No. 808,202. PATENTED DEC. 26, 1905.

J. HUNTER.

CLAMP FOR CARRYING PLATE GLASS.

APPLICATION FILED NOV. 9, 1904.

Fig. 1

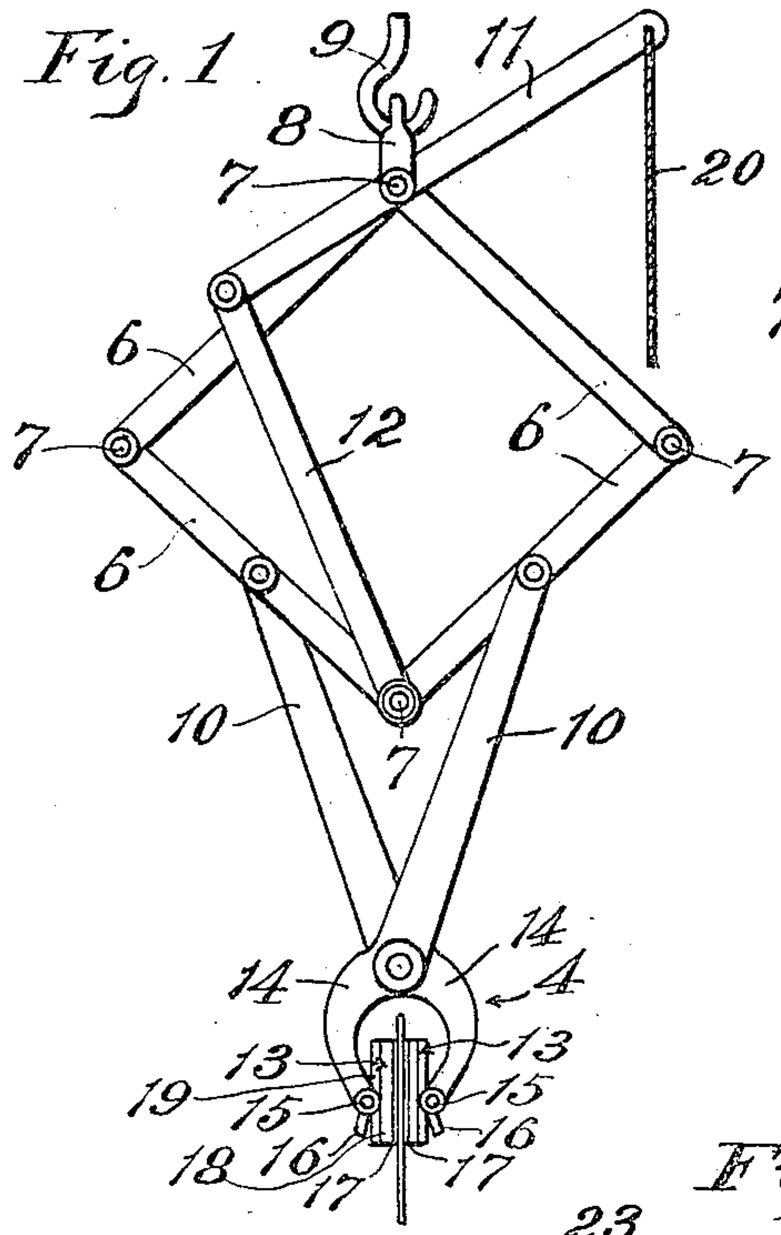


Fig. 2.

