W. W. GLOVER.

Belt-Fastener.

No. 210,518. Patented Dec. 3, 1878.

Fig. 1

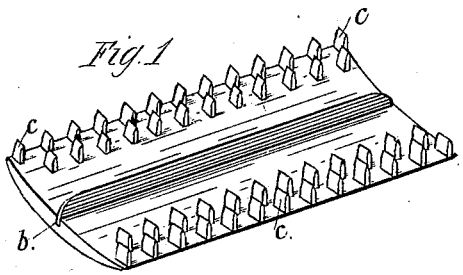


Fig. 2.

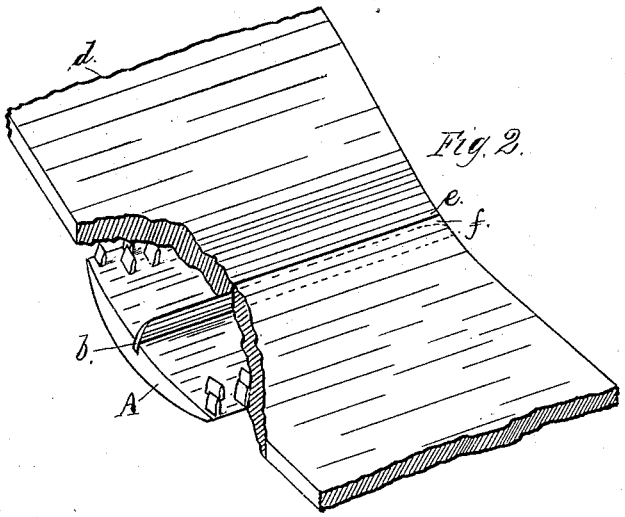


Fig. 3.

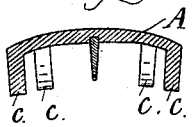
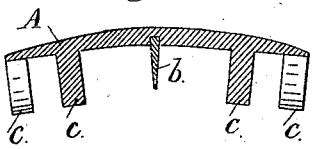


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM W. GLOVER, OF AURORA, ILLINOIS.

IMPROVEMENT IN BELT-FASTENERS.

Specification forming part of Letters Patent No. **210,518**, dated December 3, 1878; application filed February 18, 1878.

To all whom it may concern:

Be it known that I, WILLIAM W. GLOVER, of Aurora, in the State of Illinois, have invented certain new and useful Improvements in Belt-Fasteners; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 letters of reference marked thereon, which form a part of this specification.

My invention is an improvement upon the belt-fastener patented December 15, 1868, to Francis G. Wilson, and numbered 84,925; and it consists not only in making the toothed plate in a single piece, and with a transverse strip extending across the center of the plate between the respective sets of teeth, but also in a special form and arrangement of the teeth, the same being oblong in cross-section, and having sharp, puncturing, knife-like edges at their tops, such edges having a length equal to the broader sides of the teeth, the teeth themselves being straight and standing relatively to the plate, so that the length of the incision or indenture made by them in the leather shall be in the direction of the strain, and the teeth not being long enough to go entirely through the belt, all as hereinafter set forth.

In the drawings, Figure 1 shows one of my improved fasteners adapted for a belt of single thickness; Fig. 2, the same with the belt attached, but partially cut away at its corners; Fig. 3, a cross-section of a similar fastener adapted for double leather belts, and Fig. 4 a similar section of one adapted for rubber belts.

A is the toothed plate or fastener, and *b* its central strip, extending across the same and projecting inward radially from the slightly arched or concave surface of the plate. *c c*, &c., are the teeth, ranged preferably in two or more parallel rows, about equally distant from and in lines about parallel with the strip *b*, and they should be longer than the height of the strip. These teeth are quadrangular, or nearly so, in cross-section, or quite narrow in the direction corresponding with the breadth of the fastener and of the belt, but quite broad in the direction of the length of the fastener, and, consequently, in the direction of the pull or strain of the belt. This gives the teeth a broad base, and, consequently, the greatest practical strength to resist the strain, and also to prevent their being bent from their true vertical position in the act of fastening the belt; and at the same time the long knife-like edges of the teeth, as they are driven into the leather, make their incisions or openings therein also in the direction of the length of the belt, whereby the latter retains, as nearly as practicable, its integrity crosswise, and with the least possible diminution of its original strength.

The strip should be thin, and preferably of diminishing thickness from its base to its edge, and its height, like the length of the teeth, must be made proportionate to the thickness of the leather or other material of which the belt is made.

The object and function and value of the strip *b* are as follows: In fastening or lacing a belt it is necessary that both its ends should be cut and lie square, so as to make a good joint where the ends meet or lie together, whatever may be the fastening used for the purpose; and this strip forms a guide or gage, whereby the operator is enabled, after the ends are squared true, to place each end exactly in its right place by aligning it with or placing it against this guiding-strip before the teeth of the fastening are forced into the belting.

