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F. BRADLEY ET AL

MEANS FOR ANCHORING OR SECURING TANKS ON UNDERFRAMES

Filed Aug. 2, 1924

3 Sheets-Sheet 1

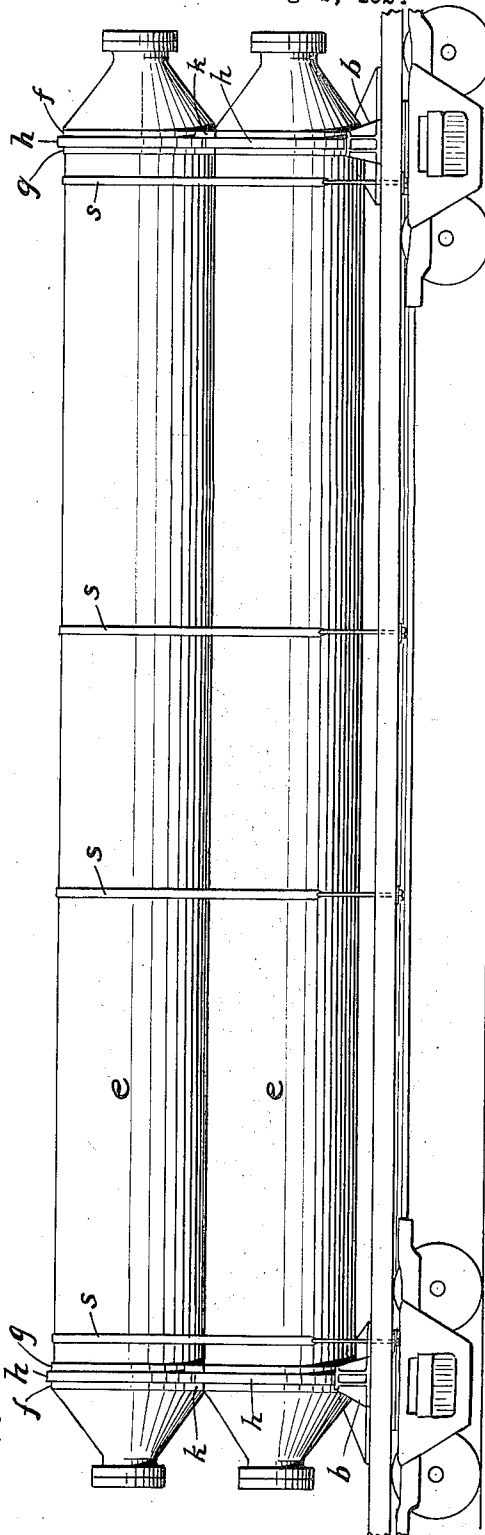


FIG. 1.

WITNESS:

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INVENTORS

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BY
Dusser and Harding
ATTORNEYS.

