No. 763,269. PATENTED JUNE 21, 1904.

M. ST. C. ELLIS.

STEAM CLEANER.

APPLICATION FILED AUG. 11, 1903.

NO MODEL.

Fig. 1.

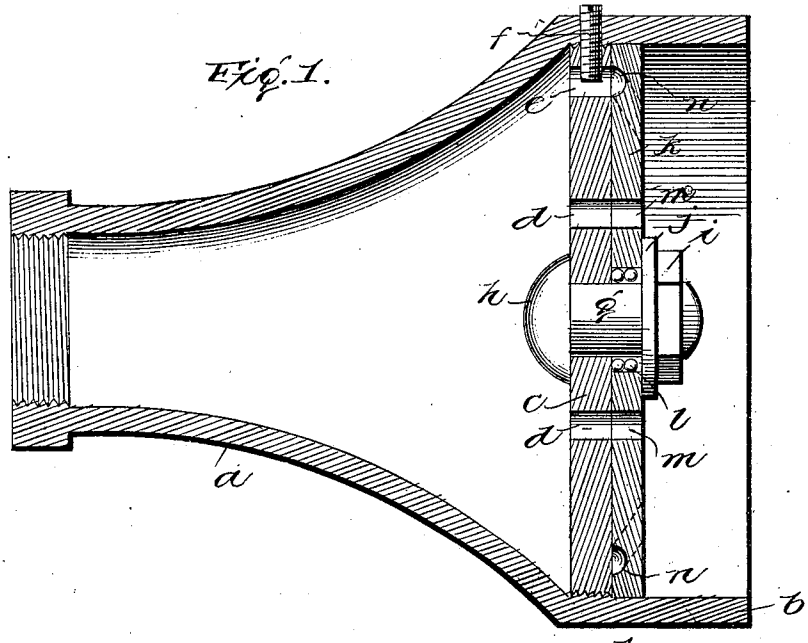
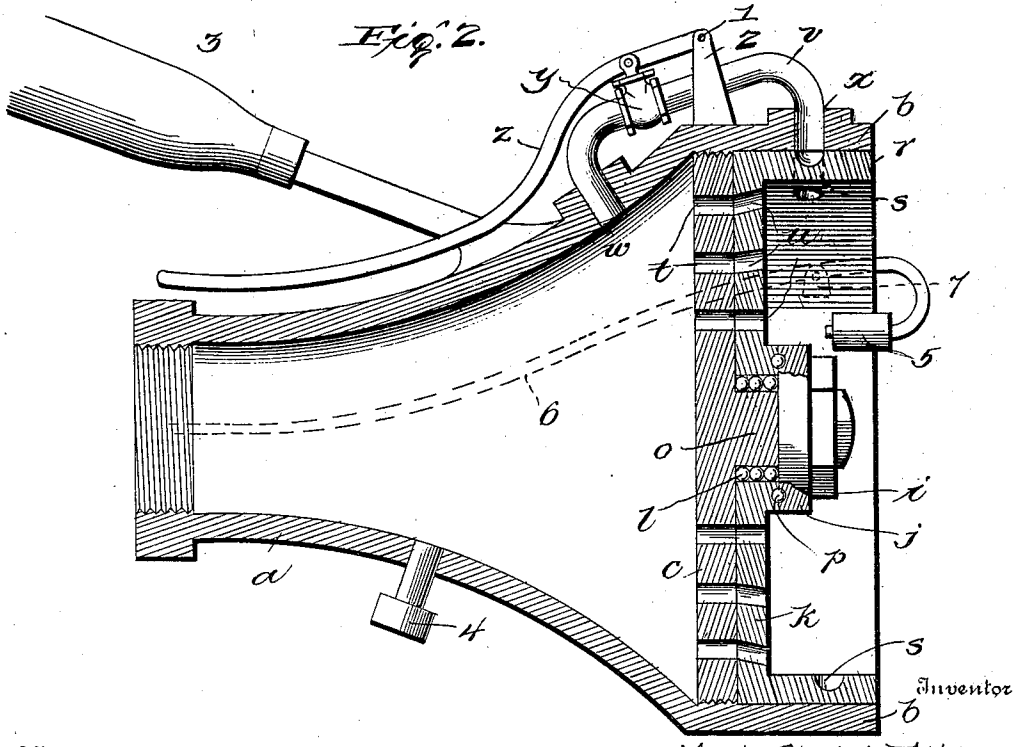



Fig. 2.




