

BELL SYSTEM PRACTICES
Station Installation and Maintenance

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TELEPHONE BOOTHS
5, 6, 10, AND 11 TYPES
INSTALLATION

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1. GENERAL

1.01 This section covers the installation of 5-, 6-, 10-, and 11-type telephone booths including their associated end panels, separators, directory lights, blowers, and ventilators.

1.02 It is reissued to include information on a new-type door lock (Roto-Lock); to add reference to the 18E shelf; and to make minor changes and corrections which bring the practice up to date.

1.03 Information pertaining to materials and parts required in the installation of these telephone booths is covered in Section C44.103, Description, and C44.131, Supplies.

1.04 Due to extensive changes, marginal arrows have been omitted.

2. LOCATING

2.01 If the location specified by the service order or its attachment conflicts with the subscriber's wishes, or with any of the following instructions, consult your supervisor before starting the installation.

2.02 Location Limitations:

(a) The distance between the front of the booth and any wall or fixture must be at least 24 inches for access to the booth. However, if the front of the booth faces the public side of a sales counter or fixture, the distance should be increased to 36 inches.

(b) The approach to each booth must be free from hazards, such as stairways leading down, trap doors, floorings in an unsafe condition, etc.

(c) To avoid inductive effects, obtain as great a separation as possible (minimum 6 inches) between the booth with its associated wiring and neon signs, neon wiring, all transformers and similar high-voltage devices.

(d) Where practicable, booths shall be installed in well-lighted locations. In darker locations electric lighting should be provided for all booths.

(e) Provide sufficient space over the top of the booth to permit access for maintenance of the booth-lighting equipment. If this is not practicable, arrange with the public telephone agent or customer to provide a removable panel or similar facility.

(f) To prevent damage from excessive heat or water, locate booths away from radiators, steam pipes, hot-air registers, flushing traps, sinks, etc.

(g) Booths should not block access to wall fuse boxes or switches.

(h) The booths covered herein should not be exposed to the elements.

3. DIMENSIONS

- 3.01 The measurements of a 5-, 6-, 10-, or 11-type telephone booth equipped with end panels are:

Width		Depth*		Height	
Feet	Inches	Feet	Inches	Feet	Inches
2	6-1/2	2	6-1/2	6	11-1/4

* If equipped with 60- or 62-type back panel add 9/16 inch.

4. ASSEMBLING AND PLACING

- 4.01 Booths are shipped assembled unless the order specifies that they be shipped unassembled (knocked down) in which case screws and other material required for the assembly are included in the shipment.

- 4.02 Screw holes required for the assembly are aligned so that the booths can be assembled in the field. To remove or attach end panels to 5- and 6-type booths equipped with smooth gold-brown matted linings, it is necessary to remove corner mouldings to gain access to screw holes. Corner mouldings are snapped on over clips. To remove, insert the end of a screwdriver behind edge of moulding and turn it until mouldings snap off. End panels of other type booths may be attached or removed without disturbing corner mouldings.

- 4.03 When assembled, the sides of the booth units should make contact with the separators or panels along their entire height. Assemble booths in accordance with the layout shown in Fig. 1.

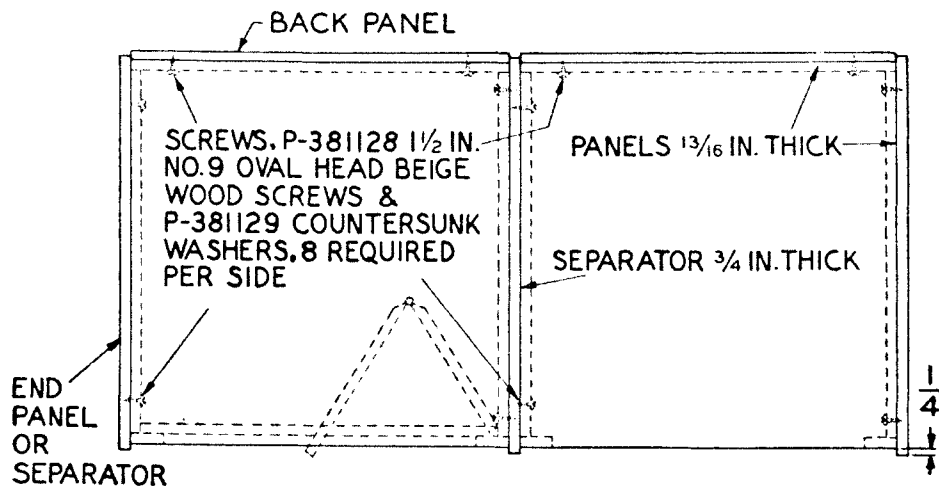


Fig. 1—Typical Layout

4.04 When their backs are not exposed, install booths having soft-wood backs. When backs are exposed and appearance is important, install booths having hardwood backs or apply the 60- or 62-type panels of corresponding finish.

4.05 When the side of a booth is not exposed or appearance is not important, a panel is not required. In such cases, however, install booth separators.

4.06 Set each booth on the floor so that it is level and does not rock. If the floor is not level or even, block up the booth by placing wooden shims under the booth-floor supports. Also, place shims under the middle area of the floor to prevent sagging or flexing. With the booth door closed, the top of the door must be aligned with the booth-door frame.

4.07 Booth leveling is an important part of the installation because the coin collector associated with the booth must be level to function properly. Level as follows:

- (1) Place a dime (or mark the size of a dime) as shown in Fig. 2.
- (2) Suspend a plumb line from a tack temporarily located in the center of the top edge of the booth so that it hangs about 1/2 inch from the floor.
- (3) Shim the booth as covered in 4.06 until the plumb line is centered within the area of the dime (or mark).

