No. 892,226. PATENTED JUNE 30, 1908.

T. J. CORCORAN.

MACHINE FOR BEVELING GLASS.

APPLICATION FILED MAR. 23, 1903.

Fig. 1.

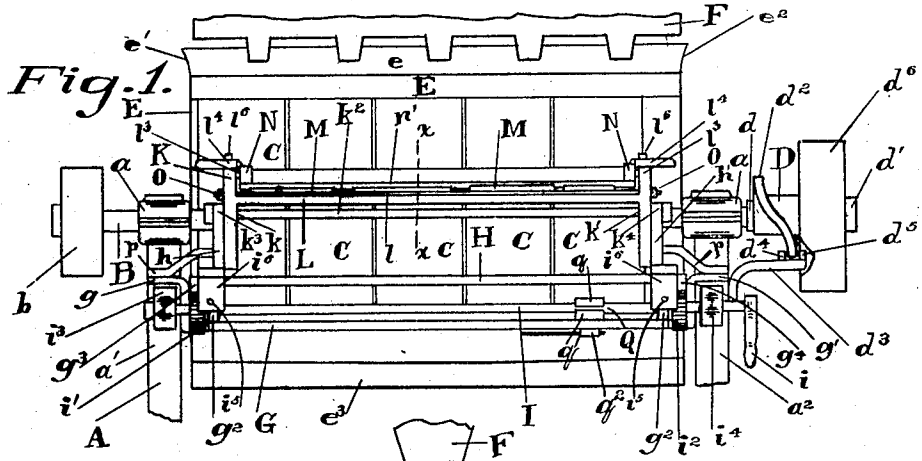
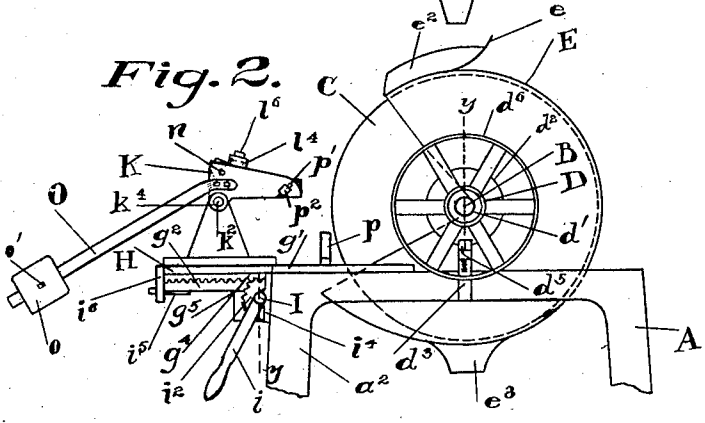


Fig. 2.



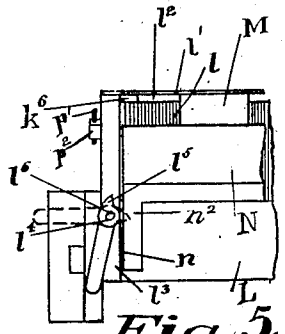
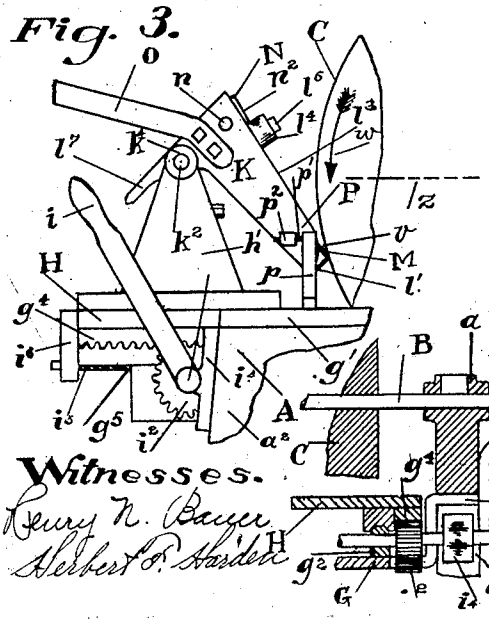


Fig. 5.

Fig. 3.



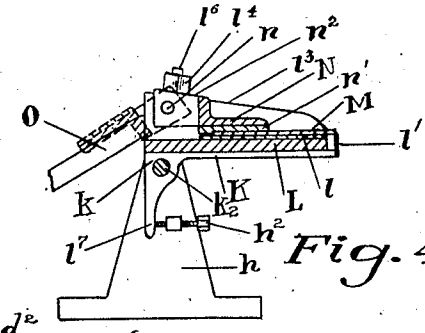


Fig. 4.

