

F. M. FURBER.
BELT FOR ABRADING MACHINES.
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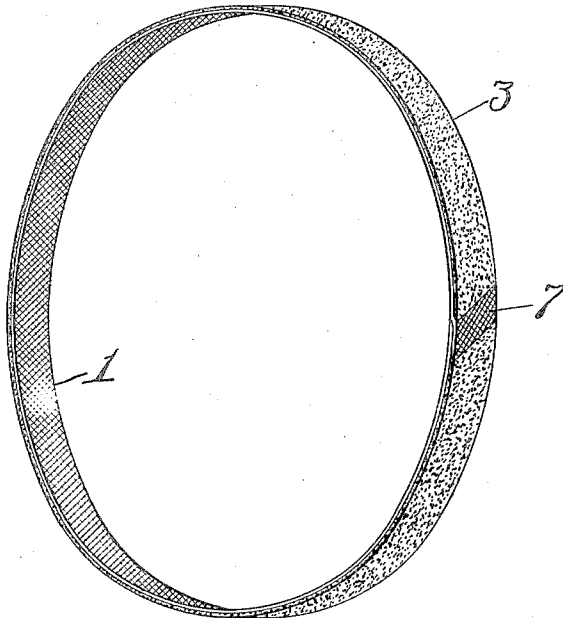


Fig. 1.



Fig. 2.

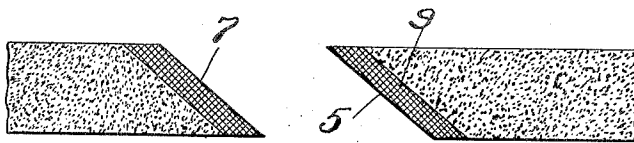


Fig. 3.

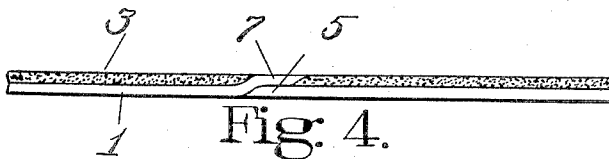


Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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BELT FOR ABRADING-MACHINES.

1,009,709.

Specification of Letters Patent.

Patented Nov. 21, 1911.

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To all whom it may concern:

Be it known that I, FREDERICK M. FURBER, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Belts for Abrading-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to abrasive belts and is herein illustrated in connection with a belt especially adapted for use with scouring machines of the type of that illustrated in Patent No. 681,636, granted to me on August 27, 1901.

In the machine of the patent an abrasive belt is carried by two pulleys of small diameter, and the edge of the shoe is presented to the belt as it passes over one of the pulleys. These pulleys are run at high speed, and it is essential that the belt run as smoothly as possible, since any irregularity in the thickness of the belt is liable to strain the belt and to produce a recurring disfiguring mark upon the work.

The most desirable results are obtained with a machine of this type by using a belt comprising a piece of textile fabric faced with an abrasive material, and hitherto such belts have been made in two layers cemented together and have comprised a backing-strip of suitable material and a facing-strip of emery cloth, it being evident that by making the belt of two layers the ends of each layer may be caused to abut directly against each other so that the finished belt is of uniform thickness throughout. The cost of making such belts, however, is so great as to prevent them from being used in ordinary work; and accordingly the general object of the present invention is to provide a belt consisting of a single piece of textile fabric coated with an abrasive material which shall nevertheless be suitable for producing a uniformly smooth surface upon the work.

Ordinarily when it is desired to produce a belt of a single thickness of material, as for example, of leather, the ends of a strip of such material are skived so as to form beveled ends which are then overlapped and cemented together. With a textile fabric, however, it is impossible to skive the ends,

any attempt to do so resulting simply in removing the cross-threads and leaving the longitudinal threads frayed and weakened.

Accordingly, one feature of the present invention consists of a belt having a joint formed by removing from the ends of a strip of emery cloth or similar material the abrasive coating and thereafter overlapping the denuded ends and fastening them together.

There thus results in the finished belt a section—comparatively small in practice—which has no abrasive coating. Experiment has proven that when this uncoated portion or joint extends directly across the belt in a direction perpendicular to the direction of travel of the belt there is liable to result upon the work a series of recurrent disfiguring marks, these marks apparently being caused by the friction between the exposed cloth and the edge of the sole or other piece of work. And in order to overcome this difficulty another feature of the present invention consists in so locating the joint in a belt of the class described that the exposed uncoated surface extends obliquely across the face of the belt; and preferably the obliquity is considerable so that one side of the uncoated surface extends well in advance of the other. With this construction and arrangement the work is never wholly engaged by the uncoated surface, and consequently if a disfiguring mark is produced on the work it is immediately erased by the abrasive material.

These and other features of the invention including certain details of construction will be described in connection with the accompanying drawings and pointed out in the appended claims.

Referring now to the accompanying drawings:—Figure 1 is a perspective view of a belt of emery cloth in which the present invention is embodied; Fig. 2 is a side view showing the adjacent ends of the belt as they appear before they are joined; Fig. 3 is a plan of the parts shown in Fig. 2; and Fig. 4 is a side view of the adjacent ends of the belt after they have been overlapped, cemented together and pressed to form the joint.

