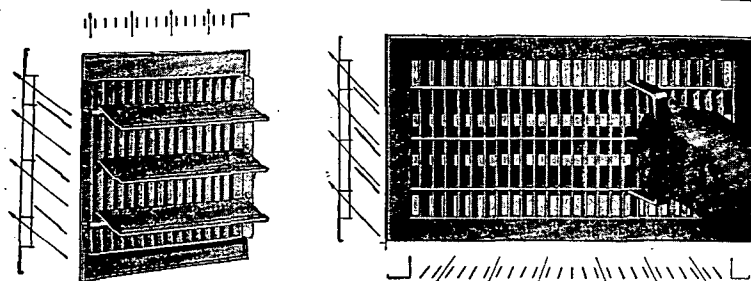


The Independent Register Co.

ESTABLISHED 1898

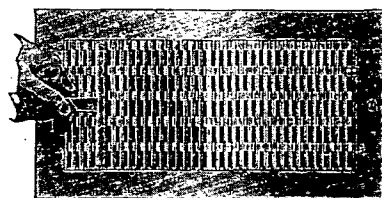
3747 East 93rd Street, Cleveland 5, Ohio

AIR CONDITIONING REGISTERS AND GRILLES

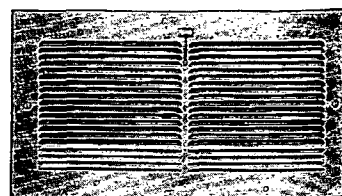


Rear View
Showing Adjustable Deflecting Vanes

No. 321A Grille with Deflecting Vanes—With vertical grille bars and horizontal deflecting vanes. The grille bars may be individually adjusted to direct air flows to right or left; and the vanes are made individually adjustable to deflect air flows up or down.



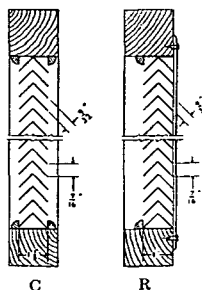
No. 238 Wrought Steel—4-way adjustable direction of air flow. Flexible vertical grille bars, multiple valves.



No. 139 Wrought Steel—Flexible horizontal grille bars, bendable for up, down or straight air flow. Single valves.



Independent No-Vision Grilles—No. 1312 for Doors, Walls and Partitions—The grille bars are "Y" shaped; it is impossible to see through the grille from any viewpoint.



No. 1312R—With overlapping rim $\frac{1}{2}$ in. wide, on all four sides.

No. 1312C—With grille core only, installed with moulding.

Knowles Mushroom Ventilator Co.

Established 1906 All Patents Protected

Main Office and Factory

Upper Montclair, New Jersey

Nu-Notch

NU-NOTCH Specifications

Furnish and install where indicated on drawings or as hereinafter specified (5 in.) (6 in.) (7 in.) (8 in.) (10 in.) (Dome Top) (Flat Top) Nu-Notch Cast Iron Mushroom Air Diffusers with recessed notches for the permanent adjustment of mushroom caps at any desired opening, together with center locking screw feature.

Provide under each Air Diffuser one No. 20 Galvanized Iron Sleeve to be set by the heating contractor in conjunction with the general contractor at the time the floor is laid. In concrete floors when sleeves are located on forms fill sleeves with sand before being grouted in, to prevent their distortion. For wood floors—attach the mushrooms to the floor by means of flat head screws. For concrete or similar type floors—by tightening 3 set screws in the collar. (In specifications indicate the desired size and style of top.)

MODERN practice shows that 8 cu ft of fresh air per minute per person is ample to keep the air in an auditorium free of odors; and to maintain body heat and to balance the outdoor heat of a warm summer's day, about 20 cu ft per minute per person must be introduced. The accurate amount becomes an engineering problem too extended for this outline.

Of the 20 cu ft per minute per person introduced, 12 cu ft may be recirculated, economizing heat in winter and cooling in summer. If too much air is recirculated, odors will result; and when smoking is to be allowed, much more new air must be introduced.

Adaptability of the KNOWLES Mushroom Air Diffuser. In an auditorium seating 2000, requiring 40,000 cfm, it is desired to use 6 in. dia. NU-NOTCH Mushrooms with air velocity of 600 fpm. By referring to the table below, it will be seen that a 6 in. mushroom will exhaust 120 cfm. Dividing 40,000 cfm by 120 indicates 333 units are required.

Size	Dimensions in Inches						Net Wgt. Lbs.	Area Sq Ft	Cfm at Velocity of								
	A	B	C	D	E	F			200	250	300	350	400	450	500	550	600
5	6	7 1/4	1 1/4	1 1/4	5	6	4	.1364	27.3	34.2	41.0	47.7	54.6	61.2	68.0	74.8	81.6
6	7 1/4	1 1/4	1 1/4	1 1/4	6	7 1/4	4 1/4	.1964	39.3	49.1	59.0	68.7	78.6	88.2	98.0	107.8	117.6
7	8 1/4	1 1/4	1 1/4	1 1/4	7	8 1/4	5 1/4	.2673	53.5	66.8	80.2	93.5	107.0	120.6	134.0	147.4	160.8
8	9 1/4	1 1/4	1 1/4	1 1/4	8	10 1/4	6 1/4	.3491	69.8	87.3	105.0	122.0	140.0	157.0	174.5	192.5	209.4
10	11 1/4	1 1/4	1 1/4	1 1/4	10	13 1/4	8 1/4	.5454	109.0	136.3	163.6	191.0	218.0	245.2	272.5	300.0	327.0

* The 10" dia. Nu-Notch is the most economically priced Mushroom to use also affording the greatest exhaust area and least duct connections.

KNOWLES NU-NOTCH MUSHROOM AIR DIFFUSER



For Auditoriums

Cast iron mushroom, successfully serving in over 5,000 buildings in U. S. and abroad. Provides correct draft-free distribution of air to each individual in any size auditorium, orchestra or balcony. Close regulation of air—10 different adjustments for all possible conditions. Easily regulated by part turn of cap, and locked in position by tightening head screw with special key—new feature to prevent tampering. Supplied with dome or flat tops, 5 diameter sizes. Easy, permanent anchorage to wood, concrete or monolithic floors.

PROPER auditorium ventilation is now recognized to be a combination of temperature, air motion and distribution, humidity, dust, bacteria, odors, and carbon dioxide. Air motion and distribution is second only to temperature in importance. The Synthetic Air Chart adopted by the A.S.H.V.E. takes into account all of these factors and makes it possible to arrive at an average which will show the percentage of ventilation obtained in any given installation.

For nearly a half century KNOWLES has devoted itself to one specialized field—the manufacture of air diffusers for auditoriums.

Write for free Guide to Distribution of Air in Auditoriums.