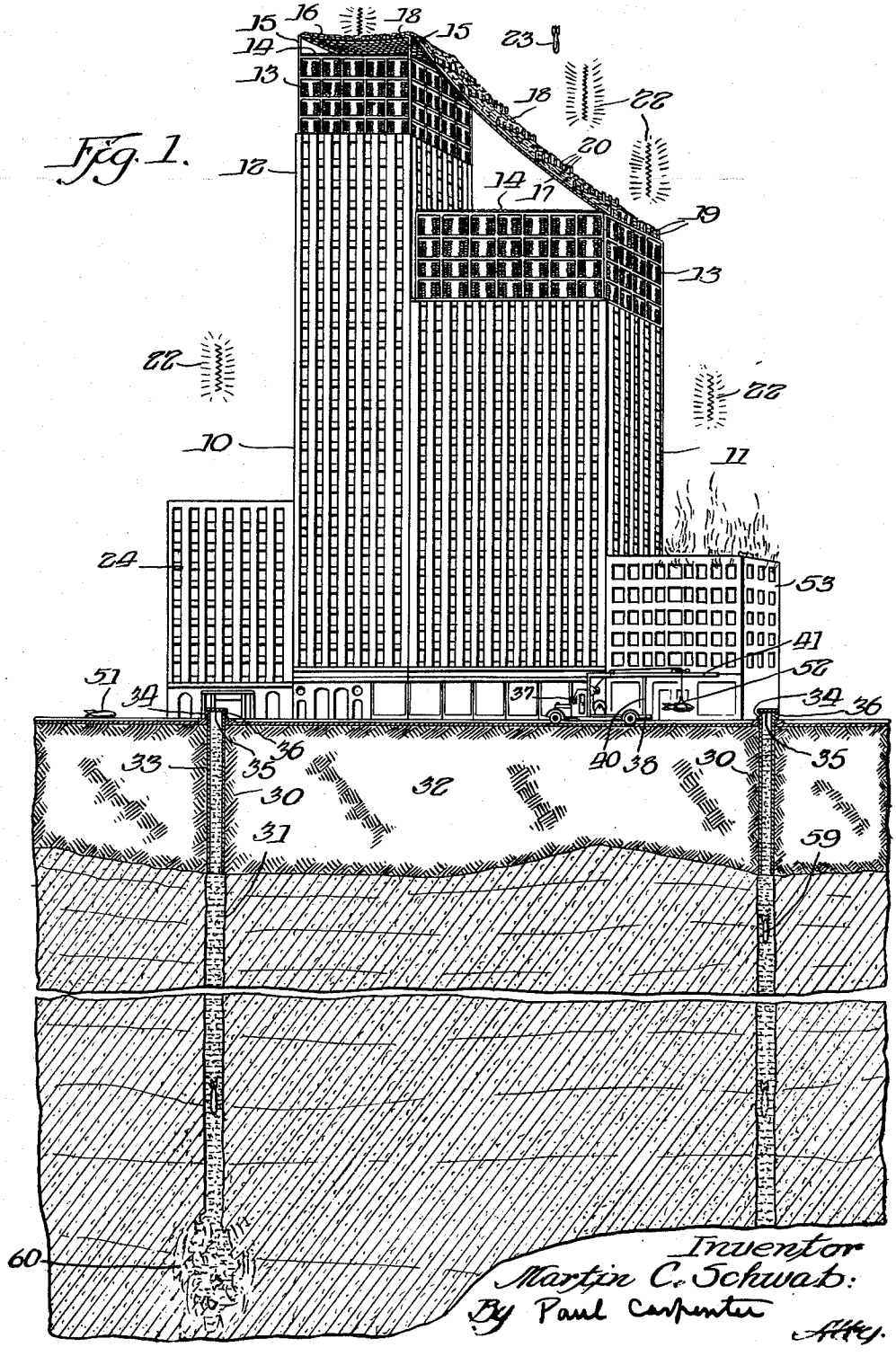
June 13, 1944. M. C. SCHWAB 2,351,297

DEVICE FOR PROTECTION OF MUNICIPALITIES AGAINST INCENDIARY BOMBS AND DELAYED ACTION BOMBS

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Fig. 1.



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Fig. 2.

