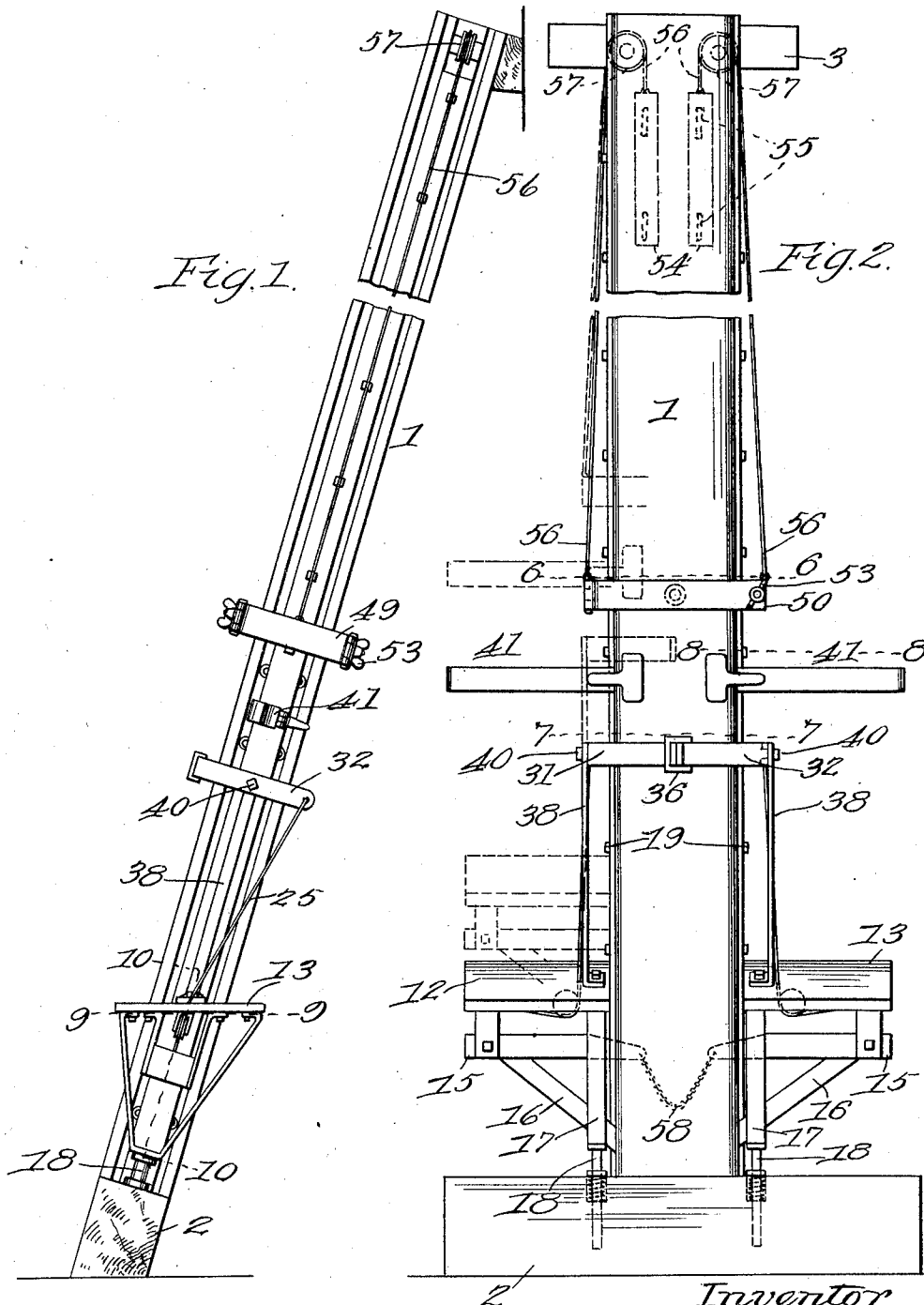


W. W. LOVE.
CLIMBING AND DESCENDING APPARATUS.
APPLICATION FILED FEB. 4, 1910.

1,002,289.

