No. 819,863. PATENTED MAY 8, 1906.

O. M. CUTLER.

METHOD OF AND APPARATUS FOR SHREDDING LEATHER.

APPLICATION FILED APR. 22, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

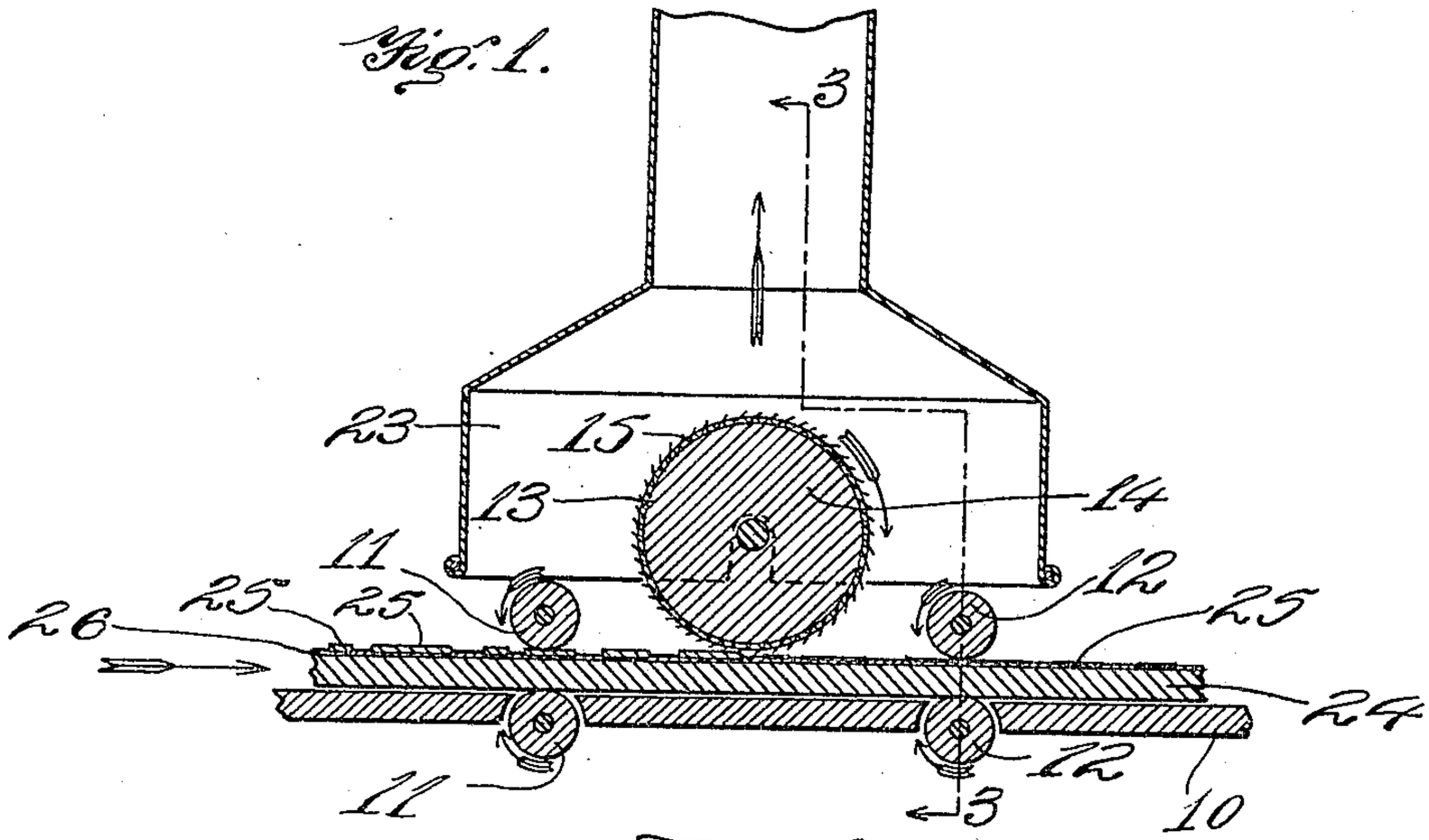
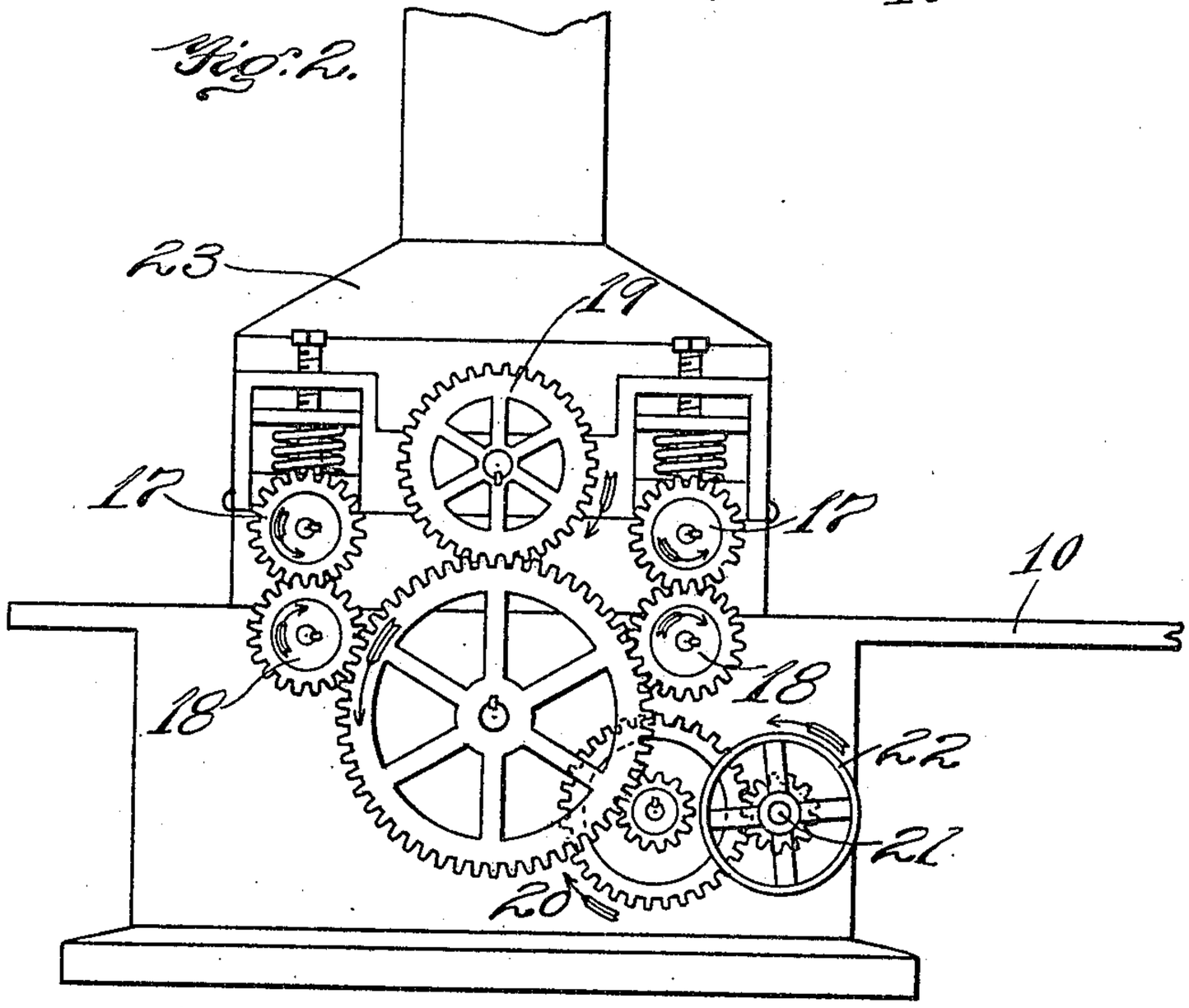


