March 23 , 1926. 1,577,457

A. E. EVANS

DRIVE GEAR MECHANISM FOR SURFACING MACHINES

Original Filed May 3, 1923 2 Sheets-Sheet 1

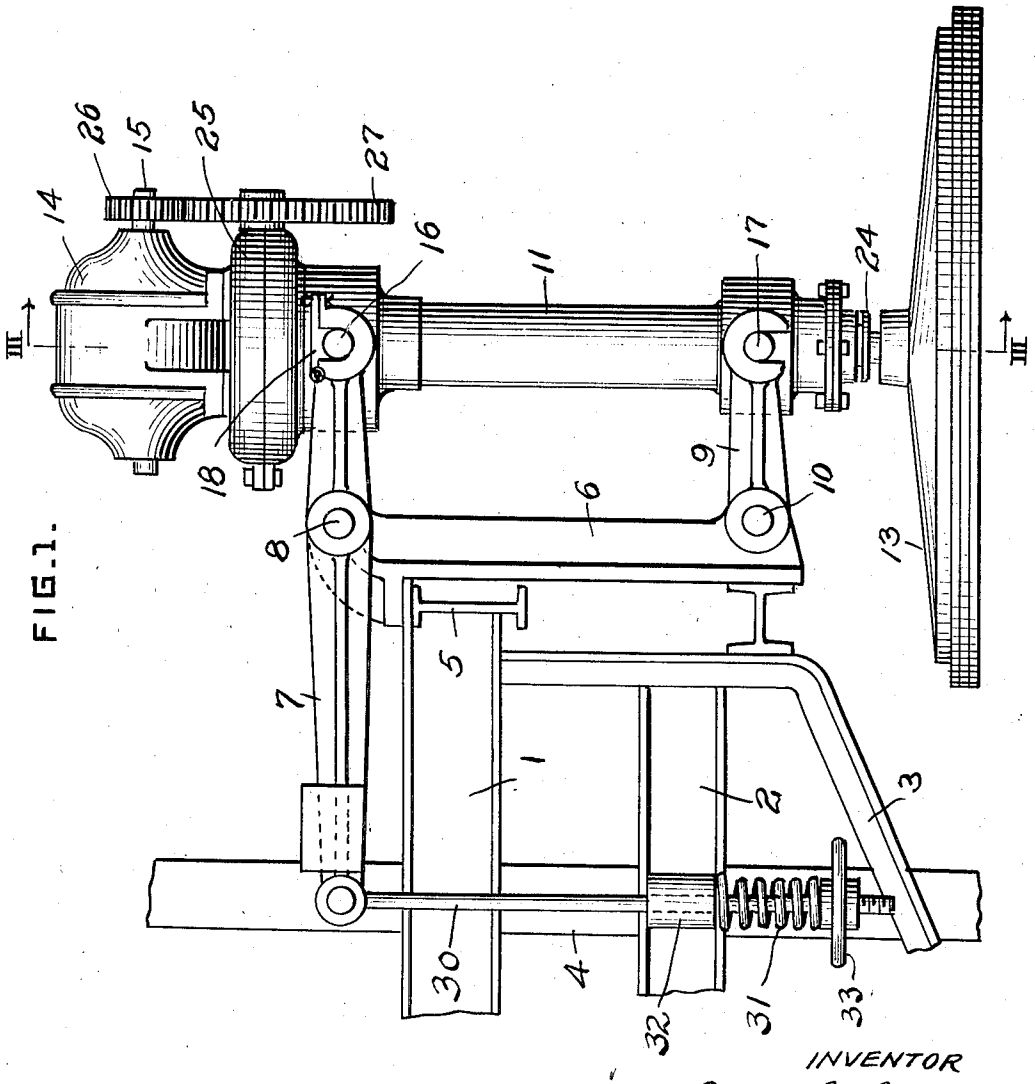


FIG.1.

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FIG.3.