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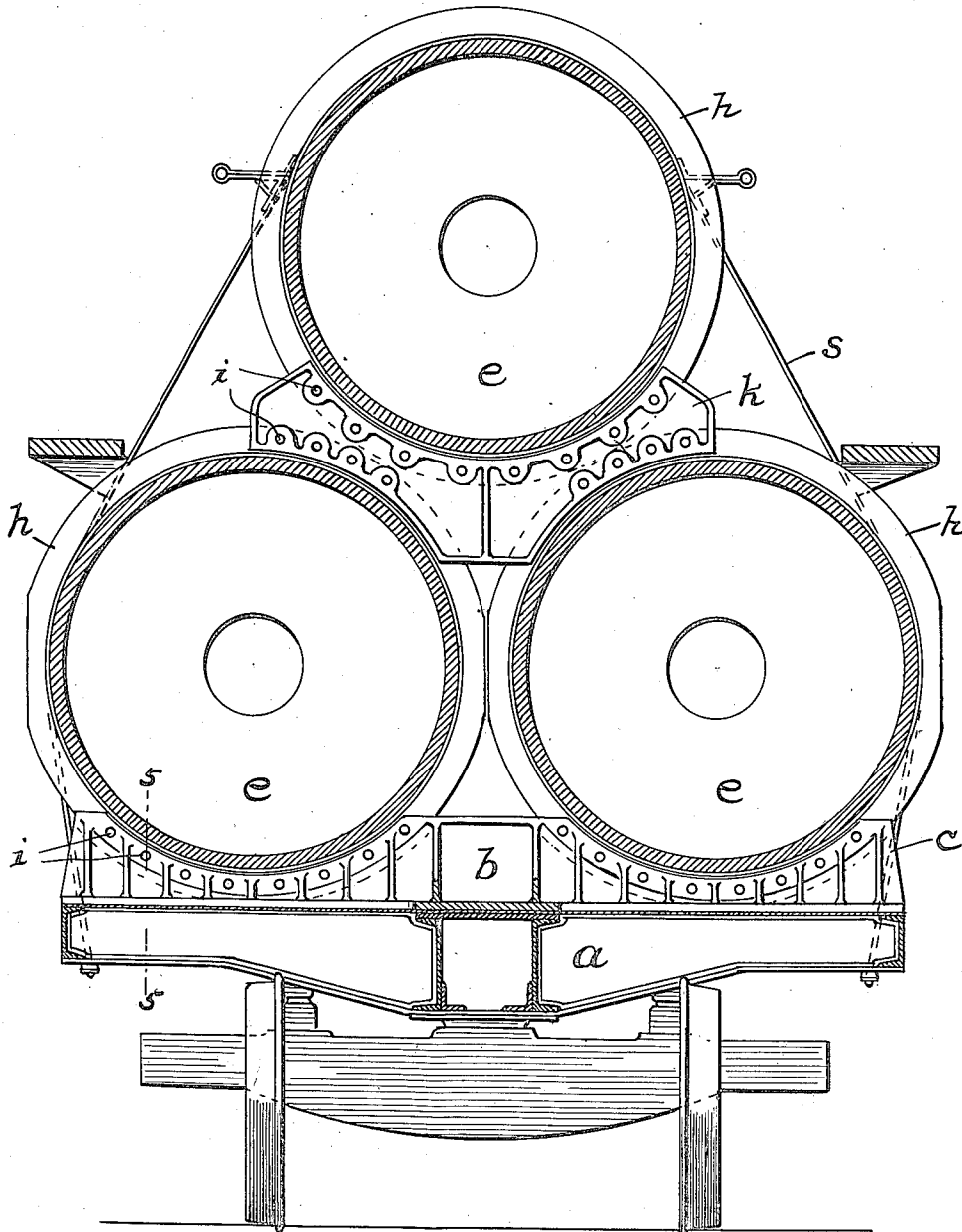


FIG. 2.

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3 Sheets-Sheet 3

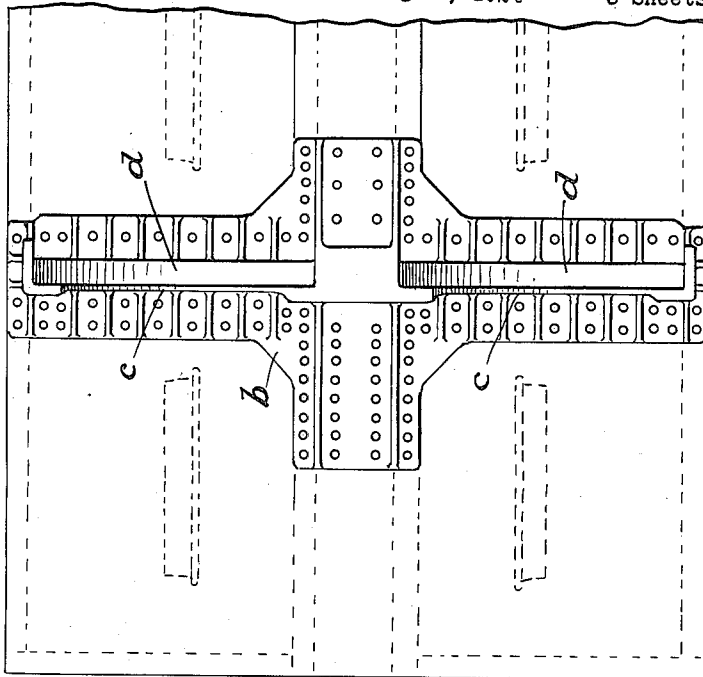


FIG. 4.

