Aug. 28, 1928. 1,682,509

C. R. HARWICK

PARACHUTE OPENING DEVICE

Filed July 19, 1927

Fig. 1.

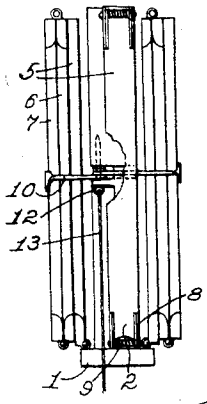


Fig. 2.

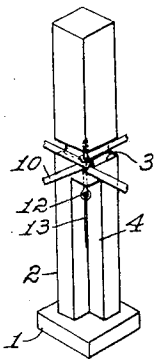
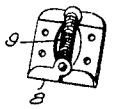


Fig. 3.



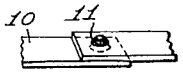
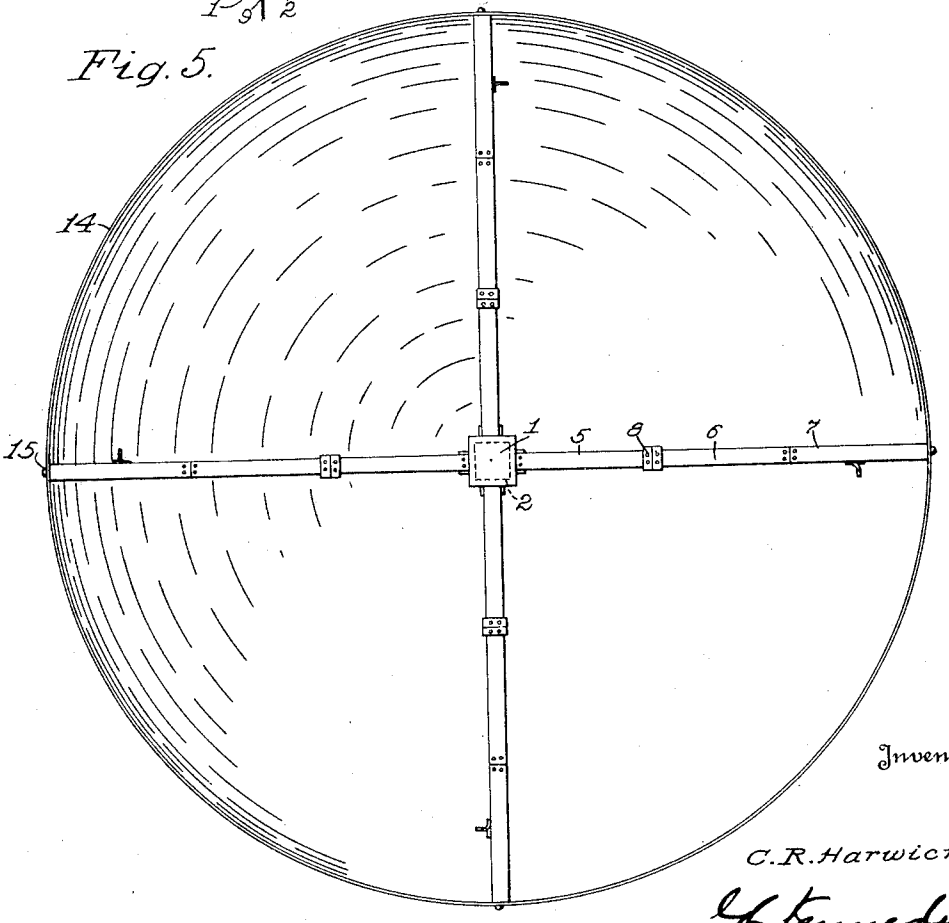


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

CLARENCE R. HARWICK, OF WATERLOO, IOWA.

PARACHUTE-OPENING DEVICE.

Application filed July 19, 1927. Serial No. 206,921.

My invention relates to improvements in parachute opening devices, and the object of my improvement is to supply a device of this type which operates instantly to open a parachute at the moment when it is to be employed in beginning a descent.

This object I have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawings, it being understood that slight modifications may be made in the device without departing from the invention.

