(No Model.)

G. E. SWAN.

SPRING FOR THE SOLES AND HEELS OF BOOTS AND SHOES.

No. 272,172. Patented Feb. 13, 1883.

Fig. 1.

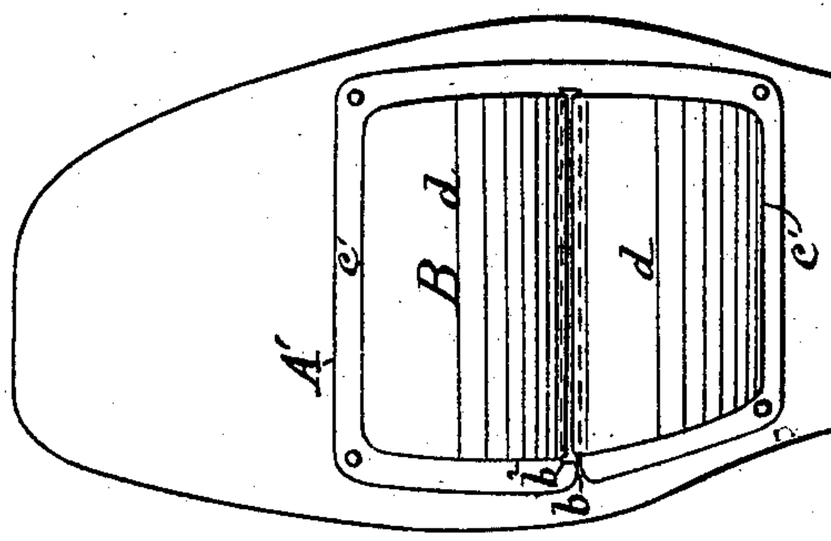


Fig. 2.

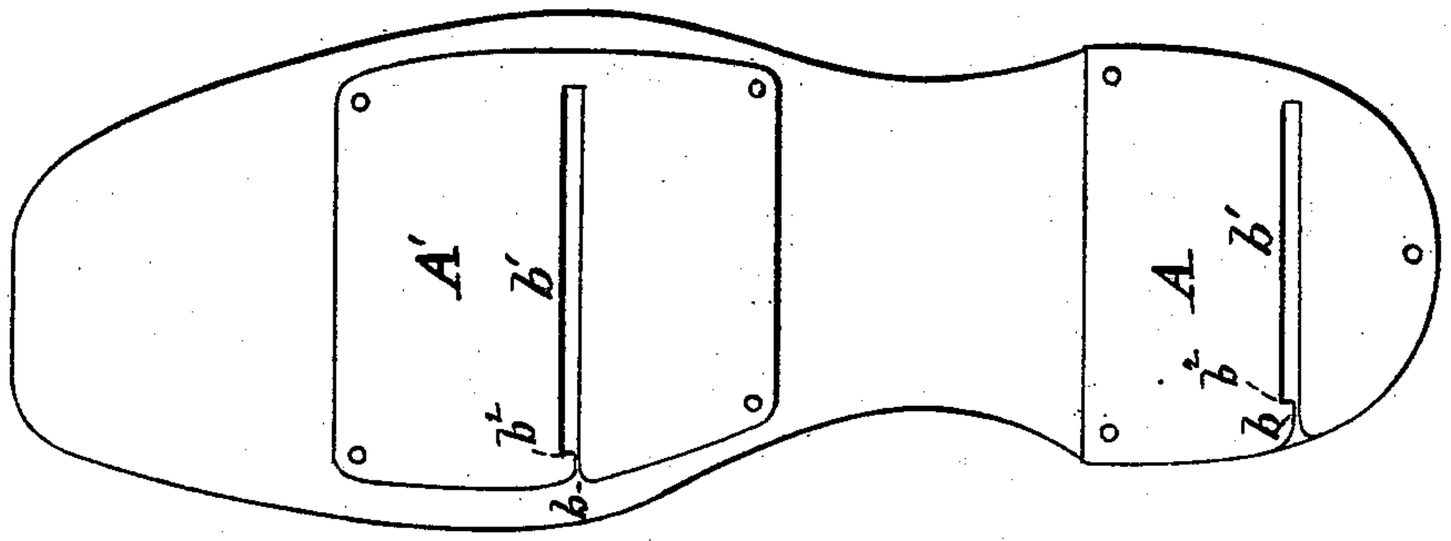


Fig. 3.

