

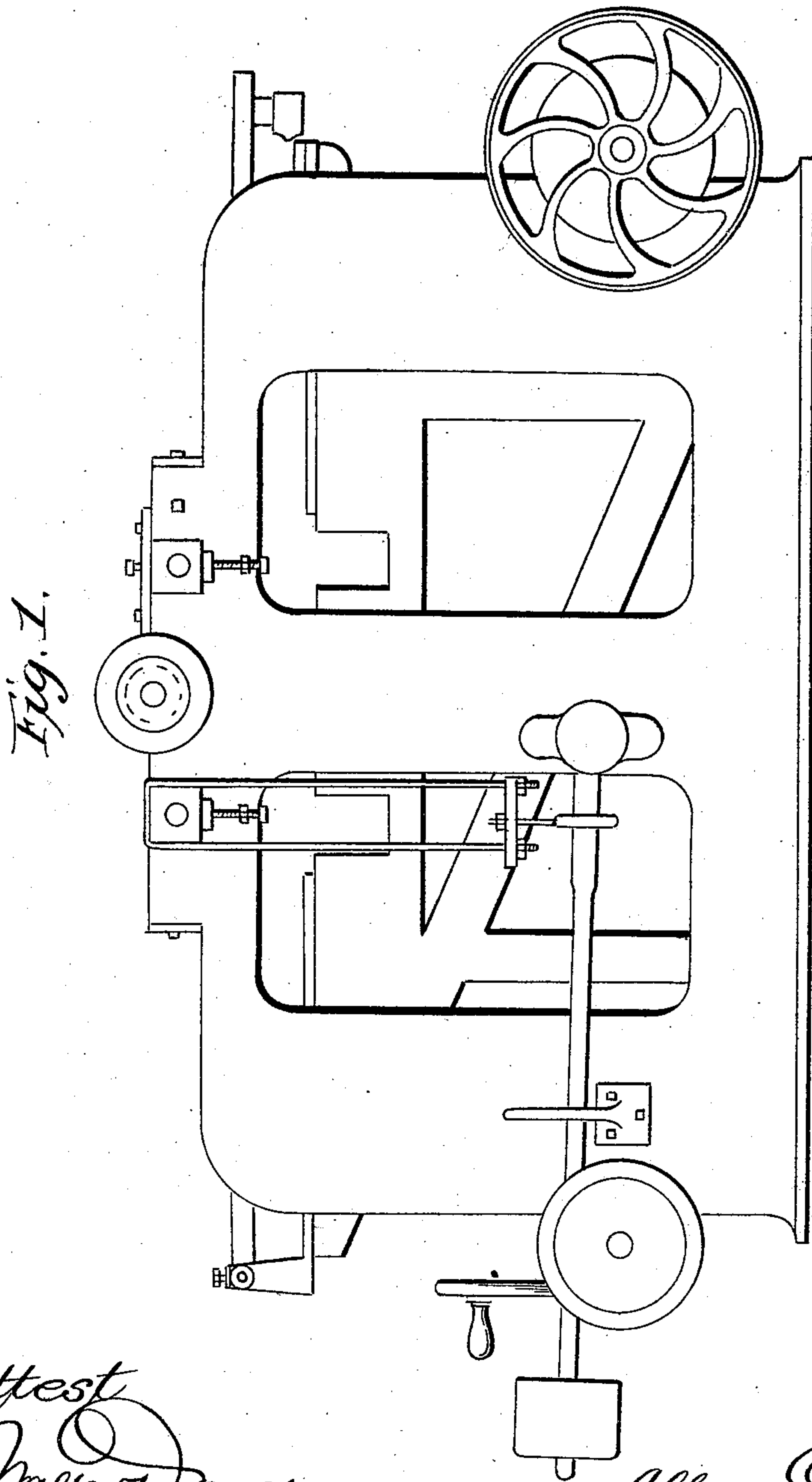
(No Model.)

5 Sheets—Sheet 1.

A. D. LINN & A. A. LYTLE.  
PLANER.

No. 549,575.

Patented Nov. 12, 1895.