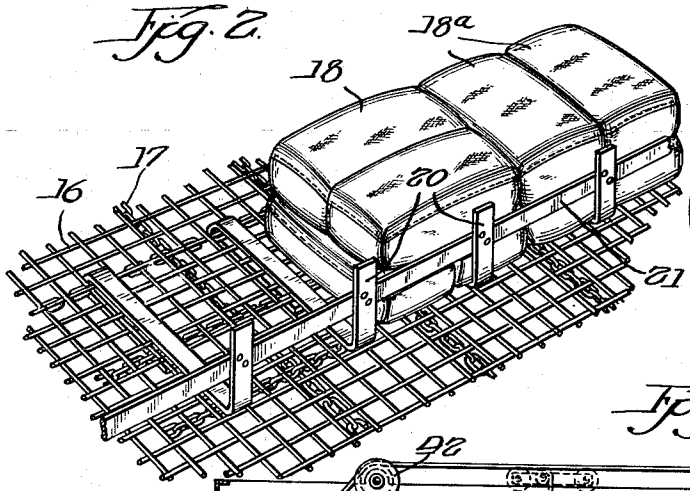


Fig. 3.

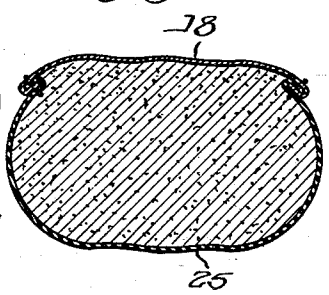


Fig. 4.

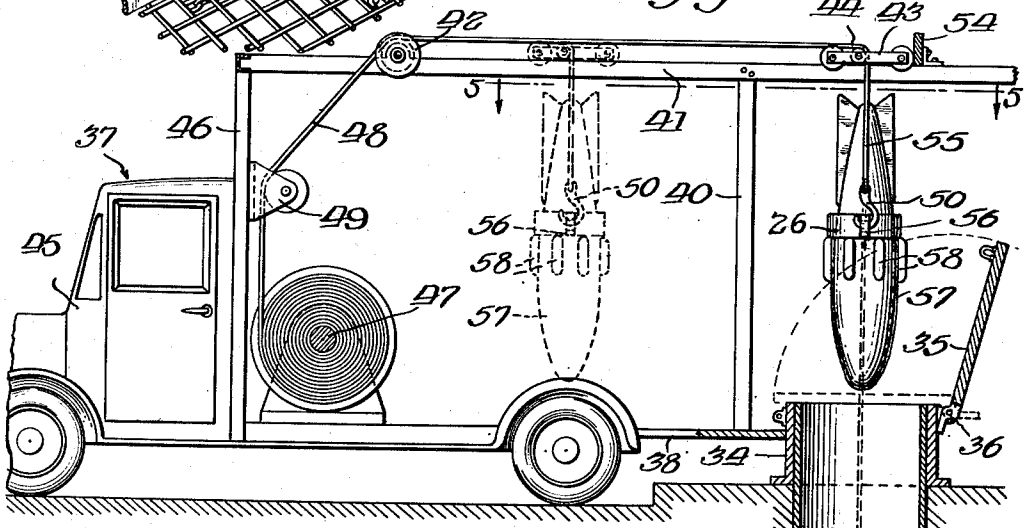
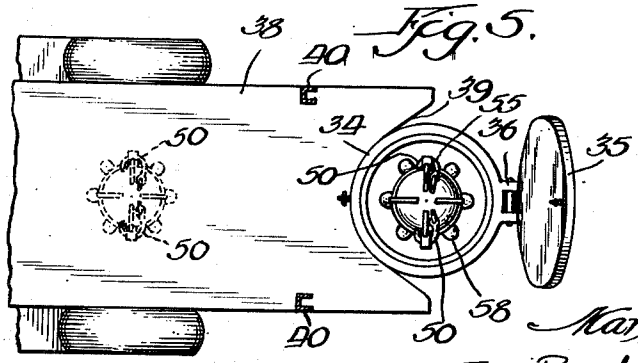
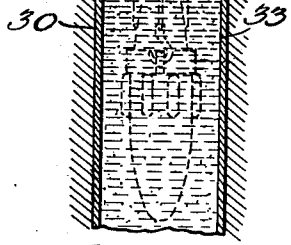


Fig. 5.





