

(No Model.)

2 Sheets—Sheet 1.

O. KLATTE.

MACHINE FOR SEPARATING LINKS FROM CHAIN BARS.

No. 547,268.

Patented Oct. 1, 1895.

Fig. 1.

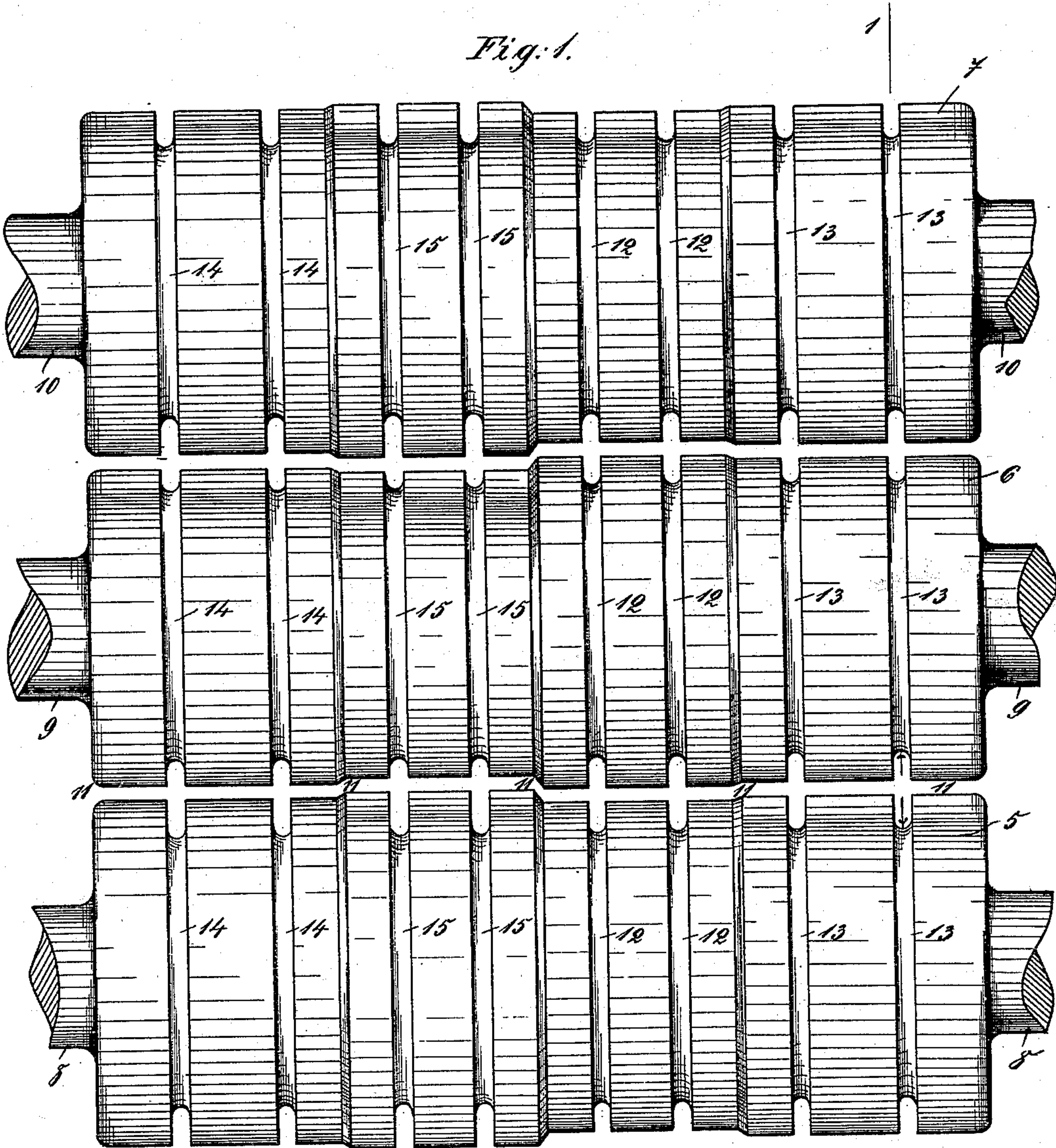
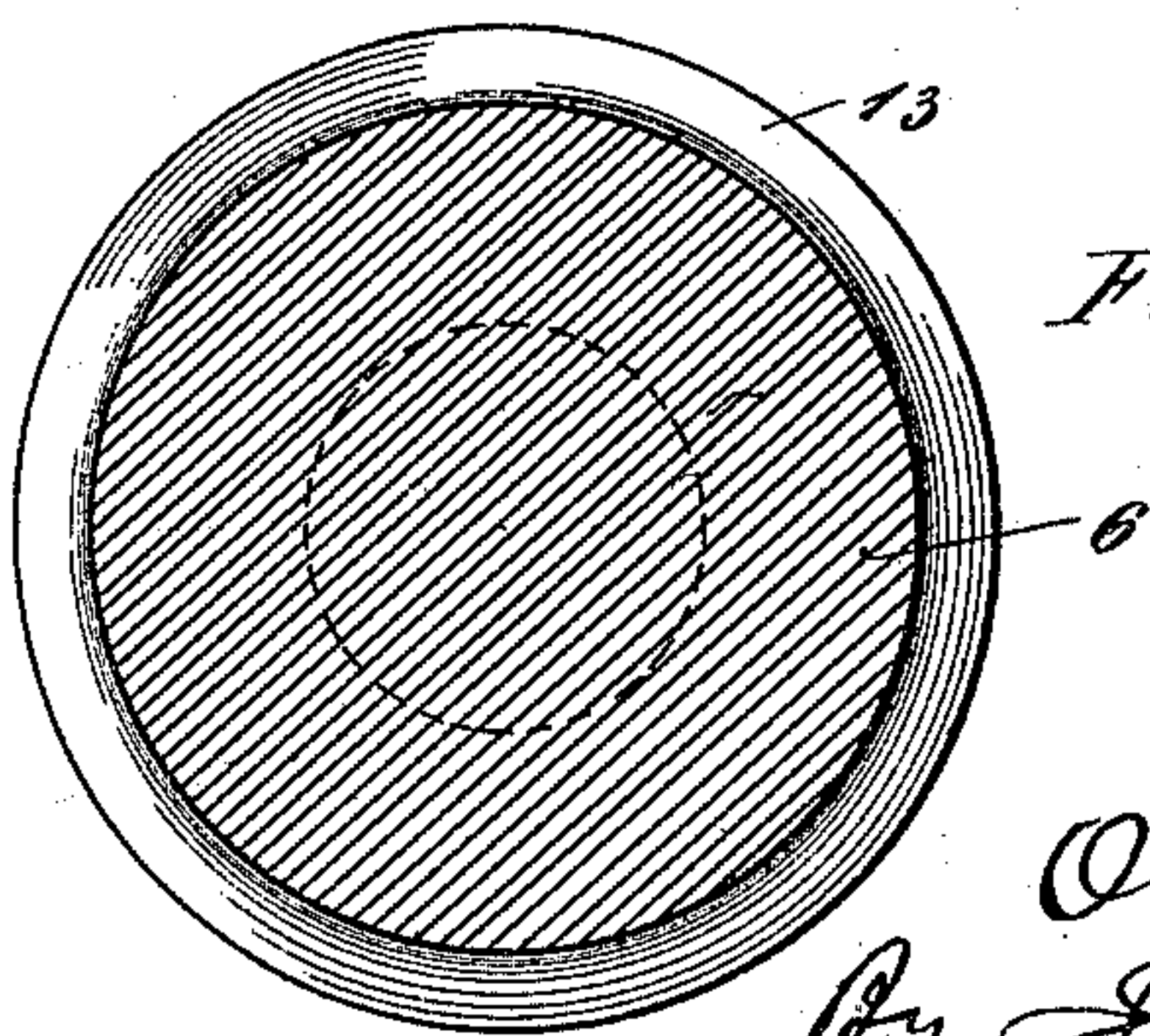


