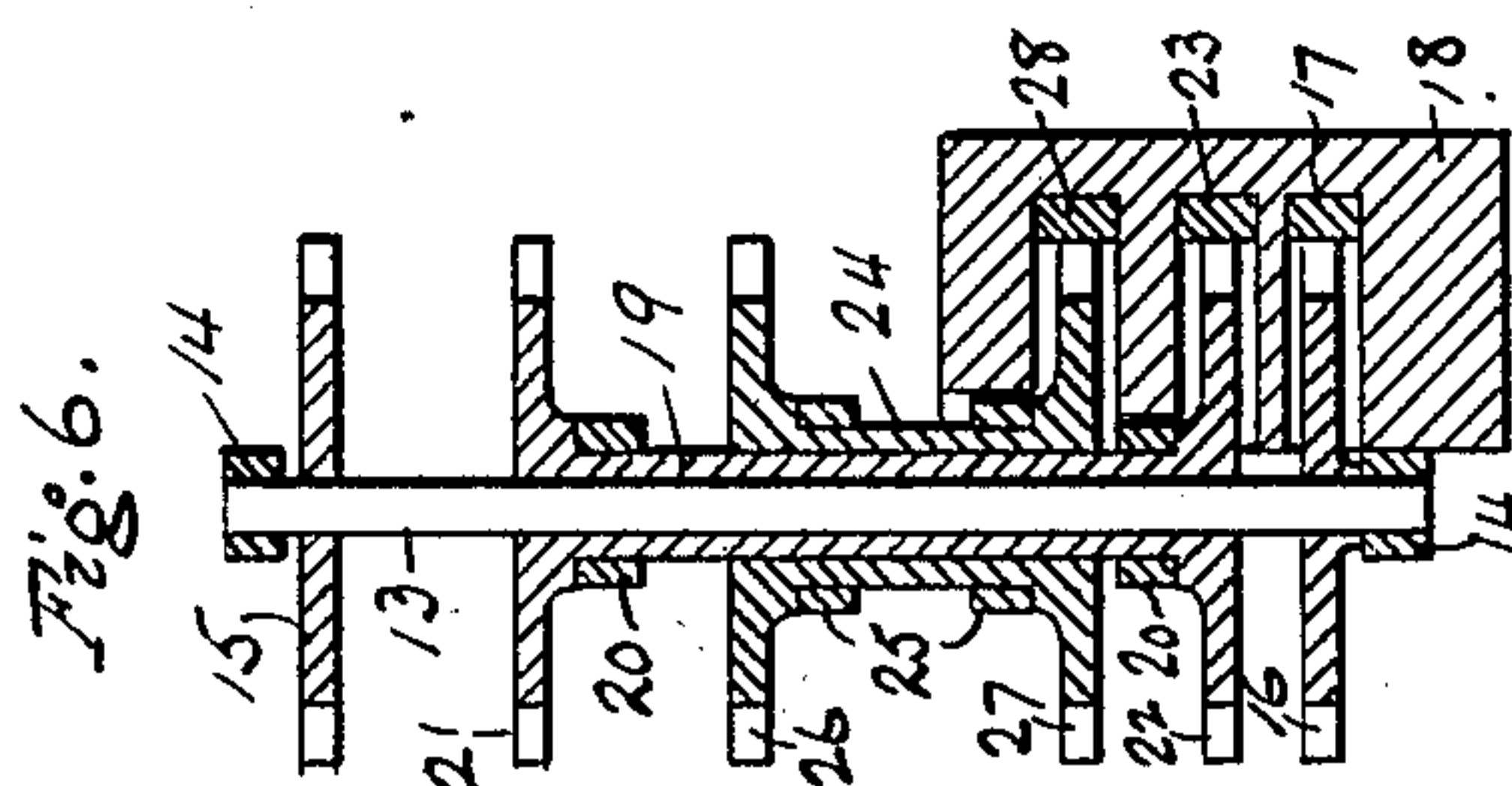
