984,006.

O. C. KADE.

PLATE GLASS STRUCTURE.

APPLICATION FILED NOV. 8, 1909.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.

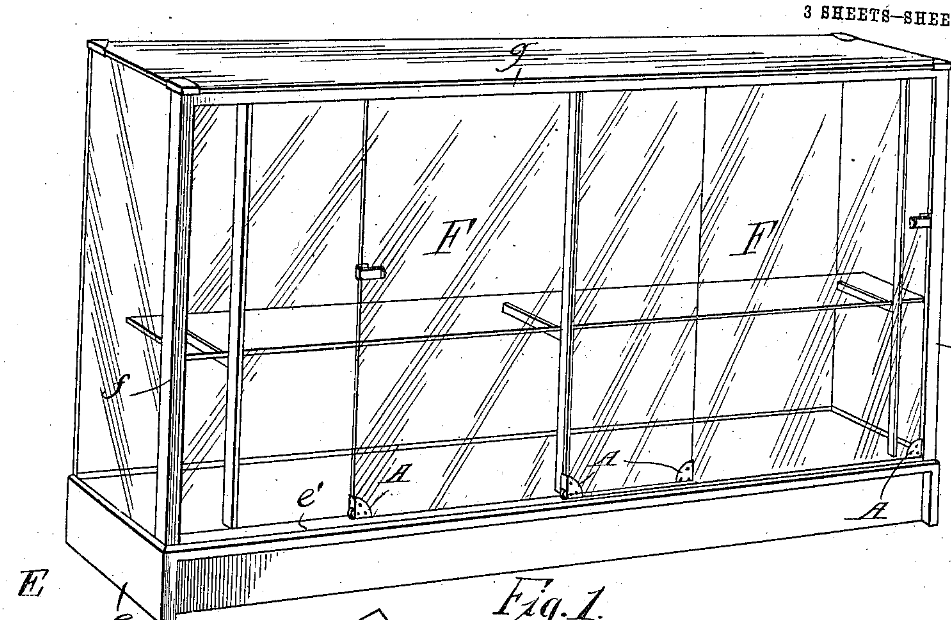


Fig. 1.

Fig. 3.

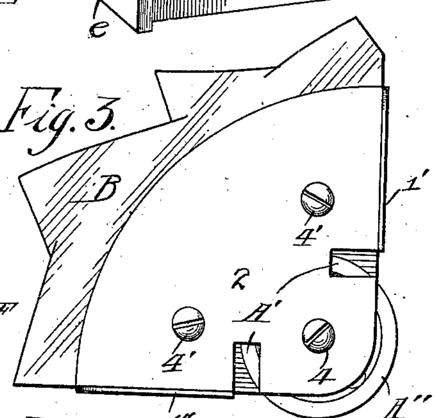


Fig. 2.

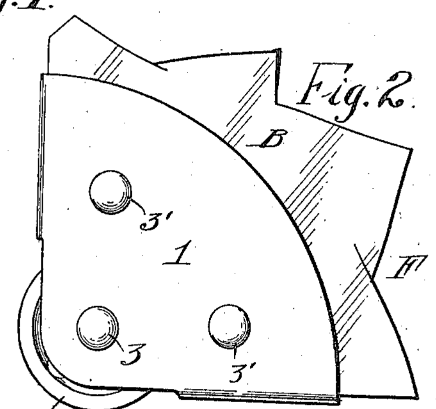


Fig. 5.

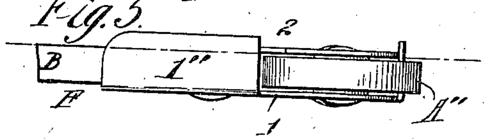
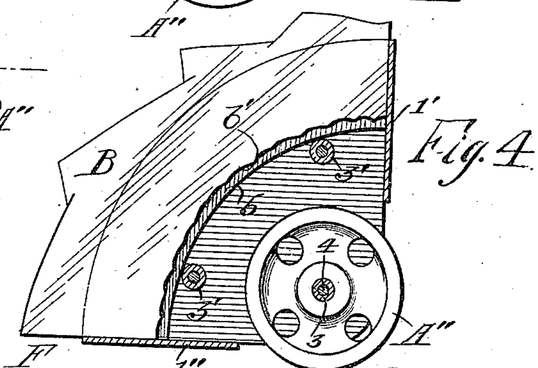


Fig. 4.



