

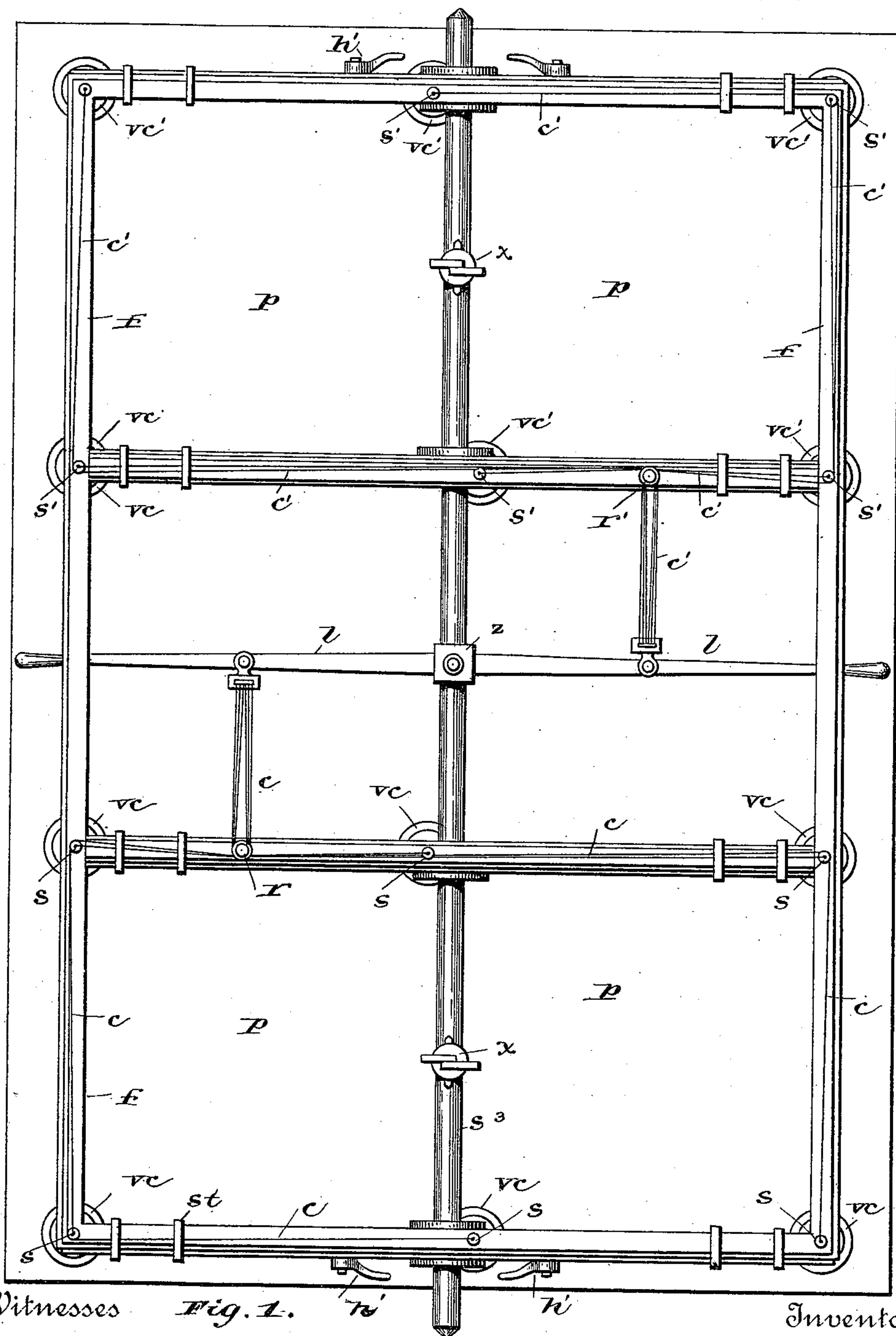
(No Model.)

2 Sheets—Sheet 1.

R. G. GUPTILL.  
PLATE GLASS CARRIER.

No. 430,283.

Patented June 17, 1890.



