

March 31. 1925.

1,531,982

C. SAGO

PORTABLE FIRE ESCAPE

Filed Oct. 12. 1923

3 Sheets-Sheet 1

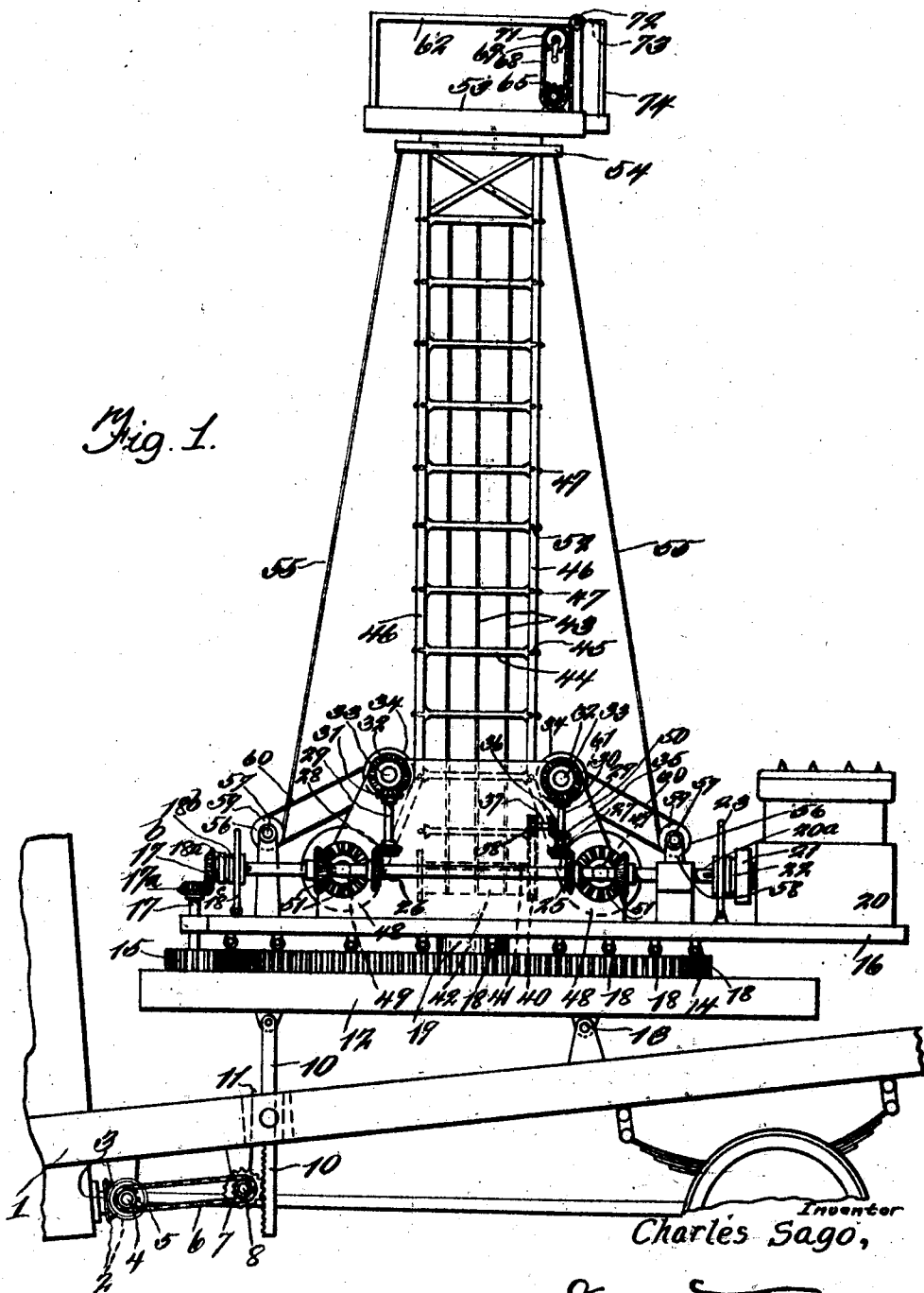


Fig. 1.

