

(No Model.)

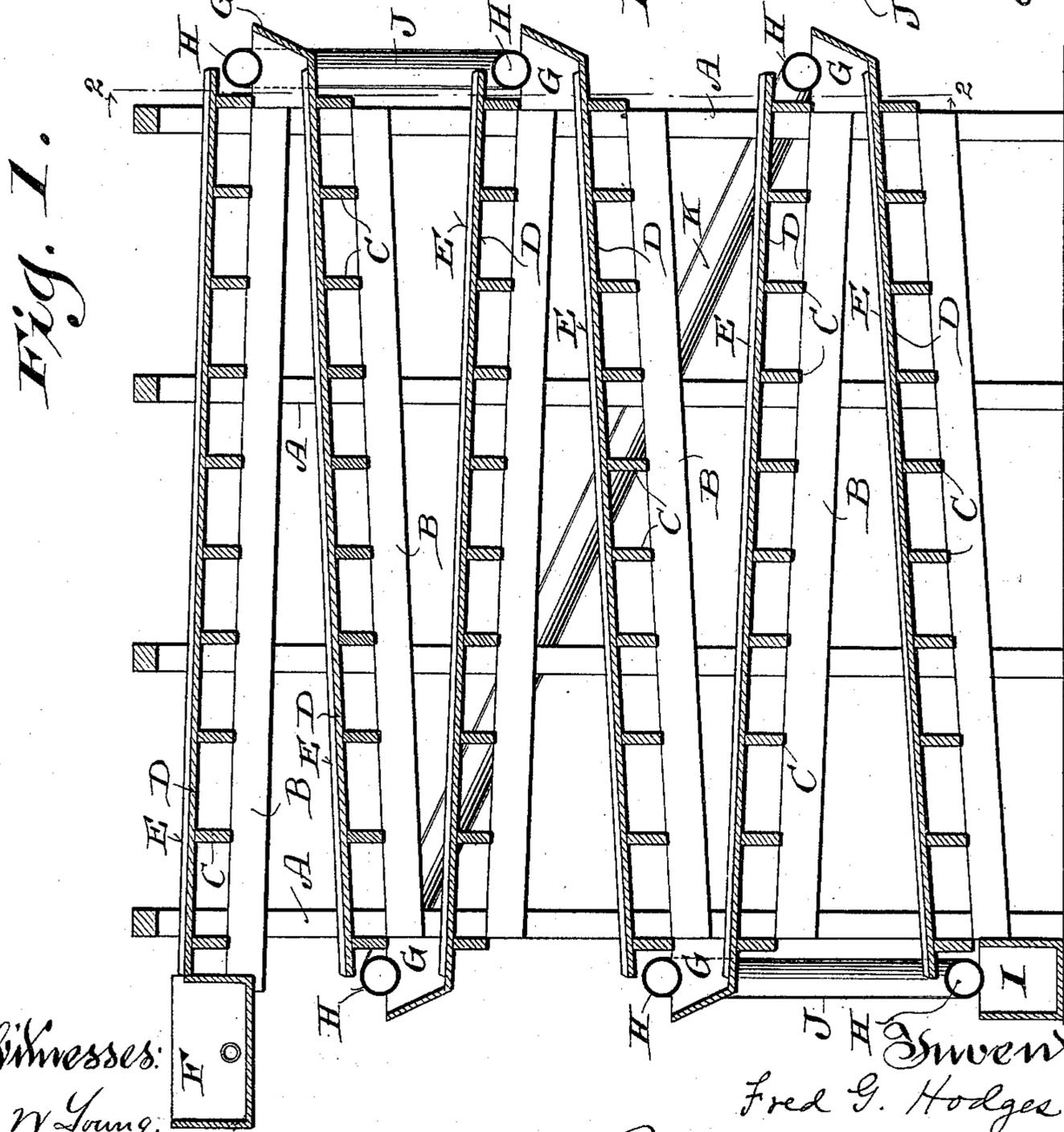
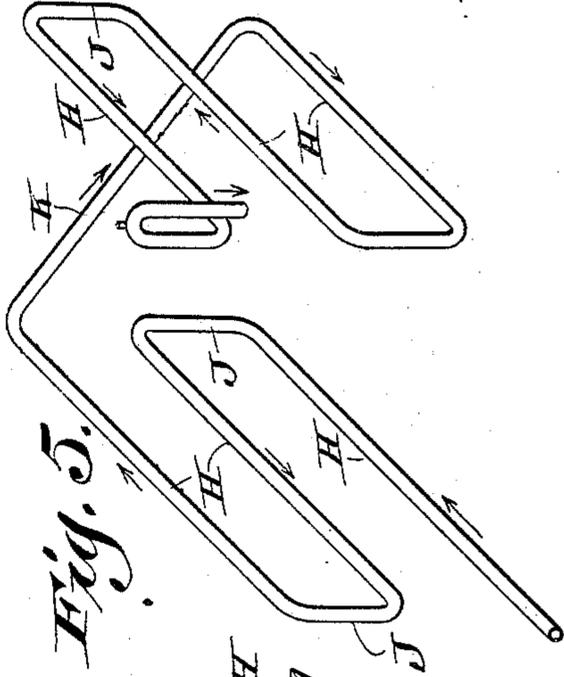
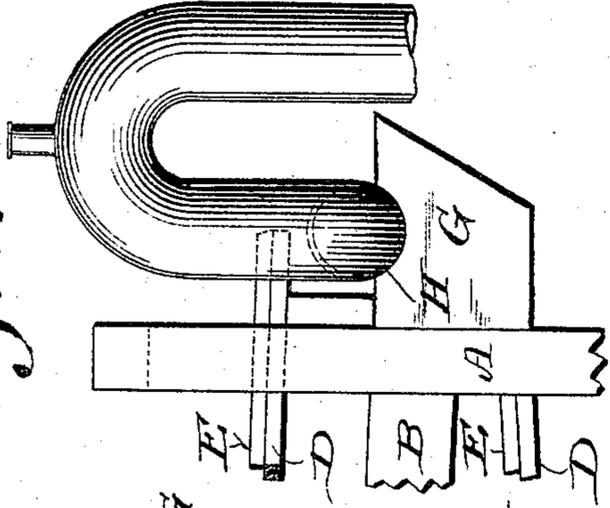
2 Sheets—Sheet 1.

