

(No Model.)

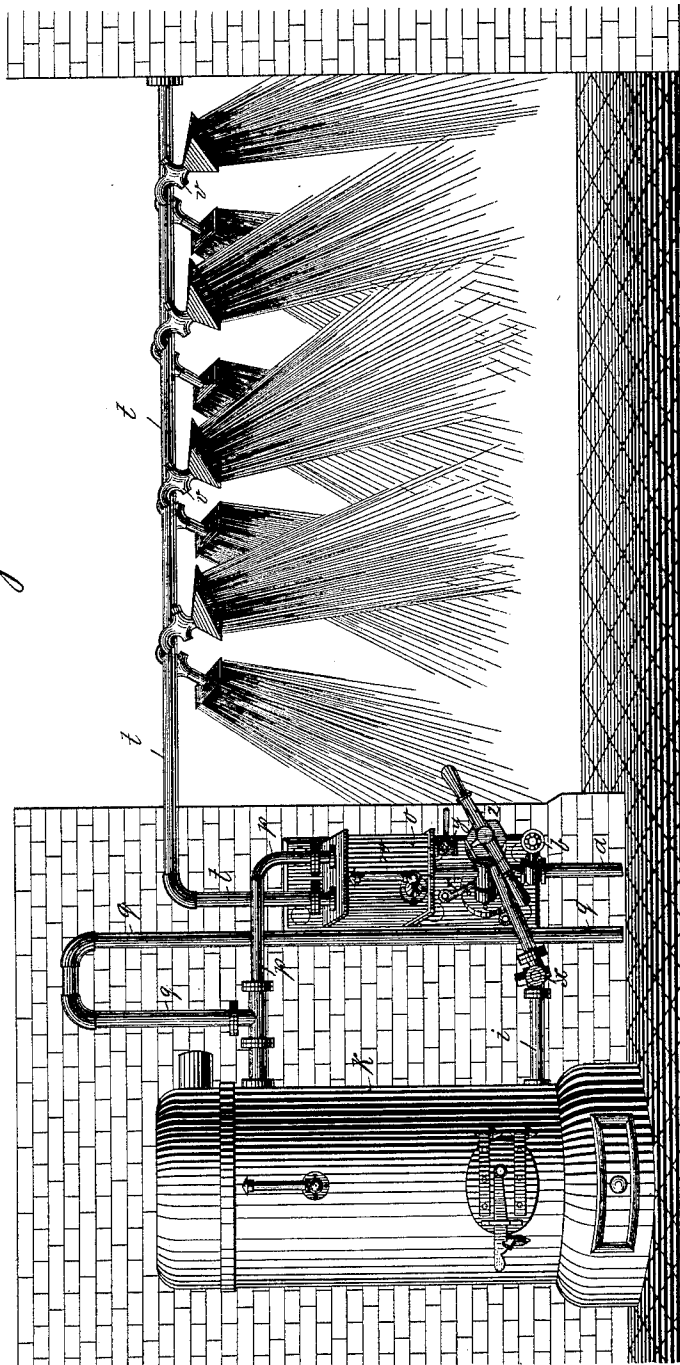
2 Sheets—Sheet 1.

D. GROVE.
SHOWER BATH.

No. 398,894.

Patented Mar. 5, 1889.

Fig. 1.



