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BOMB SHIELD FOR SHIPS, BUILDINGS, AND OTHER STRUCTURES.

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2 SHEETS—SHEET 2.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

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BOMB-SHIELD FOR SHIPS, BUILDINGS, AND OTHER STRUCTURES.


To all whom it may concern:

Be it known that I, Max Jakobson, a citizen of the United States, and a resident of the borough of Manhattan, in the county of New York, have invented certain new and useful Improvements in Bomb-Shields for Ships, Buildings, and other Structures, of which the following is a specification.

My invention relates to means for protecting ships, buildings and other structures against explosive missiles (torpedoes, bombs, etc.) directed against them from above or from the sides. The object of my invention is to construct the shield in such a way that it will yield readily upon being struck, and cause the missile to bounce off or glance off so as to prevent explosion. In the preferred form of my invention, I employ inflatable cushions as shields, and within such cushions I dispose springs which will preserve a certain degree of elasticity even when the cushion is punctured, and which will also increase the resisting or repelling power of the shield, as will be fully set forth hereinafter.

Reference is to be had to the accompanying drawings, in which:

Figures 1 and 3 are longitudinal sections taken on lines 1-1 of Fig. 2 and 3-3 of Fig. 4, respectively, showing two forms of my improved bomb-shield;

Figs. 2 and 4 are corresponding plan views;

Fig. 5 is a plan view showing a third form of my bomb-shield;

Fig. 6 is a vertical section on line 6-6 of Fig. 5;

Fig. 7 is an elevation of a house, showing a number of my bomb-shields applied to its outside wall;

Fig. 8 is a vertical section through a fort provided with a roof composed of my improved bomb-shields;

Fig. 9 is a partial cross-section on line 9-9 of Fig. 8;

Fig. 10 is a partial plan view of another form of protected roof embodying my invention; and

Fig. 11 is a section on line 11-11 of Fig. 10.

In Figs. 1 to 6, I have shown a bag of square or other suitable shape, made of rubber A, or other material impervious to air, and provided with a valved nipple A' for inflating it by means of an air pump or otherwise. The inflatable bag is preferably covered with wool asbestos or like non-inflammable material B, so as to protect the rubber against catching fire. Within the inflatable bag I arrange springs tending to prevent its complete collapse; these springs may be of various types, thus in Figs. 1 and 2, I have shown a series of coiled springs C, similar to those employed in mattresses, while according to Figs. 3 and 4 the inflatable bag contains a plurality of independent flat arched springs C' arranged side by side and together occupying substantially the entire width of the bag, these springs being yieldable by means of slots e, therein, engaged by the retaining lugs e'. Obviously, I might use a single flat spring of a width equal to the aggregate width of the three springs shown, but I deem the arrangement shown preferable, as the independence of the several springs gives the bag or cushion greater local resiliency. In Figs. 5 and 6, I have indicated at C'' a fine woven wire spring (of the type employed for bed springs) which is secured by attaching thereto the inner ends of longitudinal helical springs C, the other ends of which are fastened to the end walls of the bag or cushion. When a bag of any one of these constructions is placed on a substantially level surface, say the roof of a building, and is inflated, its top will be lifted out of contact with the spring or springs, as indicated in Figs. 1, 3 and 6. Now, if an aerial bomb should strike this cushion or shield, the top will yield and the compressed air will to a certain extent check or break the force of the blow. As the top is thrust downward or inward by the missile, it will come in contact with some of the springs C or C', or with the spring C'', and this will not only accomplish a further reduction of the force of the blow, but the spring or springs, after being compressed to a certain extent, will by their rebound throw the missile away from the building and thus eliminate the danger of the bomb's crashing through the roof and wrecking the building.

While in some cases it might be desirable to keep the roof of the building, or the deck of a ship, etc., permanently protected by having it covered at all times during a war, with inflated cushions or bomb-shields of the character set forth, I consider that it would generally be preferred to place the shields in their protective position only upon the receipt of an alarm of danger from air craft or other bombardment. In this case,
the individual cushions could be stored readily in a suitable room; for instance they could be stacked or piled one on top of the other, either in their inflated condition, or preferably deflated. The rectangular shape of the shields would be particularly suitable for attaching them in this manner. When required for use, the shields would be so flexible that they could be easily rolled or folded up on a roller of the character of a shade roller, or even upon themselves, without any roller. The shields might be used without any provision for inflating them, in which case the springs alone would be relied upon to arrest the missiles and ward them off.

Shields of the character described would form units made of a size and weight to render them readily portable. These units could be applied on roofs, decks, or other level or moderately inclined surfaces, by simply laying them flat on such surfaces, one unit upon another or over others, so as to properly cover and protect the surface. When applied to the sides of a house or a ship, or to any surface on which the shields would not find a sufficient hold, they would be hung on hooks or other suitable supports, and for this purpose a loop of cord or wire might be secured permanently to the shield at one or more sides thereof, as indicated at D. This loop would be engaged with the hook or other support.

When applied to the sides of a ship below the water line, the shields would act as a protection against torpedoes, and in this case the shields might be used without inflation, or if they were inflated, it would be necessary to secure them firmly to prevent their buoyancy from bringing them to the surface of the water. Obviously, the improved bomb shield could be used in other locations, and I have given only a few examples to indicate how easily these shields lend themselves to prompt and efficient application under different conditions.

In Figs. 8 and 9 I have shown a fort or gun-position having a suitable post or mast E from which inclined pipes, such as E', extend toward the guns G. These pipes could be adjacent to each other (although not necessarily parallel), and adapted to serve as supports for cushions or bomb-shields H. These shields might be of any one of the constructions described above, only somewhat longer, so as to cover the length of the pipes E', as indicated at the left of Fig. 8; however, I might, as shown, employ cushions comprising simply a cover and stuffing of suitable resiliency. The upper end of each strip-like cushion could be secured permanently at the ridge of the roof, say to the mast E. When not in use, the cushions could be rolled up or folded, as indicated at the right in Fig. 8, and this could be done even if the cushions contained springs such as shown in Figs. 1 to 6. When required for protection, the cushions would be unrolled or pulled down and fastened to the pipes E' by suitable means, for instance by straps H', each having one end secured to the cushion permanently and the other detachably. Cushions of this character might also be used simply as awnings, to keep out the sun or rain.

In the construction illustrated by Figs. 10 and 11, E' may represent a ridge-beam of the roof and E", rafters extending from said beam and made as angle-irons with the flanges to receive and support the cushions H when they are let down to the position of use. The straps H' could be omitted in this case, the lower ends of the cushions being hooked or otherwise detachably fastened to the roof to keep them in their protective position.

I have illustrated several preferred and satisfactory forms of my invention, but it is obvious that changes may be made therein within the spirit and scope thereof, as defined in the appended claims.

I claim:

1. A bomb shield comprising an inflatable bag, and springs located within the bag and having ends secured to one side of the bag, said springs extending toward the opposite side of the bag but being out of contact with such opposite side when the bag is inflated.

2. A bomb-shield comprising an inflatable bag, and a spring structure located within the bag and secured to one side thereof, and out of contact with the opposite side of the bag when the latter is inflated, whereby the impact of an object striking the shield will be checked progressively by the successive cushioning action of the compressed air contained in the bag and of said spring structure.

3. A bomb-shield comprising an inflatable bag, and a spring structure located within said bag and secured thereto at one side thereof, said structure extending from said side toward the opposite side of the bag and being freely movable adjacent to such opposite side and out of contact therewith when the bag is inflated.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

MAX JAKOBSON.

Witnesses:

D. LEWIS MATTREM,
MOB M. WEINBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."