Patented Sept. 5, 1911.

3 SHEETS—SHEET 1.



Witnesses
J. P. Connor.
C. J. Dulin

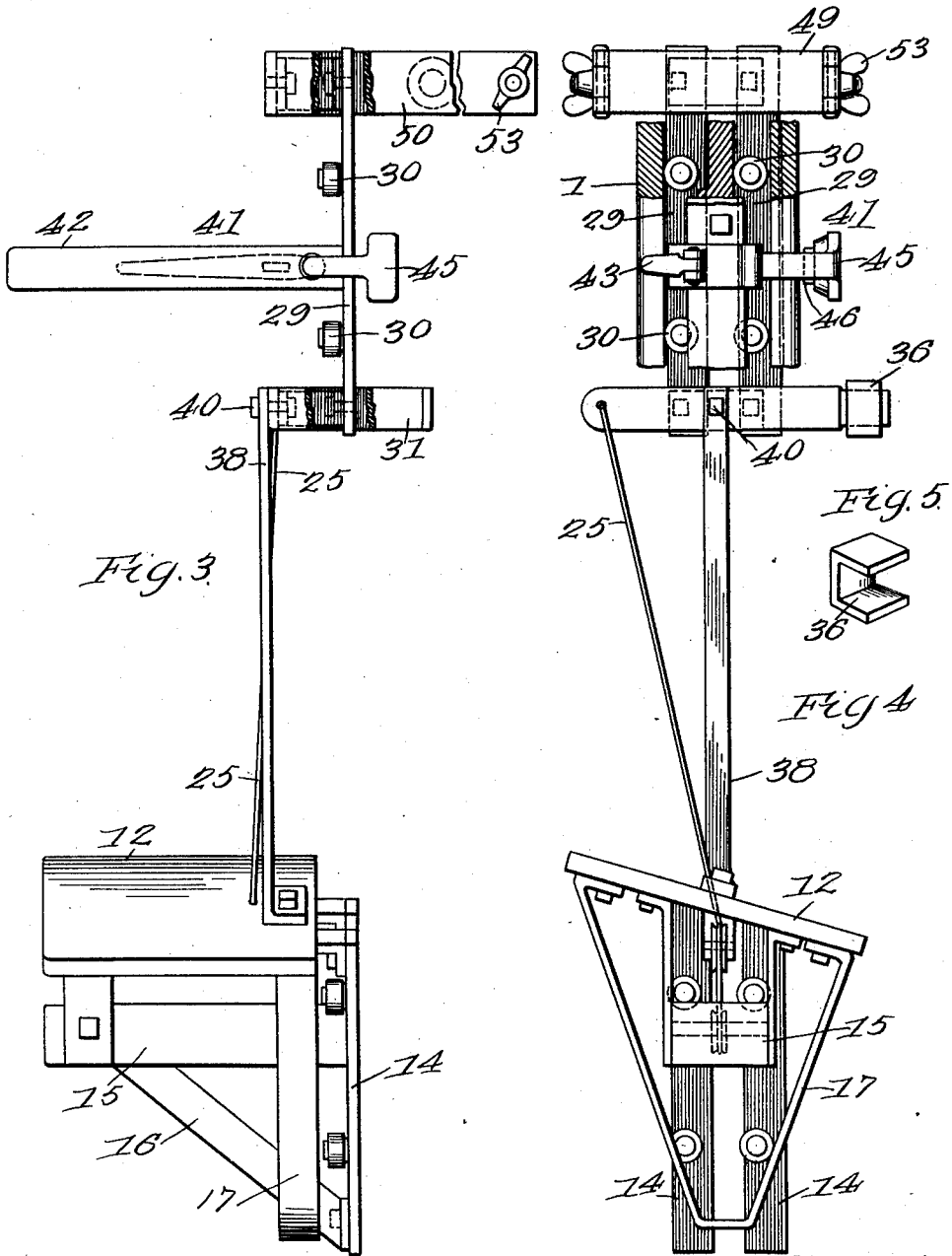
Inventor
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3 SHEETS—SHEET 2.