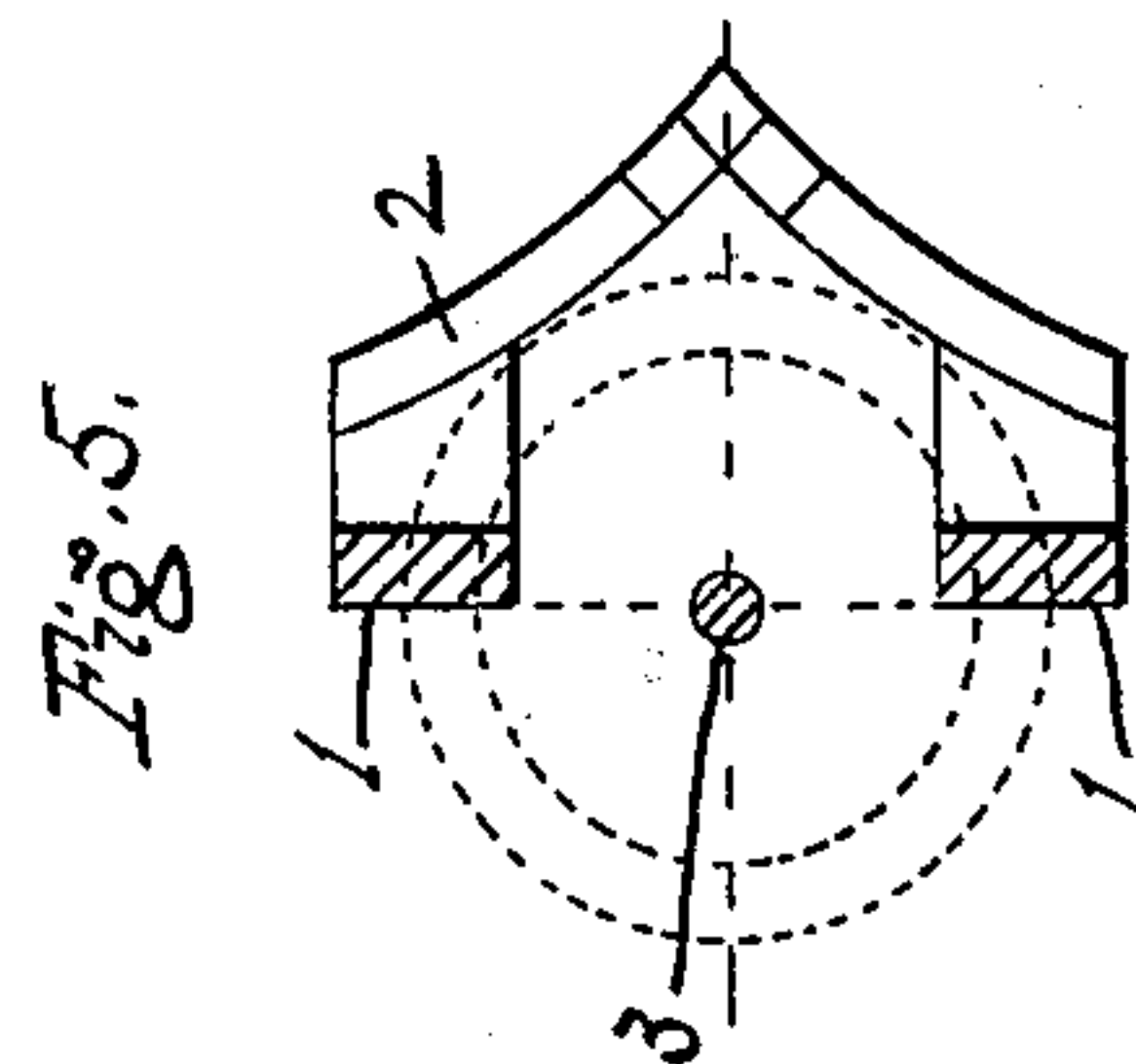
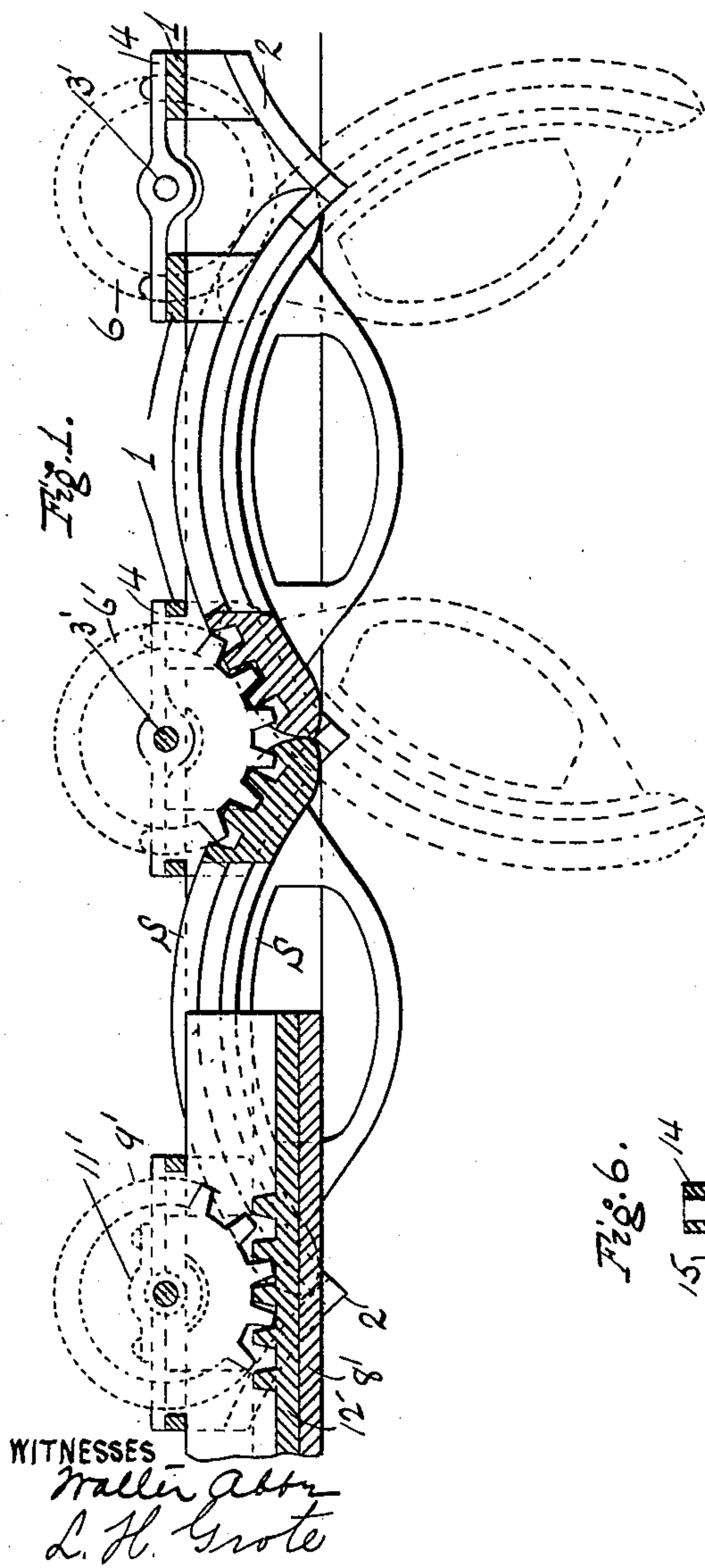
