(No Model.) 3 Sheets—Sheet 1.

J. E. CRISP.

MACHINE FOR HEADING TACK STRIPS.

No. 385,747. Patented July 10, 1888.

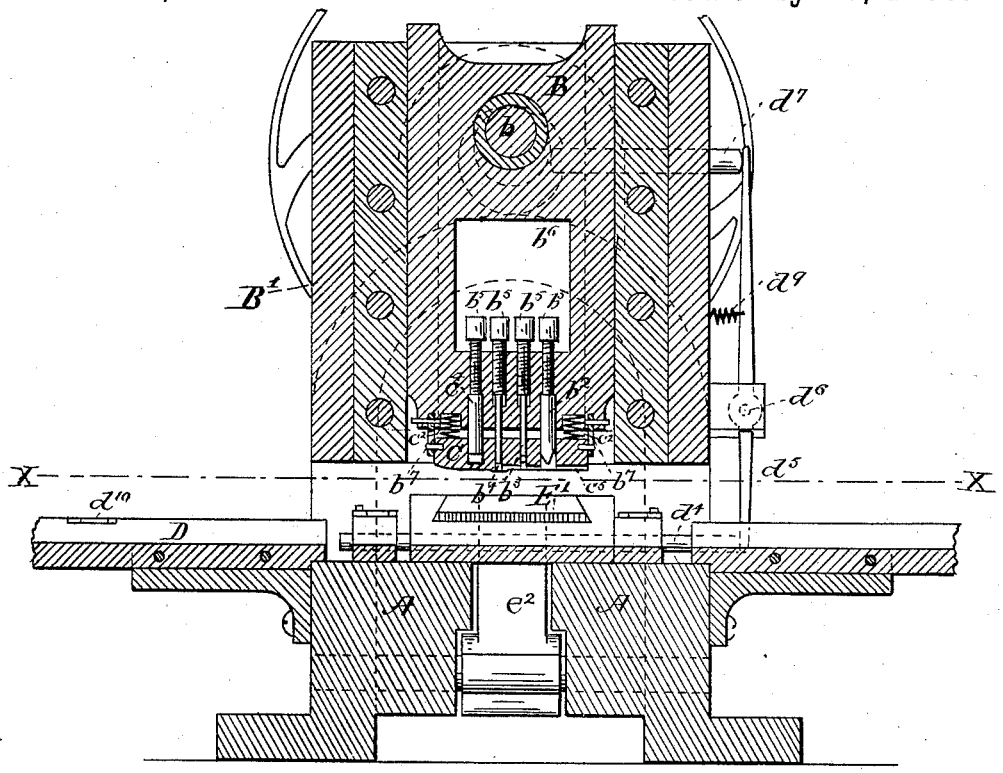

Fig. 1.

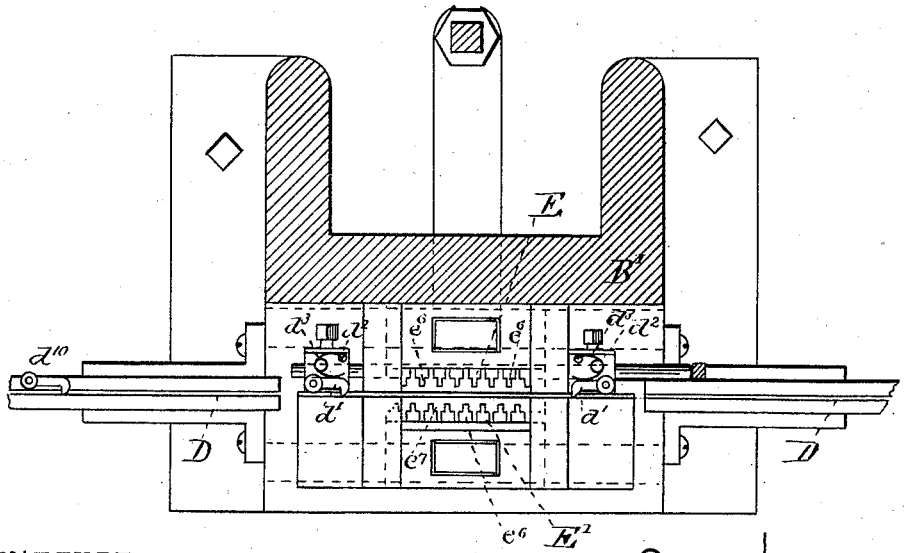

Fig. 2.

