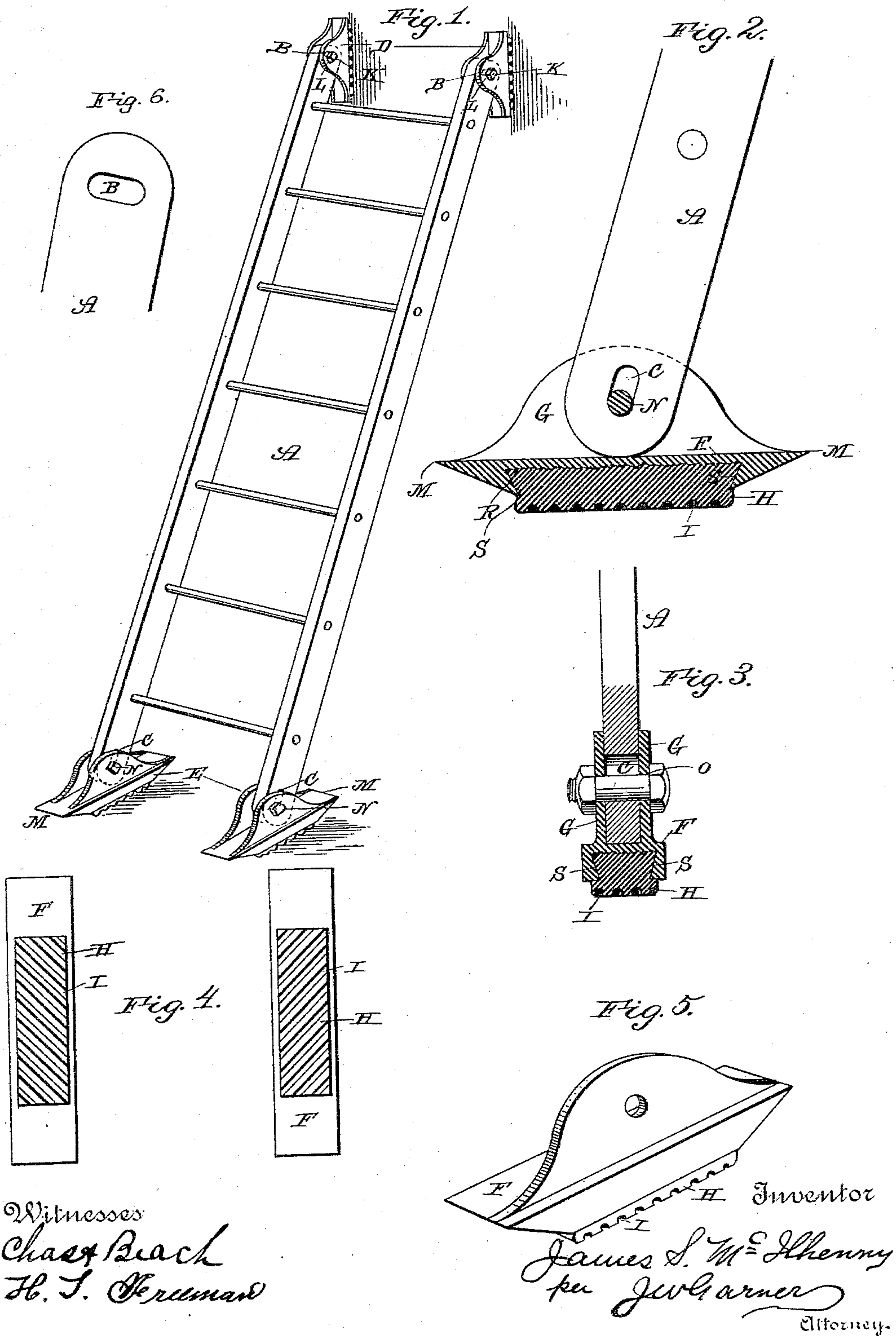


(No Model.)

J. S. McILHENNY.
SHOE FOR LADDERS.

No. 412,199.

Patented Oct. 1, 1889.



UNITED STATES PATENT OFFICE.

JAMES S. McILHENNY, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF TWO-THIRDS TO JOHN IRWIN, JR., AND ROBERT L. MIDDLETON, BOTH
OF SAME PLACE.

SHOE FOR LADDERS.

SPECIFICATION forming part of Letters Patent No. 412,199, dated October 1, 1889.

Application filed May 29, 1889. Serial No. 312,614. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. McILHENNY, of Washington, District of Columbia, have invented a new and useful Improvement in Shoes for Ladders; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use it, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to an improvement in shoes for ladders, designed to prevent the ladder from slipping when erected against a wall or other object; and my invention consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is perspective view of a ladder provided with shoes embodying my improvements. Fig. 2 is a vertical longitudinal sectional view, on a larger scale, of one of my improved shoes, showing the same attached to the ladder. Fig. 3 is a vertical transverse sectional view of the same. Fig. 4 is a bottom plan view of a pair of my improved shoes, showing the reverse diagonal arrangement of their respective corrugated bottom surfaces. Fig. 5 is a perspective view of a modified form of my improved shoe. Fig. 6 is a detailed view showing the transverse slot at the upper end of the ladder.

