No. 795,628. PATENTED JULY 25, 1905.

R. B. LEWIS.

METHOD OF FORMING METALLIC RIVETS OR FASTENERS.

APPLICATION FILED OCT. 30, 1903.

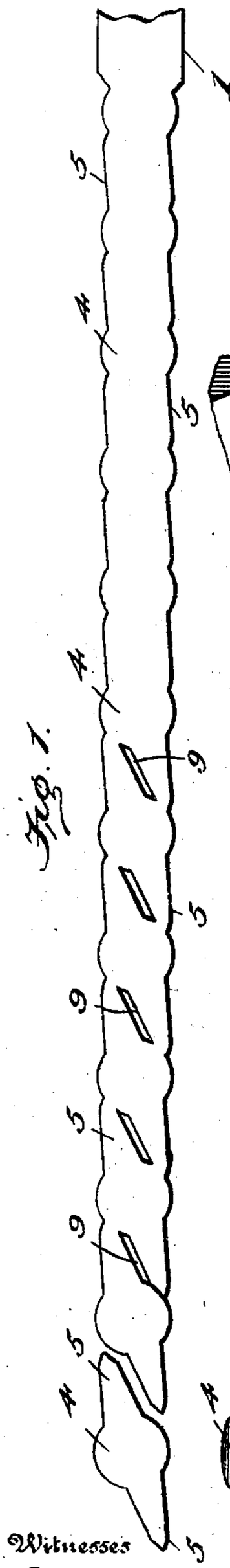



Fig. 1.

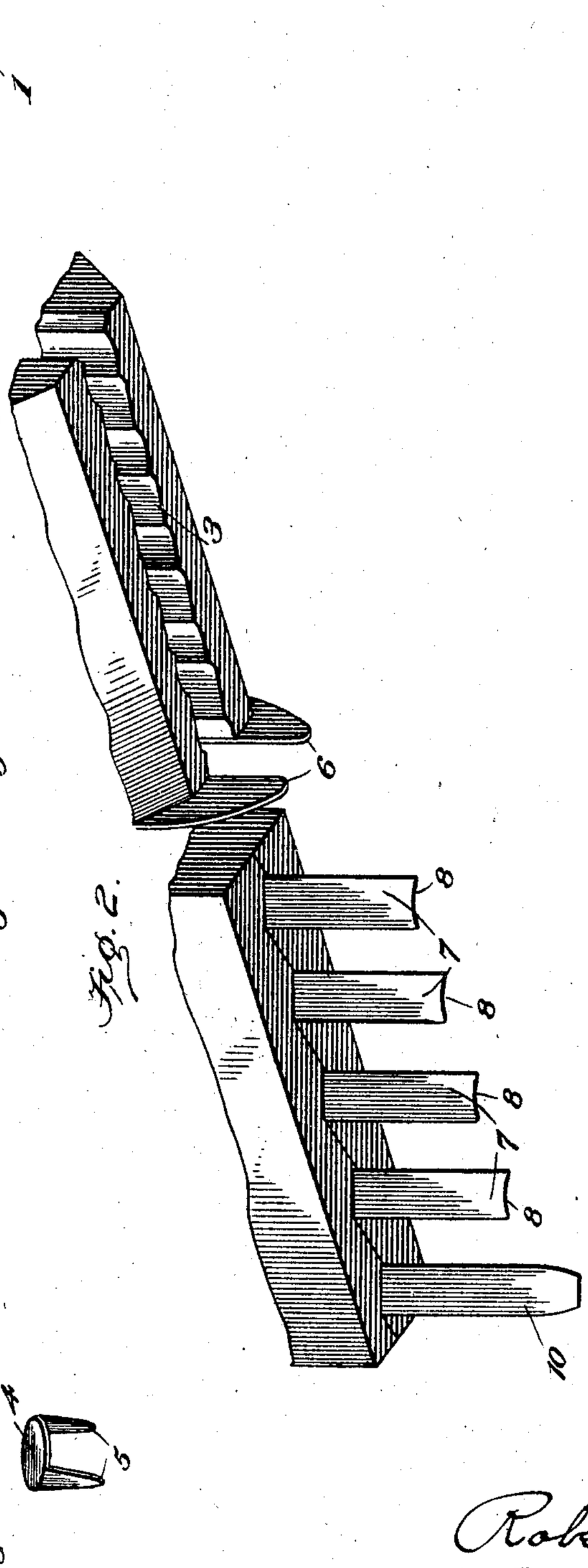



Fig. 2.

