April 1, 1958 E. MATTHEWS 2,828,497

RETRACTABLE GANGWAY SAFETY RELEASE

Filed March 10, 1954 2 Sheets-Sheet 1

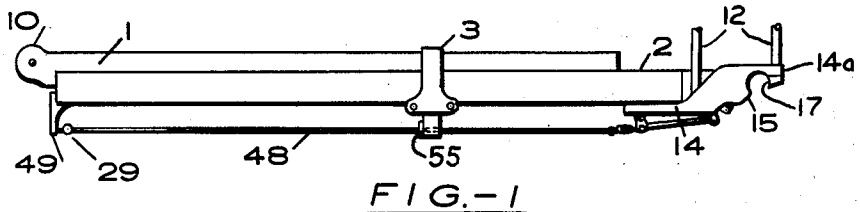


FIG.-1

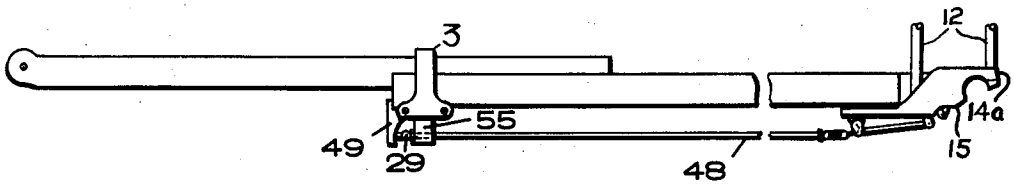


FIG.-2

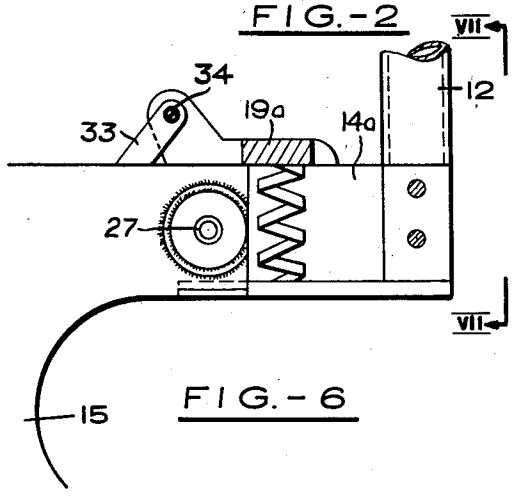


FIG.-6

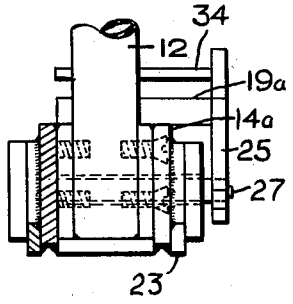


FIG.-7

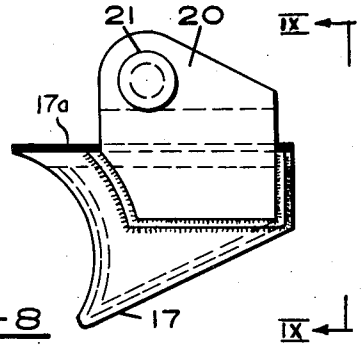


FIG.-8

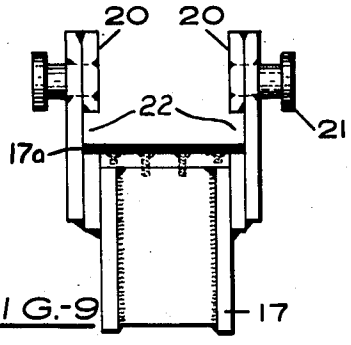


FIG.-9

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RETRACTABLE GANGWAY SAFETY RELEASE

