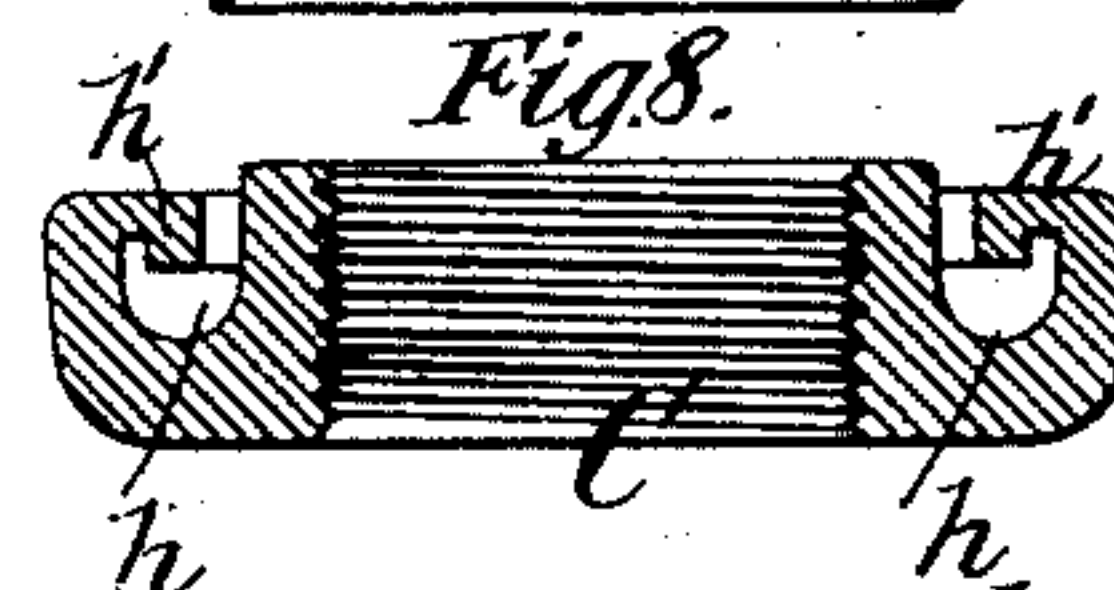
