INVENTORY AND
APPRAISAL
OF
EXCHANGE
TELEPHONE PLANT

SAN FRANCISCO
CALIFORNIA
DEC. 31, 1912

Vol. XIII

PHOTOGRAPHS

THE PACIFIC TELEPHONE
AND
TELEGRAPH COMPANY

PHOTOGRAPHS OF TELEPHONE CONSTRUCTION

In the photographs shown herewith, are portrayed and described some of the operations which are made in constructing the telephone plant in San Francisco. Most of these photographs were taken at various times, during the six months prior to May 1st, 1914, though some are quite old. All are of plant in the city of San Francisco.

In taking these pictures the aim has been to show average conditions as nearly as could be done. Here and there extreme cases have been cited, but only with intent to show truly all conditions under which work is done in San Francisco. The subjects are typical and cover the range of everyday operations of the Company when construction work is under way. The Table of Contents following indicates the grouping of these pictures into the various types of construction.

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THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY
INVENTORY OF EXCHANGE TELEPHONE PLANT, SAN FRANCISCO, CALIF.
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1

POLE LINE CONSTRUCTION

Geary St. near 33rd Ave.

Pole steps are uniformly spaced on 18" centers. Holes are bored with 5/8" bit to a depth of 4-1/2". The holes being bored in the picture are below the lowest iron step and are intended for the use of "climbing pins" in lieu of wooden steps. The rough appearance of the butt is accounted for by the fact that this pole is one recovered from the plant of the former Home Telephone Company. Such poles if too badly deteriorated are made useful by cutting off a proper portion of the butt.

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INVENTORY OF EXCHANGE TELEPHONE PLANT, SAN FRANCISCO, CALIF.

AS AT DECEMBER 31, 1912

2

Don

POLE LINE CONSTRUCTION

Geary St. near 33rd Ave.

Setting the pole. After the hole has been dug the first step, as shown in this picture, consists of raising the pole into position in the hole. Note the use and position of the pole jinny. As shown in the picture, the crossarms are usually attached on the ground before the pole is raised.

3

Don

POLE LINE CONSTRUCTION

Geary St. near 33rd Ave.

This picture shows the pole partly raised, using pike poles. The pole jinny has been advanced to a position closer to the butt. Note the aerial wire obstructions, in this case trolley feed wires which have been pulled to one side. Note also the foreman easing the pole into the hole.

4

on

POLE LINE CONSTRUCTION

Geary St. near 33rd Ave.

The pole has been set into position and is supported by pike poles. The men are tamping the earth firmly into place. Note the lineman in the background replacing the trolley feed wire on the insulator from which it was temporarily removed.

5

Don

POLE LINE CONSTRUCTION

34th and Ingalls St.

In this picture a pole is shown raised into position for conveniently bolting on the crossarms. It is supported on a temporary horse made of a cable crossarm and brace. Note that the top of the pole has been "roofed"; also that a gain has been cut for holding the crossarm firmly in place.

6

Don

POLE LINE CONSTRUCTION

34th and Ingalls Sts.

The cable crossarm is shown here in place and bolted to the pole shown in the previous picture. The lineman is driving the fetter drive screw which attaches the braces to the pole. Note the 4-groove porcelain insulators bolted to the end of the crossarm for holding aerial wire.

7

Don

POLE LINE CONSTRUCTION

34th and Ingalls Sts.

This is the same pole as shown in the preceeding picture, having been raised into position.

8

Don

POLE LINE CONSTRUCTION

Western Electric Company Pole Yard
De Fremery's Wharf

This is a general picture of the pole yard of the Western Electric Company where they maintain a stock of poles for the use of the Telephone Company. The poles in this yard are arranged in piles according to their lengths and sizes of tops and butts. These poles are selected stock and before acceptance by the Telephone Company are subjected to rigid inspection.

XIII-8.

9
Don

POLE LINE CONSTRUCTION

Sussex St.

Placing a head guy. The guy strand is being attached just under the second gain of the pole to be guyed and to the other about 8' from the butt. Note the groundman at the bottom of the distant pole pulling the guy strand taut, using for that purpose blocks and rope.

10

Don

POLE LINE CONSTRUCTION

Sussex Street

In this picture the head guy appearing in the preceeding picture, is shown completed. The cable messenger strand is here being drawn taut by the men at the distant pole. As this is done the guy takes up the strain of the messenger.

11

Don

POLE LINE CONSTRUCTION

24th Ave Bet. California & Clement

This is a general view of a pole line showing aerial cable. The cable terminal shown just below the cable crossarm on the pole in the foreground is a Western Electric Company type No. 14. Note the No. 17 B.&.S. twisted pair drop wires attached to the distributing brackets on the ends of the cable arm.


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BEFORE YOU
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GENERAL MOVING

12

Don

POLE LINE CONSTRUCTION

17th Ave. and Geary Streets

This picture shows an anchor guy at the end of an aerial cable lead. Note the wooden box protection at the base of the guy and the use of strain insulators in both the guy strand and the messenger strand as required by city ordinance.

13

Don

AERIAL CABLE CONSTRUCTION

Oakdale Avenue

Stringing aerial cable. The linemen are here shown placing cable rollers on the messenger strand. Note the 1" rope threaded through the rollers preparatory to pulling the cable.

14

Don

AERIAL CABLE CONSTRUCTION

Oakdale Avenue

Pulling a 300-pair, 19 gauge cable. Note the cable reel in the foreground with the end of the cable just entering the 6th roller. The cable is being pulled by the two horse team shown in the background. This cable consists of 606 wires, is 2-11/16" in diameter and weighs 7.9 lbs. per linear foot.

L5

)on

AERIAL CABLE CONSTRUCTION

Oakdale Avenue

The cable is here shown in place. The lineman riding on the removable carriage is removing the rollers as he comes to them and "clipping" the cable, that is, attaching the metal hangers and fastening them to the messenger strand with the crimping tool. The weight of this cable is such that the attaching of these hangers is a difficult matter.

16

Don

AERIAL CABLE CONSTRUCTION

Mission St. Viaduct

The splicer is shown at work on a 300-pair, 19 gauge cable. He is here cutting and removing the lead sheath from the end of the cable so as to properly separate the wires for splicing. The helper is shown on the ground melting the paraffine with which to boil out the exposed wires, in this way minimizing the possibility of moisture entering the paper insulation. Note the heavy guys attached to the pole and the use of the strain insulators required by city ordinance.

17

Don

AERIAL CABLE CONSTRUCTION

Mission St. Viaduct

The splicer is here shown boiling out the wires. Under the parts boiled out is placed a drip pan to catch the hot paraffine that runs off as it is poured by the splicer over the wires.


LONDON LIFE

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Don

AERIAL CABLE CONSTRUCTION

Mission St. Viaduct

The actual operation of splicing the 606 wires contained in this cable is here shown nearly completed. Note the head band receiver on the splicer's ear used for testing all spliced pairs through to the central office. This splice was made in a working cable, that is, one to which working telephones are connected, making it necessary to test separately each of the 303 pairs to be spliced. Note the splicer's tarpaulin for use in rainy weather or as a protection to the splice at night if not completed.

19

Don

AERIAL CABLE CONSTRUCTION

Mission St. Viaduct

The splice is here shown completed and the splicer is about ready for the second boiling out, after which he slips the lead sleeve over the completed splice. The sleeve is shown to the right hanging on the cable just behind the trolley pole. This second boiling out is necessary in order to drive out all the moisture which may have collected in the paper insulation during the long time interval which has elapsed since the splicer started work. Note that the helper is reheating the paraffine.

20

Don

AERIAL CABLE CONSTRUCTION

22nd Ave. and California Sts.