Inventor
Charles Sago,

By *Arthur Talbot*
Attorney

March 31, 1925.

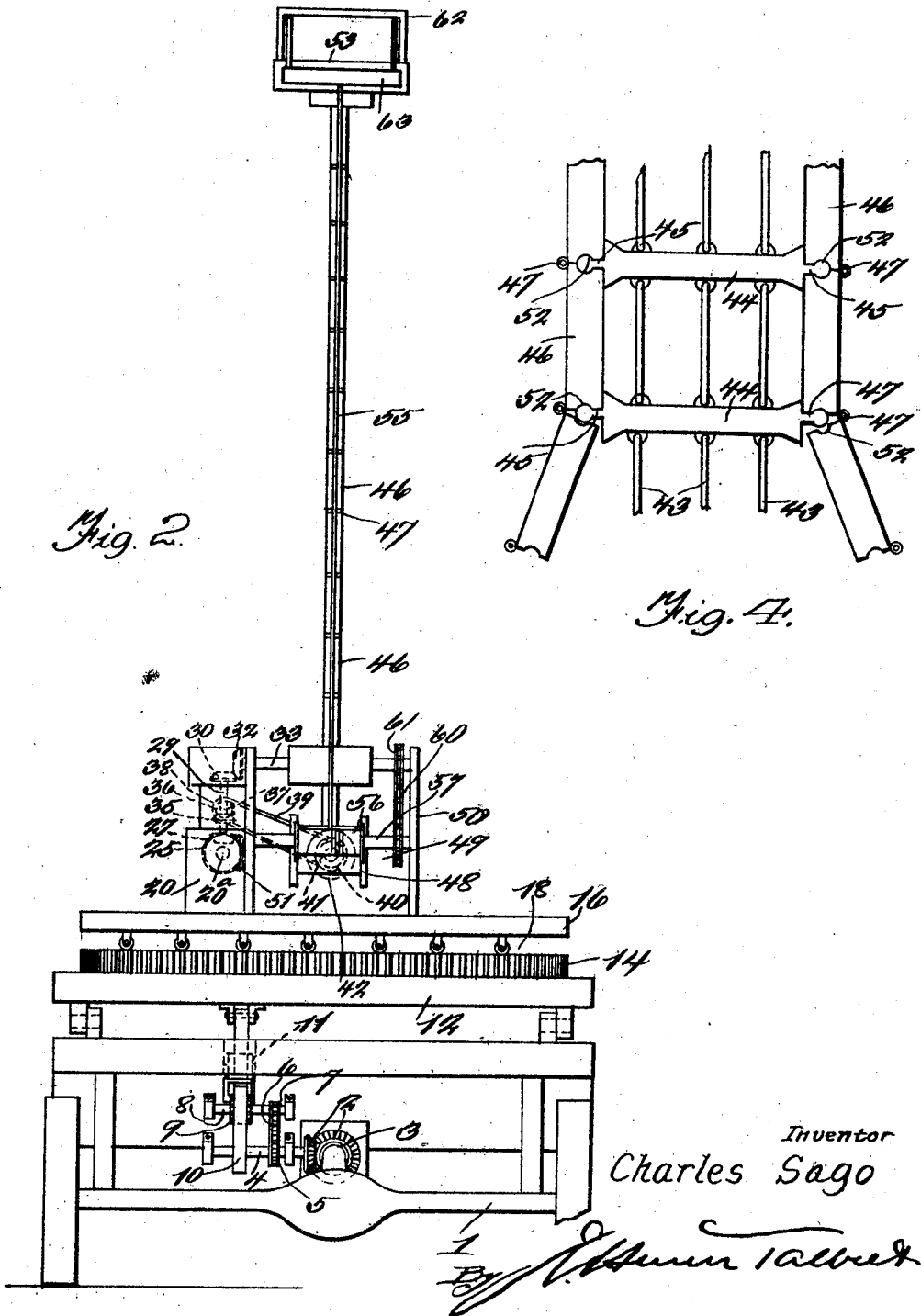
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3 Sheets-Sheet 2



