

W. B. GODDARD.

BILGE BARREL FORMING MACHINE.

APPLICATION FILED JULY 2, 1910. RENEWED APR. 21, 1911.

1,001,634.

Patented Aug. 29, 1911.

Fig. 1

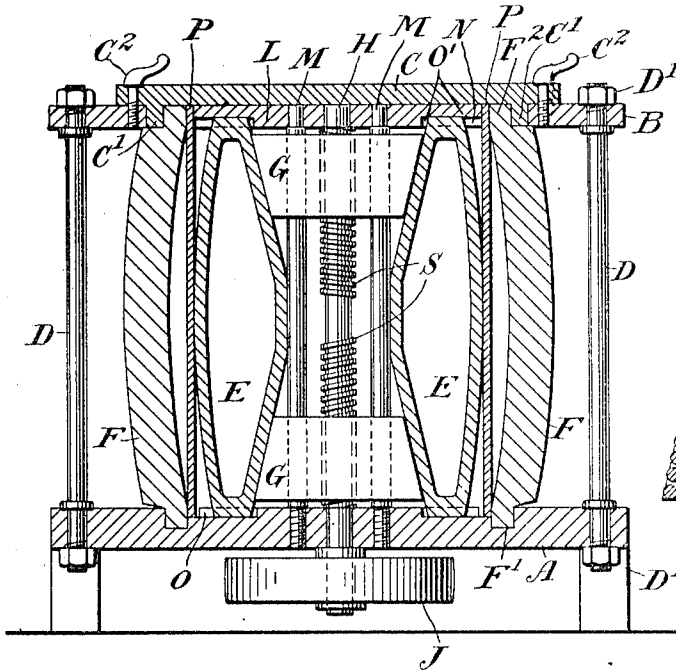


Fig. 2

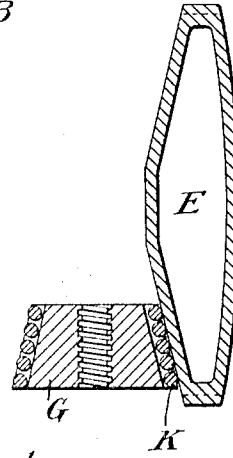


Fig. 3

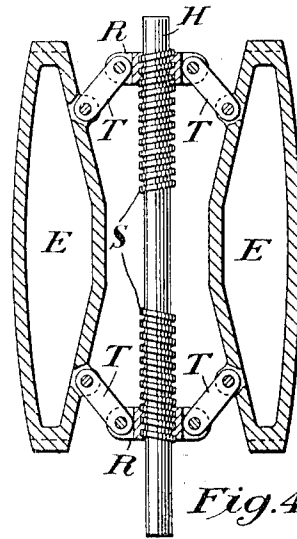
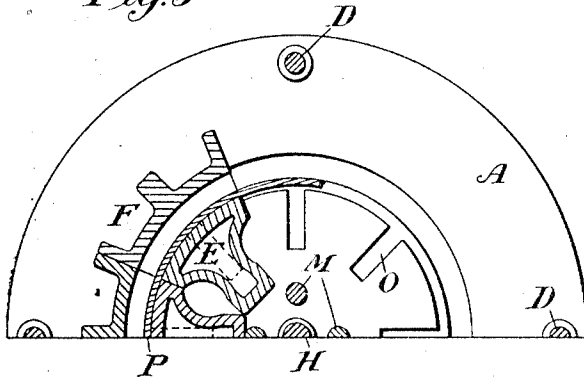


Fig. 4

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UNITED STATES PATENT OFFICE.

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BILGE-BARREL-FORMING MACHINE.

1,001,634.

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Application filed July 2, 1910, Serial No. 570,199. Renewed April 21, 1911. Serial No. 622,580.

To all whom it may concern:

Be it known that I, WILLIAM B. GODDARD, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Bilge-Barrel-Forming Machines, of which the following is a specification.

10 This invention relates to apparatus for shaping the body portions of metal bilge-barrels.

It is well known that explosives, various more or less volatile liquids, such as gasoline, naphtha, benzin, alcohol, etc., and like materials, are required to be packed for storage or shipment in hermetically sealed metal containers, which are usually of cylindrical form and called steel or metal drums. For many reasons, a steel or metal barrel, of the same configuration as the well-known wooden barrel, with its bilge, is preferable to the drum, but most processes for forming the body portion of a bilge-barrel from a single blank of sheet metal are attended with such difficulties and are so costly that the inferior drum-shaped container has continued to be more generally used.

30 The principal object of the present invention is the provision of a machine or device for forming or shaping the body portion of a metal bilge-barrel, which is simple and dependable, which is sufficiently powerful to properly expand the sheet steel, and by which these body portions may be formed or shaped at comparatively small cost.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a central sectional elevation of a machine or apparatus embodying my invention; Fig. 2 is a fragmentary section of one of the internal expanding segments and the lower of the two actuating members hereinafter described; Fig. 3 is a fragmentary, partly sectional and partly plan view, the section being taken at substantially the middle of the machine and the plan being of the base thereof, and Fig. 4 is a central sectional elevation of the ex-

panders and their actuating mechanism, showing a modification of the latter.

