F. PARKER.

WINDOW SHIELD.

APPLICATION FILED SEPT. 30, 1912.

1,108,613.

Patented Aug. 25, 1914.

4 SHEETS—SHEET 1.

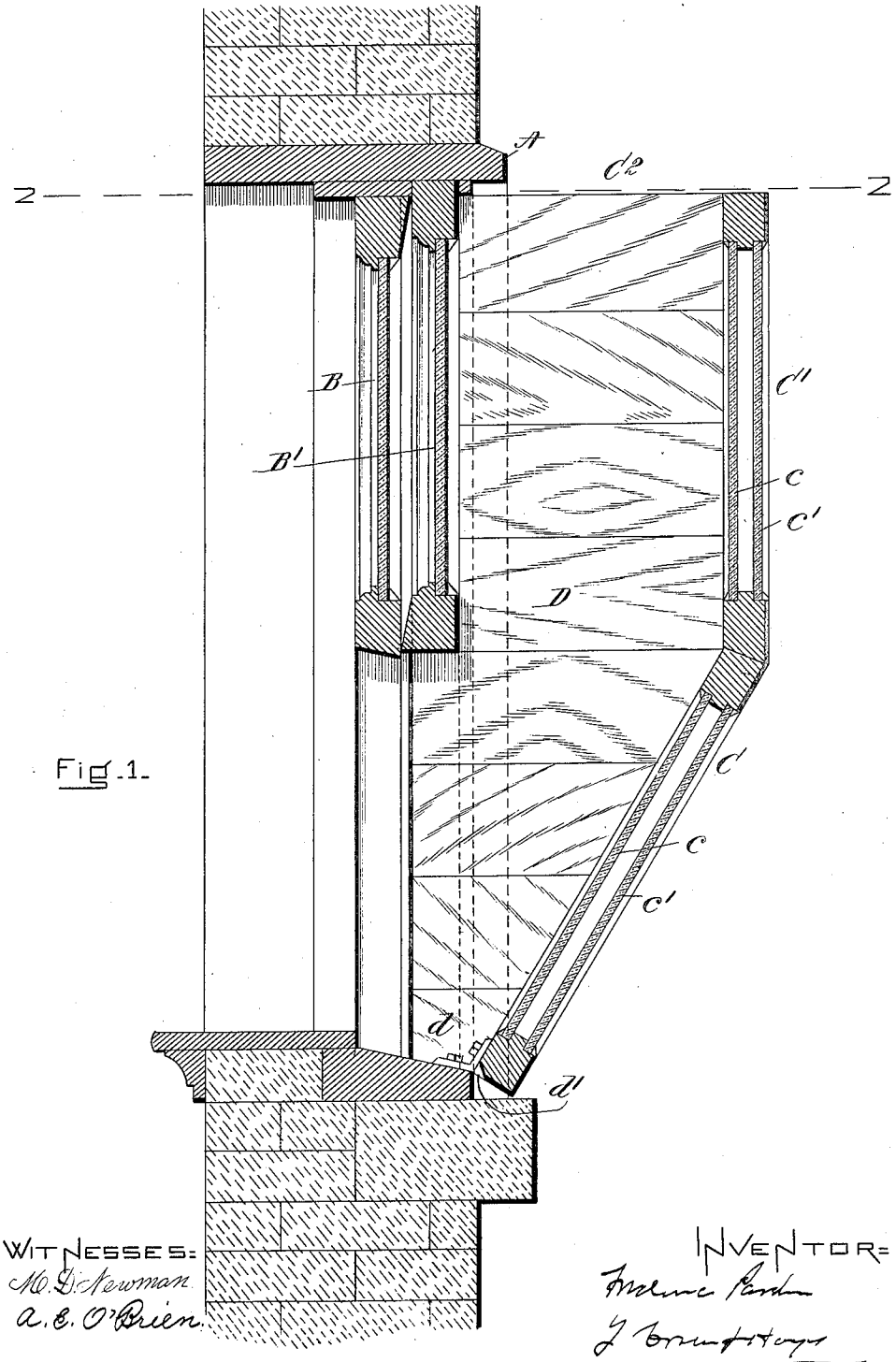


Fig. 1.

