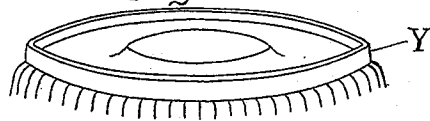
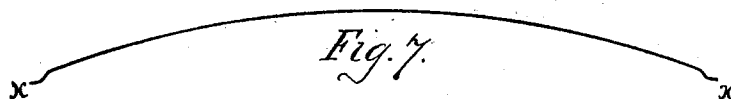
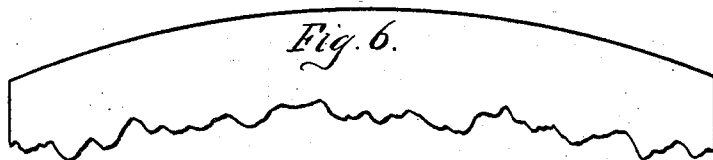
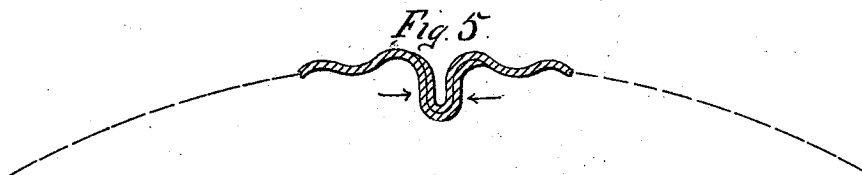
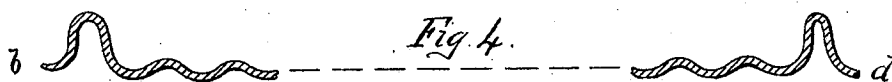
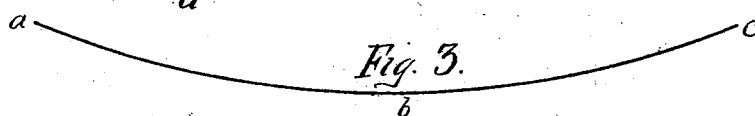
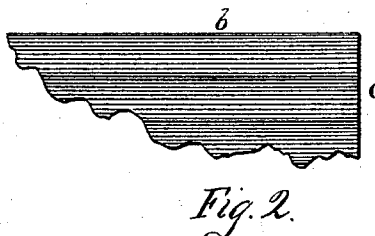
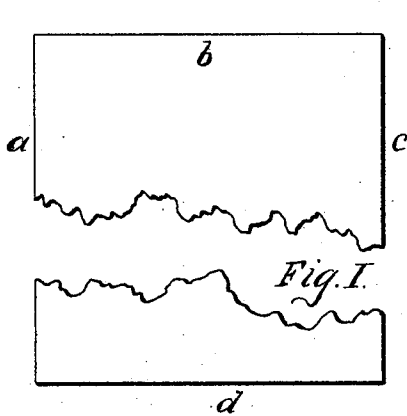


(No Model.)

E. REDMAN.
MANUFACTURE OF BARRELS.

No. 582,228.

Patented May 11, 1897.



Witnesses
John Redman
Frank Marsden

Inventor.
Edward Redman.

UNITED STATES PATENT OFFICE.

EDWARD REDMAN, OF LEEDS, ENGLAND.

MANUFACTURE OF BARRELS.

SPECIFICATION forming part of Letters Patent No. 582,228, dated May 11, 1897.

Application filed January 15, 1895. Serial No. 534,989. (No model.)

To all whom it may concern:

Be it known that I, EDWARD REDMAN, a subject of the Queen of Great Britain, and a resident of Leeds, in the county of York, England, have invented an Improvement in the Manufacture of Barrels, of which the following is a specification.

In order to make the nature of my invention clear and readily intelligible, I shall proceed to describe how I carry it into effect in order to produce a barrel. For the purposes of such description I shall refer to the accompanying sheet of drawings, in which—

Figure 1 represents the sheet from which the barrel-body is made. Fig. 2 represents the same after it has been corrugated. Fig. 3 represents the rough curve given to the end of the corrugated plate to enable it to enter the nesting-rolls. Figs. 4 and 5 represent one form of joint. Fig. 6 represents the barrel-body before the ends *a* are straightened. Fig. 7 represents the barrel-body after the ends *a* have been straightened. Fig. 8 represents in perspective the end of the barrel-body with the end thereon. Fig. 9 is a section of a convenient form of barrel end.

In the said drawings similar letters of reference indicate similar parts, and the dimensions which I shall hereinafter give are those of an actual barrel constructed under my invention to hold forty-three gallons, approximately.

In order to construct such a barrel, I take a rectangular sheet of suitable metal, say of steel, the length of the longer sides *a* and *c* being seventy-eight inches and the width of the sheets (or the length of the shorter sides *b* and *d*) being thirty-two and one-half inches. This sheet I corrugate in the direction of the width of the sheet by any suitable means—for example, by passing it between corrugating-rolls—and then I obtain a sheet, as shown in Fig. 2, the corrugations (which are about one-inch pitch) extending from one to the other of the longer sides of the sheet, or, in other words, extending parallel to the shorter sides *b* and *d*. This operation shortens the sheet by about one-fifth. I then place one end—say *b*—of the plate between dies, so as to curve the same in the direction of the corrugations, as is shown in Fig. 3, for the purpose of enabling the sheet easily to enter between nesting-rolls.