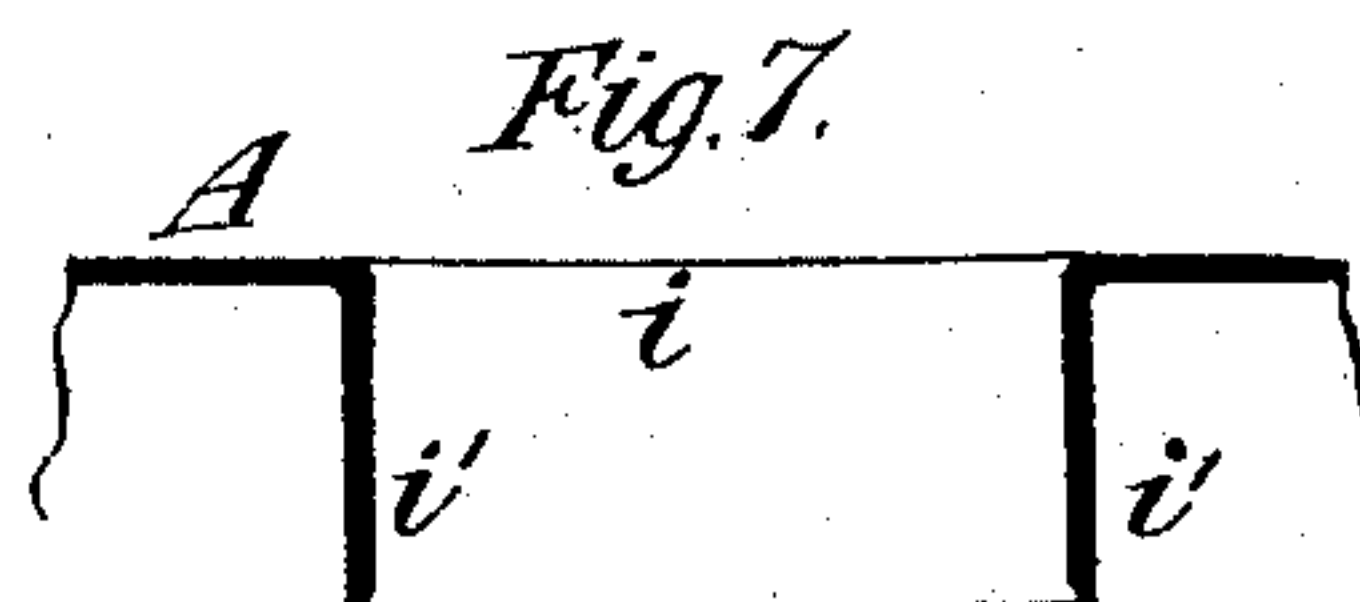
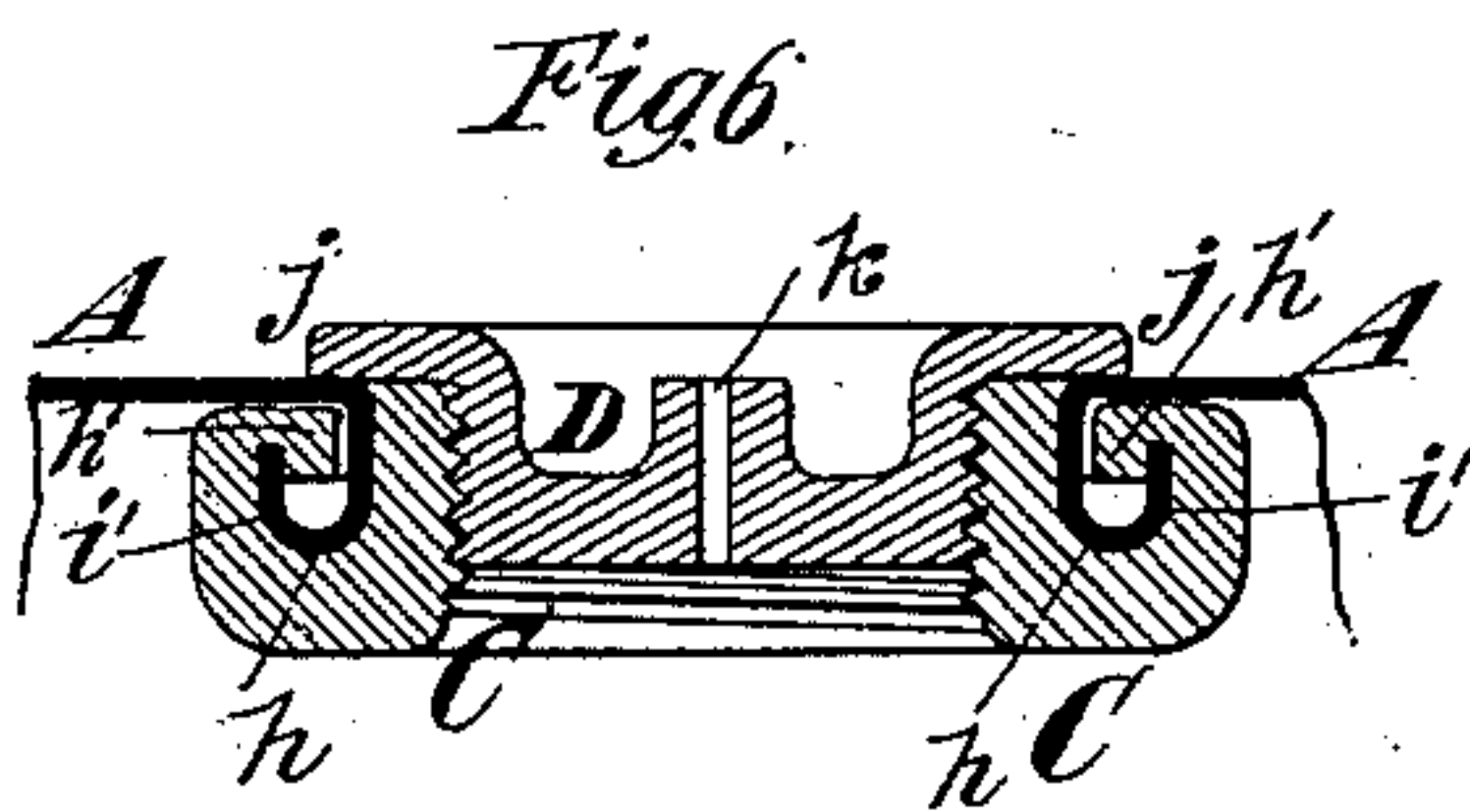
