

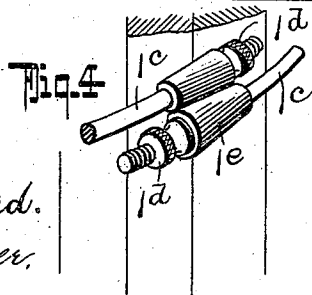
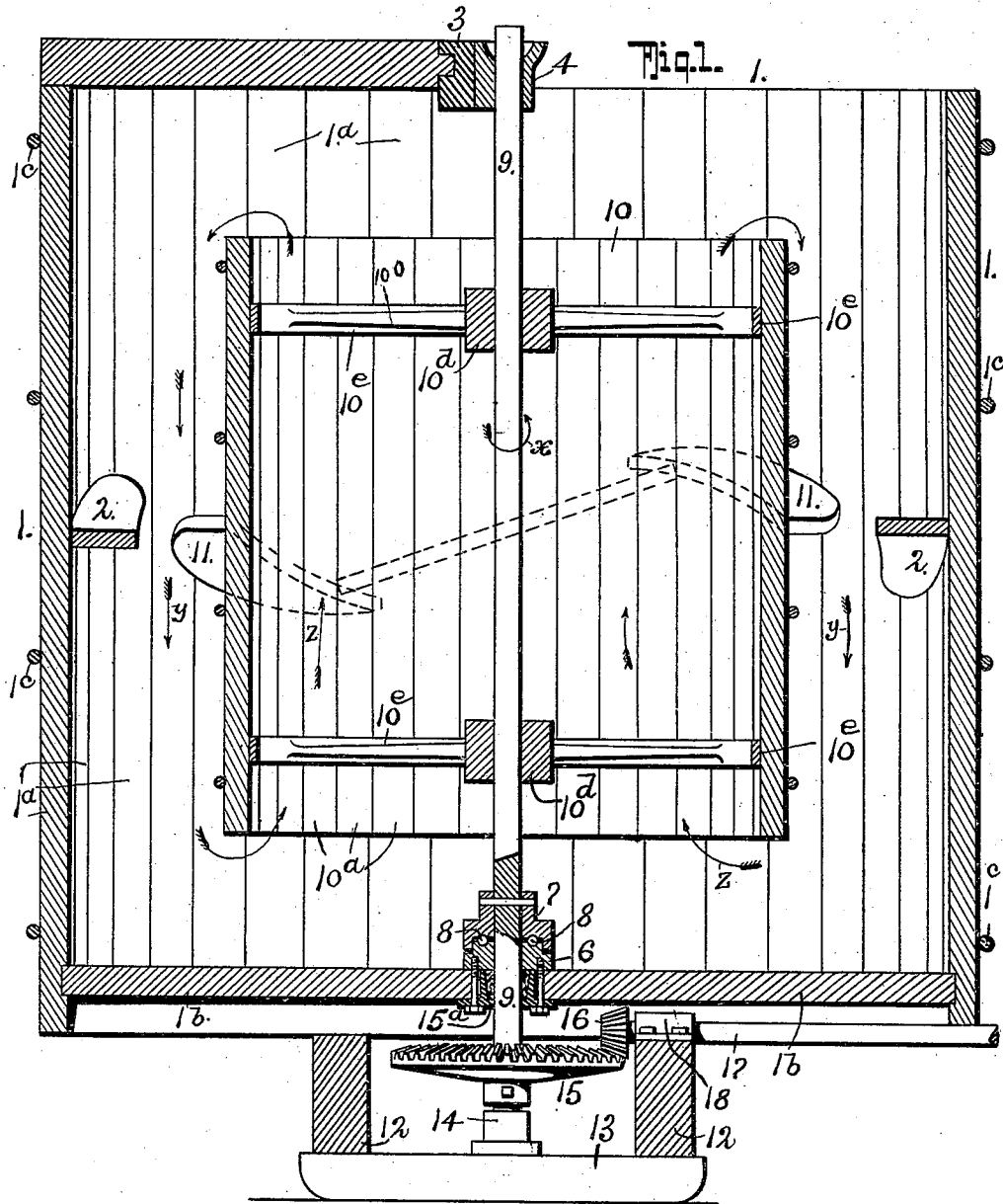
T. L. BRANNEN.
MIXING MACHINE.

