

D. WATSON.
Sidewalk.

No. 223,784.

Patented Jan. 20, 1880.

Fig: 1.

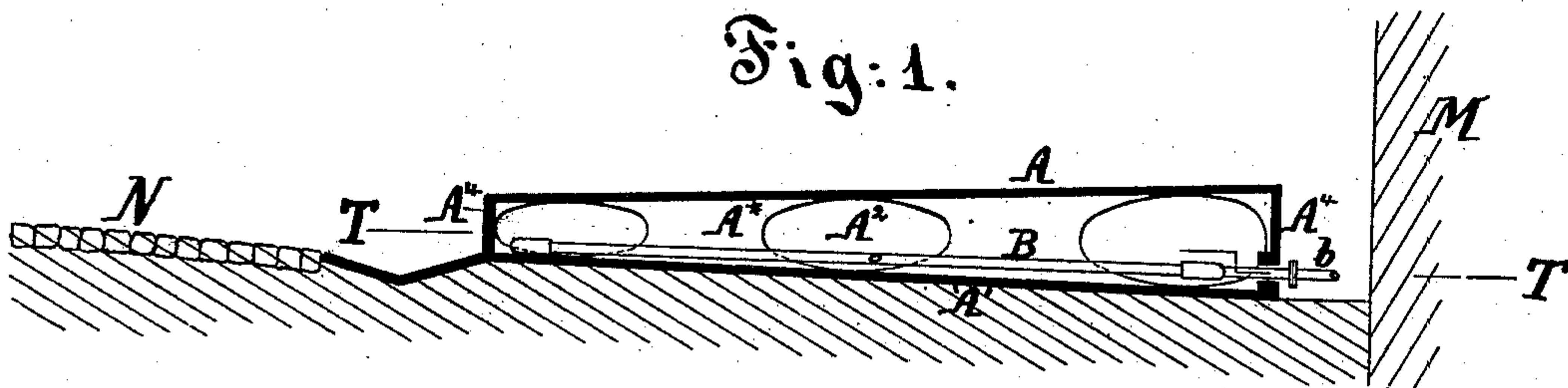
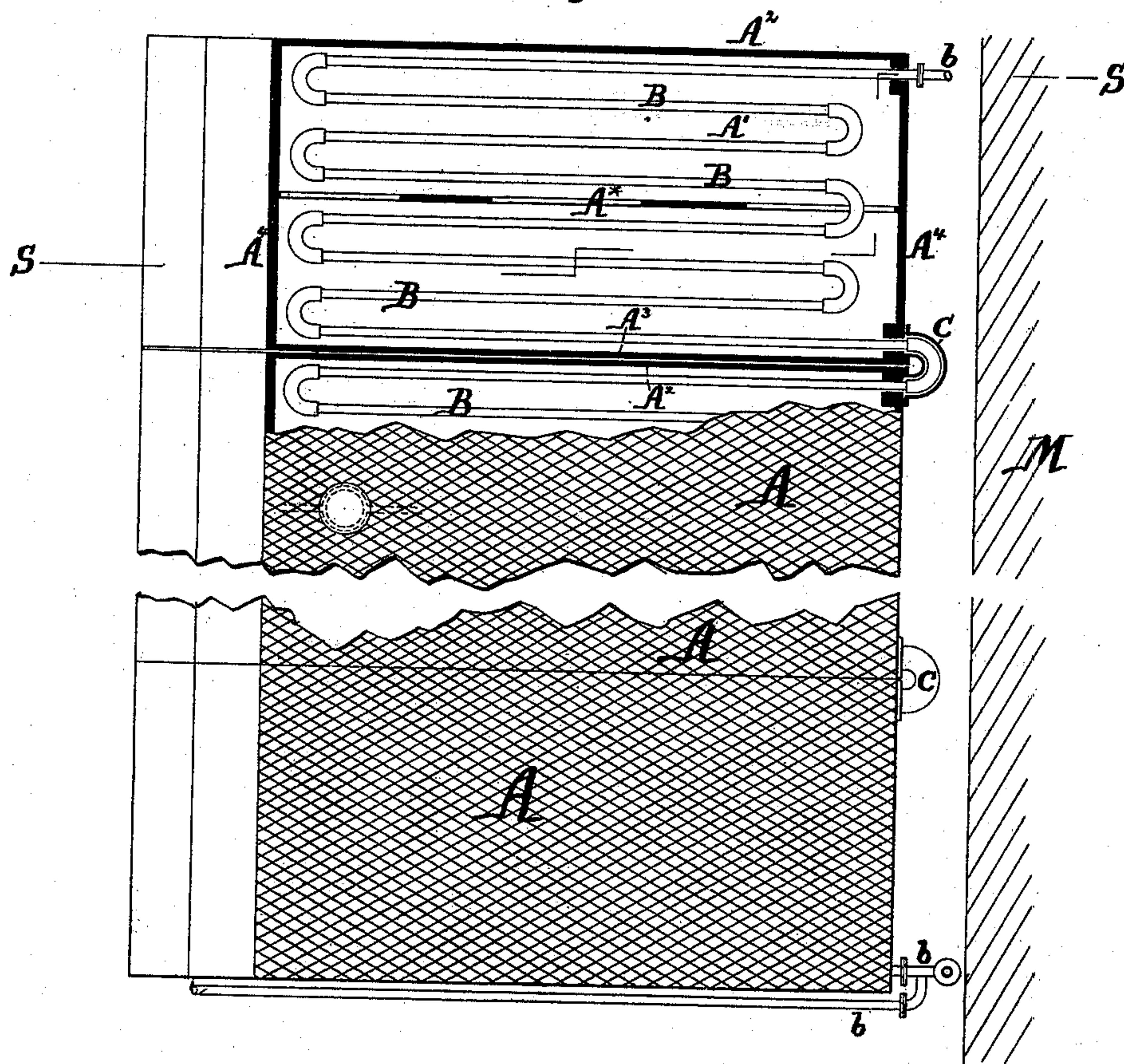


