

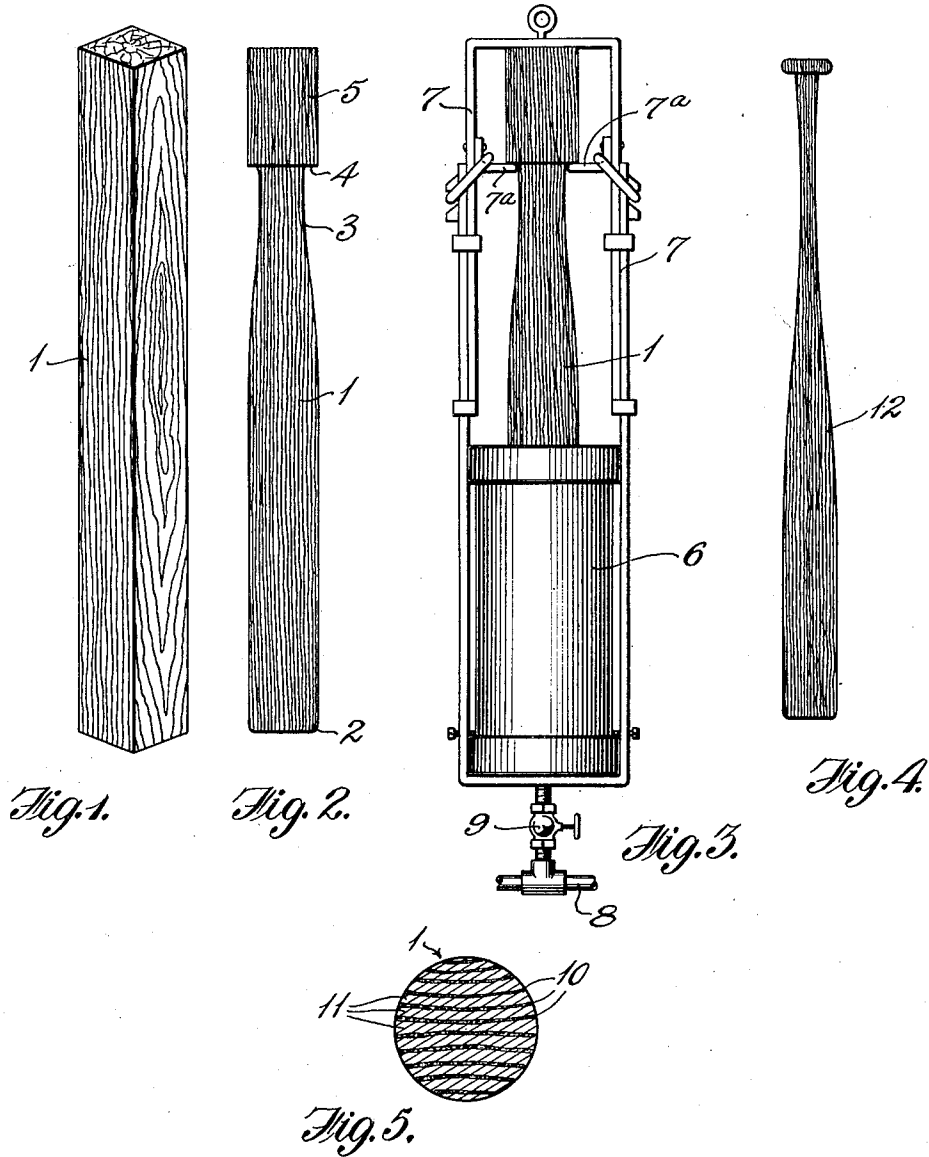
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J. A. HILLERICH

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TREATMENT OF WOOD FOR BASEBALL BATS

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Inventor
J. A. Hillerich

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Low & How

Attorneys

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TREATMENT OF WOOD FOR
BASEBALL BATS

John A. Hillerich, Louisville, Ky., assignor to
Hillerich & Bradsby Co., Louisville, Ky., a cor-
poration of Kentucky

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The invention relates to the treatment of wood for baseball bats by impregnation and subsequent seasoning, and has particular relation to a process for impregnating the entire cross-sectional area of the wood with a suitable adhesive to bind the wood layers together and insure against checking or splintering or separation of the wood layers during the life of the bat, after which the wood is thoroughly seasoned, and finally the bat is turned and finished to the proper dimensions and shape.

The present invention contemplates the use of the apparatus described in the issued patent to Beck and Beck, Number 1,936,579, for Baseball bat, dated November 28, 1933, but is primarily concerned with the impregnation of the bat billets with casein glue or the like and a subsequent period of seasoning, as distinguished from the impregnation of completed and turned down bats.

