S. B. KEPPERLING & T. B. KREITER.

Improvement in Artificial Limbs.

No. 115,065. Patented May 23, 1871.

Fig. 1

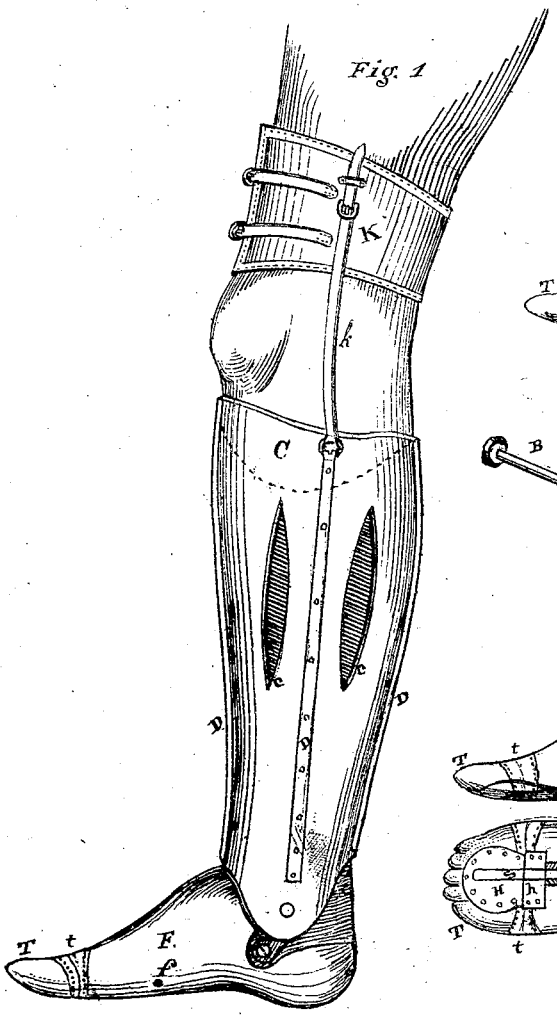

Fig. 2.

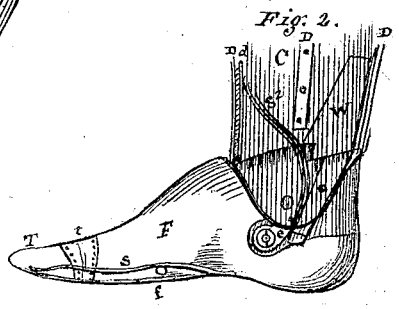

Fig. 3.

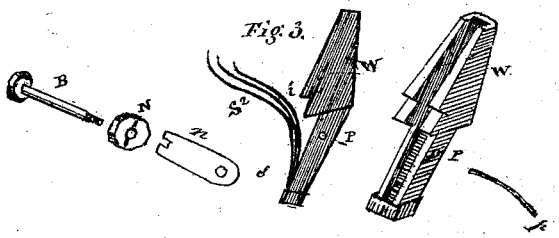

Fig. 4

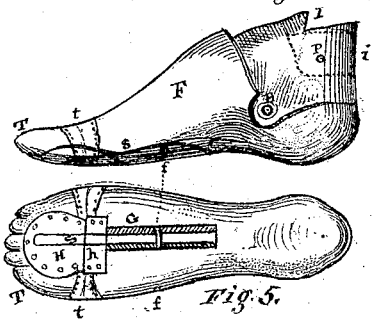

Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL B. KEPPERLING AND THOMAS B. KREITER, OF NEFFSVILLE, PA.

IMPROVEMENT IN ARTIFICIAL LIMBS.

Specification forming part of Letters Patent No. 115,065, dated May 23, 1871.

We, SAMUEL B. KEPPERLING and THOMAS B. KREITER, of Neffsville, in the county of Lancaster, in the State of Pennsylvania, have invented certain Improvements in Artificial Legs and Feet, of which the following is a specification:

The nature of our improvement is twofold—in the material used and manner of combining, to secure strength, lightness, and durability, as well as in the simplicity of the arrangement of the parts, the ease of repairing, and its adaptation to the motions necessary for walking in a natural, easy manner. All these valuable points are secured.