In said drawings, Fig. 1 is an elevation of said device as collapsed and secured releasably in that condition, with a part of one arm section broken away. Fig. 2 is a perspective elevation of the central fulcrum body upon which the radiating sectional arms are mounted, with the arms removed. Fig. 3 is a detail perspective view of one of the resiliently controlled hinges used to connect the arm sections. Fig. 4 is a fragmentary detail view of overlapped apertured terminations of the arm fingers. Fig. 5 is a diminished under plan view of a parachute in its open or spread condition as mounted upon the radiating extended sectional arms of my opening device.

The opening device has a central vertically elongated standard or fulcrum body 1—2, the basal part 1 being wider than the upright part 2. About midway of its length the body 2 has a notch 3 crossing two meeting sides, and spaced a short distance below this notch or groove 3 the part 2 has a portion removed at 4 creating a reentrant angle under an angular projection or shelf part above. This shelf part and the overhanging part of the body above the groove 3 have vertical alined holes to seat a removable and eyed pin 12, from whose depending eye a cord 13 hangs.

A number of sectional resiliently controlled arms, in this case four, are hinged to the four sides of the squared fulcrum body part 2 on hinges 8.

Each arm is composed of three sections 5, 6 and 7, the innermost sections 5 being so hinged to the body 2 as to oppose the abutting ends of the sections against said body preventing swinging of the arms below the same transverse plane when extended. The leaves of the spring 8 are connected by a pintle on which is mounted a coiled spring 9, so end connected to the leaves as to tend to keep them spread apart in the same plane. The several sections of each are likewise hinged together with like spring controlled hinges 8, so that all the hinges act when released to extend the arms outwardly in one plane as shown in said Fig. 5.

On the outer section 7 of each arm a finger 10 is fixed to project upwardly when the arms are extended. Each finger 10 has a terminal aperture preferably rimmed upwardly when the fingers are overlapped as brought together when the arm sections are collapsed as in Fig. 1. When so overlapped, the rims 11 are alined with the apertures thereof and also alined with the vertical aperture in the shelf 2′ of the body 2 upon which they rest within the groove 3. The collapsed condition of the device is shown in said Fig. 1, and when the fingers 10 are overlapped on the shelf 2′ the eyed pin 12 may be pushed upwardly through the apertures 11 and the alined apertures in the shelf and the body 1 above, to lock the fingers and the folded arms against the body 2 compactly for transportation or storage.

The concave flexible parachute 14 may have its margin secured to the outer ends of the sectional arms by any fasteners 15. In Fig. 5 it is shown as extended by the action of the sectional arms and their springs 8. The arms are instantly extended when the operator by pulling upon the cord 13 detaches the pin 12 to free the fingers 10, the springs 8 then reacting to extend the arms, and with them the parachute 14 which has been folded about them. The ease and rapidity with which the parachute may be extended, renders it available for use as a fire escape in tall buildings, or elsewhere.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In combination, a parachute, a supporting body positioned centrally near it, a plurality of radial arms hinged to said body, terminally connected with the margin of the parachute and having apertured projections whose apertures register when the arms are collapsed, resilient means connecting said arms to said body placed under tension when the arms are collapsed upon said body, and a securing element removably seated in said projection apertures and releasably engaged with said body for releasably securing said arms to said body when so collapsed.

2. In combination, a parachute, a central supporting and vertically elongated body positioned near one face of the parachute

said body having communicating medial lateral grooves and a separated recess whereby a shelf is provided overhung by a part of the body, both said shelf and the overhang of said body being vertically apertured in alinement, a locking pin seated detachably in said apertures to cross said grooves, arms resiliently mounted hingedly upon opposite parts of said body to radiate in one plane therefrom when the resilient controlling means therefor are untensioned, said arms being terminally connected to abutting marginal parts of the parachute, and terminally apertured fingers mounted fixedly on said arms to project angularly therefrom in one direction, said arms being hingedly collapsible upon said supporting body while placing their resilient controlling means under tension, the apertured fingers overlapping each other in said lateral grooves with their apertures in alinement with the apertures in said body, whereby said locking pin may be inserted through said apertures detachably to lock the arms in their collapsed condition, the pin when removed, releasing the arms to extend as the resilient controlling means react, to extend the parachute instantaneously.

In testimony whereof I affix my signature.

CLARENCE R. HARWICK.