

(No Model.)

2 Sheets—Sheet 1.

J. G. HODGSON.

MACHINE FOR FLANGING OR HEMMING EDGES OF TIN PLATES, &c.

No. 522,254.

Patented July 3, 1894.

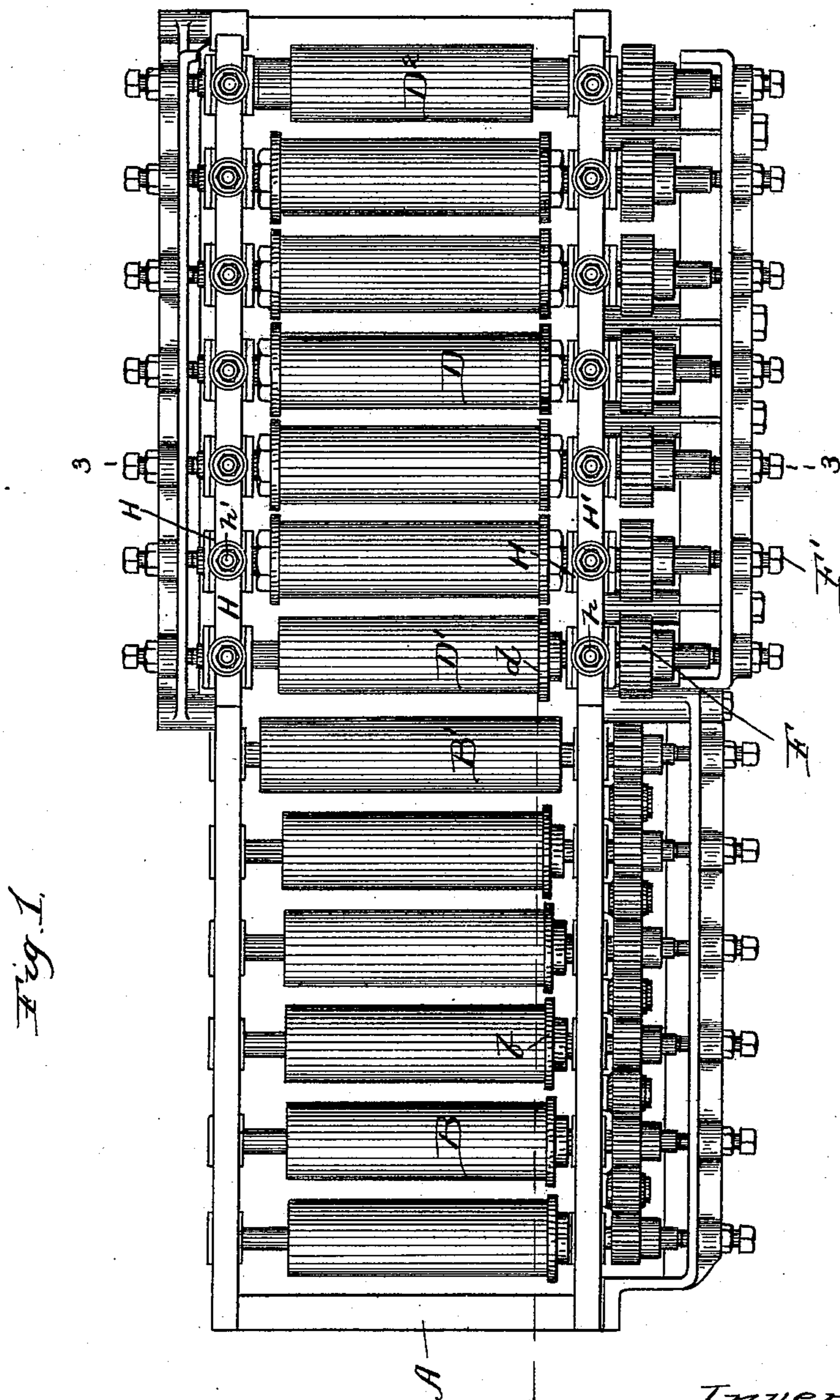


Fig. 1.

