A. H. G. FOKKER.

TOWING CONNECTION FOR FLYING MACHINES.

APPLICATION FILED JUNE 16, 1921.

1,418,783.

Patented June 6, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

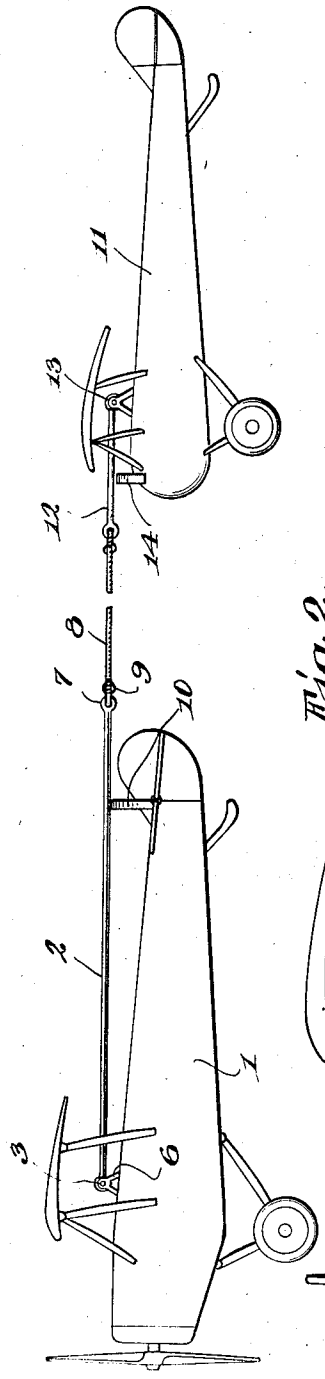
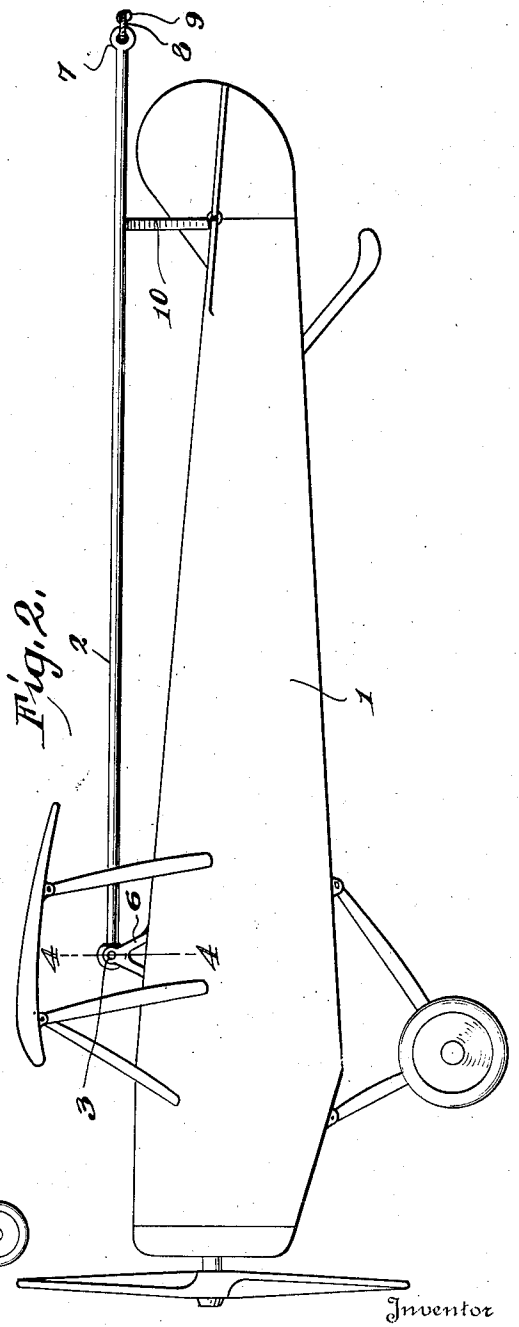


Fig. 2.



