

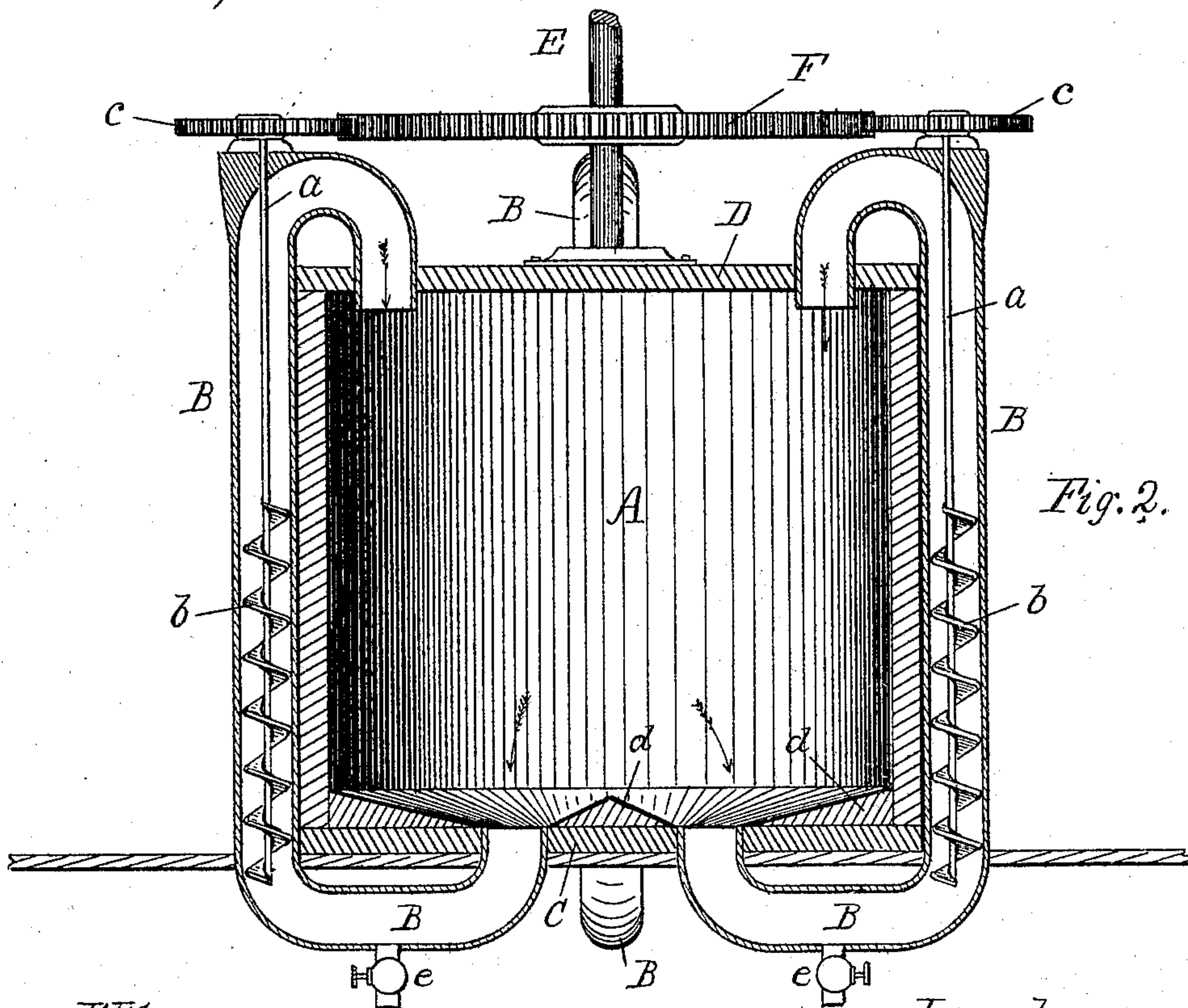
