April 10, 1956 S. J. PROCOS 2,741,159

MASTER BOMB RAINER

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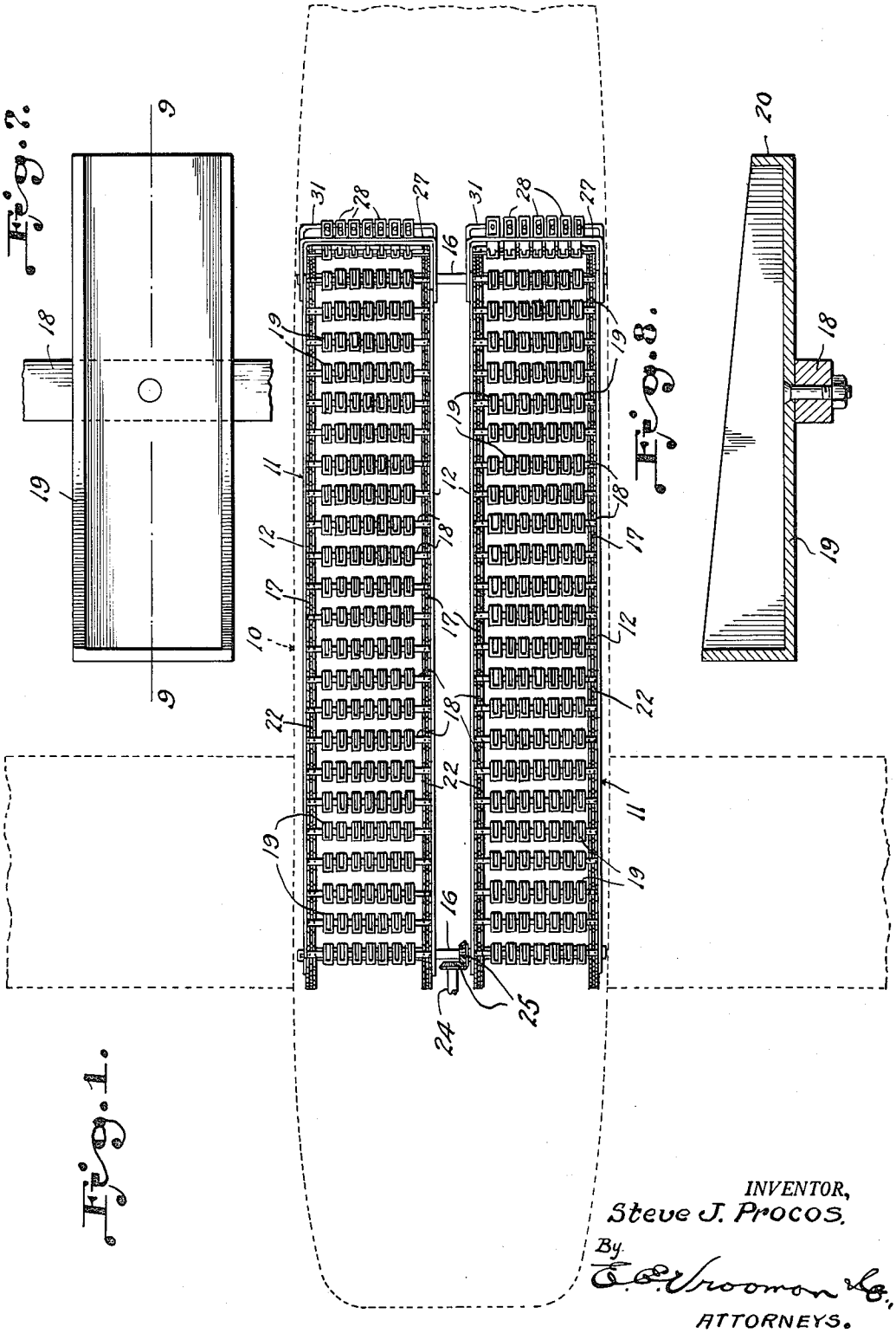


Fig. 1.

Fig. 2.

Fig. 3.