Witnesses
J. P. Lammot.
C. J. Dulin

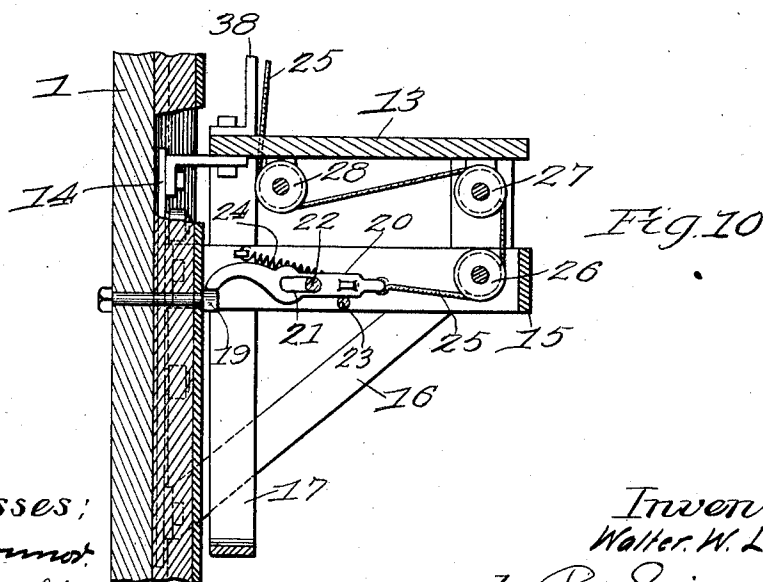
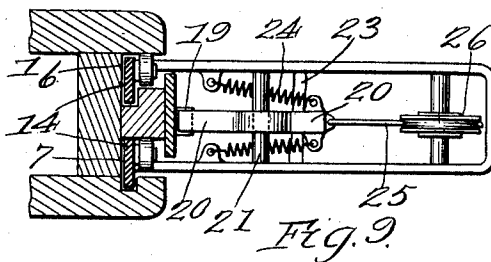
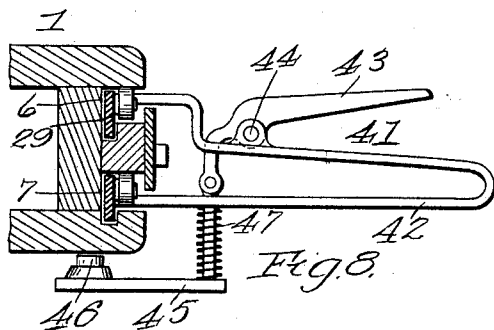
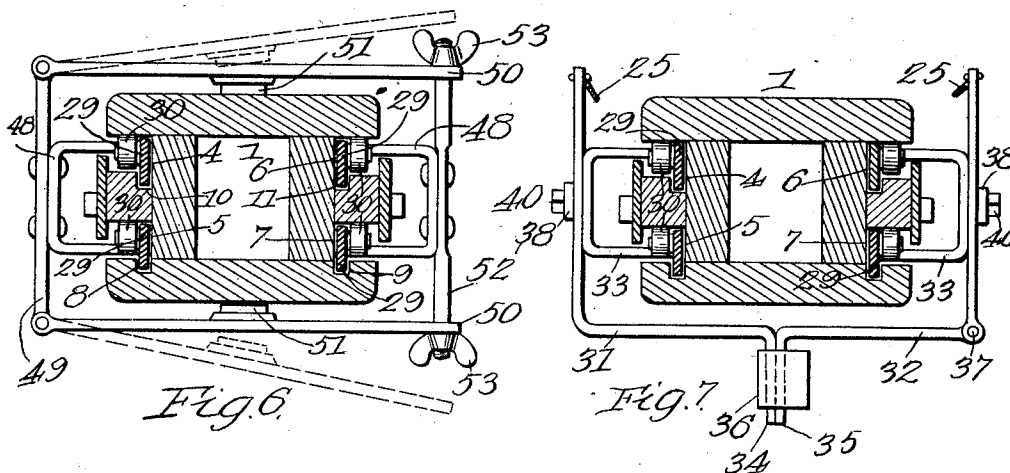
Inventor:
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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