F. G. HODGES.
LIQUOR COOLER.

No. 533,126.

Patented Jan. 29, 1895.

Fig. 1.
Fig. 4.



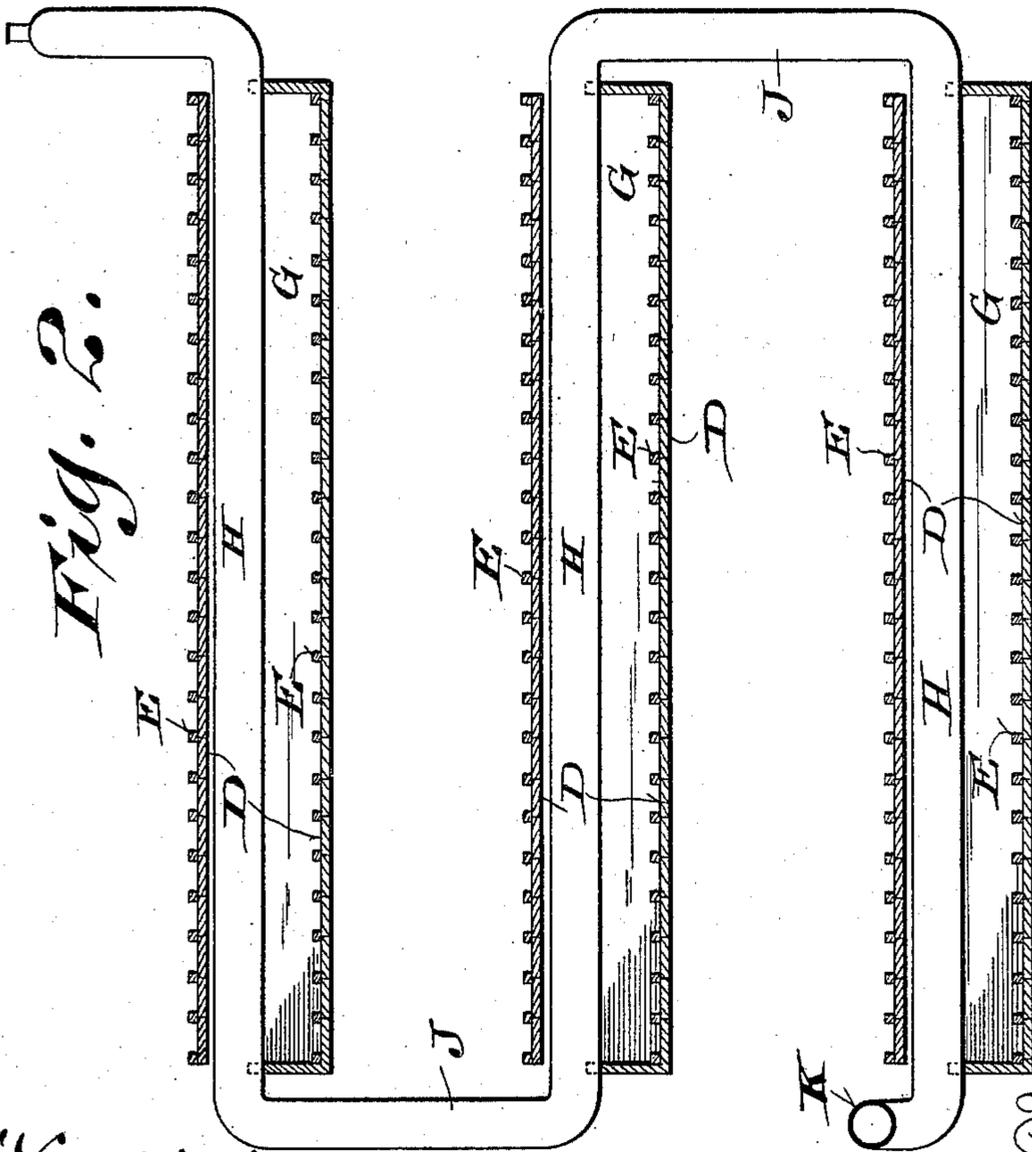
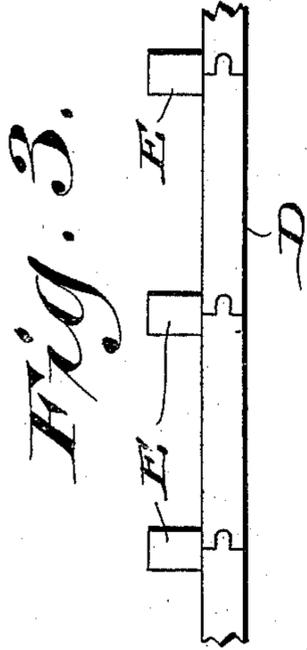
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 Attorney

UNITED STATES PATENT OFFICE.

FRED G. HODGES, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF TO WILLIAM PLATZ, OF SAME PLACE.

LIQUOR-COOLER.

SPECIFICATION forming part of Letters Patent No. 533,126, dated January 29, 1895.

Application filed August 4, 1894. Serial No. 519,493. (No model.)

To all whom it may concern:

Be it known that I, FRED G. HODGES, a citizen of the United States, and a resident of Racine, in the county of Racine, and in the State of Wisconsin, have invented certain new and useful Improvements in Cooling Liquors; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to effect a rapid cooling of tan or other liquors; and it consists in the apparatus hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a vertical longitudinal section of a liquor cooling apparatus constructed according to my invention; Fig. 2, a vertical transverse section taken on line 2—2 of the preceding figure; Fig. 3, an end view of a portion of one of the inclined liquor circulating shelves constituting part of the apparatus; Fig. 4, a side elevation of a portion of said apparatus, and Fig. 5, a perspective view of a pipe-line constituting part of the aforesaid apparatus.

Referring by letter to the drawings A represents a series of standards in two parallel rows any desirable distance apart and joined to each row of standards are a series of inclined supports B for joists C, the pitch of said supports being alternate in opposite directions and preferably of gradually increasing degree in descending order, as clearly illustrated in Fig. 1.

Built on each series of joists is a shelf D made from matched boarding the joints being protected by strips E whereby I form a series of gutters as shown in Figs. 2 and 3.

