Nov. 11, 1924. 1,515,129

A. L. MAYER

GLASS CUTTING MACHINE

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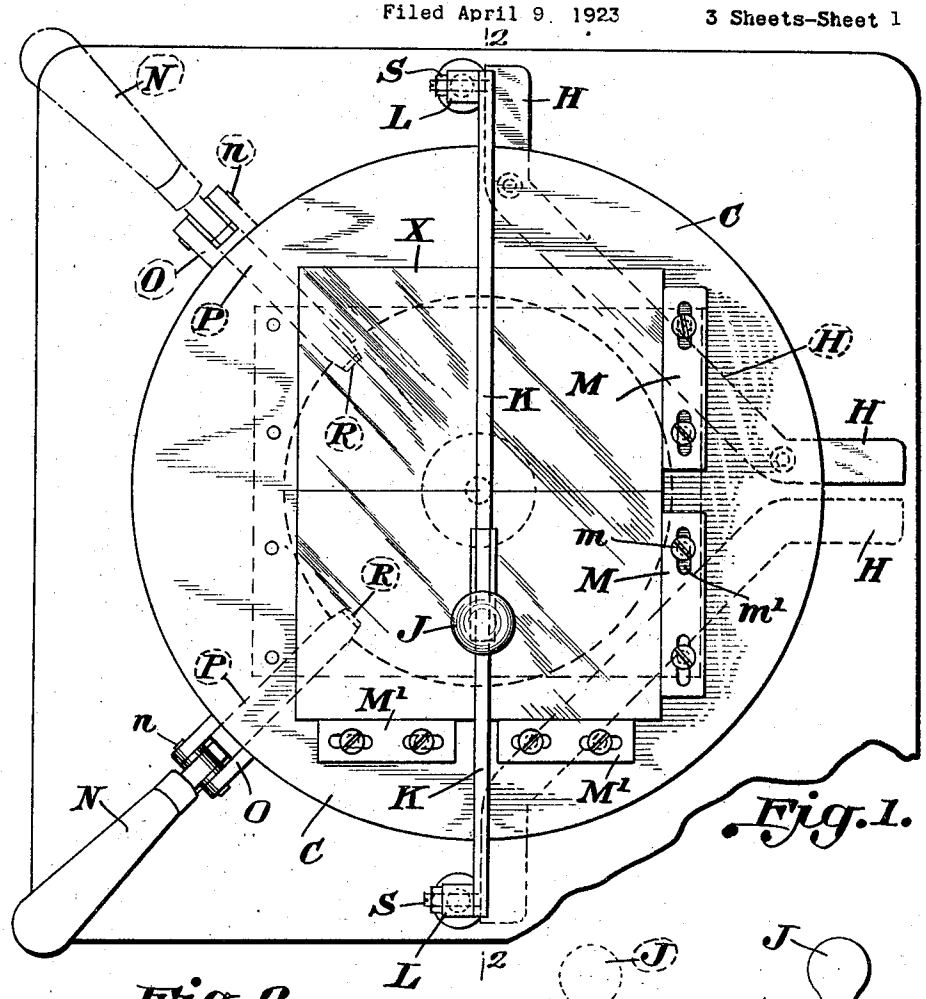
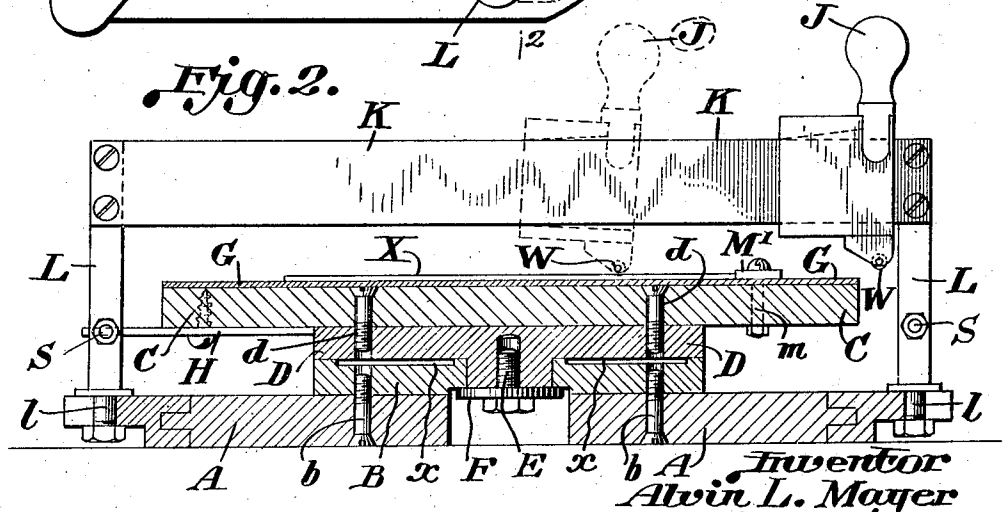


