



# MONITOR

## SKYLIGHTS AND VENTILATORS

*Manufactured by*

LICHTY METAL PRODUCTS CO.  
WATERLOO, IOWA, U.S.A.

*This Trade-Mark*



*Our Guarantee*

Makers of good merchandise should and in most cases do apply a name or trade-mark on their goods. Names or trade-marks are a mark of distinction and should be an emblem of quality. They are useful to the public as such and assist them in purchasing standard advertised products backed by the reputation of well known manufacturers.

We have applied the name MONITOR as shown and illustrated in this trade-mark to all of the products we manufacture. This trade-mark is our guarantee that the merchandise on which it is placed is made of the best grades of materials, by skilled mechanics, and will give to the user the service that he has a right to expect.

We took the name MONITOR from Captain Ericsson's famous iron clad battleship of 1862, and which served the government so well at that time, because it is a fitting name for the strong and serviceable products we manufacture.

The following is a brief history of Captain Ericsson's MONITOR:

The keel of the famous vessel of modern times, Captain Ericsson's first iron clad, was laid in the shipyard of Thomas F. Rowland at Greenpoint, Brooklyn, in October, 1861, and on the thirtieth day of January, 1862, the novel craft was launched. On the twenty-fifth day of February she was commissioned and turned over to the government, and nine days later left New York for Hampton Roads, where, on the ninth of March, occurred the memorable contest with the Merrimac. On her next venture on the open sea she foundered off Cape Hatteras in a gale of wind (December twenty-ninth).

The general features of the MONITOR are well known. The vessel was an iron-clad steam battery. The thin lower hull was protected by an overhanging armor. A revolving turret, containing the guns, was situated on deck in the center of the vessel. The principal dimensions were: Length over all, 172 feet; breadth over all, 41 feet, 6 inches draught of water, 11 feet; inside diameter of turret, 20 feet; height of turret, 9 feet; thickness of turret, 8 inches; thickness of side armor, 5 inches; thickness of deck plates, 1 inch; thickness of pilot-house, 9 inches. Her deck was one foot above the water-line. She carried two 11-inch smooth bore guns, firing solid shot that weighed 180 pounds. Her speed was between four and five knots. A novel feature was the absence of smoke-stacks in action; they and the pipes over the blowers were taken apart and laid flat on deck, which gave an all-round fire abaft. The draught to the furnaces was maintained by powerful blowers. The tops of the smoke-stacks were six feet above the deck, and the blower-pipes four and a half feet. These openings in the deck were covered by iron gratings.

The origin of the name MONITOR is given in the following letter to Gustavus V. Fox, Assistant Secretary of the Navy:

New York, January 20, 1862.

Sir:

In accordance with your request, I now submit for your approbation a name for the floating battery at Greenpoint.

The impregnable and aggressive character of this structure will admonish the leaders of the Southern Rebellion that the batteries on the banks of their rivers will no longer present barriers to the entrance of the Union forces. The iron-clad intruder will thus prove a severe monitor to those leaders.

But there are other leaders who will also be startled and admonished by the booming of the guns from the impregnable iron turret. "Downing Street" will hardly view with indifference this last "Yankee notion," this monitor. To the Lords of the Admiralty the new craft will be a monitor, suggesting doubts as to the propriety of completing those four steel-clad ships at three and a half millions apiece. On these and many similar grounds I propose to name the new battery MONITOR.

Your obedient servant, J. ERICSSON.

1862 JANUARY 20 11:11 AM J. ERICSSON



## *MONITOR Skylights*

MONITOR Skylights are designed by engineers that have had years of experience in skylight construction. They are manufactured in all styles and shapes for all purposes. We illustrate here the seven types most commonly used. All skylights shown here except figure 701 are designed to be erected on a curb built up level.

All MONITOR Skylights are manufactured from the best grades of galvanized copper steel and bear the MONITOR trade-mark which is our guarantee of quality. They are amply strong for any purpose and are equipped with condensation gutters in each sash for carrying off the condensation which forms on the under side of the glass when the skylights are used over damp rooms or where there is lots of moisture and steam. All MONITOR Skylights are so constructed that they are water tight without the use of putty. They are regularly furnished with heavy ribbed glass cut to fit the sash, but this glass is boxed separately for shipping.