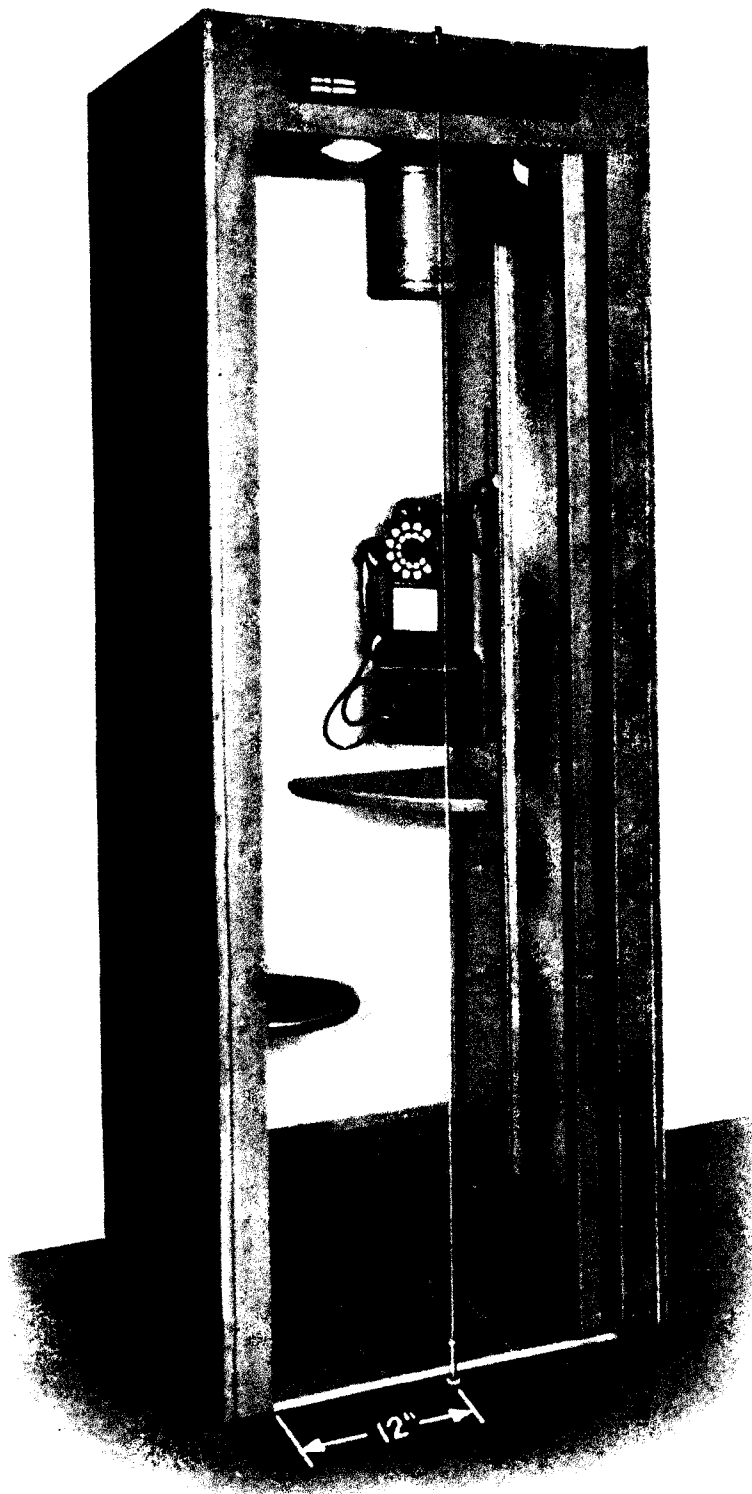


Fig. 2—11-Type Booth With Plumb Line

4.08 Setting of booths on floors with a considerable slope, such as ramps, inclined passageways between rooms, etc., should be avoided. When such locations cannot be avoided, each booth should be placed level and provided with a minimum step-up to enter. If more than one booth is involved, the separator should be attached to the higher standing booth first. Stain any exposed portion to match the booth.

4.09 Any exposed gap of 1/4 inch or more between the booth and the floor should be sealed with strips of wood stained to match the finish of the booth.

4.10 In multiple installations, line up the booths so that their fronts and tops present a straight line before attempting to fasten them together. Because of the difference in height, 5-, 6-, 10-, and 11-type booths should not be assembled in the same group with 1-type booths.

5. INSTALLATION OF TELEPHONE WIRING

5.01 In selecting the wire or cable to be used between telephone booths and the terminal point for line conductors, be guided by the instructions covered in Section C24.041, Selection of Wire and Cable.

5.02 Signaling Grounds

Number of Booths	OPTIONS		
	Cable Pairs	Conductors of Station Wire	#14 Ground Wire
1 to 6	1	1	—
6 to 12	2	2	1
12 or more	1 per 6 booths	1 per 6 booths	1

5.03 Terminate inside-wiring cable on a suitable connecting block installed in the ceiling of one of the booths or in their immediate vicinity to feed the individual booths.

5.04 For installations where cable is not used, triple wire should be run to the connecting block of each booth. Some booths have the connecting block installed in the booth ceiling near the wiring slot and the top cover must be removed to gain access. On booths equipped with 3- or 4-type light fixtures the connecting block is mounted on a bracket which is attached to one side of the light fixture. To gain access to this connecting block, open the lens in the light fixture from the inside of the booth. Use a screwdriver to open the 4-type fixture and a 544A key to open the 3-type fixture.

6. INSTALLATION OF ELECTRIC SERVICE WIRES

6.01 **Makeshift or temporary connection of booth-lighting equipment to electric-lighting circuits shall not be made under any circumstances.**

6.02 Work in connection with the installation of electric service wires should be provided for by the public telephone agent. This work must be in accordance with the National Electrical Code and any other local regulations that may apply. Arrangements for the extension of electric service wiring should be made during the preliminary booth survey by the proper authority.

6.03 Each booth should be equipped with a light and a power cable or an interconnecting cable. Power cables, when provided on booths, are equipped with a plug for attachment to an electrical-outlet receptacle. Booths may also be ordered equipped with cutout switches if desired. A booth equipped with a switch located on the booth ceiling is shown in Fig. 7. Select cables from the types listed in Section C44.131, Telephone Booths, Supplies. **Rubber-covered cables other than the No. 18 high-temperature blower cable should not be used with the 4-type fixture.**

6.04 When electric service wires are connected to old-fashioned knob and tube work, it is desirable to have a ground wire run from a suitable building ground to the plug receptacle box cover. Do not use the telephone signaling ground for this purpose.

6.05 **Before connecting power cable of telephone booths equipped with a KS-14125 blower to the power-supply receptacle, remove the retaining block (used for shipping purposes) from the upper end of the blower. Replace and tighten wing nuts on the blower after removing the retaining block. Although later-type blowers are not equipped with shipping blocks, they must be checked before power is connected. Store block as covered in 11.12 (1).**

Power Receptacles

6.06 Where local regulations permit, the lighting equipment of telephone booths may be connected to power circuits as covered herein. Install all receptacles in accordance with 6.02.

6.07 Receptacles should be located approximately 87 inches above the floor and within a radius of 24 inches from either upper-rear corner. Where the 1- or 2-type booth is to be installed, the receptacle should be located 92 inches above the floor. In multiple installations the receptacle should be located near and just above an end where most practicable.

3-Wire Receptacle and Attachment Plug

6.08 The Hubbell 7189, 3-way flush-type plug receptacle or its approved equivalent, is grounded by a shunt from the unpaired terminal to the outlet box through the supporting lugs as shown in Fig. 3.

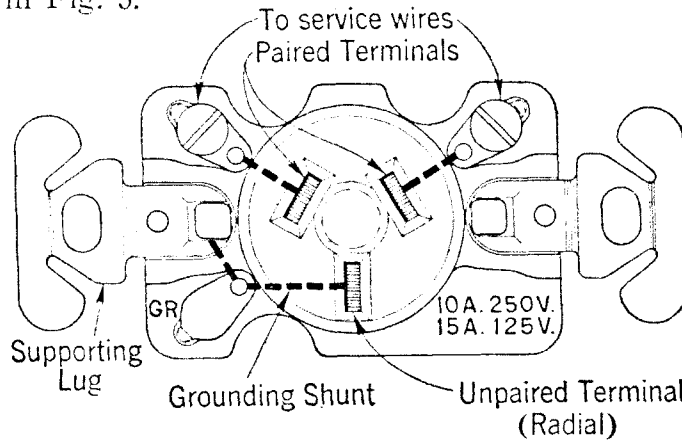


Fig. 3—3-Wire Flush-Type Receptacle With Grounding Shunt

6.09 Fig. 4 shows the 2-conductor armored flexible cable which should be used to connect the 3-way receptacle and the booth-lighting equipment.