*Attest*  
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*F. L. Madsen*

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*Alton A. Lytle*  
*by* *Wm. Spru*  
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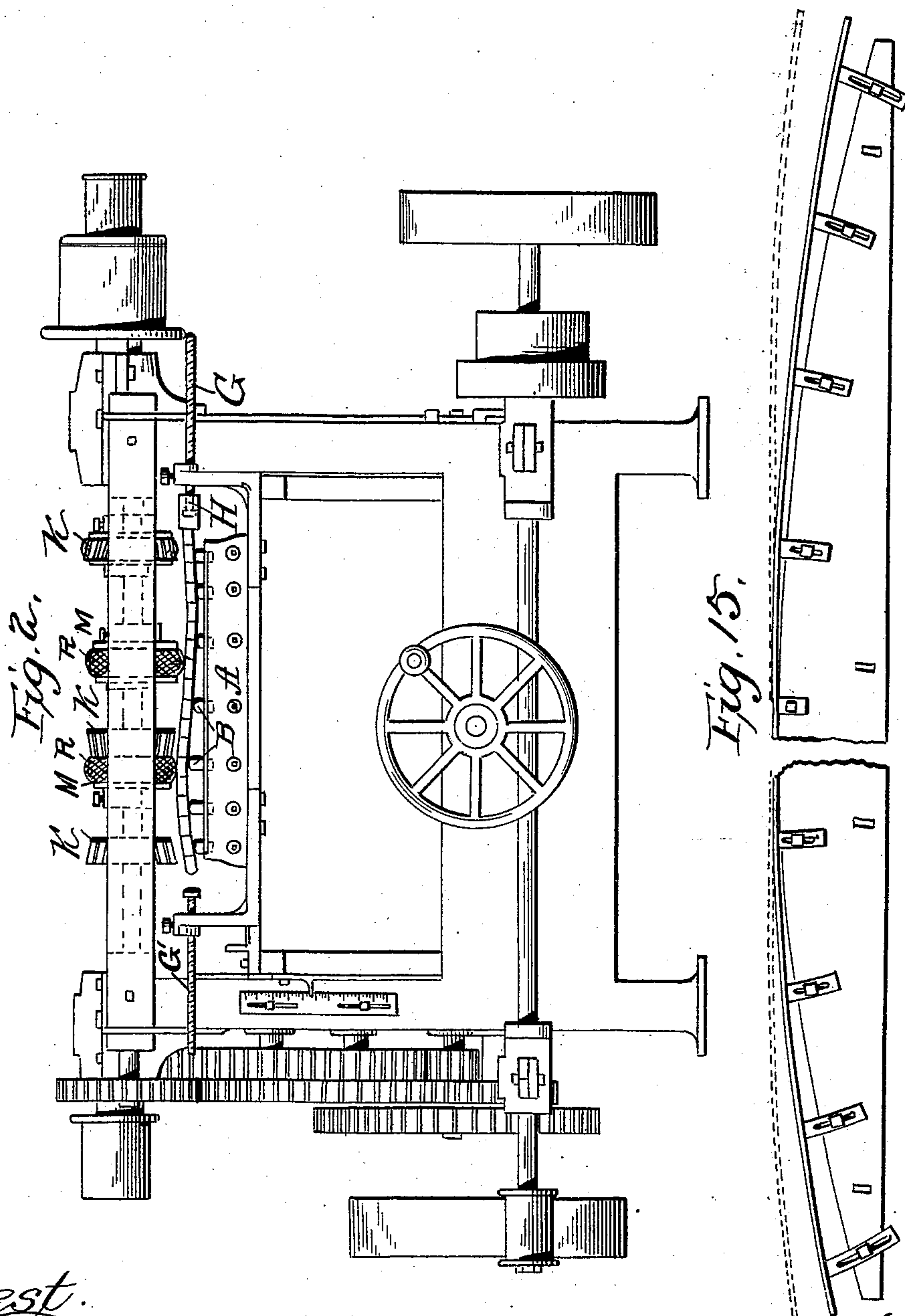
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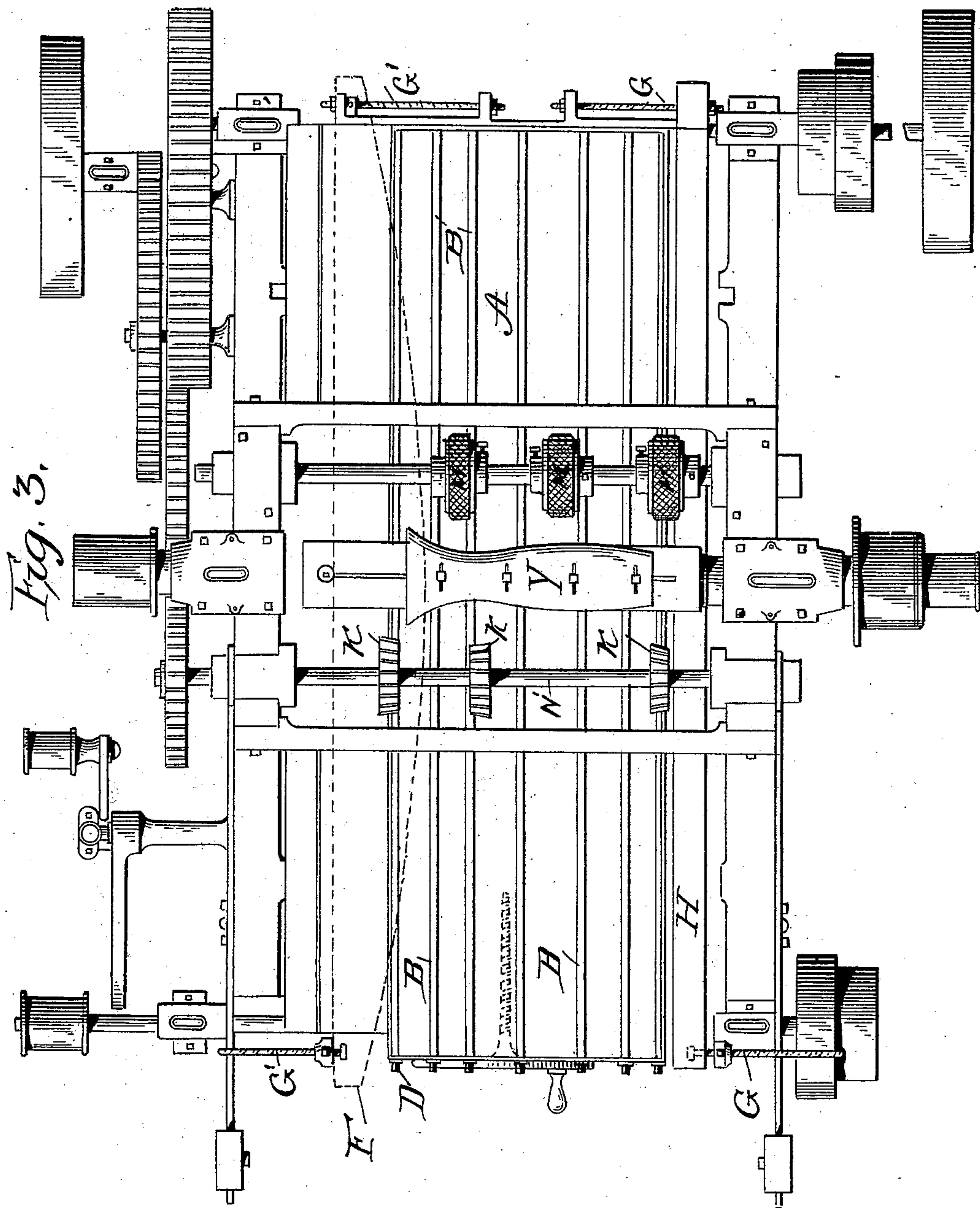
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PLANER.