Fig. 1.

Fig. 2.



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Fig. 3.

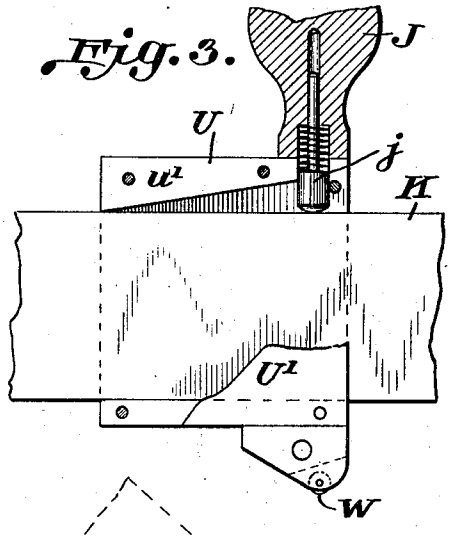


Fig. 4.

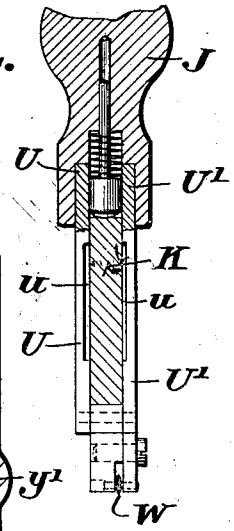
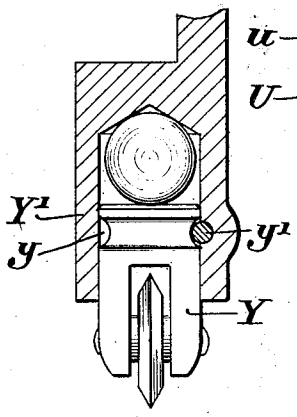


Fig. 5.