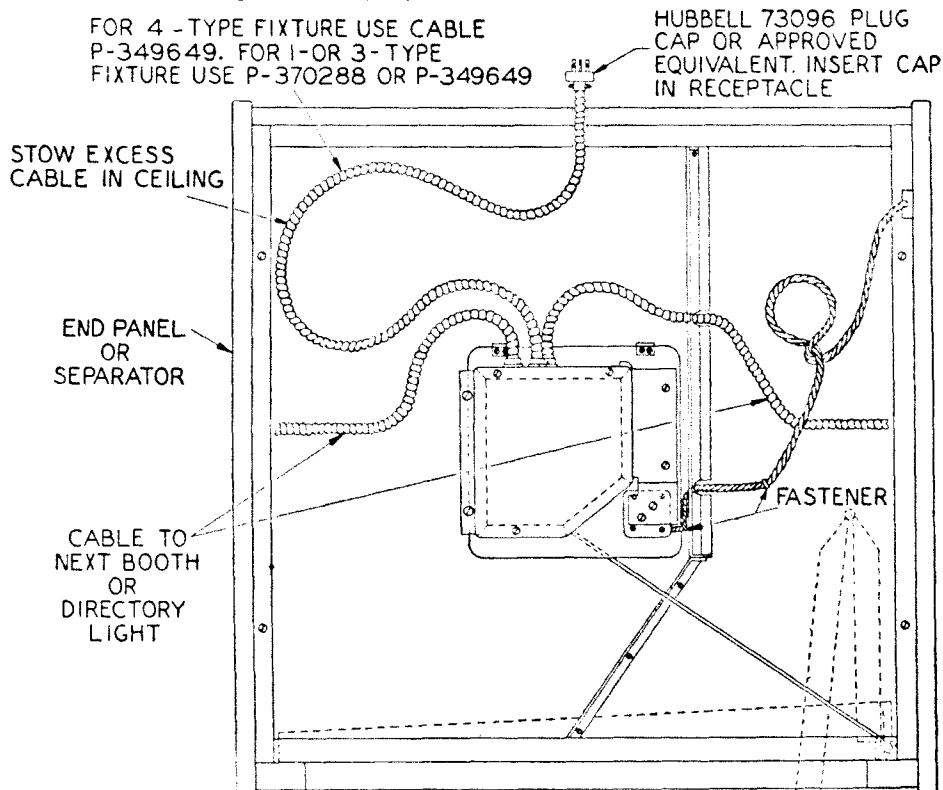


Fig. 4—Typical Installation for 3-Way Receptacle

2-Wire Receptacle and Attachment Plug

6.10 A parallel blade, single (not duplex) flush-type receptacle for 2-wire attachment plugs should be provided. Grounding is accomplished by terminating the ground-wire jumper, attached to the armor of the cable, under one of the attachment screws of the locking ring as shown in Fig. 5.

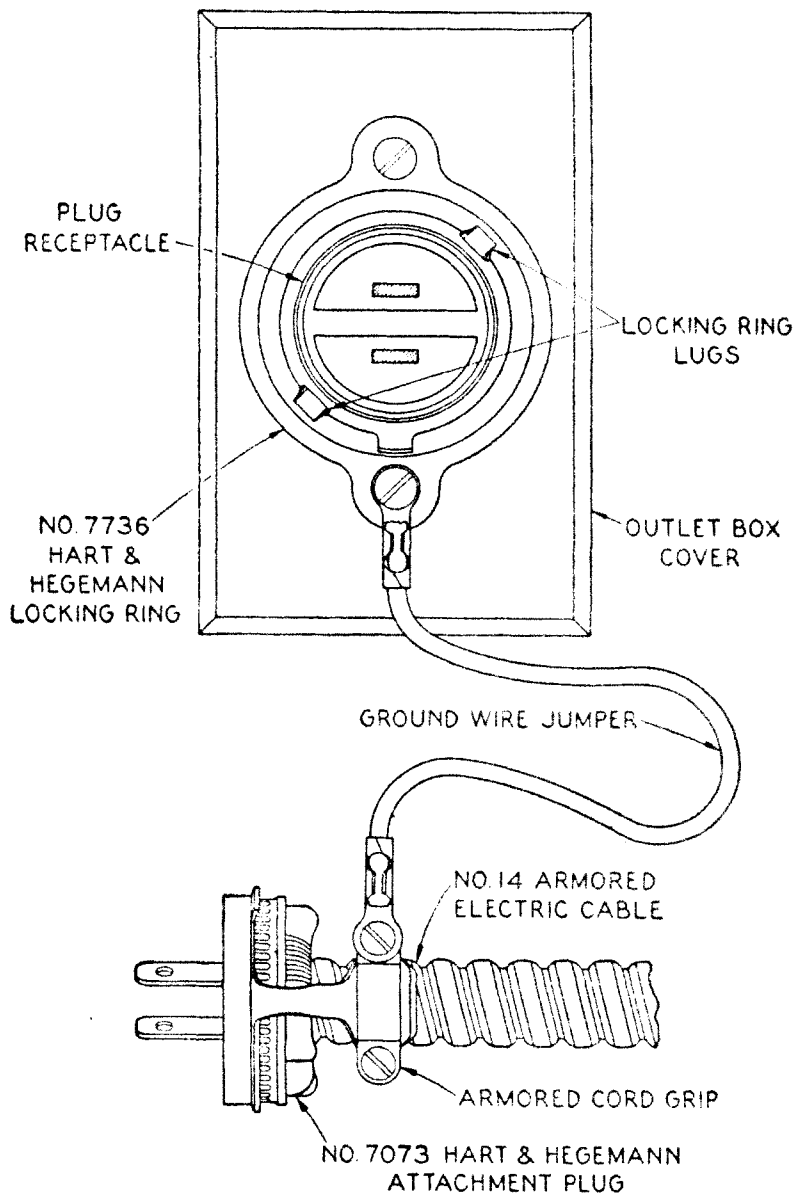


Fig. 5—2-Wire Receptacle and Plug

6.11 Connection between the 2-wire receptacle and the booth-lighting equipment is made with a 2-conductor armored flexible cable, the plug end of which is secured in the receptacle by means of a locking ring and locking-type plug. See Figs. 5 and 6.