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4 SHEETS—SHEET 2.

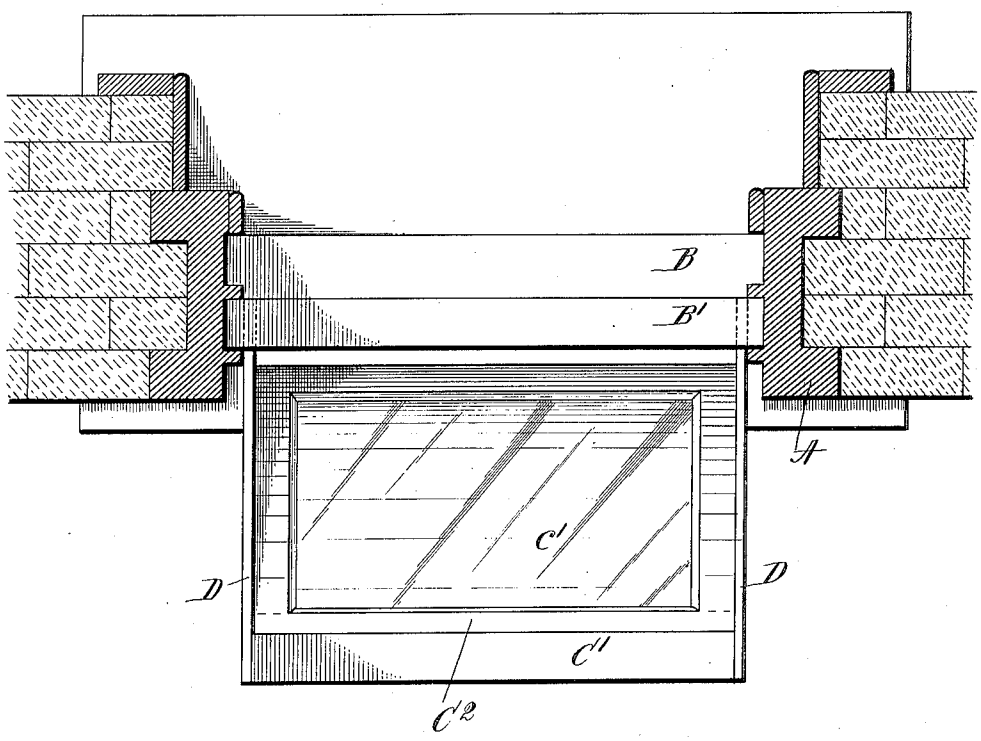


Fig. 2.

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4 SHEETS—SHEET 3.

