

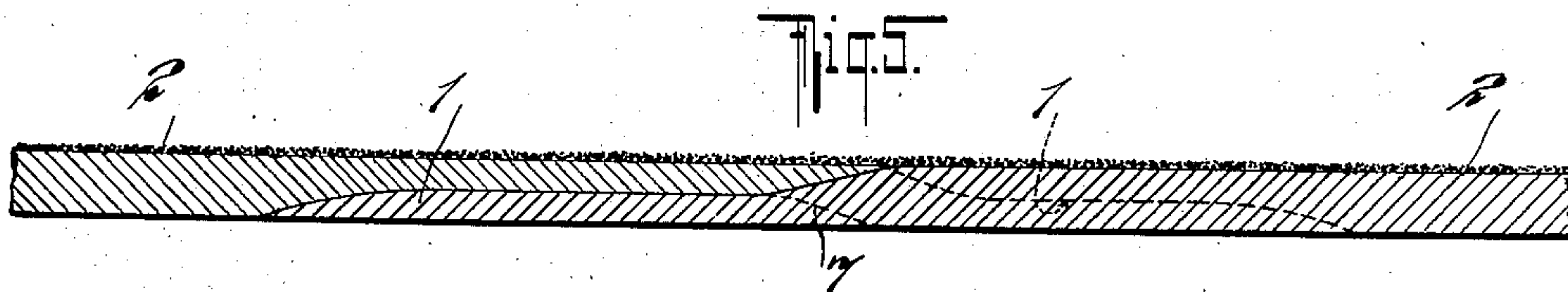
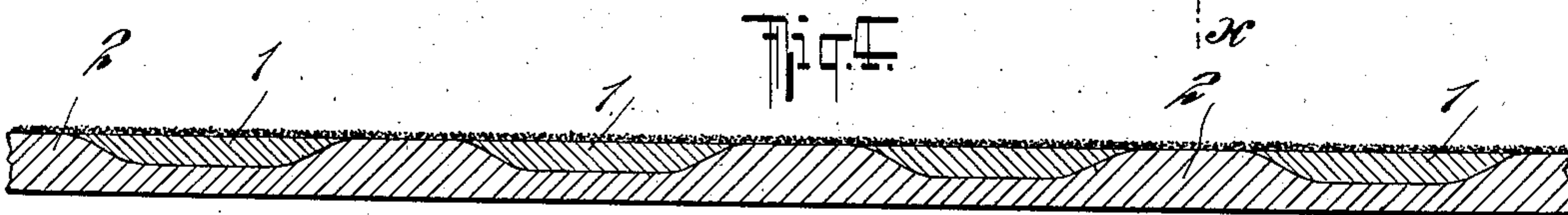