APPLICATION FILED JUNE 27, 1910.

988,167.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.



WITNESSES:

Hayward Woodard.
Charles H. Wagner.

INVENTOR

Thomas L. Brannen

BY

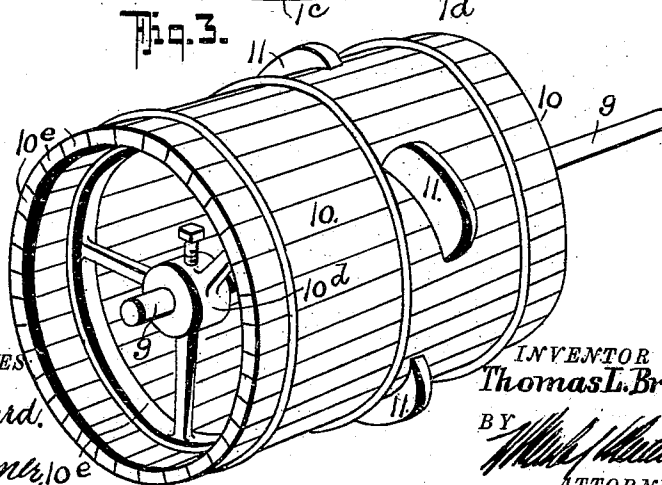
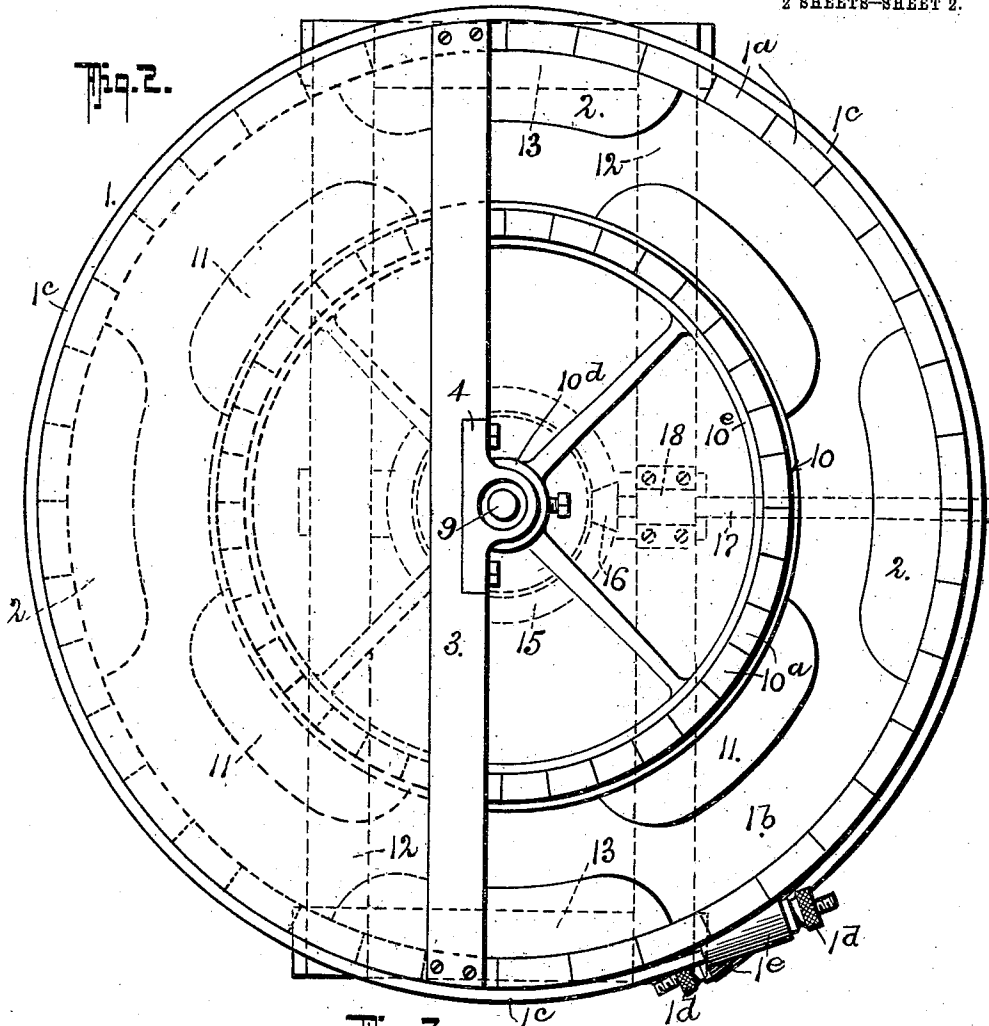
ATTORNEY