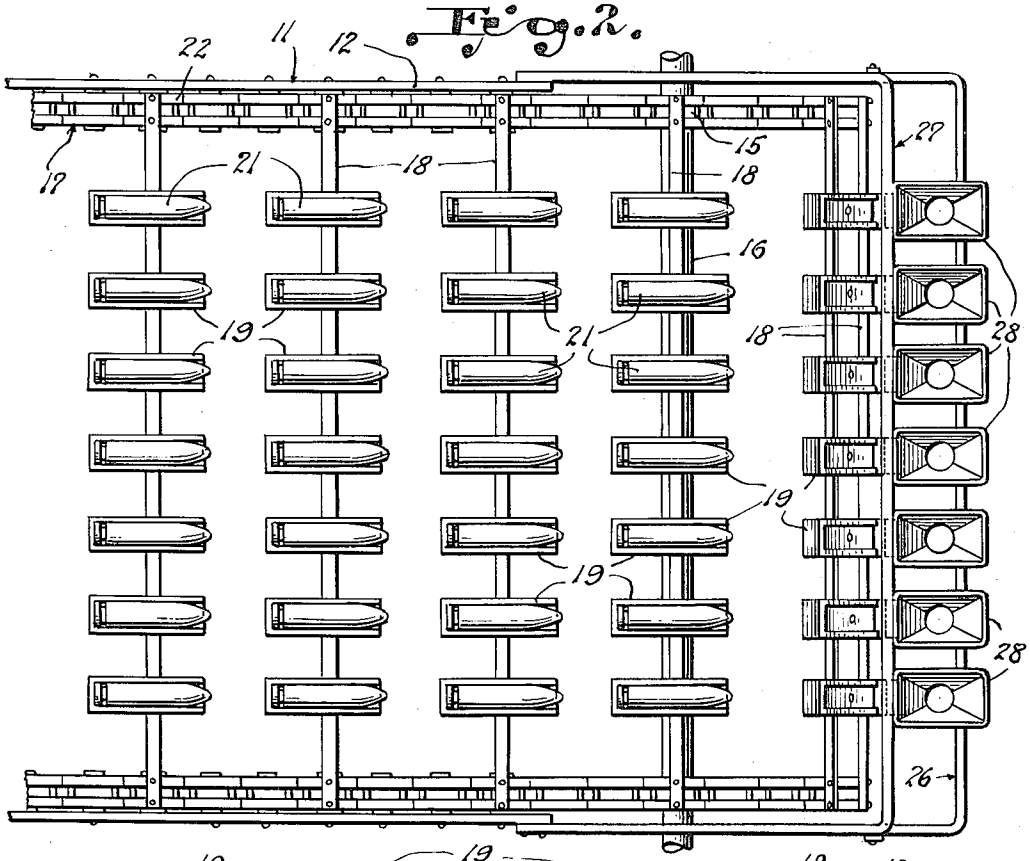
INVENTOR,
Steve J. Procos.
By
E. E. Broomon & Co.
ATTORNEYS.

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MASTER BOMB RAINER

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Fig. 2.



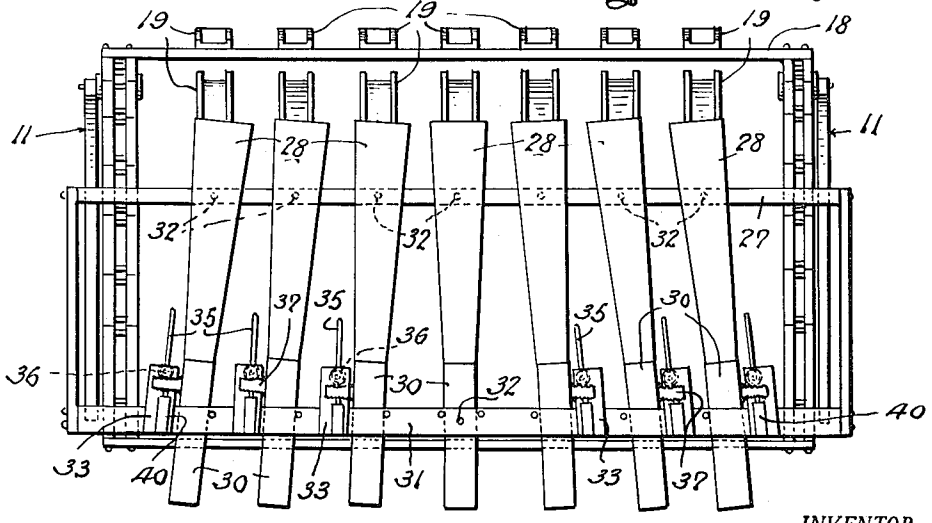


Fig. 3.