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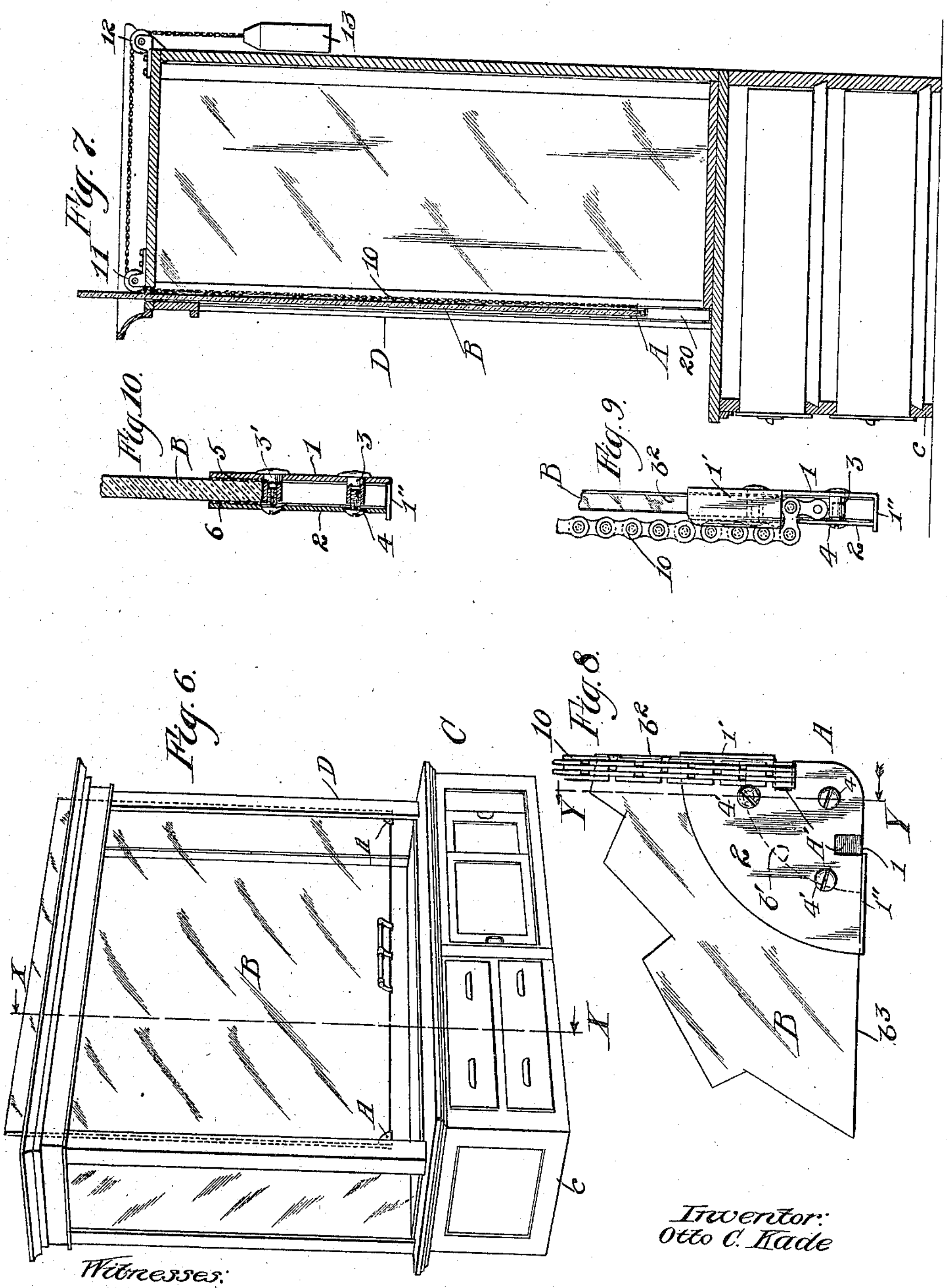
3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

