H. ZOERNER.

MACHINE FOR POLISHING PLATE GLASS.

APPLICATION FILED MAY 5, 1915.

1,167,244.

Patented Jan. 4, 1916.

4 SHEETS—SHEET 1.

Fig. 1.

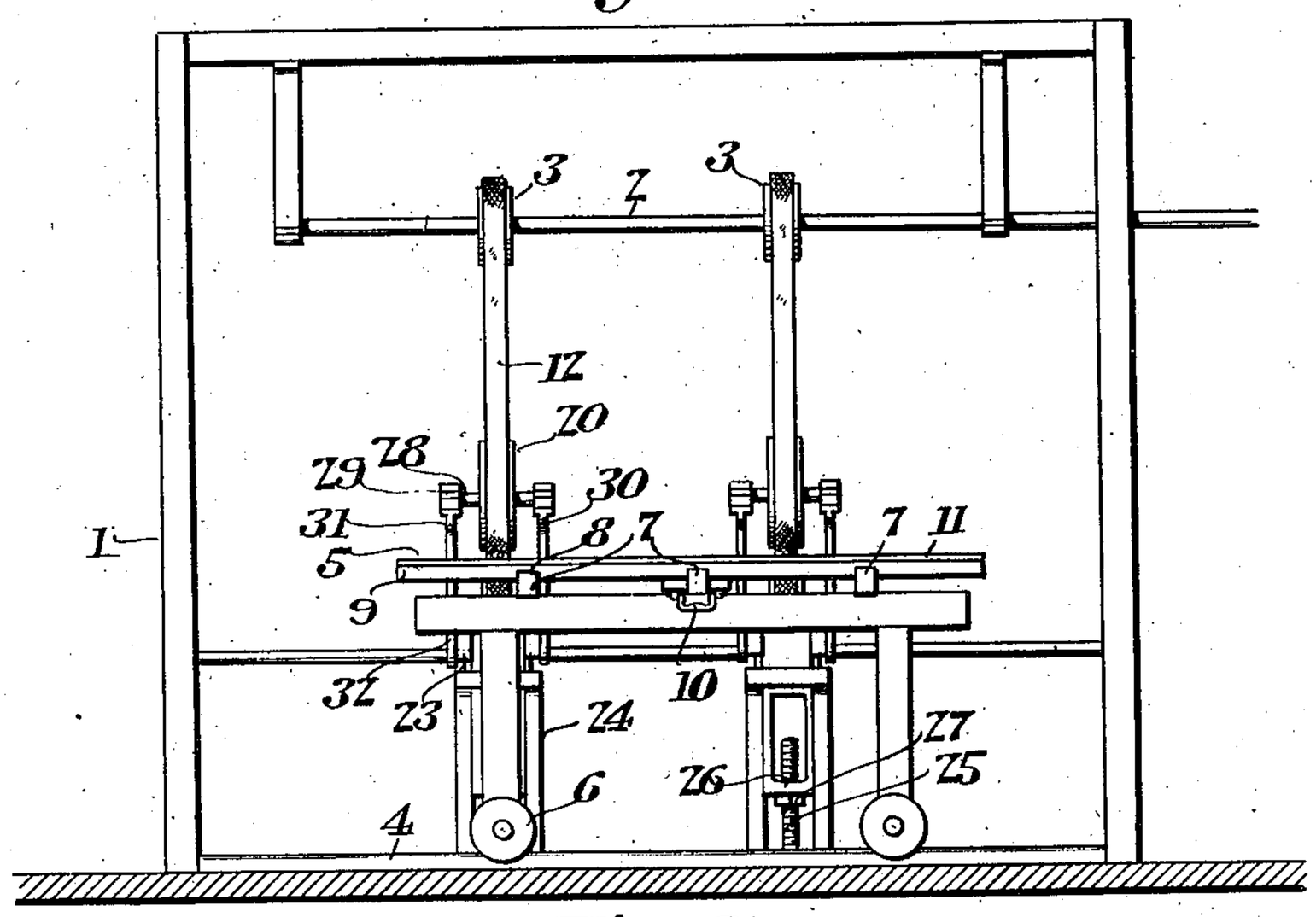
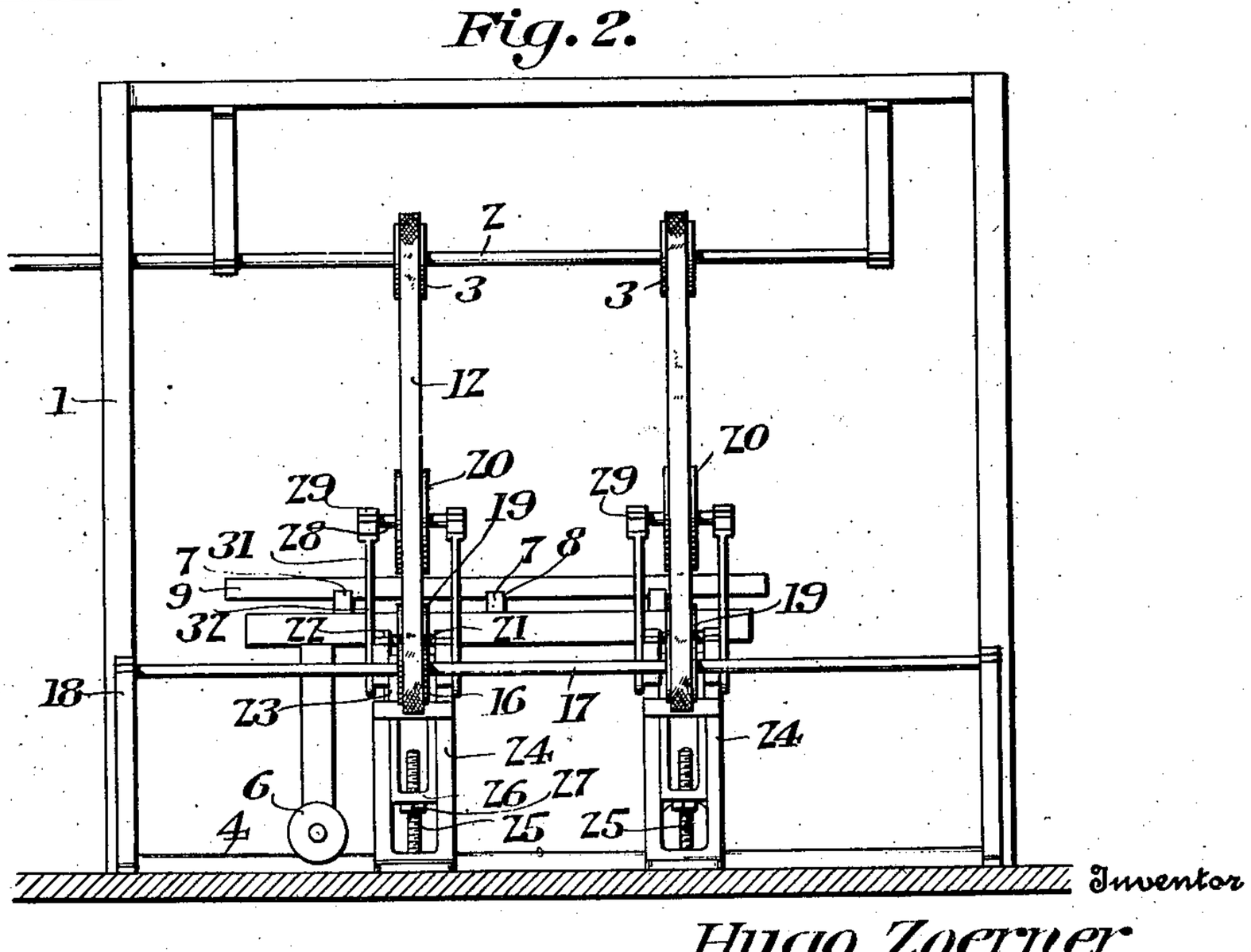