INVENTOR,
Steve J. Procos.
BY
E. C. Crooman & Co.,
ATTORNEYS.

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Fig. 4.

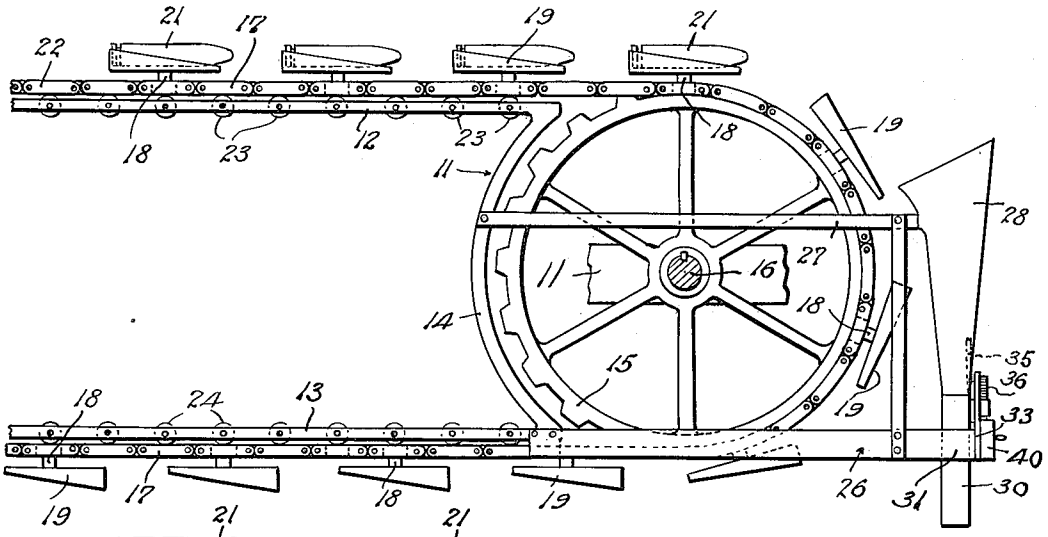


Fig. 5.

