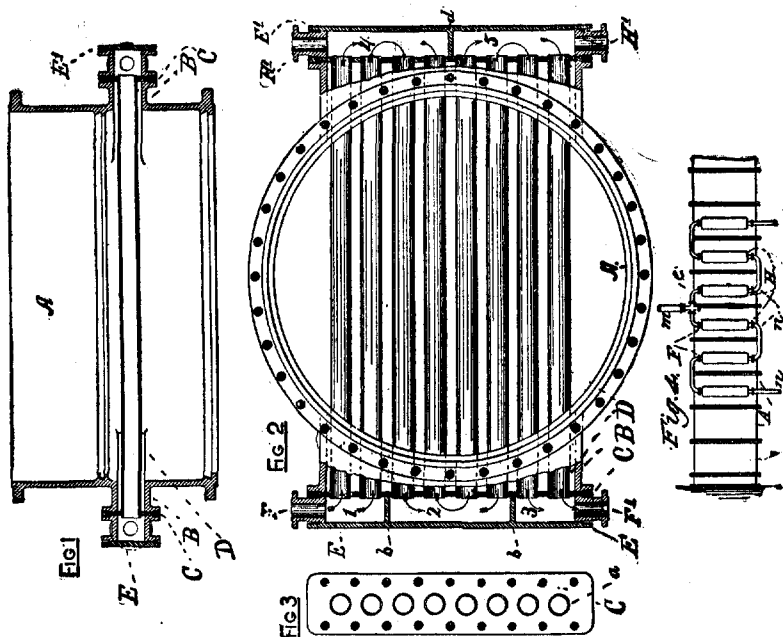


The drawings, specifications, and claims of the patent in suit are as follows:



"Apparatus for Cooling Saline Solutions.

"Specification Forming Part of Letters Patent No. 362,938, Dated May 17, 1887.

"Application filed July 20, 1885. Serial No. 172,146.

"(No Model.)

"To All Whom It May Concern: Be it known that I, William B. Cogswell, of Syracuse, in the county of Onondaga, state of New York, a citizen of the United States, have invented certain new and useful improvements in bicarbonate columns, of which the following is a specification, reference being had to the accompanying drawings, in which Fig. 1 is a longitudinal vertical section of one of the horizontal segments of the column; Fig. 2, a top plan view of same, showing sections of construction at the ends of the piping system; Fig. 3, a plan view of the inner face of the pipe-heads; Fig. 4, an elevation of the column. My invention relates to the manufacture of bicarbonates, and it consists in the construction of the apparatus, and not in the chemical portion of the process. My object is to partially cool the liquid contents of the column, or reduce their temperature, so that they leave the column cooler than by the ordinary process, where tubular columns are used without any cooling attachments. It consists in the use of internal or partly internal and partly external cooling pipes, with the exterior internal surface of which the hot liquid comes into contact, and which pipes are kept as cool as possible by maintaining a flow of cold water through them, or by any other equivalent means. I construct my column as follows: A represents a section of the column, tubular in form, and provided with flanges, which are secured to the preceding and following sections in any ordinary manner, as the column is built up of successive superimposed sections until the desired height is reached. B, B, are rectangular nozzles, formed integral with the body of the column, opening outward and into the interior of the section, the openings being usually rectangular in form. These nozzles are located opposite to each other upon the periphery of the section, and usually in the same horizontal plane. C, C, are the flue sheets, perforated, as at a, to receive the flue pipes, D, D,

and also provided with holes to receive the bolts by which these sheets are secured to the outward flanges of the nozzles. The flues are set in these sheets in any ordinary manner. E, E', are the covers, provided with the partition walls b, b, upon E, and d upon E', which walls stand out at right angles to the inner faces of the covers, and when placed in position form the chambers 1, 2, 3, 4, and 5. F, F', are couplings for the inlet and exit pipes for the water or cooling mixture. H, H', are couplings, which can be used when it is desired to couple by connecting pipes the sections (two or more) of the column together, so that the water will flow from one section through another. In Fig. 4 several sections are shown coupled together, and all taking the water from a single stand-pipe, m; e, e, representing the connecting pipes and n, n, the exit pipes. My invention is operated as follows: The water enters the chamber 1 through the coupling, F, passes thence through the flues transversely into the chamber 4, thence through the flues into the chamber 2, thence across into the chamber 5, and thence across into the chamber 3, from which it passes out through the coupling, F'. The drawings show the pipes, D, arranged in pairs, but they may be arranged singly, or in any other manner desired. By the use of these pipes the contents of the column are much reduced in temperature when they leave it, and the quantity of bicarbonates produced is largely increased by the quickening of the process. What I claim as my invention, and desire to secure by letters patent, is: (1) A bicarbonate column consisting of a series of superimposed sections, provided with transverse flues continuously connected, and having inlet pipes opening into the flues and exit pipes coupling the sections together, substantially as described. (2) A section for a bicarbonate column, consisting of a body, A, nozzles, B, flue sheet, C, flues, D, cover, E, and inlet and exit couplings, F, F', constructed and operating together, substantially as described, for the purposes set forth.

