

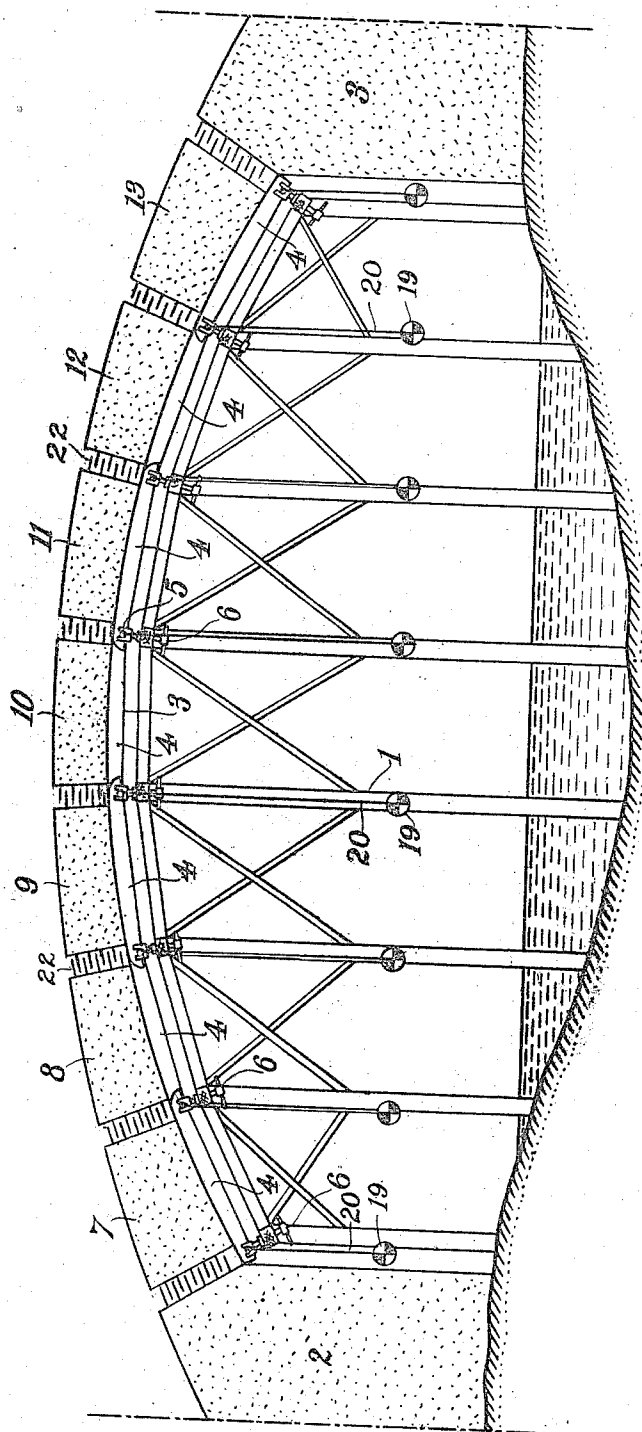
984,878.

P. AYLETT.
SYSTEM OF CONCRETE CONSTRUCTION.
APPLICATION FILED MAY 28, 1909.

Patented Feb. 21, 1911.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:
Bert. Sandman.
A. Dunham.

