

(No Model.)

H. SMITH.

MOTOR FOR CHURNS AND WASHING MACHINES.

No. 284,500.

Fig 1 Patented Sept. 4, 1883.

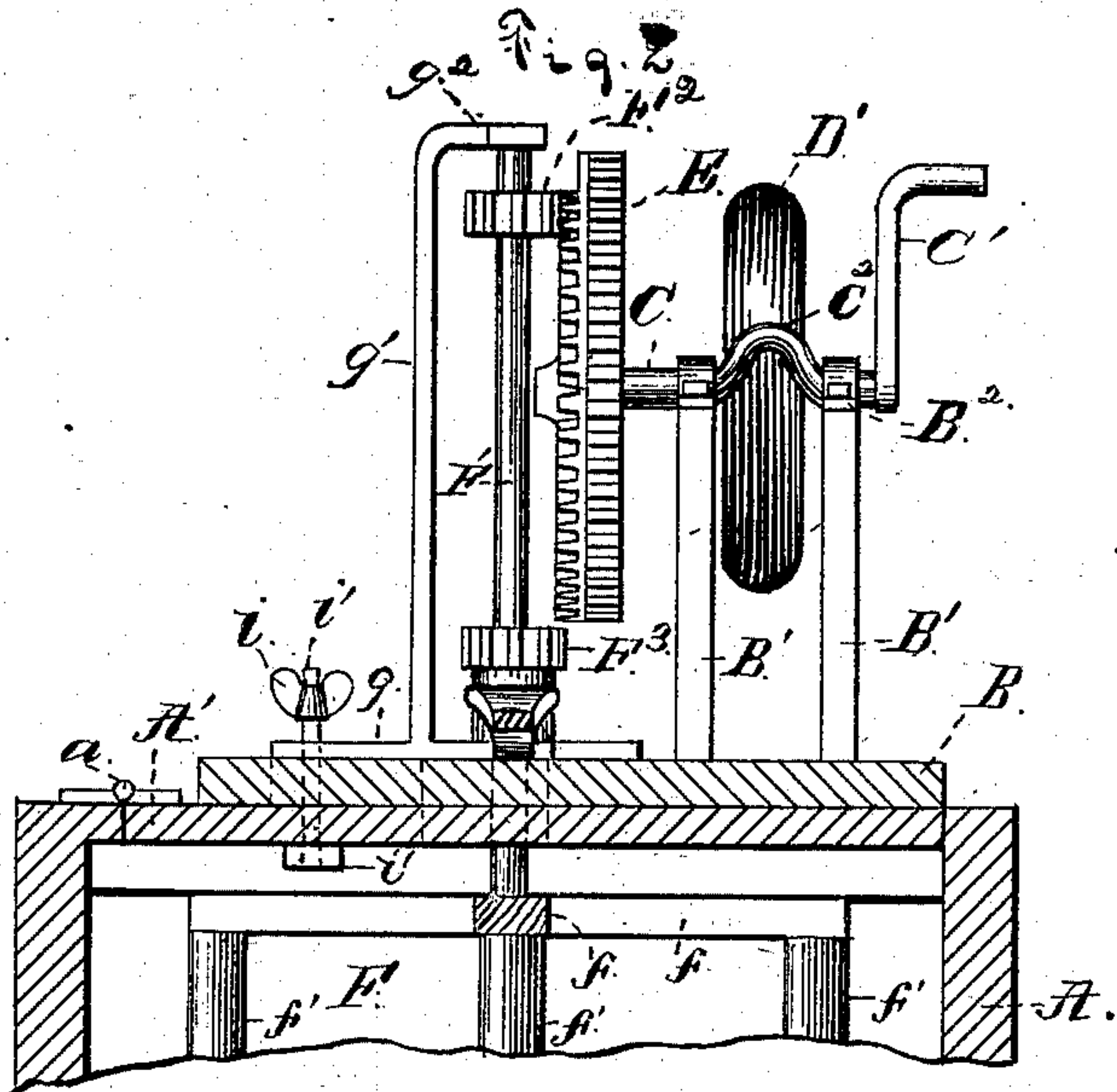
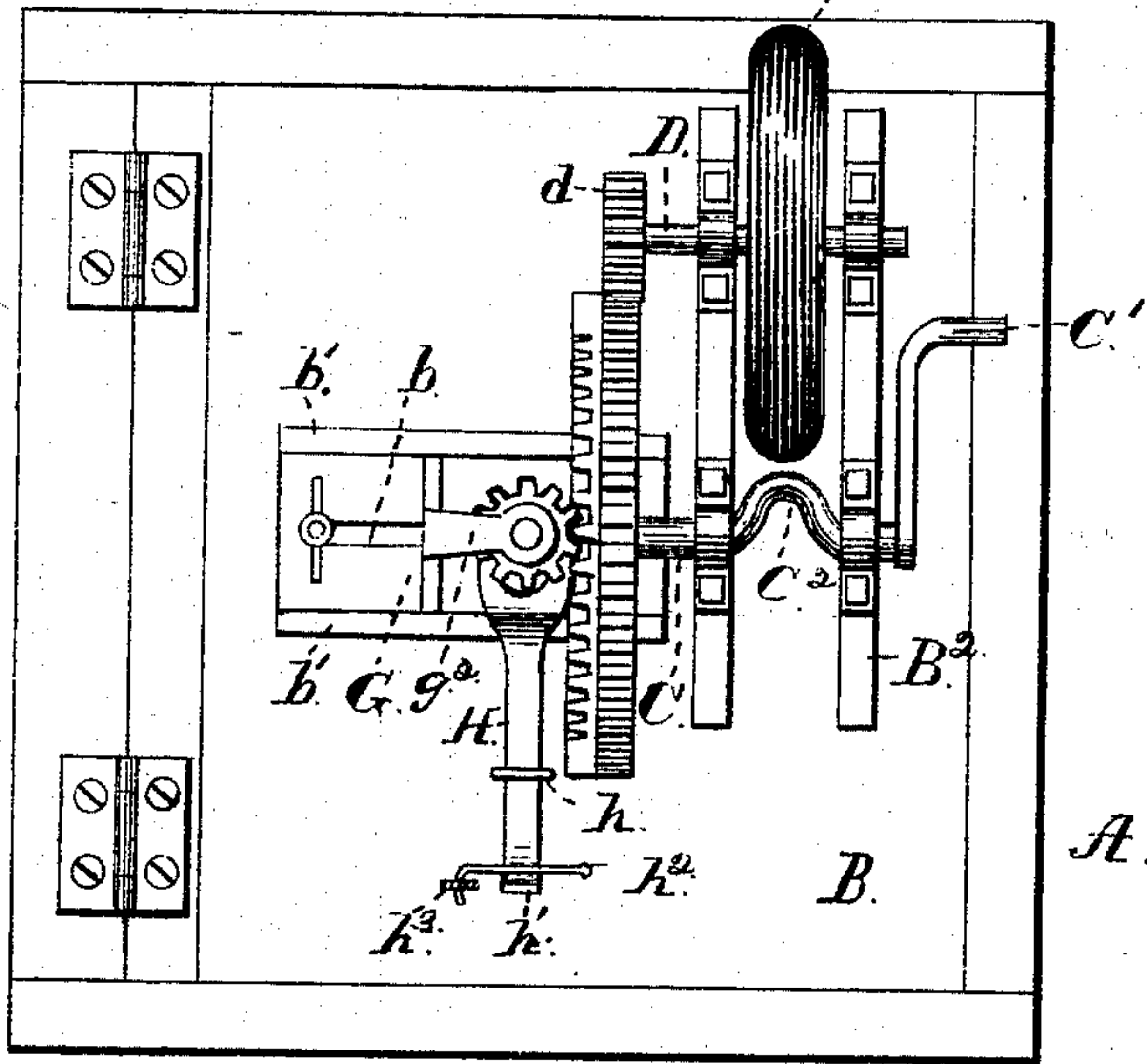


