(Model.)

A. CAMPBELL.

MEANS FOR PROTECTING UNDERGROUND PIPES AND WIRES.

No. 253,181. Patented Feb. 7, 1882.

Fig. 1.

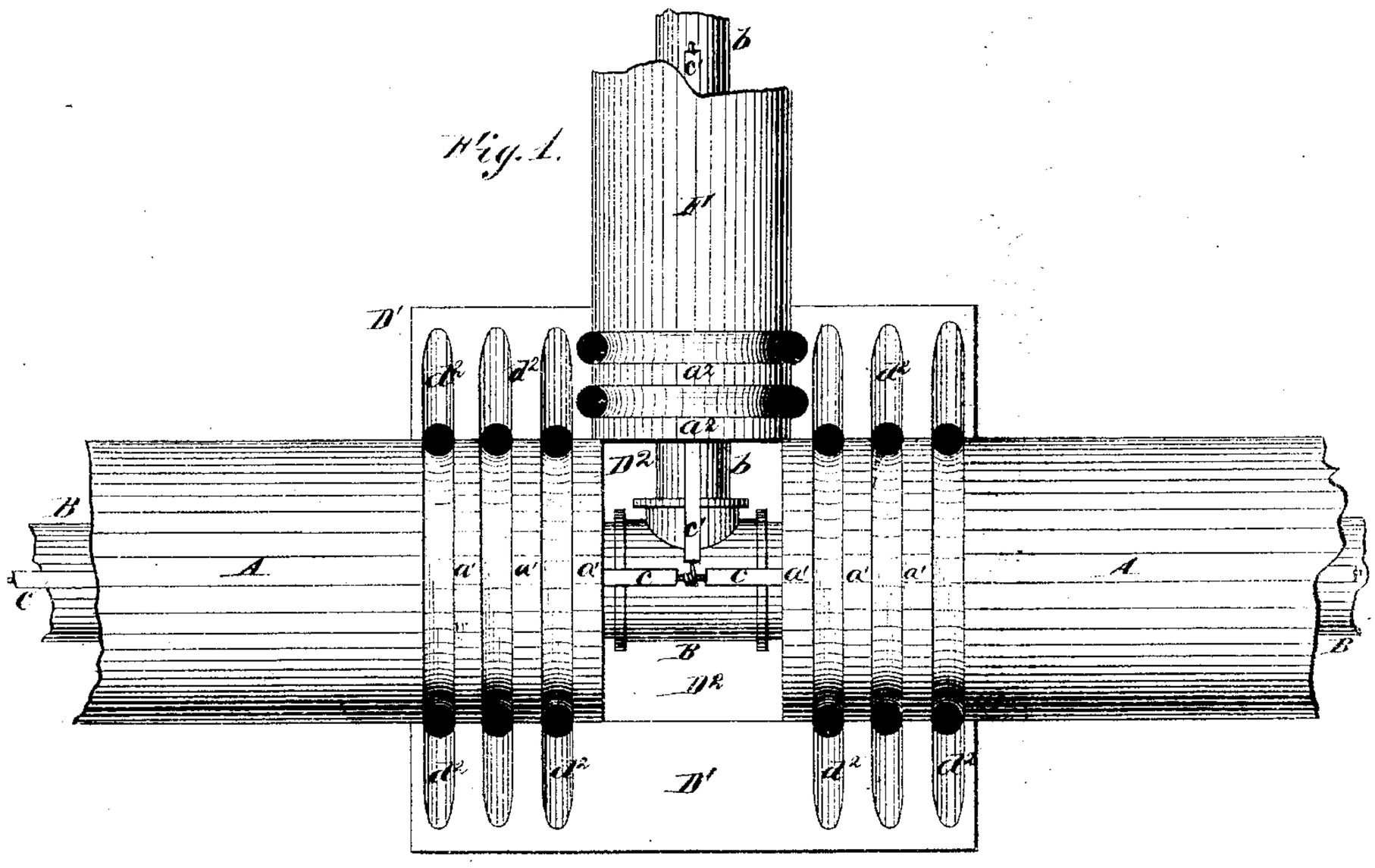


Fig. 2.