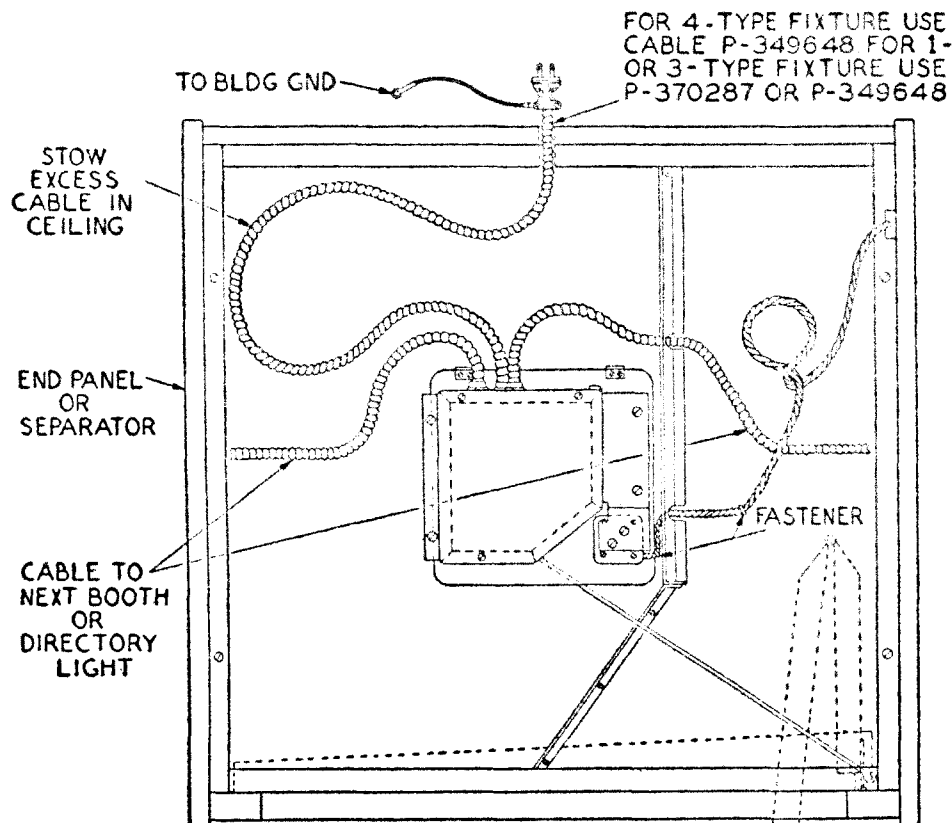


Fig. 6—Typical 2-Wire Cable Arrangement

6.12 In order to connect booth armored cable assembly to the plug receptacle, remove the screws in the receptacle cover plate and attach the locking ring to the receptacle with the two longer screws furnished with the ring. Remove and substitute the screws one at a time. Terminate the ground-wire jumper under one of the screws.

6.13 In a multiple installation, the plug receptacle should be located near an end booth. Lighting equipment of booths in a group must be connected together by interconnecting cable P-349647. One receptacle may be used to supply

electric-lighting current to a group of booths not exceeding ten in number. However, local regulations may require the installation of an additional plug receptacle where a multiple installation consists of more than six booths.

6.14 After observing instructions in 6.05, insert plug into receptacle. Test booth lamp socket for polarity as outlined in Part 9. Reverse plug, if necessary.

6.15 Lock plug in receptacle by turning the lugs on the locking ring until they slide over the plug flange.

6.16 Plug-receptacle arrangements provide a ready means for opening the lighting circuit, which should be done whenever it is necessary to work on booth or directory-lighting equipment. For built-in booths other arrangements should be considered such as the cutout switch described in 6.17.

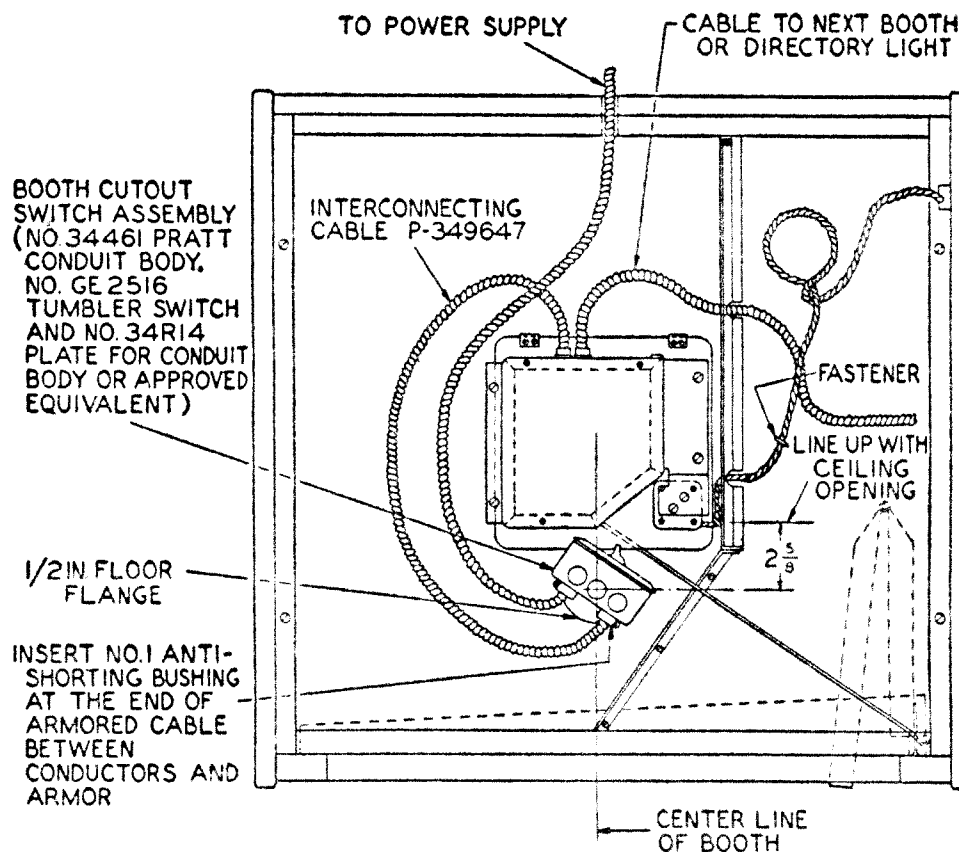


Fig. 7—Typical Cutout Switch Installation with 4-Type Light Fixture

Booth Cutout Switch

6.17 Where it is desirable to arrange one or a group of booths so that the circuit may be opened from within a booth, a cutout switch may be installed as shown in Fig. 7. A 1/2-inch floor flange is fastened to the top of the ceiling, and the switch box is fastened to it by means of a chase nipple through the middle knockout hole in the side of the box. The toggle of the switch is located so that it will be accessible from within the booth through the opened light fixture. In booths equipped with the 3-type light fixture, the switch should be placed immediately to the right of the fixture instead of at the front, to make the switch toggle accessible from within. In the latter case, the P-349715, 16-inch, low-temperature booth cable may be used in place of the P-349647 shown in Fig. 7.

7. CABLE CONNECTIONS AT LIGHT FIXTURES

7.01 **At the 3-type light fixture** make cable connections as shown in Fig. 8. Each cable shown is to be provided and connected only when required. When 3-wire cable P-370288 is used, its ground conductor (green) is automatically grounded to the fixture through its box connector.

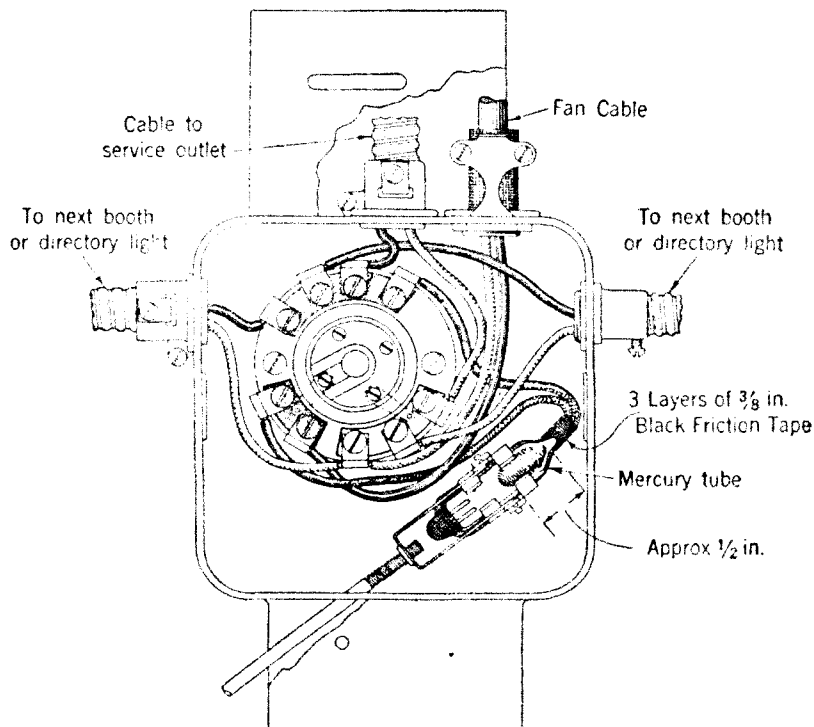


Fig. 8—3A Fixture Viewed From Within the Booth

7.02 **At the 4-type light fixture**, connections are made to the terminals as shown in Fig. 9. Each cable shown is to be provided and connected only when required. Spade terminals should be inserted squarely and to full depth of slot in order to provide maximum separation between terminals. When connected as shown in Fig. 9, the lamp operation is controlled by booth-door movement. To obtain continuous illumination in booth, connect red-strap lead from lamp socket to terminal 2 instead of terminal 1 on light-fixture terminal strip.