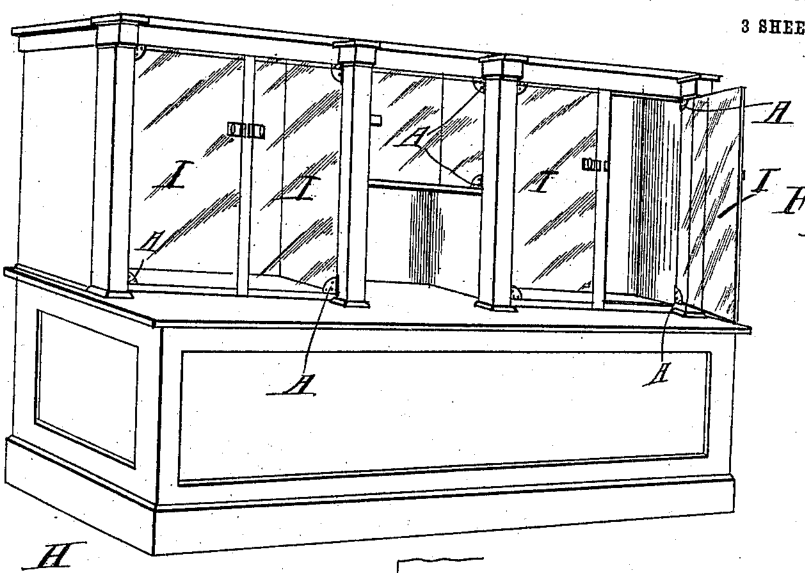
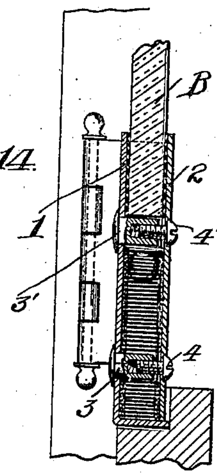


Fig. 11.

Fig. 14.



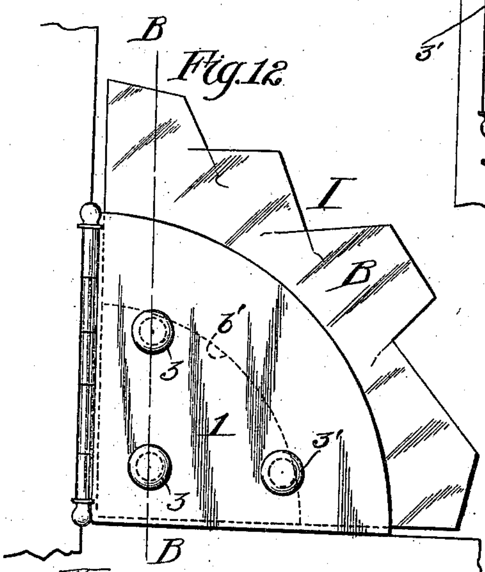
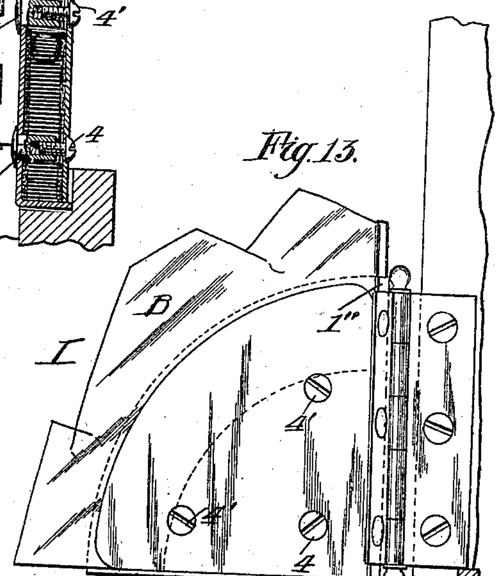


Fig. 12.