Fig. 2.



Witnesses

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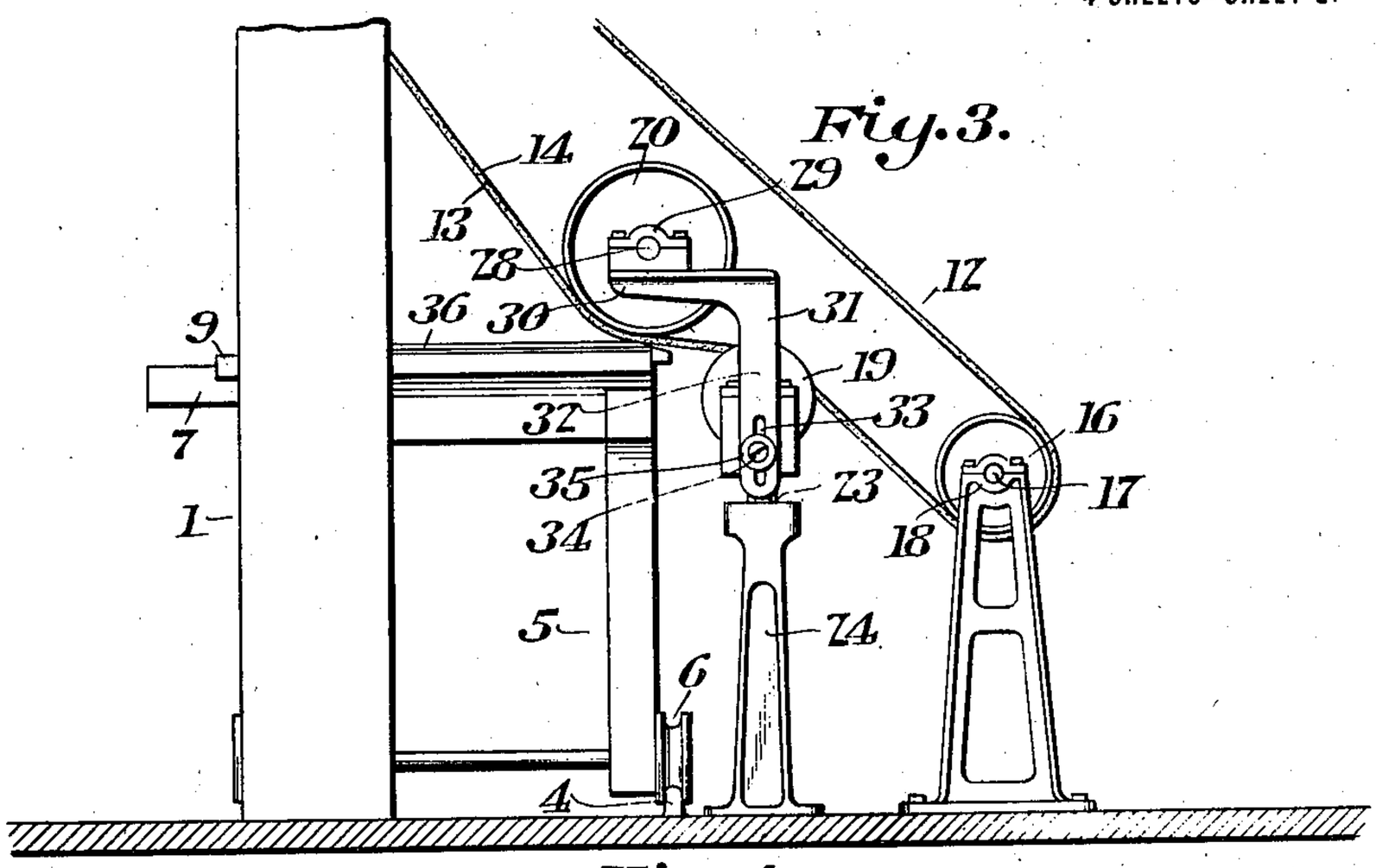
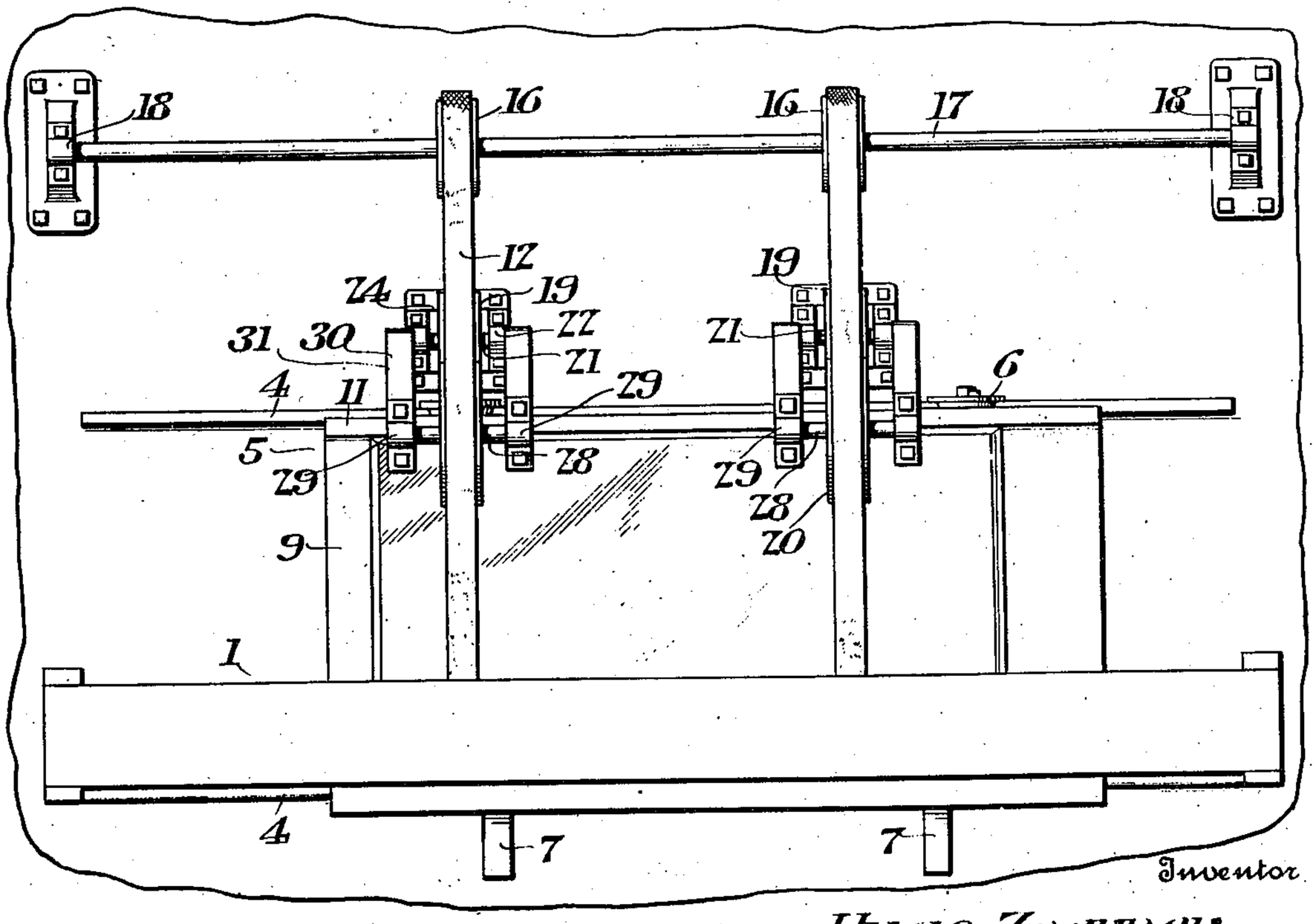


