JENNINGS' SYSTEM

OF

WATER FILTRATION.

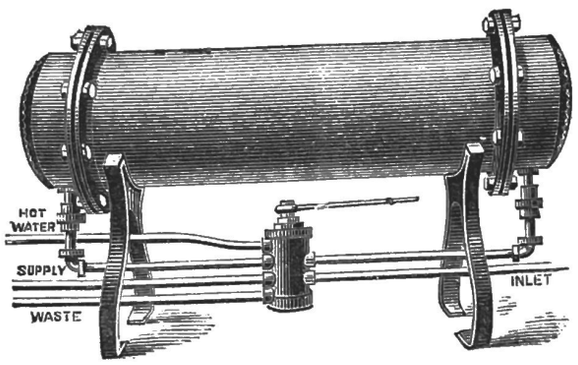
PATENTED IN THE

UNITED STATES, ENGLAND, FRANCE AND BELGIUM.

PURE WATER

SUPPLIED TO

ALL PARTS OF A HOUSE.



THIS MACHINE,

PLACED IN THE CELLAR OF A HOUSE, AND CONNECTED WITH THE INLET PIPE FROM THE STREET, SUPPLIES THE ENTIRE HOUSE WITH **PURE** AND **WHOLESOME WATER**, THE IMPURITIES BEING ARRESTED IN THE PASSAGE OF THE WATER THROUGH THE FILTER AND DISCHARGED AUTOMATICALLY INTO THE WASTE PIPE LEADING TO THE SEWER.

1878

THE NEW YORK FILTER COMPANY,

No. 1296 BROADWAY,

East side, two doors below 34th Street, **NEW YORK CITY.**

THE

NEW YORK FILTER CO.

ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK,
JANUARY 23D, 1878.

N. G. KELLOGG,
President and Treasurer.

R. S. JENNINGS,
Vice-President and Sup't.

No. 1296 BROADWAY,

East side, two doors below 34th Street.

FACTORY,
No. 45 GOLD STREET,
NEW YORK CITY.

FOUNDRY,
40 & 42 DOUGHTY ST.,
BROOKLYN, L. I.

NEW YORK:
J. J. BLOOMFIELD, STATIONER,
70 CHAMBERS STREET.

1878.

JENNINGS' SYSTEM OF WATER FILTRATION

was introduced into this city in the fall of 1876, and immediately attracted general attention. The *New York Herald* of December 11th, 1876, contained a long and very favorable editorial article in regard to the operation of the system, and prominent members of the *Board of Health* and of the New York *Health Association* entered at once into a thorough investigation of its construction and practicability, resulting in a very flattering paper, read before the latter association at their meeting of February 8th, 1877, by Mr. James C. Baylis, Chairman of *Committee on House Drainage and Water Service.*

On the following Saturday an exhibition of the practical operation of the system was given to the New York press with the most gratifying results. The following Saturday an exhibition was given to the New York weekly press, and through their representatives the system received unanimous endorsement by editorial articles in their respective journals. The publicity thus given to the subject created a general public interest, and orders were soon received to place machines in some of the most prominent public places in the city and in residences of leading private citizens, all of whom, after months of trial, give their unqualified testimony to its merits and simplicity of operation.

Probably no improvement or invention ever brought out could, during the first year of its existence, show such a record of eminent and influential names, most of whom, having had the benefits and luxury of pure and wholesome water during the past season by the introduction of this improvement, and realizing its importance, have most cheerfully consented to our referring our patrons to them, which we shall be most happy to do upon application to us. Our office, at 1296 Broadway, corner of 34th street, was located for the convenience of ladies and families, who are very respectfully invited to call and witness the ease and simplicity with which they may have the luxury of pure water in every department of their houses at a reasonable expense.

Description of the Machine.

The cylinder of the filter is of cast iron, ¾ of an inch in thickness, 3 feet in length, and 1 foot in diameter, lined throughout with block tin, and filled with charcoal of suitable size and quality to thoroughly filter and purify the water passing through it. To this cylinder is connected the inlet pipe from the street—the supply pipe to the house—the hot water connection with the kitchen boiler, and the waste pipe to the sewer. The flow of the water to and through the filter is controlled by a six-way valve placed underneath the cylinder and operated by a single lever. This valve, though complicated in appearance, is as simple as an ordinary faucet. The machine is generally placed in the cellar, and connected with the inlet pipe, and can be set by any plumber without interfering with the existing conditions of the piping of the house.