Witnesses:

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Inventor:

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his Attorneys.

(No Model.)

2 Sheets—Sheet 2.

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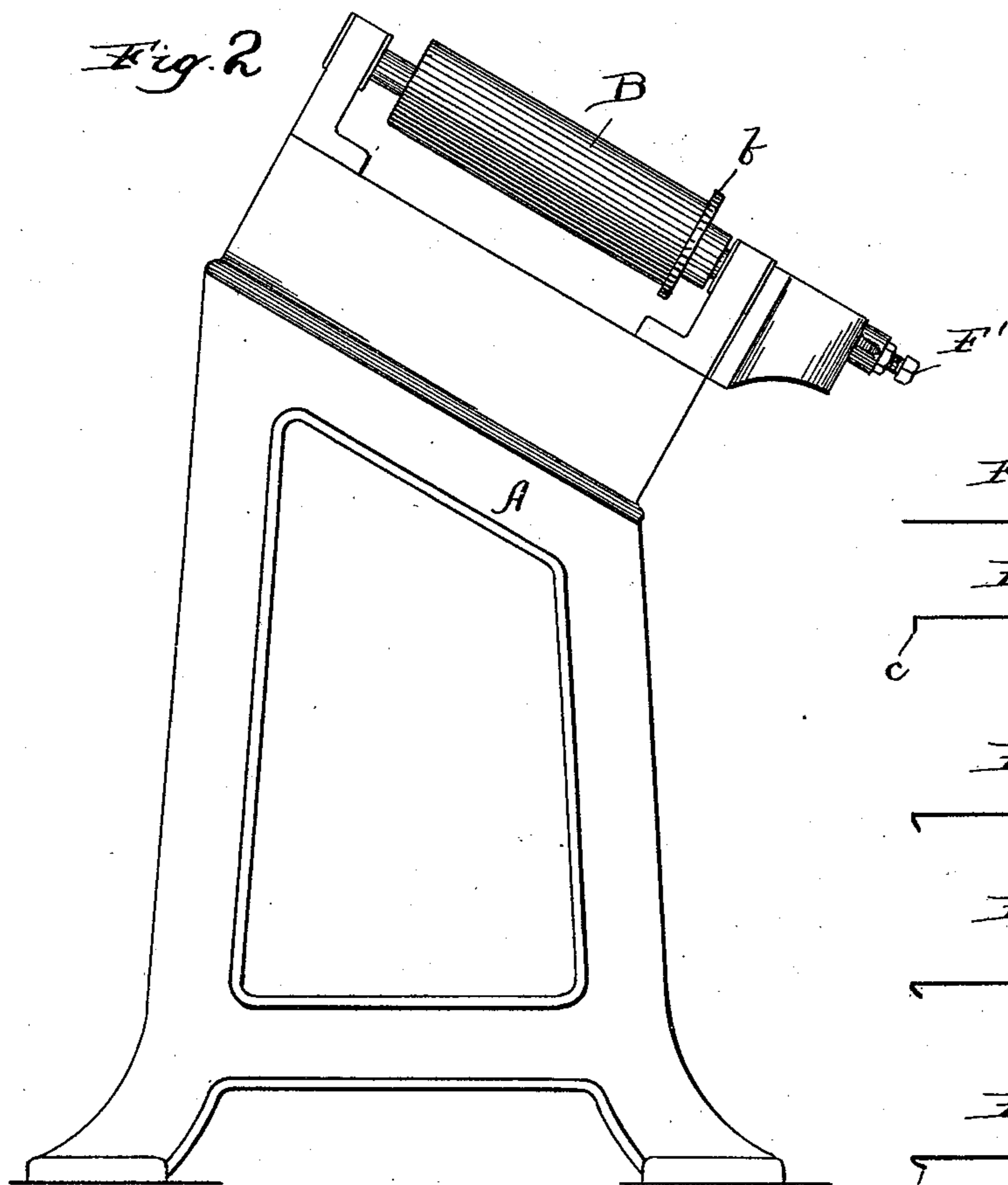


Fig. 4 C

Fig. 5.