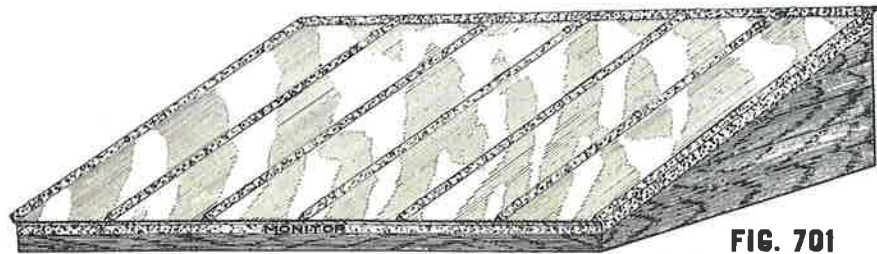
Wire glass can be furnished if desired at a slight additional cost. For description of glass see page 8.

All regular sizes of MONITOR Skylights are made to use glass 24 inches wide but special sizes and styles of skylights can be made, suitable for any width or kind of glass. All of the rafters and ridge bars in MONITOR Skylights are of the Keystone type (see perspective on page 5), which is the strongest and most substantial type of bar designed. The base or framework around the curb is extra large and strong. It is provided with unusually large condensation gutters which will easily take care of a large amount of condensation. The glass on all MONITOR Skylights is held in place by V-shaped metal strips (see perspective, page 9), which are easily removed at any time to replace glass if it accidentally becomes broken. Besides the skylights illustrated herein, we are prepared to manufacture any size, style or type of skylight for any purpose and build this same excellent quality into their construction.

MONITOR Skylights are securely packed and crated suitable for shipping anywhere in good condition. Skylight frames larger than the six foot wide are made up in sections so that they can be loaded into ordinary freight car doors. These sections are made so that they can be easily assembled.

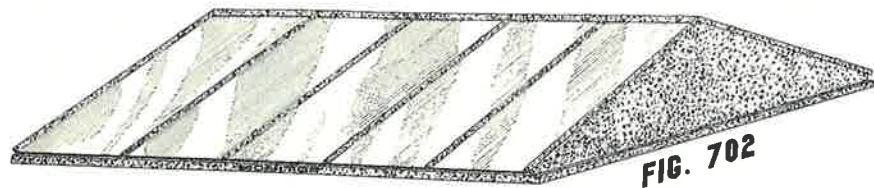
All styles of MONITOR Skylights can be specially made according to the National Fire Underwriters' specifications required for fireproof construction at a slight additional cost.

For prices on regular MONITOR Skylights, see special price list. For prices on special sizes and designs, submit drawings and specifications.



**FIG. 701**

Figure 701 is a flat type of skylight at a low cost and cannot be successfully equipped with a ventilator. It is designed to erect on pitched curb not furnished with skylight.



**FIG. 702**

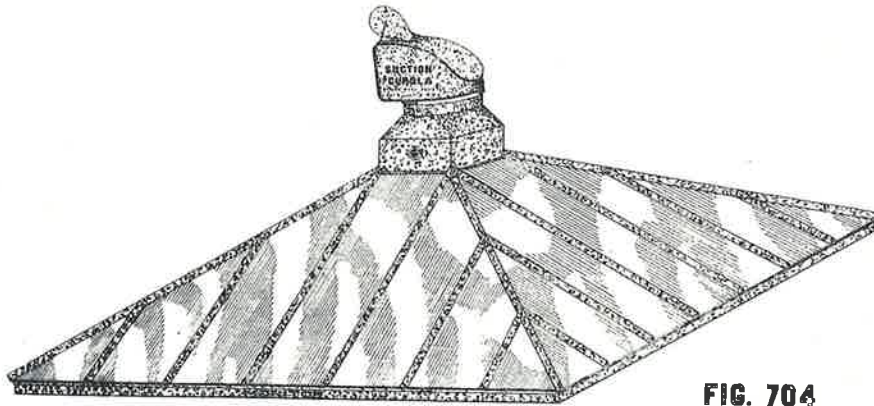
Figure 702 is what is commonly called a double pitch skylight, pitching two ways with closed ends and no provision made for ventilation. It can be equipped with ventilator like 707.