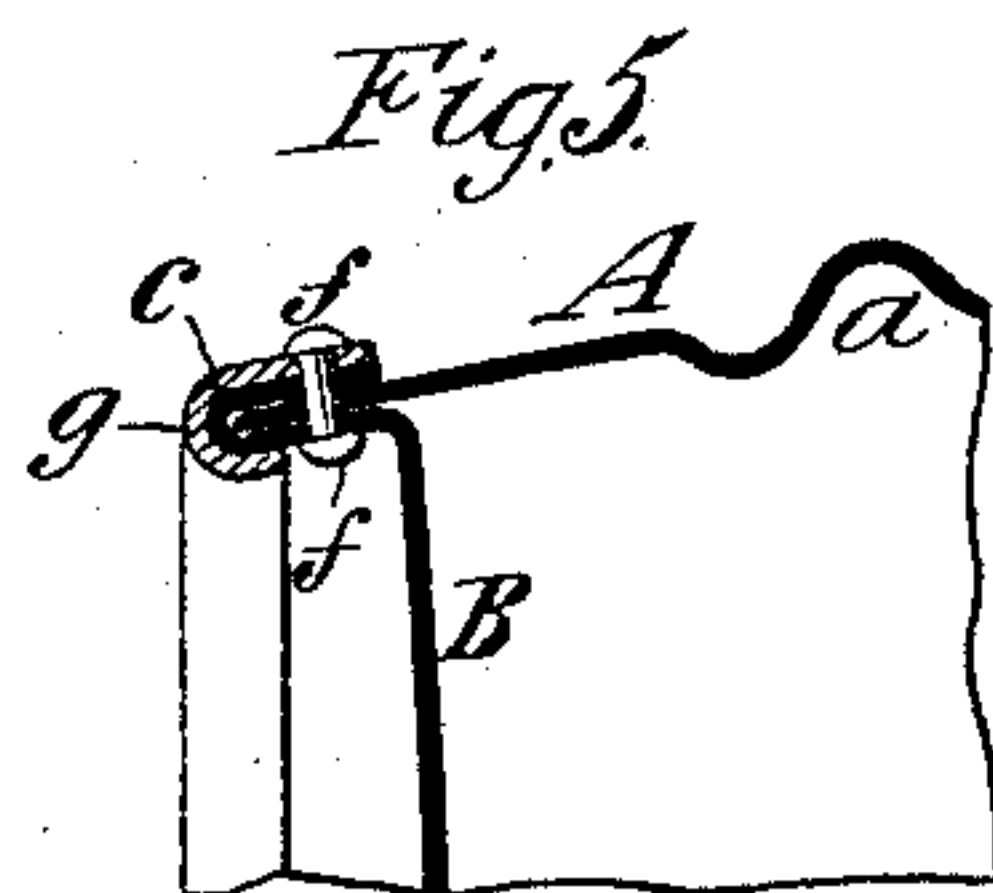
