

[54] **VACUUM HOLDING TABLE FOR A
PHOTOGRAPHIC PLATE OR THE LIKE**

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[51] Int. Cl. **F16b 47/00, G03b 27/60**

[58] Field of Search .. 269/21; 248/362, 363, 206 R;
355/73, 76

[56] **References Cited**

UNITED STATES PATENTS

3,156,462 11/1964 Weaver 269/21
2,302,387 11/1942 Greens et al 248/424 X

2,155,341 4/1939 Wayne 248/362
3,653,341 4/1972 Nielsen 248/188.4 X

FOREIGN PATENTS OR APPLICATIONS

435,981 10/1935 Great Britain 248/362
581,529 1/1932 Germany 248/362

Primary Examiner—J. Franklin Foss

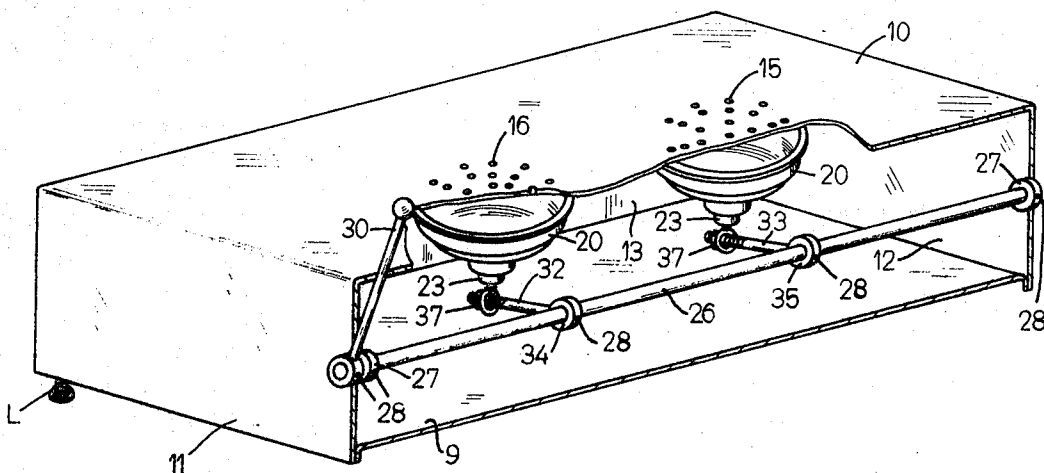
Attorney, Agent, or Firm—James E. Nilles

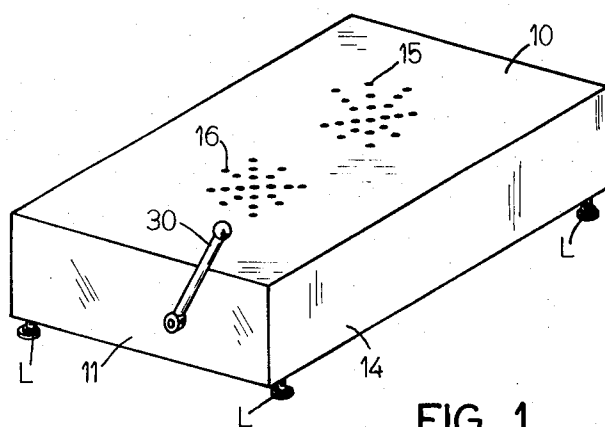
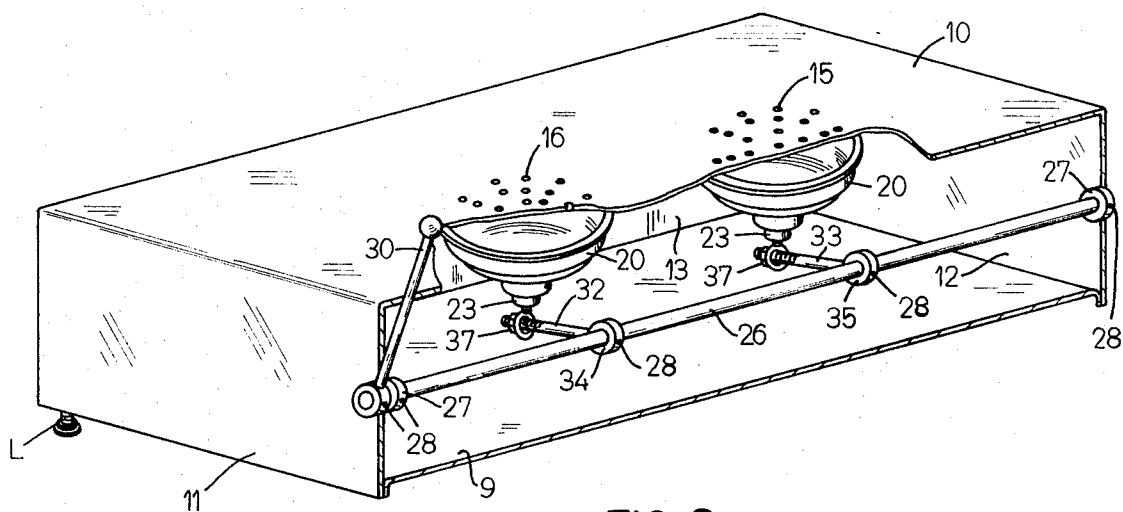
[57]

