(No Model.) 2 Sheets—Sheet 1.

F. G. SARGENT.

WOOL WASHING MACHINE.

No. 455,059. Patented June 30, 1891.

Fig. 1.

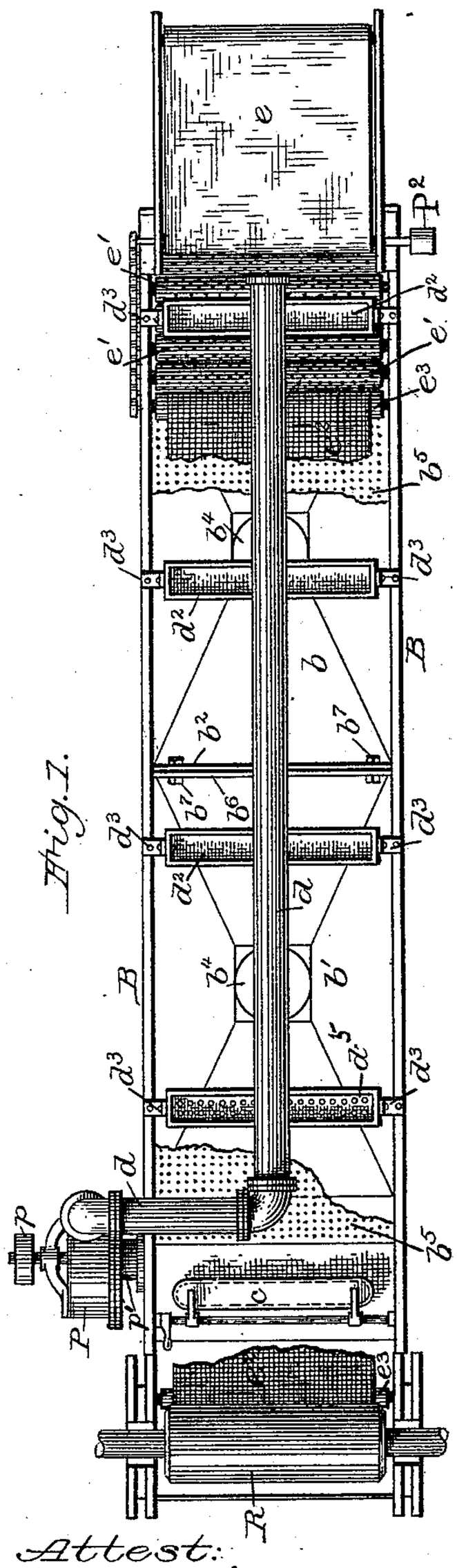
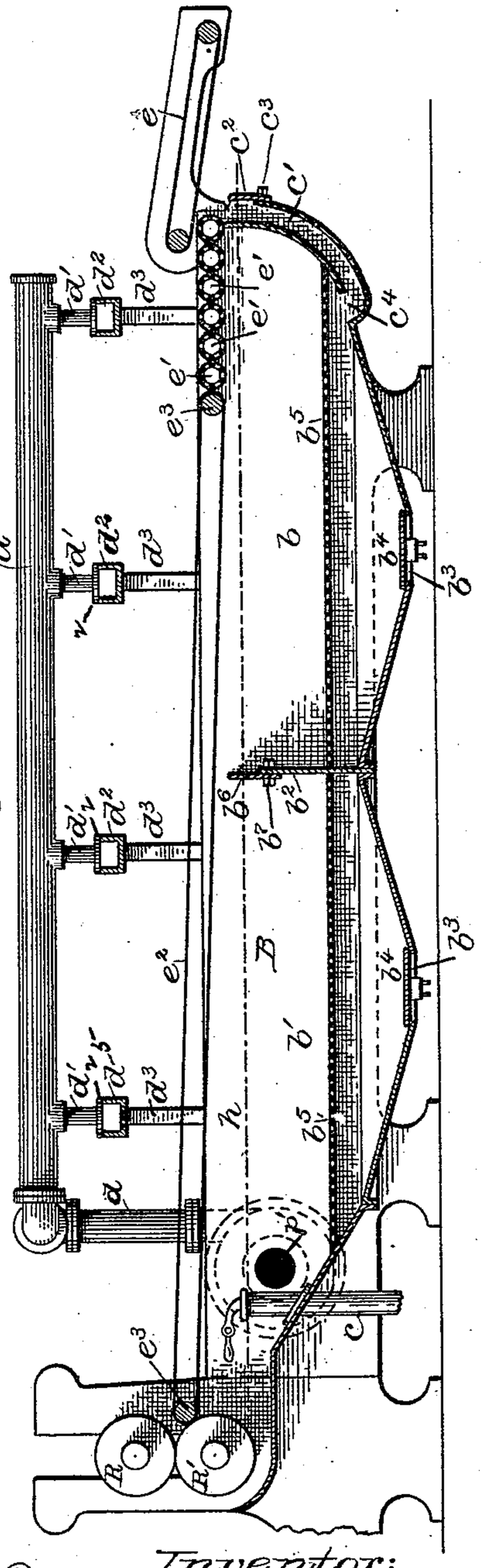


Fig. 2.



