Sheet 1, 2 Sheets.

J. H. Doolittle.

Making Hoop-Skirt Clasps.

No. 50,102. Patented Sept. 26, 1865.

Fig. 2.

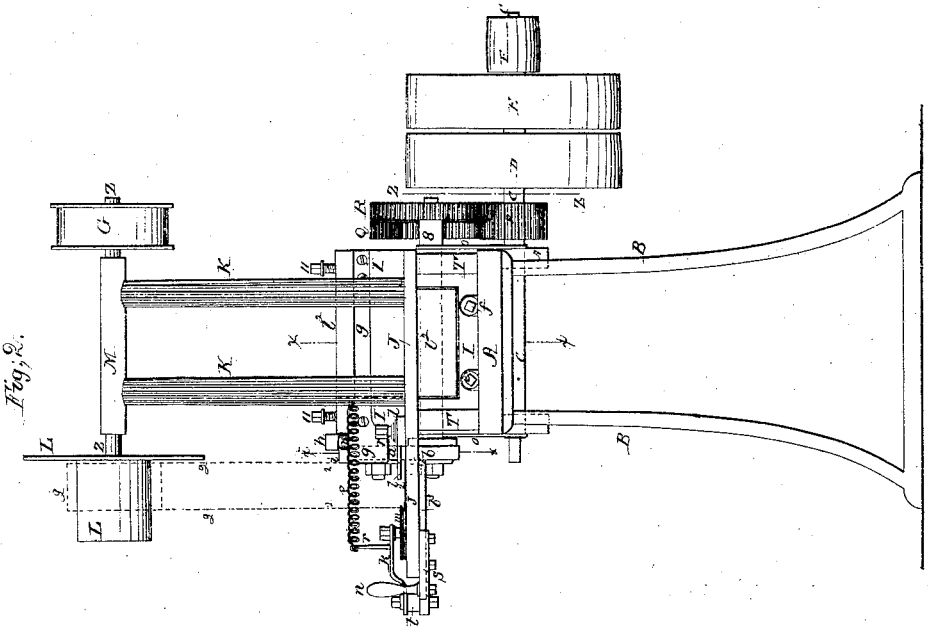
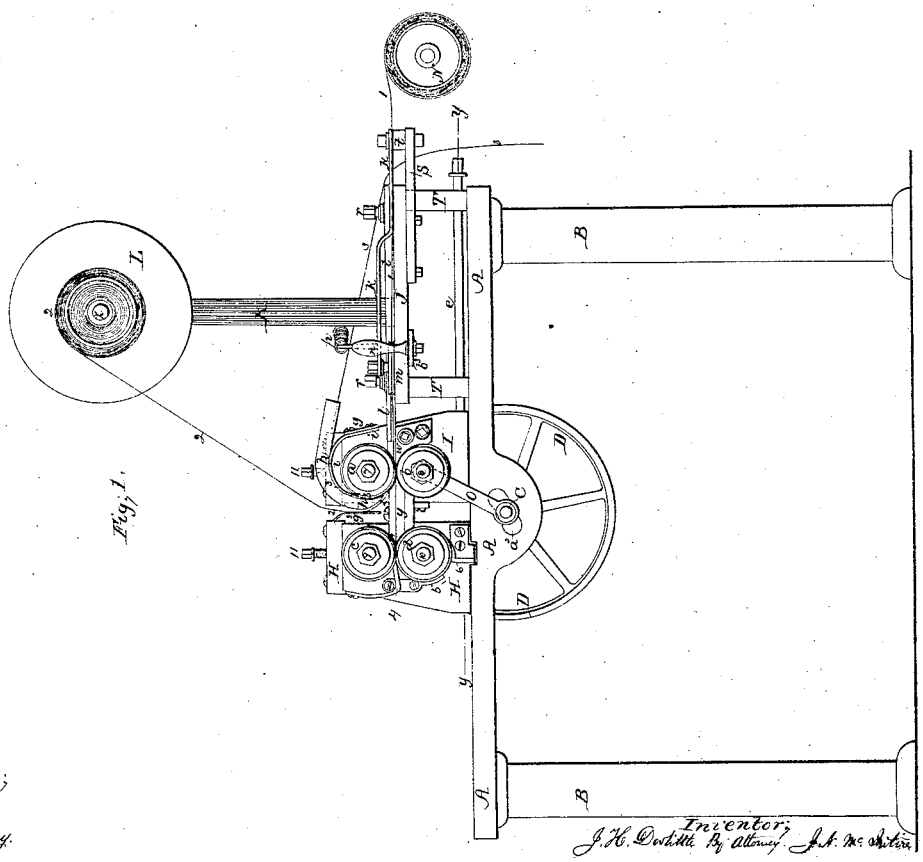


Fig. 1.



