

B. B. BRIGGS.  
FIRE APPARATUS.  
APPLICATION FILED MAY 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

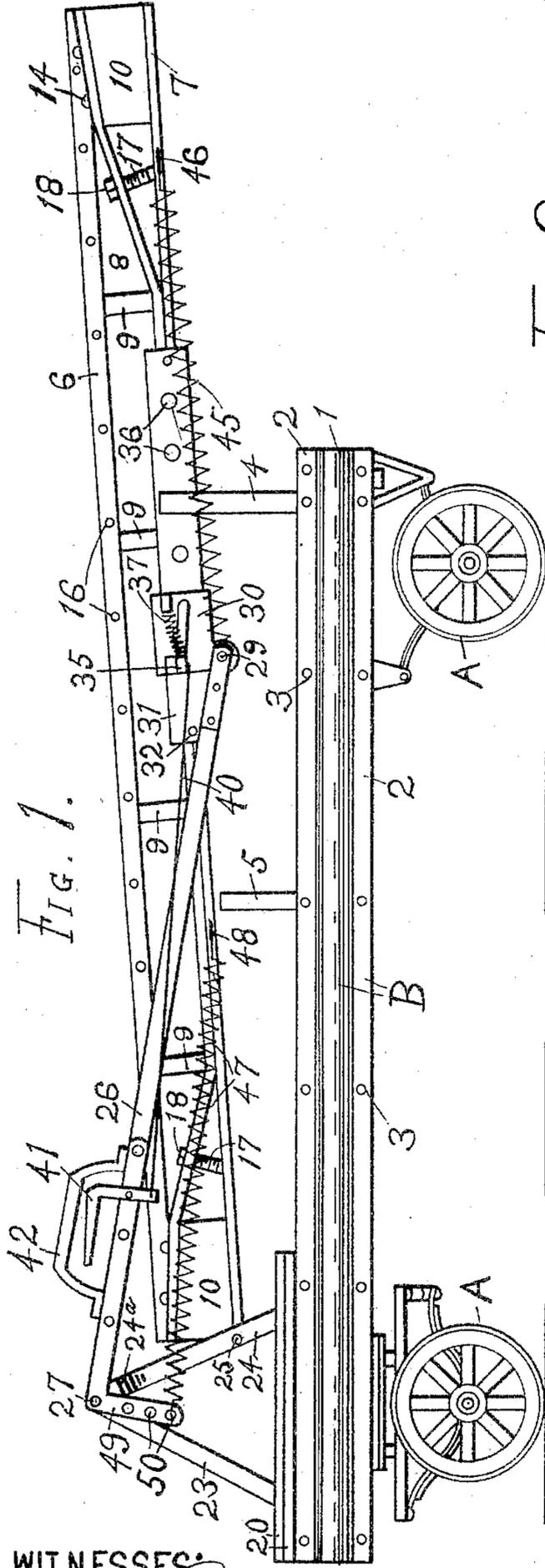


FIG. 6.

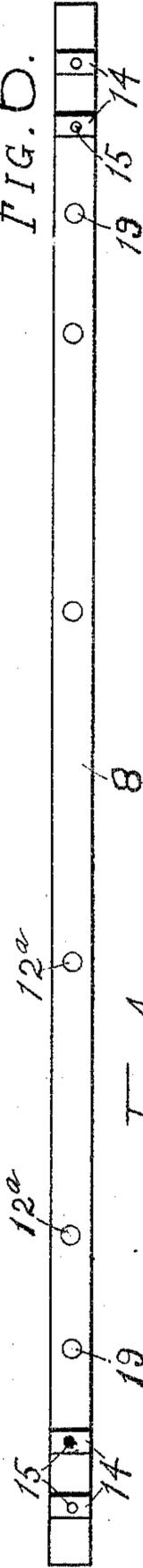


FIG. 4.

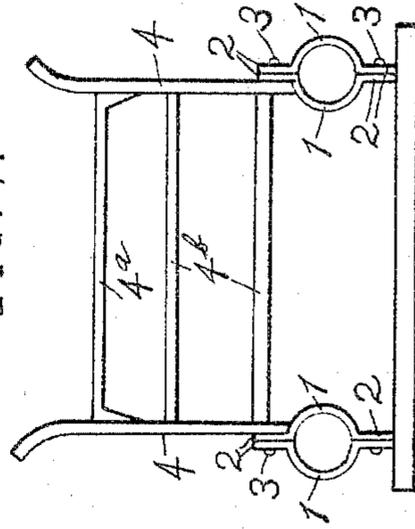


FIG. 5.

