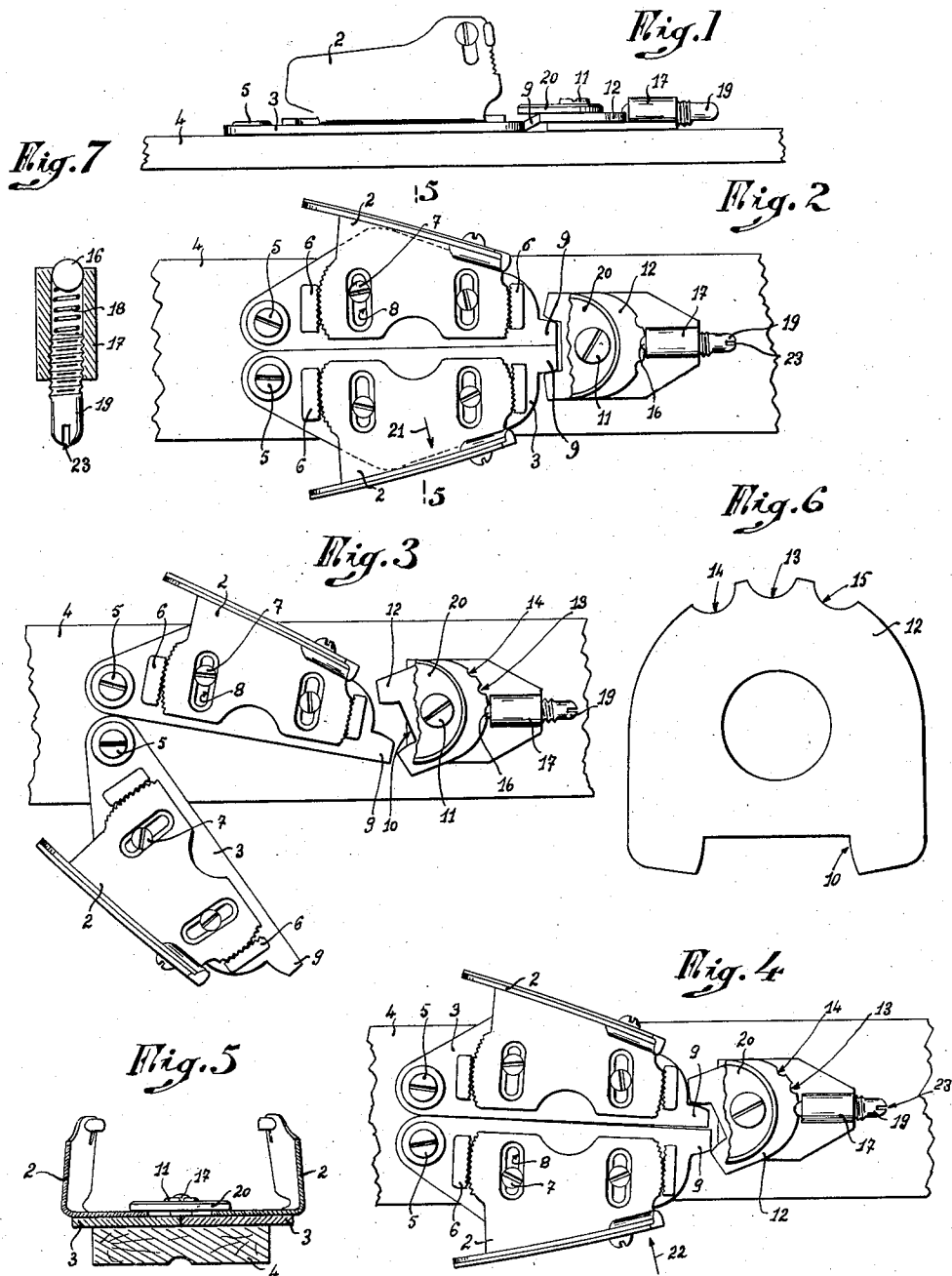


July 22, 1958

C. F. TRONCHET
AUTOMATICALLY RELEASABLE SAFETY ARRANGEMENT FOR
SECURING A SKI TO A SKIER'S BOOT
Filed Nov. 10, 1954

2,844,381



1

2,844,381

AUTOMATICALLY RELEASABLE SAFETY ARRANGEMENT FOR SECURING A SKI TO A SKIER'S BOOT

Charles Francois Tronchet, Cluses, France

Application November 10, 1954, Serial No. 468,101

Claims priority, application France March 23, 1954

1 Claim. (Cl. 280—11.35)

My invention has for its object means for securing skis in a manner such that a skilful skier is allowed thereby to execute all possible movements while reducing to a minimum the risks of accident by reason of the toe-clamps opening as soon as the foot of the skier is submitted to an exaggerated twisting stress.