Here is shown a 4-way aerial cable splice (lower) and a 3-way splice (upper). Note that the cables are hung with metal rings while the splice in each case is hung with marlin. At the extreme right may be seen the end of a section of aerial cable moulding which is used to protect the aerial cable where it crosses over trolley wires.


FRUITS
POULTRY

21

Don

AERIAL CABLE CONSTRUCTION

Stockton and Bush Sts.

This picture shows temporary aerial construction over Stockton and Bush Streets during the construction of the Stockton Street tunnel, and is here used to show at close range two standard forms of cable construction using metal and marlin hangers. The topmost cable on the left has marlin hangers. Attention is called to the pile of 6-chamber vitrified clay conduit which is to be used in restoring the underground system in Bush Street upon completion of the tunnel.

22

Don

AERIAL WIRE CONSTRUCTION

Broadway and Steiner Sts.

Here are shown three 16-pin crossarms carrying No. 14 N.B.S. copper wire circuits. The pole carrying these circuits is called an "underground" pole, that is, a pole at which terminates a subsidiary duct and cable. Extending from the main underground conduit system on the opposite side of this pole just above the crossarms will be seen the terminal box in which the subsidiary cable terminates, and above that the platform for the men when working in this terminal. The connection between the underground cable and the open wire is made with No. 18 twisted pair bridle wire connecting at one end with the terminal and at the other with 7-A or similar line fuses which in turn connect with the aerial wire. From this underground pole may be seen an aerial cable extending to the pole at the left. This is an Okonite cable and terminates in the small terminal box shown at the left of the second pole. From this latter terminal bridle wires connect with the aerial wire circuits on the 20-knob crossarm above. Note that this latter lead is at right angles to the one first mentioned.

23
Don

AERIAL WIRE CONSTRUCTION

Webster and Jackson Sts.

Of particular interest in this picture is the method of arranging the crossarm for attaching the drop wires. The construction of the top crossarm is known as "T" arm construction.

24

Don

AERIAL WIRE CONSTRUCTION

Pacific Ave. & Huron St.

Placing drop wires. The first step in placing a drop wire is here shown, that of picking out and testing with the wire chief in the central office the particular pair of the cable to which is to be connected at this terminal, the drop or service wire. The terminal is here shown open. Note the lock nuts to which the wires are to be connected; also the bridle rings on the crossarms through which the wire will be strung. Wires from outside are connected to wires in cables only through "terminals".

25

Don

AERIAL WIRE CONSTRUCTION

Sickles Ave. & Huron St.

The linemen on the poles and the foreman on the ground are here shown stringing a drop wire between the two poles and thence to the store shown in the next picture. Note the 4-groove insulators on the end of the cable crossarm to which the drop wire will be attached.

26

Don

AERIAL WIRE CONSTRUCTION

Sickles Ave. & Huron St.

The men are here shown making the connection to the subscriber's premises. Note that the drop wire has been fastened at several points along the building just above the store window. The man at the foot of the ladder has in his upraised hand the protective fuses which are always used on such installations.


THIS STORE WILL BE OPENED SAT
MAR 7TH AS A FIRST CLASS
GROCERY
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IMPORTED ITALIAN GROCERIES

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Don

AERIAL WIRE CONSTRUCTION

Alley off of Brannon St. bet. 3rd and 4th Sts.
Looking North.

Here is shown a distributing pole in an alley, a terminal, type No. 8 W.E.Co. at the top of the pole, a double 16 pin crossarm and twisted pair drop wires extending in various directions. The arrangment of steps on poles is clearly shown. The poles in the background are plant of the former Home Company.

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Don

AERIAL WIRE CONSTRUCTION

Quincy Place

A detail view of the top of a distributing pole in an alley, showing a lateral cable coming from the underground, strapped to the side of the pole and covered with a protective wooden moulding. A 50-pair, No. 8 W.E.Co. terminal, a 16-pin double crossarm, and No. 17 copper steel and No. 14 copper drop wires are shown. This is typical of distributing pole construction within blocks.


HELVETIA
HOTEL

29

Don

AERIAL WIRE CONSTRUCTION

Drop wagon equipped for the field.

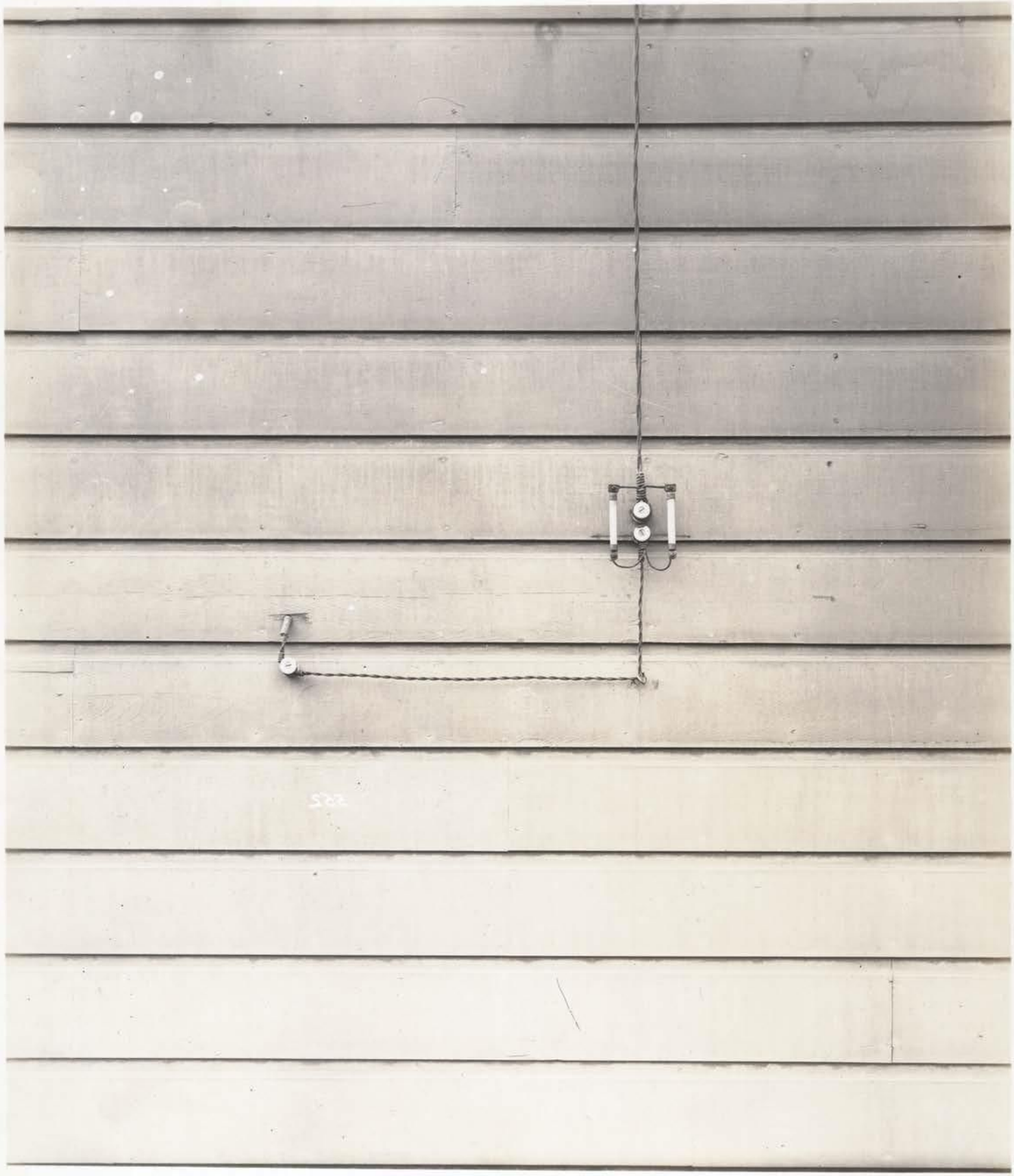

EPHONE AND TELEGRAPH CO.

