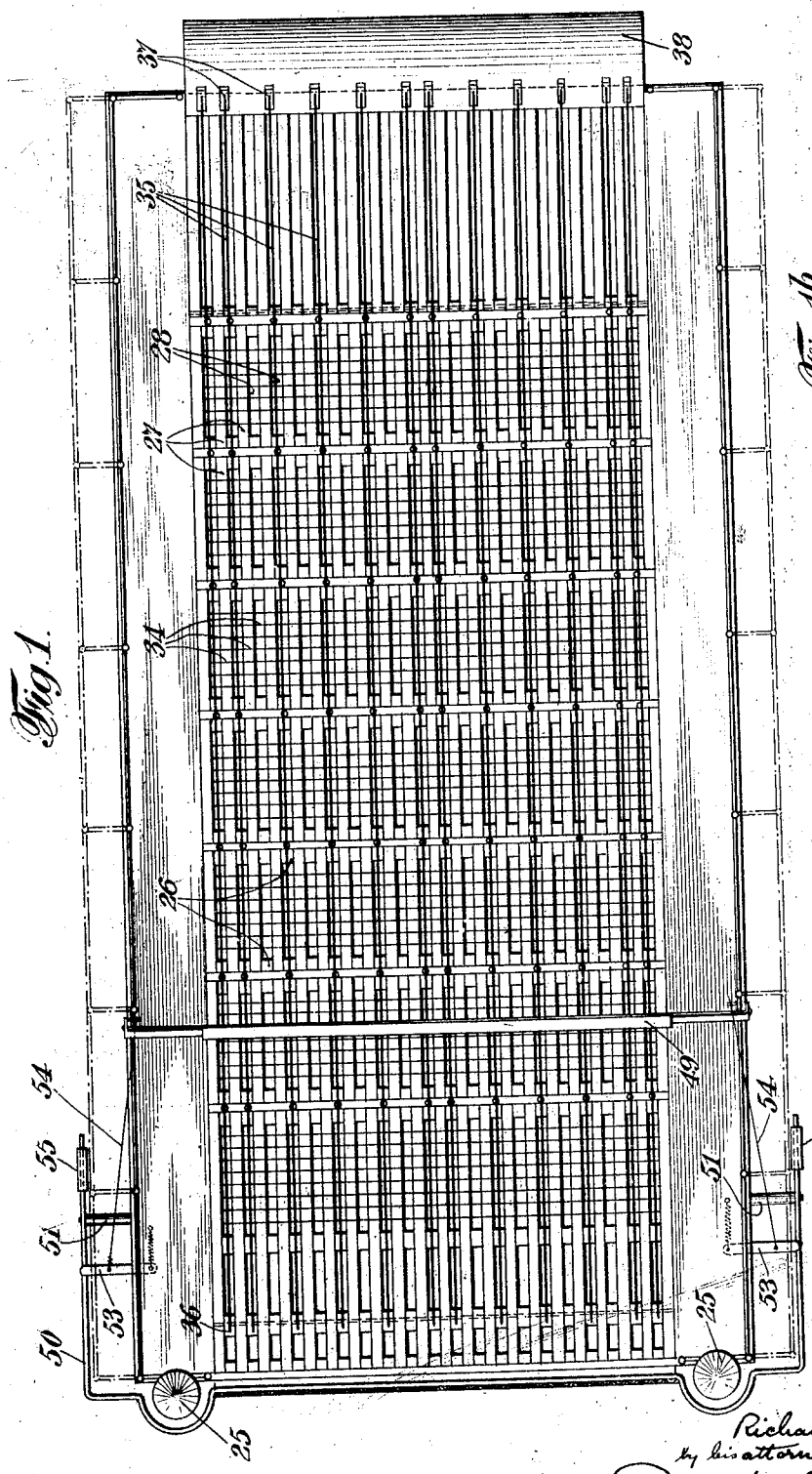
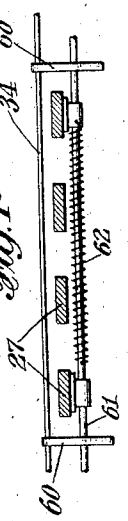
Nov. 10, 1925. 1,560,775

