T. JEYNES.

SHIELDS FOR TUNNELS.

No. 192,512. Patented June 26, 1877.

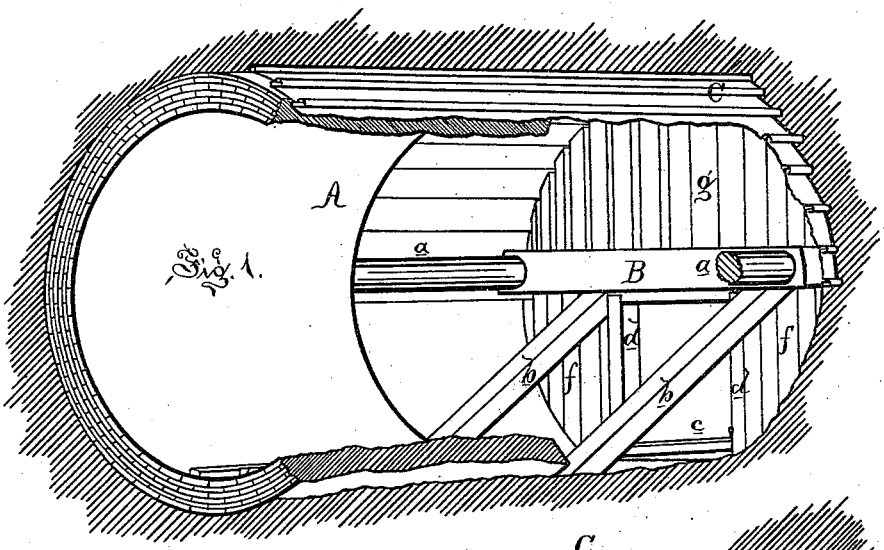

Fig. 1.

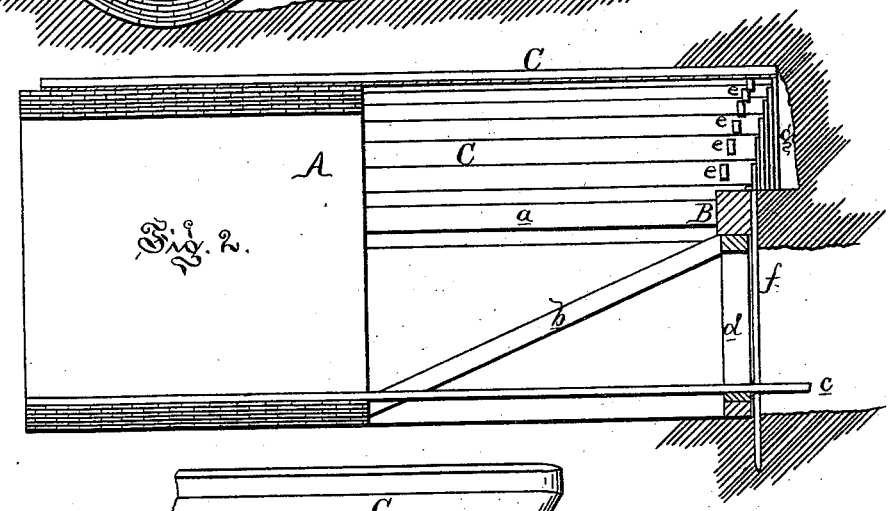

Fig. 2.

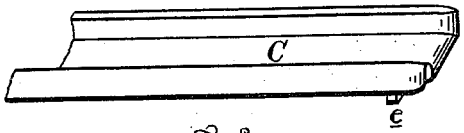

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS JEYNES, OF DETROIT, MICHIGAN.

IMPROVEMENT IN SHIELDS FOR TUNNELS.

Specification forming part of Letters Patent No. **192,512**, dated June 26, 1877; application filed April 4, 1877.

To all whom it may concern:

Be it known that I, THOMAS JEYNES, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Shields for Tunnels, of which the following is a specification:

The nature of my invention relates to an improvement in shields for preventing the caving in of earth in driving tunnels and subterranean galleries until the same is bricked or walled up; its object being to simplify the construction of the shield and to advance it as rapidly as the heading is driven and the tunnel is lined. To this end it consists in making the shield in longitudinal strips or staves, the one overlapping the next at the edge, each stave having an abutment near the front end on the inner side, against which a jack-screw may be placed to advance it into the heading.

Figure 1 is a perspective view of the shield in position at the end of a tunnel, with portion broken away to show the interior. Fig. 2 is a longitudinal vertical section. Fig. 3 is a detached perspective view of a shield-stave.

In the drawing, A represents the head end of the lining of a tunnel, and B a horizontal center sill at the heading-face, held in place by a pair of horizontal braces, *a*, and diagonal braces *b*. In the bottom of the tunnel and drift, tram-rails *c* may be laid, and in the space between the diagonal braces *b* a door-frame, *d*, is placed, under the sill B, to give access to the bottom heading.

The shield is composed of a number of metal staves, C, laid longitudinally on the superior half of the lining. One edge of each stave is flanged radially outward, while the other is flanged outward and then bent inwardly upon itself, to overlap the flange of the adjacent stave, as shown. Upon the inside, near the front end, there is an abutment, *e*, forged on each stave, against which to place a jack-screw, to advance it into the face, the extremity being chisel-pointed.

In bad ground the face is sheet-piled in front of the sill, as represented by the sheet-piles *f*.

The staves are advanced one by one, by means of the jack-screws, beginning with the topmost one and alternating at each side. As fast as advanced the desired distance, each stave is supported by a prop, *g*, whose foot rests on a block laid on a ledge in the face.

The projecting ends of the shield-staves protect the tunnel-head until it can be walled in, when an additional lengthening out of the tunnel-head may be made in like manner.

What I claim as my invention is—

1. In a tunnel-shield, the combination of the metal staves C, overlapped in the manner described, and adapted to be advanced bodily independent of each other, constructed and arranged substantially as and for the purposes set forth.

2. The combination, in a tunnel-shield, of the horizontal braced center sill B, overlapped metal staves C, adapted to be advanced separately, and props *g*, all constructed and arranged substantially as described and shown.

THOMAS JEYNES.

Witnesses:
H. F. EBERTS,
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