Arrangements for securing skis are already known which include various shapes of plates acting as toe-clamps and adapted to pivot with reference to a pin positioned either to the front or to the rear of said plates.

In the arrangement according to my invention, the toe-clamps are secured no longer directly to the ski but to two intermediate plates pivotally mounted on two pivots rigid with the ski and locked each in position by at least one-thrust-exerting finger cooperating with a cam pivotally secured to a further pivot and possibly rigid with the said intermediate plate, the said finger holding elastically in their closed position the toe-clamps through the agency of the said pivoting cam.

In such a securing arrangement, only a twisting stress exerted on the toe-clamps which are connected with the plates, is capable of making the cams pivot so as to release thereby the plates which open and release thus the skier's foot. This cuts out the possibility of serious accidents and in particular a breaking of the skier's leg.

In contradistinction, when the skier executes a normal movement for which his legs run no risk, the securing arrangement produces the same effect as any other good securing arrangement which is not provided with a safety device, and this is true in all circumstances and in particular in the so-called edgewise movement during which the skier instead of setting his skis flat on the ground causes the edges of the ski to engage the ground so as to form a brake or else to change the direction of progress.

According to a preferred embodiment of my novel arrangement, the two plates carrying the toe-clamping jaws pivot round spindles located to the rear of the latter and a single finger positioned to the front of the said toe-clamps holds both plates in position through a cam which is inserted between the finger and the plate and which is provided on one hand with at least one notch engaged by the finger urging it into the position corresponding to the closing of the toe-clamp and on the other hand with a recess adapted to be engaged by two tenons forming the front ends of the two plates.

Obviously, the toe-clamps may be secured in any suitable manner allowing them to be adjusted with reference to the plates and they may also be secured indifferently above and underneath their carrier plates.

Accompanying diagrammatic drawing illustrates by way of example and by no means in a limiting sense, a preferred embodiment of my improved ski-securing arrangement. In said drawing:

Fig. 1 is a side elevational view of the first embodiment referred to.

Figs. 2 and 3 are plan views from above of the same

2

embodiment respectively in its toe-clamp-closing and in its toe-clamp-opening position.

Fig. 4 is a plan view from above showing the position of the toe-clamps, immediately before their return into their closed position.

Fig. 5 is a sectional view through line 5—5 of Fig. 2.

Fig. 6 is a plan view on an enlarged scale of the cam as seen from above.

Fig. 7 is a detail view showing the finger exerting a thrust on the said cam.

The securing arrangement illustrated includes toe-clamps comprising two jaws 2 of conventional type, secured no longer directly to a plate rigid with the ski but to two intermediate plates 3 each pivotally secured to the ski 4 through a pin or spindle 5 screwed into the ski to the rear of the corresponding jaw 2. These plates 3 are provided with serrated projections 6 which allow securing adjustably the jaws 2 to the said intermediate plates through engagement with serrated sections of the jaws; said jaws are then held fast on the plates by means of screws 7 extending through elongated ports 8 formed in the jaws 2.

The front ends of the intermediate plates 3 carrying the jaws 2 are provided each with a tenon 9. When the toe-clamps are in their closed position as shown in Fig. 2, the two tenons 9 lie in juxtaposed location inside the recess 10 of a member 12 acting as a cam and adapted to rock round a screw 11 forming a pivot for the said cam-shaped member 12.

The said cam-shaped member 12 is provided in its front surface with a medial notch 13 to either side of which are formed two further identical notches 14 and 15.

The size and outline of the notches 13, 14 and 15 are such that they allow the engagement therein of a ball, finger or the like projecting member 16 housed inside a cylindrical chamber 17 extending longitudinally of the ski, said ball being submitted to the action of a spring 18 urging it outwardly of said chamber 17 and into engagement with the cam 12. The front end of said spring 18 bears against a plug 19 screwed inside the front end of the chamber 17.

It is therefore apparent that the projecting ball 16 engages selectively one of the notches 13, 14 and 15 so as to hold the cam 12 fast in a corresponding position. This forms, however, only an elastic securing of the cam under the mere action of the spring 18 the pressure exerted by which is adjustable and depends on the extent of screwing of the plug 19 inside the chamber 17.