Emery cloth consists of a backing of textile fabric having one surface coated with finely granulated emery, which is secured to the backing by an adhesive substance

such as glue; and the thickness of the coating of emery is equal to or greater than the thickness of the backing.

In the drawings, the cloth backing is indicated at 1 and the coating of emery at 3.

In making the belt a strip of cloth of the desired dimensions is cut in any desired manner from suitable material. The ends of this strip are then treated with water or other suitable solvent so as to soften the glue or other adhesive substance, and thereby loosen the emery for about one-fourth of an inch from the ends. The edge of a scraper, which may be a knife blade, is then pressed into the emery on a line parallel to the end of the strip, and the strip drawn from beneath it whereby the loosened emery is removed and a narrow strip of the backing exposed. It will be understood that both ends of the strip receive this treatment and that the strip which is to be made into a belt will then present the appearance shown in Figs. 2 and 3 wherein the exposed or uncoated ends of the backing are indicated at 5 and 7. One of these exposed portions, for example 5, is covered with glue or other cement; the under side of the other exposed portion 7 is placed upon this cemented surface with its end abutting against the shoulder 9 formed by the end of the coating of emery; and the parts are then firmly pressed together. The result of this pressure is to distort or offset the cloth backing at one end (the end 7 as shown in Fig. 4) so as to cause the upper surface of this uncoated end to lie approximately in the plane of the surface of the coating of emery. There is thus formed a joint, the thickness of which is equal to or slightly less than the thickness of the emery cloth; and it should be particularly noted that when proper cement is used the strength of the belt at the joint is fully equal to, if not greater, than at any other portion and that at the same time there is no increase in thickness at the joint and hence no danger of straining the belt as the joint passes over the pulleys by which it is driven nor of disfiguring the work by any bunch or protuberance on the belt. It has been found by experiment, however, that when the joint is so formed that the uncoated strip extends across the belt in a direction perpendicular or approximately perpendicular to the edge of the belt, there is liable to be produced upon the edge of the sole of the shoe or other work a series of disfiguring marks. If the belt were used upon pulleys of large diameter, these disfiguring marks would probably not result in the finished work since every portion of the work would then be brought into contact with a considerable extent of the belt—or at least into contact with an extent greater than that of the exposed joint—and any marks which might be caused by said exposed joint would

be immediately erased by the emery. In use with small pulleys, however, in which the sole of the shoe or other piece of work is presented to that portion of the belt which is passing over the pulley, the extent of the belt which comes into contact with any given portion of the work may be—and often is—not greater than the extent of the exposed surface of the joint. That is, as the shoe is presented in a direction opposite to that in which the belt is moving, only a very small extent of the belt is brought into contact with the work; and, when this small extent is the exposed surface of the joint, a disfiguring mark is produced. In order to overcome this difficulty as well as to produce a stronger joint, the strip from which the belt is made is cut in the form of an elongated rhomboid as best shown in Fig. 3. The uncoated ends are thus oblique to the side edges of the belt, and the joint which results is similarly oblique to the side edges and hence to the direction in which the belt travels when in use. With this construction the edge of the sole or other work is never wholly engaged by the uncoated surface; the possibility of making a disfiguring mark is thus greatly reduced, and whatever slight marks may be made are sufficiently erased by the emery. It will be understood that while the angle made by the joint with the sides of the belt may be varied, it is desirable that one side edge of the joint should be well in advance of the other; and preferably the angle is such that no line perpendicular to the side edge of the belt will cross both side edges of the joint.

Prior to the present invention, sandpaper belts have been connected by skiving the ends of a strip of paper and then cementing the skived ends together. This form of connection, however, could not be employed in making a belt from emery cloth since it is impossible to skive the cloth backing to which the emery is applied. The joint of the present invention is thus essentially different from that used in connecting the ends of a strip of sandpaper in that the emery is removed from both ends of the strip while the thickness of the backing remains unchanged.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An abrasive belt consisting of a textile strip having a coating of abrasive material thereon from a point near one end to a point near the opposite end, there being thus provided uncoated end attaching portions of uniform thickness, one of said end portions being offset and overlapping the other, said ends being attached together and producing a joint of a thickness approximately corresponding to the thickness of the belt.

2. An abrasive belt consisting of a rhom-

boidal strip comprising a backing having a
coating of abrasive material on one side
thereof, the margin of the backing at each
end being denuded of abrasive material, said
5 denuded margins being overlapped and fas-
tened together, the end of each strip extend-
ing parallel to the opposite end of the abra-
sive coating, leaving an obliquely extending
uncoated portion on the working face of the
10 belt which is so arranged that no line per-

pendicular to the side edge of the belt will
cross both side edges of the uncoated por-
tion.

In testimony whereof I have signed my
name to this specification in the presence of 15
two subscribing witnesses.

FREDERICK M. FURBER.

Witnesses:

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LAURA M. GOODRIDGE.