

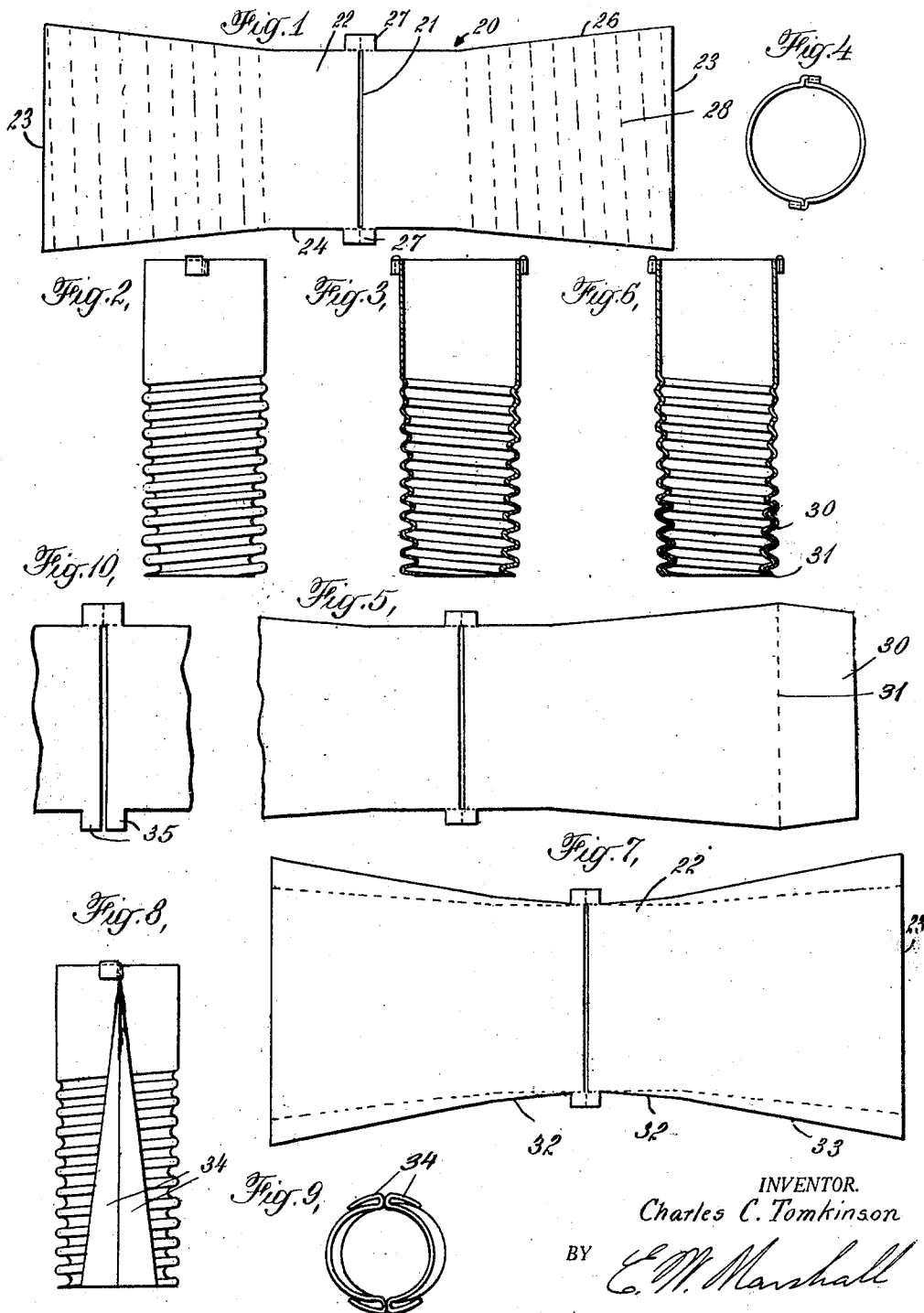
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EXPANSION SHIELD

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EXPANSION SHIELD.

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To all whom it may concern:

Be it known that I, CHARLES C. TOMKINSON, a citizen of the United States, and a resident of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Expansion Shields, of which the following is a specification.

This invention relates to expansion shields and more particularly to sheet metal expansion shields.

One of the objects of the invention is to provide a simple and inexpensive device of the character described which will effectively hold a bolt or screw in material such as stone, brick or cementitious material with which the shield element can not directly obtain a secure hold.

Another object of the invention is to provide a simple device of the character described which may be economically manufactured and will effectively perform the desired functions.

Another object of the invention is to provide a simple, practical and inexpensive method of manufacturing an expansion shield of the character described.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application and in which

Fig. 1 is a plan view of one form of blank from which an expansion shield embodying the invention may be formed.

Fig. 2 is an elevation of the completed shield formed from the blank shown in Fig. 1.

Fig. 3 is a longitudinal sectional elevation of the shield shown in Fig. 2.

Fig. 4 is an end elevation of the outer end of the shield shown in Fig. 2.

Fig. 5 is a plan view of another form of blank that may be utilized in forming an expansion shield constructed in accordance with my invention.

Fig. 6 is a sectional elevation of a shield formed from the blank shown in Fig. 5.