Fig. 3

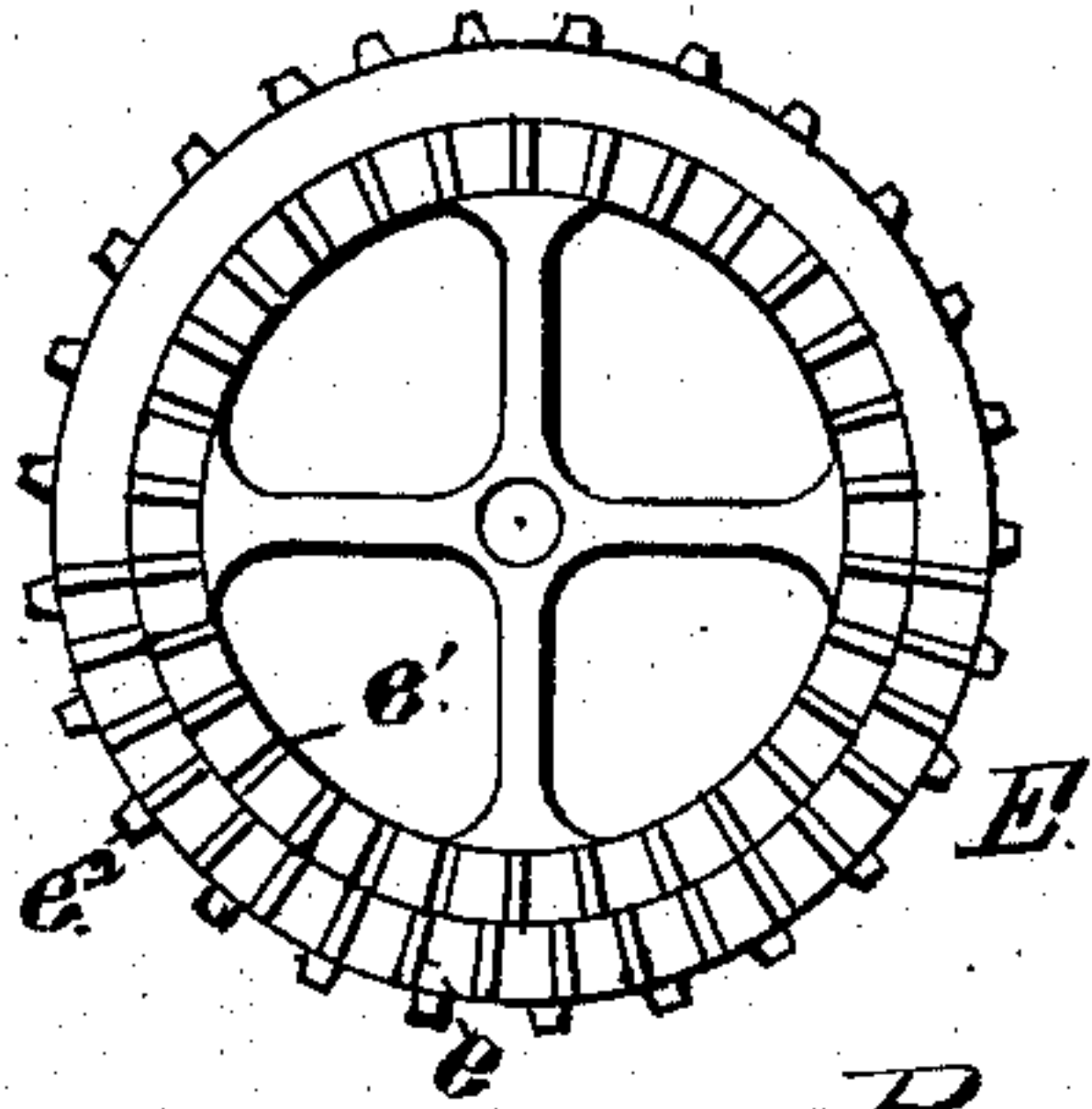
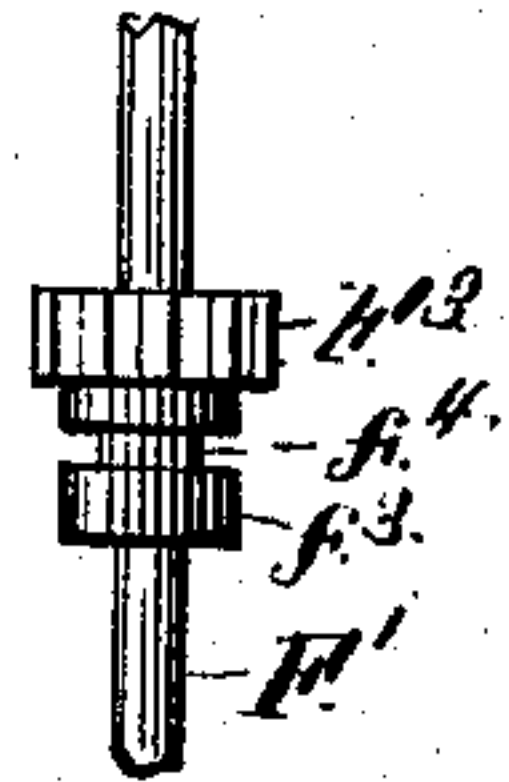