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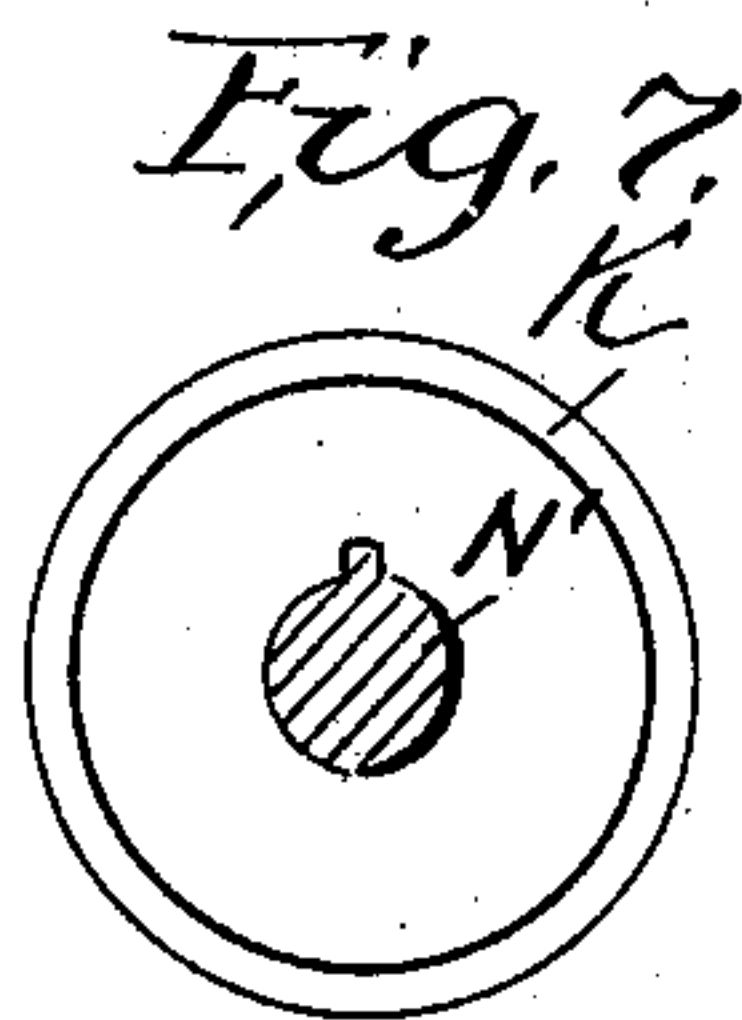
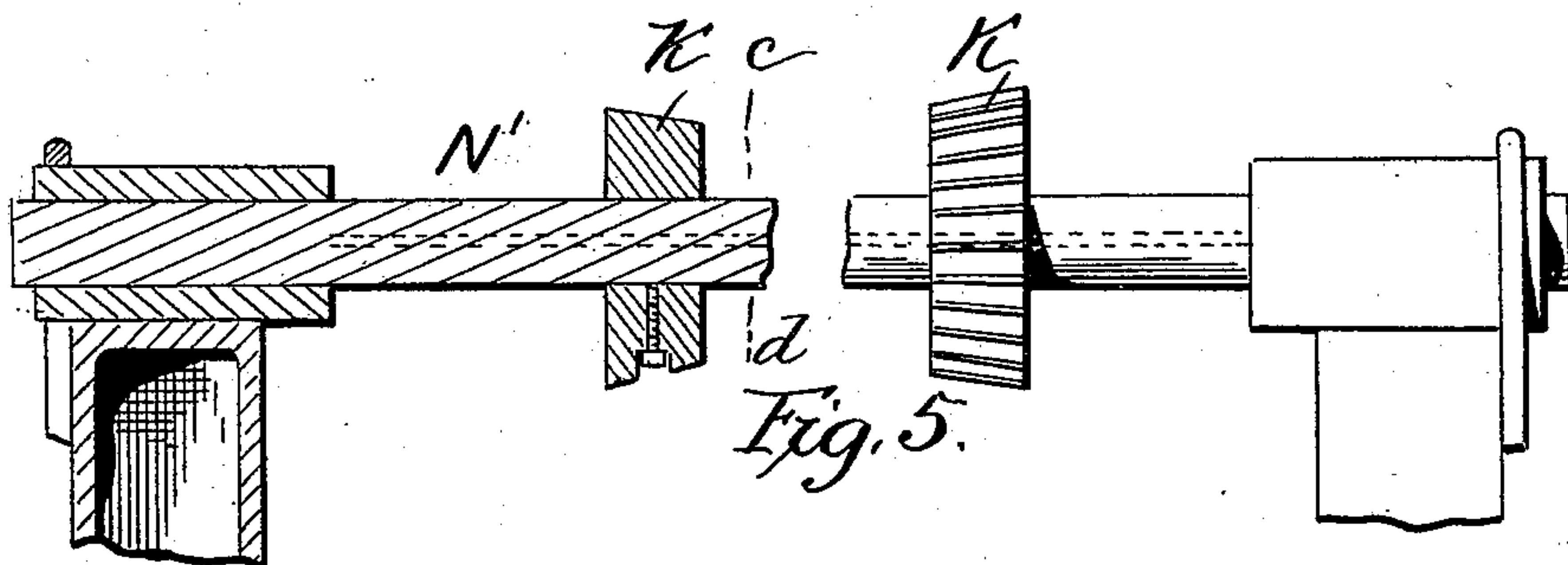
