

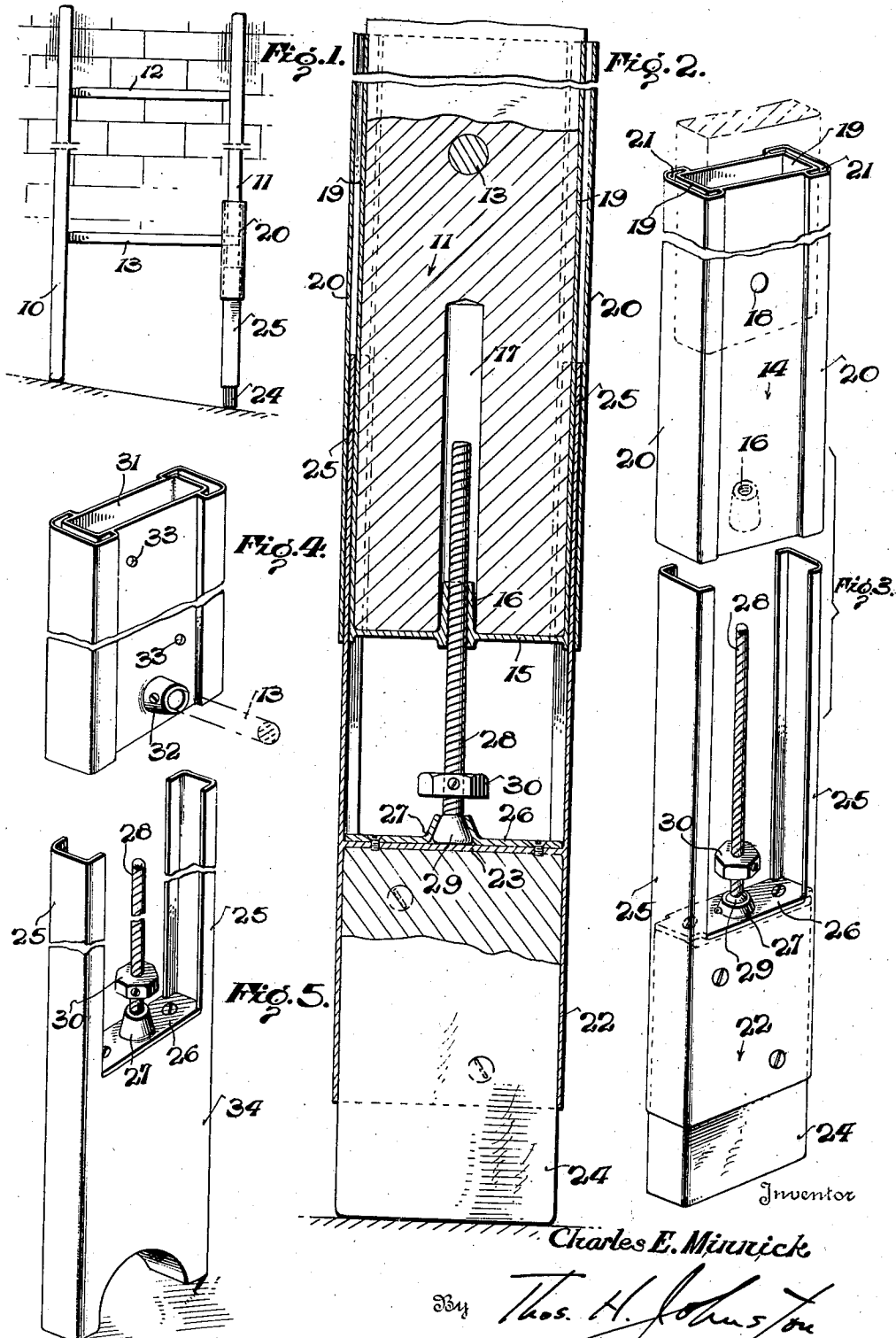
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LADDER

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LADDER

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This invention relates to an improved ladder especially designed for use as an efficient and safe unit of fire apparatus. As shall presently appear, however, the invention is equally applicable to a much wider field and it is not my desire to be limited to any single specialty of adaptation.

