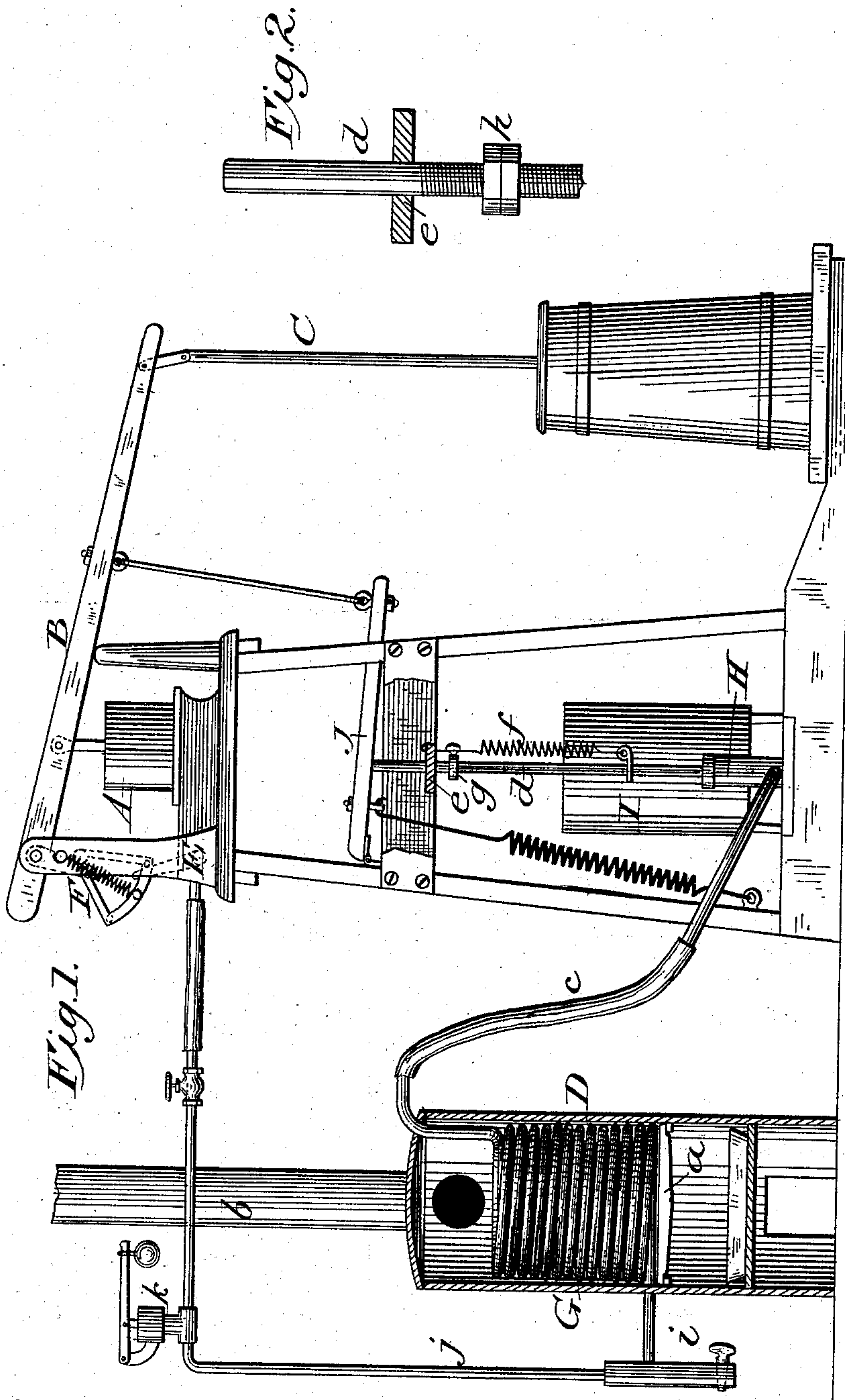


(No Model.)

T. MAYHEW.  
STEAM CHURN POWER.

No. 252,323.

Patented Jan. 17, 1882.



*Attest.*

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# UNITED STATES PATENT OFFICE.

THEOPHILUS MAYHEW, OF POUGHKEEPSIE, NEW YORK, ASSIGNOR OF TWO-THIRDS TO ROBERT SLEE AND CHARLES P. LUCKEY, BOTH OF SAME PLACE.

## STEAM CHURN-POWER.

SPECIFICATION forming part of Letters Patent No. 252,323, dated January 17, 1882.

Application filed October 19, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THEOPHILUS MAYHEW, of Poughkeepsie, in the county of Dutchess and State of New York, have invented certain  
5 Improvements in Steam Churn-Power, of which the following is a specification.

This invention relates to apparatus for operating churns by steam-power, and particularly to the application thereto of the flash system  
10 of generating steam.

The invention consists in combining with a motor having a vibratory lever for operating a churn, a steam-generator and a pump operated by said vibratory lever and capable of variation as to its delivery, whereby the quantity  
15 of water delivered and the amount of steam generated may be accurately proportioned to the work to be performed.

The invention further consists in various details of construction, hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a side elevation of the improved apparatus; Fig. 2, an enlarged view of the pump-regulating mechanism.

