(No Model.) 2 Sheets—Sheet 1.

E. J. HESS.

DIE FOR FORMING SPRING HEAD CLIPS.

No. 389,570. Patented Sept. 18, 1888.

Fig. 1.

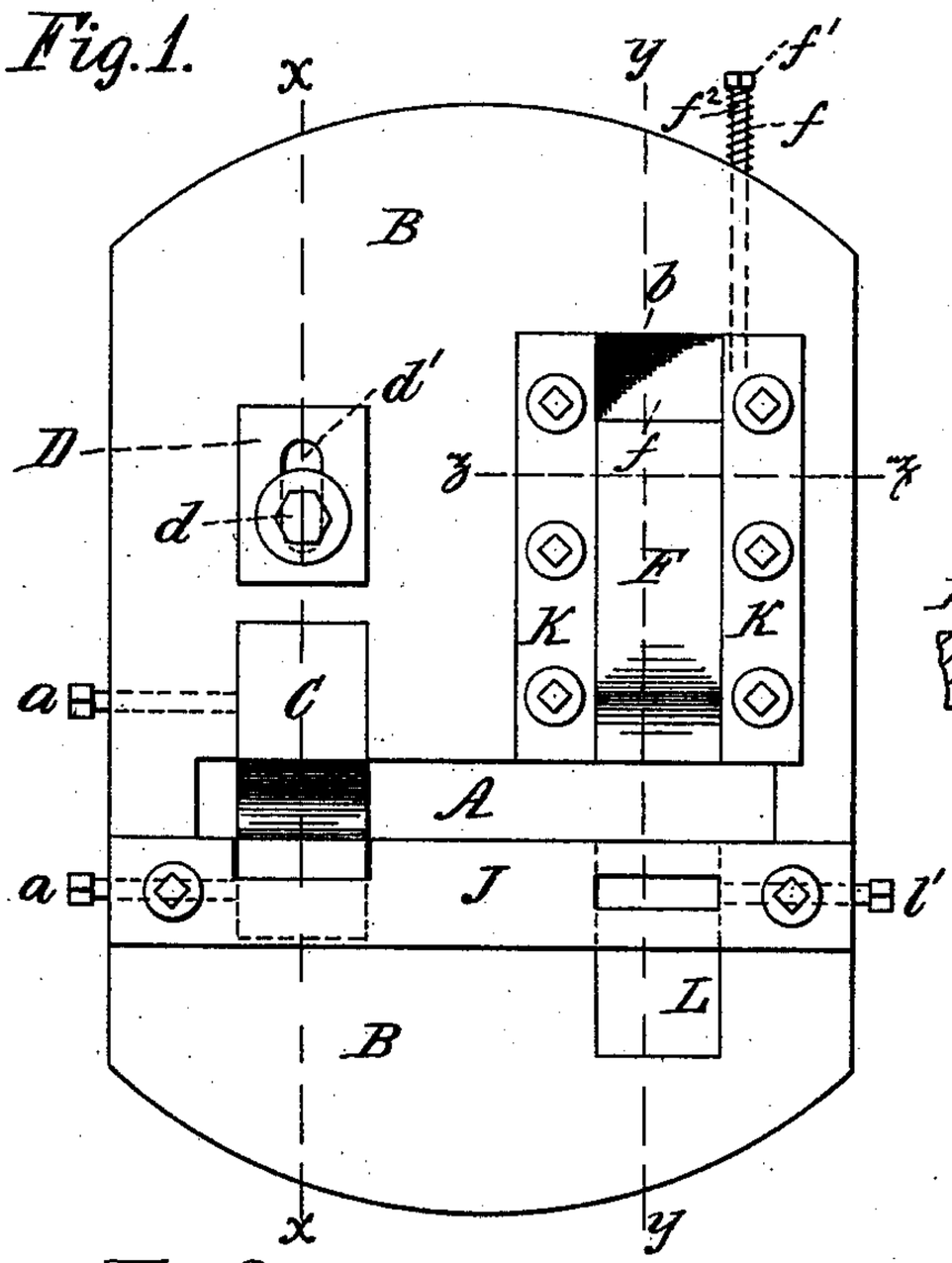


Fig. 4.