WALTER WILLIAM LOVE, OF KINSON, NEAR BOURNEMOUTH, ENGLAND.

CLIMBING AND DESCENDING APPARATUS.

1,002,289.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed February 4, 1910. Serial No. 542,137.

To all whom it may concern:

Be it known that I, WALTER WILLIAM LOVE, a subject of the King of Great Britain, residing at Kinson, near Bournemouth, in the county of Hants, England, have invented certain new and useful Improvements in Climbing and Descending Apparatus, of which the following is a specification.

This invention relates to improvements in climbing and descending apparatus and has for its object the provision of such an apparatus adapted for use under ordinary conditions for reaching and descending from an elevated position, and also adapted for use under such extraordinary conditions as fires for climbing to and descending from different points of a burning structure.

The device of my invention has a broad application to any of the uses to which a ladder might be employed with the advantage of enabling the operator to more quickly ascend and descend than would be possible for him to do on a ladder.

My invention will be more fully described in connection with the accompanying drawings and will be more particularly pointed out in and by the appended claims.

In the drawings: Figure 1, is a view in side elevation of the device of my invention. Fig. 2, is a front elevation thereof. Fig. 3, is a front elevation, with parts broken away, of a portion of the apparatus detached from the upright. Fig. 4, is a side elevation thereof with parts in section and also illustrating guiding portions of the upright. Fig. 5, is a perspective detailed view. Fig. 6, is a sectional view on lines 6—6 of Fig. 2. Fig. 7, is a sectional view on lines 7—7 of Fig. 2. Fig. 8, is a sectional view on lines 8—8 of Fig. 2. Fig. 9, is a sectional view on line 9—9 of Fig. 1 with the structure turned about at ninety degrees from the position shown in Fig. 1. Fig. 10, is a sectional view on lines 10—10 of Fig. 1.

Like parts are designated by similar characters of reference throughout the different figures of the drawings.

As illustrated, my invention includes a main upright 1, provided with a base portion 2, and a transversely disposed bearing beam 3. The lower face of the base portion 2 is inclined to permit the upright to assume the proper angle in resting against the side of the building. The bearing beam 3 is

also inclined, as shown in Fig. 1, to rest against a vertical wall.

The upright 1 is provided on its side with guide ways 4, 5, 6 and 7, as clearly shown in the sectional view. Guide ways 5 and 7 include recessed portions 8 and 9 guide ways 4 and 6 include recessed portions 10 and 11.

Foot stands 12 and 13 are provided for the feet of the operator to rest upon when using the apparatus. Foot stand 13 is connected with a pair of guide shoes 14 which slide in guide ways 6 and 7. Foot stand 12 is connected with a similar pair of guide shoes which slide in guide ways 4 and 5. Said foot stands are connected with the guides by framework which includes members 15 and 16. Frame members 17 are provided for engaging spring buffers 18 when the foot stands reach their lowermost position. Stops 19 are provided for supporting the foot stands in elevated positions during the climbing operation. Each foot stand is provided with a pawl 20 mounted upon a rod 21. Pawls 20 are slotted, as at 22, to provide for longitudinal movement of the pawls with respect to the rod 21. Each pawl is provided with a stop 23 limiting downward movement of the outer end so that when the inner end of the pawl engages the stop 19 the foot stand will be rigidly supported thereby, as will be readily seen by reference to Fig. 10. Springs 24 normally hold the pawls 20 in the position shown in Fig. 10, or in other words, in engaging proximity with the stops 19, and also permit withdrawal of the pawls 20 from engaging proximity to the stops 19. Connection 25, such for instance as cords, are attached to the pawls 20 and are trained about pulleys 26, 27 and 28.