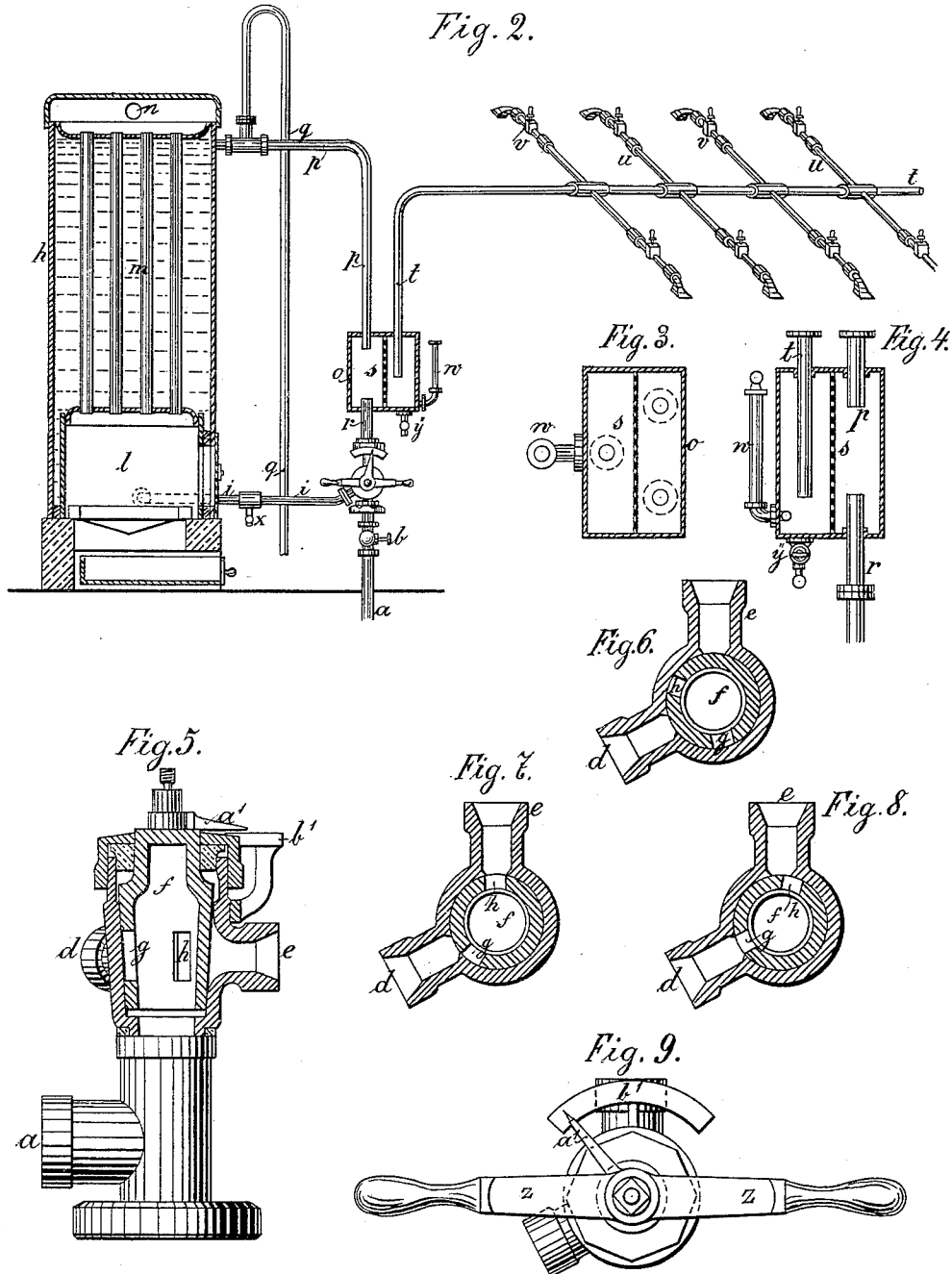
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UNITED STATES PATENT OFFICE.

DAVID GROVE, OF BERLIN, GERMANY.

SHOWER-BATH.

SPECIFICATION forming part of Letters Patent No. 398,894, dated March 5, 1889.

Application filed November 16, 1885. Serial No. 182,970. (No model.) Patented in England October 26, 1885, No. 12,811.

To all whom it may concern:

Be it known that I, DAVID GROVE, of the city of Berlin, Prussia, Germany, have invented certain new and useful Improvements in Shower-Baths, (for which a patent has been granted to me in England, No. 12,811, dated October 26, 1885,) of which the following is a specification.

My invention relates to an improved shower-bath which is admirably adapted for employment in public as well as private bathing establishments, factories, mines, hospitals, schools, barracks, workshops, and other establishments.

The chief characteristic points of my said invention are simplicity of construction, novel arrangement of the roses or mouth-pieces, special arrangement of the mixing-vessel, and arrangement of the three-way cock so that hot water can under no circumstances pass off first into the delivery-pipe to the roses or mouth-pieces and the arrangement of the exhaust-pipe, so that as soon as the heat should become excessive such superfluous heat in the form of steam would be led off by means of the said exhaust-pipe or in the form of water when the pressure in the heater should become excessive.

