United States Patent

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[54] HOCKEY PRACTICE DEVICE FOR PROPELLING PUCKS

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[52] **U.S. Cl.** .....**124/11,** 124/30 R, 273/1 B

[51] **Int. Cl.** **F41f 1/04**

[58] **Field of Search** .....124/11, 13 R, 13 A, 30 R, 45

[56] **References Cited**

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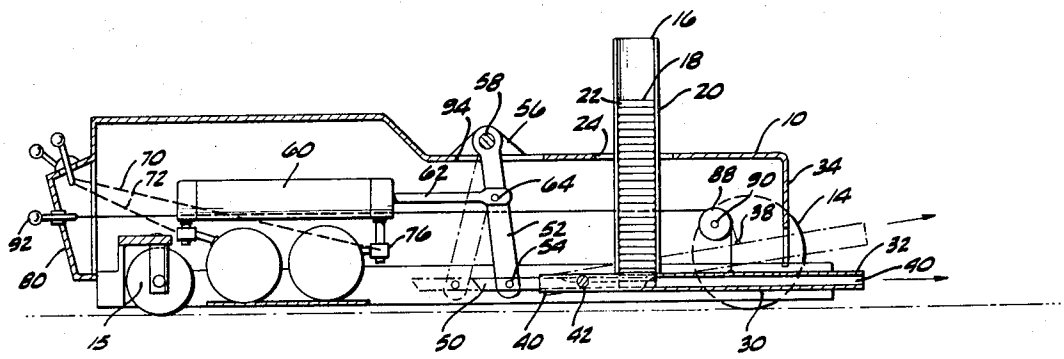
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Assistant Examiner—R. T. Stouffer
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[57] **ABSTRACT**

A machine for automatically shooting or propelling a hockey puck is described. The machine includes apparatus for automatically issuing a hockey puck from a hopper. The puck is then dropped into an aiming chute from which it is propelled by a piston driven hammer. The aiming chute is adapted to be raised or lowered to propel the puck therefrom at different levels off of the ice. For ease in maneuvering across the ice, the machine is placed on wheels.

5 Claims, 4 Drawing Figures



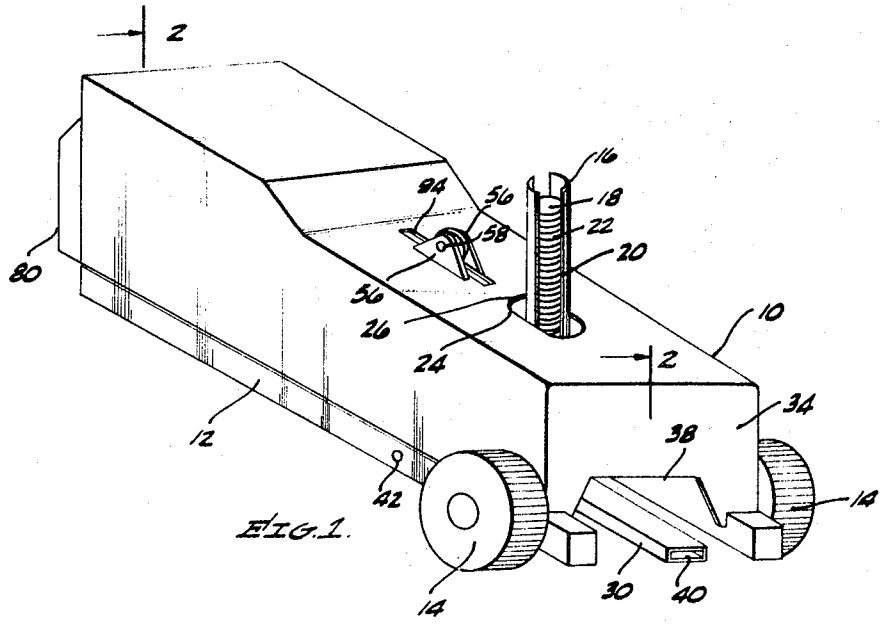


FIG. 1.

