June 14, 1932. G. C. FEDDERMAN 1,863,088

BUTTONED HOLDDOWN

Filed Feb. 24, 1930

Fig. 1.

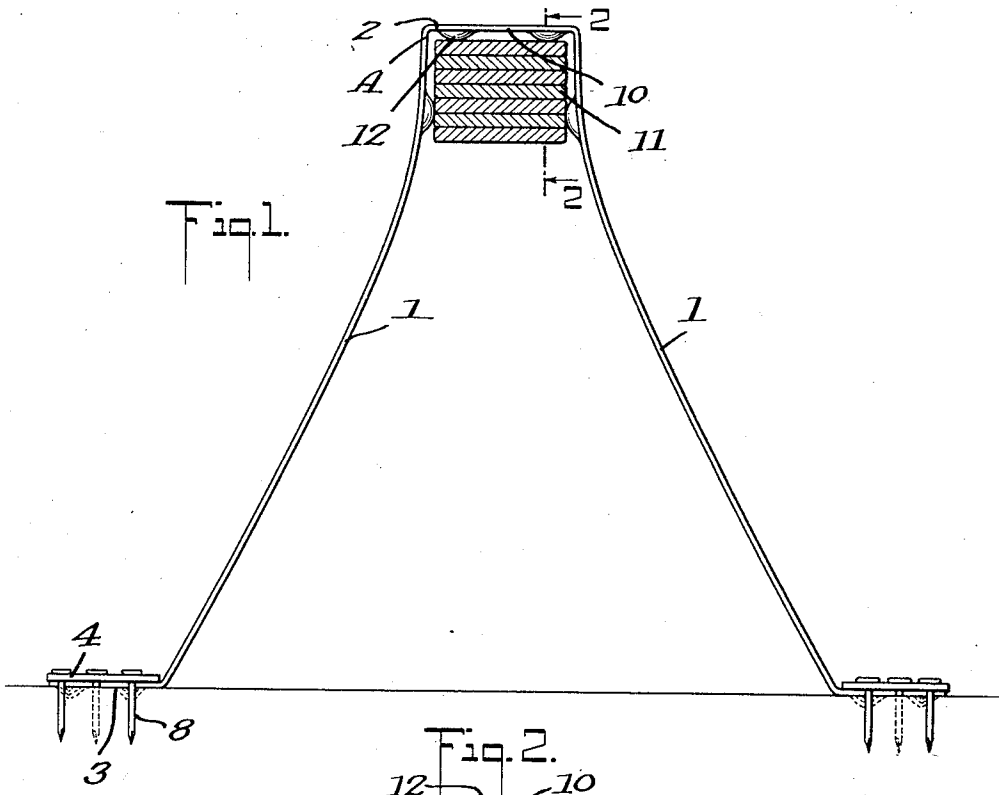



Fig. 2.

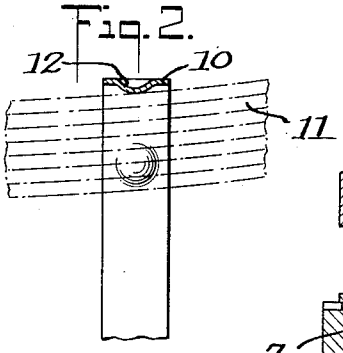



Fig. 3.

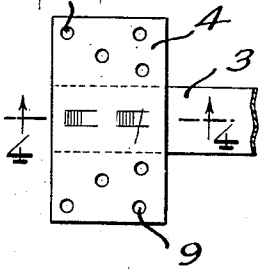



Fig. 4.