Philip Aylett,
Inventor,

By his Attorneys
Herr, Page, Cooper & Hayward

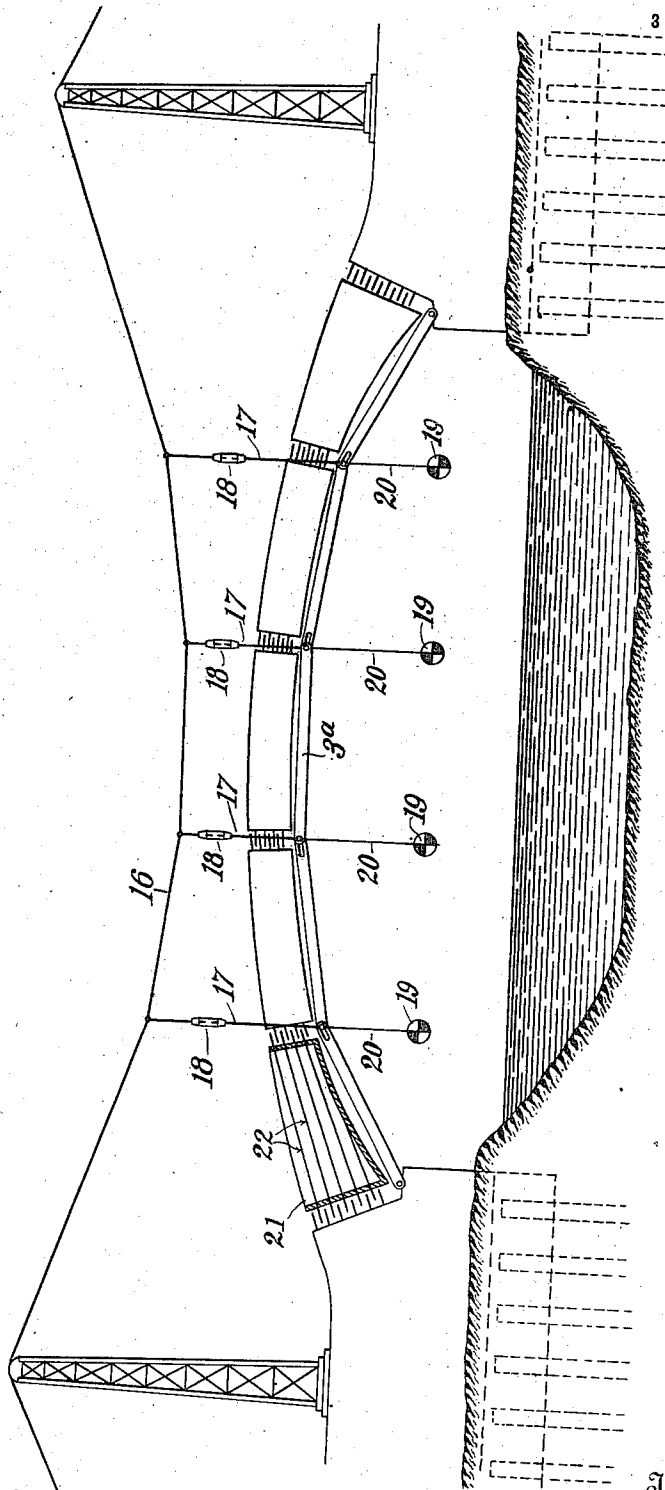
984,878.

P. AYLETT.
SYSTEM OF CONCRETE CONSTRUCTION.
APPLICATION FILED MAY 28, 1909.

Patented Feb. 21, 1911.

3 SHEETS—SHEET 2.

Fig. 2



Witnesses:
Bert. Sandman.
S. J. Dunham

Inventor,
Philip Aylett,
By his Attorneys,
Herr, Page, Cooper & Hayward

984,878.

P. AYLETT.
SYSTEM OF CONCRETE CONSTRUCTION.
APPLICATION FILED MAY 28, 1909.

Patented Feb. 21, 1911.