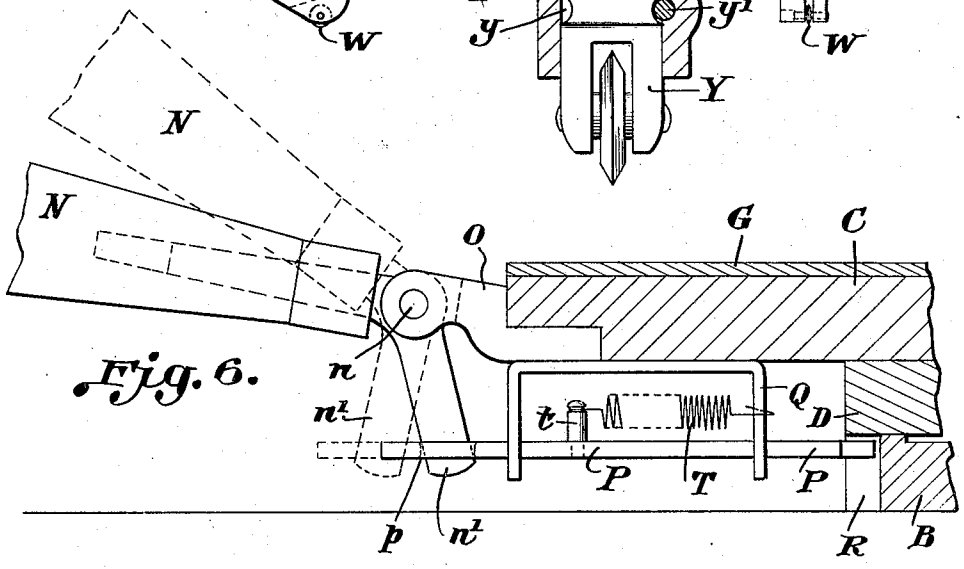


Fig. 6.

Fig. 7.

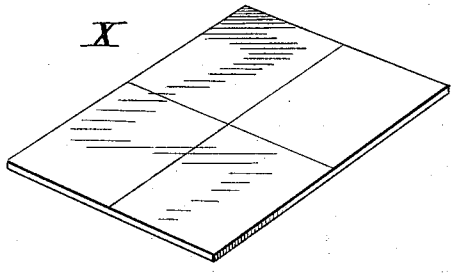
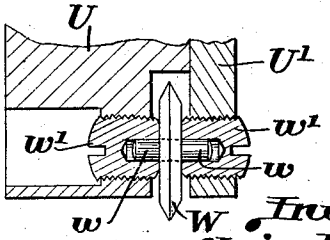


Fig. 8.



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Fig. 9.

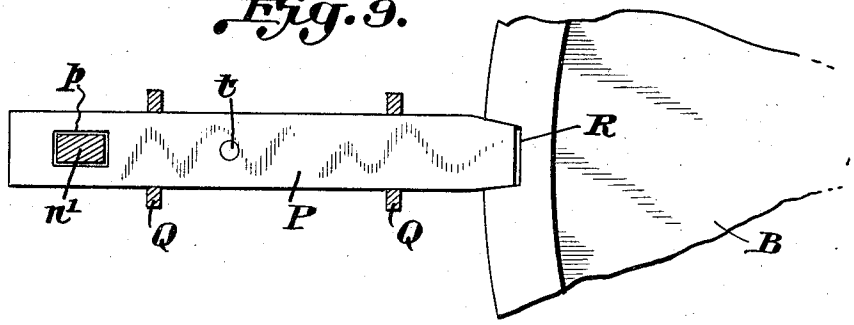
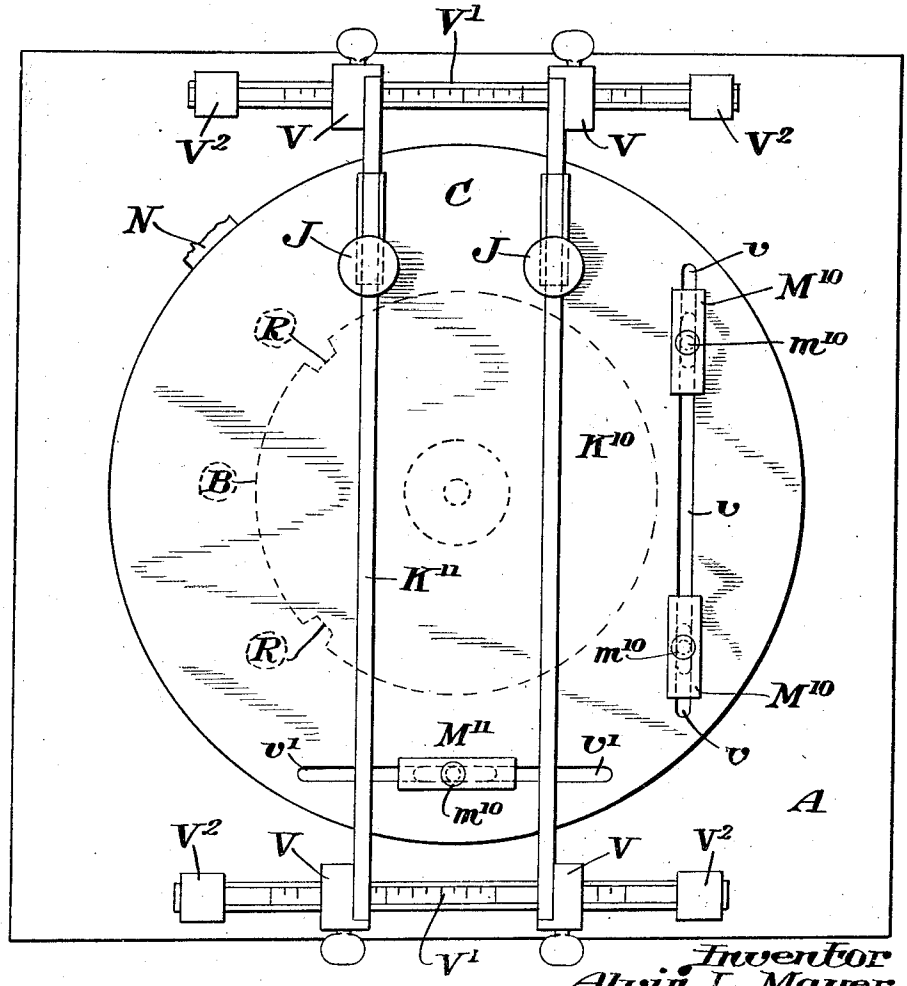


