

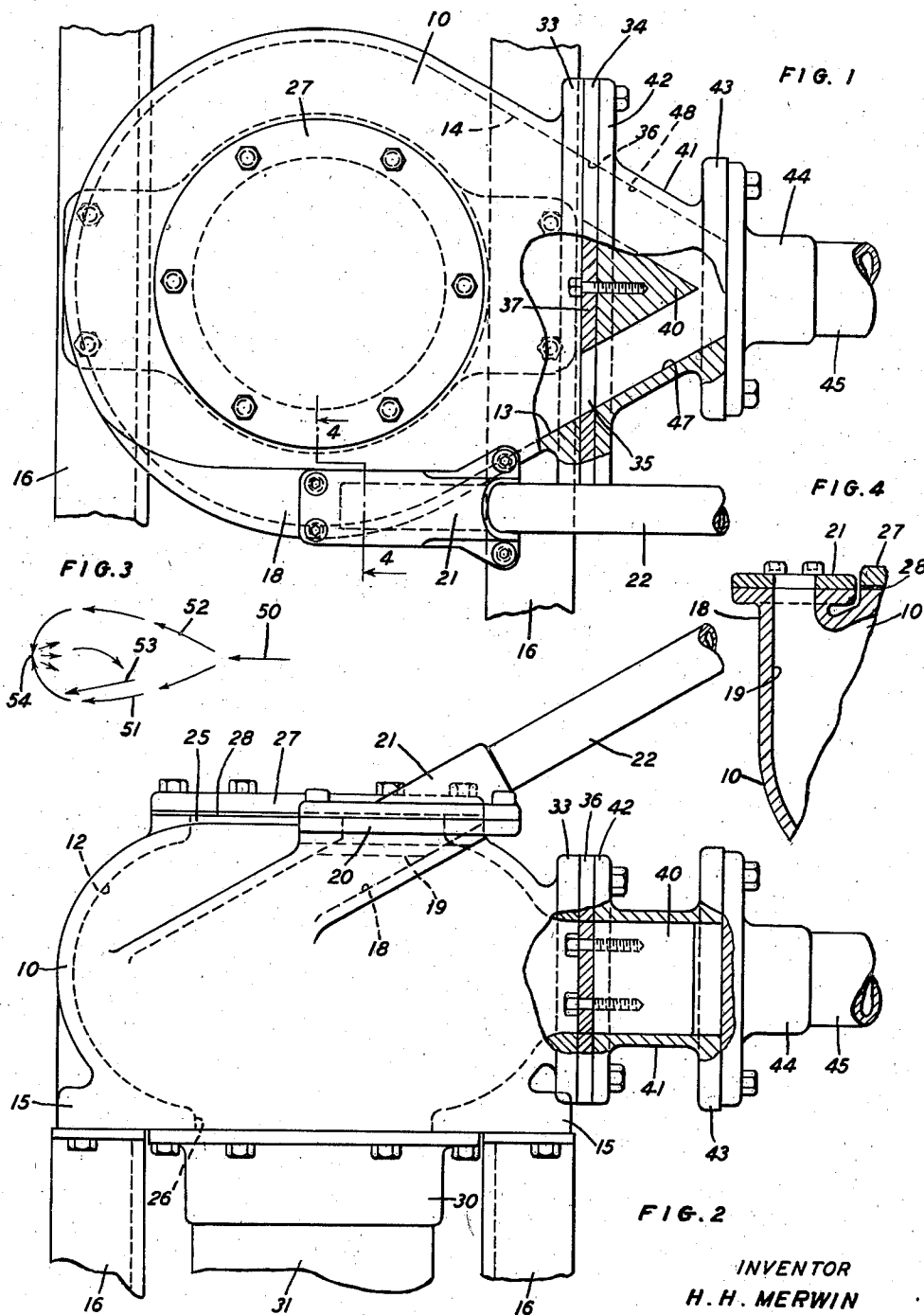
Dec. 23, 1941.

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2,267,412

MIXING APPARATUS

Filed Aug. 26, 1939



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## UNITED STATES PATENT OFFICE

2,267,412

## MIXING APPARATUS

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Application August 26, 1939, Serial No. 292,101

## 3 Claims. (Cl. 259—4)

This invention relates to a mixing apparatus, and more particularly to an apparatus for mixing selected substances with liquid.

One of the final steps in the preparation of a pulp mixture for application on conductor wires as an insulator is the mixing of pulp with a liquid, the latter serving as a carrier for the pulp. The uniformity of application of the pulp on the wires, especially when several wires are passing through the same body of pulp solution, depends greatly upon the thorough mixing of the pulp with the liquid.

An object of the invention is to provide a mixing apparatus which is simple in structure, inexpensive to manufacture, highly efficient, and which requires no maintenance.

With this and other objects in view, the invention comprises a mixing apparatus having a bowl-shaped chamber with a member at the entrance thereof to divide a fluid, travelling in large volume and at high velocity, into two streams and direct them along opposite sides of the chamber until they meet with a violent agitation, a second fluid to be mixed therewith being introduced in small volume and low velocity in a downwardly flowing stream into one of the first mentioned fluid streams.

Other objects and advantages will be apparent from the following detailed description when taken in conjunction with the accompanying drawing, wherein

Fig. 1 is a plan view of the mixing apparatus, a portion thereof being broken away;

Fig. 2 is a side elevational view of the mixing apparatus, a portion thereof being broken away;

Fig. 3 is an illustration of the paths of the streams of liquid and the substance introduced thereto, and

Fig. 4 is a fragmentary sectional view taken along the line 4—4 of Fig. 1.

