Dec. 4, 1928. 1,693,695

Z. T. ELLIS

KNOCKDOWN TANK

Filed Feb. 14, 1927 2 Sheets-Sheet 1

Fig. 1.

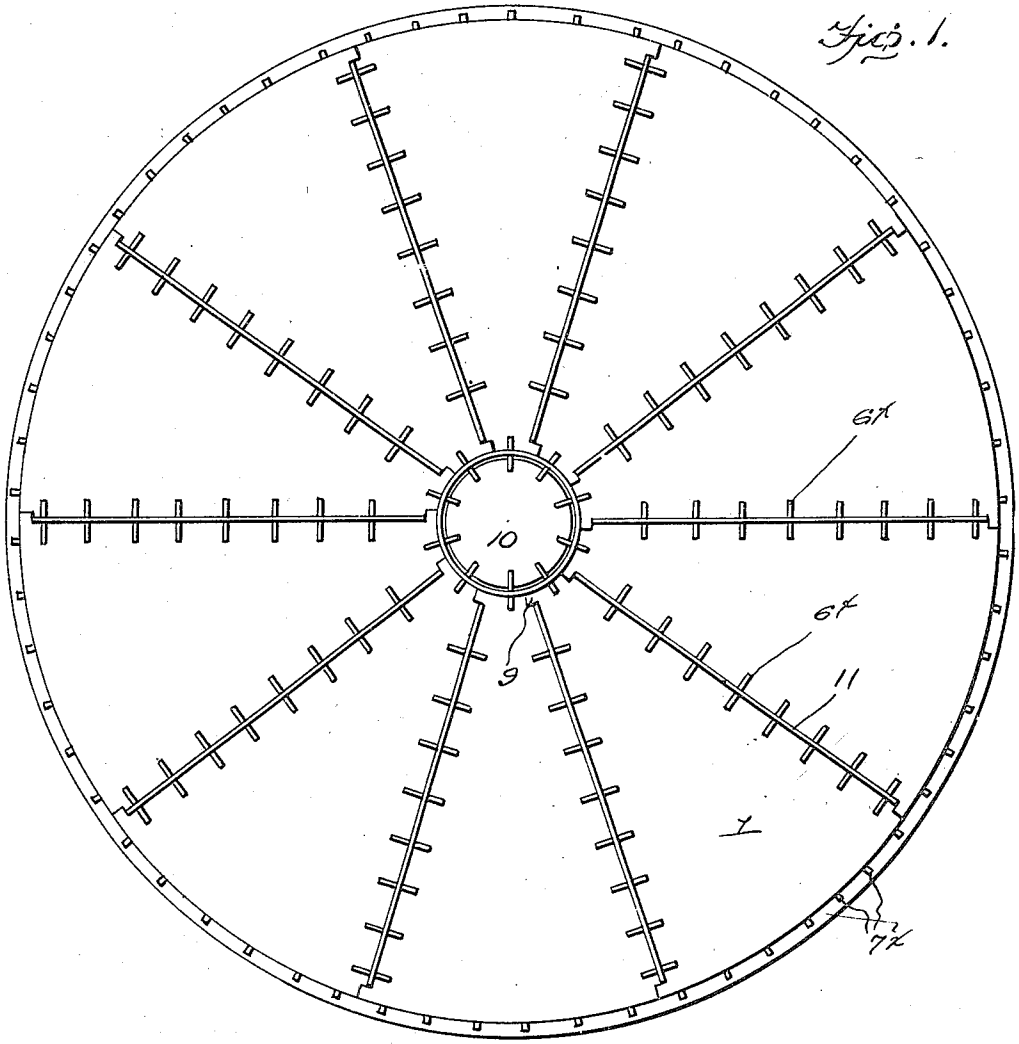
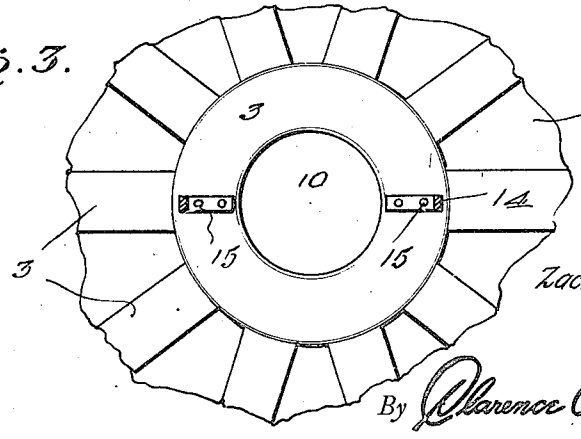


Fig. 3.