Fig. 10.



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Patented Nov. 11, 1924. 1,515,129

UNITED STATES PATENT OFFICE.

ALVIN L. MAYER, OF LONG ISLAND CITY, NEW YORK.

GLASS-CUTTING MACHINE.

Application filed April 9, 1923. Serial No. 631,026.

To all whom it may concern:

Be it known that I, ALVIN L. MAYER, a citizen of the United States, residing in Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in Glass-Cutting Machines, of which the following is a specification.

This invention relates to machines for cutting glass plates to obtain a plurality of smaller plates. The invention especially relates to the cutting of photographic plates which have been properly exposed, developed and fixed to obtain plates of the kind, size and shape for use in projecting the photographs. In such work several pictures of the same kind, or it may be of different kinds are made on a relatively large plate and this plate is so cut as to separate the pictures to obtain plates of suitable size for use. Ordinarily this work is done by rules and cutters requiring measurements and considerable care in the operation.

According to my invention, I provide a machine of such construction that a plate of standard size containing a plurality of exposed, developed and fixed pictures may be quickly cut to obtain a plurality of plates of suitable size, the operation being performed with great facility by unskilled labor. While preferably the machine is adapted to cut the plate into four separate pieces, it may be constructed and operated to cut a larger number of such plates if desired and the machine may also be used to cut plates having curved edges.

My improvements are illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a glass cutting machine embodying my improvements in the preferred form.

Figure 2 shows a section on the line 2—2 of Figure 1.

Figure 3 is a detailed sectional view of the cutter and its mounting preferably employed.

Figure 4 is another sectional view thereof.

Figure 5 is a sectional view of a modified form of cutter adapted to cut plates having curved edges.

Figure 6 is a detailed sectional view showing the locking devices for the glass holding table.

Figure 7 is a perspective view of a piece of glass of standard size and indicating how it may be cut to obtain four plates of smaller size.

Figure 8 is a sectional view of the cutter illustrated in Figures 3 and 4.

Figure 9 is a plan view of the sliding bolt for locking the table in operative positions and it shows in section a part of the handle for operating the bolt.

Figure 10 is a plan view of a modified form of cutting apparatus.

Briefly stated the machine includes a circular table adapted to revolve on a suitable base plate and provided with gages for positioning the plate to be cut. The table is provided with a handle by which it may be turned and devices are provided for locking the table in its adjusted positions. Means is provided for limiting the movement of the table within a field of any desired degree. The cutter is supported on a horizontally arranged cross bar mounted on posts or uprights attached to the base plate. The cutter is normally held above the plane of the plate to be cut but is adapted to be moved into engagement therewith.