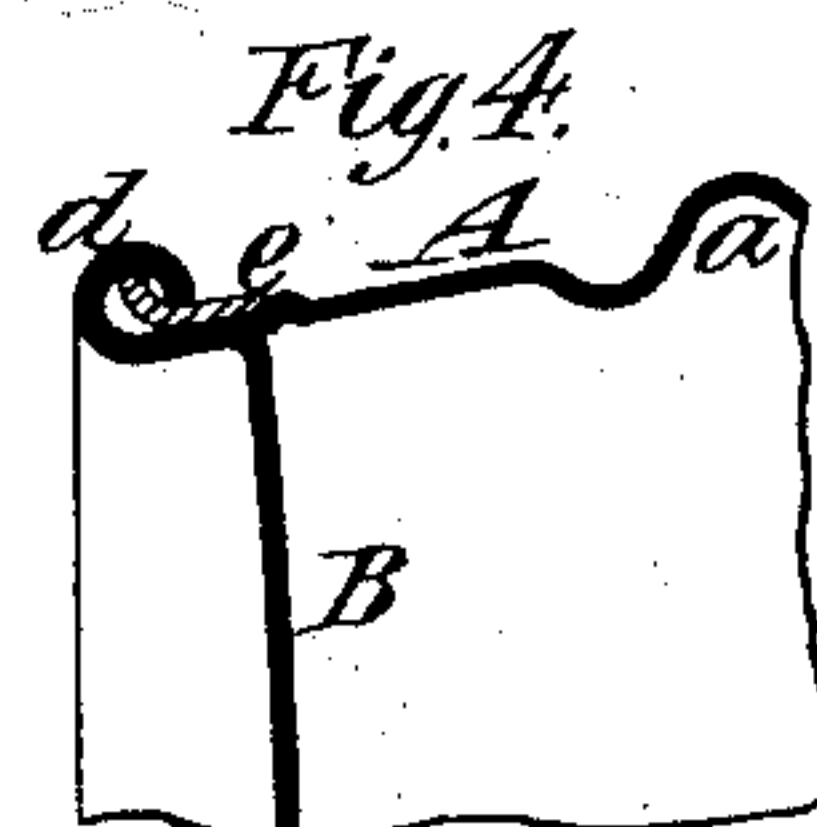