WITNESSES.
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Fred. B. Dolan.

INVENTOR,
Joseph E. Crisp.
by his attys
Clarke & Raymond.

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J. E. CRISP.

MACHINE FOR HEADING TACK STRIPS.

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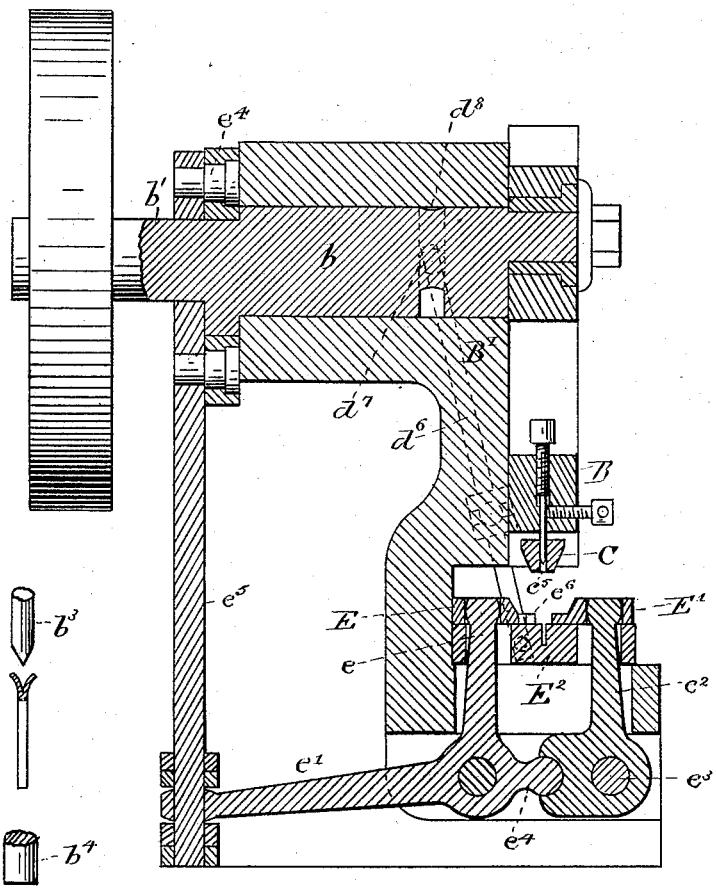

Fig. 3.

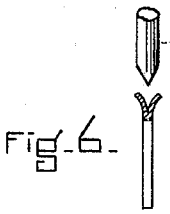

Fig. 6.

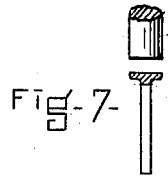

Fig. 7.

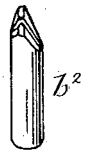

Fig. 8.

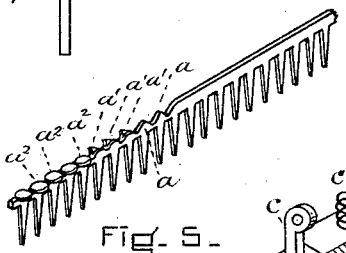

Fig. 5.