Fig. 6.

Witnesses.

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MACHINE FOR BEVELING GLASS.

No. 892,226. Specification of Letters Patent. Patented June 30, 1908.

Application filed March 23, 1903. Serial No. 149,152.

To all whom it may concern:

Be it known that I, THOMAS J. CORCORAN, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Beveling Glass, of which the following is a specification.

It is the object of my invention to provide a machine for beveling glass, of simple construction and capable of rapid operation, and the invention will be readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a front elevation of my improved device with the frame and weight levers partly broken away. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged detail in side elevation showing the glass and its clamping frame in position for beveling the glass. Fig. 4 is an enlarged detail of the clamping frame taken in cross section on the line x—x of Fig. 1. Fig. 5 is a detail in plan view showing the clamp for clamping the glass in position; and, Fig. 6 is a longitudinal section on the line y—y of Fig. 2 showing the construction for reciprocating the abrading shaft longitudinally.

A represents the frame, on which, as in bearings a, a shaft B is adapted to rotate and reciprocate longitudinally. The shaft has rigidly secured thereto suitable abrading rolls C, preferably spaced apart. A pulley b is rigidly secured to the shaft, receiving motion from a suitable source of power, and serves to rotate that shaft. The shaft is reciprocated longitudinally by having loosely mounted thereon a hub D held against endwise movement on the shaft by means of collars d d'. The hub is provided with a cam rib d^2. A bracket d^3 extends from the frame and has two anti-friction rolls d^4 d^5 taking against the side faces of the rib. A pulley d^6 on the hub D receives motion from a suitable source of power and rotates the cam rib, the side faces of which latter, being guided by the contact faces or anti-friction rolls on the bracket d^3, cause the hub and shaft to move longitudinally. The shaft, receiving its rotation through the pulley b and its longitudinal reciprocation through the separate pulley d^6, permits the speed of the longitudinal reciprocation to be varied with relation to the speed of rotation of the shaft by merely changing the relative speed of the pulleys b and d^6.

Thus it will be noted from Fig. 1 that the pulleys b d^6 are of different diameters and if driven from a countershaft having pulleys of the same size, about which latter pulleys and the respective pulleys b d^6 ordinary belts or bands pass for driving the pulleys b d^6, the pulley b, rotating the abrading drums, will rotate at a given speed, and the pulley d^6, rotating the cam d^2, will rotate at a different speed. If the pulleys on the countershaft for driving the pulleys b d^6 are changed in size different relative speeds will be imparted to the pulleys b d^6, or the pulleys b d^6 may themselves be changed in size for receiving different relative speeds. I have not shown the countershaft mentioned in the drawings because any person skilled in the art will readily understand how this may be accomplished without further illustration. It may be remarked however that the pulley b is fast on the shaft B, and the pulley d^6 with its cam-rib d^2 are loose on that shaft, the shaft however being caused to move longitudinally with the cam-rib d^2 because relative longitudinal movement between the shaft and cam-rib d^2 is prevented by the collars d d' fast on the shaft. The longitudinal movement of the cam-rib d^2 is caused by the anti-friction rolls d^4 d^5, or fingers, rigidly positioned on the frame, the rolls engaging the cam and causing the cam to move longitudinally of its axis according to the bending of the cam out of the perpendicular. (See Figs. 1 and 6). Permitting relative changes in speeds of rotation and reciprocation according to the kind or grade of stock being operated upon results in economy of manufacture.

A hood E takes over the abrading rolls for directing the abrading material, consisting usually of sand and water, to the rolls from a suitable hopper F, the hood also preferably having a back plate e and side plates e' e^2 for further directing the abrading material. The bottom of the hood may be provided with an outlet e^3. Between the side pieces a' a^2 of the frame A, a saddle G is supported, as upon brackets g g' extending from the saddle and resting on the top of the side pieces, to

which they are suitably secured. The saddle is provided with slide ways g^2, shown in the form of V's, on which a slide H is adapted to be moved toward and from the abrading rolls. This movement is accomplished preferably by a shaft I, to which a lever i is rigidly secured. Pinions i' i^2, rigidly secured to the shaft, mesh into racks g^3 g^4 secured to the slide. The shaft rocks in bearings i^3 i^4 secured to the frame. Throwing the lever upwardly moves the slide equally at both ends and throughout its length toward the abrading rolls. At each end of the slide a set screw i^5 is adjustably secured and is adapted to strike the saddle as at g^5, forming an adjustable stop for adjustably limiting the inward movement of the slide. The set screw may screw through a plate i^6 rigidly secured to the slide.