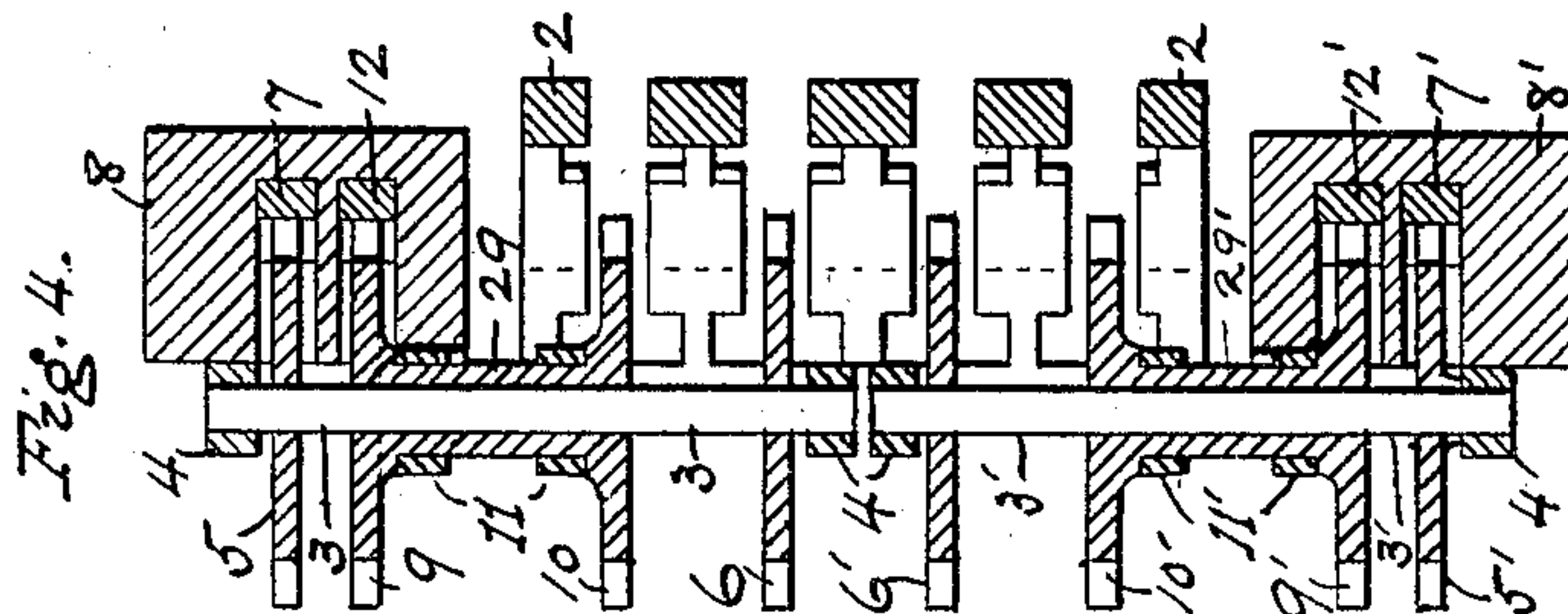


