

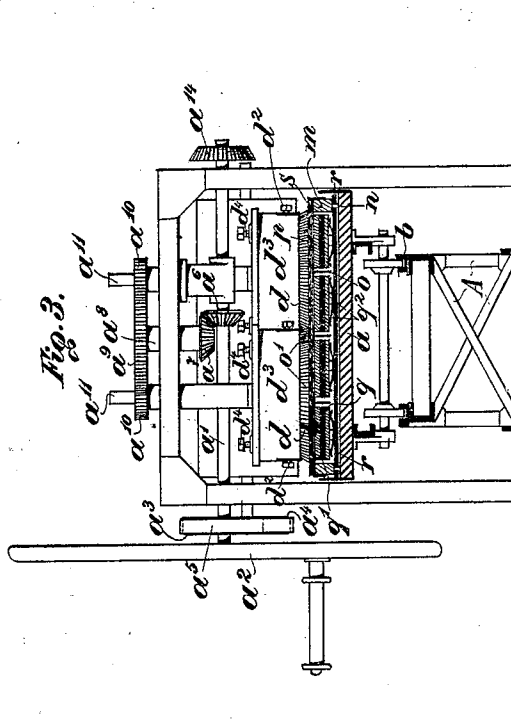
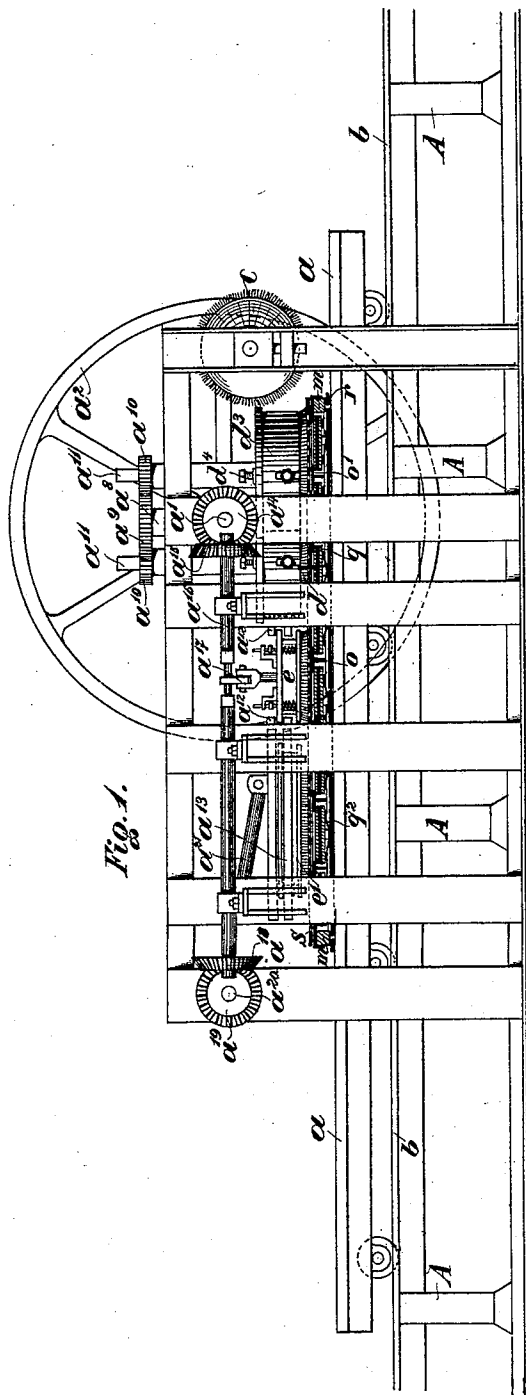
(No Model.)

2 Sheets—Sheet 1.

F. E. GNANT.
APPARATUS FOR DECORATING GLASS.

No. 513,180.

Patented Jan. 23, 1894.



Witnesses:
Wm. Schulz.
A. Goughman.

Inventor:
 F. E. Grant,
 by his attorneys
 Roeder & Brien

(No Model.)