Witnesses

J. L. Mackaye

Fred W. Englert.

Inventor

Mark St. Clair Ellis,

By Wilkinson & Fisher

his Attorneys

No. 763,269. Patented June 21, 1904.

# UNITED STATES PATENT OFFICE.

MARK ST. CLAIR ELLIS, OF THE UNITED STATES NAVY.

## STEAM-CLEANER.

SPECIFICATION forming part of Letters Patent No. 763,269, dated June 21, 1904.

Application filed August 11, 1903. Serial No. 169,101. (No model.)

*To all whom it may concern:*

Be it known that I, MARK ST. CLAIR ELLIS, a lieutenant in the United States Navy, stationed on board United States Steamship Bancroft, San Juan, Porto Rico, have invented certain new and useful Improvements in Steam-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cleaning-machines, and particularly to that class wherein a jet of steam, water, or compressed air is used.

My invention is designed more especially for the cleaning of ships, both the exterior and the interior thereof, although it is not restricted to such uses.

The objects of my invention are, first, to provide a nozzle or casing with an interrupting device arranged therein to cause the steam, water, or compressed air to be ejected in intermittent streams, whereby, as may be readily seen, the dirt will be removed much faster and more effectively than if a continuous stream were employed; second, to provide a cleaner which is remarkably simple in construction, and consequently very cheap to manufacture; third, to economize power, since by my invention power is saved and the work of cleaning done more thoroughly, and in the case of the steam-cleaner a disinfecting action is obtained in addition to the cleaning action.

With these objects in view my invention consists in the construction and combinations of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section of one form of my invention, and Fig. 2 is a longitudinal section of a modification.

In the simple form shown in Fig. 1, *a* represents a casing or nozzle, which is provided with a screw-thread and adapted to be secured to the end of a flexible hose, to which steam, water, or compressed air is delivered. In case steam is used it sometimes happens that the steam is wet or oily, or both, and whenever it is necessary I make use of a separator of any well-known type for drying the steam and a filter of any well-known type for cleaning the steam. The separator and filter, however, are not shown on the drawings.

The casing or nozzle *a* is enlarged toward the delivery part, terminating in a cylindrical portion *b*. Within this cylindrical portion is permanently mounted a plate *c*, this plate being secured in the cylinder *d* by screw-threads or in any other suitable manner.

The plate *c* is provided with openings *d*, through which the cleaning fluid passes, and with an opening *e* for the purpose of driving the interrupter, which will be hereinafter described.

Passing through the cylinder *b* and down into the hole *e* is a screw *f*, which is used for the purpose of wholly or partially closing the hole *e*, thus varying the speed at which the interrupter revolves by varying the amount of the motor fluid passing through the hole *e*.

I have shown the screw *f* as provided with a slot in its head, in which the screw-driver is adapted to be inserted; but of course any ordinary means for turning the screw *f* could be used. Indeed, an ordinary thumb-screw could be used instead of the form shown.

Centrally mounted in the plate *c* is a spindle *g*, provided with a head *h*, a nut *i*, and washer *j*. Mounted on the spindle or bolt *g* is the interrupter *k*, which revolves on ball-bearings *l*, located between the interrupter *k* and the spindle *g*.

The interrupter *k* is provided with a series of holes *m*, arranged to register with the holes *d* in the plate *c*. The interrupter is also provided with a series of holes *n*, which are arranged at a sharp angle to the face of the interrupter *k*, the inner ends of said holes being arranged to register with the outer end of the hole *e*. The steam, water, or compressed air issuing through the hole *e* strikes the inclined sides of the holes *n* successively and revolves the interrupter *k*.

The interrupter *k* as it revolves brings the holes *m* momentarily in line with the holes *d*, and thus permits jets of motor fluid to escape through the holes *m* and against the object to be cleaned.

In Fig. 1 only one circular row of holes *d* is shown; but it is obvious that any number of holes or rows of holes could be used. I

have also shown these holes as arranged at right angles to the plate *c* and interrupter *k;* but it is obvious that they might be arranged at different angles to said plate and interrupter in order to impart to the cleaning fluid a rotary and spraying effect.