"In witness whereof I have hereunto set my hand this 5th day of January, 1885.

W. B. Cogswell.

"In presence of:

"C. W. Smith.

"S. D. Gilson."

It appears by the concession of counsel that the Solvay process patent was a very valuable one, and worked a revolution in the art of making bicarbonate of soda. No column was erected in this country until 1883. The plaintiff then built a column in accordance with the Solvay patent at Syracuse, N. Y. Considerable difficulty was found in preventing the heat caused by the reaction from arising to such a degree as to interfere with the proper chemical changes. At first a hose was used to throw the water upon the column which was 60 feet high and 6 feet in diameter. This proved not to be successful in properly reducing the heat. A water jacket was then put around the column, but that proved not to be what was desired. Finally, within three or four months after the column was built, Cogswell, the patentee, conceived the present apparatus. It was introduced into the column, and increased the production per day of a column from 12 tons of bicarbonate of soda to more than 30 tons. The court below held that there was no novelty in the device by reason of what was shown in the prior art.

Smith & Denison, for appellant.

Cyrus E. Lothrop, for appellees.

Before TAFT and LURTON, Circuit Judges, and CLARK, District Judge.

TAFT, Circuit Judge (after stating the facts as above). We concur with the court below in the view that there is no patentable novelty in the device under consideration. The problem which Cogswell had to solve was how to prevent a column of liquid in which chemical reactions were producing heat from becoming so hot as to interfere with the reactions. In Gerstenhofer's patented apparatus for the manufacture of sodium carbonate was a tank in which the same chemical

reaction between carbonic acid and ammoniated brine, as in the Solvay process, was intended to take place. For the purpose of avoiding too great heat in the reactions, the patentee introduced a cylindrical coil of pipe winding about the inside surface of the tank, and coming in contact with the liquid to be cooled, and passed cold water through the coil. Gerstenhofer's patent was issued in 1881. In 1882 an English patent was issued to Charles Wigg for the making of carbonate of soda, in which soda was made by the same chemical reactions as those in the Solvay process. The ammoniated brine and carbonic acid gas were mixed in a tank. In order to facilitate the union, and to prevent too great heat, the inventor provided a reel with hollow arms or beaters rotating around a horizontal axis inside the tank, and passed cold water through the hollow arms. The arms extended transversely across the tank. In 1882, a patent was issued to F. O. Kunz for an apparatus for the cooling of mash in a distillery. It consisted of a series of transverse pipes so connected together as to permit a continuous flow of cold water from one end to the other of the vessel in which the mash was contained. In January, 1883, a patent was issued to F. Richter for a beer cooler. It was for a device having transverse pipes arranged in horizontal series in a vessel into which the beer was allowed to drip. Through the pipes there was a continuous flow of cold water. The inlet and outlet pipes were adjusted in relation to the various series so that water of different temperatures might be introduced into the different series as the operator should desire. It is common knowledge that one of the best modes of cooling liquids is by introducing pipes into the liquid to be cooled, and circulating through such pipes a cooler medium. So far as we can see, this is all that the patentee in the case before us did. The use of pipes for the very purpose which the patentee here had in mind is shown in the Gerstenhofer and the Wigg devices. The arrangement of such pipe in transverse horizontal series with provisions for varying the heat in the different series is shown in the Richter beer-cooler patent, already referred to. To apply the apparatus thus disclosed in the prior art to the Solvay column does not seem to us to have required any invention whatever. The cross-examination of the complainant's expert by Mr. George Lothrop demonstrates how small a step in the art the complainant's device was:

"X. Q. 17. If steam or hot water were passed through the column of the Cogswell patent, instead of ammoniated brine, would not water circulating through the transverse flues cool the steam or hot water in the same manner that it cools ammoniated brine in the operation of the Cogswell apparatus? A. If the water which circulates through the pipes called the transverse flues in the Cogswell patent is cooler than the water or the steam which is passed through the column as supposed in the question, the cooler water in the pipes will absorb and carry off heat from the surrounding hotter fluid, whatever that may be, whether steam, water, or ammoniated brine. X. Q. 18. Has it not been long known that if a heated fluid be passed through a vessel it can readily be cooled by a water circulating pipe placed transversely to the path of the moving fluid? A. Yes, sir. X. Q. 19. Was not this well known long prior to the date of Mr. Cogswell's alleged invention? A. I think it was. X. Q. 20. Referring to the patent to Kunz, does not that patent show and describe a cooling apparatus built of a series of superimposed sections so arranged as to form a continuous passage for fluid from the top of the top section to the bottom of the lower section? A. It does. X. Q. 21. Is not

each section of that apparatus provided with transverse cooling pipes through which water may be made to circulate? A. It is. X. Q. 22. Are not the transverse cooling pipes in one section shown and described as connected with the transverse cooling pipes in the adjacent section? A. They are. X. Q. 23. Assuming that water is circulated through the transverse cooling pipes of the Kunz patent, will not those pipes cool any fluid passed through the apparatus, provided such fluid be hotter than the water in the circulating pipes? A. It seems to me that they would. X. Q. 24. Does not the Richter patent show and describe a cooling apparatus in which different portions of the apparatus may be independently supplied with cooling water? A. It does. X. Q. 25. Does not the Wigg patent show and describe transverse cooling pipes in an apparatus for making bicarbonate of soda by the ammonia process? A. It does. X. Q. 26. Does not the Gerstenhofer patent show another well-known form of cooling pipes applied to an apparatus for making bicarbonate of soda by the ammonia process? A. It shows a cooling coil of cylindrical form arranged in a vessel described as being designed for use in the ammonia process of making bicarbonate of soda. A cooling coil of that form was well known before this patent."

