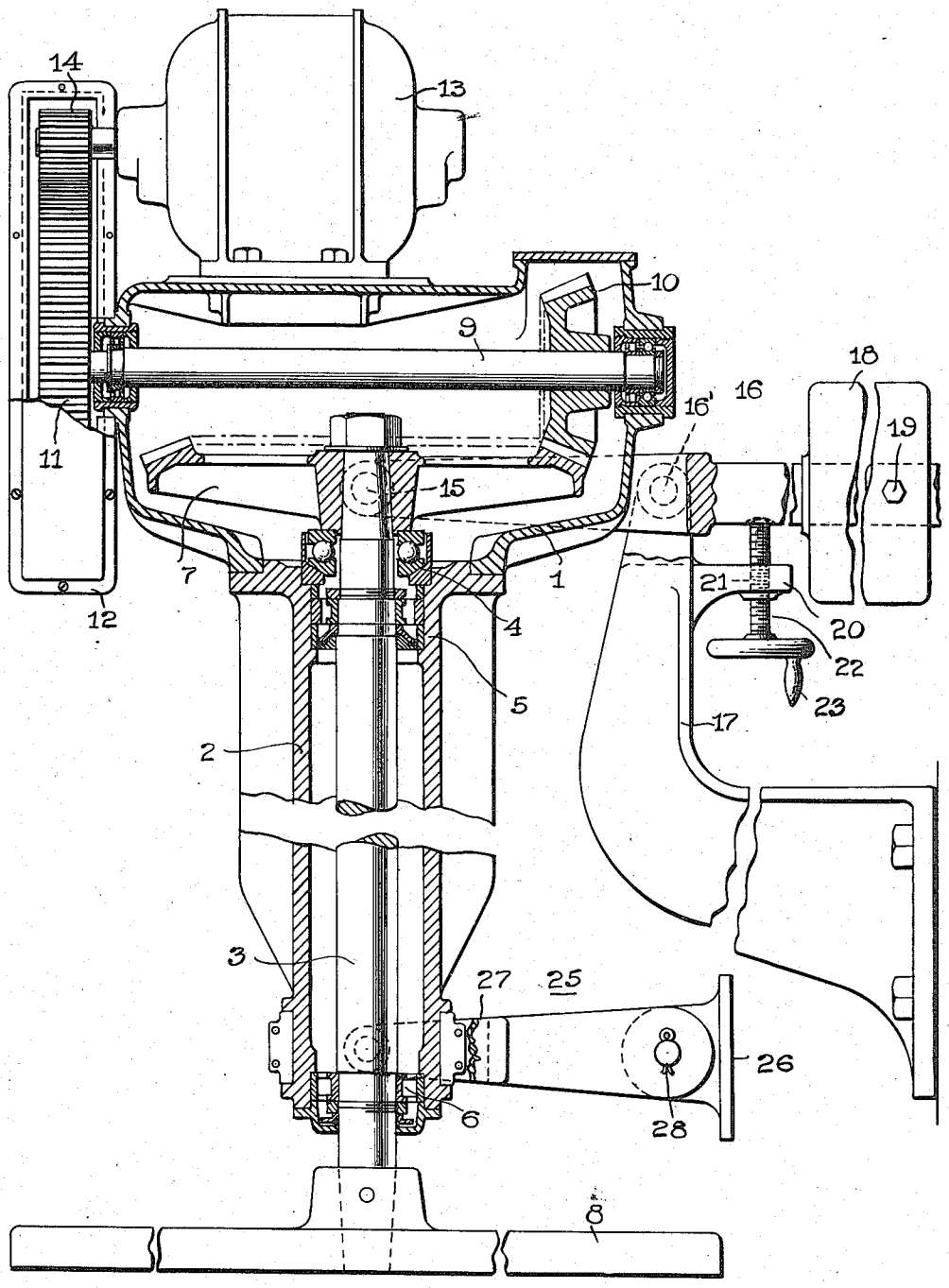
Dec. 2, 1924. 1,517,293

L. H. KEIM

DRIVE GEAR MECHANISM

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UNITED STATES PATENT OFFICE.

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DRIVE-GEAR MECHANISM.