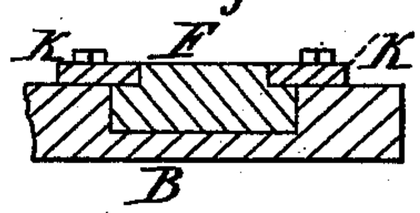


Fig. 2.

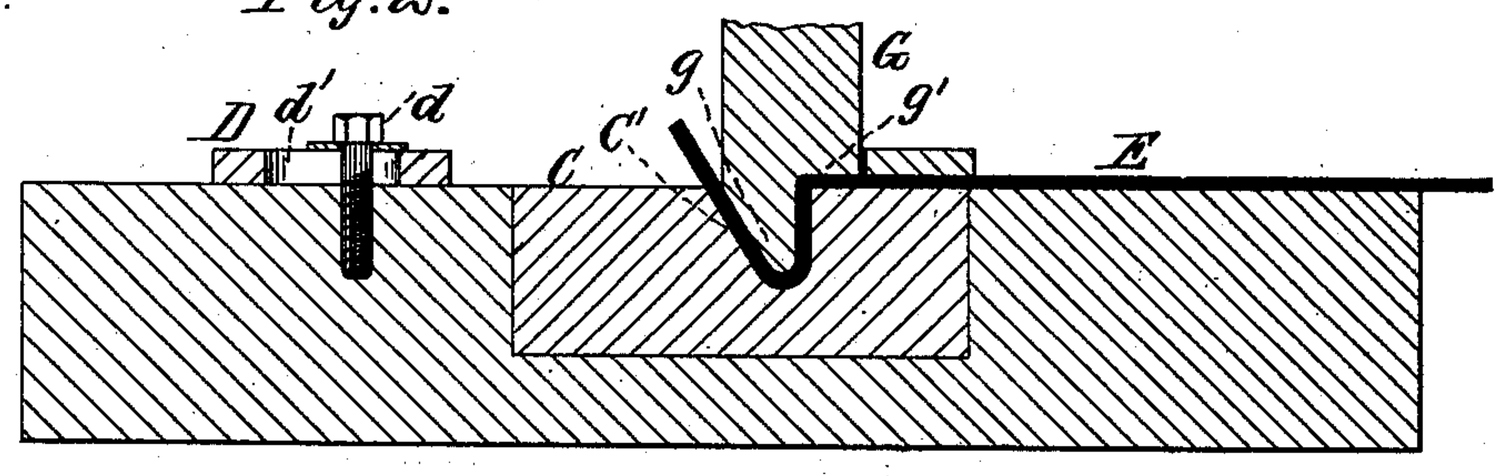
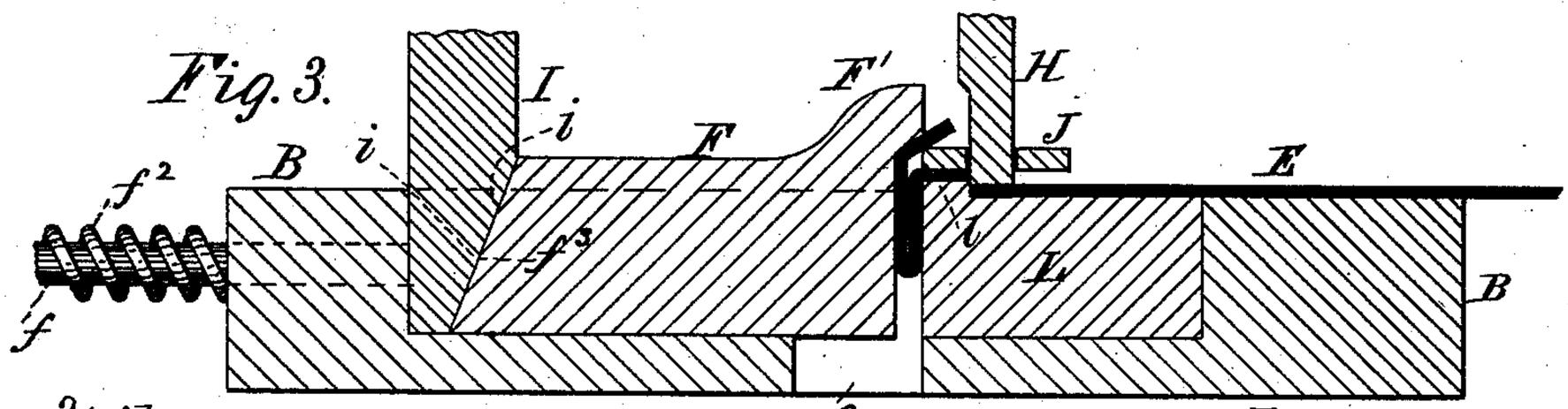


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

E. J. HESS.

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Fig. 5.

