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cold air directly into the smoke flue through damper, P. With these provisions, complete control is obtained over the fire, and this automatic regulation has been found so reliable that where the floats are adjusted for a given temperature, the temperature of the heated air is regular to a degree, as long as a good fire is kept up, and there is no material change in the weather. The floats or rods may be set to give any required temperature by the methods usually employed in pyrometric regulators for stoves, etc. As the expansion and contraction of the water takes place slowly, the action upon the fire is in consequence gradual and not sudden, as in pyrometric arrangements when metallic rods connected with the dampers are expanded by the heat of stoves or fires. The loss of water from the vessel, F, by evaporation is supplied as often as necessary in order to keep the regulators to a uniform action. 79-3

The claim is for the arrangement of the two sets of floats operating the valves, M O, and damper, P, and the open vessel, F, in combination with a circulating hot water apparatus, as set forth.

The heating of buildings by hot water is far more healthy than by hot air. Commodore Stockton, T. Kirkbride, M. D., and John Fallon, Esq., Philadelphia, also Dr. Buttolph of the New Jersey Asylum, Trenton, have these furnaces in operation, and have used them for some time with increasing satisfaction.

Mr. Tasker in a letter to us invites the criticism and attention of architects, builders, and citizens to this improvement, and says:—"House warming may now be summed up as follows: make up a fire once a day, (morning) set the regulator by the scale and the furnace will take care of itself and the family into the bargain, until bed time."

The patentee has been engaged for years in manufacturing different kinds of house-heating apparatus. The firm is Morris, Tasker & Morris, 85 South 3rd street, Philadelphia, where this furnace is sold. The firm is always prepared to estimate for warming of buildings of any size—both churches, hospitals, and private dwellings, and from whom more information may be obtained by letter.

Hydrants and Pumps.—The supply of water to our citizens from the wells and pumps—yet remaining in various parts of the city—and from the several water works of the city, deserves some consideration upon points relating to the convenience of the people and to the interests of the city. There are portions of the city limits yet in which pipes of conduit for the water from the public works are not laid, and consequently the dependence of citizens for water must be upon the pumps, which are either provided by private means or are in charge of the city authorities and maintained at the public expense. Of course, this dependence upon wells will and must continue until the means of supply from the public works is provided for by the laying down of the necessary water mains. Where no pipes have yet been laid, there can be no fault found with the condition of things in reference to the point of interest to the city, except so far as blame may possibly attach to the owners of property who have neglected to do what is generally conceded and believed to be a blessing to any community, viz: a supply of good water, of easy access to everybody, upon terms of mutual agreement.

But one of the chief causes of real complaint is, that in many localities throughout the city, where the conduit pipes are laid, and where it would be expected that the public supplies of water ought to be preferred to the reliance upon old wells with pumps, there are scores and hundreds of properties not supplied from the public works, the owners or tenants of which depend upon a pump or pumps in their neighborhoods. This condition of things results in a large loss of revenue to the city annually, which ought to be prevented by the public authorities refusing to maintain the pumps at the expense of the taxpayers. This is not all, for there are hundreds of localities where the pipes are laid and a large proportion of the properties supplied with the water, but where numerous owners of property up to this time refuse to afford it to their tenants, and the latter are compelled to resort to the pumps, or beg or steal from their neighbor's hydrants and wash-paves. This taking of water can hardly be held less than a fraud upon the City Treasury, and measures ought to be adopted by the city authorities to stop it. Attention to this subject by the departments of the city would result in a short time in a large increase of the city revenue, and would put our taxpayers and property-owners upon a nearer equality than they are now or have been for years past in respect to the public supply of water. Councils want to reform, and the city treasury wants money. Let reform begin with doing even and exact justice to all, and let the Treasury receive money from all legitimate sources.

SELF-REGULATING HOT WATER FURNACE.

