Jan. 13, 1925. 1,522,871

J. A. DE CEW

MAKING EMULSIONS

Filed Dec. 23, 1922

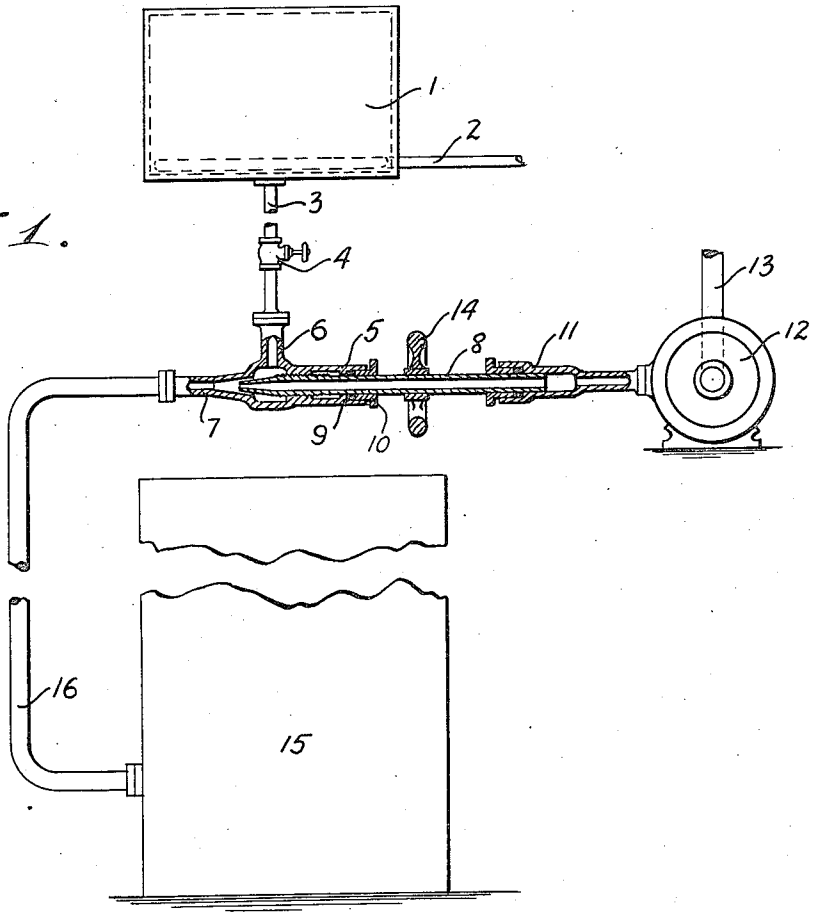


Fig. 1.

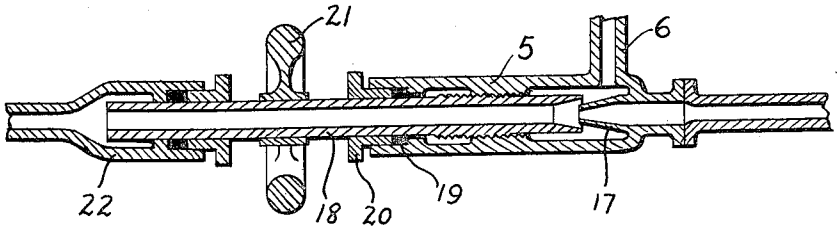


Fig. 2.

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UNITED STATES PATENT OFFICE.

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MAKING EMULSIONS.

Application filed December 23, 1922. Serial No. 608,710.

To all whom it may concern:

Be it known that I, JUDSON A. DE CEW, a citizen of the United States, residing at Mount Vernon, New York, have invented certain new and useful Improvements in Making Emulsions, of which the following is a specification.

My present invention relates to the dilution of resin soaps used as size in the paper industry, and more particularly to a method whereby such a substance may be diluted without emulsification. In all previous methods wherein this result has been aimed at, it has been thought that agitation in one form or another, was necessary in order to bring the particles of size in contact with the solute. This invention, however, secures intimate contact of the resin soap and water with a minimum degree of emulsification, without the use of a so-called "agitator."