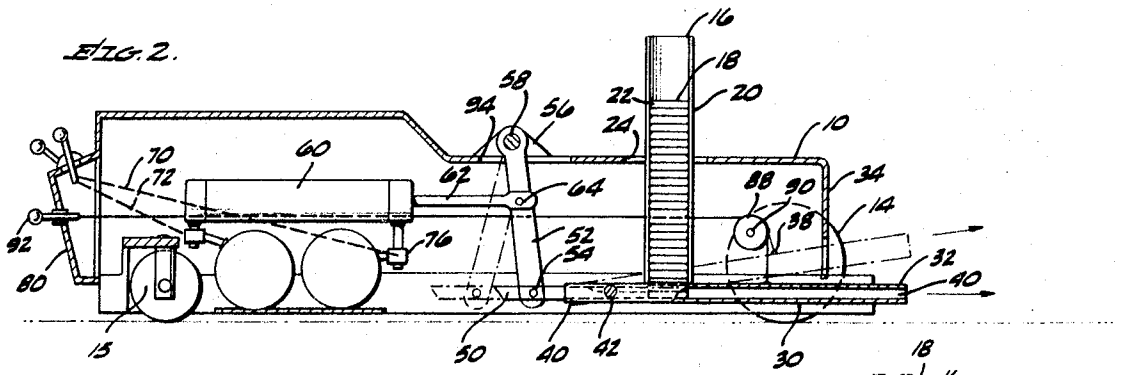


FIG. 2.

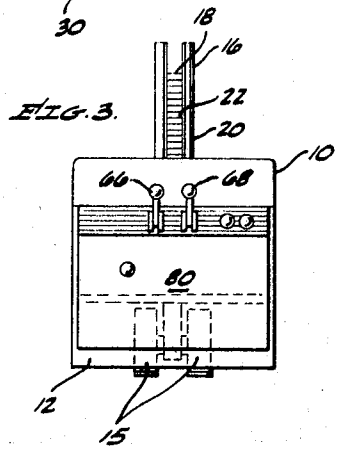


FIG. 3.

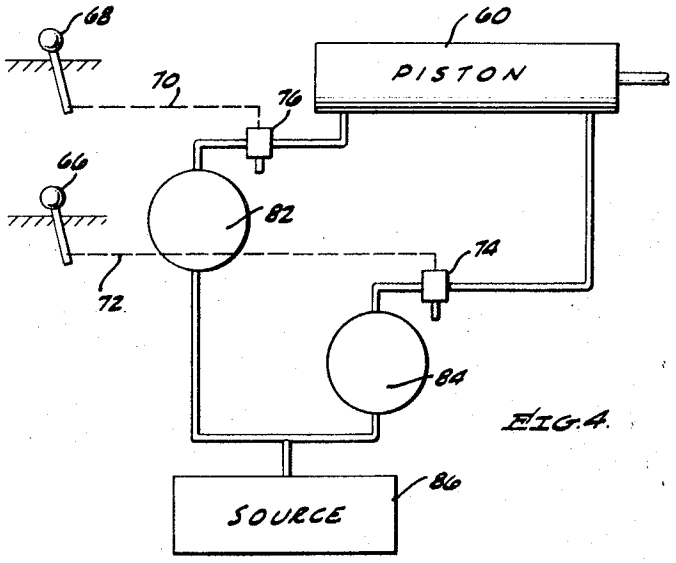


FIG. 4.

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HOCKEY PRACTICE DEVICE FOR PROPELLING PUCKS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to hockey training apparatus and more particularly to a novel and improved machine for propelling hockey pucks toward hockey players during practice or the like.

2. Discussion of the Prior Art

To improve the skill of any player involved in sporting activities, a player must continually practice. This holds especially true for hockey players. For example, it is now the custom for players to line up and propel hockey pucks at the goalie. This has two effects, first to improve the skills of the shooter, but more important, to give the goalie practice in catching and blocking the puck. This type of practice is less than adequate, the reason being that the goalie needs more practice time tending his goal than the other players need shooting. Further, the other players need to spend their time on other practice activities, i.e., passing, stick handling, and setting up certain plays. When the other players are engaged in the other practice activities, there is no means in which the goalie can continue to practice. Hence, he must wait for the other players to finish in order to continue his own practice.

