

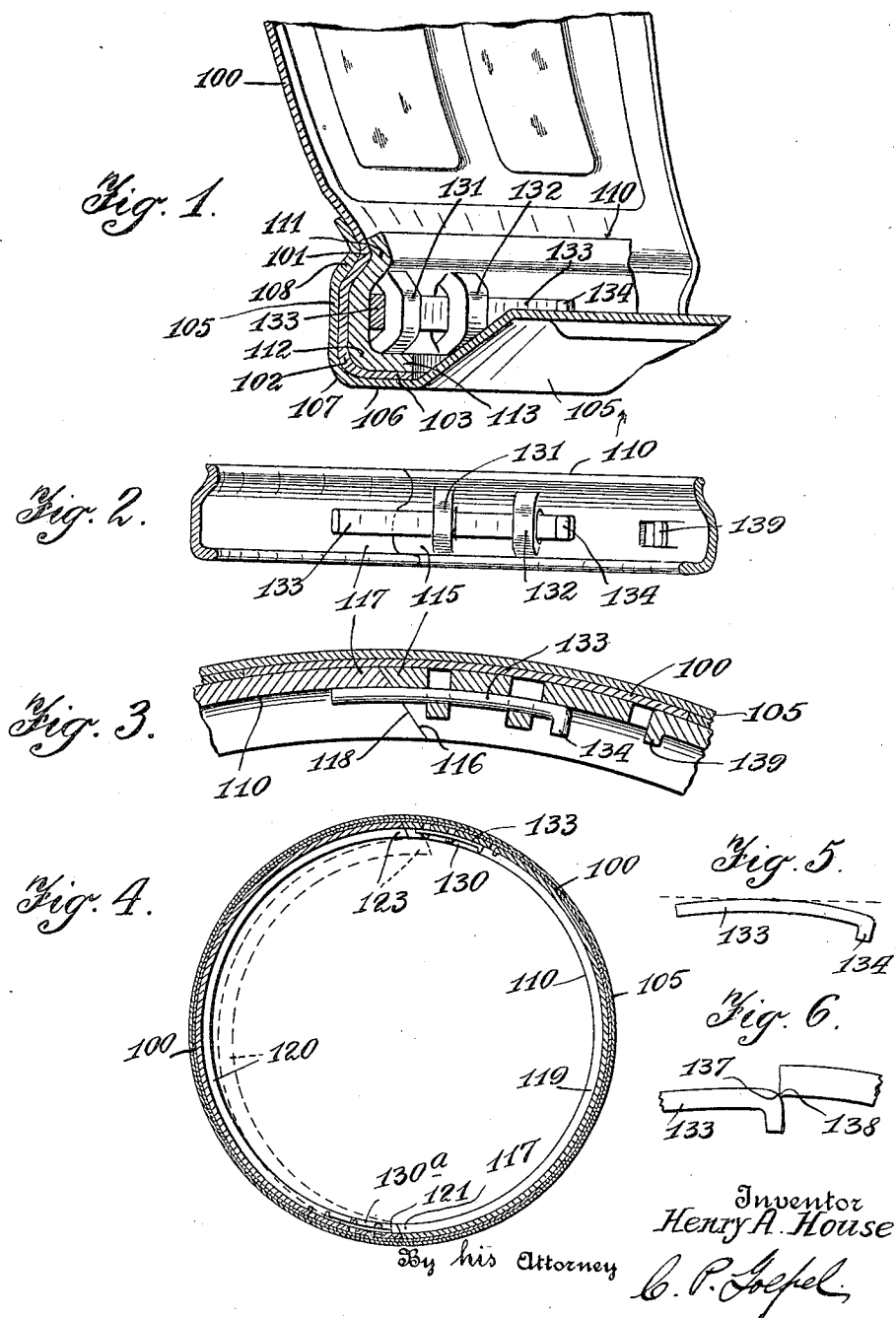
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H. A. HOUSE

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KNOCKDOWN METAL RECEPTACLE

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UNITED STATES PATENT OFFICE.

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KNOCKDOWN METAL RECEPTACLE.

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To all whom it may concern:

Be it known that I, HENRY A. HOUSE, a citizen of the United States, and a resident of Bridgeport, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Knockdown Metal Receptacles, of which the following is a specification.

This invention relates to knockdown metal receptacles, and has for its primary object to provide a collapsible or knockdown barrel or other receptacle, the several parts of which may be easily and quickly assembled to provide a perfectly rigid structure which will not be liable to accidental collapse in use.