We also manufacture machines adapted to filtering large volumes of water for public institutions, factories, mills, etc., etc., meeting a want long felt in that direction, and now attracting general attention among leading manufacturers throughout the country.

TESTIMONIALS.

The best evidence of the merits of this system "*is its success*," and we most respectfully submit to the citizens of New York a portion of its record, fully assured that the names given warrant us in claiming this system of supplying pure and wholesome water for domestic purposes to be *one of the greatest and most important sanitary improvements of the day.*

Office of CHAS. H. HASWELL,
Civil Engineer and City Surveyor,
Consulting and Superintending Engineer,
No. 6 Bowling Green.

New York, *Nov.* 13*th*, 1877.

Gentlemen: After a very fair trial of your instrument for the filtration of water under a pressure, I have the pleasure of reporting that it effects all you claim for it; that its operation is very simple; and that, from repeated observations of the sediment and matter arrested by it, that I am convinced of the indispensable necessity of it, or a like instrument, wherever the Croton water is used for domestic purposes.

I am, respectfully yours, etc.,

CHAS. H. HASWELL.

Messrs. Kellogg & Jennings, 45 Gold street, N. Y.

OPINIONS OF THE PRESS.

[N. Y. *Herald*, Dec. 11th, 1876.]

THE CROTON.

A New Method which it is claimed will make the Croton pure and wholesome.

An exhibition was given on Saturday of a new style of water filter, which is applied between the service pipe leading into the cellar and the supply or distributing pipes of the house. The apparatus consists of a cylinder of cast iron three feet in length, and enclosed in a complete wooden case. Into one end of the cylinder the service pipe is conducted, and the water issuing from this is made to pass through two filters of vegetable and animal charcoal, placed at a distance of eight inches from each other near the middle of the cylinder, and leaving a space of about one foot at each end. The first filter, of vegetable charcoal, is intended to absorb the greater part of the impurities in the water, and the animal charcoal is used principally as a decolorizer. The water, after passing through the two filters, is conducted directly into the house pipes, and distributed by them in whatever room it is desired. It is claimed that the flow of the water is transmitted with practically the same head after passing both filters. When, however, the force of the water is impeded by the filtering chambers becoming clogged, the simple opening of a door in the filter case forces a reverse current of hot water from the kitchen boilers through the filtering chambers, carrying the refuse into the waste pipes leading to the sewer. One of these waste pipes is placed between the two filters, and the other at the end nearest the street connection, and the opening of the same door, which admits the water through the pipe from the kitchen boiler, opens the valves of the waste pipes and closes those of the supply and house distributing pipes. The water is allowed to run for about three minutes from the kitchen boiler, and then, on closing the door of the case, the valves of the boiler and waste pipes are shut, and the flow restored of the street and house pipes.

TELLING ITS OWN STORY.

The length of time required for the cleansing process can always be determined by simply closing the door, and noticing if the water from the house pipe has regained its full head and purity. Hot water is employed in the process, as removing more perfectly all impurities, and particularly any mineral sediment in the charcoal, such as the salts of lead, from the pipes, which cold water filtration would fail to absorb. This apparently complicated arrangement of cut-off valves is worked entirely by a system of levers attached to the door, acting automatically by its mere opening and shutting. If desirable for any cause, the cylinder can be readily removed by unscrewing the top of the case, which is so constructed as to be taken apart without difficulty; but it is not apprehended that the necessity for this will ever arise.

Note.—The above criticism applies to the filter as it was made a year ago. The mechanical construction has been much improved since then, doing away with all wood work and combining the separate faucets, which originally operated the filter, into a single valve.

[New York *Evening Express*, Dec. 9, 1876.]

PURE CROTON.

A private exhibition was given to-day, at No. 294 Broadway, of an improved filtering apparatus, designed and patented by Mr. R. S. Jennings. The plan is simple, inexpensive, and can be adopted to any building and for dwelling or manufacturing purposes. The old objection to filters is that they become inoperative and fail in a short time, and cleaning is a tedious and vexatious matter. In Mr. Jennings' apparatus the system of pipes is so constructed that all the water passing from the service pipe in the street must be filtered before entering the house pipes. The principle of cleansing the filter is by forcing a reverse current of hot water through it and this is done simply by turning a lever of the valve attached to the apparatus. Any servant of ordinary intelligence and care can, by turning the lever once a week for five minutes, keep the filter clear and the supply of strictly pure water in all parts of the house uninterrupted. The invention commends itself to all householders and manufacturers who need and must have pure water.

