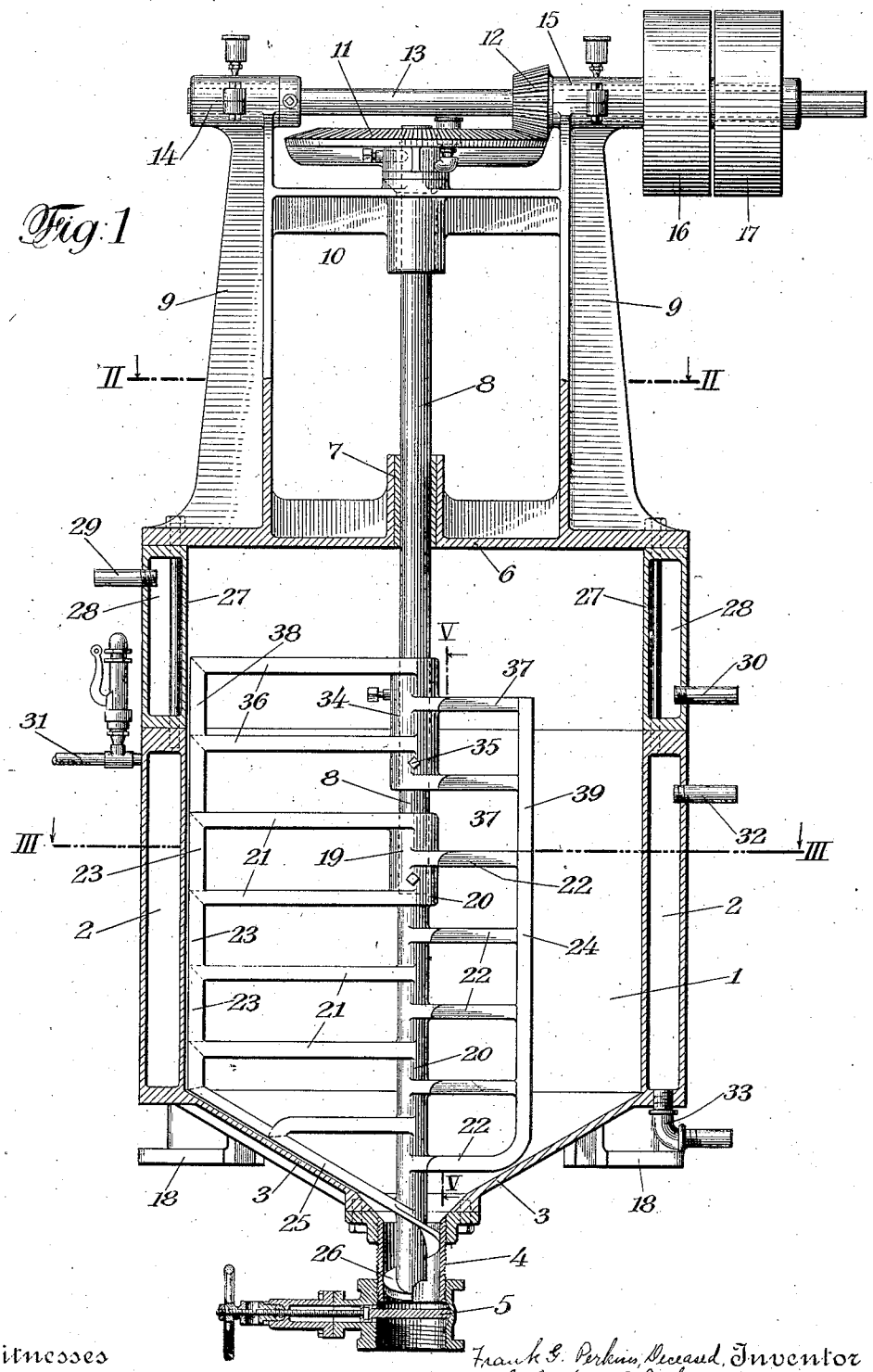
F. G. PERKINS, DEC'D.
G. S. PERKINS, EXECUTRIX.
GLUE KETTLE.
APPLICATION FILED MAR. 4, 1911.

1,109,144. Patented Sept. 1, 1914.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses
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by Gertrude S. Perkins, Executrix
By Attorneys
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3 SHEETS—SHEET 2.