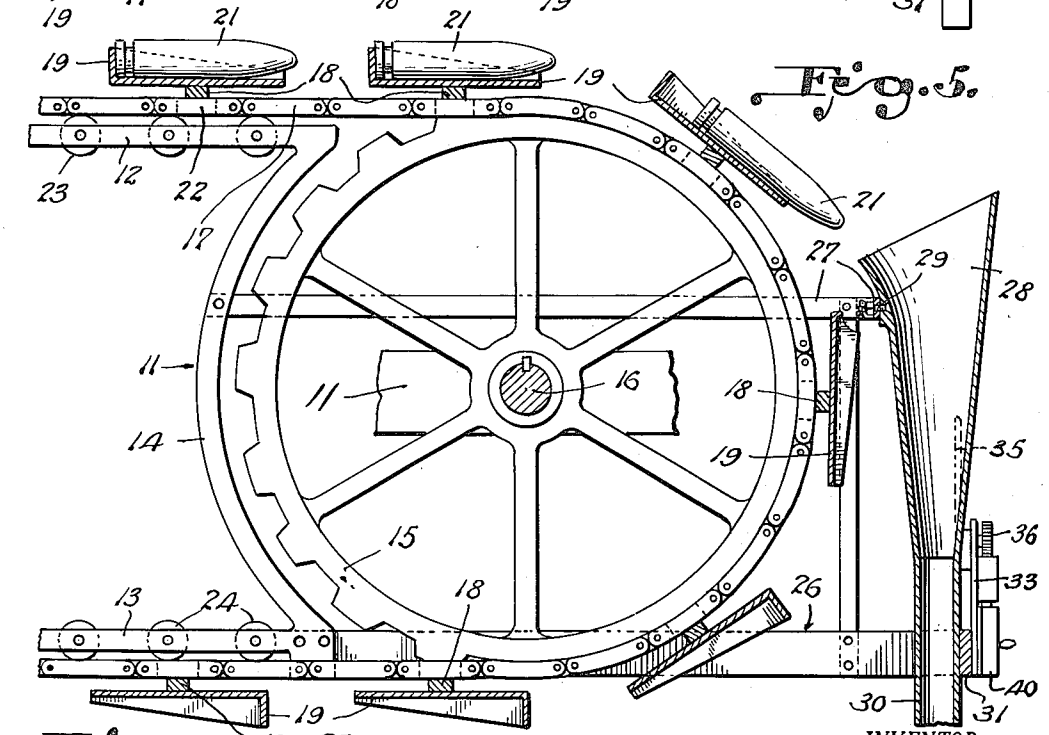
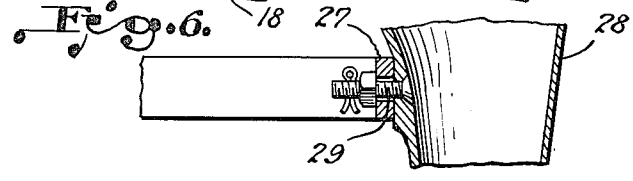


Fig. 6.



INVENTOR,
Steve J. Procos.
BY
E. O. Crooman & Co.,
ATTORNEYS.

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Fig. 9.

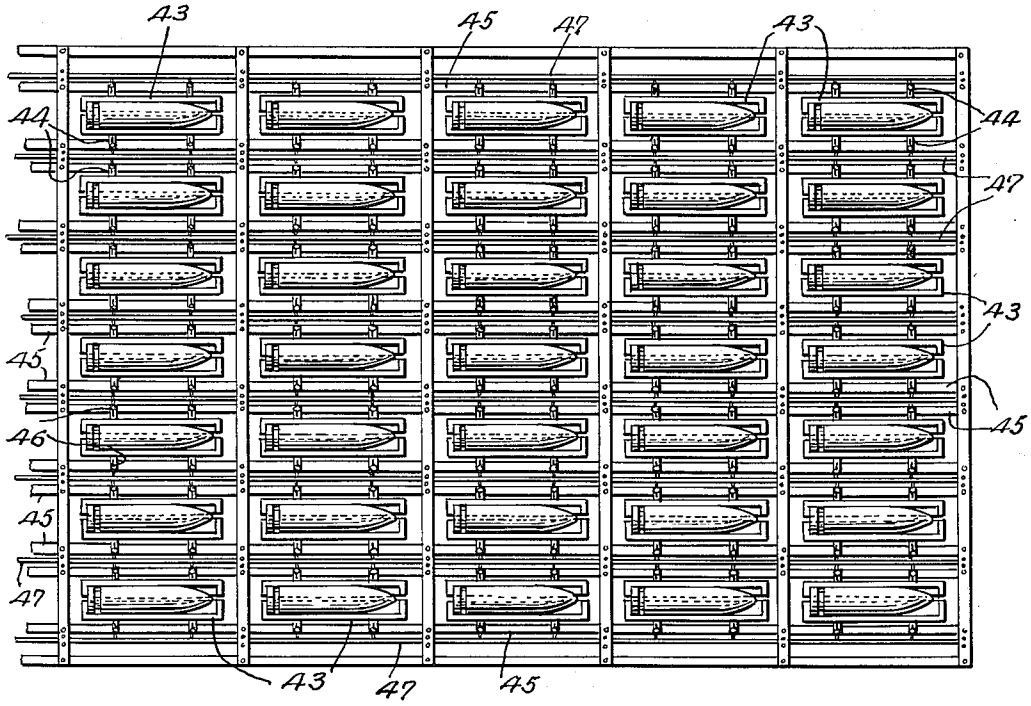


Fig. 10.