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2 SHEETS—SHEET 1.



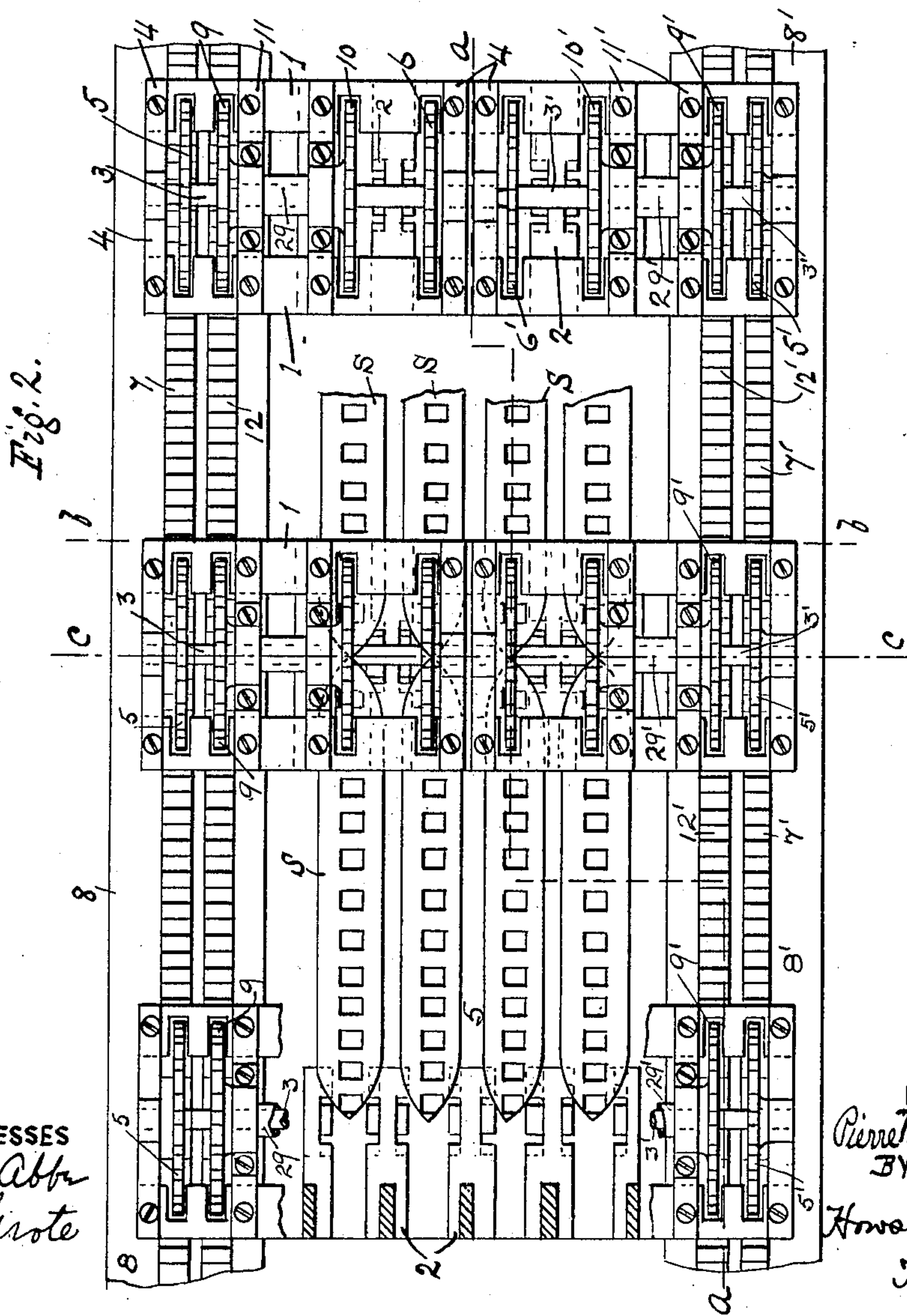