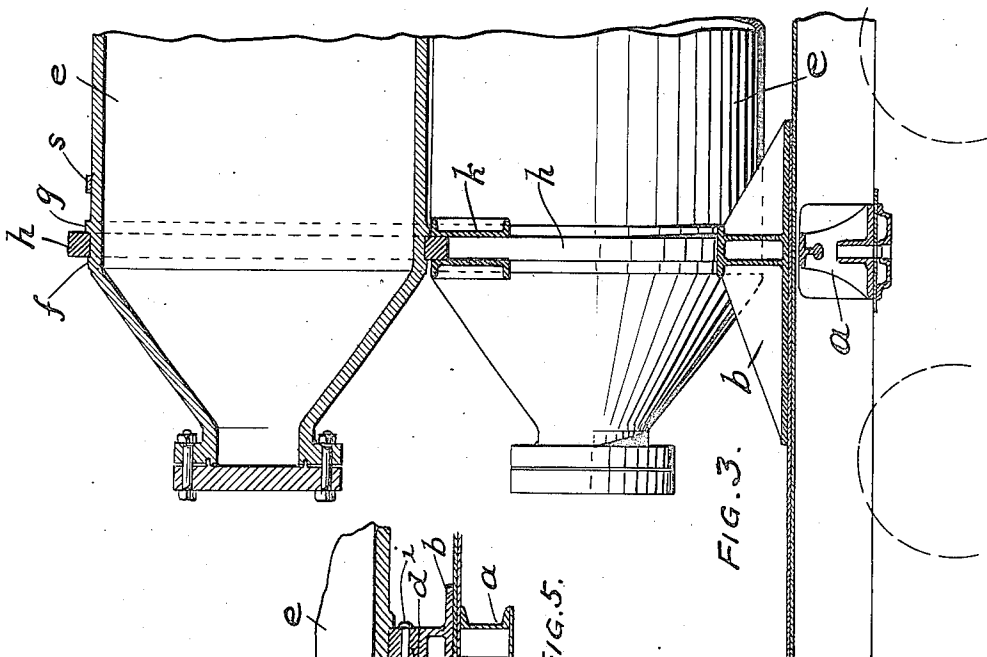


FIG. 3.

FIG. 5.

WITNESS:

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UNITED STATES PATENT OFFICE.

FRANCIS BRADLEY, OF PHILADELPHIA, PENNSYLVANIA, AND ALLEN E. OSTRANDER, OF BRONXVILLE, NEW YORK, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY, AND ONE-HALF TO SAID BRADLEY.

MEANS FOR ANCHORING OR SECURING TANKS ON UNDERFRAMES.

Application filed August 2, 1924. Serial No. 729,664.

To all whom it may concern:

Be it known that we, FRANCIS BRADLEY, of Philadelphia, county of Philadelphia, State of Pennsylvania, and ALLEN E. OSTRANDER, of Bronxville, county of Westchester, State of New York, citizens of the United States, have invented a new and useful Improvement in Means for Anchoring or Securing Tanks on Underframes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

In the transportation of certain classes of liquids and gases in tanks on railway cars, it is of the utmost importance that the tanks be held against longitudinal, lateral and vertical displacement with relation to the car body and to each other. The tanks used in this construction are about the length and about one-half the width of the car body or underframe. It is obvious that where a capacity is required that is in excess of that to be obtained by two tanks, the preferred arrangement would be to place a third tank above and between the other two; but no satisfactory means has been devised to secure tanks to each other and to the underframe in such relation and to avoid danger of one or all of them becoming freed from their fastenings under the great stresses and strains arising in transportation. By our invention, we provide a new means of supporting the tanks on the car body or underframe and holding them thereon with such security that all danger of longitudinal lateral and vertical displacements is avoided.