Among the desirable features of such a receptacle, perhaps the foremost resides in the capability to resistance of internal strains and stresses which may devolve upon the several parts when the receptacle is filled. It is therefore an important object of the present improvement to provide a barrel or receptacle consisting of separable parts or sections, and means for locking the said sections together when assembled in such manner as to produce a high degree of security and provide an efficient and serviceable container which will effectively withstand the use and abuse to which such receptacles are subjected in shipment.

It is a further object of my invention to provide means for locking the several staves or body sections of the barrel or receptacle in assembled relation, which will equally distribute internal strains or stresses in a circumferential direction to the several staves, the said locking means being wholly enclosed within the barrel so that it is not liable to accidental release in the handling or movement of the barrel from place to place.

With the above and other objects in view, the present invention consists in a collapsible or knockdown barrel or receptacle as above characterized, and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims,

In the drawing wherein like reference characters designate corresponding parts throughout the several views, and in which

I have illustrated one practical embodiment of my invention,

Fig. 1 is a vertical sectional view through the end of a stave or body member of the barrel, a portion of the head and my improved locking and strengthening device, whereby the parts are retained in assembled relation;

Fig. 2 is a fragmentary interior elevation showing the two sections of the strengthening ring locked together at their abutting ends;

Fig. 3 is a longitudinal sectional view of the parts shown in Fig. 2;

Fig. 4 is a horizontal section through the barrel or receptacle showing the staves assembled and illustrating the manner of locking the staves to the head;

Fig. 5 is a plan view of the locking bolt; and

Fig. 6 is a similar view illustrating the manner in which one end of the bolt coacts with a part of the strengthening and locking ring to secure the bolt in its effective locking position;

In the drawing, I have illustrated an embodiment of my invention as adapted and applied to a knockdown barrel, but it will be understood, as the description proceeds, that the subject matter of the present invention may likewise be utilized in connection with containers or receptacles of other shapes and sizes as may be employed for many different purposes. In this drawing, each of the staves or body members 100 adjacent to its opposite ends is formed with an indentation 101. The end of the stave extending from this indentation is curved or bent as clearly shown in Fig. 1, to provide a chime section 102. From the chime, a terminal flange 103 on the stave extends horizontally and in an inward direction. It will be understood that when the several staves 100 are assembled, the parts 102 thereof form a continuous circumferential chime. As the construction of the barrel or receptacle heads, and the manner of applying and locking these heads upon the opposite ends of the staves is identical in both cases, the following description of one end of the barrel or receptacle will suffice for both.

The barrel head 105 at its perimeter, corresponds in cross sectional configuration to the end of the stave as above described, the

said head having a flat horizontal portion 106 corresponding to the flange 103 of the stave, a curved portion 107 corresponding to the portion 102 of the stave, and an inwardly projected or bent portion 108 corresponding to the indentation 101 of the stave. Owing to this exact conformity of the circumscribing marginal portion of the barrel head and the stave ends, the latter when assembled within the head flange will closely hug the several parts of the flange wall, which materially promotes the equal circumferential distribution of the internal stresses and strains to which the barrel is subjected to the stave ends and to the head flange. These strains are thus distributed over and assimilated by a greater area of the metal barrel sections.

In order to securely lock the assembled parts together and strengthen the same, I provide a locking member generally indicated by the numeral 110. This locking member in the present disclosure is in the form of two ring sections each of which has a cross sectional configuration corresponding to the configuration of the stave end, and is thus provided with a curved flange 111 at one longitudinal edge to receive the indented portion 101 of the stave, a curved portion 112 to seat against the portion 102 of the stave, and a horizontal inwardly projecting flange 113 at its other longitudinal edge disposed in superposed relation to and upon the flange 103 of the stave. It will thus be seen that the head 105 is provided with a continuous circumferential embracing portion surrounding the stave ends while the sections of the locking member 110 when assembled as hereinafter described, constitute in effect, a single continuous circumferential locking unit disposed within the chime formed by the assembled staves. As this locking unit likewise assimilates the the internal strains and stresses, and equally distributes the same to the several staves, it will be apparent that the pressure per unit area is reduced to a minimum, and thus the strain or pressure upon the head flange is materially lessened.

I have above referred to the locking member as comprising two ring sections, but it will, of course, be understood, that three or more such sections may be provided if desired. For the purpose of facilitating the arrangement of these locking ring sections in operative position, I provide each section at one end designated 115 with an acutely beveled or inclined face 116 while the other end 117 of said section has its end face obtusely beveled or inclined as at 118. When the several staves have been assembled together with the head as above described, one section of the locking and strengthening ring is applied and arranged in proper position within the chime 102, as for in-