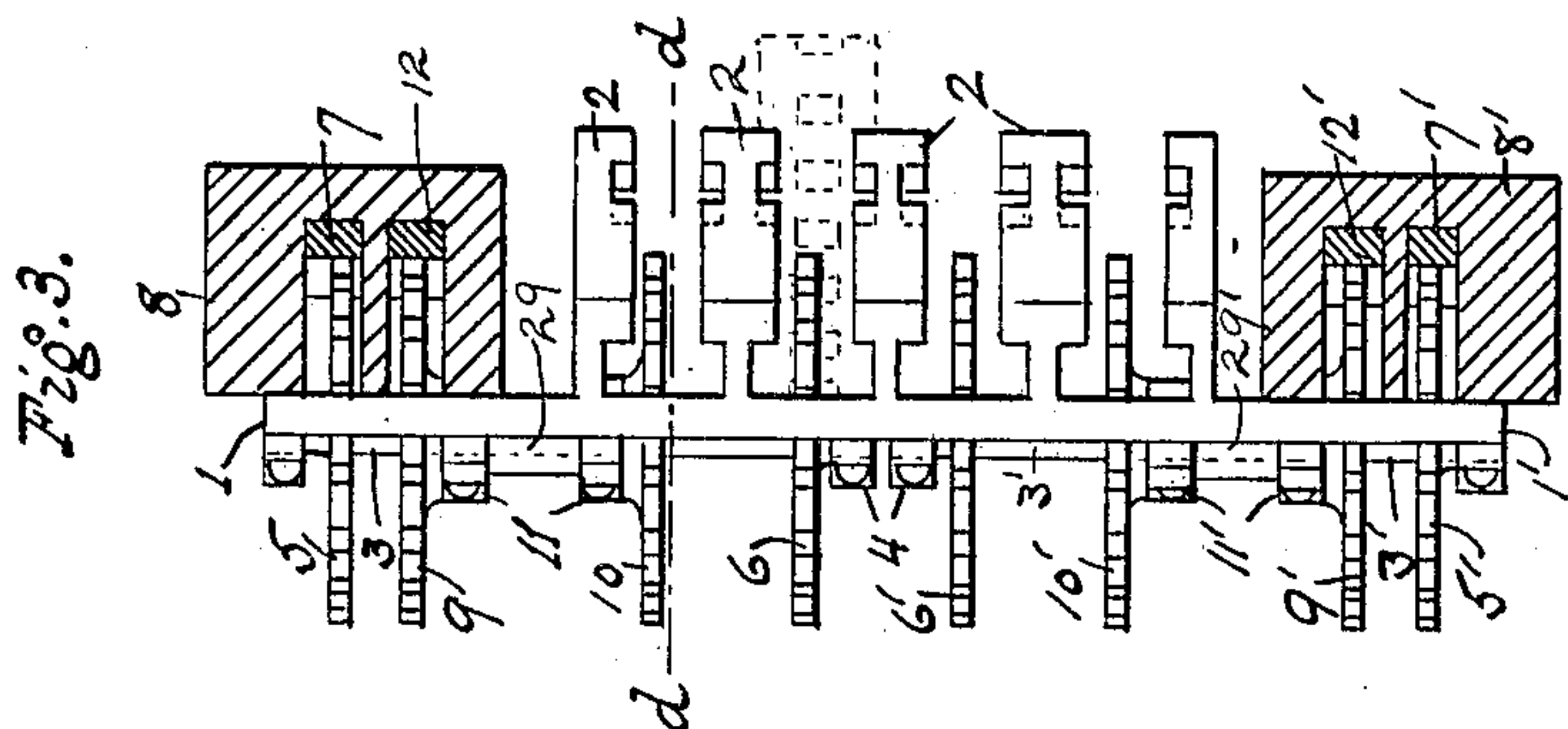
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

