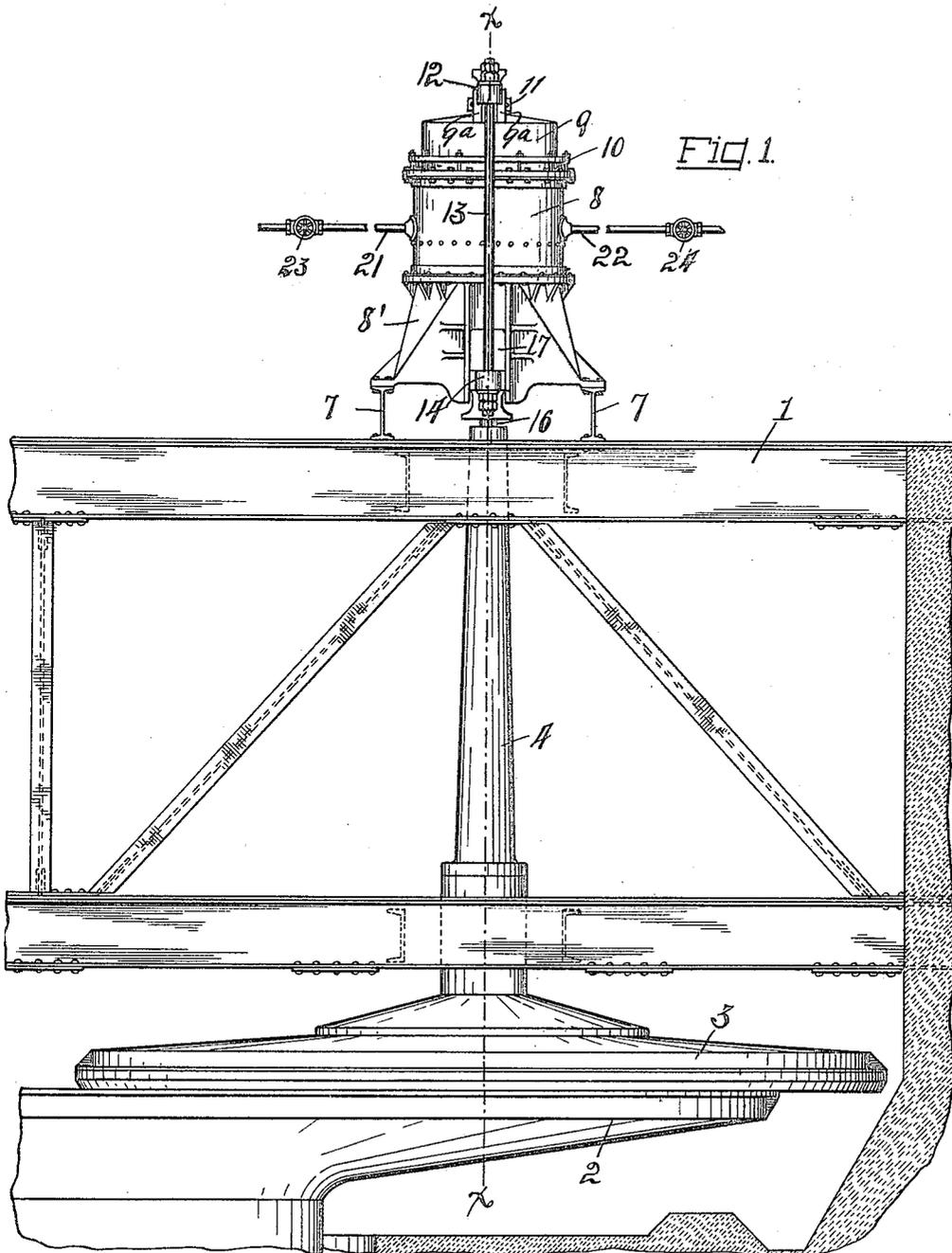


J. H. KUHNS.
 RUNNER CONTROL FOR GLASS GRINDING MACHINES.
 APPLICATION FILED AUG. 17, 1914.

1,151,802.

Patented Aug. 31, 1915.

