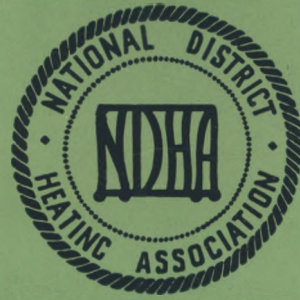


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Museum Piece is Unearthed¹

76 Year Old Unusual Heating System Junction Box Discovered

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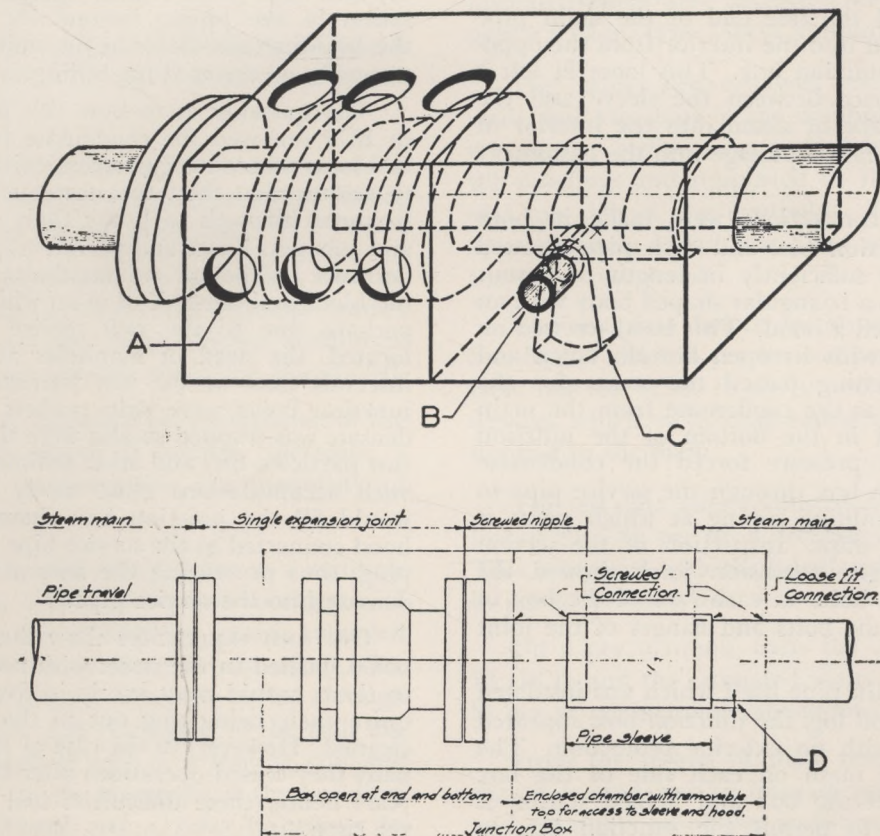
Once again remnants of the first district heating company ever to operate in Milwaukee were uncovered to the light of day during the excavation the past summer for a new 12" low pressure steam main in E. Juneau ave., between 8 N. Marshall st. and N. Waverly pl. This new main constructed by the heating division of the Company's Power Plant department to serve the Knickerbocker hotel by chance was installed in the same location in E. Juneau ave. as that of the abandoned 4" main installed in 1879 by the Steam Supply Company to serve this area. That company ceased functioning in 1881 or 1882.

The unearthing of this old main was not altogether unexpected, however, because during the excavation work for a new 16" main in N. Marshall st. in 1954 to serve the Astor hotel a portion of this old heating system was exposed and a 4" valve was recovered. (The July 1955, issue of "District Heating" contained an article on this pioneer central station heating company.)

Our work this year permitted greater inspection of this original installation because approximately 500 ft. of it were removed. Although the years had taken their toll, the old pipe was found in fair condition. However, the wood log which enclosed the wrought iron pipe had almost completely disintegrated. The asbestos and manila paper wrapped around the pipe itself for insulation purposes, although badly parched, was found intact and attached to the pipe. The pipe itself had not suffered badly from corrosion. It was in good enough condition to be accepted as scrap metal.

This relatively good condition of the pipe was due to proper drainage of condensate from it in the days when it was under steam, protected by its insulation of wood log, asbestos, and manila paper. The earth surrounding this main had remained undisturbed by excavations for other utilities in the areas adjacent, thus permitting it to remain firmly compacted and more or less impervious to moisture.