Fig. 3.

Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

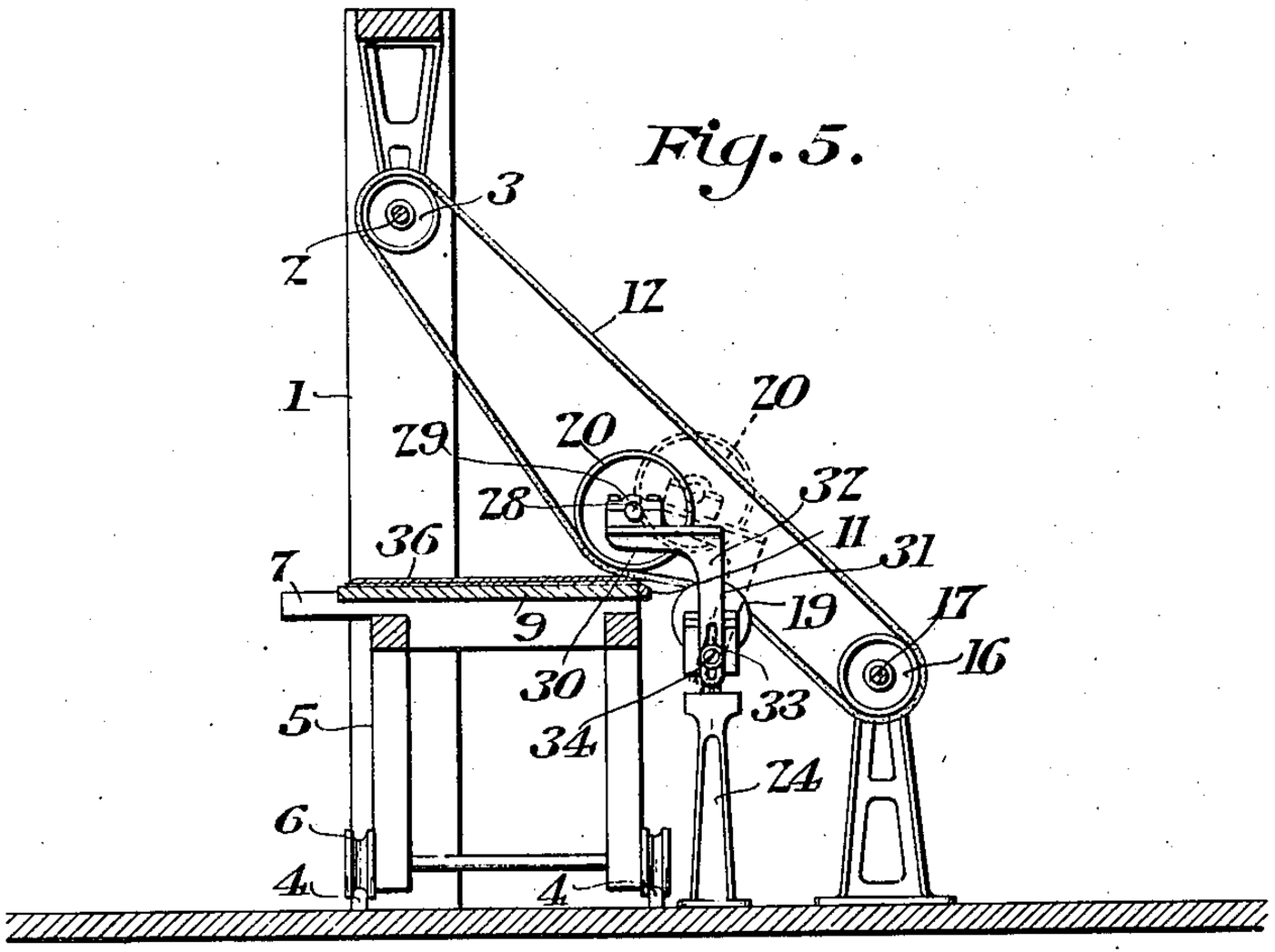
