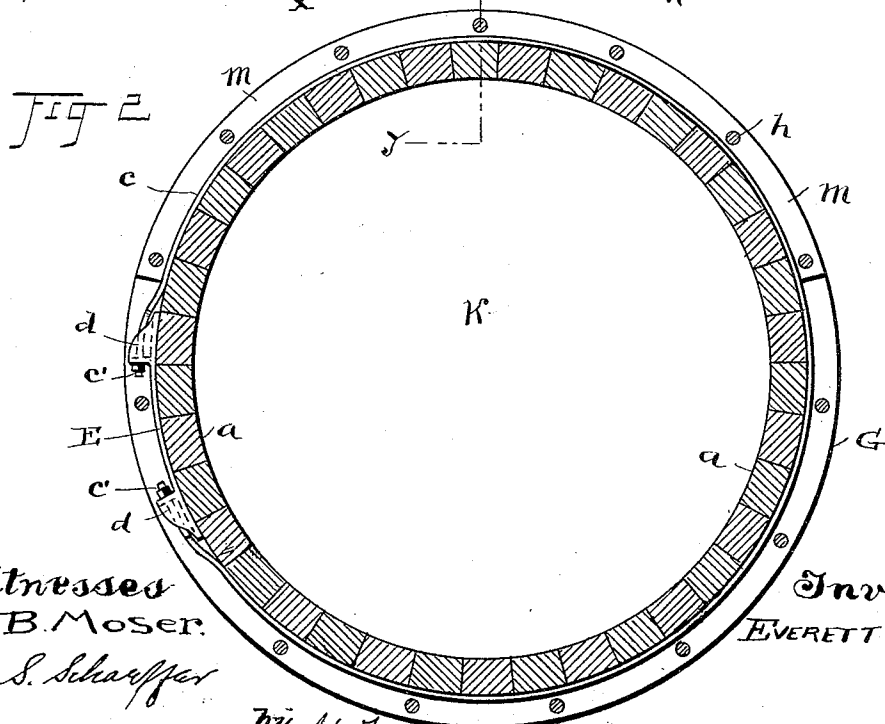
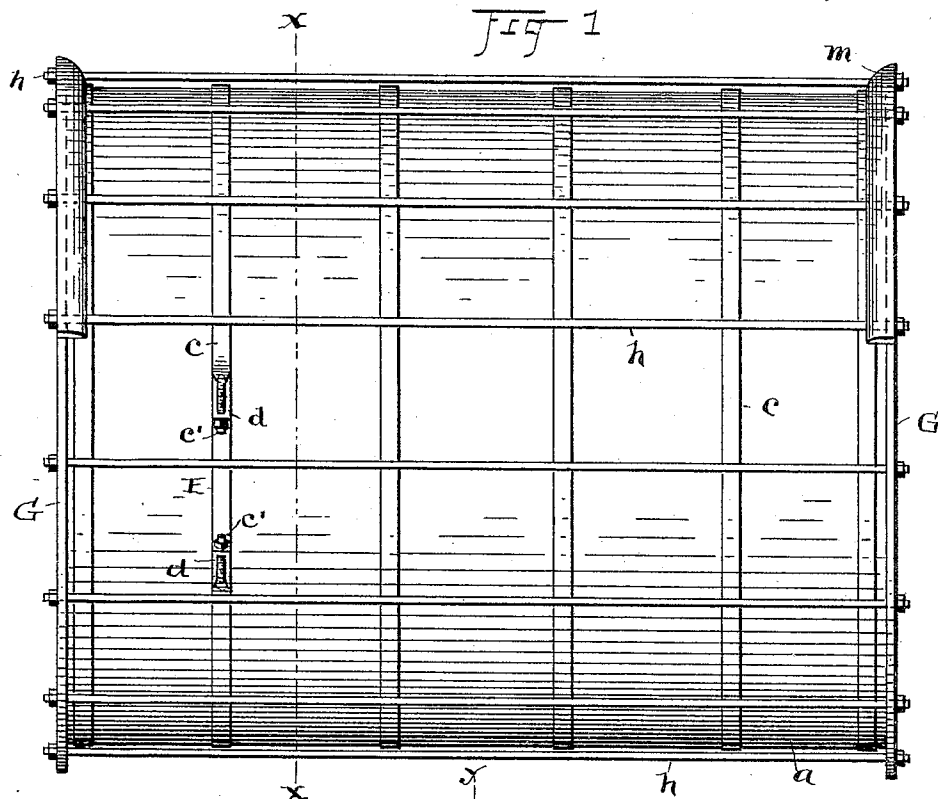


E. B. BRAGG.
TANK FOR CONVEYING ACIDS.

No. 511,674.

