Jan. 22, 1957 R. B. COTTON 2,778,611

SYSTEM FOR AERIAL PICK-UP FROM SURFACE VESSELS

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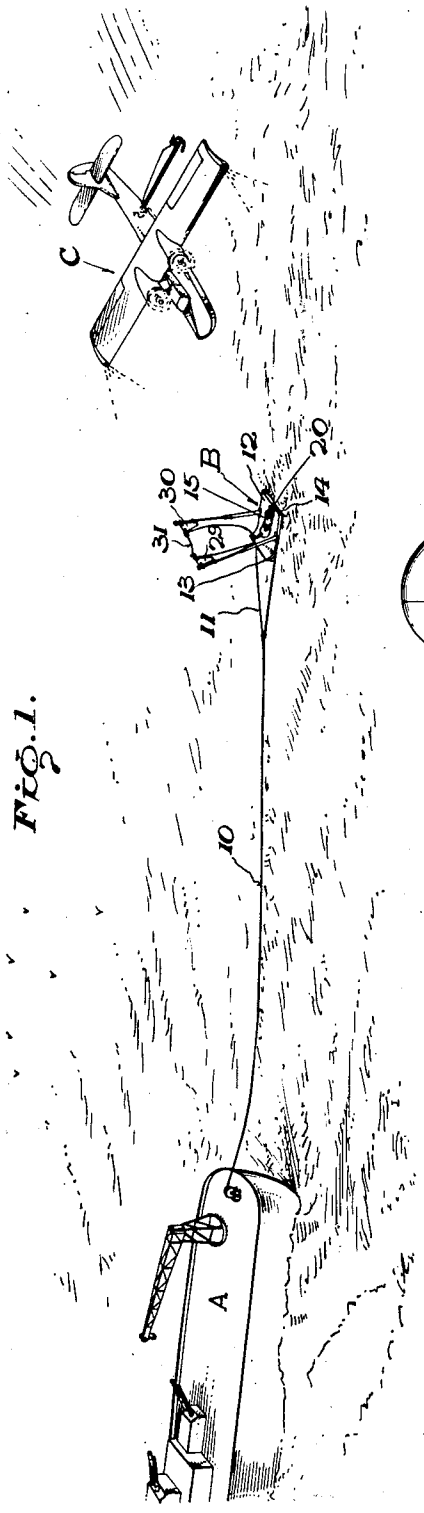


Fig. 1.

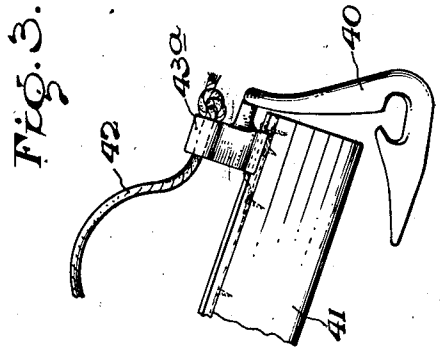


Fig. 3.

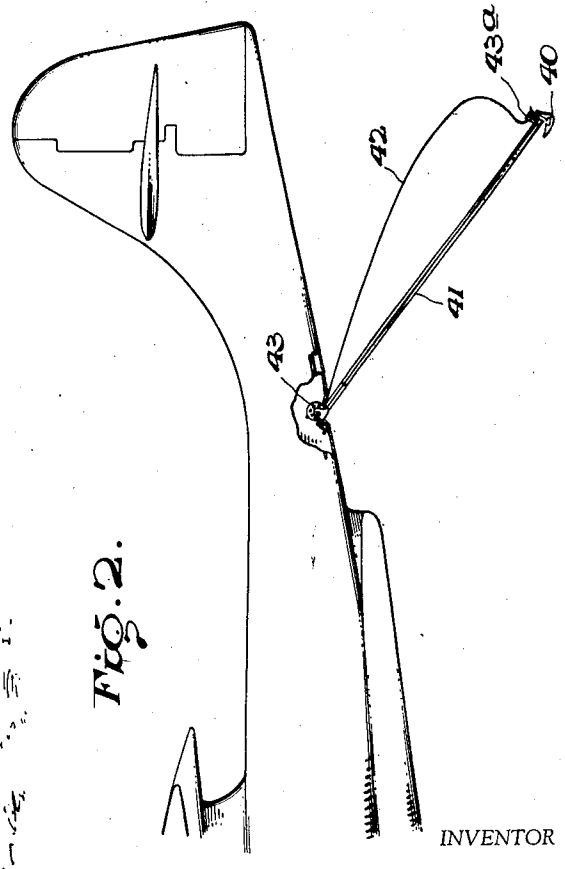


Fig. 2.