Fig. 2.



Witnesses:

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Inventor:

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(No Model.)

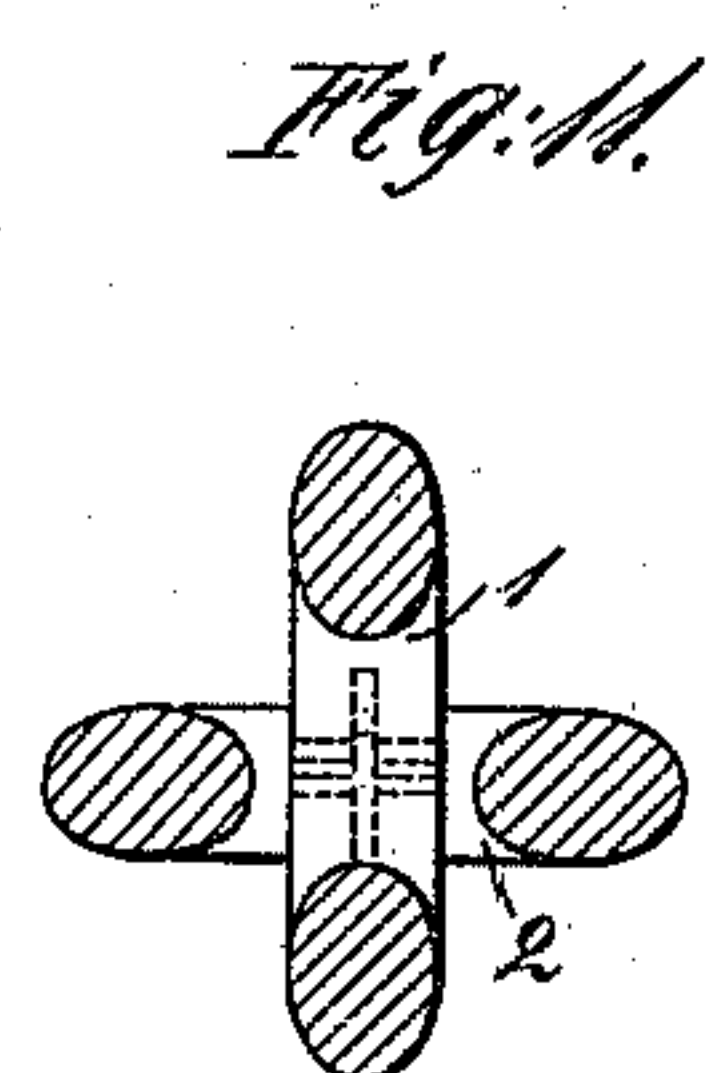
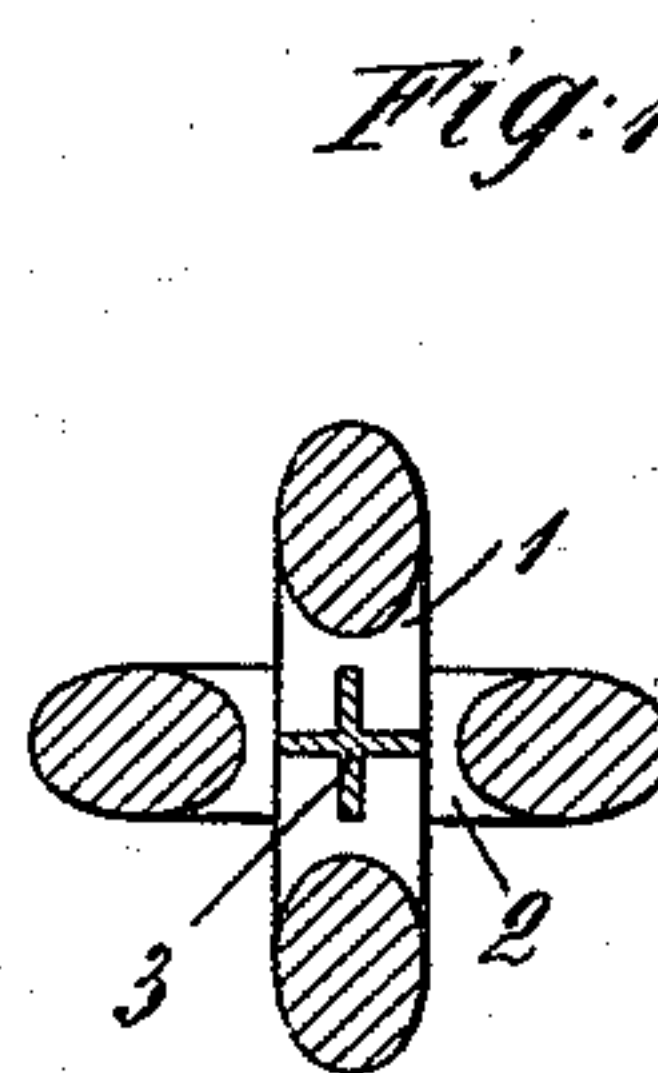