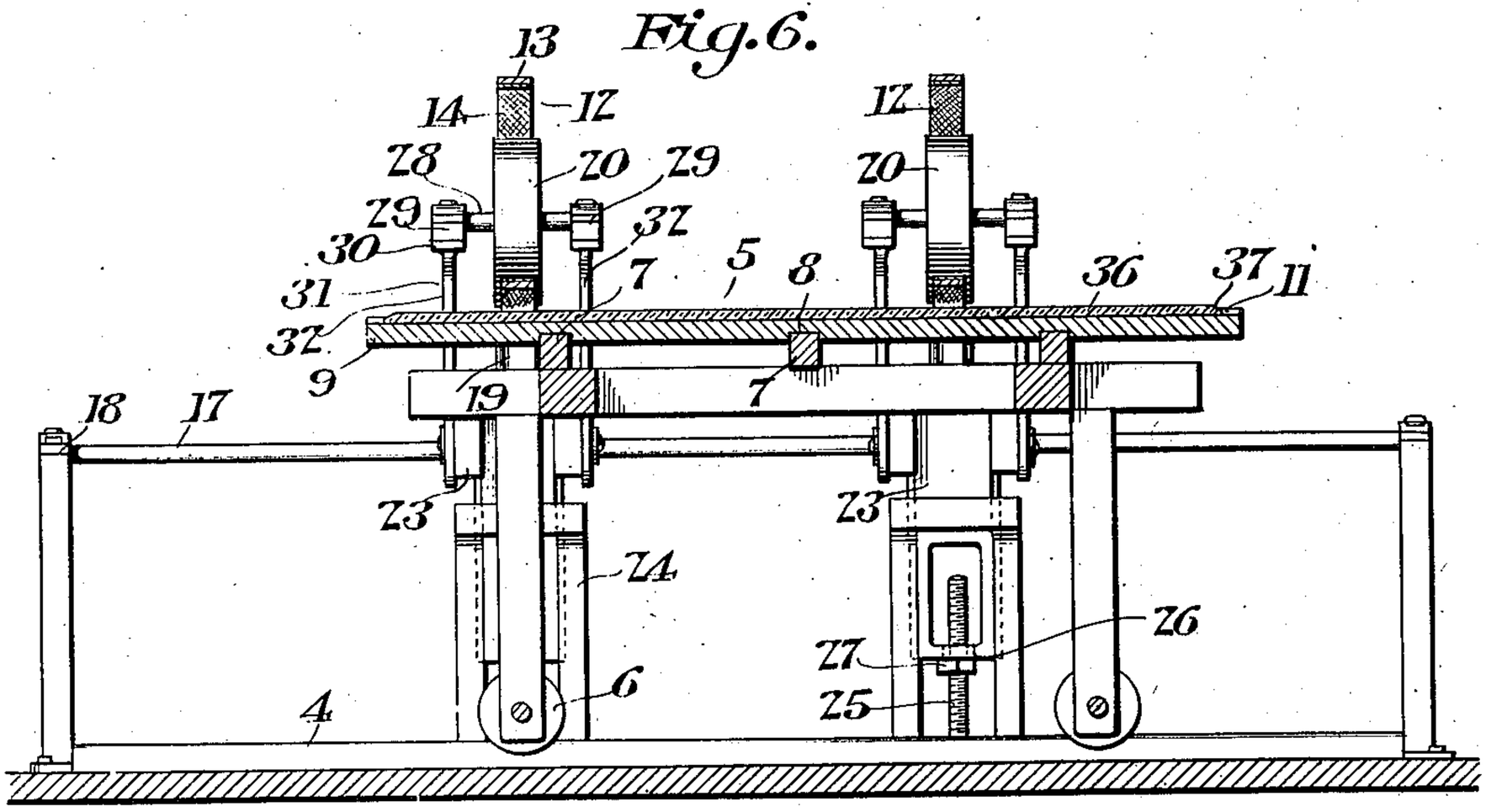


Fig. 6.



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4 SHEETS—SHEET 4.

Fig. 7.