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Fig. 4.

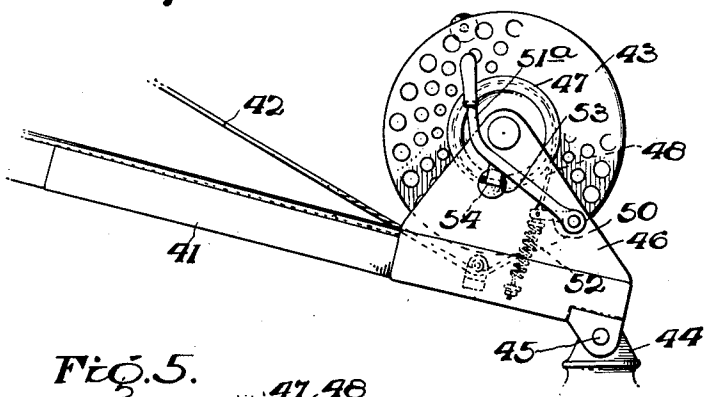


Fig. 5.

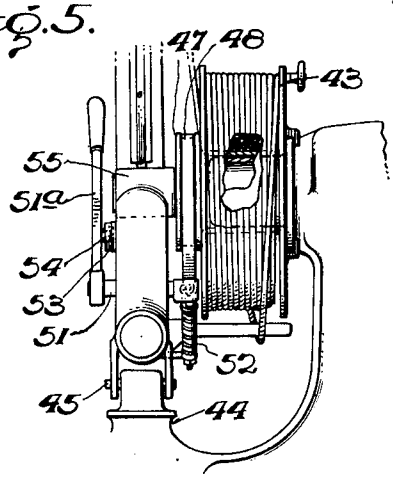


Fig. 7.

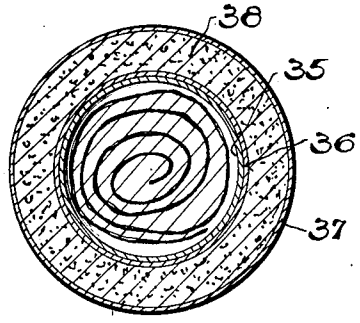
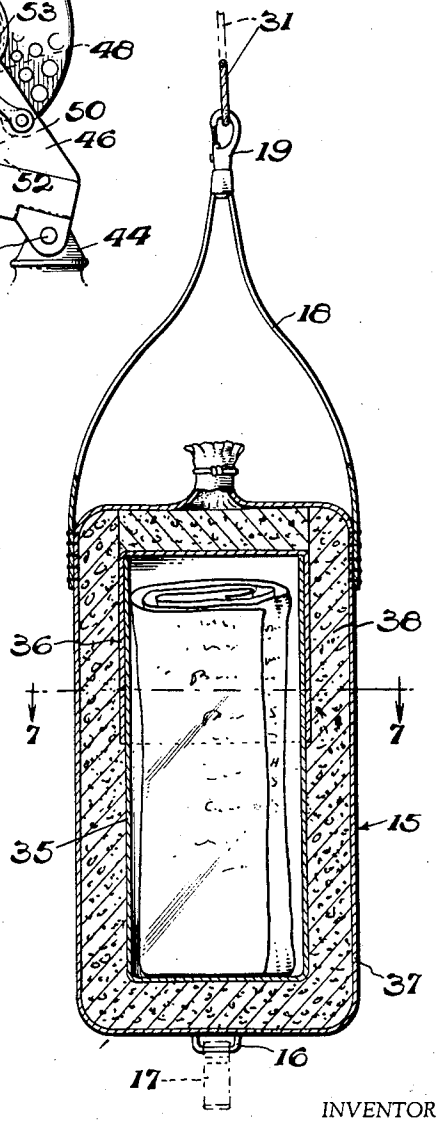


Fig. 6.