Inventor
Zachary Taylor Ellis

By Clarence A. O'Brien
Attorney

Dec. 4, 1928. 1,693,695

Z. T. ELLIS

KNOCKDOWN TANK

Filed Feb. 14, 1927 2 Sheets-Sheet 2

Fig. 7.

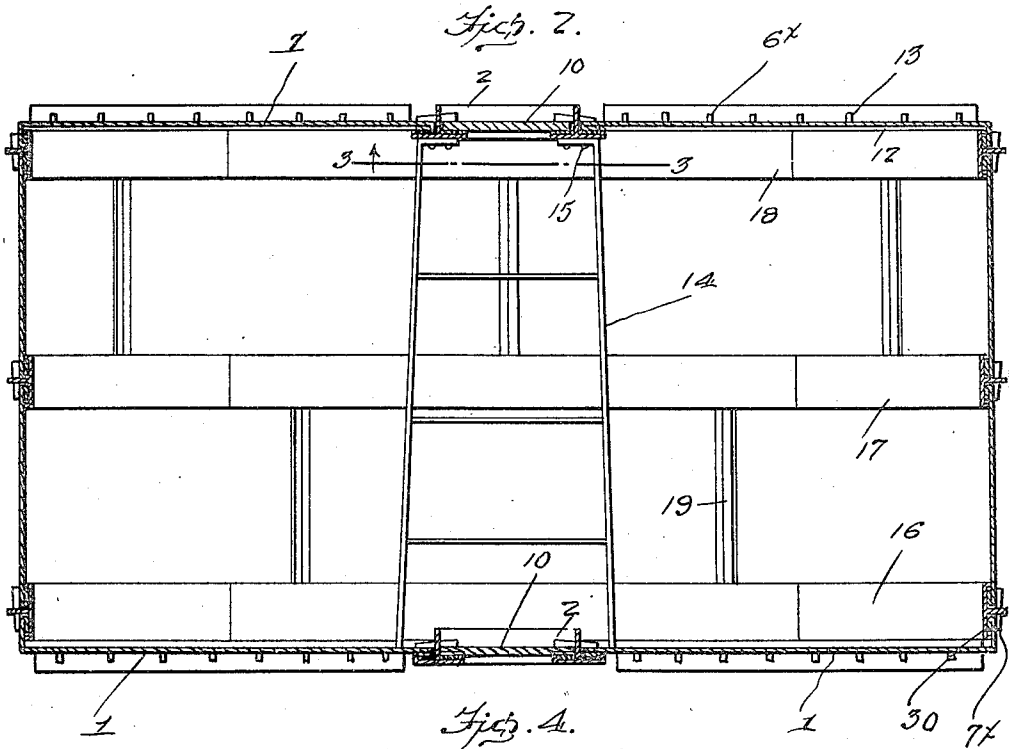


Fig. 4.

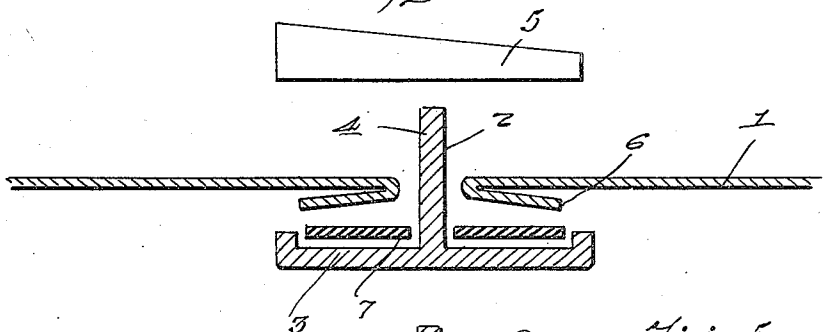
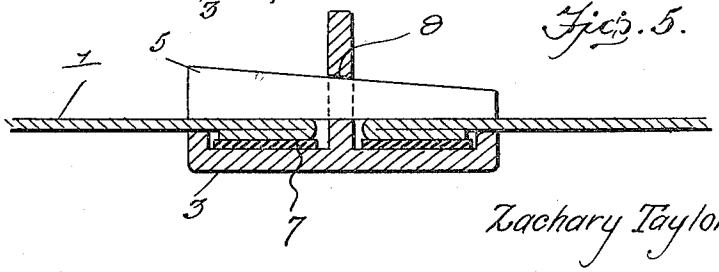


Fig. 5.



Inventor
Zachary Taylor Ellis

By Clarence A. O'Brien
Attorney

Patented Dec. 4, 1928. 1,693,695

UNITED STATES PATENT OFFICE.

ZACHARY T. ELLIS, OF DUNCAN, OKLAHOMA.

KNOCKDOWN TANK.

Application filed February 14, 1927. Serial No. 168,111.