25 The objects of my invention are to economize in fuel and water for operating motors of this class, and to render the apparatus capable of being speedily put into operation.

With these ends in view, a steam-generator  
30 is employed, consisting merely of a coil of pipe arranged within a suitable fire-chamber, communicating at one end with a supply-pump and at the other end with the steam-chest of the motor, the pump being operated by the motor,  
35 and capable of regulation, so that only so much water shall be delivered to the coil as is necessary to produce the required amount of steam for each operative stroke.

The motor is of the same general style as  
40 that for which Letters Patent were issued to me July 8, 1879, No. 217,392, and reissued July 12, 1881, No. 9,804, in which a vibratory lever is employed for actuating the churn-dasher.

For the practical operation of the common  
45 dasher-churn the vibratory lever is essential, and hence it becomes necessary to so construct and organize the parts of the apparatus that the pump may be operated by a motor provided with such a lever.

Referring now to the drawings, this construction and arrangement of parts will be explained.

A represents the motor, provided with a vibratory transmitting-lever, B, to which the churn-dasher C is attached, as shown in Fig. 55 1. The motor is actuated by steam-pressure the steam being produced in the generator D and admitted and cut off by the valve E, controlled by a tripping device, F, as in the patent above referred to.

The generator consists of a cylindrical body or casing containing a fire-grate, *a*, beneath which is an ash-pit, and a coil, G, of pipe, into which the water is delivered, and in which it is converted into steam, the flames and products of combustion passing up through the middle of the coil and escaping through a stack, *b*, thus acting upon a large surface and serving to convert the water rapidly into steam. The water is delivered to the coil G through a pipe, *c*, by a pump, H, taking its supply from a tank, I, and said pump is actuated by the vibratory lever B, either directly or through the medium of a second vibratory lever, J, connected by a link with the first, this latter arrangement being merely for convenience of arrangement of the parts.

The pump is of ordinary construction, and has its rod *d* carried upward through a guide or cross bar, *e*, to which is attached one end of a spring, *f*, the other end of which is attached to the rod *d* and serves to raise the same.

The height to which the rod and its piston may rise is controlled by means of a nut or collar, *g*, screwed upon the threaded upper portion of the rod, and serving, by its contact with the guide or cross bar *e*, to limit the upward movement of the rod.

A jam-nut, *h*, may be employed to prevent the turning of the nut *g*; or a collar and set-screw may be employed instead of a nut.

The upper end of the rod *d* is arranged in position to be struck and depressed by the vibratory lever B, or by the secondary lever J, if the latter be used, as said lever descends.

When ready for operation the tank is supplied with water and fire is kindled in the fire-chamber of the generator. The collar or nut



*g* is then set so that at each operative stroke of the vibratory lever the pump shall deliver the exact quantity of water required to the coil *G*, where it is converted into steam, which  
 5 passes to and actuates the motor *A*.

For the purpose of drawing off any water which may accumulate in the coil or pipes from condensation or otherwise, a cock or valve, *i*, is placed at the lower end of the upright section of the steam-pipe *j*, and a safety-valve, *k*,  
 10 is applied to said pipe to prevent too great an internal pressure.

I am aware that steam-generators have hitherto been constructed in the manner described  
 15 and shown, and that the flashing system has been known and used for many years. As above stated, however, the employment of a motor having a vibratory lever is essential to the practical and convenient operation of  
 20 churns of the class mentioned; and this invention consists in adapting this system of steam-generation and the particular class of motors mentioned one to the other.

It is obvious that instead of arranging the  
 25 pump to be depressed by the lever it may be reversed; or that a positive connection may be made with the vibratory lever and the variable stroke secured by slotting the rod to permit the lost play, and providing an adjustable stop to vary the length of the slot, or in  
 30 other similar ways which will readily present themselves to the practical mechanic.

It is also apparent that the motor arranged as above described may be employed for oper-  
 35 ating other machinery than churns, though especially adapted to that use.

The churn is placed upon a base or board secured to the lower part of the framing upon which the motor is mounted, as shown, and serves to steady the apparatus. 40

I am aware that walking-beam engines have been operated on the flash system, and that in connection with such engines a pump has been used operated by the walking-beam. I am also aware that it is not new to combine 45 with a flashing steam-generator a pump capable of adjustment as to the quantity of water delivered at each stroke. I am also aware that a pump has been provided with an adjustable threaded stem or stop to be struck and oper- 50 ated by some moving part of a motor, and therefore make no claim to these features, broadly considered.

Having thus described my invention, what I claim is— 55

1. The herein-described apparatus for operating churns, &c., consisting of generator *D*, motor *A*, lever *B*, operated by the motor and having one end free, pump *H*, having its rod *d* provided with nut or collar *g*, and spring *f*, 60 all combined and operating as set forth.

2. In combination with a motor provided with a vibratory lever *B*, the pump *H*, provided with rod *d*, and the lever *J*, adapted and arranged to depress the pump-rod as the lever 65 descends, substantially as set forth.

THEOPHILUS MAYHEW.

Witnesses:

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 THEO. F. CLARK.