WITNESSES:

*F. L. Tall*  
*Silas W. Goussier*

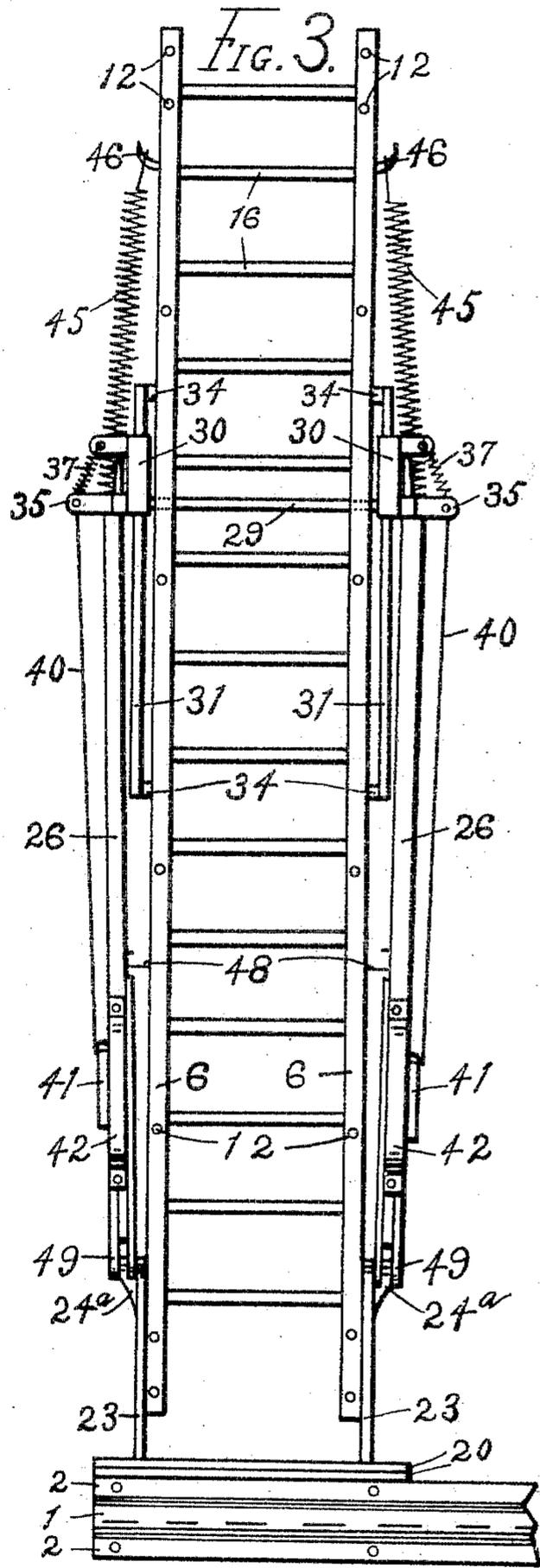
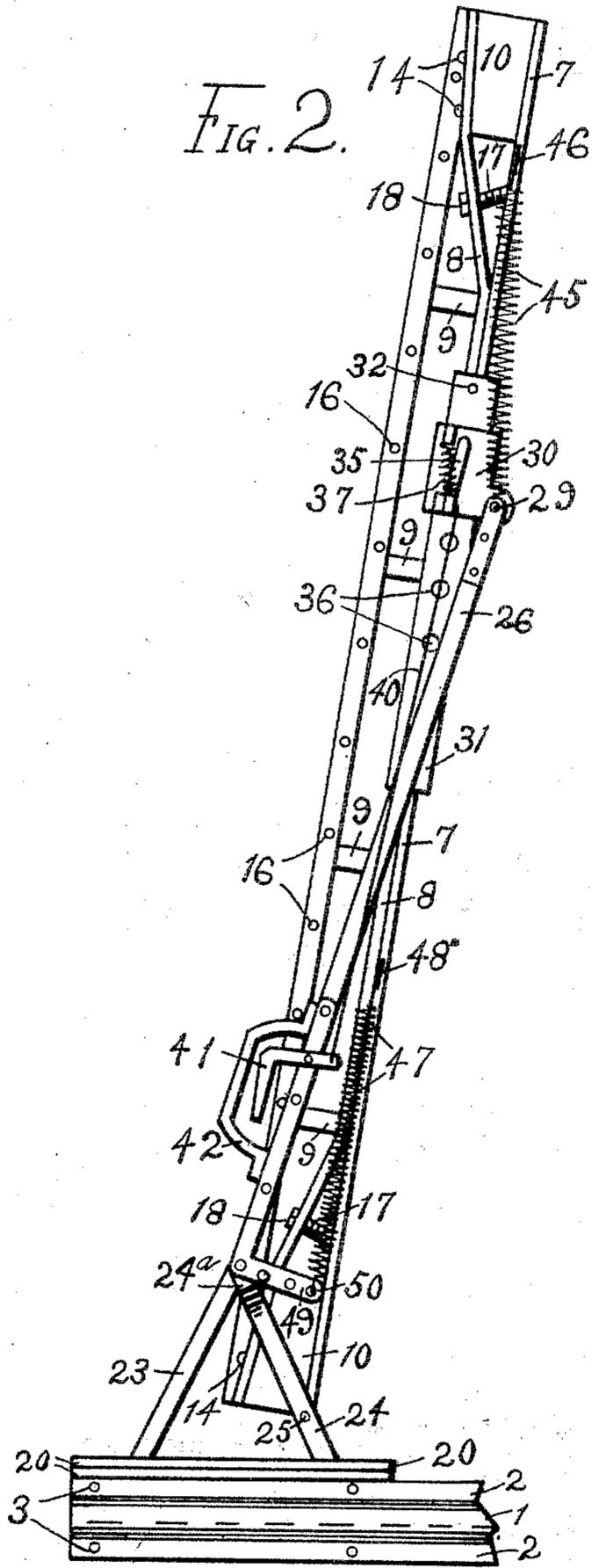
INVENTOR:

*Burdett B. Briggs.*

B. B. BRIGGS.  
FIRE APPARATUS.  
APPLICATION FILED MAY 13, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:

*L. L. Patt*  
*Silas W. Gouldin*

INVENTOR:

*Burdett B. Briggs.*

# UNITED STATES PATENT OFFICE.

BURDETT B. BRIGGS, OF CRESTON, IOWA.

## FIRE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 776,886, dated December 6, 1904.

Application filed May 13, 1902. Serial No. 107,205. (No model.)

*To all whom it may concern:*

Be it known that I, BURDETT B. BRIGGS, a citizen of the United States, residing at Creston, in the county of Union and State of Iowa, have  
5 invented certain new and useful Improvements in Fire Apparatus; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying  
10 the novelty.

My invention relates to fire-ladders, more especially to that kind which are mounted on trucks; and the objects of the same are, first, to provide an improved means of trussing a  
15 ladder with a metal truss, so as to secure the truss against end tension without adding to the weight of the ladder to an objectionable extent; second, to provide an improved and simplified means for raising and lowering the  
20 ladder, in which springs and lifting-levers are employed for raising and lowering the ladder, and also render the raising and lowering mechanism stronger and more effective; third, to provide a light, strong, and serviceable truck-  
25 frame for the support of the ladder and its operating mechanism; fourth, to provide a better construction of apparatus of this general character and to provide certain improved details, all adding to the general efficiency of  
30 the apparatus.

To this end the invention consists in the details of construction hereinafter more fully described and claimed and as shown in the accompanying drawings, wherein—

35 Figure 1 is a side elevation of the entire device, the ladder being lowered upon the truck. Fig. 2 is a side elevation of the truck-frame removed from the gear and the ladder raised. Fig. 3 is a side elevation of the truck-frame  
40 removed from its running-gear and with the ladder raised and turned so it is viewed from the front side. Fig. 4 is a somewhat enlarged view of the rear end of the truck-frame removed from the running-gear. Fig. 5 shows  
45 a modification of the side sills to the truck, one of the longitudinal parts being flat. Fig. 6 shows the metal truss 8 removed from the side of the ladder and showing the metal cogs or projections 14, also the holes 12<sup>a</sup> where

bolts 12 pass through and holes 19 where the  
50 tightener-bolts pass through.

Referring to the drawings, similar letters and numerals refer to similar parts throughout the several views.

A A designate the wheels of a truck such  
55 as usually forms part of the fire equipment of large cities.

B designates the main frame or sills of the truck for the support of the ladder and its  
60 raising mechanism and consists of a pair of longitudinal side sills, each running from end to end of truck and each formed of two complementary parts. Each part or half consists of a blank of suitable shape made from  
65 sheet metal and afterward bent so that it presents a semitubular part 1 with vertical faces 2 2, as shown in Figs. 1 and 4, and joined together by bolts or rivets 3 at several points, as shown in Fig. 1. It is clear that one of  
70 the parts of each sill might be flat, as is shown in Fig. 5. The two side members of the truck thus formed are light, strong, and rigid and require so little bracing that the rack-frames 4 5  
75 for the support of ladder, supplemented by connections mainly provided for the turn-table or platform and the running-gear of the truck, constitute, essentially, all required connections between the two sills.

