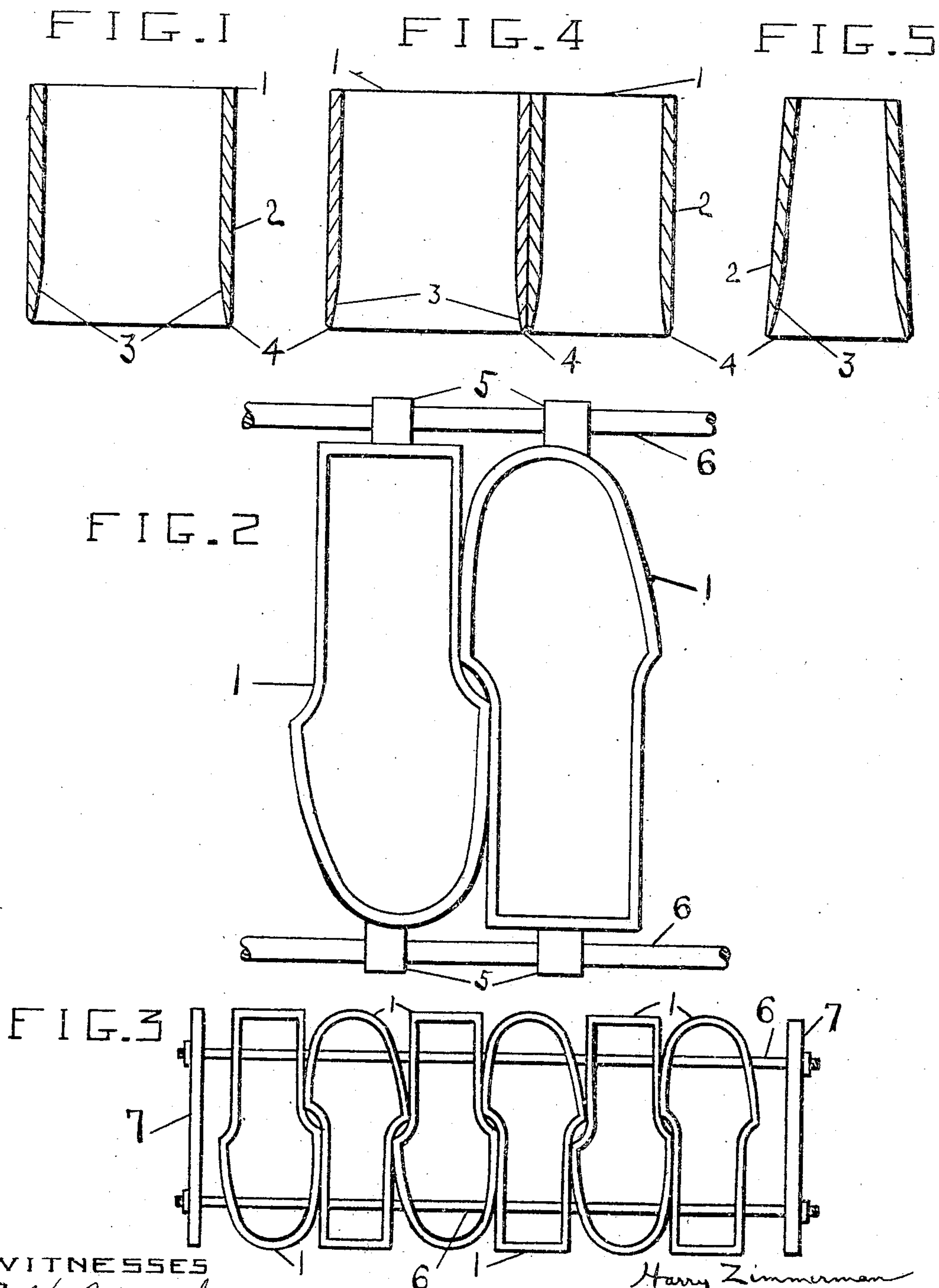


H. ZIMMERMAN.
MATERIAL CUTTER AND GROUPING FRAME.
APPLICATION FILED APR. 15, 1909.

954,559.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.



WITNESSES
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2 SHEETS—SHEET 2.

