

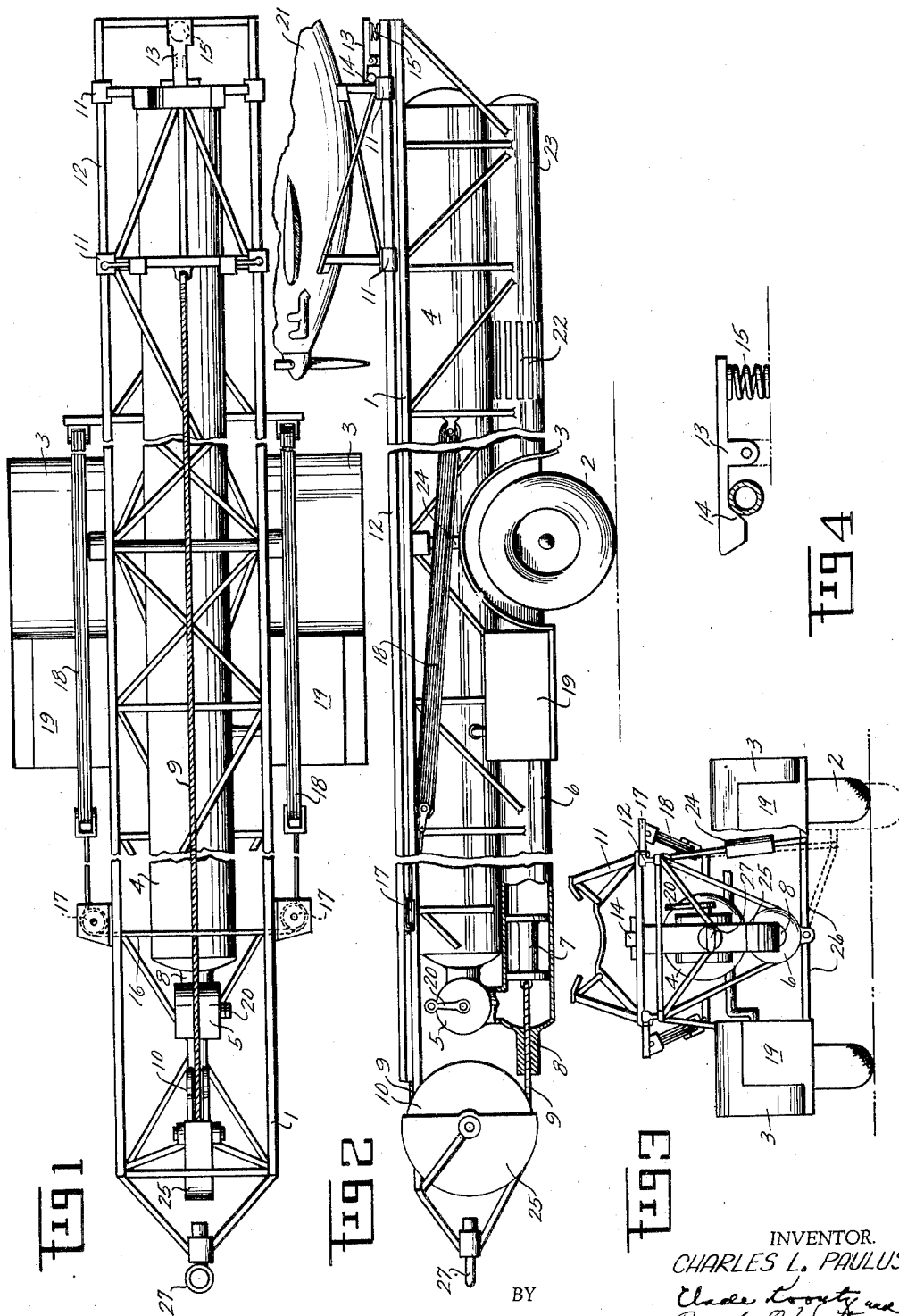
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CATAPULT

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CATAPULT

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The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to catapults.

It is an object of the invention to provide a catapult for launching air targets and the like through the use of compressed air.

Another object of the invention is to provide a target launching mechanism that may be portable i. e. adapted for road travel and that may be readily adjusted for the launching of targets of different size and at different speeds.

With the above and other objects in view, my invention is hereinafter described and illustrated in the accompanying drawings, wherein:

Fig. 1 is a top plan view of the device;

Fig. 2 is a side elevation of the catapults showing a part of the air chamber broken away;

Fig. 3 is an end view of the construction shown in Fig. 2; and

Fig. 4 is an illustration of my novel locking means for holding the catapult carriage from forward movement until the desired pressure has been obtained.

