(No Model.) 2 Sheets—Sheet 1.

S. TOYE.

PORTABLE CENTER FOR CONSTRUCTING CONTINUOUS ARCHWAYS.

No. 537,871. Patented Apr. 23, 1895.

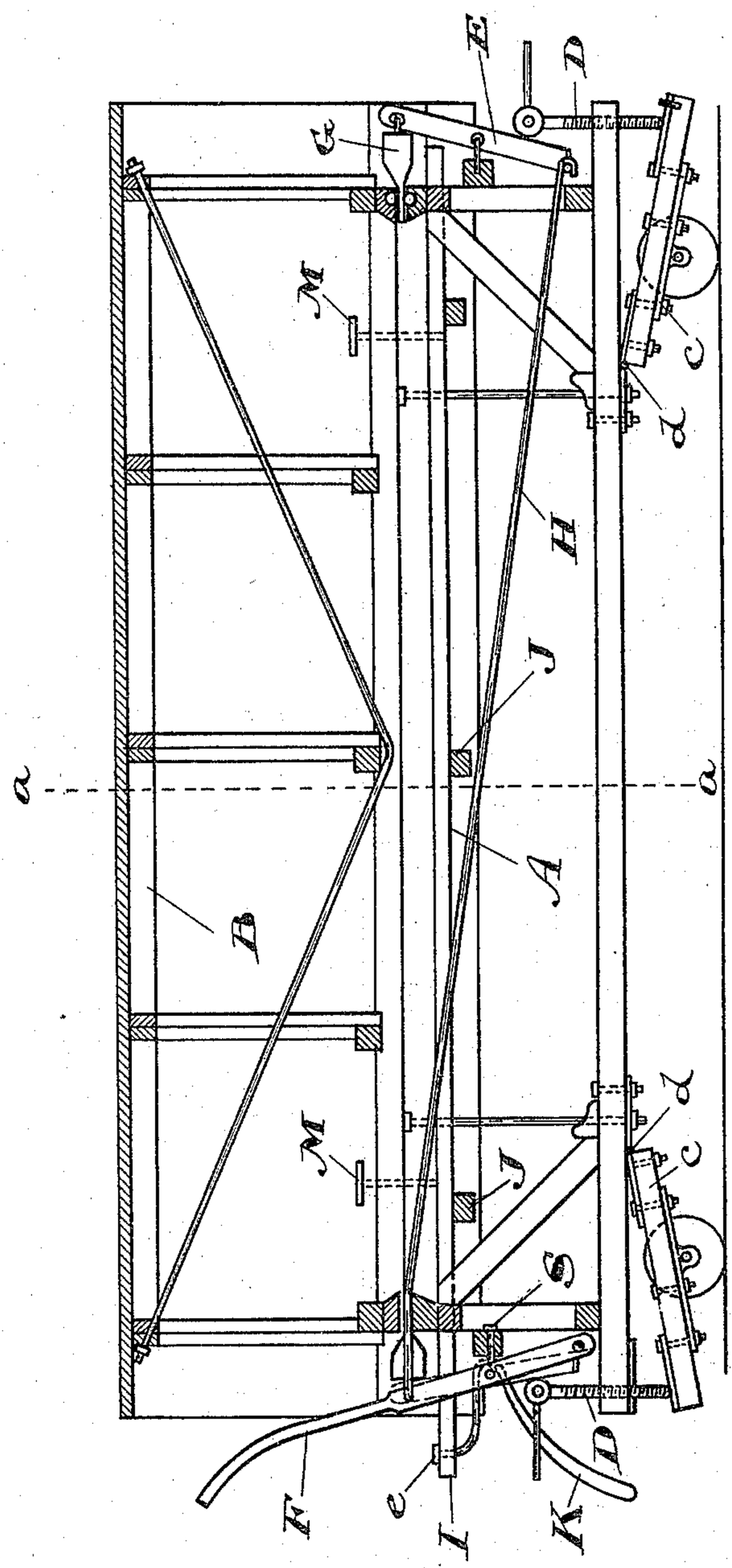

Fig. 1.

Witnesses

J. L. Lamson

Leonard. Foulds

Inventor

Smith Toye

by C. H. Riches

his Attorney.

(No Model.) 2 Sheets—Sheet 2.

S. TOYE.

PORTABLE CENTER FOR CONSTRUCTING CONTINUOUS ARCHWAYS.