Patented Dec. 26, 1893.



Witnesses
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G. S. Scharffer

Inventor
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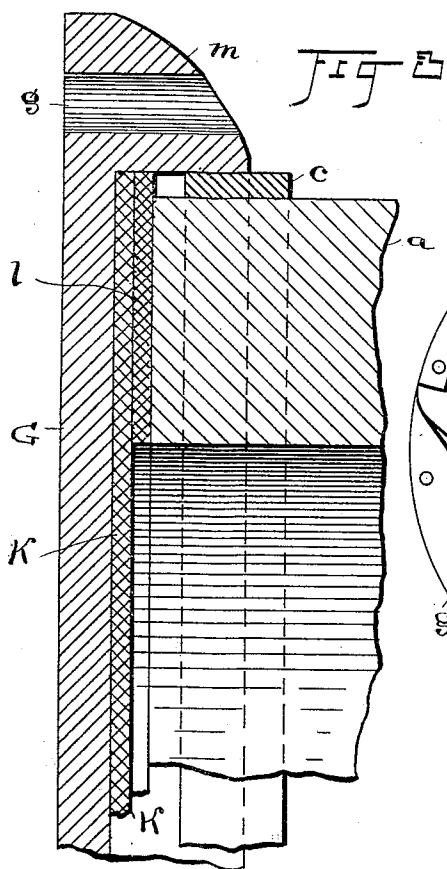
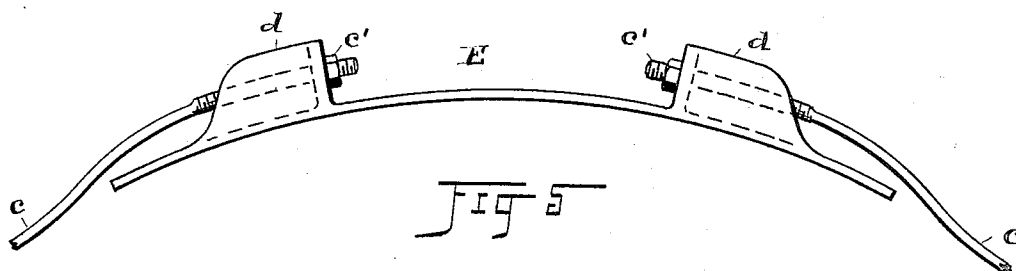
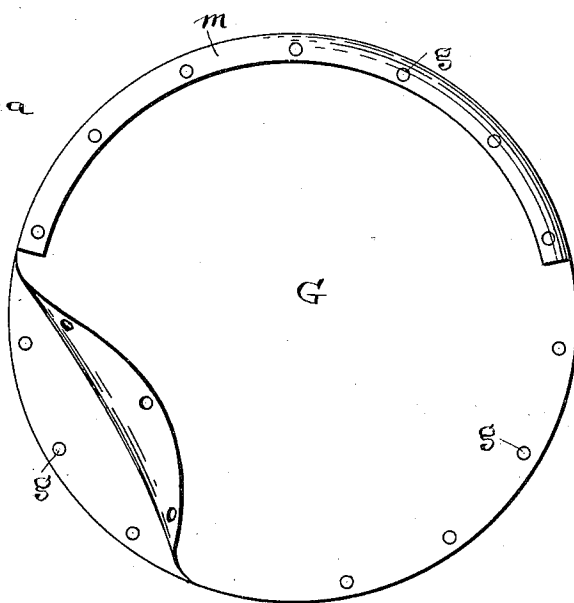


Fig 4



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UNITED STATES PATENT OFFICE.

EVERETT B. BRAGG, OF CLEVELAND, OHIO, ASSIGNOR TO THE GRASSELLI
CHEMICAL COMPANY, OF SAME PLACE.

TANK FOR CONVEYING ACIDS.

SPECIFICATION forming part of Letters Patent No. 511,674, dated December 26, 1893.

Application filed March 10, 1893. Serial No. 465,411. (No model.)

