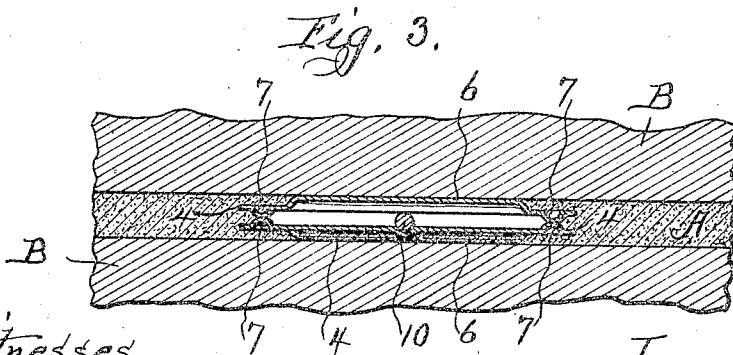
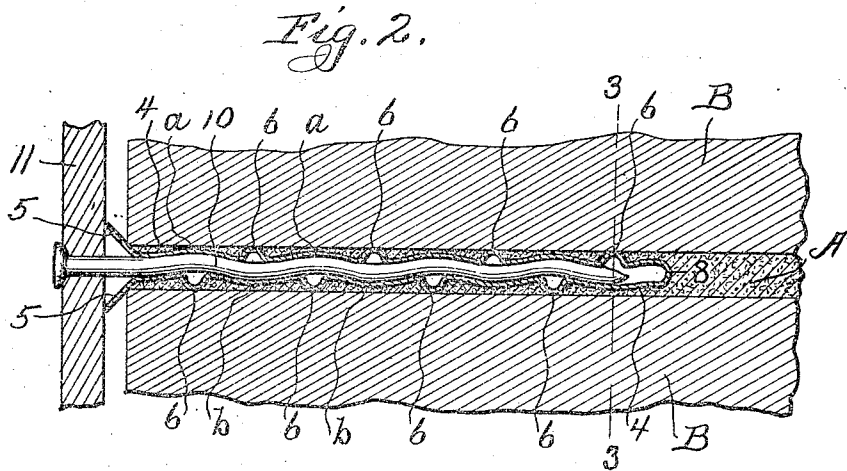
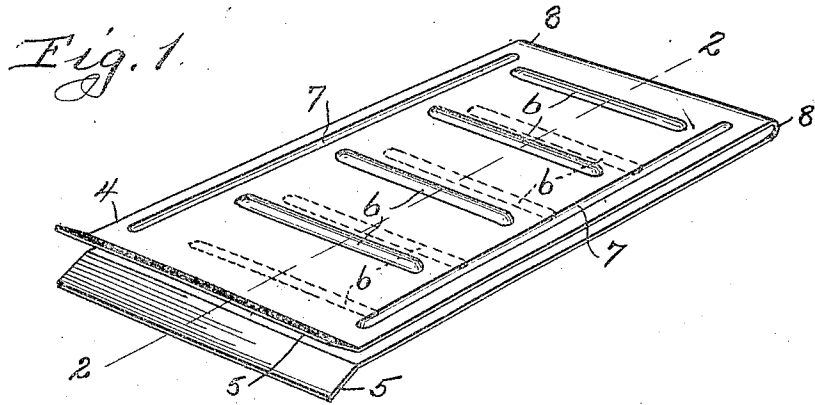


W. V. HEINZ.
WALL PLUG.
APPLICATION FILED OCT. 22, 1908.

931,869.

Patented Aug. 24, 1909.



Witnesses
R. J. Gackler
F. P. Boncklin

Inventor:
William V. Heinz
By Jno. H. Whipple
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM V. HEINZ, OF LA SALLE, ILLINOIS.

WALL-PLUG.

931,869.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed October 22, 1908. Serial No. 358,976.

To all whom it may concern:

Be it known that I, WILLIAM V. HEINZ, of La Salle, in the State of Illinois, have invented certain new and useful Improvements in Wall-Plugs, of which the following is a specification.

My invention relates to improvements in metallic wall-plugs or nail grips, designed and adapted to be embedded in the mortar joints of brick walls and the like, at intervals for the purpose of attaching furring strips or metal lath by the use of nails; and the objects of my improvements are, first, to provide a folded metal wall-plug having a nail-pocket slightly smaller in one direction than the nail to be inserted and stiffening means located at alternating points on opposite sides whereby the pocket walls and nail will be curved alternately in opposite directions by the operation of driving in the nail; and second, to provide the folds with suitable inward projections for keeping them properly apart and with outward alternating projections adapted to rest in contact with the bricks above and below the mortar filling or joint.

A further object is to provide an article of the class mentioned having such construction that it can be most cheaply made.

I attain these objects by the construction illustrated in the accompanying drawing which shows the best or preferred form of embodiment of the invention, as contemplated by me.

In the drawing Figure 1 is a perspective view of an article of the class mentioned containing my invention. Fig. 2 is a detail showing a fragmentary vertical section of a brick wall containing my improved wall-plug, the section line being located at the longitudinal center of the plug as indicated by the lines 2 2 of Fig. 1. Fig. 3 is a detail showing a vertical section at the line 3 3 of Fig. 2.

