

No. 723,180.

PATENTED MAR. 17, 1903.

C. H. PORTER.  
BROOM HANDLE TUMBLING BARREL.

APPLICATION FILED OCT. 14, 1901.

NO MODEL.

Fig. 1.

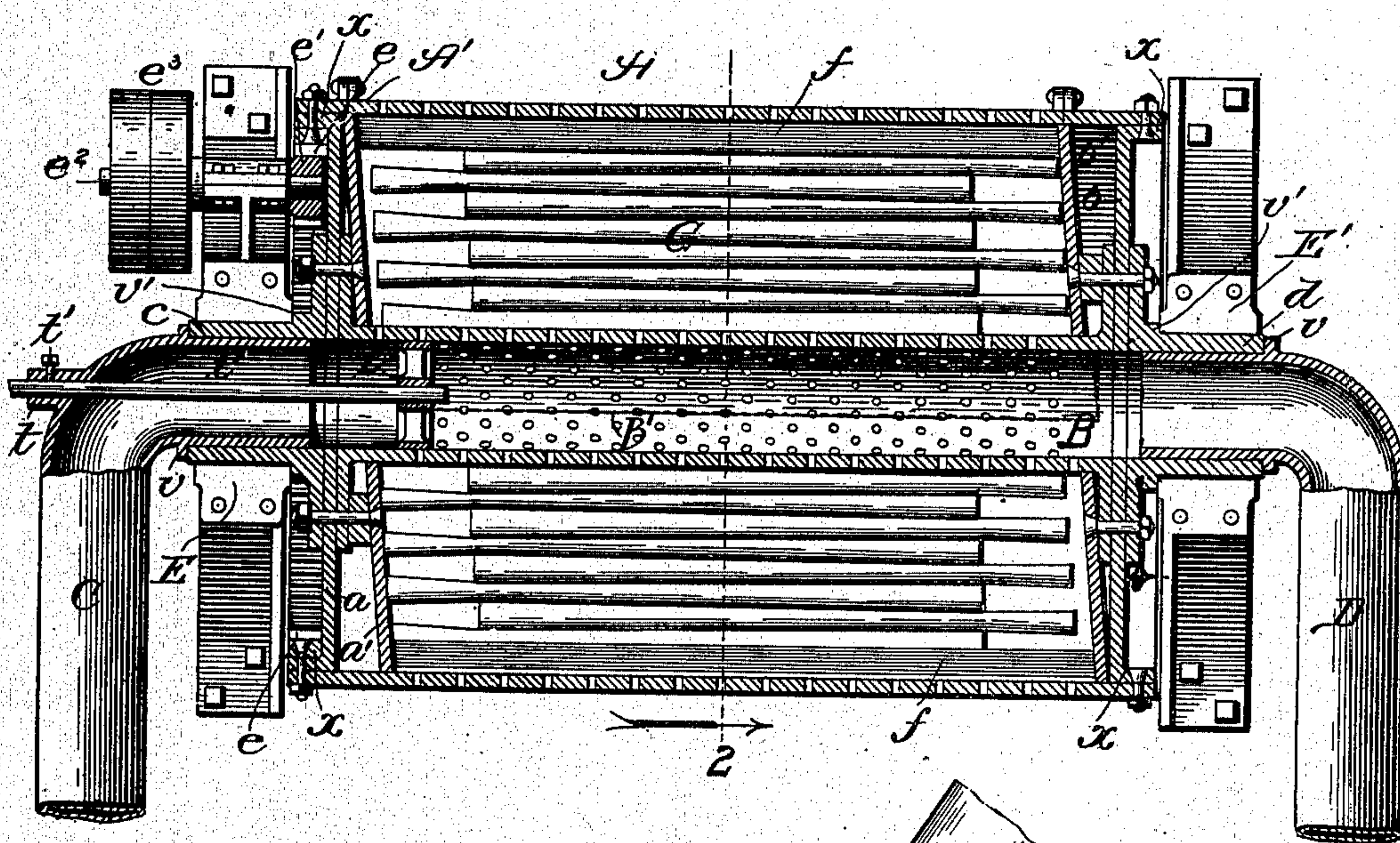


Fig. 2.