Inventor
Charles Sago

By 

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C. SAGO

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3 Sheets-Sheet 3

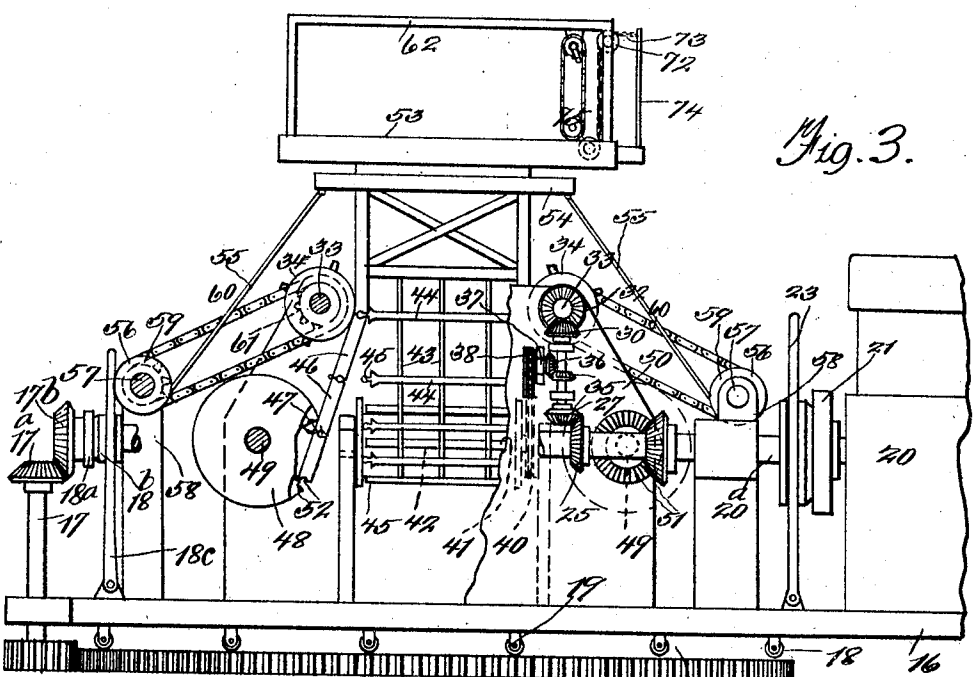


Fig. 3.

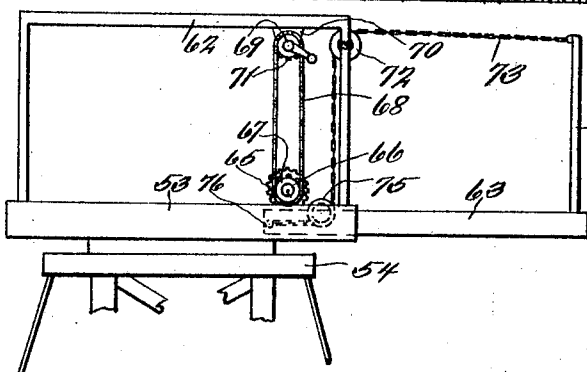


Fig. 5.

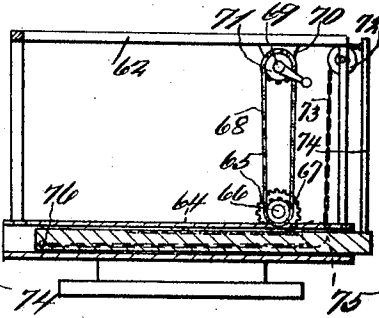


Fig. 7.

