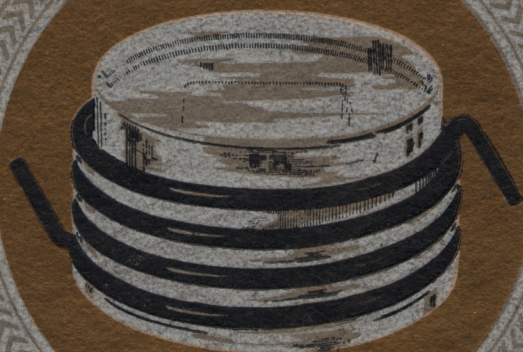
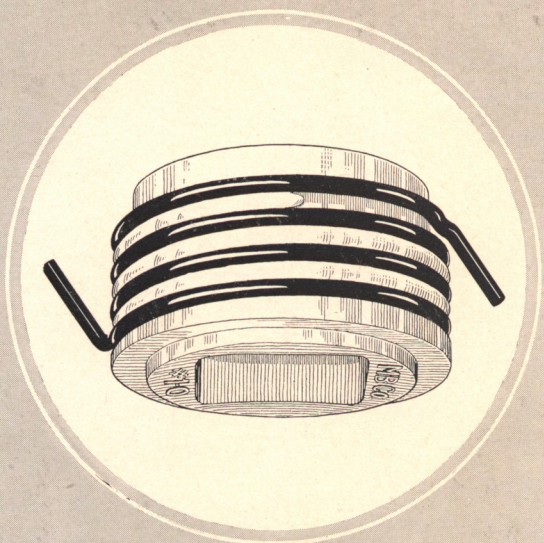


THE REPLACEABLE VAULT LIGHT

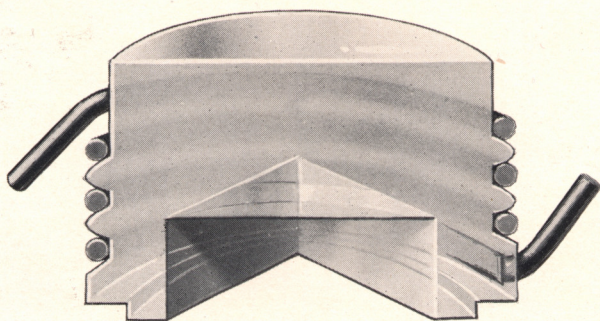


MANUFACTURED BY
MULLEN BROS. CO. PITTSBURGH, PA.

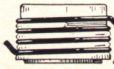


The Replaceable Vault Light

Manufactured by
Mullen Bros. Co., Pittsburgh, Pa.

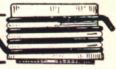


Section Through Replaceable Vault Light
(Plain Lens)



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



INTRODUCTORY



THE "REPLACEABLE" vault light is another illustration of the truth of the old saying that necessity is the mother of invention. It comes to us as a direct product of necessity, and while it has been over long on the way it is here at last, and buyers of vault lights will benefit by it.

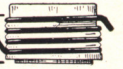
In the past years there has been nothing in the building trade that has proved so unsatisfactory and has been such a source of expense and annoyance as the vault lights. It is only natural that this should be the case, since in the old cast iron walk the combination of iron—the durable, and glass—the frail, made it certain that the glass would break up while the iron was still in good repair, leaving the walk old and patched in appearance when in reality it had seen only a few years of service.

The same has been the case with the concrete walks in which the glass is permanently incorporated in the cement when the work is first installed, with absolutely no thought as to how it is going to be repaired when broken, as it is surely going to be with the rough usage it gets, to say nothing of the expansion, contraction, vibration and other more or less unaccountable causes which tend to shatter it in time.



THE REPLACEABLE VAULT LIGHT

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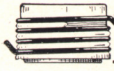
SIMILARITY OF OTHER CONSTRUCTIONS

Of course, attempts have been made to improve vault lights by eliminating the objectionable features, but in no case has any real and apparent improvement been accomplished, since the ideas put forth have all been very much alike, and their originators have copied each other so closely that it would appear that the spark of individuality had burned out in the minds of the men who made the manufacture, selling and improvement of vault lights their business.

From time to time new ideas have turned up in which the construction, glass, re-inforcement or some other item would differ slightly from the others, but in almost all cases these innovations were so slight and their advantages so obscure that the closest study would fail to reveal any marked improvement that would appeal to the buyer of vault lights as a strong and recognizable point of superiority.

