

R. R. L. DE MURALT.  
 REVETMENT FOR THE PROTECTION OF SLOPES, EMBANKMENTS, WALLS OF CANALS, &c.  
 APPLICATION FILED SEPT. 21, 1909.

953,051.

Patented Mar. 29, 1910.

Fig. 1.

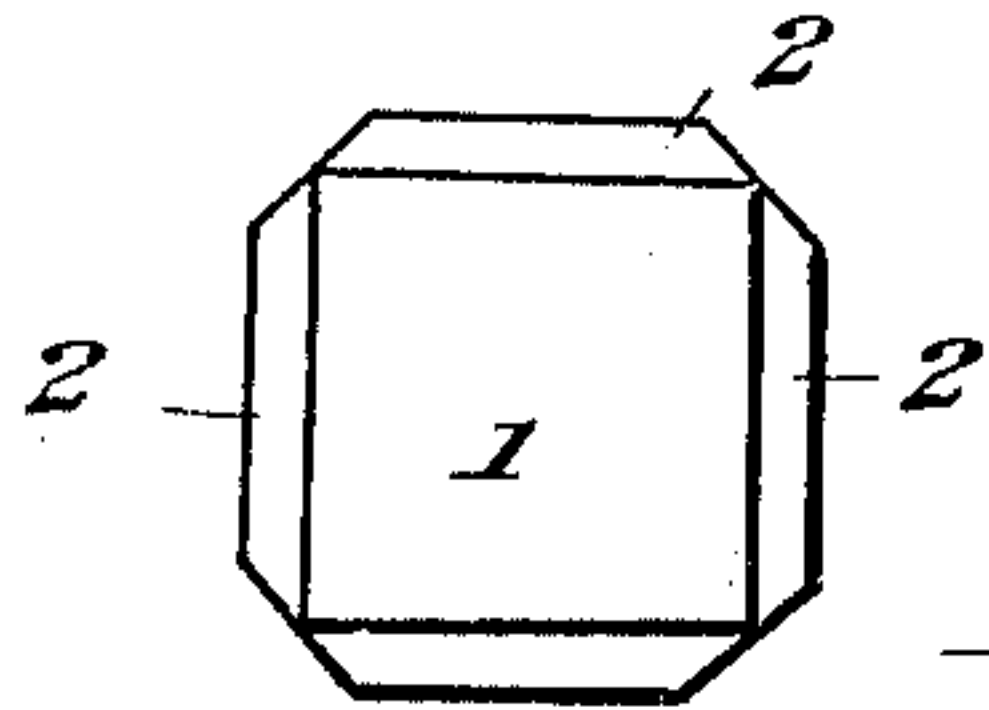


Fig. 3.

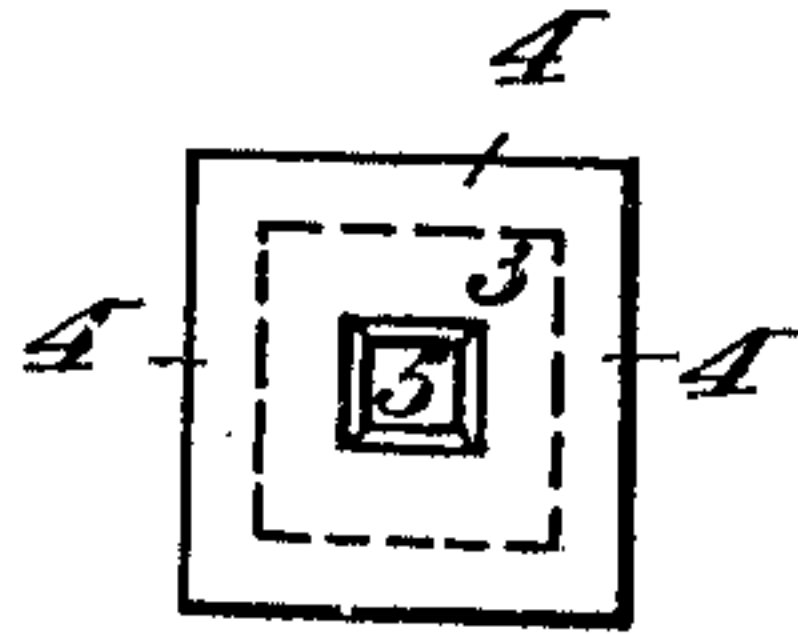


Fig. 5.

Fig. 2.