Fig. 13.



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UNITED STATES PATENT OFFICE.

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PLATE-GLASS STRUCTURE.

984,006. Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed November 8, 1909. Serial No. 526,807.

To all whom it may concern:

Be it known that I, OTTO C. KADE, a citizen of the United States, and resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Plate-Glass Structures, of which the following is a true, clear, full, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to plate glass doors or closures for show cases and the like and has particular reference to means for mounting or hanging the same.

The object of my invention is to provide means whereby a sheet of plate glass can be mounted as a door or closure for show cases and the like without incasing the glass in a frame or sash.

A further object of my invention is to provide simple and substantial means which can be easily secured to a sheet of plate glass whereby the same can be mounted or hung as a door or closure for show cases and the like.

A further special object of my invention is to provide a plate glass door of improved appearance for show cases and the like.

A further particular object of my invention is to provide means which can be secured to a sheet of plate glass without drilling holes therein, by which the glass can be hung or mounted as a door or closure for show cases and the like.

A further special object of my invention is to provide a plate glass door which can be constructed at a low cost.

Still further objects of my invention will appear hereinafter.

With these objects in view my invention consists generally in a sheet of plate glass in combination with corner pieces secured thereto which serve as a means of hanging or mounting the glass as a door or closure.

My invention consists further in a device comprising a pair of metal corner forming devices adapted to be secured to the corners of a sheet of plate glass the combination forming a substantially all plate glass or closure.

The invention consists further in a device adapted to be secured to a sheet of plate glass whereby the same can be mounted as a sliding door, a vertical lift door or a hinge door.

The invention consists further in the arrangement, construction and combination of parts hereinafter shown and described and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which;

Figure 1 is a perspective view of a show case provided with sliding plate glass doors embodying my invention; Fig. 2 is an enlarged view of one of the corner pieces used for supporting the sliding doors shown in Fig. 1; Fig. 3 is a view of the corner pieces taken from the side opposite to that shown in Fig. 2; Fig. 4 is a view of the corner piece with one of the cover members removed showing how the glass is fitted therein; Fig. 5 is an edge view taken from Fig. 3; Fig. 6 is a perspective view of a show case provided with a sliding lift door or closure embodying my invention; Fig. 7 is a sectional view substantially on the line X—X of Fig. 6; Fig. 8 is a view of the corner pieces shown in Figs. 2, 3, 4 and 5, the roller being removed and a chain inserted adapting the device for the type of door shown in Fig. 7; Fig. 9 is an edge view taken from Fig. 8; Fig. 10 is a sectional view on the line Y—Y of Fig. 8; Fig. 11 is a perspective view of a show case provided with hinge doors embodying my invention; Fig. 12 is a detail view of a corner piece of the same general construction as that shown in the former figure, a hinge or butt being secured thereto adapting the device for doors of the type shown in Fig. 11; Fig. 13 is an inside perspective view of the hinge member shown in Fig. 12, illustrating the same secured to the show case structure; Fig. 14 is a section on the line B—B of Fig. 12.

It will be seen that I have illustrated three forms of my invention in the drawings, namely, the longitudinal sliding door, the vertically movable door and the hinge door. The devices A, fastened to the corner of the glass for hanging or mounting the same are essentially alike for the three types of doors illustrated, hence a detail description of the construction and manner

of applying a corner piece to one form will serve for all.

