(No Model.)

A. HARLEY.

LIFE SAVING APPARATUS FOR FIRE SERVICE.

No. 428,603. Patented May 27, 1890.

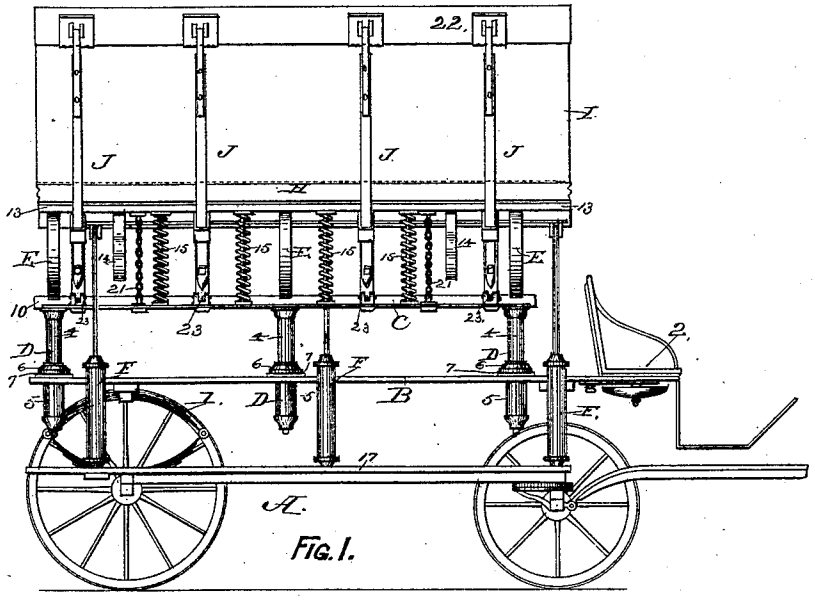


Fig. 1.

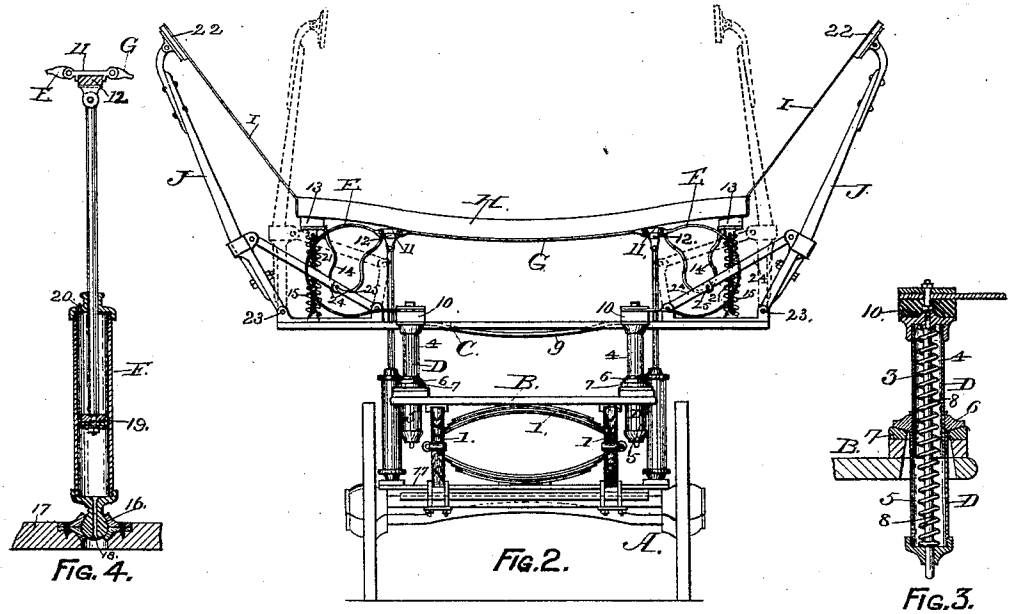


Fig. 2.

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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LIFE-SAVING APPARATUS FOR FIRE-SERVICE.

SPECIFICATION forming part of Letters Patent No. 428,603, dated May 27, 1890.

Application filed June 14, 1888. Serial No. 277,071. (No model.)

To all whom it may concern.

Be it known that I, ALFRED HARLEY, of the city and county of Albany, in the State of New York, have invented a new and useful Life-Saving Apparatus for Fire-Service, of which the following is a specification.

My invention relates to a portable apparatus for saving human life when endangered in a burning building; and it consists of a cushion mounted on suitable springs and carried on a running-gear to facilitate its removal from place to place, as occasion may require, said cushion being provided with wings or deflectors by which the receiving area of the cushion is greatly increased, and the efficiency of the apparatus is thereby proportionately enhanced.

This apparatus is designed to be placed in position under the windows or other openings of a burning building to enable persons confined therein to escape by jumping or dropping upon the spring-supported cushion of my apparatus, whereby their fall will be broken and rendered practically harmless.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a side elevation of my apparatus. Fig. 2 is an end elevation of the same. Fig. 3 is an enlarged vertical section of one of the telescopic cylinders for containing the springs which carry the upper framing of the apparatus, and Fig. 4 is an enlarged vertical section of one of the pneumatic checks for preventing a sudden rebounding movement of the cushion.

As represented in the drawings, A is the running-gear on which my apparatus is mounted in order to facilitate its removal to places where it may be required. Said running-gear may be made in the form shown or in any form that is suitable for the purpose.