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Fig. 8.

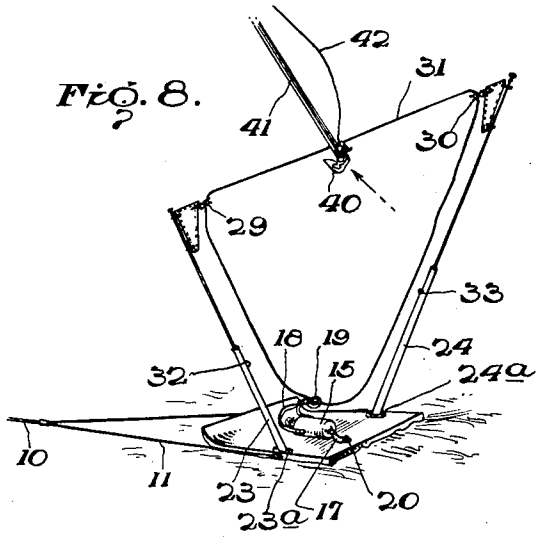


Fig. 9.

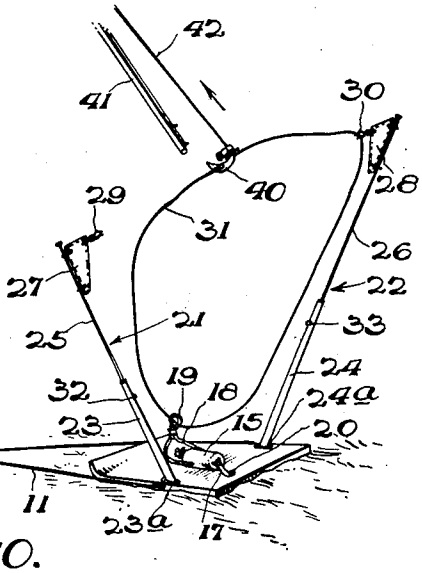
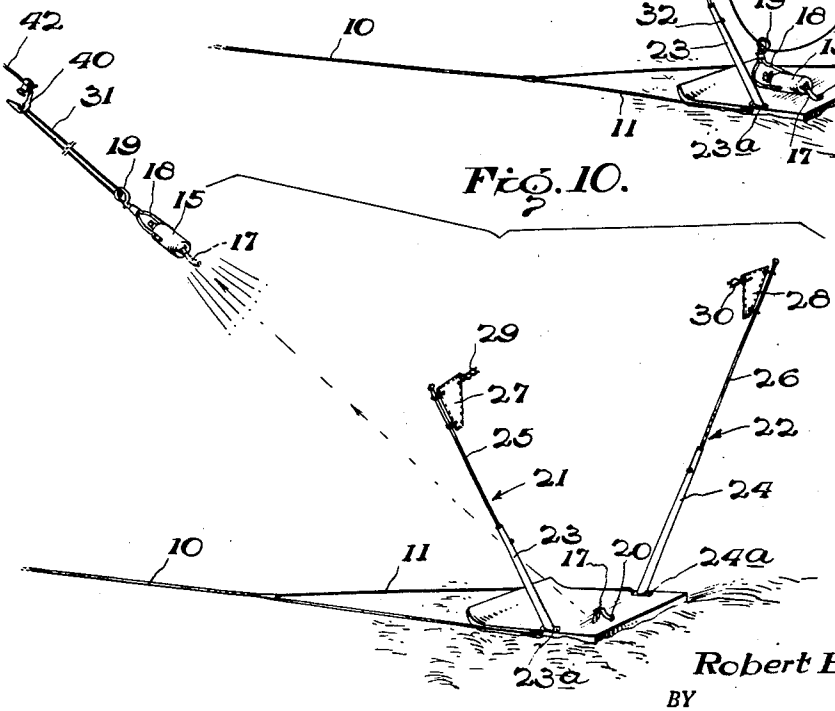


Fig. 10.



