

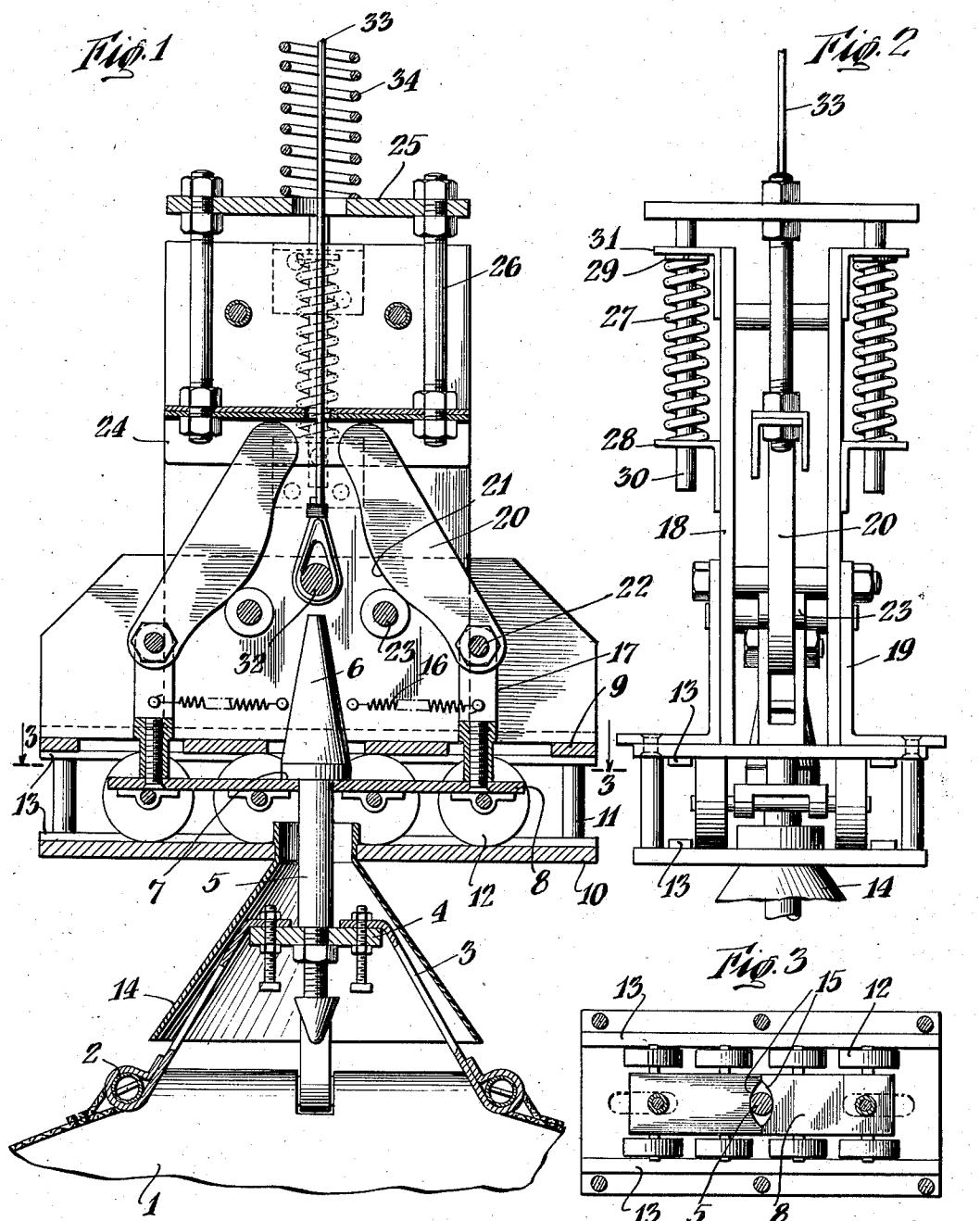
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AUTOMATIC RELEASED DEVICE

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AUTOMATIC RELEASED DEVICE

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7 Claims. (Cl. 294—90)

This invention relates to an automatic releasing device.

Generally speaking the device is designed so that its separable parts may be quickly and easily engaged, one with the other, will remain securely attached together and will be automatically released.

In the drawing:

Figure 1 is a vertical sectional view of the device;

Figure 2 is an end view of the device; and

Figure 3 is a horizontal sectional view on line 3—3 of Figure 1.

In the drawing I have illustrated the device in connection with a parachute canopy and a cable for raising the same, the canopy being attached to one of the separable elements of the device and the cable to the other.

I have illustrated a parachute canopy at 1 which is attached at its vent to a rigid ring 2. A spider 3 consisting of several arms is attached to the ring 2 and extends upwardly therefrom, the arms converging to and being secured to a disc 4. A rod 5 extends from the disc 4 to which it is attached or with which it is integral and terminates in a conical head 6 which, at its lower end, has abrupt shoulders 7. These parts constitute one element of the separable device.

The other element of the separable device broadly includes a pair of separable slides 8 that are adapted to engage beneath the shoulders 7 of the head 6 to hold the two elements of the device together and to be separated to release the same.

A pair of spaced plates 9 and 10 that are held in proper spaced relation by posts 11 are provided. The slides 8 are carried by rollers 12 that operate on the lower plate 10 between the plates and are guided by guides 13.

