No. 610,532. Patented Sept. 13, 1898.

J. HARMATTA.

APPARATUS FOR FORMING METAL CASKS.

(Application filed June 30, 1897.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.

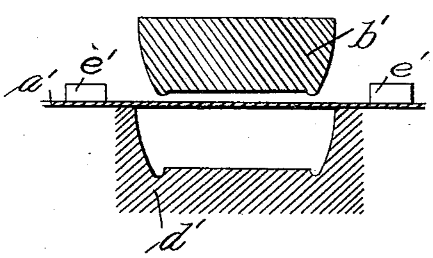

Fig. 2.

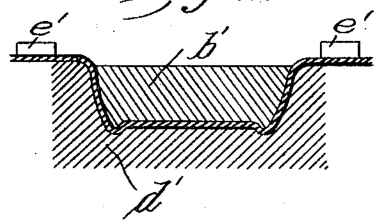

Fig. 3.

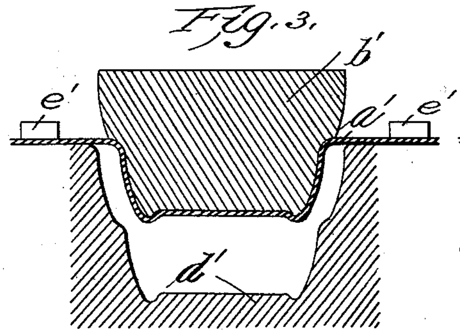

Fig. 4.

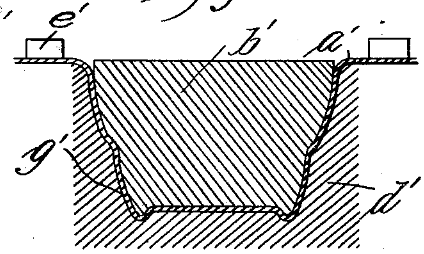

Fig. 5.

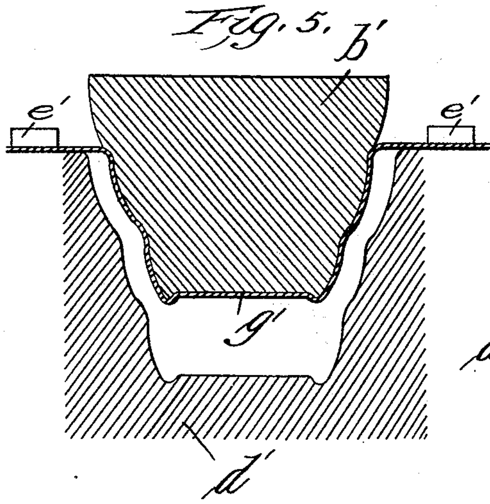

Fig. 6.

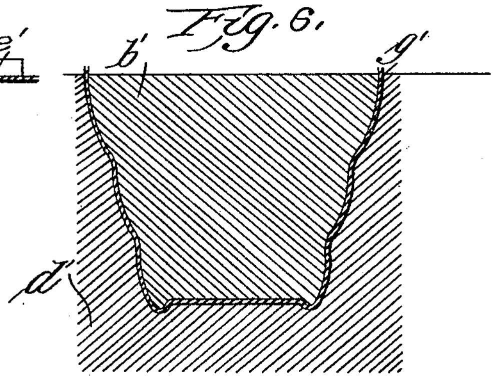

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Fig. 7.

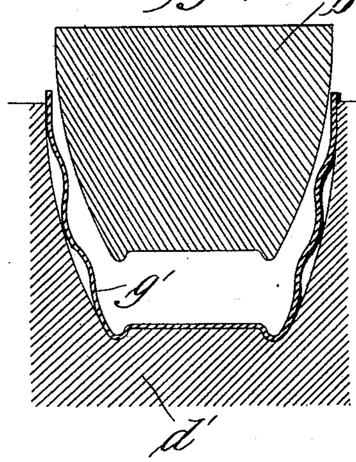

Fig. 8.

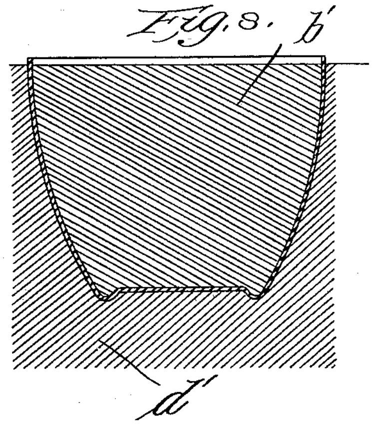

Fig. 9.