30

Don

AERIAL WIRE CONSTRUCTION

Typical drop wire construction on the sides of buildings, using twisted pair copper wire. Note the compact arrangement of fuses and attachments; also the circular loom used at the entering point to the building. The hole for this loom is bored with an upward angle to prevent water entering.



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Don

AERIAL WIRE CONSTRUCTION

Typical drop wire construction on the side of building, using weatherproofed iron wire.

METHOD OF CONNECTING LINE FUSES TO DROP LEADS

32

Don

UNDERGROUND CONDUIT CONSTRUCTION

Manhole at Pacific and Broderick Streets
Looking North.

This picture illustrates the method of constructing concrete manholes, in this case replacing a small manhole (already removed) with a larger in the same location. Note the 6-duct conduit consisting of two fibre pipes above and one 4-chamber vitrified clay duct below; also round and square conduit plugs. The two lowest ducts contain main underground feeder cables. It is of particular interest to note that these two cables must be cut and a short piece spliced into each to allow for the necessary placing and training along the walls of the new manhole.


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UNDERGROUND EXTENSIONS

33
Don

UNDERGROUND CONDUIT CONSTRUCTION

Manhole at Pacific and Broderick Streets
Looking South

This view, from the opposite direction to that of the preceeding picture, brings out the not unusual obstructions encountered in such work. The obstruction here shown is a 12" water main. The excavation for this manhole has been completed. Note the shoring, that is, planking placed to prevent the earth from caving in.

XIII - 33

Don

UNDERGROUND CONDUIT CONSTRUCTION

Manhole at Pacific and Broderick Streets

Showing the forms in place and the concrete being tamped for the side walls. The men on the right have just finished shoveling a batch of concrete. Note the wagons and teams for hauling away the surplus earth and the old broken up concrete.


THE PACIFIC TELEPHONE AND TELEGRAPH CO
UNDERGROUND EXTENSIONS

35

Don

UNDERGROUND CONDUIT CONSTRUCTION

Manhole at Pacific and Broderick Streets
Looking North

The walls are here shown completed. Concrete to a depth of 4" has been placed as a part of the roof; reenforcing strand 7/16" in diameter is now being placed. Over this will be placed another 4 inches of concrete. The bricks on end in a circle are, in this particular manhole, used in lieu of a wooden form which has been broken, to outline the circular entrance to the manhole. These bricks (forms) are removed before the concrete sets. The inside of the opening is plastered smooth with cement and the bricks laid flat on top of the roof in a circle around the entrance. This forms a collar on which the manhole entrance casting will be placed.


PACIFIC TELEPHONE AND TELEGRAPH CO
NDERGROUND EXTENSIONS

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Don

UNDERGROUND CONDUIT CONSTRUCTION

Manhole at Pacific and Broderick Streets
Looking South

The concrete work has been completed and the manhole casting set. The 27" cover is shown to the right. These castings, including the cover, weigh on an average of 670 lbs. each. Note to the left the boiler iron plate on which the concrete was mixed as required by city ordinance. The opening made on the street for this manhole is now ready for the pavement. Note the surplus earth which must be hauled away.

XIII - 36.


THE PACIFIC TELEPHONE AND TELEGRAPH CO.
UNDERGROUND EXTENSIONS.

37

Don

UNDERGROUND CONDUIT CONSTRUCTION

Ashbury and Frederick Streets

Gadding and removing asphalt pavement preparatory to excavating the trench. The asphalt is carefully removed in slabs to be later used for temporary repaving until such a time as the permanent pavement can be laid.

XIII-37

37

38

Don

UNDERGROUND CONDUIT CONSTRUCTION

Ashbury and Frederick Streets

Breaking up the concrete pavement base and excavating the trench. Note that the asphalt has been removed in large slabs and piled to one side.


TELEPHONE AND TELEGRAPH CO.
GROUND EXTENSIONS

39

Don

UNDERGROUND CONDUIT CONSTRUCTION

Ashbury and Frederick Streets

The trench is about completed ready to lay the conduit. Note the curve in the trench made necessary to avoid or minimize obstructions.

XIII - 39


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UNDERGROUND EXTENSIONS

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Don

UNDERGROUND CONDUIT CONSTRUCTION

Sutter and Leavenworth Streets,

Showing the construction of a "tunnel" under street railway tracks.

XII - 40

40

41

Don

UNDERGROUND CONDUIT CONSTRUCTION

Bush St. between Stockton and Monroe Sts.

Here is shown an extreme case in conduit construction. Note the many obstructions, both parallel with and directly across the street. Conduit construction under such conditions is most expensive, especially so in this instance where rock formation exists. Note the cable splicer's tool cart in the right background.

XIII-41


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58 SUTTER ST. - HOLBROOK BLDG.

42

Don

UNDERGROUND CONDUIT CONSTRUCTION

Bush Street at Stockton

Showing an example of rock formation encountered in some sections of the city. This picture is of interest also as showing some of the unusual construction made necessary by reason of the Stockton Street tunnel.

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Don

UNDERGROUND CONDUIT CONSTRUCTION

Polk Street Looking North from Broadway

Four duct creosoted wood conduit in place. Note the protective creosoted wood planking on top. Similar planking is placed underneath as a base.

XII-43

44

Don

UNDERGROUND CONDUIT CONSTRUCTION

Polk Street Looking North from Broadway

Excavation for manholes, showing lay up of ducts in the trench.


AND
STEAM

45
Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

A load of cable reels containing cable. Each of these reels weighs over 4000 lbs. Note the heavy two horse dray necessary for this purpose.

XII-45 45A


WELLS FARGO &
EXPRESS
WESTERN ELECTRIC CO.
THE PACIFIC TELEPHONE AND TELEGRAPH CO.

45

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Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

Pumping water from the manhole preparatory to hauling the cable. This is always done in the low lying sections of the city and in all other sections during the rainy season. The particular manhole shown in this picture fills at high tide. Instead of a hand pump for this work, engine driven apparatus is sometimes used.

47

Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

Jacking up the reel of cable so that it will revolve. The laborers are removing the lagging at the same time. Note the sectional rods and fish wire in the foreground which are used for "rodding" the ducts. The operation of rodding a duct consists of pushing a mandrel through the duct ahead of the sectional rods, after which the duct is threaded with the wire. This wire is then used for pulling in the wire hauling rope.

XIII - 43

47

48

Don

UNDERGROUND CABLE CONSTRUCTION

/ The Embarcadero

This picture shows the wire serving which has been placed on the end of the cable, with the swivel attached. To the swivel is attached the wire hauling rope. As this serving takes the entire strain, it is so placed as to firmly grip the cable during the operation of hauling. Note that the end of the cable is swaged smaller to avoid fouling on minor obstructions in the duct.

XIII-48

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Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

The cable is here shown ready to enter the manhole. Note that one man is stationed at the hole to guide the cable while the other steadies the reel and prevents the cable from slacking off.