PIERRE MARTOUREY, OF ST. ETIENNE, FRANCE.

## SHUTTLE MECHANISM FOR LOOMS.

No. 913,667.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed July 12, 1907. Serial No. 383,461.

*To all whom it may concern:*

Be it known that I, PIERRE MARTOUREY, a citizen of the French Republic, residing in St. Etienne, Loire, France, have invented a certain new and Improved Shuttle Mechanism for Looms, of which the following is a full, clear, and exact description.

This invention relates more particularly to multiple fabric looms of that class which are commonly termed narrow ware looms and in which many different sets of warp threads are arranged side by side, and fabrics woven therefrom side by side.

The main object of my invention is to so construct the shuttles, guides and operating means that with a simple and easily constructed mechanism, the size of the shuttle frame may be greatly reduced and the shuttles and sets of warps and the fabrics may be brought closer together than heretofore. This advantage increases in importance with an increase in the number of shuttles employed.

In the accompanying drawings Figure 1 is a sectional plan view on the line *a—**a*, Fig. 2; Fig. 2 is a face view, showing four sets of shuttles and guides, a part being broken away to show the ends of the shuttles and part of the guides; Fig. 3 is a section on the line *b—b*, Fig. 2; Fig. 4 is a section on the line *c—c*, Fig. 2; Fig. 5 is a section on the line *d—d*, Fig. 3; Fig. 6 is a section, similar to Fig. 4, but of a modification.