Another real need is to provide shots toward the goalie in given areas. Should, for example, the goalie have a certain area in which he is weak, he would naturally want a repeated number of shots in that area, for example, a high shot over his left shoulder, which requires a backhand catch or knockdown with his right glove hand. The hockey players, no matter how skilled, are not able to give the repeated shots in this area, especially the number required to improve the goalie's skill in a relative short period.

Thus, it can be seen that a need has developed for a machine which can continually propel hockey pucks into a given area. This machine should be of the type which can propel the pucks at a relatively high speed and yet be able to shoot the puck successively into a given area.

SUMMARY OF THE INVENTION

Briefly described, the present invention comprises apparatus for propelling the hockey puck towards a goalie or player and including a hopper which is adapted to hold a plurality of pucks. Means are included for issuing a hockey puck one at a time into a chute. The chute has a first open end in which a hammer is propelled in a plunger-like form into the chute and is capable of engaging the hockey puck. The other end of the chute is open by which the hockey puck can be propelled therefrom. The chute is adjustable on vertical angles in order to aim the puck at different angles from the ice. Means are provided in the form of a cylinder, a dual active cylinder or the like which is used to activate the hammer which forces the plunger.

The device of this invention is capable of being maneuvered over the ice by having wheels attached thereto and can be easily manipulated by a single player from, for example, the rear portion of the driven machine. By this invention, a single trainer, coach, or even an unskilled hockey player can control the device to enable the goalie, for example, to have continual practice without involving the other players.

Further, the device is useful for propelling hockey pucks towards other players to practice their catching and passing techniques.

DESCRIPTION OF THE DRAWINGS

These and other features and advantages will become more apparent to those skilled in the art, when taken into consideration with the following detailed descriptions wherein like reference numerals indicate like and corresponding parts throughout the several views and wherein:

FIG. 1 is a perspective view of one embodiment of this invention;

FIG. 2 is a section line taken along the lines 2—2 of FIG. 1 and shows the internal mechanisms of this apparatus;

FIG. 3 is a rear view of the device shown in FIGS. 1 and 2 illustrating the control mechanisms used for operating this device; and

FIG. 5 is a schematic drawing of the hydraulic system used for propelling the pucks.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to FIG. 1, there is shown a view of one preferred embodiment of this invention. The device illustrated is a portable and movable machine comprising a body portion **10**, which includes a frame **12**. The frame is supported by wheels **14** and **15**, which are used for maneuvering the machine of this invention both on and off of the ice. The body portion frame and wheels are connected together in any suitable manner and can be composed of any suitable material. For example, the body portion **10** may be comprised of aluminum or plastic, and the frame portion **12** may be comprised of steel or iron, while the wheels **14** and **15** are best constructed of rubber.

In this embodiment the rear wheels **15** are shown pivotally mounted to the rear of the body portion **10** for ease in maneuvering the entire machine. A hopper **16** is vertically positioned near the forward end of the body **10** and is connected thereto in any suitable manner. Hopper **16** may be cylindrical in shape and be capable of holding a plurality of hockey pucks **18** as shown therein.

Slots **20** and **22** may be provided on either side of the cylindrical hopper **16** to provide for ease of positioning or removing the hockey pucks **18** into and out of the hopper **16**.

Hopper **16** is positioned into a hole **24** whereby hole **24** may be elongated in the rear portion **26** thereof.

A chute **30** is pivotally mounted to the frame **12**. The chute **30** is positioned horizontally under the body **10** and has one end **32** which extends from the front portion **34** of the body **10**. The front portion **34** may have a notch or slot **38** therein to receive the chute **30**. The chute is pivotally mounted from its rear portion **40** by a pivot pin or axle **42**. There is provided in the proper construction of this invention, a single pin **42** on either side of chute **30** which is then rotatively mounted to the frame **12** in a suitable manner. The opening **44** of the chute **30** is sufficiently large enough to receive one of the hockey pucks **18** therein from the hopper **16**. The hopper **16** is vertically mounted to the top portion of the chute **30** and is capable of dropping a single puck into the chute at a time. Suitable means may be included to prevent other pucks from jamming the chute **30**.