Witnesses *Fig. 1.*

H. D. Nealy.  
D. B. Griffith.

Inventor

Roderick L. Gupbill

By his Attorney

C. P. Jacobs.

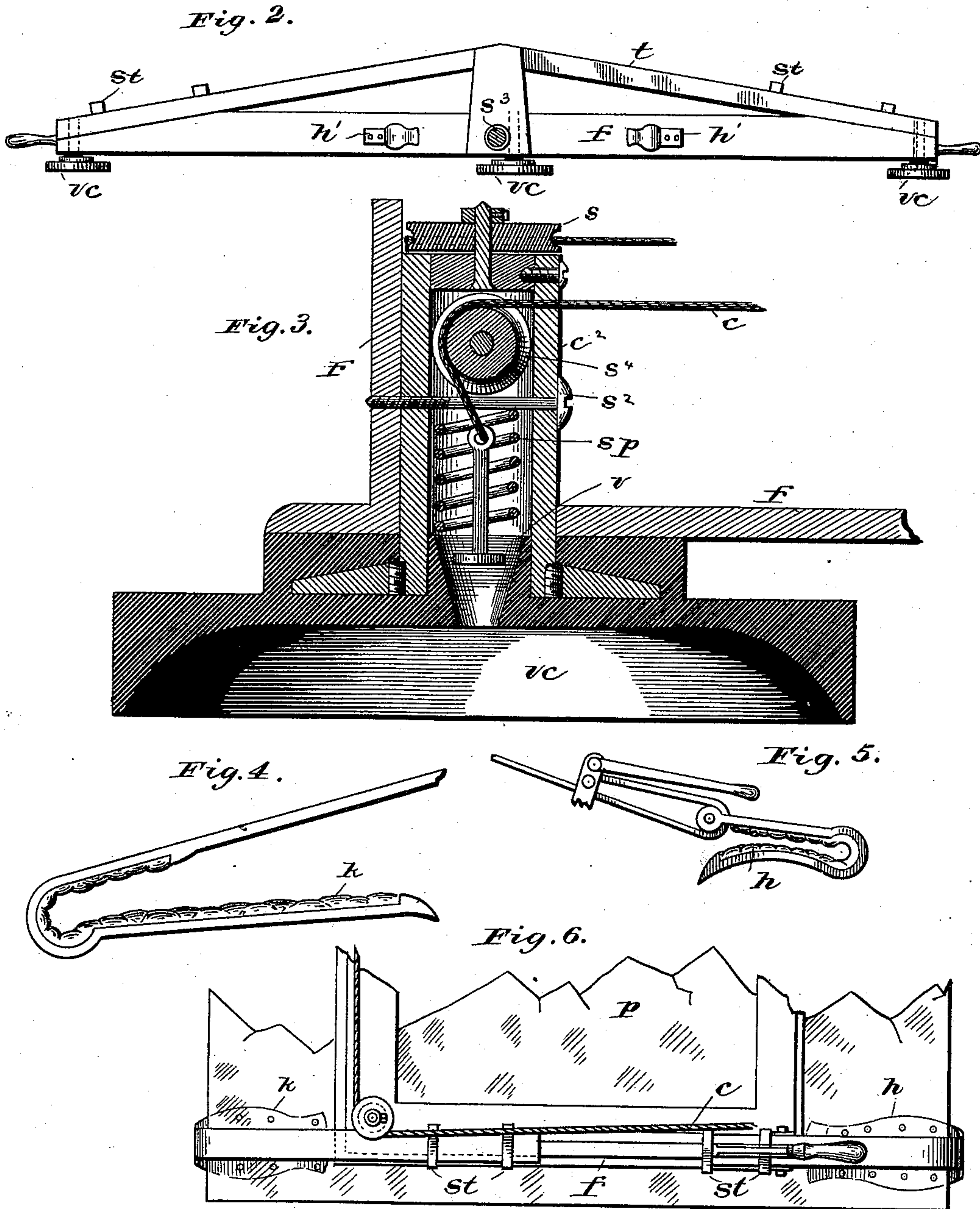
(No Model.)

2 Sheets—Sheet 2.

R. G. GUPTILL.  
PLATE GLASS CARRIER.

No. 430,283.

Patented June 17, 1890.



Witnesses

H. D. Neely,

Edwin L. Bradford

Inventor

Roderick G. Guptaill

by C. P. Jacobs,

his

Attorney



# UNITED STATES PATENT OFFICE.

RODERICK G. GUPTILL, OF ELGIN, ILLINOIS.

## PLATE-GLASS CARRIER.

SPECIFICATION forming part of Letters Patent No. 430,283, dated June 17, 1890.

Application filed November 18, 1889. Serial No. 330,815. (No model.)

*To all whom it may concern:*

Be it known that I, RODERICK G. GUPTILL, of Elgin, county of Kane, and State of Illinois, have invented certain new and useful Improvements in Plate-Glass Carriers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

My invention relates to the construction of devices for lifting and sustaining plates of glass during the course of its manufacture, and also its transfer for storage and shipment, and will be understood from the following description.

In the drawings, Figure 1 is a top view of my device attached to a plate of glass by means of the vacuum-cups, as hereinafter described. Fig. 2 is an end view. Fig. 3 is an enlarged sectional view of the vacuum-cup, valve-chamber and valve, and its controlling device. Figs. 4 and 5 are detail views of different forms of hooks or spring-clasps, which may be used as auxiliaries for the vacuum-cups in cases of sheets of glass of extra size. Fig. 6 is a detail top view showing the method of connecting the straps to which are attached the hooks or clasps for supporting the plate at its edges.