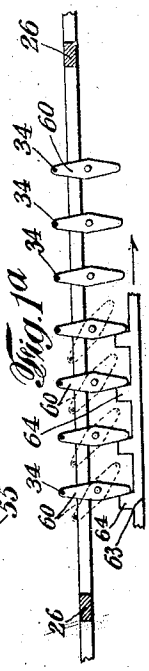
R. GIBBONS

AERIAL LANDING AND LAUNCHING APPARATUS

Filed Jan. 30, 1924 3 Sheets-Sheet 1







Inventor
Richard Gibbons
by his attorneys
Prindle, Wright & Mead

Nov. 10, 1925.

1,560,775

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AERIAL LANDING AND LAUNCHING APPARATUS

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3 Sheets-Sheet 2

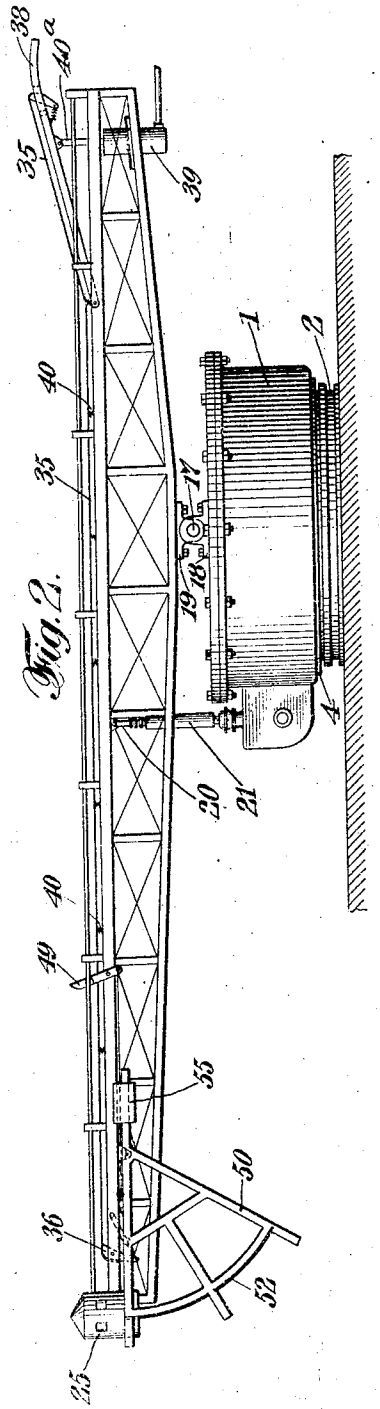

Fig. 2.

