

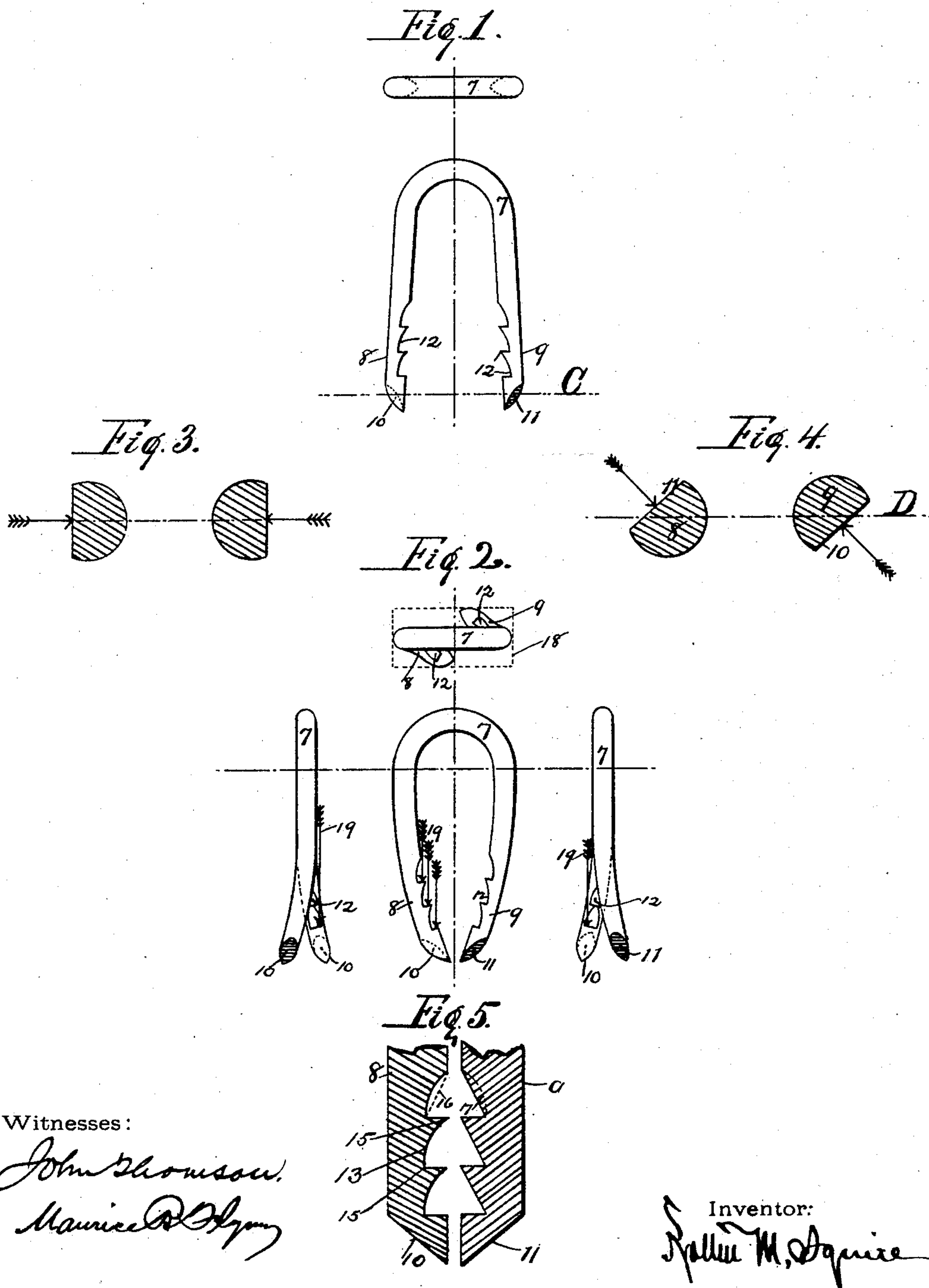
(No Model.)

R. M. SQUIRE.

STAPLE.

No. 327,339.

Patented Sept. 29, 1885.



