

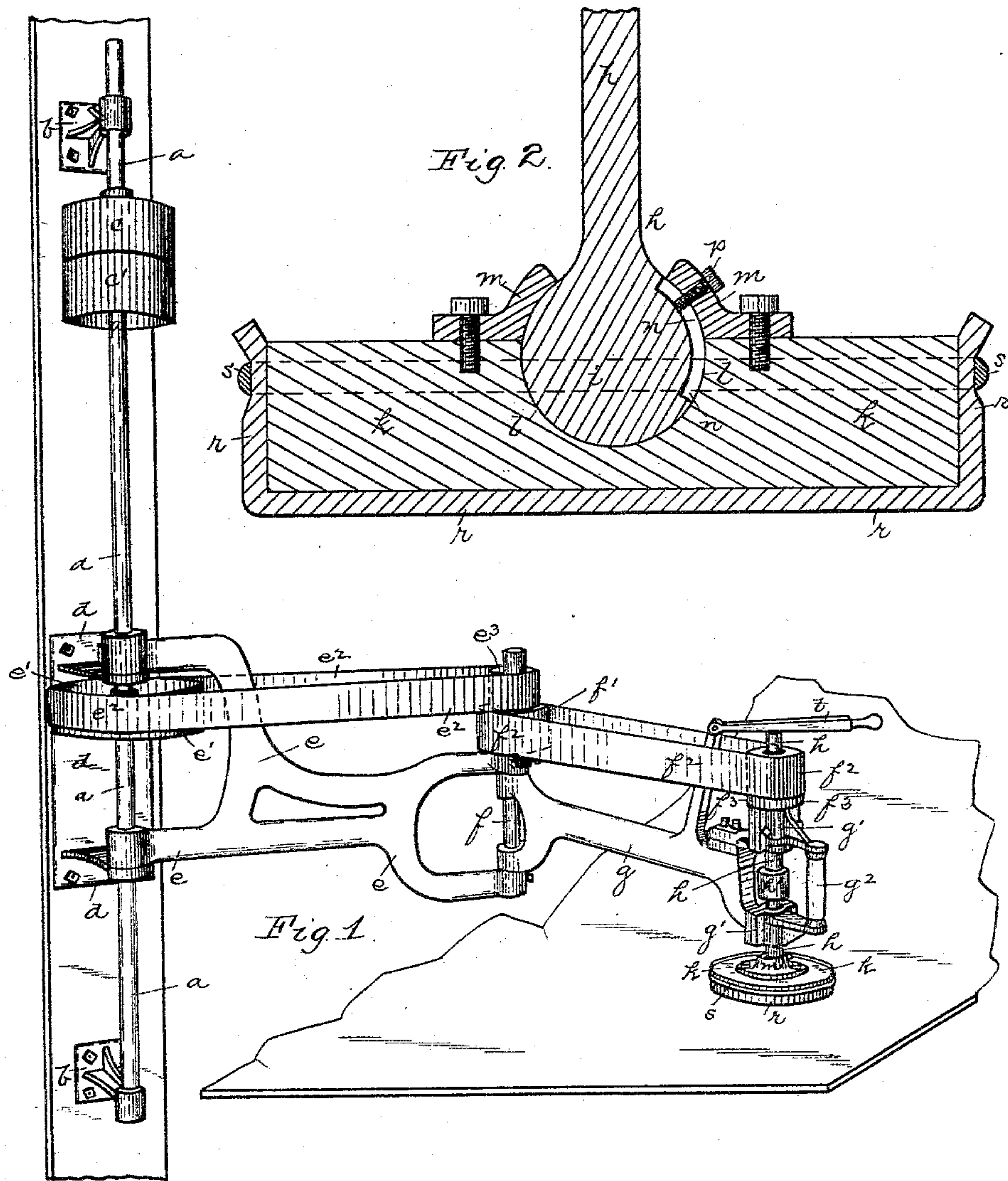
(No Model.)