As is well known, fire ladders usually consist of two matching stiles rigidly connected by rungs. Thus, in any instance where it is necessary to erect the ladder upon a slope or where the object against which the ladder is placed is tilted, the ladder is, as a consequence, caused to lean sidewise. This, as is well known, has proven dangerous to anyone climbing the ladder as, due to its sidewise tilt, the ladder has a pronounced tendency to slip and fall. To correct the hazard, bricks, blocks or any other convenient objects are generally used beneath the lower end of the stile at the low side to approximate leveling of the ladder. This expedient is also dangerous to use of the ladder, however, as such chocks are not only inherently insecure but also, are so likely to be accidentally displaced during the hurry and excitement of a fire.

It is therefore an object of the present invention to provide a ladder embodying self-contained means upon one of the stiles for quickly and conveniently leveling the ladder.

A further object of the invention is to provide a ladder wherein the leveling means will be contained within the lines of the stile, so that no parts will project to be accidentally broken off while, also, the ladder may be conveniently stacked with other ladders of the kind.

Still another object of the invention is to provide a ladder wherein the adjustable foot employed will be braced and guided against possible angular canting with respect to the stile so that the foot will always have free movement for adjustment.

A further object of the invention is to provide a ladder wherein the adjusting means for the foot will be self-locking at any position of adjustment so that once the ladder is leveled, the ladder will not slip sidewise due to any fault of said adjusting means.

And the invention seeks, as a still further object, to provide a construction of the utmost simplicity commensurate with the practical advantages attained and capable of feasible manufacture at nominal cost.

Other and incidental objects of the invention will appear during the course of the following description and in the drawing:

Figure 1 is an elevation of my improved ladder, showing how the ladder may be leveled.

Figure 2 is an enlarged fragmentary vertical section particularly showing the leveling mechanism.

Figure 3 is a detail perspective view showing the parts detached but in proper operative position.

Figure 4 is a detail perspective view showing a slight modification.

Figure 5 is a detail perspective view showing a further slight modification.

Referring now more particularly to the drawing, I have shown a ladder embodying stiles 10 and 11 rigidly connected by rungs 12, all of wood, the bottom rung being specifically indicated at 13. Except as shall be pointed out, the ladder may be otherwise of any approved construction and, therefore, to dwell upon exact detail in this connection is unnecessary.

In accordance with the present invention, the stile 11 is shortened at its lower end and tightly fitting the lower end of said stile is a rectangular jacket 14, preferably of suitable sheet metal. At its lower end, this jacket is provided with an end wall 15 limiting the jacket against upward movement on the stile and formed on or otherwise fixed to said wall is a screw sleeve 16. As seen in Figure 2, this sleeve is accommodated in an axial bore 17 formed in the stile 11 from the lower end thereof.

At this point, it is to be noted that the jacket 14 is provided in its inner side wall with an opening 18 and the adjacent end of the bottom rung 13 of the ladder extends through said opening to engage in a suitable socket in the stile 11. Therefore, said bottom rung is utilized as a means of locking the jacket 14 fixed upon the stile.

Embracing the vertical end walls 19 of the jacket 14 are more or less channel shaped retaining hoods 20 coextensive with the jacket. The vertical margins of the side walls of these hoods are turned inwardly toward each other and are welded or otherwise rigidly fixed to the side walls of the jacket near the corners thereof. Thus, the hoods 20 are spaced from the end walls 19 as well as from the side margins of the side walls of the jacket and cooperate with the jacket to provide U-shaped channels 21 at the edges of the jacket extending throughout the length thereof.

In conjunction with the jacket 14, I further provide a foot embodying a rectangular socket 22, preferably of suitable sheet metal. This socket is provided with an upper end wall 23 and

fitting in said socket is a shoe 24 which may be of wood and which is detachably fixed rigidly in the socket by suitable screws, as shown, or otherwise.

