

No. 712,839.

Patented Nov. 4, 1902.

W. L. MCGOWAN.  
SECTIONAL CONDUIT.  
(Application filed Mar. 20, 1902.)

(No Model.)

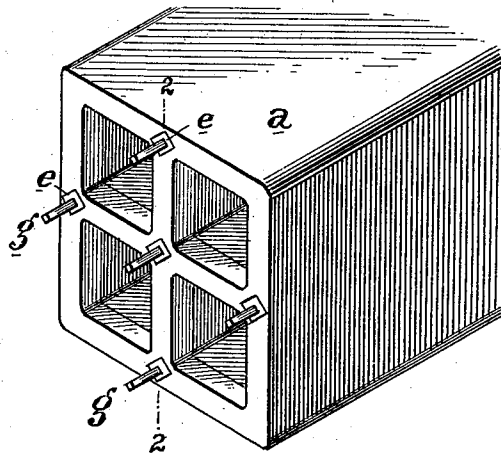


Fig. 1

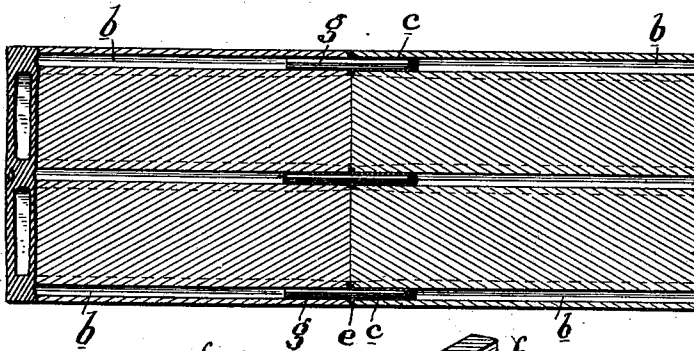


Fig. 2

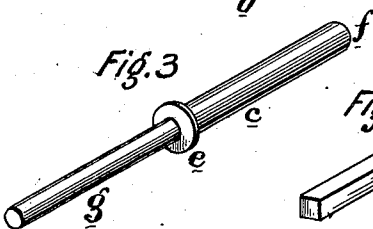


Fig. 3

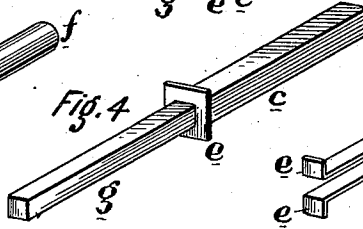


Fig. 4

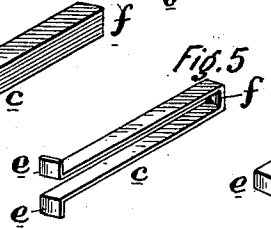


Fig. 5

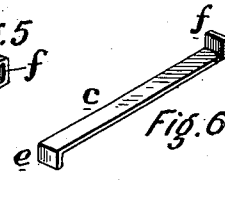


Fig. 6

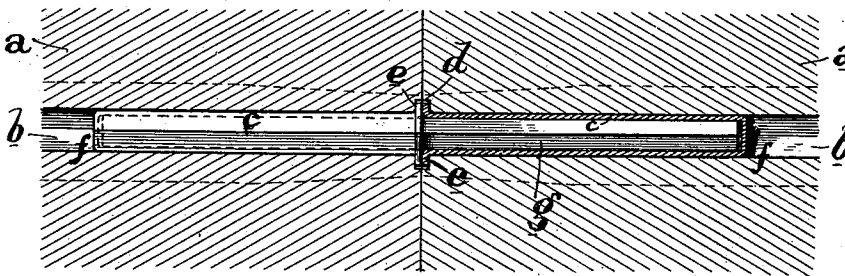


Fig. 7

Attest  
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# UNITED STATES PATENT OFFICE.

WILLIAM L. MCGOWAN, OF PHILADELPHIA, PENNSYLVANIA.

## SECTIONAL CONDUIT.

SPECIFICATION forming part of Letters Patent No. 712,839, dated November 4, 1902.

Application filed March 20, 1902. Serial No. 99,235. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM L. MCGOWAN, of Philadelphia, Philadelphia county, Pennsylvania, have invented an Improvement in  
5 Sectional Conduits, of which the following is a specification.

More particularly, my invention relates to the means for uniting the ends of adjacent conduit-sections together to keep the sections  
10 in alinement and form a strong joint capable of sustaining the transverse strains to which the sections may be subjected.