Fig. 2.

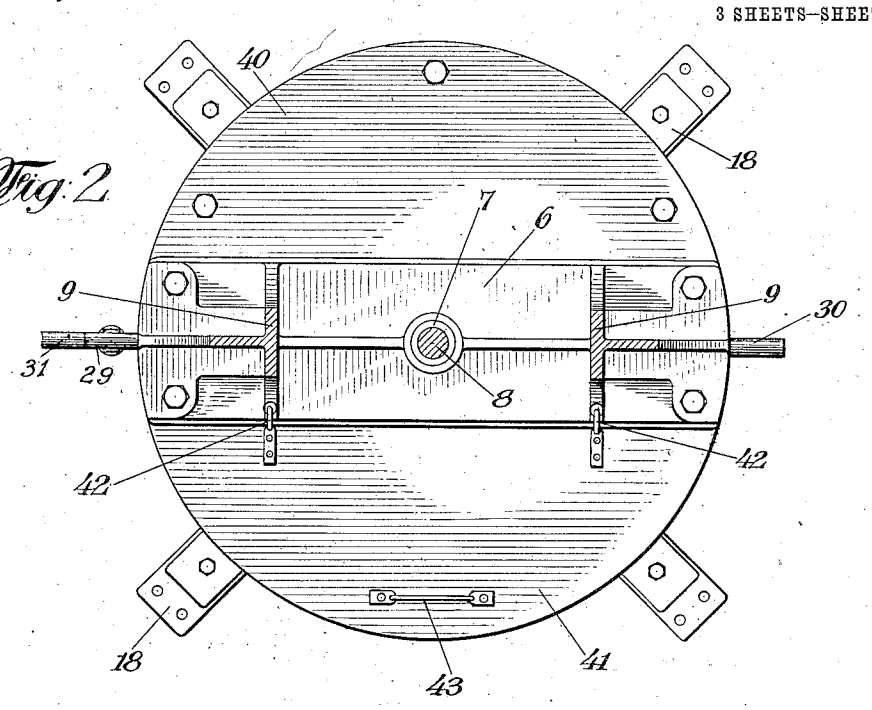
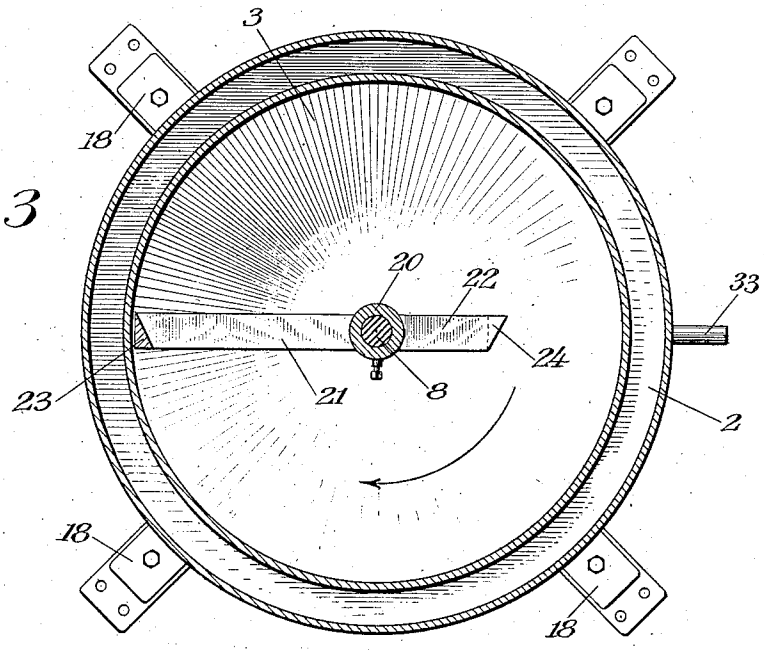