Pairs of shoes 29 are disposed in the guide ways and above the shoes 14. Anti-friction rollers 30 are provided on the shoes 29 to reduce friction which would otherwise greatly retard the operation when the support is in an inclined position. Levers 31 and 32 are pivotally mounted on yokes 33 which latter are secured to the shoes 29. The free ends of said levers 31 and 32 are attached to the cords 25 and when their opposite ends 34 and 35 are depressed then the pawls of the foot stands are withdrawn from engagement with the stops 19. In order that the ends 34 and 35 of levers 31 and 32 may be operated together the same may be locked by means

such as a clip 36. The clip 36 may be so proportioned as to fit tightly about the ends 34 and 35 so as to ordinarily be retained in position by friction. When the clip 36 is withdrawn the levers 31 and 32 may be operated independently. Preferably the lever 32 is made in two parts which are hinged together at 37 so that when the levers 31 and 32 are to be operated independently the latter may be slightly withdrawn from the former to permit freedom of movement.

According to my invention the two pairs of shoes on each side of the upright are connected so as to move in unison, and they are preferably rigidly connected, so that when braking mechanisms (hereinafter described) are actuated the pairs of shoes on opposite sides will be arrested and prevented from moving until the braking mechanism is released. As illustrated the lower shoes of one side are connected with the upper shoes on the same side by a rigid connection 38. As illustrated one end of each connection is secured to a foot stand and the other end is secured to one of the pivots 40 of the levers 31 or 32.

Above the pawl operating levers 31 and 32 there is disposed a pair of braking mechanisms arranged and designed for manual operation. One of these mechanisms both of which are designated by 41 as a whole, is shown in detail in Fig. 8.

Each hand braking mechanism includes a bar 42 secured to the shoes 29 and provided with a lever 43 pivotally mounted at 44. The free end of the lever 43 is arranged to be actuated by the hand of the operator and the opposite end is connected with a brake 45 which may be provided with a rubber or the like member 46 for engaging the upright 1. A spring 47 normally holds the brake member 45 out of engagement with the upright 1 and permits braking action when the lever 43 is drawn toward the part 42. These hand brakes are arranged for independent operation by the user and one hand brake serves to retard the movement of two pairs of shoes on its side of the upright and the other hand brake serves to retard the movement of both pairs of shoes on the opposite side.

Above the manual brake mechanism is disposed the main frame mechanism which will be described in detail.

Yokes 48 are mounted upon shoes 29 and one of said yokes carries a pivot bar 49 on the ends of which are pivoted brake bars 50. The brake bars 50 are provided with rubber or like braking members 51 which are disposed and arranged for engagement with the upright 1. On the other yoke 48 is provided the slanting bar 52 having threaded end portions and nuts 53 whereby the brake bars 50 may be clamped in braking position or released to free the braking element 51

from the upright member 1. The braking members or levers 50 are shown in full line in Fig. 6 in a braking position and in dotted lines in a released position. When the levers 50 are released the nuts 53 are turned off from the bar 52.

Counter weights 54 are provided for the mechanism on each side of the upright 1 and rollers or wheels 55 are provided to reduce friction during up and down movement of the weights 54. Each weight 54 is connected by a cord or cable 56 which is trained about a pulley 57 and is connected with the main braking mechanism in any suitable manner.

If the brake bars or levers 50 are connected as shown in Fig. 6, then the pairs of shoes on both sides and the foot stands on both sides move in unison and are rigidly connected together. In this adjustment the clip 36 will be in place as shown in Fig. 7 so that both of the pawls 20 can be withdrawn from the stops 19 on depression of the levers 31 and 32.

If it is desired that the foot stands on opposite sides be independently movable then the brake bars 50 are disconnected and so also is the clip 36.