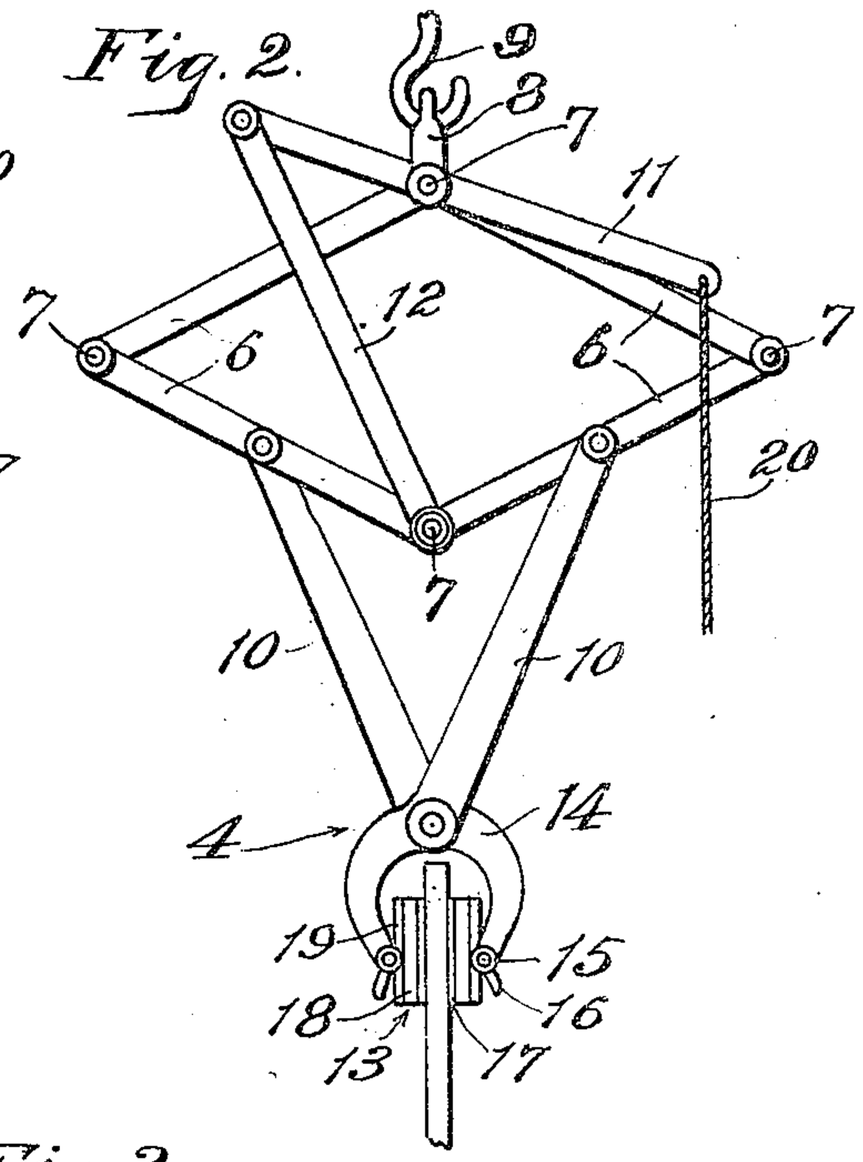


Fig. 3

Fig. 4

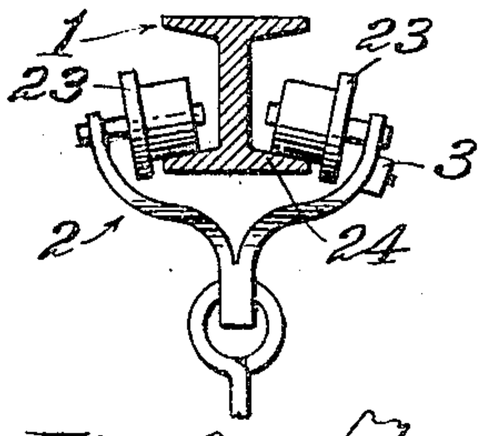
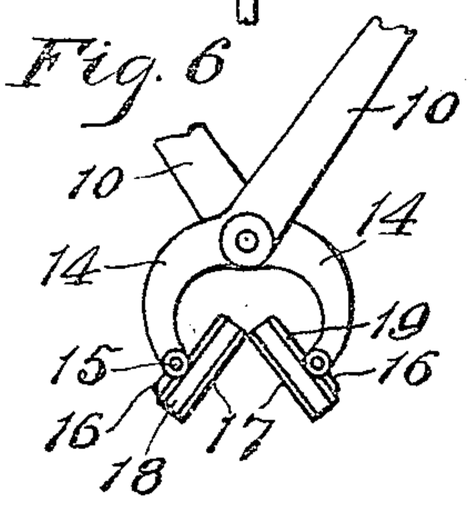