5 Rising from the vertical edges of the socket are parallel channel shaped guides 25 facing each other. These guides may be integral with the socket or suitably fixed thereto and are also preferably of suitable sheet metal. The guides 25
10 slidably but more or less snugly fit in the channels 21 embracing the vertical end walls of the jacket 14 and are retained for vertical sliding movement by the hoods 20. Thus, a metal to metal contact is provided between the guides and
15 the jacket and due to the length of the parts and the presence of the hoods, a straight line rectilinear relation between the parts will be maintained so that the foot may always slide freely and canting or binding between the parts will
20 be prevented.

Detachably secured to the end wall 23 of the foot, as by screws or otherwise, is a bearing plate 26 preferably of suitable sheet metal and spun
25 upwardly from the plate or otherwise suitably fixed thereto is a more or less conical bearing 27. Journaled at its lower end in said bearing is an adjusting screw 28 having a conical head 29 rotatably fitting freely in said bearing. As will
30 be perceived, the screw may be removed downwardly through the bearing 27 when the plate 26 is removed and removably fixed to the screw near the lower end thereof is a nut 30 by which
35 the screw may be manually turned. The threads of the screw are preferably of steep pitch so that the adjustment will be fast and, as will be observed, said screw is received through the sleeve
16 to coact therewith and, at its upper end, is freely accommodated in the bore 17.

As will now be perceived, the screw 28 may be
40 manually turned in either one direction or the other for adjusting the foot of the stile 11 up or down so that the ladder may be readily leveled. Furthermore, endwise weight on the screw cannot serve to rotate the screw, so that the foot
45 will remain fixed in any position of adjustment while, also, the parts all lie substantially within the lines of the stile 10 and will thus be protected.

In some instances where it is desired to place
50 the rung 13 very low, it may prove expedient to fasten the adjacent end of said rung to the jacket 14 so as to obviate interference by the rung-terminal with the bore 17 of the stile 11 or

the adjusting screw 28. In Figure 4, I have shown a slight modification intended to meet the contingency. As will be observed, the inner side wall of the jacket, which jacket is indicated as a whole at 31, is provided with a nipple 32 to accommodate the adjacent end of the lower rung.
5 As will be understood, the rung will be of a length to terminate in said nipple and may be fastened by a radial pin or screw. Also, the jacket 31 may be provided in its inner side wall with openings
10 33 to receive screws or the like for securing the jacket fixed on the stile 11. Otherwise, the construction is as first described.

In Figure 5 of the drawing, I have shown another modification pertaining more particularly
15 to the foot employed. In this modification, the foot is indicated as a whole at 34. Instead of the socket 22 and shoe 24, the lower part of the foot 34 is made solid of metal and is preferably hollowed out at its lower edge, as shown, to provide
20 extremities to rest upon the ground. Otherwise, the construction is as first described.

Having thus described my invention, I claim:

1. A ladder including a stile having a bore therein, a jacket fixed to said stile and provided
25 with hoods forming channels and with a screw sleeve received in said bore, a foot having guides slidably received in said channels, and a screw rotatable upon the foot and received through
30 said sleeve in said bore to coact with the sleeve for adjustment to space the foot relative to the stile.

2. A ladder including a stile, a jacket fitting the lower end of said stile and provided with end walls, hoods embracing said end walls to define
35 channels, a foot having guides slidably fitting in said channels, and means for adjusting the foot relative to the stile.

3. A ladder including a stile having a bore therein, a jacket fitting the lower end of the stile
40 and provided with a screw sleeve accommodated in the mouth of said bore, said sleeve having end walls, hoods embracing said end walls and fixed to the sleeve to provide channels, a foot having
45 guides slidably received in said channels, a screw rotatable upon the foot and received through said sleeve within said bore to coact with the sleeve, said screw being rotatable for adjusting the foot relative to the stile, and a plate removably securing the screw upon the foot and provided with a bearing mounting the screw.
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