3 SHEETS—SHEET 3.

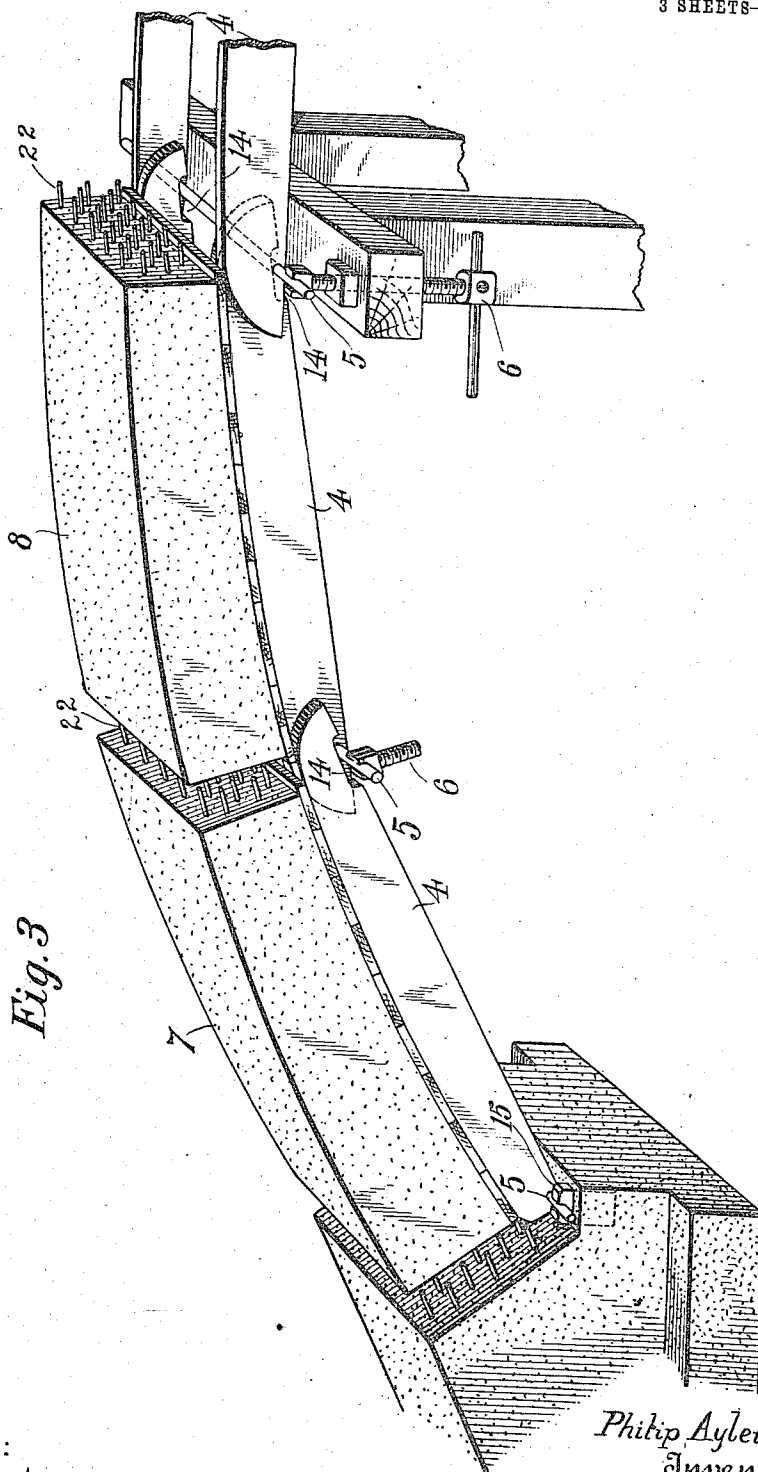


Fig. 3

Witnesses:
Bert. Sandman
S. L. Dunham

Philip Aylett,
Inventor.

By his Attorneys
Herr, Cass, Cooper & Hayward

UNITED STATES PATENT OFFICE.

PHILIP AYLETT, OF PORTSMOUTH, VIRGINIA.

SYSTEM OF CONCRETE CONSTRUCTION.

984,878.

Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed May 28, 1909. Serial No. 498,848.

To all whom it may concern:

Be it known that I, PHILIP AYLETT, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Systems of Concrete Construction, of which the following is a full, clear, and exact description.

This invention relates to the erection of concrete structures, for example bridge arches, and has for its chief object to provide a simple and economical, yet withal thoroughly effective scheme for erecting the structural element across the space which is to be spanned.