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2,351,297

DEVICE FOR PROTECTION OF MUNICIPALITIES AGAINST INCENDIARY BOMBS AND DELAYED-ACTION BOMBS

Martin C. Schwab, Chicago, Ill.

Application September 27, 1941, Serial No. 412,584

6 Claims. (Cl. 109—49.5)

This invention relates to national defense, and more particularly to devices for protecting buildings and municipal areas against incendiary and delayed action bombs.

A development of the current war has been the threatened destruction of municipalities due to the promiscuous bombing, particularly with small incendiary bombs containing readily inflammable material such as "Thermite" which are dropped in great numbers and generate upon contact small flames of high heat. It has been found necesasry in European cities subject to attack by incendiary bombs to employ numerous fire watchers stationed on every building in the area subject to attack, and who are provided with equipment to extinguish rapidly fire started by the incendiary bombs. An object of the present invention is, therefore, the production of devices to protect buildings against attack with incendiary bombs and explosive bombs and to alleviate the need for employing numerous fire watchers whose number can be materially reduced, hence freeing them for other important defense work, by employing the devices disclosed herein.

The invention also contemplates the provision of means for rapidly disposing of delayed action high-explosive bombs, which have been employed in the current European war, and also "duds" which have not exploded upon striking the ground. Such bombs are provided with time fuses which do not permit the explosion of such bomb for several hours after they have been dropped. They have been a danger and insiduous weapon, not only because of the destruction done to property and human lives, but because of the fact that until the bombs have exploded it is necessary to close off the areas surrounding the point in which they lie, and more particularly because of the damage to the nervous systems of persons already subjected to the stresses of modern warfare directed against civilion populations, arising from the presence of bombs liable to explode at any unknown moment. The invention contemplates the provision of wells or bores extending downwardly from the surface with specially adapted covers and trucks designed to rapidly pick up and convey time bombs to such disposal wells.

The invention will be readily understood from the following description, in conjunction with the accompanying drawings, in which:

Fig. 1 is an elevational view of a modern municipal office building and a vertical cross-section of the subsoil in front of said building and disclosing the present invention;

Fig. 2, a view in perspective of a device for protecting buildings against incendiary bombs;

Fig. 3, a vertical sectional view through a sandbag employed in the device for protecting buildings against incendiary bombs;

Fig. 4, a side elevation of a truck adapted to pick up and transport delayed action bombs and showing in section a portion of a well for disposing of such bombs; and

Fig. 5, a plan view of the construction shown in Fig. 4, taken along the lines 5—5 of Fig. 4.

Referring to Fig. 1, the reference character 10 indicates a conventional modern municipal office building provided with a main building 11 and a tower section 12. Two adjoining buildings 24, 53 are not equipped with my improved protective device against incendiary bombs, and building 53 is shown on fire started by the dropping of incendiary bombs. In accordance with the present invention, the upper three or four stories of office buildings in localities subject to a bomb attack are vacated of their usual equipment, such as furniture and the like, window frames, all combustible material and all brick or stone work adapted to be shattered and thrown to the street by a bomb explosion. In the rooms of these upper floors are stacked, one upon the other, a plurality of sandbags 13. The roofs of such buildings are also provided with rows of sandbags 14 stacked one upon the other. Thus, if a high explosive bomb strikes the roof of the building, the concussion and the explosive charge will be absorbed to a great extent by the bags 13 of sand and the damage will almost completely be confined to the upper three or four stories. If desired, a wire netting may be draped around the building to catch any portions of the wall which may be dislodged by the explosion and prevent their fall to the street.

The corner posts of the tower sections of such buildings and all four corners of buildings having flat roofs without offset portions are provided with extensions 15 which may be in the form of channel-shaped steel beams. Supported by said beams 15 at a position above the roof, such as from 10–15 feet above the roof, is a netting 16 formed of heavy steel wire and reinforced by steel chains 17. Upon this netting are disposed rows of sandbags 18 disposed in layers two or three feet deep. The sandbags 18 may be formed of convas material which has been waterproofed, and when the bags are filled the sand is wetted so that, due to the impervious covering,

it will retain its moisture and tend to extinguish the flames started by the deposition of incendiary bombs thereon. As shown in Fig. 3, the lower portion 25 of the bags may be formed of a waterproof material, such as rubber, rubberized fabric, "Koroseal" and the like, and the upper portion may be a non-waterproof canvas. Thus the sand within the bags 18 may be kept wet in dry weather by sprinkling them every few days. Likewise bags 18a formed of rubber or rubberized fabric and containing water may be interspersed among the sandbags, as shown in Fig. 2. Such bags will be burst if an incendiary bomb, which is water-extinguishable, drops near them and will assist in extinguishing any fires started by such bombs.