Referring to Figs. 8, 9 and 10 which illustrate the device, A, in its typical form, 1 and 2 are cover members preferably made of metal. The member, 1, has bent over portions, 1′, 1″, which extend at right angles to the main body portion. The member, 2, is slightly smaller than the part, 1, allowing a relative movement between the two parts, whereby glass of different thicknesses can be accommodated. The member, 1, has a number of studs, 3, 3′, secured therein, which are tapped to receive the screws, 4, 4′, placed through the part, 2. The screws, 4, 4′, serve as a means of positively and powerfully drawing the parts, 1 and 2 together. Thin sheets of rubber, 5 and 6, are preferably cemented to the inner surfaces of the parts, 1 and 2. Rubber is used as it can be readily cemented to both glass and metal. To secure the device to a sheet of plate glass, B, it is necessary to cut away the corner of the glass substantially on the line, b', as best shown in Figs. 4 and 8. This is necessary in order that the edges, b^2, b^3, of the glass can be brought in contact with the sides or bent over portions, 1′, 1″, of the part, 1, without drilling holes in the glass for the studs, 3, 3′. Cutting away the corner of a sheet of glass does not weaken it, while to drill holes in it weakens it considerably. Having a sheet of plate glass with the corner properly cut away in this manner, it is a simple matter to secure the device, A, thereto. The parts or corner covers, 1 and 2, are drawn apart sufficiently to allow the free placing of the device on the glass. It is then pushed on until the portions, 1′, 1″, of the part, 1, come in contact with the edges, b^2, b^3, of the glass, B. The tightening of the screws, 4, 4′, serves to powerfully clamp the parts 1 and 2 to the glass, B. A coat of cement previously applied to the surface of the rubber sheets 5 and 6, serves to further bind the members to the glass. It will be obvious from this description that it does not require one particularly skilled in the art to secure the device to the glass. When secured in the manner just described the device, A, practically forms a part of the sheet of glass. A pair of the covers, 1 and 2, secured to the corners of a common side of a sheet of glass form means of mounting or hanging it as a door or closure. Heretofore in order to mount a sheet of plate glass as a door or closure, it has been necessary to incase the same in a frame or sash, to which the hinges, butts or rollers were then secured. This is both an expensive and cumbersome method and oftentimes mars the appearance of a case which is otherwise very pleasing to view.

Having thus described the device in its essential form and the manner of securing it to the glass, I will describe the different types of doors.

Referring to Figs. 6 to 10, C, is a show case of common construction having a base, e, and a superstructure, d. It is provided with a vertical lift door or front, B. A pair of the corner pieces, A, are secured to the lower corners of the glass, B. The member, 2, of the part, A, is cut away at A′, in which one end of the chain, 10, is placed. This is well illustrated in Figs. 8 and 9. From there the chain, 10, passes to the top of the case, thence over suitable pulleys, 11 and 12, the other end being secured to the counterbalance weight, 13, (see Fig. 7). The front closure or door, B, is thus held in balance by the weight, 13, through the medium of the chains, 10, which are secured in the pieces, A. The door, B, is adapted to pass up through the top of the case and is guided by the pulley, 11, and by guides, 20, in the superstructure of the case. (See Fig. 7). It will be noticed that the door, B, is all plate glass with the exception of the small corner pieces, A.

Figs. 1 to 5, illustrate the invention as applied to sliding doors. E is a floor show case of common construction having a base, e, and uprights, f, f'. The uprights, f, f', are connected by a suitable cross member, g. Doors, F, are slidably mounted between the base, e, and the cross member, g. They are supported by members, A, which are of the same construction, as those shown and described with reference to Figs. 6 to 10. In this case a roller or wheel, A″, is revolubly mounted in the corner member, A, the stud, 3, furnishing a bearing for the same. The doors, F, are thus slidably mounted by means of the members, A. A suitable track, e', is preferably provided for the wheels, A″, to roll on. This method forms a neat and simple means of mounting a sheet of plate glass as a sliding door. It will be noticed also that the appearance of the case is considerably enhanced by the absence of heavy casing or sash around the glass.

Figs. 11 to 14 illustrate the invention as applied to hinge doors. H is a show case of typical construction provided with hinged doors, I, embodying my invention. The doors are hung on hinges which are secured on corner pieces, A. The corner pieces, A, are of the same general construction previously described in detail. The bent over portions, 1′, 1″, of the member 1, are in this case longer than in the other forms. It is better to have a longer side in this case as it gives a larger portion to which to rivet the hinges (see Fig. 13). It will be noticed that the hinge type of door has the charac-

teristics of the other forms previously described, namely, it is neat in appearance, easily applied and can be constructed at low cost.