FIG. 6

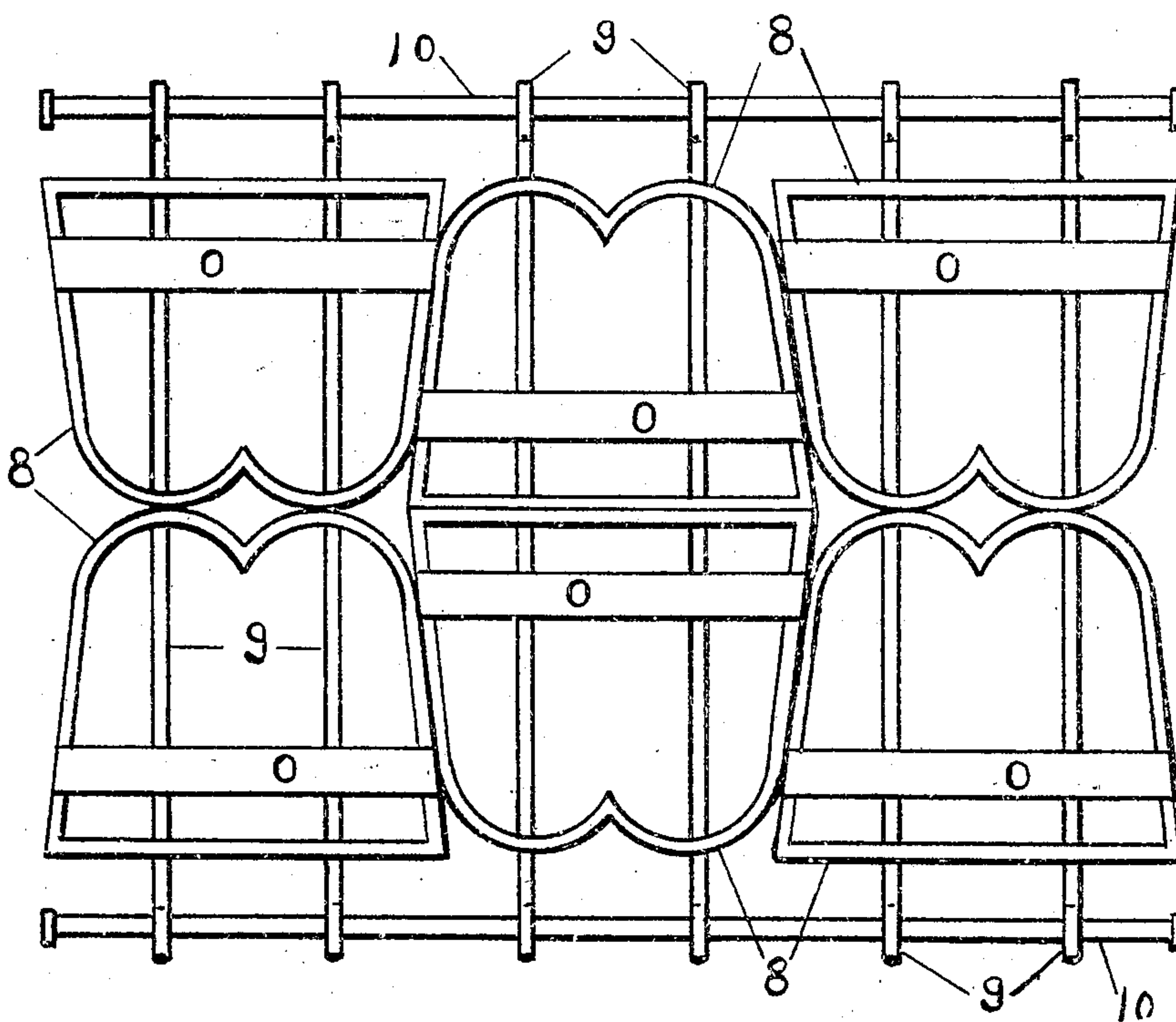


FIG. 8