# UNITED STATES PATENT OFFICE.

ROLLIN M. SQUIRE, OF NEW YORK, N. Y.

## STAPLE.

SPECIFICATION forming part of Letters Patent No. 327,339, dated September 29, 1885.

Application filed November 15, 1884. (No model.) Patented in England March 25, 1885, No. 3,852.

*To all whom it may concern:*

Be it known that I, ROLLIN M. SQUIRE, of the city, county, and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Staples, of which the following is a specification.

This invention refers to self-clinching barbed staples: and is an improvement on Letters Patent issued to Stiles Frost, March 27, 1883, No. 274,481.

The said improvement consists, first, in forming the deflecting angles upon the outside of the extension of the prongs of the staple in such manner that the said prongs are forced inward toward each other and also away from each other, the latter deflection, however, being in a direction sidewise of the staple; and, secondly, in an improved form of barb or space.

Of the drawings, Figure 1 is a plan and front elevation showing staple in normal condition. Fig. 2 is a plan, front, and side elevations, showing staple after it will have been driven. Figs. 3 and 4 are enlarged transverse sections on line C, also showing a modification; and Fig. 5 is an enlarged longitudinal section through prongs of staple, illustrating the preferred form of spaces or barbs.

In the drawings a staple of usual form, 7, is represented, with the exception that the extremities or extensions of the prongs 8 9 are beveled on their outer sides, as 10 11, in an inward and downward direction, and also at an angle to the common center line, D, of the prongs, the angles of the said beveled portions, however, being formed in an opposing direction each to the other, as seen in Fig. 4; hence, when the staple is driven into any yielding material, as wood, the resistance against the bevels tends to deflect the prongs differentially inward toward each other and sidewise away from each other, as illustrated in Fig. 2. The extent of this deflection or curvature is directly dependent upon the degree of obtuseness given to the bevels, the length of the prongs, and the character of the material in which the staple may be driven. It will therefore be seen that by properly balancing the conditions the prongs of the

staple will be forced into a shape whereby to resist withdrawal to an extent limited only by the rigidity of the metallic prongs against flexure—that is, to be restraighened—and the friction of the material in which they are embedded.

To yet further increase the resistance of the staple against withdrawal, a series of spaces or barbs, as 12, are formed in one or more sides of the prongs. It will be apparent that the larger the volume which can be embraced by the spaces between the barbs of the material encompassing the prongs, the greater will be the resistance offered to the withdrawal of the staple. To this end the said spaces are formed in the manner shown at 13, Fig. 5, in which the bottom of each space is the arc of a circle, preferably of the least diameter that will connect the bottom, as 14, with the top, as 15, of any single space. The increased capacity of the spaces, and therefore the advantage of the serrations thus formed, is clearly shown by the dotted outlines 16 17.

It will be observed that the extent and direction of the differential movement imparted to the prongs by the bevels is not arbitrary, but may be varied to suit special requirements. This is indicated by Figs. 3 and 4, in which the arrows show the lines of force and consequent direction of movement.

The controlling advantage of this form of staple is that the prongs are caused to embrace the material in which the staple may be driven, and also to spread and increase the area of resistance against displacement. Thus this combined embracing and spreading action imparted to the prongs increases the efficiency of the staple, first, by augmenting the friction against the staple, and, secondly, by the direct opposition of the fibers of the material which fill the spaces between the barbs, all of which is clearly demonstrated by the dotted outline 18 and arrows 19, the latter indicating resisting lines of force.

I claim—

1. As a new article of manufacture, a staple having the outside of the extension of each prong beveled to an edge or point, the direction of the said bevel being downward and in-



ward and also at an angle to the center line, D, of the prongs, in combination with spaces or barbs formed in the main portions of the prongs, substantially as specified.

- 5 2. As a new article of manufacture, a staple having the outside of the extension of each prong beveled to an edge or point, the direction of the said bevel being downward and inward and also at an angle to the center line,  
10 D, of the prongs, in combination with spaces or barbs formed in the main portions of the

prongs when the bottom of the said spaces are formed to the arc of a circle, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROLLIN M. SQUIRE.

Witnesses:

JOHN THOMSON,  
MAURICE B. FLYNN.