WESTERN ELECTRIC CO
89843

X
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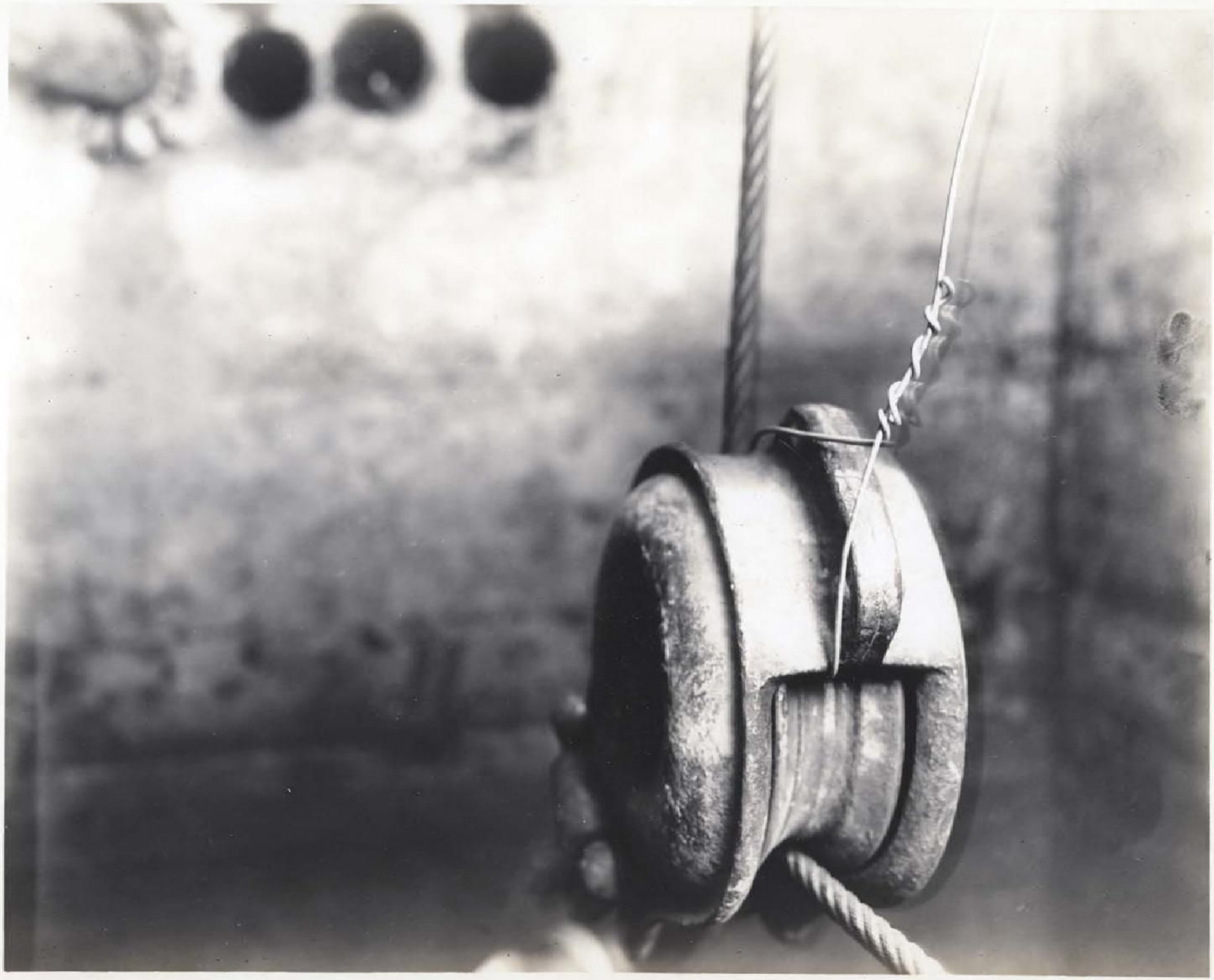
Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

Here is shown the sheave block attached to an iron called the pulling in iron, which is permanently imbedded in the end of the manhole for this purpose. This sheave block is placed in the manhole toward which the cable is to be drawn. The wire rope connects directly to the drum of the winch shown in the next picture.

XIII -50



50

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Don

UNDERGROUND CABLE CONSTRUCTION

The Embarcadero

The hand power winch with which the cable is being hauled is here shown. Four men are usually required to operate this winch with an extra man to take care of the slack rope as it is unwound from the drum. The cable is hauled through the duct with this device at a speed of approximately 10 ft. per minute.

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Don

UNDERGROUND CABLE CONSTRUCTION

Bush Street near Hyde Looking West

Underground cable is here being pulled in with a motor truck which is seen in the distance.

55

Don

UNDERGROUND CABLE CONSTRUCTION

Hyde St. bet. Sutter and Bush Sts.

Showing the truck in operation. With these trucks the cable is pulled in with a speed of approximately 40 ft. per minute.

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Don

UNDERGROUND CABLE CONSTRUCTION

Bush Street and Mary Lane.

Pulling in a 600 pair, 22 gauge cable.

XIII-54

55

Don

UNDERGROUND CABLE CONSTRUCTION

Bush Street and Mary Lane.

The cable is here shown entering the manhole. Note the pulling in irons; also the obstruction encountered in constructing this manhole as evidenced by the overhanging ledge in the upper right hand corner. Note also the ring on the cable in the lower left hand corner. On this ring is stamped the necessary information for identifying this cable.

XIII-55

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Don

UNDERGROUND CABLE CONSTRUCTION

Bush Street and Mary Lane.

The free end of the cable has been brought into the manhole and is now being bent and trained along the walls. This is a rather difficult operation with a 600-pair cable such as shown. A fair example of this training is shown immediately above the workers. The length of cable to which this is to be spliced appears in the extreme upper right hand corner supported by the small rope. The splice when completed will hang on the part of the wall shown in the extreme upper right hand corner. Note the cables between the workmen across the center of the manhole. This cable it has been necessary to temporarily remove from its position on the wall to allow for the hanging of the new cable.

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Don

UNDERGROUND CABLE CONSTRUCTION

Bush Street and Mary Lane.

A 600-pair cable splice in process. There are 1212 wires here to be brought together and spliced. The operation gone through by the splicer in splicing each pair is indicated in the picture following. As here shown the splice is partly completed and the splicer is seen slipping a pair of paper sleeves over a pair of cable wires. An outline of the various operations performed by the splicer is given in the description of the picture following. It is interesting to note the splice in the cable immediately above that on which the splicer is working. This is also a 600-pair cable and the wires of the new splice must be brought to within the same compass as the completed splice above. Note just over the top splice, the imprint of the wooden form used in constructing the manhole. This is an indication of a good mixture of concrete.

UNDERGROUND CABLE CONSTRUCTION

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Don

This picture shows the various steps in the operation of splicing a pair of wires in cable.

1. The ends are brought together and lapped sufficiently to give the necessary wire for making the twist.

2. The wires are separated, the paper insulation removed, and the paper sleeves which are used to insulate the bare wires of the splice are slipped over one set of wires. The paper sleeves shown in the picture are 3" in length.

   The manner in which a 600-pair cable is coded so that particular groups of wires in each cable may be picked out, is interesting.

   The 600-pairs of wires in such a cable are divided into six groups of 100 pairs each. Each pair of wires in a group has a particular color combination designating that group as follows:

   First group, red and gray.
   Second group, blue and gray.
   Third group, orange and gray.
   Fourth group, green and gray.
   Fifth group, red and blue.
   Sixth group, red and green.