NEW YORK, *Nov.* 16*th*, 1877.

I have had sufficient experience with your filter to satisfy me that it is a most desirable household adjunct—simple, efficient, easily managed. Every householder, having a regard for family health, and able to make the outlay of its cost—a really moderate and reasonable sum—should provide himself with one. The Health Board should prescribe its use in hotels, apartment houses and tenements. It cleanses and purifies the Croton, and renders it an inestimable luxury.

Yours, etc.,

JONAS B. KISSAM,
8 E. 49th street.

Messrs. KELLOGG & JENNINGS,
45 Gold street, New York City.

[The *New York Observer*, Feb'y 8th, 1877.]

An interesting system of water filtration is on exhibition in this city at 294 Broadway. The water passes through charcoal, and is drawn from the faucet as clear as crystal. The charcoal is cleansed, whenever needful, by a reverse current of hot water, which passes off into the sewer. The machinery by which this is effected is so simple that a child can use it, and yet all the water in a house or a hotel, both hot and cold, is perfectly cleansed and purified. In the present condition of Croton water, such an arrangement for filtration is of importance to all.

ST. DENIS HOTEL AND CAFÉ,
NEW YORK, *Oct.* 16*th*, 1877.

Jennings' System of Water Filtration was adopted by us last summer. It supplies us with *pure* and *wholesome water* without any trouble, and we cheerfully recommend it to lovers of *pure water*.

TAYLOR & GILSON.

[Extract from an editorial article in the *Illustrated Christian Weekly* of March 17th, 1877.]

THE WATERS OF THE CITY.

We have been interested not a little in a new invention, which anybody may examine at 294 Broadway. It is an apparatus which may be annexed to the main pipe entering any building, and it acts upon *all* the water which is used. The stream passes through a chamber of charcoal, and reaches every faucet as clear as crystal. By a reverse process a current returns from the hot water boiler, cleansing the charcoal receptacle, and discharging all the refuse into the sewer, so the filter is ready for its excellent work again. The mechanical arrangements are wonderfully simple. In the present and common state of our Croton supply, this thing is worth looking up for our hotels and our houses.

HOTEL BRUNSWICK, Fifth avenue, 26th and 27th streets,
NEW YORK, *Nov. 15th*, 1877.

The Jennings System of Water Filtration has been in constant and successful operation in this hotel several months. Being placed in the engine room, it has been under my own personal supervision, and has never required any changing or repacking. I consider it a most desirable improvement.

Respectfully,
J. CARROLL,
Engineer.

[From the New York *Daily Witness*, Dec. 13, 1876.]

FACTS REGARDING FILTERS.

The impurities of the Croton supply during the past summer brought to the surface very many plans for the filtration of water. That there was and is a very great necessity for the water used for drinking purposes to pass through some such process, is admitted by every intelligent person. Eminent medical men in this country and England have impressed upon the public, whenever a favorable opportunity offered, the importance of a more general use of pure water. The class of filters commonly in use in this city consists of a small brass tube attached to the faucet, which widens into a sort of globe about two inches in diameter, inside of which is a wire sieve, a sponge, or, perhaps, some charcoal. The sieve or sponge retains all rough impurities, thus acting as a kind of strainer to the water. A new filter is on exhibition at 294 Broadway, which appears to be very perfect and simple in its workings. It consists of a cast iron cylinder three feet long and one foot wide. The water is led from the street by a distributing pipe into the end of the cylinder, through the charcoal, into the house pipes. When the lever of the valve is turned quarter of a circle, the construction of it is so arranged that the water running through the cylinder is stopped off, and a reverse current of hot water comes sweeping from the kitchen boiler, clears away all impurities from the filter, and passes out into a pipe communicating with the sewer. There is a marked contrast between the ordinary Croton water coming from the house faucets and that which is filtered. On a comparison, not only are the impurities in the former plainly perceptible, but it has a yellowish tinge not otherwise noticeable.

NEW YORK, *Oct. 16th*, 1877.

Our establishment has, for some months past, been supplied with pure water by Jennings' System of Water Filtration. We are much pleased with it.

FLEISCHMAN'S VIENNA MODEL BAKERY,
per W. GRIEVE,
Cashier.

[Extract from the *Metal Worker*, Dec. 30th, 1876.]