To protect the main portion 13 of the building below the tower 12, wire nets of the type described are suspended from the adjacent corner post extensions 15 to the side 19 of the roof removed from the tower. The wire netting slopes downwardly and, as shown in Fig. 2, is provided with transverse angle bars 20 having cross members 21 adapted to support rows of sandbags 18 of the type described. Thus, as shown in Fig. 1, incendiary bombs striking the wire netting 16 can do little or no damage, since there is no combustible material on the wire netting 16 and the flames formed by the incendiary bombs will be readily extinguished. Explosive bombs 23 striking the wire netting will, of course, do no damage to the netting, since they may penetrate the netting, but, due to the presence of layers of sandbags upon the roof of the building and the upper stories thereof, can do but little damage upon explosion. Thus, it will be seen that my invention provides adequate protection to buildings against both incendiary and explosive bombs.

The invention also contemplates improved devices for the ready and rapid disposal of delayed action time bombs. Such devices include the provision of wells 30 extending vertically into the earth and in which delayed action time bombs may be dumped and permitted to explode without damage. The depth of such wells will depend, to a large extent, upon the nature of the subsoil, since if the subsoil is soft the concussion from the explosion will be more readily absorbed than in a hard solid rock subsoil, but in most cases the wells will extend at least 300 or 400 feet below the surface of the ground and in some cases 1000 feet. The wells will extend well below building foundations and such subterranean conduits as are provided in municipalities for telephone wires, sewage disposal, gas mains, telephone lines and the like. The portions 31 of the well, extending through solid rock subsoil, need not be lined, but as shown in Fig. 1, the portions of the well extending through soft dirt, sand or clay 32 are provided with linings 33 of brick or concrete. The openings to the bomb disposal wells 30 are usually provided along the parkways of the streets, and the well has an upper section 34 extending from two to three feet above the earth's surface. The well is preferably provided with a heavy cover 35 of iron mounted upon a hinge member 36. Such wells are disposed throughout a municipality at numerous places, as are the usual fire hydrants. For example, in built-up areas a well may be placed at a corner to serve the four adjoining blocks, and other wells may be disposed at the corners of every other block to serve the four adjacent blocks. The wells may be flooded to provide hydrostatic pressure at lower depths to prevent crumbling of the sides of the wells.

Trucks 37 equipped with the usual flat body portion 38 and having a curved concave end 39 are employed to transport the delayed action bombs from wherever they may strike to the most convenient well 30. The trucks are provided with a frame 40 having an upper horizontal rail 41 on which is mounted a guide roller 42 and a dolly 43 equipped with a guide roller 44 and a stop member 54 limiting the movement of the dolly 43 on the rail 41. Behind the cab 45 of the truck is a sheet of armor steel 46 forming a part of the frame of the truck and adapted to afford some measure of protection to the driver against untimely explosion of a bomb during its transportation to the disposal well. Mounted on the body of the truck is a reel 47 carrying a third Manila rope 48 leading over the guide roll 49 mounted on the frame of the truck, over the guide roll 42 carried on the rail 41, and over the guide roll 44 of the dolly 43. The rope 48 is provided with bifurcated end portions 55, each portion having at its ends a hook 50 which is adapted to be slipped under eyes 56 secured to a metal collar 26 of a jacket 57 adapted to be slipped loosely over the end of a bomb to be transported. The jacket 57 is preferably formed of heavy durable canvas equipped with a plurality of bumpers 58 which may be slipped into pockets in the jacket after it has been drawn over the bomb.