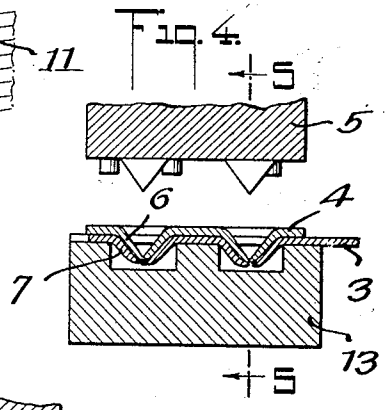
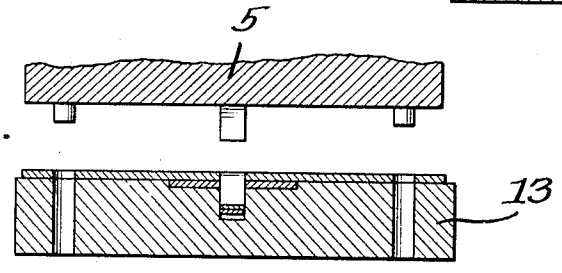



Fig. 5.




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# UNITED STATES PATENT OFFICE

GEORGE C. FEDDERMAN, OF DETROIT, MICHIGAN

## BUTTONED HOLDDOWN

Application filed February 24, 1930. Serial No. 430,707.

My present invention relates to a device generally referred to as a hold-down and is used to secure automobiles or the like to the floor of a freight car while in transit.

While many types of devices are in use at the present time, yet they are not wholly satisfactory either from the point of view of the manufacturer or from that of the shipper.

The manufacturer desires a hold-down which will require the least number of operations to manufacture, which can be assembled easily and quickly, which can be made of cheap stock readily bought, while the shipper requires a device which will be effective, which will not readily break or become dislodged when subjected to shocks and strains normally encountered and which will not damage the automobile.

It is, therefore, the object of this invention to produce a device which has all of these desirable qualities to a greater extent than any of which I am now aware.

To this end the invention contemplates a hold-down, preferably of strap stock bent to form legs, divergent from an intermediate section, which engages the vehicle, the legs terminating in feet at an angle to the legs, in combination with a foot plate secured to each foot and perforated to receive nails, whereby the whole can be efficiently secured to the floor of a freight car or the like.

The foot plate is secured to the hold-down foot preferably by placing the former on the latter or vice versa, and then forcing a die through both elements so as to punch or deform a button from the top section through the solid metal of the underlying element. During this underlying operation a similar button is formed in the lower element, the two lying together in superimposed relation, the button from the upper element binding frictionally on the walls of the aperture formed in the lower element. This buttoning operation can be performed simultaneously with the cutting of a length of foot plate stock and the punching of nail holes in either foot, foot plate, or both, so that the nail-hole-forming operation and the operation of securing the foot plate to the foot can be accomplished in a single step, which is extremely important from the manufacturer's point of view.

In order to prevent undue contact between that part of the hold-down intermediate the legs which engages a part of the vehicle, such as an axle or spring, offset bosses or embossed portions are formed, projecting from the plane of the hold-down strap stock, the hold-down making contact with the vehicle only at the embossed portions. This not only prevents limited contact with the vehicle but prevents tearing of the hold-down strap due to friction, vibration or excessive pull at the edge of the spring or axle. The embossing of the strap may be accomplished at the same time that the strap stock is cut to the requisite length so that no additional operation will be necessary for this purpose.

The invention further consists of the novel construction, combination and arrangement of parts, and the steps of the method hereinafter described and shown in the drawing.

In the drawing:

Fig. 1 is a view showing one embodiment of my invention in use.

Fig. 2 is a view along the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary plan view of a foot and foot plate.

Fig. 4 is a view along the line 4—4 of Fig. 3, in combination with a die and anvil.

Fig. 5 is a view along the line 5—5 of Fig. 4.

In this drawing I have shown a strap hold-down having divergent legs 1 and an intermediate portion or section 2 adapted to engage a part of the vehicle. This may be a spring, axle, hub or the like, as is well

known in this art, and consequently the intermediate section will be shaped appropriately to fit that portion of the vehicle which it is to engage.

Each leg 1 terminates in a foot 3 at an angle to the leg, and is usually over-laid by a foot plate 4 to insure better and firmer contact with the floor on which the device is secured. As the foot plate 4 and the hold-down proper are separate elements, they must be fastened together in some manner which will prevent accidental separation during shipment to the point of use and yet from the manufacturer's standpoint this must not require additional parts such as rivets or bolts or an expensive fastening operation.