Referring now to the drawings in detail, 55 the letter A refers to a base plate resting upon any suitable support and carrying the top or upper plate B, at a suitable distance therefrom, by means of the rods or bolts D the ends of which are threaded for the reception of the securing nuts D'. The top 60 plate B is provided with a central and circular aperture or orifice of a diameter slightly greater than that of the cylindrical blank which it is desired to expand into the form of the body portion of a bilge-barrel. Covering this orifice is the preferably circular plate C, secured to the plate B by the easily removable screws C'. Said plate C is further provided, on its under- 70 side, with the annular rib or flange C', which fits snugly within the orifice in the plate B, and the internal diameter of which is that of the desired external diameter of the barrel chime. 71

Journalled in the base plate A, and in the plate N, underneath the plate C, and which will be hereinafter more fully described, is the vertical shaft H, carrying a pulley J at its lower end which is connected in the 80 usual manner with any suitable source of power. This shaft H is provided with the right-and-left screw threads S which pass through correspondingly threaded bores in the upper and lower wedge-blocks G G. 81 These blocks G G are of truncated conical shape, and are held against rotation by means of the guide-rods M M the ends of which are secured in the plates A and N. It will be apparent, therefore, that upon ro- 82 tation of said shaft H, the blocks G G may be moved to and from each other, under powerful forces, according to the direction or rotation of the shaft H. Surrounding said shaft and wedge-blocks is a segmental 83 expander or former having, when in its most expanded condition, with the segments E E at maximum distances from each other, substantially the exterior shape of the desired form of barrel body. The inside face of 100 each of these segments E E provides two oppositely-disposed inclined planes adapted to receive the pressures of the wedge-blocks G G and be radially forced away

from each other as said wedge-blocks move toward each other. When these segments E E are in contact with each other, and the expander thus in its most contracted condition, the maximum middle diameter of the latter is slightly less than the internal diameter of the metal cylinder which it is desired to expand, whereby said cylinder may readily be placed over the expander, as shown in Fig. 1. The tops and bottoms of these segments E E are slidably mounted in grooves O and O¹, in the plates A and N respectively, these grooves permitting radial movement only of said segments. Surrounding this internal expander, is a mold preferably made up of a plurality of segments F F, the internal face of this mold being in configuration that of the desired shape of the barrel and corresponding to the configuration of the external face of the expander. Each of these mold segments F is provided with an upper flange F² and a lower flange F¹, whereby said segment is supported against lateral movement, said lower flange F¹ fitting within an annular groove in the lower plate A, and the upper flange F² being exteriorly supported against the rib C¹ on the plate C.

To insert in the device the metal cylinder to be expanded, the wedge-blocks G G are separated to permit of the contraction of the segmental expander to its smallest possible diameter, and the plate C is removed. The metal cylinder or blank P is then passed through the orifice in the plate B, down over the expander segments E and within the mold segments F; the removal of the top plate with its rib C¹ permitting the blank to be easily placed in proper position. The plate C is now adjusted so that the rib C¹ forces the tops of the mold-segments F to bind the upper end of the blank, which is to become the upper barrel-chime, firmly between the periphery of the circular plate L and the flange F² of the outer mold segments F. The lower end of the blank is supported against the lower ends of the outer mold segments, and it will be seen that the blank ends, which form the barrel chimes, are now held rigidly against expansion, and that upon rotation of the shaft H, forcing toward each other the wedge-blocks G G, the internal expander segments E will be forced radially away from each other, thus stretching and forming the metal of the cylindrical blank to provide a substantially integral, metal bilge-barrel body.

In order to reduce friction, I may provide the conical surface of the wedge-blocks G with a plurality of seats or sockets for the balls K or other anti-friction devices, as shown in Fig. 2. Furthermore, it will be apparent that means other than the wedge-blocks G may be employed for expanding

the inner mold. In Fig. 4 I have shown a modification of these expanding means, the wedge-blocks G being replaced by toggle joints, the blocks R being interiorly screw-threaded for the reception of the threaded shaft S, with a plurality of arms T having one end pivoted in said blocks and the other end pivoted to the segments E, whereby, as the blocks R are forced toward each other, due to rotation of the shaft S, the segments will be expanded in a manner similar to their expansion under action of the wedge-blocks G.

Many modifications of minor details of my improved machine for forming sheet-metal barrels will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific construction herein shown and described.

I claim as new and desire to secure by Letters Patent:

1. In a metal bilge-barrel forming machine, an expander comprising a plurality of separate segments, said expander having substantially the shape of the barrel-body to be formed, each of said segments being provided with oppositely disposed inclined surfaces, wedge-blocks between and common to all of said segments and cooperating with said surfaces to separate said segments radially from a common center to have the effect of expanding said former, and means for actuating said wedge-blocks.

2. A metal bilge-barrel forming machine comprising means for supporting a cylindrical sheet-metal blank and holding the ends thereof against expansion, and cooperating internal and external formers, said internal former comprising a plurality of segments, and means for forcing said segments apart to have the effect of expanding said former.

3. A metal bilge-barrel forming machine comprising means for supporting a cylindrical sheet-metal blank and holding the ends thereof against expansion, an external former and a complementary segmental internal former, and means for expanding said internal former.

4. A metal bilge-barrel forming machine comprising means for supporting a cylindrical sheet-metal blank and holding the ends thereof against expansion, an external former the internal configuration of which is that of the barrel body, and an internal former comprising a plurality of separate segments, and means for separating said segments from each other to have the effect of expanding said internal former and symmetrically expand said blank.

5. In a metal bilge-barrel forming machine, an expander comprising a plurality of separate segments, said expander having substantially the shape of the barrel-body

to be formed, each of said segments being provided with oppositely disposed inclined surfaces, wedge-blocks between and common to all of said segments and cooperating with said surfaces to separate said segments radially from a common center to have the effect of expanding said former, a shaft screw-
5 threaded through said wedge-blocks to force the same toward and away from each other, and means for rotating said shaft.

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