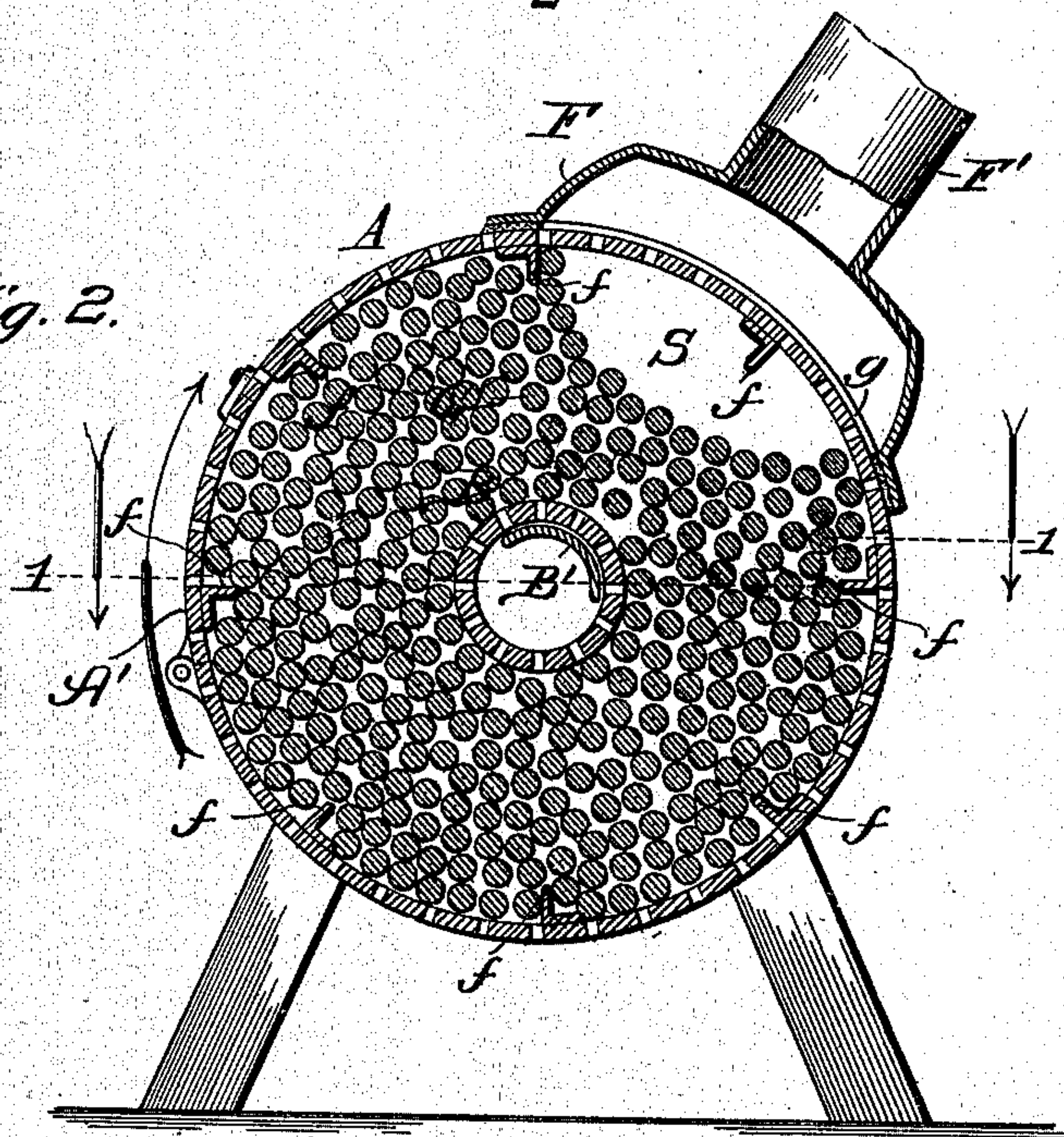
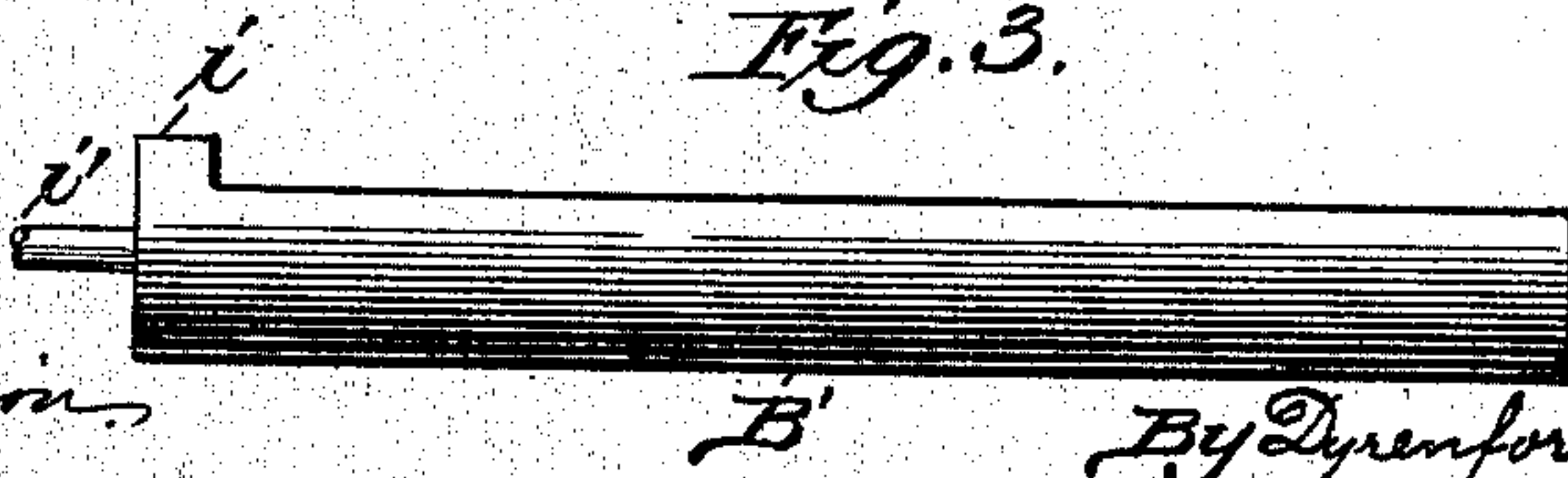