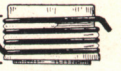
ON THE WRONG TRACK

Many of these improvements sought to use the glass in such a way as to make it practically unbreakable. To do this would be achieving the impossible, for glass is sure to break under the exceedingly rough usage it gets in sidewalks no matter how much care and scientific thought is used in making it.



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



THE RIGHT IDEA AT LAST

The thing most needed and beyond a doubt the thing most overlooked was to produce a construction which would allow for the quick, easy and perfect replacement of a broken glass. The fact that this has been entirely overlooked heretofore does not fill us with regret as it gives us an opportunity to place on the market a perfect vault light, the superiority of which has been instantly recognized everywhere and is due to the following qualities which are to be found in the "REPLACEABLE" vault light only:

Broken glass can be replaced and made perfectly watertight in a few moments time by anyone.

Glass can be replaced without injuring the surrounding concrete.

Neat appearance of walk after broken glass has been replaced. No unsightly patches to mar its appearance.

Economy of upkeep: Glass can be replaced at cost of a few cents.

The walk in which replaceable vault lights are used will look good as long as the concrete lasts because the glass in it can be replaced over and over without giving the walk that crazy quilt appearance.

New glass can be put in and made watertight in a severe rainstorm if necessary.



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



DESCRIPTION

The "REPLACEABLE" vault light consists of a circular, threaded glass with a wire spring screwed into and following the threads which are cast in the circumference of the glass. The wire terminates at each end in a straight arm which serves as an anchor to assist in holding the wire fast in the concrete.

These arms are given an upward and downward turn in order to make their hold on the concrete more secure.

The glass with the wire spring around it as shown in figure three on opposite page is placed in the walk and the concrete poured in and worked down in the usual way.

When a glass becomes broken it can be knocked out, leaving the wire firmly anchored in the concrete to form a clean, smooth thread into which a new glass can be screwed after the sleeve has been coated with a thin layer of waterproofing compound.





THE REPLACEABLE VAULT LIGHT

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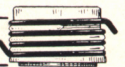


Figure 1 shows the glass alone. Note the threaded surface with the thread terminating in a rim at the bottom. This insures a smooth finish on the under side of the walk after the old glass has been removed and a new one screwed into place.

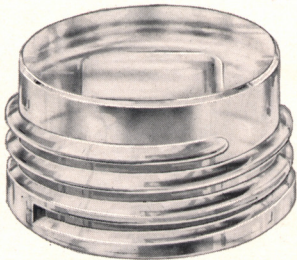


Fig. 1

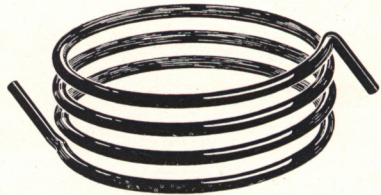


Fig. 2

Figure 2 shows the wire spiral which forms the thread into which the glass is screwed. Note the arms or anchors extending out at top and bottom which anchor the wire firmly in the concrete.

This wire is coated with a waterproof paint before being used.

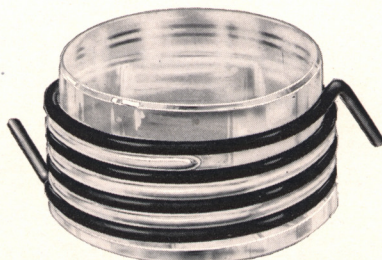
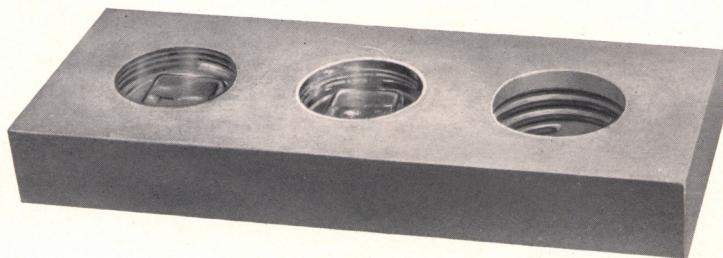


Fig. 3

Figure 3 shows the wire and glass assembled ready to be concreted in place in the walk.

THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



No. 1

No. 2.

No. 3

The accompanying photograph is of a slab containing three lights, two of which have been broken out and the other left in the cement as originally installed. This glass is marked No. 1.