Of special interest was the recovery of a junction



¹"For 1879 it was pretty good!" A pioneer heating system junction box installation with expansion joint and service outlet. "A"—access holes located in top and sides of junction box; "B"—screwed nipple of service connection to junction box; "C"—hood open at

bottom screwed to service nipple inside of junction box permits passage of steam and condensate from box to service—service outlet and hood installed on both sides of junction boxes.

box described in the September 4, 1879, issue of the "Milwaukee Sentinel" and again in the last January issue of "The Outlet." Unfortunately, the contractor's men were not cognizant of our great interest in this museum piece, and damaged it by breaking it free of the main. To the further dismay of heating division personnel, several days later the box disappeared from its place of storage where it was awaiting a thorough cleaning. However, before its appropriation by some over zealous collector of scrap, a close inspection was made, and a sketch of the junction box as based on field observation is reproduced in connection with this article.

This particular junction box, for a 4" main, measured 30" in length and 12" in width and depth. It was of cast iron and the body was divided equally into two sections, one being a closed chamber with a removable top and the other being merely an extension of the top and sides of the closed chamber.

The junction box served two purposes, first to permit anchoring of a single expansion joint to take care of the expansion in the main, and second, to permit the connection of customer's service piping and drainage of condensate from the main. The single expansion joint was connected to the main and to the junction box by screwed flanges and was inserted in the open end of the junction box and connected to a screwed nipple that entered the interior of the closed chamber of the box. This nipple entered the interior a short distance and on the end of this nipple was screwed a pipe sleeve 6" in length. Into the other end of this pipe sleeve was loosely fitted the free end of the main pipe which was screwed into the interior from the opposite side of the junction box. This loose fit left a small annular space between the sleeve and the main for the escape of steam into the interior of the chamber and hence passage into the customer's pipe connection.

Service pipe connections were made in both sides of the junction box and each pipe screwed into the interior sufficiently in length to permit the connection to a triangular shaped body with an open bottom called a hood. This hood screwed on the service pipe with its open bottom down and through this opening passed the steam for the customer as well as the condensate from the main that accumulated in the bottom of the junction box. The steam pressure forced the condensate from the junction box through the service pipe to the customer's building piping at which point it was removed by traps. Inspection of the section covering the single expansion joint showed the presence of three holes in each face of the box to permit access to the bolts and flanges of the joint and piping.

Unlike the main pipe itself which was insulated by paper and wood log, the junction box appeared to be installed with no exterior protection. The wood log of the main on each side of the box butted up against the box and helped station it securely enough to permit the junction box to serve as an anchor for the expansion joint. As to the open side and bottom of the box section into which the expansion joint was inserted, it most

likely was filled with wood shavings, although no evidence of them was discovered.

The drainage of condensate from the main via the junction box and the customer's service pipe was surprising. Our Company practice is to provide bleeder points in the main for the removal of the condensate by traps to the sewer. Manholes for this purpose are built at frequent intervals to insure that a maximum length of one block of steam main is drained of its condensation. This we find is desirable to insure proper and safe operation. Then, too, customer service piping is connected to the main in such manner that it pitches back to our main and its condensation flows into the main.

Inasmuch as the customer cannot be billed for condensation in any of the service piping lying between his lot line and the Company's steam main, the above mentioned installations are desirable and the costly practice of installing Company steam traps on customer premises with its accompanying hazards is eliminated. In rare cases, when it is absolutely necessary due to obstructions in the street, a service pipe may drain toward a customer's building, and when that is true the condensate is trapped out ahead of the customer's service valve and discharged to the sewer.

The private property extension of a service pipe beyond the lot line in order to reach a customer's building is another exception to the rule. In this case a high point in the service pipe is established at the lot line, and from this point the condensation flows back to the main in the piping between the said high point and the main, and the condensation in the piping beyond the high point on the building side flows to the building where it is trapped and metered for billing to the customer.

The question as to how this pioneer company in 1879 removed the condensate from their mains in blocks where no customers existed prompts one to assume that they, too, constructed manholes at frequent intervals to house their expansion joints and junction boxes and permit trap and sewer connections. Although no manholes were found in the block and one-half of main which was removed, perhaps due to the two service connections we located, the need of manholes at more frequent intervals than we use was warranted. Since their junction boxes were drip pockets where the condensate was trapped so also were they points where rust particles, dirt and other sediment accumulated. Such accumulations most surely in a few years would fill the junction box chamber so that the hood connected to the service pipe would gradually plug, thus preventing the flow of steam and condensate into the service pipe.

Our own experiences show that these junction boxes, buried in the street with no means of access to them, would most surely in five to 10 years require their being dug out so that they could be cleaned. However, in the case of this pioneer company they ceased operations after only two or three years hence, these difficulties had most likely not yet risen.