No. 537,871. Patented Apr. 23, 1895.

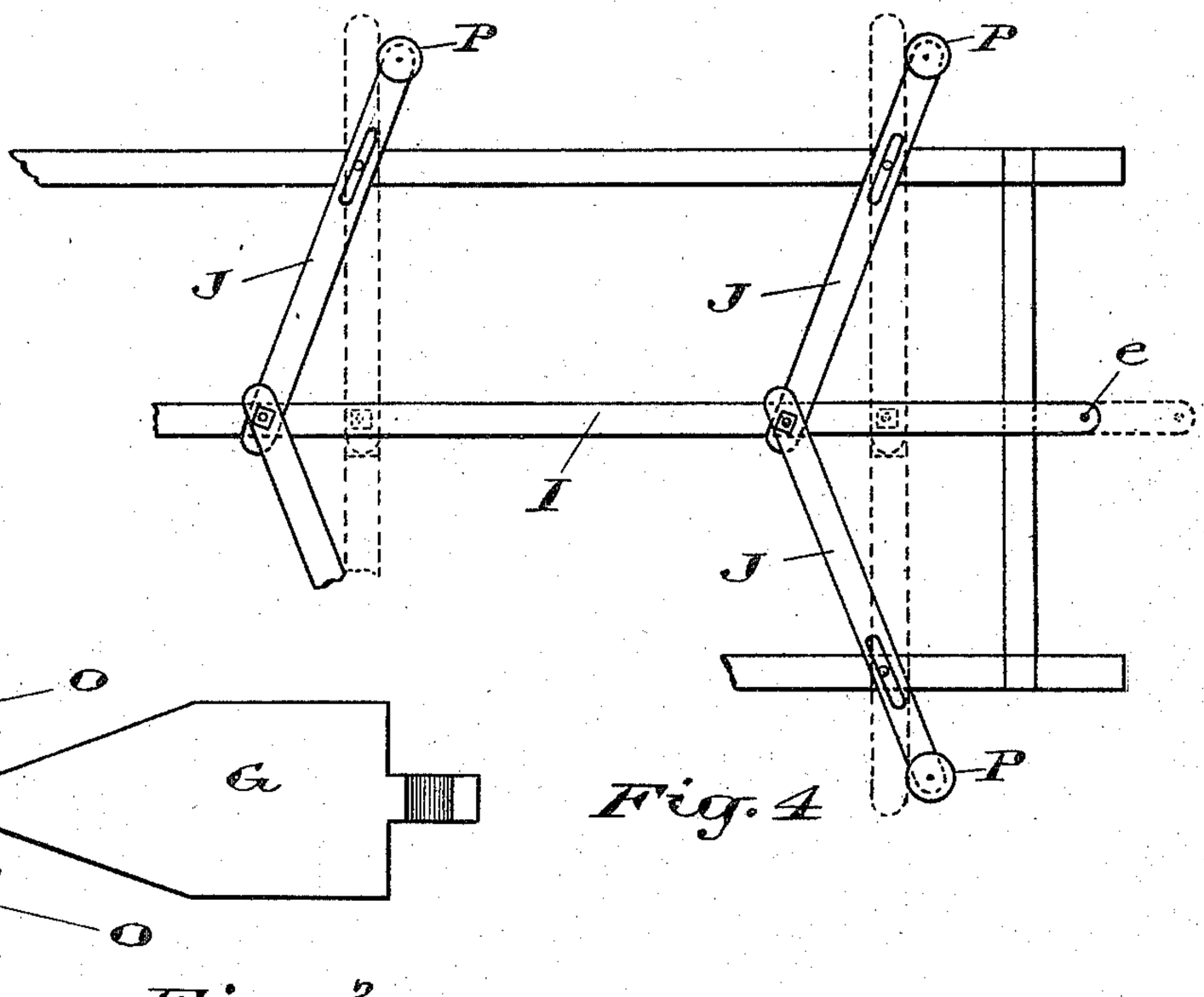

Fig. 4

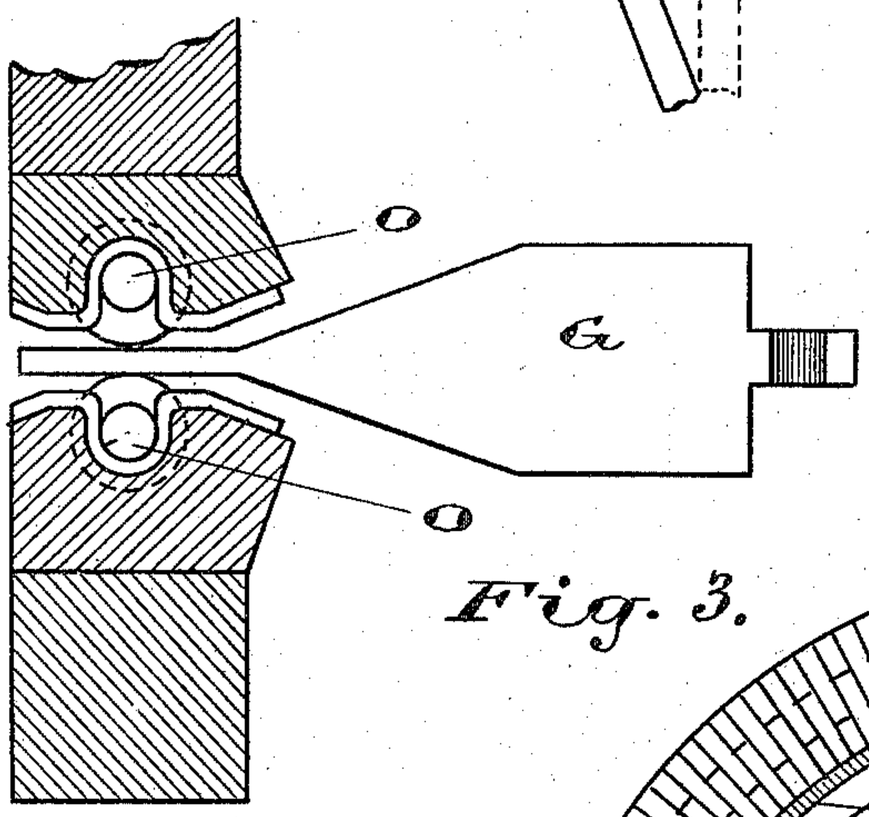

Fig. 3.