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

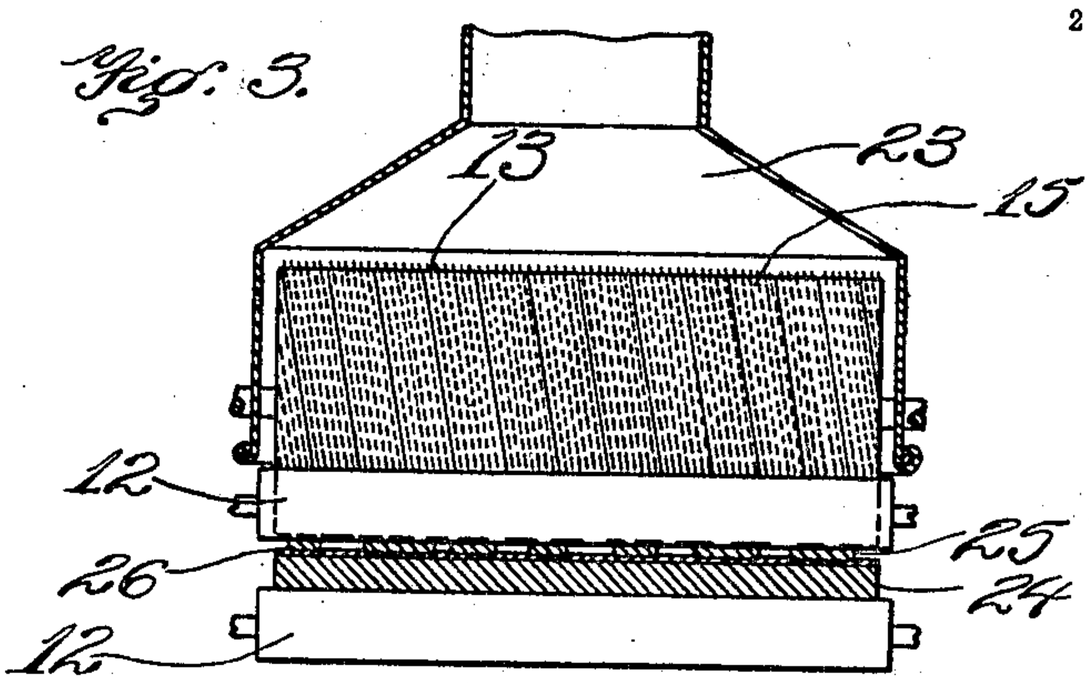


Fig. 4.

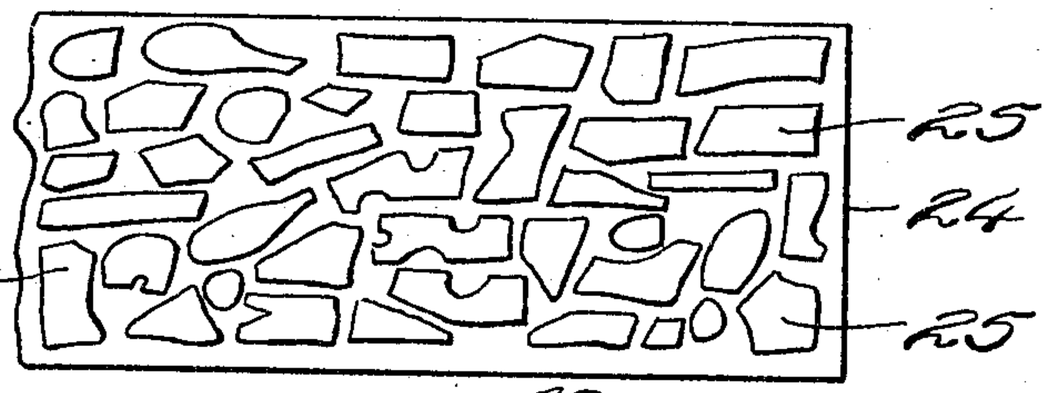


Fig. 5.