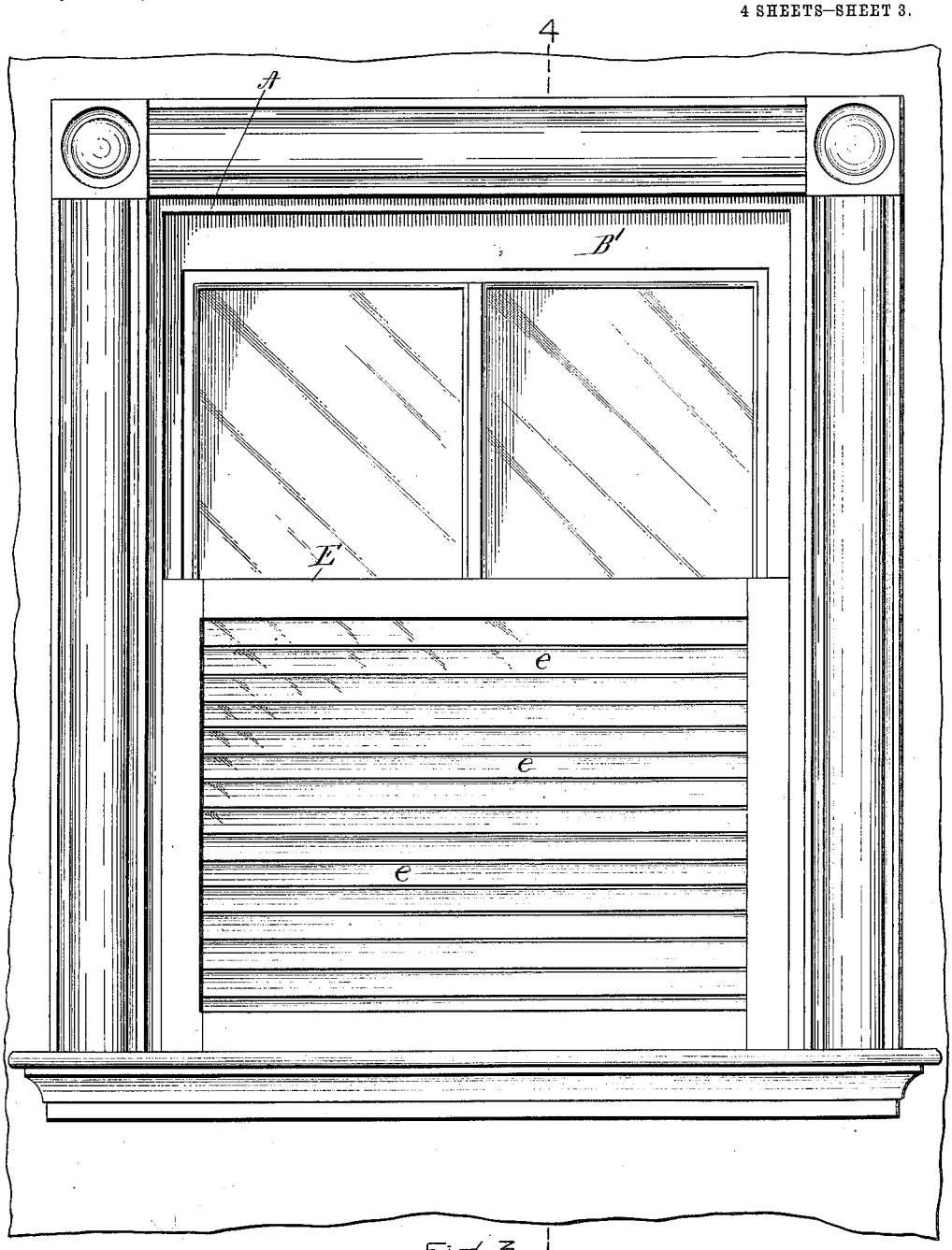


Fig. 3.

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1,108,613.

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4 SHEETS—SHEET 4.

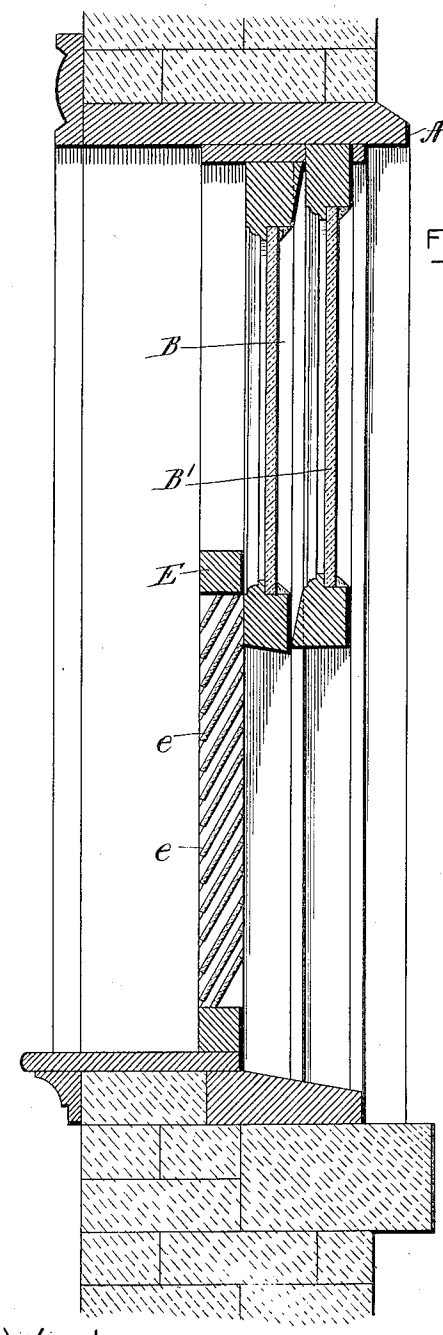


Fig. 4.