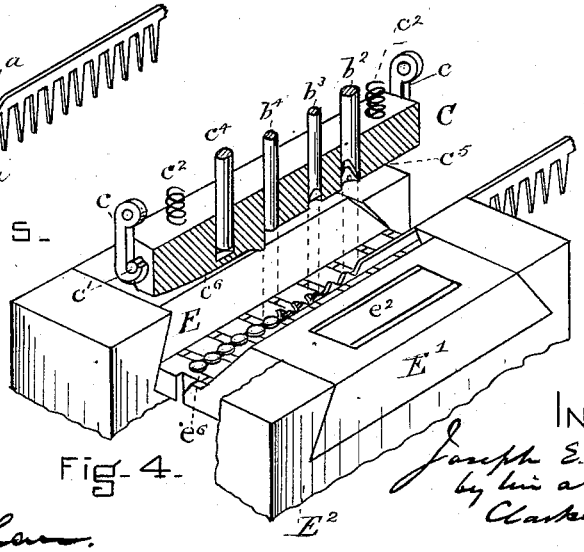

Fig. 4.

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J. E. CRISP.

MACHINE FOR HEADING TACK STRIPS.

No. 385,747. Patented July 10, 1888.

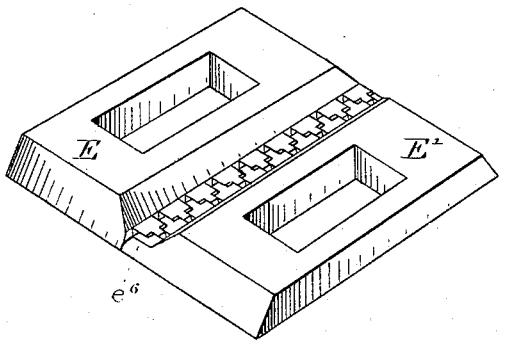

Fig. 9.

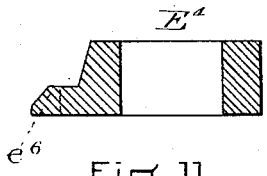

Fig. 11.

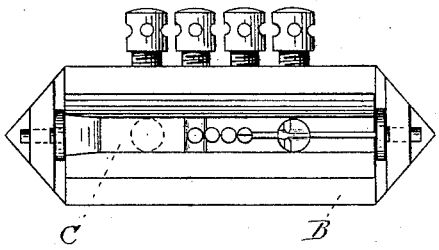

Fig. 10.

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UNITED STATES PATENT OFFICE.

JOSEPH E. CRISP, OF SOMERVILLE, ASSIGNOR TO GEORGE W. COPELAND, OF MALDEN, MASSACHUSETTS.

MACHINE FOR HEADING TACK-STRIPS.

SPECIFICATION forming part of Letters Patent No. 385,747, dated July 10, 1888.

Application filed September 1, 1885. Serial No. 175,927. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. CRISP, of Somerville, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Machines for Heading Tack-Strips, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents in vertical section a machine containing the features of my invention. Fig. 2 is a plan view thereof below the line *x x* of Fig. 1. Fig. 3 is a vertical central section at right angles to that shown at Fig. 1. Fig. 4 is a view in perspective representing certain details of construction, which are hereinafter more fully described. Fig. 5 is a view of the tack-strip, showing in perspective the successive operations of the machine thereon. Figs. 6 and 7 show views which further illustrate the operation of the machine. Fig. 8 is a perspective view of the head-forming tool. Fig. 9 is a perspective view of the tack-strip-holding clamp. Fig. 10 is a view in plan of the presser reversed. Fig. 11 is a view of a part of one jaw or clamp.

The primary object of the invention is to furnish mechanism for heading tack-strips. The tack-strip as it is submitted to the machine may have a head-connecting section of uniform width and height, as shown in the section in Fig. 5, to the right of the serrations; or it may have well-defined head-forming sections, as represented by the serrated or notched part of the strip. When this first form of strip is used, the first operation of the machine is to form therein by a V or similar shaped former the pointed head-forming sections *a*. These head-forming sections of course will be somewhat thicker than the head-forming portions of the straight strip before it is submitted to this operation. They are then split lengthwise and in succession by means of suitable splitting-tools into two parts, which are slightly turned laterally from the strip, as represented at *a'*, Fig. 5. These partially-bent portions are then flattened into a head, as represented at a^2, same figure, by a reciprocating heading-tool. These tools are all attached to one cross-head or hammer and reciprocated simultaneously, so that the operations of forming the head-forming sections, dividing or splitting the same, and forming the head are going on at the same time, but on successive sections of the strip.