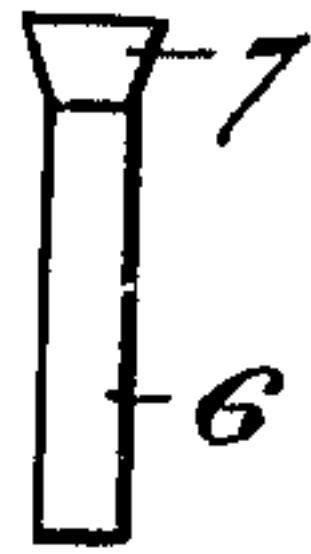


Fig. 4.



Fig. 6.

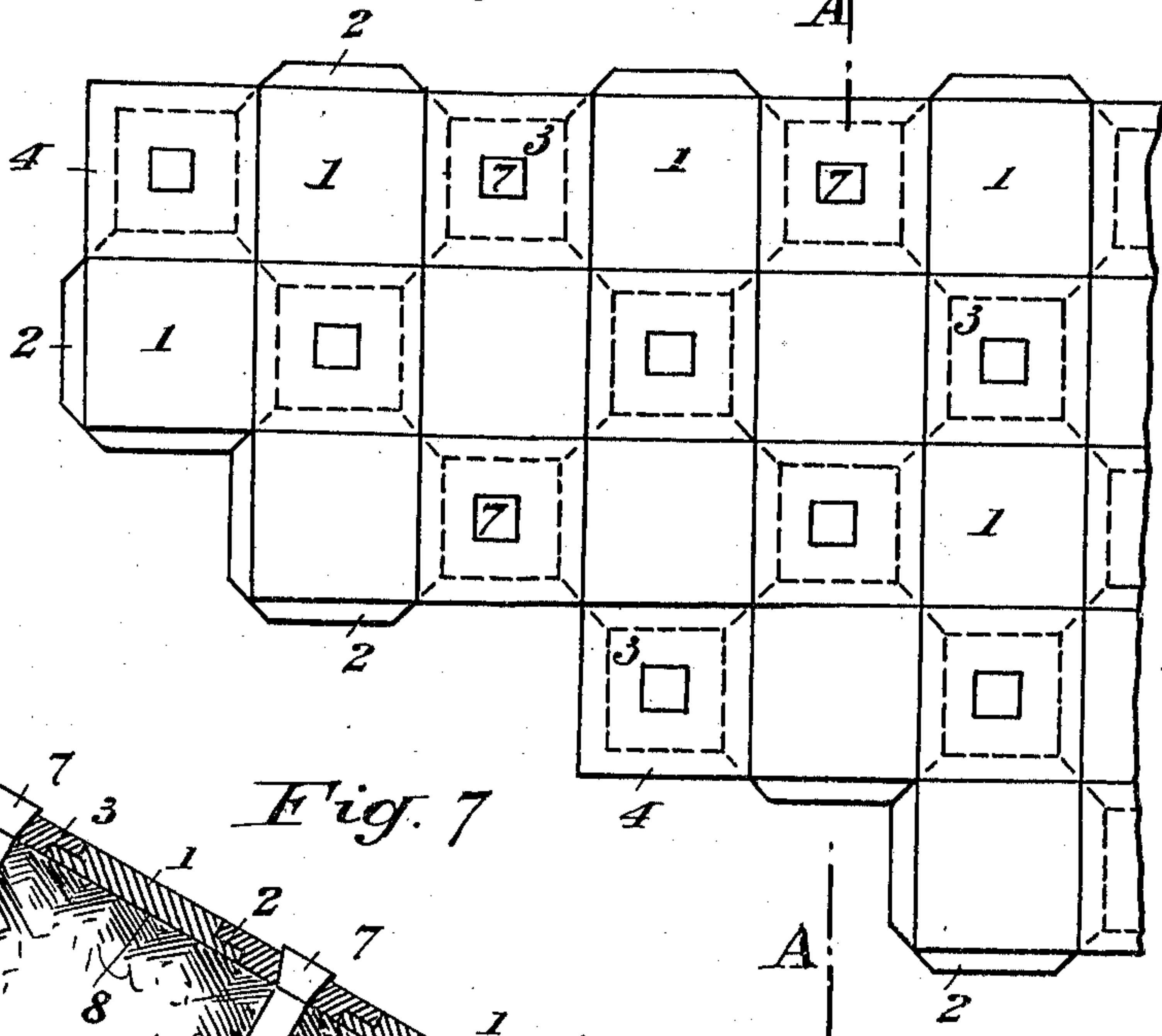
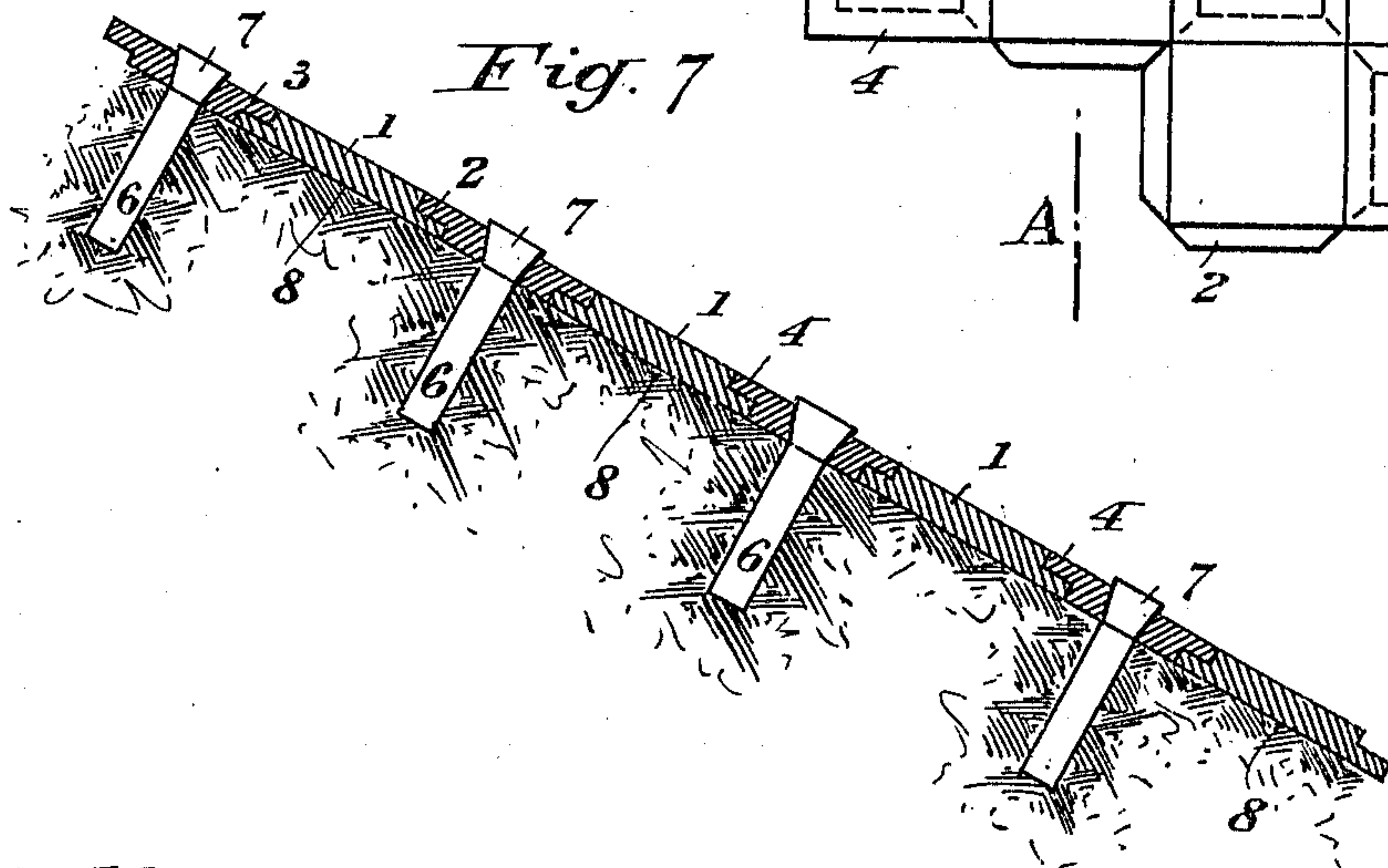


Fig. 7.



WITNESSES

W. P. Burr 14

A. F. Heuman

INVENTOR

Robert Rudolf Lodewijk de Mural

BY M. M. M. M. M.

ATTY



# UNITED STATES PATENT OFFICE.

ROBERT RUDOLF LODEWYK DE MURALT, OF ZIERIKZEE, NETHERLANDS.

REVETMENT FOR THE PROTECTION OF SLOPES, EMBANKMENTS, WALLS OF CANALS, &c.