The base plate A may be made of wood and it carries a metal bearing plate B which is secured to the base plate in the manner indicated at *b*. The circular table C may be made of wood and it has secured to it as indicated at *d* a bearing plate D which receives a headed screw E carrying a washer F. By this construction the table may be turned about its vertical axis and in order to reduce friction the adjacent inner sides of the bearing plates are cut away as indicated at *x*.

The table C is covered by a plate G of brass or other suitable material to provide a smooth even surface to receive the glass to be cut. A stop plate H is attached to the table and it has outwardly extending radial arms arranged 90° apart.

A cutter indicated at J in Figures 1 and 2 is carried by a cross bar K secured to vertical posts L attached to the base plate as indicated at *l*. The posts are arranged on diametrically opposite sides of the table and hold the cross bar a short distance above it, in line with the axis of the table.

In order to position the glass plate X on the table I employ gages M, M′ arranged at right angles with each other and they are adjustably secured to the table by headed screws *m* engaging the table and ex-

tending through slots m' in the gages. The gages M are arranged at right angles to the gages M', but they may be adjusted to lengthen or shorten the gaging area for different sizes of plates. By moving the cutter J across the plate X, the latter may be separated into two parts or so scored that it may be thus easily separated. By then giving the table a quarter turn, the operation may be completed and the plate may be so cut or scored that the two sections previously produced may be subdivided to thus obtain four smaller plates from the original plate in the manner indicated in Figure 7. It will be observed that the two gages M have their inner ends spaced apart in line with the axis of the table so that the cutter may move across the table without encountering the gages. The gages M' are similarly arranged.

In order to turn the table I preferably employ a handle N pivoted at n to a bracket O secured to and extending radially from the table and having a downwardly extending arm n' which enters a slot p in the bolt P mounted to slide in a frame or bracket Q secured to the underside of the table. The bolt P is moved radially and its inner end is adapted to enter either of the two notches R formed in the bearing block B. These notches are located 90° apart and the table is given a quarter turn only when it is shifted.

In order to limit the movement of the table I employ the stop plate H before referred to and I apply adjustable stop screws S to the posts L against which the arms of the stop plate abut when the table is turned in the manner indicated in the drawings. As the arms of the stop plate are located 90° apart, if the table should be moved through an arc of only 90° these arms of the stop plate will limit the movement of the table so that when said movement is stopped the bolt P will at once enter one of the notches R. When the bolt is engaged with a notch R and it is desired to turn the table, the handle N is turned on its pivot n so as to withdraw the bolt as indicated by dotted lines in Figure 6 and then the table may be given the desired movement. When the handle is released the bolt is made to automatically engage a notch by the spring T attached to a post t on the bolt and to the inner end of the bracket Q.

In Fig. 10 I have shown a modification in which the gages M^{10}, M^{11} are attached to the table by screws or bolts m^{10} attached to the gages and extending through slots v, v' in the table. In this case I provide two parallel cross bars K^{10}, K^{11} carrying cutters J. The cross bars are attached to slides V mounted on calibrated bars V' carried by posts V^2 attached to the base plate A. The cross bars may be set a desired distance apart and the plate may be cut or scored in different lines without turning the table and then if desired the table may be given a quarter turn and the cutter again operated to cut or score the plates. In this way a plate of standard size may be quickly divided into a large number of sections.

The preferred form of cutters are shown in detail in Figures 3, 4, 5 and 8. Figures 3, 4 and 8 illustrate the form of cutter shown in Figures 1 and 2, while Figure 5 shows a modification. Referring to Figures 3, 4 and 8, the cutter is shown in the form of a hard metal wheel W, loosely mounted on a wire pivot w projecting into adjustable screws w' carried by the cutter holder. Preferably this holder comprises two members U, U' arranged on opposite sides of the cross bar K. The members U, U' are cut away at u to reduce friction and the holder is suitably shaped at its lower end to receive the cutter W and the screws w'. The members U, U' are secured to each other as indicated, but in such manner as to allow them to move freely back and forth over the cross bars. The member U is formed with a top part u' which overlies the cross bar and which has an inclined inner wall above the cross bar.