JENNINGS' SYSTEM OF WATER FILTRATION.

A water filter of novel construction, which is now attracting attention from those interested in plumbing work, is on exhibition at No. 294 Broadway, and may be examined at work by any one curious concerning it. Though apparently complicated in construction, the device is simple enough in its automatic operation. The water needed for the house supply enters the filter through the service pipe, and thence to the distributing pipes after passing through the filter. The supply of water to the kitchen boiler, while the filtering chamber is being cleaned, is furnished by an independent connection with the service pipe. Whenever the water in the house pipes becomes impeded in its flow, a current of hot water from the kitchen boiler is forced reversely through the filtering chamber and off through the waste pipes into the sewer, carrying all accumulated impurities with it. This is accomplished by turning a valve connected with the filter, having an automatic connection with all the different pipes used.

The Jennings Filter delivers very clear and pure water, and arrests all the visible impurities which are retained in the filter until removed by setting in operation the reversed current of hot filtered water from the boiler, when they are carried off to the sewer through a waste pipe.

EDWARD H. WARKER,
Successor to THOMAS WARKER,
(Late Schults & Warker,)
35 West 13th Street,
Mineral Waters.

NEW YORK, *Aug. 1st*, 1877.

Messrs. KELLOGG & JENNINGS,
45 Gold Street.

DEAR SIRS: "Jennings' System of Water Filtration" is in use in my factory, and supplies water which is perfectly satisfactory.

Yours very truly,
EDW'D H. WARKER.

[Extract from *Frank Leslie's Illustrated Newspaper* of January 27th, 1877.]

A NEW FILTER.—PURE CROTON WATER AT LAST.

A very important sanitary improvement, by which a house can be supplied with pure water for all purposes, has recently been brought out, and is attracting the attention of the city authorities, professional gentlemen, and the public generally. The

apparatus is a large filter, which is applied between the street main and distributing pipes, thoroughly filtering and cleansing all the water passing into the house.

The cylinder is made of cast iron, three feet in length and ten inches in diameter, filled with charcoal. By the simple act of turning a lever the valves of the inlet pipe and the distributing pipe are *closed*, and the other valves are *opened*, thus causing a reverse current of *hot water* to pass through the filtering chamber of the apparatus to the waste pipe, and thence to the sewer. Through one of the pipes a supply of water is taken to the boiler while being drawn from during the cleaning process.

The action of *hot water* upon the contents of the filtering chamber effectually dissolves all impure matter that has accumulated, and also renews its marvellous antiseptic properties as an absorbent and purifier. *Cold water* would not produce the same results. The replacing of the lever restores the current of water to use again.

[From the *Methodist*, March 31st, 1877.]

People who drink the water supplied to New York or any other large city must generally shut their eyes and not think. It is obvious that water supplied from a river or lake, and accumulated in open reservoirs, must contain what is not desirable to drink. A filter that does not cause too much trouble is one of the wants of the age. Such a filter seems to be supplied in the Jennings system, which has for several months been on exhibition in this city. It is applied between the service and distributing pipes, and thoroughly filters all the water that passes into the house. There is no escape when this apparatus is used. The water that is drawn from the faucet must go through the filter, at the same time the rapidity of the flow is not impeded. By a very simple process, taking about five minutes, the hot water may be turned back through the cylinder, and the entire filtering apparatus made as good as new.

Dr. Lancaster, of England, says:

"Pure water is as necessary for health as good and fresh air, consequently the importance of using 'pure water' for drinking and cooking purposes cannot be over estimated."

Another English writer says:

"Drink no water which has not been effectually filtered. Impure water, though the impurities may not be visible to the eye, produces fever, dysentery, cholera, and many other deadly diseases."

[Extract from the *New York Evening Mail*, March 24th, 1877.]

A NEW FILTER.

Pure water for drinking and for cooking purposes is of vital importance in the household, and by "Jennings' System of Water Filtration," now on exhibition at 294 Broadway, houses in the city may be supplied with pure, healthful water. The apparatus for filtering is to be placed in the cellar, between the service and distributing pipes, so that all the water used in the house must pass through the filter. The water passes from the service pipe through a copper gauze wire, which stops the

more bulky impurities, and thence into the chamber of a cast iron cylinder containing charcoal. The distributing pipes next receive the water, and it issues from the faucets clear as crystal, ready for use. Once in two or three weeks it is necessary to clean the charcoal of the accumulated impurities it contains, and this is done by simply turning a lever connected with a valve, when the supply and house distribution pipes are *closed*, and at the same time hot water admitted from a pipe connecting with the kitchen boiler, enters the filter and passes through the charcoal, removing from it the impurities, and thus renewing its antiseptic properties as an absorbent and purifier. The hot water is carried away by a waste pipe connected with the sewer.