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To all whom it may concern:

Be it known that I, LESTER H. KEIM, a citizen of the United States, and a resident of Crafton, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Drive-Gear Mechanism, of which the following is a specification.

My invention relates to drive mechanism, more especially to gear reduction units embodying a special type of housing construction which adapts it for various uses, such as a driving unit for grinding or polishing heads employed in finishing glassware and the like.

It is among the objects of my invention to provide a drive mechanism of the above designated character which shall be of simple, durable mechanical construction, which shall operate efficiently in the polishing of glassware and which shall be designed and constructed to facilitate such manufacturing operations.

In the manufacture of plate glass and other vitreous articles, the material is subjected to finishing operations consisting of polishing the surface with a polishing wheel, the type of which varies with the particular purpose it is desired to accomplish. Some of the finishing operations are for the purpose of obtaining a specified thickness which is accomplished by providing adjusting means for the polishing head or wheel so as to make allowances for variations in the position of the member to be ground and for the natural reduction of the working surface.

My invention is directed to a drive mechanism for a polishing disk or wheel which is especially designated to provide certain adjustments relative to the work and to maintain alignment of the working surface of the polishing disk with the surface to be ground or finished. To carry out this purpose I utilize a housing structure which is pivoted at or near its center of gravity to a lever arm, which is pivoted to a supporting bracket and is provided with an adjustable counter-balance weight. I further provide adjusting means for regulating the pressure on the surface of the polishing disk which is secured to a spindle vertically disposed in the housing and connected by a suitable gearing to a motor mounted on the outside of the housing member.

In the accompanying drawing constituting a part hereof and in which like reference characters designate like parts, the single figure comprises a view, partially in vertical section and partially in elevation, of a polishing head or reduction gear unit embodying the principles of my invention.

The structure comprises an annular housing 1 having a vertical depending sleeve member 2 formed integrally therewith or secured thereto, which is adapted to rotatably support a work spindle 3. The spindle 3 is provided with bearings 4, 5 and 6, to carry the weight of a relatively large bevel gear 7 and a polishing disk 8 secured at the respective ends of the spindle.

A drive shaft 9 is journalled in the upper portion of the housing 1, in a horizontal position and at right angles to the spindle 3. The shaft 9 is provided at one end with a bevel gear pinion 10 with straight or helical teeth in co-operative engagement with the bevel gear 7 on the spindle 3 and with a gear 11 on its other end that is either of a spur or helical tooth type and is enclosed in a gear case 12 secured to the housing 1. A motor 13 is mounted on the housing member and is connected by a pinion 14 on its shaft to the gear wheel 11.

The housing 1 is provided with a pair of trunnions 15 by which it is pivotally secured to a yoke lever 16 that is pivotally mounted at 16′ on an extending wall bracket 17 which may be secured at any height from the work table. A counter-balancing weight 18 is slidably mounted on the extended end of the lever 16 to permit adjustment and may be secured in any position by the set screw 19. The bracket 17 is provided with an extending arm 20 having a screw threaded opening 21 adapted to receive a screw shaft 22 provided with a hand wheel 23 which is rotated to raise or lower the lever 16 for the purpose of changing the position of the disk 8.

A rest 25 comprising a mounting bracket 26 and a yoke 27 having a pivotal connection at 28 to the bracket 26 is engaged with the lower end of the housing 2 to steady the disc 8.

The design of the housing, gear, bearings, and levers is such as to provide balance within practical limits of the structure on the trunnions 15 with respect to the pivot connection to the bracket 17 and to maintain

vertical alinement of the spindle 3 for any position of the lever 16. The bearings and gear wheels are designed for the particular operating conditions when utilized as a polishing head but it is obvious that modifications may be made in the proportions and details of contsruction to adapt the drive mechanism for any suitable type of service.

It is evident from the above description of my invention that a drive mechanism embodying a reduction gear unit constructed in accordance with the principles of my invention, provides a simple, durable and efficient device, which is especially adapted to the specific service requirements herein specified and which is capable of withstanding the severe service conditions to which it is subjected.

I claim as my invention:—

1. A drive mechanism comprising an annular housing, a counter-balanced lever for pivotally mounting said housing, a vertical shaft journalled in an extending arm portion of said housing, a drive shaft journalled transversely of said vertical shaft in the head portion of said housing, a pair of bevel gears connecting said shafts, a cylindrical gear wheel mounted on the end of said transverse shaft and a drive motor geared to said last named gear, said motor and cylindrical gear being mounted outside of said housing.

