(No Model.)

G. P. FROTHINGHAM.

COLLAPSIBLE OR KNOCKDOWN VESSEL.

No. 509,155. Patented Nov. 21, 1893.

Fig. 3.

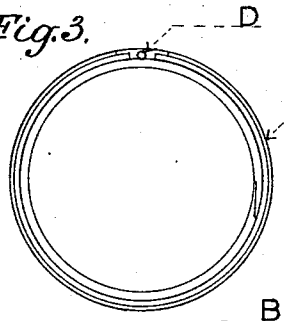


Fig. 1.

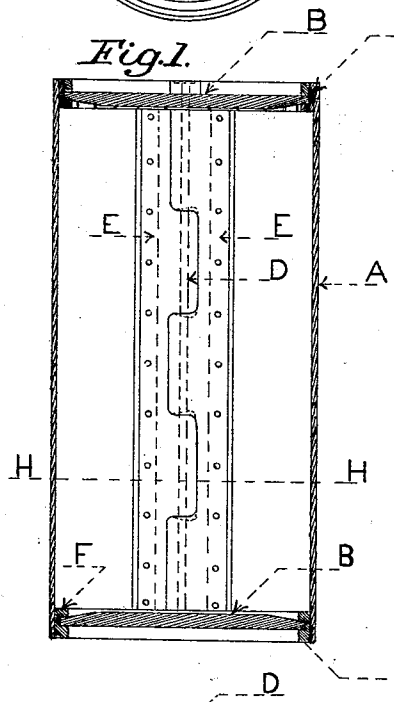
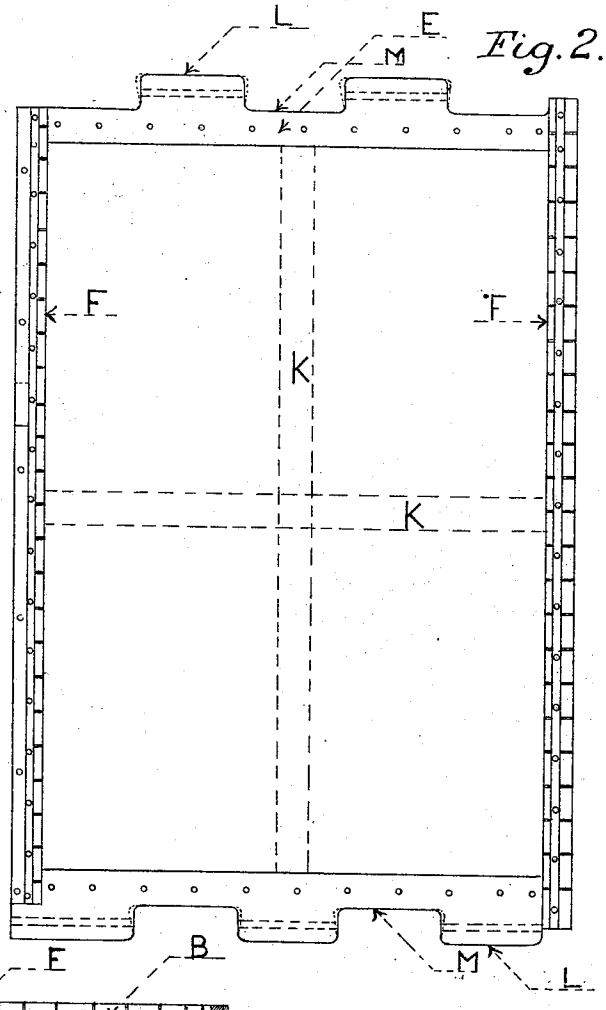


Fig. 2.



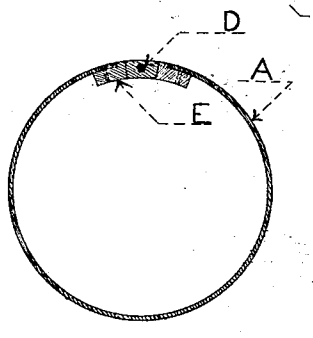


Fig. 4.