Fig. 6.



Fig. 7.

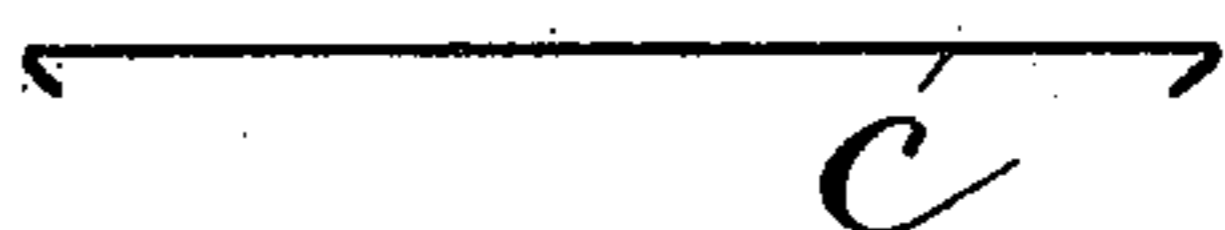


Fig. 8.

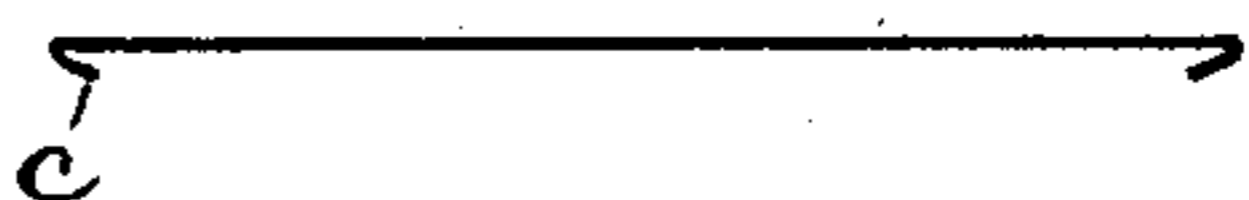
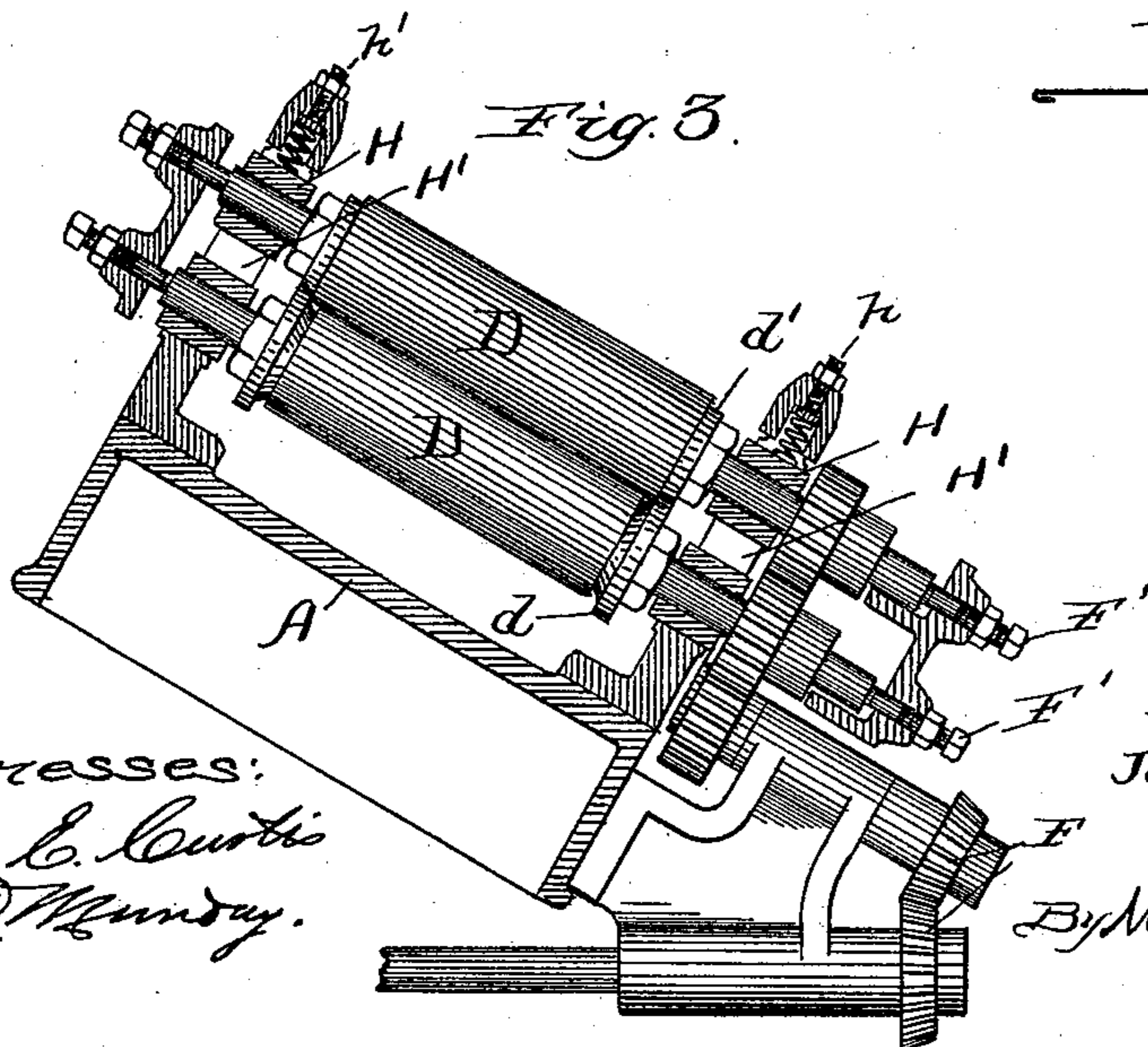
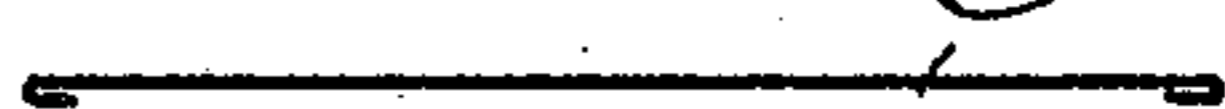


Fig. 9. C



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UNITED STATES PATENT OFFICE.

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OF SAME PLACE, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

MACHINE FOR FLANGING OR HEMMING EDGES OF TIN PLATES, &c.

SPECIFICATION forming part of Letters Patent No. 522,254, dated July 3, 1894.

Application filed July 23, 1892. Renewed March 14, 1894. Serial No. 503,555. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. HODGSON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Flanging or Hemming the Edges of Tin Plates or other Metallic Sheets, of which the following is a specification.

10 My invention relates to improvements in machines for flanging or hemming the edges of tin plates or other metallic sheets.

The object of my invention is to provide a machine of a simple, efficient and durable construction by means of which the two marginal edges of sheet metal blanks or sheets may be accurately and perfectly flanged and folded so as to leave the folded or hemmed edges of the sheets straight and true and parallel to each other and at right angles to the ends of the sheet.