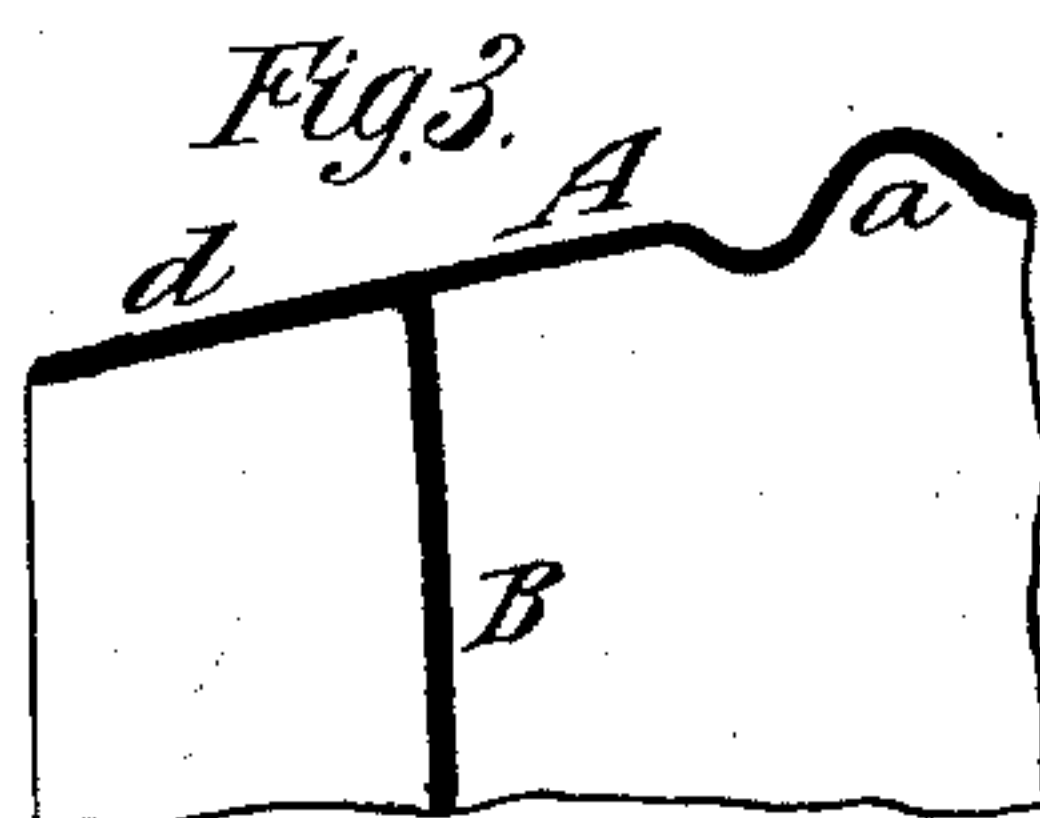
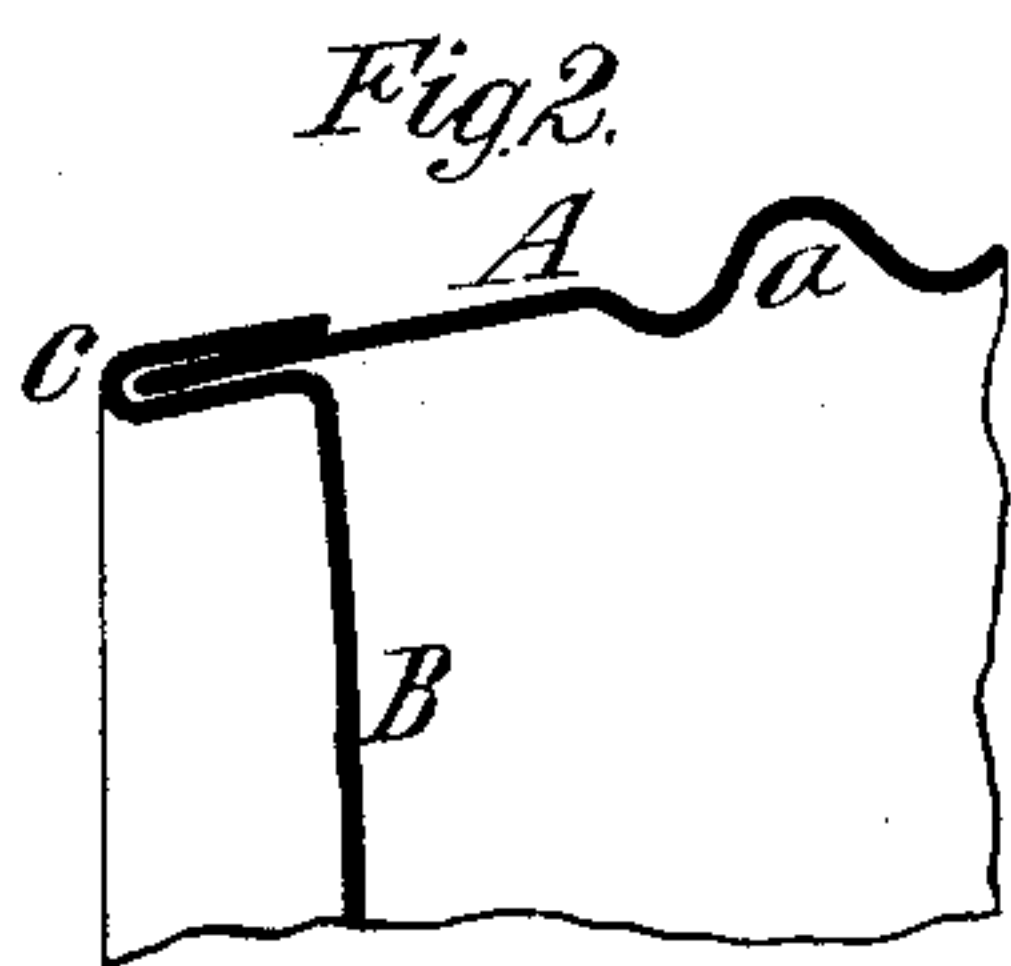