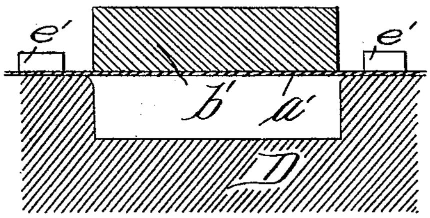

Fig. 10.

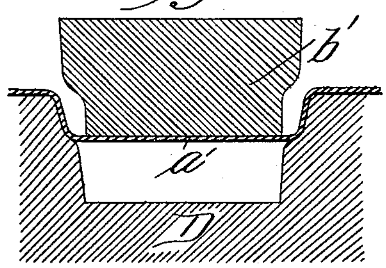

Fig. 11.

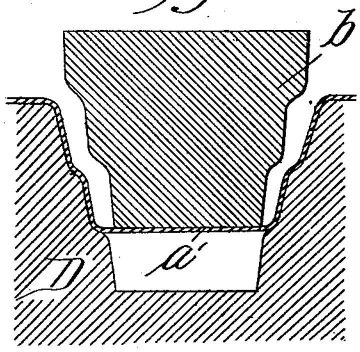

Fig. 12.

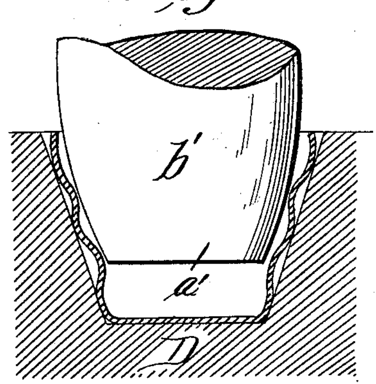

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Fig. 13.

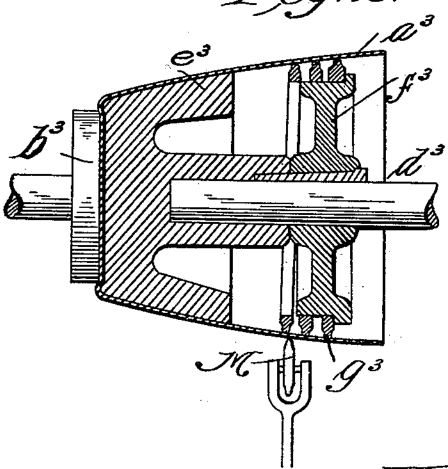

Fig. 14.

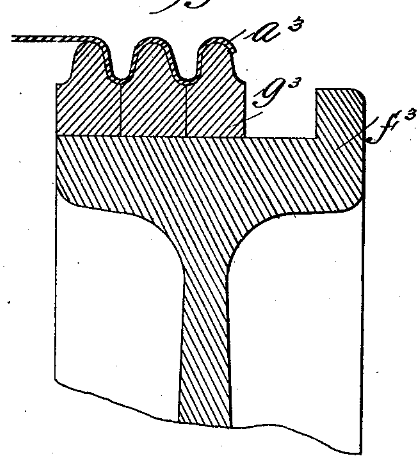

Fig. 15.

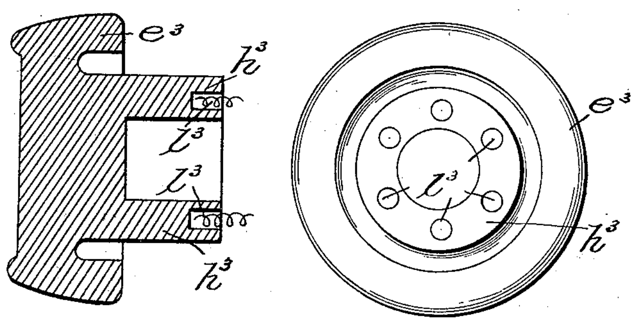

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Fig. 16.