**FIG. 703**

Figure 703 is the same as Figure 702, except that provision is made for ventilation at either end by stationary louvers.

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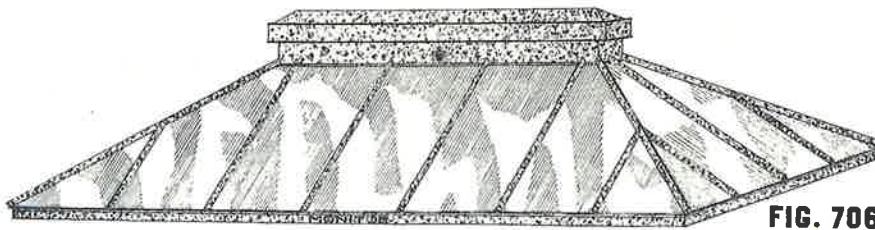
**FIG. 704**

Figure 704 is what is commonly known as a square hipped skylight equipped with Suction Ventilator. This skylight can be furnished with or without the ventilator as desired.



**FIG. 705**

Figure 705 is what is known as a hipped skylight and is the same as Figure 704, except that it is rectangular in shape. It can be equipped with ventilator as shown in Figure 704 or 707.



**FIG. 706**

Figure 706 is a rectangular shaped skylight equipped with a rectangular stationary ventilator of large capacity.

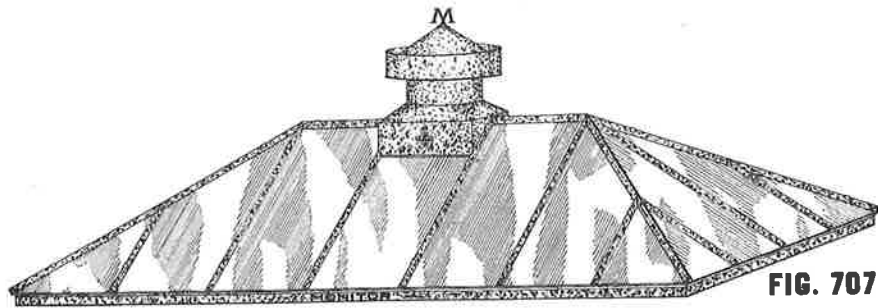
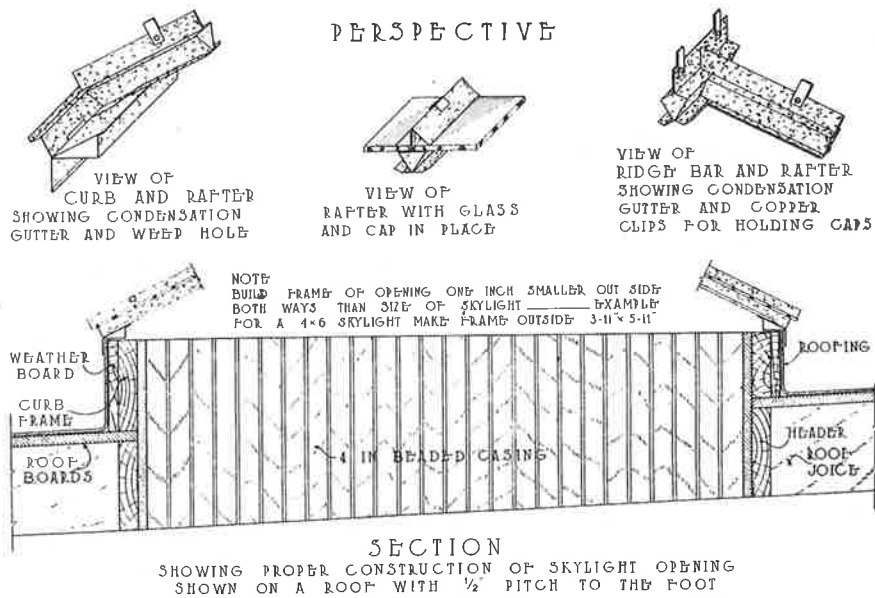
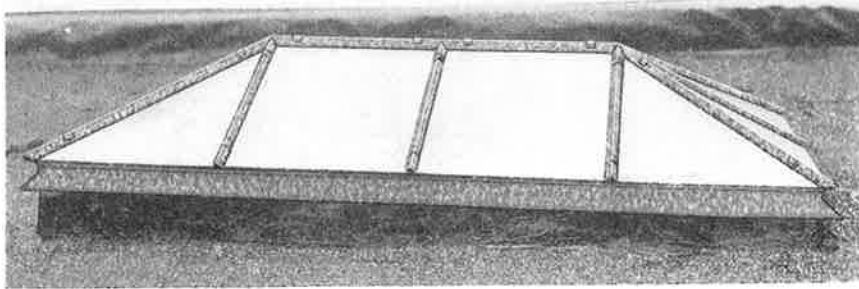


