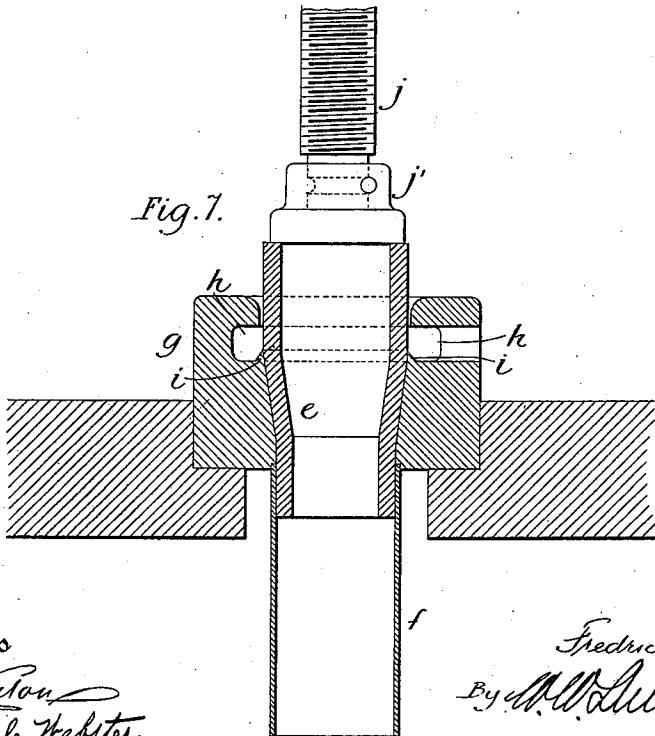
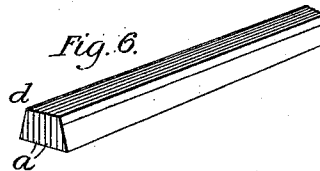
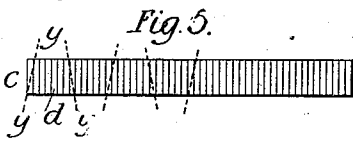
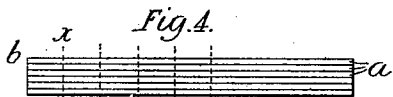
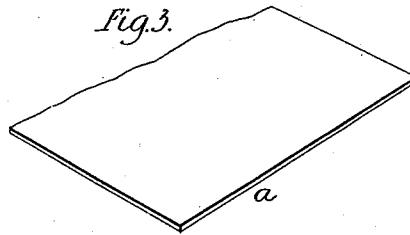
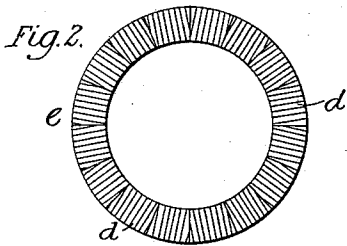
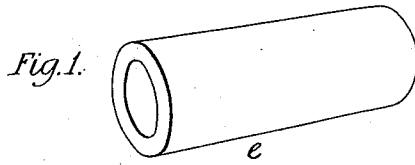


(No Model.)

F. LATULIP.
JOURNAL BEARING.

No. 564,564.

Patented July 21, 1896.



Witnesses

W. J. Norton
Benjamin Webster.

Inventor

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By *W. A. Lindsey & Co.*
his Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK LATULIP, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF
TO EDWARD J. SHANAHAN, OF SAME PLACE.

JOURNAL-BEARING.

SPECIFICATION forming part of Letters Patent No. 564,564, dated July 21, 1896.

Application filed September 11, 1895. Serial No. 562,133. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK LATULIP, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Journal-Bearings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention is directed to improvements in the construction of bushings or journal-box bearings, and has for its object the production of an efficient rawhide bushing or bearing possessing advantages in point of durability and maximum economy in manufacture.

The nature of my invention will become apparent from a reading of the following detailed description when taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a cylinder-bushing constructed according to my invention. Fig. 2 is an enlarged transverse sectional view of the same. Fig. 3 is a perspective view of one of the artificial sheets which enter into the structure. Fig. 4 is a sectional view showing a number of the artificial sheets assembled to form an incomplete block, the dotted lines indicating the lines at which the block is divided to form strips. Fig. 5 is a sectional view of a completed block made up of said strips, the inclined dotted lines thereon indicating the lines on which said completed block is divided to form segments for constructing a cylindrical bushing or bearing. Fig. 6 is a perspective view of one of the segments. Fig. 7 is a sectional view of a machine for jacketing cylindrical bushings.

In carrying my invention into practice I reduce rawhide, by grinding or otherwise, to a more or less fine state, and from the material in this condition build up the bushing or other bearing-surface.

The rawhide when reduced is of about the same nature and condition as wood sawdust, being comparatively finely divided and free from dirt and other foreign substance. This

material is then mixed thoroughly with moderately warm water, in the proportions of, say, five pounds of ground rawhide to one gallon of the water, and to this is preferably added about one quart of concentrated ammonia. The action of the water or water and ammonia on the rawhide results in the formation of an adhesive film on the surface of each particle of the rawhide which causes said particles when subjected to a heavy pressure to unite to form a homogeneous mass, thereby dispensing with the employment of an additional ingredient as a binder. The addition of the ammonia to the water quickens the action of the latter on the particles, thus saving considerable time in the manufacture. After a thorough mixture of the ingredients named the same is placed in a mold and subjected to a heavy pressure, which eliminates all moisture, and the form is then taken from the mold and dried in a suitable kiln.