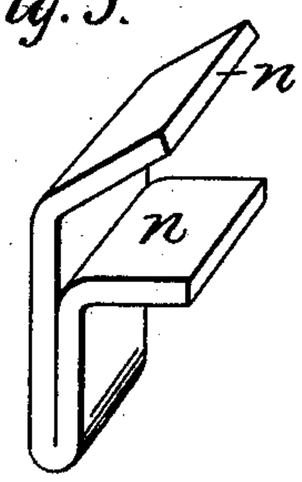


Fig. 8.

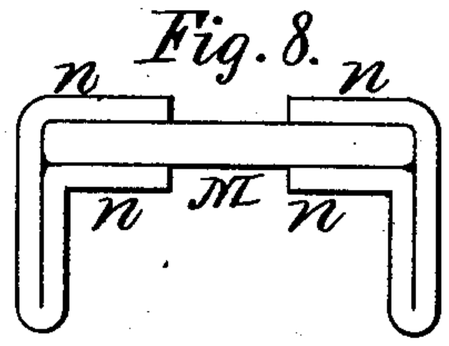


Fig. 6.

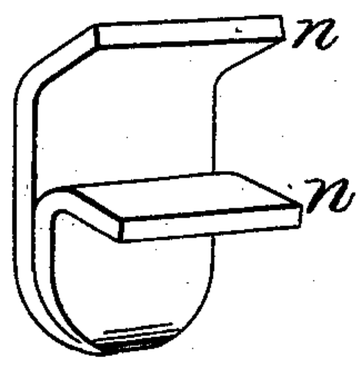


Fig. 9.

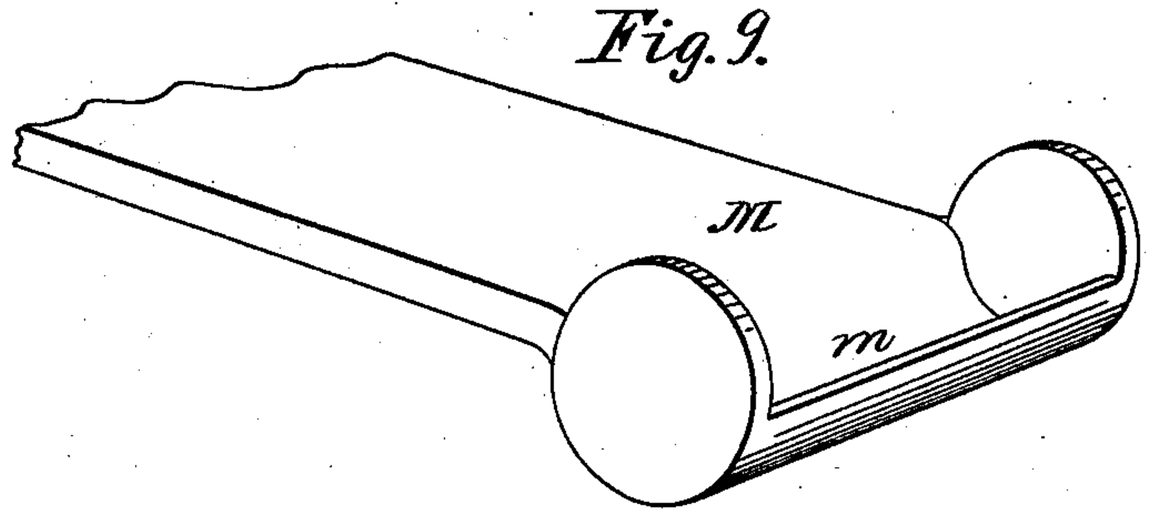
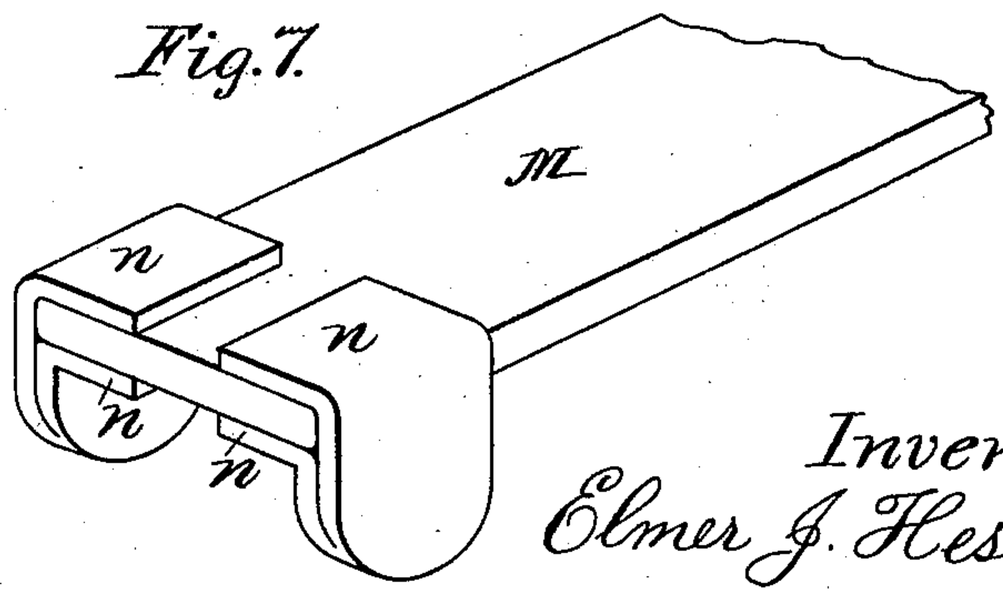


