PLASTIC BRICK & EARTHENWARE APPARATUS.

No. 862,418. PATENTED AUG. 6, 1907.

J. E. STREET.

ADJUSTABLE AND PORTABLE FALSE WORK FOR ARCHES.

APPLICATION FILED NOV. 14, 1906.

Fig. 1.

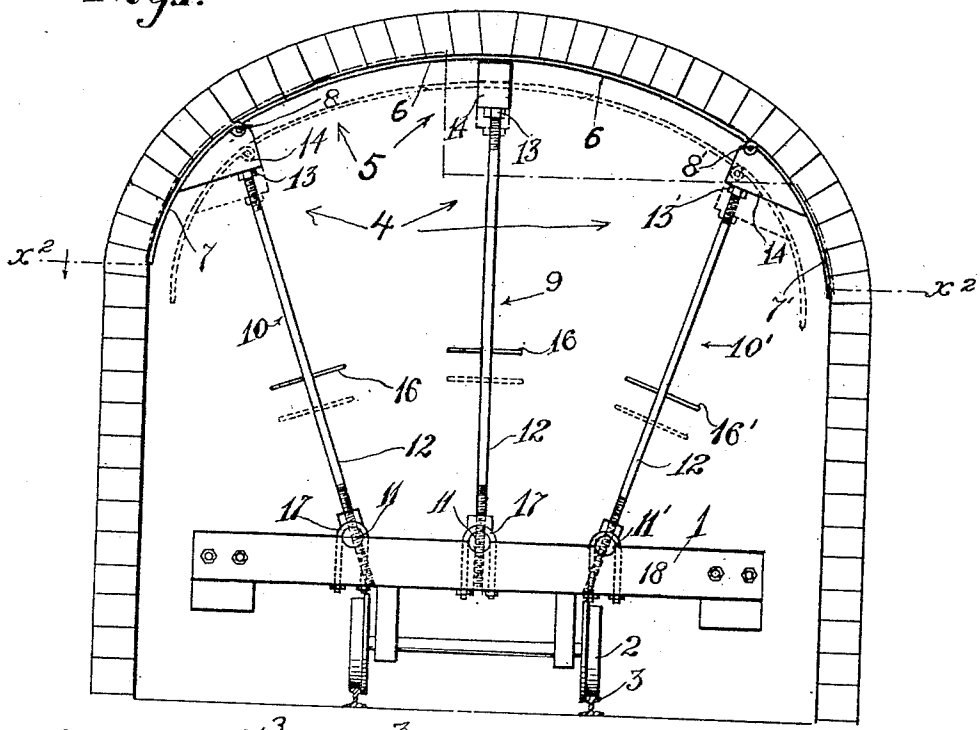


Fig. 2.

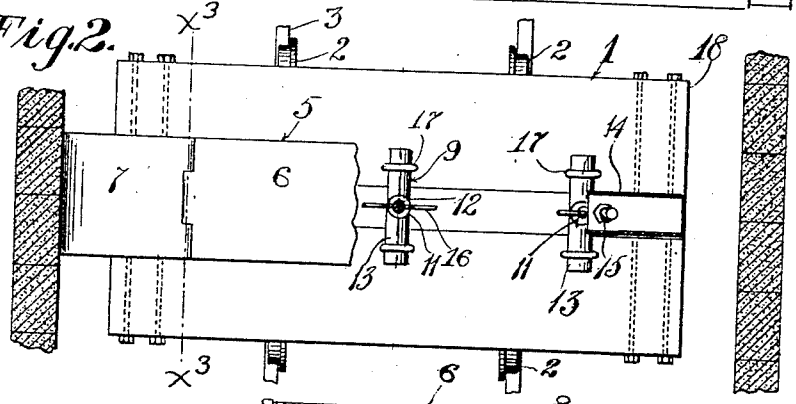
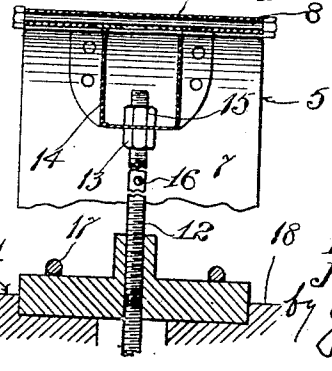


Fig. 3.