Figure 707 is a rectangular shaped skylight equipped with MONITOR Stationary Ventilator, which can be opened or closed from the floor below. Can be equipped with Suction Ventilator like 704.

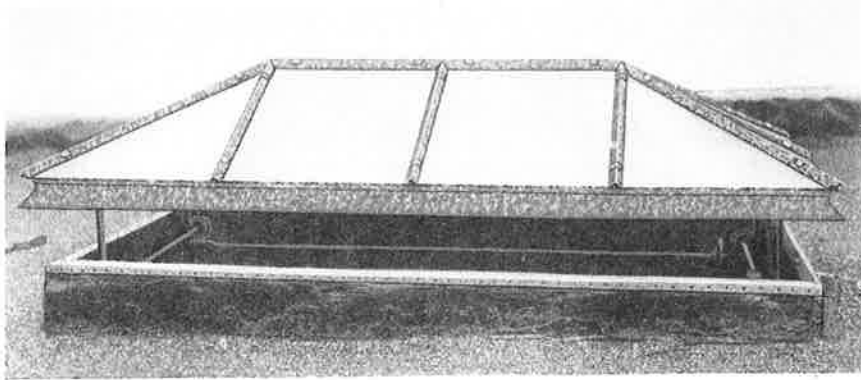


Here is shown details of the Keystone type of ridge and rafter bars, also the large substantial curb or base molding used in all MONITOR skylights, also details for construction of curb and erection of skylight.