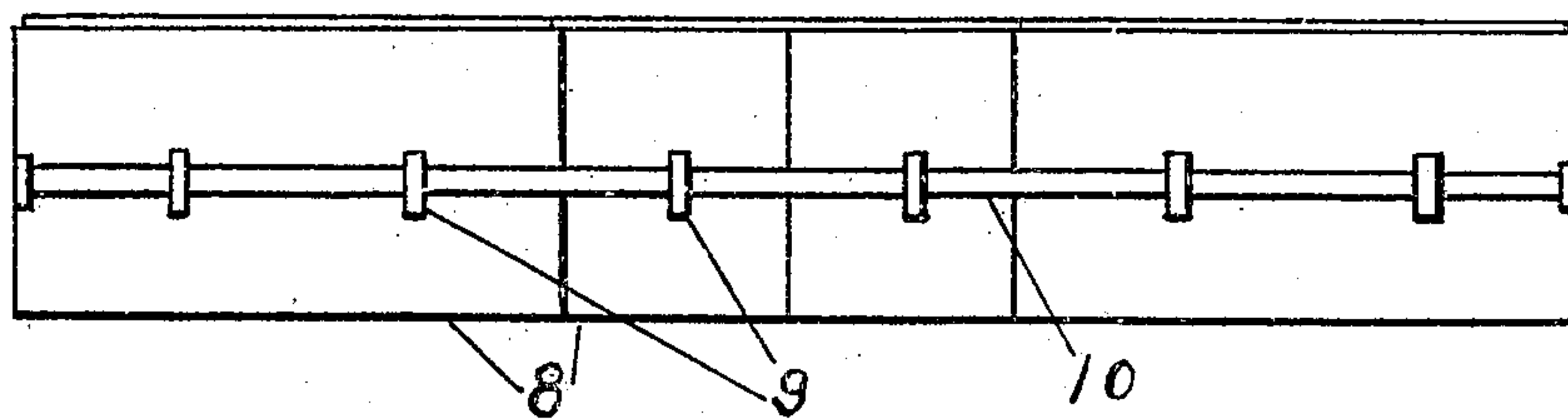
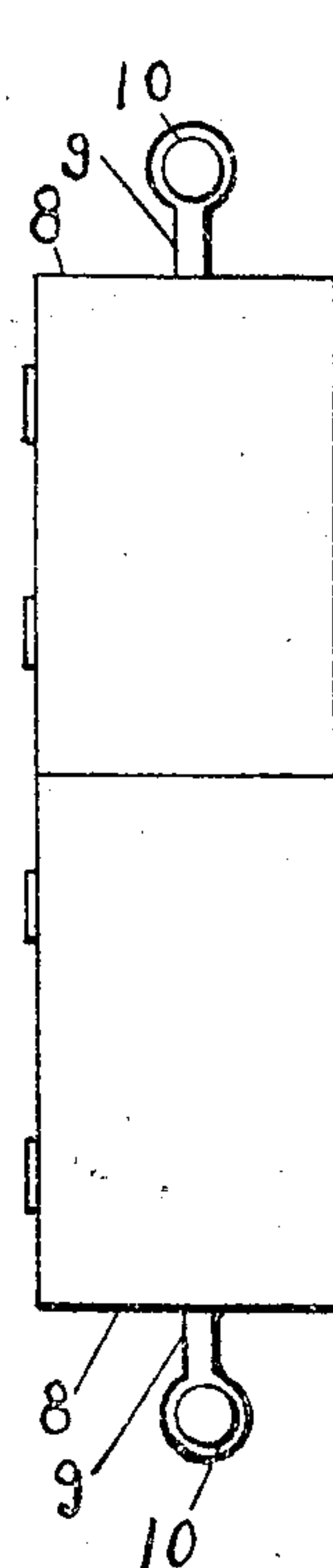