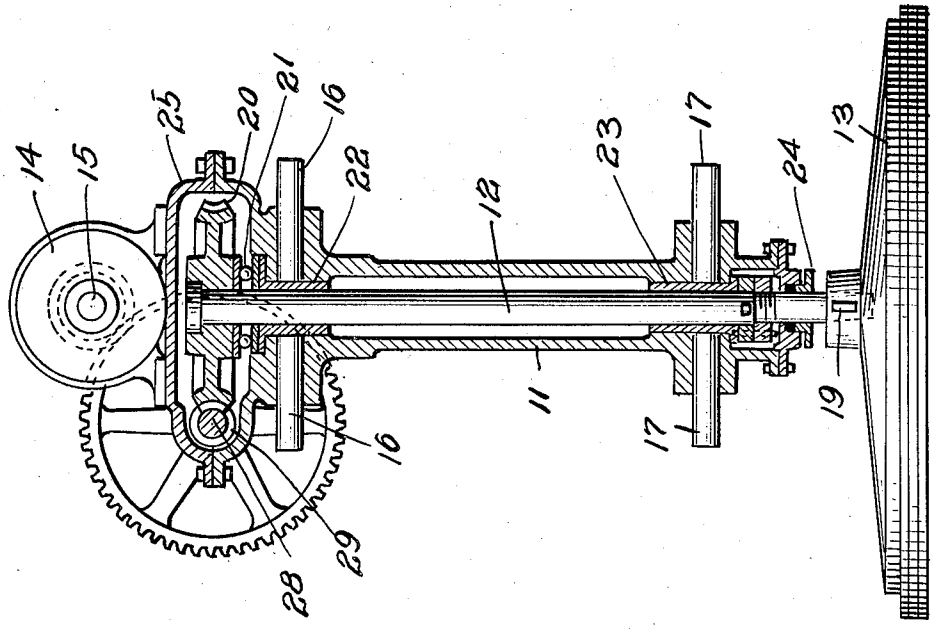
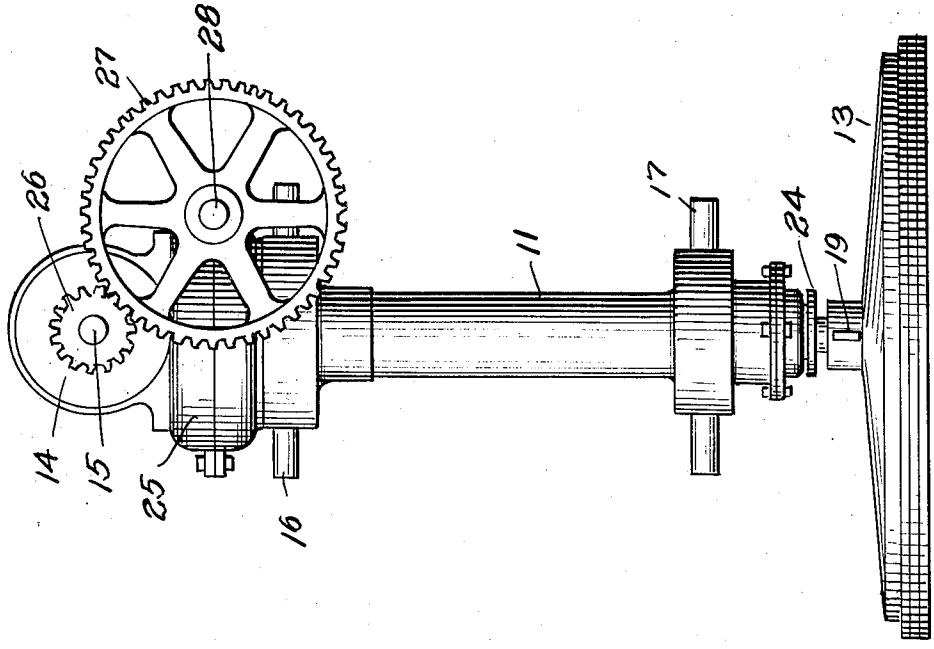


FIG.2.



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Patented Mar. 23, 1926. 1,577,457

UNITED STATES PATENT OFFICE.

ALBERT E. EVANS, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO PITTSBURGH PLATE GLASS COMPANY, A CORPORATION OF PENNSYLVANIA.

DRIVE-GEAR MECHANISM FOR SURFACING MACHINES.

Original application filed May 3, 1923, Serial No. 636,327. Divided and this application filed October 7, 1924. Serial No. 742,185.

To all whom it may concern:

Be it known that I, ALBERT E. EVANS, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have made a new and useful invention in Improvements in a Drive-Gear Mechanism for Surfacing Machines, of which the following is a specification.