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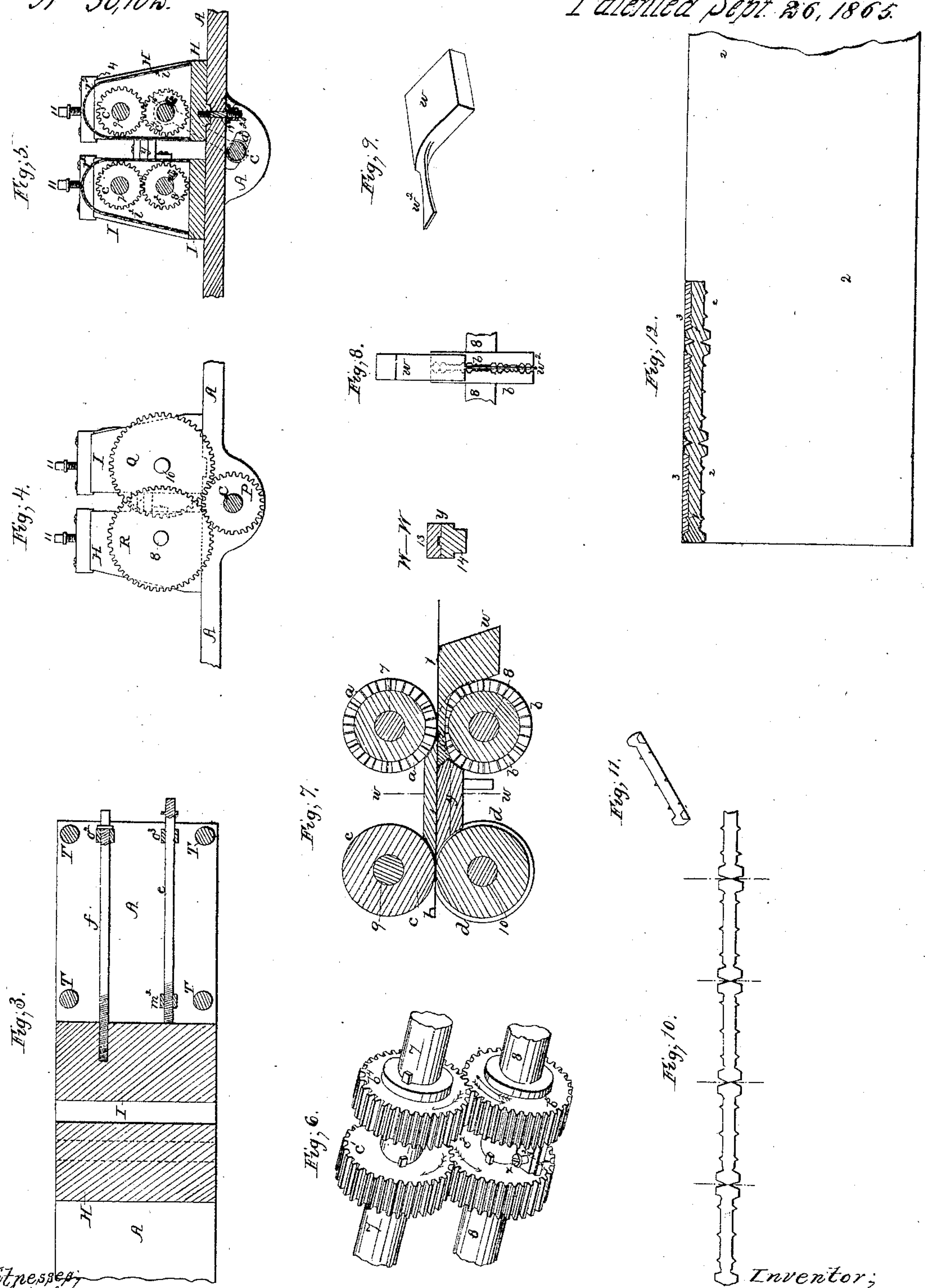

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UNITED STATES PATENT OFFICE.

JOHN H. DOOLITTLE, OF ANSONIA, CONNECTICUT.