Fig. 3.

Witnesses:

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# UNITED STATES PATENT OFFICE.

CHARLES H. PORTER, OF ROCKFORD, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHARLES S. HARMON, OF CHICAGO, ILLINOIS.

## BROOM-HANDLE TUMBLING-BARREL.

SPECIFICATION forming part of Letters Patent No. 723,180, dated March 17, 1903.

Application filed October 14, 1901. Serial No. 78,537. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. PORTER, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Broom-Handle Tumbling-Barrels, of which the following is a specification.

My invention relates to improvements in the class of tumbling-barrels used for simultaneously drying broom-handles in the process of their manufacture and polishing them by their mutual attrition; and my object is to adapt the tumbling-barrel of the variety referred to to perform its drying and polishing work on broom-handles in an improved manner.

Referring to the accompanying drawings, Figure 1 is a view in longitudinal sectional elevation of a tumbling-barrel provided with my improvements and filled with broom-handles undergoing drying and polishing, the section being taken at the line 1 1 on Fig. 2 and viewed in the direction of the arrows; Fig. 2, a section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow, and Fig. 3 a view in elevation of the deflector detail.

Referring to Fig. 1, A is the barrel, preferably of the cylindrical form illustrated and provided with numerous perforations throughout its body portion between the heads *a b*, which are open at their centers, where they are connected by a numerously-perforated hot-air conduit B. Hollow journals *c d* project from the outer sides of the heads *a* and *b*, respectively, and surround the horizontal or inlet ends of hot-air-induction pipes C D, within suitable bearings E E', at which the barrel is rotatably supported. At their outer ends the journals *c d* abut against flanges *v v* on the air-pipes, and shoulders *v' v'* on the journals abut against the inner sides of the bearings. The barrel ends project somewhat beyond the heads, which are flanged circumferentially, as represented at *x*, for convenience in bolting the parts together, and about the flange on the head at one end of the barrel is provided an internal gear *e*, engaged by a pinion *e'* on a suitably-journaled stub-shaft *e<sup>2</sup>*, carrying on its outer end a belt-pulley *e<sup>3</sup>* for connection with the driving power. (Not

shown.) Within the barrel are shown supplemental or false heads *a' b'*, bolted to and braced from the respective heads *a b*, to occupy correspondingly-inclined (though not necessarily parallel) positions relative to the axis of rotation, for a purpose hereinafter described, and at intervals about the inner walls of the barrel are provided projections, shown as longitudinal horizontally-extending wings *f*, also for a purpose hereinafter described.

Within the conduit B is provided, by preference, a deflector B' of crescent shape in cross-section covering the rows of perforations along a portion of the conduit. This deflector is supported by extending from the rim of an annular wheel-like head *i*, fitting within the conduit near one end and rigidly held by a rod *i'*, fastened at one end in the wheel-center, and at its opposite end by a set-screw *t'* in a socket *t*, projecting in suitable position from the bend in the air-pipe C.