The invention relates to drive gear mechanism for surfacing machines, the apparatus having its greatest utility in connection with the grinding and polishing of sheet glass in a straight away operation to produce plate glass, in which operation, the glass sheets on trucks or carriers, are passed beneath a series of grinding and polishing machines. The present application constitutes a division of my co-pending application, Serial No. 636,327, filed May 3, 1923. The invention has for its primary objects; the provision of an improved surfacing unit for a machine of the type specified, which may be removed bodily for replacement and repair; and the provision of a unit of the kind specified having improved means for driving the runner spindle or shaft from the electric motor superimposed thereabove. One embodiment of the invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a side elevation of the apparatus. Fig. 2 is a front elevation. And Fig. 3 is a partial side elevation and partial section on the line III—III of Fig. 1.

The glass, which is to be ground and polished, is carried by a series of trucks or tables (not shown) mounted on a track passing beneath a series of machines of the type of the one shown, a part of such machines being grinding machines, to which sand and water are supplied, while other parts of the machines are provided with polishing runners having the usual felt blocks, to which a mixture of rouge and water is supplied.

Referring to the drawings, the framework of the machine consists of the commercial sections 1, 2, 3, 4 and 5, parts only of which are shown. Secured to this framework, is a casting 6, upon which the removable surfacing unit is mounted and guided for vertical movement by means of the lever 7, pivoted at 8, and the arm 9 pivoted at 10.

The surfacing unit comprises the supporting member 11, the runner shaft or spindle 12, the runner 13, the electric motor 14, and the speed reducing gearing between the motor drive shaft 15, and the runner shaft.

The supporting member 11, is preferably a steel casting provided with the pairs of trunnions 16, 16 and 17, 17, which trunnions are engaged by the hook shaped ends of the lever 7 and arm 9, such lever and arm having their ends in the form of forks which straddle the tubular supporting member 11, at its upper and lower ends. The hook shaped ends of the lever 7 are provided with suitable retaining caps 18 to maintain the trunnions 16 in the hook recesses.

The shaft or spindle 12 is secured to the runner at its lower end by means of a key 19 or other suitable means and at its upper end carries a worm-wheel 20, beneath which is the thrust anti-friction bearing 21, which takes the weight of the shaft 12 and runner 13. The shaft is also journaled in a pair of bearings 22 and 23 carried by the tubular supporting member 11, such bearings being shown for simplicity of illustration, as plain sleeve members, but may be of any desired type. A stuffing box 24 is also shown beneath the bearing 23 for retaining lubricant which may be supplied to the gear casing 25 at the upper end of the supporting member.

The worm-wheel 20 is driven through the intermediary of the gears 26 and 27 carried by the motor drive shaft 15, and the horizontal counter-shaft 28 and the worm 29, also carried by the counter-shaft, such shaft being mounted at its ends in a pair of suitable bearings carried by the gear casing 25. The motor 14 is seated upon the gear casing 25, and secured by means of stud bolts (not shown). The foregoing arrangement provides for the necessary speed reduction between the motor drive shaft and the runner shaft, as the runner must be rotated at a relatively low speed. Other types of gear reductions might be substituted between the motor shaft and counter-shaft, or between the counter-shaft and spindle.

The entire grinding unit is counterbalanced, by means of the rod 30 and the spring 31, lying between the bracket 32 carried by the channel 2 and the hand wheel 33 threaded to the end of the rod 30. By

this means the weight applied to the glass by the runner may be adjusted to suit conditions.

What I claim is:

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

2. A drive mechanism comprising a housing, a drive spindle journaled 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.

3. 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 journaled in said sleeve, a drive shaft journaled 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.

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

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

6. 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.

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, a counter-poised lever for pivotally engaging said first named trunnions and a pivotally mounted lever for similarly engaging said other trunnions.

8. A drive mechanism comprising an annular housing, a counterbalanced lever for pivotally mounting said housing, a vertical shaft journaled in said housing, a drive shaft journaled transversely of said vertical shaft in the upper end of said housing, a worm wheel secured to the upper end of said vertical shaft, a worm on the transverse shaft in driving engagement with said worm wheel, a spur gear mounted on the end of said transverse shaft, and a drive motor geared to said last named gear, said motor and spur gear being mounted outside of said housing.

9. A drive mechanism comprising a vertically elongated casing, a vertical spindle journaled in the casing, a motor mounted on the casing and having a driving connection with the spindle, pivot means provided on the casing near its center of gravity, a counterpoised lever for engaging said pivot means, and a pivotally mounted link spaced away from said lever and in substantial parallelism therewith and pivoted to said casing for guiding and steadying it.

In testimony whereof, I have hereunto subscribed my name this 22nd day of September, 1924.

ALBERT E. EVANS.