In carrying out my invention in the preferred manner I provide a temporary supporting structure, which may be of any suitable kind, for example one of the ordinary "trestle" type, a truss arch, or a cable system such as is described and claimed in my copending applications Serial Nos. 336,315 and 399,235. On the temporary structure the structural element is laid in sections, said sections being arranged in series but spaced apart so as to leave key-spaces between them. Provision is made whereby the structural sections may, by means of suitable adjusting devices associated with the temporary structure, be accurately alined or brought exactly to the position which they are to occupy in the finished structure, for example an arch ring, after which the sections are keyed or fastened together, as by forming concrete keys in the key-spaces. The gist of the invention resides in this accurate alining or "truing up" of the sections or parts of the structure prior to keying the same together. Various means may be employed for effecting this operation, and of these I have selected for illustration and specific description herein the two embodiments which at the present time I consider the best methods of applying the invention.

Referring now to the drawings, Figure 1 is a side view, somewhat diagrammatic, showing the invention employed with a temporary support of the trestle type. Fig. 2 is a side view, also more or less diagrammatic, showing the invention employed in connection with my cable system of construction, described in the copending applications above referred to. Fig. 3 is a detail view in perspective, of the preferred means for truing or alining the arch-sections when the same are supported on falsework below

them in contradistinction to being suspended from cables.

The falsework, 1 in Fig. 1 is intended to represent any suitable structure of timber, steel, or iron, and 2, 3, are suitable abutments, or skew-backs constituting the terminals of an arch. On the falsework or temporary structure is a structure 3^a in the nature of a centering, composed of a series of sections 4, jointed end to end in such manner as to be capable of pivotal movement relatively to each other at the joints. In the construction illustrated the pivot rods or pins, as 5, are extended beyond the sides of the centering sections and rest in suitable sockets in screw jacks 6 mounted on the falsework. The numbers 7 to 13 designate sections of an arch ring, arranged in longitudinal series on the centering but spaced apart as shown. If after the arch-sections are laid (either by molding them on the centering or by placing previously formed blocks on the centering) they are found to be in accurate alinement in the arch-ring they may be at once fastened together, as by molding concrete keys between them. But if it should be found that from any cause, for example settling or shrinkage of the falsework, the arch sections are not in the desired accurate alinement they may be brought into position or "trued up", by adjusting the centering sections by means of the jacks 6. The pivotal construction which permits this adjustment of the sections is preferably that illustrated in Fig. 3. In this figure the pivot rod or pin 5 at one end of each centering section (for example the left end, as viewed in the figure) is fixed in the section, that is, incapable of movement longitudinally of the section, while the adjoining end of the next section is provided with a longitudinal slot or socket 14 in which the pivot rod is engaged. Now, if at any time it is found that any of the sections are not in their proper positions, for example suppose the adjacent ends of sections 7 and 8 are lower than they should be, they may be trued up by means of the associated jack 6. As the pivot rod is raised it will have a slight movement to the right with respect to the slot 14 in the section 4 at the left and, being fixed in the right-hand section 4, will (if the jack is radial of the arch ring as in the figure) carry the said right-hand section slightly to the left. In other words the construction described provides a pivotal slip-joint, permitting the sec-

tions to be raised or lowered, as the case may be, in the operation of truing the arch. It will be observed that in Fig. 1 the pivot rods at the ends of the arch are-carried (on jacks) by the falsework. These rods may, however, be supported by the abutments or skew-backs as in Fig. 3, resting in socket pieces 15 provided for the purpose and suitably mounted on the abutments.

In Fig. 2 I have illustrated the invention in use with my cable system of erection. In this system the flexibly-jointed centering 3^a is suspended from cables 16 by means of hangers or suspenders 17 having turnbuckles 18 by which they may be lengthened or shortened, thereby raising or lowering the centering at one or more points as desired, to aline the arch to its true form in case it should be distorted from any cause, as stretching of the cables. In this system, as in Fig. 3, the outer ends of the end-sections may be supported by the abutments or skew-backs.