The billets from which bats of all sizes and proportions are to be turned are sawed into shape, about 3 inches square and about as long as the longest bat to be made; the billets are prepared long in advance of the actual bat making, and are stored under conditions which cause and result in a seasoning of the wood. This seasoning involves a gradual passing out of the billets of the watery part of the sap, while the solid elements of the sap harden in combination with the wood filaments, and I obtain important results, in making the bat strong, tough and resilient by causing this seasoning to take place while the wood is impregnated with the glue. Before seasoning the billet is relatively rough on its surface and susceptible to impregnation by a fluid such as casein glue and the like and any air or gas between the wood fibers is most easily driven out to yield space to be occupied by the impregnating fluid.

I have discovered that if the casein glue is impregnated into the wood before the final formation of the bat, and remains in it during the process of seasoning for a considerable time, the bat is better and more satisfactory, in respect of strength and that elasticity which enables hard and long hits to be made.

The bat billets of hickory, ash or like desirable hard woods, are furnished to the bat manufacturer in the green state and require a long period of seasoning before the same are suitable to be transformed into bats. The bat billets are or may be substantially of the same size, the length being sufficient to accommodate the longest bat permitted by the regulations and of sufficient cross-sectional area to permit a bat of the largest

regulation diameter to be turned from said billet. As heretofore stated, the bat billets may be of various hard woods having varying degrees of porosity and are stored in the open under conditions permitting free air circulation for as long a period as is necessary to preliminarily season the billets so that contained sap will not too much obstruct the entrance of the glue into and between the fibers. After the billets have been subjected to suitable initial seasoning, and are partly turned so as to be circular in cross-section, they are ready to be treated in accordance with the present invention, namely by subjecting the partly seasoned and rough turned billets in individual tanks to the penetrating action of a suitable adhesive mixture, preferably casein glue, which is forced under strong pressure through the billets in a longitudinal direction and into and between the wood fibers substantially throughout the entire cross-sectional area of the billets.

After impregnation the rough turned billets are stored for six to eight weeks, additional seasoning which has been found sufficient for complete drying and hardening of the adhesive and evaporation of all moisture content resulting from the impregnation. In fact the longer the period of seasoning after impregnation, the greater hardness, resiliency and driving power are imparted to the billets. The seasoned and impregnated rough turned billets are now ready to be completely turned down and finished into any size bat as may be desired in accordance with requirements.

The advantages of my discovery are that the billets being completely impregnated with glue and thoroughly dried and seasoned before being turned down into bats, this period of seasoning after impregnation imparts to the finished bat increased properties of hardness, durability, strength, resilience and driving power. All of these stated qualities are highly desirable in the finished bats, and the presence of the adhesive also prevents checking, splintering or separation of the wood layers or fibers.

Furthermore in accordance with my invention it is possible to turn out on short notice from the seasoned billets any desired number of bats of any desired specifications such as weight, diameter, length and so forth.

The seasoned, impregnated and dried billets prepared in accordance with my invention are readily accessible to be turned into the proper and desired size and ready for immediate delivery. Frequently the customer insists upon immediate delivery of seasoned and impregnated bats turned

down to particular specifications which it is difficult if not impossible to meet in bats prepared according to any other process. Under such conditions and in accordance with my invention, any unexpected rush orders may be taken care of since the seasoned impregnated and dried billets are capable of being turned into bats having any desired specifications.

In carrying out the process, the partly seasoned, dried and rough turned billets are placed in individual bat tanks in the manner described in the said co-pending application of Beck and Beck. By this process the billets are subjected to individual treatment depending upon the hardness and porosity of each particular billet. After being thoroughly impregnated with adhesive in a longitudinal direction throughout their cross-sectional area, the completely impregnated billets are stored to be thoroughly dried and further seasoned for a period of from six to eight weeks or longer and are then ready to be turned down into bats in accordance with the demands of manufacture. After being turned into bats it will be evident that the same are ready for immediate use, the final seasoning of the impregnated wood having been completed.

With such objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists in the procedure, and in the use of the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportions and arrangements without departing from the nature and scope of the invention.

In order to make the invention more clearly understood there are shown in the accompanying drawing means for carrying the same into practical effect, without limiting the improvements, in their useful applications, to the particular constructions which, for the purpose of explanation, have been made the subject of illustration.

In the said drawing:

Fig. 1 is a view in perspective of a wood billet from which the seasoned and impregnated bats are made.

Fig. 2 is an elevation of the billet after the same has been rough turned to prepare it for the impregnating step.

Fig. 3 is an elevation of the rough turned billet positioned in a bat treating tank to be impregnated with adhesive.

Fig. 4 is an elevation of the turned down and completed bat after the same has been impregnated and thoroughly dried and seasoned.

Fig. 5 is an enlarged cross section of the impregnated bat or billet.

