C. W. BEAM.

POLISHING MACHINE.

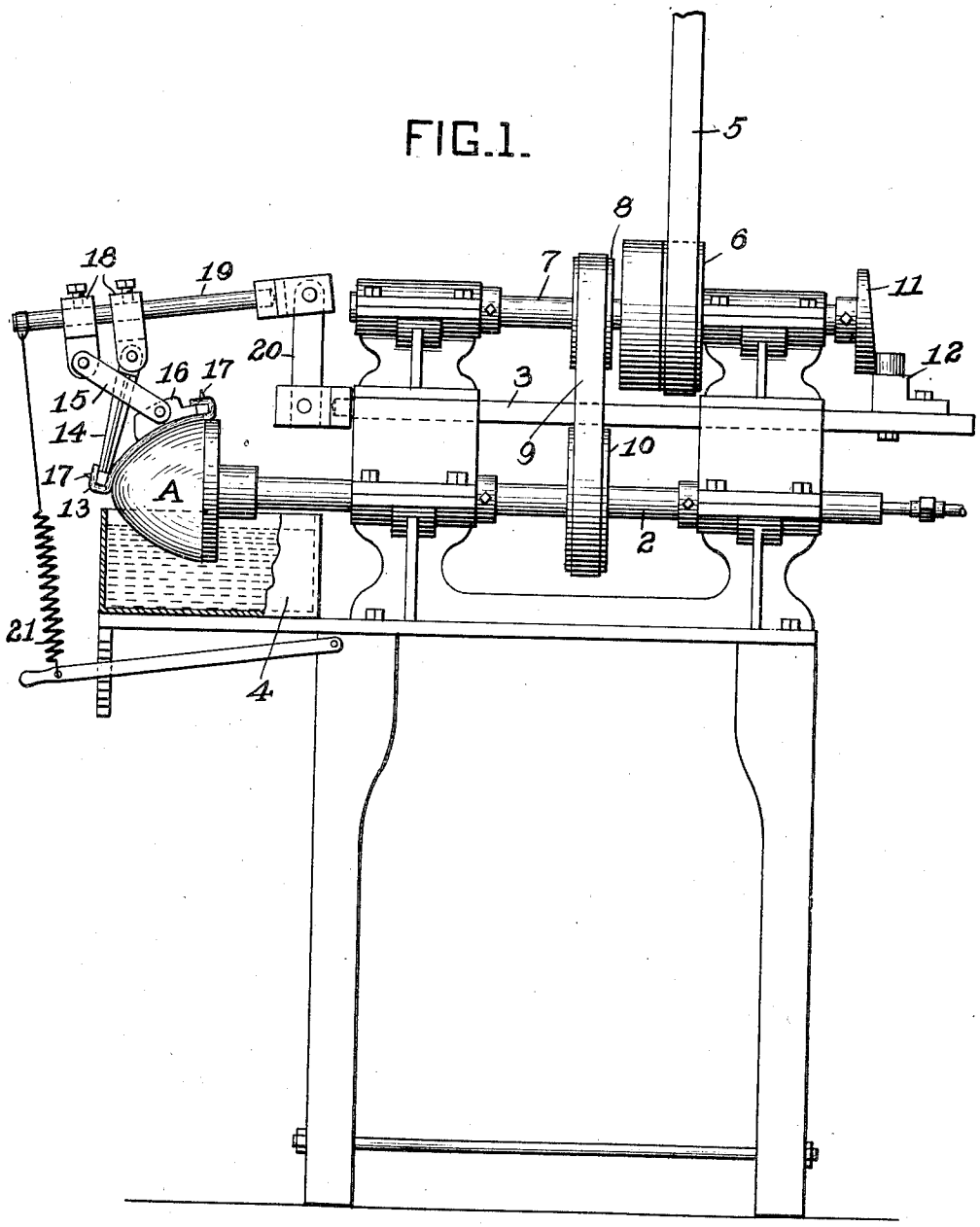
APPLICATION FILED JULY 17, 1913.

1,089,456.

Patented Mar. 10, 1914.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

F. E. Gaither

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2 SHEETS—SHEET 2.

FIG. 2.

