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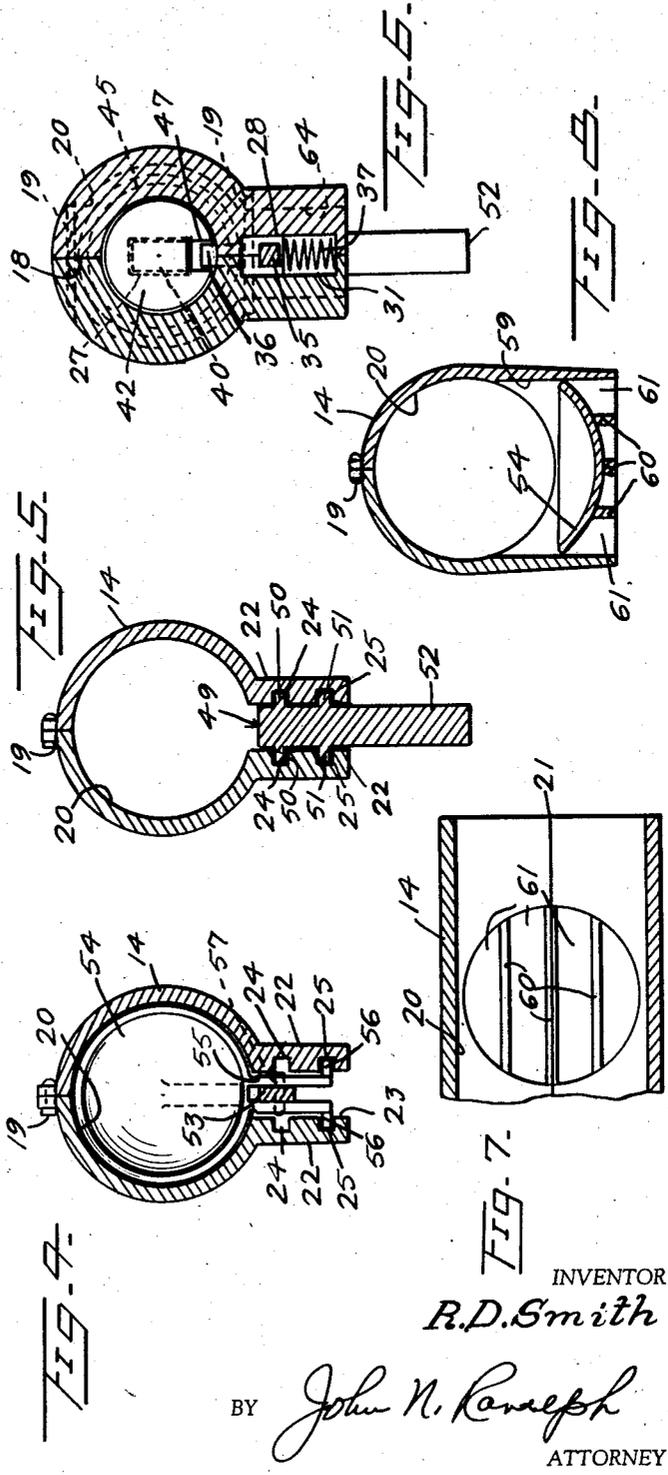
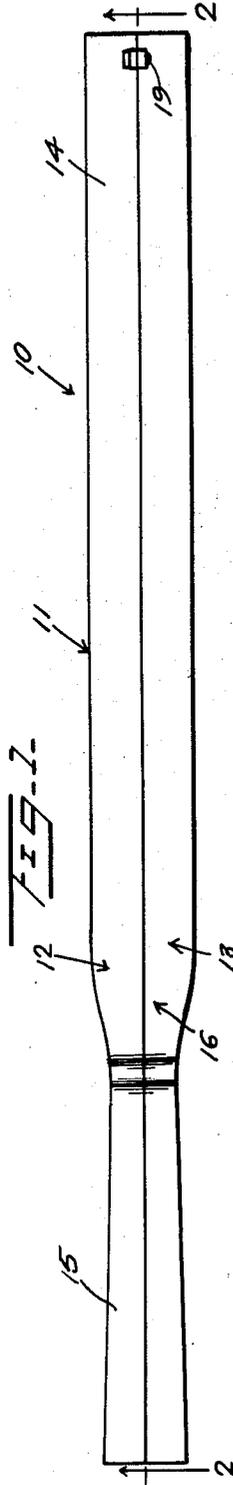
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2,948,275