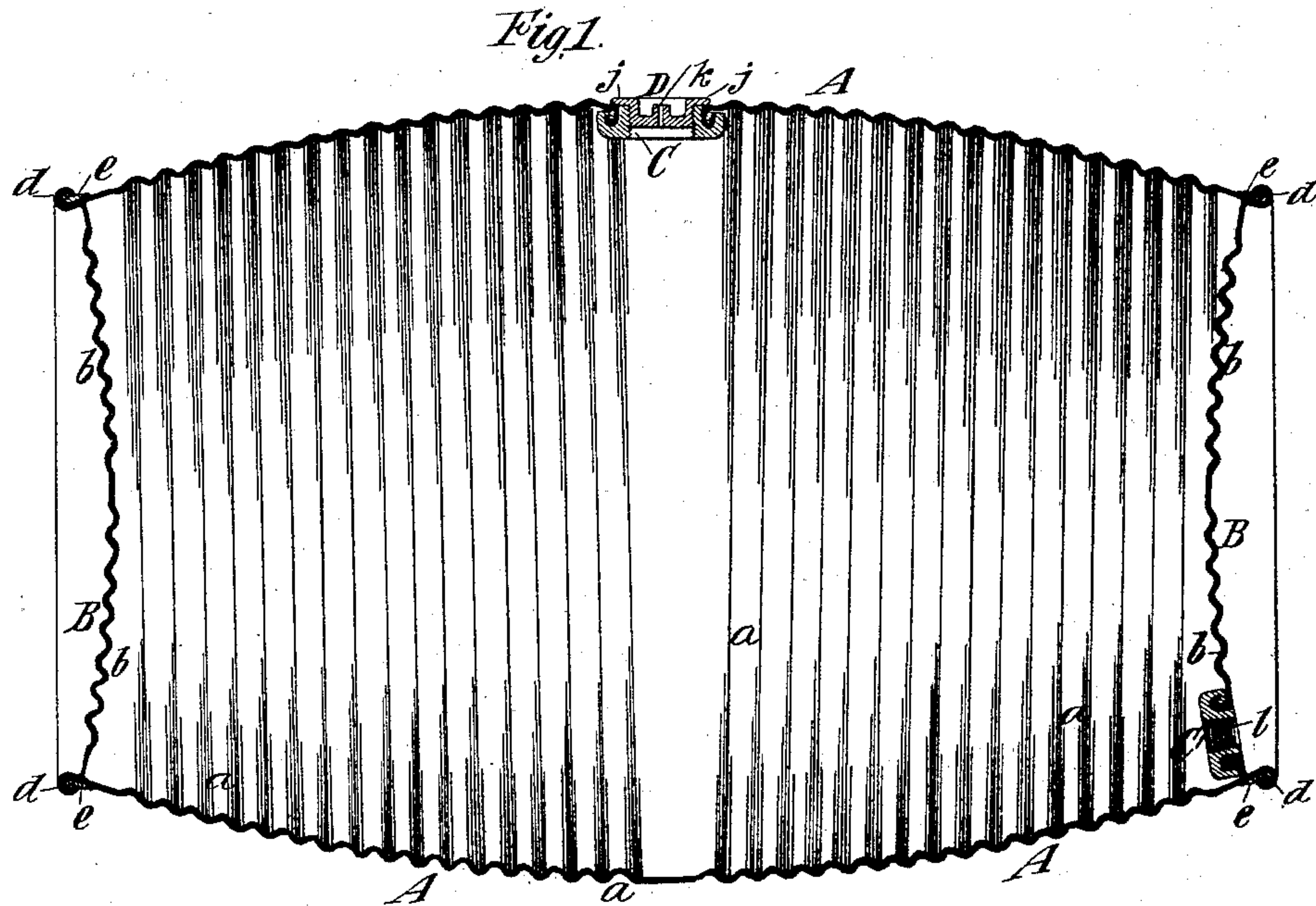


