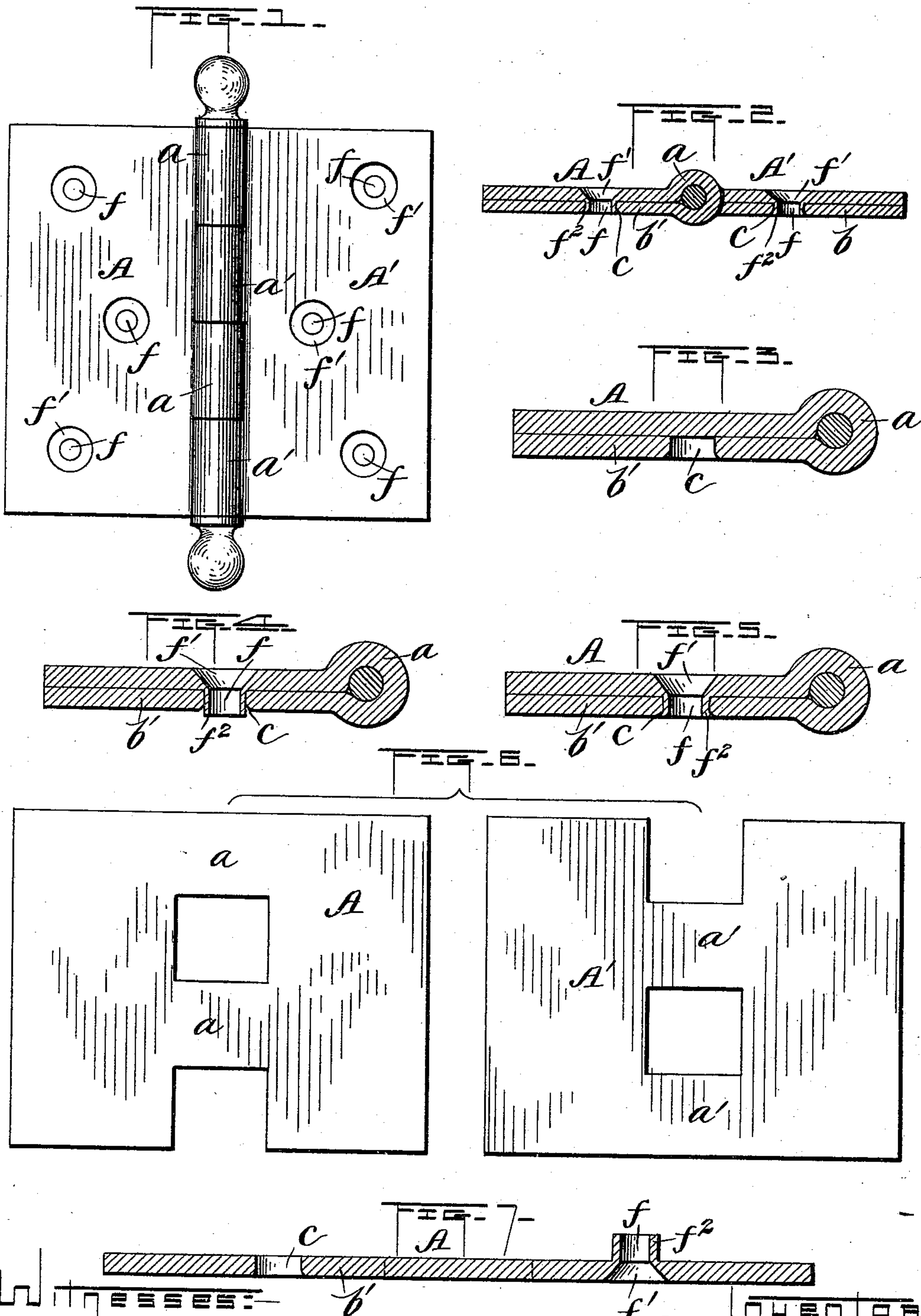


(No Model.)

R. T. SMITH.
METHOD OF MAKING BUTT HINGES.

No. 487,939.

Patented Dec. 13, 1892.



Witness:
J. E. T. Smith

Witness:
Roswell T. Smith
by his Attorneys
Mason, Fenwick and Lawrence

UNITED STATES PATENT OFFICE.

ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE.

METHOD OF MAKING BUTT-HINGES.

SPECIFICATION forming part of Letters Patent No. 487,939, dated December 13, 1892.

Application filed May 18, 1892. Serial No. 433,468. (No model.)

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Methods of Making Butt-Hinges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a method of constructing and uniting the folding portions of the metal of which the halves of butt-hinges are formed, such halves being ordinarily made by cutting or punching and shaping sheet metal so as to form pintle-eyes, and then folding the metal away from the eyes, one portion upon the other; and my said method consists in cutting an aperture in the under folding part of the metal preparatory to shaping and folding the metal, and also punching or cutting another hole in the sheet, either preparatory or subsequently to the folding operation, at a point which coincides with said aperture when the hinge is finished, forming a hollow projecting spur of homogeneous metal with the hinge on the upper folding portion, which is adapted for extending entirely through the aperture in the under folding portion, and subsequently pressing down the spur flush with the outer surface of said under folding portion, so as to present a smooth flat finish and solidly and firmly unite and hold the parts together as one, and at the same time leave the folded portions of the metal riveted together and the hinge finished with a countersunk screw-hole for receiving the fastening-screw in such a manner that its head is substantially flush with the surface of the hinge.