The walls of the conduit-sections are provided with centering-holes which usually extend longitudinally through the entire section,  
15 and it has been customary to unite adjacent sections together by dowel-pins extending partly into the holes of each section. Owing to the liability of the dowel-pins to slip or  
20 work longitudinally in the holes of one section, and thus become disengaged from the hole of the other section, it is necessary to provide some means to hold the dowel-pins against the longitudinal movement. It also frequently  
25 occurs that in terra-cotta or other baked conduit-sections the centering hole or holes in one section shrink to a diameter too small to admit the dowel-pin, which, under existing methods, requires the hammering  
30 down of one end of the dowel-pin to a diameter small enough to enter the shrunken centering hole or socket. This is objectionable and requires considerable labor and causes delay in the laying of the conduit. With the  
35 ordinary cylindrical dowel-pin commonly used there is nothing when a single pin is used to prevent the turning of one section on its axis with reference to the other, which is liable to occur if the bed settles unevenly or is undermined, or if the weight on the surface is  
40 unequally distributed. Such turning of one section with reference to another not only causes injury to the walls of the conduit, frequently resulting in fracture, but often damages the  
45 cables contained in the conduit-ducts.

It is one of the objects of my invention to prevent the longitudinal movement of the  
50 dowel-pin within the dowel-socket of one section and its resulting disengagement from the dowel-socket of the other section. This object I accomplish by the employment of a

dowel-pin retainer fitting the dowel-socket of one or both sections and provided with a stop or projection which prevents the inward movement of the dowel-pin.

55 It is another object of my invention to enable a section having a shrunken dowel socket or hole to be united with one having a socket of normal size without the necessity of hammering down the dowel-pin to reduce its diameter. This result I accomplish by using the  
60 dowel-pin retainer only in the dowel-socket of full diameter and allowing the dowel-pin, without the retainer to project directly into the shrunken socket of the other section.

65 It is another object of my invention to prevent the turning of the dowel-pin in its socket and also the turning of one section with reference to another when a single dowel connection is employed. This object I accomplish  
70 by employing a dowel-pin of square or other non-circular form, which may be used, so far as this feature alone is concerned, either with or without the dowel-pin retainer.

In the drawings, Figure 1 is a perspective  
75 view of a conduit-section, illustrating my improved dowel-pin union. Fig. 2 is a longitudinal vertical sectional view of two sections taken on the line 2 2 of Fig. 1 and showing the union. Figs. 3 and 4 are perspective  
80 views illustrating different forms of the dowel and retainer. Figs. 5 and 6 are perspective views illustrating different forms of the dowel-pin retainer, and Fig. 7 is an enlarged  
85 sectional view of the union between two sections.

The walls of the conduit-sections *a* are provided with longitudinal centering-holes *b*, which usually extend entirely through the section and the ends of which constitute  
90 dowel-sockets. It has been customary to unite adjacent sections by dowel-pins projecting part way into the dowel-sockets of each section. Instead of thus inserting the dowel-pins directly in the dowel-sockets I  
95 employ dowel-pin retainers *c*, which are inserted in the sockets *b* and receive the dowel-pins. The normal diameter of the sockets *b* is made sufficiently large to receive both the retainer and pin. The retainers *c* are flanged  
100 or provided with lugs at their outer ends, so as to be retained against inward movement

in the sockets *b*, and the rims of the sockets *b* are preferably countersunk, as at *d*, to receive the flanges *c* of the retainers, which thus form no obstruction to the meeting of the ends of the sections *a a*. The retainers *c* are closed or flanged at their inner ends, as at *f*, to form retaining-stops for the dowel-pins *g*.

Ordinarily in practice a retainer *c* will be inserted in the socket *b* of each of these sections. The dowel-pin *g* will then be inserted in one of the retainers and will project from the end of the section, as shown in Fig. 1. The other section will then be placed against the first section and the projecting end of the dowel-pin will fit in the other retainer. The retainer will thus prevent longitudinal movement and disengagement of the dowel-pin. In those cases, however, where the retaining hole or socket *b* of one section has shrunk, so that the retainer and dowel together cannot be inserted, the retainer is omitted from the shrunk socket, which will, however, be of sufficient size to receive the dowel-pin without the necessity of decreasing its diameter. I have shown this construction in the dowel-pin union at the top and bottom of Fig. 2. While this will hold the dowel-pin against longitudinal movement in one direction only and is therefore not as efficient as where retainers are used for both ends, it will ordinarily be sufficient, particularly if the retainer is used with the section which is laid first, as that retainer will hold the dowel-pin against inward movement while the next section is being laid. The dowel-pin may be prevented from slipping into the socket by first placing a little cement therein where it is inconvenient to use the retainer.