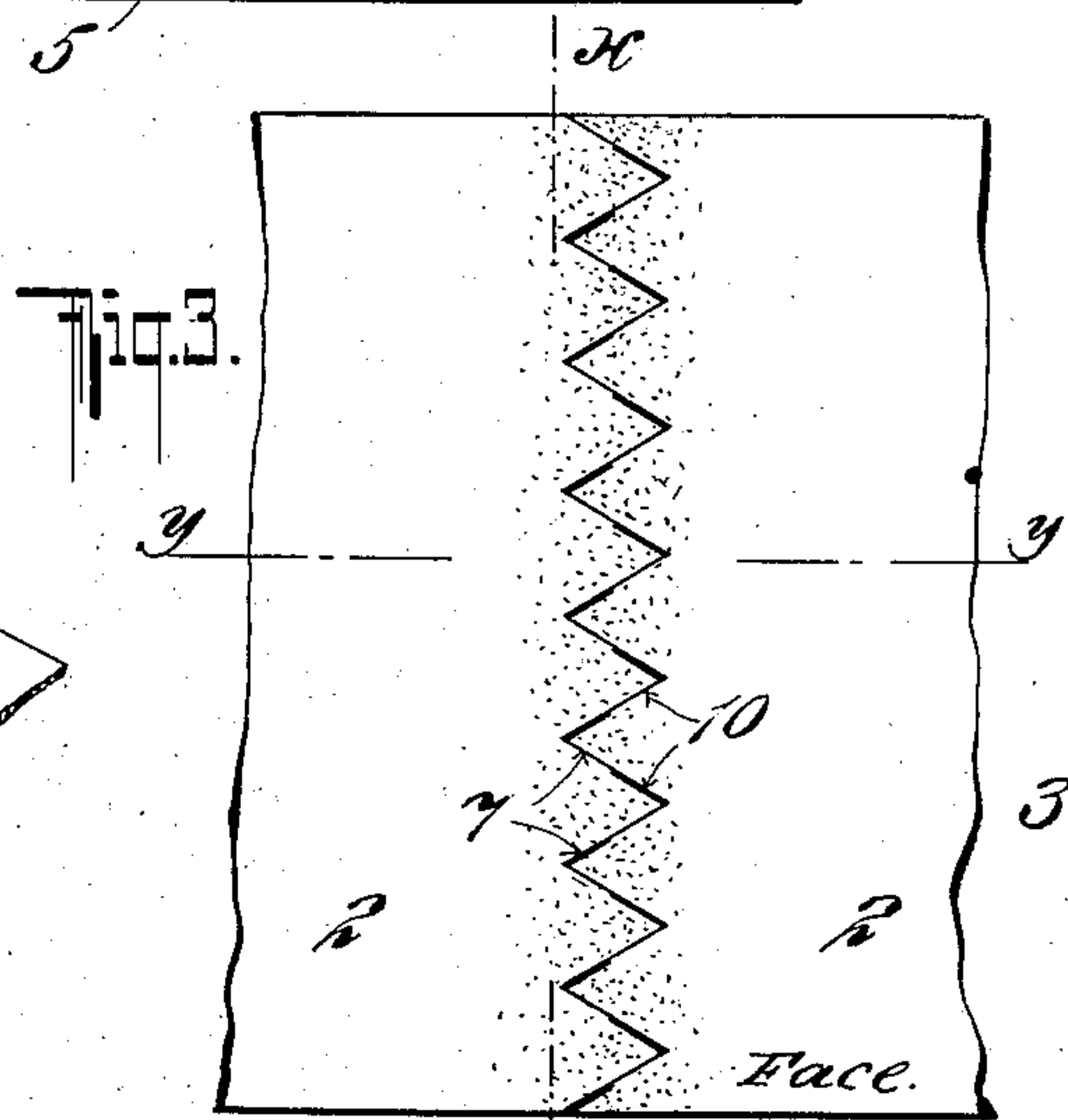
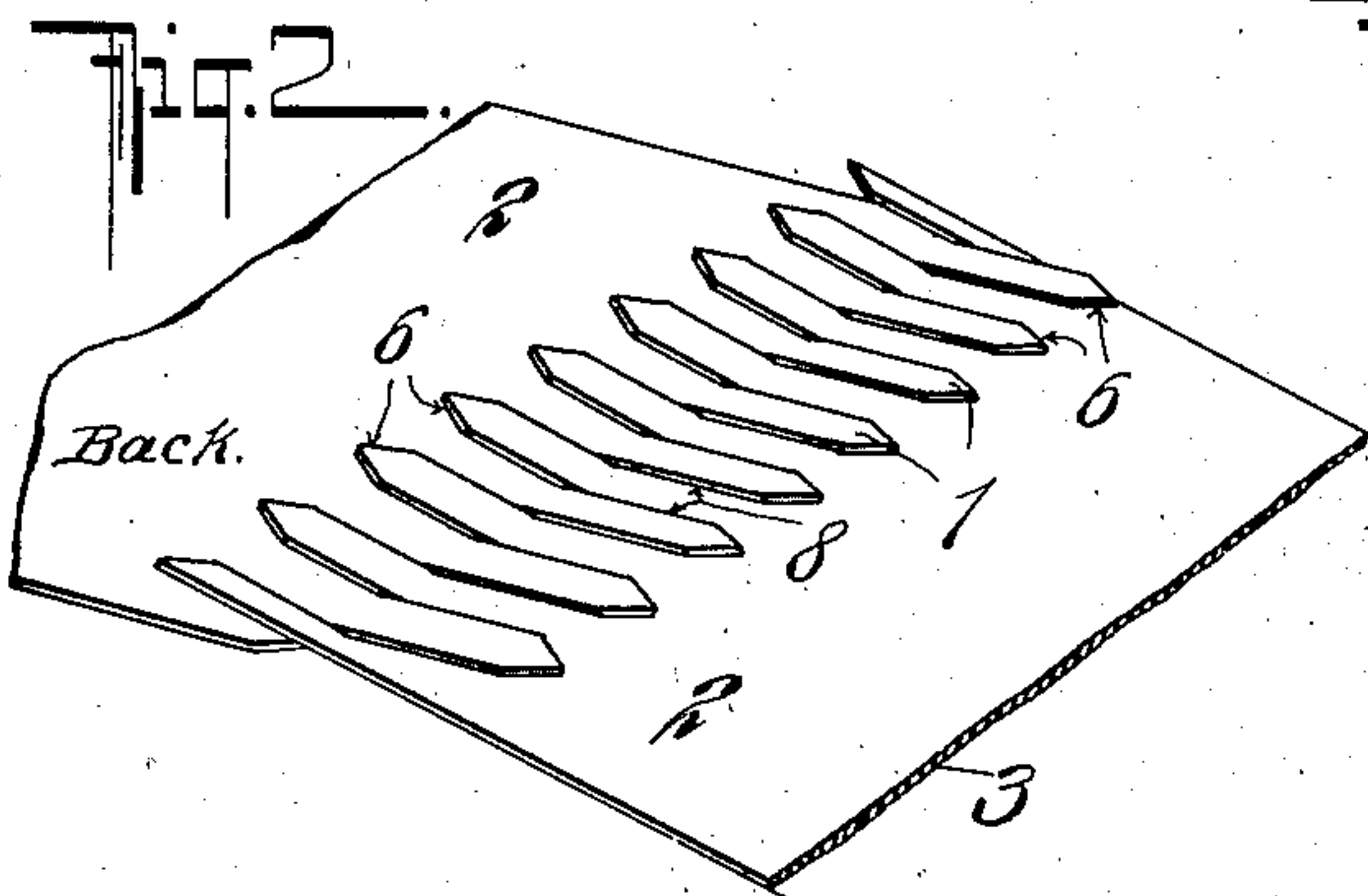