Fig. 7.



Witnesses:

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G. H. Paver

Inventor:

Elmer J. Hess,

per Wm. Hubbell Fisher,

his Attorney.

UNITED STATES PATENT OFFICE.

ELMER J. HESS, OF CINCINNATI, OHIO.

DIE FOR FORMING SPRING-HEAD CLIPS.

SPECIFICATION forming part of Letters Patent No. 389,570, dated September 18, 1888.

Application filed June 22, 1888. Serial No. 277,897. (No model.)

To all whom it may concern:

Be it known that I, ELMER J. HESS, a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Dies for Forming Spring-Head Clips, of which the following is a specification.

The several features of my invention and the advantages arising from their use, conjointly or otherwise, will be apparent from the following description:

In the accompanying drawings, forming part of this specification, Figure 1 is a top view of the die-plate and lower dies. Fig. 2 is a section taken at the line *x x*, Fig. 1, and also showing the upper die and strip of metal as bent. Fig. 3 is a section taken at the line *y y*, Fig. 1, looking from left to right. It also shows the upper dies in position and the completed bending and cutting off of the clip by these dies. Fig. 4 is a section taken at the line *z z*, Fig. 1. Fig. 5 is a perspective view of the clip as it leaves the dies. Fig. 6 is a perspective view of the clip as trimmed into shape. Fig. 7 is a perspective view of the clips in position on the end of the bar of steel forming the leaf of the spring just before welding. Fig. 8 is an end view of that end of the combination of clips and spring-leaf shown in Fig. 7. Fig. 9 is a perspective view of the end of a complete spring-head, the clips being welded in place.

The block or base B, which is to be suitably mounted, is provided with the transverse slot A, extending entirely through it. At one side of the block B the die C is set into it, being received in a suitable recess and held in place by the set-screws *a a*, screwed through the sides of the block B.

The die C is provided with a depression, C′, one face of which is vertical and the other oblique. The outline of the depression C′ is shown in Fig. 2, where the bar E is shown fitting into it. Immediately behind the die C the guide D is placed. This guide is secured to the face of the block B by the set-screw *d*, which latter passes through the slot *d′* in the guide, and is screwed into the block B, thus providing for adjustment of the guide to and from the die C. The die F is placed in the recess *b* in the block B, and is held in place by the guide-plates K, which are themselves bolted or otherwise secured to the block B. The pin *f* projects backwardly from the die F, to which it is attached, through the block B. It is provided with the head *f′*, and between this head *f′* and the block B it is surrounded by the coiled spring f^2, whose action serves to retract the die F. The die L is set in the block B on the other side of the slot A from the die F, and is held in place by the set-screw *l′*. It is provided with the shoulder *l*, raised above the general level of the block B, and having a sharp edge in front.