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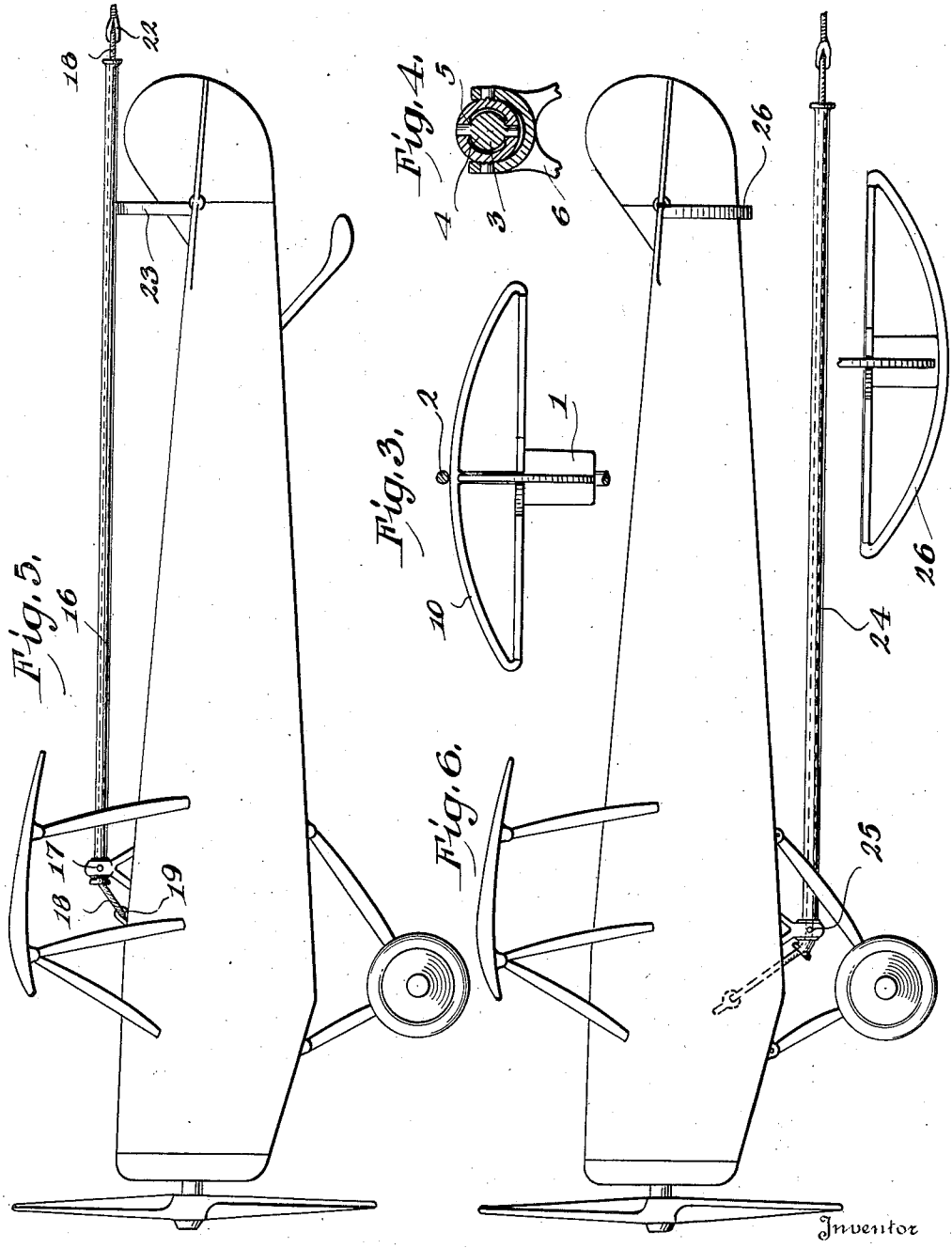
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UNITED STATES PATENT OFFICE.

ANTHONY HERMAN GERARD FOKKER, OF AMSTERDAM, NETHERLANDS.

TOWING CONNECTION FOR FLYING MACHINES.

1,418,783. Specification of Letters Patent. Patented June 6, 1922.

Application filed June 16, 1921. Serial No. 478,084.

To all whom it may concern:

Be it known that I, ANTHONY HERMAN GERARD FOKKER, a subject of the Queen of the Netherlands, residing at Amsterdam, Netherlands, have invented a new and useful Towing Connection for Flying Machines, of which the following is a specification.

This invention relates to improvements in towing connections for flying machines, the object of the invention being to provide improved devices of this character embodying means to prevent the tow rope or cable from fouling or otherwise interfering with controlling or stabilizing devices or other vital parts of an aeroplane which is used for towing another, or any form of flying machine, and also embodying means to enable the tow rope to be cast loose during flight without danger of the ends of the rope similarly fouling or interfering with the said devices or parts.