Attest:
Howell Bartle.
Alex. Scott

Inventor:
Frederick G. Sargent.
By Philip F. Garner.
Associate Attorney.

(No Model.) 2 Sheets—Sheet 2.

F. G. SARGENT.

WOOL WASHING MACHINE.

No. 455,059. Patented June 30, 1891.

Fig. 3.

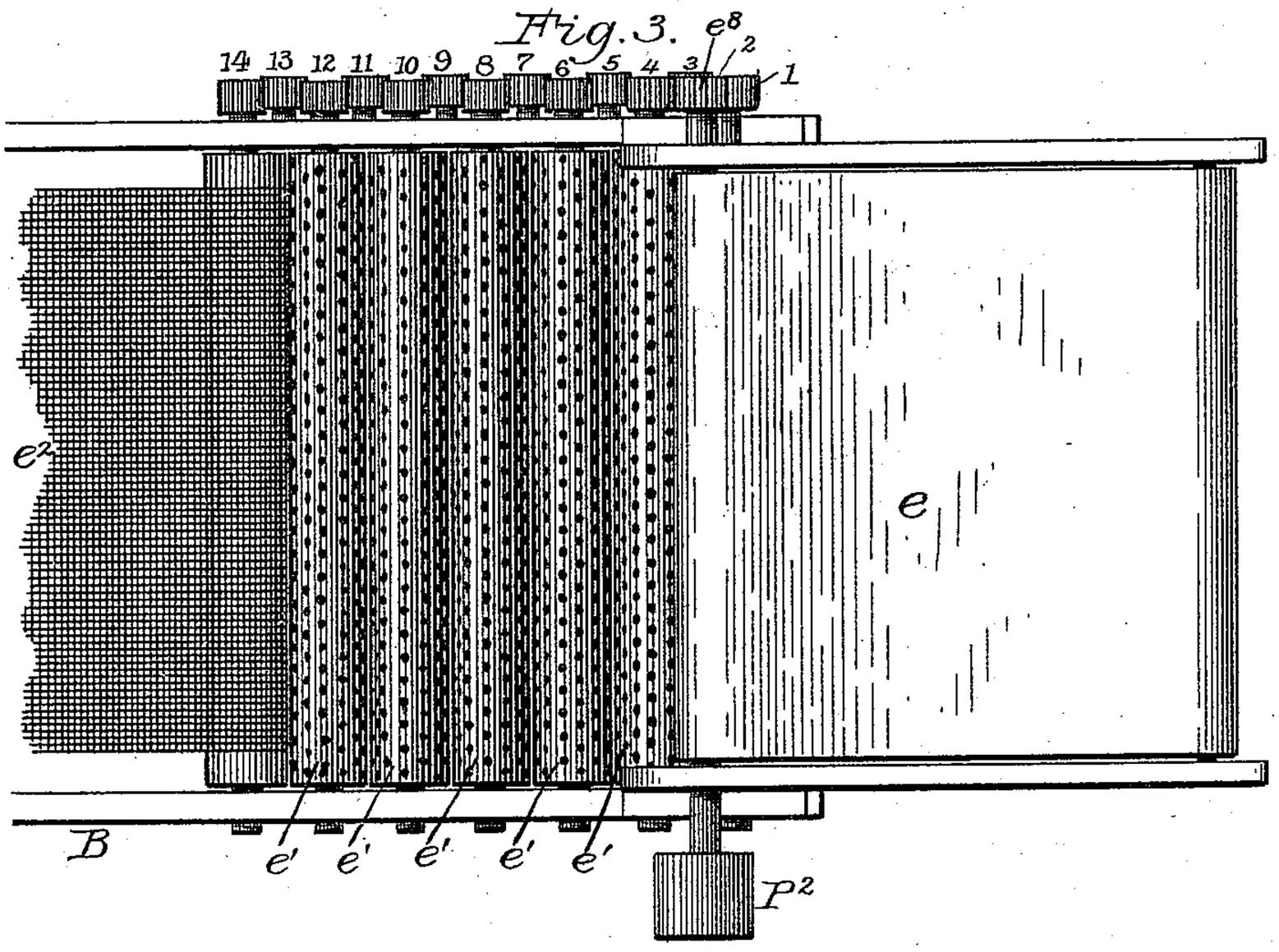
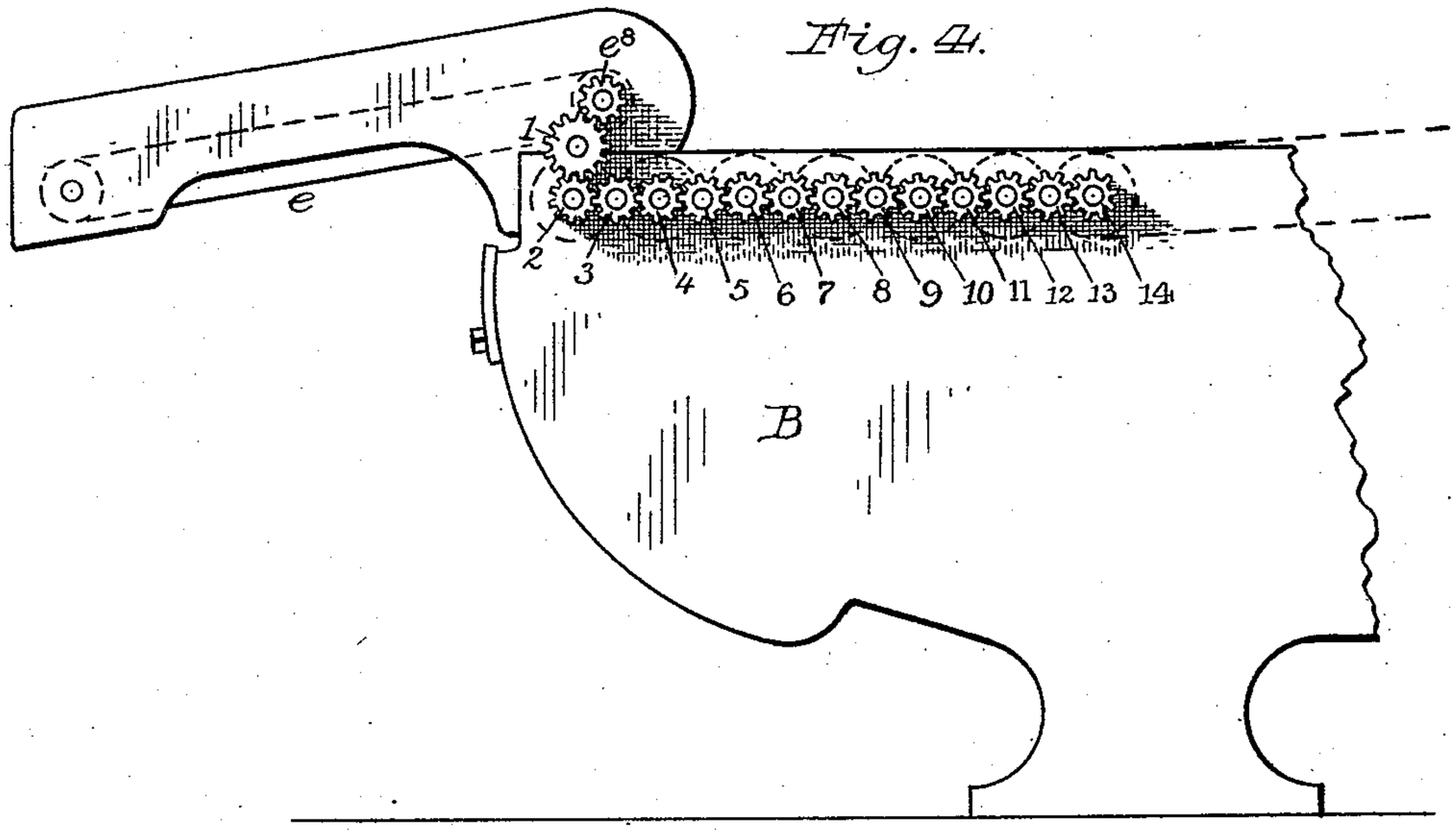


Fig. 4.



Attest:
Howell Gatlett
Alp. Scott

Inventor:
Frederick G. Sargent
By Philip F. Garner.
Associate Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK G. SARGENT, OF GRANITEVILLE, MASSACHUSETTS.

WOOL-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,059, dated June 30, 1891.

Application filed July 30, 1887. Serial No. 245,761. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. SARGENT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Wool-Washing Machines, of which the following is a specification.