My present invention pertains to tanks for containing oil and other substance; and it contemplates the provision of a peculiar and advantageous knock down tank.

To the attainment of the foregoing the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings:—

Figure 1 is a top plan view of a knock-down tank constituting the preferred embodiment of my invention.

Figure 2 is a diametrical section of the same.

Figure 3 is an inverted horizontal section taken on the plane indicated by the line 3—3 of Figure 2, looking upwardly.

Figure 4 is an enlarged detail view illustrative of the elements that enter into each of the novel lock joints comprised in my novel tank, the said elements being shown as separated.

Figure 5 is an enlarged detail view illustrating one of the novel and advantageous lock joints as formed.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

The bottom and the top or deck of my novel tank are each formed of a circular series of sector shaped sheets 1, preferably of steel. In both the bottom and the top or deck the plurality of sheets 1 are grouped about an annulus 2 having an upwardly extending stem or circular flange and also having a head with channel portions 3 at opposite sides of the stem or flange, the stem or flange being designated by 4. The stems or flanges of the annuli 2 are provided with apertures for the reception of tapered locking keys 5. It will also be understood that the inner ends of the sector shaped sheets 1 are bent upon themselves as designated by 6, and the bent portions are disposed in the heads 3 of the annuli 2 after the manner shown in detail in Figure 5. It will also be understood that an annulus 7 of appropriate packing material or rather annuli 7 of appropriate packing material are arranged in the channel portions of the upper annulus 2, and when deemed expedient, similar annuli 7 of packing material may be arranged in the channel base portion of the lower annulus 2. Manifestly when the inner bent ends of the sector shaped sheets 1 are arranged as shown in Figure 5, and keys 5 are socketed in the apertures 8 of the annuli flanges or stems 4, the bent ends of the sheets 1 will be tightly and strongly held in engagement with the annuli 2. I would also have it understood that I prefer to provide the inner end portions of the sheets 1 with lateral lugs 9, one of the lugs of each sheet 1 being arranged in a plane below the complementary lug of the adjoining sheet 1 so as to rest under the last named lug in lapped relation, after the manner shown in Figure 1.

Within the annuli 2 are arranged discs 10, also preferably of steel, which are engaged by the keys 5 and are tightly held by the same down on the inner portion of the bases of the said annuli 2.

Intermediate of the edges of the sheets 1 are arranged the stems 11 of bars of T-form in cross section, the said stems 11 extending a considerable distance above the sheets 1 at the bottom and top of the tank. The bases of the said bars of T-form in cross section are designated by 12 and are disposed immediately under the adjoining side edges of the sheets 1, and it will be readily noted that the said T-bars are maintained in position, and the sheets 1 are held tightly down on the heads 12 of the T-bars by transverse tapered keys 6× similar to the keys 5 before described, disposed above and against the adjoining portions of the sheets 1 and also disposed in transverse apertures 13 in the stems 11 of the T-bars.

At 14, Figure 2, is a ladder, preferably of metal which I prefer to employ in the tank. The side stiles of the said ladder 14 are provided at their upper ends with inwardly bent arms, and the said arms are riveted or otherwise connected at 15 to the under side of the base of the upper annulus 2. The lower end of the said ladder is designed to merely rest on the bottom of the tank after the manner shown in Figure 2.

In the formation of the side wall of the tank I employ a lower circular series of arcuate T-bars 16, arranged end to end so as to form an annulus, and I also employ an intermediate circular series of T-bars 17, and an upper circular series of T-bars 18, the bases of all the T-bars 16, 17, and 18 being preferably channeled at opposite sides of the stem of said T-bars. I also employ in the formation of the side wall of the tank, upright T-bars designated by 19 and having channeled base portions, and arcuate sheets, preferably of steel interposed between the arcuate T-bars 16, 17 and 18, and also interposed between the upright T-bars 19 and having

their end portions bent upon themselves and seated in the channeled portions of the T-bars and secured in said relation through the medium of keys 7× similar to the before mentioned keys 5 best illustrated in Figures 4 and 5. I would further have it understood at this point that the outer ends of the sheets 1 comprised in the bottom and top of the tank are bent upon themselves as indicated by 30 in Figure 2, and are disposed in channeled portions of the bases of the lower and upper arcuate T-bars 16 and 18, the said end portions being secured in the channeled portions of the bases of the arcuate T-bars by keys such as those described above, viz, the keys 7×.

At this point I would have it understood that in each instance where a sheet incorporated in my novel tank is bent upon itself and the bent portion is disposed in a channel portion of an interposed bar of T-form in cross section, packing may when deemed expedient be interposed between the base of the T-bar and the adjacent bent portion of a sheet.