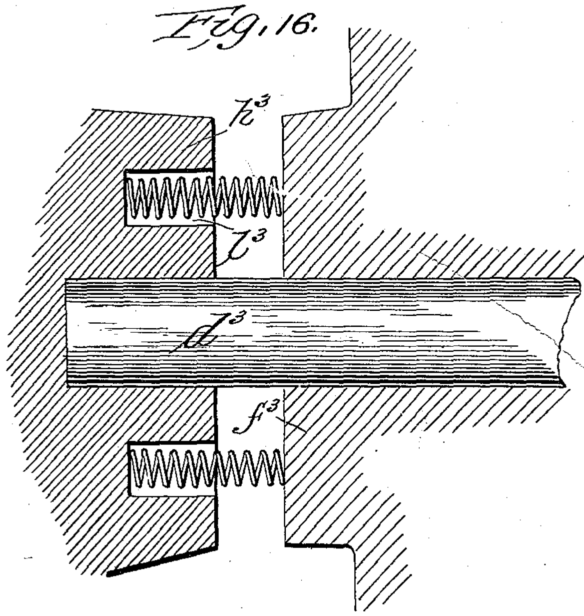

Fig. 17.

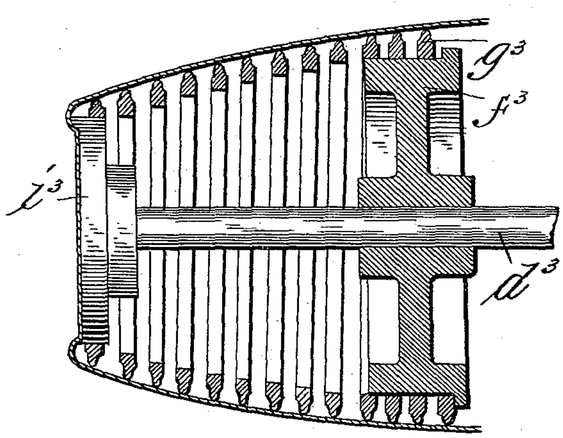

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Fig. 18.

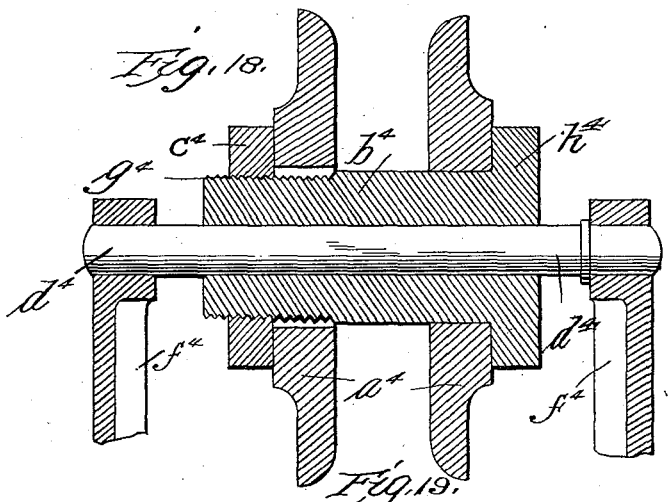

Fig. 19.

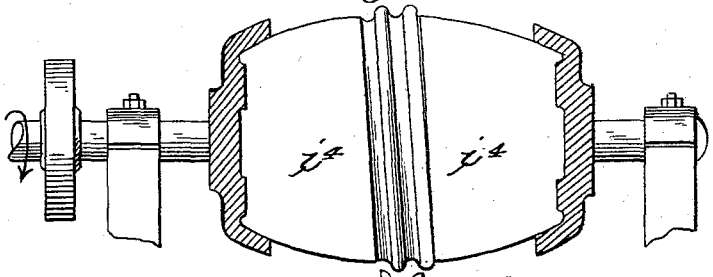

Fig. 20.

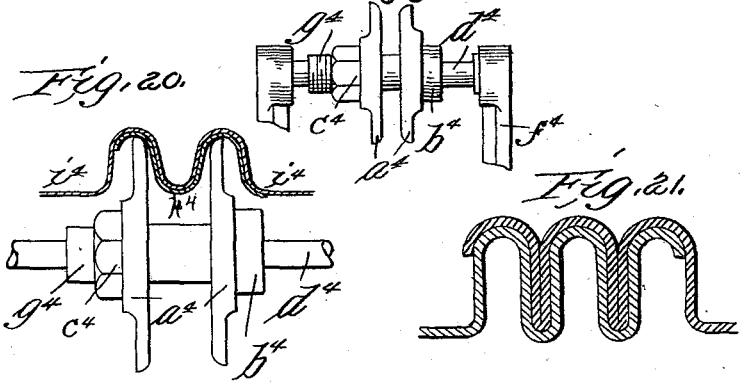

Fig. 21.

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UNITED STATES PATENT OFFICE.