[From the *New York Evangelist*, April 5th, 1877.]

PURIFYING THE CROTON.

We last week witnessed the very satisfactory action of a newly devised filter. It receives the Croton just as it is drawn from the great reservoirs and mains, and yields it in a state of irridescent purity that is very noticeable by way of contrast.

[From the *Examiner and Chronicle*, April 12, 1877.]

A supply of clean water, whether for drinking, cooking, bathing or laundry use, is one of the indispensables of agreeable housekeeping. But it is well known that such water does not always come at the turn of the faucet. Even the "chemically pure" Croton sometimes shows unmistakable traces of the hillsides of Westchester. To obviate all this a new method of filtration has been invented, called the "Jennings System." The filter consists of a cast iron cylinder, three feet long and ten inches in diameter, containing charcoal. Through this all the water for the house passes. Whenever the filter becomes clogged, it is only necessary to turn a lever of a valve connected with the filter for a few minutes, when a back flow of hot water from the kitchen boiler passes through the cylinder into the sewer pipe, and thoroughly cleanses the charcoal in the cylinder. It is a very simple, easily managed and apparently effective method of securing clean water for household use.

Pure water is hardly second to pure air as a life giving and life protecting agent. It is the most potent servant the sanitary authorities can call to their aid.

PROF. C. F. CHANDLER, M. D., LL. D.

[*Scientific American*, Feb. 2, 1878.]

A NEW AND EASILY CLEANSED FILTER.

Filters are liable to become choked with the material which they collect, especially where water is filtered before use in a steam boiler, and the result is that the supply, through the stoppage of its conduit, is materially diminished. Messrs. Ralph S. Jennings and Norman G. Kellogg have recently patented, both in this country and abroad, an ingenious device, which they claim entirely obviates the above mentioned

trouble. The filter is provided with a valve and a series of pipes, by means of which hot water may at any time be conveyed through the filter. The water enters at the discharge end and passes through to the supply end, where it escapes to a pipe leading to the sewer. The hot water dissolves the various salts hitherto held in solution by the cold water, and mechanically removes all solid matter from the charcoal filling.

[*N. Y. Tribune*, July 7, 1877.]

A decided improvement in water filters, adapting them for use wherever there are the usual Croton fixtures, has been recently invented. Hitherto the chief objection to filtering apparatus has been that the impurities abstracted from the water soon clogged the filter, or otherwise impaired its powers, and then the process of cleansing the purifier was troublesome and costly. In most of the old contrivances the cleansing was attempted with cold water, with very imperfect results. In the Kellogg & Jennings filter the purifying material is charcoal, secured by sieves within a large tubular receptacle of iron; when the filter is foul it can be immediately cleansed by draining through it the hot water of an ordinary kitchen boiler. The charcoal appears to be thoroughly cleansed by this process and is again as serviceable as before. A great deal of ingenuity has been spent in the arrangements by which the cleansing is effected, and they have been at last reduced to a simple and compact apparatus, not liable to misuse. A single lever, turning a faucet that is curiously devised, effects the whole operation; when the handle of the faucet (*i. e.*, the lever) points to the right, all the water that is used on the premises passes through the filter; when the handle is turned part of a revolution, the hot water of the kitchen boiler runs back through the filter and is discharged by a waste pipe into the sewer. But if this were all of the contrivance, the safety of the kitchen boiler would be endangered as its contents ran low; and to meet this difficulty the faucet is so contrived that, while the hot water is running out of the boiler, cold water is constantly running in and filling the space. It follows that if a careless servant, who has turned the faucet, should leave it so turned, the only result would be that the kitchen boiler would fill with cold water, while the Croton ran to waste. It is said that such a filter, after several months of use, suffers no impairment of its cleansing powers; and the impurities which are trapped by the charcoal are quite considerable, as shown by the discoloration of the waste water when the filter is cleansed.

[N. Y. *Trade Journal*, Sept. 22, 1877.]

IMPORTANT SANITARY IMPROVEMENT.