Referring to the drawings, A represents the frame of the machine.

B is a block provided with a reciprocating movement by means of the crank or eccentric *b* on the main shaft *b'*. This block is guided in suitable ways in the upright portion B' of the frame of the machine, and it supports the various tools which I have heretofore referred to—namely, the head-forming tool b^2, the head-section-splitting tool b^3, and the header b^4. These tools are all supported by the end of their respective screw-stems b^5, and these screw-stems extend upward through the lower portions of the block into the space b^6. The lower portions of the tools pass through the pressure-block C, which is attached to the block B by the hooks *c* and pins *c'*, the hooks being attached to the block to hook upon the pins *c'*, attached to the presser-block.

The springs c^2 are placed between the presser and the block B, in order that the presser-block may be kept forced out from the block B, excepting when it comes in contact with the head-forming portion of the tack-strip, when it yields to allow the tools to come in contact therewith. The springs extend into the holes b^7 in the block B, and upon the downward movement of the block are compressed to such an extent that its under surface comes in contact with the upper surface of the pressure-block. There is also a guide or steady pin, c^4, attached to the head, which projects into a hole in the presser-block C.

The tack-strip is fed through the feedway D by means of the reciprocating feed-pawls *d d'*. These pawls are pivoted to their respective blocks d^2, so that they project into the feedway and engage the shanks of the strip, and they have a laterally-yielding movement in relation to the feedway in opposition to the springs d^3. The pawls are round or inclined upon the portions opposed to the feed, in order that they may ride over the shanks on their backward throw. The blocks d^2 are recipro-

cated by means of the rod d^4, to which they are fastened, the lever d^5, pivoted at d^6, and the push-pin d^7, operated by the cam d^8 and the spring d^9. In addition to these feed-pawls there is the locking-pawl d^{10}, which is similar to them in shape, but does not reciprocate, its office being to engage the shanks of the strip and hold it stationary while the feed-pawls are moved back to take a new hold.

The tack-strip is supported during the operation of the tools by means of the two jaws E E′. The jaw E is moved by the arm e of the rock-lever e', and the jaw E is moved by the bell-crank e^2, which is pivoted at e^3, and the lever e' has a projection, e^4, which extends into a groove or hole in the bell-crank lever e^3. The lever e' is reciprocated by means of the cam e^4 on the main shaft and the connecting-rod e^5, and its reciprocating movement causes the jaws E E′ to be simultaneously moved to and from each other. The jaws are supported upon the bed-plate E^2, in which is a portion of the feedway.

The jaws E E′ each have a series of projections, e^6, which are shaped to close under the head connecting portions of the tack-strip alternately, one from one side of the strip and the other from the other side. The upper surface of these projections is inclined toward their outer end, in order that they may shut under the head-connecting part of the strip and elevate it as they close sufficiently to lift the point of the shanks from contact with the under surface of the feedway. The front surfaces, e^7, of the jaws shut against the sides of the shanks of the tack-strip, and the tack-strip is thus supported and clamped firmly by its shank, with the head forming and connecting portions exposed to the action of the heading device.

The tack-strip is held stationary by the feedway upon the opening of the jaws. The extent of the throw of the jaws may be varied by means of the adjusting-screws, so that tack-strips of varying thickness may be headed without changing the jaws. The tack-strip, having been inserted in the feedway, is advanced by the feeding devices to the gang of tools. The first tool displaces the metal to provide the head-forming sections of the strip, the next tool in order splits the head-forming sections, and the next tool or header heads the sections already split. While the tools thus perform separate functions they are operated simultaneously, and the feed is so regulated that upon the upward movement of the press the tack-strip is fed forward one tack. The presser-block C, being a little in advance of the ends of the tools, comes in contact with the upper edge of the tack-strip and holds it firmly in position upon the jaw while the tools are operating. This presser-block has a groove, c^5, of the width of the head-connecting portion of the tack-strip from the hole of the heading-tool b^4 to its right end and is flat upon its under surface, c^6, beyond or to the left of the heading-tool. This portion of the presser-block acts in connection with the jaws to straighten or hold straight the strip while it is being headed, and the strip thus held during the heading operation is prevented from spreading.