The number of dowel-pins used in making a joint between two sections may be varied. In some cases a single dowel is sufficient, while in others as many as five may be used, as shown in Fig. 1, or more, if desired.

While the dowel-pin and its retainers may be cylindrical in shape, as illustrated in Fig. 3, I prefer to make them of square or other non-cylindrical shape, as shown in Fig. 4, in which case the sockets *b* should preferably be correspondingly shaped. The advantage of making the dowel-pin and its retainers non-cylindrical is not only that it prevents the dowel and retainer turning in the centering hole or socket, which, as has been explained, is liable to cause injury, but also that where a single dowel-pin is used between adjacent sections it prevents one section turning with reference to the other.

In Figs. 3, 4, and 7 the retainers are shown in the form of socket-pieces adapted to receive and inclose one end of the dowel-pin. They may, however, be made in the form of a strap open on the sides, as shown in Fig. 5, or a single strip oppositely flanged on its ends, as shown in Fig. 6, may be used. Another advantage of my construction is that the ends of the sections may be cut off when

required without affecting their utility, as would be the case if the dowel-sockets were provided with internal retaining stops or shoulders for the ends of the dowel-pins, because in that case the cutting off of the end of the section would render the dowel-sockets too short or totally destroyed.

The details of construction shown may be varied without departing from the invention.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a sectional conduit, the combination with the abutting sections provided on their ends with dowel-sockets, of a dowel-pin projecting part way into the socket of each section, and a dowel-pin retainer supported in one of said dowel-sockets and provided at its inner end with a retaining-stop to prevent inward movement of the dowel-pin.

2. In a sectional conduit, the combination with the abutting sections provided on their ends with dowel-sockets, of a dowel-pin projecting part way into the socket of each section, and a dowel-pin retainer supported in each of said dowel-sockets and provided at its inner end with a retaining-stop to prevent inward movement of the dowel-pin in either direction.

3. In a sectional conduit, the combination with the abutting sections provided on their ends with dowel-sockets, of a dowel-pin projecting part way into the socket of each section and a dowel-pin retainer supported in one of said dowel-sockets and provided at its outer end with a projection to prevent inward movement of said retainer in the socket, and at the inner end with a retaining-stop to prevent inward movement of the dowel-pin.

4. In a sectional conduit, the combination with the abutting sections provided on their ends with dowel-sockets, of a dowel-pin projecting part way into the socket of each section and a dowel-pin retainer supported in one of said dowel-sockets and provided at its outer end with a projection to prevent inward movement of said retainer in the socket, and at the inner end with a retaining-stop to prevent inward movement of the dowel-pin, the outer end of the socket being recessed to receive the retaining projection of said dowel-pin retainer.

5. In a sectional conduit, the combination with the abutting sections provided on their ends with non-circular dowel-sockets, and non-circular dowel-pins extending part way into the socket of each section, and a dowel-pin retainer supported in one of said sockets and provided at its inner end with a retaining-stop, whereby rotation of one section with reference to the other is prevented and the dowel-pin is held against inward movement by said retainer.

6. The combination with the dowel-pin, of a dowel-pin retainer adapted to be inserted in the socket of a conduit-section provided with means to hold the dowel-pin against inward movement.

7. The combination with the dowel-pin, of a dowel-pin retainer adapted to be inserted in the socket of a conduit-section provided at its outer end with a flange or projection *c* 5 and at its inner end with a stop *f*.

8. The combination with the tubular dowel-pin retainer having a stop *f* at its inner end, of the dowel-pin fitting within said retainer for a portion of its own length and held against 10 inward movement by the stop *f*.

9. The combination with the tubular non-circular dowel-pin retainer having a stop *f* at its inner end, of the non-circular dowel-pin fitting within said retainer for a portion

of its own length and held against inward 15 movement by the stop *f*.

10. The combination with the tubular dowel-pin retainer having a stop *f* at its inner end and a flange or projection *e* at its outer end, of the dowel-pin fitting within said re- 20 tainer for a portion of its own length and held against inward movement by the stop *f*.

In testimony of which invention I have hereunto set my hand.

WILLIAM L. MCGOWAN.

Witnesses:

R. M. HUNTER,

R. M. KELLY.