(No Model.)

J. GRAVES.  
METAL BARREL OR CASK.

No. 327,254.

Patented Sept. 29, 1885.



Witnesses:

O. Sundgren

Matthew Pollock

Inventor:

John Graves  
by his Atty.  
Brownt Hall



# UNITED STATES PATENT OFFICE.

JOHN GRAVES, OF BROOKLYN, NEW YORK, ASSIGNOR TO CHRISTOPHER CUNNINGHAM, OF SAME PLACE.

## METAL BARREL OR CASK.

SPECIFICATION forming part of Letters Patent No. 327,254, dated September 29, 1885.

Application filed January 21, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GRAVES, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Metal Barrels and Casks, of which the following is a specification.

The object of my invention is to provide a very strong, light, and durable barrel or cask of sheet or plate metal, which will not be perishable, and which is particularly adapted for kerosene or other inflammable fluids by reason of its fire-proof nature.

My improved barrel or cask may be of sheet steel or iron bent into form and having its lengthwise seam, which may be straight or diagonal, formed by welding or otherwise. The body of this barrel or cask is corrugated throughout the whole or principal part of its surface, and these corrugations run spirally in opposite directions from each end, because then there will be no tendency of the barrel or cask to run to one side or another in rolling it over skids. The heads of the barrel or cask may also be of sheet metal, and are or may be corrugated. The head is formed with a U-shaped flange, which receives the end of the body and laps on the inner and outer sides thereof, and I prefer to join the end of the body and the U-shaped flange receiving it into one integral structure by welding, although they may be joined by riveting. The welded or riveted joint is protected, as I shall hereinafter describe, and the bung-hole is formed in or re-enforced by a bushing secured in a very firm manner to the sheet metal of which the barrel-body is composed.

The invention consists in a metal barrel having its body corrugated in spiral lines which have a reverse pitch from each end toward the center; and it also consists in novel combinations of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a central section of a complete barrel embodying my invention. Figs. 2, 3, and 4 represent the joint between the head and body in the various steps in the operation of completing it. Fig. 5 represents a joint of modified form and also embodying the invention. Fig. 6 represents the bung, bung-bushing, and adjacent portion of the barrel. Fig. 7 represents the

portion of the body at the bung-hole, showing the method of attaching the bushing; and Fig. 8 is a sectional view of the bung-bushing alone. All figures from 2 to 8, inclusive, are drawn on a larger scale than Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates the body of the barrel or cask, which may be of iron or steel, and which is here shown as larger in diameter at the middle of its length, like an ordinary barrel. This body may be made by a sheet cut into proper shape and rolled up into circular form. The seam, which is made to form the body, may be straight or diagonal, and is preferably formed by welding; but may be riveted. To weld the seam, the two edge portions of the metal are ground clean, so that they will weld solidly and form a secure joint, which will be as strong as the other parts of the barrel. This longitudinal seam is not shown, as if welded it would not present an appearance different from the other parts of the body.

The body A of the barrel is corrugated, as shown at *a*, in order to increase its strength. These corrugations run spirally, and are of reverse pitch from each end to the middle of the length, so that in rolling the barrel or casks on skids it will have no tendency to run one way or the other endwise.

Each head B is composed of a round plate or disk of iron or steel, which is preferably corrugated, either circularly or spirally, as shown at *b*, to increase its strength, and is bulged or set inward slightly also to make it stronger.