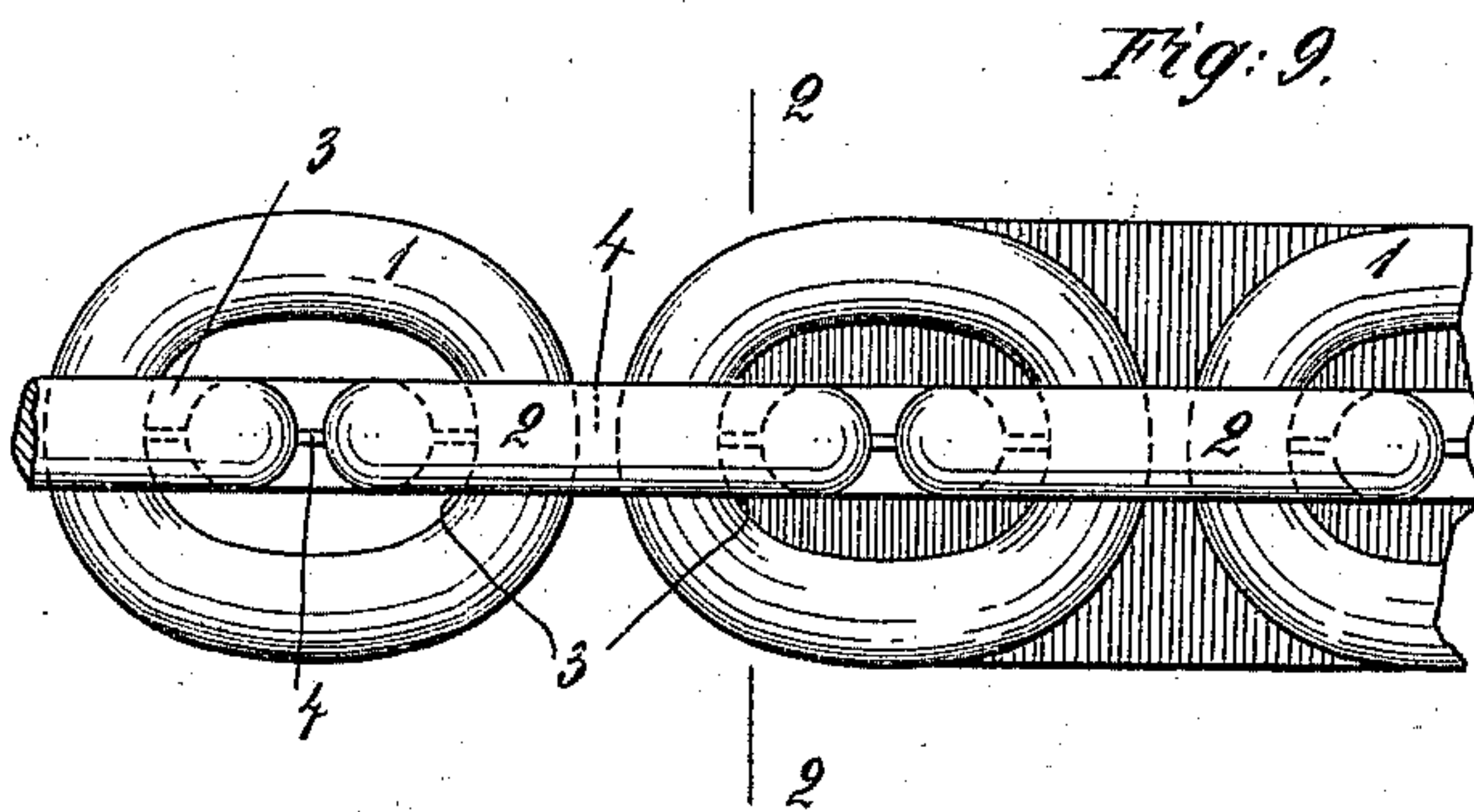
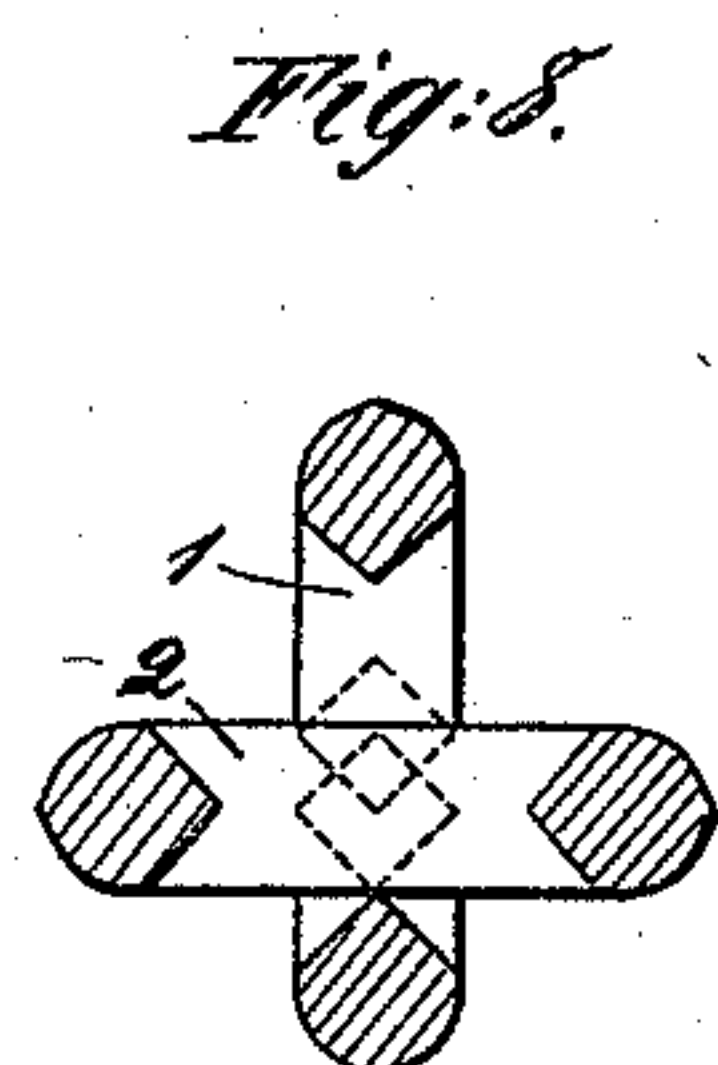
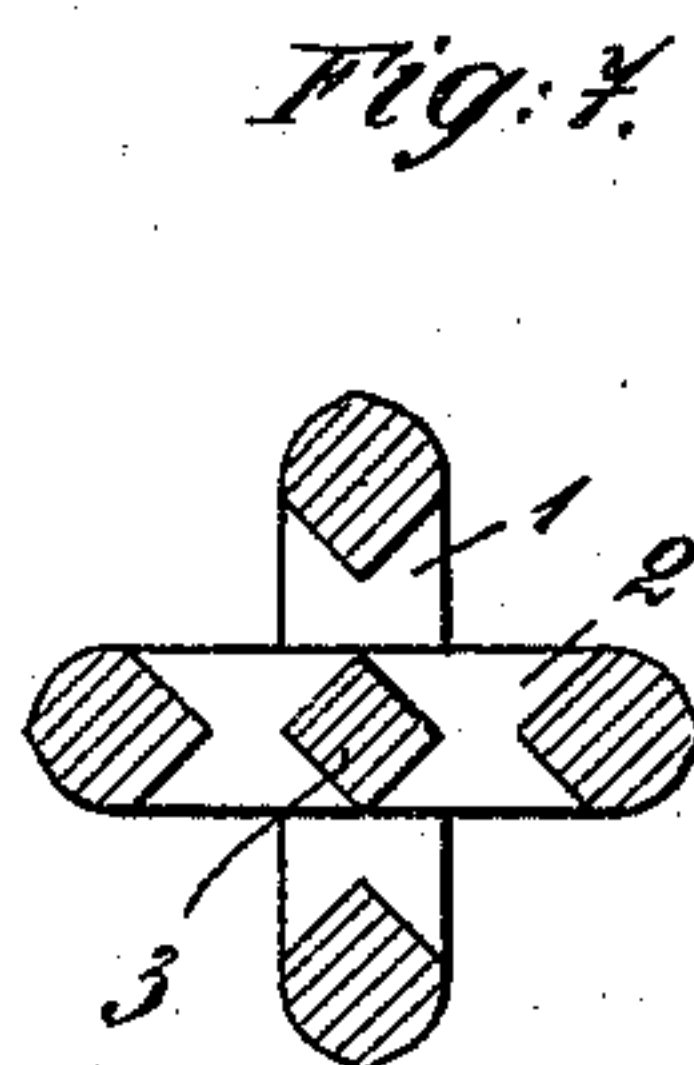