FIG. 7

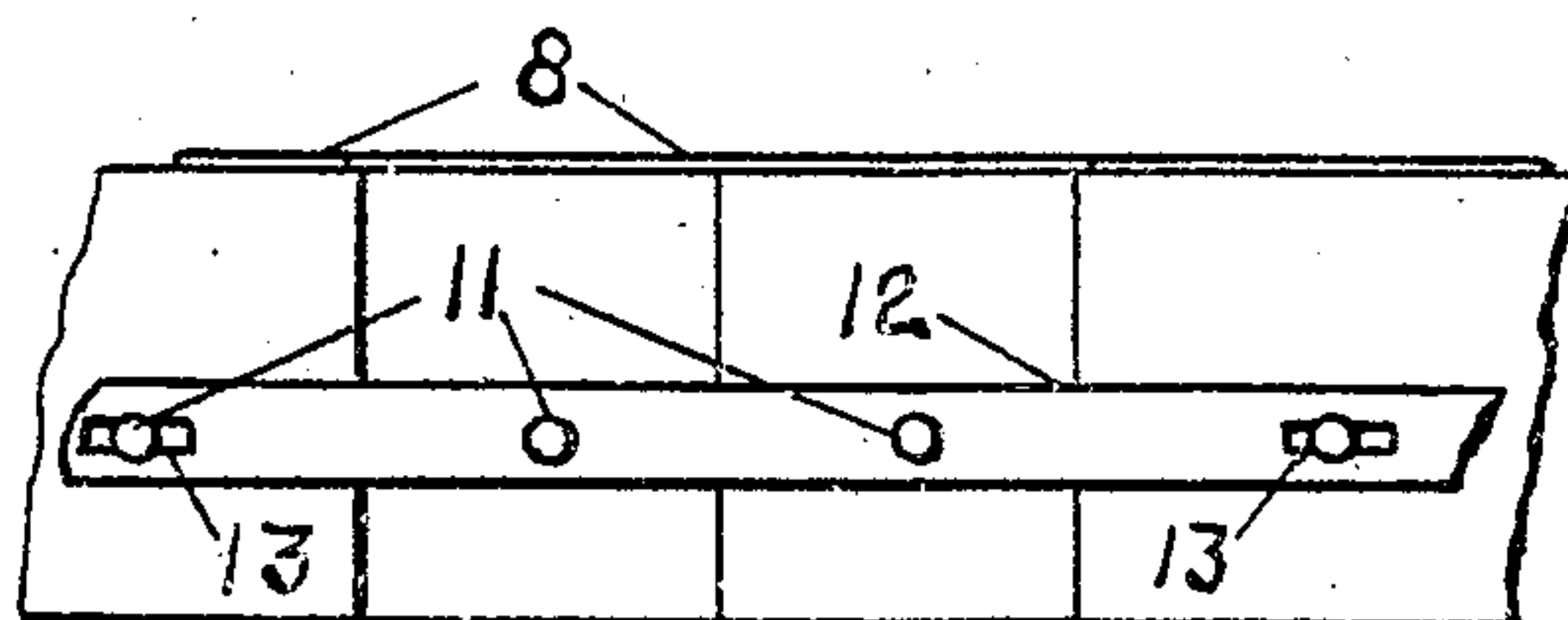


FIG. 9

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UNITED STATES PATENT OFFICE.

HARRY ZIMMERMAN, OF FREMONT, OHIO.

MATERIAL-CUTTER AND GROUPING-FRAME.

954,559.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed April 15, 1909. Serial No. 490,190.

To all whom it may concern:

Be it known that I, HARRY ZIMMERMAN, a citizen of the United States, residing at Fremont, Sandusky county, Ohio, have invented new and useful Material-Cutters and Grouping-Frames, of which the following is a specification.

This invention relates to the cutting of material in quantity with accuracy and despatch.

This invention has utility when embodied in dies and their grouping for cutting a plurality of layers of fabric at one operation.

Referring to the drawings: Figure 1 is a section through a die embodying features of the invention; Fig. 2 is a plan view of a fragmentary group of dies, showing the flexibility of the grouping as well as compactness in abutting relation; Fig. 3 is a plan view of a more complete grouping in primary, or one direction grouping for movement toward and from each other of dies of similar form to the showing of Fig. 2; Fig. 4 is a section through a couple of dies at the abutting portions, indicating the snug manner in which they coact to mutually aid each other in producing a common cut; Fig. 5 is a section similar to Fig. 1, showing the adaptation of cutting edge feature of the die to a converging wall multiple fabric cutter; Fig. 6 is a plan view of a complex or primary and secondary flexibility grouping of dies permissible by use of the cutting edge feature hereof; Fig. 7 is a side elevation of the dies and grouping of Fig. 6; Fig. 8 is an end view in elevation of the dies and grouping of Fig. 6; and Fig. 9 is a view similar to Fig. 7 disclosing another form for the secondary grouping.

The die 1 is provided with the straight directing wall face 2, opposing which on the opposite side of this relatively high stiffening wall is the beveled or inclined wedge face 3. Near the base of the straight face 2, is an abrupt counter-cut extending to the bevel, to form the active edge of the die, and which edge approximates closely the straight face 2. To withstand excessive duty demanded in multiple fabric cutting, dies must have the cutting edge firm as well as sharp. With the wedge bevel extending to the cutting edge on the outer side of the die, the congested material would tend to turn or roll the edge. A sharpening of the die from the bevel side, weakens the edge all

the more. However, by giving the die a counter-cut 4, from the straight face, the downward drive of the die is placed to give the strain more within the stiffening wall, yet throws the wedge action all at one side of the wall, to leave the material on the other side undisturbed and free for uniform size engagement of the cutting edge in the separate superposed layers of the material acted upon.