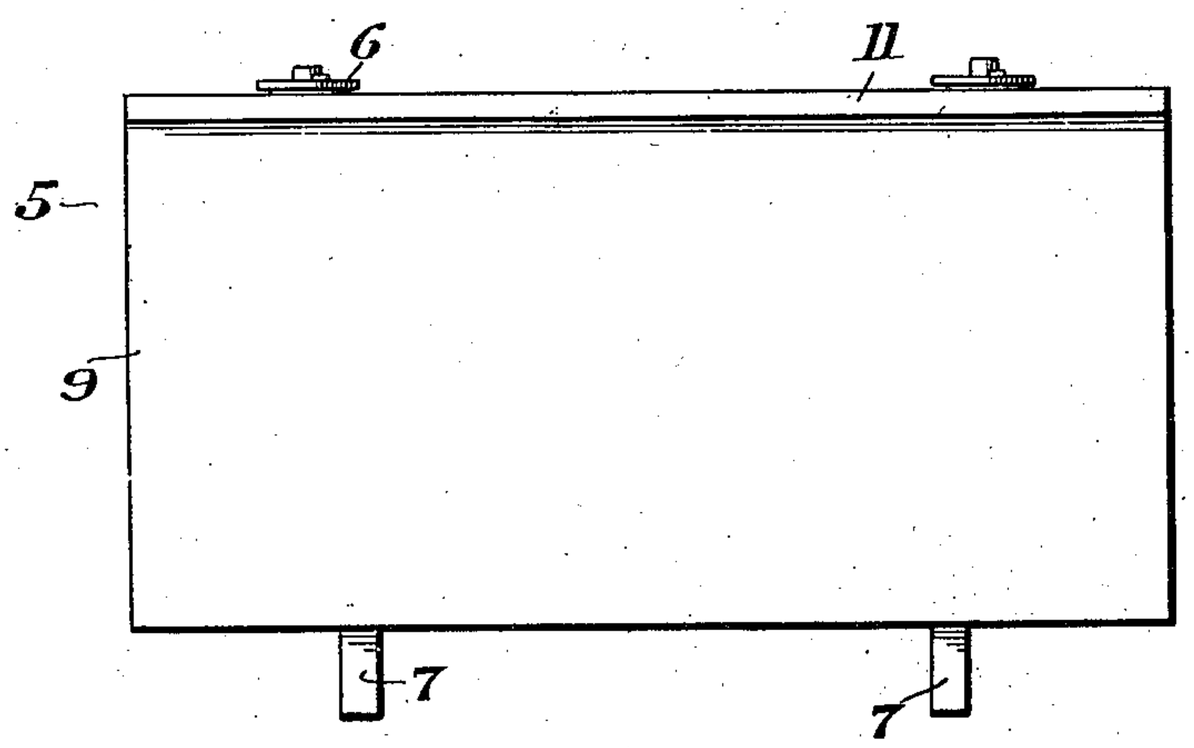
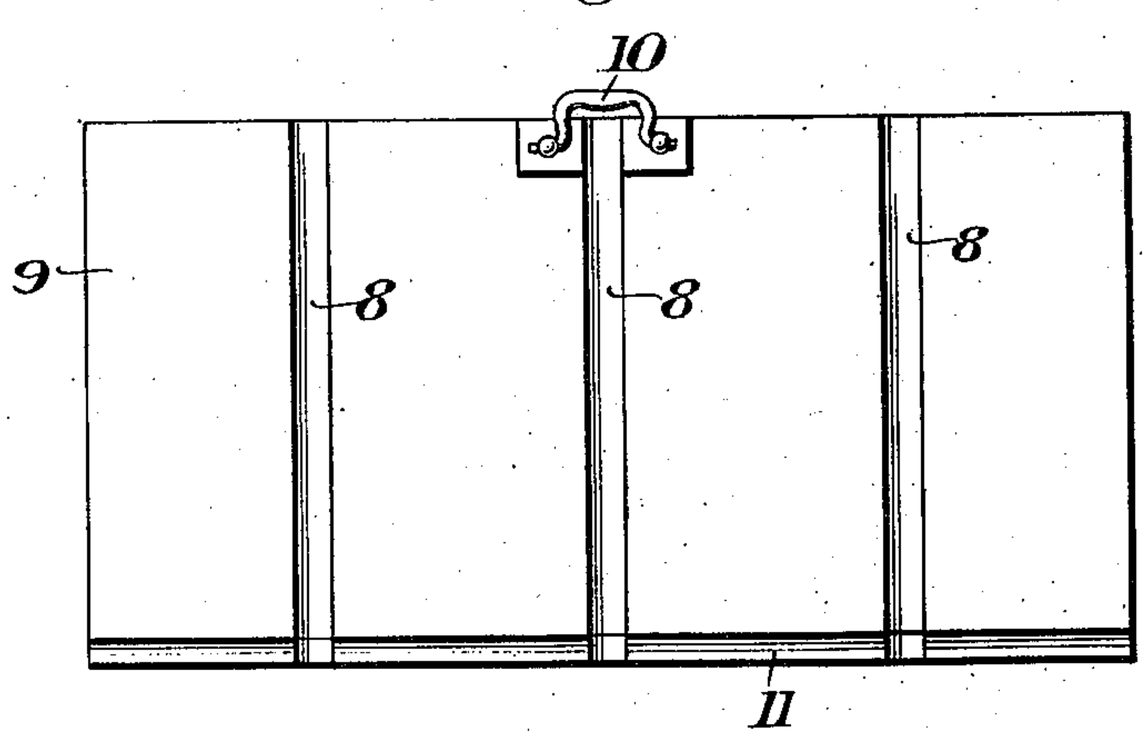


Fig. 8.



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UNITED STATES PATENT OFFICE.

HUGO ZOERNER, OF ARCADIA, MICHIGAN.