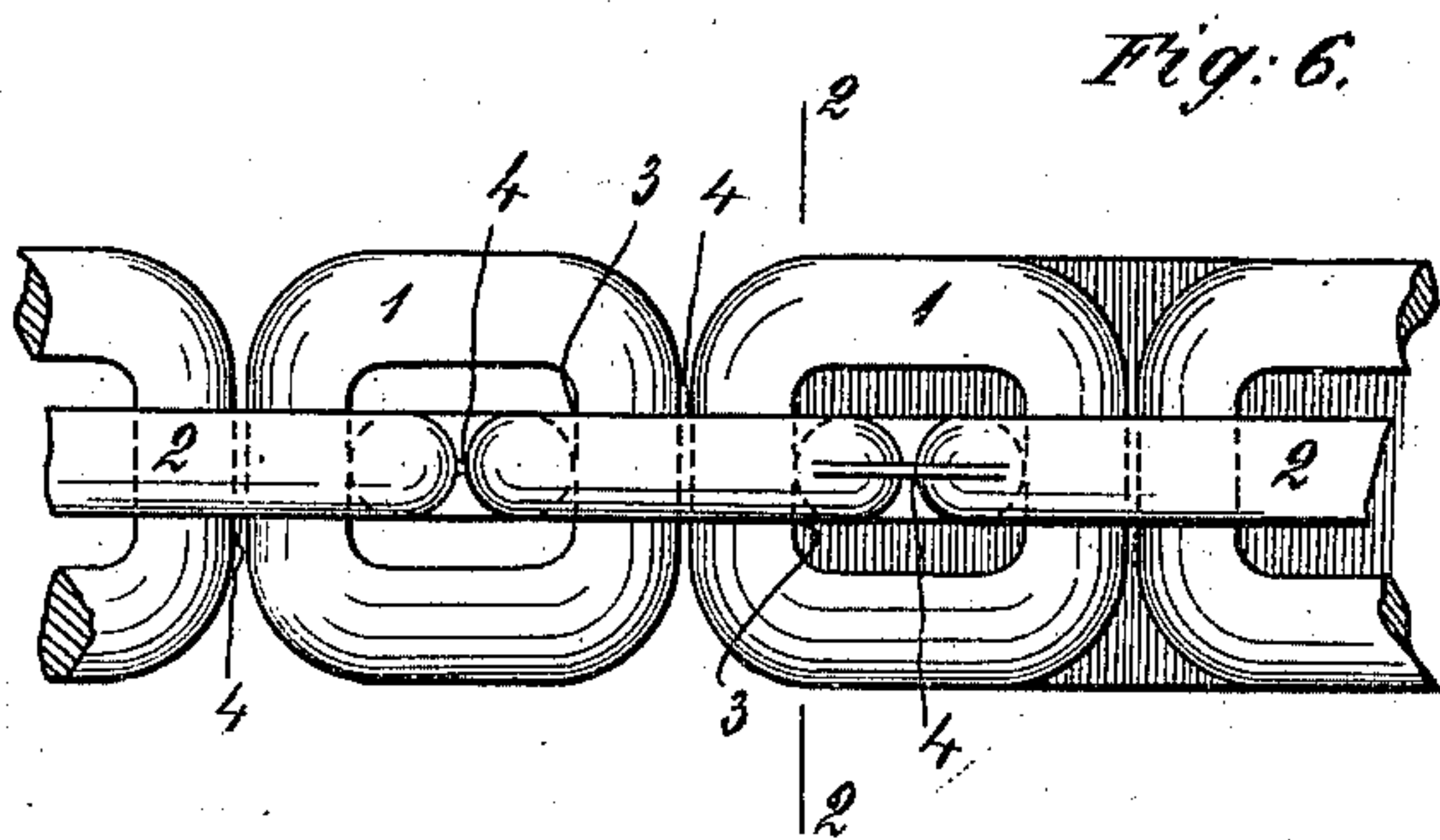
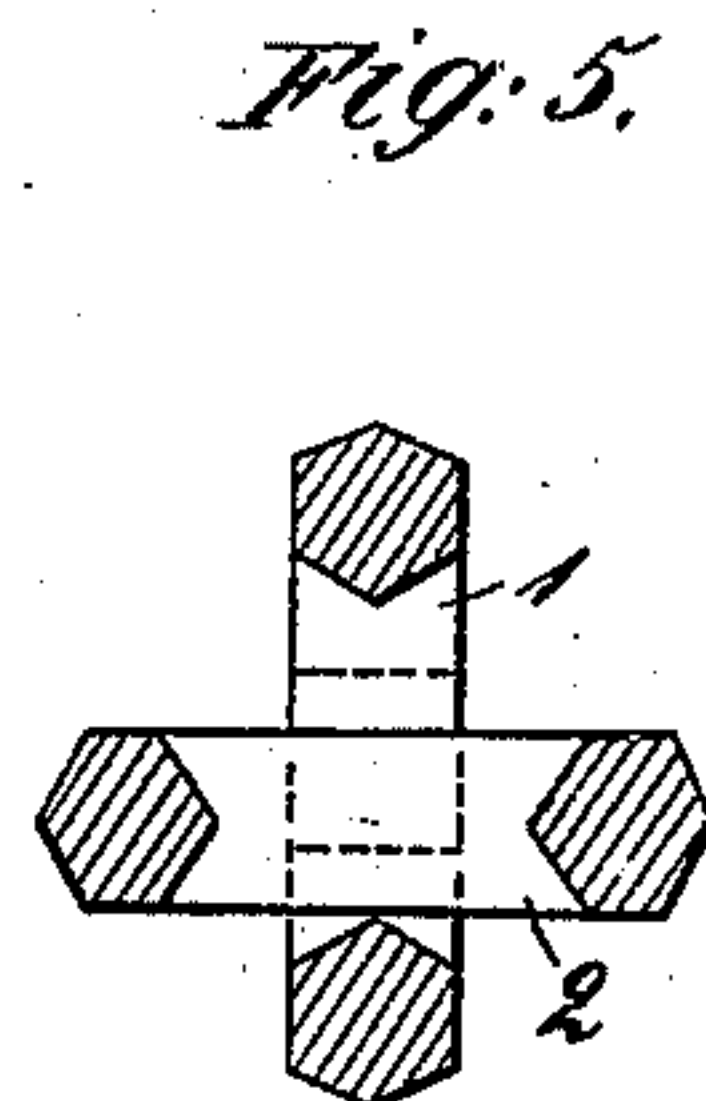
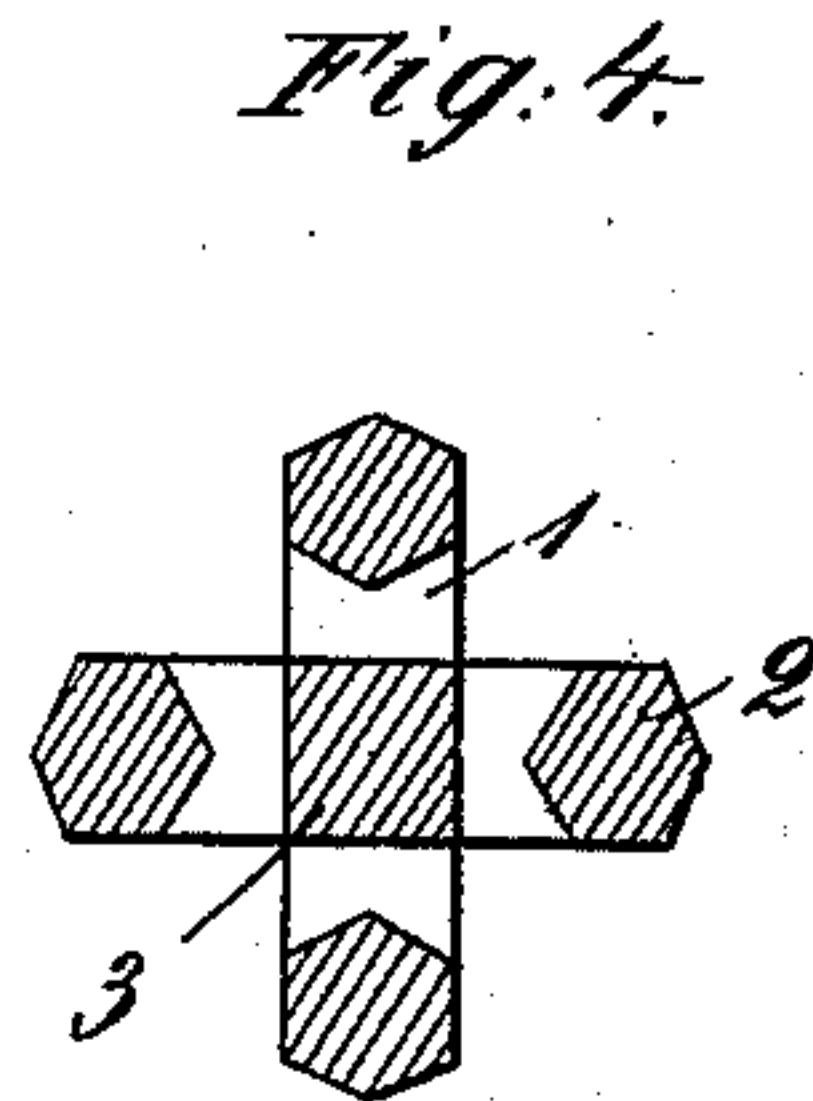
