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shells called "rose murex," "motto cowries," "banded snails," "Japan ears," "turbo shells," "red ears," and "pearl snails."

The same conclusion is arrived at as in the Wiegmann case, and the judgment of the Circuit Court is

Affirmed.

SNOW v. LAKE SHORE AND MICHIGAN SOUTHERN RAILWAY COMPANY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF NEW YORK.

Argued April 19, 1887. — Decided May 2, 1887.

The first claim in letters-patent No. 127,933, granted to the Buffalo Dental Manufacturing Company as assignee of George B. Snow, June 11, 1872, for a new and useful improvement in steam bell-ringers is limited to a combination in which the piston and piston-rod are detached from each other, and is not infringed by the use of steam bell-ringers constructed and operated in conformity to the drawings and specifications of letters-patent granted August 25, 1874, to Charles H. Hudson for a new and useful improvement in steam bell-ringing apparatus.

THIS was a bill in equity to restrain an alleged infringement of letters-patent. Decree dismissing the bill, from which the complainants appealed. The case is stated in the opinion of the court.

Mr. James A. Allen for appellants.

Mr. George Payson for appellee.

MR. JUSTICE MATTHEWS delivered the opinion of the court.

The appellants, who were complainants below, filed their bill in equity August 7, 1882, against the defendant, to restrain the alleged infringement of letters-patent No. 127,933, granted to the Buffalo Dental Manufacturing Company, as assignee of George B. Snow, on June 11, 1872, for a new and

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useful improvement in steam bell-ringers; the Buffalo Dental Manufacturing Company being a joint stock association under the laws of the state of New York, of which the appellants were the sole officers, directors, shareholders, associates, and persons in interest. The specifications, with drawings annexed, of this patent are as follows:

"Specification describing certain Improvements in Steam Bell-Ringing Apparatus, invented by George B. Snow, of Buffalo, in the county of Erie, state of New York.

"This invention relates to the construction of a steam bell-ringer in such a manner as to prevent any apparent leakage, either of water or steam, without resorting to the use of stuffing-boxes; and, also, to cause the admission and release of the steam directly by the motion of the piston, and without the use of any intermediate parts between the piston and valves.

"Referring to the annexed drawing, Figure 1 [page 620] is an elevation of the device as applied to the bell of a locomotive. Fig. 2 [page 621] is a vertical section of the steam-cylinder on the plane *a b*, on an enlarged scale.

"A is a single-acting steam-cylinder, connected to the crank B on the bell-yoke by the slotted rod C. This rod should be of such a length that the piston G will be forced to the bottom of the cylinder as the crank B passes its lower centre, the slot through which the crank-pin passes being long enough to allow the crank to pass its upper centre freely, notwithstanding the disproportion between the throw of the crank B and the length of stroke of the piston-rod D. The piston G is disconnected from its rod D, to prevent any lateral strain being communicated to it, thereby decreasing to some extent the wear of the piston in the cylinder. The piston should be considerably longer than its length of stroke. The piston-rod D passes through a sleeve in the cylinder-cover I, which should be long enough to steady it and act as a guide, and is limited in its upward motion by the collar *d*. E is a conical exhaust-valve, seating upward against the bottom of the piston G. F is the steam-valve, also conical, and seating upward, containing within itself the tail of the exhaust-valve E,