In detail the carrier comprises a frame *f*, which is constructed substantially in the manner shown in Fig. 1, having side and end pieces and central cross-bars, as shown, and the shaft *s*<sup>3</sup>, having bearings in the end pieces and cross-bars. This shaft being journaled in the frame-work allows the plate to be swung in a perpendicular position and carried around a turn safely, facilitating its transfer from one point to another. At the corners of this frame and also at the junction of the cross-bars with the side bars of the frame are fixed rubber cups having a body part shaped like a disk and a concave or cup opening below to allow its compression upon the glass, so as to cause the expulsion of the air from the cup. To this cup is fixed a valve-chamber *c*<sup>2</sup>, which is fastened by a screw *s*<sup>2</sup> to a lug or flange connected with the frame-work, as shown in Fig. 3. This valve-chamber is preferably made of steel and incloses a valve *v*, whose stem is surrounded by a coiled spring *sp*, which bears against the top of the valve and the screw *s*<sup>2</sup>,

which unites the valve-chamber to the frame, the normal tension of this spring operating to hold the valve down in place, preventing any admission of air to the cup chamber below. To this valve-stem is connected one of the cords *c c'*, which pass up around the sheave-wheels *s*<sup>4</sup> and out through an opening in the valve-chamber, and thence along the top of the frame around one of the sheaves *s s'* and thence on to the connection of the lever *l*. It will be observed that this lever extends entirely across the carrying-frame, being centrally pivoted at 1 to the shaft *s*<sup>3</sup>, so that the lever by its extended handles may be operated from either or both sides, the handle on one side being connected to a series of these cords which pass about the sheaves, and one series of the cup-valves is controlled by such part of the lever as is upon one side of the central pivot. In other words, in Fig. 1 of the drawings the lever upon the right-hand side controls the cords *c'*, which pass about the sheaves *s'* and are connected to the series of vacuum-cups on the upper side of the central lever, while the lever on the left-hand side through its cords *c* and sheaves *s* controls the series of vacuum-cups at the bottom of the frame. Thus each side of the lever controls the valves of the vacuum-cups on one-half of the same, and by simultaneously operating the lever from both sides all the cups are instantaneously controlled. The lever may be held stationary by an ordinary ratchet-bar, fixed beneath the frame, or by a stop-pin or any other suitable device. It will be observed that those cups will first be released through the cords which are tightest, while those that are a little more slack will be operated last, and in this way by graduating the length of the cords a part of the cups may be used independently of the rest.

In Fig. 1 are shown pins or hooks *x*, attached to the shaft at either end, which may be used for connection with grapple-hooks attached to ropes or cables or other means by which the frame is to be carried; or the hooks may be connected directly by passing them about the shaft.

*st* are loops or staples which are intended to be connected with the cushioned hooks *h* or clasps *k* shown in Figs. 4 and 5, and these



are to be used only as auxiliaries to assist the vacuum-cups in case of plates of glass of extra size, and in such cases they are passed over the edges near the end of the plate *p* in the manner shown at the corner in Fig. 6.

In the end view shown in Fig. 2 *t* are truss-bars, which are so disposed as to strengthen the frame.

The device operates as follows: The frame is set in place on the surface of the sheet to be carried and its weight is such that it will compress the rubber cups, expelling the air from below and causing them to adhere firmly to the surface of the plate. This being accomplished, the plate is now ready for transportation, and the operator connects his cables or grapples with the shaft by means of the hook or the pins *x* and lifts it by any suitable mechanism. When the glass has reached its destination and it is desired to deposit it, it may be freed from the control of the carrier-frame by means of the cords *c c'*, connected to the lever *l*, and by pulling on this lever and tightening the cords the valves are raised from their seats, air is admitted to the cups below, loosening their hold upon the surface of the glass, and the frame may then be lifted out of the way. The cups are made of such size and strength that any one of them by itself will safely hold a small plate of glass, so that the carrier-frame can carry as many of such small sheets as it has cups. Additional hooks *h'* are conveniently placed at the frame ends, to which the lifting-cable is also intended to be connected to assist in holding the frame in a perpendicular position while

it is being carried. These hooks are set on both sides of the central shaft, and that one is to be used which will sustain the glass tilted on the proper side until it is removed from the frame.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. A plate-glass carrier comprising a frame, a shaft journaled therein for allowing the frame to swing or rotate thereon, in combination with a series of elastic cups connected to such frame and compressible upon the surface of the plate, substantially as described.

2. A plate-glass carrier comprising a frame, a shaft centrally journaled therein for allowing the frame to tilt or rotate thereon, a series of elastic cups provided with air-valves connected thereto and compressible upon the plate-surface for holding the same, and means for opening the valves to release the hold of the cups upon the glass, all combined substantially as described.

3. In a plate-glass carrier, one or more compressible elastic cups provided with an air valve or valves, in combination with a frame to which such cups are connected, the frame mounted and rotatable upon a central shaft or axle, and means for opening the valve and admitting air into the cups, all combined substantially as described.

In witness whereof I have hereunto set my hand this 11th day of November, 1889.

RODERICK G. GUPTILL.

Witnesses:

LEON O. BAILEY,  
C. P. JACOBS.