Fig. 1 79-1

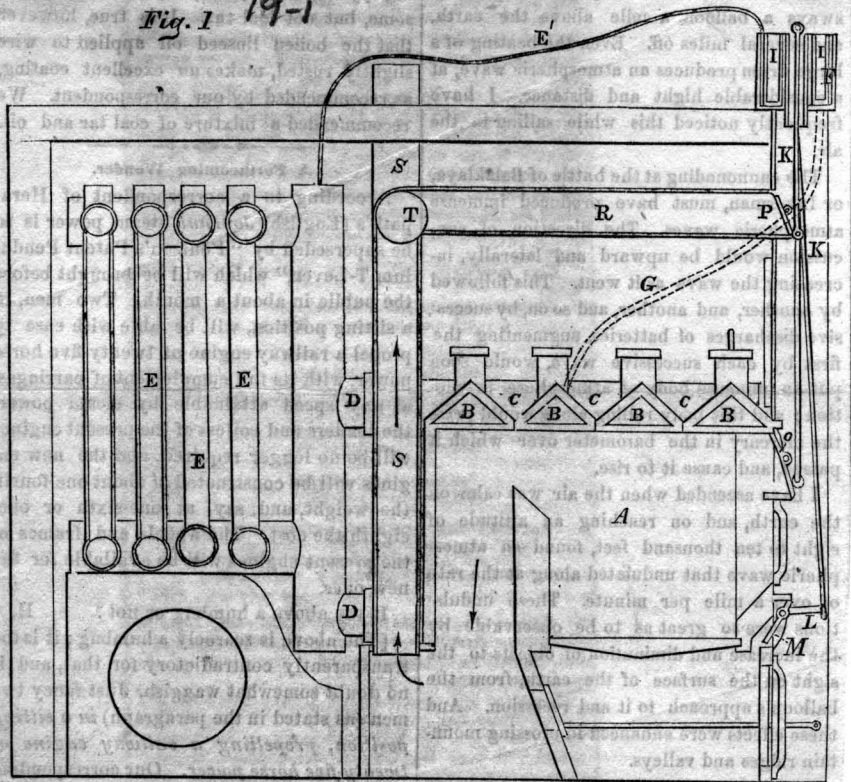
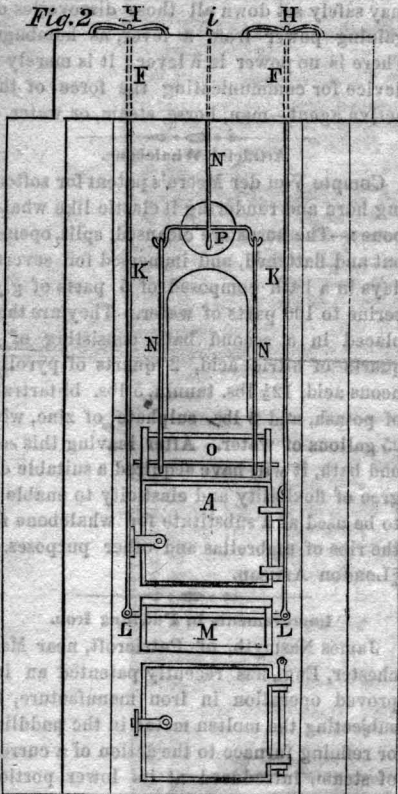


Fig. 2



The annexed figures represent an improvement in hot water furnaces for heating pub-

lic and private buildings, greenhouses, hospitals, &c., for which a patent was granted to Thomas T. Tasker, of Philadelphia, Pa., on the 5th of December last.

Figure 1 is a sectional elevation through the furnace from front to rear, and figure 2 is a front view of the furnace showing the regulator. Similar letters indicate like parts.

The invention consists in a mode of regulating the temperature of furnaces for hot water apparatus by self-acting valves and dampers of a peculiar arrangement. One evil that has been experienced in all hot water arrangements for heating apartments, is the unequal heat and circulation from the variations in the fire from hour to hour and from day to day; and another is the overheating of the water causing it sometimes to boil and generate steam and straining the joints of the tubes by too great expansion. These are effectually guarded against by the arrangements for controlling the draft through the furnace, the construction and operation of which are as follows:—

A is the furnace, the walls of which are composed of tubes, B, of a triangular form in the cross section, and so arranged that by the meeting of their edges as seen at C, the inner surface of the walls are even, and the outer surface presents a zig-zag line in the cross section. These tubes are connected by main tubes, D D, which convey the heated

water to the circulating system of tubes, E E, whence the water is conveyed by pipes, E', to the open vessel, F, and thence down through tubes, G G, to the heaters, B B. In the vessel, F, are three floats, H H and I. To the floats, H H, are connected metallic rods, K K, which take hold of short rods, L L, attached to the draft valve, M; and connected with the float, I, is a rod, N, which takes hold of a valve, O, above the fire, and also hold of a damper, P, placed at the end of the flue, R, which enters the smoke pipe, S, at T. As the temperature of the water in the open vessel, F, rises, it expands and carries up the floats, H H, which through the rods, K K, operate to close the draft valve, M, and check the fire, and the float, I, operates through the rod, N, to open the valve, O, and also the damper P. When fire is thoroughly ignited it is often difficult to check it as quick as necessary by shutting the draft below, and though the admission of a draft of cold air above the fire has a tendency to check it, yet under some circumstances it may for a while increase it, and it is therefore provided for the admission of