MACHINE FOR POLISHING PLATE-GLASS.

1,167,244. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed May 5, 1915. Serial No. 26,091.

To all whom it may concern:

Be it known that I, HUGO ZOERNER, a citizen of the United States, residing at Arcadia, in the county of Manistes and State of Michigan, have invented new and useful Improvements in Machines for Polishing Plate-Glass, of which the following is a specification.

This invention relates to a machine for polishing plate glass, particularly the beveled surfaces of beveled plate glass, the object of the invention being to provide a machine whereby the operation of polishing a beveled surface may be efficiently, economically and rapidly accomplished.

A further object of the invention is to provide a machine of the character described which embodies the use of one or more polishing belts composed of felt and a backing of a strong and durable material, such as canvas, combined with means whereby the glass may be adjusted and supported to present its beveled surface to the rubbing action of the belt or belts and a polishing medium used in conjunction therewith.

A further object of the invention is to provide a machine embodying means whereby the belts may be made as torque or loose as desired, to exert a desired rubbing pressure on the glass, and also adjusted to suit different thicknesses of glass plates, and also embodying a table or carriage for supporting the glass whereby the latter may be properly adjusted toward and from the belt or belts and also moved in a direction transversely of the belt or belts so as to secure a rapid and efficient polishing action.

The invention consists of the features of construction, combination and arrangement of parts herein fully described and claimed, reference being had to the accompanying drawings in which:—

Figure 1 is a front elevation of a polishing machine constructed in accordance with my invention. Fig. 2 is a rear elevation of the machine. Fig. 3 is an end elevation of the same. Fig. 4 is a top plan view of the machine. Fig. 5 is a vertical front to rear section on line 5—5 of Fig. 4. Fig. 6 is a vertical longitudinal section on line 6—6 of Fig. 4. Fig. 7 is a top plan view of the carriage or traveling table. Fig. 8 is a bottom plan view of the carriage or table top.

In carrying my invention into practice, I provide a machine including a suitable frame structure 1, supporting an overhead shaft 2 provided with driving pulleys 3, whereby it may be driven from any suitable source of power. Supported upon the base of the frame or a suitable floor or foundation from which it rises are track rails 4 extending in the same direction as the shaft 2 and upon which is arranged to travel a carriage or table 5 provided with wheels or rollers 6 to traverse said rail.

The carriage includes a suitable frame structure having guide bars 7 extending transversely thereof, and in a direction from front to rear of the machine, which bars are adapted to engage guide grooves 8 in the underside of a work bed or table top 9, which is provided at the front with a suitable grip or handle 10 and at the rear with a longitudinally extending abutment strip or rail 11.

The polishing mechanism comprises one or more endless polishing belts 12, two being shown in the present instance, each belt comprising a working lamina or surface 13 of felt and a backing lamina or surface 14 of strong and durable material, such as canvas. The belts are employed in conjunction with any suitable polishing material or composition, such as rouge and water, and I have found that felt is of peculiar value and efficiency as a rubbing medium for use in combination with such substances or compositions, inasmuch as it has a soft and delicate, and yet positive frictional rubbing action, while it is sufficiently porous to receive and hold the polishing substance and supply it uniformly to the surface to be polished, the canvas backing is employed to hold the felt intact and prevent it from stretching. The felt may be glued, sewed or otherwise secured to the canvas backing and may be of any suitable width and thickness.

As shown, the belts 12 pass around drive pulleys 15 on the shaft 2 and around guide pulleys 16 on a countershaft 17 journaled in suitable bearings 18 arranged at a point below and in rear of the surface of the supporting table, the belts thus being so extended that their lower or working stretches will run at an angle to the horizontal corresponding to the bevel of the glass to be polished, which rests upon the table 9.

At points intermediate the shafts 2 and 17 the lowest stretch of each belt passes over a grooved guiding or direction pulley 19 and beneath a combined direction and pressure pulley or wheel 20. Each pulley 19 is

mounted on a horizontal shaft 21 journaled in spaced bearing members 22 on a supporting or carrier bracket 23 vertically adjustable in the guideway of a supporting and guide frame 24, whereby the pulley 19 may be raised and lowered to correspondingly adjust the portion of the working stretch of the belt against which it bears. The adjusting means for the bracket 23 may be of any suitable construction, in the present instance I have shown a fixed screw stem 25 projecting upward from the base of the frame 24 and passing through an apertured cross head 26 on the bracket 23 and carrying an adjusting screw 27 acting on said cross head, whereby the bracket may be adjusted and supported at different elevations.

Each direction and pressure pulley or wheel 20 is carried by a shaft 28 journaled in spaced bearings 29 upon the horizontal arms 30 of L-shaped supporting members 31, the vertical arms 32 of which are longitudinally slotted, as at 33, to receive clamping screws or bolts 34 adjustable in said recesses or openings in the bearing members 22, the heads of the screws being arranged to bear against the washers 35, and the construction thus being such that the supporting members 31, together with the shaft 28, provide a vertically adjustable frame which is also mounted to swing in a direction toward and from the table on an arc of a greater or less radius, according to the degree of adjustment of the wheel or pulley 20 with respect to the pivot and clamping screws 34.