I prefer to secure the foot and foot plate together by placing one on the other and both on an anvil and then forcing a die as at 5 through both elements so as to punch a button 6 from the top element, in this case the foot plate 4, through the lower element, here the foot 3, forming at the same time a similar button 7 on that element underlying the first. A grooved anvil 13 may be used in connection with the die to assist this forming operation. The first mentioned button 6 frictionally engages the sides of the opening formed in the lower element and secures the two parts together. In the form shown, the die 5 has a shearing action along two parallel lines in both foot plate and foot, and simultaneously punches and pushes the material therebetween downwardly until both buttons 6 and 7 project below the foot. This projecting composite button embeds itself in the floor of the freight car or the like, when nails 8 are driven through nail holes 9 in the foot plate or the button holes and serves to prevent undue slipping of the hold-down in transit. Obviously, the buttons may be of any desired shape by utilizing an appropriately shaped die, and one or more buttons may be used. In like manner the foot plate may underlie the foot instead of as shown.

That portion of the hold-down strap which is to engage a part of a vehicle may be embossed to produce an off-set portion which will prevent undue contact between the hold-down and the vehicle. Either the horizontal portion or section 10 which is to engage a part of the vehicle such as a spring 11, or an upper part of the legs 1 may be embossed as at 12. This is desirable not only because less damage will be done to the finish of the part by this minimum contact, but from the standpoint of breakage. When undue strain or pull in a downward direction is put on the leg of a hold-down, it usually parts or shears at the point A, due to surface or line contact with the vehicle part. If, however, the hold-down has limited contact as at the offset portion12, undue breakage does not occur, for the reason that there is a certain limited amount of give to the device at this point and in addition the curved section strengthens the portion most liable to break. In addition, such a construction permits a limited rocking movement which prevents breakage due to vibration in friction.

In manufacturing the device as above described, fewer mechanical operations are necessary than with any other strap hold-down of which I am aware.

The preferred method of manufacture of the above device follows:

A length of strap is cut to length and the offset boss or bosses 12 formed in a single operation. The next step includes overlying the ends of the strap which are to comprise the feet, with the wider foot plate. A die or series of dies then penetrate both elements, thus forming the buttons and the nail holes, and cuts off the foot plate to the proper length, all simultaneously. The hold-down is then bent to the proper shape in the third operation, thus eliminating any unnecessary steps. By connecting two presses together, both ends of the strap can be worked on simultaneously and thus, the whole series of steps may be performed quickly and efficiently, thus making a very cheaply manufactured product.

I claim:

1. A hold-down having a foot, a foot plate secured thereto, one of said elements having a button projecting through the other element, the button being integral with the first element, and overlying a similar button on the other element.

2. A hold-down having a foot, a foot plate secured thereto, both elements having overlying buttons projecting below the lower element.

3. A hold-down having legs and a section for engaging a part of the vehicle intermediate said legs, said section having an embossed portion whereby limited contact may be made with the engaged portion of the vehicle.

4. A hold-down having legs and an intermediate portion adapted to engage a part of a vehicle, and a protruding boss on the hold-down to prevent surface contact between the hold-down and the vehicle.

5. A hold-down having legs and a substantially flat portion adapted to engage a part of a vehicle, and a boss in the flat portion for making limited contact with the vehicle.

6. A hold-down having legs and a substantially flat portion intermediate the legs, bosses on said flat portion, said bosses being adapted to engage a part of a vehicle and hold the main flat portion away therefrom.

7. A hold-down having divergent legs and an intermediate section adapted to pass over a vehicle, said section having a boss thereon projecting toward the inside of the legs and

adapted to space the major portion of the section away from the vehicle.

8. A hold-down having divergent legs and an intermediate section adapted to pass over a part of a vehicle, said section having a boss thereon projecting toward the inside of the legs and adapted to space the section intermediate the legs from the vehicle, and a similar boss on the divergent legs adjacent the intermediate section.

In testimony whereof, I have hereunto subscribed my name this 20th day of February, 1930.

GEORGE C. FEDDERMAN.