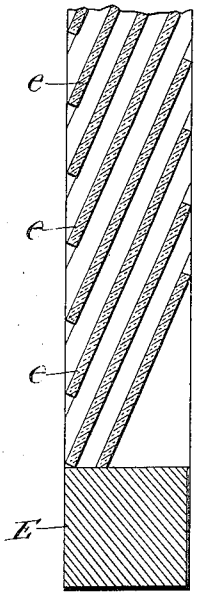


Fig. 5.

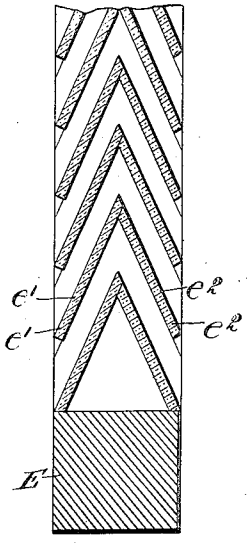


Fig. 6.

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UNITED STATES PATENT OFFICE.

FREDERIC PARKER, OF BEDFORD, MASSACHUSETTS.

WINDOW-SHIELD.

1,108,613. Specification of Letters Patent. Patented Aug. 25, 1914.

Application filed September 30, 1912. Serial No. 723,055.

To all whom it may concern:

Be it known that I, FREDERIC PARKER, of Bedford, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Window-Shields, of which the following is a specification.

The nuisance from the noise of traffic to the occupants of a business building located on a busy street is too well known to require amplification. My invention is intended to reduce the amount of noise which penetrates the building especially when the windows are open, and it consists in a shield arranged to reflect the sound waves so that to a large extent they are diverted preferably upward and fail to reach the room so shielded.

That waves of sound, like waves of light, are capable of reflection is well known, and by making a reflector of transparent material a large proportion of sound can be reflected while the light will pass through the reflector, and by providing suitable openings for ventilation the comfort of the occupant of the room can be secured with scarcely perceptible loss of either light or air.

I have shown in the drawings two forms of my invention one of which is substantially permanent in the sense that when once in place it is intended to remain attached to the building until removed bodily, for example, during the winter season, and the other in the form of an extra sash which may likewise be removed when the season no longer requires it or may be balanced like an ordinary sash and raised and lowered as occasion may require. In either case the device comprises one or more sound reflecting surfaces which are set at such an angle with relation to the pavement or roadbed as to receive the sound waves coming therefrom and reflect them in such a direction as eventually to dissipate them so far as the room controlled by the window is concerned.

It is of course well known that sound waves will penetrate all materials to a certain extent, but the impact of sound waves passing through the air against a solid material results in a large percentage of reflection coupled with a certain amount of refraction and a very small percentage of penetration, so that in the operation of my invention while the result cannot be the absolute exclusion of sound, such a percentage will be excluded as to render an otherwise noisy room comparatively quiet.

In the drawings two forms of my invention are shown.

Figure 1 is a vertical section of a form of my invention arranged for permanent use outside a window, Fig. 2 being a section on line 2—2 of Fig. 1 showing the device in plan. Fig. 3 is an interior elevation of another form of my invention, Fig. 4 being a section on line 4—4 of Fig. 3. Fig. 5 is an enlarged sectional detail of the reflector shown in Fig. 3, and Fig. 6 a corresponding section showing a different form of reflector.

A is the window frame in which are hung the upper and lower sashes B, B^1, all of any ordinary construction.