No. 2 has been broken out and a new one or a “REPLACEMENT” glass screwed into place and waterproofed.

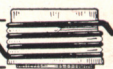
The white rim around this glass is the waterproofing which becomes set in a few minutes after the glass has been inserted, holding it firmly in place and making it absolutely waterproof. This illustration shows the neatness with which glass can be replaced when broken. None of the concrete has been cut away and there are no unsightly patches of cement around the glass such as can always be seen where the ordinary glass has been repaired.

No. 3 has been broken out and left out to show how the wire spiral becomes imbedded in the concrete. When a glass is broken out the side of the opening is always found to be perfectly smooth with a gloss on the concrete that very much resembles porcelain. This is caused by the concrete finishing up smoothly against the glass when it is first installed. The wire and concrete in this way form a perfect thread into which the “REPLACEMENT” glass is easily screwed after sleeve has been lightly coated with waterproofing compound.



THE REPLACEABLE VAULT LIGHT

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The Replaceable Way

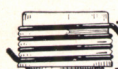
The economy of upkeep is the main advantage of the "REPLACEABLE" vault light. When a glass becomes broken it takes only a few minutes to screw a new one into place and this can be done by anyone.

Contrast this with the work required in repairing broken glass in the ordinary walks in which hours are spent in cutting away the concrete, blocking up from below to hold the new glass in place while the grout is poured in around it. All of which must be done by a skilled and highly paid mechanic in order to make the job at all presentable.

And when this is finished it leaves a patched up walk which detracts from the appearance of any building.

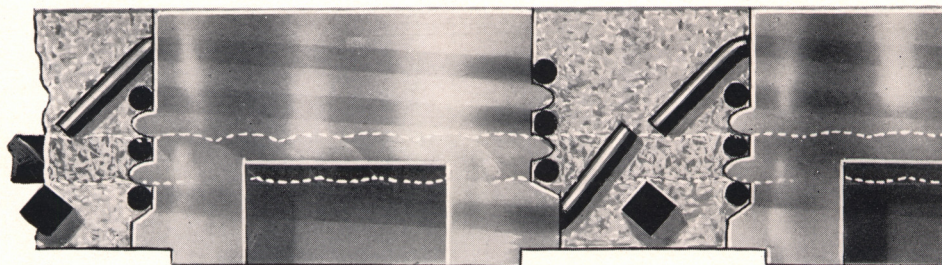
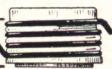


The Ordinary Way



THE REPLACEABLE VAULT LIGHT

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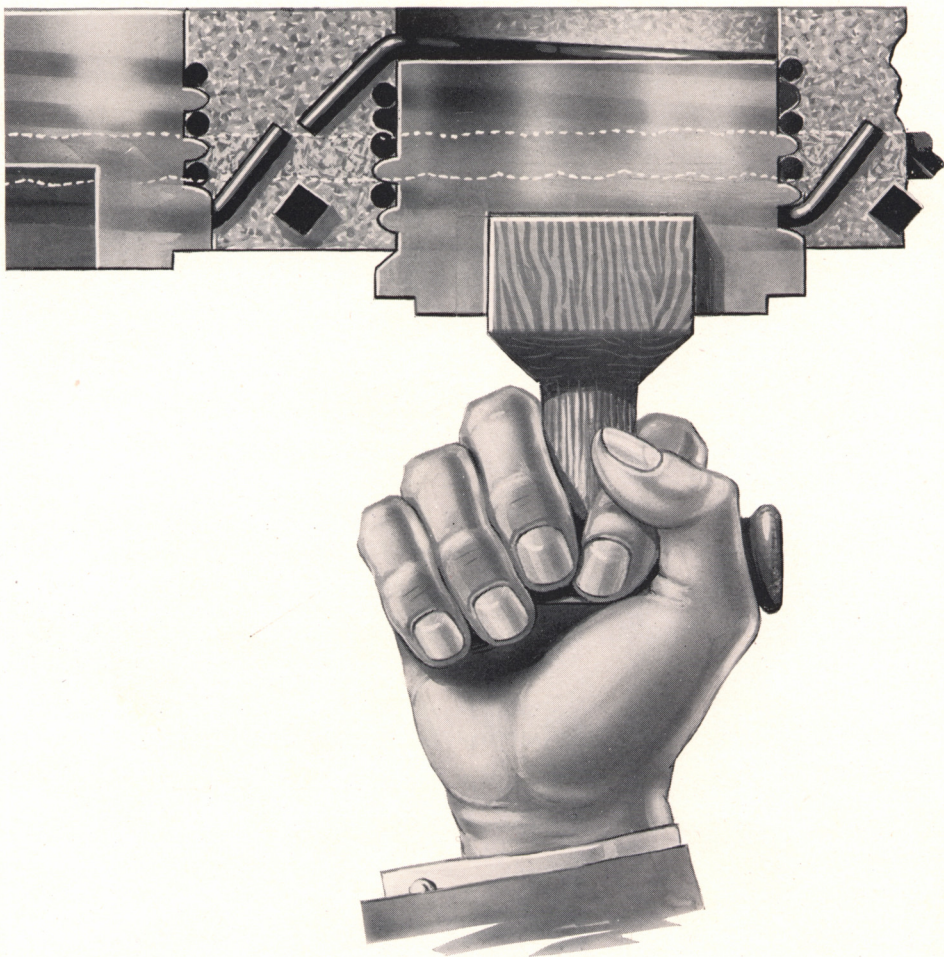
A VERY IMPORTANT POINT