For the purpose of facilitating the work of alining or truing up the arch a series of targets 19 may be hung by means of cords or rods 20 from suitable points of the centering, for example from the pivot rods. Knowing the curvature of the arch it is not difficult to calculate the lengths which these target-hangers should have in order that when the arch is in proper form all the targets will be on a level. The lengths of the said hangers being thus properly proportioned it is only necessary, in truing up the arch, to manipulate the jacks or turnbuckles until the targets are in the same horizontal plane.

As previously stated, the arch section may be formed on the centering, or formed elsewhere and then placed in position on the centering. In the former case suitable molds, as the box-molds 21, Fig. 2, are arranged on the centering and filled with concrete, the molds being broken away or otherwise removed when the concrete has set sufficiently. If desired the arch sections may be provided with embedded reinforcing members, as the rods or bars 22, extending into the key-spaces and overlapping therein.

After the arch sections are properly alined to the proper arch form they are keyed together in any convenient manner, as by molding concrete keys in the key-spaces between the sections. When the keys have set the temporary supporting structure, falsework or cables as the case may be, is removed, leaving the arch self-supporting.

From the foregoing it will be seen that my invention makes it possible for the temporary supporting structure to shrink, stretch, settle, or otherwise be distorted without injury to the uncompleted arch, since the arch sections can at any time before keying them together be accurately alined in the proper curvature. To those skilled in

the art it will be apparent that this fact greatly simplifies the falsework problem and correspondingly cheapens the cost of concrete work.

The constructions herein specifically described have been found to be convenient and effective, but it is to be understood that the invention is capable of embodiment in other forms without departure from its proper spirit and scope as defined by the appended claims.

What I claim is:

1. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, means for supporting thereon the sections of the structural element in pivotal relation to each other end to end, and means for pivotally adjusting such sections to bring the same into desired alinement with each other before they are keyed together.

2. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, means for supporting thereon the sections of the structural element in pivotal relation to each other end to end, said means comprising a series of pivotally jointed members, and means for pivotally adjusting said sections to bring the same into desired alinement with each other before they are keyed together.

3. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, a centering comprising a series of pivotally jointed members, and means for supporting the centering on the said temporary structure, said means being adjustable to effect pivotal adjustment of the said centering members whereby to bring the sections of the structural element into desired alinement with each other before they are keyed together.

4. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to

be spanned by the structural element, means for supporting the sections of the structural element in pivotal relation to each other end to end, and devices for supporting said means on the temporary supporting structure, said devices being adjustable to effect pivotal adjustment of the said sections whereby to bring the same into desired alinement with each other before they are keyed together.

5. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, a centering arranged to support the sections of the structural element and composed of a series of members connected together by pivotal slip-joints, and adjustable supports carried by the temporary supporting structure and connected with the centering to support the same, whereby to effect pivotal adjustment of the said sections of the structural element relative to each other to bring the sections into desired alinement before they are keyed together.

6. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a falsework extending across the space which is to be spanned by the structural element, means above the falsework for supporting the sections of the structural element in pivotal relation to each other end to end, and adjustable supports carried by the falsework and connected with the said means to support the same, whereby to effect pivotal adjustment of the said sections of the structural element relative to

each other to bring the sections into desired alinement before they are keyed together.

7. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, means for supporting the sections of the structural element in pivotal relation to each other, and adjustable supports carried by the temporary supporting structure and connected with the said means to support the same, whereby to effect pivotal adjustment of the said sections of the structural element relative to each other to bring the sections into desired alinement before they are keyed together.

8. In an apparatus for erecting concrete structural elements by arranging sections of the elements in the positions which they are to occupy in the finished structure and subsequently keying the sections together, in combination, a temporary supporting structure extending across the space which is to be spanned by the structural element, means for supporting thereon the sections of the structural element in pivotal relation to each other end to end, means for pivotally adjusting such sections to bring the same into desired alinement with each other before they are keyed together, and a series of targets associated with said sections to indicate visually the conformity or non-conformity of the sections to the desired alinement.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

PHILIP AYLETT.

Witnesses:

RUTH HOFFER,
I. P. HOAG, Jr.