embraced and described by him, as above stated; and that the Commissioner's decision as to that must be reversed, and affirmed as to that part of it which is in favor of said King.

M. G. Harrington, for the appellant.

J. J. Greenough, for the appellee.

IN RE MIGHILL NUTTING. APPEAL FROM REFUSAL TO GRANT PATENT.

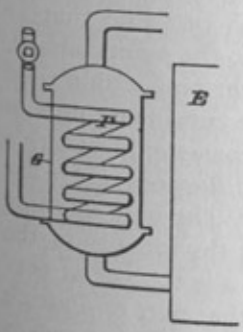
INVENTION — WATER GAUGE — COILED PIPE FOR STRAIGHT.—In a steam-boiler water guage, merely lengthening the pipe within the chamber connected with the boiler by coiling the same or by uniting several straight lengths of pipes for the purpose of increasing the effect, is not a patentable invention. It is an ordinary expedient for multiplying the heating surface, and in this sense is a mechanical equivalent of the straight pipe.

SM—FORM—PRINCIPLE.—A machine is the same in substance as another if the principle be the same in effect, though the form of the machine be different.

EQUIVALENTS—HOW DETERMINED—Equivalents are to be known by an inference drawn from all the circumstances of the case, by attending to the consideration whether the new contrivance is used for the same general purpose, performs the same kind of duties, or is applicable to the same object as the old device.

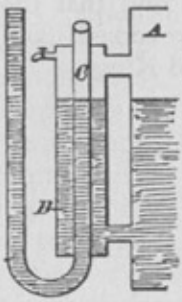
(Before MORSELL, J., District of Columbia, June, 1856.)

STATEMENT OF THE CASE.



The decision will be readily understood from the subjoined cut, showing one form of the applicant's apparatus, in which *E* represents the boiler of the steam-engine, *G* a chamber in communication therewith, and *P* the coiled indicator pipe within the chamber. The devices for controlling the feed by means of the expansion and contraction of the liquid contained in this pipe are not necessary to an understanding of the decision, and are not shown.

Opinion of the court.



In the patent to Clark (No. 11,030), relied upon by the Office as an anticipation, *A* is the boiler, *B* the chamber, and *C* a straight indicator pipe extending through the same. The only point involved was as to the patentability of replacing the straight pipe *C* by a coiled or otherwise extended pipe *P*.

MORSELL, J.

Appeal from the decision of the Commissioner of Patents refusing to grant him letters-patent for a certain new and useful improvement in apparatus for regulating water in steam-boilers.

In his specification he says: "The nature of my invention consists in the construction of an apparatus indicating and regulating in a constant manner the height of the water-level in the boiler to which it is attached, obviating thus the dangers arising from an irregular supply of water. * * * I do not claim an apparatus for indicating the level of water in steam-boilers consisting of an inverted syphon, one leg of which passes longitudinally through a chamber connected with the boiler, and in relation to an independent horizontal tube and chamber; but what I claim, and desire to secure by letters-patent, is the use of one curvilinear or several straight and connected pipes, arranged in the manner described and for the purposes set forth."

The Commissioner states, in substance, as the reasons and grounds of the rejection, that "the appellant was referred to the patent granted to Patrick Clark on the 19th of May, 1854 (No. 11,030). On examining Mr. Clark's specification, it will be found that he sets forth an apparatus which, so far as relates to the point claimed, differs from Nutting's only in having a straight pipe within what Mr. Nutting calls the chamber *G*, instead of a curvilinear pipe or several pipes united and continuous. The purposes of Mr. Clark's apparatus and Mr. Nutting's are the same, and they operate in the same way, so far as is known to this Office. The only question that has been raised by the appellant against the identity of the two inventions bears upon the single point of one tube or of several tubes. The construction placed upon that part of Patrick Clark's specification in which this statement occurs, 'by means