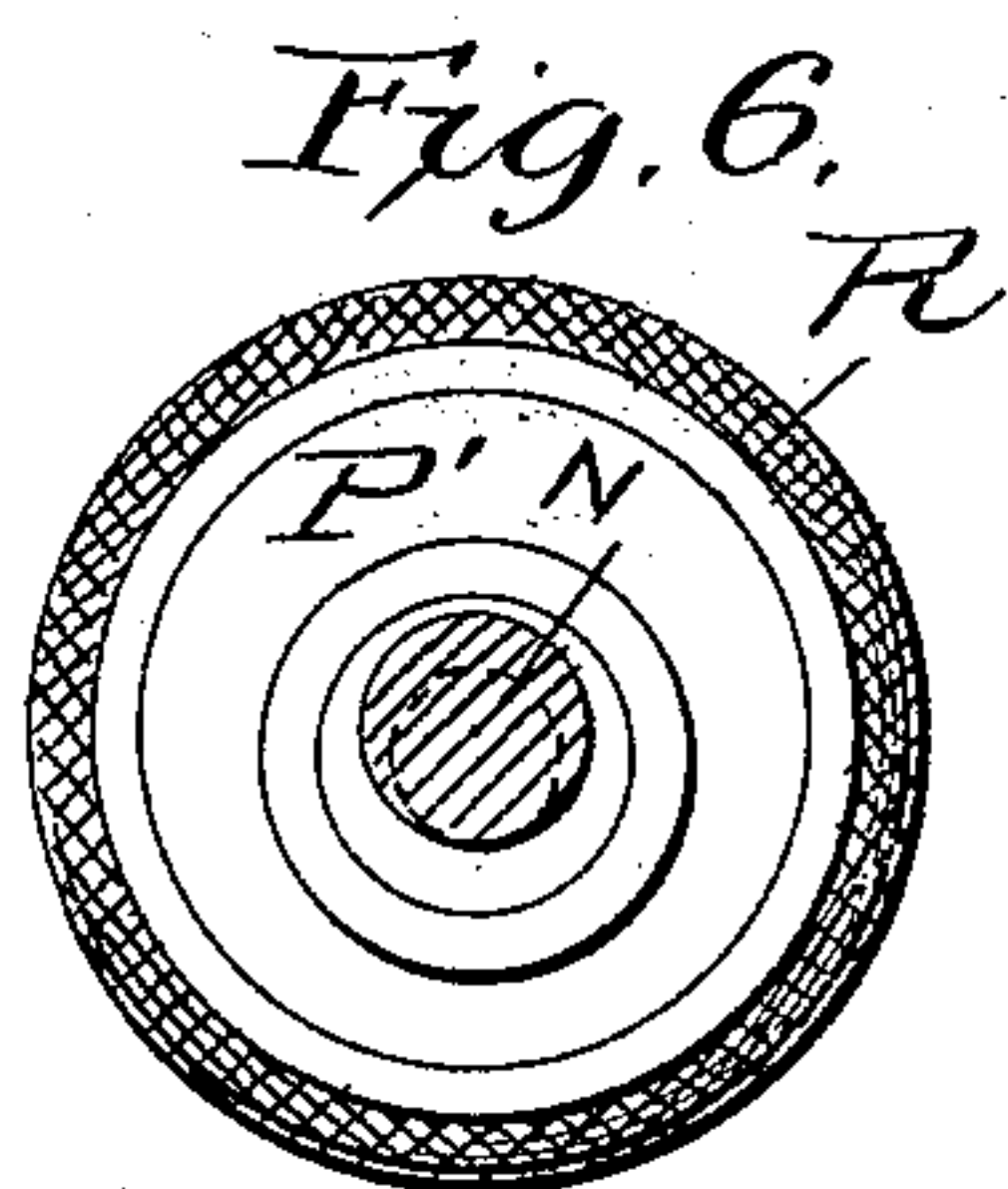
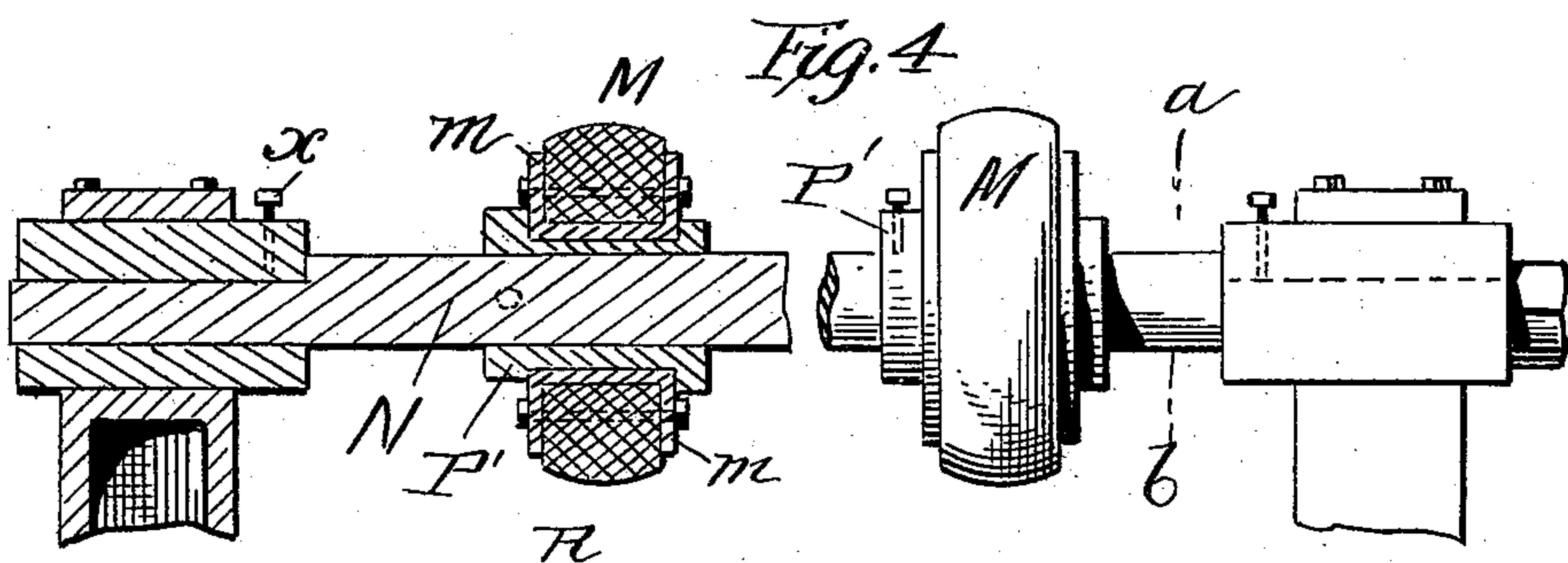
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5 Sheets—Sheet 4.

