G. ANDERSON.

DEVICE FOR LAUNCHING AEROPLANES FROM SHIPS.

APPLICATION FILED DEC. 27, 1920.

1,384,036.

Patented July 12, 1921.

2 SHEETS—SHEET 1.

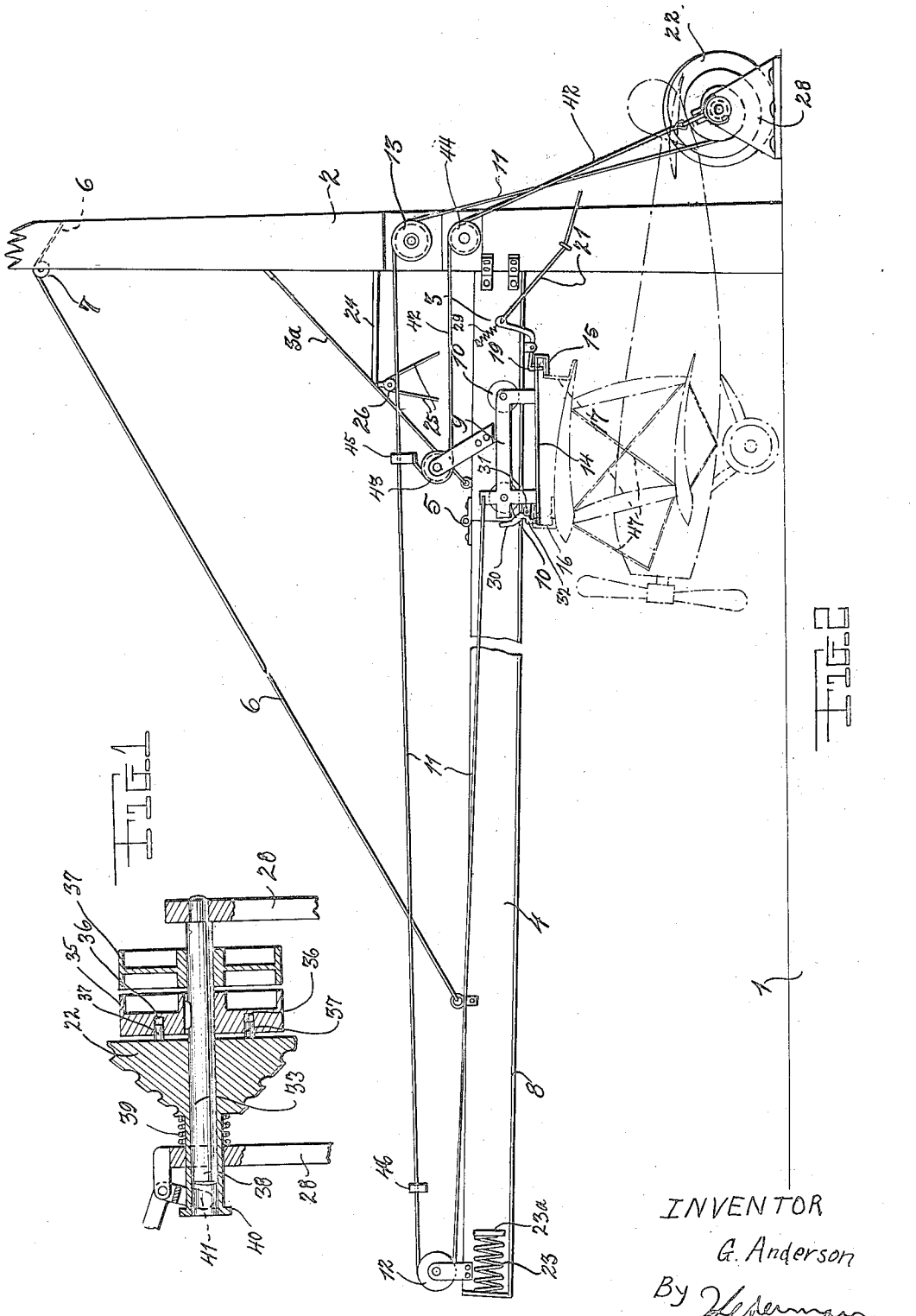

FIG. 2

FIG. 1

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FIG. 4

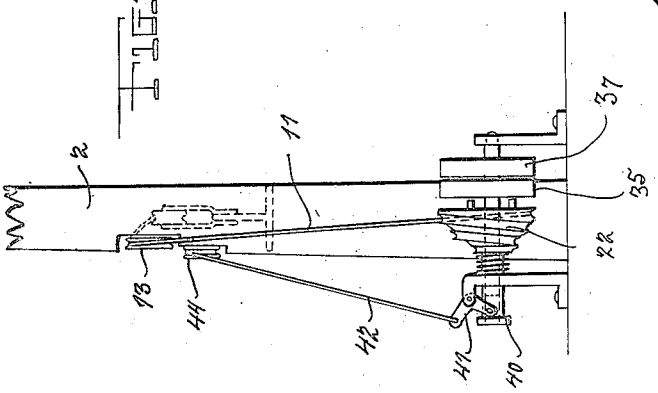


