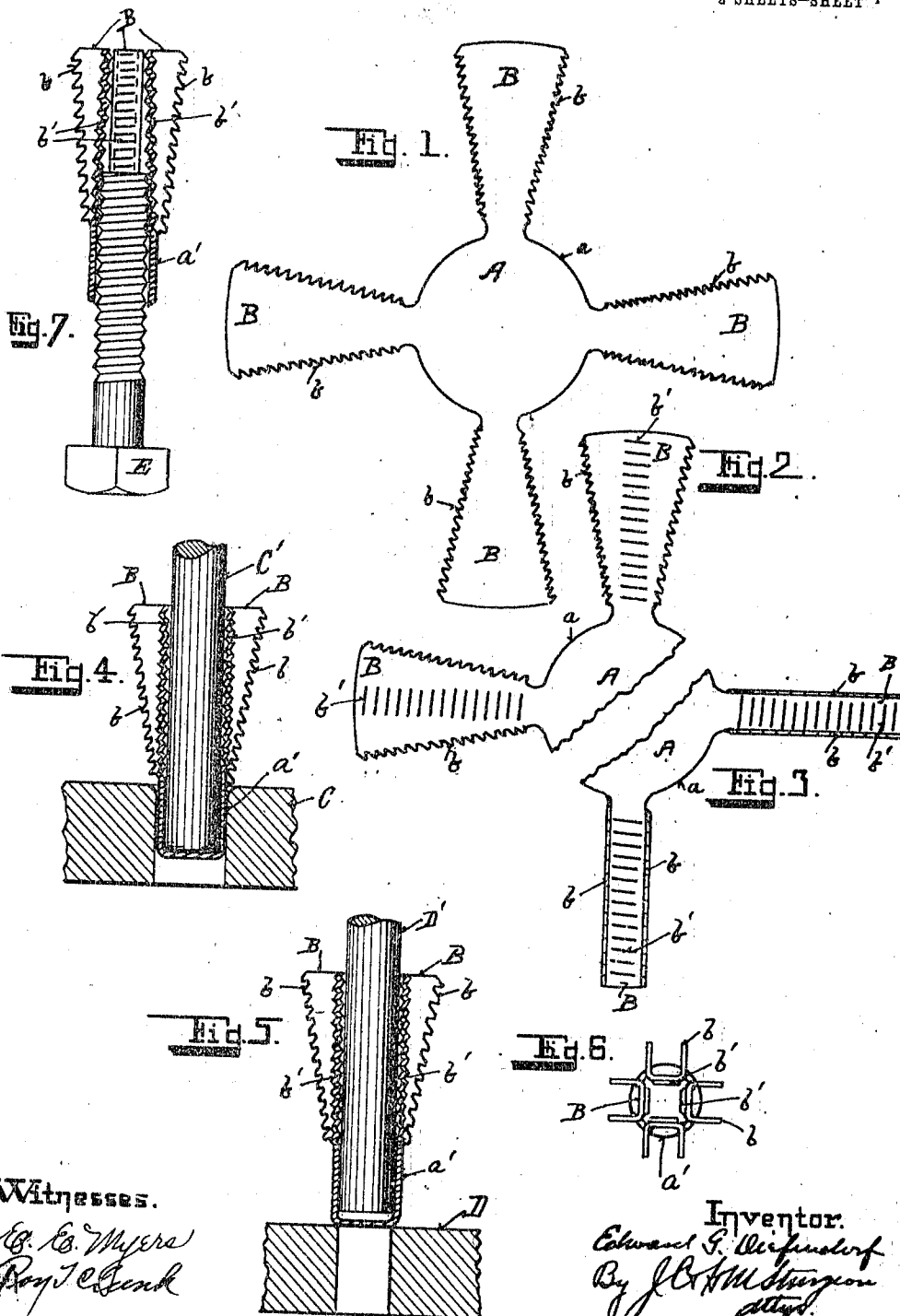


E. G. DIEFENDORF.
 PROCESS OF FORMING SEAMLESS EXPANSION SHIELDS FOR LAG BOLTS FROM SHEET METAL.
 APPLICATION FILED JAN. 26, 1914.

1,114,971.

Patented Oct. 27, 1914.

3 SHEETS—SHEET 1



Witnesses.

E. G. Myers
Ray J. Cook

Inventor.