ABSTRACT

A vacuum holding table for holding photographic plates or the like while the plate is being processed. The table includes a lever by means of which the operator can quickly load the plate and hold it securely on the table without further attention and then can quickly and positively remove the plate from the table.

1 Claim, 7 Drawing Figures





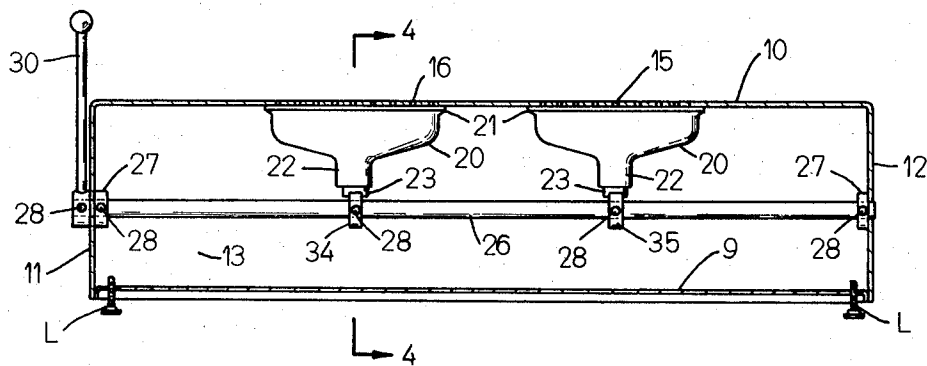


FIG. 3

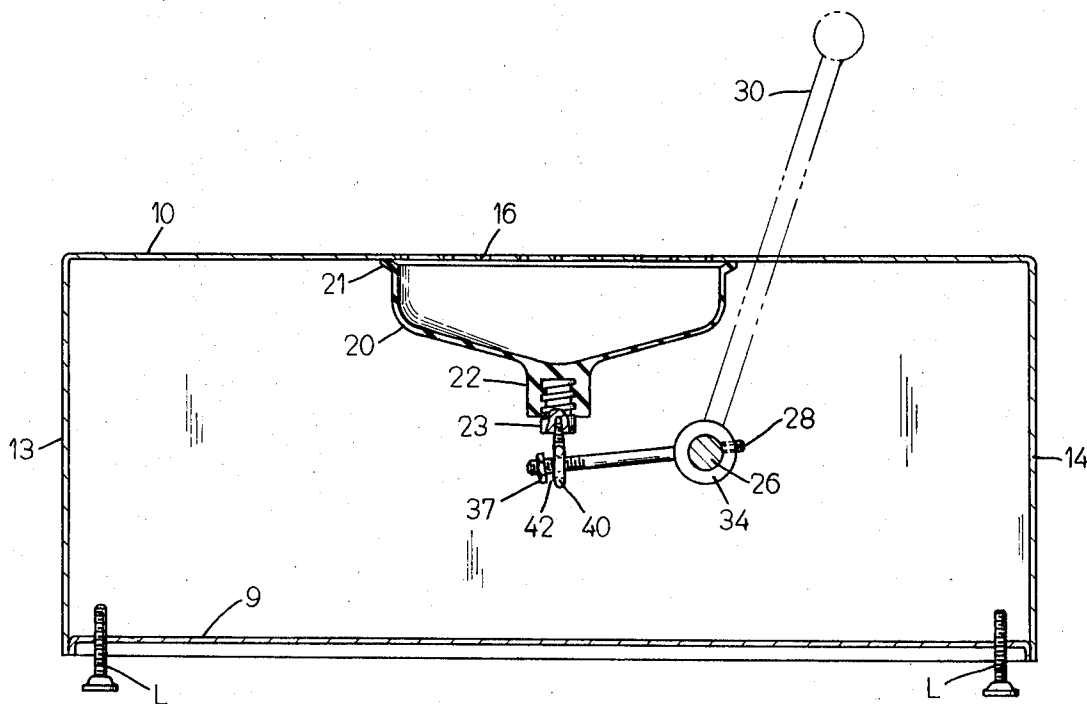


FIG. 4

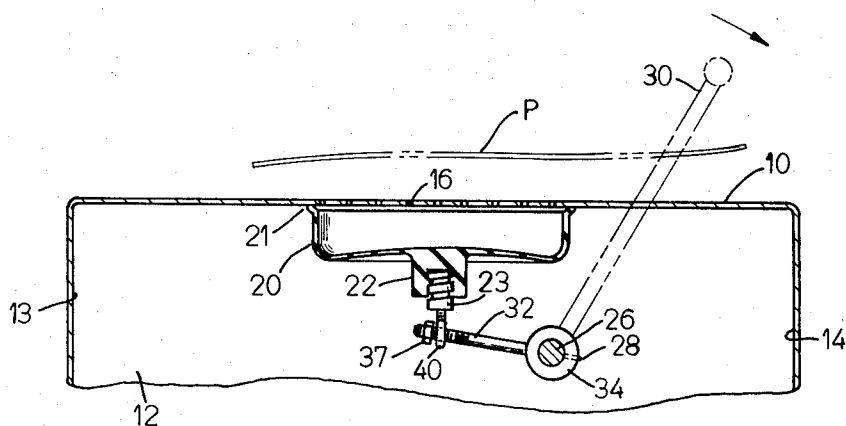


FIG. 5

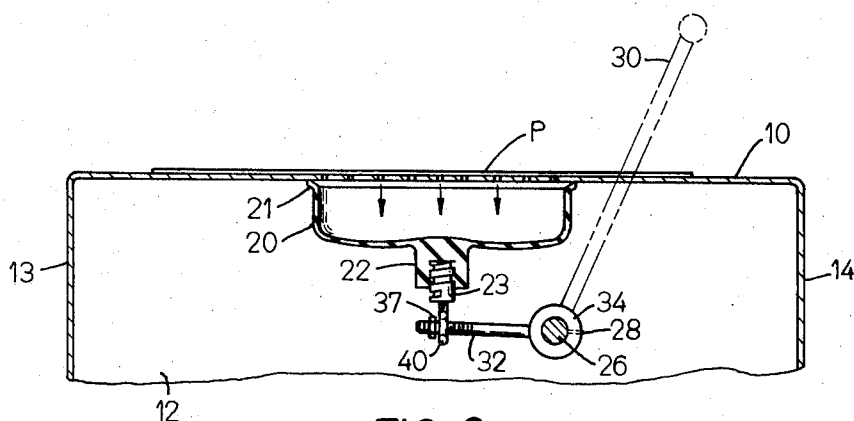


FIG. 6

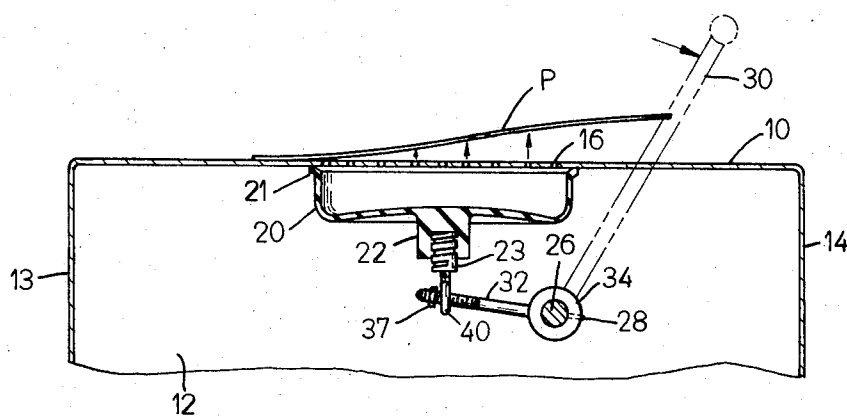


FIG. 7

VACUUM HOLDING TABLE FOR A PHOTOGRAPHIC PLATE OR THE LIKE

BACKGROUND OF THE INVENTION

The invention pertains to vacuum holding tables for holding photographic plates or the like firmly in place and without the aid of mechanical clamps. Devices of this general character have been proposed but have usually been objectionable because of the numerous parts involved and the fact that they could not be quickly operated and required attention from the operator while in the holding position.

SUMMARY OF THE PRESENT INVENTION