FIG. 6

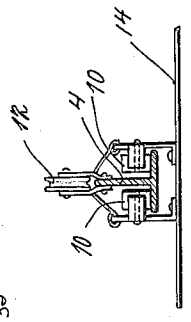


FIG. 7

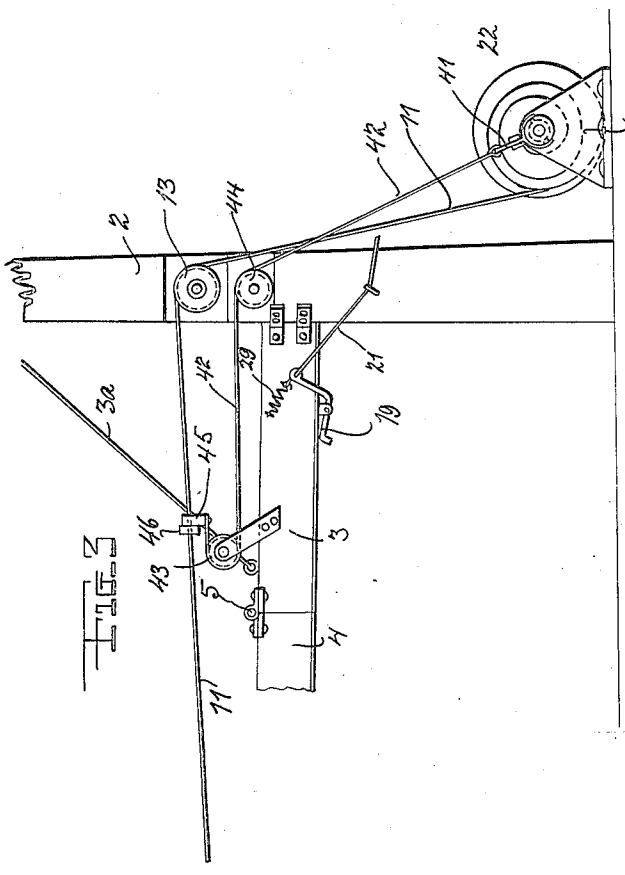
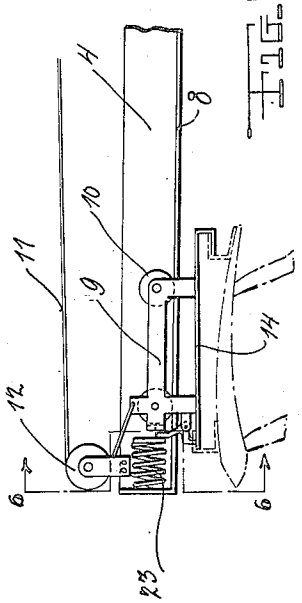


FIG. 5



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UNITED STATES PATENT OFFICE.

GUSTAF ANDERSON, OF NEW YORK, N. Y.