My preferred construction involves the forming of artificial sheets, as *a*, by subjecting the reduced rawhide to heavy pressure, and coincident with or subsequently to the application of pressure thoroughly drying said sheets by steam or otherwise to expel therefrom all moisture. A number of these artificial sheets so formed are then cemented together, pressure being applied, and the result is a block such as shown in Fig. 4 and lettered *b*. From this block the necessary segments or other forms for building the bushings or bearings may be obtained, but I prefer to construct from the block *v* what I term a "completed" block *c*, (shown in Fig. 5,) and which is made by half reversing and cementing together under pressure strips cut from block *b* on the dotted lines *x x*. The completed block *c* is thoroughly dried, and is then ready to be divided into the segments or other forms of strips which enter into the bushing or bearing.

In Fig. 5 I have shown a method of cutting the block to form segments *d* for a cylindrical or half-round bushing or bearing, by which the maximum economy of material is secured, said method consisting in dividing the block on the inclined lines *y y*, and thereby obtaining by a single cut the sides, so to speak, of two segments. As shown in said Fig. 5,

every other segment is in reverse relation, but all are of the same shape and size, and said method obviates the loss of V-shaped pieces, which would result were the block otherwise divided. The segments so formed are now ready for assemblage in the form of a cylindrical or half-round bushing or bearing, and when arranged together are first cemented and then placed in a suitable clamp to form, for instance, the body *e*. (Shown in Figs. 1 and 2.) This form is then subjected to a suitable drying process and is then ready to receive its metallic casing or jacket *f*, the operation of jacketing being as follows: The body, before or, if desired, after the drying process, is placed in a lathe and turned to a diameter considerably in excess of the diameter of the casing or jacket into which it is to be placed, and I then reduce the body under heavy pressure and force it in place, the device employed for this purpose being shown in Fig. 7. Referring to said figure, *g* denotes a collar having a tapering aperture and adjacent to said aperture recesses *h* for the escape of shavings. At the point where the taper commences and coincident with said recesses is an annular knife *i*, which trues the periphery of the form as it passes downward into the contracted portion of the aperture. Pressure is applied to the form by a screw *j* and plunger *j'*, and at the base of the aperture is placed the jacket *f*, into which the form is shown partially inserted.

The contraction of the diameter of the form to enable its entry into the jacket insures a very tight fit when in place, as said form has a tendency to expand to resume its normal diameter, and by this means no keys or other locking devices are necessary, as would be the case if the normal diameter of the form were the same as the internal diameter of the jacket or casing. Where the exterior of the form has in the first instance been carefully turned, the annular knife *i* may be dispensed with.

While I have in the foregoing described the making of the segments or other forms of strips from artificial sheets, I do not wish it understood that I confine myself thereto, as it is evident that the bushing or bearing can be formed either by molding the entire body or form at one operation or molding the segments or other forms of strips, which latter may be afterward assembled, as previously described.

A bushing or bearing so constructed requires no lubrication, but to enhance its effectiveness I sometimes mix the reduced rawhide with plumbago, which has the effect to further minimize the wear by acting as a lubricant.

It will be evident that in a bushing or bearing constructed in accordance with the foregoing there is no "grain;" hence the resistance to wear is equal throughout.

By my invention I am enabled to utilize those particles of rawhide which have pre-

viously been regarded as "waste" and which have been in consequence discarded, and, in addition to this advantage of economy, the hide may be hardened by pressure to a degree greatly in excess of rawhide in its natural state.

I claim as my invention—

1. The method herein described of making bushings, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water to form an adhesive film on the surface of the particles, eliminating the moisture from the mass by pressure, and then subjecting the same to the action of heat.

2. The method herein described of making bushings, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water and concentrated ammonia to form an adhesive film on the surface of the particles, eliminating the moisture from the mass by pressure, and then subjecting the same to the action of heat.

3. The method herein described of making bushings, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water to form an adhesive film on the surface of the particles, subjecting the mass to pressure to eliminate the moisture therefrom and to form artificial sheets, subjecting said sheets to the action of heat, cementing said sheets together to form a block, from which strips are cut to make the bushing.

4. The method herein described of making bushings, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water and concentrated ammonia to form an adhesive film on the surface of the particles, subjecting the mass to pressure to eliminate the moisture therefrom and to form artificial sheets, subjecting said sheets to the action of heat, cementing said sheets together to form a block, from which strips are cut to make the bushing.

5. The method herein described of making tubular articles, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water to form an adhesive coating on the particles, subjecting the mass to pressure to eliminate the moisture therefrom and to form artificial sheets, subjecting said sheets to the action of heat, cementing said sheets together, severing said assembled sheets to form strips, cementing said strips to form a block, severing said block on inclined lines in the manner set forth to form segments, and cementing said segments to form the bushing.

6. The method herein described of making tubular articles, consisting of reducing rawhide to a finely-divided condition, mixing therewith warm water and concentrated ammonia to form an adhesive coating on the particles, subjecting the mass to pressure to eliminate the moisture therefrom and to form artificial sheets, subjecting said sheets to the action of heat, cementing said sheets together, severing said assembled sheets to form strips,

cementing said strips to form a block, severing said block on inclined lines in the manner set forth to form segments, and cementing said segments to form the bushing.

5 7. As a means for jacketing rawhide bushings, a collar having a tapering aperture and an annular recess extending therefrom near its upper end, an annular knife-edge, one of the edges of which is contiguous with the
10 wall of the aperture, a device for forcing the

bushing through said aperture and against said knife-edge, and a jacket to receive said bushing, so arranged as to form a continuation of said aperture.

In testimony whereof I affix my signature 15
in presence of two witnesses.

FREDRICK LATULIP.

Witnesses:

A. A. BISHOP,
E. J. SHANAHAN.