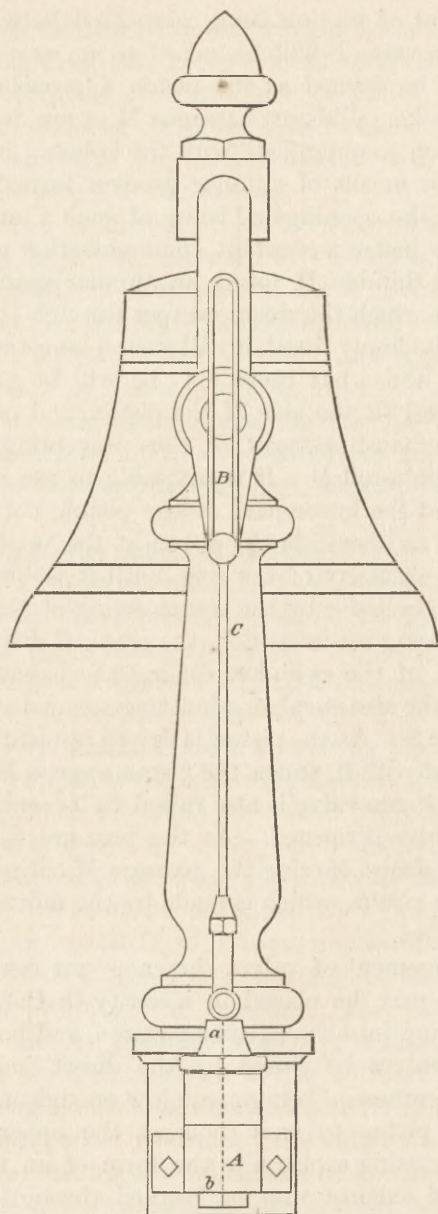
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such an amount of motion being permitted between the two that the steam-valve F will be raised to its seat and the exhaust-valve E be opened as the piston approaches the upper end of its stroke. Exhaust-passages M *m* are formed in the piston G, which communicate with the holes *m'* in the side of the cylinder by means of annular grooves turned in the side of the piston, the openings *m'* being of such a number and so disposed as to insure a constant communication with the passage M. The thimble H forms an annular space around the cylinder, from which the steam escapes through the passage O. If the piston is closely fitted, it will wear a long time with very little leakage, and what there may be will be caught in the annular grooves in the side of the piston, and passed at once through the exhaust-passages *m'*, thus preventing any leakage around the piston-rod D. It is advisable to use a packing of a single ring at the lower part of the piston, not so much to avoid leakage as to sustain the piston at the upper end of its stroke by the elasticity of the ring, until it is brought to the bottom of the cylinder by the return swing of the bell.

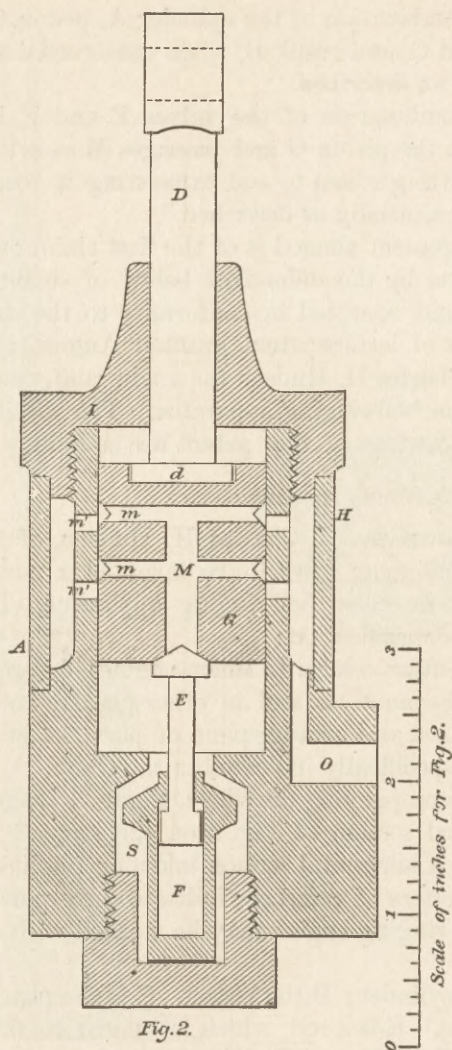
“The bell being set in motion, the crank B drives the piston to the bottom of the cylinder, closing the exhaust-valve and forcing open the steam-valve, admitting steam to the cylinder from the space S. As the piston is driven upward the exhaust-valve is carried with it, and as the piston approaches the end of its stroke the steam-valve is also raised to its seat, after which the exhaust-valve is opened. As the pressure is relieved, the exhaust-valve drops, leaving the passage M entirely clear during the return stroke, which is made by the momentum of the bell on its return.

“The arrangement of valves shown is not essential, as the exhaust-valve may be placed in a cavity in the body of the cylinder opening into the exhaust-passage, and both the steam and exhaust-valves be closed by the direct impulse of the steam, the openings *m'* being made low enough in the cylinder to allow the piston to pass them at the upper end of the stroke; or, by using a piston in the form of an inverted cup, the steam and exhaust may be worked through openings in the side of the piston and cylinder, the expansion of the steam

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*Fig. 1.*

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doing the work. The disadvantage of the first of these plans is, that the valves are closed so violently that they soon wear out; of the second, the difficulty of getting rid of water of condensation.