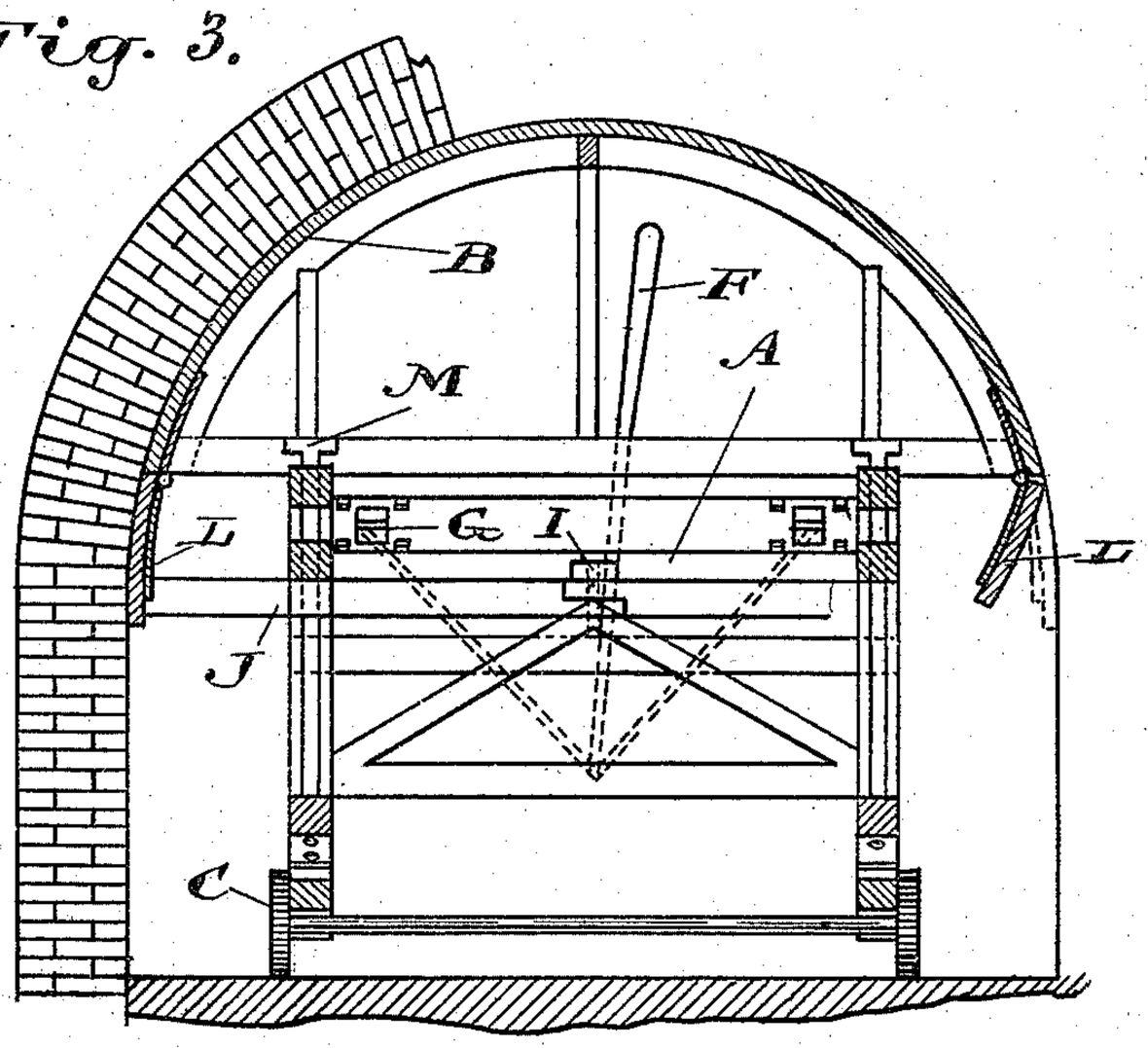

Fig. 2.

Witnesses
J. C. Lamerson
Leonard Stoulds

Inventor
Smith Toye
by Church & Church
his Attorneys.

UNITED STATES PATENT OFFICE.

SMITH TOYE, OF CARDINAL, ASSIGNOR OF ONE-HALF TO ARCHIBALD THOMAS ANDERSON, OF TORONTO, CANADA.

PORTABLE CENTER FOR CONSTRUCTING CONTINUOUS ARCHWAYS.

SPECIFICATION forming part of Letters Patent No. 537,871, dated April 23, 1895.

Application filed April 25, 1894. Serial No. 508,934. (No model.) Patented in Canada September 16, 1889, No. 32,274.

To all whom it may concern:

Be it known that I, SMITH TOYE, residing at Cardinal, in the united counties of Leeds and Grenville, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Portable Centers for Constructing Continuous Archways, (for which I secured Letters Patent No. 32,274 in the Dominion of Canada under date of September 16, 1889;) and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in the construction of continuous archways in mason work, such as sewers and tunnels; and the object of the invention is to provide a portable center upon which a section of the archway of the tunnel or sewer can be built, and when that section is completed to withdraw the center without injury to the completed section and move the center into position for constructing thereupon the next succeeding section of the archway; and the invention consists essentially of the device hereinafter more fully set forth and more particularly pointed out in the claims.