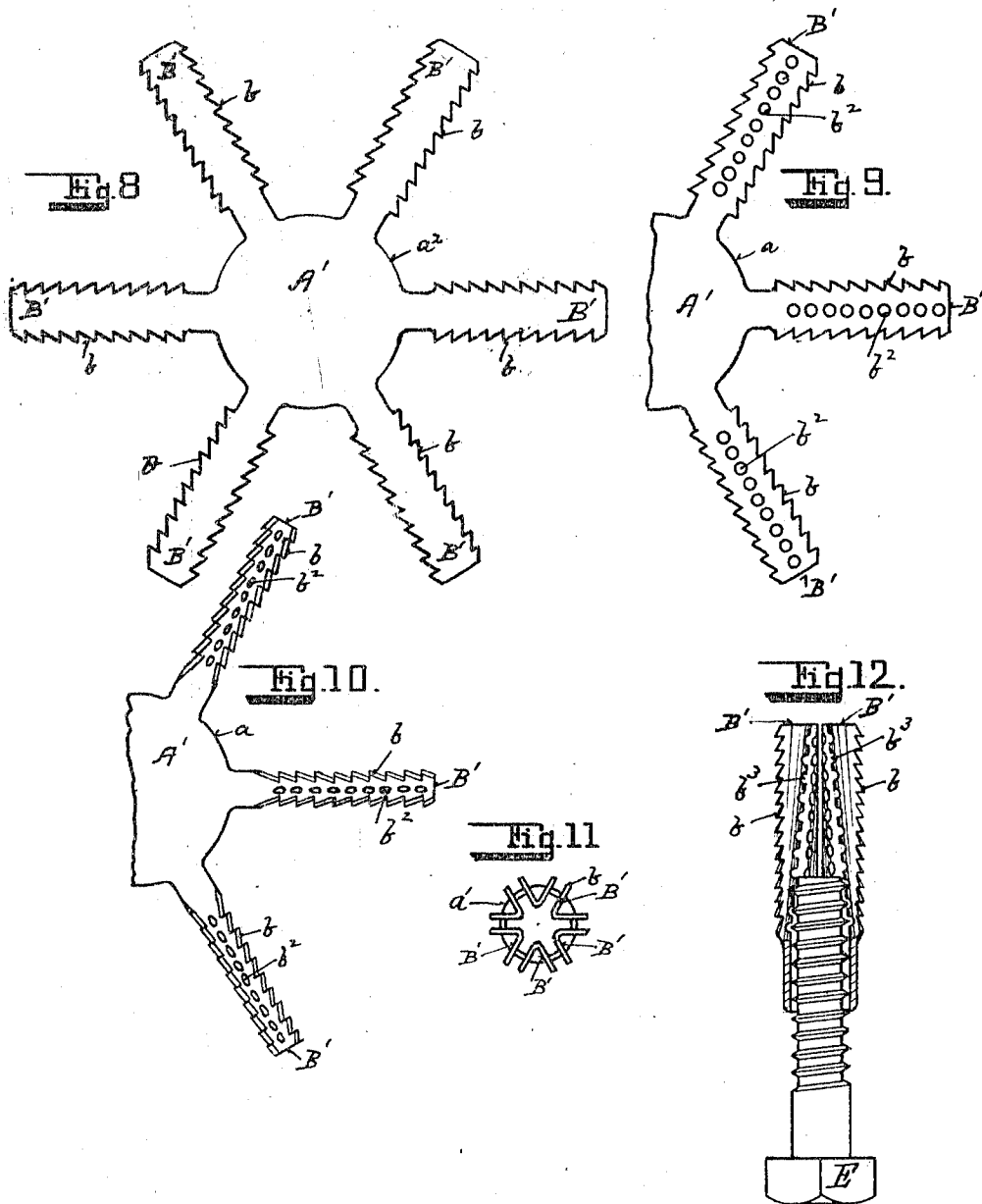
Edward G. Diefendorf
 By *J. C. M. Stinson*
attys.

E. G. DIEFENDORF.
 PROCESS OF FORMING SEAMLESS EXPANSION SHIELDS FOR LAG BOLTS FROM SHEET METAL.
 APPLICATION FILED JAN. 26, 1914.

1,114,971.

Patented Oct. 27, 1914.

2 SHEETS—SHEET 2.



Witnesses.
 C. E. Myers
 Roy J. Clunk

Inventor.
 Edward S. Diefendorf
 By J. C. Huntington
 atty.

UNITED STATES PATENT OFFICE.