To this end my invention consists in connection with a set of flanging and edge folding or hemming rollers arranged at an angle or inclination to the horizon, of a set of feed and guide rollers similarly inclined, the guide flanges of which are slightly stepped in respect to each other, so that as the sheet is fed and guided thereby to the set of edge folding and flanging rollers the sheet will enter the first pair of rollers at a slight angle and thus compensate for the natural tendency of the sheet, especially if it is a long one, to pass more freely and faster at its upper edge than its lower edge between the pairs of rollers; and thereby cause the sheet to pass straight and squarely through between the several pairs of inclined edge flanging and folding rollers. I have found by practical experience on attempting to flange and fold the edges of sheets of any considerable length, that where the set of a single feed and guide rolls are arranged with all their guide flanges in the same straight line with the corresponding flanges of the pairs of rolls constituting the second set, it is practically impossible to cause the sheet to pass straight and squarely through the machine, the result being imperfect work and the spoiling of many sheets or blanks, the edges of which are attempted to be flanged and folded. This I think is due, or may be

due, to the fact that the lower edge of the sheet, passing as the sheet does in an inclined position through the machine, encounters greater resistance in passing the pairs of rolls constituting the second or operative set of the machine than does the upper edge of the inclined sheet, and consequently the sheet, when its front end or edge strikes the first pair of rolls tends to lift up slightly at its rear end and thus assume a slight angle to its normal and proper path through the edge folding and flanging rolls; but whatever may be the cause of this peculiar operation of the machine when the first or single set of feed and guide rolls are arranged in the same straight line with the corresponding flange of the double rolls or pairs of rolls, I have discovered that the defect may be cured and the machine rendered practical and successful by simply arranging the first or single set of rolls with their guide flanges slightly stepped as to each other, so that the sheet is directed to the second set of rolls at a slight angle or inclination, as by this means when the front end or edge of the sheet strikes the first pair of rolls, the rear end of the sheet will simply lift sufficiently to bring the edges of the sheet into straight line with the second or double set of rolls. After the sheet has thus entered between the pairs of rolls constituting the second set, the rear end of the sheet being unsupported by the guide flanges of the first or single set of feed rolls, the weight of this end of the sheet tends also to keep the sheet passing in a straight line between the pairs of edge flanging and folding rolls.

In the accompanying drawings, which form a part of this specification and in which similar letters of reference indicate like parts, Figure 1 is a face view looking at right angles to the plane of the inclined rolls of the machine embodying my invention. Fig. 2 is an end view showing the feed end of the machine, and one of the single set of feed or guide rolls. Fig. 3 is a cross section on line 3—3 of Fig. 1 and showing one of the pairs of the double set or operative set of rolls. Figs. 4, 5, 6, 7, 8 and 9 illustrate the several stages or operations performed by the successive pairs of edge flanging or folding rolls,

• Fig. 9 showing of course a cross section of the completed product, that is to say, the edge-folded or hemmed sheet or blank.

In the drawings A represents the frame of the machine which may be of any suitable or well known construction.

B is the set of inclined sheet feed and guide rolls, the same being simply single rolls upon which the sheet lies in an inclined position with its lower edge resting against the guide flanges *b* with which each of the rolls B is provided, except the last or inner one. This last roll of the set B is designated by the letter B' for the sake of distinction from the other rolls B which have guide flanges. The rolls B are arranged with their guide flanges *b* in a slightly stepped position in respect to each other, so that the line or roll of guide flanges *b* of all the rolls B taken together will be at a slight angle to the corresponding flanges or collars *d* of the succeeding or operative set of pairs of rolls D between which the sheet passes and by which its edges are flanged and folded. The rolls D have bending flanges or collars *d* which fit in corresponding grooves or channels *d'* which serve to form the flanges *c* upon the sheet C and to bend or incline said flanges as shown in Figs. 6, 7 and 8 and to finally fold said flanges down snugly upon the sheet, as shown in Fig. 9. The collars *d* on the rolls D are furnished with beveled faces, the angle or bevel increasing with each successive pair of rolls, as is clearly indicated by Figs. 6, 7 and 8. The first pair of the double set of rolls D, and which for sake of distinction is marked D', is simply to perform the office of guiding and feeding the sheet, and the upper roll of this pair is provided with a collar or flange *d* only at its lower end. The rolls D² of the last pair of said rolls D is simply for the purpose of delivering the sheet from the machine and has no flange or collar.