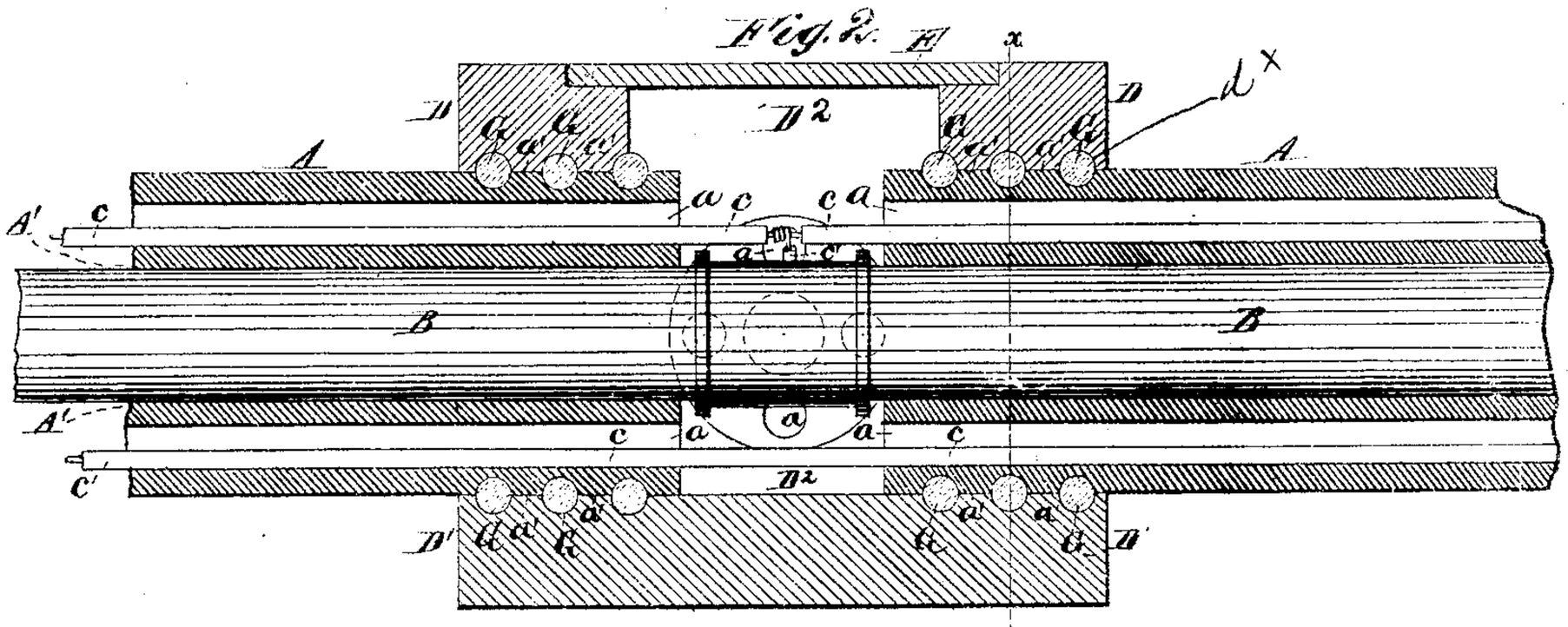
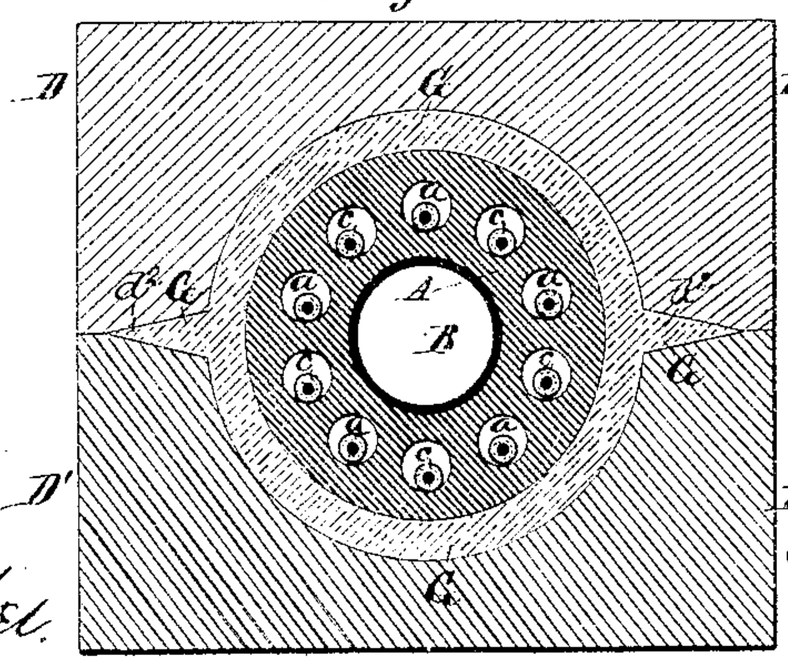


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE

AUGUSTINE CAMPBELL, OF METUCHEN, NEW JERSEY.

MEANS FOR PROTECTING UNDERGROUND PIPES AND WIRES.

SPECIFICATION forming part of Letters Patent No. 253,181, dated February 7, 1882.

Application filed March 28, 1881. (Model.)

To all whom it may concern:

Be it known that I, AUGUSTINE CAMPBELL, a citizen of the United States, residing at Metuchen, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Means for Protecting Underground Steam and Similar Pipes and Telegraph-Wires, of which the following is a specification.

My invention relates primarily to means for protecting underground steam-pipes for general useful purposes under what is generally known as the "Holly" system, and, secondarily, to the formation in the said protector of tubular passages for the reception of telegraphic wires or cables.