Fig. 4



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HUGH SMITH, OF ROODHOUSE, ASSIGNOR OF ONE-HALF TO GEORGE E. HILL,
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MOTOR FOR CHURNS AND WASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 284,500, dated September 4, 1883.

Application filed July 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, HUGH SMITH, a citizen of the United States, residing at Roodhouse, in the county of Greene and State of Illinois, have invented certain new and useful Improvements in Motors for Churns and Washing-Machines; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon; which form a part of this specification.

My invention relates to improvements in motors for washing-machines and churns; and it consists in the construction, combination, and arrangement hereinafter described and claimed.

In the drawings, Figure 1 is a plan view, and Fig. 2 is a vertical section, of my machine. Fig. 3 is a detail view of the drive-wheel, and Fig. 4 shows the lower pinion of the agitator-shaft.

I aim in my invention to provide simple and convenient means whereby the agitator may be given a continuous rotary motion or an alternating rotary motion at the will of the operator by a simple adjustment hereinafter described; also, to provide means whereby the motor may be changed to give a vertically-reciprocating instead of the rotary agitating motion, all of which will be described.

In carrying out my invention I employ the box or tub A, the lid A' of which is hinged at *a* on one side, as shown, so as to turn back from over the box. On this lid A', I secure the base-plate B, on which the several operating devices are mounted. The standards B' are projected up from this plate B to one side of the center, and are surmounted by the beams B² B², in which the drive-shaft C and the fly-shaft D are journaled.

The shaft C is provided with the handle C', and between the beams B² it is bent to form the crank C². This shaft C, it will be seen, is arranged in a line radial to the center of the box, and the drive-wheel E is secured on its inner end in position to mesh the agitator-shaft pinions hereinafter described.

The wheel E is provided with the outer semi-circular series of teeth, *e*, which are formed on its face close to the periphery, and with the circular series *e'*, arranged within the outer series, *e*, as shown, and for the purposes hereinafter described. It is also provided with the peripheral series *e*² of teeth, which mesh with the pinion *d*, secured on the end of shaft D of the fly-wheel D'. This wheel D' is made sufficiently heavy to render the motions of the machine steady and certain.

The agitator F is made to suit the work for which the machine is intended. If the machine is to be used as a washer, the agitator will be constructed about as shown, with the radial arms *f f* and the depending beaters *f' f'*. When the machine is to be used as a churn, the agitator will have vertical breaking bars or plates, as is common in such devices.

It will be readily seen that the joint between the agitator and its shaft F' could be made detachable by means of threads and nuts, so the machine could be converted readily from washer to churn and back again.

The shaft F' is passed up through a slot, *b*, formed through the lid A' and the base-plate B, and has bearings in the bracket G, hereinafter described.