The uprights 4 and 5, which are arranged  
80 between the side sills, afford bearing for the cross-rod 4<sup>a</sup> and rollers 4<sup>b</sup>. The cross-rod 4<sup>a</sup> is placed down a suitable distance from the top of the uprights 4 and affords a supplementary support for the ladder when lowered  
85 upon the truck, as seen in Fig. 1.

The turn-table 20, upon which the ladder and the raising and lowering mechanism are mounted, is, as usual, constructed so that its upper half or section may turn upon the lower  
90 half or section, which is secured to the truck-frame B in any suitable manner.

The ladder has each one of its two sides formed of two bars 6 and 7, and a truss rod or bar 8, which is preferably made of metal, is connected at its two ends to the ends of the bar 6  
95 and the middle portion of said truss converging away from bar 6 toward bar 7, and several struts or brackets 9 and 10 are interposed be-

tween the bars or between the truss and bars and secured by bolts or rivets 12, as most clearly shown in Figs. 2 and 3.

To provide extra resistance against end vibration or tension, which might destroy the efficiency of the trusses, provided the bolts were simply relied upon to hold the truss and bars in place, I provide the truss 8 with projections or semiround cogs 14, as seen in Figs. 1, 2, and 6. The projections 14 are also made of metal and are secured to the truss 8 by rivets 15, as seen in Fig. 6, or by other suitable means. As will be seen in Figs. 1 and 2, the cogs 14 project out from the truss 8 and fit or are pressed into a suitable recess in the bars, as is shown in Fig. 1.

Heretofore wooden trusses have been used and secured against end vibration by dowelpins inserted in a hole bored in and between the truss and the leg of the ladder; but by the employment of such means the truss would be cut considerably away, and, again, such methods as doweling and halving that have been used on wooden trusses would be wholly unfit and an expensive mode of securing a metal truss to a wooden member, and, as seen, with these cogs projecting out from the truss the truss itself is not weakened, and a metal truss can be used, which is light and much stronger than a wooden truss.

The truss is provided with a tightener or tension-adjuster, which consists of threaded bolts or rods 17, attached to one of the bars, and projects through a hole 19 or other suitable fastening on the truss 8, as best seen in Figs. 2 and 6, and a bur 18 is screwed on the bolt 17. The two sides thus formed are connected together by rounds 16.

The ladder is hinged or pivotally supported at its base or lower end to the support or turn-table 20, or, as at 25, to the uprights or brackets 23 24, which are secured upon the rotary section of the turn-table in any suitable manner. A pair of lifting or supporting levers 26 are hinged to the uprights 23 24, as at 27, at a point above and forward of the pivot 25 of the ladder. The two levers need not be connected, as the outer or movable ends are connected to the cross-rod 29, which is movable on or under the ladder, as best seen in Figs. 2 and 3.

The levers 26 are arranged on opposite sides of the ladder and far enough apart so as not to interfere with the raising of the ladder.

A lock-plate 31, provided with holes or recesses 36, is secured to the sides of the ladder by bolts or rivets 32. A block 34 is inserted between the lock-plate and ladder to give space for the working of a movable casing 30, which is secured on the lock-plate, as best seen in Figs. 2 and 3.

The casing 30 is connected to the lever 26 or cross-rod 29 and is provided with a catch or pawl 35. A spring 37 engages the catch with

the holes 36 in the lock-plate, as seen in Figs. 2 and 3.

A suitable rope or rod 40 connects the catch 35 to a finger-lever 41, which is located on the lever 26 or on the handhold, which is also located on the lever 26, as seen in Figs. 2 and 3.

The levers 26 are each provided with an angle base or projection 49, and a spring 47 is attached at one point to eyes or fasteners 50 on the angle projection and at another point to the ladder, as at 48, as will be seen in Figs. 1 and 2. 45 represents a spring connected to the outer or movable ends of the lever 26 (or cross-rod 29) and to the ladder by suitable connections or hooks 46. The springs 45 and 47, which cooperate with each other to assist in raising and lowering the ladder, are located at such points that they will increase in tension when the ladder is lowered, and the cross-rod 29 and the movable ends of the levers 26 move down toward the pivoted end of the ladder; but this tension will decrease as the ladder is raised from a horizontal to an inclined plane.

The positive means herein for raising the ladder is the handhold or handle 42, attached to the lever 26; but it is manifest that a variety of means well known, such as windlass and various screw mechanism, might be employed in conjunction with the levers and springs for this same purpose, which would be necessary if an extensible section was used. It will be observed, however, that the lifting-levers 26 being pivoted at points above and forward of the pivot of the ladder makes the strain on the levers caused by the spring 45, or when the levers are sustaining the ladder by the locking mechanism applied to their movable ends, a longitudinal pull which admits of the use of a small and light lever which is exceedingly strong without the multiplicity of braces and truss-rods.

