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T. COVENTRY.
BEVEL WHEEL SHAPING MACHINE.
APPLICATION FILED JAN. 7, 1907.

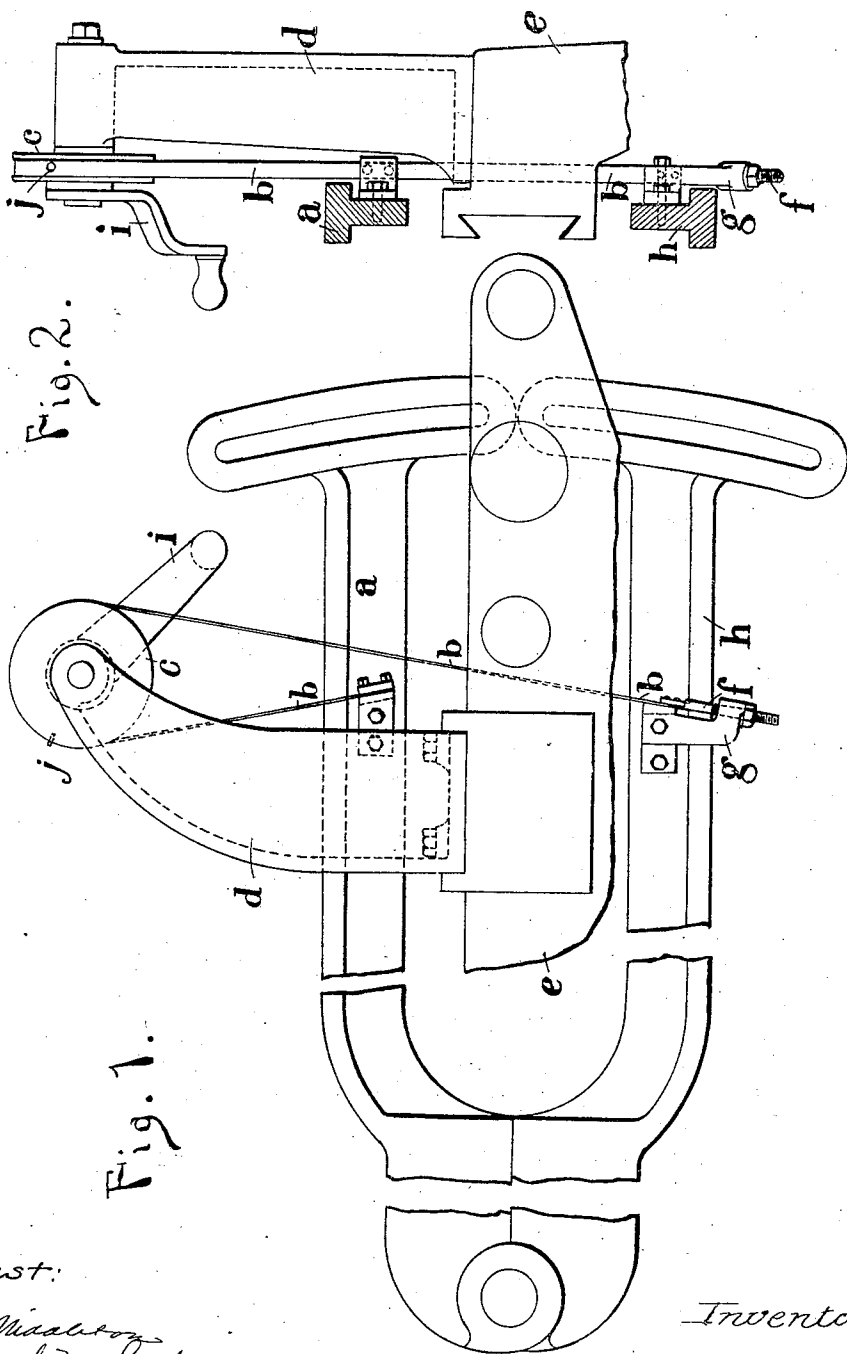


Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

THEODORE COVENTRY, OF SALFORD, ENGLAND.