In the accompanying drawings, Figure 1 is a face view of a butt-hinge made in accordance with my method. Fig. 2 is a horizontal section of the completed hinge shown in Fig. 1. Fig. 3 is a horizontal section, on an enlarged scale, of one half of the hinge, showing the lower portion as it is perforated preparatory to folding the metal, so as to permit the punching of the screw-hole and forming the countersink and the riveting-spur on the up-

per folding portion or to admit of the passage through the perforation of the spur formed on the upper folding portion previously to the folding operation and during the act of punching the countersunk screw-hole. Fig. 4 is a similar section to Fig. 3, with the upper folding portion in position and condition for riveting. Fig. 5 is a section similar to Fig. 4, showing the riveting completed, as in Fig. 2. Fig. 6 represents a face view of two pieces of metal cut or punched for forming the two halves of the butt-hinge; and Fig. 7 is a section of one of the sheets, showing the aperture and also the countersunk screw-hole and riveting-spur formed on it previously to the shaping and folding operation, the same representing an equivalent method for carrying out a portion of my invention.

A A' in the drawings designate two halves of a butt-hinge, each half being formed out of a single piece of sheet metal by punching and folding the metal and shaping it with pintle-eyes *a a'* and riveting the folded portions after my improved method. In the sheet of metal cut and punched, so as to form the pintle-eye and preparatory to shaping it with the pintle-eye portion, and also preparatory to folding one portion upon the other, a round aperture *c* is cut through the under folding portion *b'*, and, if preferred, a countersunk screw-hole and riveting-spur may also be formed upon the sheet before folding the upper portion thereof upon the under portion, as will be hereinafter more fully explained; but if simply the aperture *b'* is cut or punched preparatory to shaping and folding the sheet is next shaped to form the pintle-eyes and the upper folding portion folded upon the lower portion, and thereupon the upper portion is subjected to the action of a cutting-punch at a point directly in line with the round aperture *c*, said punch being cone-pointed, cylindrical, and bevel-shouldered and adapted for forming a cylindrical screw-hole *f* and a countersink *f'* and also displacing the metal at the point where the screw-hole and the countersink are formed and forcing it in the form of a cylindrical hollow spur *f²* through said hole *c* in the lower folding portion of the metal, and thereafter the parts are pressed together and by means of the spur are solidly

united and securely riveted, the lower end of the spur lying flush with the surface of the under side of the under folding portion of the metal. The lower edge of the round hole is slightly flared in the operation of punching it, and it is by this means that the lower edge of the rivet can be pressed so as to stand or lie flush with the metal of the hinge and not present an extending projection beyond the surface of the hinge. If preferred, the hole which is in the upper folded part may be formed by a punch not having a countersinking-shoulder, and the countersink may be formed with another punch which has such shoulder and a cylindrical guiding and forming end below the shoulder. The respective halves of the hinge are made alike, except, as usual, one half has a plurality of pintle-eye portions and the other a single eye portion. This, however, may be in accordance with any known modes of hinging the parts together. If preferred, the halves of the hinge may have their folded portions of metal riveted at any time after the punching and countersinking are performed; but preferably the operation will be a continuous one.

By referring to Fig. 7 it will be observed that the countersunk hole for the fasteningscrew is cut and the spur formed on the sheet before it is folded. Under this method the spur is made to enter the round aperture when the sheet is folded, and the parts can then be pressed and riveted together the same as when the spur is formed after the portions of metal are folded one upon the other. All of the screw-fastening holes of the hinge may be constructed in the same manner as the single one described. By my method both the screw-holes and the rivets are formed simultaneously, and when the hinge is finished it has no exposed fastening portions other than the screws, which are necessary for confining the hinge in position. My method enables me to furnish the trade with folded double-plate hinges which are very strong and solid, al-

though made out of light sheet or plate metal, and the same are cheaply manufactured, while presenting a beautiful and finished appearance.

Malleable metal may be employed in connection with my process, as well as wrought metal, in the manufacture of butt-hinges.

What I claim as my invention is—

1. In the art of manufacturing hinges, the within-described method of making the halves of butt-hinges of the type herein described, the same consisting in cutting an aperture in the under folding part of the sheet of metal preparatory to shaping and folding the metal, and also punching or cutting a hole through the upper folding portion, which coincides with said aperture when the hinge is finished, and forming a hollow projecting spur of homogeneous metal with the hinge, which is adapted for extending entirely through the said aperture in the under folding portion, and subsequently pressing down the end of the spur flush with the outer surface of said under folding portion, so as to present a smooth flat finish and solidly and firmly unite and hold the parts together as one, and at the same time leave the hinge finished with a countersunk screw-hole adapted for receiving the fasteningscrew in such a manner that its head is substantially flush with the surface of the hinge, as set forth.

2. The improvement in the art of uniting pieces of metal, the same consisting in forming a hole in one piece, punching a hole in the other piece and forming a projecting fin or flange on the edge thereof, passing the fin or flange through the hole of the first-mentioned piece, and hammering down or upsetting said fin.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ROSWELL T. SMITH.

Witnesses:

FRED E. PECKHAM,
IRA F. HARRIS.