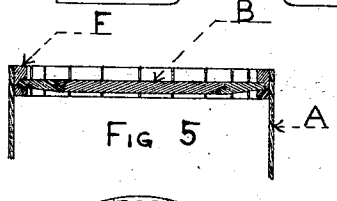


Fig 5

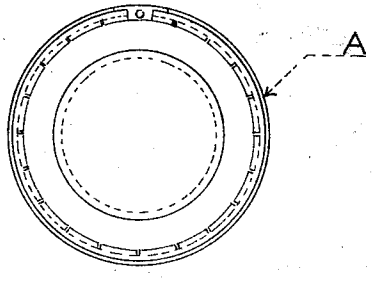


Fig. 6.

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COLLAPSIBLE OR KNOCKDOWN VESSEL.

SPECIFICATION forming part of Letters Patent No. 509,155, dated November 21, 1893.

Application filed December 20, 1892. Serial No. 455,844. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. FROTHINGHAM, a citizen of the United States, residing in the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Collapsible or Knockdown Vessels, of which the following is a specification.

My invention relates to collapsible or knock-down vessels, such for instance as barrels, kegs and the like, and which are specially applicable for storage and transportation of merchandise, and it has for its object to improve the construction and arrangement of said devices and to provide a vessel which may be packed, stored and transported in its collapsed or knock-down position, thereby saving space and cost and may be readily put together and secured without the intervention of any nails, hoops or other permanent fastening devices, and which may again be knocked-down for further transportation or storage, the vessel being complete in itself and capable of being quickly put together or taken down, without the aid of any special tools or skill.

To these ends my invention consists in a vessel embodying the general features of construction and having the mode of operation, substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings—Figure 1, is a vertical central section of a vessel embodying my invention. Fig. 2, is a plan view or development of the flexible body of the vessel. Fig 3, is a top plan view of the head of the vessel. Fig. 4, is a transverse section on the line *h*—*h*, Fig. 1. Fig. 5, is a plan view and Fig. 6, is a vertical central section showing an alternative arrangement of the upper head of the vessel.

It is well known that the storage and shipment of empty vessels which are adapted for receiving and carrying various articles of merchandise occupies much space and is exceedingly expensive and many attempts have been made to overcome these disadvantages by providing vessels which may be packed for storage or transportation so as to occupy comparatively little space, and may then be put together and filled with the articles to be transported.

The object of my invention is to improve upon the various constructions and arrangements heretofore provided and to provide a vessel which shall be complete in itself, in which the parts can be packed for storage or transportation and occupy little space and in which the parts of the vessel may be put together without any special appliances or tools and then when desired may be again knocked down or collapsed and be ready for further use.

It is further the object of my invention to provide such a vessel which shall be complete in itself without hoops or other extraneous securing devices, and at the same time shall be cheap and simple to make and capable of repeated use.

In the accompanying drawings I have shown my invention as applied to a cylindrical vessel, as a barrel, tub or the like and it will readily be understood that it may be applied to other and similar constructions without departing from the spirit of my invention and I do not limit myself to the exact details of construction and arrangement shown.

In carrying out my invention I provide a flexible body A, which may be made of any suitable material, as a single sheet of flexible material, such as compressed paper pulp. This body portion is provided with strips or projections F, along its edges, which projections will serve to support and maintain the heads or ends of the barrel in position and to these ends I provide the strips with grooves. These strips may be formed integral with the body portion or may be made separately and permanently attached thereto in any suitable way, the essential feature being that they shall be flexible and capable of bending to the required shape and shall be substantially rigid to form proper supports for the ends or heads of the vessel. The ends of the body portion are provided with some suitable means whereby they may be connected together, and in order to successfully do this I find it advantageous to thicken the material of the ends by applying thereto or forming therewith ridges or projections or thickened portions, and in the