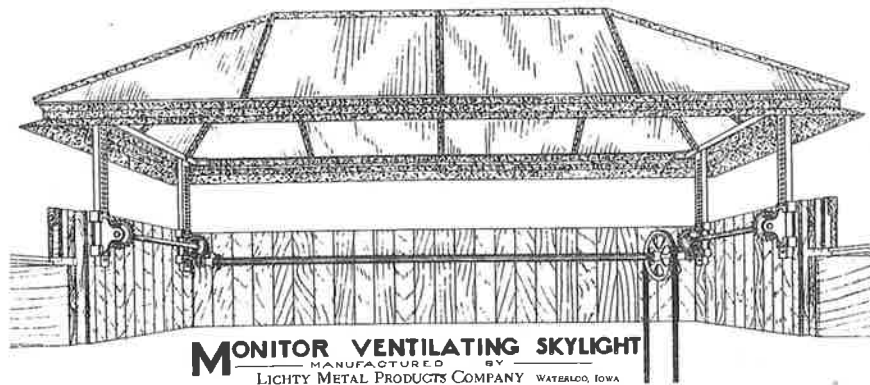


## *MONITOR Ventilating Skylights*

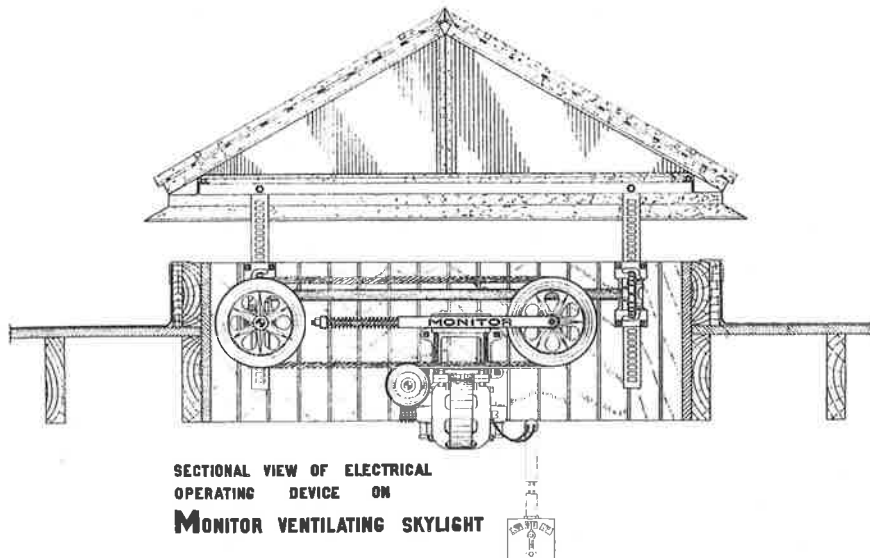
MONITOR Ventilating Skylights are shown here in actual operation. The frames are constructed along the same mechanical lines as the regular MONITOR Skylights. Galvanized copper steel is used throughout. The curb or base molding is equipped with a wide apron to prevent rain from entering the opening when the skylight is raised. The lower picture shows the Ventilating Skylight open or in the position for ventilating. The opening or raising device is our own invention and works perfectly. It holds the skylight in a strong rigid position when open.



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The cutaway view above shows the raising device of a MONITOR Ventilating Skylight equipped for hand operation. Simply pulling the endless rope which runs over the large wheel at the right of the cut, raises or lowers the skylight as desired.

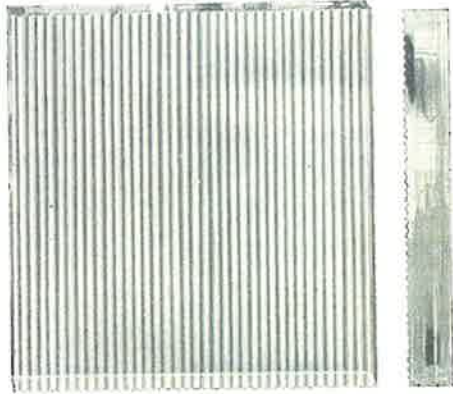


This view shows the electrical operating device for MONITOR Ventilating Skylights together with the up, down and off switch for opening and closing the ventilating feature of the skylight. This switch can be located at any desirable position.



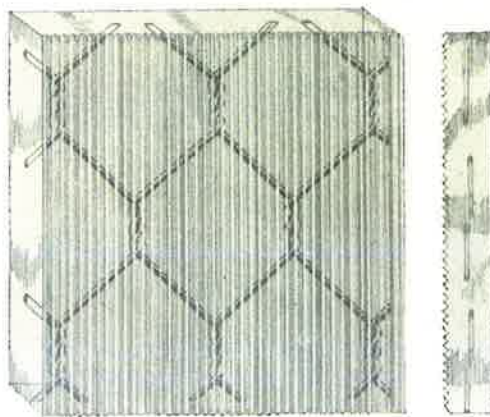


## Ribbed Skylight Glass



**Ribbed Glass**

*All MONITOR Skylights furnished with the Ribbed Glass as illustrated above unless otherwise specified.*



**Wired Glass**

On this page we illustrate the glass regularly furnished with MONITOR Skylights. The first cut is of the plain ribbed glass showing the actual thickness. The little ribs on one side of this glass are placed on the under side and spread the light over a large surface. These always aid in carrying off any condensation that may accumulate on the under side of the glass where excessive moisture or steam is created within the room. The lower picture illustrates the heavy ribbed wire glass as you will see by the picture. There is imbedded in the center of these lights a woven wire netting, making this glass fireproof to the extent that in case the glass is subjected to excessive heat, it does not crumble and fall when it cracks. This glass is preferable in some cases on account of this advantage and it must be used in fireproof skylights constructed according to the fire underwriters' specifications.



