

Nov. 29, 1938.

W. D. HAAS

2,138,404

METHOD FOR INSERTING AND HOLDING CLOSURE PLUGS

Filed Oct. 12, 1934

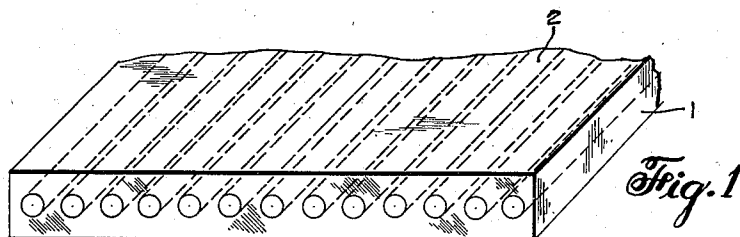


Fig. 2

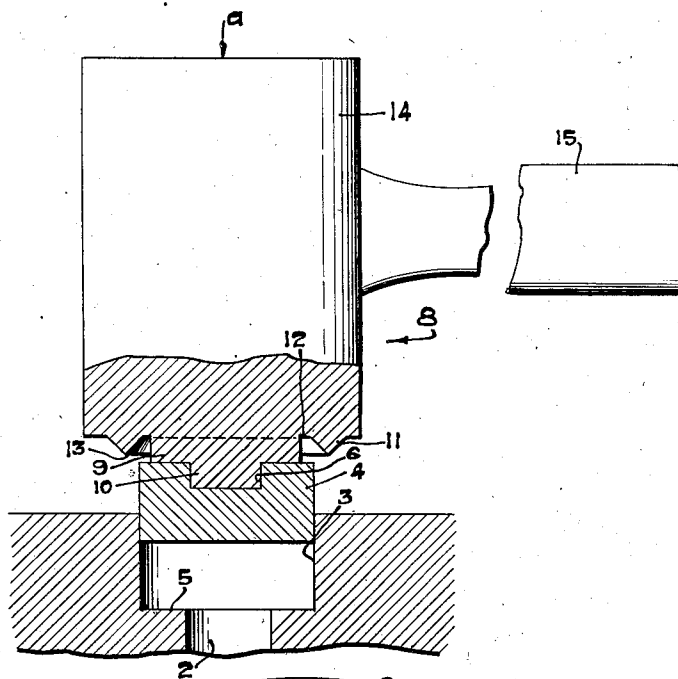


Fig. 3

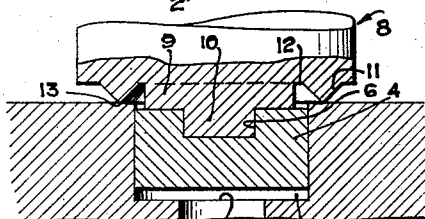
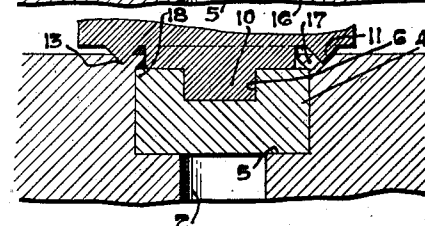


Fig. 4



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2,138,404

METHOD FOR INSERTING AND HOLDING
CLOSURE PLUGSWalter D. Haas, Philadelphia, Pa., assignor to
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Application October 12, 1934, Serial No. 748,150

3 Claims. (Cl. 29—148)

This invention relates generally to an improved method for inserting and holding closure plugs in passages of platens for hydraulic press work and especially steam platens, although the invention is applicable to passages formed in various other types of equipment.

It is one object of my invention to provide an improved method for seating a closure plug of a passage and at the same time causing a portion of the body member in which the passage is formed to be continuously turned over on the edge of the plug as the plug is moved inwardly, thereby to progressively hold the plug as it is driven in right down to its seat and thus insure that as the plug is driven hard into seating and sealing contact with its seat that the plug will be instantaneously held thereto.

A further object is to provide a simplified method whereby a single tool is adapted to perform the multiple functions of driving the closure plug to its seating position and of simultaneously upsetting the body member and turning it over on the marginal edge of the closure plug.