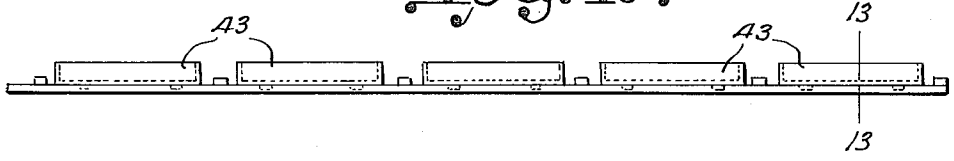


Fig. 11.

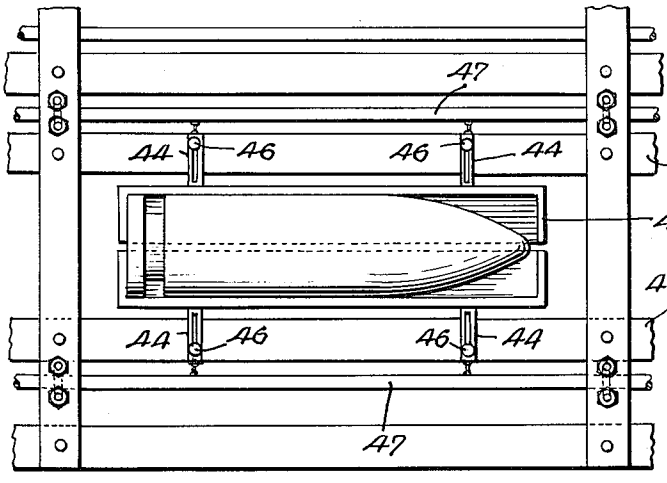
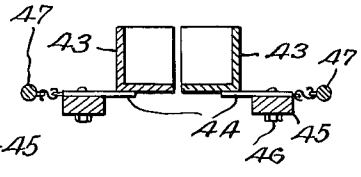


Fig. 12.



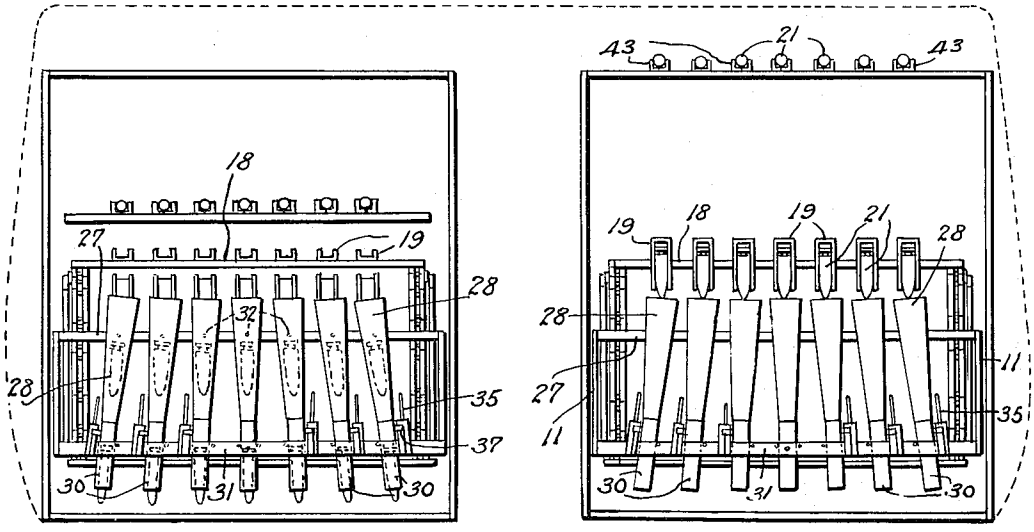
INVENTOR,
Steve J. Procos.
BY
E. G. Broomand Co.,
ATTORNEYS.

