(No Model.)

J. C. RAYMOND.

DRAFT PRODUCING DEVICE FOR STACKS.

No. 577,322. Patented Feb. 16, 1897.

Fig. 1

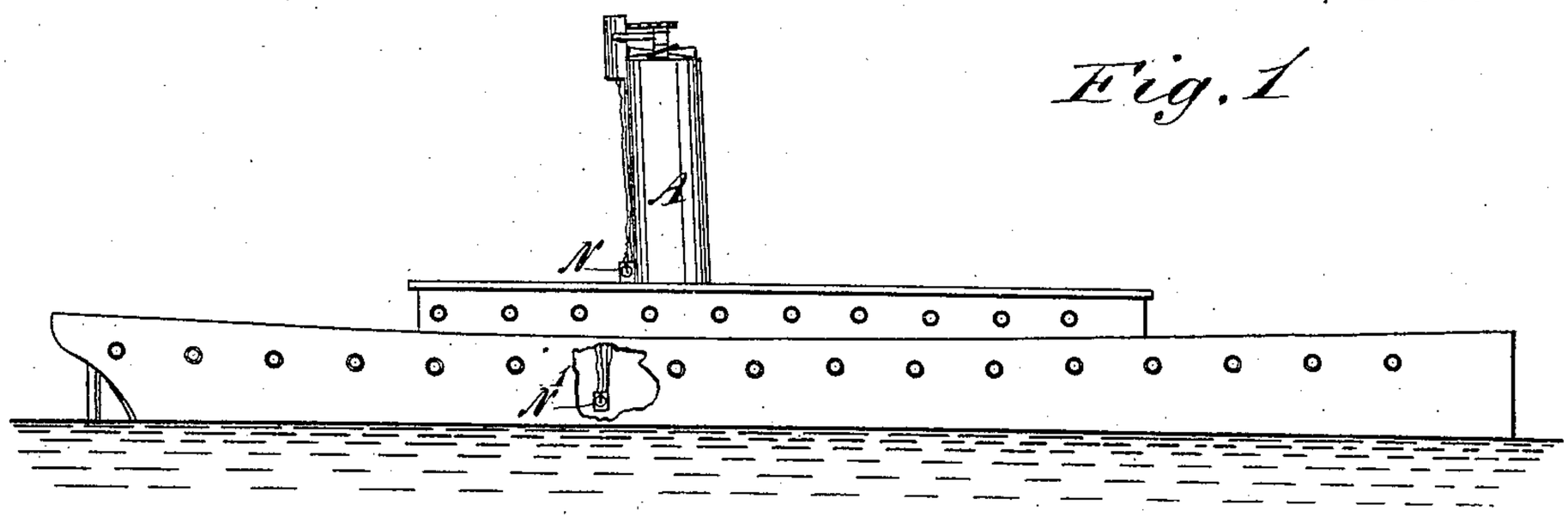


Fig. 3

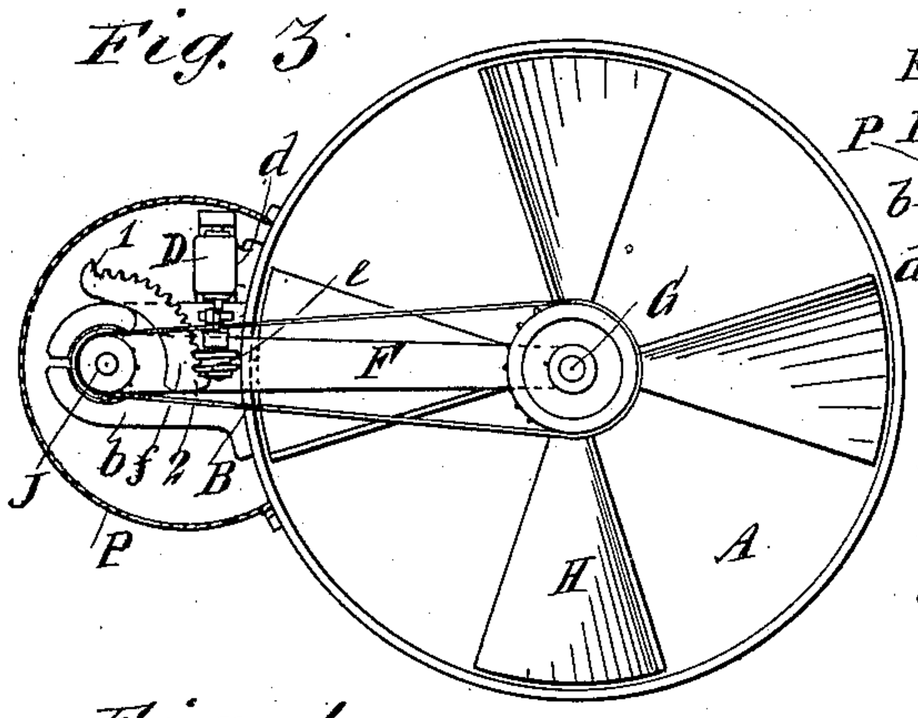