The lower plate 10 carries a funnel-shaped guide 14 which is open at both its upper and lower ends.

The inner or adjacent ends of the slides 8 are recessed at 15 so that when they abut an opening is formed therebetween. This opening is in alignment with the openings in the funnel-shaped guide 14 and is adapted to receive the head 6.

Thus when the slides engage beneath the shoulders 7 of the head 6 the two elements of the separable device will be secured together.

These guides are normally urged together by springs 16 that are secured to posts 17 that extend upwardly from the slides 8 and to some other relatively movable part of the device as for instance the vertical side walls 18.

Thus when the head 6 is forced between the

slides 8 the slides will be forced apart by the head against the action of the springs 16 and when the head passes the slides the springs 16 will retract the slides and cause them to engage beneath the shoulders 7.

In order that the slides 8 may be automatically separated to release the head 6 and permit the two elements of the device to separate I have provided the following:

A pair of vertical, spaced walls 18 secured to the upper plate 9 by angular braces 19.

A pair of cams 20, having cam faces 21, are pivoted at 22 to the posts 17. The cam faces 21 rest upon and cooperate with the cam rollers 23 that are carried by the vertical walls 18 and the upper ends of the cams 20 are free to move in a guide 24 that operates between the walls 18 and is made rigid with a head plate 25, that is located above the upper ends of the walls 18, by posts 26 that extend between the guide 24 and the head plate 25.

These cams 20 are normally urged into such position that the slides 8 will be in a closed position by springs 27 that abut at their lower ends against abutments 28 and that abut against abutments 29 carried by and secured to guide rods 30 extending through angle supports 31 and rigid with the head plate 25. The tendency of these springs 27 is to raise the plate 25 and, because of its rigid connection with the guide 24 through the rods 26, to raise the guide 24 to permit the springs 16 to move the slides 8 inwardly to a reset position. The movement of these slides, because of the pivotal connection 22, restores the cams to their original positions.

In order that the upper element of the device may be attached to a cable 33, for instance, I have provided a bolt 32 extending between the walls 18 to which the cable may be attached.

A spring 34 surrounds this cable and rests freely on the head plate 25 as illustrated.

In operation, when the two slides 8 are abutting each other, the head 6 is forced through the opening 15 between the adjacent ends of the plates. This causes the parts to assume the position shown in Figure 1 with the slides 8 engaging beneath the shoulders 7 of the head 6 thus holding the two parts of the separable device together.

When the device is used in connection with a cable to elevate a parachute canopy, for instance, the cable draws the device upwardly until the spring 34 engages a stationary abutment. When it does so a cushioned force, through the spring 34, is transmitted to the head plate 25, thus causing the plate to move downwardly against the 55

action of the springs 27. The downward movement of this head plate 25 causes the downward movement of the guide 24 which operates the cams 20 on the cam rollers 23. The slides 8 are thus forced apart and the head 6 released. As the head 6 passes from between the slides 8 and the pressure is relieved from the head plate 25 the springs 16 move the slides 8 together and the cams 20 into their set or initial positions.

10 What I claim is—

1. In a device of the class described, a fastener element including a ring, a spider carried by the ring, a disc carried by the spider and a conical head having shoulders carried by the disc, and a fastener element including a pair of spaced plates, slides having recesses in their adjacent ends arranged between said plates, rollers supporting said slides, resilient means to normally urge said slides together, cams pivoted to said
- 20 slides, cam rollers fixed in relation to the cams and slides, a guide for the cams and movable in relation thereto, and spring resisted means for operating said cams.
2. In a device of the class described, a fastener including a conical head, and a fastener element including a pair of separable plates adapted to engage beneath said head, resilient means to normally urge said plates into such engagement, cams for moving said plates out of such engagement against the action of the springs and means for operating the cams.
3. In a device of the class described, a fastener element including a head, and a second fastener element suspended by a cable for vertical movement and including a pair of oppositely disposed slides adapted to engage said head, means for pressing said slides toward each other to hold them in engaging position, and a guide carried
- 40 by said second fastener element and having con-

verging walls to guide said head between said slides.

4. In a device of the class described, a fastener element including a head and a fastener element including a pair of slides adapted to have their adjacent ends engage said head, cams pivoted to said slides, cam rollers adapted to cooperate with said cams between the ends of said cams, and means for engaging the upper ends of said cams to actuate the same.

5. In a device of the class described, a plate having an opening therein, a pair of slides adapted to close said opening, resilient means for moving said slides into their closing position, and means for moving said slides into their inoperative 15 positions including a pair of cams, a cross head for operating said cams and resilient means for moving said cross head into inoperative position.

6. In a device of the class described, a fastener element including a conical head having a shoulder thereon, and a second fastener element including a slide adapted to engage beneath said shoulder, said second fastener element being suspended from a cable, spring means for moving 25 said slide into its operative position and means operable by the upward movement of said cable for moving said slide into its inoperative position.

7. In a device of the class described, a cable and a fastener element supported thereby having 30 a recess, a funnel-shaped guide carried by said cable and aligned with said recess, a fastener element unconnected with said cable and having a head adapted to enter said recess and be guided thereto by said guide, and releasable means on 35 the first-mentioned fastener element to maintain the said head in fixed relation thereto for supporting said second mentioned fastener element from said cable.

JAMES H. STRONG. 40