   In certain of these groups are placed extra pairs as a guarantee of 600 good pairs in each cable

3. The wires having insulation colors alike are then spliced by twisting together the bared

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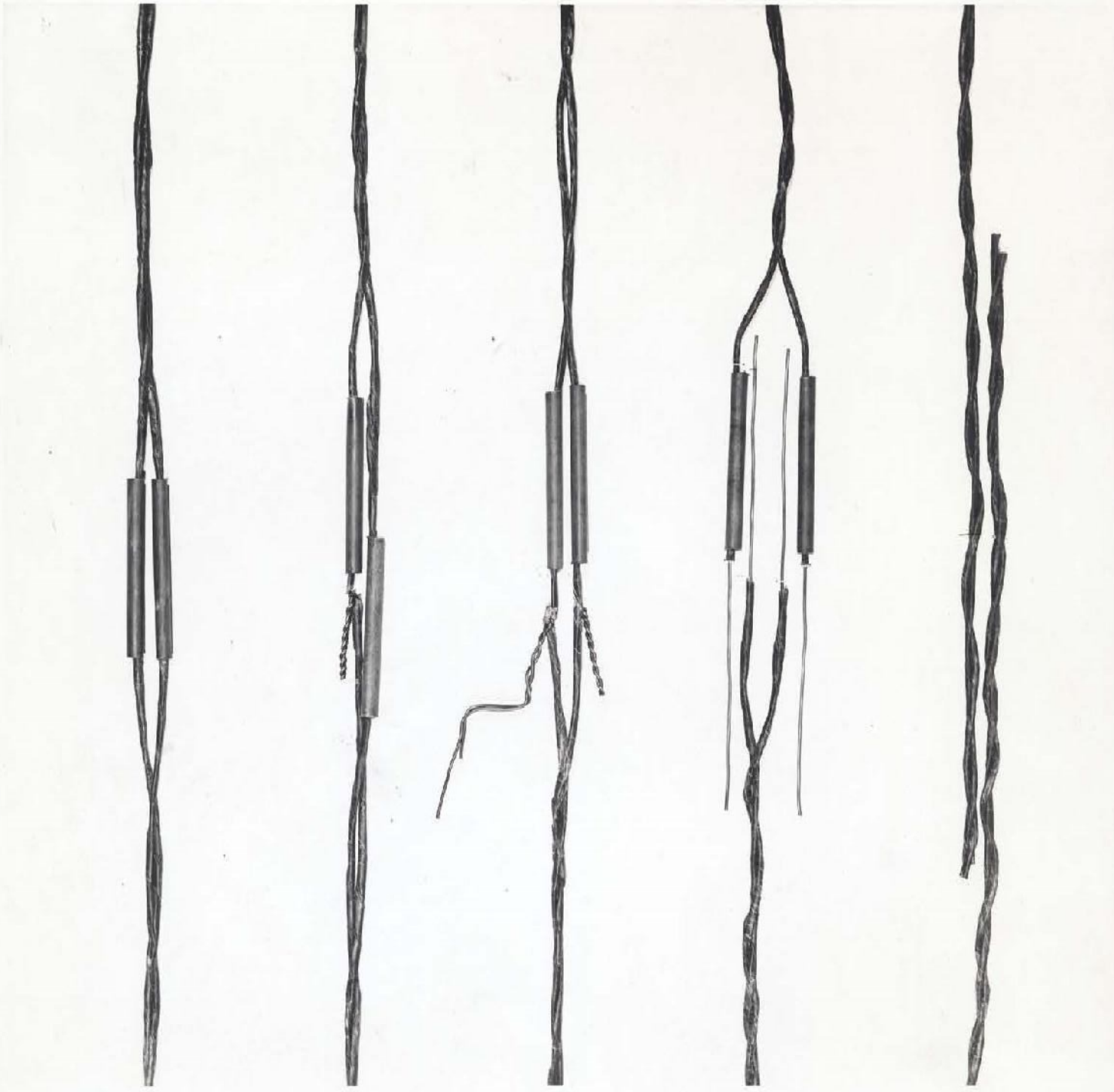
Don

ends. In this operation it is of utmost importance that the paper insulation from each side of the twist be caught into, at least, the first turn. This is necessary to prevent the insulation from pulling apart at the joint. In actual practice the splicer in twisting wires together makes a sort of crank out of the wires as indicated in the picture and more readily makes the twist in that manner.

4. The next operation consists of snipping off the loose ends of the wires and slipping over the sleeve.

5. This shows the pair spliced as it appears in the completed cable splice.



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Don

UNDERGROUND CABLE CONSTRUCTION

Franklin Office

Central Office pothead splice. This picture shows a 600 pair, cable brought into the central office from the underground system through ducts in the floor. Above are seen three 200 pair, silk and cotton insulated type "G" cables, which are connected with the main distributing frame above. This picture, the first of the series on this splice, was taken December 9, 1913, at 10:15 A.M.

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Don

UNDERGROUND CABLE CONSTRUCTION

Franklin Office

The wires in the 600-pair cable have been separated in groups according to the color code. The 200-pair cables similarly coded have been likewise separated. Note the lead sleeve which the splicer has slipped on the 600-pair cable and now resting on the floor. This picture was taken December 10, 1913 at 4:15 P.M.

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Don

UNDERGROUND CABLE CONSTRUCTION

Franklin Office

300 pairs of the 600-pair cable have been spliced, that is, the core and second and third groups immediately surrounding the core. This picture was taken December 11, 1913, at 2 P.M.

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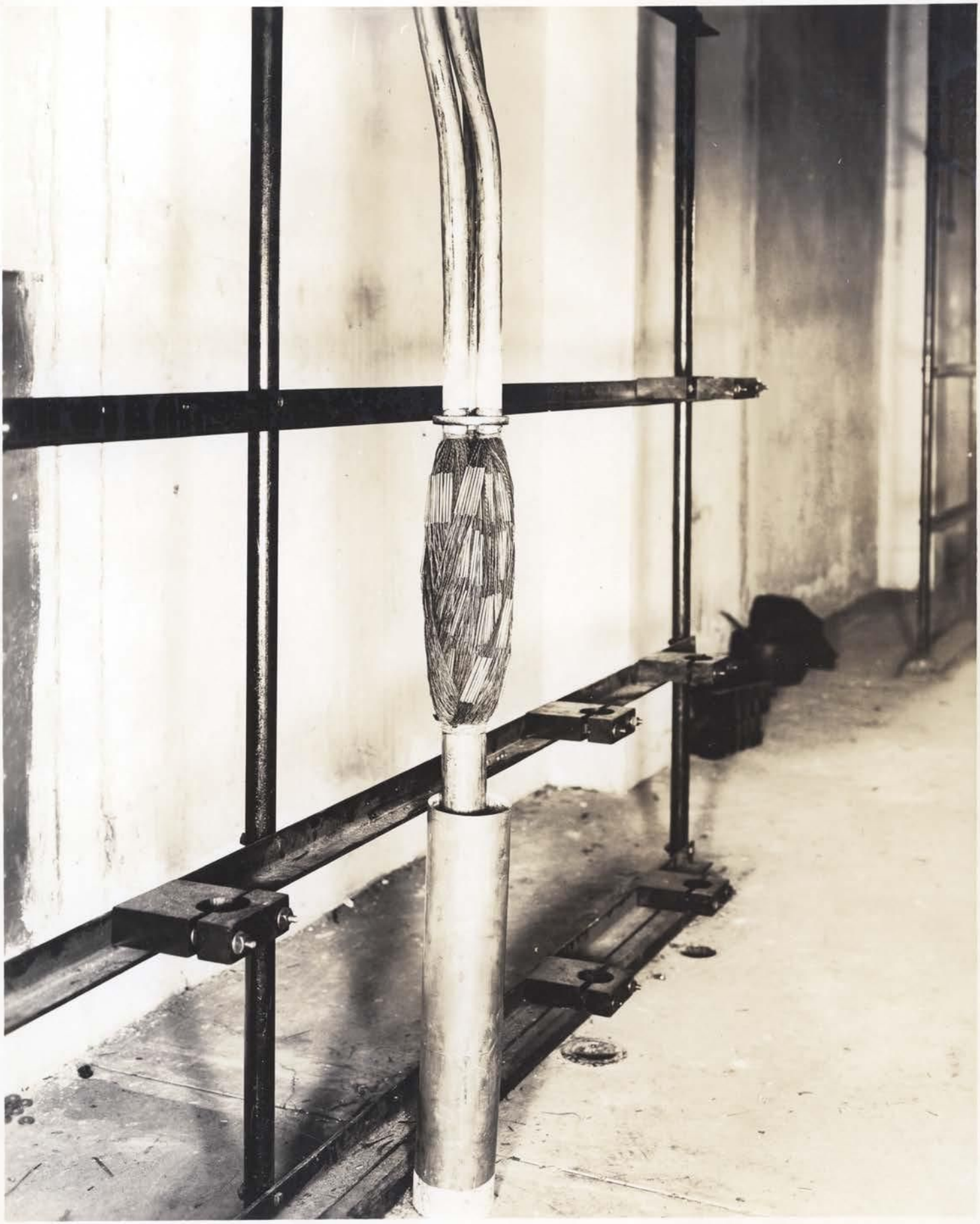
Don