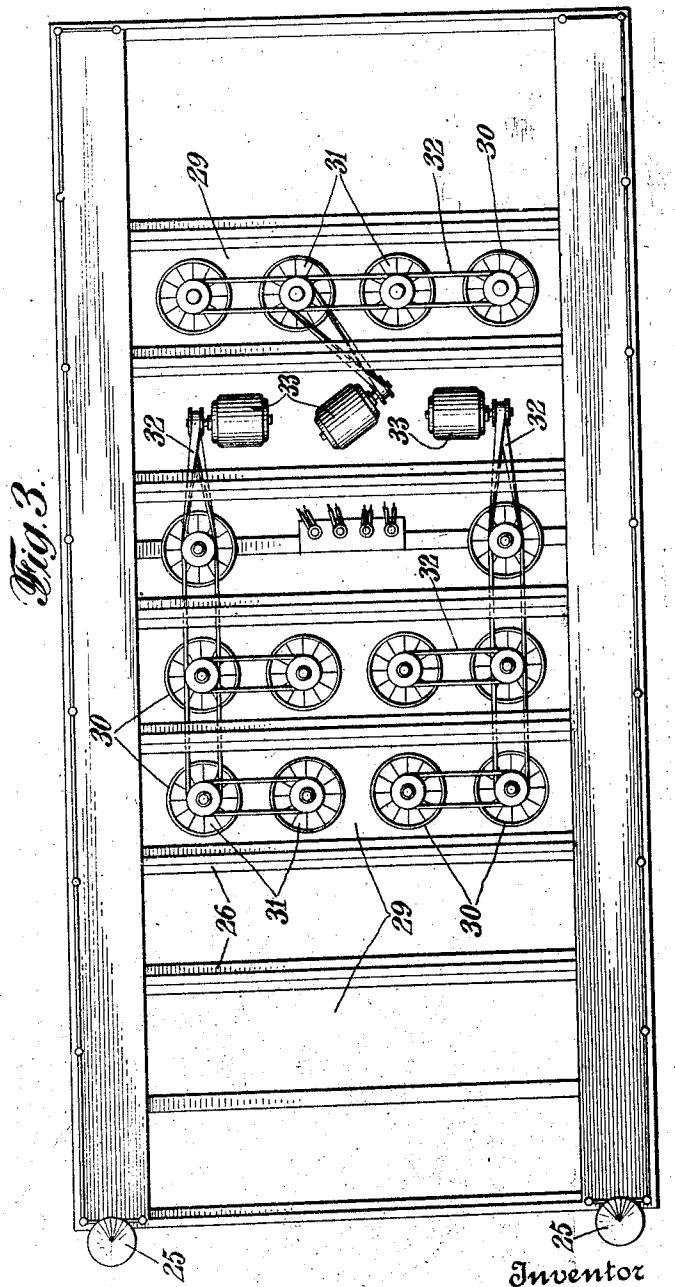

Fig. 3.

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Fig. 4.

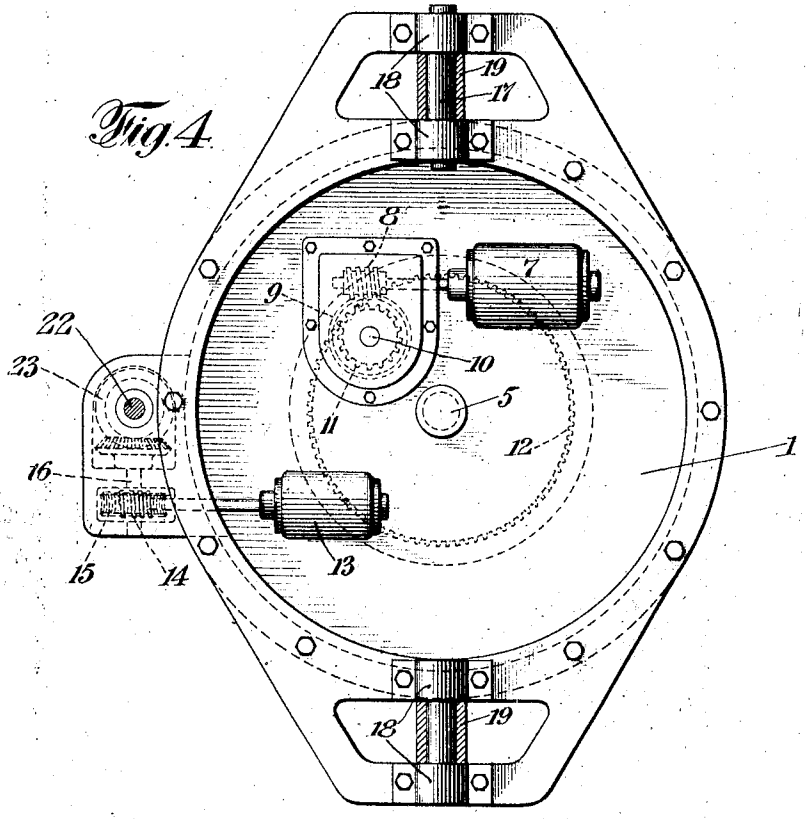
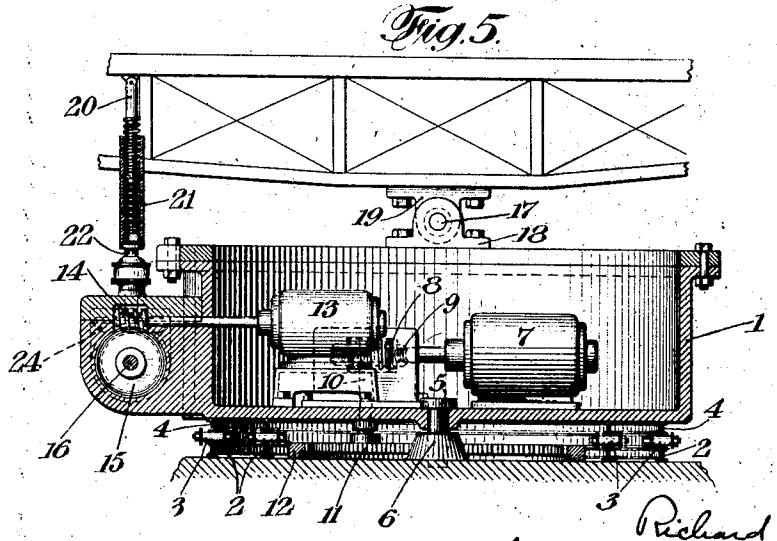