My said invention can, furthermore, be employed to great advantage in all districts where open-air baths cannot be erected or where the erection of the ordinary public baths proves too expensive or do not cover the wants.

If a water-service is at hand, the piping or tubing of my improved shower-bath is connected immediately with the same. Warm-water reservoirs can also be combined with the arrangement, if required. The temperature of the water can be regulated by operating the same cock which is employed for supplying the entire water for the bath, and for this purpose the mixing-chamber is provided with a thermometer, so that the temperature of the water directly after mixing can be readily ascertained. The connection-pipe between the water-service and the bath serves as the cold-water-supply pipe and as feed for the stove or heater. The same is provided with a suitable stop-cock and communicates with a three-way cock, which in its turn communicates with the stove or heater. This stove or

heater is provided with the customary firing, and is on all sides, with the exception of the firing-door, surrounded with water, in order to better utilize the heat produced. A tube or pipe at the upper end of the heater leads into a mixing-vessel, which said mixing-vessel is connected by a suitable short pipe or tube to the three-way cock. The mixing-vessel or chamber is provided with a thermometer for registering the temperature of the water in the said mixing vessel or chamber, which latter is further provided with an outlet pipe or tube provided with a desired quantity of roses or mouth-pieces. The three-way cock can be so adjusted that the cold-water supply is either led to the roses or mouth-pieces or allowed to flow simultaneously to the heater, thus forcing the hot water out of the heater into the mixing-vessel, where the said hot water is mixed with the cold water and flows off through the delivery-pipe leading to the roses or mouth-pieces; or the said cock can be so adjusted that water is admitted alone to the heater for filling the same. In order to allow the steam generated in the water-reservoir of the heater to escape, I apply an exhaust pipe or tube leading to the basement and into the open air or into a condenser, so that the water of condensation is fed back into the heater. Suitable cocks are arranged for emptying the heater and the mixing vessel or chamber and for regulating the jet from the roses or mouth-pieces.

Figure 1 represents the total arrangement of a shower-bath according to my invention. Fig. 2 is a part longitudinal section of the same. Fig. 3 is a horizontal section of the mixing vessel or chamber. Fig. 4 is a vertical section of the same. Fig. 5 is a horizontal section of the three-way cock; Fig. 6, a vertical section of the same in closed position; Fig. 7, a like section in partially-closed position, the water-supply being in communication with the mixing-vessel and the roses or mouth-pieces. Fig. 8 is a vertical section of the same in open condition, the water-supply being in communication with the mixing vessel or chamber and with the heater. Fig. 9 is a top view or plan of the three-way cock.

The tube or pipe *a* acts as the water-supply pipe, and is connected with the water-service

or other water-supply, and is further provided with a suitable stop-cock, *b*. The said tube or pipe *a* is connected to the lower end of the three-way cock *c*, which is provided with the two connections or outlets *d e* and the hollow cone *f*, which latter is provided with two borings or openings, *g h*, so that in operating the said hollow cone the connection can be opened between the two connections or outlets *d e*, which are closed when the cone *f* of the said cock is in its normal position. The pipe or tube *i*, leading to the heater and connected to the lower part of the same, is connected with the connection or outlet *d* of the three-way cock.

My said heater is constructed in a manner similar to that employed in vertical tubular boilers, and is provided with the furnace *l* and fire canals or flues *m*, through which the products of combustion escape to the chimney *n*.

The water-level is kept constantly near the top of the heater, so that as soon as a fresh supply of water enters the heater through the pipe or tube *i* the superfluous water can stream or flow off through the pipe or tube *p* into the mixing-vessel. An exhaust pipe or tube, *q*, which leads to the floor or to a suitable condensing apparatus, is connected to the tube or pipe *p*, in order to carry off any superfluous steam generated in the heater.