A clamping frame K is swingingly mounted on the slide, as being pivoted on bearings k k' about a shaft k^2 mounted in bearings k^3 k^4 on standards h h' on the slide. The clamping frame consists preferably of a bed plate L forming a platen for the stock to be operated on, upon which a rubber or other cushion l is secured. The pieces of glass M are laid upon the cushion and are adapted to rest against a gage l' at the inner edge of the bed-plate. The gage is secured to the inner edge of the bed-plate by means of screws taking through the gage and blocks k^6 and into the bed-plate (see Fig. 5) leaving a space l^2 between the inner edge of the bed-plate and the gage, except at the points where the gage is secured to the bed-plate. A clamping bar N is pivoted to the sides l^3 of the bed-plate, as upon bolts n. The lower face of the clamping bar preferably has a rubber or other cushion n' of sufficient resiliency so that pieces of glass of varying thickness may be placed side by side and clamped between the bed plate and clamping bar. For clamping the bar N I provide a bevel face n^2 at the top of the clamping bar and a pivoted shoe l^4 at the top of each side l^3 of the bed plate arranged so that a lip l^5 on the shoe takes over the bevel face n^2 and climbing upon that bevel face forces the bar toward the bed-plate, thereby clamping the pieces of glass between the bar and bed-plate. The bolt l^6 of the shoe is adjustable in its hole for exerting different limits of pressure upon the clamping bar.

Preferably at each end of the clamping bar I provide a rod O extending rearwardly and supporting a weight o which is adapted to be secured at different points along the rods, as by a set screw o'. The weight exerts pressure for yieldingly holding the glass against the abrading rolls. For limiting the movement of the glass toward the abrading rolls I provide an adjustable stop P, consisting preferably of a lug p extending from each side of the frame, each end of the clamping frame being provided with a set-bolt p' taking through a lug p^2 in the bed-plate of the clamping frame.

In operation, in loading the clamping frame, the latter is receded from the abrading rolls, as shown in Fig. 2, and the clamping bar is thrown backwardly, as shown in dotted lines in Fig. 4, the bed-plate of the clamping frame also being thrown in substantially horizontal position as shown in Figs. 1 and 4, a toe l^7 projecting from the bed-plate and being adapted to strike an adjusting screw h^2 on each of the standards h h', thereby forming a stop for limiting the upward tilting of the clamping frame and preferably leaving the platen substantially horizontal. The glass is then laid on the bed-plate with the edge to be beveled against the gage. The clamping bar is swung upon its pivots and laid with its cushion face upon the pieces of glass, and the clamp l^4 or shoe thrown into position for clamping the glass between the bar and bed-plate. The clamping frame is then swung upon its rod or pivot, lowering the edge of the glass to be beveled and the slide is forced inwardly toward the abrading rolls by means of the lever i. When the set screws i^5 strike the faces g^5, the set-screws having been properly adjusted for the work in hand, the slide is clamped into the position into which it has been thus moved by means of the clamp Q which I have shown as two blocks q q' on the saddle, with a clamp-screw q^2 taking freely through the lower and screwing into the upper block for firmly clamping the shaft I against rotation to the saddle, and thereby clamping the slide in position. During this manipulation the clamping frame is being tiltingly held out of contact with the abrading rolls. The clamping frame being released permits the edge of the glass to be beveled to take against the rolls, the weights exerting the proper pressure for forcing the edge of the glass to be beveled toward the abrading rolls. The edge of the glass is held against the abrading rolls in a plane below the horizontal longitudinal axis of the abrading shaft, the horizontal plane of which latter is indicated by the dotted line z in Fig. 3. The direction of rotation of the abrading roll is indicated by the arrow w. The abrading material coming out of the spout of the hopper and passing upon the rolls is fed to the point of contact between the edge of the glass and the rolls, the edge of the glass and the periphery of the rolls thereby forming a receptacle v (Fig. 3) for receiving and properly utilizing the abrading material to its fullest extent. The peculiar manner in which I mount the glass and its point of application of its edge to the rolls also permits the glass to be yieldingly forced away from the roll in case an undue amount of sand or abrading material is fed to the rolls and thereby prevents breakage or chipping of the glass. When the stops P

come in contact, the glass will have been sufficiently beveled and the beveling operation thereupon ceases.

