(No Model.) 3 Sheets—Sheet 1.

J. R. DONNELLY.

GRINDING AND POLISHING MACHINE.

No. 344,359. Patented June 29, 1886.

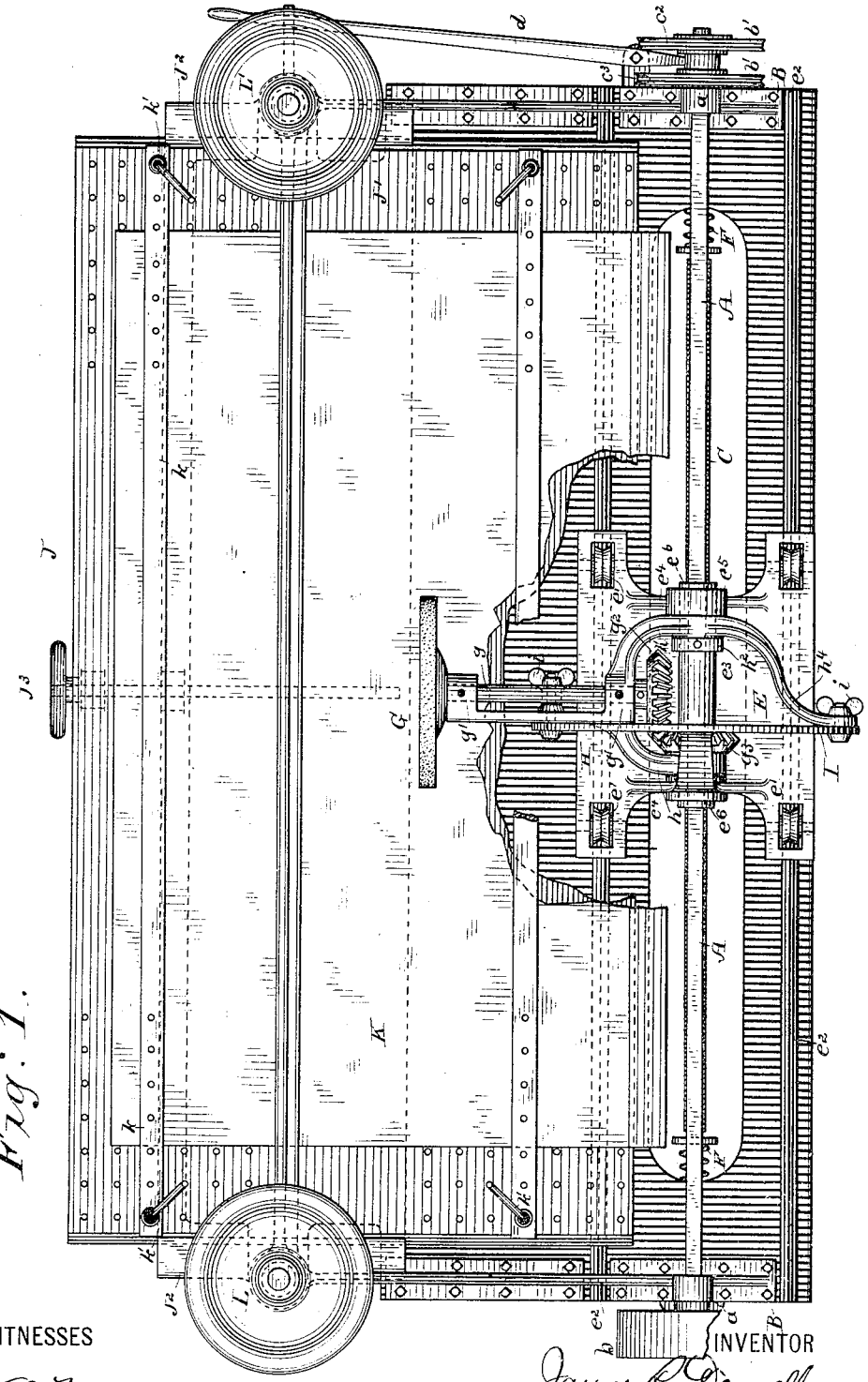

Fig. 1.

