Feb. 27, 1945. H. K. WARD ET AL 2,370,431

PNEUMATIC LAUNCHING RAM

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Fig. 1.

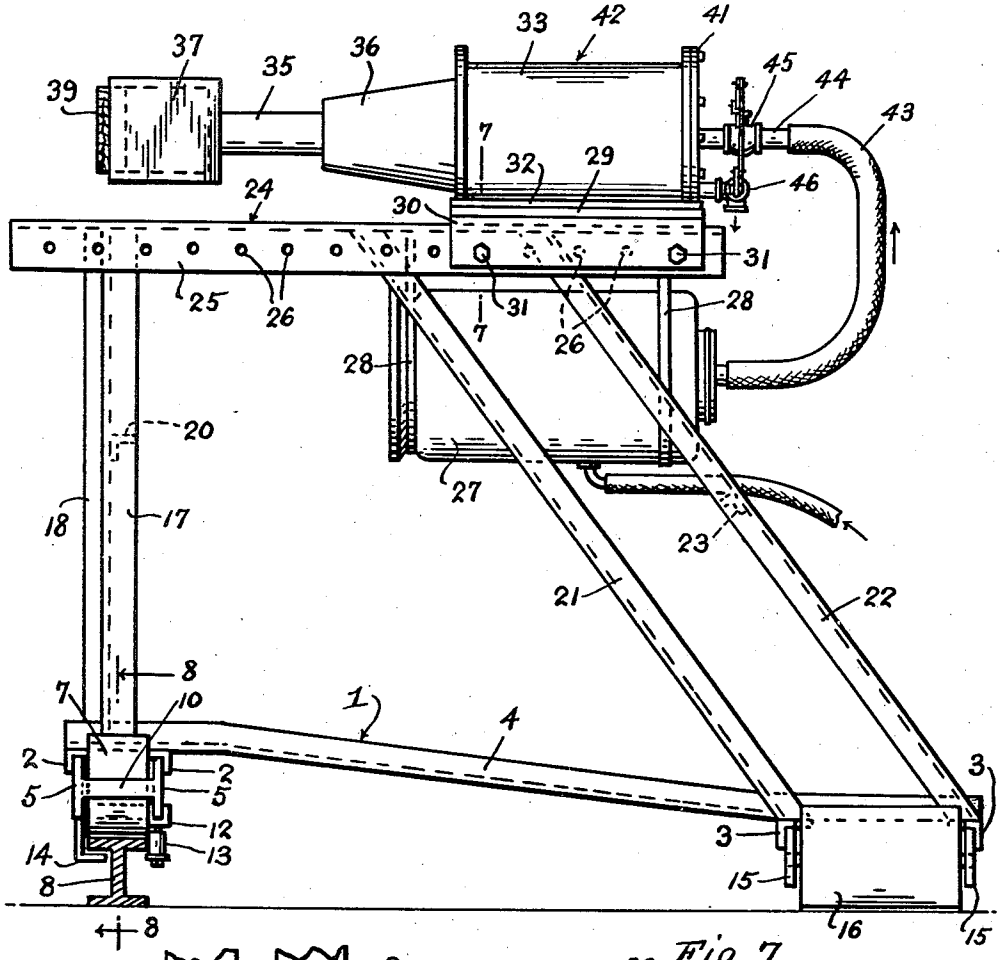


Fig. 6.

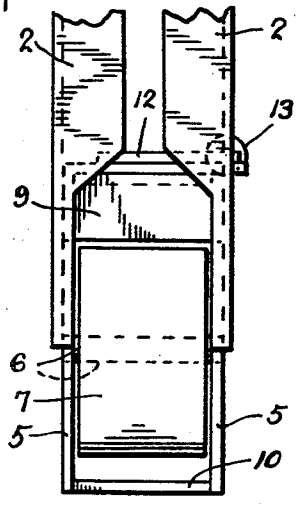
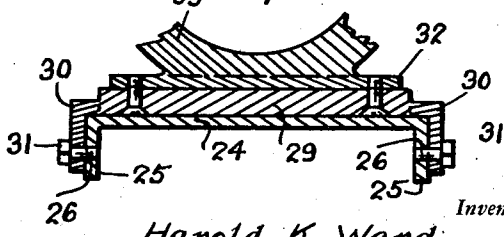


Fig. 7.