To all whom it may concern:

Be it known that I, EVERETT B. BRAGG, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tanks for Conveying Acids; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tanks for conveying acids upon cars, and the invention consists in the construction of a tank substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of one of my improved tanks, and Fig. 2 is a cross section thereof on line *x, x*, Fig. 1. Fig. 3 is a sectional view of a part of the head or end of a tank and of other associated parts taken on a line corresponding to line *y, y*, Fig. 2. The parts here are very considerably enlarged over the other views to more clearly disclose their construction. Fig. 4 is an inside elevation of one of the heads or ends of the tank with part of the rubber cover torn loose and thrown back, and Fig. 5 shows the means for securing and adjusting the ends of the hoops or bands and for tightening them upon the tank or cask, substantially as shown and described.

The object of the invention is to provide a tank adapted to transport acids on cars, and especially muriatic acid, and the construction of the tank or cask is such about its head that it can be tightened to take up shrinkage without being obstructed by the head, and utilized for shipping in cars without injury, all substantially as hereinafter fully described.

Heretofore it has been customary to build tanks for shipping muriatic acid in such way that they would lie endwise in the cars, but tanks so built and arranged were liable to great strain upon their heads by the swashing of the large body of acid back and forth incident to the movements of the cars. According to my invention the tanks are constructed to lie transversely of the car with their ends at the sides of the car, so that the

movements of the acid in the tanks will not be against the ends to spring leakage and the like, but up against the circular inside of the tank where it can roll and spend its force without doing any injury. To these several ends I construct the body of the tank out of a suitable number of heavy staves *a*, which are saturated with oil so as to prevent attack by the acid, and these staves are bound together by a series of heavy bands or hoops *c*, which have threaded ends and nuts *c'* locking them in the heads *d* of the connecting strap *E*. The ends of the hoops are rounded in cross section and passed through holes in the heads *d* and the nuts *c'* are tightened so as to bind the staves firmly together. Then as shrinkage of the staves occurs the cask or tank is kept tight by simply turning up the nuts *c'*, and in this way the tank can be kept as close about its sides as it need be to prevent leakage. Now having the body of the tank constructed and bound together in this way, I accommodate the head of the tank to this structure, so that shrinkage may occur in the body without affecting the head or being affected thereby, by providing a head *G* of iron, or other suitable material, which preferably has flat inner and outer surfaces and is adapted to rest against the ends of the staves, but projects laterally beyond the said staves all around sufficiently to provide a flange or rim for the connecting rods *h*, which bind the said heads or ends together. These heads or ends are alike in construction, and have at frequent intervals about their edge or flange portion a series of holes *g* through which said tie rods *h* pass, said rods being threaded and provided with nuts for drawing the heads tight against the ends of the tanks or casks. It will be noticed that the said heads or ends bear directly against the ends of the staves, and in order that they may be protected from the action of the acid, I affix, first, a heavy coat or cover of pure gum rubber *k* or other suitable acid resisting material, upon the inside face of said heads. Then I employ a gasket *l* of like material against which the ends of the staves bear directly and make a close joint for the parts. When the parts are thus constructed, arranged and connected the rods *h* are tightened up and the

tank or cask is ready for use. But the said heads are large and heavy, and hence in order that they may be held in proper position and relation upon the tank and supported thereby instead of having the support come upon the tie rods, I form upon their upper portions the inwardly projecting flange or overlapping lip *m*, shown clearly in Fig. 3, said flange overreaching the staves and the end band or hoop in this instance, and carrying the weight of the head. This flange extends around about one-third of the edge of the head so as to keep the head in place all around.

15 Having thus described my invention, what I claim is—

1. A tank for conveying acids, comprising the body portion constructed of wooden staves bound together by bands or hoops and means
20 for adjusting and tightening said bands or hoops, combined with metal heads having plain interior surfaces to abut against the ends of the staves, and partial circumferential flanges at their upper portions overlying
25 the staves to support said heads in place, an

acid-resisting covering for the plain interior surfaces of said heads, and connecting rods for securing said heads in place, substantially as described.

2. A tank for conveying acids, comprising the body portion constructed of wooden staves bound together by bands or hoops and means for tightening and adjusting said bands or hoops, combined with metal heads having plain interior surfaces to abut against the ends of the staves, and partial circumferential flanges at their upper portions overlying the staves to support said heads in place, an acid-resisting covering for the plain interior surfaces of said heads, a gasket interposed between said acid resisting covering and the ends of the staves, and connecting rods for securing said heads in place, substantially as described.

Witness my hand to the foregoing specification this 18th day of February, 1893.

EVERETT B. BRAGG.

Witnesses:

H. T. FISHER,

GEORGIA SCHAEFFER.