The provision of an adequate water supply for large cities contains other elements of importance than mere quantity. This may be abundant, and the water free from but a slight percentage of mineral salts in solution, and therefore adapted for washing, or have but little effect upon the metal pipes used to convey and distribute it, but by far the most imperative demand is for entire purity, freedom from impurities, either mechanically suspended or held in solution, and which science has demonstrated with most unerring certainty are the most prolific sources of disease. The aggregation of a large population within a limited space, as is the

case in all large cities, prevents a resort to the ordinary means provided by nature to furnish a supply of pure water, and necessitates a resort to distant sources. It is well known that the water thus obtained, under the most favorable circumstances, contains a large percentage of impurities, and the question is to provide a convenient and effective and inexpensive mode of getting rid of them by filtration. The plans suggested and the methods adopted for the accomplishment of this purpose are as innumerable as the difficulties which they have, in a measure only, succeeded in overcoming. We have had brought to our notice lately a system of filtration which, from its simplicity of construction, and as embodying a correct application of recognized principles of chemistry, as well as the practical tests to which it has been subjected, would seem to be an unquestionably successful solution of this question. We refer to the Jennings System of Water Filtration, manufactured by Kellogg & Jennings, of No. 45 Gold street, New York.

A brief explanation will suffice—by reason of the simplicity of the apparatus—to give the reader a full understanding of the interior arrangement. It consists of a cylindrical case of cast iron, lined with tinned copper plate, to prevent rust, and provided with heads secured on either end by bolts. The interior is divided into two compartments, packed respectively with vegetable and animal charcoal. The arrangement of pipes provides for the attachment of the service pipe from the main and to the distributing pipe of the dwelling. A connection is also made with the hot water boiler and with the waste pipe running into the sewer. The water entering from the street main passes first through a metallic strainer, detaining the coarser suspended impurities, then through the layer of vegetable charcoal, where it is filtered and deodorized, this operation being completed in its subsequent passage through the layer of animal charcoal—and by this latter also decolorized—and is delivered in a pure, limpid stream to all parts of the house. The valve underneath, and from which the pipes radiate, is of peculiar construction, as to the relative position of its ports or openings, and is the important part of the mechanical construction. A quarter turn of this valve—and it cannot be improperly turned through ignorance or carelessness—shuts off the connection through the filter between the street main and piping of the house, establishes a direct connection therewith, so that the supply to the house is maintained, and opens a reverse connection with and allows the hot water from the boiler to pass through the apparatus in a contrary direction, escaping through the waste pipe into the sewer, carrying with it all impurities which may have accumulated, cleansing and washing the filtering materials. A turn of the valve restores the former system of circulation, and thus in less than five minutes it is cleansed and prepared to do its office for a period of from two to four weeks.

The Jennings system is patented in the United States, England, France, Belgium and other foreign countries. It is being extensively adopted, the latest applications being to the pipes of three of the leading hotels of the city. It is in operation in Fleischman's Vienna Model Bakery, having been seen there by our reporter—Mr. Helman, the manager, expressing his entire satisfaction with its workings and efficiency in purifying the water used in that establishment. At other and equally prominent hotels and restaurants the Jennings system is applied with the same satisfaction. Arrangements have been perfected by which all the water supplied to the boilers, to be used at the Fair of the American Institute, will be purified by passing through the

Jennings system, as well as that to be supplied to the large drinking fountain in the Main Hall of the Institute Building.

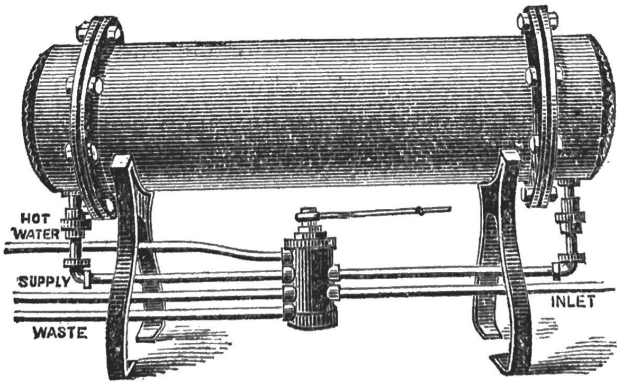
The Jennings system has been subjected to a careful examination by the Board of Health of the City of New York, and also by the New York Health Association, a society composed of the leading physicians and scientists of the city—resulting in its receiving the emphatic endorsement of both bodies. The chairman of the New York Health Association, who conducted the examination at the request of Dr. Jayne, of the Board of Health, in his report, read before the Association, said, "I can see no room for improvement in the Jennings System of Water Filtration."