WITNESSES

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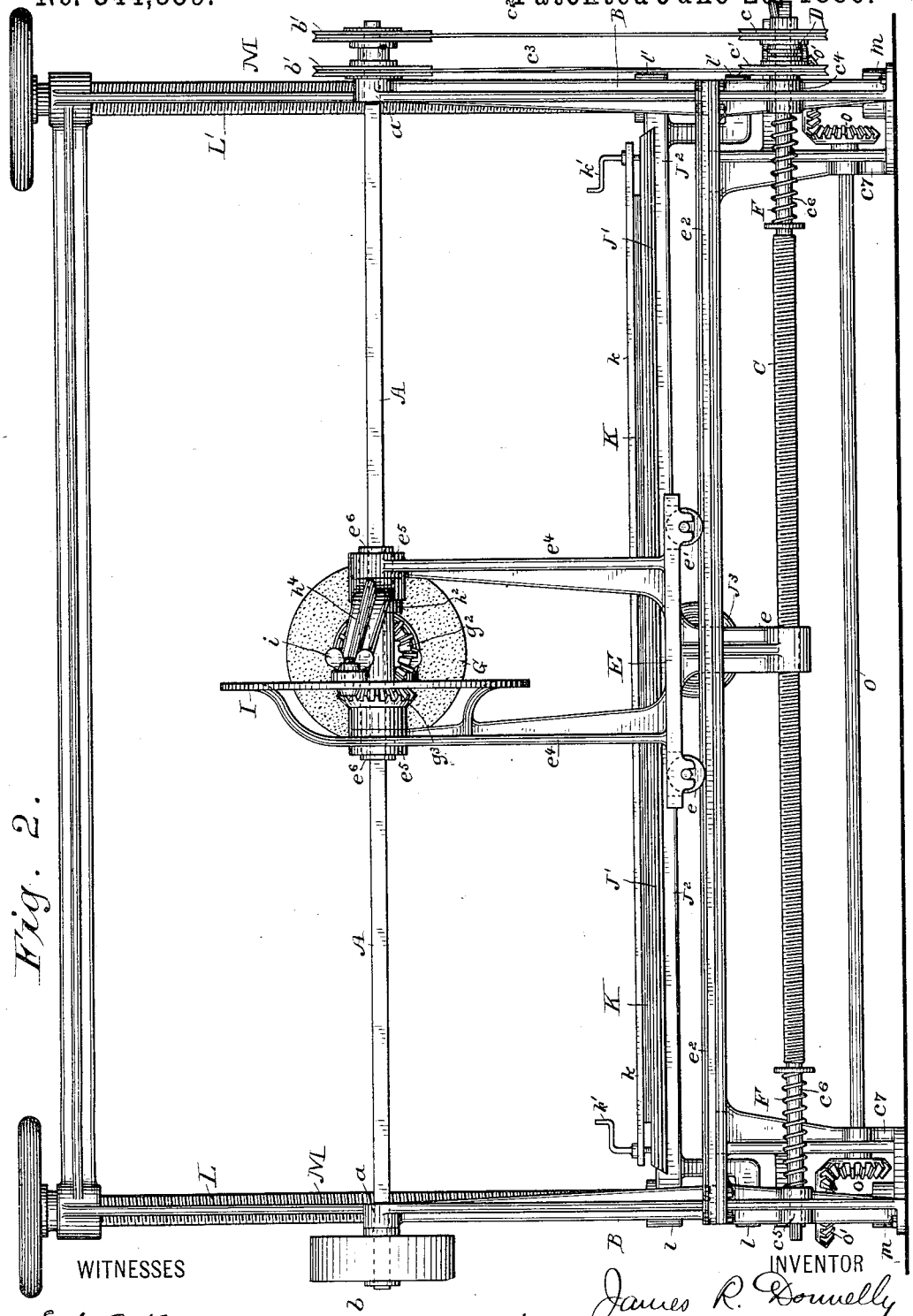

Fig. 2.