Fig. 7 is a plan view of another form of blank.

Fig. 8 is an elevation of a shield formed from the blank shown in Fig. 7.

Fig. 9 is an end elevation of the inner end of the shield shown in Fig. 8, and

Fig. 10 is a plan view of the central por-

tion of still another form of blank which may be utilized and embodies the invention.

The invention may be briefly described as follows. In carrying out the invention a single piece sheet metal blank is used, this blank comprising an elongated member having a transverse slit at substantially the longitudinal center thereof. This slit divides the blank into two elements connected together at at least one edge by an extension or tab. In order to form the shield the blank is folded on an axis substantially coinciding with the slit and the tab or tabs are folded back on the outer surface of the shield. In the particular forms of the invention illustrated the end portions of the blank are flared to provide an excess of metal and the shield is formed with a constricted or tapered bore.

Referring first to the form of the invention shown in Figs. 1-4 there is illustrated a blank 20 having a transverse slit 21 at substantially the longitudinal center thereof. The blank comprises a central portion 22 and end portions 23. The side edges of the central portion are substantially parallel as shown at 24 and the edges of the end portions flare or gradually increase in width from their adjacent ends to their other ends as shown at 26. The object of this increase in width is to provide an excess of metal toward the inner end of the shield. The central portion 22 as shown in Fig. 1, is divided into two parts by the slit 21, these parts being connected by lateral extensions or tabs 27 disposed substantially at the longitudinal center line of the blank and extending outwardly or laterally beyond the ends of the slit.

Corrugations 28 are formed in the portions 23 of the blank and as shown in Figs. 2 and 3 these corrugations increase in depth and have their greatest depth in the portions forming the inner end of the shield. This increase in depth of the corrugations, of course, forms a constricted or tapered bore for the shield. It will be understood that the corrugations may be formed either before the blank is folded or at some subsequent step in making the shield.

To form the shield from the blank shown in Fig. 1 the blank is folded about an axis substantially coinciding with the slit 21 and the two portions of the blank are separated to form the substantially cylindrical shield

shown in Figs. 2, 3 and 4. The tabs 27 are folded with the blank and when the shield has been formed the extensions or tabs are folded back against the outer surface thereof as clearly illustrated in Figs. 2 to 4.

In Figs. 5 and 6 another form of the invention is shown, this form differing from that already described in that extensions 30 are formed on each end of the blank to provide an excess of metal which may be folded back on the blank as shown in Fig. 6 at 31. In other respects the blank shown in Fig. 5 and the shield shown in section in Fig. 6 are similar to the blank and shield shown in Figs. 1-4.

In Figs. 7, 8 and 9 another embodiment of the invention is illustrated. The blank shown in Fig. 7 has its end portions 23 flared at a greater angle than are the portions 23 in Fig. 1 to provide a still greater excess of metal. Furthermore the central portion 22 of the blank shown in Fig. 7 is also flared as shown at 32 but it should be noted that the angle of the flaring portion 32 is not as great as that of the flaring portion 33 of the portions 23 of the blank, the reason for this being that the portions 23 only are corrugated and therefore as the central portion is not corrugated an excess of metal for this purpose need not be provided. In Figs. 8 and 9 the completed shield formed from the blank shown in Fig. 7 is illustrated and it will be noted that the edges of the expansible elements of the shield are folded back upon the constricted portion of the bore to provide a greater excess of metal for the purpose of more effectively gripping the wall of the opening in which the shield is used. This folded back portion is indicated at 34 in Figs. 8 and 9.

In Fig. 10 still another form of blank is shown and in this form it will be noted that the slit 21 extends entirely through one edge of the blank but that a pair of tabs or extensions 35 is formed on the blank. It will be understood that when the shield is formed from the blank shown in Fig. 10, the extensions 35 will be folded back of the outer surface of the shield in the same manner as the tabs 27 of the other embodiment of the invention.

The folded tabs or extensions, in addition to forming the connections between the expansible elements, have the function of preventing rotation of the shield in the opening in which it is positioned.

From the above description it will be obvious that the blank from which the shield is formed can be very economically manufactured and furthermore that the method of forming the shield from the blank is simple and may be accomplished with a minimum expense. The shield moreover,

possesses all the advantages possessed by any of the other devices of this character since the corrugations will effectively grip the wall of the opening and firmly retain the shield in position.

Although certain specific embodiments of the invention have been illustrated and described, it will be understood that the invention is capable of further modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention as expressed in the following claims.

What I claim is:

1. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending members and having a transverse slit therebetween, and folding the members on an axis coinciding with the slit into a tubular shield.

2. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending, tapered members, and having a transverse slit therebetween, and folding the members on an axis coinciding with the slit into a tubular shield with the outer portions thereof of greatest diameter lying in substantially the same cylinder and opposite parts depressed to constrict the bore of the tube.

3. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending, tapered members, and having a transverse slit therebetween, and folding the members on an axis coinciding with the slit into a tubular shield with the outer portions thereof of greatest diameter lying in substantially the same cylinder and opposite parts depressed to constrict the bore of the tube, and folding the members over parts adjacent the depressions to provide an excess of metal at the part of the tube of constricted bore.