In carrying out my invention I employ sectional protectors of tubular form, constructed of burnt clay, in the center of which is formed an aperture adapted to receive a pipe of considerable diameter for carrying steam to a considerable distance, and dispose of the same at intervals, for the purpose of heating, or manufacturing purposes, the object of the protector being to prevent the radiation and consequent loss of heat by reason of the steam-pipe coming in contact with the earth. At suitable intervals around the annulus of the tubular protector I form other passages, of smaller diameter, adapted to receive telegraph wires or cables. The sections of the tubular protector are connected together at suitable intervals by means of connecting-blocks provided with corrugations corresponding with corrugations in the ends of the sections of the protector. The blocks are so formed that they shall hold the ends of the sections at a considerable distance apart, and the upper section of the block is provided with a man-hole, whereby access may be readily obtained to the telegraph-wires and a junction made with the steam-pipe in order to conduct steam to any given place. The junction-pipe is covered by a smaller protector, which is similarly provided with corrugations and fits into a recess formed with corrugations in like manner to the main sections. The lower half of the connecting-blocks and the tubes having been placed in position, cement is run into the grooves and placed on the junctions and upper sides of the tubes. The upper half of the connecting-block is then placed in position and the joints securely made, a considerable hole or space being left between the two ends of the main sectional protector and the branch protector for the purpose of enabling ready access to be obtained to the steam-pipes and telegraph-wires. The branch protector is provided with an aperture or apertures for steam-pipes and also for branch telegraph-wires. The passages for the traverse of the wires occupy a considerable portion of the thickness of the protector. They are so thickly introduced that they materially contribute to the non-conducting character of the protector.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a plan view, showing the lower half of a connecting-block with the ends of two main protectors secured therein, and also a branch protector with a main and branch steam-pipe and a main and branch telegraphic wire crossing therethrough. Fig. 2 is a vertical section, showing the upper and lower halves of the blocks in position with the steam-pipe and telegraph-wires passing therethrough. Fig. 3 is a cross-section on the line *x x*.

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

A A represent the ends of two sections of my protectors, the center passage, A′, of which is adapted to receive a main steam-pipe, B. The annulus of the protector is provided with a series of holes, *a*, through which are passed telegraphic wires or cables *c*. The ends of the sections of the tubular protector A are provided with corrugations *a′*, and are connected together by means of blocks D D′, provided with corrugations *d*, corresponding with the corrugations *a′* in the ends of sections of the main protector. The blocks D D′ are formed with a cavity or man-hole, D^2, in the center thereof, so as to hold the two sections of the tubular protector at a considerable distance apart, leaving sufficient room for the manipulation of the telegraphic wires and the connection of branch wires thereto, and also of connecting branch pipes to the main steam-pipe B. The cavity D^2 in the upper block, D′, is covered by a plate, E.

F is a branch protector, which is shown ar-

ranged at right angles to the main sections A A. This branch protector is held in place in the blocks D D′ by means of corrugations a^2, corresponding with similar corrugations in the blocks D D′. It is also provided with a central aperture for the passage of a branch steam-pipe, *b*, and with smaller passages for the reception of branch telegraphic wires *c′*.

G represents the cement, which is run into the cavities d^2.

In carrying out my invention, wherever I desire to make a junction either for steam or telegraphic purposes I apply a pair of blocks, D D′, with a suitable man-hole, D^2, covered by a plate, E.

I have described my invention as applied to steam and telegraphic purposes only. It is, however, applicable to the protection of pipes for water, telephonic, and pneumatic and similar purposes.

I prefer to form the protectors A A and the branch protectors F F of burnt clay. They may, however, be formed of concrete or cement suitably compressed.

The small holes *a*, in addition to their function of receiving protecting telegraph or other wires *c*, perform an important function in contributing to increase the non-conducting character of the casing A. They form air-spaces, and to a large extent entirely cut off the passage of heat. The only conduction of heat from the interior of the pipe to the exterior is through the small remaining spaces between the holes *a*. At the joints the blocks D D′ afford additional non-conducting material. The cement G accommodates itself to the positions of the parts, and makes a water-tight joint. It also, by applying in the grooves in the respective parts, and filling them, locks the parts against any possible endwise movement.

I claim as my invention—

1. A protector for steam or other pipes and telegraphic wires or similar wires, having corrugations *a′*, in combination with blocks D D′, formed each in two parts halved together, and provided with corrugations *d*, substantially as shown and described.

2. The combination, with the sectional blocks D D′, provided with a man-hole, D^2, and corrugations a' a^2, of main sections A A, and branch sections F F, formed with corrugations for the reception of cement, substantially as shown and described.

3. As an improvement in what is known as the "Holly" system of steam-heating, the protector A, of burnt clay or analogous earthy cheap non-conducting material, having the large central passage A′ and surrounding smaller passages *a*, in combination with the steam-pipe B and wires or cables *c*, arranged to serve substantially as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 26th day of March, 1881, in the presence of two subscribing witnesses.

AUGUSTINE CAMPBELL.

Witnesses:

EDW. WM. FRANCIS,

W. COLBORNE BROOKES.