The manufactory is at No. 45 Gold street—as also the office—the castings being made in Brooklyn, and the fitting and assembling done here. With the increasing demand the facilities have been enlarged, and the company are enabled to fill all orders without delay. In conclusion, we cannot resist the inclination to give expression to the opinion that this system of water filtration, upon its merits for efficiency, convenience and simplicity, is destined to become as important a portion of the water service of dwellings, hotels, factories, etc., as the pipes themselves.

[From the *American Manufacturer and Iron World*, October 12th, 1877.]

JENNINGS' WATER FILTER.

There are more or less impurities in the water supplied to every large town, even though they may not be visible. To purge out all such deleterious substances, in the most effectual and convenient way, is a problem that has engaged the attention of many eminent engineers and scientists. One of the most practical contrivances for this purpose ever brought to our notice is the Kellogg & Jennings Water Filter, illustrated herewith. A cylindrical case of cast iron is lined with tinned copper plate, to prevent rust, and provided with heads secured on either end by bolts.



The interior is divided into two compartments, packed respectively with vegetable and animal charcoal. The apparatus must be set in the service pipe before reaching the distributing pipe, as near to the latter as possible, so that the connection with the kitchen boiler may be short. A connection is also made with the waste pipe leading to the sewer. As the water enters it passes through a metallic strainer, taking out the coarser impurities, then through the vegetable charcoal, where it is filtered and deodorized, and finally through the animal char-

coal, where it is decolorized and delivered perfectly pure. The valve underneath may be turned, and the water shut off from the filter, and a direct connection with the house established. At the same time, a reverse connection with the hot water in the boiler is established, which passes through the filter in an opposite direction, and escaping through the waste pipe into the sewer, carrying with it all impurities that may have accumulated. A turn of the valve restores the former circulation. This system is patented in the United States, and the principal countries of Europe, by Kellogg & Jennings, 45 Gold street, N. Y. It is very highly recommended by the boards of health and leading physicians. The filters are made of all required sizes. For large manufactories they are supplied in batteries, so that any needed volume can be filtered. In this way one may be cleaned while the others are in use. For purifying feed water for boilers these filters are unsurpassed.

[From the *Real Estate Record*, Nov. 24th, 1877.]

JENNINGS' WATER FILTER.

Of the many appliances designed to promote a sanitary condition of the household, there is one that especially deserves the thoughtful consideration and attention of the public. We are loath to give undue prominence to any one of the multitude of these meritorious devices, and should in any case refrain from doing so until a personal examination and trial had furnished us with the requisite basis for an opinion. We conceive, however, that the merit of this particular invention, or rather application of a well known principle, and its practicability, entitle it to this particular mention. We refer to the excellent apparatus which has been devised by Mr. Jennings for rendering the entire water supply of a house pure and innocuous.

From the time of the first introduction of Croton water, it has been conceded that, however wholesome it may be at the fountain sources, the accidents of its conduction to and through the city create the imperative necessity of subjecting it to a filtering process as a qualification for household purposes. From that time to the present there has been no lack of available and efficient hand filters, intended to be applied at the faucet most frequently used. These require constant care and attention to see that they are continuously used and regularly reversed, as the only means of cleansing them. The experience of every family that has tried this primitive method has probably been the same. For a short season the head of the family may have undertaken the exclusive management of the filter, and attended with conscientious fidelity to its reversal from day to day, but when the novelty of this self-imposed task wore off, the duty was not unwillingly transferred to the household servants. With proverbial inaptitude for such delicate offices, servants are apt to allow the filter to remain unreversed for days together, so that the accumulated sediment would be forced through the enclosed packing and appear undisguised in the drinking water. After a while, wearying of the unremitting attention which proper management of the filter demands, the servant in charge would remove it from the faucet and ultimately bury it out of sight in the ash barrel, or allow it to be carried off by some kleptomaniac butcher boy to be sold as junk.

The impossibility of insuring a proper and reliable filtration of water by means

of the hand filter has usually discouraged the average housekeeper from attempting to secure this important desideratum for the family by any other means. Hence, by almost universal consent, the Croton water has been allowed to go unfiltered; and its use in this condition is probably the rule to-day in nine out of ten families.