A preferred embodiment of the invention is shown in the drawings, in which—

Fig. 1 is a side elevation of a car body with the tanks mounted thereon.

Fig. 2 is a vertical sectional view through one of the car bolsters, the tanks and the securing means between such bolster and the tanks.

Fig. 3 is a central longitudinal sectional view through one of the car bolsters, the tanks and the securing means.

Fig. 4 is a plan view of the cradle superposed on the regular car truck bolsters.

Fig. 5 is a detail sectional view taken on line 5—5 Fig. 2.

The car body may be of any usual con-

struction, *a a* representing the two usual transversely extending bolsters, one at each end of the car body.

Directly above each car bolster *a* we mount a cradle *b*. This cradle may be integral with the bolster *a*, but it is preferred to make it a separate member and rivet it to the regular body bolster, and also to the floor of the car if it is considered advisable to use a floor. Each cradle comprises two saddle portions, each comprising an upstanding flange *c* and a rest *d* conforming to the curvature of, and affording a rest for, a ring *h* secured to the tank *e* resting on such saddle, as hereinafter described.

Each tank *e* comprises an elongated cylindrical body with conical-shaped ends. On the body portions of the tanks, adjacent each conical end, are formed two annular spaced-apart shoulders *f* and *g*. The shoulder *f*, which adjoins the conical end of the tank, is of less height than the shoulder *g*. The shoulder *f* is, preferably, of the maximum height that will permit a ring *h* to be slipped over it while the ring is hot and be shrunk into the groove formed between the two shoulders.

The two lower tanks *e* are placed on the cradle *b* in such position that each ring *h* rests on the rest *d*, and against the flange *c*, of the cradle *b*. The ring *h* is secured to the cradle by rivets or bolts *i* extending through the ring and the flange *c* of the cradle.

A top supplemental cradle or saddle *k*, made in two parts, is adapted to be supported by the two lower tanks *e* and to directly support the single upper tank *e*. The curvature of its lower face corresponds to the curvature of the rings on the two lower tanks and the curvature of its upper face corresponds to the curvature of the ring on the upper tank; and it is provided with flanges corresponding to the flanges *c* of the lower cradle *b*, which flanges are adapted to be engaged by and riveted to the rings *h* of the several tanks.

To comply with the requirements of the railway interchange rules, straps *s* extend around the tanks and are secured at their ends to the car frame. Such straps, however, afford a very insecure means of securing the tanks to the car body, and where

the tanks are supported in accordance with our invention, are quite superfluous.

It is possible to dispense with the shoulders *f*, because the ring *h* is shrunk on the tank; and if there were any tendency to longitudinal displacement, it would be prevented in one direction by the shoulder *g* at one end of the tank and in the other direction by the shoulder *g* at the other end of the tank. The principal function of the shoulders *f* is to insure that the ring *h* will be properly seated against the shoulder *g*.

By the foregoing construction, all strains and stresses tending to displace the tanks longitudinally or transversely or vertically, or tending to twist the tanks, relative to the car frame, will be effectually resisted.

Having now fully described our invention, what we claim and desire to protect by Letters Patent is:—

1. The combination with a car frame, of a tank, a circumferential shoulder on the tank, a ring shrunk on the tank adjacent the shoulder, and means supported by the car frame and engaging said ring and supporting said tank.

2. The combination with a car frame, of a tank, a circumferential shoulder on the tank, a ring shrunk on the tank adjacent said shoulder, and an arcuate cradle supported by said frame and engaging said ring and supporting said tank.

3. The combination with a car frame and its bolster, of a tank, a circumferential shoulder on the tank, a ring shrunk on the tank adjacent said shoulder, a cradle mounted on said bolster and supporting said tank, and means securing said ring to the cradle.