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

1. The combination with a support, a fire-escape ladder, hinged at one point thereto, a pair of levers each hinged at points, which, when the ladder is in a horizontal position, are above the plane of the ladder, a cross-rod connecting their movable ends, and movable under the ladder, a base projection on the levers, and a spring attached at one end to the projection, and at the other end to the ladder, for assisting in raising and lowering the ladder, and with it the levers, substantially as set forth.

2. The combination with a support, a ladder hinged at one point thereto, uprights on the support, a pair of lifting-levers hinged at one end, at points on said uprights, which are above, and in front of the pivot of the ladder, and the movable ends of said levers having bearing on the said ladder; of springs attached to the outer ends of the levers, and to

the ladder, at points to bring them under tension when the ladder is down, for assisting in raising and lowering the ladder.

3. As an improvement in means for raising and lowering a ladder with lifting-levers, the combination with a support, a ladder pivoted thereon, a catch-bar attached to the sides of the ladder, a movable catch thereon, raising and lowering levers hinged to uprights on the support, and located thereon, at points which are above the pivot of the ladder, and having their movable ends attached to said catch, handles located on the lifting-levers, a finger-lever located at a convenient point on said handles, and connected to the catch by a suitable rod, and automatic means for assisting in raising and lowering the levers, and with them the ladder, all as set forth.

4. The combination, with a support, a ladder pivoted thereon provided with a lock-plate attached to the sides of the ladder, a movable catch thereon, the raising and lowering levers hinged to brackets on the support, and located thereon at points, which are in front of the pivot of the ladder, and having their movable ends, attached to a movable locking mechanism, a handle secured to the lifting-lever, a hand-lever located at a convenient point on the lifting-levers on said handles, and connected to the locking mechanism by a suitable connection, and springs attached to the levers or movable locking mechanism, and to the standard at points to bring them under tension, when the ladder is down, for the purpose set forth.

5. The combination with a turn-table, a ladder pivoted at one point thereto, a supporting-lever pivoted at another point thereto, which is above and in front of the pivot of said ladder, and the movable end of said lever attached to a slide, movable on a lock-plate, secured to the side of the ladder, a catch secured to said slide, for engaging said plate, and a spring for engaging said catch with said lock-plate.

6. In a fire-escape, the combination with a ladder, pivotally mounted on a support, uprights secured to the support, lifting-levers pivoted to said uprights, at points which are above and in front of the pivot of said ladder, said levers having their movable ends attached, to a suitable attachment movable on said ladder, of an angled base projection on the said lifting-levers, a spring attached at one end to the said angled base projection, and at

the other end to the ladder, and adapted to assist in raising and lowering the ladder.

7. The combination, in a fire-apparatus truck, of a turn-table carried thereon, uprights secured to the said turn-table, and a ladder pivoted to said uprights, of lifting-levers pivoted to said uprights, at points which are above and in front of the pivot, of said ladder, and their movable end attached to and adapted to be moved on said ladder, and springs attached to the ladder, and to said levers, at points to bring them under tension when the ladder is down.

8. In a fire-apparatus truck, the combination with a turn-table carried thereon, uprights secured to the turn-table, a ladder pivoted to said uprights, supporting-levers pivoted to the uprights, and connected at another point, to a locking mechanism secured to, and movable on a suitable lock-plate secured to the ladder, substantially as specified.

9. In a ladder, the combination with the side of the ladder composed of a plurality of bars, of a metal truss interposed between said bars, means securing said truss and bars together, means to adjust the tension of said truss, and means securing said truss against end vibration, consisting of metal cogs secured on said truss, and projecting into the side bar of the ladder, as set forth.

10. The combination in a fire-escape ladder having two sides, each composed of a plurality of bars, a truss-brace connected at its ends to the side bars, and several brackets interposed between the bars and between the truss and bars, means for securing said bars and truss together, and means secured to the said side, and to the said truss, for adjusting the tension of the truss, and which draws transversely on said truss, substantially as described.

11. In a ladder having two sides, each consisting of a plurality of bars, a truss-rod connected at its ends, to one of the bars, and its middle portion converging away therefrom, and several struts interposed between the said bars, or truss and bars, of threaded bolts or rods secured at one end to the said sides, and passing through a suitable fastening on said truss, a bur on the end thereof, and adapted to adjust the tension of said truss, as set forth.

BURDETT B. BRIGGS.

Witnesses:

BENJAMIN FRIEND,  
OSCAR W. PEARSON.