The slot *b* is extended radially from the center of the machine in a direction diametrically opposite the shaft C of the drive-wheel, as shown in Fig. 1. On the plate B, on opposite sides of and in line with slot *b*, I fix cleats or guide projections *b'*. The base *g* of the bracket G rests between these cleats *b'*, and is provided with a slot which corresponds to and communicates with the slot *b* through the plate B and lid A'. From the base-piece I project the vertical standard *g'*, the upper end, *g*², of which is bent at right angles, to provide a bearing for the agitator-shaft F'. This shaft F' bears in the base-plate *g* and the upper bent end, *g*², of the bracket G, and is so connected with the agitator that it can be vertically moved, as shown. This shaft is provided with the upper pinion, F², and the lower pinion, F³, arranged a distance from each other equal to the diameter of the circle in which the outer semicircular series, *e*, of teeth is formed. The lower pinion, F³, has its hub *f*³ extending down a short dis-

tance and provided with the circumferential groove f^4 . The lever H has one end bifurcated and engaging in groove f^4 of the hub f^3 , and is practically pivotally secured on the
 5 base-plate through the staple h , and its outer end, h' , is bent up to provide the necessary leverage and in position to be engaged and held by the hook h^2 , which is hinged to the plate B, extends across the end h' of the lever and
 10 catches in staple h^3 , and holds the lever down when the latter is depressed in the operation of the device.

The base-plate g of the bracket is held in position by the thumb clamping-nut i , turning
 15 on screw i' , which passes up from lid A' through the slot b , as will be readily understood. By simply releasing the nut i the plate g or bracket G can be set back to throw the pinions F^2 F^3 out of gear with the drive-wheel.

20 In the operation of the machine when the several parts are in the position shown in Fig. 2 and the drive-wheel is revolved, it, by the mesh of its teeth e' with the pinion F^2 , will revolve the said pinion F^2 , its shaft, and the
 25 agitator, giving thereto a continuous rotary motion. Now, if it is desired to give the agitator an alternate rotary motion, the end h' of lever H is depressed and caught by hook h^2 . This throws the shaft F' up so as to bring its
 30 pinions F^2 F^3 in position to be meshed and operated by the semicircular or segmental gear e^2 . This engaging the one pinion below and the other above gives to the shaft and the agitator an alternating rotary motion, the said
 35 agitator being revolved first in one and then in the opposite direction, causing currents and counter-currents in the contents of the box.

It will be understood that various means
 40 could be employed for elevating the shaft F' ; also that instead of making the portion f^3 an extension of the wheel F^3 it could be made a separate collar, or that the bifurcated end of the lever H could bear directly under the
 45 wheel F^3 ; also that instead of moving the shaft F' vertically the pinions F^2 F^3 could be secured thereon by set-screws, so as to be movable along and secured on the shaft at any desired point to effect the different meshings
 50 above described. By setting the bracket G back, by the before-described means, the agi-

tator will be thrown out of gear, and by securing the rod of a dasher to the crank C^2 a vertically-reciprocating dasher-motor will be provided.

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

1. In a motor for washing-machines and churns, the combination, with a drive-wheel
 60 having inner circular and outer semicircular series of teeth, e , formed or secured on the face thereof, of the shaft provided with upper and lower pinions, the said pinions or shaft being adjustable vertically, whereby one of the
 65 pinions may be meshed with the inner circular series of teeth, or both pinions may be brought in line to be meshed by the outer semicircular series, and a continuous or an alternating rotary motion may be imparted to the agita-
 70 tor as the drive-wheel is revolved, substantially as hereinbefore set forth.

2. In combination, in a motor for washing-machines and churns, the drive-wheel having
 75 inner circular and outer semicircular series of teeth, the agitator-shaft having upper and lower pinions and movable vertically in its bearings, the lever pivoted on the base-plate and having one end arranged to engage and elevate the agitator-shaft, and a hook or latch secured
 80 to the base-plate and adapted to hold the outer end of the lever down when the said lever is depressed in the operation of the device, substantially as set forth.

3. In a motor for washing-machines and
 85 churns, the combination, with the agitator-shaft having upper and lower pinions and the fly-wheel provided with suitable connecting-pinion, of the drive-wheel constructed with the inner circular and outer semicircular
 90 series of face-teeth arranged to mesh with the agitator-shaft pinions, and the peripheral series of teeth meshed with the fly-wheel pinion, all arranged and operating substantially as and for the purposes set forth.

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

HUGH SMITH.

Witnesses:

JAMES L. PATTERSON,
 BUELL PATTERSON.