Supported by the structure thus far specified is a feed trough F arranged to have its upper inner edge on a level with the highest end of the uppermost shelf, the liquor to be cooled being supplied to said trough through an opening in the lower portion of the same, and it is to be understood that this trough is as long as the width of said shelf. The higher ends of the succeeding shelves are in the form of troughs G, each of the latter being immediately under the lower end of the preceding shelf. Intermediate of each of the troughs G and the adjacent end of the preceding shelf is a closed conveyer for cooling fluid this con-

veyer being preferably a horizontal stretch H of a continuous pipe-line, and the cooling fluid may be either water or air. Another cooling fluid conveyer or horizontal stretch H of the continuous pipe-line is arranged intermediate of the lower end of the lowermost shelf and a conduit I, as shown in Fig. 1.

The several horizontal stretches of the pipe-line at each end of the previously described structure are connected by suitable bends J and the upper horizontal stretch of one series is joined to the lowermost horizontal stretch of the other series by means of an inclined stretch K as is best illustrated in Fig. 5. The upper portion of said pipe-line is shown in the form of a siphon-bend provided with a vent and said pipe line is carried on to any convenient point at which to discharge the cooling fluid.

In practice the liquor to be cooled is forced up into the trough F to run over the upper inner edge of the same onto the highest end of the adjacent upper shelf, and any sediment in said liquor has an opportunity to settle in said trough. The liquor flows on the upper shelf in a thin sheet and discharges into the trough-like end of the succeeding shelf over a horizontal stretch of the pipe-line through which a cooling fluid is kept running, this fluid being first admitted to the lowermost horizontal stretch of said pipe line. In a like manner the liquor progresses from one shelf to another throughout the series, and in each descent from one shelf to another it comes into contact with a horizontal stretch of the pipe line until it finally passes over the lowermost horizontal stretch of said pipe line into the conduit I, by which it is conveyed to a point of discharge. The travel of the liquor in a thin sheet along the several shelves under exposure to the surrounding air results in said liquor being cooled to a certain degree proportionate to the number and dimensions of said sheets, but the operation is materially hastened and the degree of coolness intensified by having the aforesaid liquor come into intermittent contact with stretches of a pipe-line through which a cooling fluid is kept running. It also follows that by having the pitch of the shelves gradually increased in descending order, the

flow of the liquor will attain a corresponding increase in speed, and while the flow on the upper shelf is always the same it will be thinner on each succeeding shelf, and the thinnest flow will come in contact with the coolest horizontal stretch of the pipe-line, whereby the accomplishment of the desired result is more rapidly effected. It is also to be noted that the separation of the flow by means of the longitudinal strips on the several shelves prevents deviation of all the liquor toward any depression or depressions that may occur in said shelves.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cooler for tan or other liquors, the same comprising a series of shelves alternately inclined in opposite directions, the pitch of the shelves being of gradually increased degree, in descending order.

2. A cooler for tan or other liquors, the same comprising a series of shelves alternately inclined in opposite directions, and a closed cooling fluid conveyer arranged below the lower end of each shelf in the path of flowing liquor.

3. A cooler for tan or other liquors, the same comprising a series of shelves alternately inclined in opposite directions, and a pipe-line for cooling fluid having horizontal stretches thereof arranged below the lower end of each shelf in the path of flowing liquor.

4. A cooler for tan or other liquor, the same comprising a series of shelves alternately inclined in opposite directions, and a pipe-line

for cooling fluid, the pipe-line embodying two series of bend-joined horizontal stretches individually arranged below lower ends of the shelves in the path of flowing liquor and an inclined stretch connecting the uppermost horizontal stretch in one series with the lowermost horizontal stretch in the other series.

5. A cooler for tan or other liquors, the same comprising a series of standards in two parallel rows, supports joining the standards in each row and alternately inclined in opposite directions, joists connecting the supports on one series of standards with those on the opposite series, shelves built on the joists, a trough having a lower supply-opening and its upper inner edge flush with the higher end of the uppermost shelf, a continuous pipe line having horizontal stretches below lower ends of the shelves in the path of flowing liquor, and a conduit leading from below the bottom of one of said pipe-line stretches.

6. A cooler for tan or other liquors, the same comprising a series of shelves alternately inclined in opposite directions, the pitch of the shelves being of gradually increased degree in descending order, and longitudinal strips on each shelf at suitable intervals apart.

In testimony that I claim the foregoing I have hereunto set my hand at Racine, in the county of Racine and State of Wisconsin, in the presence of two witnesses.

FRED G. HODGES.

Witnesses:

D. G. JANES,
GEORGE HODGE.