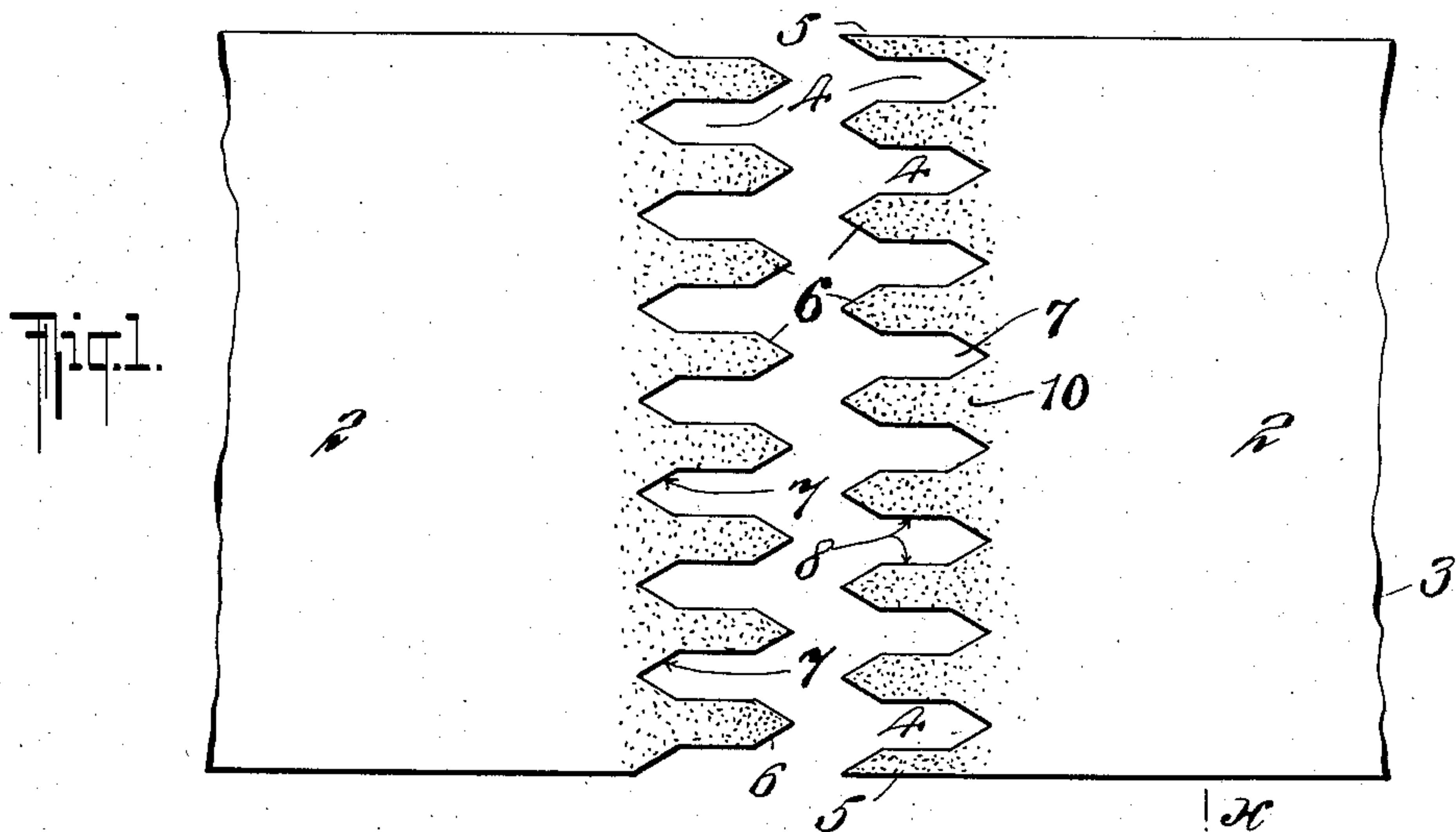
J. C. BLEVNEY.