SNOWBALL MAKER AND LAUNCHER

Filed Aug. 20, 1958

2 Sheets-Sheet 1



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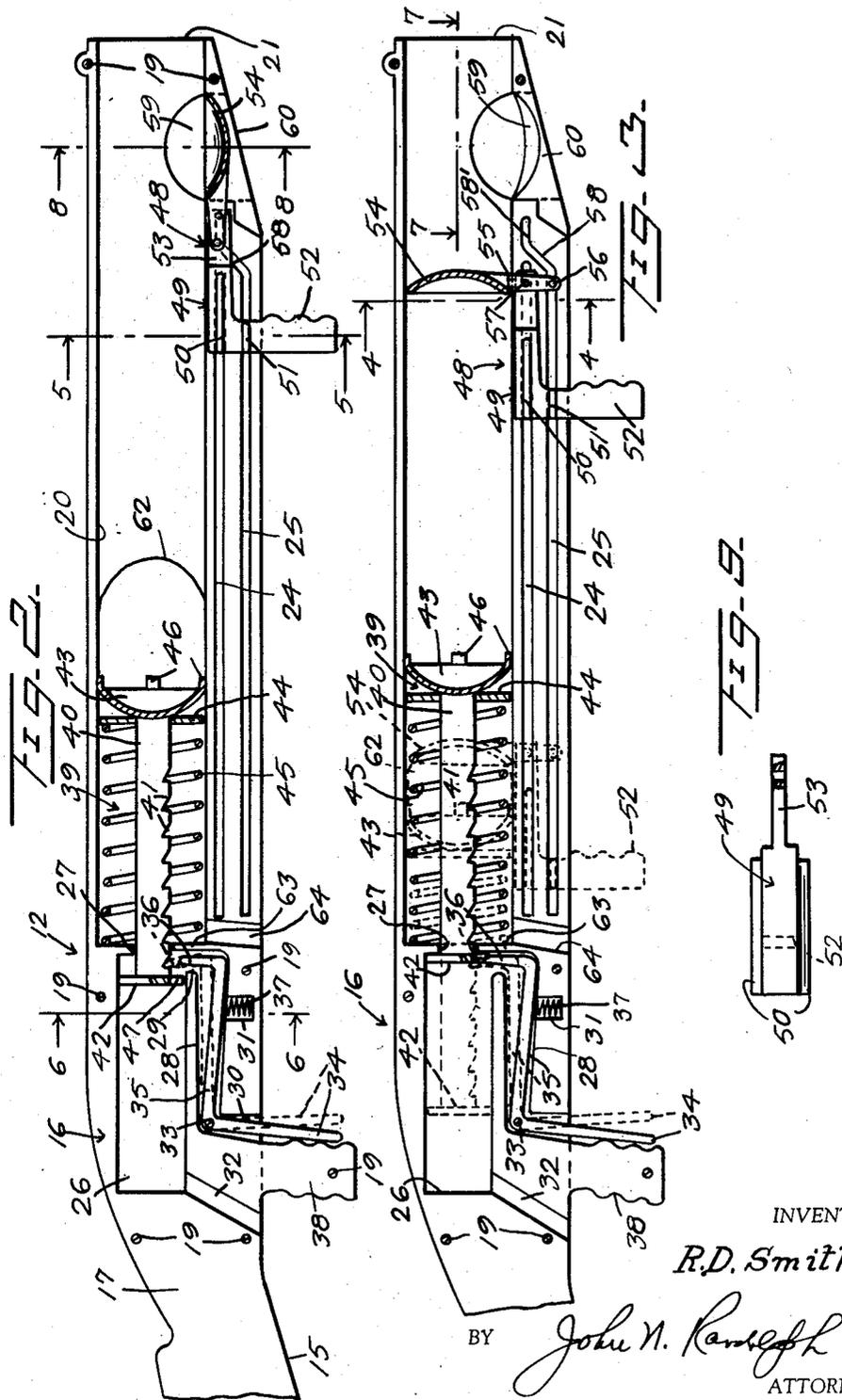
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SNOWBALL MAKER AND LAUNCHER

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2 Sheets-Sheet 2



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SNOWBALL MAKER AND LAUNCHER

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5 Claims. (Cl. 124—27)

This invention relates to a toy launcher or gun having novel means for forming therein a compressed mass of snow and for thereafter projecting or launching said compressed mass, as a projectile, from the gun or launcher.

More particularly, it is an aim of the present invention to provide a manually actuated pump mechanism for moving a mass of snow rearwardly of the launcher barrel and for thereafter compressing the mass between a part of the pump mechanism and the head of a plunger mechanism, while said pump mechanism is also functioning for retracting the plunger mechanism, so that when the pump mechanism is again displaced forwardly of the launcher barrel, the plunger mechanism will remain in a retracted cocked position with the compacted snow mass directly in advance thereof ready to be propelled from the launcher upon release of the plunger mechanism.