UNDERGROUND CABLE CONSTRUCTION

Franklin Office

The actual splicing of the wires has been completed and the splice is ready for the final boiling out, after which the pothead sleeve will be raised into place. Note the perforated cap shown just above the splice. The lead sleeve is brought into position with its top just above this perforated cap which then serves as a base on which to float the solder used in sealing the top of the splice. The lead sleeve is soldered to the 600-pair cable with a wiped joint, after first swaging the lower edge of the sleeve so that it fits closely around the cable sheath. This picture was taken December 12, 1913, at 10 A.M.



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Don

UNDERGROUND CABLE CONSTRUCTION

Franklin Office

The pothead is here completed and strapped to the supporting rack. Note the ducts in the floor through which other cables will later be brought. This picture was taken December 13, 1913, at 9 A.M. The total time for the splicer and his helper in doing the work shown in this series of pictures was 33-1/2 hours.

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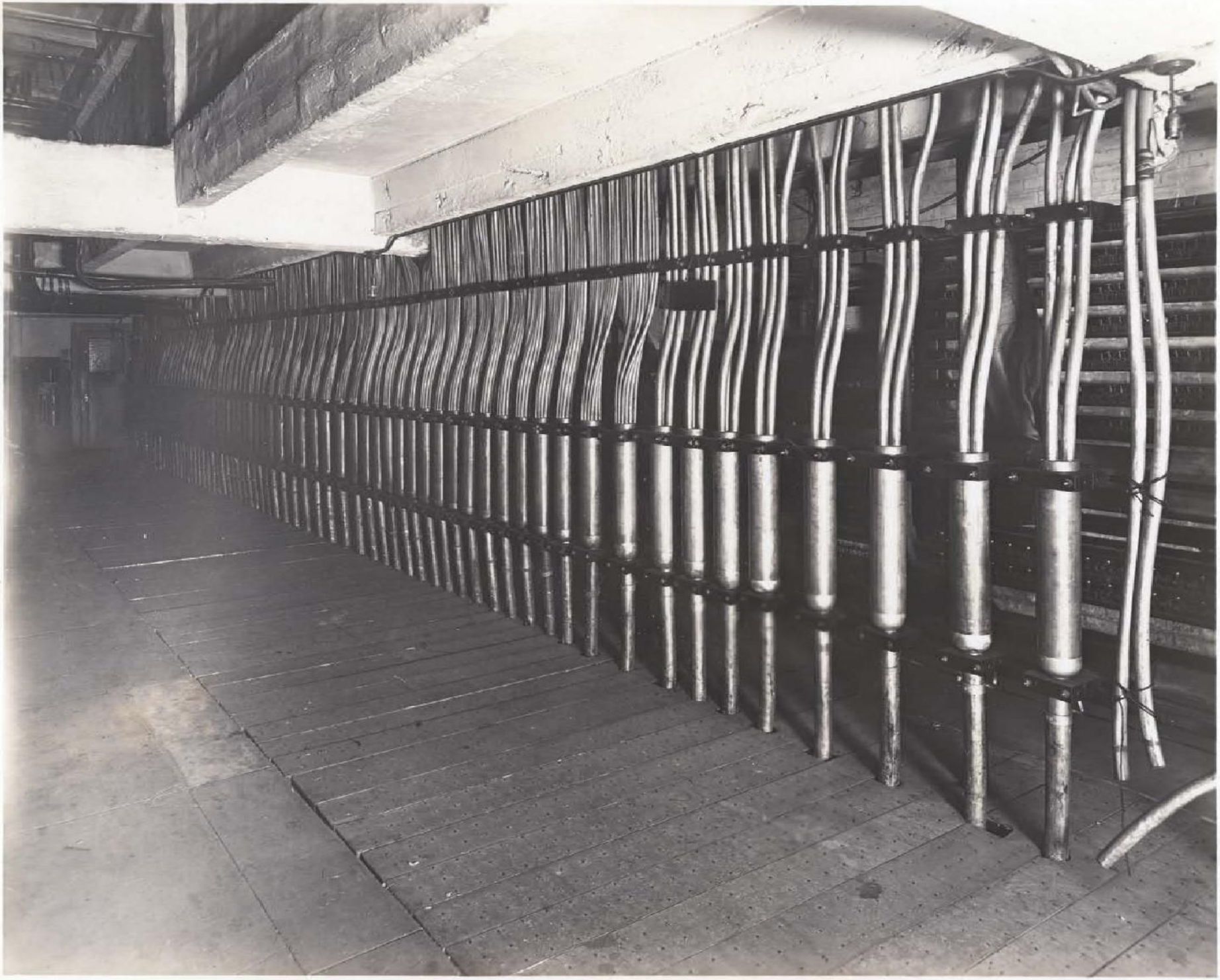
Don

UNDERGROUND CABLE CONSTRUCTION

445 Bush Street,

View of the pothead rack at Kearny Office showing the general arrangement



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AS AT DECEMBER 31, 1912

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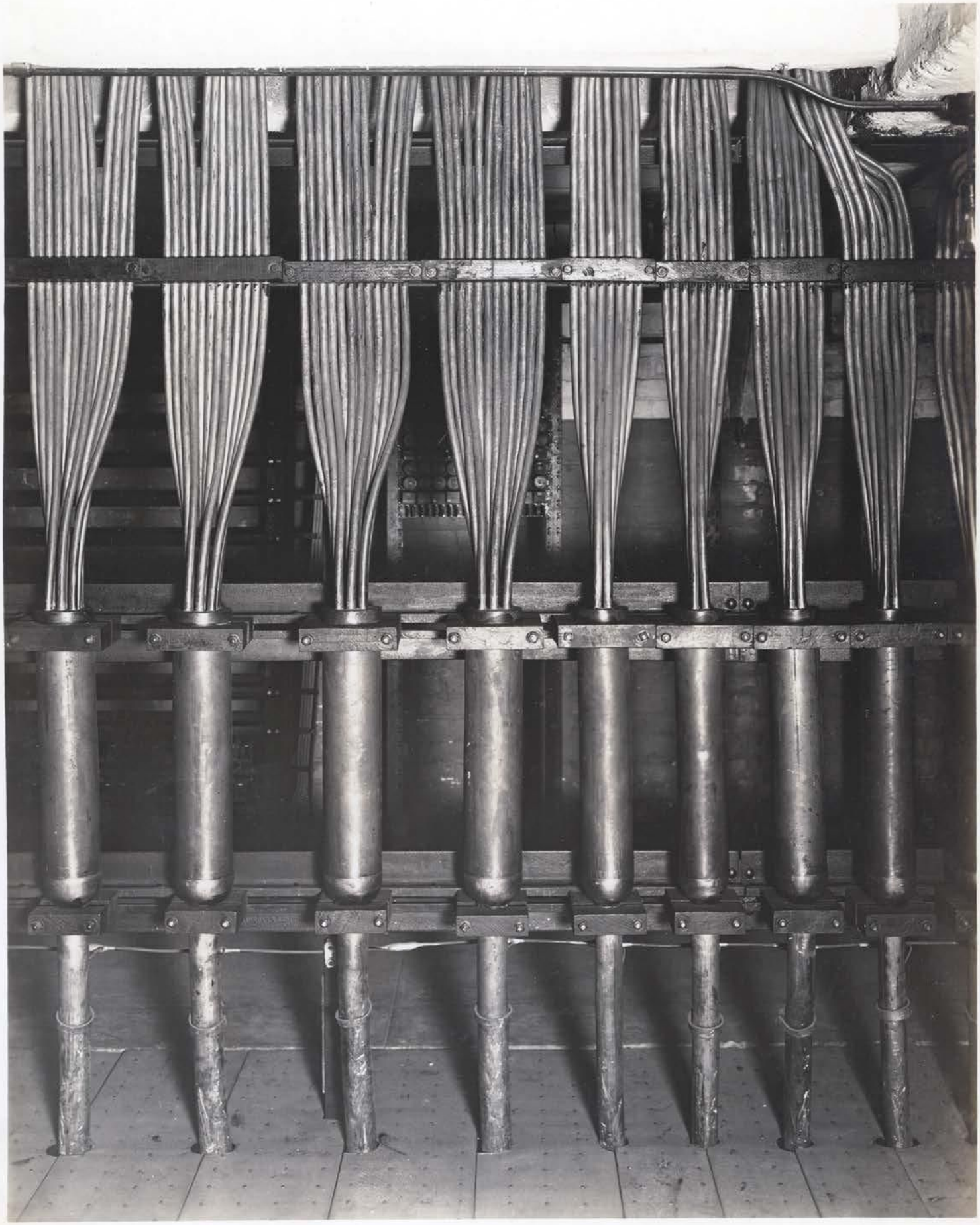
Don