Referring now more particularly to the drawing, the numeral 1 designates the catapult framework which is welded to the cylinder 6 and is mounted centrally on the wheels 2 of a road vehicle about which it is able to pivot lengthwise so that the angle of inclination for firing may be by means of the split axles 26, 26 and has suitable shock absorbers at 24 cushioning the shock to the framework while traveling over rough terrain. The wheels 2 have the conventional mud guards 3. Within the framework 1 is the air storage tank 4 being closed at one end and having the valve 5 at the other end. Immediately beneath said storage tank 4 is the tubular cylinder 6 in which the piston 7 operates. One end of said cylinder is closed and the opposite end has the gland 8 through which a cable 9 is threaded. Said cable 9 travels on the pulley 10 and is connected with the carriage 11, said pulley having the conventional housing 25 thereon. Said carriage 11 is movably mounted on the rails 12 and when tension is applied to the cable 9, the carriage 11 is held against forward movement by the locking device 15 which comprises a pivotally mounted bar, one end of which has the downwardly tapering shoulders 14 and the other end of which has the coil spring 15 exerting pressure against said bar and tending to hold the shoulder 14 in engagement with the carriage 11. When the pressure on the cable

9 is sufficient to overcome the pressure of the spring 15, the carriage will move forward. As the carriage moves forward under pressure, its forward movement will be checked near the end of the rails by engagement of the carriage with the check member 16 which is connected by the pulleys 17 to the flexible detaining means 18 consisting of rubber cords or other flexible material.

When a target is to be launched, the air compressor 19 is activated until the predetermined amount of pressure has been accumulated in the air storage tank 4. The lever 20, controlling the valve 5, is rapidly moved into open position permitting the pressure to be transmitted to the cylinder 6 forcing the piston 7 towards the rear of the cylinder 6 at a high rate of speed. The locking means 13 will prevent the piston 7 from moving forwardly until a predetermined pressure has been built up against said piston. Upon reaching the predetermined pressure the pull on the cable 9 will overcome the pressure of the spring 15 and the piston 7 will move toward the rear of the cylinder 6 and the carriage 11, carrying the target 21, will move forwardly on the rails 12 at a high rate of speed, and the target launched when the carriage 11 contacts the carriage restraining means 16. As the piston moves rearwardly in the cylinder 6, the predetermined pressure within the storage tank 4 will be transmitted to the cylinder 6 due to the aperture of the valve 5 being of approximately the same diameter as the cylinder 6. As the piston 7 reaches the end of its run, the ring of elongated ports 22 in the cylinder 6 will dissipate the air pressure within the cylinder and the piston will pass into the compression chamber 23 at the closed end of the cylinder which will assist the restraining means 18 in stopping the movement of the piston 7 and of the carriage 11.

The weight and the desired launching speed of the target 27 will determine the pressure to be built up within the storage tank 4.

The coupling member 27, which may be of any suitable construction, provides means for coupling the structure to a towing vehicle.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A portable catapult for launching target aircraft including a mobile two wheeled vehicle adapted for road travel and tiltable about its wheel base in the direction of its length, said vehicle having a propulsion cylinder forming the main frame element, guide rails positioned above and supported by said cylinder, a piston

axially slidable in said cylinder, a launching carriage mounted for movement along said guide rails, a cable interconnecting the piston and the launching carriage, a compressed air storage tank positioned on the frame and connected to said cylinder at one end thereof to admit a propulsion charge thereto, said cylinder being closed at its other end to form a compression chamber and a ring of elongated exhaust ports intermediate the ends of the cylinder uncovered by the piston as it advances from the working portion of the cylinder to the compression chamber.

2. In a catapult apparatus of the character described, a launching carriage, a pair of wheels and a cross-wise arranged axle connecting said wheels, substantially under the middle point of the length of said carriage guide rails supporting said carriage for movement therealong, a working cylinder closed at its ends, said guide rails and cylinder being tiltable about said axle, a piston positioned within said cylinder, a cable connected at one end to said piston passing through one of the cylinder closures and being connected at its other end to the launching carriage, a source of compressed air for propelling the piston in the cylinder and a ring of exhaust ports in the cylinder intermediate the ends thereof such that passage of the piston thereover vents the propelling charge and further movement of the piston causes the compression of air in the portion of the cylinder beyond the ports to thereby decelerate the piston and cable.

3. A portable catapult for launching aircraft including a mobile wheeled vehicle having a propulsion cylinder forming the main frame element, guide rails positioned above and supported by said cylinder, a piston axially slidable in said cylinder, a launching carriage mounted for movement along said guide rails; a cable connecting the piston and the launching carriage, a compressed air storage tank positioned in the frame and connected to said cylinder at one end thereof to admit a propulsion charge thereto, said cylinder being closed at its other end to form a compression chamber, and having a ring of elongated exhaust ports intermediate the ends of the cylinder uncovered by the piston as it advances from the working portions of the

cylinder to the compression chamber, the compression chamber portion of said cylinder serving to retard the movement of the piston and connecting cable after the piston uncovers the exhaust port and elastic snubbing cord secured to the frame and engaged by the launching carriage for stopping the carriage and restoring the carriage to its initial position.

4. A portable catapult for launching target aircraft, including a mobile wheeled vehicle having a propulsion cylinder forming the main frame element, guide positioned above it supported by said cylinder, a piston axially sliding in said cylinder, a launching carriage mounted for movement along side guide rails, a cable interconnecting the piston and the launching carriage, a compressed air storage tank positioned on the frame and connected to side cylinders at one end thereof to admit a propulsion charge thereto, said cylinder being closed at its other end to form a compression chamber and having a ring of elongated exhaust ports intermediate the ends of the cylinder which are uncovered by the piston as it advances from the working portion of the cylinder to the compression chamber and a spring loaded latch for restraining the launching carriage against movement until the working pressure within the propulsion cylinder exceeds a predetermined value.

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