In the form shown in Fig. 2 the parts *a*, *b*, and *c* are similar to those shown in Fig. 1. In Fig. 2 the spindle *o* is shown as made integral with the plate *c*. The interrupter is mounted on roller-bearings *l;* but the second set of roller-bearings *p* is interposed between the washer *j* and the interrupter *k* in this modification. The interrupter *k* is in this modification provided with a hollow cylindrical extension *r* and a row of driving-orifices *s*. The plate *c* is provided with a number of rows of holes *t*, through which and the corresponding holes *u* in the interrupter *k* the cleaning fluid is delivered.

Any number of rows of holes in the stationary plate and in the interrupter may be used; but I have shown only three in the drawings. Preferably the inner row of the holes *t* and *u* is made at right angles to the plate *c* and interrupter *k;* but the outer holes are arranged at different angles thereto, as shown in Fig. 2, for the purpose of obtaining a rotary and spraying effect.

The interrupter *k* is driven by means of motor fluid supplied through the pipe *v*, which connects with the casing *a* at *w* and with the part *b* at *x*, delivering motor fluid through the holes *s*, which, however, are inclined relatively to the pipe *b* to cause the interrupter to revolve.

Within the pipe *v* is a valve *y*, operated by a handle *z*, which is pivoted at 1 on an arm 2, attached to the nozzle *a*. By moving the handle *z* up and down the amount of motor fluid allowed to pass through the holes *s* may be varied, and therefore the speed of the interrupter.

3 represents a handle attached to the nozzle for purposes of convenience and safety in handling the same. 4 represents a tube which is attached to the casing or nozzle *a* for the purpose of sucking up water to be discharged against the surface to be cleaned. The water is drawn up through the tube 4 by the steam as it passes through the nozzle on the principle of an injector. This water of course can be soapy or charged with any cleaning material.

5 represents a rotary friction-brake which is adapted to bear on the inside of the extension *r* of the interrupter *k* to control the speed thereof. This brake is operated by a handle 6, pivoted on an arm 7 on the outside of the portion *b* of the nozzle or casing.

While I have thus described my invention, I wish it to be distinctly understood that I do not limit myself to the exact details shown and described, as many modifications may suggest themselves to those skilled in the in the art; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a cleaner, the combination of a casing, a flat perforated plate mounted therein transversely to the axis thereof, and a flat automatic interrupter, said interrupter being adapted to rotate against the face of said plate and to allow an intermittent stream of cleansing fluid to pass through said casing, substantially as described.

2. In a cleaner, the combination of a casing or nozzle, a perforated plate permanently secured in said nozzle, a spindle projecting from said plate, and an automatic interrupter mounted on said spindle, substantially as described.

3. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, and an interrupter mounted on said spindle, said interrupter being provided with inclined perforations, substantially as described.

4. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, and an interrupter having perforations therethrough adapted at times to register with the perforations in said plate, said interrupter being mounted on said spindle and provided with means for causing it to be rotated by the passage of the cleansing fluid, substantially as described.

5. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, an interrupter provided with inclined perforations mounted on said spindle, and means for varying the speed of rotation of said interrupter, substantially as described.

6. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, an interrupter mounted on said spindle and having openings therethrough adapted to register with the perforations in said plate, said interrupter being provided with an annular flange or extension having inclined perforations therein, and means for discharging fluid through the perforations in said flange, substantially as described.

7. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, an interrupter mounted on said spindle and having openings therethrough adapted to register with the perforations in said plate and also provided with a flange extending from its periphery and having inclined perforations therein, and a valved pipe leading from said casing to the perforations in said flange, substantially as described.

8. In a cleaner, the combination of a casing provided with a handle, a perforated plate mounted in said casing, a spindle projecting

therefrom, a perforated interrupter mounted on said spindle, and a tube connected to said casing, substantially as described.

9. In a cleaner, the combination of a casing, a perforated plate mounted therein, a spindle projecting from said plate, a perforated interrupter mounted on said spindle, provided with a projecting flange, and a brake adapted to be brought in contact with said flange, substantially as described.

10. In a cleaner, the combination of a casing, a perforated plate permanently mounted in said casing, a spindle projecting therefrom, a perforated interrupter provided with a perforated flange mounted on said spindle, a valve-pipe leading from said casing to the perforations in said flange, a lever for operating the valve in said pipe, a handle attached to said casing, a tube attached to said casing, and a rotary brake also attached to said casing, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MARK ST. CLAIR ELLIS.

Witnesses:
D. A. CHADWICK,
ROSS DAVIS.