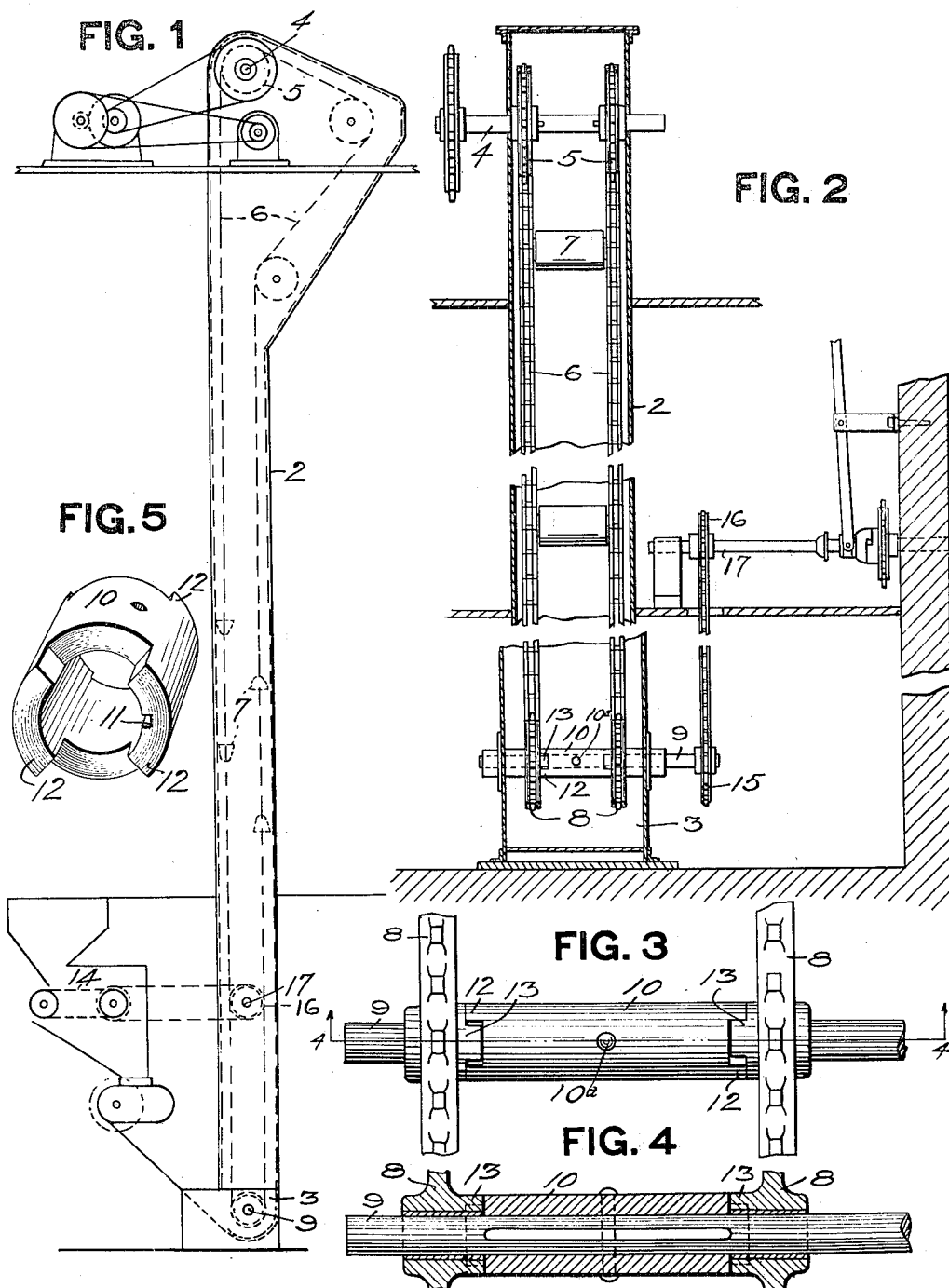


No. 837,486.

PATENTED DEC. 4, 1906.

E. J. MASON.  
DRIVING MECHANISM.  
APPLICATION FILED JULY 16, 1903.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## DRIVING MECHANISM.

No. 837,486.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed July 16, 1906. Serial No. 326,441.

*To all whom it may concern:*

Be it known that I, ELLIOTT J. MASON, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Driving Mechanism; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to driving mechanism, and more especially to cases where power is to be transmitted from a shaft carrying two or more sprocket-wheels driven by chains connected up to sprocket-wheels on the power or main shaft.

A common example of the above is the ordinary bucket elevator in which the chains carrying the buckets are driven by sprocket-wheels rigidly secured to the power-shaft, while the sprocket-wheels at the other points of the elevator, such as in the boot, are usually arranged so that one of each such pair of sprockets is rigid on the shaft and the other loose. The loose sprocket takes up any irregularity in the length of the chains. Where power is to be transmitted from the last-named shaft, the chain on the tight sprocket will do all the work. In order to equalize the wear, however, it has been customary to provide said shaft with keyways, as well as said sprockets, and then key said sprockets alternately on the shaft, so that one or the other will always be loose to compensate for inequality in length of chain, and divide the wear on the chains more equally.