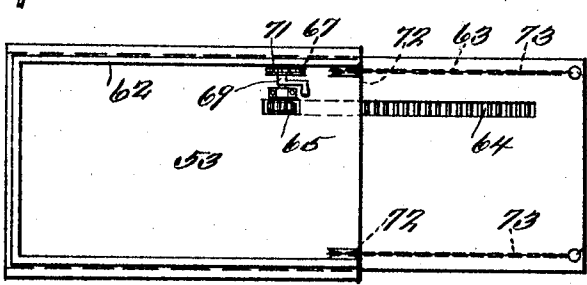


Fig. 6.

Inventor
Charles Sago,

BY *Arthur Talbot*
Attorney

UNITED STATES PATENT OFFICE.

CHARLES SAGO, OF OLD FORGE, PENNSYLVANIA.

PORTABLE FIRE ESCAPE.

Application filed October 12, 1923. Serial No. 668,170.

To all whom it may concern:

Be it known that CHARLES SAGO, a citizen of the United States, residing at Old Forge, in the county of Lackawanna and State of Pennsylvania, has invented new and useful Improvements in Portable Fire Escapes, of which the following is a specification.

The present invention has for its purpose to provide, in a portable fire escape, a relatively simple and efficient portable contrivance as a substitute for firemen's step-ladders for effecting rescue in case of fire in buildings where the ordinary means of egress, such as extensible ladders, are impracticable.

Another purpose is to provide a device for this purpose which is extensible to any desired height on the exterior of the building and close to the wall thereof, permitting the transfer of the occupants of the building through the windows thereof.

Still another purpose is the provision of laterally extensible means at the upper end of the extensible contrivance for bridging the relatively narrow space between the upward extensible contrivance and the windows of the building in order to permit the occupants to pass with safety from the windows to the platform at the upper end of the contrivance.

A further purpose is to provide, in an extensible contrivance of this character, means actuated by power mounted upon a motor driven truck or vehicle whereby the contrivance may be lowered to such an extent that the entire apparatus may be easily and very quickly transported from place to place without interference with overhead wires or other overhead structures.

A still further purpose is the provision of means for mounting the extensible contrivance on the motor driven vehicle or truck whereby the contrivance may be rotated in a horizontal direction so as to permit the contrivance to be disposed in any suitable position adjacent the building which is on fire without necessitating changing the position of the motor driven truck or vehicle.

It is to be understood that the particulars herein given are in no way limitative and that, while still keeping within the scope of the invention, any desired modifications of detail and desired proportions may be made in the apparatus according to the circumstances.

The invention comprises further features

and combinations of parts to be hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in side elevation of the improved portable fire escape apparatus constructed in accordance with the invention, showing the extensible contrivance in its extended position.

Figure 2 is a view in elevation at right angles to that shown in Figure 1.

Figure 3 is an enlarged view in side elevation of the apparatus, more clearly showing the mechanism for actuating the extensible contrivance, showing a part of said contrivance broken away in the center with the platform at the top in lowered position.

Figure 4 is an enlarged detail view of a portion of the extensible contrivance showing how the links of the extensible contrivance are constructed in order to permit the parts thereof to assemble and disassemble during the extensible action.

Figure 5 is an enlarged detail view of the platform at the top of the extensible contrivance showing the laterally extensible gang-plank.

Figure 6 is a plan view of the same.

Figure 7 is a longitudinal sectional view through the platform, showing the extensible gang-plank retracted.