Fig: 2.



— WITNESSES: —

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UNITED STATES PATENT OFFICE.

DANIEL WATSON, OF NEWPORT, RHODE ISLAND, ASSIGNOR OF ONE-HALF
OF HIS RIGHT TO JAMES MAHONY, OF SAME PLACE.

SIDEWALK.

SPECIFICATION forming part of Letters Patent No. 223,784, dated January 20, 1880.

Application filed June 4, 1879.

To all whom it may concern :

Be it known that I, DANIEL WATSON, of Newport, in the county of Newport and State of Rhode Island, have invented certain new and useful Improvements relating to Sidewalks in front of retail dry-goods stores and in analogous situations in cold climates, of which the following is a specification.

I have devised a construction which, by the aid of steam—which may be exhaust-steam from a steam-engine—will keep the sidewalks clear of snow and ice, and, except during the actual falling of snow or rain, thoroughly dry.

I provide, under and in combination with a hard sidewalk-surface, a series of connected pipes, into and through which I discharge the steam. Provision being made for the escape of the condensed water and for regulating the operation so as to avoid overheating, I can insure a clear and relatively dry sidewalk under all conditions.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a vertical section on the line S S in Fig. 2. Fig. 2 is a plan, partly in section, on the line T T in Fig. 1.

Similar letters of reference indicate like parts in both the figures.

A is a surface of cast-iron, properly ridged, and adapted to serve all the ordinary functions of a strong proper sidewalk. Beneath this I arrange pipes B in such proximity as to impart sufficient heat thereto when the pipes are properly warmed with steam.

M is the wall of the adjacent building, and N is the street-pavement. The steam is introduced into the pipe B through a connection, *b*, from the discharge-port of a steam-engine. (Not represented.) The pipe B makes a sufficient number of turns to thoroughly heat the space under the plate A. The plate A receives a constant accession of heat from below, which may be regulated by supplying more or less steam through the pipe B, according to the severity of the weather and the quantity of snow to be melted, or of melted snow or of rain to be dried up.