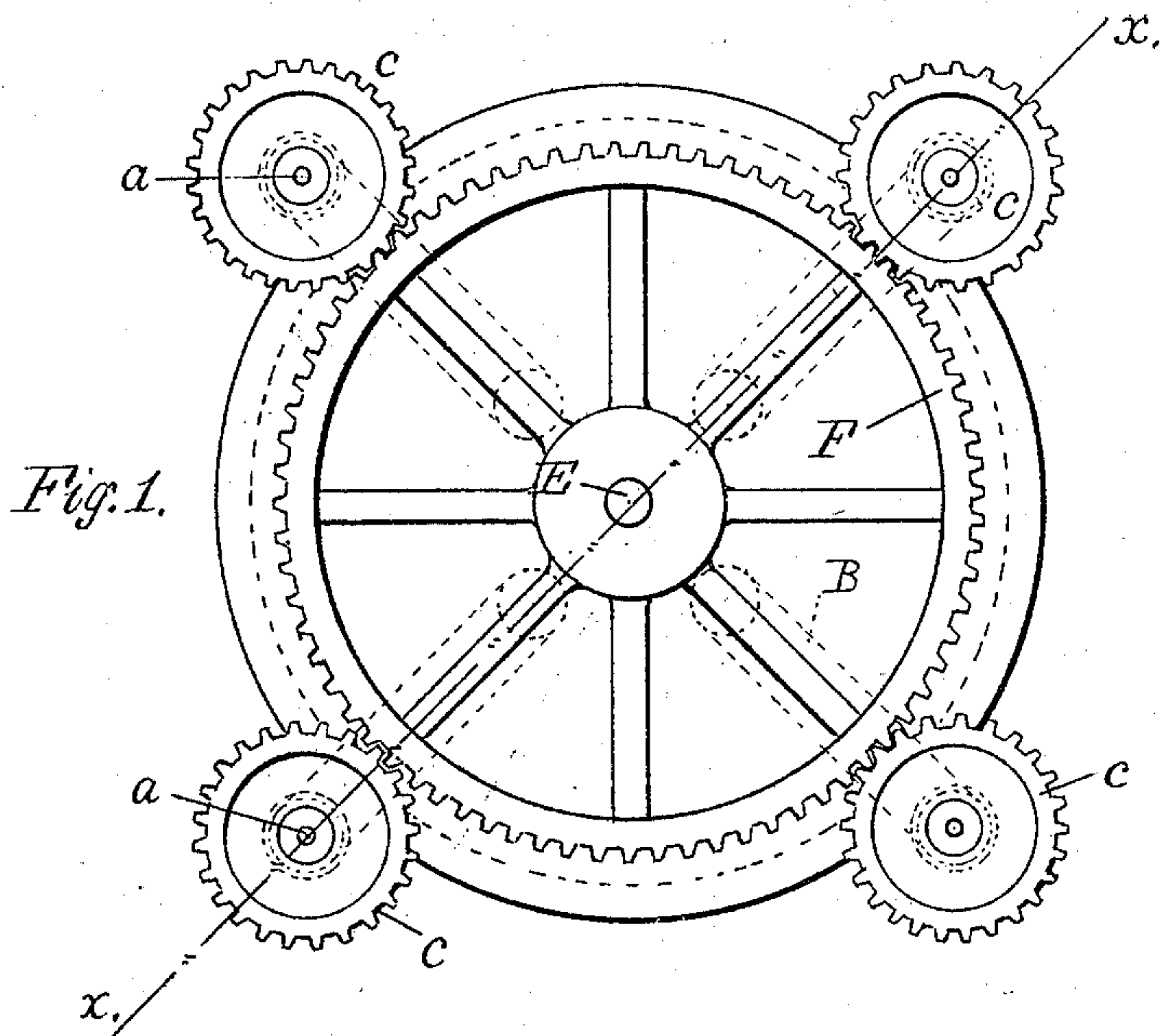
(No Model.)