2 Sheets—Sheet 2.

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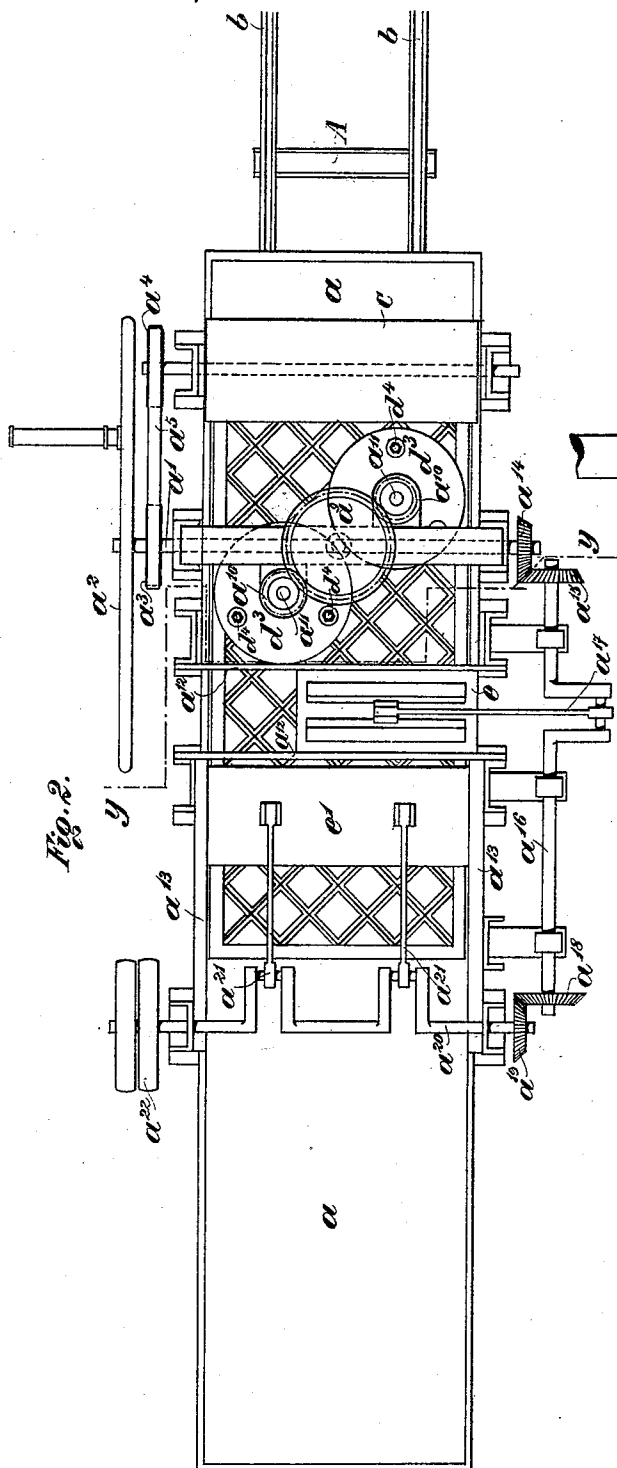


Fig. 2.

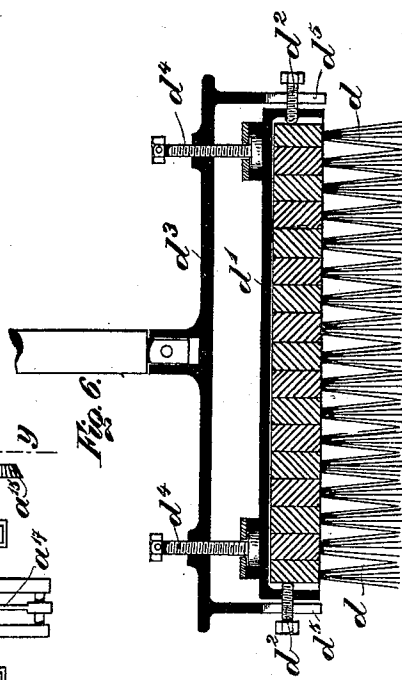


Fig. 6.