The great increase in the product effected by the Cogswell apparatus would, in a doubtful case, be evidence of the patentability of the invention, if there had been many inventors at work in the field for a considerable time. But it is to be observed with reference to the asserted difficulty of the problem of cooling the column properly that it was not six months after the Solvay process was put into practical operation in this country, and the difficulties with respect to heating were developed, before Cogswell conceived of this method of avoiding them. The profitable manufacture of soda by the Solvay process had been rendered difficult to the rest of the world by the fact, which is asserted by the complainant company, that there were many secrets needed for a very successful operation of the process, which had been carefully guarded by it. While the patent was in force, therefore, those who would be likely to devise improvements were limited to the small number of licensees. In this country there was but one, and its column was not built till 1883. When it began to be operated, the heating difficulty was presented. The use of the hose and the water jacket on the column were but crude attempts to meet it, which were followed at once by the present system. The experts and counsel for the complainant have involved ingenious theories upon which to base the claim that the apparatus here devised is peculiarly adapted to the Solvay process, and solves the problem in a wonderful way. We cannot think that the problem is so intricate. The question was to reduce the heat of the liquid. It is said that it was to reduce the heat at the proper points. The devising of means by which the temperature of the flowing water should be varied at different parts of the column involved nothing but mechanical skill, and was plainly disclosed in Richter's patent. The questions where the cooler water ought to be introduced, and what the variation in temperatures ought to be, were questions for experiment, and are not answered by anything in the patent. The case is well within the principle laid down in *Stearns & Co. v. Russell*, 54 U. S. App. 591, 29 C. C. A. 121, and 83 Fed. 218, and *Steiner Fire Extinguisher Co. v. City of Adrian*, 16 U. S. App. 409, 8 C. C. A. 44, and 59 Fed. 132, and the cases upon which those decisions rest. The decree of the circuit court is affirmed.

AMERICAN GRAPHOPHONE CO. v. NATIONAL GRAMOPHONE CO. et al.

(Circuit Court, S. D. New York. December 10, 1898.)

PATENTS — INFRINGEMENT — IMPROVEMENT IN RECORDING AND REPRODUCING SPEECH.

The Bell & Tainter patent, No. 341,214, for an improvement in recording and reproducing speech, as to claim 21, covering a loosely-mounted or gravity reproducer, held valid and infringed, on motion for preliminary injunction.

Motion for preliminary injunction on United States patent to Bell & Tainter for improvement in recording and reproducing speech, etc., No. 341,214, May 4, 1886.

Richard N. Dyer and Philip Mora, for the motion.
Charles E. Mitchell, opposed.

LACOMBE, Circuit Judge. Although the notice of motion embraces claims 19 to 23, both inclusive, complainant has addressed its argument solely to claim 21. The others may be considered as withdrawn from this application. It is difficult to see upon what theory this court can assume that Judge Shipman, in the case of Same Plaintiff v. Leeds, 87 Fed. 873, held the twenty-first claim not to be valid, in view of the fact that the decree in that case expressly declares that the patent is valid so far as that claim is concerned. Nor is there anything in the opinion in the Leeds Case which would require this court to read additional elements into claim 21, thereby making it identical with one or more of the other claims which were also sustained. It seems reasonably clear that this court did not entirely concur with Judge Grosscup. Certainly it held the claim for the loosely-mounted reproducer, or gravity reproducer, or floating reproducer to be valid; and in disposing of the present motion this must be taken as adjudicated, no new evidence of any weight being introduced.

The claim reads as follows:

"(21) The reproducer, mounted on a universal joint, and held against the record by yielding pressure, substantially as described."

Defendants seek to escape infringement upon the theory that the sinuosities in their record which preserve and reproduce the sound waves are found in the walls of the groove, instead of in the bottom; wherefore, as they contend, the reproducer is not held with a yielding pressure against the record, but is moved positively by the side walls. A careful perusal of the patent, however, indicates that the word "record" is not used to indicate solely that particular part of the recording groove whereon the sound waves are recorded by elevations and depressions. Thus, referring to the operation of the reproducer, the specification says:

"No special care is necessary to insure its adjustment; for if the reproducer be allowed to rest against the record, with the style upon the engraved line, the style will of itself gravitate to the bottom of the groove."

And again:

"Difficulties on these accounts are avoided by the loose or flexible mounting of the reproducer, the style automatically adjusting itself to the proper place on the record."