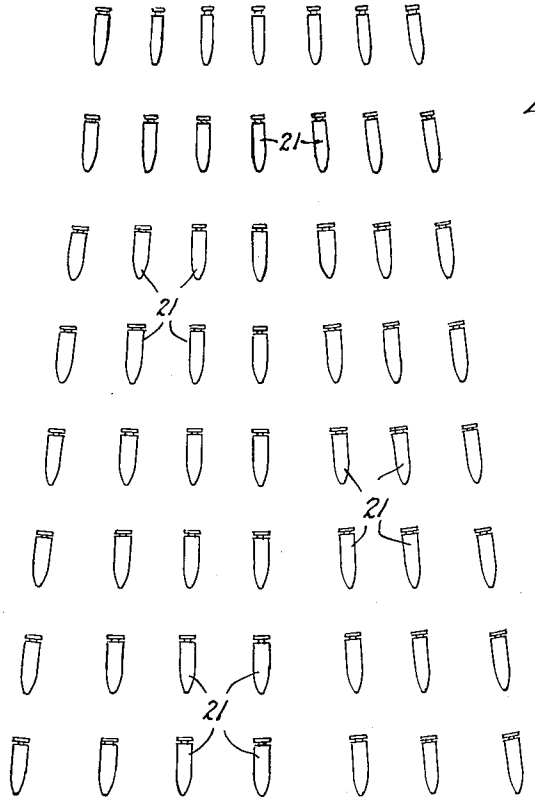
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MASTER BOMB RAINER

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Fig. 15.





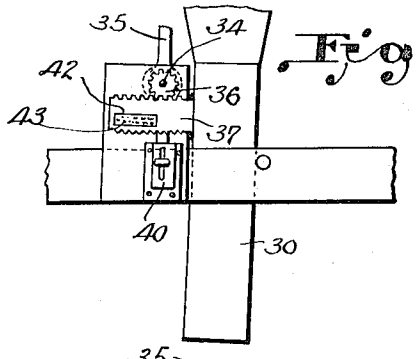


Fig. 13.

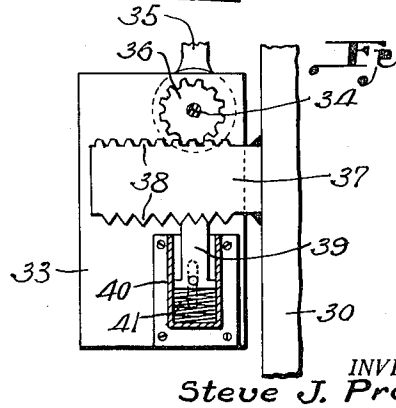


Fig. 14.

INVENTOR.
Steve J. Procos.
BY
E. C. Crooman & Co.
ATTORNEYS.

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2,741,159

MASTER BOMB RAINER

Steve J. Procos, Chicago, Ill.

Application July 8, 1952, Serial No. 297,731

1 Claim. (Cl. 89—1.5)

This invention relates to a bomb dropping device for airplanes.

One important object of the invention is to provide novel means whereby a multiplicity of bombs may be carried by an airplane and discharged therefrom in groups, each group consisting of a plurality of bombs.

A second important object of the invention is to provide a device of this character wherein the bombs are loaded on the airplane in a series of rows extending longitudinally of the plane and each row consisting of bombs.

A third important object of the invention is to provide a device of this character wherein the rows are driven by endless chains and bombs are discharged from the rows simultaneously on reaching one extremity of the endless chain device.

A fourth important object of the invention is to provide a device of this character having the multiplicity of bomb pockets carried by endless chains, each of said pockets holding an individual bomb and discharging these bombs as the endless chain turns to move from its forward direction to its rearward direction.

A fifth important object of the invention is to provide such bomb carrying pockets with open ends so that tilting of the pockets effects the discharge of the bombs.

A sixth important object of the invention is to provide a novel form of pocket consisting of two halves movable toward and from each other so as to hold a bomb when the halves are moved toward each other and to release the bomb when the halves are moved away from each other.

A seventh important object of the invention is to provide a novel chute arrangement for properly distributing the bombs as they pass out of the bomb holding pockets.

An eighth important object of the invention is to provide controlling means for regulating the passage of the bombs from the chutes, controlling means being arranged to effect proper distribution in accordance with the height of the airplane above the ground.

The invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly claimed.

In the accompanying drawings like characters of reference indicate like parts, and:

Fig. 1 is a plan view of one form of the bomb carrying apparatus, the airplane being shown in broken outline to indicate the position of this apparatus in the plane, the bombs being removed therefrom.

Fig. 2 is an enlarged fragmentary plan at the delivery end of a bomb carrying device.

Fig. 3 is an end view of Fig. 2, the view being taken from the right hand end thereof.

Fig. 4 is an enlarged detailed side view of that part of the device as shown in Figs. 2 and 3.

Fig. 5 is a view showing a further enlargement of the parts shown in Fig. 4 and showing the movement of bombs from the carrier to the chutes.

Fig. 6 is a fragmentary detail showing the manner of supporting the bomb chute.

Fig. 7 is a greatly enlarged plan view of one form of a bomb carrying pocket.

Fig. 8 is a similar view to Fig. 7 but showing a slightly modified form on the line 9—9 of Fig. 7.

Fig. 9 is a fragmentary view of a portion of the bomb carrier having split bomb pockets.

Fig. 10 is a side view showing a plurality of the pockets shown in Fig. 9.

Fig. 11 is an enlarged plan view of a portion of Fig. 9.

Fig. 12 is an enlarged fragmentary section on the line 13—13 of Fig. 10.

Fig. 13 is a detailed view showing a form of chute control.

Fig. 14 is a slightly enlarged section of such chute control.

Fig. 15 is an end view of two bomb delivery sections as installed in an airplane, the spreading of the bombs being illustrated below one of these sections.

In the embodiments of the invention as here shown, it is preferred that two general arrangements of bomb carrying dispensing means shall be used in the fuselage 10 of an airplane, one being on each side of the axis of the plane. Each of these devices, as best shown in Figs. 1 to 8, 10 and 14, consists of a pair of laterally spaced side frames indicated in general at 11. Each of these frames includes an upper rail 12 and a lower rail 13, the upper and lower rail being connected by arcuate members 14. In the space adjacent each end of the frame is mounted a sprocket wheel 15 carried by a shaft 16 suitably supported from the frame by any suitable means. The sprocket wheel for each frame is coplanar with the frame and around the sprockets of each frame is trained an endless chain 17. The chain of one frame is connected to the chain of the other frame by means of tie bars 18, on which are mounted bomb holding pockets 19, which may have one end fully open as in Fig. 7 or may have a slight rib or flange 20 extending between the sides of the pockets as at Fig. 8. These pockets are in laterally spaced relation and are there fixedly secured to the tie bars, the arrangement being such that the pockets of one tie bar are arranged in alignment with the pockets of adjacent tie bars so that longitudinal rows of pockets are formed as clearly shown in Fig. 1. In use, bombs are carried in the pockets which face upwardly, the pockets which face downwardly being those from which the bombs 21 have been discharged. In order to provide smooth movements of the upper run 22 of the chain, the upper rail 12 is provided with rollers 23, on which the chain travels. Rollers 24 are also provided on the lower rail 13 for the purpose of preventing slipping of the chain against the lower rail. At one end of the frames there is indicated in Fig. 1, a drive shaft 24, which is driven by any suitable means not deemed necessary here to be shown. This drive shaft is connected by bevelled gearing 25 with a sprocket shaft 16 at this end of the device. At the other end of the frames there is provided an auxiliary frame 26, which projects from the main frame beyond the sprockets and which is provided at its upper portion with a crossed bar 27. This crossed bar 27 carries the upper trumpet-like ends 28 of a series of chutes equal in number to and aligned with the rows of pockets 19. The connection of these upper ends 28 with the bar 27 is made in the form of a pivot 29 so that the lower delivery ends 30 of the chutes may rest against the lower cross bar 31 of the auxiliary frame.