A. D. LINN & A. A. LYTLE.  
PLANER.

No. 549,575.

Patented Nov. 12, 1895.



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(No Model.)

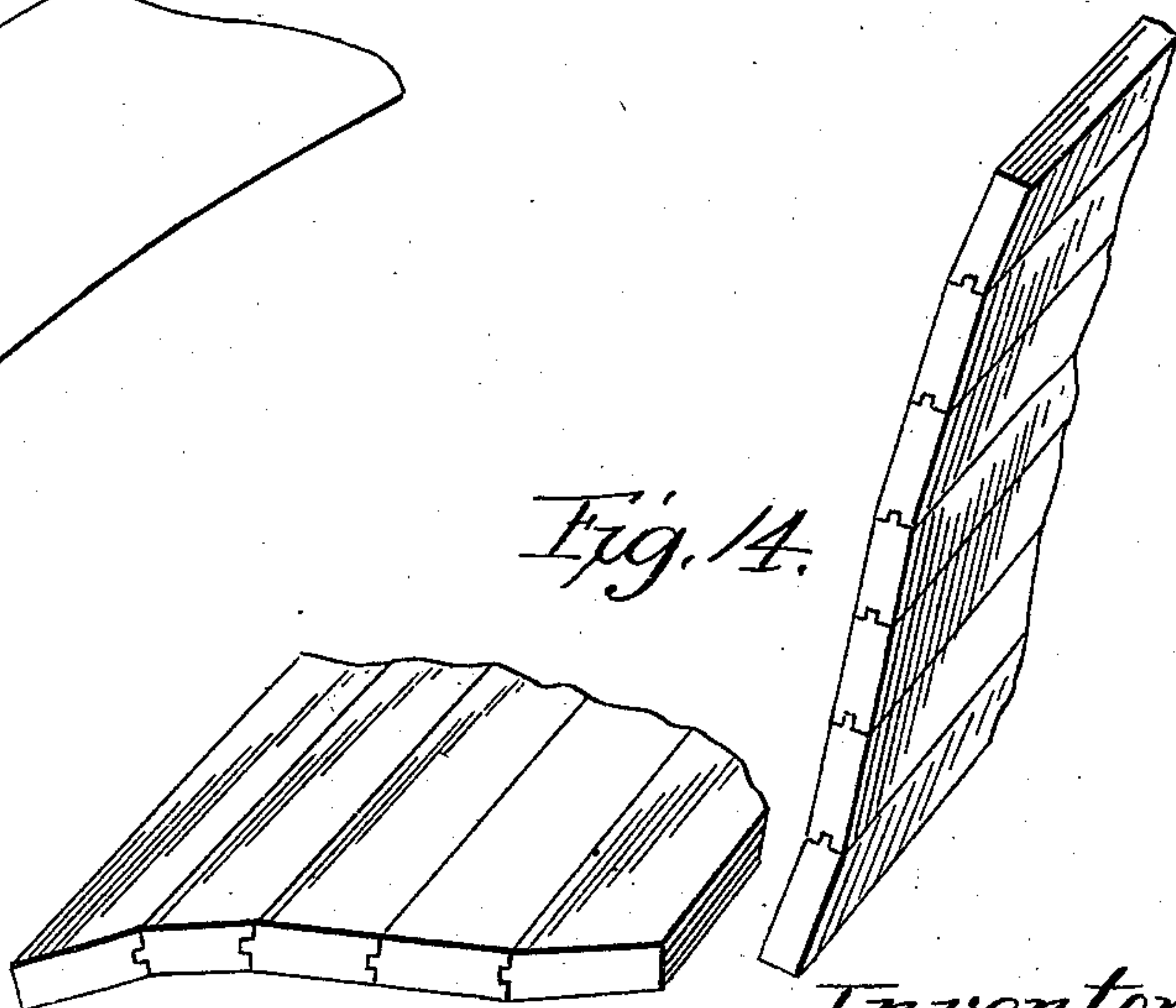
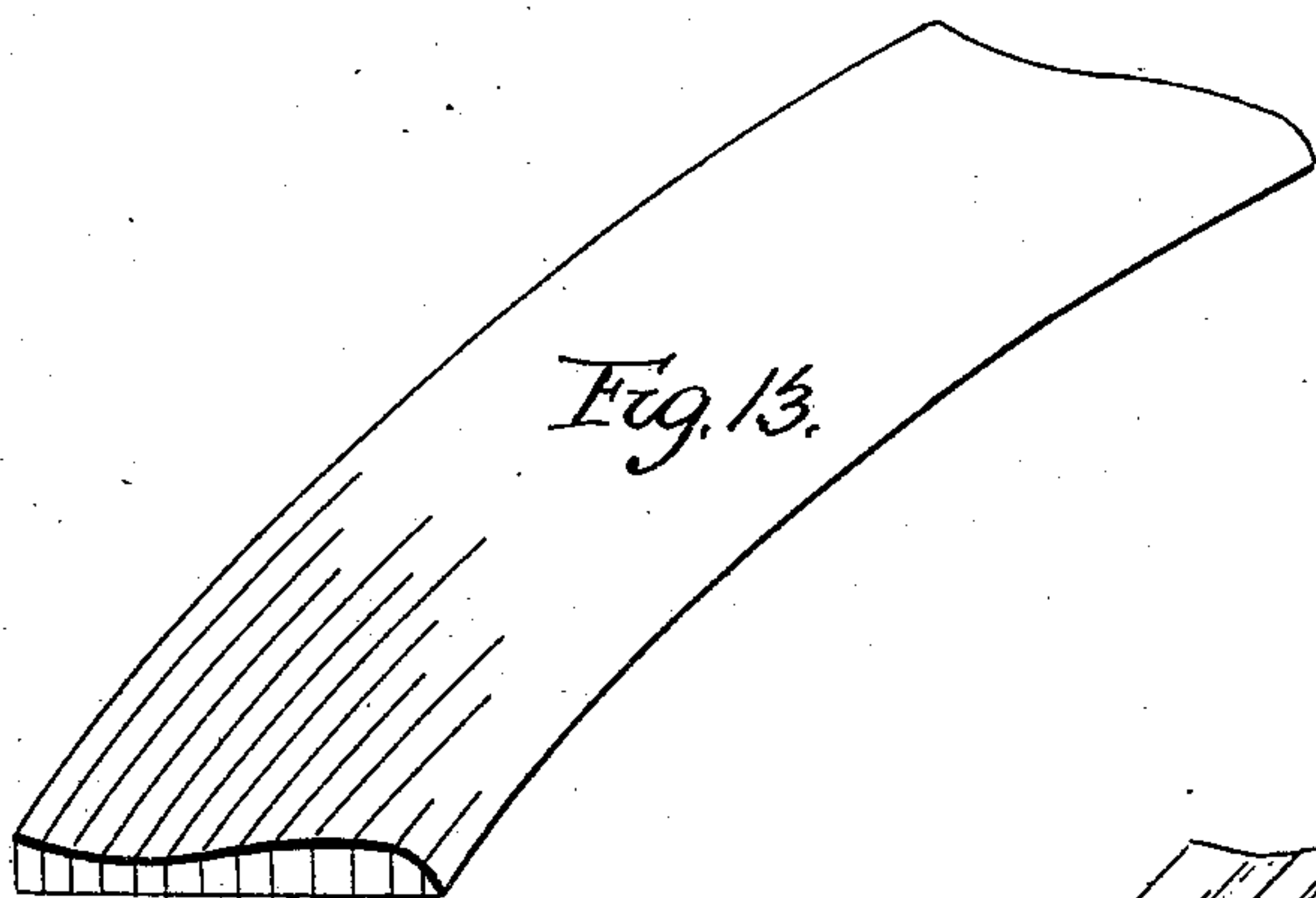
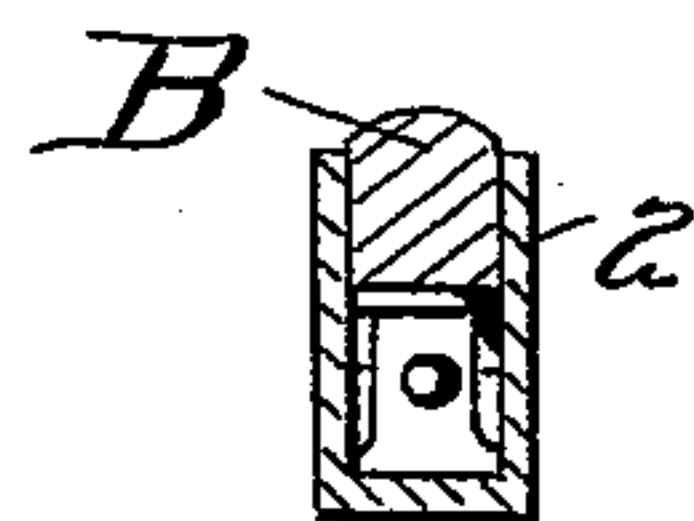