With the above and other objects in view the invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—

Fig. 1 is an elevation of a towing aeroplane and a towed aeroplane such as a glider, connected together by my improved towing connection.

Fig. 2 is an elevation, on a larger scale, of the towing machine and attached towing connection.

Fig. 3 is a detail rear elevation of the same, showing the construction and arrangement of the fender.

Fig. 4 is a detail sectional view of the universal joint connection of the inflexible towing element.

Fig. 5 is an elevation of a towing aeroplane provided with a towing connection constructed in accordance with a modification of my invention.

Fig. 6 is a similar view of another modification, in which said inflexible towing element is arranged below the body of the machine.

Fig. 7 is a detail rear end elevation of the same, showing the fender.

Referring especially to the form of the invention shown in Figs. 2 and 3, the body of an aeroplane is indicated at 1, and a towing element, which is relatively inflexible, comprises a rod 2 which is connected by a suitable universal joint 3 to the body of the machine at a point substantially coincident with the center of pressure. The said universal joint is here shown as comprising a ball 4 on the front end of the rod 2 and a socket 5 in which said ball is mounted for universal angular movement, said socket being here shown as mounted on a stanchion or bracket 6. The said rod 2 is of such length as to extend beyond the rear end or tail of the machine and is provided at its rear end with an eye 7 to which the towing rope 8 is attached, as by means of a slip catch 9, which may be of any suitable construction to enable the towing rope to be readily detached and cast from said rod 2. On the rear portion of the flying machine body and extending across and above the same is an arcuate fender 10 which serves to prevent the said element 2 from coming in contact with or fouling the rudder or other vital part of the machine.

The aeroplane 11 which is being towed, and which is shown in Fig. 1 as a glider, has a similar forwardly extending inflexible towing element or rod 12 which is connected by a universal joint 13 to the body of the machine at a point coincident with the center of pressure, and said element 12 extends forwardly of the machine and is prevented from coming in contact with any vital part thereof by means of a fender 14 which is substantially identical in construction with the fender 10. Either towing or towed machine may be of any type, within the scope of my invention. The towing rope 8 is also connected to the element 12 by a suitable slip catch 15 which enables the tow rope to be readily cast off and to fall clear of any part of the machine.

In the form of my invention shown in Fig. 5, the inflexible towing element comprises a tube 16, which has enlarged ends and is connected at the front end to the body of the machine by a universal joint 17, such as hereinbefore described, or of any suitable construction. A rope 18 extends through said tube and has its front end securely attached to the machine, as at 19, by means of a slip catch or other suitable device 22 to enable the tow rope to be readily cast loose, after which it slips through the tube, which acts as a guide to bring the end of the rope clear of the machine. A fender 23 such as hereinbefore described is em-

ployed to prevent the tube 16 from coming in contact with the rudder or any other vital device or part of the machine.

In the form of the invention shown in Fig. 7, the inflexible towing element 24 is shown arranged below the body of the machine and connected thereto for universal angular movement, as at 25, and the fender 26 is also shown arranged on the lower side of the machine at the rear end thereof.

While I have herein shown and described preferred embodiments of my invention, I would have it understood that other changes may be made in the form, construction and arrangement of the several parts, without departing from the spirit of my invention and within the scope of the appended claims.

What I claim is:—

1. A towing connection for flying machines, comprising a relatively inflexible element attached to a flying machine body for universal angular movement, a towing rope connected to said element, and means to prevent said element from fouling.

2. A towing connection for flying machines, comprising a relatively inflexible element attached to a flying machine body for universal angular movement and at a point substantially coincident with the center of pressure, and a towing rope connected to said element, and means to prevent said element from fouling.

3. A towing connection for flying machines, comprising a relatively inflexible element attached to a flying machine body for universal angular movement, a towing rope connected to said element, and a fender to prevent said element from fouling.

4. A towing connection for flying machines, comprising a relatively inflexible element attached to a flying machine body for universal angular movement, a towing rope detachably connected to said element, and means to prevent said element from fouling.

5. A towing connection for flying machines, comprising a relatively inflexible element attached to a flying machine body for universal angular movement, said element acting as a guide for the tow rope which is attached to the body of the flying machine, and means to prevent said element from fouling.

In witness whereof I affix my signature.

ANTHONY HERMAN GERARD FOKKER.