Still a further object of the invention is to provide a launcher of the aforescribed character having novel means for moving a piston element of the pump mechanism to a seated position in a recess of the launcher barrel, in which position said piston element will not obstruct movement of the compressed mass as it is projected from the launcher.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a top plan view of the launcher;

Figure 2 is an enlarged fragmentary longitudinal sectional view thereof, taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 2 with certain of the parts disposed in different positions from the positions thereof as seen in Figure 2;

Figure 4 is an enlarged transverse sectional view taken through the launcher, substantially along the line 4—4 of Figure 3;

Figures 5 and 6 are cross sectional views of the launcher, taken substantially along planes as indicated by the lines 5—5 and 6—6, respectively, of Figure 2;

Figure 7 is an enlarged fragmentary horizontal sectional view taken substantially along a plane as indicated by the line 7—7 of Figure 3;

Figure 8 is an enlarged cross sectional view of the launcher taken substantially along a plane as indicated by the line 8—8 of Figure 2, and

Figure 9 is an enlarged top plan view, partly in section, of one part of the pump mechanism, shown removed from the launcher.

Referring more specifically to the drawings, the snowball maker and launcher in its entirety is designated generally 10 and includes an elongated launcher body, designated generally 11 and which is composed of two corresponding longitudinal halves 12 and 13. The launcher body 11 as disclosed simulates a rifle; however, as the description proceeds it will be readily apparent

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that the launcher could be constructed to simulate a hand weapon such as a pistol or revolver. The launcher body 11 includes an elongated barrel 14, constituting one end thereof, a stock 15, constituting the other end of said body 11, and a receiver portion 16 which is interposed between adjacent ends of the stock 15 and barrel 14.

As seen in Figures 2 and 3, the launcher half 12 has an inner side or face 17 which is disposed in abutting engagement against a corresponding inner side or face 18 of the other, right hand, launcher body section 13. Said halves 12 and 13 of the launcher body 11 are secured together by fastenings 19 which extend through abutting portions of said inner faces 17 and 18.

The barrel 14 has a substantially circular bore 20 extending from end-to-end thereof and which opens outwardly of the forward end of the barrel 14 at the muzzle 21. Corresponding halves of the bore 20 are formed by each body section 12 and 13. Said body sections 12 and 13 have downwardly extending transversely spaced guide portions 22 which are disposed beneath the barrel 14 and which form an elongated slot 23 which is open at its bottom and which opens upwardly into the bottom portion of the bore 20. The guide portions 22 have opposed upper guide grooves 24 and lower guide grooves 25, which open into the slot 23.

The receiver 16 of the launcher body has an elongated longitudinally extending chamber 26 which is provided with a restricted opening 27 at its forward end, which opens into the rear end of the bore 20. The receiver 16 has a recessed portion 28 disposed beneath and extending longitudinally of the chamber 26. The recessed portion 28 has an opening 29 at its forward end which opens upwardly into the forward end of the chamber 26 and a downwardly extending opening 30 at its rear end which opens outwardly of the bottom of the receiver. The receiver 16 is also provided with a socket 31 which opens upwardly into the bottom of the recessed portion 28, near the forward end thereof. A drain bore 32 extends downwardly and rearwardly through the receiver 16 from the rear end of the chamber 26 and opens outwardly of the underside of said receiver. The portions 26 to 32 are formed in both launcher body sections 12 and 13.

An angular lever is mounted for rocking movement in the recessed portions 28 and 30 and is pivotally mounted at its apex by a pivot pin 33 at the rear end of the recessed portion 28. Said lever includes an arm 34 extending downwardly from the pivot 33 through the recessed portion 30 and to substantially below the underside of said receiver 16, and which arm 34 forms a trigger. The other arm 35 extends forwardly from the pivot 33 longitudinally of the recessed portion 28 and has an upturned forward end 36 which extends upwardly through the opening 29 and forms a sear. A small compression spring 37 is mounted in the socket 31 and bears against the underside of a portion of the lever arm 35 to urge said lever arm 35 and the sear 36 upwardly about the pivot 33 and to urge the trigger 34 to swing forwardly. A handgrip 38, formed partially by each body section 12 and 13, extends downwardly from the receiver 16, between the recessed portion 30 and bore 32 and which is normally disposed behind and spaced from the exposed free end of the trigger 34.