Fig. 5.



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Patented Nov. 10, 1925. 1,560,775

UNITED STATES PATENT OFFICE.

RICHARD GIBBONS, OF BROOKLYN, NEW YORK, ASSIGNOR TO MARY A. KENNEY, OF BROOKLYN, NEW YORK.

AERIAL LANDING AND LAUNCHING APPARATUS.

Application filed January 30, 1924. Serial No. 689,444.

To all whom it may concern:

Be it known that I, RICHARD GIBBONS, a citizen of the United States, a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Aerial Landing and Launching Apparatus, of which the following is a specification.

The invention relates to a platform adapted to be mounted in locations, where it is desired to land or launch an aerial vehicle in restricted space such as the roof of a building, deck of a ship, etc., the platform having features of construction which will enable airplanes, hydroplanes, gliders, and the like to be safely landed or launched in short distances.

According to one phase of the invention, the platform is honeycombed and provided with fans or blowers to withdraw air uniformly through the openings in the platform, thereby preventing the building up of an air bank underneath the wings of an airplane in landing, which otherwise would tend to prevent it from settling upon the platform; or in the case of launching these fans or blowers may be reversed to project a column of air on to the wings of an airplane from underneath to assist in lifting the latter from off the runway.

The construction of the platform is such that the rarefaction of the air in landing or the building up of air pressure in launching, as above described, will be substantially uniform, and therefore avoids the creation of unbalanced forces upon the airplane as it passes over the platform.

Certain devices, later to be described in greater detail, are preferably provided in connection with the platform, to assist in bringing a vehicle to rest thereon, and preferably the platform is provided, at its far end, with a safety screen, or the like, which will be interposed across the path of travel of the vehicle and stop the latter in case the above-mentioned devices for any reason have failed to bring it to rest.

The above and other features of the invention will be more thoroughly understood as the description proceeds and it should be noted that the various devices on the platform need not all be used in combination with each other although they are preferably so used. In the drawings:

Fig. 1 is a general top plan view of a platform embodying the various features of the invention;

Fig. 1^a is an enlarged detail section taken on line longitudinally of Fig. 1.

Fig. 1^b is a similar section taken on line transversely of Fig. 1.

Figs. 2 and 3 are respectively a side view and a bottom plan view of the structure as shown in Fig. 1;

Fig. 4 is a plan view partly in section, showing, detached, the turret support for the platform;

Fig. 5 is a vertical sectional view taken centrally through Fig. 4.

The platform as a whole is preferably rotatably and tiltably supported so as to enable it to be turned in different directions according to the wind and to be tilted to different angles to provide an incline for assisting in bringing an airplane to rest or launching it. As shown, the platform as a whole is carried by a turret 1 running on circular tracks 2 (Fig. 5) having anti-friction rollers 3 which are interposed between the tracks 2 and similar tracks 4 and carried by the turret 1. A king-pin 5 may also be provided at the centre of the turret 1 and engaging a hub 6 on the platform base. As shown, the turret and platform are turned in a horizontal plane by means of a motor 7 within the turret which drives a worm 8 meshing with a worm-wheel 9 on a vertical shaft 10 carrying at its lower end a pinion 11 which meshes with an internal gear 12 fixedly carried by the base on which the platform is mounted. For tilting the platform a separate motor 13 is provided within the turret 1 and driving a worm 14 which in turn drives a worm gear 15 on a horizontal shaft 16. The platform as a whole is pivoted to the turret 1 as by means of pins 17 passing through bearings 18 on the top of the turret and blocks 19 on the undersurface of the platform. The angle at which the platform is maintained depends upon the position of a shaft 20 which is pivoted to the platform at its upper end and threaded into a sleeve 21 carried by a shaft 22 which is provided with a beveled gear 23 driven by a gear 24 on the shaft 18 previously described. Thus, when the motor 13 is actuated the sleeve 21 will be turned to change the inclination of the platform as desired. Both of the motors 7 and