Fig. 4.

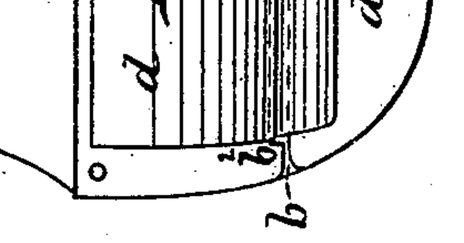


Fig. 5.

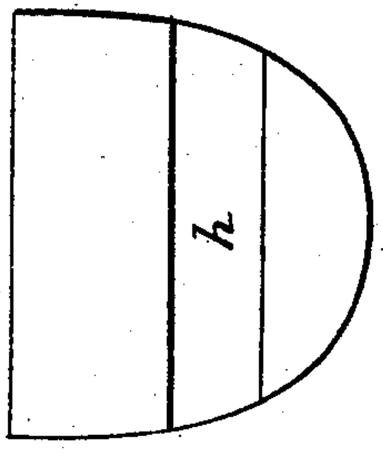
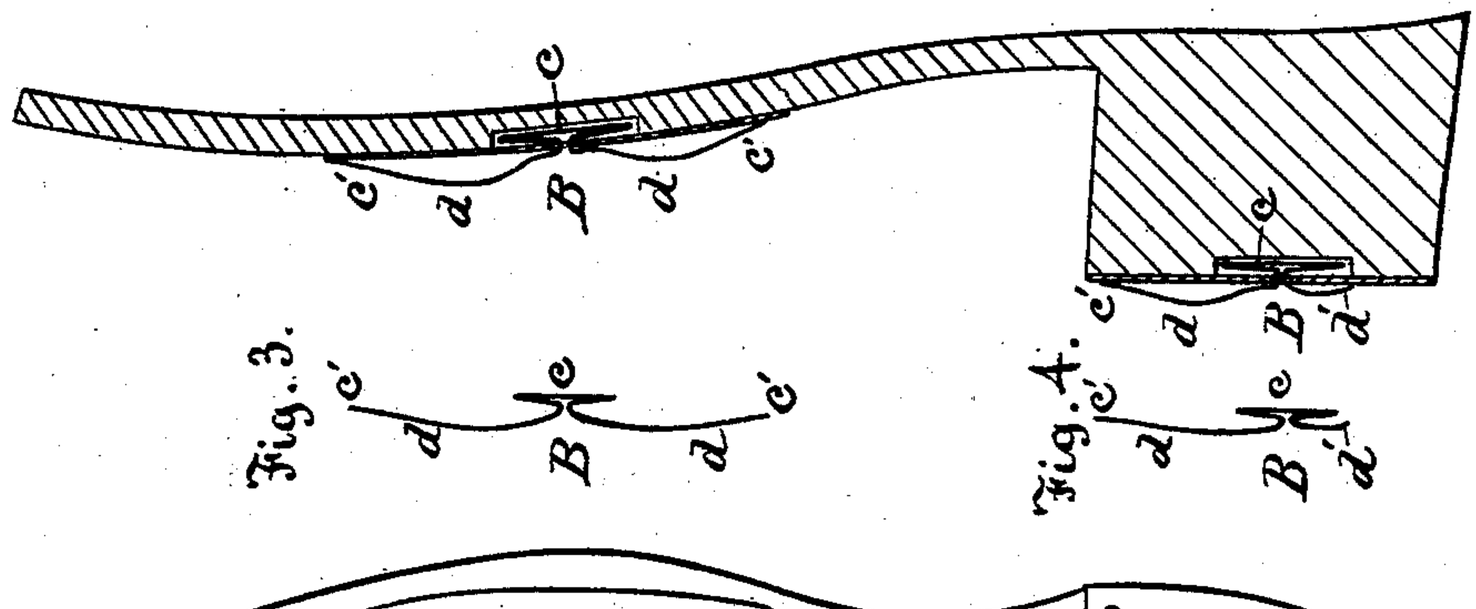


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE E. SWAN, OF BEAVER DAM, WISCONSIN.