present instance I have shown these portions E, as applied to the ends and shaped so that they may be placed adjacent to each other and secured together by any suitable means. While these means may be varied, I have shown in the present instance the portions E, as provided with alternate projections L, and recesses M, so that when the ends of the body are brought together these projections and recesses will interlock and may be secured by any suitable device. In the present instance I have shown the projections with holes through which may be passed a rod D, and this serves as a secure locking device, holding the ends of the body together and yet they may be quickly and easily separated by simply releasing the locking device as will be readily understood. While I have found this a convenient means for securing them, any other suitable or equivalent means may be used.

The thickened portions or strips at the edges and ends as above intimated may be made integral with the body portion and may be applied and secured thereto in any suitable manner and instead of making the projections or ridges F, with a groove I can make them solid and apply two of them at each edge leaving a space between for the reception of the head as illustrated in Figs. 5 and 6. The heads or ends of the vessel are preferably made of a single piece of material adapted to fit the grooves in the body portion and when it is desired to provide means for ready access to the vessels without the necessity of taking it down, the head may be provided with a detachable portion as indicated at C, Fig. 3. Such being the general features of construction of the vessel its mode of use will be readily understood and it will be seen that when the barrels are to be stored or transported the parts are separated, the body being preferably placed flat and the heads disposed thereon and when the vessel is to be used it is simply necessary to rest the edges of the heads in the grooves in the edges of the body, roll such body around the heads until the ends of the body abut and secure them with the fastening or locking device, when the barrel is complete and the parts are held together without hoops or nails, tacks or other permanent fastening devices, and when, for any reason, it is desired to knock-down the vessel it can readily be taken apart for storage or reshipment and again used if desired. By pasting a label or strip of paper over the removable portion of the cover when used and over the meeting edges of the body the barrel may be made practically air-tight so that materials which deteriorate by absorption of moisture or dust may be transported or stored.

When comparatively large vessels are to be used, or for any other purpose it is desired to strengthen the body, stiffening strips K, may be used, they being formed integral with the body or securely attached thereto. Thus it will be seen that the vessel comprises practically three pieces of material and a suitable locking device for securing the ends of the body together and that these can be quickly assembled together to form the vessel, or as quickly knocked down so as to be readily stored or transported, and the whole device is cheap and effective and well adapted for the purposes intended.

What I claim is—

1. A knock down vessel, comprising a body composed of a sheet of flexible material provided with flexible projections to receive and support the heads and separable fastening devices for securing the ends of the body together and permitting their ready separation, substantially as described.

2. A knock-down vessel, comprising the heads, a body composed of a sheet of flexible material provided with flexible projections at its sides, forming recesses for the reception of the heads, thickened portions at its ends, and means for detachably securing the thickened ends together, substantially as described.

3. A knock-down vessel, comprising the heads, a body composed of a sheet of flexible material provided with flexible projections at its sides forming recesses for the reception of the heads, thickened portions at its ends, and a detachable rod engaging the thickened portions and securing them together, substantially as described.

4. A knock-down vessel comprising solid heads, a flexible body, the ends of which are provided with interlocking projections and recesses and removable fastening devices for detachably securing the ends together, substantially as described.

5. A knock-down vessel comprising solid heads, a flexible body, the ends of which are provided with interlocking projections and recesses, said projections being perforated longitudinally and a rod passing through said perforations and detachably securing the ends together, substantially as described.

6. A knock-down vessel comprising solid heads, a body composed of a single sheet of flexible material, the edges of which are formed with interlocking projections and recesses, said projections being perforated longitudinally, and a rod passing through said perforations, substantially as described.

7. A barrel, keg or other vessel having a body composed of flexible material, the ends and edges of which are of greater thickness than the main portion thereof, said thickened edges having projections and corresponding recesses, said projections being perforated longitudinally of the barrel and a rod passing through said perforations, whereby said edges are removably held together, substantially as described.

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