Fig. 6



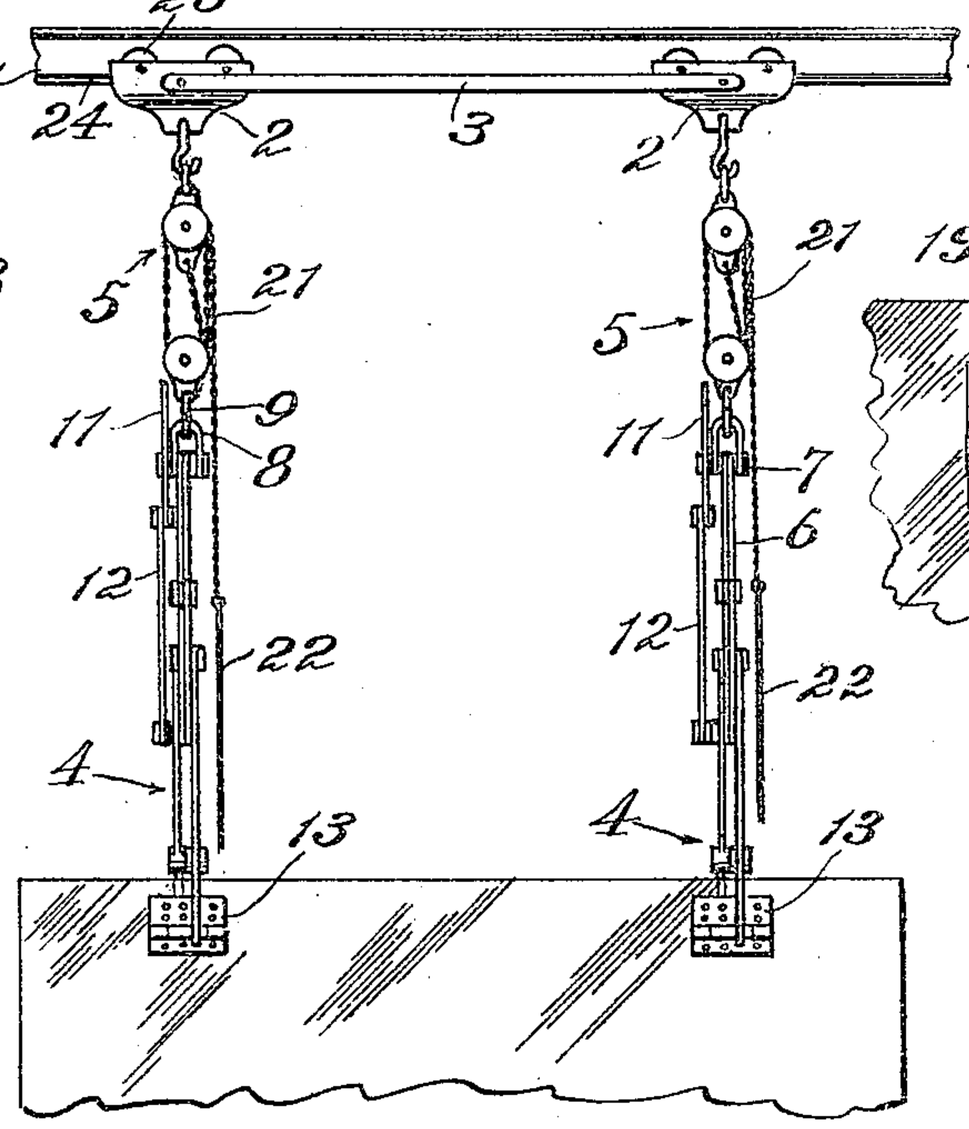
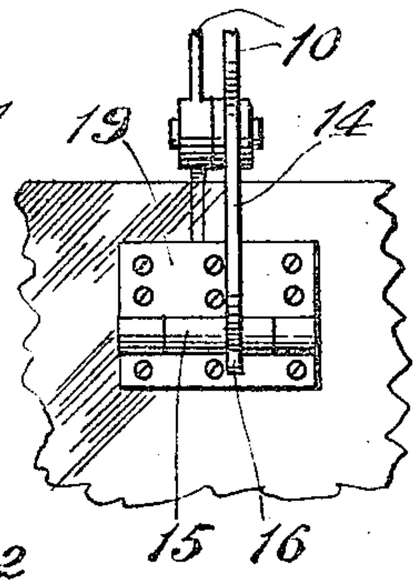


Fig. 5



Witnesses:
C. C. Holly.
A. P. Knight

Inventor
John Hunter
by Townsend Bros.
Attys.