of tubes of sufficient length,' is that it applies to the tubes containing the liquid in communication with the diaphragm, while it is understood that the appellant construes it to apply to the tubes connecting the exterior chamber which contains the tubes of the actuating liquid with the steam and water space of the boiler. It does not in reality make any difference in the force and pertinency of the reference under either construction; and although the first construction above named is regarded as the correct one, yet if the second be adopted the main and important ground is unbroken. If Mr. Clark in using his apparatus should find that a straight or syphon tube was insufficient, and should lengthen the tube by coiling it within the chamber, as is shown by Fig. 1 of Mr. Nutting's drawings, does it seem reasonable to deny that his patent would give him protection? What more common and ready plan would occur to any individual when he wished to extend tubular surface within a given space than to make a coil? It is well known that tubes and pipes within a given chamber can have a more extended surface by coils or by a series of curved or straight tubes than by one tube of the length of that chamber; and in all cases where tubes or pipes are used, the aggregating or coiling plan is adopted wherever it may be useful and convenient. As instances, look to the use of pipes for heating buildings, for steam condensers, for distilling purposes, for heating feed-water for locomotive engines, and for heating air for metallurgic purposes. Again, the series of tubes arranged vertically or horizontally, and connected with other tubes at right angles to the first, is only another plan of extending tubular surfaces equally well known, and as of common use as the former plan. In all departments of mechanics and the useful arts, where tubular surface can be employed, the extension of that surface by a continuous pipe or tube coiled, or by a series of pipes or tubes arranged in any desirable positions or conditions, and connected in various ways, is as well understood at this day as is the extension of plain surfaces by stretching out sheet after sheet of metal or of any other of the fabrics of common use in the ordinary affairs of life."

The reasons of appeal are, in substance—

First. That appellant is the first and original inventor and discoverer, and that the invention has not been patented or described in any printed publication, &c.

Opinion of the court.

The second is because the Commissioner rejected the application without giving satisfactory references, and because he uses arguments based upon said references of which they are not justly susceptible. Upon which application, due notice was caused to be given of the time and place of trial; at which time and place the Commissioner laid before me the original papers, with the reference, models, and drawings in the case, together with the grounds and reasons of his decision and the aforegoing reasons of appeal, and the case has been submitted thereupon and upon the written argument of the appellant's counsel.

The question is as to the identity between the two inventions—the appellant's and that of Clark's, to which the reference has been made. There is certainly a difference in the construction of the apparatus claimed as the improved invention between this case and that of Clark's. Clark says: "The nature of my invention consists in indicating the level of water in steam-boilers, and also of regulating the supply of water fed to the boiler, and of giving an alarm in case the water should get below the proper level by means of the action, *i. e.*, the expansion and contraction caused by the change of temperature which occurs in a vessel or chamber connected with the boiler by means of tubes of sufficient length, and of such material as will prevent said chamber from being heated or cooled except by the presence or absence of the steam caused by the rise or fall of the water in the boiler."

The specification of claim on the part of the appellant has been hereinbefore recited, and is the use of one curvilinear or several straight and connected pipes, arranged in the manner described and for the purposes set forth, in connection with the diaphragm and the boiler. Clark, for the purposes of his invention, uses the inverted syphon, and his tubular contrivance is different. It is true that he does not, in the part of his specification just recited, expressly state the connection of the tubes containing the liquid with the diaphram. To give a true and proper construction on this point, the whole of the specification should be taken together; in another part of which I think it sufficiently appears that it will admit of that construction. Thus it will appear that with both Clark and appellant the idea or principle was the same, although differently clothed. The general purpose and object appear to have been the same; the changes appear to me to be only in

things mechanically equivalent. If found necessary, Clark would have a right, under a proper construction of his specification, to extend the length of his tube to effect more perfectly the desired object, being means within the scope of the principle of his invention, as ordinarily included in such cases.

I take the law applicable to be clear, which is, that "it is necessary to ascertain, with as much accuracy as the nature of such inquiries admits, the boundaries between what was known and used before and what is new in the mode of operation.* The inquiry, therefore, must be, not whether the same elements of motion or the same component parts are used, but whether the given effect is produced substantially by the same mode of operation and the same combination of powers in both machines." (Curtis, p. 84.) One machine is the same in substance as another if the principle be the same in effect, though the form of the machine be different. (Bovill *v.* Moore, Dav. Pat. Cas., 361, 405.)

One man was the first inventor of the principle, and the other has adopted it; and though he may have carried it into effect by substituting one mechanical equivalent for another, still we must look to the substance, and not to the mere form. Equivalents are to be known by an inference to be drawn from all the circumstances of the case, by attending to the consideration whether the contrivance used by the appellant is used for the same general purpose, performs the same kind of duties, or is applicable to the same object as the contrivance used by the patentee.

The aforegoing views bring me to the conclusion that there is substantially no difference between the inventions of the appellant and that of Clark in a patentable sense, and that the Commissioner has correctly rejected the application for a patent of the appellant, and that his decision is, and ought to be, affirmed.

Everett & Pollok, for the appellant.

IN RE JAMES E. HALSEY. APPEAL FROM REFUSAL TO GRANT PATENT.

INVENTION—FIRE-ARMS—ANTICIPATION.—In a fire-arm, the invention of a priming-tube extending from the cap through the charge, and per-

* Whittemore *v.* Cutter, 1 Gall., 480.