“Having thus fully described my device, I claim as my invention —

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"1. The combination of the cylinder A, piston G, piston-rod D, slotted rod C, and crank B, when constructed and operated substantially as described.

"2. The combination of the valves E and F, both seating upward, with the piston G and passages M *m m'*, for the purpose of admitting steam to and exhausting it from under the piston G, substantially as described."

The infringement alleged is of the first claim only, and consists in the use by the defendant below of steam bell-ringers constructed and operated in conformity to the drawings and specifications of letters-patent granted August 25, 1874, No. 154,394, to Charles H. Hudson for a new and useful improvement in steam bell-ringing apparatus. The specifications and illustrative drawings of that patent are as follows:

"To all whom it may concern :

"Be it known that I, Charles H. Hudson, of the city and county of Dubuque, Iowa, have invented a new and useful improvement in steam bell-ringing apparatus, of which the following is a specification:

"This invention relates to steam-engines, designed for ringing bells on locomotives and in other places; and consists in the construction and arrangement of parts, as hereinafter described, and specifically indicated in the claim.

"In the accompanying drawings, Figure 1 [page 623] represents a vertical section of Fig. 2 on the line *x x*; and Fig. 2 [page 623] is a horizontal section taken on the line *y y*, Fig. 1.

"Similar letters of reference indicate corresponding parts.

"This bell-ringing engine may be worked with either steam or air.

"A is the cylinder; B the piston. C is the piston-rod. D is the valve-ring. E is a rod, which is hinged to the piston-rod at the point F. This rod E slides in the tube G, which is attached to the bell-crank. This connection is such that the lower end of the tube G will be at the shoulder H when the bell-crank is at the lowest point, and the piston at the bottom of the stroke. The movement of the tube upon the rod E will allow the bell to be turned over and the bell-crank to go to its highest point freely, while the piston is at the lowest point.

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Fig. 1.

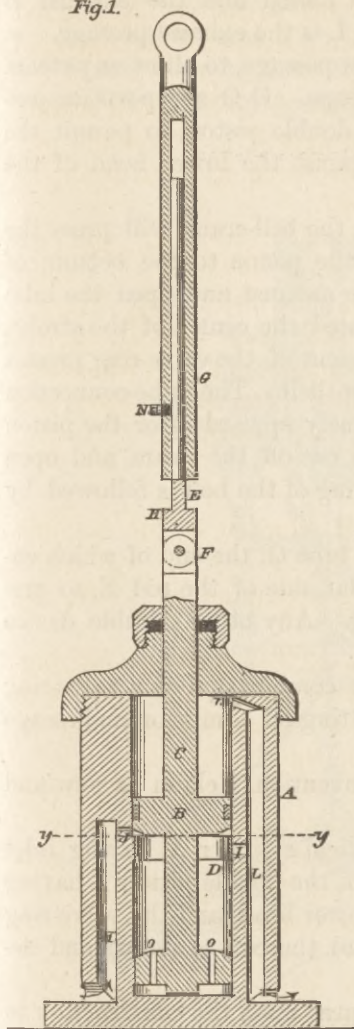
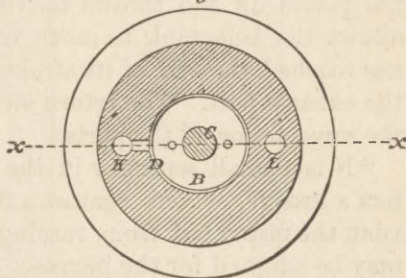


Fig. 2.



"I is the exhaust-port; J the inlet-port. The valve-ring D is so arranged in regard to the ports, that the movement of the piston to the lowest point moves the valve-ring down, and closes the exhaust and opens the inlet port. When the piston moves to the other end of the stroke the ring is moved in the

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other direction, and the inlet is closed and the exhaust is opened. K is the inlet-passage. L is the exhaust-passage. *m* is a small opening into the exhaust-passage, to allow any steam which may pass the piston to escape. O O are ports or passages in the lower head of the double piston, to permit the steam (or air, if used) to act against the lower head of the cylinder.

