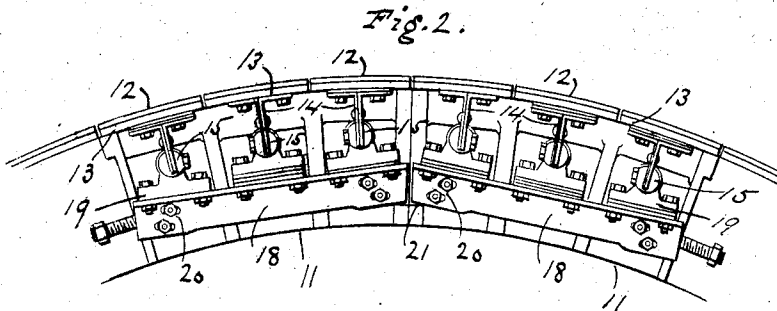
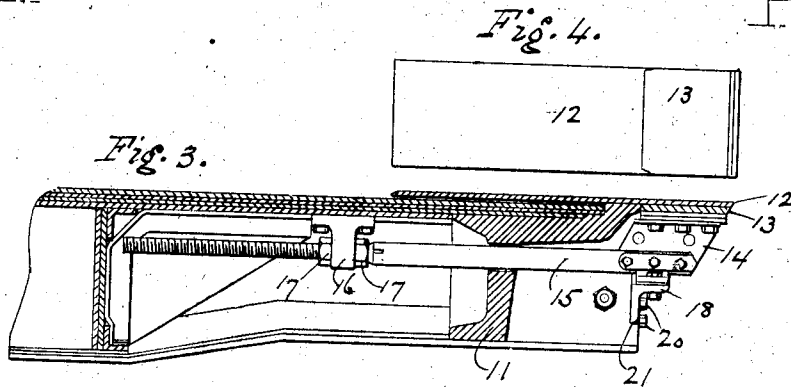
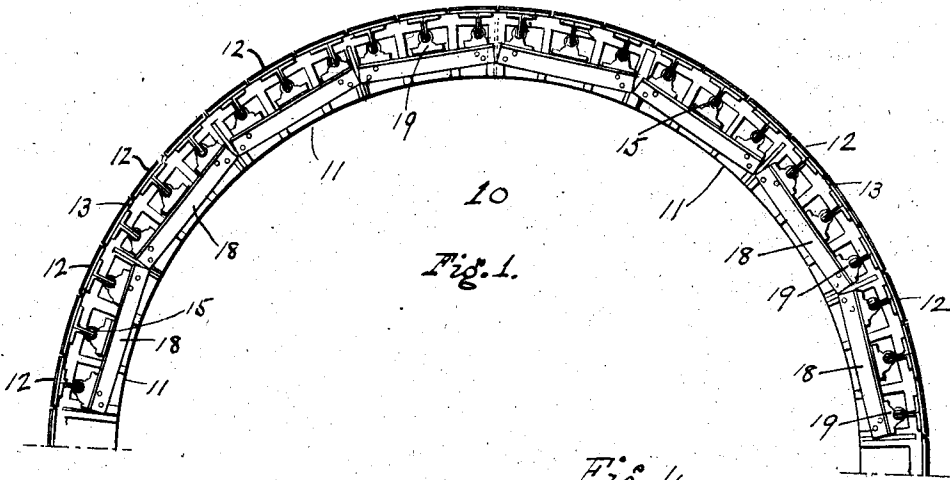


No. 834,745.

PATENTED OCT. 30, 1906.

E. W. MOIR.  
SHIELD FOR TUNNELS.  
APPLICATION FILED APR. 12, 1906.



WITNESSES

Paul A. Blair.  
Halter atty

INVENTOR

Ernest W. Moir  
BY

Horton and Horton

ATTORNEYS

# UNITED STATES PATENT OFFICE.

ERNEST W. MOIR, OF LONDON, ENGLAND, ASSIGNOR TO S. PEARSON AND SON, INCORPORATED, OF LONG ISLAND CITY, NEW YORK, A CORPORATION OF NEW YORK.

## SHIELD FOR TUNNELS.

No. 834,745.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed April 12, 1906. Serial No. 311,305.

*To all whom it may concern:*

Be it known that I, ERNEST W. MOIR, a subject of the King of Great Britain and Ireland, residing in London, England, have invented certain new and useful Improvements in Shields for Tunnels, of which the following is a specification.

My invention relates to apparatus employed in excavating subaqueous tunnels, subways, and the like, and particularly to a sectional extension-hood on the tunnel-shield and the means for advancing it.

It is the object of this invention to provide a simple and improved attachment for the shield that may be easily advanced, and for this purpose I surround the upward half of the forward edge of the shield with a number of plates side by side, each being provided with screw means for advancing it independently into the heading.

In the accompanying drawings, Figure 1 represents a front view of the upper half of the shield with the sectional extension-hood. Fig. 2 represents a similar and enlarged view of a section of the same. Fig. 3 is a sectional view of the shield enlarged, and Fig. 4 is a plan view of one of the plates with its cutting edge in detail.

Referring to the drawings, 10 represents the shield, of substantially the same style as is commonly used in tunnel-driving and operated in a manner well known in the art. At the forward end of the shield is a ring of segments 11, and over the upper half of this ring, preferably on the outer side of the shell of the shield, I provide a plurality of longitudinally-adjustable plates 12 side by side. On the forward end and preferably on the inner side of each plate 12 there may be a reinforcing-plate 13, forming, with the plate 12, the cutting edge. These plates are secured to each other and to T-pieces 14, which may be conveniently formed of angle-irons. To the inner ends of these T-pieces are bolted or otherwise secured adjusting-rods 15, which project backward within the shield and pass through the segments 11 and also through the abutment 16, secured to the shield. Nuts 17 are fitted on the threaded parts of the rod 15 and are adapted to bear against the opposite faces of the abutment 16. By manipula-

tion of these nuts the plates 12 13 may be longitudinally adjusted, as desired.

To support the forward ends of the plates constituting the sectional hood, I provide the cross-bars 18 of angle-iron, which I bolt, as at 20, to the flanges of each segment 11 of the shield, and they may rest on projecting parts 21 of these flanges, Figs. 2 and 3. To the top of these bars I secure guide-blocks 19, on which the adjusting-rods 15 are supported, so as to be free to slide thereon. These blocks 19 may vary slightly in shape, according to their location on the periphery of the tunnel-shield, so as to always be beneath and supporting the shaft, as indicated in Fig. 1.

By turning the nuts 17 on each side of the abutment 16 the shaft 15 may be advanced to force the plate of the extension-hood into the heading, and as the shield is advanced these plates may be withdrawn in a similar manner, as desired.

I claim as my invention—

1. In combination with a tunnel-shield, an extension-hood comprising a plurality of plates around the periphery of the shield, an abutment for each plate, and a screw for advancing each plate independently.

2. In combination with a tunnel-shield, an extension-hood comprising a plurality of plates around the periphery of the shield, an abutment for each plate, on the interior of the shield, and a threaded shaft passing this said abutment, and nuts for advancing each plate independently.

3. In combination with a tunnel-shield, an extension-hood consisting of a plurality of plates around the periphery of the shield, an abutment for each plate, and means for advancing each plate independently, said means comprising an adjustable rod secured to each plate and projecting backward within the forward end of the shield, and means carried by the shield near its forward edge to support the rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

E. W. MOIR.

Witnesses:

H. D. FORBES,  
W. V. TEIG.