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4

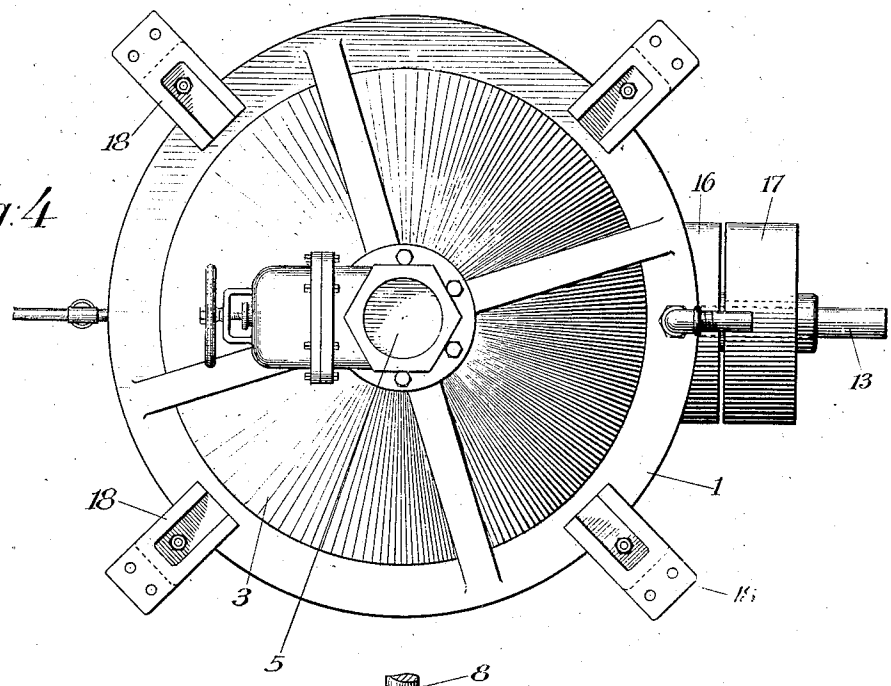
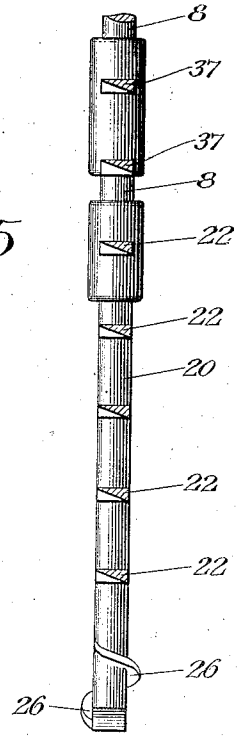


Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK G. PERKINS, DECEASED, LATE OF LANSDALE, PENNSYLVANIA, BY GERTRUDE S. PERKINS, EXECUTRIX, OF LANSDALE, PENNSYLVANIA, ASSIGNOR TO PERKINS GLUE CO., A CORPORATION OF PENNSYLVANIA.

GLUE-KETTLE.

1,109,144. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed March 4, 1911. Serial No. 612,181.

To all whom it may concern:

Be it known that FRANK G. PERKINS, deceased, late of Lansdale, borough of Lansdale, State of Pennsylvania, did invent certain new and useful Improvements in Glue-Kettles, of which the following is a specification.

The invention relates to improvements in glue kettles or glue mixing apparatus and various objects of the invention are to provide an apparatus of this class which is especially simple and easy of construction and efficient and economical in operation and manufacture, and also which is especially applicable to manufacture or treatment of glue made from a vegetable base.

Further objects, features and advantages will more clearly appear from the detailed description given below taken in connection with the accompanying drawings which form a part of this specification.

In the drawings Figure 1 is a vertical section through the apparatus. Fig. 2 is a top view partly in section on the line II—II of Fig. 1. Fig. 3 is a transverse section on the line III of Fig. 1. Fig. 4 is a bottom view of the apparatus, and Fig. 5 is a detail section taken on the line V—V of Fig. 1.

Referring to the drawings, 1 represents a main container provided with a steam jacket 2 cylindrically arranged about its sides. The bottom 3 of the container inclines downwardly toward the center where it is provided with a glue outlet 4. At or below the outlet 4 there is a gate valve 5 for admitting or shutting off the supply of glue to below from the container. Bolted to the upper part of the container is a cast iron top 6 having a bearing 7 in which a vertical shaft 8 is journaled. The top 6 has two upright members 9 integral therewith which carry an upper bearing 10 for the shaft 8. Secured to the upper end of the shaft 8 is a beveled pinion 11 which meshes with a beveled pinion 12 secured to a shaft 13 journaled in bearings 14 and 15 on the uprights 9. On the shaft 13 are fast and loose pulleys 16 and 17 so that the shafts 13 and 8 may be driven from any suitable source of power. The apparatus is supported by lugs 18 integral with the main container, which lugs may be bolted to the floor and the outlet 4 and part of the bottom 3 extend down through the floor to the room below to which glue is supplied from the apparatus.