MODE OF MAKING CLASPS FOR HOOP-SKIRTS.

Specification forming part of Letters Patent No. **50,102**, dated September 26, 1865.

To all whom it may concern:

Be it known that I, J. H. DOOLITTLE, of Ansonia, of the county of New Haven, in the State of Connecticut, have invented a new Method of Making Clasps from Sheet Metal for Hoop-Skirts, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to certain new and useful improvements in the method of making metallic clasps for hoop-skirts and other purposes, and has for its objects to manufacture such clasps more rapidly and with less waste stock than they have been heretofore made; and to these ends my invention consists in cutting from a strip of material (from which the clasps are made) a continuous strip of blanks, which passes on through suitable dies, by which the blanks are separated, formed up complete, and discharged, while at the same time the strip of scrap is discharged from the clasp-forming mechanism and the remaining stock is reeled for reuse, as hereinafter more fully explained; and my invention further consists in forming the continuous strip or the series of united blanks in such manner that they may be separated and formed up without the making of any scrap in said operation of separating and forming up, as will be hereinafter more fully explained.

To enable those skilled in the art to fully comprehend my invention and use it, I will proceed to describe the mode in which I have most successfully practiced it, referring by letters and figures to the accompanying drawings, forming part of this application, and illustrating the machinery by which I have worked my said invention.

In the drawings, Figure 1 is a front elevation of an improved machine for making clasps upon my new method. Fig. 2 is an end elevation of the same. Fig. 3 is a horizontal section at *y y*, Fig. 1. Fig. 4 is a vertical section at *z z*, Fig. 2. Fig. 5 is a vertical section at *x x*, Fig. 2. Fig. 6 is a detail perspective view, showing particularly the device for effecting the perfect working of the rotary dies driven by gearing. Fig. 7 is a detail sectional view at the line & &, Fig. 2, increased scale. Fig. 8 is a top view of one of the lower dies shown at Fig. 7, together with the sustaining-plate for causing the stock from which the blanks are cut to properly leave the die. Fig. 9 is a detail perspective of the sustaining-plate. Fig. 10 is a plan of the continuous strip of blanks. Fig. 11 is a perspective view of a clasp formed of one of the blanks seen at Fig. 10; and Fig. 12 is a plan of the strip of material from which the clasps are manufactured, illustrating the mode of cutting the strip of blanks from a strip of stock, as will be presently fully explained.

In the drawings I have fully shown not only the method of working up the stock, but also, in detail, the machinery employed; but many parts of said machinery have no direct connection with the invention sought to be covered in this application. They will therefore not be particularly described here, but will be found more minutely explained in another application filed simultaneously with this, in which I claim the improvements in the said machinery.

I will in this specification explain briefly the construction and operation of the machine illustrated in the drawings as carrying out the invention herein claimed.

A is the bed-plate; B, the supporting-frame or legs of the machine. A short distance above the bed-plate A, and supported by it, is arranged a work-table, J, which is supported by four columns, T, and on which are arranged an adjustable stop and guide plate, *l*, and a retaining spring-pressure roll, *m*, for guiding and retaining the strip of metal which may be fed into the mechanism for forming the clasps.

H and I are two stands, in which are mounted, in suitable bearings, four shafts, 7 8 9 10, carrying on their front outer ends four rotating circular dies or die-rolls, *a b c d*, between the faces of which the metallic sheet is fed, as will be presently explained. The shafts 7 and 8 are geared together in the manner illustrated at Fig. 6, and the shafts 9 and 10 are geared together in like manner, and the two lower shafts, 8 and 10, are driven through the medium of gears Q R on their back ends meshing into the driving-pinion P on the main driving-shaft C, said shaft C being provided with a fast and loose pulley, D and E, on which the driving-belt runs.

The pulley F is for the purpose of driving a hanger-pulley, from which a belt extends down to the pulley G of the reel-shaft Z. This reel-shaft is mounted in suitable bearings in the sleeve M, which is sustained by two columns, K K, from the work-table J, and carries a reel,

L, on which the strip of stock passed through the rotary dies is wound.

In Figs. 1 and 2 I have illustrated the strip of metal from which the clasps are formed, and the operation of dividing or cutting it up, by red lines, the line numbered 1 representing the portion of stock formed into blanks for making the clasps, that numbered (two) 2 the remaining stock, which is rewound on reel L, and that numbered 3 the strip of scrap, which is discharged from the machine at the end opposite to that where the finished clasps are discharged.