953,051.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed September 21, 1909. Serial No. 518,844.

*To all whom it may concern:*

Be it known that I, ROBERT RUDOLF LODEWYK DE MURALT, engineer, a subject of the Queen of the Netherlands, residing at Oude Haven No. D. 480, in the city of Zierikzee, in the Kingdom of the Netherlands, have invented certain new and useful Improvements in Revetments for the Protection of Slopes, Embankments, Walls of Canals, and Trenches in General.

The drawback presented by most of the systems of revetment used up to the present for the protection of slopes, dikes, embankments and similar works, for the walls of canals and trenches in general, is their absolute and irrational rigidity, because, generally the grounds protected are submitted to certain unavoidable movements from which there either results that the ground is washed away under the revetment, or that the revetment is completely destroyed through splitting, cracking and disintegration.

The present invention has for its object:

1. A movable revetment for the protection of slopes, dikes, embankments and similar works, for the walls of canals and trenches or any inclined earthen surfaces in general, characterized by the fact that the different elements constituting this revetment remain independent from each other, which allows:

(a.) Certain relative movements of the different elements constituting the revetment.

(b.) Easy and cheap repairs of the movements having taken place in the protected earth-work.

2. A device showing, by way of example, one of the numerous forms of the claimed improvement.

Figures 1 and 2 show in plan view and section respectively a lower element shown by way of example, with a lower ledge or flange. Figs. 3 and 4 show in plan view and section respectively one form of the upper elements, with an upper ledge or flange. Fig. 5 is an elevation of a fixing member, for securing the device in position upon the earthwork or the like. Fig. 6 is an elevation of a part of a complete revetment, according to the invention. Fig. 7 is a section on the line A—A of Fig. 6.

In Figs. 1 and 2: 1, 1 are lower elements. 2, 2 are ledges or flanges of the said lower elements.

In Figs. 3 and 4: 3, 3 are upper elements. 4, 4 are upper ledges of these elements. 5, 5

are openings made in the center of the upper elements.

In Fig. 5: 6 is the body of a fixing member or element. 7 is the head of this member.

In Figs. 6 and 7, the elements or members bear the same reference numbers as in the other figures.

In Fig. 7: 8, 8 represent inclined earth-work surfaces. The ground having been well leveled, a certain number of lower elements are judiciously placed on this surface. These elements are spaced in such a way that the body of each upper element will fill exactly the spaces left free between the lower elements. After the upper elements have thus been placed, so that their ledge or flange covers the ledge or flange of the inferior elements, the fixing members, represented in Fig. 5 are forced into the openings 5 of the upper elements. Previously to this forcing a hole is made in the ground 8 by means of any suitable tool in order to allow the body 6 of the fixing element to penetrate sufficiently deep into the earth-work.

The lower elements, the upper elements and the fixing members can have any suitable form, any suitable size and be made of any suitable material.

Having now fully described my invention what I claim is:

1. A protective device for earth work and the like, comprising a plurality of elements, each element being free from positive connection with any other element.

2. A protective device for earth work and the like, comprising a plurality of elements, each element being free from positive connection with any other element, and means for securing certain of said elements to the earth work.

3. In a protective device for earth work and the like, in combination, a plurality of elements provided with a lower flange, and a plurality of elements provided with an upper flange, said elements being free from positive connection with one another and being so positioned upon the earth work that the upper flanges of said second mentioned elements engage the lower flanges of said first mentioned elements.

4. In a protective device for earth work and the like, in combination, a plurality of elements provided with a lower flange, a

- plurality of elements provided with an upper flange, said elements being free from positive connection with one another, and being so positioned upon the earth work
- 5 that the upper flanges of said second mentioned elements engage the lower flanges of said first mentioned elements, and means for securing said second mentioned elements to the earth work.
- 10 5. In a protective device for earth work and the like, in combination, a plurality of elements provided with a lower flange, a plurality of elements provided with an upper flange, said elements being free from
- 15 positive connection with one another, and being so positioned upon the earth work that the upper flanges of said second mentioned elements engage the lower flanges of said first mentioned elements, said second mentioned elements being provided with 20 openings therethrough, and fixing members extending through said openings and into the earth work for retaining the elements in position.
- In witness whereof I have hereunto set 25 my hand in presence of two witnesses.
- ROBERT RUDOLF LODEWYK DE MURALT.
- Witnesses:
- E. HEYL,  
GREGORY PHELAN.