Referring to the drawings, 1 designates a motor driven truck of conventional construction, with the exception that in the present instance the platform assumes a position inclined upwardly toward the rear. Driven by bevel gears 2, one of which is rotated by the drive shaft 3 of the motor, is a transverse shaft 4 mounted in bearings on the under side of the platform of the truck. Mounted upon the shaft 4 is a sprocket 5 operating a chain 6 which, in turn, passes about a sprocket 7 for rotating a shaft 8 which also assumes a transverse position on the platform in bearings thereof. Carried by the shaft 8 is a gear 9 which meshes with a rack 10 which engages with a swivelled guide 11 mounted upon the platform. The rack 10 is, in turn, pivoted to a platform 12 which supports the entire fire escape apparatus.

The platform 12 is fulcrumed at 13 upon suitable supports and disposed upon the platform is a gear 14 with which a gear 15 meshes for revolving the turn-table 16 relatively to the gear 14 and the platform

12. The shaft 17 which carries the gear 15 is mounted in bearings on the turn-table 16 and projecting downwardly from which is a plurality of wheels or rollers 18 for engaging a suitable raceway on the upper face of the gear 14, thereby revolubly supporting the turn-table. A supporting shaft 19 on which the turn-table 16 is mounted constitutes a bearing and is disposed concentric with the gear 14. The rollers or wheels 18 act to maintain the platform level during its operative movements.

A conventional form of motor 20 is mounted upon the turn-table and its shaft has a conventional form of fly wheel 21 and brake wheel 22 for controlling the shaft. A conventional form of lever 23 is employed for operating the brake wheel. The motor shaft 20^a also has bevel gears 25 and 26 which mesh with the bevel gears 27 and 28. The gears 27 and 28 are carried by the perpendicular shafts 29 which are mounted in bearing and their upper ends are supplied with bevel gears 30 and 31 for meshing with the bevel gears 32 which are carried by the horizontal shafts 33 which, in turn, carry the sprockets 34.

One of the shafts 29 has a bevel gear 35 which meshes with a bevel gear 36 carried by a shaft 37 and on one end of this shaft is a sprocket 38 for driving the chain 39 which, in turn, engages about a sprocket 40 on a shaft 41. The shaft 41 carries a suitable drum 42 and rising from the turn-table is an extensible contrivance which comprises the links 43 and the transverse rungs 44 to which the links are hingedly connected, thereby providing a flexible extensible member to wind about the drum 42, that is, when the drum is rotated. The ends of the rungs 44 have extensions 45 at their ends and the extremities thereof are spherical.

In order to hold the links 43 relatively rigid when the contrivance is extended, additional links 46 which are hingedly connected at right angles to the connection of the links 43 are provided. These links 46 are adapted to assume positions adjacent the ends of the rungs 44 when the contrivance is extended. In fact, the hinged connections 47 of the links 46 are on the remote faces of the links, whereby the links 46 may wind about drums 48 carried by the shafts 49 which are also supported in bearings of supports 50 mounted upon the turn-table. The shafts 49 are also operatively geared at 51 to the motor shaft in order to cause the links 46 to wind about the drums 48.

It will be noted upon reference to the drawings that the ends of the links 46 separate as the links wind upon the drum 48 and close when the links of the contrivance are extended. The adjacent ends of the links 46, when closed, are alined axially with the center of the rungs 44 and the faces of the ends

of the links 46 have semispherical sockets 52 for the reception of the spherical extremities of the extensions 45. When the contrivance is extended, the adjacent ends of the links 46 automatically close upon the spherical extremities of the extensions 45 and, due to the hinged connections 47 being at right angles to the hinged connections between the links and the rungs, the collapsible elements of the contrivance are held rigid when the contrivance is extended.

When the drum 42 and the drums 48 are rotating, and it is desired to lower the platform 53 at the upper end of the extensible contrivance, the various links 43 and 46 will automatically disengage and wind about the drums 42 and 48, respectively. In order to cause the links 43 to wind about the drum 42, power is transmitted from the shafts 37 to the shaft 41 while the drums 48 are driven by the operative gear connections 51.