I believe that the device may be operated with some success by simply the employment of the pipes B, bedded in the earth or in masonry at a little distance below the plates A; but I have devised a more elaborate construction for working out the invention in its completest form.

A' is a bottom plate, cast in one or pieces with the top plate, A, and connected therewith by continuous upright webs A² A³ at each side, and by one or more broken or open-work webs, A*, along the interior. There is also a continuous web, A⁴, along the outer and inner edge of the casting, making the entire pieces a single tight box. Within this the steam is allowed to circulate through the pipe B, which heats the air all through, and thus imparts the proper moderate heat to be transmitted through the top plate, A, and produce the desired effect.

I can, where the pipes are employed, fill the remainder of the interior of the casting with masonry, ashes, or other cheap solid material, which will have the effect to moderate the intensity and to longer retain the heat.

In ordinary cases it will be preferable to form the casting A A', &c., in sections. I have represented them as each of sufficient length to extend from the curb nearly inward to the building. The sections are connected by U-shaped pipes C, which should be sufficiently elastic to allow for imperfect workmanship, and for the variations in contraction and expansion, and for any slight disturbance in the positions by settling. When the pipes B are employed the connections C should be sufficiently large to allow the corresponding sections of the pipe B to be extended through, as shown.

The top plate, A, should be inclined a little to shed the water toward the curb. The bottom plate, A', should be inclined in the other direction. The connections C should be as near the bottom of the casting as is practicable, to allow the water to flow freely from one section into the next, and so on to the end, to be discharged through the last connection, *b*², the latter to connect with a pipe, *b*³, which may allow the water of condensation to flow downward and escape through a drain, while any steam which comes out through the system

may be discharged upward through the top of the building, if desired.

Various modifications may be made. One section may be provided with a suitably-in-
5 closed hole and cover, to serve the ordinary uses in taking in coal. The top plate, A, may be equipped with roughening material. It may be liberally lighted with glass, either in large
10 panes or in small easily-detachable lights in common use. Such will, of course, only be used where the bottom plates, A', are dispensed with and the pipes B are relied on for imparting sufficient heat.

The casting A A' A² can be made in two or
15 more separate pieces, bolted together with suitable joints, if preferred.

I propose to extend the casting outward into the street a little way, sufficiently at least to form the gutter, or that portion immediately
20 adjacent to the sidewalk.

I believe it may be practicable to extend out the casting to an indefinite distance toward the center of the street, and to carry the same warming system out into that portion, so as to
25 make my invention not only melt the snow from the sidewalk and the immediately adjacent part of the street, but from as much of the ordinary street-surface as may be desired.

I propose in situations where the sidewalk
30 has been already finished at a low level, and a little higher elevation of the sidewalk may be allowed, to construct the improved sidewalk by simply applying the sections together upon the top of the previously-formed sidewalk. In
35 such case I can provide a proper inclined approach at each end, to facilitate the walking

over it, and the sectional top surface may be altogether of iron, or formed with a top, of which the whole or a greater part should be earthy material, as concrete, to prevent slip- 40 ping and to afford a proper walking-surface. Such sidewalk may be temporary or permanent on the top of the ordinary sidewalk. It is important in either case that a sufficient space, either filled with air or with earthy material, as ashes, cement, or other slow conductor, be interposed between the steam-pipes and the upper surface when the latter is of metal, in order to avoid the intense heat which would be otherwise developed at points if the steam 50 or hot water were allowed to come in direct contact with the under surface of such iron.

Having thus described my invention, I would have it understood that I do not claim, broadly, a pavement having a hollow space or chan- 55 nel beneath the same for the purpose of receiving a stream of heated air or steam; but

What I do claim, and desire to secure by Letters Patent, is—

The castings A, formed in sections, connected by curved pipes C, in combination with the inclosed pipes B and connections b, arranged to serve as a pavement for sidewalks or streets, or both, as herein specified. 60

In testimony whereof I have hereunto set 65 my name in presence of two subscribing witnesses.

DANIEL WATSON.

Witnesses:

WM. GILPIN,

CHARLES F. DAVENPORT.