In the drawings:—Figure 1 is a longitudinal sectional elevation of the device. Fig. 2 is a transverse sectional view taken on the line *a*—*a* Fig. 1. Fig. 3 is an enlarged sectional view of the raising wedge showing an end view of the friction rollers bearing thereon. Fig. 4 is a plan view of the top of the frame work of the wedge.

Like letters of reference refer to like parts throughout the specification and drawings.

The apparatus consists of a carriage or frame work A which is supported upon adjustable trucks C. The carriage A supports the cover or center proper B provided with mechanism for withdrawing the sides and raising and lowering said covers from contact with the constructed masonry of the arch. Except for the archways increasing in height or varying in height in different parts it would not be necessary to make the trucks C adjustable. The truck C is connected with the body of the carriage A preferably by wrought iron hinges *d* which are arranged to be set at varying angles by the use of set screws D.

The forked lever E is connected with the hand lever F by means of the connecting rod H, the said levers operating the wedges G which raise or lower the cover B as required.

The wedges G are constructed with a thin rectilinear tongue and a thick rectilinear continuation at the rear thereof for the purpose of arresting the vertical motion of the cover B when the friction wheels O are in contact with either such tongue or extension.

The sliding reach I is connected to the arms J governed by the hand lever K which is hung to the frame work A with eye-bolts S (only one being shown the other eye-bolt being similarly attached on the opposite side of the lever K from that shown.)