The guide J extends across the block B, and is raised above it and above the shoulder *l* a sufficient distance to accommodate the bar E. The upper parts of the device consist of die G, wedge I, and knife H, moved by suitable vertically-reciprocating mechanism. The lower end, *g*, of the die G is shaped to force the bar E into the depression C′ of the die C. The die G also has the shoulder *g′* to form one lip, *n*, of the clip. The knife H moves vertically past the shoulder *l* and acts in conjunction therewith as a shear. The wedge I descends into the recess *b* behind the die F, and its beveled face *i*, impinging against the beveled face f^3 of the die F, serves to force the latter forward.

The die F is provided with the projecting lip F′, whose lower face is beveled, as shown in Fig. 3.

The mode of operation of the device is as follows: The bar of iron, E, to be made into clips is pushed under the guide J, over die C, against die D. The die G, now descending, bends it into the shape shown in Fig. 2, the iron adjacent to the guide D being drawn into the depression C′. The iron thus shaped is now slipped laterally through the slot A, under the guide J, until it rests on the die L, in front of the die F. The wedge I, now descending, forces the die F forward and bends the iron into the shape shown in Fig. 3. At the same time the knife H descends and cuts off the clip from the bar. As the wedge I ascends, the spring f^2 retracts the die F, and the clip is removed through the slot A. The clip is now in the shape shown in Fig. 5. The corners of the

doubled portion are now rounded off, as shown in Fig. 6, and the clip is ready to be applied to the end of a spring to form the head. In completing the spring-head the spring-leaf M is placed between the lips *n n* of the clip, and the whole powerfully welded together, the curve *m* in the spring-head being made at the same time. The ends of spring-heads formed of clips made in the manner described are particularly strong, because the grain of the iron runs in the direction of the strain. Another advantage of thus forming the clips is, that the length of the lips *n n* may be controlled, and the lips may be made of any desired length—for instance, so as to meet in the center of a longitudinal central plane of the spring bar or leaf when desired.

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

1. The combination of the block B, die C, having depression C′, die G, having end *g* and shoulder *g′*, and guide D, substantially as and for the purposes specified.

2. The combination of block B, die C, having depression C′, die G, having end *g* and shoulder *g′*, guide D, and guide J, substantially as and for the purposes specified.

3. The combination of block B, provided with recess *b*, sliding die F, having projection F′, rod *f*, having head *f′*, spring f^2, and die L, substantially as and for the purposes specified.

4. The combination of block B, provided with recess *b*, sliding die F, having projection F′, and die L, substantially as and for the purposes specified.

5. The combination of block B, provided with recess *b*, sliding die F, having projection F′, rod *f*, having head *f′*, spring f^2, die L, and guide J, substantially as and for the purposes specified.

6. The combination of block B, provided with recess *b*, sliding die F, having projection F′, rod *f*, having head *f′*, spring f^2, die L, having shoulder *l*, knife H, and guide J, substantially as and for the purposes specified.

7. The combination of block B, provided with recess *b*, sliding die F, having projection F′, guide-plates K, rod *f*, having head *f′*, spring f^2, and die L, substantially as and for the purposes specified.

8. The combination of block B, provided with recess *b*, sliding die F, having projection F′, rod *f*, having head *f′*, spring f^2, die L, and wedge I, substantially as and for the purposes specified.

9. The combination of block B, provided with recess *b*, sliding die F, having projection F′, rod *f*, having head *f′*, spring f^2, die L, having shoulder *l*, knife H, and guide J, and wedge I, substantially as and for the purposes specified.

10. The combination of block B, having recess *b* and slot A, sliding die F, having projection F′, wedge I, means for retracting die F, die L, having shoulder *l*, knife H, die C, having depression C′, adjustable guide-block D, die G, and guide J, substantially as and for the purposes specified.

ELMER J. HESS.

Attest:
M. C. SIMON,
G. A. W. PAYER.