Means are then provided to propel the hockey puck **18** down the chute **30** and towards a player if so desired. By this embodiment, means for propelling the hockey puck is provided in the form of a hammer **50**, which is to extend into the opening **44** of the chute **30**. The hammer **50** is pivotally mounted to a link **52** by a pivot **54**, which may be any suitable type of pivot such as a nut, bolt or rivet. The other end of link **52** is pivotally mounted to a pair of flanges **56** which are connected into the top portion of the body **10**. Again, the pivots on the top portion of link **52** may be in the form of a threaded member or a rivet or the like.

The hammer **50** is driven into the chute **30** by a piston-cylinder assembly **60**. This assembly is preferably a dual action type in which the piston is driven from two ends to assure fast forward and return action of a shaft **62** extending therefrom. Shaft **62** is pivotally mounted to the link **52** at a pivot point **64**. The dual acting piston-cylinder assembly **60** is controlled by control arms **66** and **68** by means of mechanical linkage **70** and **72** which operate valves **74** and **76** respectively.

Preferably, the control arms **66** and **68** are mounted on a rear portion **80** of the body **10**. This rear portion may extend in a suitable manner to allow ease in manipulating a control arm **66** and **68**. Piston-cylinder assembly **60** may be mounted firmly to the frame **12** in a suitable manner and the mechanical linkages between the valves **74** and **76** and the control arm **66** and **68** are not shown in detail in that their construction may be presented in any suitable manner and still remain

within the spirit and scope of this invention. The valves **76** and **74** are connected to a pair of reserve tanks **82** and **84** respectively which may, in turn, be connected to a source **86** which may be either a reserve source or an outside source of supply for refilling the tanks **82** and **84** as shown in FIG. **4**.

The chute **30** is adjustable by being angularly rotated on its pin **42**. This is accomplished by the pulley **88** which is pivotally mounted by pivot **90** which may extend into the body portion **10** in a suitable manner, and having a cable or the like affixed to preferably the forward portion of the chute **30** and leading back to the control area **80** and into a knob **92**. By manipulation of this knob, for example, by pulling it forward or being threaded in a manner where it can be screwed in and out, the forward portion of the chute **30** is capable of being upwardly lifted in a manner shown by the dashed arrows in FIG. **2**. Because the hammer **50** is pivotally mounted on a pivot point **54** and the shaft **62** is pivotally mounted, the angle assumed by the chute **30** will not affect the operation of the propelling mechanism. Further, a slot **94** is provided in the top portion of the housing **10** to which the flanges **56** and **56** are positioned near. Clearance is provided for proper movement at any angle of the chute **30**. Further, the elongated portion **26** of the hole **24** allows for backward rotation of the hopper **16** so that this adjustment may be properly made. Note that the chute **30** can be moved in a horizontal angle by moving the entire machine on the rear wheels **15**.

Having thus described but one preferred embodiment of this invention, what is claimed is:

1. A hockey practice device for propelling hockey pucks in a given direction, and said device comprising:

a frame;

a body portion disposed on said frame;

a chute having a first end pivotally mounted to said frame and a second end for propelling hockey pucks therefrom;

a hopper extending through said body portion and being interconnected to said chute to dispense hockey pucks into said chute;

a plunger extending into said chute and adapted to engage the hockey puck dispensed therein;

a link having one end pivotally mounted to said plunger and the other end pivotally mounted to the top of said body portion;

a piston-cylinder assembly secured to said frame and including a piston having a shaft pivotally mounted to said link;

means for actuating said piston-cylinder assembly and thereby causing the hockey puck to be propelled from said chute.

2. The hockey practice device as defined in claim **1** wherein said actuating means includes:

air chamber means for holding a supply of compressed air;

valve means coupled between said air chamber means and said piston-cylinder assembly;

control means mounted to said body portion for activating said valve means.

3. The hockey practice device as defined in claim **1** and further comprising means for adjusting the angle of said chute.

4. The hockey practice device of claim **3** wherein said means for adjusting the angle of said chute comprises a pulley rotatably mounted on said body portion above said chute; a chute angular position control; and a cable passing over said pulley and coupled between said control and said chute; whereby the vertical angular position of said chute is positionable by said control.

5. The hockey practice device as defined in claim **1** wherein said hopper is cylindrically shaped and is positioned to extend vertically above said chute and is adapted to hold a stack of hockey pucks therein.

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