EDWARD G. DIFENDORF, OF ERIE, PENNSYLVANIA.

PROCESS OF FORMING SEAMLESS EXPANSION-SHIELDS FOR LAG-BOLTS FROM SHEET METAL.

1,114,971.

Specification of Letters Patent.

Patented Oct. 27, 1914.

Application filed January 23, 1914. Serial No. 314,337

To all whom it may concern:

Be it known that I, Edward G. DIFENDORF, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Forming Seamless Expansion-Shields for Lag-Bolts from Sheet Metal; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to expansion shields for lag-bolts, and has for its object the perfecting of a process whereby seamless expansion shields for lag-bolts may be formed up from sheet metal.

The steps of my process are hereinafter set forth and described, and are illustrated in the accompanying drawings, in which:—

Figure 1, is a plan view of one form of sheet metal blank used with my process. Fig. 2, shows a plan view of a portion of said blank after receiving one of the steps of my process. Fig. 3, shows a plan view of a portion of said blank, illustrating a step of my process. Fig. 4, is a longitudinal central section of the same, illustrating a step of my process. Fig. 5, is a like view of the same, illustrating a step of my process. Fig. 6, is an end view of a seamless expanding shield for lag-bolts, made in accordance with my process. Fig. 7, is a central longitudinal section of a seamless expanding shield made in accordance with my process, in place on a lag-bolt. Fig. 8, is a plan view of another form of sheet metal blank used in my process for forming expanding shields for lag-bolts. Fig. 9, is a plan view of a portion of the same illustrating an alternative step in my process. Fig. 10, is a plan view of a portion of the same illustrating another alternative step in my process. Fig. 11, is an end view of a lag-bolt shield, formed from the blank shown in Fig. 8, according to my process. Fig. 12, is a longitudinal section of the same in place upon a lag-bolt.

In these drawings Figs. 1, 2, and 3, A, indicates a blank of sheet metal, which I first cut in the form shown in Fig. 1, with a cen-

tral disk *a*, having radial arms B, integral therewith, and preferably with teeth *b*, on the edges of the arms B. The arms B, are next provided with corrugations *b'*, which are so placed that they will engage the threads on a lag-bolt when the shield is finished. The serrated edges *b*, of the arms B, are then bent upward as shown in Fig. 3. The disk *a*, is then formed into a cylinder or thimble *a'* preferably by means of a forming die C, and plunger C', as shown in Fig. 4; the forming of this thimble *a'*, causing the radial arms B, to extend upward along the sides of the plunger C'. The last step of my process is to cut out the closed end of the thimble *a'*, which I preferably do by means of a cutting die D, and punch D', as shown in Fig. 5; after which the shield is ready for the reception of a lag-bolt E, as shown in Fig. 7.

In Fig. 8, I show an alternative form of blank A', having a central disk *a'*, and radial arms B', integral therewith, which is cut from a sheet of metal, and along the edges of which arms B', I cut teeth *b*, as hereinbefore described.

In Fig. 9, I illustrate an alternative manner of providing for the engagement of the threads on a lag-bolt, consisting in punching a row of holes *b''*, along the middle portion of each radial arm B'.

In Fig. 10, I show an alternative manner of bending the serrated edges *b*, upward, the line of such bending being on the central line of the holes *b''*, so that said arms B', will be V-shaped in cross section, as shown in Fig. 11, and said holes *b''*, will form notches *b'''*, into which the threads on a lag-bolt E, may enter as shown in Fig. 12.

After the blank (Fig. 8), has received the treatment illustrated in Figs. 9 and 10, it is then treated as illustrated in Figs. 4 and 5, and as hereinbefore described. The alternative steps of my process shown in Figs. 9 and 10, produce the same results and are essentially the same as are the steps of my process illustrated in Figs. 2 and 3.

Having thus fully illustrated and described my improved process so as to enable others to utilize the same, what I claim as new and desire to secure by Letters Patent, is:—

The process of forming expansion shields for lag-bolts, consisting of cutting a disk from sheet metal with radial arms extend-

ing from the periphery thereof, forming
thread engaging means in the metal com-
posing said arms, bending the metal of said
arms longitudinally, and giving said disk
5 and arms a cylindrical form with the edges
of said arms outward, substantially as de-
scribed.

In testimony whereof I affix my signa-
ture, in presence of two witnesses.

EDWARD G. DIEFENDORF.

Witnesses:

H. M. STURGEON,
P. V. GIFFORD.