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UNITED STATES PATENT OFFICE.

THOMAS L. BRANNEN, OF BERLIN, NEW HAMPSHIRE.

MIXING-MACHINE.

988,167.

Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed June 27, 1910. Serial No. 569,142.

To all whom it may concern:

Be it known that I, THOMAS L. BRANNEN, residing at Berlin, in the county of Coos and State of New Hampshire, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in mixing machines particularly designed for use in the art of manufacturing paper to mix the different kinds of stock, sizing, alum, clay and color together.

In its generic nature the invention resides in providing a mixing machine consisting of a tank in which a hollow open ended cylinder revolves, and including means for effecting a circulation of the contents of the casing or tank through the cylinder and in a spiral path around the cylinder.

More specifically my invention resides in providing a tank in which a hollow open ended cylinder rotates, the cylinder being of a less length than the tank so as to be spaced from the ends thereof and the tank and cylinder being provided with means which cause the contents of the tank to circulate in a spiral path around the inside of the tank between it and the cylinder and then through the cylinder back to the outside of the cylinder during the rotation of such cylinder.

In its more subordinate nature, the invention also includes those novel details of construction, combination and arrangement of parts, all of which will be first fully described in detail, then be specifically pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1, is a central vertical section and part elevation of my invention. Fig. 2, is a top plan view thereof. Fig. 3, is a detail perspective view on a reduced scale of the rotatable cylinder. Fig. 4 is a detail perspective view of the bail clamp.

Referring now to the accompanying drawings, in which like letters and numerals of reference indicate like parts in all of the figures 1 designates the tank which is built up of staves 1^a secured into a cylindrical form by bails 1^b that are secured together at their ends by nuts 1^a and connections or clamps 1^c, as best shown in Figs. 2 and 4 of the drawings. The tank 1 also includes a bottom 1^b which may be supported on a cradle formed of longitudinal beams 13 and cross beams

12, as best shown in Figs. 1 and 2 of the drawings.

Within the tank 1 is a series of wings, blades or paddles 2 that are secured to the inner walls of the tank and held in a spiral direction to cooperate with similarly formed wings, paddles or blades 11 that are carried on the outside of a cylinder 10 which is rotatably mounted within the tank 1 on a shaft 9 whose upper end is held in a bearing 4 on the cross beam 3 that projects across the top of the tank and whose lower end is projected through the bottom 1^b of the tank and receives the master drive gear 15 which meshes with a pinion 16 on a power shaft 17, the shaft 17 having a bearing 18, as shown.

The shaft 9 has its lower end held in a stepped bearing 14 and passes through a stuffing box 15 in the bottom 1^b. The bottom 1^b carries a thrust bearing box 6 in which the balls 8 are held, a cap bearing member 7 fitting over the balls 8 and closing the box 6 is secured to the shaft 9, see Fig. 1.