The handle J of the cutter carries a spring pressed pin j which engages the upper edge of the cross bar and normally holds the cutter above the glass to be cut as indicated at the right hand side of Figure 2, but when the handle is pressed downward against the force of the spring, the cutter is made to engage the glass and when reciprocated will score or cut the glass in well known ways. When the handle is released the cutter automatically moves above the plane of the glass.

A modified form of cutter shown in Figure 5 comprises a cutter holder Y which is adapted to turn in its support Y'. The holder is formed with an annular groove y into which extends a pin y' which holds the cutter and its support in place, but permits the cutter to turn about a vertical axis. By using this form of cutter curved scores may be formed on the glass when the table is turned with the cutter engaging the glass.

The operation of the mechanism has been indicated in the foregoing description. The gages M, M' are suitably set and held firmly in place. The plate X of standard size, which may be a plain plate or one containing photographs, is placed on the table with two of its edges engaging the gages and the cutter is pressed into engagement with the plate and moved across the table. The plate is thus cut or scored and divided into two parts. The handle N may then be lifted to release the bolt P and the table is given a quarter turn, its movement being limited by the stops before mentioned. As soon as the

handle is released the bolt P automatically engages the table. By this operation the plate X is so moved that by again operating the cutter the plate may be again scored or cut in a line at right angles to the score previously produced, thus dividing the plate into four rectangular parts. The plate X can be easily placed in position and readily removed from the table when desired, when the cutter is withdrawn to one side as indicated in full lines in Figure 2.

When the cutter is worn out, it may be easily replaced by a new one.

While the machine is especially adapted to cut glass plates, it may be used for cutting plates of other material.

It will be observed by reference to Figures 2 and 3 that the cutter W is not only normally held above the surface of the glass to be cut but when depressed it goes downwardly only far enough to engage the glass. At no time can the cutter be depressed to such an extent as to engage the table if there be no glass thereon such a movement being prevented by the inclined inner wall of the top part w' of the cutter frame. This construction also avoids any liability of the cutter entering the slots v, v' shown in Figure 10.

I claim as my invention:

1. A machine for cutting glass, comprising a rotary plate holding table, a plurality of cutters, a plurality of parallel cross bars on which they are mounted, horizontally arranged calibrated bars on which the cross bars are supported, gages for positioning the plate, and means for locking the table in adjusted position.

2. A machine for cutting glass plates comprising a rotary glass holding table, a cutter mounted to move across the table while engaging the plate, a handle for the table, adjustable stops for limiting the movement of the rotatable table and a device for locking the table in adjusted positions.

3. A machine for cutting glass plates comprising a rotary glass holding table, a reciprocable cutter mounted to move across the table while engaging the plate, a handle for the table, a stop plate carried by the table and having its end portions at right angles to each other, and stops for engaging said end portions of the stop plate and limiting the rotary movement of the table.

4. A machine for cutting glass plates comprising a rotary glass holding table, a reciprocable cutter mounted to move across the table, means for holding the cutter normally out of engagement with the plate thereon but permitting it to be moved into engagement with the plate, means preventing the cutter from being moved into contact with the table, a handle for the table, and adjustable means for limiting the turning movement of the table.

5. A machine for cutting glass comprising a rotary glass holding table, a plurality of cross bars mounted above said table, a sliding cutter carried by each of said cross bars, means for normally holding each cutter out of engagement with the glass on the table but permitting it to be moved into engagement therewith, means for positioning the glass on the table, a handle for the table and detent means for holding the table in adjusted position.

In testimony whereof, I have hereunto subscribed my name.

ALVIN L. MAYER.