SPRING FOR THE SOLES AND HEELS OF BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 272,172, dated February 13, 1883.

Application filed November 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. SWAN, a citizen of the United States of America, residing at Beaver Dam, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Springs for the Heels and Soles of Boots and Shoes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to springs for heels and soles of boots and shoes; and it consists of a flat, convex spring, having one end fastened to a holding-plate and the other end free and adjusted to bear closely upon the plate, as hereinafter fully described, and as shown in the drawings, in which—

Figure 1 is a plan view of one form of the spring attached to the heel and sole of a shoe. Fig. 2 is the same view, showing the holding-plates without the springs. Figs. 3 and 4 are edge views of the spring detached. Fig. 5 is a plan of a heel without the plate, showing a recess to receive the bent folded portion of the spring. Fig. 6 is a longitudinal section on line *x x* of Fig. 1.

A A′ represent plates adapted to be attached to the heel and sole, respectively, and are constructed with the narrow slits *b*, wide enough only to admit the two folds of the spring when pressed closely together, the narrow slits leading to the enlarged interior slits or slots, *b′*, which are the required length and width to receive and hold in place the springs.

B represents springs formed of clock-spring steel or other suitable material having the requisite elasticity. The middle portion of the springs, constructed as shown in Figs. 1, 3, and 4, are bent and folded inwardly, the folds lying closely together, forming the holders *c*, for holding in place the springs upon the plates. This form of spring may be made with only one spring-wing, *d*, and with a holding end, *d′*, as shown in Figs. 1, 4, and 6, or they may be made with two spring-wings *d d*, as shown in Figs. 1, 3, and 6. The springs are curved, so as to form convex outward surfaces, and their free ends *c′* are adjusted to bear closely upon their holding-plates. The springs are formed the required shape and afterward tempered to the highest degree of elasticity. Before the plates A A′ are attached, slight recesses *h* are formed in the heel or sole to receive the holder *c*, the folds forming which being pressed closely together before the spring is tempered, so that the holder will require the smallest possible space, and also to avoid all spring and strain on that portion of the spring-plate. To insert these springs in the plates the two folds, forming the neck of the holder *c*, are pressed closely together, and are then inserted through the narrow slit *b* into the enlarged inner slit or slot, *b′*, the square shoulders b^2 of the slot forming a stop and bearing to the edge of the spring-plate, thus preventing it from slipping out of the slot. To remove one of these springs the folds forming the neck of the holder *c* are again pressed together and passed out through the narrow slit *b*. When desirable, these springs may thus be adjusted on and removed from the plates attached to the boot or shoe.

The invention, consisting mainly of a convex spring having its free end bearing upon its holding-plate, does not depend entirely upon the particular method herein set forth of attaching the holding-plates; but any other devices and methods suitable for the purpose may be employed.

These springs are helpful in standing as well as walking. They lessen the strain and fatigue of persons—such as printers, public speakers, and merchants—who are required to be on their feet for long periods. For such use the springs should be made to yield not more than one-quarter or one-half of an inch. In walking, the convex surface flattens under the pressure of the foot, relieving the foot and leg of the usual jar, and as the pressure is removed the spring resumes its convex shape, aiding the upward movement of the foot, and thus giving elasticity to the step, and is especially helpful to old persons.

These springs may be used on the heels only or on both the heels and soles of the boots or shoes.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a plate adapted to be attached to the heel or sole of a boot or shoe, of a convex spring attached to the plate,

and having its free end adjusted to bear constantly upon the face of the plate, substantially as and for the purposes described.

2. The combination, with a plate adapted to be attached to the heel or sole of a boot or shoe, and having the narrow slit *b* and the enlarged slit *b'*, of the convex spring B, attached to the plate by the holding device *c*, and having its free end adjusted to bear constantly upon the plate, substantially as and for the purposes described.

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

GEORGE E. SWAN.

Witnesses:
GUSTAVE ZINSER,
EDWARD ELWELL.