B is the lower frame-work of the apparatus, which is preferably supported on elliptic springs 1, of similar construction to those commonly used on wagons. A driver's seat 2 is fixed on said lower frame-work for the use of a driver while the apparatus is moved from place to place.

C is the upper frame-work, which is carried by springs 3, which are contained in the telescopic cylinders D, that are borne by the lower frame-work B. Said cylinders are composed of an upper section 4 and a lower section 5, one being fitted to slide telescopically into the other. Said lower section is provided with a flange 6, which, as shown in Fig. 3, has a convex lower face that is fitted to bear in a concave seat 7, fixed on the lower frame-work B, so that said cylinders can be oscillated laterally in every direction. A guide-rod 8, secured to the top piece of the upper section 4, extends downwardly through the central opening of the spring 3, and freely passes through an opening in the lower end of the lower section 5, and by this arrangement of the springs ample provision is made for obtaining both a free up-and-down movement and an oscillatory movement, in order to meet any unevenly-distributed downward strain to which the apparatus may be subjected while in service.

The upper ends of the telescopic cylinders D are connected together transversely by the cross-ties 9 and longitudinally by the string-pieces 10, said cross-ties and string-pieces forming the upper frame-work C. The curved springs E have their lower end secured to the string-pieces 10 and their upper end hinged to the joint-pieces 11, which are secured to longitudinal stringers 12. The inner ends of each pair of oppositely-located joint-pieces 11 are connected by through-brace straps G, which form the central portion of the support for the safety-cushion H. The outer portions of the support for said cushion are formed by string-pieces 13, which are connected by looped springs 14 to the stringers 12, and are borne on the springs 15, which rest upon the upper frame-work C.

To prevent any rebounding movement of the safety-cushion H, which would be liable to occur by reason of a person dropping from a height thereon, pneumatic checking-cylinders F are fixed under the support for said cushion. Said cylinders are hinged by ball-and-socket joints 16 to string-pieces 17 of the running-gear A. At the lower end of each of said cylinders there is an air-opening 18, through which the air can be freely discharged from the cylinder during a downward movement of the piston 19, and in the head of each of said cylinders there is an air-opening provided with a valve 20, which opens downwardly, so that while the piston 19 is making its downward stroke said valve will open and

allow the air to pass into the upper part of the cylinder; but on a reversal of the movement of said piston said valve will instantly close said opening to such a degree that the escape of air from the upper part of the cylinder will be very slow, and thereby the upward movement of the safety-cushion H will be retarded, so as to avoid a sudden rebound thereof. Check-chains 21 connect the string-pieces 13 with the upper frame-work C, to prevent the latter from being forced above its proper level.

To provide a greater area of surface than is contained in the safety-cushion H, adjustable nettings or wings I have their lower edges secured to the longitudinal string-pieces 13 and their upper edges secured to stringers 22, which are attached to swinging arms J, hinged, as at 23, to the outer edges of the upper frame-work C. Said arms are held in their extended position, as shown by the full lines in Fig. 2, by means of jointed braces 24, which have one end hinged to said arms, the opposite end hinged to the upper frame-work C, and which are jointed, as at 25, so that said brace can be swung upwardly out of a direct line, as indicated by dotted lines in Fig. 2, for the purpose of drawing in the upper ends of the arms J toward the center line of the apparatus at such times that the apparatus is not in actual service at a fire.

The nettings I, when extended as shown in Fig. 2, incline downwardly from their outer edges toward the safety-cushion H and form deflectors, which, when a person falls thereon, will give a proper direction to his body and land him on the safety-cushion H.

This apparatus is operated in the following manner: While out of service and while being taken to a fire the adjustable nettings are preferably swung inwardly, as indicated by dotted lines in Fig. 2, so that the apparatus will take up less space and can be moved through narrower places. On reaching the locality of a fire the adjustable netting should be extended and the apparatus backed up directly under a window or other opening of the burning building wherein the safety of persons therein is jeopardized, and such persons can then jump or drop from the building directly upon the safety-cushion of the apparatus. The impact of the falling body upon the safety-cushion will cause the several sets of springs which support said cushion and the upper frame-work to give downwardly; but at the same time the force of the fall will be so modified by said springs that the effect will be comparatively harmless to a person making the descent. While the safety-cushion is making a downward movement the pistons 19 are thereby forced downward in the checking-cylinders C to fill the upper part of said cylinders with air, so that said safety-cushion will be restrained from making a violent rebounding movement by reason of the gradual discharge of the air from said checking-cylinders, as hereinbefore described. The mode of descending from the apparatus is so obvious that a description is not necessary.

I claim as my invention—

1. In a portable life-saving apparatus, the combination of a vehicular running-gear provided with springs 1, a lower platform B, supported on said springs and provided with springs 3, which are contained in telescopic cylinders D, said cylinders being fitted to receive an oscillatory motion, an upper frame C, supported on the springs 3, a safety-cushion H, supported on springs E and 15 and by air-cushions F, the latter being fitted to receive an oscillatory motion, and the adjustable wings or nettings I, all being constructed and arranged to operate substantially as herein specified.

2. In a portable life-saving apparatus, the combination of a spring-supported safety-cushion H and adjustable wings or nettings I, the latter having their lower edge joined to said cushion and their upper edge connected to swinging arms J, which are provided with locking mechanisms which prevent said arms from swinging inwardly, as and for the purpose herein specified.

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