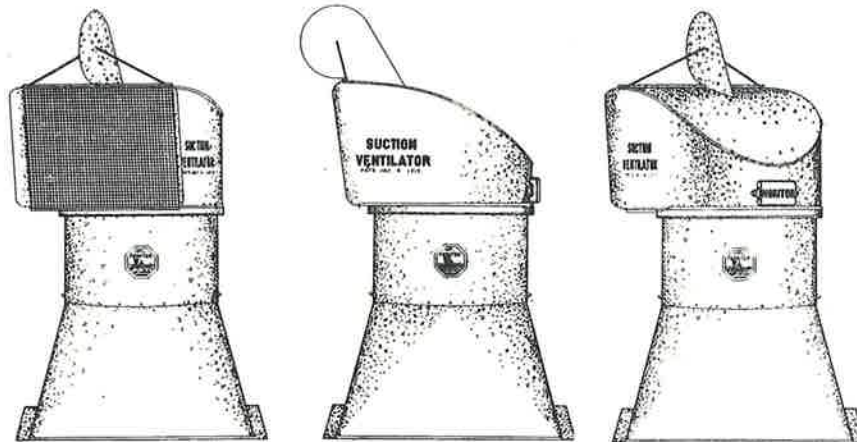
## *Ventilation*

Everything that lives and breathes, whether man, animal, plant, bird, insect, etc., requires air of sufficient quantity and quality to sustain life. For centuries the importance of ventilation has been recognized but even at this late date the proper method of attaining or the proper apparatus to use in procuring a circulation of pure air in closed structures is but little known except among engineers and architects.

Oxygen is the life-sustaining quality of the air and when this oxygen is consumed or absorbed by the breathing of persons occupying the building, by lamps or gas burners and by poisonous matter given off from our bodies, the persons choke or suffocate unless the foul or impure air is removed and replaced by fresh air. Grave risk is entailed by living in or temporarily occupying crowded rooms that have no provision for proper ventilation. This applies to schools, churches, public buildings, offices, factories, work rooms, theaters, and all places where numbers of people gather. Infectious diseases prevalent among workmen in shops are known to factory inspectors as due frequently to unsanitary conditions. The economical value of pure air should be recognized by the general public as well as the property owners in order that the property owners' investment in ventilators will be appreciated by the general public. In Massachusetts and some other states a fresh air supply of thirty cubic feet per person per minute is required by law.

In the central states where stock raising is a large industry, no new buildings for housing stock are planned or constructed without first giving proper attention to ventilation.

A number of years ago we designed and perfected both the Suction (revolving) type and Stationary type of Ventilators. Thousands of these ventilators have been in use for years, giving the very best of satisfaction in all cases, and we submit these illustrations which we believe to be the most efficient and best constructed ventilators on the market.



## *MONITOR Suction Ventilators*

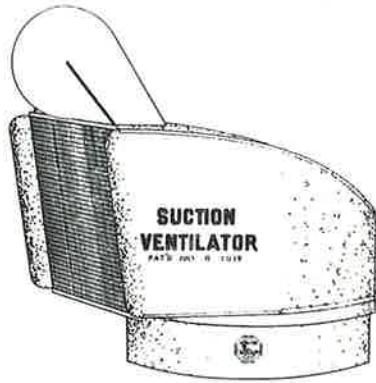
MONITOR Suction Ventilators are constructed of the best grades of galvanized steel, also pure copper. The top or head of this ventilator revolves with the slightest breeze so that the opening is always to the leeward. The ease with which this head revolves is accomplished with our own patented pivot ball-bearing revolving device used only on MONITOR Suction Ventilators. This revolving device reduces friction to the minimum and has ample strength. The wind blowing past the opening in this ventilator creates a suction within the ventilator, making an exhaust in excess of the natural gravity exhaust.

All MONITOR Ventilators are made of very heavy material, strongly reinforced and braced with specially designed rust-resisting materials. The exhaust head has twenty per cent greater capacity than the flue—a feature possessed by very few ventilators, and yet it is very essential to ventilating efficiency.