A represents a ladder, which is of the usual form and has a pair of transverse slots B in its sides near their upper ends and a pair of longitudinal slots C in its sides near the lower ends thereof. At the upper end of the ladder are a pair of shoes D, and at the lower end thereof are a pair of shoes E. Each of the shoes D E is composed of a plate F and a pair of ears G, bent at right angles thereto and projecting from one side thereof. On the lower or outer sides of the plates F are secured friction-soles H, which are made of rubber or other suitable material and have their lower or outer sides provided with diagonally-arranged corrugations I.

In attaching the shoes D to the upper end of the ladder the upper ends of the sides of the ladder are inserted between the pairs of ears G, and bolts K are passed through aligned central openings L in said pairs of ears and through the slots B, thereby pivoting the shoes D to the upper end of the ladder and enabling the shoes to rest flat against the wall or object, no matter at what angle the ladder is erected.

The shoes E for the lower end of the ladder are similar in construction to the shoe D, with the exception that the ends of their bottom plates are extended beyond the ends of the pairs of ears and beveled or inclined on their lower sides to form sharpened points or edges M, which are for the purpose to be hereinafter stated. The said shoes E are attached to the lower end of the ladder by bolts N, which pass through aligned openings O in their pairs of ears and through the slots C. Thereby the said shoes E are pivotally connected to the lower end of the ladder, and are adapted to bear flat on the floor, carpet, or other surface, no matter at what angle the ladder is placed.

By reason of the slots through which the pivotal bolts pass a certain amount of play or lost motion is permitted between the ladder and the shoes, and thereby when the ladder is erected its ends bear directly against the bottom plates of the shoes, almost entirely relieving the pivotal bolts of strain and applying the thrust of the ladder directly to the bottom plates of the shoes near the central portions thereof, and hence entirely counteracting any tendency of the bottom shoes to turn on their pivotal bolts and let the ladder slip when in use.

In Figs. 2 and 3 I illustrate the mode of securing the friction shoes or plates to the bottoms of the shoes. The latter have their lower sides provided with countersunk recesses P, and are provided within the areas of the said recesses with roughened surfaces R, which may be formed when the shoes are cast. The sides of the said recesses are inclined and caused to converge downwardly, as shown. The friction shoes or plates of

rubber are partly melted and forced into the said recesses and caused to adhere firmly to the roughened surfaces R and to become keyed between the inclined sides S. By this means the friction-plates are so firmly attached to the shoes that there is no danger of their becoming parted from the shoes, no matter what strain may be exerted on the ladder.

10 The corrugations on the bottoms of the shoes are diagonally arranged, and at right angles to each other, on the respective shoes of each pair, as shown in Fig. 4, this reverse arrangement of the diagonal corrugations being of great utility in preventing either end of the ladder from slipping laterally.

15 A ladder provided with my improved shoes may be erected on a surface of planks, glass, tin, carpet, or the like without danger of slipping.

20 The sharpened points of the lower pair of shoes are of great utility when the ladder is erected on grass plots or soft earth, as the lower shoes may be turned into alignment with the ladder and the said points caused to engage and become embedded in the ground.

25 In carrying my invention into practice it may be found desirable in some cases to sheath the sides of the ladder at the points where the shoes are applied with metallic plates to prevent the sides of the ladder from splitting, and to reduce friction between the same and the ears on the shoes. It may be also found desirable in some instances to provide each shoe with only one ear, as shown in Fig. 5, to adapt the shoe to be applied to a ladder of any size.

35 The shoes may be made of cast or wrought metal or of any other suitable material.

40 Having thus described my invention, I claim—

1. The ladder having the pivoted shoes

with their pivots working in slots, whereby lost motion is effected between the ladder and shoes to relieve the pivots of strain when the ladder is erected, substantially as described. 45

2. The ladder having the slots at its ends, one or both, in combination with the shoes having the pivot-bolts working in the said slots, substantially as described. 50

3. The shoes adapted to be pivoted to a ladder and having the friction plates or surfaces and the pointed ends M in line with the faces of the shoes, substantially as described.

4. The pair of shoes adapted to be attached to a ladder, for the purpose set forth, said shoes having the friction plates or soles provided with diagonal corrugations arranged in reverse relation to each other on the respective shoes, substantially as described. 55 60

5. The shoes adapted to be pivoted to a ladder and having the countersunk recesses with roughened surfaces on their lower sides and the friction soles or plates of rubber secured in said recesses, substantially as described. 65

6. The shoes having the countersunk recesses on their lower sides, the sides of said recesses being inclined and converging downward, and the friction plates or soles arranged in said recesses, substantially as described. 70

7. The ladder having the transverse slots at its upper end and the longitudinal slots in its lower end, in combination with the shoes attached to said ends of the ladder and having the pivotal bolts working in said transverse and longitudinal slots, substantially as described. 75

In testimony that I claim the foregoing I append my signature.

JAMES S. McILHENNY.

Witnesses:

J. W. GARNER,

JNO. IRWIN, Jr.