The leaves L, L, are extended toward the sides of the sewer when the lever K is in position shown and withdrawn toward the frame work A when the free end of the lever K is raised thus forcing the upper end of the lever K toward the eye *e* shown in the end of the reach I, Fig. 4. A drop leaf L is arranged on each side of and is attached to the cover B preferably by heavy iron strap hinges.

Set through the side beams of the cover B and top beams of the carriage A are pins or dowels M to prevent the horizontal shifting of the cover on the carriage.

The friction rollers O engage with the wedges G to ease the movement thereof while the bearing wheels P at the outer extremity of the arms J reduce friction when they bear upon the drop leaves L.

For constructing concrete sides the drop leaves L may be extended vertically to the floor of the sewer making, when extended, as shown, a tight side which can be withdrawn from contact with the completed work by swinging such drop leaves upon the hinges inward, as shown, before lowering the cover as above explained.

In using my improved portable center for masonry I first construct the floor and side walls of the conduit or sewer upon the desired grade. I then place the carriage A in position upon said floor and in line with the

course of the sewer to be constructed, and place the set screws D in the proper position to give the desired height to the sewer when the cover B is raised as below described. I then place the cover B in position upon the carriage A, as shown, and fasten it therein by means of the pins M engaging with the beams, as above explained. I then raise the cover B by forcing the wedges G between the friction rollers O by means of the forked lever E, connecting rod H and lever F. I then force the drop leaves L into contact with the side walls of the sewer by vertically depressing the hand lever K thus forcing the upper end of the said lever K downward through the eye *e* formed in the end of the reach I (shown in Fig. 4) toward the lever K and thus operating also the extension arms J. I then construct a section of the sewer over the top of my portable center and as soon as the arch is completed I first release the drop leaves L from contact with the constructed masonry by means of the hand lever K operating as above shown. I then drop the cover B by withdrawing the wedges G by means of the levers F, E, and connecting rod H. The portable center being thus released from contact with the constructed masonry, the cover and carriage riding on the truck C are propelled forward into position for constructing another section of the sewer in the same manner as that above mentioned, and this operation is repeated until the desired construction is completed.

If the area of the sewer is to be enlarged as the work progresses I construct my truck C of such a height as will make the raised cover stand at the height of the smallest part of the sewer when the set screws D are released so that both ends of the truck C bear upon the lower beams of the body of the carriage A, and as the construction progresses I raise the body of the carriage at the forward end by means of said set screws so as to have the top of the cover touch on the grade desired and thereafter as such progressive sections are completed I turn the said set screws a given distance thus progressively raising the roof of the constructed sewer on the given grade.

In using this portable center for constructing concrete work I extend the drop leaves L from the hinges the shape desired for the side of the conduit such distance that they will reach to the floor when extended and proceed in the manner above described for masonry, but constructing a section of concrete embracing both sides and arch at each placing of the portable center—progressing the same in the manner above described for masonry from section to section as fast as constructed and set. It will be noted that the cover B is made vertically adjustable in two definite positions, that is, so that the cover or center upon which the arch is formed is raised to a fixed position in relation to the carriage body while the arch is being built thereupon and drop to another fixed position in relation to the carriage body while being moved forward to position for succeeding sections.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a portable center for constructing archways, the combination with a wheeled truck, of a carriage body mounted thereon, a cover supported on said body, means for adjusting said cover vertically, and for securing the same removably upon the carriage body, substantially as described.

2. The combination with the truck and carriage body mounted thereon, of a vertically adjustable cover, secured against horizontal movement, and provided with depending hinged wings, and expanding devices for said wings, substantially as described.

3. The combination with the truck and carriage body, of a vertically adjustable cover, wedge devices for raising said cover, means for securing the cover against horizontal displacement, hinged wings depending from the sides of the cover, and expanding mechanism for said wings consisting of laterally movable arms, and a longitudinal sliding reach, substantially as described.

4. The combination with the centering device, of the hinged truck provided with adjusting screws, substantially as described.

5. The combination with the truck and carriage body, of the vertically adjustable cover, and removable pins for securing the cover upon the carriage body, substantially as described.

Norwood, New York, August 21, 1893.

SMITH TOYE.

In presence of—
DAVID GILMOUR,
JAMES VAN DELINDER.