I now pass the said sheet between such nesting-rolls, which are so arranged as to lie more closely together toward the center than toward the end of the said rolls, so that the sheet shall be nipped more tightly at the center than toward the edges. These nesting-rolls are shown in Fig. 10, in which figure *F* is the upper or convex roller and *G* is the lower or concave roller. It will be seen that the curvatures of these two rollers are different, that of roller *G* having a greater radius than that of roller *F*. The effect of this is that the two rollers lie more closely together toward the center than toward the ends of the said rollers, as is clearly seen in the figure. The consequence is that when I now pass the sheet between the said rollers it is nipped more tightly at the center than toward the edges. The effect of this is to flatten those parts of the channels or corrugations which are toward the center of the sheet (or, in other words, at what will be the center or belly of the finished barrel) and to cause the said sheet to be curved around until the opposite ends *b* and *d* of the sheet approach one another. When the said ends *b* and *d* are brought in contact, the sheet is now in the form of a bellied tube or barrel-body, the corrugations running in the direction of the length of the said tube or barrel-body. The ends of the sheet are now attached to one another in this position by any convenient means. One convenient way is to cause one of these to overlap the other for the distance of two or more corrugations, rivet them, (the rivet-holes having been formed before the sheet was passed through the nesting-rolls,) and then sweat or solder the said overlapping parts together. Another convenient form of seam for the said edges *b* and *d* is formed in the manner shown in Figs. 4 and 5. About an inch from each of the edges *b* and *d* (see Fig. 4) a deep and narrow channel *m* is formed in such manner that when the two edges are brought into overlapping position, as shown in Fig. 5, one of the said deep and narrow channels enters the other, so that they now both project toward the geometric axis of the barrel and lie parallel thereto. The said channels are now squeezed tightly together and sweated and soldered, so as to form a close joint. I now straighten out the ends of the

bellied tube or barrel-body, so that they shall take the form of the ends of a true cylinder, and at the same time I compress these ends, so as to slightly flatten the channels and at the same time lessen the diameter of the cylinder at the said part. This is shown in Fig. 7 of the drawings, the said ends being indicated at *xx*. I now pass the ends of the barrel-body into suitably-shaped heads. A convenient form of head consists of a stamped disk of the form shown in perspective in Fig. 8 and in section in Fig. 9. Having placed such a head in position upon the head of a barrel-body, I compress the two sides *yy* of the channel *Y* upon the end *x* and make tight by dipping or soldering in the usual way.

As a material for my barrel I prefer to employ Siemens-Martin steel of about sixty-five one-thousandths of an inch in thickness. For convenience of illustration I have represented Fig. 6 without the corrugations and Fig. 7 by a simple line.

By my invention casks identical in shape are produced, and these casks possess all the conveniences for storing and the facility for handling now possessed by wooden casks, as well as the strength and safety of metal casks. Instead of the substantially parallel sides heretofore found in metal casks, my new metal cask has a bilge formed of corrugations each curved inwardly endwise and flattened to afford a suitable resting-surface. Where the sides are parallel, as heretofore, the cask moves in a straight path when rolled along the floor and requires unnecessary lifting to change the direction of its movement. My casks, on the contrary, are rolled in any desired direction with a minimum of labor. Where the sides are parallel, much unnecessary labor is required to upend the casks, but by my invention a slight and easy endwise rocking of the cask in its flattened inwardly-curving bilge suffices to enable the

handler to upend the cask with but slight exertion. The flattening of the corrugations at the middle or bilge curves the corrugated blank (and therefore each corrugation) inwardly, so that the cask when on its sides rests on its flattened middle portion, each adjacent end portion of the cask being above the floor.

A cask having a lengthwise-corrugated body, the corrugations curving inwardly to provide a bearing or resting surface at the bilge, is new with me; and in no metallic vessel of any kind is there shown, so far as known to me, a corrugation flattened at its middle to produce a bearing or resting or supporting surface.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The improved metallic barrel herein described, of the form of a wooden barrel, with central bilge and convex sides, said sides corrugated from end to end, having a single longitudinal seam formed by two overlapping corrugations, hermetically joined as by riveting and soldering or sweating; said barrel having a truly cylindrical chime at each end, and furnished at each end with a circular metallic head consisting of a stamped disk with channeled edge standing at right angles to the plane of the disk, and united to and compressed upon the entering chime and hermetically sealed thereon by any well-known means as soldering, dipping or sweating, all substantially as specified.

In testimony whereof I have hereunto set my hand this 2d day of January, 1895, in the presence of the two subscribing witnesses.

EDWARD REDMAN.

Witnesses:

JOHN REDMAN,
FRANK MARSDEN.