Referring to the drawing, the wood billets 1 are initially or partly seasoned in the usual manner, preferably by storage with a free circulation of air, after which the preseasoned billets are rough turned as shown in Fig. 2. The billets are rough turned so as to provide a rounded peripheral edge 2 at the butt end and is somewhat tapered as at 3 to provide a shouldered enlargement 5 at the handle end of the bat. The rough turned billets are then submerged in individual billet treating tanks 6 as shown in Fig. 3 with the bottom ends of the billets spaced above the bottom of the tanks, and clamped therein by suitable releasable clamping mechanism generally indicated at 7. The adhesive, preferably casein glue, is admitted under pressure from the bottom

end of the tank through a flow line 8 having a control valve 9. The bat tank 6 may constitute one of a plurality of individual treating tanks arranged along the flow line substantially as shown and described in the co-pending application of Beck and Beck above referred to. The details of all of the apparatus illustrated in Fig. 3 are or may be similar to the apparatus fully described in said application and need not be further enlarged upon. It is sufficient to state that when valve 9 is opened the adhesive mixture having the desired consistency as explained in said Beck and Beck application, is forced under pressure into the tank and longitudinally through the bat billet to penetrate the pore rings in a vertical direction and for the entire cross-sectional area and longitudinal extent of the billet. The amount and duration of pressure required to complete the impregnation of the billet is of course variable depending upon the hardness and texture of the wood of which the billet is constituted. The pore rings of the billet are indicated at 10 in Fig. 5 and the alternate layers of wood fiber are shown at 11. The pore rings 10 are completely impregnated by the adhesive as indicated in this figure and serve to rigidly and permanently unite the said wood layers to insure against chipping or splintering during the life of the bat.

After the bat is completely impregnated the admission of adhesive under pressure is shut off at the valve 9 and the impregnated partially turned billet is removed from the tank as described in the Beck and Beck application. The engagement of the gripper elements 7a beneath the shoulder 4 provide means for removing the impregnated bat billet from the tank. The rounded peripheral edge 2 at the lower or butt end of the billet permits the same to be forced into the usual resilient gasket at the top end of the tank, preparatory to treating the billet. Said gasket also constitutes one of the fully described and claimed features of the said co-pending Beck and Beck application.

The partly seasoned and completely impregnated rough turned billet is now ready to be stored for further drying and seasoning until all the moisture content in the pore rings resulting from the admission of the adhesive is completely evaporated. For this purpose the impregnated billets may be stored from six to eight weeks or even longer to reach the maximum degree of hardness and resiliency desired and which is most essential in the completed bat.

After the period of final seasoning and drying the rough turned bat billets are ready to be completely turned down into a bat having any desired specifications according to the demand therefor. A completed seasoned and impregnated bat for example is indicated at 12 in Fig. 4.

In rough turning the billet it may be advisable to have the spur marks of the chuck on the lathe head stock at the upper or handle end of the bat. The tendency of these spurs in entering the wood is to compress and compact the wood fiber to a limited degree, which might interfere with or retard the ingress of the impregnating adhesive. By locating these marks at the handle end of the bat this difficulty will not be encountered, since the adhesive is injected upwardly through the opposite end of the billet where there are no such spur marks.

I claim:

1. The process of preparing wood billets for baseball bats which consists in first rough turning a partially seasoned billet to resemble the

general shape of a bat, then confining one end only of the billet in a pressure chamber while the other end of the billet remains exposed to atmospheric pressure, then forcing a liquid adhesive material under pressure longitudinally of the billet from the confined end toward the exposed end and throughout the entire cross sectional area of the billet, said adhesive entering and permeating the partially seasoned pore rings of the wood which are sufficiently dried out to permit their complete impregnation by said adhesive, whereby substantially all of the air normally included in the pore rings is replaced by said adhesive and the layers of wood fiber adjacent the pore rings are firmly united together and held against separation, and then drying the impregnated billet and simultaneously completing the seasoning thereof, whereby the impregnation and entire seasoning of the billet is effected in substantially the same time as though the impregnation were not carried out, and the treated billet is in condition for subsequent turning to prescribed specifications without leaving free of adhesive any portion of the completed bat desired to be impregnated.

2. The process of preparing wood billets for baseball bats which consists in first rough turning a partially seasoned billet into general bat shape having a tapered area between the ends thereof where the pore rings of the summer growth are cut transversely, then partially im-

pregnating said billet by forcing liquid adhesive under pressure longitudinally through said pore rings from one end of the billet and throughout the entire cross sectional area thereof until said adhesive emerges from the cut ends of the pore rings within said tapered area and short of the other end of the billet, thus indicating the extent of impregnation longitudinally of the billet, said adhesive entering and permeating the partially seasoned pore rings of the wood which are sufficiently dried out to permit their complete impregnation by said adhesive, whereby substantially all of the air normally included in the impregnated portion of the pore rings is replaced by said adhesive and the layers of wood fiber adjacent the pore rings are firmly united together and held against separation, then discontinuing the impregnation so as to leave the remainder of the billet unimpregnated, and then drying the partially impregnated billet and simultaneously completing the seasoning thereof, whereby the desired impregnation and the entire seasoning of the billet is effected in substantially the same time as though the impregnation were not carried out, and the treated billet may be subsequently turned to prescribed bat specifications without leaving free of adhesive any portion of the completed bat desired to be impregnated.

JOHN A. HILLERICH. 30