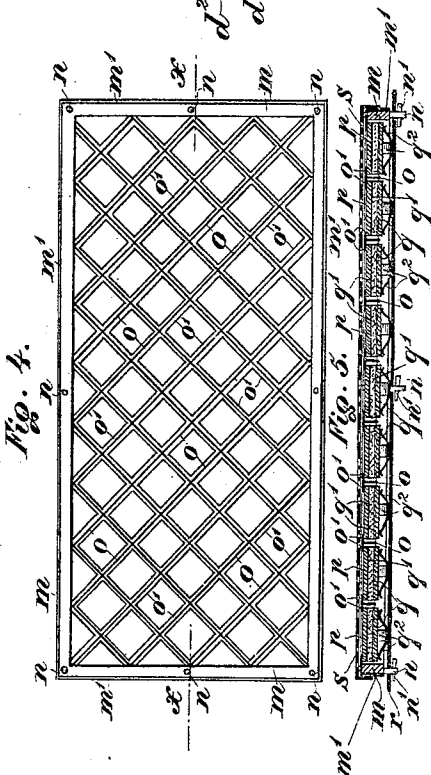


Fig. 4.

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Inventor:
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UNITED STATES PATENT OFFICE.

FRANZ EMIL GNANT, OF MUNICH, GERMANY.

APPARATUS FOR DECORATING GLASS.

SPECIFICATION forming part of Letters Patent No. 513,180, dated January 23, 1894.

Application filed December 23, 1890. Serial No. 375,656. (No model.)

To all whom it may concern:

Be it known that I, FRANZ EMIL GNANT, a resident of Munich, Bavaria, Germany, have invented certain new and useful Improvements in Apparatus for Decorating Glass, of which the following is a specification.

This invention relates to an apparatus for producing, in quantities, plastic and gobelin-like ornamentations upon glass.

By this invention all the delicate shades and outlines may be produced in a simple and effective manner.

The invention consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved apparatus; Fig. 2 a plan or top view thereof; Fig. 3 a section on line *y, y*, Fig. 2; Fig. 4 a top view of the frame *m*; Fig. 5 a section on line *x, x*, Fig. 4. Fig. 6 is a vertical central section through cylinder *d*³.

The letter *a*, represents the work table, free to be reciprocated upon rails *b*, of the machine frame *A*. The work table carries the frame *m*, hereinafter described, that holds the glass to be ornamented and subjects it to the action of the brushes. Three kinds of brushes are employed, viz: a cylinder brush *c*, disk brushes *d*, and reciprocating brushes *e, e'*. The cylinder *c*, receives its motion from the work shaft *a'* (driven by hand wheel *a*², or otherwise) by means of the pulleys *a*³, *a*⁴, and belt *a*⁵, and may be thrown out of action by shifting the belt in the ordinary manner. The cylinders *d*³ containing the brushes *d* more particularly employed for making round and oval patterns, are so placed, that they cover the entire width of the work (Fig. 2). They are driven through the bevel gear *a*⁶, *a*⁷, upright shaft *a*⁸, gearing *a*⁹, *a*¹⁰, the gear wheels *a*¹⁰, being mounted upon the shafts *a*¹¹, of the cylinders *d*³.

The cylinders *d*³ (Fig. 6) are open at the bottom and contain flanged heads *d'* to which the tufts or brushes *d* are removably attached, by means of screws *d*² passing through slits *d*⁵ of cylinders *d*³. The heads *d'* are rendered vertically adjustable by set screws *d*⁴ so that the tufts may be made to act upon the work with varying degrees of pressure. The brushes may be of any suitable kind, and if an en-