“When the bell is in motion, the bell-crank will press the tube down on the rod and force the piston to the bottom of the stroke, and thereby close the exhaust and open the inlet ports. When the crank has passed the centre of the stroke, the steam admitted by the movement of the valve-ring presses the piston up and throws up the bell. The tube-connection allows the bell-crank to move freely upward after the piston has reached the end of its stroke, cut off the steam, and open the exhaust-port. The return swing of the bell is followed by the same action of the parts.

“N is a small set-screw in the tube G, the end of which enters a groove, or acts against a flat side of the rod E, to prevent the piston-rod from turning. Any other suitable device may be adopted for the purpose.

“I do not claim, broadly, the combination of a valve-ring with a piston and cylinder for cutting off admission and escape of steam alternately; but,

“Having thus described my invention, I claim as new and desire to secure by letters-patent —

“In combination with the vertical cylinder A, having inlet and exhaust ports K J and I L *m*, the double piston B having openings or passages O O in its lower head, and the valve-ring D, arranged below the upper head thereof, as shown and described, to operate as specified.”

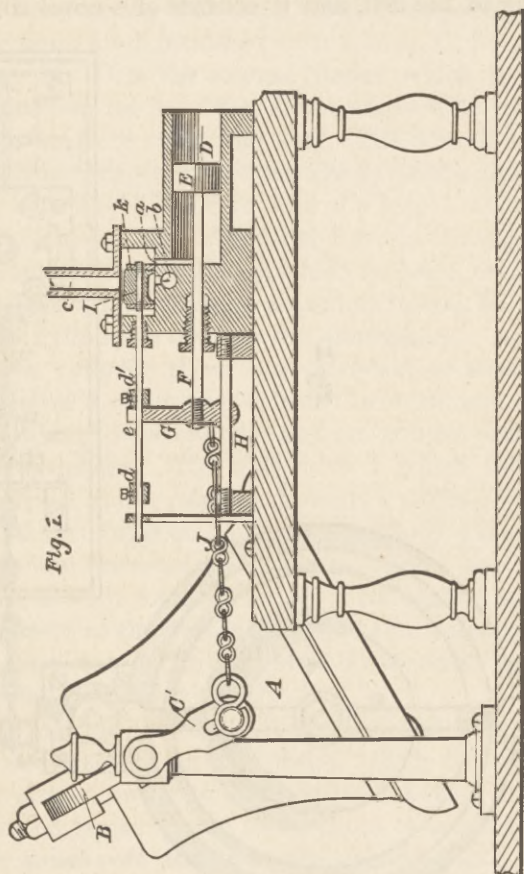
The question of infringement turns upon the construction to be given to the first claim of the patent sued on, to determine which it is necessary to consider the state of the art at the time of its date. This is shown by a prior patent issued to Snow, No. 11,307, dated July 11, 1854, and which had expired before the granting of the patent sued on.

The specifications and accompanying drawings of that patent are as follows:

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"To whom it may concern :

"Be it known that I, G. B. Snow, of Buffalo, in the county of Erie and State of New York, have invented a new and useful method of employing steam to ring the bells of locomotives,