4. The combination with a car frame, of a tank, a circumferential shoulder on the tank, a ring shrunk on the tank adjacent said shoulder, and a cradle supported by the car frame and providing a rest and side abutment for the ring.

5. The combination with a car frame and its bolster, of a tank, two spaced apart circumferential shoulders near the end of the tank, the outer shoulder being of less height than the inner shoulder, a ring shrunk on the tank between said shoulders, and tank-supporting means on the car bolster and engaging said ring.

6. The combination with a car frame and its bolster, of a tank, two spaced apart circumferential shoulders near the end of the tank, the outer shoulder being of less height than the inner shoulder, a ring shrunk on the tank between said shoulders, and a cradle supported by the frame and secured to said ring and supporting the tank.

7. The combination with a car frame and its bolster, of a tank carried thereby, two spaced apart circumferential shoulders near the end of the tank, the outer shoulder being of less height than the inner shoulder,

a ring shrunk on the tank between said shoulders, a cradle mounted on the car bolster, and means securing the cradle to said ring.

8. The combination with a car frame and its bolster, of a tank carried thereby, a circumferential shoulder on the tank, a ring shrunk on the tank adjacent said shoulder, a tank cradle mounted on the car bolster and extending transversely of the car frame and conforming in curvature to the tank ring and affording a rest and a side abutment for the ring, and means securing the tank ring to the tank cradle.

9. The combination with a car frame and its bolster, of a tank carried thereby, two spaced apart circumferential shoulders near the end of the tank, the outer shoulder being of less height than the inner shoulder, a ring shrunk on the tank between said shoulders, and an arcuate cradle mounted on the car bolster and extending transversely of the car frame and affording a rest and a side abutment for the ring.

10. The combination with a car frame and its bolsters, of arcuate cradles mounted on the respective car bolsters, two tanks extending lengthwise of the car frame, rings secured on each tank near the opposite ends thereof, and tank-anchoring means on said cradles comprising ring-engaging side members and ring-supporting rests conforming to the curvatures of the rings on the corresponding ends of the two tanks.

11. The combination with a car frame and its bolsters, of cradles mounted on the respective car bolsters, two tanks extending lengthwise of the car frame, circumferential shoulders near opposite ends of each tank, rings shrunk on the tanks adjacent said shoulders, and tank-anchoring means on each cradle comprising ring rests conforming to the curvatures of the rings on the corresponding ends of the two tanks and side members against which the rings are secured.

12. The combination with a car frame and its bolsters, of three tanks extending lengthwise of the car frame, rings secured on each tank near opposite ends thereof, lower tank cradles mounted on the respective car bolsters, tank-anchoring means on each cradle, two of said tanks extending side by side and supported on said means, top supplemental cradles overlying the two last named tanks, means on the lower faces of the supplemental cradles engaging the rings of, and supported by, the two lower tanks, and means on the upper faces of the supplemental cradles engaging the rings on, and supporting, the third tank.

13. The combination with a car frame and its bolsters, of three tanks extending lengthwise of the car frame, circumferential shoulders near opposite ends of each tank, rings shrunk on the tanks adjacent said shoulders

arcuate cradles mounted on the respective car bolsters and engaging the rings and supporting and anchoring two of the tanks, and arcuate cradles mounted on and engaging the rings on said two tanks and engaging the rings on the third tank and supporting and anchoring it.

14. The combination with a car frame and its bolsters, of lower tank cradles mounted on the car bolsters, a pair of tanks mounted on said tank cradles, upper oppositely curved cradles mounted on said pair of tanks, a third tank mounted on the upper cradles,

rings secured to the several tanks, means on the lower and upper cradles engaging the peripheral and side faces of the rings of the two lower tanks, and means on the upper cradles engaging the peripheral and side faces of the rings of the upper tank.

In testimony of which invention, we have hereunto respectively set our hands at Philadelphia, Pa., this 30th day of July, 1924, and at New York city, N. Y., this 25th day of July, 1924.

FRANCIS BRADLEY.
ALLEN E. OSTRANDER.