DEVICE FOR LAUNCHING AEROPLANES FROM SHIPS.

1,384,036. Specification of Letters Patent. Patented July 12, 1921.

Application filed December 27, 1920. Serial No. 433,103.

To all whom it may concern:

Be it known that I, GUSTAF ANDERSON, a citizen of Sweden, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Devices for Launching Aeroplanes from Ships, of which the following is a specification.

The main object of this invention is the provision of a device for launching aeroplanes from ships, which will at the same time be simple in construction and operation, and relatively inexpensive in cost of manufacture.

The above and other objects will become apparent in the description below, in which like-named characters of reference refer to like-named parts in the drawings.

Referring briefly to the drawings, Figure 1 is a cross-sectional view of my cable-winding device.

Fig. 2 is a side elevational view of my complete device.

Fig. 3 is a fragmentary side elevational view of my device with the respective parts in another position.

Fig. 4 is a rear elevational view of the showing of Fig. 3.

Fig. 5 is a fragmentary side elevational view of my device showing the carriage in position just before the aeroplane leaves the device.

Fig. 6 is a view taken on the line 6—6 of Fig. 5.

Referring now in detail to the drawings, the numeral 1 represents the deck of a ship, and 2 a mast or post rising from said deck. A beam 3 extends from said mast at right angles, and a second beam 4 is hingedly attached at 5 to the end of the beam 3. Both of said beams are of the form of an inverted T in cross-section. A cable 6 is attached near the end of the beam 4, and passes about a pulley 7 on the mast 2, and thence to suitable winding means, not shown, so that the beam 4 may be lifted out of the way when not in use.

On either side of said beams the edges 8 extend outward to provide runways for wheels 10 upon which is mounted a carriage 9. A cable 11 is attached to the forward end of said carriage, and passes about a pulley 12 at the end of the beam 4, and thence about a pulley 13 secured to the mast 2, and finally to the winding drum 22 which will presently be described. The lower member of the carriage 9 comprises a plate 14 which supports the hangers of the aeroplane shown dotted. These hangers are provided at the front and rear of the upper wing of the aeroplane, the former being indicated at 16 and the latter at 17. A hole or recess is provided in the edge 15 of said plate, said edge being bent down as shown for obvious reasons, and in the hanger 17. A hook 19, pivotally mounted on the beam 3, normally engages said hanger, locking the latter against the plate 14 and preventing its falling from the carriage. A spring 29 normally urges said hook into said engagement. A cable 21 is attached to the end of said hook, and leads to the lever which is manipulated to start the driving mechanism of my device, the same being adapted to be operated by said lever so as to withdraw the hook 19 from engagement with the hanger 17 at the instant that the carriage begins to move forward. A hole is similarly provided in the hanger 16 and the forward end of the plate 14, and a hook 32 is pivotally attached to an extension 31 on the carriage 9. The free end 32 of said hook is adapted to engage the bumper 23^a when the carriage reaches the end of the beam 4, and thereby, in an obvious manner, trip said hoook 32 so as to disengage it from the hanger and allow the plane to leave the device. The engagement until the plane reaches the end of the beam prevents its falling before that time.

A bumper 23^a, at the end of a coiled spring 23, is attached to the outer end of the beam 4, to absorb some of the shock of the carriage 9 in its outward movement.

In the operation of my device, it is desired to have the motion of the carriage 9 toward the end of the beam 4 to be relatively slow at the start, in order to prevent undue shock, and to increase so as to have a maximum speed at the end of the beam 4. In order to accomplish this I provide a spiral drum 22 upon which the cable 11 is wound. Said drum is rigid with a sleeve 38 having a flanged end 40 and resting loosely upon the end of a shaft 33. A loose pulley 35 is mounted upon the shaft 33 adjacent the drum 22, and is provided with recesses 36 adapted to receive pins 37 projecting from the said drum. A coiled spring 39 normally urges the drum 22 against the pulley 35. An idle pulley 34 is mounted adjacent the pulley 35, and a belt, not shown, which may be permanently connected, passes over the