Connected to supporting beams 54 upon which the platform 53 is supported are guy ropes or cables 55 which wind about drums 56 carried by the shafts 57 which are mounted in bearings of supports 58. Carried by the shafts 57 are sprockets 59 which are engaged by the sprocket chains 60. The chains 60 are, in turn, engaged with sprockets 61 which are mounted upon the shafts 33 and, due to the shafts 33 being rotated through the medium of the shafts 29 geared to the motor shaft, power is transmitted to the drums 56 for causing the guy ropes or cables 55 to wind upon the drums. The guy ropes or cables act to reinforce the platform 53 when the contrivance is extended.

The beams 54 are spaced from the platform 53 (upwardly from which a railing or bannister 62 rises) for the purpose of affording a guide for the extensible gang-plank 63. A rack 64 is mounted upon the gang-plank 63 and its teeth mesh with the gear 65 which is rotatable with a shaft 66. The shaft 66 carries a sprocket 67 with which a sprocket chain 68 engages. A suitable crank shaft 69 is mounted in bearings of a bracket 70 carried by the platform 53 and movable with the shaft is a sprocket 71 with which the chain 68 engages.

By rotating the shaft 69, it is obvious that motion may be transmitted to the sprocket 67 causing the shaft 66 to rotate which, in turn, will render the gang-plank 63 extensible in a lateral direction through the medium of the gear 65 meshing with the rack 64. The purpose of providing the extensible gang-plank movable in a lateral direction is to permit occupants of a building to egress from the windows thereof upon the gang-plank to the platform 53. Obviously, when all of those who are in danger have been rescued and are upon the platform 53, the extensible contrivance may be retracted, lowering the platform to a relatively close

position above the turn-table. Before lowering the platform, the gang-plank is returned to its normal position. However, after the platform reaches its lowered position, the gang-plank may again be extended to permit those who have been rescued to reach the ground in safety.

Mounted upon suitable shafts laterally projecting from the railing or banister are sprockets 72 with which the railing or banister chains 73 engage. Rising from the gang-plank are standards 74 to which the chains 73 are connected. The chains also pass over sprockets 75 which are carried by the platform 53 and the other ends of the chains are connected at 76 to one end of the gang-plank, that is, the end opposite the supports 74. Obviously, when the gang-plank 63 is extended or retracted, the railing or banister chains 73 automatically extend or retract.

The invention having been described, what is claimed is:

1. In a portable fire escape apparatus including a turn-table with means for supporting the same, an extensible contrivance consisting of a single ladder with a platform at its upper end, said ladder comprising a plurality of flexibly connected rungs and a plurality of flexibly connected links, said links having means for automatically connecting and disconnecting with the ends of the rungs as the contrivance extends and retracts, the connections between the links and the rungs acting to reinforce the ladder when extended, and means comprising a plurality of drums for reeling the rungs and the links respectively as the contrivance is retracted.

2. In a portable fire escape apparatus including a turn-table with means for supporting the same, an extensible contrivance consisting of a single ladder with a platform at its upper end, said ladder comprising transverse flexibly united rungs and flexibly united links, the flexibly connected links having means for operative connection and disconnection with the ends of the rungs, and means for extending and retracting the ladder and including a plurality of drums, one on which the rungs reel and a pair of drums on which the flexibly connected links reel as the ladder retracts.

3. In a portable fire escape including a turn-table with means for supporting the same, an extensible contrivance mounted upon the turn-table consisting of a single ladder with a platform at its upper end, extensible and retracting reinforcing guy cables operatively connecting with the upper end of the ladder, said ladder comprising horizontal flexibly connected rungs and flexibly connected links provided with opening and closing connections with the ends of the rungs, thereby reinforcing the ladder when extended and enabling the rungs and the links to be reeled respectively when retracted, means for extending and retracting the ladder including a drum for the rungs and separate drums for the links, and a reeling mechanism for the guy cables and provided with operative connections with the extending and retracting means for the ladder.

In testimony whereof he affixes his signature.

CHARLES SAGO.