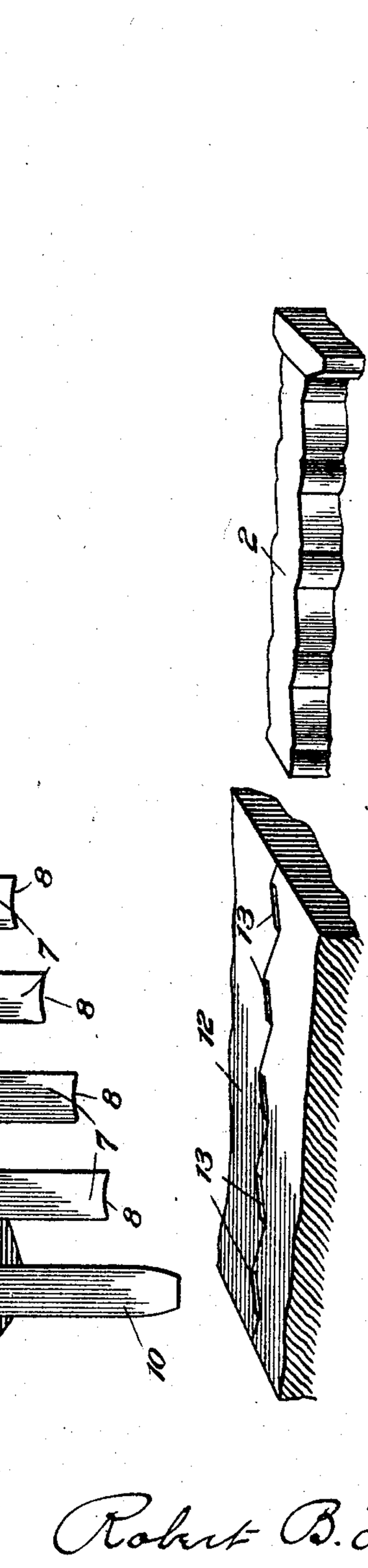
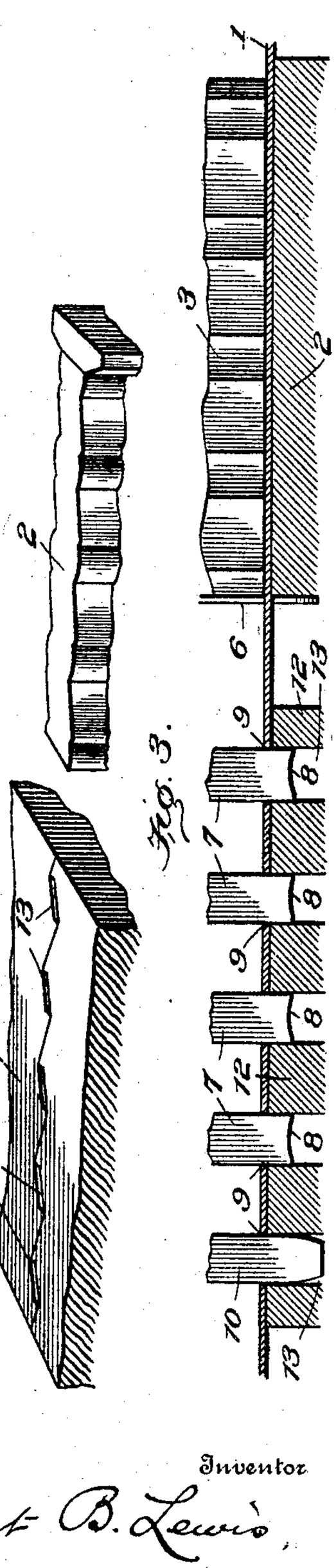



Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## METHOD OF FORMING METALLIC RIVETS OR FASTENERS.

No. 795,628. Specification of Letters Patent. Patented July 25, 1905.