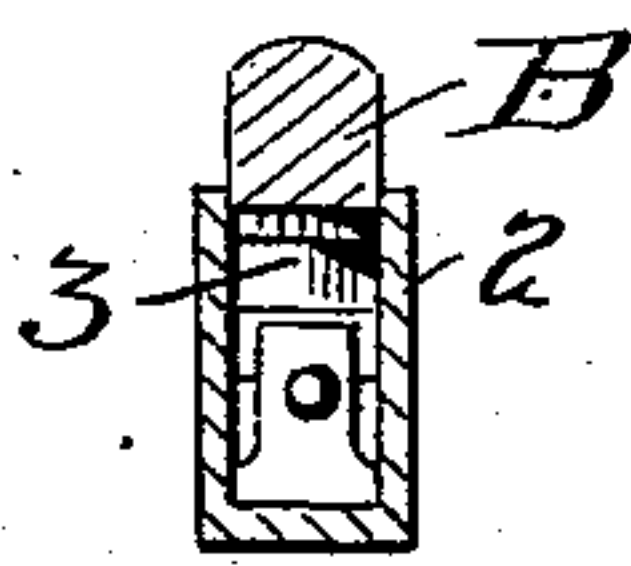
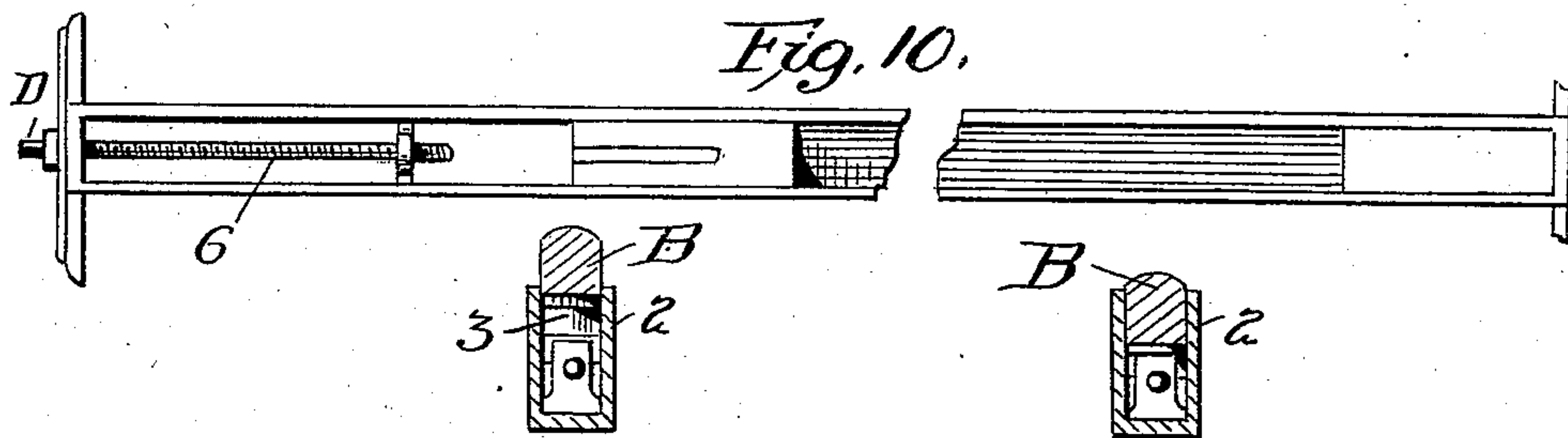
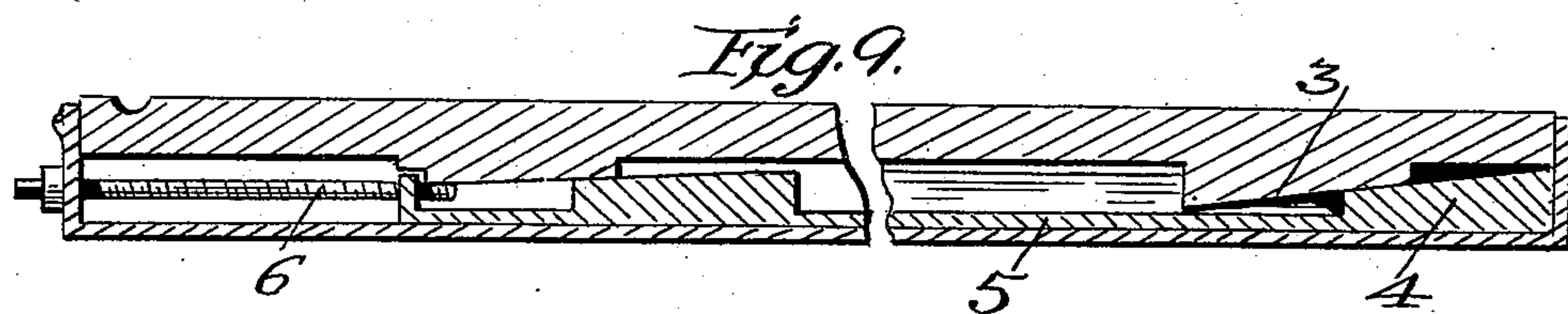
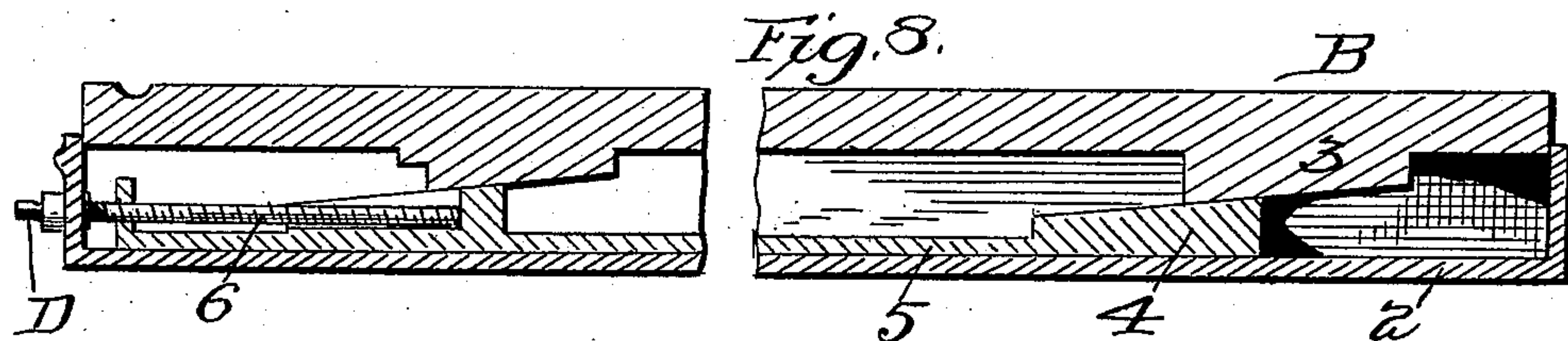
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A. D. LINN & A. A. LYTLE.