Secured to the lower end of the shaft 8 at 19 is a stirrer 20. For this purpose the stirrer 20 is enlarged at 19 and is provided with a cylindrical opening into which the shaft 8 extends as shown by dotted lines. A set screw may be used to firmly secure the shaft to the stirrer. The stirrer 20 is made of one integral casting having integral radial arms 21 extending horizontally in one direction substantially to the inside wall of the container. The stirrer also has integral radial arms 22 extending horizontally in the opposite direction and in the same vertical plane as the arms 21. The arms 21 carry at their outer ends an integral upright or vertical member 23. The arms 22 only extend about half way from the center of the stirrer to the inside wall of the container and carry at their outer ends an integral vertical or upright member 24 which travels in a circular path between the axis of the stirrer and the path taken by the upright member 23. A slight space is provided between the upright member 23 and the inside wall of the container.

The underneath or lower surfaces of the arms 22 are beveled off or inclined as shown in Figs. 1 and 5, in a direction to tend to force the glue downwardly. The arms 21 are also beveled off or inclined on their lower sides in the same manner and in a direction to force the glue downwardly. The upright member 23 is beveled off or inclined on its inner side as shown in Fig. 3, in a direction to force the glue or mixture inwardly. The upright member 24 is beveled off or inclined on its outer side, as shown in Fig. 3, in a direction to force the glue mixture outwardly. Integral with the stirrer 20 is an arm 25 which is inclined so as to be parallel with the bottom of the container and which runs near to the bottom of the container. Also integral with the stirrer 20 is a screw 26 at or in the outlet 4 which when the stirrer revolves acts as means to force the glue through the outlet when the valve 5 is open.

In order to accommodate different sized batches and different spaces into which the apparatus may be put the apparatus is made extensible or adjustable. For this purpose

an extension 27 of the container is provided which also has a steam jacket 28 so that the container is formed of a plurality of cylindrical sections superposed upon one another. Steam pipes 29 and 30 lead into the jacket 28 and pipes 31 and 32 into the jacket 2. A pipe 33 also leads into the jacket 2 for drawing off water, etc. The stirrer is also provided with an extension 34 secured to the shaft 8 as by screw 35. The stirrer extension 34 is provided with radial arms 36 and 37 like the arms 21 and 22, respectively, in every particular, and also with upright members 38 and 39 like the upright members 23 and 24, respectively. It will thus be seen that the size of the apparatus may be adjusted to suit requirements.

On one side of the top piece 6 the container is covered by a plate 40 bolted to the container. On the other side of the top piece 6 the container is provided with a cover 41 hinged to the part 6 at 42 and provided with a handle 43 for lifting the cover to admit of the glue materials being placed in the container.

The glue or glue materials are placed in the apparatus and the stirrer set in motion to thoroughly mix the same and stir the glue. The steam jackets will serve to keep the bath at the proper temperature if necessary. After being fully treated the gate valve 5 may be opened and the screw 26 will readily force the glue through the glue outlet to the room below. The particular arrangement of stirrer shown is found especially advantageous in the preparation of vegetable glue or glue made from a vegetable base and the particular beveling of the stirrer members is found advantageous in this regard. The inclination of the bottom toward the outlet makes more easy the withdrawal of the batch and the member 25 aids in this respect.