UNDERGROUND CABLE CONSTRUCTION

445 Bush Street

A detail view of a section of the pothead rack. In this picture the cables from the potheads to the main distributing frame above contain 50 pairs each. There are 12 such cables to terminate a 600 pair and 8 to terminate a 400-pair main underground cable.



66

Don

UNDERGROUND CABLE CONSTRUCTION

445 Bush Street,

Another view showing the cables entering the building through the underground ducts. In this picture the wooden cover of the cable pit has been removed. There are more than 56,000 wires entering this office through these cables.

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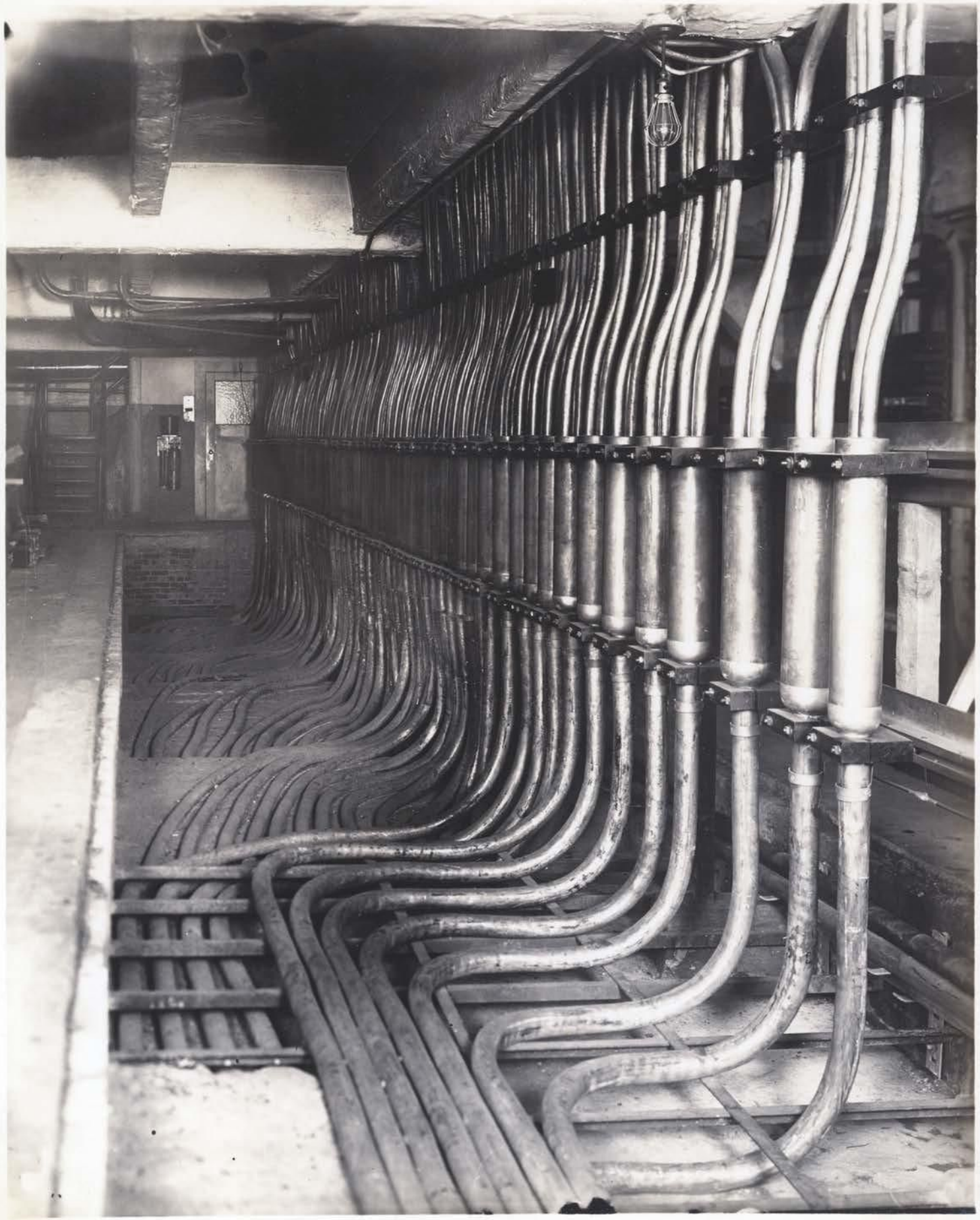
UNDERGROUND CABLE CONSTRUCTION

445 Bush Street

Picture showing pothead rack with cover of cable pit removed, looking from opposite direction to that of preceeding picture.