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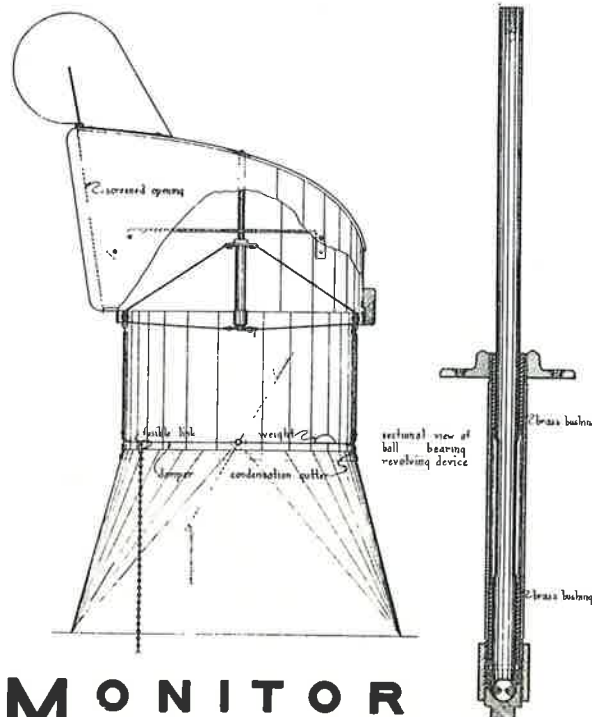


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MONITOR Stationary and MONITOR Suction types of ventilators have been approved by nearly all of the leading architects throughout the central west and both types of ventilators are acknowledged by experts and engineers to be of the highest quality of materials and workmanship and of the greatest ventilating efficiency.

*Details of  
Our  
Patented  
Pivot  
Ball-Bearing  
Revolving  
Device  
and  
Assembly.*

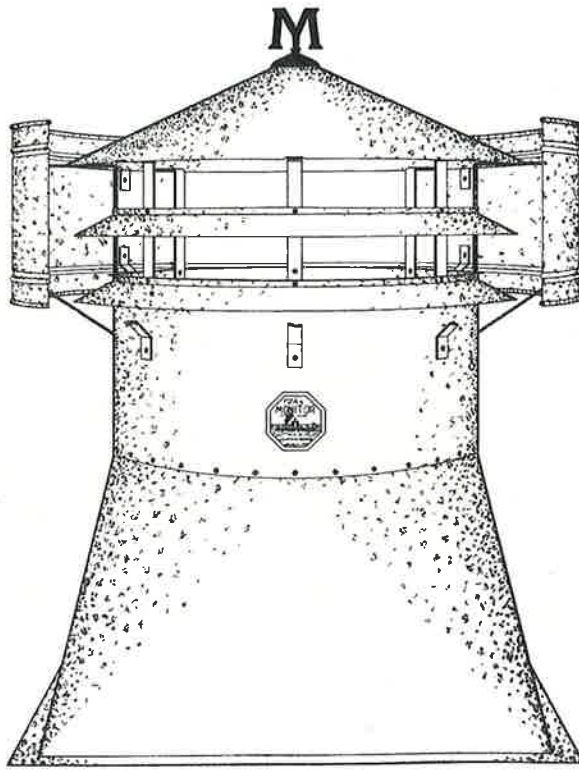


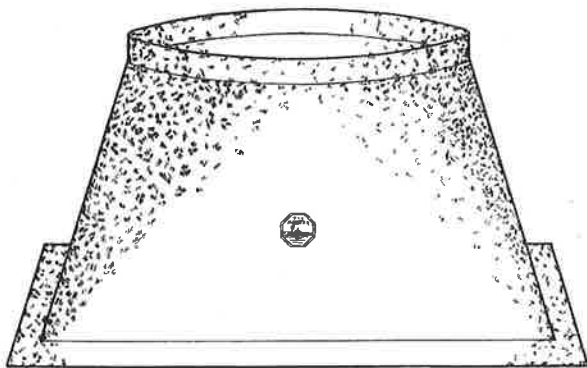
**MONITOR**  
SUCTION VENTILATOR  
PATENTED JULY 9 1914



### *Stationary Ventilators*

The MONITOR Stationary Ventilator is constructed of the best grades of galvanized steel or copper and is the type of stationary ventilator that proved most efficient in the tests made by the National Society of Heating and Ventilating Engineers. All sizes are so constructed that they are storm-proof and yet they will exhaust a full flow of air at all times and under all weather conditions.