Fig. 4

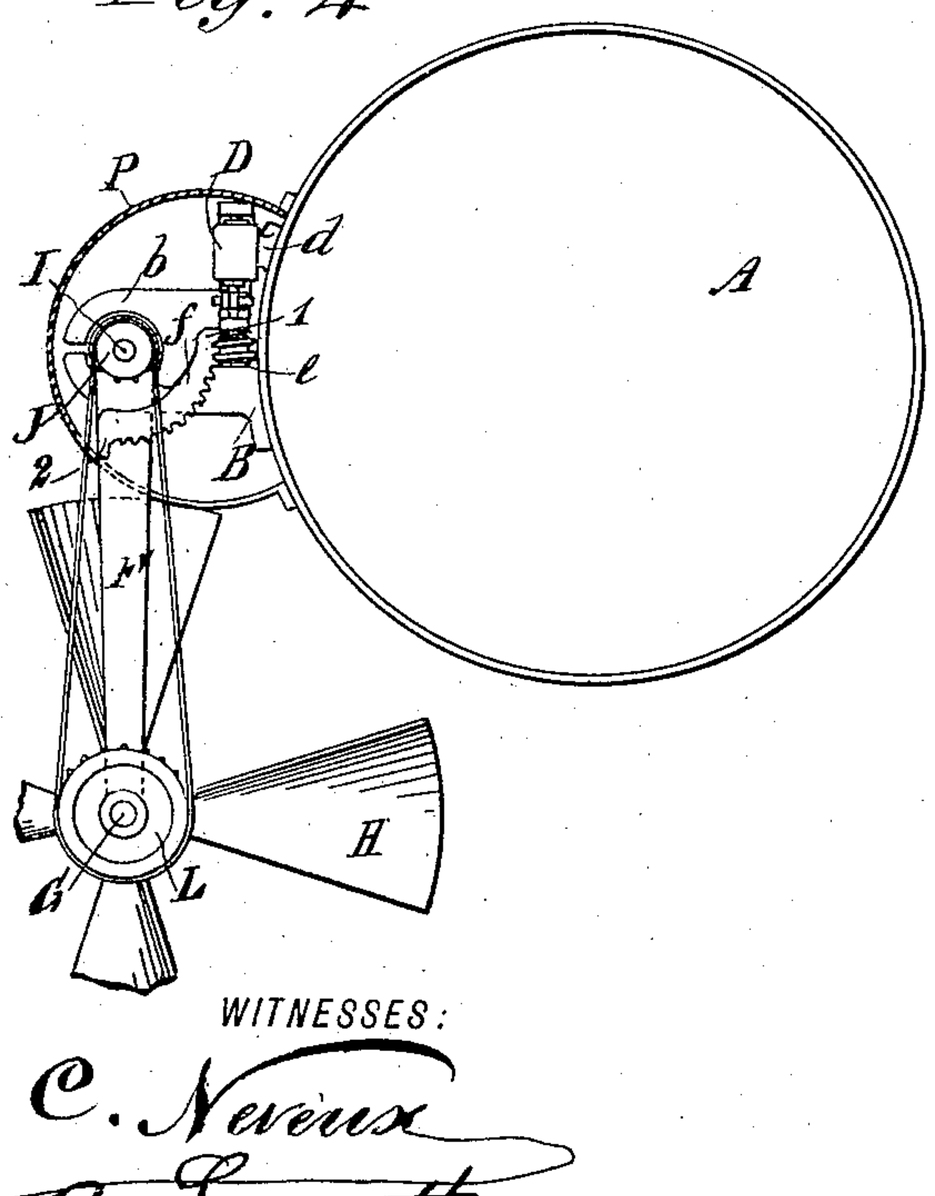
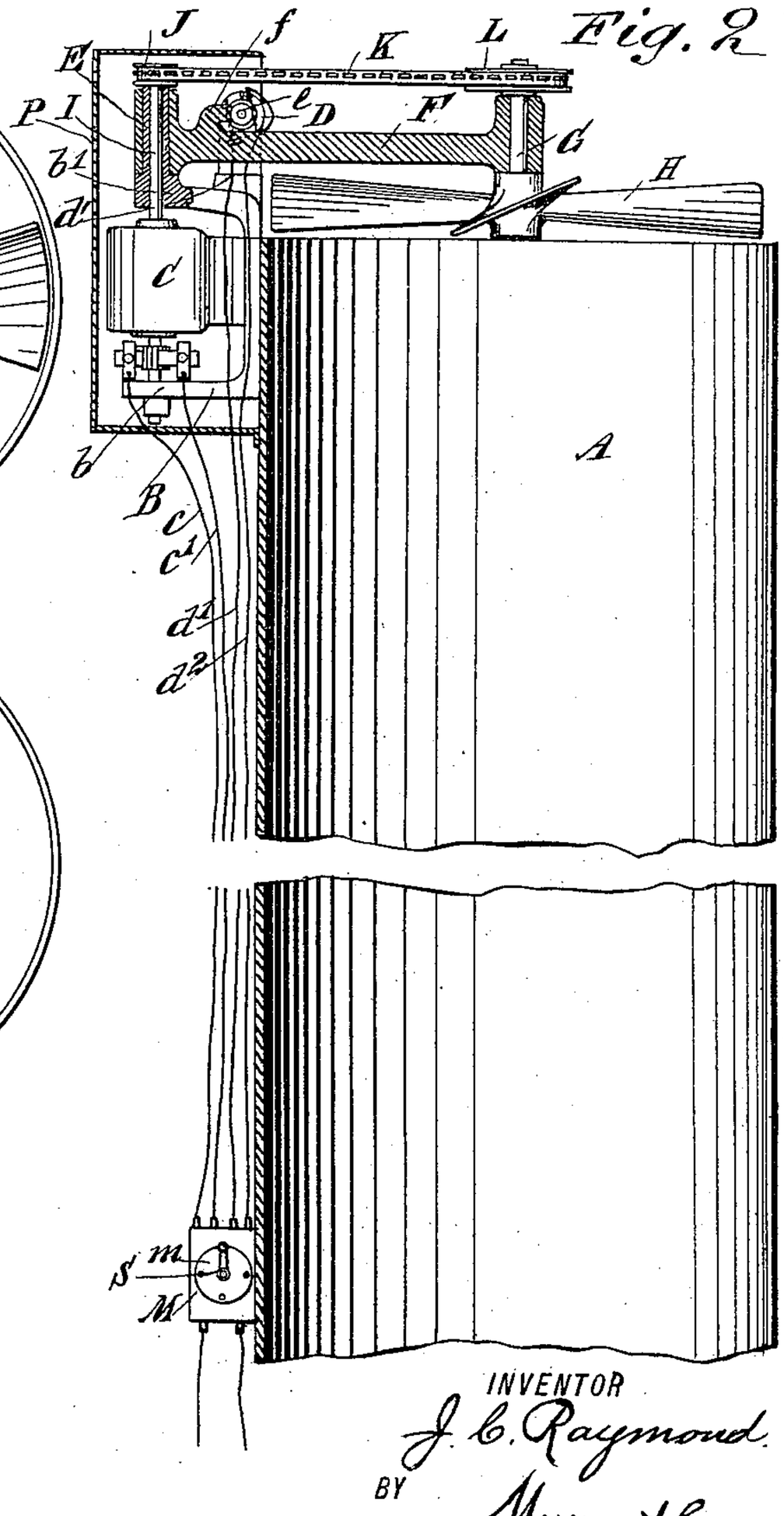