The appliance of Mr. Jennings does away with all possibility of neglect or failure on the part of servants, by applying the filter at the main service pipe, thus ensuring the complete filtration of every drop of water that enters a building.

The filter itself, though scientifically correct, and a model of proper mechanical contrivance, is entirely free from any complication of construction or difficulty of management. It simply consists of an iron cylinder, about three feet long and one foot in diameter, with oval ends. These ends are protected by the finest copper gauze—so fine as to be almost non-transparent—the meshes numbering about 100 to the square inch. This provision serves as an effectual double sieve or strainer, and prevents the passage into the house pipes of any gross matters or impurities. The interior of the cylinder is solidly packed with the finest willow charcoal in a state of trituration. Through this cylinder, and the charcoal which it contains, the whole supply of water is made to pass. It is well understood that charcoal in this condition is the best and most reliable absorbent of any gaseous and organic impurities which the water may contain. By this simple process and treatment a perfect guaranty is afforded of the absolute purity and wholesomeness of the filtrated water. By the use of a combined lever cock the supply of water can be shut off from the filter and diverted to another pipe, which keeps the water back of the range and the rest of the plumbing work supplied during the operation of cleansing the filter. The same movement of the lever cock which effects this condition also introduces a supply of hot water from the kitchen boiler, but in a reverse direction from that by which the street service enters the filter. It is a scientific fact that, when charcoal loses its absorbent properties, as it is apt to do from prolonged action, by reheating it these properties may be completely restored.

It is claimed by Mr. Jennings, and his claim is supported by eminent scientists, that the application of hot water and steam of a temperature such as may be drawn from an ordinary kitchen boiler, the same effects will be produced upon the charcoal as by perfect incineration. Furthermore, practical tests instituted by Mr. Jennings and supervised by experts, have demonstrated the reliability and correctness of this principle. This cleansing process becomes necessary not oftener than once a week or once a fortnight, and is effected in such a simple manner that an intelligent and full grown child might conduct the operation. The waste or sediment that collects during the process of filtration in one head of the filter is forced by the counter current of hot water into a waste pipe, which empties into a small sink place in a convenient position, whence it discharges into the house drain. The actual appliance, in its adaptation and operation, is self-demonstrative, and cannot fail to interest any one who takes the trouble to examine it and to satisfy those who see fit to give it a practical trial.

The absolute importance of the proper filtration of Croton water can be demonstrated by the naked eye—without the assistance of a microscope—in inspecting the sediment which collects in a few minutes in an ordinary hand filter, or by examining a quantity of the waste which is discharged in the cleansing of this larger filter. Any one at all acquainted with the surface of the Croton water shed, and the risks of contamination in its numerous ponds, lakes and streams, or who has ever examined

the condition of the water as it stands in the principal reservoir, will be sufficiently impressed with the desirableness of subjecting it to a purifying process. Discolorations, frequently noticed, usually arise from the oxydization of the iron pipes through which it flows, or by the introduction of soil and gravel into the pipes at points where repairs are being made. The Jennings Filter decolorizes as well as purifies the Croton, leaving it as clear and limpid as spring water. Impurities of vegetable and animal origin, with which the Croton abounds, in both living and inanimate forms, plainly perceptible on close examination, render it unfit for introduction in its unfiltered state into the human system. The noxious gases and malarious exhalations of the country through which the Croton River passes are largely absorbed in the water, and conveyed as by a vehicle into our dwellings. Physicians concur in asserting that the use of water in any way contaminated is sure to lay the foundation of serious disease.

It is not too much to claim for the Jennings Filter that it completely and reliably removes every perceptible impurity, as well as the equally dangerous imperceptible ones. With this appliance ready at hand, and afforded at what must be considered, in view of its success, a moderate cost, no occasion exists for householders to deprive themselves of that inestimable boon—a pure, sweet, and wholesome drinking water.

The single possible objection that may be urged to the use of such a filter is the chance of its diminishing the head or force of the water. In practice, it is found that there is no appreciable diminution, at least so far as private dwellings are concerned. In cases where the water supply is furnished in greater quantity, or with greater force than it is from our reservoirs, there might possibly be a slight reduction in the head, but as the water is at present supplied to New York dwelling houses, we can aver, from practical examination, that there is no loss of natural force.

This interesting development of sanitary science may be studied in its practical operation at the American Institute Fair, or at Mr. Jennings' office, No. 45 Gold street, near Fulton street.