PLANER.

No. 549,575.

Patented Nov. 12, 1895.



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# UNITED STATES PATENT OFFICE.

ALLEN D. LINN AND ALTON A. LYTTLE, OF GRAND RAPIDS, MICHIGAN,  
ASSIGNORS TO THE GRAND RAPIDS SCHOOL FURNITURE COMPANY,  
OF SAME PLACE.

## PLANER.

SPECIFICATION forming part of Letters Patent No. 549,575, dated November 12, 1895.

Application filed March 21, 1895. Serial No. 542,704. (No model.)

*To all whom it may concern:*

Be it known that we, ALLEN D. LINN and ALTON A. LYTTLE, citizens of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Planers, of which the following is a specification, reference being had therein to the accompanying drawings.

The improvements hereinafter set forth are applied to an ordinary planer and are designed to adapt such ordinary planer to the work of planing curves and irregular surfaces.

We have shown and described the improvements which constitute our invention in connection with an ordinary planer, which, with our improvements, is illustrated in the accompanying drawings.

In the drawings, Figure 1 represents a side elevation of the planer. Fig. 2 shows an end view of the same; Fig. 3, a plan view. Fig. 4 shows partly in side elevation and partly in section the pressure-rollers and their shaft and bearings. Fig. 5 is a similar view of the feed-rollers. Figs. 6 and 7 show sections on lines *a b* and *c d* of Figs. 4 and 5, respectively. Figs. 8 and 9 show sections of the adjustable bed, and Fig. 10 a top view of one of the bars thereof. Figs. 11 and 12 are end views of Figs. 8 and 9. Figs. 13 and 14 show the irregular surfaces to be planed. Fig. 15 shows a modified form of segment to be used in circular or semicircular work.