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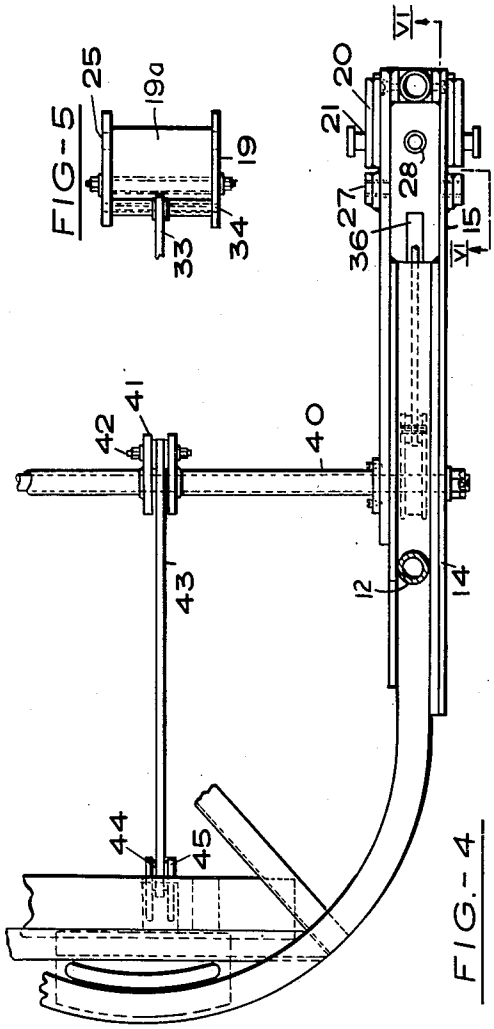


FIG.-4

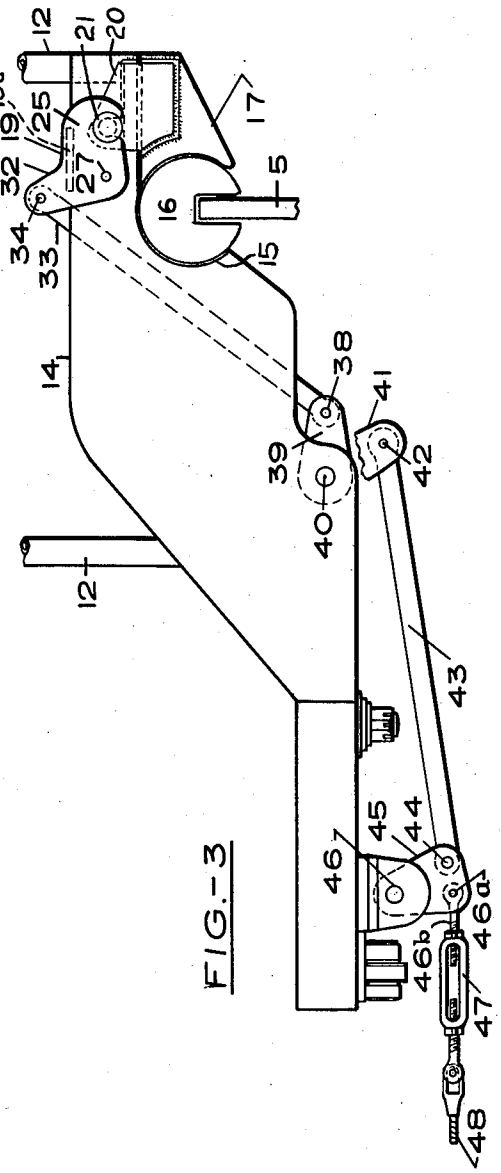


FIG.-3

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2,828,497

RETRACTABLE GANGWAY SAFETY RELEASE

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Application March 10, 1954, Serial No. 415,299

1 Claim. (Cl. 14—71)

This invention relates to improvements in gangway structure. More particularly, it relates to an improved extensible gangway provided with a retractible safety release.

It is an object of this invention to provide a gangway adapted to bridge the gap between objects spaced by distances which are subject to variation by movement of one or the other of said objects, as between a ship and a pier, and wherein the attachment between said gangway and either of said objects may be released automatically whenever such movement exceeds a predetermined extension limit. It is a further object of this invention to provide a gangway attachment mechanism for the purpose set forth above.