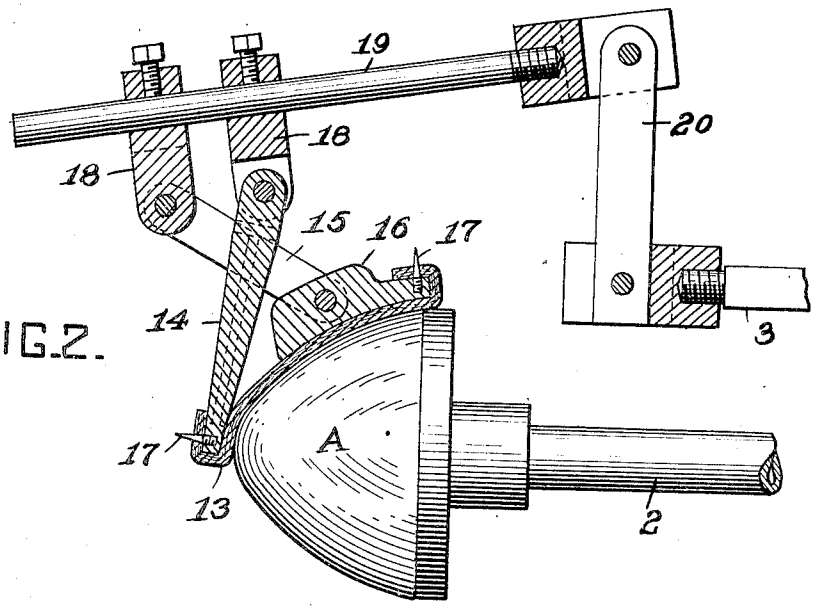


FIG. 3.

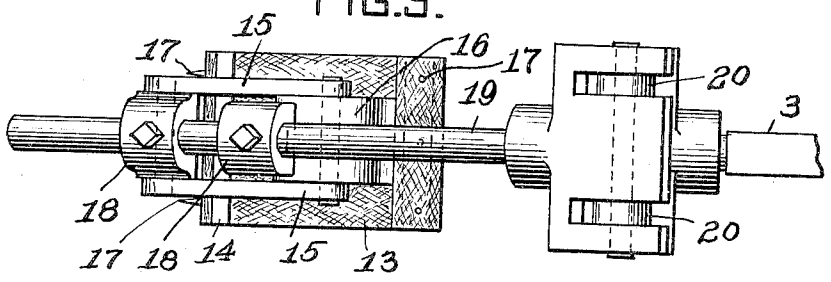
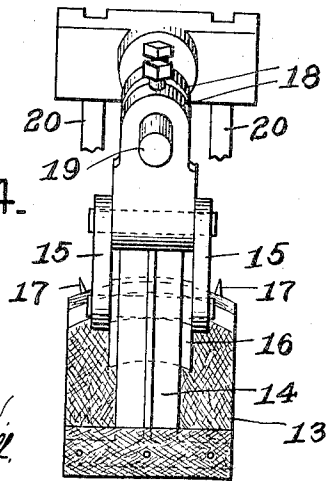


FIG. 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. BEAM, OF ROCHESTER, PENNSYLVANIA, ASSIGNOR TO H. C. FRY GLASS COMPANY, OF ROCHESTER, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

POLISHING-MACHINE.

1,089,456. Specification of Letters Patent. Patented Mar. 10, 1914.

Application filed July 17, 1913. Serial No. 779,438.

To all whom it may concern:

Be it known that I, CHARLES W. BEAM, residing at Rochester, in the county of Beaver and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Polishing-Machines, of which improvements the following is a specification.

My invention relates to polishing machines, such as are illustrated in my Patent 1,037,852; and the object thereof is to provide a machine which will evenly and rapidly polish all portions of irregular curved surfaces.

While my invention may be employed for polishing various glass articles, it is particularly useful for polishing the outer surfaces of parabolic reflector blanks.

In the accompanying drawings, which form part of my specification, I have illustrated one embodiment of my invention. However, it will be understood that my invention may be embodied in various other forms without departing from the spirit thereof as defined in the claims.

Figure 1 of the drawings is an elevation of a complete polishing machine provided with a blank to be polished; Fig. 2 is a longitudinal central sectional view to enlarged scale of the polishing block, a blank being shown in elevation in polishing position; and Figs. 3 and 4 are top plan view and left end elevation, respectively, of the block as shown in Fig. 2.

In the several figures like numerals are used to designate like parts.

In the machine illustrated in my above mentioned patent, a glass blank is mounted upon a rotatable blank-holding member and a polishing block is held yieldingly against the surface of such blank, there being means provided to effect a movement of reciprocation of the blank and polishing block with relation to each other. The polishing block consists of a box within which a body of felt is adjustably secured, the arrangement being such that the felt bears in a substantially normal direction upon the surface of the blank to be polished. When polishing parabolic reflector blanks with this machine, it has been found that the less curved portions of the blanks become polished much less rapidly than the portion of greater curvature. It is toward overcoming this difficulty that my present invention is specifically directed.

In the practice of my present invention I provide, instead of the relatively rigid body of felt, a flexible pad, engaging such pad at opposite points thereof and holding it yieldingly upon the surface of the blank, at the same time stretching or applying tension to the pad in such a manner that it will bear evenly upon all parts of the blank. Means are also provided for effecting the same relative movement of the blank holder and pad as are present in the machine of my earlier patent.

