C. T. GRILLEY.

Leather Washers.

No. 164,444. Patented June 15, 1875.

Fig. 1.

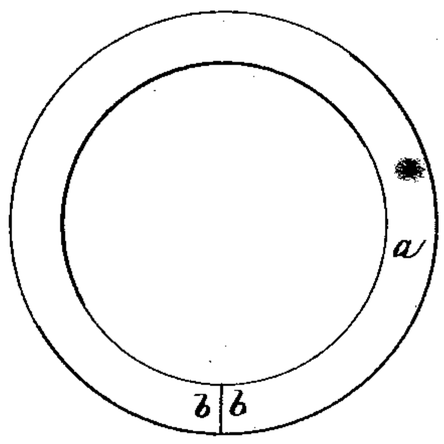


Fig. 2.

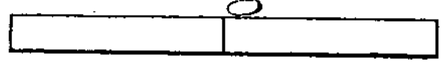


Fig. 9.

Fig. 3.

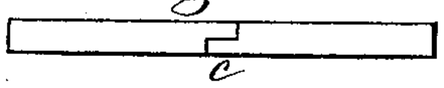


Fig. 4.

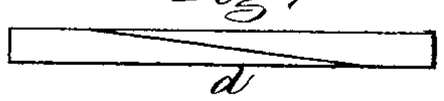


Fig. 7.

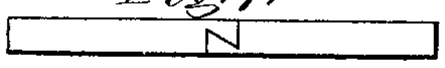
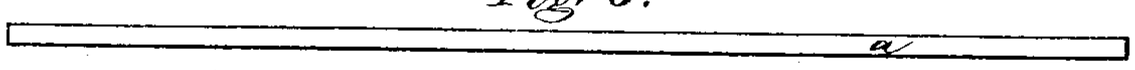


Fig. 8.

Fig. 5.

Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES T. GRILLEY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LEATHER WASHERS.

Specification forming part of Letters Patent No. **164,444**, dated June 15, 1875; application filed April 7, 1875.

To all whom it may concern:

Be it known that I, CHARLES T. GRILLEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Leather Washers, of which the following is a specification:

This invention relates to an improvement in leather washers; and has for its object the production of such washers cheaply, and from strips of waste, scrap, or other leather.

It is well known that washers are commonly used on axles of carriages, one or more being used at the collar within or near the back side of the hub, and one or more between the nut and the hub, to prevent friction of iron against iron, and prevent rattling. Washers are also used in unions for connecting pipes, as with pumps and gas-meters, and frequently are employed about rods in stuffing-boxes and pistons working in water or liquids, and for various other purposes.

Washers, as heretofore made for packing purposes, have been made of india-rubber and of leather. Those of india-rubber are very expensive, and when they are to come in contact with oil are objectionable, because the oil soon destroys the rubber. Those of leather, as heretofore usually made, have been cut as flat rings from sides of leather, washers of the largest size being first cut, and then from the interiors of such large washers are cut smaller washers, down to the smallest washer used. In this process of cutting washers there is no actual waste of leather, except the pieces from between the peripheries of the large washers and the small pieces punched or cut from the smallest washer.

In the manufacture of washers, however, in this way, good leather is used in sides, and w rth from forty to forty-five cents per pound, and there are always made as many small as large washers. It is not, therefore, possible to cut and supply an order for washers of a given size without at the same time making as many washers of other sizes, and in this way the stock of a washer-manufacturer is rendered unnecessarily large, making it necessary to hold sizes for which there is not much demand; and for large washers made to order it is necessary to charge a price not according to the quantity of leather in the washer, but according to the quantity of leather rendered then unproductive in small washers.

This invention consists in a washer composed of a single layer of leather, either waste, scrap, or other strip, bent into an annulus or ring, as hereinafter described and shown as a new article of manufacture, the grain or edge of the strip of leather forming the wearing-surfaces.