The particular glue for which this apparatus is especially adapted is the vegetable glue described in U. S. Letters Patent No. 1,020,656 and Reissue Letters Patent No. 13,436. The glue there described is a colloid of great viscosity formed by dissolving starch flour in water and caustic soda, and it apparently contains besides a large proportion of hydrosols an enormous number of nuclei, and owing to its unusually high concentration (about 30%) it is prone to gelatinize. The causes for requiring a specially adapted mixing kettle and the functions of its parts appear to be as follows: As soon as hydrogel particles begin to form a minute weblike structure is created with walls perhaps entirely invisible under a microscope, and as the starch molecule is relatively large, this structure is extensive and will long remain like a fluid. Under the influence of surface tension these sheets of weblike structure roll up into hollow cylinders etc. and there results a segregation of hydrous hydrogel groups from the remaining hydrosols. In this manner ropy, viscid masses and lumpy gelatinous aggregations are prone to form throughout the glue mass and also to grow and harden by further segregation and addition to the wall structure. When this occurs in this vegetable glue such aggregations collect more or less on the sides and bottom of the container and if allowed to remain for any length of time attach themselves thereto strongly. It is not sufficient to remove these aggregations bodily but they must be desegregated by breaking down the invisible dividing walls and tearing up the ropy structure.

In the apparatus shown and described, the upright members 23 and 28 and bottom scraper 25 running close to the walls of the container, not only serve to prevent the gelatinous aggregates from collecting, growing and attaching themselves to the side and bottom of the container, but also act to desegregate any such masses as may be formed. The intermediate stirring members 24 and 29 act to desegregate or prevent segregation in the body of the glue mass by tearing through the segregation walls, liberating the contents of the segregation cylinders, etc. and disintegrating and distributing the fragmentary parts of these walls.

The screw blade 26 operating in the glue outlet acts to stir and desegregate the glue in the outlet when the valve 5 is closed, and this screw blade 26 is of such size and shape that it will not pack any solid material (as the starch flour suspended in water) in the outlet when the outlet is closed, but upon opening the valve 5 the blade 26 acts to force the glue through the outlet.

Although the improvements have been described in great detail it is not desired that the invention in its broadest aspects be limited to such details except as clearly pointed out in the appended claims, since many changes and modifications may well be made without departure from the spirit and scope of the invention in its broadest aspects.

Having thus fully and clearly described the invention what is claimed and desired to be secured by Letters Patent, is:

1. A glue kettle comprising a main container having a heating jacket about its sides and an outlet from its bottom, the bottom inclining downwardly toward said outlet, a valve in said outlet, a stirrer in the container, said stirrer having radial arms extending in opposite directions in substantially the same plane, the arms extending in one direction nearly to the inside wall of the container and carrying an upright mem-

ber which runs near the inside wall of the container; and the arms extending in the opposite direction being shorter than said first mentioned arms and carrying an upright member which runs intermediate the center of the kettle and the path of said first mentioned upright member, said arms being beveled on their underneath sides in a direction to force the glue downwardly, said first mentioned upright member being beveled on its inner side in a direction to force the glue inwardly, said second mentioned upright member being beveled on its outer side in a direction to force the glue outwardly, a screw carried by said stirrer for forcing the glue out through said outlet, and means for operating said stirrer.

2. A glue kettle comprising a main container having an outlet from its bottom, a stirrer in the container, said stirrer having radial arms extending in opposite directions in substantially the same plane, the arms extending in one direction nearly to the inside wall of the container and carrying an upright member which runs near the inside wall of the container, and the arms extending in the opposite direction being shorter than said first mentioned arms and carrying an upright member which runs intermediate the center of the kettle and the path of said first mentioned upright member, said arms being beveled on their underneath sides in a direction to force the glue downwardly, said first mentioned upright member being beveled on its inner side in a direction to force the glue inwardly, said second mentioned upright member being beveled on its outer side in a direction to force the glue outwardly, a screw carried by said stirrer for forcing the glue out through said outlet, means for operating said stirrer, and a stirrer forming an extension to said first mentioned stirrer and having similar radial arms and upright members.

3. A glue kettle comprising a container having an outlet in its bottom for the glue, means for forcing the glue through said outlet, a stirrer in the container carrying an upright member which runs near the inside wall of the container and also carrying an upright member which runs intermediate the center of the kettle and the path of said first mentioned upright member said first mentioned upright member being beveled on its inner side in a direction to force the glue inwardly and said second mentioned upright member being beveled on its outer side in a direction to force the glue outwardly to more effectively stir the glue, said means for forcing the glue through said outlet comprising a screw integral with said stirrer.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

GERTRUDE S. PERKINS,
Executrix of the estate of Frank G. Perkins, deceased.

Witnesses:
R. C. WENDT,
L. MCMILLEN.