WITNESSES

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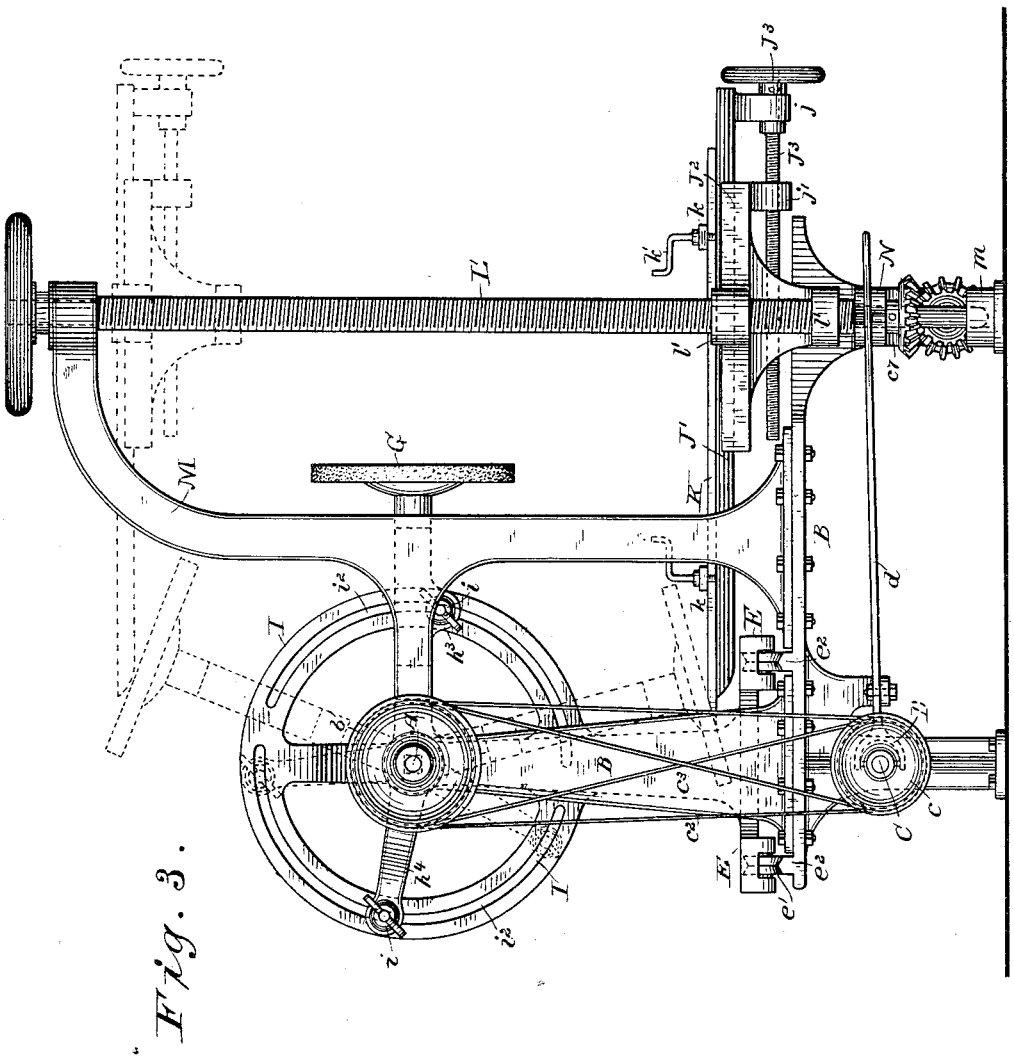

Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES R. DONNELLY, OF NEW YORK, N. Y.

GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,359, dated June 29, 1886.

Application filed April 10, 1886. Serial No. 198,472. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. DONNELLY, of New York city, State of New York, have invented certain new and useful Improvements in Grinding and Polishing Machines, of which the following is a specification.

My improved machine is especially designed for grinding and polishing glass, particularly for forming bevels on plate-glass. It involves certain improved mechanism and novel organizations for rotating, adjusting, and reciprocating the grinding-wheel, and also improved devices for adjusting the glass relatively to the grinding-wheel.

In the accompanying drawings, Figure 1 is a plan of my improved machine; Fig. 2, a front view, and Fig. 3 a side view.

The main driving-shaft A is mounted in bearings *a* in the main frame B. On one end of the driving-shaft is a driving-pulley, *b*, and on the opposite end are keyed pulleys *b' b'*, that are connected with pulleys *c c'* on the screw-shaft C by means of a straight belt, c^2, and a cross-belt, c^3. The screw-shaft is mounted in bearings c^4, in opposing standard c^5, at the front of the machine. The pulleys *c c'* are alternately operatively connected to the screw-shaft by means of clutch mechanism D, operated by a hand-lever, *d*. The screw-shaft extends through a female screw in the depending arm *e* of the carriage E. The carriage rests on rollers *e'*, that travel on tracks e^2 on the main frame over the screw-shaft. As the screw-shaft is revolved in one direction, and then in the other, the carriage is caused to travel back and forth. At each end the screw-shaft is cut away or made plane—as at c^6—and is provided with spring buffers F for preventing sudden jars when the carriage reaches the end of the screw. The buffer gives way as the carriage advances, and the arm *e* passes onto the plane end of the shaft. The carriage then ceases to travel, but when the clutch mechanism is reversed the carriage is fed in an opposite direction, the spring buffer giving it a start. The carriage need not of course travel the entire length of the screw-shaft, as the clutch mechanism may be reversed at any time, so as to immediately reverse the movement of the carriage.

