hold the friction ring or shoe in place. The rivets are indicated at 21. The wheel 17 is made sufficiently heavy, so that it by its own weight alone will by resting upon the friction shoe or

ring 18 give sufficiently strong frictional contact for the purpose of causing the armature-shaft to be driven from the fly-wheel, and no dependence is had upon the weight of the dynamo-frame in securing the necessary frictional contact. The dynamo-frame is rocked on its pivot connection to the slight extent necessary to place the friction pulley or wheel 17 in or out of contact with the friction drive-shoe or leather 18 by means of a jack-screw 22, bearing at its upper end upon a part of the frame at the right-hand side thereof, Fig. 1, the lower threaded end of the said screw working in the extension 2 of the base. The screw is turned to adjust the dynamo-frame by a bar or lever 23, engaging in any one of a series of sockets 24 in a boss 25 on the jack-screw. The movement necessary to place the friction-wheel 17 in or out of contact with the driving element is very slight, and this is permitted by the construction before described at the side where the dynamo-frame is pivoted. It will be understood that the parts are so adjusted and arranged in respect to each other that when the friction wheel or pulley 17 is in strong frictional contact with the driving-shoe or friction-band 18 the dynamo-frame will be resting solidly upon its bearings upon the pivot-point 4 and at the wedge or wedges 10, and the weight of this frame is therefore not on the shaft 9, and the weight of this frame is not, therefore, relied upon to press the friction pulley or wheel 17 against the friction-surface of the driving member; but, on the contrary, the weight of the friction pulley or wheel 17 alone is relied upon to impart the movement to the armature-shaft. By this arrangement the armature-shaft rotates freely in its bearings and is not subjected to the frictional resistance or to the strain consequent, for instance, upon the pulling effect of a driving-belt. By the connection described the power to the driven pulley is applied substantially tangentially thereto and without pulling strain.

It will be noticed, further, that by our arrangement of pivots in relation to the frame and other parts as above described the driven shaft 9 will always maintain its horizontal position, and this will not be affected in any way by tilting the frame so that the surface of the friction-pulley 17 will throughout its lateral extent always maintain its parallelism with the friction surface or belt 18, with which it is to engage, and thus there will be no undue wear on the friction-surface due to an angular relation between the said surfaces. This effect results from the fact that the tilting of the frame takes place in a direction transversely to the axis of the dynamo and not in a direction longitudinally thereof, which would give rise to undesirable effects.

It will be understood that the wedge or wedges 10 may be adjusted out or in, so that the surface of the friction-pulley 17 may be adjusted toward and from the inner side of the rim of the fly-wheel, so that the pulley may be made to rest upon and engage with the leather band more or less heavily when in normal position to transmit the full amount of power desired to the shaft 9—that is to say, the frame of the dynamo may have its position of rest slightly altered within the limits of the wedge-surface; but at all times when the frame is let down it will rest solidly upon the surface of the wedge.

We place the leather friction surface or band upon the fly-wheel instead of upon the periphery of the friction-wheel 17, so as to withstand the wear and prevent it from being burned off, as would result if the said leather piece or band were placed upon the smaller driven member.

We claim as our invention—

1. In combination with a driving-wheel, a driven wheel or friction-pulley having frictional engagement with the driving-wheel, a shaft carrying the driven wheel, a frame in which the said shaft is supported, a pivot-support for the said frame at one side thereof and a rigid bearing for the opposite side of the said frame upon which the same bears solidly when the friction-wheels are in contact, substantially as described.

2. In combination the friction driving-wheel, a friction pulley or wheel to contact therewith, a shaft carrying the said pulley, a frame in which the said shaft bears, a pivot-support for the said frame and a fixed bearing upon which the said frame rests solidly when the friction-wheels are in contact, whereby the shaft is relieved from the weight of the said frame, substantially as described.

3. In combination, the driving and driven wheels or members with their shafts, the said driven wheel bearing upon the inner side of the rim of the driving member, a frame in which the shaft of the driven member bears, means for adjusting the frame toward and from the axis of the driving member while maintaining the parallelism of the driven shaft to the said axis and a fixed bearing upon which the said frame rests solidly when the friction-wheels are in contact, whereby the shaft is relieved from the weight of the said frame, substantially as described.

4. In combination, the driving and driven wheels, a shaft carrying the driven wheel, a frame in which the said shaft bears, a pivot-support for the said frame and adjustable wedge means upon which the said frame finds a solid bearing, substantially as described.

5. In combination the driving and driven friction-wheels, a shaft carrying the driven wheel, a frame in which the said shaft bears, a pivot-bearing for the said frame and a jack-screw for adjusting the frame, substantially as described.

6. In combination the driving and driven

wheels, a shaft for the latter, a frame in which the said shaft bears, a pivot for the said frame consisting of the bar or member upon which the frame rests, a bolt passing through a part of the frame and through the said pivot-bar and yielding means between the frame and a part of the bolt, substantially as described.

7. In combination the driving and driven wheels, a shaft for the driven wheel, a frame in which the said shaft bears, having a pivot-bearing and means for holding the opposite end of the said frame consisting of a bolt passing into a part thereof, and a spring surrounding the bolt and pressing upon a part of the pivoted frame, substantially as described.

8. In combination, a drive-wheel, a friction pulley or wheel to contact therewith, a shaft carrying the said driven wheel, a frame in which the said shaft bears and means for adjusting the said frame to remove its weight from the said shaft, substantially as described.

9. In combination, the driving and driven wheels with their shafts, the said driven wheel bearing upon the inner side of the rim of the driving member, a frame in which the shaft of the driven member bears and means for adjusting the said frame toward and from the axis of the driving member while maintaining the parallelism of the driven shaft to the said axis, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES WHITE.
ARTHUR R. MIDDLETON.

Witnesses:
MURRAY HANSON,
S. E. SWEENY.