2 SHEETS—SHEET 1.



WITNESSES:-

R. L. Allen.
F. E. Aul.

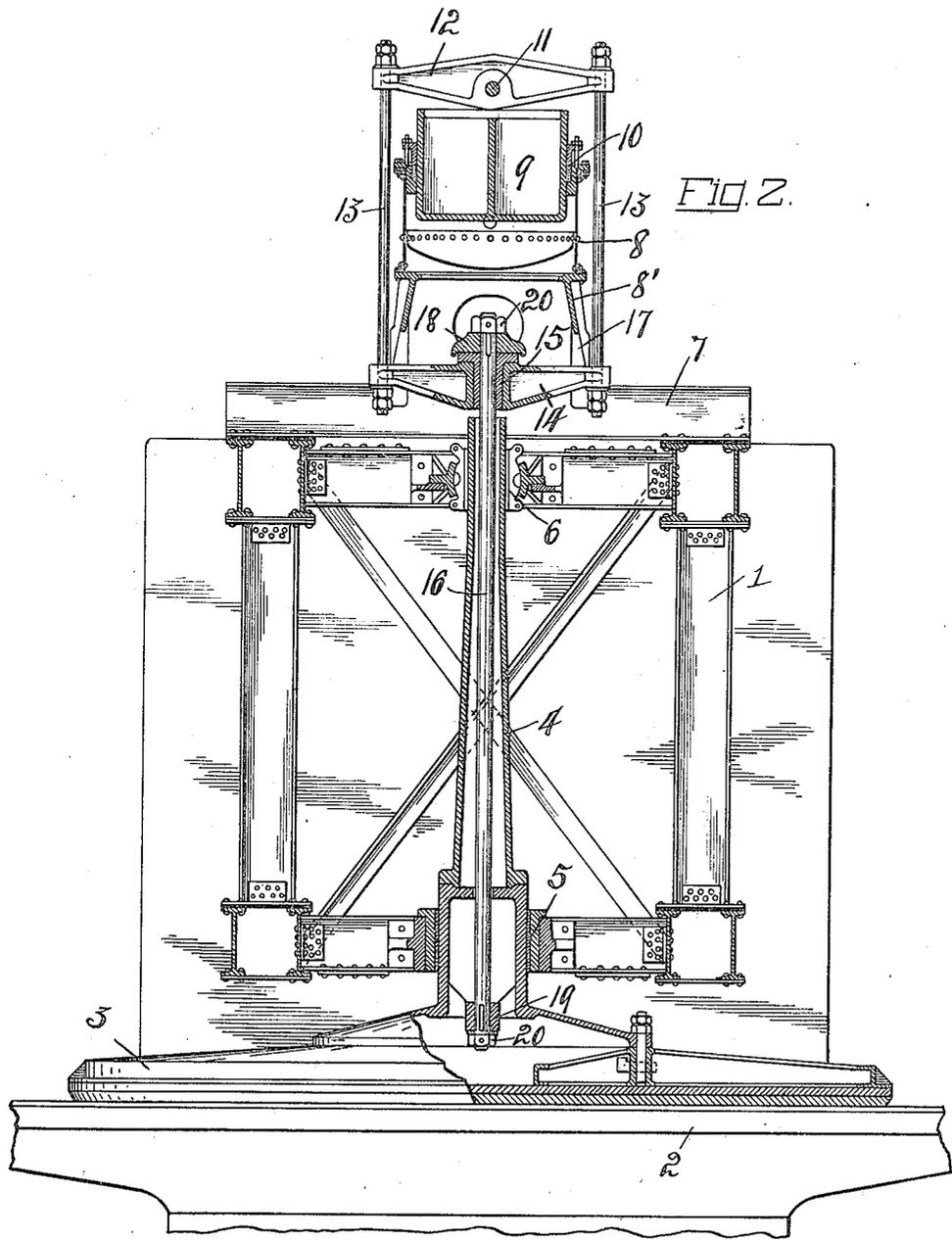
INVENTOR.

John H. Kuhns,
By Owen, Owen & Crampton,
His attys.

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UNITED STATES PATENT OFFICE.

JOHN H. KUHN, OF TOLEDO, OHIO, ASSIGNOR TO THE EDWARD FORD PLATE GLASS COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

RUNNER CONTROL FOR GLASS-GRINDING MACHINES.

1,151,802.

Specification of Letters Patent. Patented Aug. 31, 1915.

Application filed August 17, 1914. Serial No. 857,240.

To all whom it may concern:

Be it known that I, JOHN H. KUHN, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Runner Control for Glass-Grinding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to glass working machinery and particularly to machines for the grinding or polishing of plate glass.

The object of my invention is the provision, in a machine of this character, of improved means for controlling the independent raising and lowering of each runner relative to the work supporting table thereof, whereby to simplify the construction and enhance the practicability and commercial value thereof and to place the runner or runners under more perfect control of the operator.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a portion of a machine embodying my invention with the runner lowered in operative relation to the work supporting table, and Fig. 2 is a partial sectional view thereof taken on the line x, x in Fig. 1.

Referring to the drawings, 1 designates the stationary frame work of the machine, 2 the rotatable work supporting table, which is mounted below said frame work, and 3 a rotatable runner, which is mounted above and may be lowered into contact with work on the table 2 and has work grinding or polishing rotation imparted thereto by the rotation of the table, as is well understood in the art. It is customary to provide two

or more runners 3 in equidistantly spaced relation around the axis of rotation of the table.

The runner 3, in the present instance, has a hollow shaft 4 axially rising therefrom and journaled for rotary and axial sliding movements in suitable bearings 5 and 6 provided in vertically spaced relation in the frame work 1.