Witnesses:
Clarence Williams
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Jacob E. Street.
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UNITED STATES PATENT OFFICE.

JACOB E. STREET, OF SAN FERNANDO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO RICHARD WILLIAM MARTIN, OF LOS ANGELES, CALIFORNIA.

ADJUSTABLE AND PORTABLE FALSE WORK FOR ARCHES.

No. 862,418. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed November 14, 1906. Serial No. 343,445.

To all whom it may concern:

Be it known that I, JACOB E. STREET, a citizen of the United States, residing at San Fernando, in the county of Los Angeles and State of California, have invented a new and useful Adjustable and Portable False Work for Arches, of which the following is a specification.

It is of the objects of this invention to provide means for rapidly building arches with stone, brick, concrete blocks, solid concrete, or other material in an efficient manner at less cost of time, labor and expense than heretofore possible; to enable constructors to line railway and other tunnels with stone, concrete blocks, or other material at small expense of time and labor; to enable railways to replace wooden linings in their tunnels in a practicable way without interfering with traffic through the tunnel; and to provide portable means adapted to be transported in knock-down form on railway cars for the construction of lining in railway tunnels and other arches.

The accompanying drawings illustrate the invention: Figure 1 is an elevation of the apparatus embodying this invention as it appears in use for replacing with concrete blocks the wooden lining in a railway tunnel without interruption of the usual traffic. Dotted lines indicate the position of parts preparatory to withdrawing the apparatus from the tunnel to allow a train to pass. Fig. 2 is a fragmental plan view partially in section to expose parts which would otherwise be hidden. Lines x^2, Fig. 1, indicate the lines of section. Fig. 3 is a vertical section on line x^3, Figs. 1 and 2, cutting axially through a hinge and adjustable side arm.

1 designates a portable base in the form of a platform railway car, mounted on wheels 2 running on rails 3. 4 in a general way designates extensible supporting means carried by said portable base 1 and arranged to adjustably support an arch form indicated in a general way by the character 5. Said form is preferably sectional, comprising a crown section 6 and two spring sections 7 which are hinged to the opposite sides of the crown section by pins 8. The extensible supporting means 4 comprise an adjustable crown support 9 and two adjustable spring supports 10. The crown and spring sections are preferably flexible, being bendable to a sufficient extent to allow the same to conform to the form of the arch within an indefinite limit of adjustment, and to allow the arch-form to be contracted when the supports are adjusted for that purpose.

The crown support and spring supports may be variously constructed of suitable mechanical means for bringing the crown and spring sections of the arch form to an appropriate position above the portable base to afford a support for the structural material of the arch. Each of said adjustable supports comprises a threaded journaled base. The adjustable crown support 9 and the adjustable spring supports 10 are preferably in the form of T jacks in which 11 is the supporting T of the jacks.

12 designates screw rods; 13, the burs or shoulders on which rest U-heads 14 which are bolted, riveted, or otherwise secured to the respective sections of the arch form.

15 designates the head burs on the screw-rods above the base of the U-heads for securing the screw-rods in place.

16 designates jack levers to turn the screw-rods to raise and lower the arch form sections.

17 designates U-bolts securing the T's of the jacks in place. Duplicate and triplicate parts are indicated by corresponding numbers with the addition of an index.

In practical use, as for instance in constructing the lining in a railway tunnel without interfering with traffic, the constructor will run the portable base 1 along the track 3 to the appropriate place at a time when no trains are due, and when the arch form has been brought to the appropriate place, the screw-rods will be turned to bring the arch form into the appropriate position and form to support the structural material of which the tunnel lining is to be made. In case, for instance, concrete blocks are to be used, these will be placed in position on the arch form and laid with cement mortar.