Fig. 2



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DRAFT-PRODUCING DEVICE FOR STACKS.

SPECIFICATION forming part of Letters Patent No. 577,322, dated February 16, 1897.

Application filed October 10, 1895. Serial No. 565,273. (No model.)

To all whom it may concern:

Be it known that I, JOHN CARLYLE RAYMOND, of New York city, in the county and State of New York, have invented a new and useful Improvement in Draft-Producing Devices for Stacks, of which the following is a full, clear, and exact description.

My invention is of that class that seeks to secure induced draft and reduce the height and cost of chimneys and funnels by the use of fans; and it consists of certain novel and useful devices which I will now proceed to describe, and particularly point out in the claims.

There is a serious drawback to the use of the abnormally high funnels now used on steam vessels in the fact that they spoil the symmetrical appearance of the ship and at the same time present a large surface of resistance to the wind, that seriously retards the ship's progress.

Now my invention seeks to secure the advantages attaching to lofty funnels and at the same time avoids the drawbacks, as above mentioned. It provides a mechanism in the top of a funnel of the usual height which augments the draft to any extent that may be desired.

As applied to the chimneys of stationary boilers on land my invention enables the height of such chimneys to be greatly reduced, and, the cost of my device being much less than the expense of a vertical height of chimney of equal draft-inducing power, I thereby effect a great economy in the first cost of any boiler installation.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a steamer, showing my invention attached to the top of the funnel. Fig. 2 is a cross-section through the funnel, showing the details of my electric fan and the wiring attached thereto. Fig. 3 is a plan view of the same, and Fig. 4 is a plan view showing the fan swung to one side of the funnel.

At the upper end of the funnel A and on the outside thereof I secure the bracket B, which carries the electric motor C by means of the arms *b b'*. The upper arm *b'* has a vertically-projecting hollow shaft E, which serves to carry a swinging arm F, which arm is arranged to swing freely in a horizontal plane. At its outer end said arm is enlarged to receive the vertical shaft G of the fan H, and its length is such that when it projects over the funnel the center of said fan shall coincide with the axis of the funnel.

The vertical hollow shaft E is bored to receive the motor-shaft I, which projects through said hollow shaft and at its upper end is fitted with a sprocket-wheel J. This wheel is geared by means of the sprocket-chain K to the sprocket-wheel L, which is keyed to the fan-shaft G, as shown in the accompanying drawings.

For the purpose of swinging the arm F with its attached fan I provide a small electric motor D, which is carried by the arm *d*, which projects upwardly from the bracket B. The motor D is arranged in a horizontal plane and carries on its shaft a worm *e*, which engages a rack-quadrant *f*, which is attached to or formed integrally with the swinging arm F. It is evident that the motor D, being attached to the bracket B, will, by its operation and the coaction of the worm-wheel *e* and the rack *f*, serve to swing the arm F in a horizontal plane. The rack *f* is provided at each end with projections 1 2, which lock against the worm *e* and limit the travel of the arm F to a quarter of a circle turn.

The wires *c c'* and *d' d²* from the motors are carried down to a switchboard M, which may be placed above deck, as at N, Fig. 1, or in the engine-room, as at N' in the same figure.

The switch M is provided with an indexed face *m*, and by the operation of the switch-handle S upon such face the current may be sent, direct or reverse, through the motor D, or it may be sent through the motor C, or it may be switched off altogether.

The motors are protected by a hood or casing P, of sheet iron or other suitable material of cylindrical form, which is fastened to the shell of the funnel, as shown.

In operation when it is desired to run the boilers with unassisted natural draft by turning the handle S of the switch M to the proper index the motor D is operated so as to swing the fan H clear of the funnel A, as shown in Fig. 4. When it is desired to in-

crease the draft, the switch is moved so as to reverse the motor D, and the fan H is swung back into position over the funnel, and by further manipulation of the switch the current is thrown into the motor C, which by means of the sprocket-wheels J and L and the chain K operates the fan H. Now I claim that by the location of the fan at the top of the funnel of the steamship or the chimney of a land-boiler I secure an increased draft that is a close approximation in its action and in its result to natural draft. This result, moreover, is obtained without any of the disadvantages attached to forced draft or an induced draft that is obtained by the use of abnormally high funnels or chimneys.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A device of the class described comprising an arm mounted to swing, a fan journaled in the free end of the said arm, an electric motor having its driving-shaft extending in the axis of the said arm and means for connecting the said motor driving-shaft with the shaft of the said fan, substantially as described.

2. A device of the class described comprising an arm mounted to swing, a fan journaled in the free end of the said arm, an electric motor having its driving-shaft extending in the axis of the said arm and means for connecting the said motor driving-shaft with the shaft of the said fan and a second electric motor carrying on its shaft a worm in mesh with a rack-quadrant on the said arm to impart a swinging motion to the said arm, to move the fan from or to the top of funnel, substantially as described.

3. A device of the class described comprising an arm mounted to swing and carrying at its free end a fan, a rack-quadrant on the said arm, a worm in mesh with the said rack-quadrant and an electric motor carrying the said worm on its shaft, substantially as described.

JOHN CARLYLE RAYMOND.

Witnesses:

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