The object of my invention is to provide driving mechanism of this character in which provision is made for the automatic adjustment of the sprockets, so that first one and then the other will be driven by its chain, and so divide the wear and strain between the two chains.

To these ends my invention comprises, generally stated, a power-shaft having sprockets thereon, chains engaging said sprockets and driven thereby, a secondary power-shaft, sprockets loosely mounted thereon with which said chains engage, and means for automatically throwing said last-named sprockets into operative engagement with said secondary shaft.

By reference to the drawings, Figure 1 is a side elevation of an elevator with my invention applied thereto. Fig. 2 is an enlarged

vertical section of the elevator. Fig. 3 is an enlarged view of the secondary shaft and the sprockets carried thereby. Fig. 4 is a cross-section on line 4 4, Fig. 3. Fig. 5 is a perspective of the sleeve.

In the drawings, the numeral 2 designates a suitable bucket elevator with the boot 3 from which the material is elevated. At the upper end of the elevator is the power-shaft 4, driven by a motor or engine. On this shaft 4 are the sprocket-wheels 5, rigidly keyed to said shaft. The chains 6, carrying the buckets 7, pass around the sprocket-wheel 5 and around the sprocket-wheel 8, loosely mounted on the secondary shaft 9, journaled in the boot 3. Keyed to the secondary shaft 9 is the sleeve 10, which has an ordinary feather-keyway 11 therein. A pin 10<sup>a</sup> passes through said sleeve and shaft to prevent longitudinal movement of said sleeve on said shaft. At the ends of the sleeve 10 are the clutch-jaws 12, which are adapted to engage the clutch-jaws 13 on the sprocket-wheels 8. There is a certain amount of play between the jaws of the clutches 12 and 13 which permits the sprockets 8 to move by each other enough to take up any inequalities in the length of the chains 6, as fully hereinafter set forth. Power may be transmitted from the shaft 9 to drive the belt conveyer 14. A small sprocket 15 on shaft 9 may be connected up to the sprocket-wheel 16 on the shaft 17 to drive the endless-belt conveyer 14.

When my invention is in use, the power from the shaft 4 drives the chain 6, and the buckets are elevated in the ordinary manner after being filled from the boot 3. In all elevator-chains there is a certain amount of irregularity in the pitch, and although the total length of two chains will be approximately the same the lengths of any two corresponding intermediate sections will most probably be different. The chains also wear unequally when in use. With my invention if one of the chains is longer than the other the shorter chain will naturally do all the work necessary to drive the shaft 9, and accordingly the sprocket at that end of the shaft 9 will be moved to positively engage the clutch of the sleeve 10 and be carried around thereby. If after a time the other chain becomes the shorter, then the positions of the sprockets will be reversed and the one

at the opposite end of the shaft 9 will become the active one. In this manner automatically the sprocket-wheels are positively driven and the wear is divided between the two chains. When the chains wear enough to become of equal length, then they will both drive. Neither chain, it is apparent, will be used by itself for any great length of time, and as a consequence no unusual wear is put upon any one chain.

It is apparent that while I have illustrated my invention with the use of two sprockets this number may be increased without affecting the spirit of my invention. It is also apparent that the invention may be applied to other devices besides conveyers of the type illustrated.

What I claim is—

1. The combination of a power-shaft, a plurality of sprocket-wheels mounted thereon, a plurality of chains engaging said sprocket-wheels and driven thereby, a secondary shaft, a plurality of sprocket-wheels loosely mounted thereon around which said chains pass, and means for automatically throwing one or the other of said last-named sprocket-wheels into positive engagement with said secondary shaft according as said chains may vary in length.

2. The combination of a power-shaft, a plurality of sprocket-wheels mounted thereon, a plurality of chains engaging said sprocket-wheels and driven thereby, a secondary shaft, a plurality of sprocket-wheels loosely mounted thereon around which said chains pass, clutching mechanism on said secondary shaft, and means for automatically throwing one or the other of said last-

named sprocket-wheels into positive engagement with said secondary shaft according as said chains may vary in length.

3. The combination of a power-shaft, a plurality of sprocket-wheels mounted thereon, a plurality of chains engaging said sprocket-wheels and driven thereby, a secondary shaft, a plurality of sprocket-wheels loosely mounted thereon around which said chains pass, interlocking-clutches on said secondary shaft and on said sprocket-wheels having a certain amount of rotary play, whereby one or the other of said last-named sprocket-wheels will be brought into positive engagement with said secondary shaft according as said chains may vary in length.

4. The combination of a power-shaft, a plurality of sprocket-wheels mounted thereon, a plurality of chains engaging said sprocket-wheels and driven thereby, a secondary shaft, a plurality of sprocket-wheels loosely mounted thereon around which said chains pass, a sleeve rigidly mounted on said secondary shaft having interlocking clutches at its ends adapted to engage corresponding clutches on said last-named sprocket-wheels with a certain amount of rotary play between said clutches, whereby one or the other of said last-named sprocket-wheels will be brought into positive engagement with said secondary shaft according as said chains may vary in length.

In testimony whereof I, the said ELLIOTT J. MASON, have hereunto set my hand,

ELLIOTT J. MASON.

Witnesses:

ROBT. D. TOTTEN,  
J. R. KELLER.