A plunger, designated generally 39, includes an elongated bar 40 which fits slidably and nonrotatably in the opening 27. The bottom edge of the bar 40 is provided with longitudinally spaced notches 41 to be selectively engaged by the tip or nose of the sear 36. Said bar 40 has a disc shaped head 42 at its rear end which fits slidably in the chamber 26 and which supports the notched bottom edge of the bar 40 out of engagement

with the lower end of the opening 27. The forward end of the bar 40 is fixed to the central portion of the convex rear side of a cup shaped plunger head 43 which is slidably mounted in the barrel bore 20 and which has a concave forward side. A disc 44 of metal or other rigid material is mounted on the bar 40 and bears against the rear side of the plunger head 43 to provide an abutment for the forward end of a compression spring 45 which is disposed loosely around said bar 40 and loosely within the rear portion of the bore 20. The rear end of the spring 45 seats against the rear end of the bore 20. The periphery of the plunger head 43 is provided with circumferentially spaced forwardly projecting lugs or fingers 46. As seen in Figure 6, the disc 42 is provided with a downwardly opening notch 47 which is wider than the sear 36.

A pump, designated generally 48, includes an elongated slide 49 which is reciprocally mounted in the slot 23 and which has upper ribs 50 and lower ribs 51 projecting from opposite sides thereof. The ribs 50 and 51 extend longitudinally of the slide 49 and slidably engage in the guide grooves 24 and 25, respectively, for slidably connecting said slide to the guides 22 to prevent rocking movement of the slide relative thereto. The slide 49 is provided with a grip 52 which extends downwardly from the slot 23. The slide 49 has an elongated forward end portion 53 which is substantially narrower than the remainder of said slide and which is disposed forwardly of the ribs 50 and 51 and above the level of said lower ribs 51. The pump 48 includes a dished piston 54 which is sized to fit slidably in the bore 20, as seen in Figures 3 and 4, and which has a concave rear side and a convex forward side. The piston 54 has a bifurcated rigid extension 55 which projects downwardly from a part of the periphery thereof and which fits loosely in the slot 23. Lower ends of the furcations of said bifurcated extension 55 are provided with outwardly projecting pins 56 which slidably engage the lower guide grooves 25, and the forward part of the restricted slide portion 53 fits loosely between the upper portions of said furcations and is pivotally connected thereto by a pivot pin 57. As best seen in Figure 3, the lower guide grooves 25 have upwardly and forwardly inclined forward end portions 58 which extend upwardly beyond the forward ends of the upper guide grooves 24 and which may include straight forward end portions 58' which are disposed forwardly of and substantially in alignment with said upper guide grooves 24.

The bottom portion of the barrel 14, forwardly of the guides 22 and the forward groove portions 58', is provided in the bottom thereof with a circular concave depression 59, of a diameter corresponding to the diameter of the bore 20, the bottom of which is formed by transversely spaced longitudinally extending bars 60 which are relatively narrow so as to form therebetween slots 61 of considerable width. Said barrel cavity 59 is formed partially in the lower half of the bore 20, as seen in Figures 2, 3 and 8, and is disposed in close proximity to the muzzle 21.

Assuming that the pump 48 is in the position as seen in Figure 3 and that the launcher is being held with one hand of the user grasping the grip 38 and the other hand engaging the grip 52, forward pressure on the grip 52 will move the pivot 57 from its position of Figure 3 toward its more forward position of Figure 2 and will cause the pins 56 to travel up the inclined groove portions 58. This upward travel of the pins 56 will cause the piston 54 to swing clockwise about its pivot 57 as it is moved forwardly from its position of Figure 3, so that said piston will assume a position seated in the recess 59, as seen in Figures 2 and 8. With the piston 54 thus disposed and with the plunger 39 in a forward position, as seen in Figure 2, the muzzle 21 is pushed into a mass of snow to fill the forward part of the bore 20 and it is

then withdrawn from the mass of snow. A rearward pull is then exerted on the grip 52 for causing the pivot 57 to move rearwardly and the pins 56 to slide rearwardly down the inclined groove portions 58 for swinging the piston 54 counterclockwise from its position of Figure 2 toward its position of Figure 3, for picking up the mass of snow, disposed above the piston 54, when positioned in the recess 59, so that the mass of snow will be disposed behind said piston when the piston assumes its upright position of Figure 3. A further pull on the grip 52 will move the piston 54 rearwardly and propel the snow rearwardly and into engagement with the concave forward side of the plunger head 43. Continued rearward movement of the pump piston 54 will compress the snow between said piston and the plunger head 43 and will thereafter force said plunger head and the bar 40 rearwardly. The nose of the sear 36 will be cammed out of each notch 41 as the bar 40 moves rearwardly and said sear will engage one of the forward notches 41 for latching the plunger 39 in a retracted, cocked position, as illustrated in dotted lines in Figure 3, with the spring 45 compressed. The pump mechanism 48 is then manually moved forward to return the piston 54 to its seated position in the recess 59. The compressed mass of snow 62 will remain in engagement with the forward side of the plunger head 43 when the piston 54 is manually displaced forwardly, due to a part of the compressed snow mass or projectile 62 adhering to the fingers 46.