In operation, the presence of an unexploded delayed action bomb 51 is reported to a central headquarters who may communicate with the driver of a truck 37 which is most adjacent to the bomb, since the trucks are preferably provided with short wave receiving sets similar to those employed in police squad cars to receive reports of criminal events and advise the driver to proceed rapidly to the spot where the bomb has fallen. Upon arrival, the end of the bomb is manually lifted a little bit to slip the canvas jacket over it. The dolly 43 is drawn to its rearmost position, as shown in Fig. 4, the lifting cables 48 are unreeled, the hooks 50 are slipped under the eyes 56 on the bag 57. The bomb 51 is transported in the vertical position as shown in Fig. 4 after it has been raised horizontally by a sling 52 disposed under both ends of the bomb, as shown in Fig. 1. The rope 48 is then reeled in about the winch 47, lifting the bomb from the ground, the dolly drawn in to the position shown in dotted lines in Fig. 4, and the truck rapidly driven to the most adjacent well 30. The truck is then backed up against the upper portion 34 of the well and since the end 39 of the truck frame is concave, the center line of the truck will be in line with the center of the well 30. The well cover 35 is opened, the dolly 43 drawn rearwardly until the bomb 50 is centered over the opening of the well, and the brake on the winch 30 released so that the bomb 59 may be lowered harmlessly into the well where it may explode without destruction, as indicated by the reference character 60. The bumpers 58 on the jacket 57 tend to keep the bomb from striking the sides of well 30. After the bomb has been lowered into the well 75 or more feet, the line 48 is cut, permitting the bomb to fall to the bottom of the well. By providing the truck with a concave end 34 adapted to fit about one side of the cylindrical upper section 34 of the well, it will be seen that the dolly 43 may be disposed above the well mouth without considerable backing of the truck or manual handling of the unexploded bomb. Thus, I have provided means for rapidly picking up and transporting unexploded delayed action bombs and "duds," which are much more efficient

and less dangerous than the present means of disposing of such bombs through traffic to disposal grounds or water fronts. This aspect of the invention is particularly important for vital areas such as shipyards, airplane plants, munition plants and like military objectives which are targets for delayed action bombs due to the disruption in the plant activities caused by the presence of unexploded time bombs.

It is also to be understood that the construction for protecting buildings from incendiary bombs may be employed on ships for like protection. Nets of steel wire or cable may be supported above the deck by the ship's masts and posts mounted at the bow, stern and along the ship's beams. Sandbags may be disposed in the nets in the manner described.

What I claim is:

1. In a building construction, devices for protecting said building against incendiary bombs, comprising a wire netting extending above the top of said building, a plurality of posts mounted along the edge of the roof of said building and supporting said wire netting, and a plurality of bags filled with sand covering said netting.

2. In a building construction, devices for protecting said building against incendiary bombs, comprising a wire netting extending above the top of said building, a plurality of posts along the edge of the roof of said building and supporting said wire netting above the roof of said building and a plurality of bags filled with sand covering said netting.

3. In a building construction, devices for protecting said building against incendiary bombs, comprising a wire netting extending above the top of said building, a plurality of posts extending above the building from the roof thereof and supporting said netting above said building, a plurality of bags filled with sand covering said netting and sacks formed of waterproof material and containing water interspersed among said bags of sand on said netting.

4. In a building construction comprising a main section and a tower section, a device for protecting said building construction against incendiary bombs, comprising a wire netting supported above the roof of said tower section and having a portion extending to the edge of the roof of said main section remote from said tower section, a plurality of angle bars secured in rows on the extended portion of the wire netting and having vertically extended portions, and a plurality of bags filled with sand covering said wire netting and being supported in the angle bars on said wire netting extension.

5. In a building construction comprising a main section and a tower section, a device for protecting said building construction against incendiary bombs, comprising a wire netting supported above the roof of said tower section and having a portion extending to the edge of the roof of said main section remote from said tower section, a plurality of angle bars secured in rows on the extended portion of said wire netting and having vertically extended portions, and a plurality of bags filled with sand covering said wire netting and being supported in the angle bars on said wire netting extension, the lower portion of said bags being formed of waterproof material.

6. In a building construction comprising a main section and a tower section, a device for protecting said building construction against incendiary bombs, comprising a wire netting supported above the roof of said tower section and having a portion extending to the edge of the roof of said main section remote from said tower section, a plurality of angle bars secured in rows on the extended portion of said wire netting and having vertically extended portions, a plurality of bags filled with sand covering said wire netting and being supported in the angle bars on said wire netting extension, and sacks formed of waterproof material and containing water interspersed among said bags of sand on said netting.

MARTIN C. SCHWAB.