In my improved device the beveling of the glass is accomplished by means of simple mechanism which is high in efficiency and rapid in operation, and consists of few parts constructed in such manner that breakage or chipping of the glass is obviated by reason of the yielding pressure exerted upon the edge of the glass, the point of application of the latter to the abrading rolls, and direction in which the rolls are rotated with relation to the position of the glass, and abrading material is utilized to its fullest extent by positioning the parts in such relation that the edge of the glass being beveled and the abrading rolls form a pocket or receptacle for receiving the abrading material.

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

1. In a machine of the character described, the combination of a shaft having an integral abrading roll with a peripheral abrading face, means for rotating said shaft, a hub loosely journaled about said shaft, said hub having cam-faces rotating therewith, a part having side contact faces for the latter cam-faces moving said latter cam-faces longitudinally of the axis of said shaft, a connection between said hub and said shaft communicating said longitudinal movement to said shaft for shifting said roll sidewardly as an entirety and permitting independent rotation of said hub about said shaft, means for rotating said hub about said shaft, a swingingly mounted work-platen whose swinging edge is substantially parallel with the axis of said roll and swings under said roll, and means swingingly and yieldingly urging said swinging edge towards said roll, substantially as described.

2. In a machine of the character described, the combination with the frame, shaft and abrading roll with a peripheral abrading face, of a pulley for rotating said shaft, and a second pulley loosely journaled about said shaft and rotatable at different speeds therefrom, the latter pulley having cam-faces and said frame having engaging face for the latter, with a stop between the latter pulley and shaft for causing longitudinal movement of said shaft with said latter pulley while permitting rotation of said latter pulley at different speeds from said shaft, and a swingingly mounted work-platen whose swinging edge is substantially parallel with the rotary axis of said roll and swings under said roll, and means swingingly and yieldingly urging said swinging edge toward said roll, substantially as described.

3. In a machine of the character described, the combination of an abrading roll, having a peripheral abrading face, a pivoted work-platen whose swinging edge is substantially parallel with the axis of said roll and swings below the horizontal plane of the axis of rotation of said roll, means yieldingly urging said swinging edge toward said roll while swinging, means for rotating the roll, a hub having cam-faces rotatable relatively to the roll, a part having contact-faces for the hub cam-faces constructed for moving the hub cam-faces longitudinally of the axis of the roll, a connection between said hub and roll for causing simultaneous longitudinal movement of roll with hub, and means rotating the hub at a speed differing from the speed of rotation of the roll.

4. In a glass beveling machine, the combination, with the frame, shaft, and roll having peripheral abrading face, of the swinging clamping frame arranged to have its edge nearest the abrading roll swung under said roll, for forming a feeding cavity in conjunction with said roll and the glass being beveled, a slide on which the clamping frame is swingingly mounted, a stop limiting the movement of said swinging edge of the clamping frame toward the roll, and means automatically yieldingly forcing said swinging edge of the clamping frame toward the abrading roll.

5. In a glass beveling machine, the combination of a horizontally disposed abrading roll having a peripheral abrading face, means for feeding abrading material to the roll from above, a yielding swingingly mounted work platen arranged to swing below the roll forming a receptacle in conjunction with the glass being beveled between the glass being beveled and roll for the abrading material, said roll rotating with the upper part of its periphery moving toward the platen and said platen being permitted to automatically swing away from said roll upon accumulation of an excess of abrading material in said receptacle.

6. In a machine of the character described, the combination with the frame, shaft and abrading roll, means for rotating and longitudinally reciprocating the roll, a slide mounted upon the frame, said slide movable toward and from the abrading roll, a stop limiting the movement of the slide toward the roll, a clamping frame swingingly mounted upon the slide, the inner edge of which is arranged to swing below the horizontal plane of the axis of the abrading roll, and a stop for limiting the movement of said inner edge toward the abrading roll, substantially as described.

7. In a machine of the character described, the combination with the frame, shaft and abrading rolls, means for rotating and longitudinally reciprocating the rolls, a slide mounted upon the frame, means for moving the slide toward and from the abrading rolls, a stop for adjustably limiting the

movement of the slide toward the rolls, a clamping frame swingingly mounted upon the slide, the inner edge of which is arranged to swing below the horizontal plane of the axis of the abrading rolls, and a stop for limiting the movement of said inner end toward the abrading rolls, with a rod extending outwardly from the clamping frame, and a weight for the rod, constructed for yieldingly holding the inner end of the clamping frame toward the rolls, substantially as described.