and other bells ; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which —

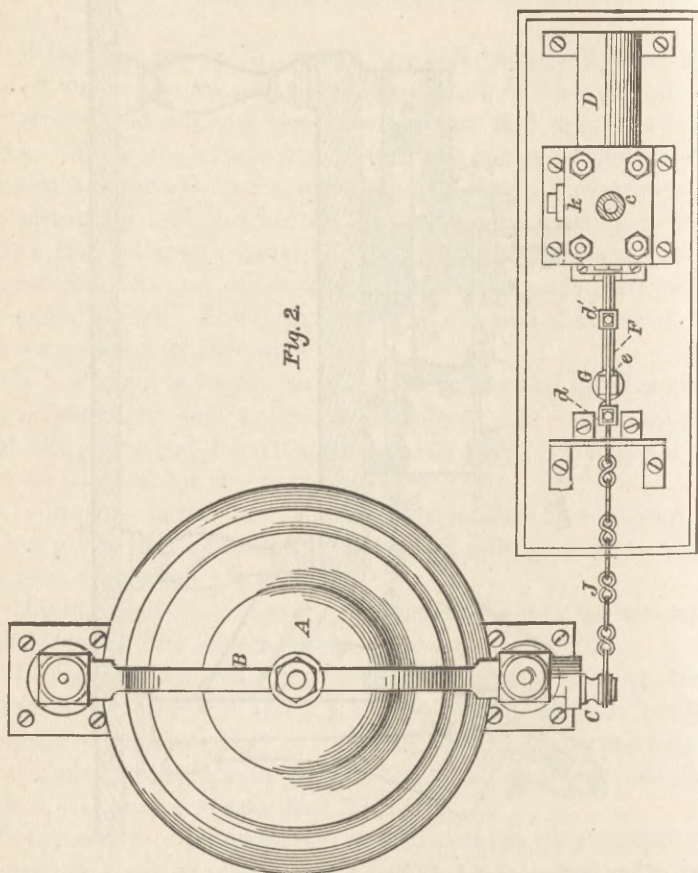
"Fig. 1 is a longitudinal vertical section of the apparatus I employ applied to a bell.

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"Fig. 2 is a plan of the same.

"Similar letters of reference indicate corresponding parts in both figs.

"My invention relates to the application of steam power to the ringing of the bell, and it consists of a novel combination



and arrangement of a direct acting engine with the bell in such a manner that the bell, being swung by the engine in one direction, is allowed to swing in the opposite direction by its own gravity and momentum, and is caused thus continuously, automatically, to work with the same freedom, but greater

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regularity and consequent increased clearness of note, as is obtained by the ordinary manual process of ringing.

"To enable others to make and use my invention I will proceed to describe its construction and operation :

"A in the drawing is the bell, which is suspended by a yoke, B, of the usual kind, furnished with a lever, C, for the purpose of ringing it. D is the steam-cylinder, which is placed in a suitable position for its piston E to connect with the yoke, and by its movement to swing the bell. The bore of the cylinder for a locomotive engine would require to be of a diameter about one and a quarter ($1\frac{1}{4}$) inches, and of a length about four and a half ($4\frac{1}{2}$) inches. The piston-rod F works through a stuffing-box at one end of the cylinder, which is closed, and it carries a cross-head, G, which works on a fixed guide-rod, H. The other end of the cylinder is open to the atmosphere. At the closed end of the cylinder there is a valve-box or steam-chest, K, which receives a steam-pipe, *c*, from the boiler, and has a steam-port, *a*, leading to the cylinder and an exhaust-port, *b*, leading to the atmosphere. The slide-valve I which this valve-box contains has a rod, *e*, passing through a stuffing-box and furnished with two tappets, *d d'*, between which it is embraced by a fork on the cross-head G. These tappets are adjusted so that the fork shall come in contact with them to open or close the steam-port at the proper time, and thus regulate the movement of the piston. The cross-head is connected with the lever C of the bell-yoke B by a chain, J.

"Fig. 1 of the drawing represents the steam-port *a* open, and the steam acting on the piston, which has nearly terminated its stroke, owing to the cross-head having come in contact with the tappet *d'* and being about to move the valve to close the steam-port and open the exhaust-port. As soon as the steam is shut off and the momentum of the bell is spent the latter will swing back, drawing with it the piston, until the cross-head strikes the tappet *d* and moves the valve far enough to open the steam-port and close the exhaust-port, when the motion of the bell will be again reversed.

"The motion which is thus given to the bell is precisely similar to that produced in ringing by hand, and could not

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be produced by the direct application of steam power to swing it in both directions, which must produce too positive a motion and could not allow it to swing with the same freedom as when the power is only applied in one direction and the bell is allowed to return under the influence of gravitation alone.

"I do not claim of itself as new ringing bells by the application of steam power, as such, in a positive manner, by rigidly connecting the engine with the bell in both directions of the swing of the latter, has before been done, nor do I claim the several devices herein named individually as new, but I do claim as new and useful, and desire to secure by letters-patent, the manner herein described of ringing the bell by the application of steam power and the gravity and momentum of the bell combined by means of the direct acting engine attached by chain, or other equivalent mechanical device, to the bell, and arranged, combined, and operating with the bell as specified, and so that the bell is swung in one direction by the engine and then let loose or free to swing back in the opposite direction by its own gravity and momentum to produce the ring or sound, and the steam alternately admitted to and exhausted from the engine by the action of the engine and movement of the bell combined, substantially as specified, and whereby the same freedom in the swing of the bell to produce a long and clear sound, as is produced by the ordinary manual process, but with greater regularity and consequent increased clearness of note, is automatically obtained, as herein set forth."