BEVEL-WHEEL-SHAPING MACHINE.

No. 868,159.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed January 7, 1907. Serial No. 351,189.

To all whom it may concern:

Be it known that I, THEODORE COVENTRY, a subject of the King of Great Britain and Ireland, residing at Gresley Iron Works, Salford, in the county of Lancaster, England, have invented certain new and useful Improvements Relating to Bevel-Wheel-Shaping Machines, of which the following is a specification.

This invention relates to bevel wheel shaping machines of the type in which two tool guide arms or brackets are pivotally mounted upon a common pin or axis.

The angles of inclination of the aforesaid pivotally mounted arms or brackets are altered automatically during the cutting of a wheel tooth, and they can be adjusted by hand to suit different forms of teeth. The arms are usually arranged nearly horizontal and thus in altering their inclination one arm must be raised and the other lowered. The said raising of the one arm involves the exertion of considerable force, especially in large machines having long and heavy arms. When the inclination of the arms is altered automatically by the operation of the machine during the cutting of the bevel wheel teeth, a severe stress is thrown upon the machine, while the adjustment of the inclination by hand, as aforesaid, is frequently a difficult matter, sometimes involving the use of a jack or other lifting device. My invention overcomes with great simplicity the aforesaid difficulties and inconveniences.

The invention comprises the balancing of the effect of gravitation on the one arm by the like effect on the other arm, so that for the alteration of the inclination of both arms either automatically or by hand, the force required is only that necessary to overcome frictional resistance.

Referring to the accompanying sheet of explanatory drawings;—Figure 1 is a side elevation and Fig. 2 a sectional end elevation showing portions of a bevel wheel shaping machine having my invention applied thereto.

The same reference letters in the two views indicate the same parts.

a is the upper of two tool guide arms or brackets such as have been previously referred to. A flexible steel or other band *b* is passed over a pulley *c* carried by the bearing support *d* which is rigidly fixed to a stationary part of the machine, such as the standard *e*. One end

of the said band *b* is securely attached to the aforesaid upper tool guide arm *a*; the other end of the band is connected to a pin *f* which is adjustably secured in an anchor piece *g* carried by the lower tool guide arm *h*. The points of attachment of the respective ends of the band *b* with the respective arms *a* and *h* are at equal distances from the center of their common pivot pin or axis, so that a movement of the one arm in the one direction will just equal and balance the corresponding movement of the other arm in the opposite direction.

Instead of employing a flexible steel or other band as *b*, I may employ a rope or chain or other flexible connection; or more than one flexible connection may be employed if desired. The adjustable attachment, as aforesaid, of one end of the flexible connection with one of the arms, allows any stretch to be readily taken up.

A crank handle or lever as *i* may be attached to the pulley *c* and be used as a medium for the adjustment of the respective positions of the arms *a* and *h*. Means are then provided to prevent slipping of the band *b* over the periphery of the pulley *c*; such as, for example, a peg as *j* secured to the pulley and passing through an eyelet or aperture in the band.

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

1. In a bevel wheel shaping machine, the combination with a pair of tool guiding arms freely mounted on a common pivot, of the means for the mutual balancing of the said arms and for imparting a uniform motion thereto in opposite directions about the said pivot, the said means consisting of the flexible connection *b*, pulley *c*, and operating lever *i*, substantially as described.

2. In bevel wheel shaping machines, the combination consisting of the tool guiding arms *a*, *h* freely mounted on a common pivot, a pulley *c* mounted on the support *d* for sustaining the weight of the said arms not borne by the pivot, a flexible band *b* passing over the said pulley having one end rigidly connected to the arm *a* and its opposite end adjustably anchored to the arm *h*, hand lever *i* attached to said pulley *c*, and peg *j* fixed to the periphery of *c* and engaging the said band *b*, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE COVENTRY.

Witnesses:

VIVIAN ARTHUR HUGHES,
WM. HENRY THOMAS.