Mounted on the frame work 1 over the shaft 4 in any suitable manner, as by resting on and being bolted to cross-beam 7, carried by said frame work, is an open-top cylinder 8 in which a plunger 9 is mounted for vertical reciprocatory movements therein. The plunger 9 works through a suitable stuffing box 10 provided in the upper open end of the cylinder and has its upper end provided centrally with upstanding ears 9^a (Fig. 1), which are pivotally attached, in the present instance, by a bolt 11, to a cross-head 12. The ends of the cross-head 12 extend beyond the respective sides of the cylinder 8 and are connected, by bolts or suspending rods 13, to a cross-head 14, which is mounted below and extends under the cylinder 8. The cross-head 14 or lower portion of the yoke, which is formed by the cross-heads 12 and 14 and rods 13, is provided with a bearing 15 in which the upper end of the runner-suspending rod 16 is mounted for free rotary movements. The cross-head 14 is prevented from turning by having its ends projected through registering vertical guide-ways 17 provided in opposite side portions of the cylinder base 8'.

The rod 16 has a bearing-collar 18 fixed to the upper end thereof for thrust bearing contact with the upper end of the bearing 15, and the lower end of said rod extends down through the hollow shaft 4 and is fixedly attached to the interior of the runner adjacent to the lower end of said shaft, as indicated at 19. The rod 16, in the present instance, is provided at its opposite ends with nuts 20, the upper one of which receives the upward thrust of the bearing-collar 17, while the lower one receives the downward thrust of the runner part 19.

It is apparent that a raising or lowering

of the plunger 9 within the cylinder 8 will impart a corresponding movement to the runner 3 relative to the table 2 and that such vertical adjustment of the runner may be effected during a rotation thereof as the runner shaft 4 is mounted for both rotary and axial movements in the frame bearings 5 and 6.

The wall of the cylinder 8 is tapped by pipes 21 and 22, which provide for the ingress and egress of an operating fluid to and from the interior of the cylinder, said pipes having suitable control valves 23 and 24, respectively. These pipes may lead to any suitable source of fluid pressure supply or discharge, as the case may be, and while it is preferable in practice to employ water as the actuating means, compressed air, steam, oil, or other suitable fluid may be used, if desired.

It is found in practice that the locating above each runner of the control means for the vertical movements thereof, as herein indicated, provides a substantially direct connection between the runner and control means, thereby obviating the use of connecting levers and links, which have heretofore been employed, and also provides a more substantial and commercially practical apparatus. It is also found that the runner can be adjusted with greater nicety with relation to the table 2. This latter feature is an important one, as the efficient grinding or polishing of plate glass requires either a very slow continuous lowering, or a gradual intermittent lowering, of a runner to compensate for the wearing down of the glass surface.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts except in so far as such limitations are specified in the claims.

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

1. In a machine of the character described, a runner mounted for horizontal rotary and vertical reciprocatory movements, and fluid pressure operated means mounted above and directly connected to said runner for producing the vertical movement thereof.

2. In a machine of the class described, a horizontally rotatable and axially movable runner, fluid pressure operated means comprising a cylinder and vertically movable plunger mounted over said runner, and connecting means between said plunger and runner for suspending one from the other for vertical and relative rotary movements.

3. In a machine of the class described, a rotatable and axially movable runner, fluid pressure operated means mounted over said runner and comprising a stationary cylinder,

and a plunger vertically movable in said cylinder, and means directly connecting said plunger and runner and comprising a yoke having connection with said plunger and extending around and under the cylinder, and a suspending member connected at its upper end to said yoke and at its lower end to said runner and permitting the runner to rotate relative to the yoke.

4. In a machine of the class described, a rotatable and axially movable runner, fluid operated means centrally mounted over said runner and comprising a cylinder and a plunger working one within the other, said cylinder having a base portion provided with vertical guide-ways, a yoke suspended from the top of said plunger and having its lower portion extending under the cylinder and guided for vertical movements by said guide-ways, and a suspending rod connected at its upper end to the lower portion of said yoke and at its lower end to said runner.

5. In a machine of the class described, a horizontally rotatable runner, a hollow shaft projecting upward from said runner and journaled for rotary and axial movements, and fluid pressure operated means mounted above said shaft and having a part extending down through the shaft and attached to the runner for suspending the same, means being operable to control the vertical movements of the runner.

6. In a machine of the class described, a horizontally rotatable runner, a hollow shaft projecting upward from said runner and mounted for rotary and axial movements, fluid pressure operated means mounted wholly above the upper end of said shaft and having a cylinder and a plunger, one being vertically movable relative to the other upon the admission or discharge of fluid pressure from the cylinder, and connection between the vertically movable portion of said means and said runner for imparting vertical movements from one to the other, said connection having a portion extending down into said shaft and engaged to the runner.

7. In a machine of the class described, an axially movable and horizontally rotatable runner having a hollow shaft extending upward therefrom, bearing means for said shaft, fluid controlled means mounted over the upper end of said shaft and having a cylinder and a plunger in alignment with said shaft, one of which is stationarily mounted and the other being vertically movable upon the admission to or discharge of fluid from the cylinder, a connection between the movable member of said means and the runner, said connection comprising a supporting part which is directly connected to the movable member of said means,

and a rod which is rotatably carried by said part and projects down into said hollow shaft and attaches at its lower end to the runner adjacent to the lower end of said shaft.

signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. KUHN.

Witnesses:

F. E. AUL,

M. H. MAYERO.

In testimony whereof I have hereunto

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."