UNITED STATES PATENT OFFICE.

JOHN HUNTER, OF LOS ANGELES, CALIFORNIA.

CLAMP FOR CARRYING PLATE-GLASS.

No. 808,202. Specification of Letters Patent. Patented Dec. 26, 1905.

Application filed November 9, 1904. Serial No. 231,982

To all whom it may concern:

Be it known that I, JOHN HUNTER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Clamp for Carrying Plate-Glass, of which the following is a specification.

The main object of this invention is to provide a clamping-tongs adapted for lifting and transporting plate-glass in a safe and expeditious manner.

Another object of the invention is to provide for lifting and carrying the glass in such manner that the tendency of breakage thereof will be reduced to a minimum, the strain on the glass being applied and distributed in such manner as to substantially preclude breakage and yet to hold the glass tightly and absolutely secure, the grip increasing in proportion to the weight or downward pull on the glass.

The invention includes clamping-jaws and their operating-arms, a toggle having its members pivotally connected to said arms, a toggle connected to the aforesaid toggle independently of the arms to form a double toggle, the first-mentioned toggle being connected to the arms independently of the second toggle, suspending means connected to the second-named toggle, and means for drawing said toggles together to separate the jaws.

An operating lever-and-link device may be pivotally connected to opposite joints of the double toggle for drawing the toggles together; but I do not limit the construction to specific means and may vary the same without departing from the principle of the invention.

The accompanying drawings illustrate the invention.

Figure 1 is an elevation of one of the tongs or carriers in closed position, showing a thin plate of glass therein. Fig. 2 is a similar view showing the tongs partially open to receive and engage a thick plate of glass. Fig. 3 is a side elevation of the complete carrier or carriage and a supporting track or way. Fig. 4 is a detail vertical section of said track or way and the trolleys running thereon. Fig. 5 is a detail side elevation of one of the grippers on the tongs, showing the glass in position therein. Fig. 6 is a detail end elevation of said grippers in open position.

1 designates a suitable transporting means—such as a track, rail, or way—on which travel trolleys 2, connected together by a bar or bars 3 to form a carriage for supporting and transporting the plate-glass. From said carriage are suspended the tongs 4, which engage and grip the glass, said tongs being connected to the carriage by suitable means, such as block-and-tackle devices 5, enabling either or both of said tongs to be raised or lowered in lifting and transporting the glass. Each of said tongs is provided with operating means to open and close its jaws, the said means consisting or double-toggle members consisting of four bars 6, forming a quadrangular figure and connected at the angles of the quadrangle by pivots 7, the suspending eye or hook 8, to which is attached the lower hook 9 of the block or tackle, being connected to the top pivot 7 of the double-toggle device and the two arms 10 of the tongs being pivoted to the lower members of the double toggle at points intermediate the lowermost pivots 7 and the pivots 7 at each side. The double toggle thus comprises upper and lower toggle members, and means are provided for operating the toggle to open the jaws, said means operating to draw the upper and lower toggles together and consisting, for example, of a lever 11, which is pivoted on the uppermost pivot 7 or generally on the support 8 and is connected by a link or bar 12 with the lowermost pivot 7, so that by operating said lever the quadrangular frame can be flattened or shortened in a vertical direction and horizontally elongated to separate the arms 10 of the tongs, and thereby open the clamp-jaws 13 thereof. When said lever is released, the weight of the tongs will act to close the jaws thereof. Said clamp-jaws are pivoted at 15 to the lower arms 14 of the tongs, the pivotal points being preferably below the center of the jaws, so that when the tongs are open the tops of the jaws will swing in toward one another and the lower portions will swing out to wide-open position to enable them to pass readily over and into engagement with the glass plate. Stops 16 on the tong-arms 14 limit this outward-swinging movement of the jaws or clamping-plates. Said jaws or clamping-plates are desirably provided with facings 17, of soft rubber or other material, to form a close frictional engagement with the glass, and said facing may be supported by a wooden body 18, which in turn is supported by a backing 19, of metal, to which the pivots 15 of the jaws are connected.