The usefulness of the barrel depends largely on the security with which the heads are joined to the body, and to this end I have especially directed my efforts. The method of making this joint will be best understood from Figs. 2, 3, and 4. I form at the margin or edge of the head B a deep outwardly-projecting U-shaped flange, *c*, which receives within it the edge of the barrel-body A, as shown in Fig. 2, and laps on the inner and outer sides of the body. These parts should all be cleaned by grinding or otherwise, so that clean strong welds may be made, and I then weld together solidly the U-shaped flange *c* and the portion of the body which is en-



tered into it, thereby producing a solid flange or rim, *d*, which is somewhat thicker than the body A, and projects beyond the head B, as shown in Fig. 3. This welding of the head  
5 into the body produces a perfectly tight and very strong joint. I afterward drive or slip upon the end portion of the barrel a band, *e*, the outer edge of which is slightly turned up, and the edge portion of the solid flange or welded  
10 rim *d* is then rolled back and over the edge of the re-enforcing band *e*, thereby giving the barrel a thick chine or edge. This is very desirable, as barrels are usually raised by hooks engaging with the chine, and when  
15 thus thickened and re-enforced it is not likely to break away.

In Fig. 5 I have represented another form of joint, which is not so desirable, but which may be used. The head B in this case also  
20 has a U-shaped flange, *c*, which receives the end of the body, and is secured thereto by rivets *f*. This joint is re-enforced by a U-shaped band, *g*, applied over the U-shaped flange *c*, and also secured by the same rivets *f*.  
25 In order to secure a properly protected and re-enforced bung-hole, I employ a bush, C, which may be made of malleable cast-iron or other cast metal. The bush is best shown in Fig. 8. It has cast in it an annular groove  
30 or seat, *h*, having a semicircular or concave bottom, and a flange or lip, *h'* projecting inward over or into the said seat or groove.

In forming the bung-hole and attaching the bushing I first punch or form a hole, *i*, in the  
35 body by turning inward the metal to form a flange, *i'*, as shown in Fig. 7. This being done I apply the bushing to this by pressing the bushing upward directly from the position shown in Fig. 7. The flange *i'* is thus made  
40 to enter the seat or groove *h*, and by the concave or rounded bottom thereof is made to turn outward and upward and under the lip *h'*, as shown in Fig. 6. The bush C is thus forced tightly against the body, and held in  
45 place with the end of the bushing flush with the exterior of the barrel.

Solder may be applied to form a tight joint, if desired; but the same result may be attained with wax if the barrel is to be made oil-tight.

50 The bush C is internally screw-threaded and closed by a screw-threaded bung, D, having a flange, *j*, which overlaps the exterior of the

barrel very slightly. In the bung D is a small vent-hole, *k*, which may be closed by a wood plug. In one of the heads is a hole or socket,  
55 *l*, for a faucet, formed by securing in the head B a small bush, C', in the same way in which the bung-bushing is secured in place.

The barrel or cask thus formed is very strong and durable, is fire-proof, and will not be liable to leak, and for these and other reasons  
60 may be used advantageously for a great variety of fluids.

The welding of the heads to the body may be performed by rapid blows of a hammer or  
65 hammers, the metal being raised to a welding heat by gas-burners and blast apparatus or otherwise.

I am aware that it is not new to connect the head and body of a metal cask by forming on  
70 the head an outwardly-projecting U-shaped flange, into which the end of the body is inserted, and then creasing or indenting circumferentially the several thicknesses thus combined in order to secure the head and body  
75 together. Such a construction I do not claim as of my invention. In my cask the head and body are united by a welded joint forming a solid rim, which projects outward beyond the head in the direction of the length of the  
80 body.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A metal barrel having its body corrugated in spiral lines having reverse pitch  
85 from each end toward the center, substantially as and for the purpose herein described.

2. The combination, with a metal barrel-body and head united by a welded joint forming a rim which projects beyond the head, of  
90 a re-enforcing band encircling the body, and over which said rim is turned or rolled outward, substantially as herein described.

3. The combination, with a metal barrel-body and a bung-hole therein, of a bung-  
95 bushing, C, having an annular seat, *h*, with a rounded bottom and inwardly-extending lip, *h'*, the barrel-body having an inwardly-projecting flange, *i'*, which is reverted and bears against the lip *h'*, substantially as described.

JOHN GRAVES.

Witnesses:

C. CUNNINGHAM,  
C. CUNNINGHAM, Jr.