My invention relates to wool-washing machines; and it consists in certain new and useful constructions and combinations of the several parts of that variety of such machines commonly known as "showering-bowls," in which the fiber is held suspended in the air and showered or sprinkled with the washing fluid while being transported through the bowl above the surface of the fluid therein, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a wool-washing machine constructed according to my invention. Fig. 2 is a side elevation of the same with the side of the bowl nearest to the observer removed to show the construction of the parts within the bowl. Fig. 3 is an enlarged plan view of the feed-in end of the machine with the showering apparatus removed to show the driving mechanism of the running parts. Fig. 4 is a side elevation of the same.

B is the bowl of the machine, which is made with two parts or divisions b b', separated by the transverse partition b^2, extending across the bowl from side to side. Each of the divisions b b' of the bowl is provided with an outlet b^3 in the center of its bottom, which inclines downward from each way toward the outlet, and each outlet is covered by a plate or valve b^4 to prevent the escape of the washing fluid until the bowl is to be rinsed out or cleared of dirt, &c. Across each division of the bowl horizontally, above the bottom and below the water-line, is stretched a perforated false bottom b^5, which allows the dirt to drop through it while catching and retaining any fibers which may drop into the washing fluid during the washing process.

The dotted line h, Fig. 2, represents the highest level of the washing fluid in the bowl. The washing fluid is prevented from rising above this level by overflow-pipes c c', leading out of the divisions b' b of the bowl, which allow it to flow off when this level is reached. Provision is made for using these overflow-pipes independently with each division of the bowl, or for using either one of them for both divisions, as may be desired, as follows: The central partition b^2 is not carried up to the water-level h, but is provided with a supplemental partition or gate b^6, by means of which it can be extended above the water-level. This gate b^6 is secured to the partition b^2 by screw-bolts b^7 b^7, and by unscrewing these and removing the gate b^6, the washing fluid may be allowed to flow either from the division of the bowl b over partition b^2 and out of overflow c, or from the division b' over the partition and out of overflow c'. In case the overflow c is thus used for both divisions of the bowl a supplemental partition or gate c^2 is employed in connection with the outlet of overflow c' to close this outlet to above the water-level h, and it is fastened upon this outlet by bolt c^3. In case the outlet c' is to be used alone, as described, the removal of gate c^2 leaves the mouth of the overflow below that of c, which allows the former to carry off all the surplus fluid.

The overflow c' is constructed in the form of a pipe opening into the bowl at its lower end at c^4, below the perforated bottom b^5, which prevents any wool in the bowl from entering it and being carried off, while at the same time the large area of the perforated bottom and its remoteness from the inlet c^4 prevent the perforations from clogging up with fibers under the suction of the overflow-pipe.

P is a rotary pump driven by the pulley p from any suitable counter-shaft. It is supplied with washing or rinsing fluid through the inlet p', and delivers it into the pipe d. The latter extends upward from the pump, thence curves inward horizontally over the center of the bowl, and thence turns and extends longitudinally over the bowl center through the greater portion of its length. At intervals branch pipes d' d' lead downward from the main pipe d for a short distance, and these terminate in troughs d^2 d^2 d^5, which extend transversely across over the bowl, as shown. The troughs d^2 d^5 are held in position by braces d^3 d^3 secured to them at each end and extending downward to the sides of the bowl, to which they are bolted. Small collars 2 sur-

round the pipes d' at the level of the upper sides of the troughs d^2 d^5 and support these pipes and the pipe d upon the edges of the sides of the troughs upon which the collars rest. When the pump P forces the washing or rinsing fluid through the pipes d d' it overflows the edges of the troughs d^2 and rinses the fiber as it descends into the bowl B. The use of the troughs d^2 in this connection prevents their being clogged up by particles of the fiber drawn up by the pump, as is the case with perforated pipes, thus greatly impairing the rinsing capacity of the apparatus. These particles of fiber are previously carried down into the bowl by the rinsing of the wool which has preceded the other through the bowl. The fiber is fed over the feed-apron e to the series of perforated rollers e' e', which convey it beneath the first showering-trough d^2. The fluid showered in sheets over the edges of the trough is allowed to pass freely through the fiber by the perforations of the rolls e', as the latter convey it beneath the trough, carrying the dirt and impurities through the perforations and between the rolls into the bowl beneath. These perforated rolls e' e' are specially adapted to allow the coarser impurities to be carried off while they convey the fiber forward. The rolls e' e' deliver the fiber to the endless wire-screen apron e^2, which traverses around the rollers e^3 e^3 and conveys it onward beneath the remaining troughs d^2 d^2 d^5 to the squeeze-rolls R R'.