13 may be made reversible with controls leading to suitably located stations 25 on the platform whereby the operator may adjust the latter as desired.

The platform itself may be formed of standard structural shape, the construction of which will not be described in detail. The surface or runway over which the aerial vehicle passes is provided with suitable openings to permit air to be drawn downwardly from above the platform through the opening or projected upwardly therethrough, as may be desired. A sufficient number of these openings is provided to make the corresponding parts of the platform of honeycombed structure, thereby permitting withdrawal of the air to be uniform over different areas above the platform. In the present instance the runway is provided with a series of cross-pieces 26 which support slats 27 running longitudinally of the platform and spaced to provide openings 28 therebetween through which the air may pass, as above described. A floor 29 below the slats 27 forms a box-like enclosure or chamber beneath the latter and such floor is provided with a plurality of openings 30 in which are located fans or blowers 31 of any suitable type. As shown, these blowers are driven by a plurality of belts or chains 32 extended from suitable reversible motors 33. Thus the blowers 31 may operate to withdraw air from above the platform through openings 28 to relieve a landing airplane from the bank of air which otherwise would be built up beneath its wings, or by reversing the motor a column of air may be directed upwardly on to the wings of an airplane through openings 28 to assist in lifting the machine from off the runway.

Transverse stop members 34, which may be in the form of cables or rods strung across the platform over openings 28, yieldably retard the motion of the vehicle as it passes along the platform. These stop members are preferably somewhat elevated above the surface of the platform in landing, but if the platform is to be used for launching purposes the members 34 are preferably moved to a non-obstructing position. As is shown more particularly in Figs. 1[a] and 1[b] the cables 34 may be strung between rocking levers 60 mounted upon shafts 61 journaled below the slats 27, and suitable springs 62 are provided to urge the levers 60 toward the upright position shown in full in Fig. 1[a].

But as the airplane passes along the platform, the cables 34 and their corresponding levers 60 may be successively depressed against the action of their corresponding springs 62. When the apparatus is to be used for launching a suitable actuating member 63 (Fig. 1[a]) having lugs 64 respectively engaging the levers 60 may be moved to the right as shown in Fig. 1[a] to depress all of the cables 34 to the level of the platform where they will not interfere with the free passage of the airplane to be launched, along the platform. In the illustrated embodiment of the invention, the lugs 64 serve as stops to hold the levers 60 in elevated position, when the apparatus is being used for landing purposes.

It is also preferred to provide the platform with guide members which will assist in directing a vehicle to travel in the desired direction in landing. These guide members may take the form of a plurality of parallel steel cables or rods 35 extending lengthwise of the platform and elevated somewhat above its surface and above the cables 34 so as to engage the wheel, tail skid, or other downwardly extended parts on the vehicle. A sufficient number of these guide members is provided to enable a vehicle to engage the same without requiring a too careful positioning of the vehicle by the operator at the time it initially engages the guide members, and after such initial engagement the guide members act to confine the vehicle to a path of travel lengthwise of the guide members.

As shown, the cables or rods 35 are strung between suitable supporting brackets 36 at the far end of the platform and similar supports 37 which, in the present instance, are mounted upon an adjustable ramp 38 which constitutes the forward end of the platform and may be suitably elevated or depressed as by means of a compressed air cylinder 39 located beneath the ramp and having a plunger 40[a] supporting the same. The guide members 35 are preferably yieldably maintained in position at intermediate points along their length, as by means of coil springs 40 (Fig. 2) between them and cross-pieces 26.