13-67

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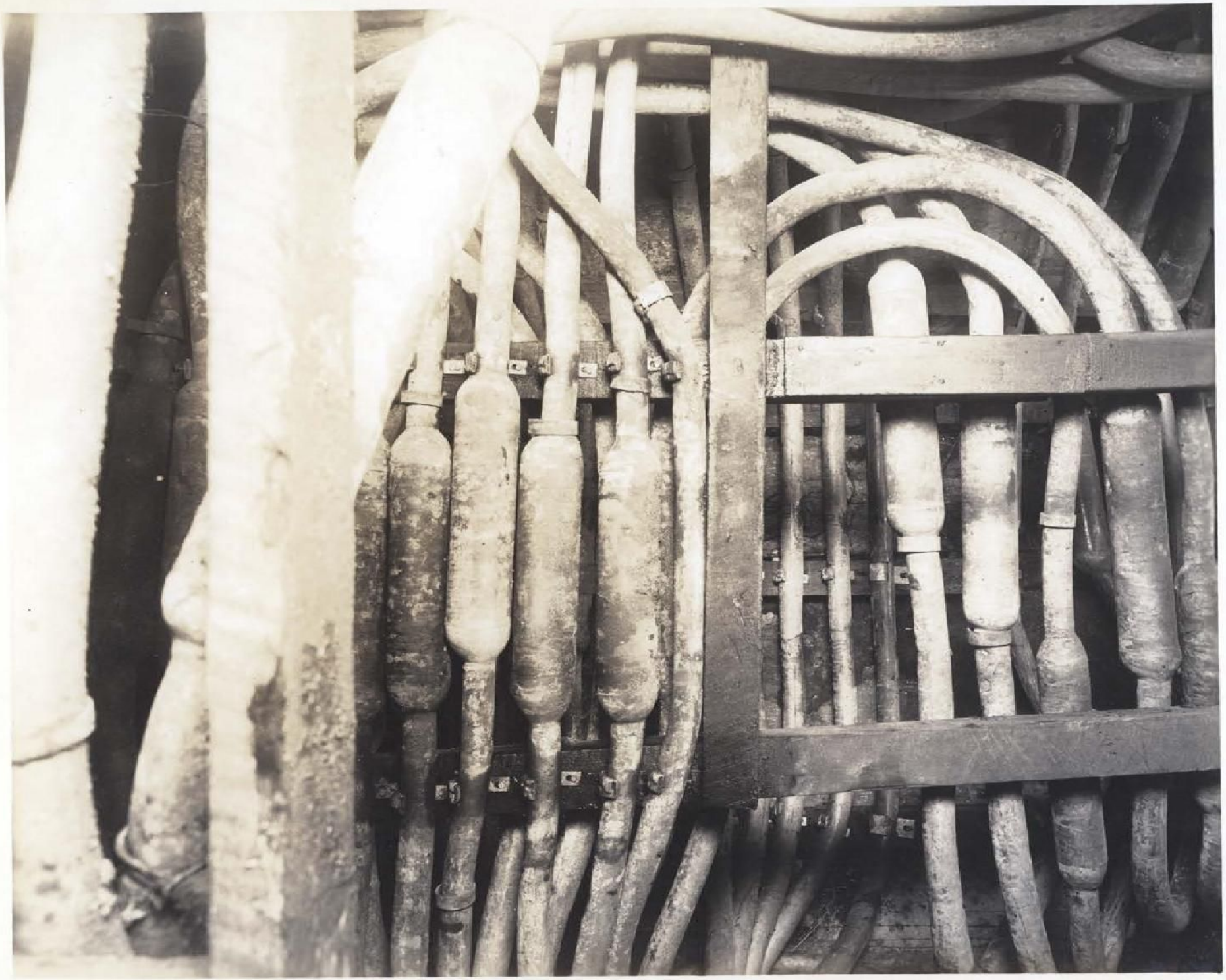
Don

UNDERGROUND CONSTRUCTION

445 Bush Street

This is a partial view only of the Kearny Office manhole. It can be easily seen from this picture that installing new cables under average working conditions such as these where the manhole is so congested is exceedingly difficult.

XIII-68.



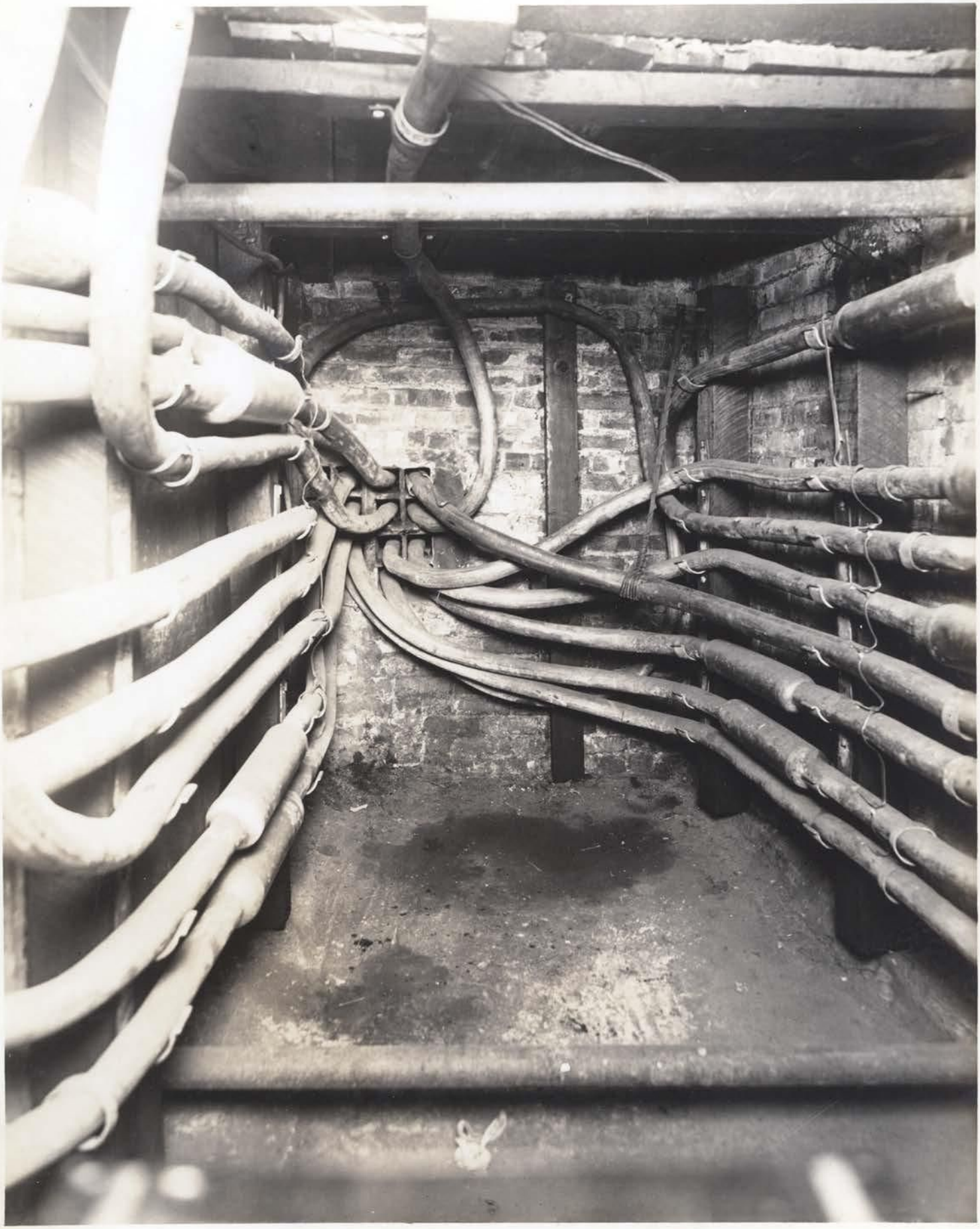
69

Don

UNDERGROUND CONSTRUCTION

Montgomery and Bush Streets

It will be seen here that all the ducts in the subway shown are full. Note the manner in which the cables are trained and supported on the walls of the manhole; also the wire bonding these cables together in order to minimize foreign electrical disturbances. In the upper left hand corner is shown a 600-pair cable into which a 400-pair cable has been spliced.



III-69.

70

Don

UNDERGROUND CONSTRUCTION

Montgomery and Bush Streets

This is a view of another portion of the manhole shown in the preceeding picture. Note the "Y" splice shown.

71

Don

UNDERGROUND CONSTRUCTION

15th and Guerrero Sts

This view is of particular interest as showing the latest idea in underground construction with particular reference to the method of building the duct entrance and the manner of supporting the cables.

XIII - 71

71

72

Don

UNDERGROUND CONSTRUCTION

Cable Vault - Sunset Office

This is typical of the latest design of central office entrances and arranging underground cables within the building. The pothead rack is here eliminated being replaced by a small splicing chamber built near the main distributing frame.