The general construction of the machine, in connection with which my invention is illustrated, is similar to the machine of my earlier patent, and comprises a frame 1, upon which is mounted a rotatable blank-holding member 2, rod 3 for holding the polishing block, and rouge tank 4, the relative reciprocatory movement between the polisher and the blank to be polished being effected by reciprocating the rod 3. The blank holder 2 is rotated through belt 5, wheel 6, shaft 7, wheel 8, belt 9, and wheel 10, secured to the member 2; while the reciprocation of the rod 3 is effected by means of a cam disk 11, secured to the rotatable shaft 7, and against which disk a roller block 12, attached to the rod 3, is yieldingly held. The rouge tank is secured to the frame 1 in such a position that the lower part of the blank A will extend into the rouge, as is clearly shown.

The flexible pad 13, which I employ for polishing the blank A, may be a strip of felt of the desired texture. In order to hold it under tension and yieldingly upon the blank, I secure the opposite ends of the pad to the otherwise free ends of a pair of pivoted arms 14 and 15, suitable pins 17 being provided for this purpose. The pad is secured directly to the arm 14, the lower end of which extends slightly below the center of the blank A, and is secured indirectly to the arm 15, there being a pressure block 16 pivoted to the end of each of such arms, to the outer end of which block the pad is attached. The face of the block 16 in contact with the pad 13, is preferably curved to correspond approximately with the curvature of the portion of the blank upon which it bears. The construction of the block 16 and its attach-

ment to the arm 15, is such that the thrust of such arm performs the double function of holding the pad 13 under tension and of applying, through the block 16, a yielding pressure upon the pad intermediate of its engaged points. In order to obtain a better thrust upon the ends of the pad 13, the arms 14 and 15 are crossed, the arm 15 being formed of two spaced bars between which the arm 14 extends, as is clearly seen in Figs. 3 and 4. To the end that the arms may be adjusted to most effectively hold pads of different length for polishing different sizes of blanks, they are pivoted to blocks 18 adjustably secured to a rod 19, which is pivoted to a post 20, rigidly secured to the reciprocating rod 3. Pressure may be applied to the polisher by any suitable means, such as the spring 21, secured to the outer end of the rod 19.

In operation, the blank holder 2 is rotated, causing the blank A to revolve on its own axis, and the rod 3 is reciprocated, thus causing the pad to reciprocate upon the blank in a plane coincident with the axis of the blank. The arms 14 and 15 hold the flexible pad under tension upon the blank, and, through the block 16, a yielding pressure is applied to the pad extending over the less curved portion of the blank.

I claim:

1. In a machine for polishing curved surfaces of glass blanks, the combination of a rotatable member holding a blank in polishing position, means for engaging a flexible polishing pad at opposite sides thereof and for holding it yieldingly and under tension upon the surface of said blank, and means for causing a reciprocatory movement of said blank and pad with relation to each other.

2. In a machine for polishing curved surfaces of glass blanks, the combination of a rotatable member holding a blank in polishing position, means for engaging a flexible polishing pad at opposite sides thereof and for holding it yieldingly and under tension upon the surface of said blank, means for applying a yielding pressure upon said pad intermediate the engaged points thereof, and means for causing a reciprocatory movement of said blank and pad with relation to each other.

3. In a machine for polishing curved surfaces of glass blanks, the combination of a rotatable member holding a blank in polishing position, a polishing block comprising a pair of pivoted arms and a flexible polishing pad secured at opposite points to the otherwise free ends of said arms, said arms holding said pad yieldingly and under tension upon the surface of said blank, and means for causing a reciprocatory movement of said blank and pad with relation to each other.

4. In a machine for polishing irregular curved surfaces of glass blanks, the combination of a rotatable member holding a blank in polishing position, a pair of pivoted arms arranged adjacent to said blank, a pressure block pivoted to the free end of one of said arms, a flexible polishing pad secured at opposite points to said pressure block and to the other of said arms, said arms holding said pad yieldingly and under tension upon the surface of said blank, and said block applying pressure to said pad intermediate the engaged points thereof, and means for causing a reciprocatory movement of said blank and pad with relation to each other.

5. In a machine for polishing curved surfaces, the combination of a rotatable member holding a blank in polishing position, means for engaging a flexible polishing pad at opposite sides thereof, and for holding it yieldingly and under tension upon the surface of said blank, and means for rotating said blank-holding member.

6. In a polishing machine, the combination of a rotatable member holding a blank in polishing position, a pair of pivoted arms arranged adjacent to said blank, a flexible polishing pad secured to the otherwise free end of said arms, and means for adjusting the pivoted ends of said arms.

In testimony whereof I have hereunto set my hand.

CHARLES W. BEAM.

Witnesses:
LEMAN W. DOLBY,
ALBERT SULSER.