A. F. CHANDLER.

APPARATUS FOR POLISHING PLATE GLASS.

No. 412,367.

Patented Oct. 8, 1889.



Witnesses:

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APPARATUS FOR POLISHING PLATE-GLASS.

SPECIFICATION forming part of Letters Patent No. 412,367, dated October 8, 1889.

Application filed May 20, 1889. Serial No. 311,397. (No model.)

To all whom it may concern:

Be it known that I, AMASA F. CHANDLER, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Apparatus for Polishing Plate-Glass; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to apparatus for polishing plate-glass, its object being to provide means for polishing any particular spot or part of the plate which may not have been brought to the desired degree of polish or finish, or may have lines formed by the grinding operation which are not entirely removed in the polishing by the ordinary reciprocating polishing apparatus employed to polish the entire plate. It is well known that after
15 these large glass plates have been finished by the ordinary reciprocating polishing apparatus there may be slight scratches or other imperfections on the surface, caused by dust or grit dropping on the surface of the plate during the polishing operation, or where such
25 polishing apparatus does not act to remove the slight marks or lines formed in the grinding operation. These imperfections have heretofore been removed by hand labor. The workmen, by means of a felt rubber and rouge,
30 remove these imperfections in the different parts or spots of the plate and impart the desired polish or finish to that part of the plate. This labor is difficult and tedious, however, and requires skilled and neat workmen, and
35 is therefore expensive. For certain grinding and sandpapering purposes brackets having hinged arms carrying pulleys connected by belts or like means, and so driving the grinding-shaft at the forward end, have been employed, such apparatus, by means of the
40 hinged arms, giving the necessary adjustability in different directions over the surface to be finished. Such apparatus, however, does not provide for a sufficiently even pressure on the surface to be successfully employed in polishing plate-glass, as it was found that the polishing-disk was liable to have a greater pressure on one side than the
45 other, and was therefore liable to form light circular or like lines on the plate, which marred the polish thereof, as has been proven by experiment with such apparatus.

The object of my invention is to so improve this power-operated apparatus as to overcome the objections so found to its use, 55 and so provide a suitable and efficient means of accomplishing this work of polishing and finishing the different parts of the plate left unfinished by the ordinary reciprocating polishing apparatus. For this purpose I take
60 the bracket having hinged adjustable arms and provided with a power-driven shaft at the forward end, and I connect to said shaft a polishing-disk by means of a ball-and-socket joint provided with a feather-and-groove connection, and I so provide a polishing-disk, 65 which may be rotated on the surface of the glass plate, and which yet will adjust itself to the surface of the plate, and, as the pressure is applied in the center of the disk and the disk is connected to the power-shaft by a joint permitting the free movement thereof, it is evident that the pressure at all parts near the outer edge of the disk will be even, and therefore that there is practically no liability of such heavy pressure on any part of the disk as to cause the formation of such radial lines or marks on the surface of the plate, and that a more perfect polishing operation is obtained. 80

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of a bracket 85 embodying my invention, showing the plate to be polished under the same; and Fig. 2 is a cross-section of the lower surface of the polishing-disk and the power-shaft carrying the same. 90

Like letters of reference indicate like parts in each.

In employing my invention any suitable form of bracket having hinged arms providing for the adjustability of the same over the surface to be polished may be employed, that shown in the drawings being well adapted for the purpose. The power-shaft *a* is supported vertically in suitable pillow-blocks or bearings *b*, and carries the driving and loose pulleys *c c'*, the shaft passing through the bracket-bearing *d*. In said bracket-bearing *d*, hinged or journaled on the shaft *a*, is the arm *e*, carrying at its outer end in 100