The mixing vessel or chamber *o*, which at its lower part is connected to the connection or outlet *e* of the three-way cock *c* by means of the piece of tubing or piping *r*, is divided into two compartments by means of an appropriate sieve or perforated partition, *s*, in one of which said compartments the stream of cold water is so mixed with the warm water from the heater that the mixture of cold and warm water passes through the perforations of the partition into the second compartment, and from thence to the delivery-pipe *t*, to which the roses or mouth-pieces *u* and the regulating cocks or valves *v* to the same are attached. The thermometer *w*, fixed to the mixing vessel or chamber *o*, registers the temperature of the mixture of hot and cold water.

The cock *x* in the pipe or tube *i* serves to empty or let off the water from the heater, while the cock *y* serves to let off the water in the mixing vessel or chamber *o* and the tubes or pipes of the bath. The cone *f* of the three-way cock *c* is provided with a suitable handle, *z*, which carries a pointer, *a'*, which latter is so arranged that the same shows the position of the cone and its openings on a sector, *b'*.

The operation of my improved shower-bath is as follows: If the bath is out of operation, the three-way cock occupies the closed position represented in Fig. 6, so that the communication with the water-supply *a*, and also with the heater and the mixing vessel or chamber *o*, is cut off. If the bath is to be put in operation, the heater being considered

as already filled, the handle of the cock *c* is turned to the right, so that the same occupies the position represented in Fig. 7, so that the cold-water supply can flow through the boring or opening *h* of the cock *c* into the mixing vessel or chamber *o*, as will be indicated by the pointer on the sector. The angles of the cold and warm water inlets in the three-way cock are so constructed that when the handle *z* is partially turned to the right the cold-water inlet is opened before the warm-water inlet. If the cock is now turned farther to the right, the boring or opening *g* will be in communication with the outlet *d* and the tube or pipe *i*, so that cold water will flow into the heater *k* and drive the heated or hot water through the pipe or tube *p* into the mixing vessel or chamber, where both streams or jets of water meet, become intimately mixed, and are then forced into the delivery-pipe for the roses or mouth-pieces.

I effectually prevent the issue from the roses or nozzles *u* of overheated water by arranging the cold-water inlet so that even in its extreme position it will admit a small quantity of cold water to constantly issue therefrom.

The heater *k* remains constantly filled, as the cold water entering the lower part of the same replaces the hot water led off through the pipe *p* to the mixing vessel or chamber *o*. One of the principal advantages of my improved shower-bath is that the temperature of the bath can be varied at will by simply operating one single cock, and that the temperature of the mixed water is accurately indicated before it leaves the said mixing vessel or chamber *o*.

The enormous advantages of my improved shower-bath will be evident to all, and it will also be evident that the arrangement and proportion of the parts can be modified in various manners without departing from the tenor of my said invention.

Having now described my said invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the heater *k* with the circulation pipe or tube *p*, the exhaust pipe or tube *q*, the three-way cock *c*, pipes *i* and *r*, and the mixing vessel or chamber *o*, into which hot water will flow as soon as cold water is fed into the lower part of the heater, substantially as described and shown.

2. The combination of the mixing-vessel *o* with the delivery-pipe *t*, the roses, mouth-pieces, or nozzles *u*, the pipes *i*, *r*, and *p*, the heater *k*, and the cock *y*, substantially as described and shown.

3. The combination of the partition *s* and mixing-vessel *o* with the three-way cock *c*, pipe or tube *r*, *p*, and *t*, the thermometer *w*, roses, mouth-pieces, or nozzles *u*, and the regulating valves or cocks *v*, substantially as described and shown.

4. The combination of the three-way cock

c with the water-supply pipe *a*, the pipe or tube *r*, the pipe or tube *i*, heater *k*, pipe *p*, mixing vessel or chamber *o*, pipe or tube *t*, and the roses, mouth-pieces, or nozzles *u v*, so
5 that the simultaneous supply of cold water to the heater *k* and mixing vessel or chamber *o* and hot water from the heater *k* to the mixing vessel or chamber *o* and the delivery-pipe *t*, and roses, mouth-pieces, or nozzles *u* can be

regulated at will, substantially as described, 10 and shown in the accompanying drawings.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DAVID GROVE.

Witnesses:

B. ROY,

M. W. MOORE.