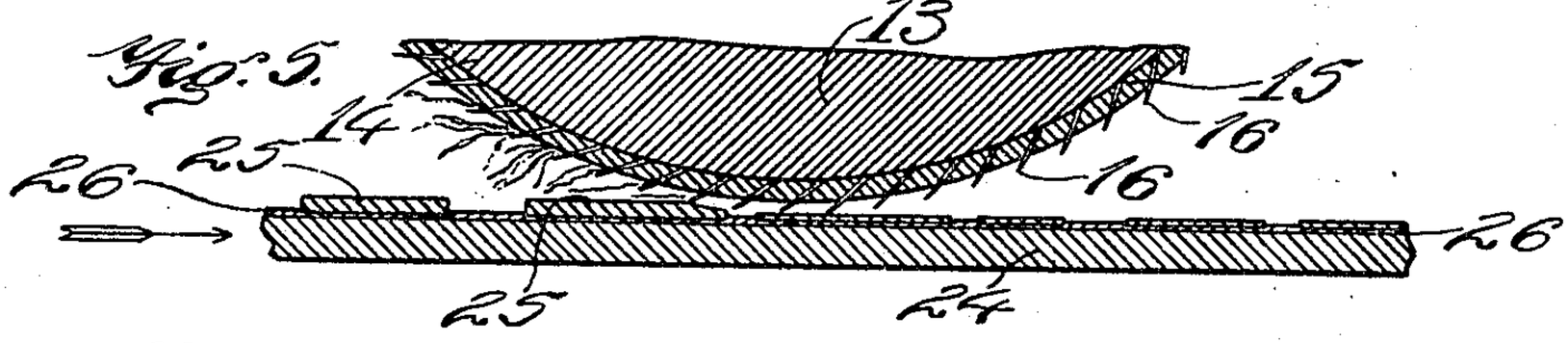


Fig. 6.

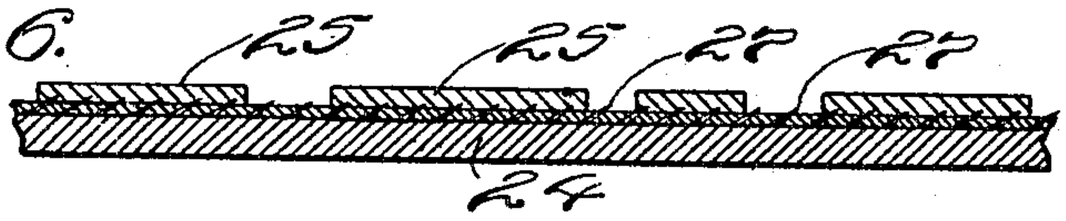


Fig. 7.

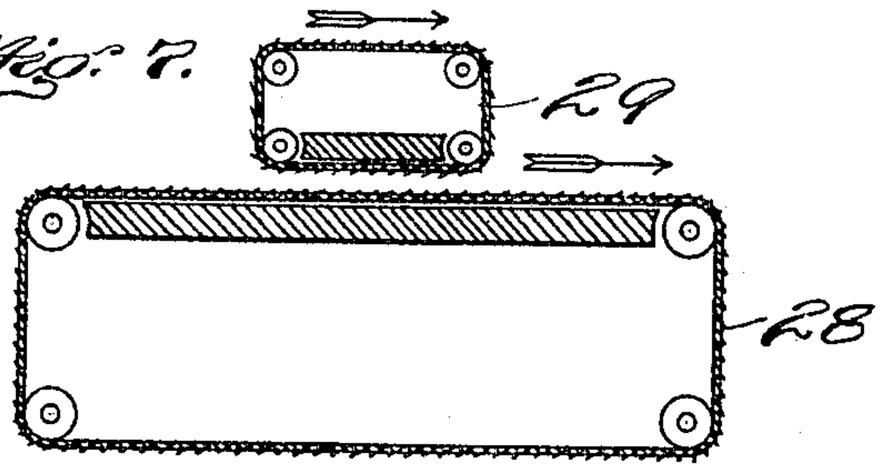
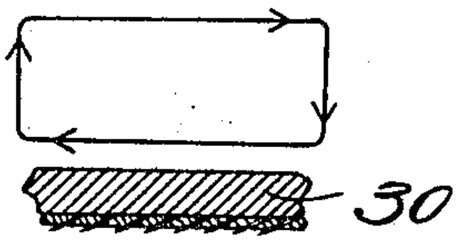


Fig. 8.