The provision of a straight outer face at the abutting portions of the dies permits two dies to enter the material in a common line, thereby resulting in most economical cutting of the material. The counter-cut in the drawings is somewhat enlarged to more clearly illustrate the structure.

Notwithstanding dies of uniform height driven into a similar number of thicknesses of material simultaneously with a common press member, would indicate constant travel rate, a relative flexibility or freedom in the die grouping is essential to permit of the die units each working its own way. A freedom of movement toward and from each other of the dies accomplishes this end. To aid in the grouping, brackets 5 may be provided on the dies 1, through which brackets the guide or grouping frame rods 6 may be freely slidable. As engaging means for the dies, the rods 6 may extend directly through the die walls, with the dies 1 freely movable thereon. To limit the amount of travel of the dies as well as hold the grouping assembled, the rods 6 are connected by cross strips or end portions 7, to comprise the die frame.

The life of the die is increased many fold by the counter-cut, for in the severe strain to which many thicknesses of fabric submit the die there is not the feather edge, but a firm entering edge counter-cut to one side and gradually beveled on the other, which effectually resists fracture. An embodiment of this edge feature, as well as the grouping feature is shown in my application Ser. No. 323,300 filed June 25, 1906, co-pending with my application 393,341 of Sept. 17, 1907, which latter case is drawn to a different application of the principle of the former and present cases.

The carrying forward of the edge idea has so increased the capacity possible to operate, as well as economy of cutting, that extension from the primary flexible grouping, to secondary flexibility in the grouping

has added still greater saving in the cutting, not only in time in arranging the material, but in the greater extension of the common abutting line cuts and consequent reduction
5 of waste material loss.

The dies 8 are slidably mounted on the rods 9 of the primary flexibility grouping, which rods 9 slidably engage the rods 10 of the secondary grouping. Equal flexibility may
10 be attained by having the primary rods 11, Fig. 9, engage the secondary grouping means 12, one set of the primary grouping being fixed to the means 12, while the remaining primary sets have some freedom
15 permitted by the slots 13.

The rods or frames 6, 7; 9, 10; 11, 12 are carried at such distance from the cutting edge of the dies as to give ample clearance from the material as the dies are forced
20 thereinto in cutting.

What is claimed and it is desired to secure by Letters Patent is:

1. Means for forming a plurality of superposed layers of flexible material of uniform size throughout, comprising a die having a straight directing face terminating in an abrupt offset which is met by an inclined wedge face on the opposite side of the die wall from the directing face said offset being inclined to the termination of the wedge face to form at their meeting the cutting edge of the die.
30

2. A die having its entering edge disposed under the stiffening wall and adjacent the straight side thereof at the meeting of the bevel face by a counter-cut from the straight side of the stiffening wall said stiffening wall providing an endless driving face opposite the cutting edge.
35

3. A die having a stiffening wall straight on one side and beveled on the other, and provided with its cutting edge approximat-
40

ing the straight side and slightly counter cut therefrom said stiffening wall providing an endless driving face opposite the cutting edge. 45

4. A die having its cutter portion comprise a straight face with an abrupt counter-cut therefrom to a beveled face to form the cutting edge and having an endless driving face opposite the cutting edge. 50

5. A combination of dies comprising a directing frame and dies freely movable into abutting relation and spaced on one side from the directing frame, said dies having their abutting faces straight to produce a common cutting at the abutting portions. 55

6. A combination of dies comprising dies and guiding means therefor permitting movement of the assembled dies in two directions toward and from each other. 60

7. A combination of dies comprising primary guiding means permitting movement of the dies in one direction, and a secondary guiding means permitting movement of the dies in an intersecting direction said guiding means having limiting portions spaced from the dies to allow free movement of the dies in cutting. 65 70

8. A combination of dies comprising dies having straight abutting faces and effective at the abutting portions to produce a common cut in the material acted upon, and guiding means permitting free movement of the dies in a plurality of directions toward and from each other during the cutting operation. 75

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

HARRY ZIMMERMAN.

Witnesses:

MATIE BISNETLE,

KATHERINE DICK.