On the bed-plate e^3 of the carriage E are mounted uprights e^4, having at their upper ends bearings e^5 for the sleeve e^6. The sleeve is arranged to turn freely in the bearings e^5, and to slide on the shaft A, by which it is revolved. The shaft A is shown as square between its bearings in the main frame, and the sleeve has a correspondingly-shaped aperture for the shaft; but a round shaft provided with a longitudinal groove may be used, and the sleeve may be connected to the shaft by means of a lug or lip that fits in the groove.

The grinding-wheel G is of any suitable construction. It is, however, preferably formed of metal covered with emery. The wheel is mounted on a shaft, *g*, that has its bearings at *g' g'* in the frame H, pivoted by means of its arms *h h'* on the sleeve e^6, between the uprights e^4 and close to their inner sides.

On the inner end of the shaft *g* is a pinion, g^2, that gears with a crown-wheel, g^3, keyed to the sleeve e^6 close to the arm *h*. A collar, h^2, is keyed to the sleeve e^6 close to the arm *h'*. By this arrangement the wheel is operatively connected with the main driving-shaft, and the several parts are so connected as to always maintain their proper relative positions. The parts may be so geared, of course, as to give to the grinding-wheel any desired speed of rotation relatively to the speed of the carriage.

The frame H, carrying the grinding-wheel G, swings on the sleeve e^6, and may be set at any desired inclination by means of set-screws *i*, that pass through the body of the frame at h^3, and through the end of the arm h^4. The screws work in annular slots i^2, in the frame I, on the upright e^4. By this arrangement the side of the grinding-wheel may be set at any desired inclination, so that any desired bevel may be given to a plate of glass, and the glass may be operated upon either from beneath or from above, as indicated in Fig. 3.

The drawings show the machine organized for forming bevels on plate-glass, and J indicates the table on which the glass is carried.

In Fig. 1, K indicates a plate of glass securely fastened by means of bands *k* and bolts *k'* to the table top J'.

As indicated, the table-top and the bands are provided with a number of perforations, so that a plate of any desired size may be accommodated. The table-top J' rests on a bed-plate J^2, and may be slid back and forth horizontally by means of a hand-screw, J^3, jour-

naled in a lug, *j*, on the bottom of the table-top, and working in a screw-threaded lug, *j'*, on the bed-plate.

The table is vertically-adjustable by means of vertical screw-shafts L L', working in lugs *l l'*, on the bed-plate J², and journaled in the uprights M and the lugs N on the standards *c'* at the rear of the machine. The shafts terminate in steps *m* in the feet of the standards *c'*.

The screw-shafts L L' are operatively connected by means of a horizontal shaft, O, having on both ends pinions *o* that gear with crown-wheels *o'*, keyed to the screw-shafts. By this means more perfect adjustment of the table may be obtained.

As indicated in the drawings, the table may be adjusted to any desired position, either above or below the grinding-wheel, and the grinding-wheel has a corresponding adjustment relatively to the table.

I have described in detail a machine embodying my improvements in a practical and efficient form; but I do not limit myself to the precise organizations shown, as obviously many changes may be made without departing from the substance of my invention.

I do not broadly claim an adjustable grinding-wheel, nor broadly an adjustable table; but I claim as my invention—

1. The combination, substantially as set forth, of the main frame, the driving-shaft, the grinding-wheel, its shaft arranged transversely to the driving-shaft and operatively connected therewith, and the reciprocating carriage that moves the grinding-wheel back and forth.

2. The combination, substantially as set forth, of the main frame, the main driving-shaft, the grinding-wheel operatively connected with the driving-shaft, the adjustable frame in which the grinding-wheel is mounted, and the carriage that moves back and forth with the grinding-wheel.

3. The combination, substantially as set forth, of the main frame, the driving-shaft, the grinding-wheel, its shaft pivotally connected to the driving-shaft, the adjusting-plate slotted both above and below the main driving-shaft, and devices for adjusting the vertical position and the inclination of the grinding-wheel relatively to the driving-shaft.

4. In a glass-grinding machine, the combination of the main frame, the main driving-shaft, the grinding-wheel, its shaft arranged transversely to the driving-shaft and pivotally connected therewith, devices for adjusting the wheel in an arc about the driving-shaft, and the adjustable table that carries the glass.

In testimony whereof I have hereunto subscribed my name.

JAMES R. DONNELLY.

Witnesses:
MICHAEL DAWSON,
WILLIAM H. M'DONOUGH.