Referring now to the drawing, the mixing apparatus comprises a bowl-shaped chamber 10 circular in general contour excepting adjacent the entrance thereof, at which position the side walls change from the curved contour indicated at 12 to the tapered walls 13 and 14. The chamber 10 has integral embossed portions 15 at the base thereof for the mounting of the chamber upon a frame 16 or other suitable support.

At one side of the chamber a hollow projection 18 is formed integral therewith, providing a passageway 19 communicating with the interior of the chamber adjacent the horizontal center line thereof and positioned at an angle to direct a substance into the chamber. The upper

portion of the projection 18 has an integral flange 20 for the securing of a pipe connection 21 thereto, a pipe 22 extending from the connection 21 to a suitable container (not shown) for a substance to be fed to the chamber.

The chamber 10 has an open upper end 25 and an open lower end 26, the upper end being closed by cover plate 27 and gasket 28 while the lower end has a flange 30 of a pipe line 31 secured thereto, the latter serving as an outlet for the solution mixed in the chamber.

The entrance end of the chamber 10 has an integral flange 33 adjacent to which is disposed a supporting plate 34. The supporting plate has transversely extending substantially rectangular apertures 35 and 36 therein with a solid central portion 37 between the apertures for rigidly supporting a dividing member 40, the latter being triangular in horizontal cross section. An intermediate member 41 having a flange 42 at the inner end thereof for the securing of the member, together with the supporting plate 34, to the flange 33 of the chamber, the other end of the member 41 having a flange 43 for the securing of a pipe flange 44 thereto. A pipe 45 connected to the flange 44 communicates with a liquid supply (not shown).

The contour of the inner walls of the intermediate member 41 are such that with the cooperation of the dividing member 40 two passageways 47 and 48 are formed in general alignment with the adjacent walls of the chamber. The dividing member 40 is equal in height to the interior of the member 41, sealing the member against the passage of liquid other than through the passageways 47 and 48.

Upon considering the operation of the apparatus, let it be assumed that the liquid fed to the chamber through the supply pipe 45 is what is commonly known as white water and the substance introduced into the chamber through the supply pipe 22 is pulp for use as an insulator on wires. The white water liquid serves as a carrier for the pulp in applying the pulp to several wires simultaneously. In order that the pulp may be applied uniformly to each wire and to all of the wires it is necessary that the pulp be thoroughly mixed with the liquid prior to its application to the wires. The liquid is, therefore, fed to the chamber in a large volume and high velocity stream through the supply pipe 45. As this stream of liquid enters the member 41 it is divided into two streams by the dividing member or element 40 and directed through the passageways 47 and 48 in the member and the passage-

ways 35 and 36 in the supporting plate 34. These two streams of liquid enter the chamber 10 adjacent the horizontal center line thereof in paths which will cause these streams of liquid to travel along the inner walls of the chamber to a point diametrically opposite the entrance of the chamber, where the two streams will meet headlong. The curved or arcuate contour 12 of the chamber walls also assists in maintaining the direction of travel of the two streams in a common plane from their inception to their point of meeting.

During this travel of the liquid the pulp in liquid form is fed slowly and at low velocity through the pipe 21, passageway 19, and into the chamber 10 in the path and in substantially the direction of flow of one of the streams of liquid. The supply of pulp is, therefore, carried to the mixing point in one of the streams of liquid, at which point a violent agitation occurs which causes a thorough mixing of the pulp with the liquid as illustrated in Fig. 3. In this figure the arrow 50 represents the single stream of liquid entering the chamber 10, or intermediate member 41 thereof in large volume and at high velocity, the arrows 51 and 52 representing the two streams which are divided from the single 50 and directed above the inner walls of the chamber. The arrow 53 indicates the introduction of the pulp to the stream 51, the pulp being carried with this stream of liquid to the point 54, where the two streams 51 and 52 meet headlong, and due to the high velocity of the two streams and further due to the fact that all portions or particles of one stream strike the portions or particles of the other as they meet headlong the pulp is thoroughly mixed with the liquid. The mixed pulp solution then travels through the lower open end or outlet 26 of the chamber 10 and through the pipe line 31 to the machine where the pulp solution is fed to the wires to be covered.

Although the apparatus has been described as being used for mixing a pulp with a liquid it may also be used to mix other fluids; for example, it may mix air with gasoline, air with fuel oil, various types of gases, or streams of dry materials.

The term "fluid" is to include anything the apparatus is capable of mixing whether it be in liquid form, a gas, or materials caused to move by air, gas or a liquid.

The embodiment of the invention herein disclosed is illustrative only and may be widely modified and departed from in many ways without departing from the spirit and scope of the invention as pointed out in and limited only by the appended claims.

What is claimed is:

1. A mixing apparatus comprising means to direct a fluid stream at high velocity, means to divide the stream into smaller streams, a chamber to receive the smaller streams having an inner wall arcuate in contour to cause the smaller streams to meet headlong with high agitation, and means to introduce another fluid into one of the streams to be mixed with the fluid therein.

2. A mixing apparatus comprising means to direct a fluid stream at high velocity, means to divide the stream into smaller streams, a chamber to receive the smaller streams having an inner wall arcuate in contour transverse to the direction of travel of the smaller streams to cause the said streams to travel in their different directions in substantially the same plane and curved to cause the said streams to meet headlong with violent agitation, and means to introduce another fluid into one of the streams to be mixed with the fluid therein.

3. A mixing apparatus comprising means to direct fluid streams at high velocity in different directions, a chamber having an inlet positioned to receive the streams, a wall to guide the streams from the inlet through arcuate paths and in a common plane until the streams meet headlong with high agitation and an outlet disposed below and at substantially right angles to the said plane of the streams, and a supply line to direct another fluid into one of the streams at an angle with respect thereto to be mixed with the fluids of the streams at their point of meeting.

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