The parts of the planer which are common and well known are illustrated in the drawings for the purpose of showing the relation of our improvements, but need not be described.

The adjustable bed is shown at A. It consists of a series of vertically-adjustable bars B, combined with means for moving them vertically and retaining them in position with stationary parts between the bars. These bars B are arranged side by side, running longitudinally of the bed, the series extending from side to side. They are mounted in boxes 2 or in grooves made in the bed A, in which they are securely held with free vertical movement. On the under side of the bars are projections 3, having inclined under

faces corresponding to the faces reversed on projections 4, fixed to a bar 5, lying in the bottom of the box and having threaded connection with the screw 6, which is held by collars and turns in the front end of the box 2. The front of the screw 6 is fitted to be turned to the right or left in order to force the projections 4 backward and forward, whereby the inclined faces cause the bar B to rise and fall.

Fig. 8 shows the bar in a raised position and Fig. 9 in lowered position.

The bars are shown as they are arranged in the bed in Fig. 2, and by turning the ends D of the screws 6 the bars B may be adjusted to conform, as shown in said figure, to the curved surface of a seat-back, shown as an example of the kind of goods which this machine is designed to plane.

The bed being formed by raising some of the bars and depressing others, so as to conform to the curves of the article to be planed, the article is placed thereon and held between the lateral supports, as hereinafter more fully explained.

In front of the cutter Y is a shaft N', extending across over the bed and carrying the feed-wheels K. These wheels are transversely grooved or roughened and are preferably formed with slightly-beveled peripheries. They are splined upon the shaft N', which is caused to rotate, and they have longitudinal movement on the shaft, being held in any desired position by a set-screw, as shown in Fig. 5, which shows a detail view of the shaft and feed-rollers. The manner in which these feed-wheels are caused to bear upon the surface of the article to be planed is shown in Fig. 2. The bed being properly adjusted the wheels K may be made to bear upon the surface of the article to be planed by shifting them laterally until they conform to the surface of said article. These feed-wheels, by reason of their rough peripheries, take hold of the surface and feed it forcibly along, and any irregularities caused by the feed is removed by the cutting-tool. The efficiency of the feed-rolls is due to their difference in diameter or cone shape. The lateral groovings or corrugations in the faces of the



rollers cause a twisting action in their movement and slipping upon each projection. This affords positiveness and certainty in the feed, and the incidental roughness caused thereby is removed, as above explained.

After leaving the feed-rolls the article is passed under the cutter Y and then passes under pressure wheels or rollers, which bear on the upper surface. These wheels or rollers are shown at M, and their particular construction is more plainly shown in Fig. 4. In this figure they are represented as mounted upon a shaft N, which shaft is eccentrically mounted in bearings on the frame, as shown on the left hand of Fig. 4. By means of these eccentric-bearings the shaft may be turned so as to adjust the wheels toward or from the bed, and the shaft is held by a set-screw *x* in the position to which it may be adjusted. Further adjustment of the wheels is obtained by means of the eccentric mounting of the wheels themselves upon the shaft. This is also shown in Fig. 4, in which P' indicates a hub, which is eccentric to the shaft on which it is mounted, so that it may be turned and held by a set-screw at any desired position with the high or low side or any intermediate part toward the bed. In this hub is loosely mounted the wheel *m*, which has preferably a rubber rim R, a convenient form for the construction of this wheel being plainly shown in the section on the left of Fig. 5. The amount of motion resulting from the eccentricity of the shaft and the eccentricity of the hub is sufficient for ordinary purposes, and this is all independent of the ordinary adjustment of the bars B of the bed.

A guide H, adjustable by screws G, serves to support one edge of the article, and the other edge is suitably clamped by screws G'.

Fig. 14 shows one of the forms of seat and back to be planed, and in Fig. 13 is shown a circular pew-seat. To hold this as it moves through under the cutter, we use a clamp or form F, which is carried by the headed ends of the screws G' G'. This segment or form may be changed and other segments substituted for work of different radius, and instead of the plain segments for the different work we may, as shown in Fig. 15, secure to a base-plate, to be bolted to the bed, a spring-plate adjustably supported on the base-plate and

capable of being adjusted to suit any degree of work of this class.

When the work has parallel sides, the segments are replaced by a straight clamp, such as that shown at II, or the screws G' may be used alone.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In combination, in a machine for operating upon irregularly shaped objects, a bed and a series of sections vertically adjustable in the face of said bed and adapted to form supporting surfaces at intervals of varying heights and means for positively adjusting said sections independently, substantially as described.

2. In combination with a bed having vertically adjustable sections for supporting the work, a shaft eccentrically mounted across and above the same, and pressure rollers mounted loosely on said shaft, substantially as described.

3. In combination with a bed, a shaft extending across the bed and eccentrically mounted and pressure rollers in hubs eccentric of the shaft, substantially as described.

4. In combination with a bed having vertically adjustable sections and pressure rollers above the same, the lateral guide or form, substantially as described.

5. In combination with the bed, the vertically adjustable sections thereof, a shaft extending above the same, the laterally adjustable feed rollers of conical shape supported on said shaft, a second shaft above the bed and the eccentrically adjustable pressure rollers mounted thereon, substantially as described.

6. In combination with the bed, the vertically adjustable sections thereof, the planer, a shaft above the table, laterally adjustable feed rollers of conical shape supported thereon, a second shaft above the bed and pressure rollers thereon with means for adjusting them relatively to the work.

In testimony whereof we affix our signatures in presence of two witnesses.

ALLEN D. LINN.  
ALTON A. LYTLE.

Witnesses:

L. T. GIBSON,  
C. F. PERKINS.