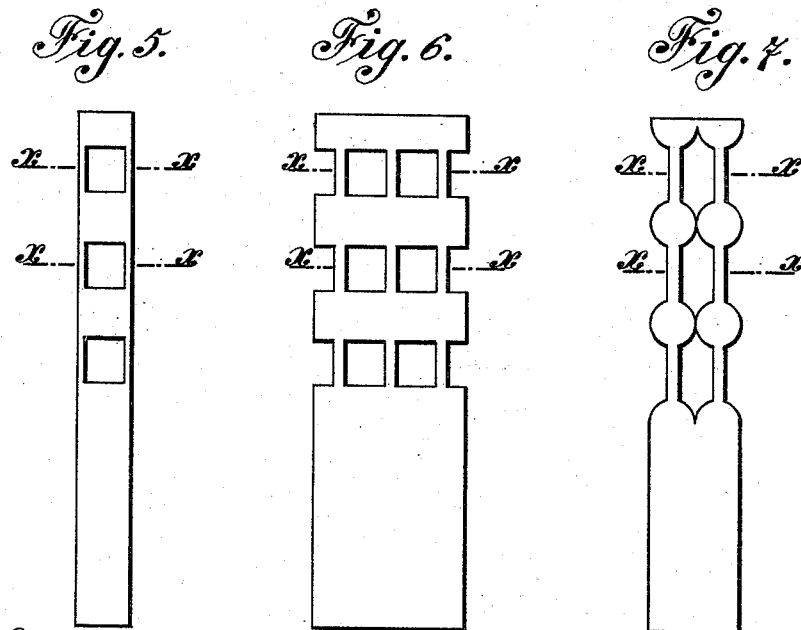
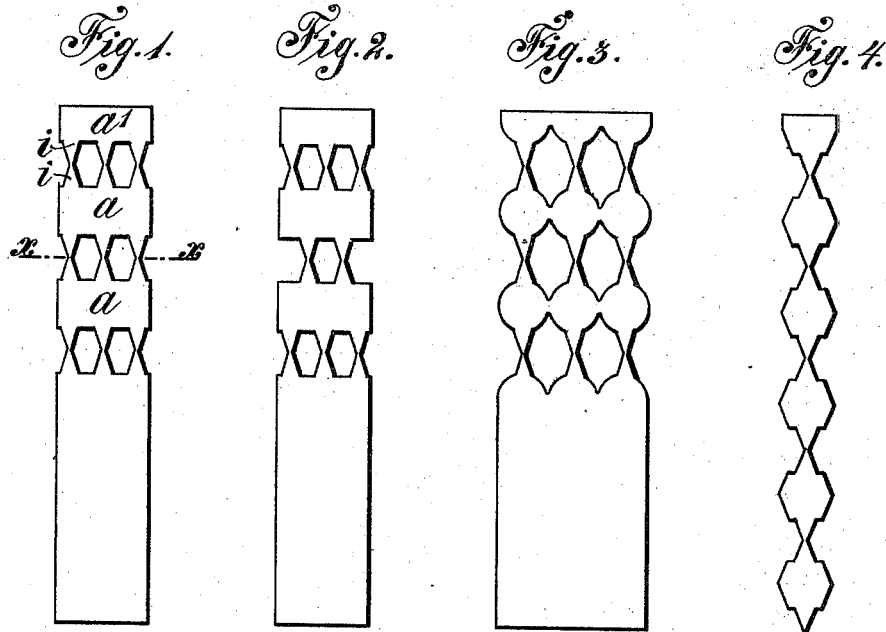


(No Model.)

E. HEYNEN.
MANUFACTURE OF METALLIC BINDING CLAMPS.
No. 526,443. Patented Sept. 25, 1894.



Witnesses:
H. G. Vieterich
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by Henry Orth

UNITED STATES PATENT OFFICE.

ERNST HEYNEN, OF BARMEN, GERMANY.

MANUFACTURE OF METALLIC BINDING-CLAMPS.

SPECIFICATION forming part of Letters Patent No. 526,443, dated September 25, 1894.

Application filed October 7, 1893. Serial No. 487,423. (No model.)

To all whom it may concern:

Be it known that I, ERNST HEYNEN, a subject of the German Emperor, residing at 30 Wertherstrasse, Barmen, Germany, have invented certain new and useful Improvements in the Manufacture of Metallic Binding-Clamps; and I do hereby declare the following to be a clear and exact description of the invention.

My invention relates to metallic binding clamps for binding together or uniting the meeting edges of boxes, and analogous receptacles made of thin wood, paste board, and other equivalent materials.