Consequently, the plates 3 carrying the jaws 2 and bearing through their tenons 9 inside the recess 10 of the cam 12, are also held elastically in position; in other words, if a sufficient lateral stress is exerted on either of the toe-clamps, the latter will open through a pivoting movement of one or both plates round its pivot 5.

Thus, as shown in Fig. 3, the toe-clamp opens under the action of an excessive stress exerted laterally by the foot of the skier on the right hand jaw 2 in the direction of the arrow 21 of Fig. 2. The tenon 9 of the said jaw produces a rocking of the cam 12 round its pivot 11 so that the said cam enters the position illustrated in Fig. 3 for which position the tenons 9 on the plates 3 are released with reference to the recess 10 of the cam while said cam is held fast through engagement of the ball 16 inside the notch 15.

When it is desired to return the toe-clamps into their closed position, it is sufficient to bring the two jaws again into engagement and consequently also the plates 3 into contact as illustrated in Fig. 4 so that the tenons 9 on said plates may face again the recess 10 in the cam 12. A sudden pressure exerted on the right hand jaw 2 in the direction of the arrow 22 of Fig. 4 returns then the toe-clamps into their normal position of operation through

3

elastic engagement of the ball 16 with the medial notch 13 in the cam 12.

It should be remarked that a plate 20 secured coaxially to the cam 12 by the screw or pivot 11 covers the said cam and the tenons 9 of the plate 3 so as to prevent any tearing out of the plates when the toe-clamps are closed.

My improved safety securing arrangement provides the following chief advantages:

It allows adjusting easily and accurately the moment at which the toe-clamps open, i. e. it allows said toe-clamps to open only when the lateral stress exerted on one of the jaws rises beyond a value defined by the skier himself; it is sufficient for him, as a matter of fact, to screw more or less the plug 19 inside the recess 17 and this screwing may be performed by the skier e. g. by means of a coin which he inserts in the slot 23 formed at the outer end of the plug 19;

The operation of the safety system is entirely independent of the tensioning of the cords or the like yielding members holding the foot and this allows retaining the safety means both when the actual foot-holding system is loose, with a view e. g. to allowing progression over flat ground or on an upwardly directed slope and when the foot-holding system is tensioned so as to hold the foot fast on the ski, i. e. during downward movement;

It allows using shoes of any type, having no rigid sole, which are consequently of a low cost price.

Obviously, my invention is by no means limited to the sole embodiment disclosed by way of example hereinabove and it covers all the modifications thereof falling within the scope of accompanying claim.

What I claim is:

In combination with a ski, a shoe-securing arrangement comprising two pivots rigid with the ski, arranged symmetrically to either side of the longitudinal axis of the ski, two similar plates pivotally secured to said pivots and adapted to slide over the upper surface of the ski into forwardly directed interengaging operative positions, cooperating jaws rigid with the outer front sections of the two plates and adapted to enclose a shoe toe between them, tenons projecting to the front of each plate and

4

engaging each other when said plates are in their forward interengaging positions, a cam pivotally secured to the ski at a point of the longitudinal axis of the ski to the front of the operative positions of said tenons, and the rear surface of which is provided with a recessed section adapted to face each tenon in its operative position and to hold the interengaging tenons fast inside it, said cam being provided along its front periphery with three notches of which the central notch is diametrically aligned with the contacting line between the tenons and the two others are arranged symmetrically to either side of the first notch, a projecting member slidably carried axially of the ski to engage the central notch in the cam, adjustable elastic means urging said projecting member into engagement with said central notch to hold the cam in the position for which its rear recessed section operatively engages the two interengaging tenons, said interengaging tenons being adapted when subjected to a stress exerted laterally by the shoe on one of the jaws, to urge the corresponding side of the recessed section laterally and thereby make the projecting member recede out of its notch against the action of said elastic means and allow the cam to rock past it and to shift said side of the recessed section away from its normal symmetrical position with reference to the ski axis, whereby the two tenons are released with reference to each other, the projecting member holding then the cam in its angularly shifted position through engagement with the corresponding lateral notch.

References Cited in the file of this patent

UNITED STATES PATENTS

2,245,850	Brown et al.	June 17, 1941
2,364,620	Crocker et al.	Dec. 12, 1944
2,667,359	Goodman	Jan. 26, 1954
2,682,416	Knauf	June 29, 1954
2,698,757	Berlenbach	Jan. 4, 1955

FOREIGN PATENTS

846,997	France	June 19, 1939
---------	--------------	---------------