Other objects and advantages will be more apparent to those skilled in the art from the following description of the accompanying drawing in which:

Fig. 1 is a fragmentary perspective view of one form of member, specifically a steam platen, with which my invention is adapted to be used in seating and holding closure plugs for the steam passages;

Fig. 2 is a sectional view of a platen closure plug and my improved tool showing the initial inserting operation;

Fig. 3 is a view similar to Fig. 2 but showing the plug inserted just to the point where the upsetting of the platen around the marginal edges of the plug takes place and before the plug has reached its seat;

Fig. 4 is a view similar to Figs. 2 and 3 showing the plug entirely seated and the surrounding edges of the platen completely upset and turned over the marginal edges of the plug.

I have illustrated my improved method in connection with a platen although the invention is of course applicable to any other suitable member having passages in which plugs are tightly held to their seat to provide a leakproof closure. It is especially necessary to provide such a closure in steam platens for hydraulic presses as the usual drilled passages are alternately heated and cooled by being subjected to steam during the molding operation of various plastic products and then being cooled by passing cold

water or any other suitable chilling medium through the passages 2.

The steam platen usually has a relatively narrow thickness although its width and length is usually several feet. The parallel passages 2 are drilled through the platen and the outer end of each passage is provided with a circular recess 3 preferably of cylindrical form, although the same may be of any other shape complementary to the shape of a closure plug 4. However, it will be considered for purposes of specific illustration herein that recess 3 and plug 4 have plain cylindrical surfaces and that a shouldered seat 5 is disposed normal to the axis of the recess. Preferably a centering or guiding recess 6 is formed in the plug.

The apparatus for inserting and upsetting the body to hold the plug is shown specifically in the form of a tool generally indicated at 7. The working end of the tool has a cylindrical plug engaging portion 8 preferably of slightly smaller diameter than that of plug 4 while a cylindrical centering tip 9 projects from portion 8. Disposed concentrically of the plug engaging portion 8 is an upsetting flange 11 whose base is preferably slightly spaced as indicated at 12 from the periphery of element 8. This upsetting flange is preferably of V-shape as shown so as to provide a lower cutting edge 13. The tool has a substantial body portion 14 which may be provided with a handle 15 for suitably positioning the tool with respect to the plug and to any suitable power means for moving the tool in an axial direction. Such power means may be hydraulic or mechanical and adapted to apply preferably a continuous axial force until the plug is fully driven home.

Operation.—The plug is initially inserted in recess 3 as shown in Fig. 2, the plug and recess having preferably a close fit to provide or aid in creating an adequate seal in combination with the seating and sealing surface 5. The tool is positioned as shown in Fig. 2 and pressure is applied in the direction of arrow *a*, thereby causing the tool to force the plug inwardly to the position shown in Fig. 3. In this position it will be noted that a space 16 is still left between the lower surface of the plug and the seat 5, and at the same time the cutting edge 13 of the upsetting flange 11 has initially engaged the body of the platen immediately around the outer circular edge of recess 3. Pressure is continued to be applied to the tool to drive the plug fully to its seat 5, but such movement of the plug is accompanied by a simultaneous upsetting of the

platen 1 as generally indicated at 17 and turning of the upset portion over the marginal edge 18 of the plug. This upsetting and turning over is a progressive operation which occurs simultaneously with each increment of inward movement of the plug. Hence the instant that the plug is driven hard on to its seat 5, the upset material will be instantaneously operative to firmly hold the same against the seat.

10 As a result of the foregoing structure and mode of operation, it is seen that the plug is tightly held and sealed in position and that this is accomplished with minimum effort and in a single operation, thus providing a very effective seal in an economical manner.

15 It will of course be understood that various changes in details of construction and arrangement of parts may be made by those skilled in the art without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. The method of seating and holding a closure plug in a recess formed in a member, consisting in driving a plug into the recess and simultaneously engaging the external surface of the member immediately surrounding the recess and causing said engaged portion to be upset and turned

over the marginal edge of the plug during progressive and complete bodily axial movement thereof.

2. The method of seating and holding a closure plug in a recess formed in a member, consisting in driving a plug into the recess and simultaneously engaging the external surface of the member immediately surrounding the recess and causing said engaged portion to be upset and turned over the marginal edge of the plug, said upsetting and turning over operations being continuous with complete bodily axial movement of the plug until it is driven home against a seat.

3. The method of seating and holding a closure plug in a recess formed in a member, consisting in driving a plug into the recess with a tool and simultaneously engaging the external surface of the member immediately surrounding the recess and causing said engaged portion to be upset and turned over the marginal edge of the plug, said upsetting and turning over operations being continuous with the plug movement until the plug is driven home against a seat, the tool being positively maintained in coaxial alignment directly with the plug during the seating and upsetting operation.

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