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Fig. 2.

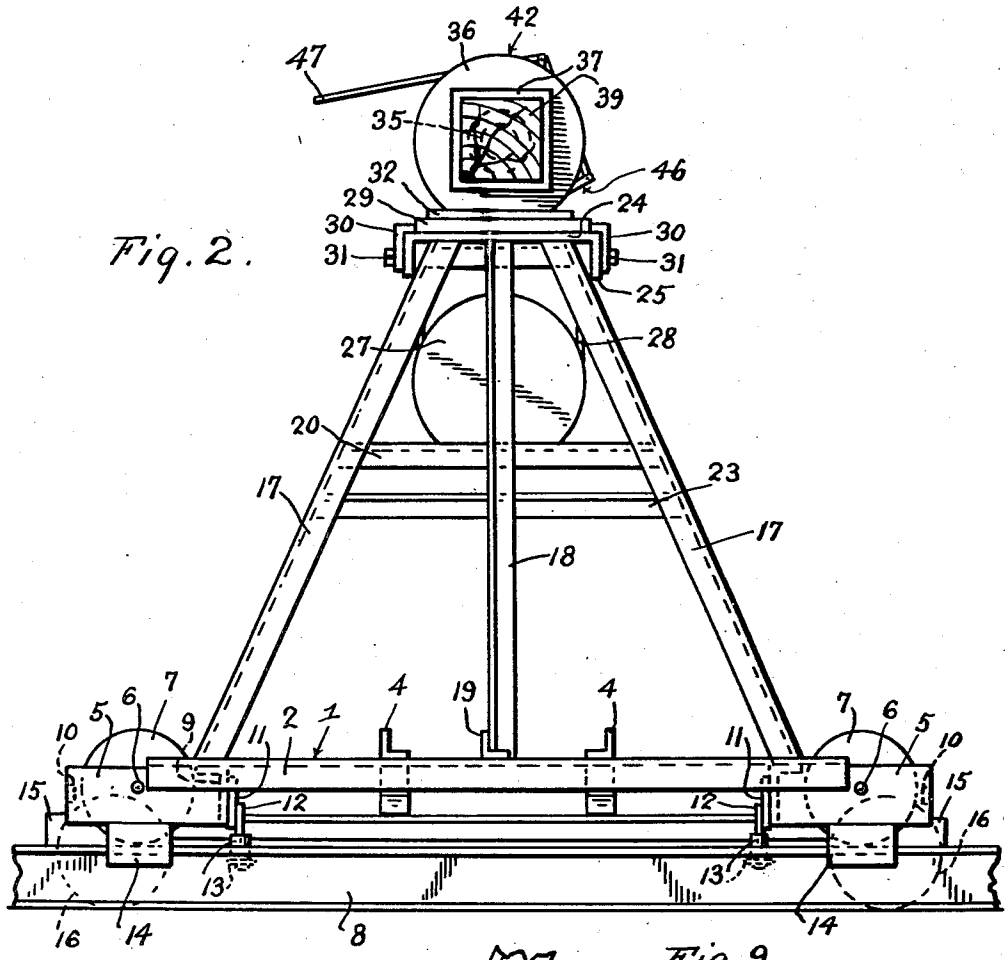


Fig. 8.