The drum or cylinder 10 is built up of staves 10^a similarly to the casing 1, the staves being secured together by bands 10^c and the cylinder 10 is held on the shaft 9 by spiders 10^b whose bearings 10^d are secured to the shaft 9 in any approved way.

In operation the material to be mixed is placed into the tank and the shaft 9 turned through any suitable driving mechanism (such as—that shown in the drawings) to turn the cylinder or drum 10 in the direction of the arrow *x* in Fig. 1. This causes the pulp within the tank 1 to effect a rotary motion in the tank, the wings, paddles or blades 2 and 11 serving to force the pulp downwardly between the drum or cylinder 10 and the tank 1 in the direction of the arrow *y* and at the same time force the pulp up through the drum 10 in the direction of the arrow *z* to cause a circulation to take place within the tank in the direction of the arrows *y* and *z* and at the same time the circulating pulp is put into rotary motion.

I have constructed and used my invention for practical purposes and find that with a machine constructed as shown in the drawings, the stock within the tank will be forced downwardly on the outside of the cylinder or drum in a spiral direction and upwardly through the inside of the cylinder or drum. I find that in practice the stock travels in a spiral form about twice around the tank be-

fore it starts up through the cylinder or drum. I have also found from practical tests that the machine is efficient in its operation and will mix any kind of stock, the centrifugal force throwing the stock outwardly from the cylinder or drum 10 and distributing it around the tank so that when the color is put in it mixes very rapidly.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of my invention will be readily understood by those skilled in the art to which the invention appertains 15 and I desire to say further that slight changes in the details of construction and the manner of driving the shaft 9 may be readily made.

What I claim is:

20 1. A mixing machine comprising a tank, a cylinder open at both ends and rotatable within said tank, said cylinder being spaced from the bottom of said tank, spirally arranged paddle blades mounted on the outside of said cylinder members mounted on 25 the inside of said tank to coöperate with said paddle blades to effect a circulation of the contents of said tank in a spiral path around said cylinder and then longitudinally 30 through said cylinder.

2. A mixing machine comprising a tank, a hollow open ended cylinder rotatable in said tank and of less length than the tank, means 35 by said tank for effecting a circulation of the contents of said cylinder and tank around and through said cylinder.

3. A mixing machine comprising a tank, an open ended hollow cylinder rotatable in 40 said tank and spaced from the walls of said tank, means carried by said tank and means carried by said cylinder in virtue of which as said cylinder turns the contents of said tank and cylinder will be forced to circulate 45 in a spiral path around said cylinder and then through said cylinder.

4. A mixing machine comprising a tank, an open ended hollow cylinder rotatable in said tank and spaced from the walls of said tank, means carried by said tank and means 50 carried by said cylinder in virtue of which as said cylinder turns the contents of said tank and cylinder will be forced to circulate in a spiral path downward and around said cylinder and then upwardly through 55 said cylinder.

5. A mixing machine comprising a tank, an open ended cylinder rotatable within said tank and spaced from the bottom of the same, spirally arranged paddles mounted on 60 the outside of said cylinder, spirally arranged paddles mounted on the inside of said tank, means for turning said cylinder whereby said paddles will force the contents of said tank downwardly between said tank and said 65 cylinder and upwardly through said cylinder while imparting a rotary motion to said contents, substantially as shown and described.

6. In a mixing machine, a tank of cylindrical form having a closed bottom, a rotatable shaft longitudinally mounted in said 70 tank, spider frames carried by said shaft, a cylinder carried by said spider frames, said cylinder being of less length than said tank whereby the ends of said cylinder will be 75 spaced from the ends of said tank, means for effecting rotation of said shaft to turn said cylinder, members on said cylinder for forcing the contents of said tank to circulate in said tank, means in said tank coöperating 80 with said cylinder members to assist in causing the material in said tank to circulate as said cylinder is turned, said circulation causing members and means serving to effect a circulation of the material longitudinally 85 through the cylinder and around the cylinder between the cylinder and the tank.

THOMAS L. BRANNEN.

Witnesses:

EDMUND SULLIVAN,
GERALDA SHAW.