The head-forming section of each tack is reduced to shape in the lower part of the hole in the presser in which the heading-tool reciprocates, which in connecting with the upper surface of the jaws makes a cup shaped die, and of course provides the head with a regular shape.

The indenting or displacing tool b^2 preferably has a central groove in its working-face and wings inclined outwardly therefrom, as shown in Fig. 8.

When a tack-strip having head-forming sections well defined is used, it is of course unnecessary to use either the tools b^2 or b^3, and I would state that I may not use the tool b^3 even when the tool b^2 is employed.

Any mechanical equivalent may be used for the parts described.

The groove in the under surface of the presser-block should close upon the head-connecting portion of the tack-strip before the clamps are closed sufficiently to tightly clamp the shanks, and the jaws remain closed until the presser-bar is lifted sufficiently to clear or become disengaged from the head of the tack-strip.

It will be observed that the machine not only acts to head the tack-strip, but that it also delivers the same from the machine perfectly straight, and the heads and shanks separated by a uniform distance; and these advantages are of considerable value—the first because it enables the strip to be well packed for transportation; the second because it secures a more regular and perfect feeding and delivery of tacks in the tack-driving device.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for heading tack-strips, the combination of a clamp or holding-jaws with the reciprocating tools b^2 b^3 b^4, or either of them, all substantially as and for the purposes described.

2. The combination of jaws or clamps for holding and supporting the tack-strip, the presser-block C, the reciprocating head B, and the tools b^2 b^3 b^4, or either of them, all substantially as and for the purposes described.

3. The combination of an intermittent feed, the jaws or clamps E E′, the reciprocating head B, the presser-block C, and the tools b^2 b^3 b^4, or either of them, all substantially as and for the purposes described.

4. The combination of an intermittent feed with the jaws E E′, all substantially as and for the purposes described.

5. The clamping-jaws E E′, having the lifting projections e^6, as and for the purposes described.

6. The combination of the jaws E E′, for supporting and holding the tack-strip, with the straightening block or presser C, all substantially as described.

7. The combination of the feedway D and the reciprocating feed pawl or pawls d' d^2, all substantially as and for the purposes described.

8. The combination of the feedway D and the reciprocating pawls d' d^2, all substantially as described.

9. The combination of the feedway D, the jaws or clamping device for lifting and holding the tack-strip, the presser, and the heading-tool, all substantially as described.

10. In a machine for heading tack-strips, the combination of the feedway D, the jaws E E′, the presser having the groove c^5, and the tools b^2 b^3 b^4, or either of them, all substantially as described.

11. In a machine for heading tack-strips, the tack-strip-clamping device having fingers or projections to shut or close under the head-connecting portion of the tack-strip and support the same during the head-forming operation, all substantially as described.

12. The process of making headed tack-strips, consisting of first forming from a metal plate a tack-strip having a head-connecting portion of uniform width and height; second, in displacing the upper portion of said head-connecting strip to form head-forming sections of the strip; third, in forming heads from said head-forming sections, either by first splitting the same and then heading or by upsetting alone, all substantially as and for the purposes described.

13. In a machine for heading tack-strips, the combination of a feedway, an intermittent feed, a tack-strip-holding device, and a reciprocating hammer or header.

14. In a machine for heading tack-strips, the combination of the feedway, an intermittent feeding device, and a tack-strip-clamping device having a bed or anvil on which the head-forming section of the strip is headed, all substantially as and for the purposes described.

15. In a machine for heading tack-strips, the combination of a support for holding the tack-strip by its head-connecting portion and a clamping device adapted to be closed upon the head-connecting portion of the tack-strip, and which are adapted to automatically operate upon successive sections of the tack-strip in holding and clamping the same, with a reciprocating header, all substantially as and for the purposes described.

JOS. E. CRISP.

Witnesses:
F. F. RAYMOND, 2d,
FRED. B. DOLAN.