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By Wright, Brown, Quinby & May Attys.

UNITED STATES PATENT OFFICE.

OTIS M. CUTLER, OF WAKEFIELD, MASSACHUSETTS, ASSIGNOR TO FIBERED LEATHER MANUFACTURING COMPANY, A CORPORATION OF MAINE.

METHOD OF AND APPARATUS FOR SHREDDING LEATHER.

No. 819,863. Specification of Letters Patent. Patented May 8, 1906.

Application filed April 22, 1905. Serial No. 256,851.

To all whom it may concern:

Be it known that I, OTIS M. CUTLER, of Wakefield, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Methods of and Apparatus for Shredding Leather, of which the following is a specification.

Figure 1 represents a vertical longitudinal section of an apparatus for carrying out my invention. Fig. 2 represents a side elevation thereof. Fig. 3 represents a vertical transverse section on line 3 3 of Fig. 1. Fig. 4 represents a view of the supporting-board to which the scraps of leather are glued. Fig. 5 represents an enlarged longitudinal section showing the action of the shredder on the leather. Fig. 6 represents a section showing a modified means of attaching the leather scraps to the support. Figs. 7 and 8 represent sectional views of modifications to be hereinafter referred to.

The same reference characters indicate the same parts in all the figures.

This invention relates to the art of shredding leather in a dry state.

In a copending application, Serial No. 199,429, filed March 22, 1904, I have described an apparatus and method for shredding leather by means of a plurality of saw-shaped disks whose teeth operate in a path of movement across the edges of the leather scraps, the scraps being fed forward by suitable rollers and forced under spring-fingers and over the edges of a table across which the saws operate.

The object of the present invention is to improve both the method and apparatus described in my aforesaid application in such manner that a longer and stronger fiber may be obtained from the leather more quickly and with less waste of material and less liability to injury of the mechanism.

According to the embodiment of my present invention, hereinafter more particularly described, the leather scraps are secured flatwise to a board or other support by suitable means, as by gluing them to the board, and are then fed under a toothed cylinder, which acts on the outwardly-presented flesh side of the leather and tears or shreds the same into fine threads, which are suitable for many purposes in the arts. This product when obtained in a dry state can be immediately utilized in various ways in which it is impossible to employ leather fiber obtained by the wet process, which consists in first soaking the leather and then disintegrating it by beating or an equivalent operation.

In the drawings, 10 is a horizontal bed, along which the material to be acted on is fed by corrugated positively-driven rollers 11 12, of which I have shown one pair located in advance of and the other beyond a shredding-cylinder 13. The latter is composed of a body or core 14 and a strip of flexible material 15, such as leather, wound helically thereon and having numerous shredding-teeth 16 embedded therein and projecting beyond the surface of the strip. Fig. 2 shows a permissible arrangement of gearing for operating the described parts. On the ends of the rollers 11 12 are pairs of intermeshing gears 17 18. 19 is a gear on the shaft of shredding-cylinder 13. These several gears connect, through gearing 20, with a drive-shaft 21, having a belt-pulley 22.

23 is a cowl or hood covering the shredding-cylinder and connected with a suction apparatus for carrying away the shredded leather produced by said cylinder.

I have devised a novel method of and apparatus for feeding scrap-leather to the action of the shredding-cylinder. A preferred means of effecting this object is to employ a moving support, such as the board 24, and attaching the leather scraps 25 thereto adhesively by means of glue 26 in a series having a longitudinal distribution and also a lateral distribution, as will be evident in Fig. 4, whereby a number of scraps covering a substantial area will be subjected simultaneously to the shredding operation.