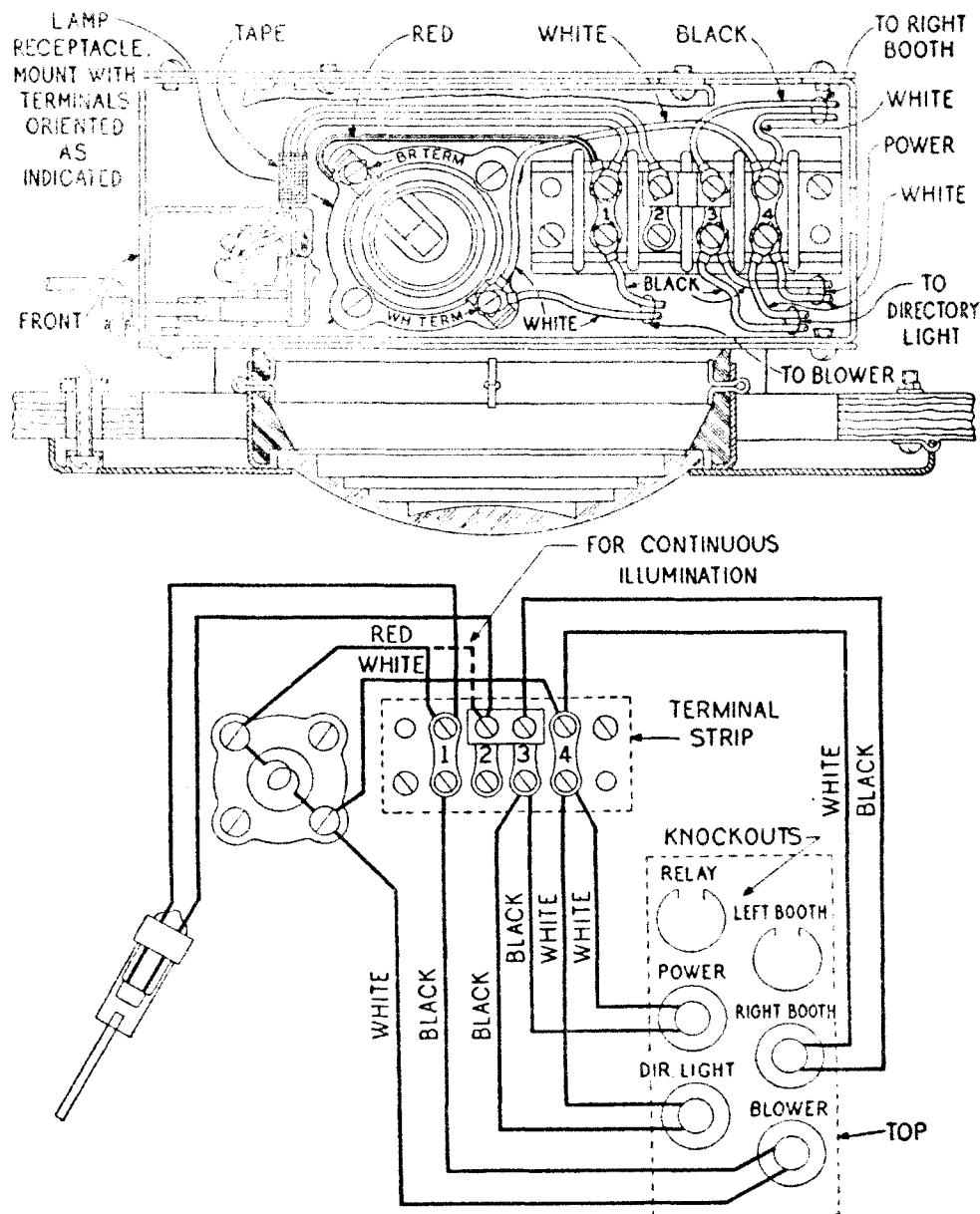


Fig. 9—4A Light Fixture for Four Cables

8. INSTALLATION OF 2-TYPE LIGHT FIXTURE (DIRECTORY LIGHTS) ON BOOTHS

8.01 When called for on the order, the booth will be delivered wired for a directory light. However, the light and shelf are added to the booth in the field to avoid being damaged in transit. Do not install a 2-type light fixture without also installing a directory shelf under it.

8.02 **Caution:** Make sure that the booth power cable is pulled out of the power receptacle before starting any electrical wiring.

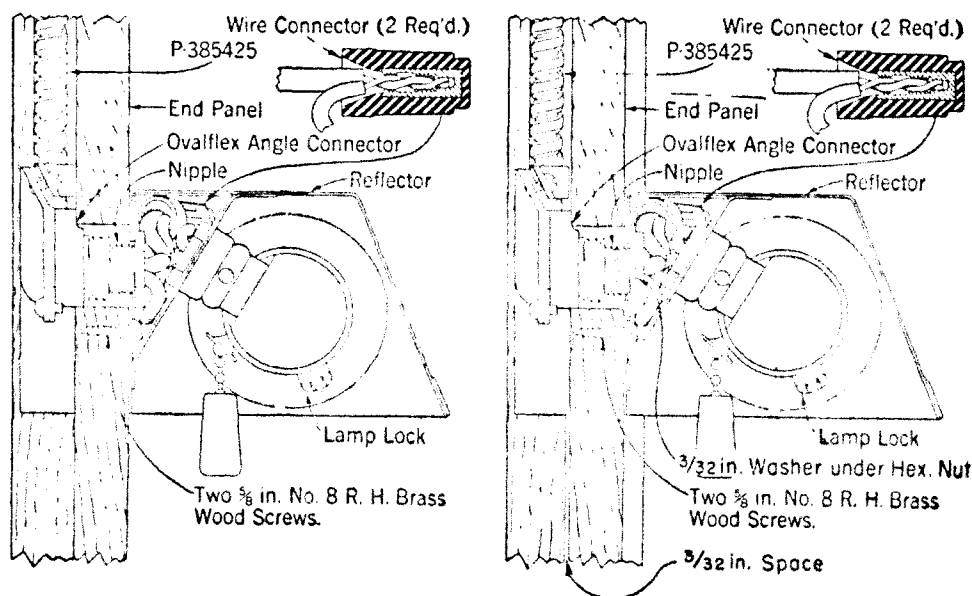


Fig. 10—Installation of 2-Type Light Fixture

8.03 At existing installations, drill a 1-inch hole for the 2B light fixture. If a 2D fixture is used, follow the instructions in Fig. 11 in order to cut a hole large enough to permit passage of the plug and the 90-degree connector attached to the cable. Remove end panel to facilitate drilling and cutting.