latter pulley. In order to rotate the pulley 36, the belt may be shifted in the usual manner. A disengaging mechanism is shown in a rocker 41 pivotally attached to one of the supports of the shaft 33. The lower end of said rocker is adapted to engage the flange 41, and a cable 42 is attached to the upper end and passes about a pulley 44 on the mast 2 and thence about a second pulley 43 attached by means of a bracket to the beam 3. The end of the cable 42 is then attached to a messenger 45 which is slidably mounted upon the cable 11 by means of a hole in the former through which said cable passes. A lug 46 is rigid with the cable 11 at about the point shown, and is adapted to strike the messenger 45 during winding-in of the cable 11.

The operation of the device is now apparent. The levers for throwing in the various moving parts are not illustrated, as they may be of any desired type and arrangement, so long as they accomplish the aims intended. As aforementioned, when the belt is shifted from the idle pulley 34 to the pulley 36, the lever accomplishing the shifting also causes a pull on the cable 21 to disengage the hook 19 from the hanger 17. Since the pins 37 normally engage the recesses 36, the pulley 35 will then rotate the drum 22. The cable 11 is attached to the innermost point of the spiral groove of said drum, so that, as the latter rotates, the cable will be slowly wound up at first and will be more and more rapidly wound up as the drum rotates at a constant speed. Therefore the carriage 9 will move outward, slowly at first, and more rapidly the nearer it approaches the end of the beam 4. When the carriage reaches the end of the beam, the free end 30 of the hook 32 will strike the bumper 23^a, when the hook will disengage from the hanger 16 and thus allow the plane to pass from the carriage. The spring 23 will at the same time absorb some of the shock of the fast-moving carriage as it is suddenly brought to a stop. The situation of the lug 46 and messenger 45 is such that, the instant that the carriage strikes the bumper 23^a, the lug 46 will strike the messenger 45 and thereby move the latter toward the mast 2. Thus the cable 42 will be pulled, and the rocker 41 will be rotated slightly in a clockwise direction, thus urging the flange 40, and hence sleeve 38, to the left and disengaging the drum 22 from the pulley 35, thus allowing the pulley 35 to continue its rotation and allowing the drum 22 to come to a stop without undue strain on the cable. In order to diminish the suddenness of the stopping of the drum, a wedge might be provided at one of the moving and one of the stationary parts adjacent the drum, this wedge to advance at the last moment so as to at first apply a slight braking force which rapidly increases as the wedge advances until the drum is at a full stop. Thus the plane will be sent out at a high speed which readily enables it to fly.

I have illustrated means for mounting the plane upon the carriage 9 after the same has alighted upon the ship deck. This mechanism is simply diagrammatically shown by a bracket 24 supporting a pulley 26 about which passes a cable 25. Furthermore, as it is possible that the shock upon the areoplane may be great, I have shown the plane provided with additional braces 47.

I claim:

1. A device of the class described comprising a support, a beam extending from said support, a carriage movably mounted on said beam, means for releasably locking an aeroplane against said carriage, a cable attached to said carriage, means driven at a uniform rate of speed for winding up said cable at an increasingly-rapid speed, means for releasing said locking means, and means for operating said winding means.

2. A device of the class described comprising a support, a beam extending from said support, a carriage movably mounted on said beam, means for releasably locking an aeroplane against said carriage, a cable attached to said carriage, means driven at a constant speed for winding up said cable at an increasingly-rapid speed, means for releasing said locking means, and means for absorbing the shock of the impact of said carriage at the end of said beam.

3. A device of the class described comprising a support, a beam extending from said support, a carriage movably mounted on said beam, means for releasably locking an aeroplane against said carriage, part of said last-named means being operable at the commencement of motion of said carriage and part at the end of the motion, means for operating said first-named part, and means for operating said second-named part comprising a hook pivotally attached to said carriage, a bumper at the end of said beam, said hook being adapted to disengage from said aeroplane upon impact with said bumper.

In witness whereof I affix my signature.

GUSTAF ANDERSON.