In the operation of the machine the board 24, with the leather scraps 25 glued to its upper surface, is fed along the table 10 by the action of the corrugated rollers 11 12 underneath and tangent to the toothed cylinder 13, the teeth of which tear the leather into filiform shreds, which retain the natural strength of the leather fibers and being in a dry state are fit for immediate employment in the arts in numerous ways. It will be seen that the scraps 25 are placed flatwise on the board 24 and the shredding-teeth act parallel to the plane of the leather instead of across its edge. This gives a long fiber of

maximum strength. The scraps are further placed with their flesh side outermost, this being the fibrous side. That portion of the leather on the hair side being not so fibrous in character is less suited to disintegration in thread-like form and may by the process of attacking the leather flatwise on the flesh side be left unshredded. It may be here stated that in the wet process the hair side of the leather will not readily disintegrate and forms objectionable lumps in the final product.

The spirally-wound toothed strip 15 makes an inexpensive shredder.

It will be apparent that various equivalents may be substituted for the described shredding and work-feeding instrumentalities without departing from the substance of the invention. Fig. 6 shows the scraps 25 attached to a supporting-board 24 by means of shallow teeth 27. The feeding-support might take the form of an endless toothed carrier 28, as shown in Fig. 7, or it might be a cylinder of construction similar to that of the shredding-cylinder 13. Fig. 7 also shows the shredder in the form of an endless toothed belt 29. The shredder may be a toothed member 30, as shown in Fig. 8, having a four-motion path indicated by the rectangle of arrows. It will be evident that the shredder could be stationary and the shredding movement imparted to the work.

I claim—

1. A leather-shredding machine comprising a shredding member and a scrap-carrying member, means for positively moving one of said members relatively to and past the other member to cause the shredding member to act progressively on the leather scraps, the teeth of the shredding member being distributed to act on all portions of the upper surface of the scraps.

2. In a leather-shredding machine, the combination of leather-shredding means, a rigid continuous support for scrap-leather, and means for feeding said support to the action of the leather-shredding means, the teeth of the shredding means being distributed to act on all portions of the upper surface of the leather.

3. In a leather-shredding machine, the combination of leather-shredding means, a support having means for positively securing and carrying scraps of leather, and means for feeding said support to the action of the leather-shredding means, the teeth of the shredding means being distributed to act on all portions of the surface of the leather.

4. In a leather-shredding machine, the combination of a rotary leather-shredder having equally-distributed teeth, and means for feeding the leather positively in a direction tangent to the acting portion of said shredder.

5. In a leather-shredding machine, the combination of a shredder composed of a revolving series of equally-distributed leather-shredding teeth, and means for feeding the leather positively in a direction tangent to the acting portion of said shredder.

6. In a leather-shredding machine, the combination of a shredder comprising a cylindrical series of equally-distributed leather-shredding teeth, means for rotating said shredder, an elongated board having means for securing leather scraps thereto, and means including a pair of opposed feed-rolls for propelling said board in a direction tangent to the shredder.

7. The process of dry-shredding leather which consists in rigidly supporting leather scraps and subjecting them to the progressive action of equally-distributed shredding-teeth in a direction lengthwise of the plane or surface of the leather.

8. The process of dry-shredding of leather which consists in subjecting the leather to the action of a multiplicity of equally-distributed shredding-teeth applied simultaneously over an area of the flesh side of the leather.

9. The process of dry-shredding of leather which consists in shredding a series of scraps of leather by positively feeding them successively to a shredding device having equally-distributed teeth acting in a direction parallel to the planes of the scraps.

10. The process of dry-shredding of leather which consists in securing scraps of leather to a support, subjecting said scraps to the action of shredding means having equally-distributed teeth by relative feeding movement of said support and said means, and rigidly holding said support to the action of said shredding means.

In testimony whereof I have affixed my signature in presence of two witnesses.

OTIS M. CUTLER.

Witnesses:

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