8.04 An inconspicuous center punch mark is located on the outside surface of the newer 61-type end panels to indicate the proper spot for drilling the mounting hole of the directory light fixture. The mark is approximately 1/16 inch in diameter and is located on the center line of the panel 60-5/16 inches above the bottom edge.

8.05 Make connections to the booth lamp receptacle as shown in Fig. 8 or 9.

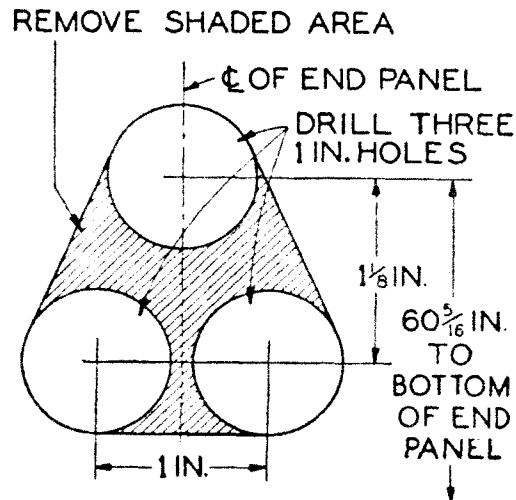


Fig. 11—Hole for 2D Fixture

9. TESTING POLARITY OF BOOTH-LIGHTING EQUIPMENT

9.01 Any locally approved neon testing devices may be used to satisfactorily determine which is the ungrounded wire.

9.02 The live side of the circuit (black wire) must be terminated on the center contact of each lamp socket. The grounded or dead side of the circuit (white wire) must be terminated on the shell or fixture side of each lamp socket. This is particularly important in the case of directory lights.

9.03 Make polarity tests as follows:

- (1) Test the lamp socket of the booth where the service wires are brought in to insure that the live side of the lighting circuit is connected to the brass-colored terminals of the receptacle, and the grounded side is connected to the other terminal.
- (2) Test all other lamp sockets to insure that the polarity is correct throughout the booth wiring.
- (3) Test to insure that ground has been continued to all of the cable armor.

9.04 To correct the polarity of a lighting circuit from a 2-wire plug receptacle, reverse the plug in the receptacle.

9.05 When incorrectly poled service wires are brought into a booth cutout switch, plug cutout, or to a 3-wire plug receptacle, the booth-lighting equipment must be left disconnected and arrangements made to have the agent correct the fault in the building wiring.

9.06 Polarity of booth-lighting equipment shall be corrected at point of reversal on the booth if the fault is in booth-lighting equipment.

9.07 Where ground is not properly continued to booth cable armor or both sides of lighting circuit are alive or grounded, lighting equipment shall be left disconnected until the fault is corrected as outlined in 9.05 or 9.06.

10. INSTALLATION OF ROTO-LOCK

10.01 Methods for installing the Roto-Lock in doors of indoor- and outdoor-type wood telephone booths at attended locations are illustrated in Fig. 12 and described in 10.02.

Note: Replace P-381074 (1-1/2 inch) door stop screws with 1-inch long wood screws (three required).

10.02 Install the Roto-Lock as follows:

- (1) Remove the guide pin and door stop to enable the booth door to swing out.
- (2) Drill and cut out mortise in booth header and door, observing dimensions in Fig. 12.
- (3) Mount male and female components flush with surface of door and header.
- (4) Viewed from the outside, the lock shall be assembled so as to engage when turned in a clockwise direction.

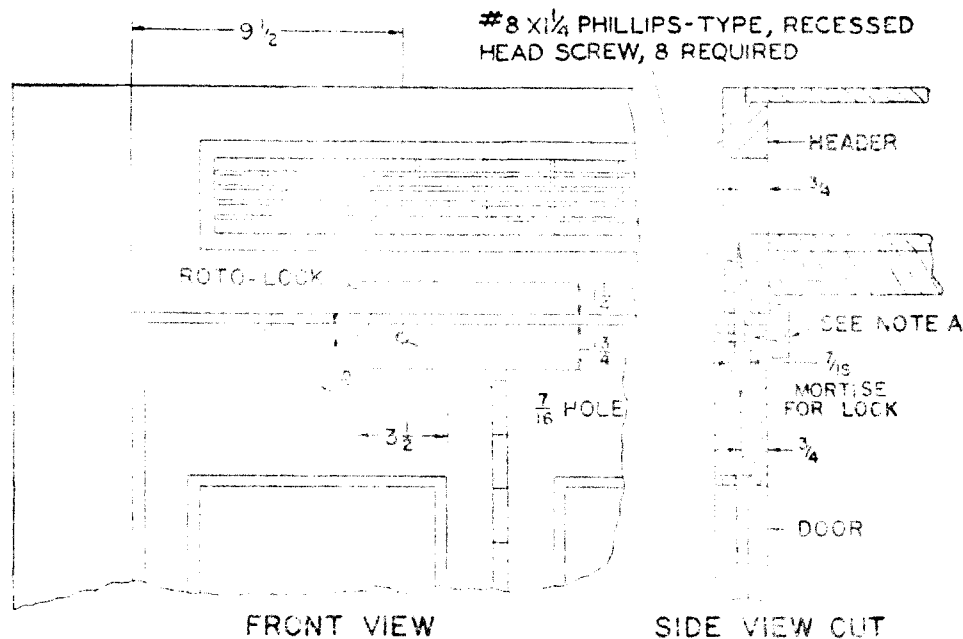


Fig. 12—Installing the Roto-Lock

11. CONVERSIONS, ADDITIONS, AND CHANGES

Booth Body and Accessories

11.01 Fasteners for booth parts and their locations follow:

<u>Booth Part or Fixture</u>	<u>Location in Booth</u>	<u>Fasteners</u>
167A Backboard	Rear-right corner. Top of backboard 63 in. from floor (without seat) and 52-1/2 in. (with seat)	Six 1/4 in. —20 x 1-5/8 in. hex head cap screws and 1/4 in. —20 tee nuts
KS-14123 Card Frame	See Fig. 13	Four 3/4 in. No. 8 FH, bright wood screws
Booth Cutout Switch or Plug Fuse Cutout	Top of ceiling as shown in Fig. 7	Two 1/2 in. No. 8 RH, blued wood screws
2-Type Light Fixture (Directory)	Centered on end panel. See 8.03 and 8.04	Two 5/8 in. No. 8 RH, brass wood screws
KS-8164 Venti- lator or KS-14125 Blower	Ceiling of booth over coin collector. See Fig. 13	Fittings furnished with ventilator and blower
Roto-Lock	See Fig. 12	Shown in Fig. 12
101T or 101U Seat	Left-rear corner with top of seat 20 in. from floor	Seven 1-1/4 in. No. 14 RH, blued wood screws. Four 1-1/4 in. —20 x 1 in. hex head cap screws and 1/4 in. —20 tee nuts
18A, 18C, or 18D Shelf	See Fig. 13	Six 3/4 in. No. 8 RH, blued wood screws
18E Shelf	See Fig. 13	Six 7/8 in. No. 8 Phillips- type OH, wood screws, zinc plated, and No. 8 countersunk washers nickel plated

Booth-lighting Equipment

11.02 **Caution:** In all cases disconnect the booth power cable or open the electric service switch and make sure that the booth-lighting circuit is dead before working on the electrical wiring.