Application filed October 30, 1903. Serial No. 179,210.

*To all whom it may concern:*

Be it known that I, ROBERT B. LEWIS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Methods of Forming Metallic Rivets or Fasteners, of which the following is a specification.

My present invention relates to an improved method of forming or cutting metallic fasteners or rivets of the type shown and described in Letters Patent No. 712,422, granted to John S. Stokes upon the 28th day of October, 1902, in which a plurality of rivets or fasteners are joined together in a continuous strip of indefinite length, each rivet or fastener comprising a head and two prongs extending outward from the head at opposite sides thereof, the points of the prongs of one rivet or fastener being joined to the heads only of adjacent rivets or fasteners, the said prongs of the fasteners overlapping each other and being slightly separated one from the other by diagonally-arranged punch-openings, and all the fasteners of the strip being disposed at an angle to a line taken longitudinally and centrally of the strip.

According to my present method contiguous fasteners or rivets of this type are formed from a thin metallic ribbon by cutting opposite edges of the strip to form portions of the heads and prongs of the rivets or fasteners and then punching out equidistant diagonal slots or openings to form the opposite or remaining sides of the heads and prongs, the resultant article being a continuous strip of completely-formed contiguous rivets or fasteners. In use this strip is fed into a forming and setting-up machine, where the fasteners are served from the strip and applied one at a time.

Considerable difficulty has been experienced in cutting or forming a rivet or fastener-strip of the type described, owing to the fact that the fasteners are comparatively small, thus requiring the edge-trimming cutters to be placed close together, and an attempt to trim the opposite edges of a strip to form portions of the heads and prongs of the rivets and simultaneously punch out the diagonal slots between the said trimmed edges to complete the formation of the fasteners proved to be a failure from a practical manufacturing standpoint of view, chiefly because of the fact that means thus constructed to simultaneously cut and punch the strip or ribbon at the same point could not be made strong and durable enough to withstand the strains and wear to which said means were subjected during operation.

My present invention is designed to overcome the objections above set forth, and the method I have devised consists in first trimming or cutting the opposite edges of a metallic strip to form portions of the heads and prongs of the fasteners and then punching out the equidistant diagonal openings to form the opposite sides of the prongs and heads of the rivets or fasteners, these two operations being carried on at different points of the strip and preferably simultaneously, the strip during these said operations being properly guided, centered, and held against movement to insure proper alinement thereof in order that the diagonal slots will be properly formed or located relatively to the heads of the rivets or fasteners.

In the accompanying specification and drawings I have shown and described one embodiment of the invention, wherein the metallic ribbon is first cut or trimmed on opposite sides for the purpose of forming portions of the heads and prongs of the rivets or fasteners and then punching the diagonal slots or openings to complete the formation of the fasteners; but I wish it understood that I may carry on these operations in precisely the reverse order—namely, by first cutting out the diagonal slots and then trimming the opposite edges of the strip. From this statement it will be understood that the salient feature of the invention resides in the method of forming a continuous strip of completely-formed fasteners of the type described by first forming portions of the heads and prongs of the rivets or fasteners and then forming the remaining portions of the heads and prongs to complete the formation of the rivets or fasteners, these two operations being carried on continuously at different points of the strip.

In order to enable others to clearly understand and practice my said invention, I will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a plan view of the fastener-

strip as it appears during the several stages of operation. Fig. 2 is a perspective view of one form of mechanism for forming the strip of fasteners. Fig. 3 is a longitudinal sectional view of the strip and forming mechanism.

In forming contiguous rivets or fasteners according to the present method I first take a thin metallic ribbon 1 of indefinite length and feed the same in a step-by-step manner by any suitable means between edge-trimmers comprising male and female cutters 2 and 3, respectively, the said cutters being constructed to trim the opposite edges of the metallic ribbon to form portions only of the heads 4 and prongs 5 of the rivets or fasteners. I prefer to make the cutters of such a length as to form a gang of rivets or fasteners at each operation thereof; but it will be obvious that this is a mere matter of convenience and that I may cut but a single rivet or fastener at a time.