BELT JOINT.

APPLICATION FILED DEC. 29, 1908.

944,658.

Patented Dec. 28, 1909.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN C. BLEVNEY, OF NEWARK, NEW JERSEY.

## BELT-JOINT.

944,658.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed December 29, 1908. Serial No. 469,769.

*To all whom it may concern:*

Be it known that I, JOHN C. BLEVNEY, a citizen of the United States of America, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Belt-Joints, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to endless belts adapted for use in polishing and grinding metal and other surfaces, such belts as those having a smooth back which travels over pulleys and an abrasive face which does the work.

My object is to provide a better joint where the ends of the belt are fastened together, so that the belt will be the same thickness throughout and have a more uniform back surface and abrasive face.

To this end my invention consists in the peculiar features and combinations of parts more fully described hereinafter and pointed out in the claims.

In the accompanying drawings, Figure 1 represents the two opposite ends of the face of my abrasive belt in position for the fingers thereon to be brought together and fastened. Fig. 2, a perspective view thereof after the edges of the ends have been brought together before the fingers are pressed down and fastened to the back. Fig. 3, a plan view of the face of the belt after the fingers have been pressed down flush with the back surface thereof, the zig-zag line showing the form of the joint, and Figs. 4 and 5 are enlarged transverse and longitudinal sections respectively through lines  $x, x$  and  $y, y$  of Fig. 3, showing the overlapping fingers embedded in the back of the meeting portions of the solid belt.

My improved joint is adapted to be applied to all belts used for grinding and polishing and especially to those endless abrasive belts made principally out of emery or abrasive cloth which is always more or less filled with glue or other adhesive matter to engage and hold the ground of pulverized abrasive on the face of the belt and to strengthen the fabric, the back of the belt being smooth. Joints for belts of this kind have heretofore been made in various ways such as by cutting the ends of the belt off, either squarely or diagonally, butting them together and securing them so by a patch glued or cemented on the back of the belt

over the butting ends, whereby the face carrying the abrasive surface of the belt will be flush at the joint.

An endless grinding or polishing belt should have a joint that is not thicker than the material of which the belt is made. It has also been customary and considered necessary to make the connecting patch of large area in order to secure sufficient tensile strength. Such big patches add to the thickness of the belt and render the joint easily cut at the edges of the patch and easily torn while in use. Furthermore, such extra thickness makes the belt less pliable and more difficult for the operator to bring the work to a proper size when such is desired, because at a certain stage of the process the high point of the belt at the joint acts like a cam and will be the only part to take effect upon the work. Generally this high-point has all or most of the abrasive surface worn off long before the remainder is used up. Another disadvantage growing out of the use of solid patches, having a large area, is that they cannot be pressed down to lie flush with the surface of the belt without using excessive pressure to an extent of destroying the strength of the fabric. Still another disadvantage lies in the rapid wearing away of the butting edges of the belt where they meet at the middle of the patch. Therefore, it is apparent that an endless abrasive belt should have a joint that is no thicker than the material out of which the belt is made.