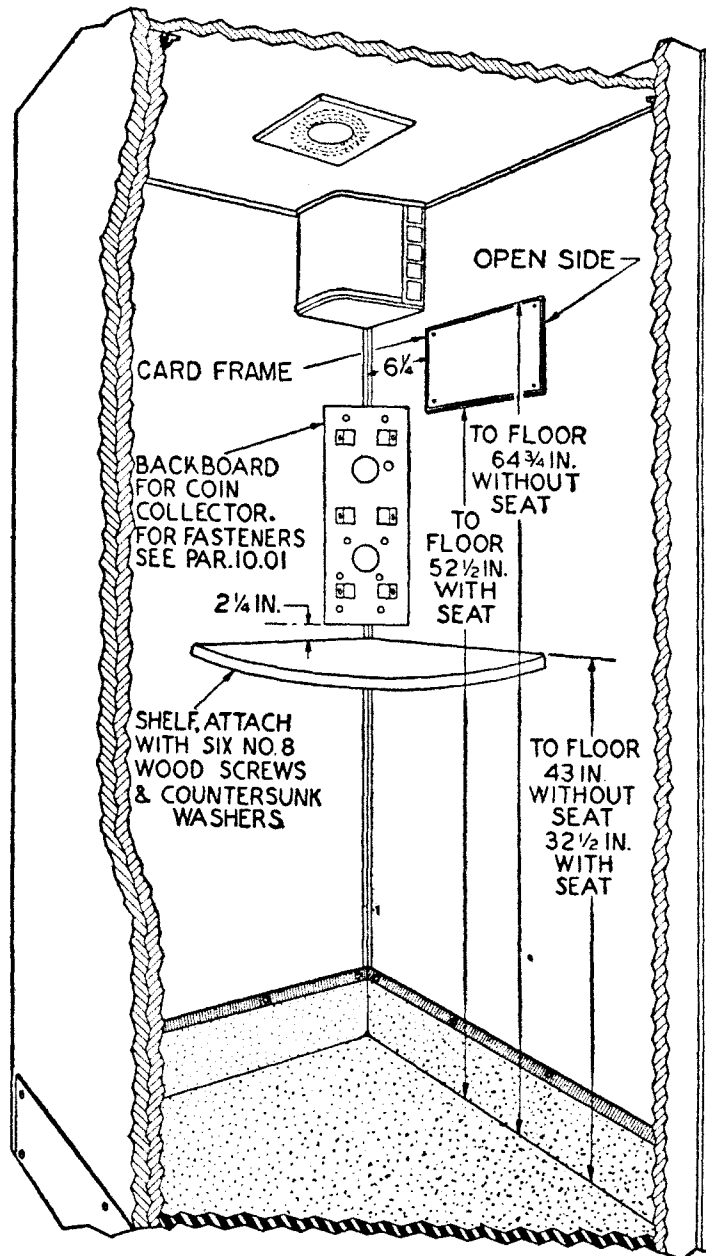


Fig. 13—Locating Booth Accessories

11.03 Where the addition of lighting equipment is required at existing booth installations, extension of electric service wires to booth should be arranged for on the same basis as covered in Part 6 of this section for new installation.

11.04 Where light fixture and assembly of the required type for making connection to electric service wires are found installed on booth, it requires only the connection of electric service wires. Where booth-lighting equipment assembly is not of the required type, remove existing assembly and install proper cable.

11.05 Where light fixture and the associated apparatus are not installed on booth, substitute a complete new ceiling assembly with its associated switch operating parts and cables, as required, and such apparatus as outlined hereinafter.

Installation of Ventilator

11.06 Install KS-8164 ventilator where provided in 5- and 6-type booths as shown in Fig. 14.

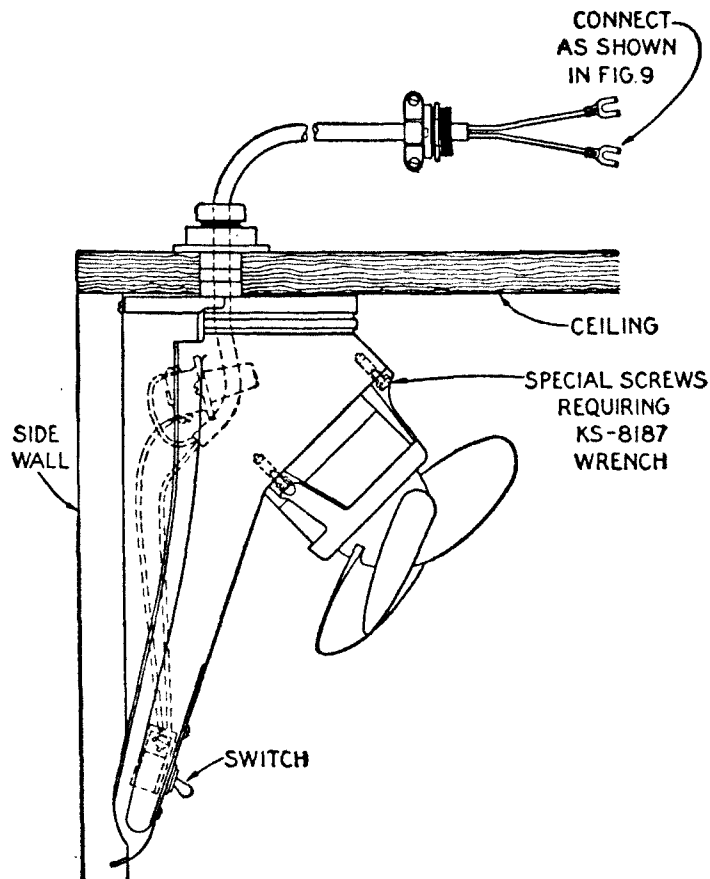


Fig. 14—KS-8164 Ventilator

11.07 If practicable, drill ceiling from inside of the booth. Locate 1-inch hole for the KS-8164 ventilator, 2-1/16 inches from rear-inner wall and 2-1/16 inches from side-inner wall as shown in Fig. 14. If the ceiling is metal lined, cut through the metal with a 1-inch hole saw, then drill the wood with a 1-inch auger bit.

11.08 If holes must be drilled from above, locate holes from inside of the booth as in 11.07. Then drill through ceiling with a small drill point (smaller than guide screw on auger bit). Using these guide holes the ceiling may be drilled from above. Be careful not to use too much pressure on the drill towards the completion of the drilling operation, otherwise the under surface of the ceiling will splinter around the hole.

11.09 Remove pipe bushing, nut, and washers from pipe stem (KS-8164 ventilator) as these parts cannot be passed through the 1-inch hole.

11.10 Pass ventilator cable upward through the 1-inch hole in ceiling and replace fittings on cable (being sure to replace in proper sequence washers, nut, and bushing on KS-8164 ventilator cable first).

11.11 A KS-8164 ventilator can be readily installed by passing a strong cord or wire downward through the 1-inch hole, tying it to the end of the fan cable and then pulling the cord or wire while lifting the ventilator upward into place. Put washers, nut, and bushing on cord or wire in proper sequence and tie to door handle. Replace washers and nut on pipe stem projecting through ceiling, leaving hand tight while checking from within the booth that the ventilator is in proper position in relation to both walls of the booth. Tighten nut and bushing, remove cord or wire, and fasten cable and connector at light fixture as shown in Fig. 8.