amel coating is to be applied to the work, a distributing brush is substituted. When the brushes are to be put entirely out of action, the set screws *d*⁴ are revolved until the tufts are drawn sufficiently into the cylinders. The reciprocating brushes *e, e'*, work at right angles to each other. They are guided by the rails *a*¹², *a*¹³, and receive motion from work shaft *a'*, as follows: Bevel gearing *a*¹⁴, *a*¹⁵, transmits motion to crank shaft *a*¹⁶, that imparts motion to brush *e*, by pitman *a*¹⁷. By bevel gearing *a*¹⁸, *a*¹⁹, the shaft *a*¹⁶, is intergeared with crank shaft *a*²⁰, having two pitmen *a*²¹, that operate brush *e'*. If desired, the machine may be driven by a motor that revolves crank shaft *a*²⁰, by pulley *a*²². Either of the brushes *e, e'*, may be thrown out of action by disconnecting the pitmen *a*¹⁷, *a*²¹ from the crank shafts *a*¹⁶, *a*²⁰, and drawing the brushes bodily out of the machine, or these brushes may be constructed similar to the brushes *d*. They pass over the work laterally and longitudinally, covering a square at a time, and are particularly adapted for hatching. The groups of brushes should be covered up during action, so as to prevent the finely divided color from flying away.

The glass to be ornamented is either cut up into the required form or is introduced into the frame *m*, in plate form. This frame is made from dry wood and is encircled by the angle iron *m'*. It is provided with upwardly and downwardly projecting pins *n*, for holding the stencil plates and the bottom plate. For locking smaller pieces of glass, the frame *m*, is provided with a net work *o*, of intersecting ribs, each rib having a horizontal flange *o'*, for supporting the glass.

To place the glass *p*, into the frame, the latter is put into the reverse position from that shown in Fig. 5, i. e., it is so placed, that the flanges *o'*, are at the bottom and that the glass *p*, may be placed upon such flanges. Upon the glass *p*, small wooden disks or blocks *q*, are placed, having a felted face *q'*, that bears gently upon the glass. A number of springs *q*², are now so placed upon the blocks, that a pair of crossing springs gently press on each block. Finally, a bottom plate *r*, is attached to the frame *m*, by means of the pins *n*, that engage perforations in the plate. Small wedges *n'*, hold the plate in place. The frame

thus filled, is now turned into the position shown in Fig. 5 and placed upon table *a*, upon which it is held by suitable stops. Distributing brushes being substituted for the brushes *d*, and the machine being set into operation, a coating of black enamel color is first applied to the work. The stencils *s* are now placed upon the frame *m*, (Fig. 5) one after another and with each stencil the work is passed through the machine. The stencils are, of course, so chosen as to produce the desired outline effect and shades. According to the nature of the design, either of the brushes is put into or out of action. Thus either the brush *c*, or the brushes *d*, or the brushes *e*, *e'*, may be put into action, or either two or all three sets of brushes may be used simultaneously to remove partly the paint exposed through the stencil plate.

If it is desired to produce the design in a plastic form and in shades and not only in outline, the pattern may be first burned or worked into the glass and the glass may be coated with color by the machine. To produce this coating the brush *c*, is removed, the brushes *e*, *e'*, are put out of action and the heads of brushes *d*, are taken out and replaced by distributing heads. The color is put on the work and the latter passed through the machine, from which it will emerge uniformly coated. After a sufficient quantity of the glass has been thus prepared, the main brushes are again set into action to produce

the darker shades in the designs. In order to produce the half shades and the light shades, the glass is covered at its third introduction, with a thin oil color, which does not effect the design so far produced.

After completion, the glass will be beautifully ornamented, with the picture in light and shade and in the nature of a gobelin.

Of course the quality of the work may be readily changed by using a larger or smaller number of stencils. Before the glass is burned in the muffle, its back may be covered with a suitable tint.

What I claim is—

1. The combination of a reciprocating work table with a frame supported thereby and adapted to hold the work, and with a set of reciprocating brushes acting at right angles, a pair of revolving brushes and a cylindrical brush, substantially as specified.

2. The combination of a reciprocating table with frame *m* having intersecting flanged ribs *o*, and with blocks *q*, springs *q'*, plate *r* and pins *n* for attaching the plates *r* to the frame, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRANZ EMIL GNANT.

Witnesses:

AUCICKMAN,
H. NICKEL.