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SYSTEM FOR AERIAL PICK-UP FROM SURFACE VESSELS

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Application December 19, 1951, Serial No. 262,420

2 Claims. (Cl. 258—1.2)

The present invention relates to air-pick-up systems and particularly to such systems for use at sea to pick up material from moving surface vessels.

Heretofore there have been arrangements for air pick-up from moving ships, but in all such prior arrangements the necessary "ground" station has usually been mounted on some part of the ship. When mounting the pick-up ground station on some part of the ship, the hazards of the pick-up procedure is greatly increased because of the many cables, masts and other obstructions of the ship's equipment. Accordingly, for safety reasons, greater speed of pick-up and generally to provide a resulting more efficient air pick-up performance, it is an object of the present invention to provide a novel ground, or in this particular case, a water based pick-up station made as a distinct unit separate and free of its mother ship.

Another object is to provide a ground or water based station unit, which is readily portable and knocked down for packing in a kit which, when it is to be used, is quickly assembled for use.

Still another object is to provide a towable water based pick-up station.

A further object is to provide an air pick-up station with a towable floating surface and a novel mounting from the upper side of the surface for the pick-up poles and for a pick-up container tethered to the usual ground loop spread between the pick-up poles.

Yet a further object is to provide a novel container for water air-pick-up use.

Still a further object is to provide a novel pick-up unit including the usual pick-up arm for mounting on the usual camera mount used on aircraft.

A further object is to provide a novel brake delay means for winch rotation control.

With these and other objects in view which will become apparent as the invention is fully understood, the same resides in the novelty of construction, combination and arrangement of elements hereinafter described in detail and distinctly claimed in the appended claims.

The description should be read in conjunction with the accompanying drawing wherein:

Figure 1 is a perspective view of the stern of a mother ship, a tow line and of one of the present inventive novel floating pick-up stations with an aircraft coming in for a pick-up.

Figure 2 is a side elevation with a fractional portion in cross section of the craft and a pick-up arm with its associated pick-up line and pick-up drum unit.

Figure 3 is a cut-away view of the lower end of the usual pick-up arm hook, such as is shown in Patent 2,373,414, of Plummer, issued April 10, 1945.

Figure 4 is a side elevation view of a standard camera mount and of the novel pick-up unit adapted to wind out and in the pick-up line connected to the pick-up arm hook shown in Figure 3.

Figure 5 is a front elevation view of the pick-up unit of Figure 4.

Figure 6 is a cross section view of the novel air pick-up container and its pick-up bridle and its frangible base connecting strap.

Figure 7 is a cross section view taken along the line 7—7 of Figure 6.

Figure 8 is a rear perspective view of one of the novel pick-up water or "ground" stations showing the several elements of the system associated therewith.

Figure 9 is a view similar to Figure 8 showing the pick-up arm hook released from the pick-up arm and in the act of picking up the pick-up container.

Figure 10 is a view of the towed pick-up station in perspective showing the device stripped after a pick-up has just been made.

Referring in detail to the drawings in which like characters of reference designate like or similar elements, Figure 1 is a panoramic illustration showing a mother ship A, a towed pick-up station B, and an aircraft C coming in to make the pick-up. The mother ship has a tow line **10** connected to a tow bridle **11** suitably secured to each leading side edge of a floating base **12**. The surface of base **12** is formed with an upward curved nose **13** and a straight trailing end **14**. Generally the surface is towed in a planning manner and is relatively longer from the leading curved end to the trailing end than it is wide. However, the surface to be towed is made sufficiently wide to float in still water and to support a pick-up container **15**. This container is formed with a bail **16** to receive a frangible connection **17** at one end and with a bridle **18** and connecting fastener **19** at its other end, see Figure 6. The frangible or breakable connection **17** is tethered to a suitable fastener **20** carried by the upper surface of the base surface **12**.

Pick-up poles **21** and **22** extend upward and diverge outwardly one from each of the side longitudinal edges of the base surface intermediate the ends thereof, see Figures 8, 9 and 10. The poles are made in sections, so as to be telescopic and for the purpose of providing a knockdown structure for stowing in a station pick-up kit, not shown. For example, each lower hollow section **23** and **24**, respectively of each pole **21** and **22** are larger than each insertable top section **25** and **26**, also each larger section has a mounting plate **23***a* and **24***a* respectively, screwed to the pick-up base **12**. The small pole sections carry the usual pick-up pole flags **27** and **28** at their top ends and include pick-up loop clips **29** and **30**. The pick-up loop **31** is releasably held by these clips as is known to the art. Also each lower pole section is formed with a set screw opening so each section receives a set screw **32** and **33**, to permit the upper pole section to be raised and held at adjusted positions above the planing surface.