Installation of Blower

11.12 **At locations where the booth ceiling is accessible from the top** (with booth roof open) the KS-14125 blower may be installed, where specified, in 10- and 11-type booths as follows:

- (1) Remove wing nuts from the top of the blower assembly and remove the retaining block. This block will be found in the list 1 and list 2 blowers only. **At no time should the retaining block be removed from the booth but should be stored in the space above the booth ceiling for use when the booth is to be relocated or recovered.**

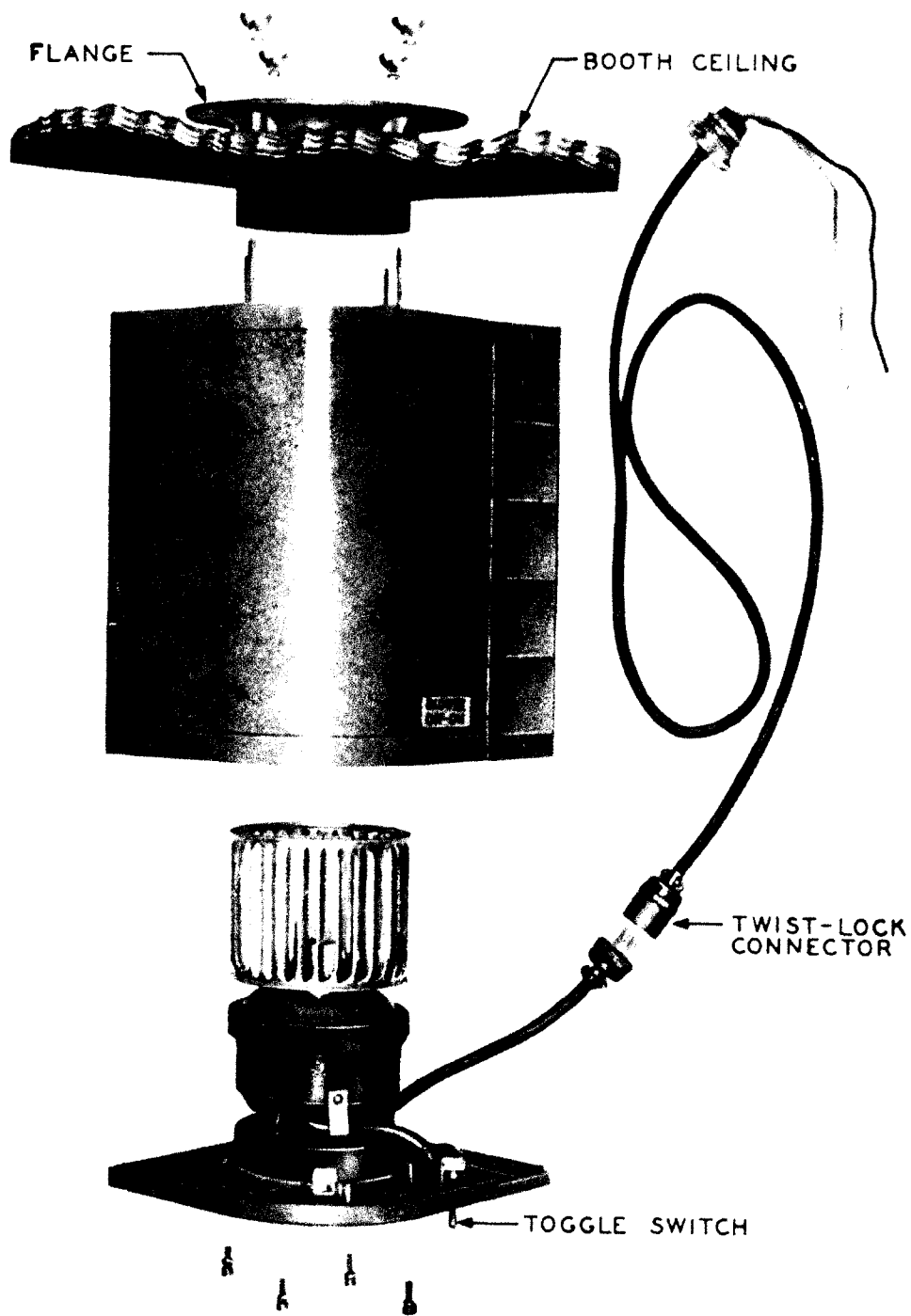


Fig. 15—KS-14125 Blower, Exploded View

- (2) Remove the intake tube of the blower assembly and lower it through the hole provided in the booth ceiling, resting the flange on the top side of the ceiling.
- (3) Disconnect the 8-inch assembly cable from the 40-inch extension cable by turning the twist-lock connector counterclockwise to release the locking plug from its socket.
- (4) Form the blower extension cable in the ceiling of the booth so that it rests in the notch of the metal-ceiling partition and drop the socket end of the twist-lock connector through the small opening in the corner of the booth ceiling. Connect the other end of the cable to the light fixture as shown in Fig. 9.
- (5) Remove the screws securing the cover at the bottom of the blower with a KS-8187 wrench and remove the cover and blower motor from the blower housing.
- (6) Hold the remainder of the assembly against the booth ceiling with the mounting studs extending through the holes provided in the flange and through the top side of the ceiling.
- (7) Reach one arm through this part of the assembly and secure the lockwashers and wing nuts in place.
- (8) Rest the remainder of the blower assembly on top of the coin collector to bring the plug end of the assembly cable within reach of the twist-lock connector hanging from the ceiling. Insert the plug into the twist-lock connector and **lock** together by turning clockwise.
- (9) Work the slack of the blower cable back up into the channel behind the blower housing while raising the assembly into place. Make certain that the excess cable does not interfere with the blower operation by **pulling** all of the slack into the space between the ceiling and the roof of the booth.
- (10) Reassemble the motor and cover to the blower framework.

11.13 At locations where the booth roof cannot be removed install the KS-14125 blower, where specified, in 10- and 11-type booths as follows:

- (1) Proceed as covered in 11.12 (1).
- (2) Remove the grille at the top of the front of the booth and pass the intake tube of the blower through the opening and drop into hole in ceiling provided for it.
- (3) Proceed as covered in 11.12 (3).

- (4) Reach through the ventilator opening and form the blower extension cable in the ceiling of the booth so that it rests in the notch of the metal-ceiling partition. Drop the locking plug through the small opening in the corner of the booth ceiling and pass the other end through a knockout in the light-fixture box. While holding this cable in place with one hand, place the locknut to secure the cable to the box from the underside of the light fixture with the other.
- (5) Connect the cable from the underside of the light fixture in accordance with Fig. 9.
- (6) Proceed as covered in 11.12 (5), (6), (7), (8), (9), and (10).

12. FINAL CHECK

12.01 Upon completion of every booth installation a final inspection should be made as follows:

- (a) **Booth** must be complete in all parts, clean, and free from burrs, sharp edges, projecting nail ends, screw heads, etc., which could present a hazard.
- (b) **Metal linings**, faceplate of light fixture, ventilator, blower housing, and switch operating rod should be free from grounds.
- (c) **Door** must fit properly and operate freely.
- (d) **Light and ventilator** should cut out when the door is opened approximately 13 inches. If booth light is controlled by a KS-9786 relay, check operation from attendant's PBX.
- (e) **Manual control switches**, where provided, and their associated equipment should be checked for operation.
- (f) Check blower or ventilator for noise.