The arrangement, construction and combination of parts can be variously modified without departing from the spirit of the invention and I therefore do not limit it to the specific forms herein shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A device for mounting a sheet of glass as a door or closure for show cases and the like, comprising a pair of cover members, bent over lip portions on one of the covers, to bear against the edges of the glass sheet, a plurality of studs permanently secured in one of the cover members and tapped to receive screws and tap screws therein adapted to force the cover members together, to clamp the corner of said sheet of glass, substantially as described.

2. The improvements herein described comprising a sheet of plate glass having two corners recessed or cut away, in combination with metallic clamps having their binding means accommodated in the recesses formed by the cutting away of the sheet, each said clamp comprising two substantially triangular members which inclose and fill out the corners of the sheet, substantially as described.

3. The improvements herein described comprising a sheet of plate glass having two corners recessed or cut away, in combination with metallic clamps having their binding means accommodated in the recesses formed by the cutting away of the sheet, each said clamp comprising two substantially triangular members which inclose and fill out the corners of the sheet, adhesive material being interposed between the corner members and the faces of the glass sheet, substantially as described.

4. The improvements herein described comprising a sheet of plate glass having two corners recessed or cut away, in combination with metallic clamps having their binding means accommodated in the recesses formed by the cutting away of the sheet, each said clamp comprising two substantially triangular members which inclose and fill out the corners of the sheet, adhesive rubber sheets being interposed between the corner members and the faces of the glass sheet, substantially as described.

5. The herein described improvements comprising a door or window frame, in combination with a substantially rectangular sheet of plate glass forming a closure therefor, metallic corner clamps attached to two of the corners of said sheet, means on each pair of said corner clamps engaging two adjacent edges of the glass and metallic members operatively connecting said corner members to said frame, substantially as described.

6. A door or window frame of a show case or the like, in combination with a sheet of plate glass forming a closure therein, two corners of said sheet being recessed or cut away, two metallic clamps applied to said corners, said clamps having their fastening means accommodated within the recesses formed by cutting away the corners, each said clamp comprising two members having bent up portions or flanges to bear against the edges of the glass sheet and attaching means which are operatively integral parts thereof, substantially as described.

7. A plate glass door or closure for show cases and the like, comprising a sheet of plate glass having cut away corners, in combination with a pair of corner cover members clamped to the corners thereof, the clamping means being accommodated in the cut away corners of the glass, flange portions on one of said cover members conforming to the adjacent edges of the glass, said flanges extending beyond the cut-away corner and serving as a support for the glass, substantially as described.

8. A plate glass door or closure for show cases and the like, comprising a sheet of plate glass having cut away corners, in combination with a pair of corner cover members adapted to fill out the corner of the glass, said cover members having side faces which extend beyond the cut away portion of the glass, integral lugs in one of said cover members accommodated by the cut out portion in the glass, tap screws entering said lugs for clamping the cover members to the glass, substantially as described.

9. In a door or closure for show cases and the like, a sheet of glass having smooth edges, in combination with a pair of corner plates at two of the corners thereof, flanges on one of said corner plates conforming to and engaging the angularly disposed edges of the glass, studs in one of said cover members, and tap screws entering said studs from the other cover member, whereby the corner plates are clamped to the glass, the glass being cut away to accommodate the studs so that no portion thereof comes into contact therewith, substantially as described.

10. In a door or closure for show cases and the like, the combination of a sheet of glass having smooth edges, with a pair of cover plates at each of two of the corners thereof, a thin layer of fabric interposed between said plates and the faces of the glass, flanged portions on one of said cover mem-

bers which conform to and engage two of the angularly disposed edges of the glass, studs in one of said cover plates and screws entering therein from the other plate, whereby the plates are clamped to the glass, the corner of the glass being cut away beyond the studs for their free accommodation, as and for the purpose specified.

In testimony whereof, I have hereunto set my hand this 5th day of November, 1909, in the presence of two subscribing witnesses.

OTTO C. KADE.

Witnesses:
MARTIN BENYSH,
EDWARD C. GRUNEWALD.