To this end, this invention relates to the use of a water injector by means of which hot water may be forced into contact with the hot size in such a manner as to produce an instantaneous solution so that no further agitating or emulsifying device is required.

The principle involved in the previous inventions for this purpose, is that of forming emulsions, the means for forming emulsions being some kind of agitation. The reason that emulsions are formed when a partially soluble material is diluted by agitation is the fact that the product to be diluted comes in contact with the diluting medium in a coarse stream so that only the surface is dissolved before agitation takes place, and the agitation by breaking up the material into fine particles, brings about an emulsion.

The object of this invention, is to avoid agitation and also formation of emulsions by providing the conditions which bring about an instantaneous solution of resin size in hot water. This result can only be obtained by bringing the size into contact with the water in a thin layer or stream, the thickness of which will be approximately 1 mm. One means of obtaining this is to bring the size into contact with hot water in a water injector which is so adjusted that a concentric ring of size is drawn into the water from this injector and that the film of size is approximately 1 mm. in thickness. This, of course, requires a water injector in which the water nozzle, or opposing part, is adjustable. With an apparatus of this kind, the dilution can be carried out in such a manner that the film of size will dissolve instantaneously without the formation of emulsions and without requiring any further agitation.

I have illustrated in the drawing a preferred embodiment of device capable of bringing about the above desired result, but it is understood that this represents merely one form only, and I do not wish to be limited thereto.

In these drawings:—

Figure 1 is a sectional elevation of an injecting nozzle incorporated in a diagrammatic circuit of a size dilution plant.

Fig. 2 is a sectional elevation of a modified nozzle.

Referring to the drawing, a size tank is represented at 1, having means to heat the same, as steam coil 2. A size outlet 3 is provided in the bottom of the tank 1, having a suitable valve 4 to control the flow.

The injector nozzle may comprise a housing 5 having a size inlet 6 and an outlet 7. The main body of the housing may be tubular to receive the nozzle proper 8, threaded thereto and provided with the usual packing 9 and gland 10. The rear end of the nozzle 8 is secured in any desired manner to a receiver 11 through which hot water is forced, as by pump 12 from a supply pipe 13. A hand wheel 14 facilitates rotation of the nozzle 8 for the purpose of adjustment. The nozzle 8 terminates in a tapering outlet which is concentrically positioned within a similarly shaped portion of the nozzle housing 5 in proximity to the outlet 7. As the nozzle 8 is rotatable within its housing, any desired adjustment therebetween may be secured and thus the size of the film of resin soap admitted to the outlet 7 regulated. As a stream of hot water is admitted under pressure and concentrically with a film of size preferably of 1 mm. in thickness, perfect solution takes place. From this point the size solution passes to tank 15 through pipe 16 to be used as desired.

In the modified form of Fig. 2 the adjustment is in the outlet tubes. The nozzle is shown at 17 as being a part of the housing 5. An outlet tube 18 is threaded to the housing and provided with a packing 19 and gland 20, and also has a frusto-conical end portion corresponding to the nozzle 17.

A hand wheel 21 permits rotation of the part 18 for adjustment toward or away from the nozzle. A receiver 22 leading to the tank 15 is fitted to the outlet tube 18 in any desired manner.

Thus it will be apparent that by so regulating the thickness of the film of size from its supply tank and injecting concentrically to said film a jet of hot water, that emulsification is reduced to a minimum and solution of the size is complete.

I claim:

1. A method of diluting resin size which includes the step of injecting a jet of hot water into a concentric film of size of substantially 1 mm. in thickness whereby the size dissolves immediately in the hot water without the aid of mechanical agitation.

2. A method of treating resin size which includes the step of injecting a jet of hot water into a film of size of substantially 1 mm. in thickness, whereby the size dissolves immediately in the hot water without the aid of mechanical agitation.

In testimony whereof I have affixed my signature to this specification.

JUDSON A. DE CEW.