The driving-shaft C is hung in bearings in a curved slot, a^2, (two slots, one on each side of the bed A,) and a connecting-link, O, in such manner that the stand I may be moved toward or from the stand H by means of its adjusting-screws *e* and *f*, while at the same time the pinion P will remain always in gear with the gears P and Q, whose shafts are hung separately in the two stands thus moved toward and from each other.

The stopping and starting of the machine are effected, at the pleasure of the operator, by an ordinary shipper for shifting the driving-belt from pulley D to E, and vice versa. The bar of this shipper is partially shown in the drawings (at Figs. 1 and 2) at b^3, and its handle at *n*. The stand H is adjustable crosswise of the bed A, for the purpose setting the two sets of dies *a b* and *c d* in line in the direction of the passage of the stock through them.

The object of the adjustment of the stand I from and toward H, as just before explained, is to vary the distance between the two sets of dies *a b* and *c d* for different lengths of clasps—different kind of work.

y is a bridge or conductor, through which the strip of blanks passes from the first set of dies to the next.

h is a curved conduit or chute, through which the strip of scrap passes off from the first set of dies.

N is a reel, which may be located at any convenient distance from the machine in any proper manner, and from which the strip of stock is fed to the machine for making the clasps.

The general operation of the machine will be understood from a few words of explanation. The reel N being piled with a continuous strip of sheet metal of any desired width and length—say ten to twenty feet long and six inches wide—the operator, having properly adjusted the machine for the kind of work to be done, passes the strip along on the table J with one edge against the face of the adjustable stop or guide-bar *l*, (see Fig. 2,) the other edge receiving a pressure from the grooved wheel *m*, to keep it against the said bar *l*, and enters the end of the said strip of stock between the first set, *a b*, of dies and sets the machine in motion. As the strip of stock is drawn through the dies *a b* it is divided into three parts, as illustrated at Fig. 12 by the portions colored blue and red and that left white, the red portion or part 3 being the scrap, which is deflected from the die *a* and discharged through chute *h*, (see Fig. 1,) the part 2 being carried up outside of the chute *h*, and between it and the deflector a^3, to the reel L, (see Fig. 1,) and the central portion, 1, (which is the strip of blanks,) passing through the conductor *y*, and thence through the dies *c d*, by which latter dies said strip of blanks is cut up at the points through which the red lines pass at Fig. 10, and formed up into clasps such as shown at Fig. 11. The operation of the dies on the strip of stock is clearly illustrated at Figs. 7, 1, and 2. After the whole length of the strip of stock has been passed through the machine, the surplus stock having been wound on the reel L, the strip of stock on reel L is removed to reel N and the end again fed into the machine, when the dies go through a repetition of the operation just described, cutting off another strip of blanks and forming them into clasps, discharging another strip of scrap, and rewinding the surplus stock on reel L; and so on, the operation is repeated until the whole of the stock has been made into clasps.

It will be seen that by the mode of operation described the manufacture of clasps and other similar articles (the dies, &c., being made readily to suit various-shaped articles) from sheet stock by rotary dies is rendered very rapid and economical; and it will also be observed that the strip of blanks (see Fig. 10) is such (the blanks being connected at their ends) that when simply separated or cut apart on a line they are in condition to constitute a perfect clasp (such as shown at Fig. 11) without any scrap or waste of the strip of blanks; and it will be understood that this peculiar feature of my invention may be employed in forming a strip of blanks to make other shaped clasps than that shown.

It will be understood that the invention described and claimed in this application is independent of the peculiar machine described, and rests in the mode of operation of manufacturing the clasps from a strip of stock, though the machine I have shown and described I am now successfully working, and it turns out twenty-two hundred and fifty clasps per minute.

Having fully explained the nature of my invention and the mode of carrying out the same, which I have successfully practiced, what I claim as new, and desire to secure by Letters Patent, is—

1. Forming the clasps or other similar articles by means of a succession of sets of rotary dies, when the strip of stock fed to the dies is divided into several parts, in the manner substantially as hereinbefore described.

2. Forming blanks of sheet metal by one set of rotary dies and close together, substantially as described, so that in their subsequent separation and forming up no stock is wasted.

In testimony whereof I have hereunto set my hand and affixed my seal.

JOHN H. DOOLITTLE. [L. S.]

In presence of—

M. De Lacy,

Thos. Wallace, Jr.