Similar reference signs marked on the drawings indicate similar parts throughout the several views.

My improved wall-plug comprises an oblong metal plate of suitable width as about $2\frac{1}{2}$ " and of a length say about 6" which is double the depth of the pocket to be formed, say for a tenpenny nail. Such plate is provided at intervals with outward projections extended cross-wise of the same, and with inward projections extended longitudinally. The plate is then folded at its mid-length, the

folds coming close together but being held out of contact by the inward projections to form the pocket.

In the drawing 4 is the oblong folded plate provided with flanges 5 which are of ordinary form. The outward projections 6 are extended cross-wise and arranged to come in the space between each other when the plate is folded as seen in Fig. 2 and appearing by dotted lines in Fig. 1. The inward longitudinal projections 7 are arranged at or near the outer side margins of the folds so as to strike together and close the pocket at its edges when the plate is folded. They are designed to hold the folds of the plate apart a distance slightly less than the diameter of the appropriate nail. In the present instance all of the projections consist of corrugations or ridges stamped in the plate and the end flanges 5 are formed by bending so that the entire formation aside from the folding may be cut out and shaped up by a single operation of suitable dies for the purpose. The folding is obviously a very simple operation which is easily and rapidly performed by many well-known means. Thin sheet steel galvanized to prevent rusting is the preferable material for use in making the plug. The aggregate thickness of the pocket, folds of plate and outward projections is made to correspond to the entire thickness of the mortar or concrete horizontal filling A between the layers of bricks B so that said projections 6 may rest in contact with the bricks when the plug is embedded in the mortar joint. Said projections serve as anchors for holding the plug fast in the wall and for stiffening the plate at alternate points of the opposite folds. In use they are in contact with the surfaces of the bricks above and below the mortar joint as seen in Fig. 2, and, being thus backed by the bricks, offer greater lateral resistance to the nail than is offered by the less stiff portions of the pocket walls between said projections and backed only by the mortar of the joint. As a consequence of this construction the nail when being driven into the pocket will take a sinuous course as indicated in Fig. 2, which shows the nail 10 passed through the furring strip 11 and as driven into the pocket. The effect of driving the nail in is as follows: The nail in passing into the front part of the pocket slightly spreads the pocket walls apart, slightly crushing the mortar backing or

pressing it back, until the nail point reaches the first projection 6 of the lower fold. By this projection the nail point is diverted upwardly curving the pocket wall upwardly at 5 *a*, and, being farther driven in, it approaches and strikes the second projection 6 (being the first one of the upper fold) and is thereby gradually curved downward until it reaches and passes said second projection, 10 curving the nether side of the fold downward as seen at *b*, and so on throughout its course. Before the driving of the nail the interior walls of the pocket are straight and somewhat yielding to the nail's movement 15 between the projections, but after the driving the walls along the path of the nail are slightly spread apart at all points and slightly curved up and down at alternate parts above and below the projections, forming a slightly zig-zag course conforming to 20 the similar shape of the nail.

The construction affords large bearing surface on the nail at all points with much pressure, and also gives a positive or shoulder grip additional formed by said zig-zag 25 course.

While it is possible by the action of the ingoing nail to spread the pocket walls when embedded in the hardest concrete sufficiently 30 to provide intense pressure for the frictional grip on the nail and a reasonable amount of the zig-zag course, the latter may be increased by applying a heavy coat of softer material, as japan or the like, to the outside 35 of the pocket walls which will permit freer outward yield of said walls to the action of the nail at the points between the stiffening projection 6.

For attaching metal lath to walls I prefer 40 to make the plug of a little heavier plate and set it less into the wall so that the flanges 5 will project out from the wall farther than when the furring strip is used and then nail the metal lath directly against said flanges.

45 The cost of producing the plug is very

cheap and the rate of production very rapid by machinery. I contemplate making the plug at the rate of 100 per minute, by the use of a suitable shearing and embossing die, and the labor of a boy. 50

It is noted that the corrugations 7 at the margin of the folds are but half the thickness of the pockets and are extended from the folds on both sides of the pocket. Obviously these might be made the full thick- 55 ness of the pocket and be placed one on either margin of the folds without altering the character of the services or the manner of making or using it.

What I claim and desire to secure by Letters Patent is— 60

1. An improved wall-plug comprising a metal plate folded at its mid-length, a series of stiffening projections on the outside of each of the folds running cross-wise and 65 alternating on opposite sides of the pocket and an inward projection on each of the folds run length-wise along an outer margin thereof, as specified.

2. An improved wall-plug comprising a 70 metal plate folded at its mid-length, a series of outwardly extending ridges on each of the folds arranged cross-wise and alternating with one another on opposite sides of the pocket and inward projections on each 75 of the folds arranged lengthwise along coincident side margins thereof, as specified.

3. An improved wall-plug comprising a flat metal plate folded at its mid-length to form a pocket means for stiffening the folds 80 at intervals arranged cross-wise of the folds, and alternating on opposite sides of the pocket, and inwardly projecting stops at the margins of the folds for closing the pocket. at opposite edges and determining the space 85 between the folds, as specified.

WM. V. HEINZ.

Witnesses:

E. J. FEURER,
J. W. KLEIN.