The present invention provides a vacuum holding table for photographic plates or the like and which table includes a smooth, corrosion free top surface having vacuum openings therein. The table is formed as a closed box within which is located one or more flexible vacuum cups which are in communication with the openings in the table top. The table also includes an easily operated lever which is connected with the vacuum cups in such a manner that in order to load the table, it is only necessary for the operator to swing the lever in one direction thereby depressing the vacuum cups, then place a plate over the openings, and release the lever which causes the vacuum cups to securely hold the photographic plate on the table without further attention. The arrangement is such that in order to release the plate, the operator again moves the lever in one direction and this movement forces the plate off the table due to air pressure. The construction of the operating linkage connection with the vacuum cups is such that the vacuum cups are always shifted in a direction normal to the table top, thus assuring proper operation of the vacuum cups.

These and other objects and advantages will appear hereinafter as this disclosure progresses, reference being had to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a vacuum table made in accordance with the present invention;

FIG. 2 is a perspective view of a vacuum table shown in FIG. 1, but on an enlarged scale and furthermore with a portion of the table being shown as broken away for the sake of clarity in the drawings;

FIG. 3 is a sectional, elevational view taken through the table;

FIG. 4 is a sectional view taken along line 4-4 in FIG. 3, but on an enlarged scale;

FIG. 5 is a view similar to FIG. 4, but on a smaller scale and showing the operating lever when moved in one direction prior to loading the plate thereof;

FIG. 6 is a view similar to FIG. 5, but showing the position after the plate has been loaded on the table and then the lever released from the FIG. 5 showing; and

FIG. 7 is a view similar to FIG. 6, but showing the lever when moved to the plate releasing position which causes the increase in pressure in the vacuum cup to forcibly eject the plate from the table top.

DESCRIPTION OF A PREFERRED EMBODIMENT

The table provided by the present invention finds particular utility in processing photographic plates and

during which process it is necessary to quickly load and unload the table and furthermore hold the plate securely on the table while it is being processed.