As shown here there has been indicated seven rows of bombs and there are, of course, seven chutes. The central one of these seven chutes is fixed, as by a bolt 32, while the other chutes have their lower ends free for swinging adjustment on the pivots 28. In order to ob-

tain the adjustment of these lower ends the means best shown in Figs. 13 and 14 is provided. Each of these means includes a plate **33**, whereon is mounted a shaft **34**, which is rotated by a lever **35**. On this shaft **34** is fixed a gear **36**, which meshes with a rack member **37** welded to the lower end **30** of a chute. On the lower edge of the rack member **37** is a series of ratchet teeth **38** wherewith meshes a pawl **39** mounted in a guide **40** fixed to the plate **33**. Between the bottom of the guide **40** and the lower end of the pawl **39** is a coiled compression spring **41**. This ratchet and pawl arrangement is such that movement of the lever **35** will cause the ratchet to slide over the pawl, the teeth being at proper angles to permit this. When this pawl has engaged the ratchet then the adjusting device will be releasably locked. If desired, an opening **42** may be provided in the member **37** and indicia **43** will be formed on the plate **33** and observable through the opening **42**. This indicia may be graduated in accordance with the desired spreading of the bombs for different altitudes of the plane.

While seven rows of bombs and chutes are shown, any desired number may be used, as for instance, three to nine, or any other number of rows and bombing chutes.

In the form of the invention shown in Figs. 9 to 12, the bomb pocket **43** is split longitudinally so as to provide two halves which are adjustable to fit closely on the bomb depending on its diameter. These halves are supported by arms **44** from bars **45** and are guided by pins **46**. The arms **44** are attached at their outer ends to rods **47**, which by movement toward and from the bars **45** serve to open and close the halves of the pockets **43**.

The upwardly facing bomb pockets are filled with bombs. When at proper position in relation to the target, the motor controlling the shaft **24** is put into operation and the bomb loaded pockets move successively toward the delivery chutes, the bombs feeding from the pockets into the chutes as indicated in Figs. 4 and 5. The chutes, having had their lower ends adjusted to desired positions, then deliver these bombs in successive groups so that a multiplicity of bombs is rained from the airplane.

In Fig. 15 there is illustrated the manner in which two bomb delivery mechanisms mounted on the same airplane may be effectively used. As shown in the left hand portion of Fig. 15, the delivery section has just discharged a number of bombs while the right hand section has discharged another group of bombs and it will be observed that each row of bombs in the right hand section is delivered intermediate the bombs in the left hand section so that a substantially continuous downpour of bombs is effected. Also in Fig. 15 racks are shown above the transverse member of the upper frame thus providing for storage of extra bombs and enabling the delivery chains to be loaded in flight.

In the construction shown in Fig. 11 if it is desired, handles may be applied to the members **47** so that they can be manually operated to open or close the bomb trays either singly or as a group.

It is to be understood that the bomb delivering devices may be made in sections which can be disassembled and removed from the plane when it is desired to use the airplane without bombing equipment of this character, the section thus being capable of assembly within the fuselage of the airplane.

While I have described the preferred embodiments of the invention and illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates during the extensive manufacture of the same, and I, therefore, reserve the right to make such changes or alterations as shall fairly fall within the scope of the appended claim.

What is claimed, is:

In a bomb dispenser for airplanes, a pair of laterally spaced side frames each including an upper rail, pairs of sprocket wheels supported by said frames at the opposite ends thereof, said sprockets being coplanar with said side frames, endless chains running around said sprockets and having upper runs extending along and above said upper rails, tie bars connecting said chains and spaced therealong, bomb pockets fixed to said tie bars in laterally spaced relation, the pockets on the several bars being aligned one behind the other to form longitudinal rows, means to drive the sprockets at one end of said frames, rollers carried by said rails and supporting said upper runs, normally substantially disposed bomb chutes at one end of said frames and positioned to receive bombs from said pockets as the chains pass around the sprockets adjacent the bomb chutes to direct bombs into said chutes, each of said chutes including a rectangular top section outwardly flared and having a lip arcually inclined toward its adjacent pocket and cylindrical lower ends, means connected to said side frames for pivotally supporting the upper ends of said bomb chutes for lateral swinging adjustments of the lower ends of said chutes, and rack and pinion means connected between said side frames and off-center chutes for transversely adjusting the lower ends of said off-center chutes.

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