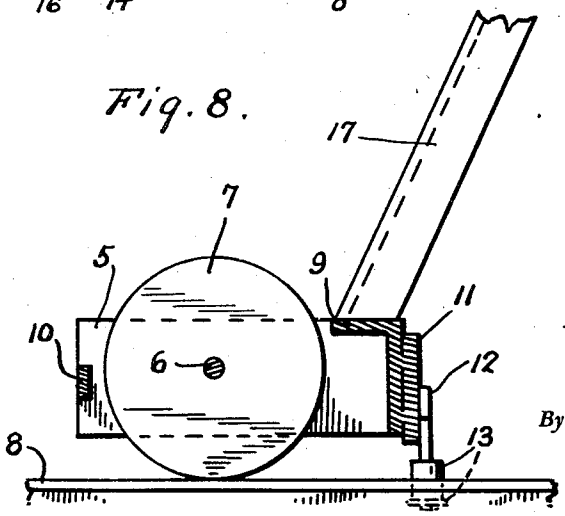
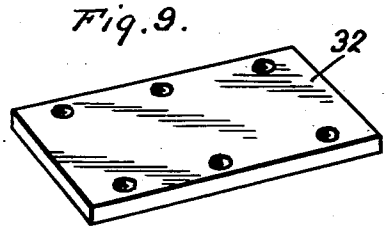


Fig. 9.



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Fig. 3.

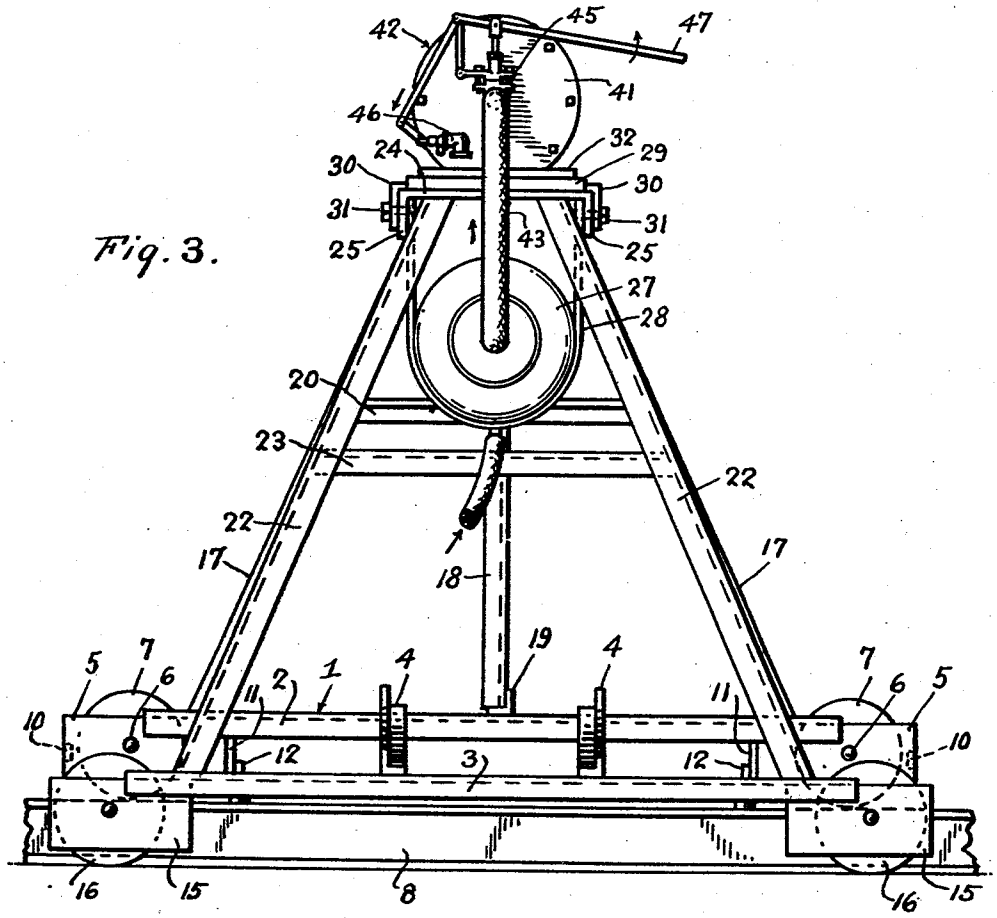


Fig. 4.