2. A drive mechanism comprising an annular housing having a vertically depending sleeve portion pivotally mounted at substantially its center of gravity, a work spindle journalled in said sleeve, a drive shaft journalled in said annular housing portion, a pair of gear wheels connecting said shaft and spindle and a motor geared to said drive shaft.

3. A drive mechanism comprising a housing a drive spindle journalled therein, a shaft geared to said spindle, a motor mounted on said housing geared to said shaft, and an adjustable lever for said housing, said housing being pivotally mounted on said lever.

4. A drive mechanism comprising a gear housing having a vertically depending sleeve portion pivotally mounted at substantially its center of gravity, means for steadying said sleeve portion, a work spindle journalled in said sleeve, a drive shaft journalled in said gear housing, a pair of gear wheels connecting said shaft and spindle, a motor geared to said drive shaft and means for effecting vertical movement of the entire mechanism.

5. A drive mechanism comprising a reduction-gear unit, a housing therefor, and a plurality of pivot arms for supporting said housing.

6. A drive mechanism comprising a reduction-gear unit, a housing therefor, and a plurality of pivot arms connected to trunnions provided on said housing.

7. A drive mechanism comprising a reduction-gear unit, a vertically elongated casing for housing said mechanism, a pair of trunnions provided on the casing near its center of gravity, another pair of trunnions provided near the lower end portion thereof and levers pivotally mounted on suitable supports for pivotally engaging said trunnions.

8. A drive mechanism comprising a reduction-gear unit, a vertically elongated casing for housing said mechanism, a pair of trunnions provided on the casing near its center of gravity, another pair of trunnions provided near the lower end portion thereof, a counter-poised lever for pivotally engaging said first named trunnions and a pivotally mounted lever for similarly engaging said other trunnions.

In testimony whereof, I have hereunto subscribed my name this 6th day of Sept., 1923.

LESTER H. KEIM.

DISCLAIMER.

1,517,293.—*Lester H. Keim*, Crafton, Pa. DRIVE-GEAR MECHANISM. Patent dated December 2, 1924. Disclaimer filed March 29, 1926, by the assignee, *Pittsburgh Plate Glass Company.*

Enters this disclaimer to claims 2 to 8, inclusive, of said specification, which claims are in the following words:

"2. A drive mechanism comprising an annular housing having a vertically depending sleeve portion pivotally mounted at substantially its center of gravity, a work spindle journalled in said sleeve, a drive shaft journalled in said annular housing portion, a pair of gear wheels connecting said shaft and spindle and a motor geared to said drive shaft.

"3. A drive mechanism comprising a housing a drive spindle journalled therein, a shaft geared to said spindle, a motor mounted on said housing geared to said shaft, and an adjustable lever for said housing, said housing being pivotally mounted on said lever.

"4. A drive mechanism comprising a gear housing having a vertically depending sleeve portion pivotally mounted at substantially its center of gravity, means for steadying said sleeve portion, a work spindle journalled in said sleeve, a drive shaft journalled in said gear housing, a pair of gear wheels connecting said shaft and spindle, a motor geared to said drive shaft and means for effecting vertical movement of the entire mechanism.

"5. A drive mechanism comprising a reduction-gear unit, a housing therefor, and a plurality of pivot arms for supporting said housing.

"6. A drive mechanism comprising a reduction-gear unit, a housing therefor, and a plurality of pivot arms connected to trunnions provided on said housing.

"7. A drive mechanism comprising a reduction-gear unit, a vertically elongated casing for housing said mechanism, a pair of trunnions provided on the casing near its center of gravity, another pair of trunnions provided near the lower end portion thereof and levers pivotally mounted on suitable supports for pivotally engaging said trunnions.

"8. A drive mechanism comprising a reduction-gear unit, a vertically elongated casing for housing said mechanism, a pair of trunnions provided on the casing near its center of gravity, another pair of trunnions provided near the lower end portion thereof, a counter-poised lever for pivotally engaging said first named trunnions and a pivotally mounted lever for similarly engaging said other trunnions."

[*Official Gazette April 13, 1926.*]