The work of adjusting the form to the appropriate position consumes but a very few minutes, so that the workmen may at once proceed to lay a course of blocks. These may be laid with broken joints in well-known manner, leaving each alternate block projecting beyond or in front of the arch form. If sufficient time remains for the workmen to shift the machine and complete another course, the workmen will turn the screws 12 to lower the arch form and will then shift the base 1 along the track the width of the arch-form, and will then again adjust the arch-form to the form of the arch, and thereupon another course will be laid, and so on until the time approaches for a train to pass. Then the screws will be turned to lower the form, and the car will be run out of the tunnel and side-tracked to allow the train to pass, and immediately thereafter the apparatus may be again brought into position in the tunnel, again adjusted, and the work immediately proceed as before.

The sections of the arch form may be made of any suitable material, as for instance, boiler iron, heavy galvanized plate iron, or steel, and the like, the same being appropriately curved to conform to the desired shape of the arch.

It is to be understood that in constructing the lining it is advisable to construct the vertical portions of the lining ahead of the arch construction, so that all that remains to be done while the apparatus is in use is to simply turn the arch.

The T-jacks are preferably mounted on a mortised or slotted base 18 through which the screw-rods project downward so as to allow the arch-form to be lowered toward the body of the car so that it may be transported along the road through bridges and tunnels without dismantling. In case further contraction of the apparatus is required for storage or transportation, this may be accomplished by removing the pins 8, removing the screw-rods from the T-base, or in any other way dismantling the machine.

The crown form section 6 and spring form sections 7, 7′, may be of bendable material, as boiler iron for instance, so that when the operators desire to shift the apparatus they may screw the spring supports 10, 10′ down further than they screw the crown support 9, and thereupon the crown section 6 may bend so as to allow the spring sections to be drawn away slightly from the walls of the lining. However, by setting the spring supports 10, 10′ outward beyond the pivots between said spring supports and the crown support, the same effect may be secured without bending the crown section; and in the act of lowering the arch form the spring supports may first be screwed down independently of the crown support, thus bringing the same away from the spring and side walls of the arch, and then the crown support may be screwed down. A small adjustment of parts in this manner will be sufficient to release the arch form from the arch and allow the apparatus to be shifted, whereupon the operators may first adjust the crown section to the appropriate position and then adjust the spring sections to their appropriate positions, whereupon another course may be laid, and so on.

It is to be understood that I do not limit myself to the use of the particular means herein shown as being preferable. Various equivalents may readily suggest themselves to those versed in the art, and I regard my invention as a pioneer invention, including all such equivalent constructions.

What I claim is:—

1. An arch form comprising a crown section, two spring sections adjustably fastened thereto, a base, extensible means adjustably mounted on said base and connected with said crown section, and adjustable supports journaled on said base and adapted to adjust the spring sections independent of the crown section.

2. An arch form, U-heads fastened to the underside thereof, T-jacks journaled to swing provided with screw-rods inserted through said U-heads respectively, a nut on the end of said screw-rods above the U-heads below the arch form, and shoulders on said rods below said U-heads and a base in which said T-jacks are journaled.

3. A truck, three supports adjustable as to length journaled on said truck to swing sidewise thereof, and an arch form comprising three sections hinged together, said sections respectively supported by said supports.

4. A truck, a support adjustable as to length mounted on said truck, a crown section of an arch form on said support, side supports adjustable as to length and journaled on the truck to swing toward and from the center support and each provided at its top with a bracket, spring arch sections on said brackets respectively, and means for detachably fastening the spring arch sections to the crown section.

5. An arch form comprising a crown section, spring sections pivoted thereto, an adjustable crown section support, and adjustable spring section supports, the latter supports being journaled to swing and attached outwardly from the pivotal connections between the crown section and the spring sections respectively, and a base in which said latter supports are journaled.

6. A portable base, an arch form comprising a plurality of sections hinged together and supports, adjustable as to length, journaled to said base and connected with said sections respectively.

In testimony whereof, I have hereunto set my hand at Los Angeles, California this 8th day of October 1906.

JACOB E. STREET.

In presence of—
JAMES R. TOWNSEND,
R. W. MARTIN.