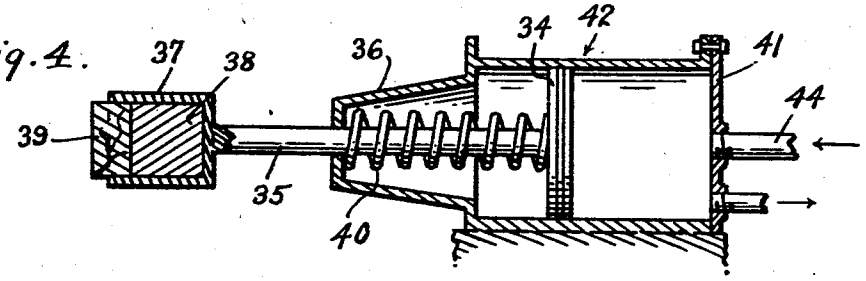
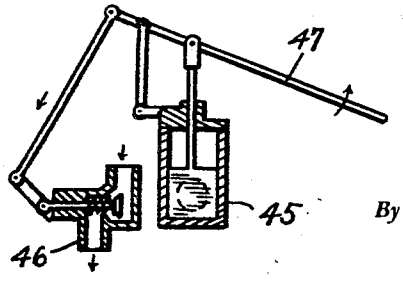


Fig. 5.



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UNITED STATES PATENT OFFICE

2,370,431

PNEUMATIC LAUNCHING RAM

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Application July 14, 1943, Serial No. 494,724

2 Claims. (Cl. 61—67)

The present invention relates to new and useful improvements in launching rams for use in shipyards, and has for its primary object to provide, in a manner as hereinafter set forth, a readily movable, compressed air actuated device of this character comprising a novel construction, combination and arrangement whereby, preparatory to the launching of a ship, the usual hull elevating wedges may be expeditiously driven in with a minimum of labor.

Other objects of the invention are to provide a pneumatic ship launching ram of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a launching ram constructed in accordance with the present invention.

Figure 2 is a view in front elevation of the machine.

Figure 3 is a rear elevational view.

Figure 4 is a view in vertical longitudinal section through the air hammer.

Figure 5 is a view in vertical section through the control valve mechanism.

Figure 6 is a top plan view of a portion of the base.

Figure 7 is a fragmentary view in cross-section, taken substantially on the line 7—7 of Figure 1.

Figure 8 is a vertical sectional view, taken substantially on the line 8—8 of Figure 1.

Figure 9 is a detail view in perspective of the plate on which the air cylinder is mounted.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which is illustrated comprises a mobile base which is designated generally by reference character 1. The base 1 includes pairs of spaced, parallel, transversely extending front and rear bars 2 and 3, respectively, of angle iron, between intermediate portions of which a pair of spaced, parallel, longitudinal bars 4, also of angle iron, extend. The bars 4 are welded to the bars 2 and 3.

Pairs of spaced, opposed, metallic plates 5 are welded to the end portions of the bars 2 and project therefrom. Shafts 6 extend between the pairs of plates 5. Rollers 7 are journaled on the shafts 6 and are adapted to travel on a rail 8 in the form of an H beam for shiftably mounting the front end of the machine thereon. The rail 8 is mounted on the usual way.

Angle irons 9 are welded between the inner end portions of the plates 5. Metallic braces 10 are welded between the outer end portions of the plates 5. Plates 11 are welded on the angle irons 9. Welded on the plates 11 are angular brackets 12 having journaled thereon vertical rollers 13 which are adapted to travel on the rear edge of the rail 8. Depending from the front plates 5 are substantially L-shaped keepers 14 which are engaged beneath the tread of the rail 8 for preventing the front of the machine from being lifted off said rail.

Welded to the end portions of the bars 3 and projecting therefrom are pairs of spaced, opposed, metallic plates 15. Comparatively long supporting rollers 16 are journaled between the pairs of plates 15. The rollers 16 are adapted to travel on the slip for supporting the rear end of the machine.

Upwardly converging front legs 17 are welded to the angle irons 9. Rising from an intermediate portion of the bars 2 is a vertical front leg 18. The lower end of the leg 18 is welded to a short angle iron 19 which extends between the bars 2. A brace 20 extends between the legs 17 and 18 at an intermediate point. Pairs of forwardly inclined legs 21 and 22 are welded to the end portions of the bars 3. A brace 23 extends between the rear legs 22.