F is the hood or mouth of a suction-pipe F', leading to an exhaust-fan. (Not shown.) This hood covers, for a purpose hereinafter described, a particular area traversed by the circumferential surface of the barrel, between which and the mouth of the hood is provided packing *g*.

The operation is as follows: The barrel A is filled, through an opening in it closed by a door-section A', with broom-handles G in an unfinished state. The shape of the broom-handles, which is exaggeratedly illustrated in Fig. 1, approximates an elongated conic frustum and a shorter conic frustum joined at their narrower ends, and in filling these broom-handles into the barrel they are relatively arranged to bring the shorter sections of a portion of the supply adjacent to one inclined head, as *a*, and the shorter sections of the other portion of the supply adjacent to the opposite head *b'*. The barrel is rotated from the belt-pulley *e<sup>3</sup>*, while hot air is forced from the pipes C and D into the perforated conduit B at its opposite ends and passes from the conduit through all parts of the interior of the barrel and its contents to dry the latter. As the handles become drier and drier under the influence of the heat they tend to resist tumbling owing to reduced friction



against the inner surface of the barrel, which slips over them. To counteract this tendency, the wings *f* are provided to insure carrying about with them the outermost handles and cause them to drop from the upper section of the barrel and commingle with the others, thereby subjecting them to the tumbling action of the rotating barrel throughout the operation, which exposes them uniformly to the drying influence of the hot air and produces a polishing action by the attrition of the handles upon each other. However, the polishing effect without the provision of the inclined barrel-heads or some equivalent provision is not uniform throughout each broom-handle, because its shape tends to prevent every portion of it from being brought into attrition contact with the neighboring handles. The inclined heads overcome this defect by forcing the barrels lengthwise upon each other in the rotation of the barrel, thus subjecting them to mutual lengthwise rubbing, whereby a longitudinal attrition action is exerted against every portion of each handle, and this, in addition to the attrition action due to the rotation of the handles upon each other, finishes them with a much higher degree of polish and more uniformly than that capable of being produced without the described lengthwise attrition action. The wooden handles necessarily shrink in drying, so that in a barrel A originally filled quite full there will be produced in the drying process an empty space which will remain in the same portion of the barrel, as indicated at S, Fig. 2. I find it preferable to apply the exhaust at that portion of the barrel for removing with the hot air the moisture and dust resulting from the tumbling action. Hence only that portion of the area of the barrel need be covered by the hood F, though it is also practicable to envelop the entire barrel with a chamber from which to exhaust the dust and moisture laden hot air. The deflector B' prevents the suction of the exhaust from directing the inflowing currents of hot air more immediately to the hood F by imparting to them a downward tendency, whereby they are diffused throughout the entire space within the barrel.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a broom-handle tumbling-barrel, the

combination with the rotary perforated barrel provided with means for admitting the drying medium, of one or more false heads in the barrel inclined relative to its axis of rotation, for the purpose set forth.

2. In a broom-handle tumbling-barrel, the combination with the rotary perforated barrel provided with means for admitting the drying medium, of correspondingly-inclined false heads in the barrel, and longitudinal wings at intervals on the inner barrel-surface, substantially as and for the purposes set forth.

3. In a broom-handle tumbling-barrel, the combination with the rotary perforated barrel provided with means for admitting the drying medium, of an exhaust-pipe covering at its mouth the area traversed by said barrel at which the empty space within it is produced by shrinkage of the broom-handles in drying, substantially as described.

4. In a broom-handle tumbling-barrel, the combination with the rotary perforated barrel, of a perforated conduit extending between its heads, hot-air pipes leading into said conduit at its opposite ends, and an exhaust-pipe covering at its mouth the area traversed by said barrel at which the empty space within it is produced by shrinkage of the broom-handles in drying, substantially as described.

5. In a broom-handle tumbling-barrel, the combination with the rotary perforated barrel, of a perforated conduit extending between its heads, hot-air pipes leading into said conduit at its opposite ends, a deflector within said conduit, and an exhaust-pipe covering at its mouth the area traversed by said barrel at which the empty space within it is produced by shrinkage of the broom-handles in drying, substantially as described.

6. In a broom-handle tumbling-barrel, the combination with the rotary perforated barrel, of a perforated conduit extending between the barrel-heads, one or more false heads in the barrel inclined relative to its axis of rotation, hot-air pipes leading into said conduit at its opposite ends, and longitudinal wings provided at intervals on the inner surface of the barrel, substantially as described.

CHARLES H. PORTER.

In presence of—

M. S. MACKENZIE,  
W. B. DAVIES.