F represents the driving gears by which the rolls are driven and F' the adjusting screws upon which the end of the roller shaft rests and is supported and by which the rolls are adjusted so that their flanges *d* and *d'* may be in proper relation to each other, as hereinbefore described. The boxes or journals H of the upper rolls of the double set D fit adjustably in suitable guides H' on the frame, and adjusting screws *h* *h'* are provided so that the requisite pressure may be exerted between the upper and lower rolls of each pair D.

I claim—

1. In a machine for flanging and folding the edges of metallic sheets or blanks, the combination with a set of pairs of inclined edge flanging and folding rollers, of a set of single similarly inclined feed and guide rollers having their guide flanges slightly stepped in relation to each other, so that the sheet is presented or fed to the double set of rolls or pairs of rolls at a slight angle, whereby the sheet is made to pass in such inclined position straight and accurately through the ma-

chine, the axes of all said rolls being arranged at an angle to the horizontal so that the sheet is caused to pass in an inclined position through the machine substantially as specified.

2. The combination with a set of inclined sheet flanging and edge folding rollers of means for feeding the sheet thereto in an inclined position and at a slight angle to the direction or path at which the sheet is to pass through said flanging rolls, the axes of all said rolls being arranged at an angle to the horizontal so that the sheet is caused to pass in an inclined position through the machine substantially as specified.

3. The combination of a set of pairs of inclined flanging and edge folding rolls D having rollers or flanges *d* and countering grooves or shoulders *d'*, said set comprising a first pair of rolls one of which has a collar at its lower end only, and a set of single feed and guide rolls B having stepped guide flanges or collars *b*, substantially as specified.

4. The combination of a set of pairs of inclined flanging and edge folding rolls D having rollers or flanges *d* and countering grooves or shoulders *d'*, said set comprising a first pair of rolls, one of which has a collar at its lower end only, and a set of single feed and guide rolls B having stepped guide flanges or collars *b*, said set of rolls B comprising a final one B' having no flange or collar, substantially as specified.

5. In a machine for flanging and folding the edges of metallic sheets or blanks, the combination with a set of pairs of inclined flanging and edge folding rollers, of a set of single similarly inclined feed and guide rollers having their guide flanges slightly stepped in relation to each other, so that the sheet is presented or fed to the double set of rolls or pairs of rolls at a slight angle, whereby the sheet is made to pass in an inclined position straight and accurately through the machine, and adjusting screws F' for adjusting said rolls in proper relation to each other, substantially as specified.

6. The combination with a set of pairs of inclined flanging and edge folding rollers D between which the sheet passes and its edges flanged and folded down flat upon itself, of a set of feed and guide rolls for delivering the sheets to said pairs of rolls, the axes of all said rolls being arranged at an angle to the horizontal so that the sheet is caused to pass in an inclined position through the machine substantially as specified.

7. The combination with a set of pairs of inclined flanging and edge folding rollers D between which the sheet passes and its edges flanged and folded down flat upon itself, of a set of feed and guide rolls for delivering the sheets to said pairs of rolls, the first pair of said rolls D being feed and guide rolls furnished with a flange or collar at its lower end thereof, only, the axes of all said rolls being arranged at an angle to the horizontal so that

the sheet is caused to pass in an inclined position through the machine substantially as specified.

8. The combination with an inclined set of 5 pairs of edge flanging and folding rolls D, of a similarly inclined set of single feed and guide rolls B, the axes of all said rolls being arranged at an angle to the horizontal so that

the sheet is caused to pass in an inclined position through the machine substantially as is specified.

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Witnesses:

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