It will be observed that each wheel or roller 20 is arranged above the plane of the associated pulley 19 and between the same and the table, and that said wheel or roller 20 is arranged to bear upon the upper surface of the lower or working stretch of the belt to force the same downward toward the table at a working angle, and that by vertically adjusting said wheel or roller 20 this angle may be varied and the working stretch of the belt made to operate with a greater or less pressure against the work. Upon loosening the clamping screws 34 either or any of the wheels or rollers 20 may be swung rearwardly to the non-working or dotted line position shown in Fig. 5, so that any number of belts of the series employed may be thrown out of action whenever desired or the rollers 20 disposed for the ready and convenient application or removal of a belt.

In practice, the glass plate 36 having the beveled surface 37 to be polished is rested upon the table top 9 so that the edge of its beveled portion will rest against the abutment strip or rail 11. If the working stretch of the belt is then disposed in proper operative position, the table is slid forwardly on the carriage until the beveled surface of the glass is brought into contact with the surfaces of the belts at the bearing point or angle of the latter. The polishing medium then being applied in any suitable manner, the belts are set into action, their lower or working stretches traveling in a downward and rearward direction, as indicated by the arrow, over and across the beveled surface of the glass, as the belts travel across the beveled surface of the glass, the operator shifts the carriage longitudinally, thus bringing the beveled surface of the glass along its entire length beneath the working surfaces of the belts, whereby the entire beveled surface is polished. It will be observed that the back and forth adjustment of the table top permits the operator to adjust glasses having beveled surfaces at different angles, or beveled portions which vary in thickness, to be adjusted at a proper position with relation to the acting surfaces of the belts without the necessity of adjusting the latter, and that the back and forth or reciprocatory motion of the carriage permits any length of beveled surface to be easily, quickly, efficiently and economically polished. These and other advantages will be evident from the foregoing description.

I claim:—

1. In a machine for polishing the beveled surfaces of plate glass, the combination of an endless traveling polishing belt having a lower working stretch arranged at an angle to the horizontal, a horizontal support for the glass, a guide roller for the working stretch of the belt disposed at a point beyond and substantially in the plane of said support, and means for acting upon the working stretch of the said belt adjacent to said roller to regulate the working angle of the working portion of said stretch and its pressure upon the glass.

2. In a machine for polishing the beveled surfaces of plate glass, the combination of an endless traveling and polishing belt arranged at an angle to the horizontal, a carriage mounted to reciprocate in a direction transversely to the direction of movement of the belt, a bed to support the glass adjustably mounted on said carriage for movement toward and from the acting surface of the belt, a guide roller disposed beyond the carriage and adjustable in a vertical plane to bear against the working surface of the belt, a guiding and pressure regulating roller arranged to engage the upper surface of the working stretch of the belt for adjusting the same toward and from the surface of the glass to be acted upon, and means for throwing said roller into and out of operative position.

3. In a machine for polishing the beveled surfaces of plate glass, the combination of an overhead drive shaft, a countershaft ar-

ranged below and in rear of said drive shaft, an inclined endless polishing belt passing around pulleys on said shafts, a carriage mounted for movement in a direction transversely of the belt, a work supporting bed on said carriage adjustable toward and from the belt, a guide roller disposed between the carriage and countershaft and adjustable vertically to act upon the intervening portion of the lower stretch of the belt, a pressure roller arranged above the portion of the bed on which the portion of the work to be polished is disposed, and arranged to bear against the upper surface of the working stretch of the belt to vary its angle of inclination and its pressure against the said surface to be acted upon, and means for adjusting said roller.

4. In a machine for polishing the beveled surfaces of plate glass, the combination of an endless traveling polishing belt having a lower working stretch arranged at an angle to the horizontal, a carriage mounted for movement in a direction transversely of the belt, a work supporting bed on said carriage adjustable toward and from the belt, a guide roller for the working stretch of the belt disposed at a point beyond and substantially in the plane of said work supporting bed, and means for acting upon the working stretch of the said belt adjacent to said roller to regulate the working angle of the working portion of said stretch and its pressure upon the glass.

5. In a machine for polishing the beveled surfaces of an inclined endless polishing belt, a carriage mounted for movement in a direction transversely of the belt, a work supporting bed on said carriage adjustable toward and from the belt, a guide roller arranged to bear against the lower stretch of the belt, a pressure roller arranged above the portion of the bed on which the portion of the work to be polished is disposed, and so as to bear against the upper surface of the working stretch of the belt to vary its angle of inclination and its pressure against the said surface to be acted upon, and means for adjusting said roller.

In testimony whereof I affix my signature in presence of two witnesses.

HUGO ZOERNER.

Witnesses:
CARL A. MANKÉ, Jr.,
ADOLPH HASSE.