When inserting a new glass in a walk which has been in use long enough to have the surface worn down, the replaceable vault light can be turned into the opening until the top of glass comes flush with the pavement and can be left in this position.

Without this advantage no vault light is replaceable, as ordinarily the new glass will stick up above the worn down surface, causing bumps on the pavement which are not only unsightly and dangerous, but are sure to cause the glass to be easily kicked out of place or broken.

THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



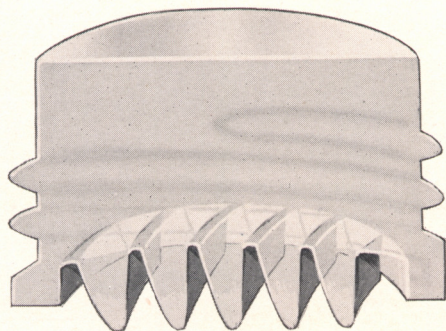
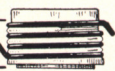
Above illustration is a sectional view of the "REPLACEABLE" vault light showing positions of glass, wire and re-inforcement in the concrete.

It also illustrates method of screwing new "REPLACEMENT" GLASS into position.



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.

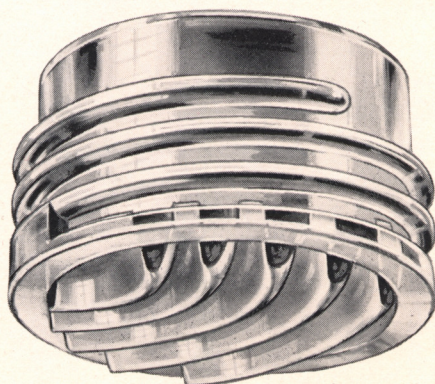


Section of No. 2-0 Prism

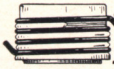
For the refraction of light we cannot recommend our No. 2-0 Prism Glass too highly.

The prisms on this glass are curved in such a way as to make use of every ray of light that strikes them and are invaluable for lighting up the more remote corners of basements.

When one of these glasses become broken a “REPLACEMENT” glass can be screwed into place with a key made for this purpose which is furnished to every purchaser.



Elevation Showing curved Prisms on Bottom



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



REPLACEMENT GLASS

The "REPLACEABLE" vault light is made in two sizes, the "REPLACEMENT" glass being a fraction of an inch smaller than the original which is placed in the walk when it is first installed.

This slight variation in size is to allow for the waterproofing compound with which the sleeve is coated before glass is turned into place.

At the completion of the work we leave a quantity of these glass with the purchaser. They can be kept in a convenient place and used when a glass in the walk becomes broken. This saves the buyer the inconvenience of having to write to the manufacturer for repair glass when in all probability he needs them in a hurry.

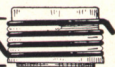
WATERPROOFING COMPOUND

In replacing broken glass the sleeve must first be lightly coated with a plastic compound. There are a great number of these on the market which are easily procured in any locality and will do the work perfectly. We have a white compound however which we strongly recommend. A sleeve coated with this substance will aid the glass in reflecting light and in this way gives better results than a darker material. This compound can be procured from us at a reasonable cost.



THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



HOW TO REPLACE BROKEN GLASS

When the glass to be replaced is badly shattered, which is usually the case, it should be knocked out with a hammer being careful in doing so to hit the glass and not the surrounding concrete. A small chisel will aid in this work.

If the glass to be replaced is very solid, having only been damaged a little, it is best to chip away the glass as much as possible on the under side of the slab. It can then be cut through from above with a hammer and chisel. If an ordinary amount of care is used in doing this work the glass will come out easily and leave a clean smooth thread to receive the new glass. This thread should be lightly coated with a waterproofing compound and the new glass turned into place with a key which we furnish for that purpose.

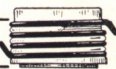
In case the key becomes lost any piece of wood cut square to fit the recess in plain lens glass or forked to fit over prisms in prism glass will serve the purpose satisfactorily. In turning the glass into place a small quantity of waterproofing compound is usually forced to the top; after this is scraped off the job is finished.

The above is a simple operation and can be done in a few minutes. After broken glass has been replaced, except for the new appearance of the replaced glass, it is usually impossible to tell that any repairs have been made.



THE REPLACEABLE VAULT LIGHT

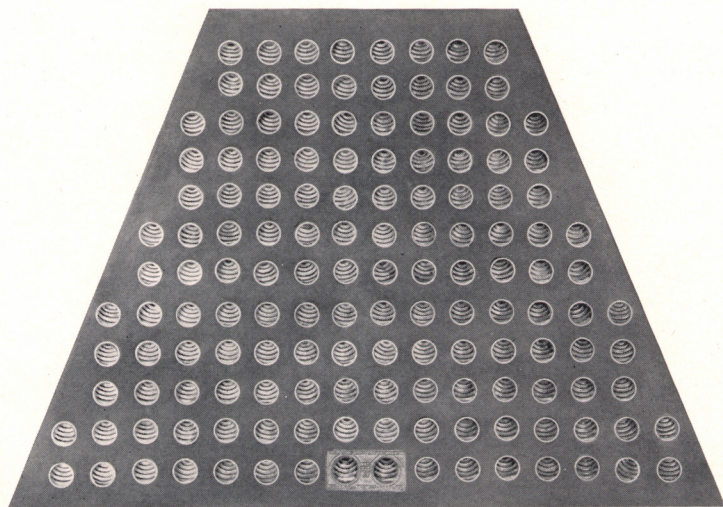
MULLEN BROS. CO., PITTSBURGH, PA.



SLABS

Where it is necessary or advisable to do so, we make up solid slabs of re-inforced concrete containing the REPLACEABLE vault lights, either plain or prism. These slabs are made in the factory and shipped to the job ready to be set in place.

The setting can be done by unskilled workmen.

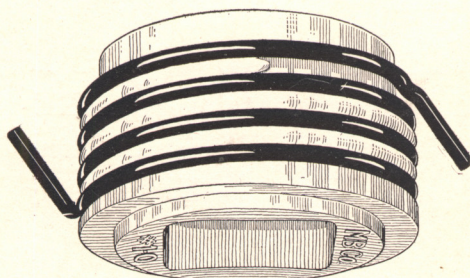


One of a Shipment of Vestibule Slabs Containing No. 2—0 Prism Glass

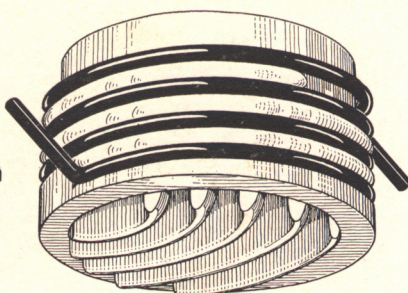
These slabs may be made to fit any opening but it is not advisable to make them larger than twenty-five sq. ft. in area. As they are very heavy and difficult to handle if made too large. One advantage of this construction is that the slabs can be made in the factory under the most favorable conditions and shipped to the job complete ready for use.

THE REPLACEABLE VAULT LIGHT

MULLEN BROS. CO., PITTSBURGH, PA.



No. 1—o Plain Lens, 2 $\frac{3}{4}$ " Top



No. 2—o Prism, Glass 2 $\frac{3}{4}$ " Top

HOW TO SPECIFY

Architects who want the best thing obtainable in the way of vault lights should incorporate the following in their specifications:

Vault lights shown on plans to be "THE REPLACE-ABLE" vault light No., manufactured by Mullen Bros. Co., Pittsburgh, Pa., and installed by their own experienced workmen.