20 designates the rope operating the tongs

to open and close the same, said rope being attached to the outer end of arm or lever 11.

The flexible operating means 21 for the block and tackle 5 may be wholly of rope, or the portion 22, which hangs down for manipulation by the workmen, may be of rope in order to prevent injury to the glass, and the portion that runs on the blocks may be of chain or cable.

It will be understood that the above-described tongs can be used in connection with any suitable transporting agency—such as a crane, derrick, &c.—and in any case it will be desirable to provide a plurality of such tongs made in such manner as to provide support for the plate-glass at different points along its length, and thereby effectually and steadily support the same. In case a track is used for transportation it may be of the form shown, consisting of an I-beam, with the wheels 23 of the trolleys 2 running on the lower flanges 24 of said I-beam.

The operation is as follows: The carriage 3, with the tongs suspended therefrom, having been brought into position over the glass plate, the tongs are lowered to engage the plate, the workmen grasping the rope 20 and pulling down the lever 11 to open the tongs and then slipping the jaws upon the glass and grip the latter firmly. Both of the tongs having been thus applied, the blocks and tackles are operated to raise the tongs, thereby bringing the weight of the glass thereon, whereupon said weight will operate to further pull upon the tongs in such manner as to more strongly close the jaws thereof together and more firmly grip the glass, the strength of the gripping action being in proportion to the weight of the glass suspended. Inasmuch as this pressure is applied to the jaws 13 through the pivots, said jaws are left free to conform absolutely to the surfaces of the glass, the pressure thereby being brought perpendicularly on the surfaces of the glass without any twisting or bending strain. This adaptability of the frictional clamping-surfaces is also of advantage in enabling the jaws to adapt themselves equally to thin glass, as shown in Fig. 1, or to thick glass, as in Fig. 2. When the glass plate has been transported and lowered to desired position, the release cords or ropes 20 are pulled to cause the jaws to open and release the plate. The fact that the two arms 10 are pivoted to lower toggle 6 intermediate the pivots of the latter gives a leverage to the latter that facilitates this operation.

What I claim is—

1. A clamp for the purpose described, comprising clamping-jaws and their operating-arms, a toggle having its members pivotally connected to said arms, a toggle connected to the aforesaid toggle independently of the arms to form a double toggle, the first-mentioned toggle being connected to the arms independently of the second toggle, a suspending means connected to the second-named toggle, and means for drawing the said toggles together to separate the jaws.

2. A clamp for the purpose described comprising clamping-jaws and their operating-arms, a lower toggle pivotally connected to said arms, an upper toggle pivotally connected to said lower toggle, independently of the arms, the lower toggle being connected to the arms independently of the upper toggle, a suspending means connected to the upper toggle, and means for drawing the lower and upper toggles together to separate the jaws.

3. A clamp for the purpose described comprising two pivotally-connected toggles, clamping-jaws, operating means for said jaws pivotally connected to one of the toggles intermediate the toggle-pivots, and suspending means connected to the other toggle, and means for drawing said toggles together.

4. A tongs comprising clamping-jaws and operating-arms, a double toggle connected to said arms, and an operating lever-and-link device pivotally connected to opposite joints of the double toggle.

5. A clamp for the purpose described comprising two pivotally-connected toggles, tongs having operating-arms pivotally connected to one of said toggles intermediate the toggle-pivots, clamp-jaws pivotally mounted on said tong-arms, and suspending means pivotally connected to the other toggle.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 2d day of November, 1904.

JOHN HUNTER.

In presence of—

FREDERICK S. LYON,
FRANK M. MERRILL.