Figure 1 is a top view of my improved washer. Fig. 2 is an edge view thereof. Figs. 3 to 6 are views showing different ways of connecting the ends of the strips.

In the manufacture of this washer, I first take pieces of thick leather, such as are commonly thrown away as the waste in the manufacture of boots and shoes, and pass them through a machine adapted to skive and leave them of substantially even thickness; then I prefer to place said pieces (one edge having been straightened by cutting) against a straight-edge or guide, and under the action of a knife, which descends and cuts the leather into strips *a* of the desired width and length, and with ends of a width equal to the thickness desired for the marker. The strip, when bent in similar form, is placed in a female die about a core, and a male die forces the leather into the female die, causing it, by pressure, to assume and retain circular shape, the ends connecting, as shown.

Before the strips of leather are bent into circular form, they may be coated with india-rubber, cement, or other leather-holding cement which will not be affected by water or oil, and the edges, when lapped and united under pressure, will be set and fastened. The leather back from the ends may be moistened a little, if desired, to facilitate its molding to shape. Instead of cutting the leather into strips, as described, it may be formed into strips in any other suitable way.

I prefer to make my washers of strips of waste leather, as described; but it is evident that I might purchase good leather and cut it into strips of the desired width, and thereby materially cheapen the manufacture of washers, for I could manufacture any desired number of washers of even thickness and density, and of any given size or thickness, and need not produce, as in the old way, as many, per-

haps then unsalable, washers as I produce of washers of the desired size, and I need charge only for the actual amount of leather used; so I do not desire to limit myself to the production of my washers from waste leather alone; but when I produce them entirely of waste leather I am enabled to reduce the cost to the very lowest degree.

I do not herein claim the mechanism described for forming these washers, nor do I claim the process of so forming them from strips, as these features of invention form the subject-matter of another application for Letters Patent filed concurrently with this, to which reference may be had, and I contemplate that this washer may be formed by other mechanism than that described.

It will be noticed that my washer is composed, as usual, of a single layer of leather, except where the ends of the strip are lapped, and at that point the ends of the strip are notched or reduced, and are lapped but for a short distance.

In the manufacture of this improved washer I have alluded to the fact that small washers are cut from larger ones, and it is well understood that large washers are usually required to be thicker than small washers, and, therefore, when a large washer is cut from a side or piece of leather of the proper thickness, the smaller washers made from the interior are too thick, and, when used by the consumer, have to be cut or made thinner by hand, resulting in a waste of time and stock. Furthermore, the washers as usually cut from sides of leather are not of even thickness, because the thickness and compactness of the leather varies at different portions of the side, and this want of uniformity must exist in the washer, as it is not practical to skive the side before cutting the washers; and, were this skiving practical, it is apparent that great loss would result in bringing a full hide to uniform thickness, or to the thickness of the thinnest part, and a most valuable portion of the hide would be lost.

In a washer of not uniform density it will be apparent that when met by metallic or other surfaces which it is to pack, that portion of the washer the most dense will regulate the distance between the metallic surfaces, and the other portion, less dense, will permit the passage of air or liquid, provided the washer is used to pack a liquid or air joint.

My improved washer of waste strips, it will be seen, can be practically made of uniform and of any desired thickness.

In the use of a washer of not uniform thickness and density in a carriage-wheel, or where it is subjected to friction between surfaces, if one portion of the washer is hard and holds the surfaces apart, while another part is soft, and does not touch the parts as firmly, the hard part receives the greatest wear, and has a tendency to throw an unequal strain on the axle at the end; and in this use of a washer, if the washer is of even thickness and not of uniform hardness, the softer portion will wear out before the harder, and cause the wheel to run irregularly and with a jar.

I claim—

As a new article of manufacture, a leather washer formed of a strip of leather of single thickness, connected directly end to end, and presenting the grain or edge of the leather for the working-surface, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES T. GRILLEY.

Witnesses:
G. W. GREGORY,
S. B. KIDDER.