On final hearing in the Circuit Court, the bill was dismissed for the reasons stated by the circuit judge in his opinion, as follows:

"Although the complainants' patent of June 11, 1872, suggests the principal and the most valuable parts of the combination found in the defendant's steam bell-ringer, the plain and explicit language of the specification requires a construction of the first claim which will enable the defendant to escape liability as an infringer. The first claim must be limited to a combination in which the piston and piston-rod are detached from each other.

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“The patentee doubtless considered that the detachment of the piston and piston-rod would assist materially in effecting one of the two expressed objects of his invention, viz., the prevention of leakage of steam. To prevent the escape of steam around the piston-rod, he proposed to confine the steam behind the piston instead of introducing it into the cylinder in front of the piston, as was done in his earlier invention. Accordingly, he located the steam passages behind the piston, and adopted a tightly fitting piston; and, in order that the piston might remain tight, he adopted a detached piston-rod to relieve the piston from lateral strain. The specification states that ‘the piston is disconnected from its rod to prevent any lateral strain being communicated to it, thereby decreasing, to some extent, the wear of the piston in the cylinder;’ and further, ‘if the piston is closely fitted it will wear a long time with very little leakage, and what there may be will be caught in the annular grooves in the side of the piston and passed at once through the exhaust passages, thus preventing any leakage through the piston-rod.’ The drawings show a detached piston-rod, and all the coöperative devices are conformed and adjusted to a detached rod, such as the long sleeve in the cylinder, to guide it, and the collar on the end of the rod to limit its movements.

“It is impossible to ignore the particular construction of these two parts which is thus pointed out as material. As the defendant’s bell-ringer does not contain such a piston or piston-rod, infringement is not shown. The bill is therefore dismissed.” 18 Fed. Rep. 602.

On this appeal, it is argued on behalf of the appellants, that this construction of their patent is too narrow; and it is now contended that the detachment of the piston and piston-rod is not an essential part of the description and claim of the invention patented. We cannot, however, but agree with the circuit judge, that the language of the specification limits the first claim to a combination in which the piston and piston-rod are detached from each other. In describing his invention in the introductory part of the specification, the patentee manifestly divides it into two parts; the first relates “to the con-

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struction of a steam bell-ringer in such a manner as to prevent any apparent leakage, either of water or steam, without resorting to the use of stuffing-boxes;" the second, "to cause the admission and release of the steam directly by the motion of the piston, and without the use of any intermediate parts between the piston and valves." The first claim covers the first part of this invention by "the combination of the cylinder A, piston G, piston-rod D, slotted rod C, and crank B, when constructed and operated substantially as described." The second claim, which we need not further consider here, because not involved in the case, covers the second part of the invention.

In the description of the device, with reference to the drawings, the specification says: "The piston G is disconnected from its rod D, to prevent any lateral strain being communicated to it, thereby decreasing to some extent the wear of the piston in the cylinder."

It is not admissible to adopt the argument made on behalf of the appellants, that this language is to be taken as a mere recommendation by the patentee of the manner in which he prefers to arrange these parts of his machine. There is nothing in the context to indicate that the patentee contemplated any alternative for the arrangement of the piston and piston-rod. The arrangement of the valves, as shown in the drawings, he declared not to be essential, and explained how they might be otherwise adjusted, and the comparative advantage and disadvantage of those plans; but no such language is used in reference to the connection between the piston and its rod. And when we compare the device as described in the specifications of the patent sued on with that of the patent of 1854, in which it was necessary to use stuffing-boxes, and consider that one of the express objects expected to be accomplished by the improvement contained in the patent of 1872 was to prevent leakage of water or steam without resort to stuffing-boxes, the conclusion seems unavoidable that the patentee intended the detachment of the piston from its rod as an essential part of the combination to be covered by the first claim.

The decree of the Circuit Court is therefore

Affirmed.