The invention will be fully understood from the following description taken in connection with the accompanying drawing. In this latter Fig. 1 is a side elevational view of the gangway in its retracted position. Fig. 2 is a side elevational view of the gangway in its extended position. Fig. 3 is a side elevational view showing the linkage for controlling the position of the safety release. Fig. 4 is a top plan view of the structure illustrated in Fig. 3 with portions removed and broken away. Fig. 5 is a top plan view of a portion removed and broken away from Fig. 4, including a release hook element. Fig. 6 is an elevation view looking along line VI—VI on Fig. 4, with part of the safety release hook portion of Fig. 5 additionally shown so as further to illustrate the association of this element with related parts in the gangway structure. Fig. 7 is an end elevational view looking along line VII—VII of Fig. 6. Fig. 8 is a side elevation view of the safety release or clamp and Fig. 9 is an end elevational view looking along the line IX—IX of the Fig. 8.

Referring particularly to the drawings, reference numerals 1 and 2 designate the gangway sections which when assembled together by the yoke 3 constitute a gangway for bridging the gap between such objects as a fixed pier and a ship, the sheer strake or gunwhale of which is designated 5 as shown in Fig. 3. The gangway sections 1 and 2 are secured to each other extensibly by means of a yoke 3 fixed to the section 1. Section 1 is provided with suitable means 10 at its inner end for fixing the gangway firmly to one of the objects to be bridged such as a dock or pier, not shown. The sections 1 and 2 may be made of any suitable material such as aluminum and may be provided with stanchions 12 adapted to carry a chain or rope, not shown, for providing security for people or objects passing over the gangway.

A mechanically operated safety release is carried by gangway section 2 at the end adjacent to the ship's side. Actuation of this release mechanism upon movement of the ship away from the pier due to such conditions as tide or wind permits separation of the gangway from the ship.

The safety release connection includes a support frame 14 for each side of the forward end of the gangway section 2. Each frame part is mounted on and fixed to the gangway section. As shown, the frame 14 provides a

fixed jaw portion 15 shaped to substantially match the periphery of a clamp 16 adapted for engagement which means such as the upper edge of the sheer strake 5. Preferably this is of such length as to be engageable by each of the jaw portions 15 of the frame parts 14 at opposite ends of the clamp. Also as shown, each frame part 14 extends beyond the jaw portion 15 as at 14*a* to provide a sliding mount for a separable or safety release jaw portion 17, and a pivotal mount for a release hook 19 adapted for separable engagement with the separable jaw portion 17.

In the apparatus as illustrated, the safety release jaw 17 is provided with two opposed upstanding ears 20. Each ear 20 has an outwardly extending headed arm 21 secured to the outer surface thereof, and aligned one with the other. The inner surface of each ear is provided with a grooved portion as indicated at 22, forming an inverted T-shaped channel between the ears 20 and the upper surface of the jaw 17. In the jaw unit as shown in Figs. 8 and 9, the upper jaw surface designated by the numeral 17*a* is formed by a sheet of a hard, smooth surfaced plastic such as "Micarta," which is a heavy-duty thermosetting plastic material made from fabric or paper impregnated with phenol-formaldehyde resins, and compressed under heat into a permanently solid substance having high structural strength and resistance to frictional wear. This inverted T-shaped channel is adapted to receive the extended end 14*a* of the frame 14, of which the lower edges are flanged, as by means of metal strips indicated by the numeral 23 in Figs. 6 and 7, and secured to the frame 14 along the lower edge of the extension portion 14*a* on opposite sides thereof.

Also included in the safety release connection is the release hook 19 engageable with the headed arms 21 on each of the ears 20 of the jaw portion 17. The release hook 19, as illustrated, consists essentially of two plate members each having the form of a bell-crank, and pivotally mounted on the frame portion 14*a* by means of a pin or shaft 27. This crank-like release hook 19 includes two angular arm portions 25 and 32 of which the former has a nose portion having a downwardly opening slot adapted to engage one of the arms 21, and the latter extends angularly upward from the pivot on pin 27. The upper ends of the arms 32 are connected by means of a plate 19*a* and a pin 34 of which the pin is adapted to receive or be received by one end of a link 33 extended angularly downward therefrom through a slot 36 in the frame 14. In the apparatus as shown, a spring, indicated by the numeral 28, connects between the under surface of the connecting plate 19*a* and the frame 14. Tension of the spring 28 thus holds the slotted nose portions 25 of release hooks 19 in engagement with the headed arms 21 on the jaw portion 17.