R. SMITH.

STUFF CHEST FOR PAPER MAKING MACHINES.

No. 369,747.

Patented Sept. 13, 1887.



Witnesses.  
H. E. Long  
E. E. Howard

Inventor.  
Richard Smith.  
F. Curtis, atty.



# UNITED STATES PATENT OFFICE.

RICHARD SMITH, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO THE FALL MOUNTAIN PAPER COMPANY, OF BELLOWS FALLS,  
VERMONT.

## STUFF-CHEST FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 369,747, dated September 13, 1887.

Application filed December 10, 1886. Serial No. 221,208. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD SMITH, a citizen of Canada, residing at present at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stuff-Chests for Paper-Making Machines; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to "stuff-chests," so called, for paper-making machines; and it consists in the peculiar apparatus connected therewith by which a more thorough and complete mixing or stirring of the contents is effected.

These stuff-chests ordinarily are large cylindrical vats or receptacles in which the finely-comminuted material termed "stuff" or pulp is stored preparatory to its delivery upon the paper-making machine in the process of forming an endless paper web. Hitherto said stuff-chests have been provided with an ordinary barred stirrer, which fails in its purpose, since the rotary movement produced thereby tends to separate the heavy from the lighter particles composing the mass.

The object of my invention is to obviate such rotary movement as tends to separate the particles by centrifugal force, but yet to maintain a constant and thorough mixing of the stuff so long as any of it is retained in the chest. This I effect by discharging the pulp or contents of the chest from the latter centrally, or thereabout, then raise said stuff mechanically, and finally deliver it into the chest at the top and near the circumference thereof. Thus a continuous flow of pulp is maintained and no separation of the particles composing it can occur.

The drawings represent, in Figure 1, a plan, and Fig. 2 a vertical sectional elevation, on line *xx* in Fig. 1, of a stuff-chest embodying my invention.

In such drawings, A represents a stuff chest, preferably circular in form, which is connected

with the beating-engines, from which it receives the pulp to be stored therein. Furthermore, a pump (not shown,) also connects with it and delivers said stuff upon the paper-making machine as it is required. This chest is closed at top and bottom.

To the walls of the stuff-chest are secured and vertically arranged a series of bent pipes or conveyers, B B, the lower ends of which are inserted in the bottom C of the chest at or near the center. The upper extremities of said conveyers enter the top D, preferably at or near the circumference of the chest. Furthermore, each of these conveyers is hollow, and contains in the present instance a vertically-disposed shaft about and to which is secured a spiral blade, *b*. The transverse diameter of this latter is equal to the bore of the conveyer, and snugly fits it. Motion of these several shafts *a a* is obtained by means of a shaft, E, which is stepped on the top D of the stuff-chest and carries a spur-wheel, F, intermeshing with pinions *c c*, surmounting the ends of the shafts *a a*, which, if desired, may be provided with stuffing-boxes at the point where they emerge from the conveyers, to more effectually prevent escape of pulp when the latter is in circulation.

The operation of the apparatus is easily perceived: After pulp has been emptied into the stuff-chest and rotation of the shaft E and spur-wheel F commenced by means of some prime motor. Movement of the latter produces rapid rotation of the shaft *a* and spiral blade *b*; but since the latter is contiguous to the interior of the conveyers the pulp is forced therethrough, being drawn from the bottom and quickly and rapidly lifted and discharged into the top of the chest. Thus a rapid circulation is maintained, and continuous even stirring is produced, while the movement is such that the heavy and light particles do not tend to separate, but are kept thoroughly commingled and in the best condition to produce a uniform sheet of paper, dependent upon the proportions and kinds of stock employed.

In Fig. 2, I have employed a filling, *dd*, or false bottom for the stuff-chest in order to cause the pulp to gravitate toward and flow



into the conveyers. Thus the chest can be readily and thoroughly cleansed, while the waste material—such as grit or other foreign particles—may be removed through the valves *e e*.

5 By this method of stirring the contents of a stuff-chest the entire interior of said chest is free from obstruction, no chance is offered for the formation of strings, and the mixing of the pulp is more effectual.

10 I do not desire to be limited to the precise form of lifting apparatus located within the conveyer; but any device which will effect a rapid withdrawal of the pulp from below and which will discharge the same into the top of  
15 the stuff-chest for the purpose of mixing the contents I consider within the scope of my invention; nor do I desire to be confined to the precise location or arrangement of the conveyers, as they may be placed within the  
20 chest, if so desired.

I claim—

1. In stirring apparatus, the combination, with a storage-receptacle, of a series of conveyers which connect with the top and bottom

of the same and spiral lifting devices ascending in said conveyers, whereby the contents are withdrawn from the bottom and discharged into the top of said receptacle, substantially as and for the purpose set forth. 25

2. The combination, with a stuff-chest, A, 30 of one or more conveyers attached thereto and provided with a continuous rotary shaft, *a*, and spiral blade *b*, operating substantially for purposes stated.

3. The stuff-chest A, provided with a bottom interiorly cone-shaped, and a series of 35 conveyers, B B, which enter at the top and bottom thereof, in combination with the shaft E, spur-wheel F, and pinions *e e*, which actuate the shafts and blades within said convey- 40 ers, substantially as described.

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

RICHARD SMITH.

Witnesses:

F. CURTIS,

H. E. LODGE.