The shuttles are arranged to oscillate in superposed horizontal planes in a frame consisting of two horizontal top and bottom bars 8, 8<sup>1</sup>, and a series of spaced vertical frames, each of which consists of a pair of parallel bars 1 and cross connecting curved shuttle guides 2, 2. In the present instance these shuttle guides 2, on each vertical frame, are in the form of flanges cut on the arcs of equal circles intersecting each other at points along a line parallel with the center line of the vertical frame. Along the center line of each frame I arrange two independent vertical shafts 3 and 3<sup>1</sup>, which can turn in bearings 4, 4. On the shaft 3 are secured two pinions 5 and 6. The pinion 5 gears with the reciprocating operating rack 7 guided in the upper bar 8 of the frame, while the pinion 6 imparts its back and forth movement to the two adjacent curved shuttles S which are formed with teeth on their outer faces to gear with the

pinion, as indicated at the middle of Fig. 1. The shaft 3<sup>1</sup> also carries two pinions 5<sup>1</sup> and 6<sup>1</sup>, the latter like 6 to operate two shuttles, while the pinion 5<sup>1</sup> gears with the reciprocating operating rack 7<sup>1</sup> sliding in the lower bar 8<sup>1</sup>.

With the foregoing described arrangement the loom can be operated with two sets of shuttles only. To construct it to operate with four sets, the supplementary arrangement shown in the drawings, Figs. 1 to 4, is employed. As best shown in Fig. 4, two pinions 9 and 10 are mounted on a common sleeve or hollow shaft 29 turning freely on the shaft 3 and being maintained in position longitudinally by bearings 11, 11. The pinion 9 gears with a reciprocating operating rack 12 in the upper part 8 of the frame, while the pinion 10 will engage with and operate its shuttles, as above explained with reference to the pinions 6. Two pinions 9<sup>1</sup> and 10<sup>1</sup> on a sleeve 29<sup>1</sup> are similarly free to turn on the shaft 3<sup>1</sup> and are guided by bearings 11<sup>1</sup>. The pinion 9<sup>1</sup> is operated by the rack 12<sup>1</sup>, while the pinion 10<sup>1</sup> imparts motion to the corresponding curved shuttles. With this construction four sets of shuttles may be operated. To run a greater number of sets of shuttles, it is only necessary to increase the number of racks and pinions together with the number of connecting sleeves. Thus in Fig. 6 I have shown an arrangement for operating six sets of shuttles. The shaft 13 turning in bearings 14, carries two pinions 15 and 16, the latter gearing with an operating rack 17 sliding in the frame 18, while the pinion 15 operates two shuttles. On this shaft 13 turns freely a sleeve 19 in bearings 20. This sleeve carries two pinions 21 and 22, the latter gearing into an operating rack 23, while the pinion 21 drives two adjacent shuttles. A third sleeve 24 guided in bearings 25 is free to turn on the sleeve 19 and carries two pinions 26 and 27, the latter meshing with an operating rack 28, while the pinion 26 is adapted to mesh with and reciprocate two curved shuttles. Another shaft in line with the shaft 13 carries an arrangement of parts, the duplicate of that shown in Fig. 6; with such a construction six sets of shuttles may be operated.

In Fig. 1 are shown by full lines the middle positions of the shuttles, and at the right of the figure are shown by dotted lines,



the two extreme positions of the right shuttle, never out of gear with a pinion on one or other of two adjacent and parallel shafts 3 (3<sup>1</sup>) or sleeves thereon, the curved shuttles 5 being always guided by the curved guides 2. Owing to the use of these curved guides made on the arcs of circles of a diameter no greater than the width of the space occupied by the two adjacent sets of cross bars 1, 1, 10 which carry them, as shown by the dotted lines, Fig. 1, free passage is left for the warps and woven fabrics, while the total space occupied is reduced to the lowest possible.

I claim as my invention:

A multiple fabric loom, having a series of shuttles and curved guides therefor guiding the shuttles in horizontal planes, in combination with vertical shafts carrying two sets of pinions, one to operate the shuttles, 20 and a rack to gear with the other pinions.

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

PIERRE MARTOUREY.

Witnesses:

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LOUIS MEILLIER.