stance the section 119 shown in Fig. 4. The other ring section 120 is then applied. The end 121 of this ring section is opposed to the end 117 of the section 119 and has its end face correspondingly beveled so as to provide a close tight fitting joint. When so arranged, the section 120 assumes the dotted line position seen in Fig. 4, and has its other end lapped upon the opposite end of the ring section 119. It is therefore necessary to apply a certain amount of force or pressure to the inner side of the section 120 in order that its end 123 will properly seat against the beveled or inclined face 116 of the end 115 of the other ring section 119. Upon the application of such pressure, the end of the ring section 120 rides off of the end of the section 119 and snaps into place. The abutting inclined end faces of the ring sections will then prevent all possibility of the relative displacement of said sections. The sections of the ring throughout their circumferential exterior faces will very closely hug the conforming end portions of the barrel staves, which will in turn transmit a tight fitting or hugging action of the barrel staves against the marginal wall of the head. In this manner, the head structure of the receptacle and the stave ends is very greatly reinforced and strengthened.

In order to effectually prevent the relative displacement of the ring sections by externally applied pressures and to further aid in maintaining the several associated parts in intimate surface contact with each other, I have provided the locking devices generally indicated at 130, and 130^a respectively. In its preferred form, this device includes a locking pin or bolt 133 which is adapted to be engaged through spaced keeper loops 131 and 132 which are struck inwardly from the medial portion of one end of each ring section 119 and 120. However, it is manifest that if desired, these keeper loops may be separately formed in any other desired manner and secured to the ring sections. The spaced loops provide guiding means for the locking bolt 133, and one end of this bolt is angularly turned to afford a handle 134 while the other end thereof is adapted to be moved over the inner face of the opposed end of the adjacent ring section as shown in Figs. 2 and 3. Thus, the locking bolt extends over the contacting joint faces of these sections of the locking ring and securely holds the same in their effective operative positions.

In order to further enhance the tight clamping action of the locking ring sections against the stave ends, and to also prevent longitudinal shifting movement of the locking bolt, I preferably curve this bolt as seen in Fig. 5 so that normally, it describes an arc of greater radius than the curvature of the locking ring sections. Thus when the

bolt is moved to its effective position, it will frictionally coact with the keeper loops and with the opposed surface of the ring sections and act as a cam to exert a tight clamping action upon the abutting ends of the ring sections. In Fig. 3 is shown the condition the pin 133 assumes when put in place within the lugs 131 and 132. The inside faces of the lugs being on an arc of lesser radius than the inner curvature of the pin, will cause the expansion of the pin outwardly against the inner wall of the locking members and will thus insure a tight frictional fit. There are no gaps left between the pin and the locking member due to the fact that the pin is constantly in a sprung condition and therefore fits frictionally against the inner wall of the locking member and the inner faces of the lugs. The pin is made of resilient material in order that it may be thus sprung in place. It is also to be observed that the bolt is provided with a cam surface 137 at the juncture of the handle 134 with the body of the bolt. When the bolt is thrown home to its locking position, this latter cam surface rides over and upon the edge 138 of one of the openings in the ring section formed by the inwardly struck loop 132 thereon. This additional pressure of the cam surface 137 upon the plate affords an additional clamping action. It will further be seen that as the corner or edge 138 on the ring section coacts with the handle 134 of the bolt, the latter is securely locked and held against retrograde movement from its effective position, such as might otherwise be caused by a violent shock or jar of the receptacle. The inherent resiliency of the bolt 133 in addition to the cam action of the body of the bolt upon the surface of the locking ring, assists in positioning the cam surface 137 in juxtaposition to the corner 138. In order to release the bolt, the handle 134 must be pried or pulled inwardly away from the locking section so that the bolt can then be moved longitudinally. This release movement of the bolt is limited by means of a stop lug 139 which is struck inwardly from the ring section as seen in Fig. 3.

When one of the heads has been applied and secured in assembled relation to the series of staves or body members as above explained, the barrel or receptacle may then be filled. After having been filled, the ring sections are then applied to the other ends of the staves and locked together, and finally the other barrel head is applied to cover the open end of the barrel and to embrace the ends of the staves. In the application of said head, sufficient force is applied in order to spring the marginal flange of the head over the stave ends, and cause said flange to seat snugly upon the staves.

From the foregoing description consid-

ered in connection with the accompanying drawing, the construction, manner of operation and the several advantages of the invention will be clearly and fully understood. The several parts of the barrel or receptacle may be easily and quickly assembled and when locked together as above explained, afford a very rigid and substantial structure. As the locking means for the several separable parts is wholly enclosed within the barrel or receptacle, it is not liable to accidental engagement and release by encountering obstructions in the handling of the barrel. Therefore a maximum degree of safety and security is obtained. The barrel or receptacle will also be practically water and air tight so that deterioration of its contents by the action of the elements will be obviated. When disassembled, the several parts of the barrel can be compactly arranged so that they will occupy relatively little space in storage or shipment. When the various parts are assembled and secured together, it will be appreciated that the invention provides a serviceable and durable barrel or receptacle of the knockdown type and with the various structural units so correlated to each other that their cooperative action results in an equal distribution of stresses and strains and the life of the barrel as a shipping container is correspondingly prolonged.