JOHANN HARMATTA, OF SZEPESVÁRALJA, AUSTRIA-HUNGARY.

APPARATUS FOR FORMING METAL CASKS.

SPECIFICATION forming part of Letters Patent No. 610,532, dated September 13, 1898.

Application filed June 30, 1897. Serial No. 642,976. (No model.)

To all whom it may concern:

Be it known that I, JOHANN HARMATTA, engineer, of Szepesváralja, in the Kingdom of Hungary, have invented Apparatus for Forming Metal Casks and the Like, of which the following is the specification.

My invention relates to means by which two plates of homogeneous iron of corresponding size and density are first pressed into the shape of the barrel-halves of even size and the edges of these two barrel-halves, or, if so desired, the whole barrel-halves, are tapped with corrugations or screw-threads. After these two halves have been screwed together the threads are pressed into firm contact, thus securing a good and secure stiffening of the barrel and rendering the same liquid and air tight.

In the accompanying drawings, Figures 1, 2, 3, 4, 5, and 6 show the means by which the metal is stamped or pressed to provide a blank of the general form required. Figs. 7 and 8 are similar views showing the dies for smoothing out the blanks. Figs. 9, 10, 11, and 12 are sections of modified forms of dies. Fig. 13 is a sectional view of the former. Figs. 14 and 15 are detail views thereof. Figs. 16 and 17 are views of modifications. Fig. 18 is a sectional view of means for compressing the corrugations of the blanks. Fig. 19 shows the holder for the blanks, and Figs. 20 and 21 illustrate the action of compressing the corrugated joints.

The means for pressing the material consist of a number of upper dies b' and matrix-dies d', which are so constructed that starting from the first upper die b' and the corresponding female die d', Fig. 1, each successive one is of a correspondingly-larger diameter than the preceding one—*i. e.*, they are increased by one number or one grade—so that each barrel-half so treated will show corresponding steps or flanges g', Figs. 4 to 6, on account of the grades and the graduated pressing at each expansion of the material. In order to hold the material secure while it is pressed, a ring e', running around the upper die, is used, which ring allows only so much play for the material as is required in the graduated pressure.

Figs. 9 to 11 show also such upper die b' and lower die D, in the employment of which the largest diameter is used first and the pressing ends with the application of the dies of smallest diameter. The barrel-trunk thus obtained is then operated on between a shaping matrix-die and an upper die, Figs. 7, 8, and 12, and the steps g' are pressed out smooth between them, thereby giving the proper shape to the body of the barrel, as in Fig. 8. The rolling out of barrel-bodies which have come out too thick and the smoothing of such barrel-bodies are effected by the means usually employed for such purposes. The barrel-halves are now joined together by corrugated portions, and the devices serving for this purpose are shown in Figs. 13 to 17.

As demonstrated in Fig. 13 of the drawings, a holdfast-plate e^3, corresponding to the lower part of the barrel, is set on a shaft d^3. Closely to said holdfast-plate e^3 another plate f^3 is set on the shaft d^3 together with the former. This plate f^3 carries a loose spiral g^3, which is varied in its pitch in proportion to the depth of the thread to be produced. This device works in the following manner: The one half of the barrel a^3 is put upon the plate or disk e^3 and locked by a second holdfast-disk b^3 into a lathe. The material of the barrel-trunk protrudes a little beyond the spiral g^3. The barrel-trunk which has been thus put in is now set to revolve together with the bodies b^3 e^3 f^3, and the material a^3 is driven into the interstices or grooves of the spiral by means of an appropriate pressure-roller. Thereby the material a^3 contracts the spiral g^3, and as soon as the spiral has been so contracted and the material has settled entirely in the interstices or grooves, as shown in Fig. 14, the screw-thread is produced. Supposing that the holdfast e^3, Fig. 13, rotates with the shaft d^3 when the spiral g^3 is open and that the presser-roller M intended to press in the thread has pressed in the sheet-iron a^3 just a little only, the operation would be as follows: This slight impression has been sufficient to contract the spiral g^3 a little. The corrugated impression of the sheet-iron a^3, though, has made it impossible for the spiral to slip out, and by the further action of the presser-roller the corrugated impression will become deeper, whereby, as a matter of course, the spiral g^3 will contract more. The action of the presser-roller is then maintained until, as shown in Fig. 14,

the spiral d^3 is completely contracted. There is, therefore, properly no direct connection between the presser-roller and the spiral. Such connection exists only between the sheet-iron and the spiral. In order to supply the barrel-trunks with threads of lesser depth and greater pitch, the following device is employed:

The holdfast or tightening disk e^3 in Fig. 15 is provided with holes l^3 at its bottom—in the present case say six—into which protruding spiral springs are inserted, which can be taken out again. The disk f^3 rests against these spiral springs, Fig. 16, and the result is that when the material is driven into the thread of the spiral g^3 the latter is only partially pressed down and the necessary material is fed automatically. A breaking or tearing of the material is also precluded by this action. If trunks of slight thickness of plate should be worked which would not be capable of overcoming the elasticity of the spiral springs set into the holes l^3 and where it is still required to procure automatic feeding of the material, some of the spiral springs are taken out, according to the needs of the circumstances, and the working process is gone through with only such a number of spiral springs as can be overcome by the plate strength of the trunk. This automatic action of preventing the breaking or tearing of the material is secured because the pressure of the springs is so determined as to yield before sufficient pressure is reached as will result disastrously. Upon the same principle barrel-trunks can be supplied throughout with screw-threads of increasing pitch and an extremely strong product is obtained, being corrugated and convexed throughout. To make such a barrel the spiral g^3 is taken of even length with the trunk of the barrel and adapted to the same, Fig. 17. It is set by its end upon a disk i^3 at the smaller diameter, while it finds a second support upon the disk f^3 at its larger diameter. The driving of the material into the thread of the spiral is procured in the same manner as heretofore described. The spiral is disengaged from the barrel-trunk by simply screwing it out, and it can then be used in the working of another barrel-trunk.

The device for joining and stiffening the barrel-halves made in the above manner is shown in Figs. 18 to 21. As shown in Fig. 18, a rotary shaft d^4 is set into the bearings f^4 f^4. This shaft carries a rotary chuck provided at its outer periphery with screw-threads g^4 and collar h^4, and the chuck carries a permanently-fixed disk a^4 and an adjustable disk a^4 with a nut. The function of this contrivance is such that two barrel-halves i^4 i^4, having corrugated screw-threads and which are screwed together, as shown in Fig. 19, are locked by the usual and known means into a lathe. Upon the slide of the lathe the pressure device, which forms the subject of the present invention, is arranged as shown in Fig. 18. This pressure device is raised to the screw connection of the barrels by the usual expedients, so that their bulge or collar K^4 stretches between the disks a^4 a^4. When the barrel i^4 i^4 is made to revolve, the disks a^4 a^4 and the collar h^4 will rotate together around the shaft d^4, and the latter will revolve around its own axis in the bearings f^4 f^4, wherein the nut c^4 is gradually moved until the corrugated joint has obtained the form represented in Fig. 21, in which the sides of the corrugation k^4 are pressed together. This gradual movement of the nut c^4 is obtained by means of a spanner or other suitable tool. Such compression of the corrugated joint obtains for the barrel not only a solid, secure, and tight connection, but also an extraordinary and advantageous stiffening.

I claim—

1. In combination in mechanism for forming barrels, the dies having annular steps of different sizes for stretching the metal successively, dies for smoothing out the metal means for corrugating or screw-threading the barrel-halves comprising the former having ribs with spaces between into which the metal of the barrel-sections is forced and means for compressing the interlocked portions of the barrel, substantially as described.

2. In combination in a machine for forming metal barrels, a former having ribs or projections for corrugating the barrel-sections and means for compressing the interlocked portions of the sections, substantially as described.

3. In combination in a machine for forming metal barrels, the former consisting of the elastic spirals, the disk f^3 carrying the same, the shaft d^3 carrying the disk, and the holdfast-disk for holding the blank at one end, substantially as described.

4. In combination in a machine for corrugating barrel-blanks, holding means a yielding former comprising ribs between which the metal of the blank is forced, and a device for pressing the blank between the spirals, the said former having a rotary movement to bring different parts of the blank in succession to the pressing device substantially as described.

5. In combination in a machine for corrugating sheet-metal blanks, the rotary chuck b^4 provided with screw-threads at one end, a shaft d^4 carrying the chuck and two disks a^4 on the chuck relatively adjustable toward and from each other, the nut c^4 bearing against one disk, the adjacent edges of the disks being rounded to engage the corrugations for pressing the same, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOHANN HARMATTA.

Witnesses:

HENRY GIBSON,

ZOETAN NÉMETHY.