Without such guide bar or strip *b* the operator must guess at getting or attempting to get the ends of the belt square or true with the fastening, and true to each other; and if not true the belt will be quite imperfect in its construction and in its running qualities; but with such strip the operator has but to cut the ends off square, (using the strip itself as a guide for cutting, or, if made sharp enough, using it as the cutter also,) and with a mallet or hammer strike upon the leather or belting, and thus force it down upon the teeth, and, this being done with both ends of the belting at opposite sides of the strip *b*, the joining is complete; and the edges of the ends of the belt may thus be in actual contact, as the

strip should not be quite as high as the thickness of the belt nor should the teeth be long enough to penetrate entirely through the belt.

The oblong form given to the teeth preserves them in their erect position, and keeps their upper edges always ready to receive a new belt, and to permit its ends to fit snugly and to abut close to and against each other, while curved pins, or pins liable to curve when the belt is driven down upon them, or pins which pass entirely through the belt and are then clinched, prevent this and preclude making a good joint after a belt is once removed from its fastening, and prevent the satisfactory reuse of the fastening after being removed.

The teeth are preferably, but not necessarily, cast integral with the plate. The strip *b* is preferably, but not necessarily, inserted in the plate. It may, in some cases, be cast integral therewith.

The teeth, to give the best hold consistent with their greatest strength and power to resist the pull and strain of the belt, should be broadest in the direction of the length of the belt.

An incidental advantage, yet an important one, resulting from the strip *b*, is that it contributes greatly toward keeping the ends of the belt in place upon the plate, especially when it is passing over the belt-pulleys, and more especially when such pulleys are of small diameter; and for the reason that as the ends of the belt abut directly against it, it arrests the tendency of the belt, when bent to a short curve, to be lifted or pulled off the teeth.

The object of this central rib or bar, *b*, is twofold, viz., it not only serves as a guide for cutting the belt square—that is, at right angles to its length—but, in conjunction with the teeth, adds very much to the adhesiveness of the belt to the fastener, for as the teeth are driven into the belt the bar *b* tends to force back the belt against the teeth, thereby fastening it much tighter than is possible if the bar were not there. The inclined faces of the rib positively compel this action, and ribs of other forms cannot perform this duty. It will thus be seen that the shape of the rib, in connection with the special character of the teeth, establishes a mutual relation and coaction between them, both conspiring to the end of securing the belt firmly, and so immovably that it is found in practice that the belt, when in use, will give way or pull apart anywhere sooner than at the fastening.

The teeth, coming from the sand-heap all finished ready for use, require no machinist's labor for this purpose.

A further function of the wedge-shaped transverse bar, in its relation to the peculiar form and action of the teeth described, is that the teeth permit the belt to be driven home down to the plate A, without any such impediment as would exist if they were blunt or too large in area, and they do not compact the leather at their tips, so as to offer formidable resistance to taking a good hold of the leather, and the leather must be uniformly guided by them straight down to the plate; and in such action, the space between the base of the transverse bar and the base of the first row of teeth adjacent to such bar being less than between the top of the teeth and the thin edge of the bar, the leather, as it is forced down into such gradually-narrowing space, wedges tightly and firmly against the bar; but if the bar were absent, the two ends of the leather would abut against each other, with nothing to hold them down, and they would be continually flying up, impairing the usefulness of the belt, and constantly tending to loosen it from the teeth.

The drawings represent fasteners of practical size as to the teeth and strip, those of Figs. 1 and 2 being adapted for single leather belts, those of Fig. 3 for double leather belts, and those of Fig. 4 for rubber belts. These fastenings I prefer to make of malleable iron, and adapted to all widths of belts. The belt should not be less than about a quarter of an inch wider than the metal fastening.

When a belt is worn out these fasteners may be readily removed from it, and will be found in perfect condition all ready to be applied to a new belt, as no wear need come upon either the teeth or upon the strip *b*. They are, hence, a great economy as fasteners.

The belts, when removed from my fasteners, are not injured nor weakened because of any holes made through them, nor torn by any screw-threads upon the fastening device, nor by any upsetting of a riveting-head on the under side of the belt; nor need any metal of the fastener come in contact with the pulley, or interfere with the continuous and uniform yielding and flexible character of the belt, as its under or inner face comes in contact with the pulleys or rollers over which it runs; nor when removed for any cause need the ends of the belt be cut off, and its operative length thereby shortened, because of any difficulty or impossibility of again satisfactorily applying the fastener to it; nor is the form of the teeth, nor their true upright position, at all changed by use, as these remain permanent and constant as long as the fastener is in existence. Indeed, where the teeth are cast integral with the plates, this can hardly be otherwise, and in such case all the expense of riveting all the teeth to the plates is avoided, as also all risk of their getting loose or dropping out. The toothed plates can be cast cheaply, all ready for use.

I do not claim a central transverse rib in a belt-fastener; and I am also aware that belt-fastener plates have been made with pointed

teeth and with blunt-ended teeth, and therefore I make no claim to such construction; but

I claim—

The belt-fastener shown and described, consisting of the bed or plate provided with the straight teeth *c*, cast or made integral therewith, and made oblong in cross-section, the longer part of their bases being in the direction or pull of the belt, and having wedge-shaped entering ends or tips, and also provided with the central transverse rib or bar *b*, made of wedge form, all as and for the purposes set forth.

WILLIAM W. GLOVER.

Witnesses:

I. M. HOWELL,

F. B. RICE.