During the edge-trimming operation the ribbon is held against lateral and longitudinal movement by means of a pilot consisting of two parallel blades 6, carried by the female member 3 of the edge-trimmers, said pilot on the descent of said member straddling the trimmed strip and closely embracing its opposite edges. The trimmed strip of partially-formed rivets or fasteners is then fed forward beneath a gang of diagonally-arranged punches which are located in line with the edge-trimmers, said punches consisting of flat blades 7, having cutting ends 8. These punches are arranged on diagonal lines and at equal distance apart and serve during operation to cut or punch equidistant diagonal slots 9 in the strip intermediate the trimmed edges thereof and between the heads 4, which slots complete the rivets or fasteners, each of which consists of a head 4, having prongs 5 extending outward therefrom in opposite directions, the points of the prongs of one rivet being joined to the heads of adjacent rivets and the prongs of each rivet overlapping the prongs of its companion rivets.

During the punching operation the strip is held against lateral and longitudinal movement by means of a centering device, which consists of a flat diagonally-arranged blade 10, located in advance of the foremost punch of the gang, said blade being somewhat longer than the punches 7, so that it will enter one of the previously-formed diagonal slots 9 before the punches are brought into contact with the strip. This centering and alining device will insure the proper positioning of the strip during its feed relatively to the punches, so that the latter will always truly and accurately cut or punch the diagonal slots at the proper points between the previously partially formed heads and prongs, which is quite essential. The punches 7 coöperate during operation with a die-block 12, having diagonally-arranged punch-openings 13 therein.

It will be obvious that instead of performing the edge-trimming operation first and then punching out the diagonal slots I may reverse this order of steps and do the punching first and then trim the edges of the strip. I consider this reversal within the spirit and scope of the invention.

From the foregoing detailed description it will be seen that my improved method consists in forming contiguous fasteners or rivets in strip form from a metallic ribbon by trimming opposite edges of the ribbon to partially form the heads and prongs of the fasteners and in punching properly-spaced openings in said ribbon intermediate the edges thereof and between the previous partially-formed heads and prongs to complete the formation of the fasteners, said trimming and punching operations being carried on at different portions of the strip. In other words, the said trimming and punching operations are performed separately and preferably, but not necessarily, simultaneously.

In use the completed strip of contiguous rivets or fasteners is fed into a forming and setting machine and the fasteners are severed one at a time along the two points of connection and are then driven into the work.

The method I have devised is simple in operation, thoroughly practical, and comparatively inexpensive.

I do not claim herein the mechanism for performing the cutting and punching operations, as such mechanism forms the subject-matter of a separate application for patent filed by me on the 5th day of September, 1903, Serial No. 172,135.

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

1. The method herein described of forming contiguous pronged fasteners in strip form, which consists in first trimming opposite edges of a metallic ribbon to partially form the heads and prongs of a gang of the fasteners, then feeding the strip forward a distance equal to the length of the said partially-formed gang and holding that part of the strip being acted upon against movement, and then punching equidistant diagonal slots in the ribbon intermediate the trimmed edges thereof and between the partially-formed heads to complete the formation of the gang.

2. The method herein described of forming contiguous pronged fasteners in strip form, which consists in simultaneously trimming opposite edges of a metallic ribbon to partially form the heads and prongs of a gang of the fasteners, then feeding the strip forward a distance equal to the length of the partially-formed gang of fasteners and holding the strip against lengthwise and lateral movement, and then punching equidistant diagonal slots in said ribbon intermediate the trimmed edges thereof to complete the formation of the gang.

3. The method herein described of forming contiguous pronged fasteners in strip form,

which consists in simultaneously trimming opposite edges of a metallic ribbon to partially form the heads and prongs of a gang of contiguous fasteners, then feeding the strip forward a distance equal to the length of the said partially-formed gang and holding the strip against lengthwise and lateral movement, then punching equidistant diagonal slots in said ribbon intermediate the trimmed edges thereof to complete the formation of said gang, and simultaneously with said punching operation trimming another portion of the ribbon immediately following the first-formed gang to provide an adjacent gang of partially-formed heads and prongs.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT B. LEWIS.

Witnesses:

FREDERICK G. FARQUHAR,

CHARLES H. RUSSELL.