Links 33 extend angularly downward to pivot connections at their lower ends with crank arms 39 through pins 38, the arms 39 being fixed to opposite ends of a pin or shaft 40 rotatably supported transversely of the frames 14 and the gangway section 2. In addition, the pin or shaft 40 carries a crank arm 41. A rod 43 is pivotally attached at one end to the crank arm 41 by means of a pin 42. At its other end the rod 43 is pivotally attached by a pin 44 to a bracket 45 in turn pivotally supported from the forward end of gangway section 2 by means indicated by the numeral 46. The bracket 45 is also pivotally engaged by one end of a rod 46*b* through a pin 46*a*. The other end of rod 46*b* is connected through turnbuckle 47 to one end of rod 48. The rod 48 is supported by a member 49 dependent from the inward end of the gangway section 2, and also by the bridle strap 55 attached at each end to yokes 3 on the outward end of gangway section 1. A limit stop 29 is secured to the rod 48 adjacent the inward end thereof.

When employed in the manner contemplated, the inward end of the gangway section **1** is attached to one of the objects. The outward end of section **2** and particularly the fixed jaw portions **15** are applied against the other object in contact therewith through means such as the clamp **16**. The release jaw portions **17** are then applied to the extension portions **14***a* of the frames **14**, and engaged therewith in substantially fixed relation to the jaw portions **15** by means of the release hooks **19**, the clamp **16** being engaged between the jaw portions **15** and **17** as shown in Fig. 3. When so connected, the gangway sections **1** and **2** are reciprocally moveable in relation to one another to extend or retract as the objects are separated, or move closer together. The section **1** over-rides section **2** as illustrated in Figs. 1 and 2. The two sections are held together by means of the yoke **3** fixed to section **1** and permitting section **2** to slide back and forth therein. If, however, the sections are extended to a degree such as to engage the stop **29** with the bridle strap **55**, upon continued extension of the sections, the rod **48** is prevented from following by the stop **29** and strap **55**. This, through the several connecting links exerts pressure on the crank arms **32** raising the crank arms **25**, and releasing their engagement with arms **21**. The safety release jaw **17** is then free to slide off the end of the frame **14**, if separation of the objects continues. When thus separated, the gangway is freed from its connection through the safety release mechanism, but is retained by the connection as at **10**. The clamp **16** and the jaw portion **17** remain with the object, such as a ship, from which the gangway connection has been broken or separated.

The foregoing description and exemplary operations have served to illustrate preferred embodiments of the invention but are not intended to be limiting in scope.

What is claimed is:

In an extensible gangway for bridging the space between two objects, wherein said space is subject to variation by movement of said objects toward and away from each other, including at least two gangway sections secured in over-riding, extensible relation with respect to each other, and means for attaching opposite ends of said gangway to said objects, of which at least one such means comprises, a frame rigidly secured to an end of said gangway, a fixed clamping jaw on said frame facing away from said gangway end, a separable clamping jaw slideably supported on said frame, said slideably supported jaw facing toward said fixed jaw in opposed relation thereto and moveable there toward, said separable jaw including a pair of aligned, oppositely extended, lateral arms, hook means pivotally supported on said frame engaging said slideable jaw arms whereby said slideable jaw is held in opposed relation to said fixed jaw, means for disengaging said hook means from said jaw arms, said disengaging means including a rod supported on said gangway for movement longitudinally with reference thereto, interfering contact means carried by said rod and said gangway, said contact means being engageable by extension of said sections beyond a predetermined distance to move said rod and thereby disengage said hook, and means carried by one of said objects in fixed relation thereto and initially engageable between said clamping jaws.

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