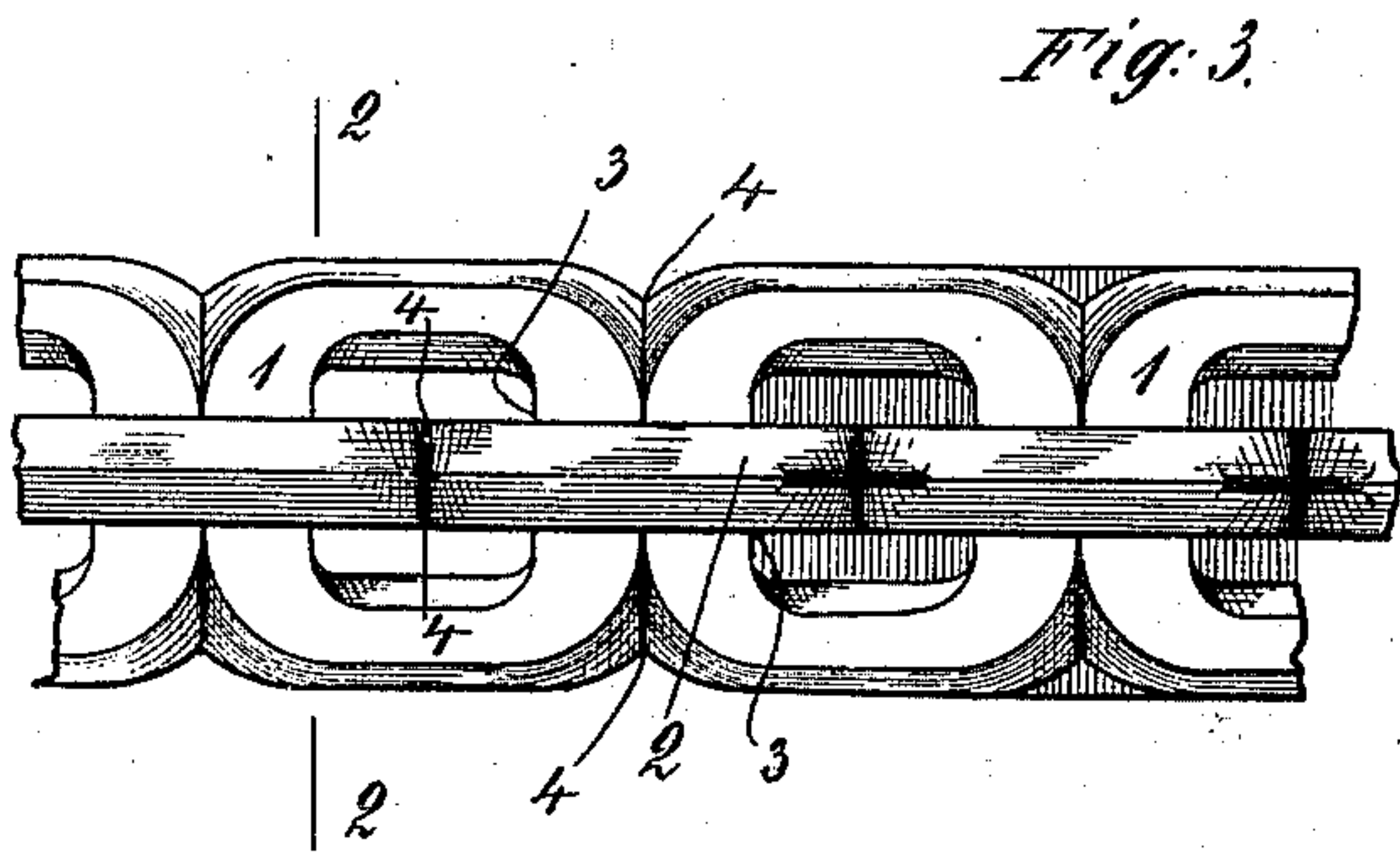
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UNITED STATES PATENT OFFICE.