It is preferred, also, to provide a platform with a barrier which in case the airplane is not brought to rest within a suitable distance for any reason, may be projected across the far end of the platform to prevent the vehicle from passing completely off the latter in landing. As shown in Figs. 1 and 2, the platform is provided with a pivoted trip 49 which controls the position of a frame-work 50 pivoted at 51 to the platform and carrying a barrier 52 which normally is withdrawn from obstructing position. But in case the trip 49 is actuated by the passage of the vehicle thereover a latch 53, which normally holds the frame 50 in withdrawn position, will be moved away from the frame 50 due to the connection 54 between the latch and the trip 49. A weight 55 connected to the frame 50 will then move the latter upwardly until the barrier 52 of wire netting or the like is in-

terposed across the path of travel of a vehicle along the platform.

While certain specific embodiments of the invention have been described it will be obvious that many changes may be made therein without departing from its principles, as defined in the following claims.

What I claim is:

1. An apparatus for landing or launching aerial vehicles comprising a table-like platform honeycombed to permit air to pass substantially uniformly through different areas thereof, and air blowers acting upon the space beneath said platform to withdraw air from upper side of the platform to the lower.

2. An apparatus for landing or launching aerial vehicles comprising a platform having a plurality of parallel supporting members spaced to provide openings therebetween, said apparatus having an air chamber underneath said platform and air blowers associated with said chamber to withdraw air from upper side of the platform to the lower.

3. An apparatus for landing or launching aerial vehicles comprising a platform having a plurality of parallel supporting members spaced to provide openings therebetween, said apparatus having an air chamber underneath said platform and air blowers associated with said chamber to withdraw air from upper side of the platform to the lower.

4. An apparatus for landing or launching aerial vehicles comprising a platform providing a runway adapted to receive a vehicle, a barrier member disposed adjacent the far end of the runway, and normally held out of vehicle obstructing position, together with means permitting said barrier member to be moved into vehicle obstructing position.

5. An apparatus for landing or launching aerial vehicles comprising a platform providing a runway adapted to receive a vehicle, a barrier member disposed adjacent the far end of the runway, and normally held out of vehicle obstructing position, together with means actuated by the movement of the vehicle past a predetermined point on said runway for permitting said barrier member to move into vehicle obstructing position.

6. An apparatus for landing or launching aerial vehicles comprising a platform providing a runway adapted to receive a vehicle, a framework pivoted adjacent the far end of the runway and carrying a barrier adapted to extend across the runway in one position of said framework, said framework being normally held in position beneath said runway, and a trip member adapted to be released to permit said framework to move said barrier into position across the runway.

7. An apparatus for landing or launching aerial vehicles comprising a platform having openings therein, air blowers associated with said platform to withdraw air from upper side thereof to the lower, and yieldable transverse stop members disposed across the platform above said openings.

8. An apparatus for landing or launching aerial vehicles comprising a platform having openings therein, air blowers associated with said platform to withdraw air from upper side thereof to the lower, and transverse cables stretching across the platform above said openings.

9. An apparatus for landing or launching aerial vehicles comprising a platform having openings therein, air blowers associated with said platform to transfer air from one side thereof to the other, yieldable transverse stop members disposed across the platform above said openings, and means adjustable to hold said stop members in non-obstructing position when desired.

10. An apparatus for landing or launching aerial apparatus comprising a platform providing a runway adapted to receive a vehicle, a plurality of yieldable stop members disposed transversely across said platform and normally maintained in a position somewhat elevated above the surface of the platform, and means adjustable to hold said stop members in non-obstructing position when desired.

11. An apparatus for landing aerial vehicles comprising a table-like platform honeycombed to permit air to pass substantially uniformly through different areas thereof, said apparatus having an air chamber underneath said platform, and air blowers associated with said chamber to transfer air from above the platform to the chamber.

12. In an apparatus for landing or launching vehicles, a runway having stop members mounted above the same in position to engage and retard the motion of a vehicle passing thereover, supporting means for such members permitting the same to move to non-retarding position when engaged by a vehicle, means yieldingly urging said members toward their vehicle-retarding position, and means whereby said members may be adjusted to remain in non-retarding position.

In testimony that I claim the foregoing, I have hereunto set my hand this 19th day of January, 1924.

RICHARD GIBBONS.