8. In a machine of the character described, the combination with the frame, shaft and roll, of a slide movable toward and from the abrading roll, a clamping frame upon the slide, a bed-plate thereon, a gage at the inner edge of the bed-plate, a clamping bar pivoted upon the bed-plate, a pivoted shoe taking against the latter, the clamping bar and shoe having an inclined face between them, substantially as described.

9. In a machine of the character described, the combination of a horizontally disposed abrading roll having a peripheral abrading face, a yielding swingingly mounted work platen arranged to swing below the roll forming a receptacle in conjunction with the glass being operated upon between the platen and roll for the abrading material, means for feeding abrading material to said receptacle above said receptacle, said roll rotating with the upper part of its periphery moving toward the platen and said platen being permitted to automatically swing away from said roll upon accumulation of an excess of abrading material in said receptacle.

10. In a machine of the character described, the combination, with the frame, shaft, abrading roll and means for rotating the roll, a slide mounted upon the frame, said slide movable toward and from the abrading roll, a stop limiting the movement of the slide toward the roll, a clamping frame swingingly mounted upon the slide, the inner edge of which is arranged to swing below the horizontal plane of the axis of the abrading roll, means yieldingly urging said inner edge toward the roll, and a stop for limiting the movement of said inner edge toward the abrading roll, substantially as described.

11. In an abrading machine of the character described, the combination of a shaft, an abrading roll on the shaft, and having a peripheral abrading face, a pivoted work-platen whose swinging edge swings below the horizontal plane of the axis of rotation of said roll, and is substantially parallel with said axis, means yieldingly urging said swinging edge toward said roll while swinging, two pulleys on the shaft, one of said pulleys tight on the shaft for rotating the shaft, the other of said pulleys loose on said shaft for being rotated independently of said shaft, said latter pulley held against longitudinal movement on said shaft, a part having cam-faces rotating with said latter pulley, and a part having side contact faces for said cam-faces, substantially as described.

12. The combination, in an abrading machine of the character described, of a shaft, an integral abrading roll secured thereto, having a peripheral abrading face, a pivoted work-platen whose swinging edge swings below the horizontal plane of the axis of rotation of said roll, means yieldingly urging said swinging edge toward said roll while swinging, a rotating device for rotating said shaft fixed to said shaft, a second rotating device journaled loose on said shaft, means for rotating said latter rotating device at different speeds, said second rotating device having cam-faces, means engaging said latter faces and thereby shifting said second rotating device endwise, and a connection between said second rotating device and said shaft communicating the endwise shifting motion of the former to the latter, and thereby reciprocating said abrading roll sidewardly as an entirety substantially as described.

13. The combination, in an abrading machine of the character described, with the frame, shaft and abrading roll having a peripheral abrading face, of a pivoted work-platen whose swinging edge swings below the horizontal plane of the axis of rotation of said roll and is substantially parallel with said axis, means yieldingly urging said swinging edge toward said roll while swinging, a pair of rotating drivers mounted on the shaft, one fast and the other loose thereon, said loose driver having cam faces rotating therewith and said frame having engaging faces for said cam-faces, constructed and operating substantially as described.

14. In an abrading machine of the character described, the combination with the frame, shaft and abrading roll having a peripheral abrading face, of a pivoted work-platen whose swinging edge swings below the horizontal plane of the axis of rotation of said roll and is substantially parallel with said axis, means yieldingly urging said swinging edge toward said roll while swinging, a pair of rotating drivers, one of said drivers fast on said shaft rotating the abrading roll and the other of said drivers loose on said shaft moving the abrading roll longitudinally, means rotating said last-named driver at different speeds independent of said shaft, said last-named driver having cam-faces rotating therewith and said frame having engaging faces contacting with said cam-faces, constructed and operating substantially as described.

15. In an abrading machine, the combination with a frame and a power-shaft journaled therein, of an abrading roll secured to said shaft and having a peripheral abrad-

ing face, a rotating part journaled on said shaft dissociated from said abrading roll and held in longitudinal relation therewith, a serpentine actuating member for differential rotation with relation thereto and on said rotating part, and a controlling member for the latter secured to said frame.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS J. CORCORAN.

Witnesses:
H. F. HARDEN,
A. F. HERBSLEB.