The accompanying drawing clearly shows the several parts and their combination, in which—

Figure 1 is an external view of the parts in place; Fig. 2, a portion of the leg, showing the arrangement of the parts; Fig. 3, the key-wedge removed, showing the spring combined with it; also, a perspective view, to show the spring-groove in the key-wedge W. Fig. 4 shows the foot with the key or spring wedge removed; Fig. 5, the under side of the foot, to show the toe-hinge and groove for the toe-spring.

The dotted lines on Fig. 4 show a metallic band, *i*, that may be added.

An inspection of this drawing and a brief explanation of the manner of constructing the case will enable any one skilled in the art to make and use our invention. Any one using this arrangement can readily repair either of the springs, should one happen to break.

To make the case C, a model of wood is made in three parts, somewhat like a boot-tree, the desired size. Afterward is applied heavy sole-leather, made wet and cut so as to fit the model and sewed together, and rubbed smooth and tight to the mold when thoroughly dry. Strong glue is prepared and a strip of muslin glued on one round. This is neatly fitted, and when the glue is hard and firmly set another portion of the strip of muslin is saturated with glue, forming a second layer. When dry a third or more laps may be made, accordingly as the size or weight of the wearer may demand, to give it sufficient strength. This, when dry and hard, may be covered with strong smooth paper in glue, and varnished with shellac or other varnish and painted. To give this casing ventilation, so essential, the sections *c* are cut out, and flat metallic stays, D, are secured by rivets on the sides, front, and rear. To the upper end of the side strips there is a loop for straps *k*, which straps connect the case with a knee-sleeve or cap, K, adjusted by means of straps and buckles, as shown. Fig. 1 also shows the ankle-joint of the case in its connection with the foot F, toe and joint T *t*. Fig. 2 shows the interior arrangement of the heel-wedge W inserted in the top of the foot, shown by Fig. 4 at I. The springs, two, three, or more, S^2, rest against an iron plate, *d*, inside the case. These springs are flat, and have play in a groove made in the wedge-piece W, Fig. 3. This wedge is perforated at P for a pin, which enters through the foot and wedge W. The springs S^2 are secured by a pin, *s*, and are inserted under a flange or band secured to the end of the wedge-piece, and either of said flat springs can be removed and readily replaced by another. The ankle-joint is formed by a rounded projecting plate, *e*, Fig. 2, working in a rounded recess on the outside of the foot F, where it is perforated and bushed with lignum-vitæ, B, Fig. 4, for the headed screw-bolt B, with its nut N, securing the case to the foot on each side firmly. The toe of the foot is hinged. *t* shows the top leather or elastic covering. Fig. 5, the under side of the foot, shows a plate, H and *h*, affixed, and a deep groove, G, which receives a flat spring, S, to act upon the toe-plate H inside. The pin *f* holds the spring at one point, while the heel end is simply thrust in a slot, so as to be easily repaired. By simply pushing out the pin *f* the spring can be removed or inserted. So also the wedge W, with its springs, is easily drawn out by first pushing out the pin P that holds it. The upper case is held by the single ankle-bolt B, easily detached by means of a pocket-key, *n*. The pin P is slightly curved, and should be inserted with the curved side up. The foot portion is made of any suitable wood, and, for additional strength, a metallic band, *i*, may be affixed above the heel for the pin P. The toe-plates H *h* are attached with screws. The slot on the bottom of the foot can be covered by a strip of leather over the whole or centrally.

The same case and foot combination is ap-

plicable to a stump above the knee, with slight additions.

One of the parties, being deprived of one of his members, has used various improved artificial legs, and is aware of the numerous devices already patented; but neither of us is aware of any wedge with the flat springs combined with the foot and acting on the upper portion, as also the flat spring shown in the bottom of the foot to give a spring to the anterior portion of the foot, so simple and so effectual in yielding, by this combined arrangement, to the natural motions. Nor are we aware that the leg portion or case was ever before made in the manner specified, by the combination of leather, glue, muslin, and paper, if desired to finish with that, forming a material, when varnished and painted, that will not be affected by the weather, nor crack nor shrink.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The case C of an artificial leg, when made by the combination of leather, muslin, and glue, in the manner and for the purpose specified.

2. The arrangement of the slotted wedge W with its springs S^2, when inserted into the foot F at I, in the manner and for the purpose set forth.

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Witnesses:
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