When the opposite foot stands are movable independently of each other then the braking operation is effected by the manual brake mechanism 41. If, on the other hand, the adjustment is effected such as shown in Fig. 6 then the braking can be done by the main brake mechanism.

When the mechanism is adjusted for independent operation of the foot stands it is desirable to connect the latter by a flexible connection such as a chain 58 so as to limit the movement of one foot stand with respect to the other.

In using the apparatus the operator stands upon the foot rests 12 and 13 and disconnects the clip 36 and the main brake mechanism so that the devices on opposite sides of the upright are free to move independently. If the operator lifts the left foot and shifts his weight on to the right foot stand 13 then the weight 54 of the foot stand 12 will raise the latter, and its corresponding mechanism, into the dotted line position shown in Fig. 2. This movement will be limited by the connection 58. When the foot stand 12 has reached the dotted line position then its pawl 20 which has loosely passed over the stop 19 will then engage the top of such stop 19 and the foot stand 12 will be prevented from descending. The operator will now shift his weight on to the foot stand 12 to permit the foot stand 13 to ascend under the action of its weight 54 until such ascending movement has been limited or arrested by chain 58. The pawl 20 of the foot stand 13 will then engage the stop 19 at such height and the foregoing operations will be repeated until the desired elevation has been

attained. The hand brakes 41 form convenient hand holds during ascent and descent.

I claim:

- 5 1. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands slidable on said guide members, a counter-balance for each foot stand, means limiting
10 independent movement of said stands with respect to each other, and mechanism supporting said foot stands at the completion of each climbing step or movement.
- 15 2. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands slidable on said guide member, a counter balance on each foot stand, stops on said upright, and mechanisms for each stand adapted
20 for engagement with said stop for supporting the stand at the completion of each climbing step or movement.
- 25 3. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands, a counter-balance for each foot stand, stops on said upright, and spring controlled means for each stand for engaging said stops to support the stand at the completion of each
30 climbing step or movement.
- 35 4. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands, counter-balance for each foot stand, stops on said upright, spring controlled means for each stand for engaging said stops to support the stand at the completion of each climbing step or movement, and means slid-
40 able with said foot stands for throwing said spring controlled means out of action to permit descent of said stand.
- 45 5. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands slidable thereon, a counter-balance for each foot stand, stops on said upright, spring controlled means for each stand for engaging said stops to support the stand at the completion of each climbing step or movement,
50 a device for each of said spring controlled

means for throwing the same out of operative relation with its stop to permit descent of its stand, and an element for connecting said devices, substantially as and for the purposes set forth.

55 6. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands therefor, shoes slidably connecting said stands with said upright, a counter-balance
60 for elevating each stand, a braking device for controlling descent of said stands, shoes slidably connecting said braking device with said upright and also connected with the shoes of said stands, and mechanism for sup-
65 porting said stands at the completion of each climbing movement or step.

7. A climbing and descending apparatus comprising in combination, an upright guide member, independently movable foot stands
70 therefor, shoes slidably connecting said stands with said upright, a counter-balance for elevating each stand, a main braking device and an auxiliary braking device, shoes slidably connecting said braking devices
75 with said upright and said shoes being connected with said stand shoe, and mechanism for supporting said stand at the completion of each climbing movement or step.

8. A climbing and descending apparatus
80 comprising in combination, an upright guide member, independently movable foot stands therefor, shoes slidably connecting said stands with said upright, mechanisms for supporting each stand at the completion of
85 each climbing step or movement, a second pair of shoes slidably mounted on said upright, a device for controlling said mechanisms mounted on said second shoes, connections between said second shoes and said
90 stand shoes, a main braking device mounted on said second shoes, counter-weights, and connections between said second shoes and said counter-weights.

In testimony whereof, I have affixed my
signature in the presence of two witnesses.

WALTER WILLIAM LOVE.

Witnesses:

R. WESTACOTT,

H. D. JAMESON.