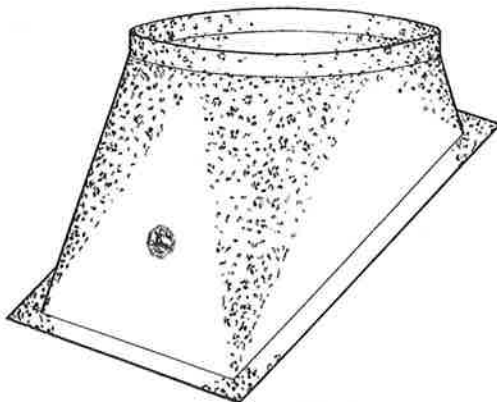


**FIG. 741**

***BASES***

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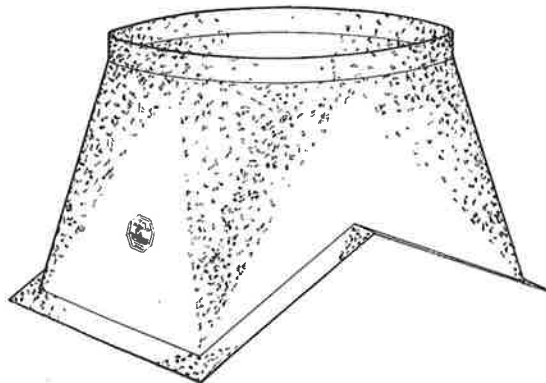
**Figure 741** base is designed for flat or nearly flat roofs and is of the transition type, that is, square to round.



**FIG. 744**

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**Figure 744** base is designed to fit on the side of a sloping roof. This is also of the transition type.



**FIG. 747**

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**Figure 747** base is designed to fit on the peak or saddle of a roof. This is also of the transition type.

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Always give pitch of roof when ordering bases.



On this foundry building belonging to the Waterloo Gas Engine Co. (John Deere & Co.), at Waterloo, Iowa, there are twelve 48-inch Monitor Ventilators, besides the Special 96-inch which shows in the foreground of this cut. This Special Monitor weighs approximately 2000 pounds, is 9 feet high and the Collar measures 30 feet in circumference. The band is 4 feet wide and 49 feet in circumference. The building is 600 feet in length and requires a vast amount of ventilation.

These ventilators are all equipped with our Fire Retarding Damper, which automatically closes the damper by means of a fusible link in case of fire.

### *Tables of Sizes, Weights and Exhaust Capacities*

Exhaust as given below is the number of cubic feet of air exhausted per minute based on a wind velocity of five miles per hour

Size	Area Inches	Exhaust Capacity Stationary	Exhaust Capacity Suction	Weight Stationary	Weight Suction	Weight Base	Gauge Steel
12	113	185	275	15	30	20	26
14	154	250	370	20	40	30	26
16	201	330	490	40	50	40	24
18	254	430	630	50	65	50	24
20	314	530	800	60	70	60	24
24	452	730	1100	80	120	70	24
30	707	1140	1700	100	160	90	22
36	1018	1700	2550	150	210	110	22
42	1385	2270	3400	200	320	125	22
48	1810	2970	4450	300	430	150	20
54	2290	3670	5500	400	650	170	20
60	2827	4590	6850	500	730	190	20
66	3421	5500	8250	600	850	220	20
72	4072	6590	9850	700	970	250	20

*For Each Person*

Office Rooms.....	1800 ft. per hr.
Dining Rooms.....	1800 ft. per hr.
Churches and Theaters.....	2000 ft. per hr.
Schools.....	2400 ft. per hr.
Toilets and Bath Rooms.....	2400 ft. per hr.
Work-shops and Barracks.....	3000 ft. per hr.
Hospitals.....	3600 ft. per hr.

This table by Prof. John R. Allen, Department of Mechanical Engineering, University of Michigan, shows the number of cubic feet of fresh air required per person each hour in the different buildings.