The apron e^2 is represented partly broken away in Fig. 1, to show the parts of the bowl beneath. As the fiber passes underneath each trough d^2 it is showered with rinsing fluid, thereby thoroughly rinsing and cleansing it before it reaches the squeeze-rolls, the dirt, grease, and impurities passing downward through the screen-apron e^2 into the bowl B. The feed-in apron e is driven by the pulley P^2 on the shaft of its uppermost roller. On the opposite end of the same shaft is the gear-wheel e^8, which meshes into the gear 1, which revolves on a stud attached to the bowl. This gear meshes into a gear 2 on the end of the shaft of the first perforated roller e' and drives the latter. The succeeding rollers have the gears 4, 6, 8, 10, and 12 on their shafts, connected together and to the gear 2 by the intermediate gears 3, 5, 7, 9, and 11 on studs attached to the bowl. The roller e^3 of screen-apron e^2 has the gear 14 on the projecting end of its shaft, which is connected to gear 12 by a gear 13 on a similar stud. The whole succession of feed-in apron, perforated rolls e' e', and wire screen-apron e^2 are thus driven from the pulley P^2.

In the operation of rinsing the fiber it may be found expedient to shower the wool immediately before it reaches the squeeze-rolls with a finer spray of fluid, in which case the bottom of the last showering-trough d^5 may be perforated, as shown in Fig. 1, to allow fine jets of the fluid to pass through it.

In the rinsing of some kinds of wool it will be found that the fluid falling into the division b of the bowl, and which is first showered upon it, carries downward too many impurities to allow it, to be employed in rinsing the fiber a second time, in which case the gate b^6 is bolted in place upon partition b^2, and the gate c^2 at the outlet of overflow c' is removed. All excess of fluid falling into division b of the bowl will then pass away through the overflow c', while this amount is made good by a fresh supply of clean fluid introduced into division b', to be taken up by the pump. In other cases the same rinsing fluid may be used several times over, in which case the gate b^6 will be removed and the gate c^2 attached in place, in which case the overflow c will only carry off any excess caused by the introduction of fresh fluid into the bowl. I am thus enabled to regulate the re-employment and gradual renewal of the rinsing or washing fluid to suit the work being done, and in all cases the partition b^2 will serve to divide the more impure portion of the fluid from the other and allow it to deposit its impurities in the division b of the bowl.

The advantage of the trough d^2, made to overflow as a showering device, is that it does not become clogged with fiber like a perforated nozzle.

What I claim as new and of my invention, is—

1. The combination of the bowl B, separated into two divisions by the transverse partition b^2, the endless screen-apron traveling above both of said divisions and wholly above the fluid-level in the bowl, and the showering apparatus adapted to shower the fiber upon said apron with fluid over both divisions of said bowl, substantially as described.

2. The combination of the series of perforated rollers e' e', adapted to convey fiber from one to the other over the same, and the showering apparatus located above the same and adapted to shower or spray the fiber with fluid as it is conveyed underneath by said rolls, substantially as described.

3. The combination of the bowl B, the perforated endless traveling screen-apron traveling wholly above the fluid-level in the bowl, and the showering apparatus located above said apron and adapted to shower the fiber passing beneath upon said apron, substantially as described.

4. The combination of the supply pipe or conduit d d', leading from the bowl B, the pump P, connected thereto, the trough d^2, adapted to shower the fluid over its edges, the fiber-carrier beneath the trough adapted to convey the fiber through only the atmosphere underneath said trough, and the bowl B beneath the carrier, substantially as described.

5. The combination of the bowl B, divided into two divisions by partition b^2, the overflow-outlets c c', respectively located in said

separate divisions of the bowl, the gate b^6, adapted to cut off or permit the flow of fluid between said divisions, the carrier adapted to convey the fiber over both of said divisions, and the showering apparatus adapted to shower the fiber with fluid over each division of the bowl, substantially as described.

6. The combination of bowl B, separated into two divisions by partition b^2, the gate b^6, applied to the latter, the overflow-outlets c c', respectively located in said separate divisions of the bowl, the gate c^2, applied to the outlet of overflow c', the carrier adapted to convey the fiber above the fluid-level over both of said divisions, and the showering apparatus adapted to shower the fiber with fluid over each division of the bowl, substantially as described.

7. The combination of the bowl B, divided into two compartments, the pump P, the conduit d d' d', terminating in showering apparatus over said compartments, and the carrier above the fluid-level of said bowl adapted to convey the fiber beneath the said showering apparatus and over said bowl, substantially as described.

FREDERICK G. SARGENT.

Witnesses:

ARTHUR B. PLIMPTON,

L. J. CHERRINGTON.