The container **15** is of a novel construction and comprises an inner hollow body formed by two telescoping sections **35** and **36**. The section **35** is shown as the main body of the inner shells and the shell **36** serves as the top therefor. The shell sections **35** and **36** are confined in an envelop or bag **37** of material, such as canvas, plastic or the like and filled between the exterior shell walls and the interior bag walls with a mass of buoyant waterproof material, such as foamplastic **38**.

The envelop **37** at the bottom carries the buckle or bail **16** and the top sides the towing bridle **18**. This bridle is made of a synthetic plastic web or strap and such material has shock absorbing value, as it will stretch under load in proportion to tensile stress and absorb energy while so stretching.

As shown in Figure 6, the bridle **18** and fastener **19** connect to the usual air pick-up loop **31**. This loop is shown in the process of a pick-up operation as the pick-up hook **40** normally on the pick-up arm **41** engages the loop strand stretched between the pick-up station poles **21** and **22**. The hook **40** is tethered to the pick-up line **42** in an eyelet lug **43***a* in a manner similar to prior Patent 2,373,414, issued to Plummer, April 10, 1945, and as-

signed to the present invention assignee. As the pick-up aircraft causes the hook to pull forward on the loop **31** the clips **29** and **30** release, see Figure 9, and the breakable strap section **17** breaks off of fastener **20**.

The pick-up line **42** has one end attached to the body of the pick-up aircraft on a rotatable drum or winch **43**, see Figures 4 and 5. The winch is mounted on the present used camera mount generally indicated by numeral **44** with a transverse pivot pin **45** for the combined pick-up arm holder and winch support **46**. The winch is provided with a brake drum **47** with a spring tensioned brake band **48** looped around it. One end of the brake band **48** is affixed to the drum **47** and the other end to an arm **50** carried by a rock shaft **51** on an elongated handle **51***a* at substantially right angles to the said rock shaft. Connected between the end of the arm **50** and anchored to a side of the winch support **46** is a coil spring **52**, which normally pulls the brake band tightly around the brake drum during air pick-up operation.

The handle **51**[a] is provided with a cam follower tab **53**, see Figure 4, which rests on an eccentric cam **54** with a high part. The high part of the cam is to hold the brake released during initial acceleration of the drum, and to prevent the effect of static brake friction, which is greater than dynamic friction. In operation the cam follower tab **53** carried by the handle **51** rests on the eccentric cam located on the winch thus keeping the brake off. As the winch begins to rotate, the tab falls off the cam causing the brake to be applied by the pull of the spring **52** for the remaining part of the pick-up operation. An electric motor **55** serves to wind in the pick-up line **42** in substantially the same manner as with the winch shown in the aforementioned Plummer Patent No. 2,373,414. Thus the eccentric cam **54** and follower lug **53** provide a simple and efficient brake retarder.

While the foregoing specification describes and the drawings illustrate the specific details of the invention, it is understood that the same is not limited by these details and is therefore susceptible to changes and modifications within the scope of the appended claims without a departure from the spirit of the invention.

What is claimed is:

1. A mobile water based station comprising a water planing member adapted to be towed by a craft on land or water, spaced poles having their lower ends connected to each side of the said member, fastener means attached to the upper ends of the poles, a rope detachably connecting said fastener means arranged in a loop, and a pick-up container connected to the said loop and tethered to the upper surface of said member by a breakable link.

2. A mobile ground station comprising a water planing base surface having an upward curved leading end and a trailing end, a tow bridle connected to said leading end, a pole diverging outwardly and upwardly from each side of the said surface, the end of each pole being adjustable with respect to the said surface, a flag attached to the end of each pole, a clip carried by each flag, loop of rope held by each flag clip between the ends of the poles, and a container connected to the lower end of the loop by a breakable link and resting on the top of the said surface.

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