The launcher 10 is then held similar to a rifle with the butt of the stock 15 against the shoulder, with one hand engaging the grip 38 and the other hand engaging the grip 52. A finger or fingers of the hand engaging the grip 38 engage around the trigger 34 and a squeezing pressure will swing the trigger 34 rearwardly about the pivot 33 to draw the sear 36 downwardly to a released position out of engagement with one of the notches 41 so that the spring 45 can project the plunger 39 forwardly for propelling the snow projectile 62 forwardly through the bore 20 and outwardly of the muzzle 21. The notch 47 is provided to pass over the nose of the sear when said sear nose is drawn downwardly to release the plunger 39 and so that the head 42 can strike the front wall 63 of the chamber 26 without contacting the sear 36.

Water from any snow melting within the launcher 10 can drain therefrom through the slot 23, through the bore 32 and through the opening 61. An additional drainage bore 64 may be provided to extend downwardly from the extreme rear end of the barrel bore 20.

Various modifications and changes are contemplated and may be resorted to, without departing from the function or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A snowball maker and launcher comprising a launcher body having an elongated barrel provided with an open muzzle end, a spring projected plunger including a plunger head mounted for longitudinal sliding movement in a rear part of the bore of said barrel, a combination trigger and sear pivotally mounted in the launcher body for latching the plunger in a retracted, cocked position, a pump unit including a slide, means slidably connecting said slide to a part of the launcher body for movement longitudinally of the barrel, a piston having a size and shape substantially corresponding to the cross sectional size and shape of the barrel bore and forming a part of said pump unit, means pivotally connecting a part of said piston to said slide, means slidably connecting the piston to a part of the launcher body and combining with the means connecting the piston to said slide for maintaining the piston in a position within the barrel and crosswise thereof for sliding movement toward and away from the plunger head and for causing the piston to swing outwardly and downwardly relative to the axis of the barrel as the piston approaches a forwardmost position adjacent the muzzle, and said barrel having a recess adjacent the

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muzzle thereof in which the piston seats in its forward-most position.

2. A snowball maker and launcher as in claim 1, said piston having a concave rear side and said plunger head having a concave forward side, between which sides a mass of snow is adapted to be compressed to form a projectile and for forcing the spring projected plunger rearwardly when the pump piston is displaced rearwardly in the barrel.

3. A snowball maker and launcher as in claim 1, said launcher body having spaced walls forming guide members extending longitudinally of the barrel and providing a longitudinally extending slot opening into said barrel and outwardly of the launcher body, said slide being reciprocally mounted in said guide slot, said walls having grooves opening into the guide slot, said slide having ribs projecting laterally therefrom and slidably engaging in said grooves, said piston having an extension projecting into said guide slot and connected to said slide for forming said means pivotally connecting the slide and piston, and said means slidably connecting the piston to the launcher body including pins projecting laterally from the piston extension and inwardly opening grooves formed in said walls and slidably engaged by said pins, said last mentioned grooves having upwardly and forwardly inclined forward portions for causing outward swinging movement of the piston within the barrel during the latter part of the forward movement of the piston.

4. In combination with an elongated launcher body including a barrel having an open muzzle end, a spring projected plunger unit slidably mounted in a rear portion of the bore of the barrel and spring urged forwardly to

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a projected position, and a manually actuated combination trigger and sear unit for releasably latching the plunger unit in a retracted, cocked position; a pump unit including a piston disposed for sliding movement within the barrel and longitudinally thereof, said piston having a size and shape substantially corresponding to the cross sectional size and shape of the barrel bore, a manually actuated slide slidably connected to the launcher body, means pivotally connecting the piston to the slide, said piston being displaceable rearwardly in the barrel for moving a mass of snow rearwardly within the barrel and for compressing the mass of snow between the piston and a head, constituting the forward end of the plunger, and for thereafter displacing the plunger rearwardly to a retracted cocked position, means slidably connecting the piston to the launcher body and cooperating with the pivotal connection of the piston and slide for swinging the piston outwardly of the barrel bore at the forward extremity of movement of said piston.

5. A combination as defined by claim 4, wherein said launcher body is provided with a recess located adjacent the barrel muzzle in which said piston seats in the forward extremity of movement thereof.

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