OTTO KLATTE, OF NEUWIED, GERMANY.

MACHINE FOR SEPARATING LINKS FROM CHAIN-BARS.

SPECIFICATION forming part of Letters Patent No. 547,268, dated October 1, 1895.

Application filed April 12, 1894. Serial No. 507,264. (No model.) Patented in Luxemburg August 10, 1893, No. 1,874; in France August 11, 1893, No. 232,132; in Norway August 16, 1893, No. 3,391; in Belgium August 18, 1893, No. 106,021, and in Italy September 30, 1893, No. 69/88.

To all whom it may concern:

Be it known that I, OTTO KLATTE, a subject of the King of Prussia, German Emperor, residing at Neuwied-on-the-Rhine, Prussia, Germany, have invented a certain new and Improved Machine for Separating Links from Chain-Bars, (for which I have obtained Letters Patent as follows: in France, No. 232,132, dated August 11, 1893; in Belgium, No. 106,021, dated August 18, 1893; in Italy, No. 69/88, dated September 30, 1893; in Norway, No. 3,391, dated August 16, 1893, and in Luxemburg, No. 1,874, dated August 10, 1893,) of which the following is a specification.

My invention relates to the manufacture of chains and particularly to a machine for separating the series of links lying in a horizontal plane from those lying in a vertical plane in X or cross shaped bars, which have been formed either by rolling or stamping into two rows of chain-links which are linked together, or, in other words, to a machine for separating the two rows of links at the places where they intersect—that is, where the inner surfaces of two links which are linked in one another are in contact.

In carrying out my invention I make use of two or three rollers arranged one above the other, the peripheries of which are so grooved that when the chain-bar is passed through these grooves the horizontal row of links is displaced relatively to the vertical row, thereby causing the shearing of the metal at the specified places. A machine consisting of three rolls is illustrated in the accompanying drawings, in which—

Figure 1 shows a front elevation of the three rolls, and Fig. 2 a cross-section on the line 1 1, Fig. 1. Fig. 3 is a plan of the chain-bar, the links of which are still in a very rough imperfect form. Fig. 4 is a section on the line 2 2, Fig. 3, and Fig. 5 shows a similar section, in which, however, the relative position of the two rows of links has been altered. Figs. 6, 7, and 8 show views similar to those of Figs. 3, 4, and 5 of a chain-bar, the links of which present a fairly completed shape. Figs. 9, 10, and 11 are views similar to Figs. 3, 4, and 5 of a chain-bar, the links of which show a finished shape.

In Figs. 3 to 11 the vertical row of links is

marked 1 and the horizontal row is marked 2. The bar, which has been formed by rolling or stamping, possesses thin webs both on the inner and outer sides of the links, which are so far detached by punching, as is shown by the shaded parts on the right-hand sides of Figs. 3, 6, and 9. The one row of links 1 is attached to the other row 2 at the parts 3, and the links of each row are connected together at the parts marked 4. The separation of the two series of links at the places 3 is now effected by displacing one row with respect to the other. In order to insure that the cohesion of the molecules in this operation is overcome and that shearing takes place, this displacement is carried out at a certain temperature at which the cohesive properties of the material are favorable for shearing and which depends on the kind of material—for wrought-iron 150° to 200° and for steel the so-called "blue coloration."

The displacement of the two rows of links relatively to one another and thereby the shearing at the parts 3 is effected by means of the machine shown in Fig. 1, which consists of three rolls 5, 6, and 7, situated one above the other and of approximately equal diameter. The necks or shafts 8 8 9 9 10 10 (shown broken off in Fig. 1) of these rolls are mounted in bearings in two standards and each roll is separately driven at the same speed.

The generatrix of the surface of each roll is a broken line 11 11 11 11, and each roll is provided with annular grooves 12 12, 13 13, 14 14, and 15 15, of different depths. The form of the generatrix and the position and depth of the annular grooves are so chosen that when the rolls are separated from one another by a distance equal to the thickness of a link the grooves are opposite one another, and the distance between the bottoms of two opposite grooves is equal to the height or breadth of a link. The grooves 12 of all three rolls are of the same depth. If now the vertical row of links of a chain-bar be passed through two opposite grooves 12, while the horizontal row of links passes between the rolls, the rows of links will only be straightened with respect to one another. The grooves 13 of the middle roll 6 are not so deep as the grooves

12, the grooves 14 not so deep as the grooves 13, and so on. The grooves 13 of the rolls 5 and 7 are on the contrary deeper than the grooves 12, the grooves 14 deeper than the grooves 13, and so on. The distance between the bottoms of two opposite grooves in every case remains, however, always equal to the height of a link. In consequence, therefore, of this arrangement, when the chain-bar is passed through the grooves 13 13 14 14 15 15, &c., one after the other in the order of sequence indicated by the numbers the horizontal row of links is more and more displaced with respect to the vertical row and the shearing of the parts 3, Figs. 4, 7, and 10 effected. After the shearing the links have the relative positions shown in Figs. 5, 8, and 11. The chain-rod is passed at least twice through the grooves and the row of links which was horizontal in the first passage through the grooves is passed through vertically the second time. After the two rows of links have been separated from one another the links of each row have still to be separated at the places 4, Figs. 3, 6, and 9. This is effected in the rod represented in Fig. 3 by sawing and in the rods shown in Figs. 6 and 9 simply by fracturing the cross-shaped connecting-barbs.

I do not herein claim the method of making chains by a rolling or stamping operation, my invention being confined to a machine for

separating from each other the two rows of links which as the chain-bar leaves the rolling or stamping operation are at right angles to each other, the separation of the vertical row from the horizontal row by my machine leaving the links of each row adhering to one another, the bar being still a rigid bar with the one row of links separated from the links of the other row, thus permitting one row to be displaced against the other.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

In the manufacture of weldless chains, the combination with a set of cylindrical rolls 5, 6 and 7, mounted one above the other and adapted to be separately driven with equal velocity, each of said rolls having annular grooves of different depths, the registering grooves of the several rolls being of such relative depths that as the chain bar is passed successively through the rolls the horizontal row of links is more and more displaced with respect to the vertical row, substantially as set forth.

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

OTTO KLATTE.

Witnesses:

FRITZ SCHÖRDER,
SOPHIE NAGEL.