I would also have it understood in this connection that because of the inherent resiliency in the sheets comprised in my novel tank, the bent end portions will tend to spring away from the major portions of the sheets and in so doing will exert pressure against the interposed packing and in that way will give rise to such frictional contact that casual displacement of any one of the keys 5×, 6× or 7× will be precluded.

It will be appreciated from the foregoing that a tank characterized as herein described is susceptible of being taken down and rebuilt with facility and this with practically no damage to the material employed.

It will also be appreciated that when knocked down, a tank of my invention may be readily moved from one point of use to another and then may be set up without the employment of skilled labor and without the employment of any parts or elements other than those comprised in the tank when originally set up.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear and exact understanding of the said embodiment. I do not desire, however, to be understood as limiting myself to the same.

Having thus described the invention, what I claim is:—

1. A knock-down device comprising a member having a stem and a channeled portion at one side of the stem, a sheet metal section having a resilient portion bent upon its major portion and tending to swing away from said major portion and disposed in said channeled portion of the member, and means cooperating with the stem for holding said resilient bent portion of the sheet section under tension in the channeled portion of said member, whereby the resiliency of the bent portion is utilized to maintain said holding means under pressure against the stem of the member.

2. A knock-down device comprising a member having a stem and a channeled portion at one side of the stem, a sheet metal section having a resilient portion bent upon its major portion and tending to swing away from said major portion and disposed in said channeled portion of the member, and means cooperating with the stem for holding said resilient bent portion of the sheet section under tension in the channeled portion of said member, whereby the resiliency of the bent portion is utilized to maintain said holding means under pressure against the stem of the member, and the said stem being apertured, and the said holding means being in the form of a wedge disposed in said aperture of the stem and against said bent portion of the section.

3. A knock-down device comprising a member having a stem and a channeled portion at one side of the stem, a sheet metal section having a resilient portion bent upon its major portion and tending to swing away from said major portion and disposed in said channeled portion of the member, and means cooperating with the stem for holding said resilient bent portion of the sheet section under tension in the channeled portion of said member, whereby the resiliency of the bent portion is utilized to maintain said holding means under pressure against the stem of the member, in combination with packing disposed in the channeled portion of the member and between the bottom of said channeled portion and the said bent portion of the section.

4. A knock down tank comprising members of T-form in cross section having apertured stems and also having channeled edge portions, sheet metal sections with resilient portions bent upon their major portions and tending to spring away from their major portions, tapered keys disposed in the apertured stem and arranged to hold the bent portion of the sheet metal sections under tension in the channeled edge portions of the members, whereby said bent portions exert pressure against and retain said tapered keys in engagement with the stems of the members.

5. A knock down tank comprising lower and upper annuli of T-form in cross section, the stems or flanges of said annuli being apertured, and the head portions of the annuli being channeled, lower and upper circular series of sector shaped sections having inner and outer end portions bent upon themselves, the inner bent portions being disposed in the channeled head portions of the annuli, discs superposed upon the inner portions of the

heads of the annuli, wedges disposed in the apertures of the annuli stems or flanges and above the inner portions of the sector shaped sections and the discs, radial bars of T-form in cross section having their heads disposed below and joining portions of the sector shaped sections and also having apertured stems extending between the adjoining edges of said sections and above the same, tapered keys or wedges arranged in the stems of said radial bars and disposed above the sector shaped sections, circular series of arcuate side bars of horizontal T-form in cross-section, said bars arranged with opposed or confronting ends and having apertured stems and also having channeled head portions, the upper of said arcuate bars receiving the outer bent ends of the upper sector shaped sections, arcuate sheets disposed between the circular series of arcuate side bars and having upper and lower portions bent upon themselves and disposed in channeled portions of the arcuate bars, tapered keys or wedges disposed in the apertures of the arcuate bar stems and against the outer sides of the arcuate sheets, upright side bars of T-form in cross section having apertured stems and also having channeled head portions receiving end portions of the arcuate sheets said sheets bent upon themselves, and tapered keys or wedges maintaining said end portions in the channeled portions of the upright bars.

6. A knock down tank comprising sheets with portions bent upon themselves, members of T-form in cross section having apertured stems and also having channeled edge portions at substantial right angles to the stem, the channeled portions receiving the portions of the sheets bent upon themselves, and tapered keys disposed in the apertured stems and at right angles thereto and arranged to rest against and hold the portions of the sheets bent upon themselves under tension in the channeled portions of the head; the said portions of the sheets bent upon themselves also serving to confine in the channeled portions of the head packing means interposed between the bottoms of the channeled portions and the said portions of the sheets bent upon themselves.

In testimony whereof I affix my signature.

ZACHARY T. ELLIS.