While I have herein shown and described one preferable and satisfactory embodiment of my invention, it is nevertheless to be understood that the device may also be exemplified in numerous other alternative structures, and I accordingly reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A barrel comprising a side wall, a head having a flange extending on the exterior of the end portion of the side wall and interlocked therewith, and locking means lying on the inner face of the end portion of the side wall and within the head and acting to expand the end portion of the side wall against the flange of the head to preserve the locked condition of these parts.

2. In a knockdown receptacle, a plurality of separable staves forming the body portion of a receptacle, a head having a marginal flange embracing the ends of the staves adapted to close the open end of the body portion and corresponding thereto in cross sectional configuration, and means within the staves and head cooperating with the ends of the staves and head to lock the staves in assembled relation to the head.

3. A barrel comprising staves having offset ends, a head having a flange interlocked with the offset stave ends and extending on

the exterior thereof, and locking and expanding means within the barrel and its head and lying against the inner side of the stave ends for forcing and holding the stave ends in interlocked position with the head flange.

4. In a barrel, a plurality of separable staves forming the body portion and having portions jointly constituting a continuous chime, a head adapted to close an open end of the barrel and extending over and embracing the chime, and locking and reinforcing means for the chime arranged within the chime and head, said reinforcing and locking means being independent of the head and staves.

5. In a knock down barrel, a plurality of separable staves having portions jointly constituting a continuous chime, said chime having an indented portion, a head having a portion extending upon the exterior of the chime, and a locking and reinforcing element upon the interior of the barrel and within the head and being independent of the chime and head and acting to expand the chime against the portion of the head which embraces the chime and to hold the indented portions in interlocked position.

6. In a knock down barrel, staves fitted together and having end portions jointly constituting a continuous chime, the chime being off-set outwardly and having an inwardly pressed indentation at its inner portion, a head having a flange extending on the exterior of the chime, said flange provided with an off-set portion conforming to the outward off-set of the chime, the said flange further having an inwardly indented portion adapted to take into the indented part of the chime and interlock therewith, and a reinforcing and locking ring on the interior of the barrel and head and fitting against the inner side of the chime for forcing the offset portion thereof into the off-set part of the flange and for preserving the indented parts of the chime and flange in interlocked relation.

7. In a knock down barrel, a body portion having an offset indented chime provided with a flange, a head having a flange embracing the offset and indented part of the chime, and a locking ring on the interior of the barrel and head and lying in close contact with the inner faces of the off-set and indented parts of the chime and having a flange lying against the chime flange.

8. In a knockdown barrel, a plurality of separable staves having portions jointly constituting a chime, a strengthening and locking member comprising two similar sections having mating ends for abutting engage-

ment with each other, means inaccessible from the exterior of the barrel for locking the abutting ends of said sections together, and a head having a flange extending over the ends of the staves and embracing the same and the said means, the flange of the head and end of the staves and said means being pressed together at the chime.

9. In a knockdown barrel, a plurality of separable staves having portions jointly constituting a continuous chime, a sectional locking member adapted to be arranged within the chime to retain the staves in assembled relation, a shiftable bolt coacting with said sections to retain the same in locking position, and means for holding the bolt in its effective position.

10. In a knockdown barrel, a plurality of separable staves having portions jointly constituting a continuous chime, a sectional member adapted to be arranged within said chime and conforming in cross sectional configuration therewith, a resilient locking bolt for the sections of said member, and means for automatically placing the bolt under tension as it is moved to its locking position to thereby retain the sections in assembled relation.

11. In a knockdown barrel, a plurality of separable staves having portions jointly constituting a continuous chime, a sectional member adapted to be arranged within the chime to retain the staves in assembled relation, keeper means on one section of said member, a resilient locking bolt slidably engaged with the keeper means and placed under tension thereby as the bolt is moved to its locking position, said bolt exerting a cam pressure upon the sections of said member, and means to coact with the bolt and prevent its casual retrograde movement whereby the sections of said member are locked in their effective positions.

12. In a knock down barrel, an offset and indented chime having an inwardly directed flange, a head lying against the flange and having itself a flange lying in intimate contact with the outer side of the offset and indented portion of the chime and being interlocked therewith, and a sectional reinforcing ring within the barrel and head lying in intimate contact with the inner faces of the offset and indented parts of the chime and having a flange extending in contact with the inner side of the chime flange, and locking means for holding the sections of the ring together.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

HENRY A. HOUSE.