4. The process of making an expansion shield which consists in forming a blank of sheet metal with a central portion having a width substantially equal to the circumference of the outer end of the completed shield and with a pair of members extending oppositely from the central portion, and separated throughout the major portion of the width of their adjacent ends by a transverse slit, and folding the members, on an axis substantially coinciding with the slit, into a tubular shield.

5. The process of making an expansion shield which consists in forming a blank of sheet metal with a central portion having a width substantially equal to the circumference of the outer end of the completed shield and with a pair of tapered members

extending oppositely from the central portion, and separated throughout the major portion of the width of their adjacent ends by a transverse slit, and folding the members, on an axis substantially coinciding with the slit, into a tubular shield, with the outer portions thereof of greatest diameter lying in substantially the same cylinder and opposite parts depressed to constrict the bore of the tube.

6. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending members having a transverse slit therebetween and tabs extending beyond the ends of the slit, and folding the members and tabs on an axis coinciding with the slit, into a tubular shield.

7. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending members having a transverse slit therebetween and a tab extending beyond at least one end of the slit, and folding the members and tab on an axis coinciding with the slit, into a tubular shield.

8. The process of making an expansion shield which consists of forming a sheet metal blank with a pair of connected, oppositely extending members having a transverse slit therebetween and tabs extending beyond the ends of the slit, folding the members and tabs on an axis coinciding with the slit, into a tubular shield and folding the tabs back toward the outer surface of the shield.

9. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit disposed substantially at the longitudinal center thereof and having the side edges at both sides of the longitudinal center flaring from the central portion toward the ends thereof.

10. A sheet metal blank for expansion shields comprising a pair of members separated throughout the major portion of their inner ends by a transverse slit and connected at their inner ends at their side edges.

11. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially its longitudinal center and a laterally extending tab on at least one of its side edges.

12. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially its longitudinal center and a laterally extending tab on each of its side edges.

13. A sheet metal blank for expansion shields comprising an elongated member having outwardly flaring end portions and a transverse slit at substantially its longitudinal center and a laterally extending tab on at least one of its side edges.

14. A sheet metal blank for expansion shields comprising an elongated member having outwardly flaring end portions and a transverse slit at substantially its longitudinal center and a laterally extending tab on each of its side edges.

15. A sheet metal blank for expansion shields comprising an elongated blank having a transverse slit at substantially its longitudinal center and having the portions extending laterally from the slit connected at each edge.

16. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially the longitudinal center and having laterally extending tabs disposed substantially in alignment with said slit.

17. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially the longitudinal center and having a laterally extending tab disposed substantially in alignment with the slit at at least one end thereof.

18. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially the longitudinal center and having laterally extending tabs, connecting the members, disposed substantially in alignment with said slit.

19. A sheet metal blank for expansion shields comprising an elongated member having a transverse slit at substantially the longitudinal center and outwardly extending, flaring end portions, said member also having laterally extending tabs disposed substantially in alignment with said slit.

20. A sheet metal blank for expansion shields comprising an elongated member having a central portion with substantially parallel side edges, and end portions, flaring from the central portion outwardly, said member having a transverse slit at its longitudinal center, extending substantially to the side edges of the member, and extensions formed on said member beyond the ends of the slit.

21. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of elements connected at one end by a tab and said tab in the completed shield being folded back on the outer surface of one of the elements.

22. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of elements connected at one end by diametrically aligned tabs and said tabs in the completed shield being folded back on the outer surface of the elements.

23. An expansion shield comprising a one piece, tubular sheet metal member having a

tapered bore, said member comprising a pair of expansible elements connected at one end by at least one outwardly extending tab.

24. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of expansible elements with a connecting tab at one end of the elements folded back on the outer surface of the shield.

25. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of expansible elements connected at one end by a tab formed integral with both members and folded back on the outer surface of the shield.

26. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of expansible elements connected at one end by a pair of diametrically opposite tabs, integral with both members and folded back on the outer shield surface.

27. A one piece, tubular, sheet metal expansion shield having a constricted bore, comprising a pair of elements connected at one end by extensions, folded back, on the outer surface of the shield.

28. An expansion shield comprising a one piece, tubular sheet metal member, said member comprising a pair of expansible elements connected at one end by a pair of

tabs and having an excess of metal on the outer surface thereof.

29. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of expansible elements connected at one end by at least one outwardly extending tab, said elements having an excess of metal on their outer surfaces on the tapered portions thereof.

30. An expansion shield comprising a one piece, tubular sheet metal member having a tapered bore, said member comprising a pair of expansible elements connected at one end by at least one outwardly extending tab, said elements having an excess of metal on their outer surfaces on the tapered portions thereof, and increasing in amount as the bore decreases in area at its inner end.

31. An expansion shield comprising a one piece, tubular sheet metal member, said member comprising a pair of expansible elements connected at one end by at least one outwardly extending tab, said elements having an excess of metal on the outer surfaces thereof.

In witness whereof, I have hereunto set my hand this 3rd day of Jan. 1922.

CHARLES C. TOMKINSON.

Witness:

I. B. MOORE.