

UNITED STATES PATENT OFFICE.

FRANK J. TURNER, OF WALPOLE, MASSACHUSETTS.

GLUE-EXTRACTING PROCESS.

1,285,474.

Specification of Letters Patent.

Patented Nov. 19, 1918.

No Drawing.

Application filed December 13, 1917. Serial No. 206,967.

To all whom it may concern:

Be it known that I, FRANK J. TURNER, a citizen of the United States, residing at Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Glue-Extracting Processes, of which the following is a specification.

My invention relates to an improved process of extracting glue from chrome tan leather, or leather scrap.

On account of the chemicals used in the manufacture of this type of leather, it has been considered impossible to extract the glue, although efforts have been made in this direction. With my invention, however, I have discovered a method of extracting the glue, and my preferred plan of procedure is as follows:—

First, the leather or scrap is thoroughly soaked in warm water for a suitable period of time, say from one to three hours, in order to soften it.

Second, the water is drained off.

Third, the wet leather or scraps are placed in sufficient water to cover them, to which water has been added for each pound of dry leather or scrap used approximately one-half ounce of potash or other alkali of like nature, as for instance soda ash, sal soda, borax, ammonium, or ammonium chlorid, the function of which alkali is to liberate or saponify any grease or oil or to remove other foreign undesirable substance.

Fourth, the entire compound is raised to approximately 190° F.

Fifth, as soon as the compound reaches this degree, the solution is drained off, and the leather or scraps are thoroughly washed, they being intact up to this time.

Sixth, the leather or scraps are ground in order to thoroughly shred them, if necessary, in order to give up the glue quicker and easier.

Seventh, the leather or scrap is again placed in sufficient water to cover it, to which water has been added for each pound of dry leather or scrap used approximately three-fourths of an ounce of potash, potassium hydroxid, or other alkali of like nature, *e. g.* sodium hydroxid, the function of which is to liberate the glue from the fiber. The alkali solution may be made in the proportion of three-fourths ounce of caustic soda to three quarts of water, but the digestion may

be expedited by increasing the proportion of the alkali.

Eighth, the product is then boiled until the glue substance is liberated from the leather or scrap, say from one to four hours.

Ninth, I then drain off or filter clear the glue solution from the compound, and any well-known acid could, if desired, be used to neutralize the alkali, as for instance acetic or hydrofluoric, although the use of acid is not deemed imperative.

Tenth, the solution is again boiled down until it becomes a syrup somewhat after the manner of making maple syrup, thereby concentrating the glue, the water disappearing in vapor, and it may be used in this form as the final product provided the solution is sufficiently concentrated.

If desired I may add to the syrup, for each pound of the dry leather or scrap, an ounce of common starch or substance of like nature, the starch having been preferably first dissolved in cold water, to which has been added one-twentieth ounce of turpentine or equivalent substance, thus making the product a little more adhesive and causing it to dry a little quicker.

In either case the concentrated solution, or the compound last referred to, may preferably be evaporated until it becomes a thick liquor, and then may be dried after pouring it out into thin sheets. Obviously there are several ways of doing this.

Finally the dry glue may be comminuted or ground. This is not at all essential but it is sometimes desirable. While the first five preliminary steps in the process are desirable in order to clean the stock and to remove the grease and other impurities so that they will not be present in the glue finally produced, they are not absolutely necessary. Again, while it is not essential that the scrap should be reduced into small pieces, it is desirable in order to hasten the process. As indicated, there are some cases in which it is desirable to add the starch and turpentine to the glue solution for certain purposes; but this is only a refinement of the process and is not necessary.

The essential steps in the process herein described are the treatment of the chrome tanned leather with an alkaline solution of sufficient strength to liberate the glue, and the removal of the final product, *i. e.* the

glue solution, from the leather scrap residuum in which the chrome compounds are retained. This glue solution is free from chromic compounds, and, while alkaline, may be concentrated and evaporated to a thick viscous mass or to one which solidifies on cooling, and used as a glue. If desired, however, as I have previously pointed out, the alkali in the solution may be neutralized by a suitable acid.

More or less slight changes might be made in addition to those outlined without in any wise departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth, but:—

I claim:

1. The herein described process of making glue, which consists in digesting chrome tanned leather and an aqueous alkaline solution with heat, and separating from the mass, as the end product, the glue solution produced thereby, which is substantially free from chrome compounds.

2. The herein described process of making glue, which consists in boiling chrome tanned leather and a strong aqueous caustic alkaline solution, thereby liberating the glue with the retention of the chromic compounds in the leather residuum, separating the aqueous glue-containing solution from the mass, and evaporating and concentrating such solution.

3. The herein described process of making glue, which consists in digesting chrome tanned leather and an aqueous alkaline solution until the glue is liberated, then separating from the mass the aqueous glue-containing solution, substantially free from chromic compounds, and evaporating and concentrating such solution.

4. The herein described process of making glue, which consists of digesting chrome tanned leather and a strong aqueous alkaline solution until the glue is liberated, then separating from the mass the aqueous glue-

containing solution, substantially free from chromic compounds, neutralizing the alkali therein with a suitable acid, and evaporating and concentrating the resultant product to the desired degree of viscosity.

5. The herein described process of making glue, which consists in treating chrome tanned leather with a grease remover, washing the leather thus treated, then boiling said leather in a strongly alkaline aqueous solution to liberate the glue, separating the aqueous glue solution from the mass and leaving the chromic compounds in the residuum, and evaporating and concentrating such solution to the desired degree of viscosity.

6. The herein described process of making glue, which consists in removing the grease and dirt from chrome tanned scrap leather by soaking it in a warm alkaline solution and washing it, then digesting the washed scrap in an aqueous caustic alkali solution with heat until the glue is liberated, leaving the chromic compounds in the residuum, draining or filtering the aqueous solution from the mass, and evaporating and concentrating the said solution to the desired degree of viscosity.

7. The herein described process of extracting glue from chrome tanned leather or leather scrap, which consists in placing the leather or scrap in a caustic alkali solution in which for each pound of dry leather or scrap used there is approximately three-fourths of an ounce of caustic alkali, then boiling the mass for a predetermined period of time until the glue substance is liberated from the leather or scrap, draining off or filtering clear the glue solution from the scrap residuum which contains the chromic compound, and then evaporating and concentrating the solution to the desired viscosity.

In testimony whereof I affix my signature.
FRANK J. TURNER.