suitable bearings the vertical shaft f , on which is hinged or journaled the second arm g , carrying at its forward end the polishing-shaft h . Secured to the shaft a , within the bracket-bearing d , is the pulley e' , from which a belt e^2 extends to the pulley e^3 , secured to the shaft f , said shaft also carrying a pulley f' , from which a belt f^2 extends to the pulley f^3 , on the polisher-shaft h , this being the ordinary construction for such machines. The shaft h is mounted in suitable bearings g' , at the forward end of the arm g , which also has the handle g^2 , for drawing the frame in any desired direction. The shaft h has preferably a suitable weight or spring h' thereon, to give the desired pressure of the polisher-disk k at the base of the shaft upon the glass plate, and may also have a suitable lever t , to vary the pressure of the disk, if desired, and also to raise the polisher-disk up when it is desired to remove the polisher-disk from the glass for any cause. The joint between the polisher-disk k and the shaft h is what is known as a "ball-and-socket joint," the ball end i being preferably formed at the base of the shaft h , and this rounded end fitting within a suitable socket l , formed within the disk k , and by means of a collar m , bolted to the disk k , and having formed thereon the face for receiving the upper part of the ball i . The ball i has formed therein the groove or recess n , extending vertically along the face of the ball, and passing through the collar m is the screw-bolt or feather p , the end of which enters the groove n , and so provides for the rotation of the disk k by the shaft h . The disk k has the felt covering r , which is secured thereto by clamping-ring s , this felt covering being usually made thick so as to form a cushion which is slightly yielding and which will retain the rouge or other polishing material, and through the same act to polish the surface of the plate upon the rotation of the disk.

When my improved polishing apparatus is in use, the polished plate-glass, having imperfections thereon which it is desired to remove, is placed upon a suitable table, which has preferably a light felt cushion to support the plate, and the operator then grasps the handle g^2 at the front end of the arm g of the bracket and brings it over the spot which is to be polished, spreading on a suitable amount of rouge for the purpose. The disk k may of course be supported in the arm g , so that it will not come in contact with the surface of the plate except at the point desired, and may be lowered by a suitable lever t , or other mechanism. The disk is rotated through the

belts $e^2 f^2$, above referred to, being turned by the shaft h , through the feather p and groove n , and it is lowered upon the spot to be polished, the disk being rotated at the speed found most desirable for the work. As the disk is free to move in any direction on account of the ball-and-socket joint, it is evident that, as the pressure is in the center of the disk, there is a practically even pressure of the entire surface of the disk upon the glass plate, and there is no liability of one side of the disk being pressed upon the glass plate more than the other, even though the shaft h might be slightly canted in the movement of the frame or the plate might not rest in a perfectly horizontal position upon its supporting-table; and consequently, on account of the even pressure of the disk, which is cushioned by the felt cushion r , a proper frictional action for polishing is obtained, and one which will not act with greater friction upon one part of the plate than another, so that all liability of the formation of light circular or like lines on the surface of the plate is overcome; and it is found by actual use that by the disk supported in the manner above described I am enabled to obtain practically as perfect a polishing action as can be obtained by hand, and one which is much more rapid and requires less labor for the operator. I am therefore enabled by means of the polishing-disk mounted in the bracket in the manner above described to finish the different parts of the plate which may not have been properly finished by the ordinary reciprocating polishing apparatus, or to remove any slight scratches or other marks from the plate and impart a perfect polished surface and finish to any such imperfect portions of the plate, and to do away with hand labor and perform the same work much more perfectly and rapidly.

What I claim as my invention, and desire to secure by Letters Patent, is—

In an apparatus for polishing glass, the combination, with an adjustable frame formed of hinged arms extending out from a bracket or support, and having a power-driven shaft at the forward end, of a polishing-disk mounted at the base of the shaft by a ball-and-socket joint having a feather-and-groove connection, substantially as and for the purposes set forth.

In testimony whereof I, the said AMASA F. CHANDLER, have hereunto set my hand.

AMASA F. CHANDLER.

Witnesses:

ANDREW G. WILLIAMS,
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