Mounted on the upper ends of the legs 17, 18, 21 and 22 is an elongated table 24 in the form of an inverted channel iron. The depending side flanges 25 of the table 24 have formed therein spaced openings 26. Mounted beneath the rear end portion of the table 24 is a reservoir 27 for receiving air under pressure from a suitable source. Hangers 28 suspend the air reservoir 27 beneath the table 24.

Mounted for longitudinal sliding adjustment on the table 24 is a carriage 29. The carriage 29 is in the form of a metallic plate and welded to the side edges thereof and depending therefrom are metallic guides 30 of angular cross-section which slidably embrace the table 24 therebetween. Bolts or pins 31 in the guides 30 are engageable selectively in the openings 26 for securing the carriage 29 in adjusted position on the table 24.

Mounted on the carriage 29 is a plate 32 having fixed thereon a longitudinally extending air cylinder 33. A piston 34 (see Fig. 4) is mounted for

reciprocation in the cylinder 33. The piston 34 is fixed on the rear end of a rod 35 which extends slidably through the forward end 36 of the cylinder 33. Mounted on the forward end of the rod 35 is a substantially cup-shaped head 37 which is weighted with lead, as at 38. Projecting forwardly from the head 37 is a wooden contact block 39. A coil spring 40 in the forward end portion of the cylinder 33 retracts the piston 34. A plate 41 closes the rear end of the cylinder 33. The elements 33 to 41, inclusive, constitute an air hammer which is designated generally by reference numeral 42.

A flexible conduit 43 connects the cylinder 33 to the air reservoir 27. In the embodiment shown, a nipple 44 projects from the plate 41 and receives the air conduit 43. The nipple 44 has interposed therein a gate valve 45 for controlling the flow of air to the cylinder 33. Also mounted on the plate 41 is an exhaust valve 46 for the cylinder 33. A hand lever 47 constitutes common means for operating the valves 45 and 46. As best seen in Figure 5 of the drawings, the construction and arrangement of the air control mechanism is such that when the air supply valve 45 is opened, the exhaust valve 46 is closed and vice versa.

It is thought that the operation of the machine will be readily apparent from a consideration of the foregoing, particularly to those skilled in the art to which the invention relates. Briefly, the machine is moved on the rollers 7 and 16 to the desired location on one side of the hull. With the air hammer 42 in the correct position on the table 24, the hand lever 47 is swung upwardly to open the gate valve 45 and close the exhaust valve 46, thus admitting air under pressure to the cylinder 33 from the reservoir 27. In this manner the piston 34 is driven forwardly in the cylinder 33 against the tension of the coil spring 40 for causing the head 37 to strike the wedge being driven a forceful blow. The wooden contact block 39 prevents the wedge from being unduly damaged when struck. The hand lever 47 is then swung downwardly for closing the supply valve 45 and opening the exhaust valve 46 which permits the coil spring 40 to return the piston 34. The operation is then repeated. As the wedge is driven in, the carriage 29 is adjusted forwardly on the table 24.

It is believed that the many advantages of a pneumatic launching ram constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the machine is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A ship launching ram comprising a mobile supporting structure, said supporting structure comprising an elongated table including depending side flanges having spaced openings therein, a carriage mounted for longitudinal sliding adjustment on the table and including depending guides slidably embracing said table therebetween, means in said guides engageable selectively in the openings for securing the carriage in adjusted position on the table, and a fluid-actuated hammer mounted on the carriage.

2. A ship launching ram comprising a base including supporting rollers, legs rising from said base, a table mounted on the base, said table comprising an inverted channel iron having spaced openings in its side flanges, a carriage mounted for longitudinal sliding adjustment on the table, said carriage including depending sides slidably embracing the table therebetween, means mounted on said guides and engageable selectively in the openings for securing the carriage in adjusted position on the table, a fluid-actuated hammer mounted on the carriage, and means for supplying fluid under pressure to said hammer.

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