It has heretofore been the practice to unite or bind together the several parts of a box along the meeting edges by means of tin clamps in preference to wire, for the reason that these clamps cover a greater area of said meeting edges, and not only protect, but strengthen the same very materially. The use of tin clamps for the purpose stated is however comparatively costly, and has many disadvantages. The construction of the clamps involves several operations performed in different machines, the clamps being first stamped or cut out of sheet or plate tin and then cut to proper length before they can be supplied to the binding or box making machines. They are comparatively heavy, so that for many purposes it becomes necessary to sharpen the teeth thereof in order that they may more readily penetrate into the material of which the boxes are made.

The cutting of the blanks or clamps to the required length frequently leaves fins or projections which during the operation of binding are not embedded in the material from which the box is made, so that the formation of a perfect joint is frequently rendered very difficult, while said fins or sharp projections are a source of injury to those that handle the boxes, as well as to furniture on which such boxes may be placed. On the other hand, the proper feeding of each individual clamp to the binding or box making machine is more or less difficult, so that the clamps are not always properly or correctly applied to the meeting edges, which results in imperfect joints, and frequently in more or less damaged goods.

My invention is designed, and it has for its

object to overcome the difficulties enumerated, and at the same time simplify and cheapen the operation of box making, or more properly speaking, of uniting the several elements necessary to the construction of a box. These I attain chiefly by the use of metal clamps in the form of a continuous ribbon or strip adapted to be wound on a roll and from thence fed to the box making machine. This in itself has many advantages, namely, I am enabled to use ribbon metal of any length or of such lengths as may be conveniently obtained in the art of metal drawing.

I am enabled to use hard drawn and very thin metal, so that the individual clamps are much lighter and at the same time stronger than the tin clamps usually employed. By stamping the clamps from or into the metal ribbon in such manner that the locking teeth interconnect the series of clamps, the width of the ribbon will in each case determine the length of the clamps, and in a measure the number of its locking teeth, so that the cutting of the clamps into suitable lengths and the disadvantages inherent thereto as above set forth are also avoided, while the severing of a clamp from a ribbon or chain of such is materially facilitated.

I am enabled to use a machine of substantially the same construction as those employed in wire binding or stapling, the changes in the operating devices being one of dimension merely.

I am enabled to combine with the box making or binding machine devices for stamping the clamps out of, or more properly into the metal ribbon, and so arrange said devices as to perform the function of feeding devices also.

I am enabled to so construct the clamps that the devices necessary to bend the wire and form the same into a staple in wire stapling or binding machines can be dispensed with and its construction materially simplified.

Finally, the construction or arrangement of the clamps in the form of a continuous ribbon, and the feeding of the same automatically from a spool or roll or direct from the stamping devices to the binding or box making mechanism insure the proper application of the clamps to the work, so that no imperfect work can result, while the opera-

tion of box making or uniting the several elements that constitute a box is materially expedited and a considerable amount of labor and expense saved.

- 5 Without departure from the scope or nature of my invention the form or configuration of the clamps may be varied and each clamp, according to the length thereof may have one or more teeth formed along its opposite edges, or one of the edges of a clamp
10 may be provided with a less number of teeth than the other, and said teeth may be arranged in such manner that those on one edge of the clamp will lie opposite the spaces
15 between the teeth on the opposite edge.

- Referring now to the accompanying drawings—Figures 1 to 7 illustrate by face views or in plan, sections of metallic ribbons a portion of which is stamped out to form series of
20 interconnected clamps.

- As shown in the drawings the clamps, *a*, are interconnected to form a continuous series or chain, through the medium of their teeth *i*, the clamps being severed in the binding or box making machine by a suitable
25 knife along the line *x—x*, the half clamp *a'* at the end of the chain of such being removed before it is applied and the chain is fed to the binding devices in the usual manner.

- 30 The strip or ribbon of metal may be punched or stamped into any one of the forms shown in Figs. 1 to 7, in a separate machine, or this may take place in the box making or binding machine, that is to say, by de-

35 vices combined with the box making or binding machine. The said devices may consist of reciprocally movable male and female dies, or one of said dies may have motion toward and from the other. I prefer, however, to employ roller dies or punches, for the reason
40 that these dies will then perform the function of feed rolls, as will be readily understood.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—
45

1. As an article of manufacture, a series of metal toothed binding clamps integrally interconnected through the medium of the teeth thereof to form a continuous chain or ribbon, and when separated adapted to penetrate and stay the meeting edges of the boxes
50 substantially as and for the purpose set forth.

2. As an article of manufacture, a series of metal binding clamps, each provided with one or more teeth along its opposite edges,
55 the points of the teeth of one clamp integrally connected with the points of the teeth of a preceding and succeeding clamp to form a continuous chain or ribbon, and when separated adapted to penetrate and stay the
60 meeting edges of the boxes substantially as and for the purpose set forth.

In testimony whereof I have hereto signed my name in the presence of two witnesses.

ERNST HEYNEN.

Witnesses:

WILLIAM ESSENWEIN,
F. H. STRAUSS.