The table provided by the present invention is preferably formed from material which resists chemical stains, such as stainless steel, and includes a bottom 9, a top 10, two end walls 11 and 12, a rear wall 13, and a front wall 14. Suitable adjustable legs L are threadably engaged in the bottom 9 and at each corner of the table so as to be able to level the top 10 of the table. Bottom 9 is spot welded to the side walls.

The upper top 10 of the table has two sets of openings 15 and 16 therethrough, but any number of sets of openings can be utilized.

Beneath each set of openings is a flexible vacuum cup 20, such as rubber, which has a flange 21 that is cemented or otherwise rigidly secured to the underside of the table top so that all of the openings of any one set are located within a vacuum cup 20. The rubber vacuum cup 20 is resilient and includes an integral hub member 22 into which is threadably connected a wooden plug 23. When in its natural unloaded position, the rubber cup assumes the position shown in FIG. 4.

Means are provided for compressing the rubber cups in unison and this means includes a shaft 26 journaled in the walls 11 and 12 and held captive therein by collars 27 which in turn are rigidly secured to the shaft 26 by set screws 28. An operator's lever 30 is rigidly secured to one end of the shaft 26, more particularly, by being fixed within the end collar. Also secured to shaft 26 are a pair of arms 32, 33 which are fixed to the shaft, respectively, by their collars 34, 35. The ends of the arms are threaded so as to receive their respective nut 37 which is adjustable along on the arm. A screw eye 40 is secured within its respective plug 23, as being threaded therein, and the screw eye has a sufficiently large opening at its free end so as to loosely receive its respective arm. The arrangement of the arm, its nut, and the screw eye 40 is such, relative to the center of its respective flexible cup, that swinging movement of the lever always causes the cup to be compressed in a direction normal to the table top. This is accomplished by the loose fit between the screw eye 40 and its arm and, as shown in FIG. 4 while in the released position, a space 42 is provided between the nut and its respective screw eye. It will furthermore be noted that when the lever 30 is swung to its fully compressed position as shown in FIG. 5, there is no binding between the screw eye and its arm and consequently the clamping action on the cup is in a direction normal to the table top.

The operation of the table and the loading and unloading of the sheet or plate P is shown in FIGS. 5, 6 and 7. In FIG. 5 before the plate is placed on the table, the lever 30 is swung in a direction so as to compress the vacuum cups. After the cups have been compressed, the sheet is placed over the openings and the lever released. This position is shown in FIG. 6 wherein the vacuum within the cups acts to firmly hold the plate on the table top and the cup has returned only partially to the original position shown in FIG. 4, thereby holding the plate on the table top without further attention by the operator, and the operator can release the lever 30.

After the plate has been processed with chemicals or whatever other operation is required on the plate, the lever can again be swung in the direction of its initial

movement, which then causes compression of the vacuum cups and an increase of pressure therein, which acts to blow the sheet off of the table top for easy grasping and removal of the operator.

The present invention provides a portable and easily operated vacuum table which can be levelled so that for example, a chemical on the plate can be distributed easily and uniformly over the plate. The table is completely under control of the operator by a simple swinging movement of the handle and the plate is securely held without attention on the part of the operator. The operating mechanism can be adjusted so as to insure proper operation of the vacuum cups at all times.

I claim:

1. A vacuum holding table for photographic plates or the like including a top having openings therethrough, said table also including a pair of end walls, a front wall,

a rear wall and a bottom wall which all form a closed box, a flexible rubber vacuum cup fixed to the underside of said top and in communication with said openings, a shaft journaled in the end walls of said table and extending through said closed box, said shaft having an end extending outwardly from said box, an operator's lever fixed on said shaft end for rotating said shaft, arm means extending from said shaft, and a connection between said arm means and said cup whereby movement of the lever causes compression of the cup, whereby when said cup is compressed and a plate is placed on said top and over said openings and said lever is released, said cup having sufficiently thick and resilient side walls so that it expands and a vacuum is formed in said cup thereby holding said plate on said top.

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