To overcome the foregoing difficulties and produce such a belt, I dispense with the back-patch and make a substantially amalgamated flush joint out of the belt itself by forming peculiar longitudinal fingers 1 in the opposing ends 2 of the belt 3. Intervening spaces 4 are formed between the fingers and are a counterpart of the latter. Hence it will be seen that in cutting belts from the cloth the cutting out of the fingers on one belt will leave counterpart receiving spaces for the fingers in the next belt cut, said spaces and fingers being of the same size and shape, excepting the two outside fingers 5 on one of the ends of the belt, which fingers are half-fingers. This formation allows the fingers to freely pass one another in the act of bringing the abutting ends of the belt together, and it also leaves room between the fingers to receive material that is crowded out from under them when the



fingers are spread laterally and pressed down and embedded into the back of the belt proper. Preferably all the fingers are provided with tapered points 6 and the intervening spaces 4 with correspondingly tapered throats 7. Each finger is by preference oblong with straight parallel edges 8 terminating respectively at the base of the tapered point 6 and at the base 10 of the throat 7.

When the fabric, from which the belts are cut, is charged with glue and abrasive the method of securing the ends of the belt together is as follows: The ends of the belt and the fingers are first pushed together, as shown in Fig. 2, until the edges meet at the base 10 of the tapered recesses which is as far as they can go. When in this position all gaps are closed and the opposite fingers will overlap the back of the opposite ends of the belt. The joint is then moistened, preferably with a piece of felt, cloth or blotting paper soaked in hot water or steam, of a width to cover the fingers and of the proper thickness to hold the right amount of moisture. This should be pressed lightly on the joint and then removed. Pressure is now brought to bear upon the overlapping fingers, generally enough to press the fingers into the belt to a flush surface. No cement or glue other than that already in the cloth is necessary, the moisture applied having softened the glue. This pressure may vary according to the grade of goods, the coarser requiring generally less than the finer grade. It is often found convenient and desirable to put hard oiled pasteboard over the back of the joint in the press in order to bring the cloth to a flush grinding surface. By my construction and process I am able to effect a strong neat flush joint without the use of glue or patch, and I bring the extreme ends of the belt to the back thereof. Furthermore there is no perceptible reduction in the strength or the bending or breaking qualities of the fabric, and the joint is reduced to the same or substantially the same thickness as that of the remainder of the belt, and the premature wearing off of the abrasive surface at the joint is almost, if not completely, prevented. By using the backlapping and embedding construction there is only a small body of double-thickness to spread and press into the adjoining fabric of the belt and enough pressure may

be applied to bring these joints to the average thickness of the belt without weakening the fabric.

The advantages of having the ends of the fingers and the throats of the recesses between the fingers tapered to a longitudinal point where the fingers and throats come together is that the edges of the belt fabric will lie in oblique relation to the path of travel of the belt, and consequently bring the edges of the throats diagonally against the projections on the work to be finished. This contact is most severe after the abrasive material on the face of the belt has worn off considerably, and if the joint extended at right angles to the path of travel, the edge of the cloth would wear away much more rapidly. It is also apparent that glue or other binders must be used if the material from which the belts are made is not already charged with it, and that other changes in the form and process of carrying out my device might be resorted to without departing from the scope and spirit of the appended claims; therefore I do not wish to limit myself to the exact details herein described and shown.

Having thus described my invention, what I claim is:

1. A flush-joint for abrasive belts, which joint consists of a plurality of embedded and back-lapped fingers at the attaching ends of the belt.

2. A joint for belts, which joint consists of a plurality of longitudinal fingers provided with points or tapered ends and separated by corresponding longitudinal spaces having tapered throats adapted to receive the bases of the fingers, said fingers being crossed and closed at the throats and lap-joined to and embedded to lie flush with the back of the ends of the belt.

3. A joint for abrasive belts impregnated with glue, which joint consists of oppositely projecting integral fingers crossed and closed at the throats, and folded down and lap-joined to the back of the contiguous ends of the belt by the adhesive substance in the belt.

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

JOHN C. BLEVNEY.

Witnesses:

R. G. DU BOIS,

C. B. SCHROEDER.