Referring to Figs. 1 and 2, the reflector as here shown comprises a sashlike frame C in which are set two plates of glass c, c^1 or other material in such manner as to be separated from each other leaving an air chamber between. A single plate or pane will answer in many cases, but to reduce the percentage of penetration two or more panes are preferable because the intervening air chamber serves to change the speed of the sound waves and reduce their capacity for penetrating the second plate. Glass is of course preferable to an opaque material as it will not materially darken the room. The reflector is usually set at an angle say of 30° to the building so that sound waves coming up from below will strike the reflector and to a large extent glance off and upward and so while some of them may penetrate to a certain extent, a large percentage of their energy will be dissipated upward. It may be otherwise set, however, according to the requirements of any especial situation, for example, the height of the window from the ground or the width of the street, or both. I prefer that the reflector may extend upward to about half the height of the open window as shown or higher if thought best according to the location of the window, and to prevent leakage around the top of the reflector I prefer to provide a vertical extension C^1 of the reflector as shown. D, D are side walls of glass, wood or other suitable material to prevent lateral leakage of sound into the window, these walls extending under the upper sash if thought best. The whole thus forms a shield which to a large extent reduces the noise at the window. The frame C may be attached to the

window frame A at the bottom by angle irons d and should be provided with openings d^1 to allow proper drainage in case of rain. The opening C^2 at the top of the shield should be sufficient to allow for proper ventilation of the room when one of the sashes is raised.

In Figs. 3, 4 and 5 the shield takes the form of an additional sash E which may be balanced like an ordinary sash or may be held in place and removed like a fly screen. In either case the sash or frame contains a series of reflecting strips e of glass set at an angle say of 30° from the vertical with air spaces for ventilation between each pair of reflecting strips. It is preferably arranged inside the window as shown so that the sound waves coming up from below will strike the strips e and glance off upward. In setting these strips into the frame or sash E they should be placed sufficiently close together to reduce the chance of leakage to the minimum and at the same time provide a substantially continuous reflecting surface. It will be seen that in this case as before, there is air between each pair of strips so that any sound waves penetrating one strip will pass into the air wherein its velocity will be reduced and then a portion of it will pass into a second strip, etc., this changing of speed assisting in the killing of its energy.

In Fig. 6 is shown another form in which the reflecting strip may be set into a sash, the reflectors being preferably glass as before. In this case strips e^1, e^2 of glass or the like are arranged at an angle so that the approaching sound waves on passing in between strips e^1, e^1 will strike a strip e^2 and be reflected upward against a strip e^1, etc., in a way which will be easily understood.

There are other arrangements of reflecting shields which may be adopted to secure the desired result and embody my invention which broadly speaking comprises the use of a shield having one or more reflecting surfaces and located with such relation to the window that a large amount of the sound will be reflected without any material interference with ventilation. The use of glass in the construction of the reflectors is desirable because it does not interfere materially with the natural lighting of the room, but when artificial light is used by preference an opaque reflector may be used. If desired the walls D, D may be of glass and the shield as a whole may be curved in horizontal section instead of angular as shown in Fig. 2.

It will of course be understood that under certain conditions by the use of certain kinds of glass light as well as sound may be reflected.

What I claim as my invention is:—

1. A window shield comprising a sound reflector having a surface adapted to be located at an angle to a window and means for supporting it with relation to a window frame with its upper edge farther from the window than its lower edge whereby sound striking it from without will be reflected.

2. A window shield comprising a reflector having a surface adapted to be located at an angle to a window, means for supporting it with relation to a window frame with its upper edge farther from said frame than its lower edge whereby sound striking it at an angle from without will be reflected, in combination with walls adapted to form with the window shield a ventilating duct thereto.

3. In combination with a window, a sound shield comprising a reflecting surface located at an acute angle to the base of said window and opposite said window whereby sounds arising from without and tending to enter said window will be reflected outward, said shield being provided with means adapted to coöperate with said window whereby ventilation may be secured.

4. In combination, a reflector comprising a series of non-contacting parallel plates arranged at an acute angle to the base of the window and means for supporting them, and a window frame and means whereby said reflector may be supported at an acute angle to the base of said window frame whereby it will reflect sounds from below and the speed of any sound waves passing through it will be deadened in transit.

5. In combination with a window frame, a sound shield extending from side to side thereof and comprising a reflecting section located at an acute angle to the base of said window frame whereby it will reflect upwardly and outwardly sounds coming from below.

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Witnesses:
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