

HENRY B. STEVENS.

Improvement in Mills for Crushing Sugar-Cane, &c.

No. 126,341.

Patented April 30, 1872.

Fig. 1.

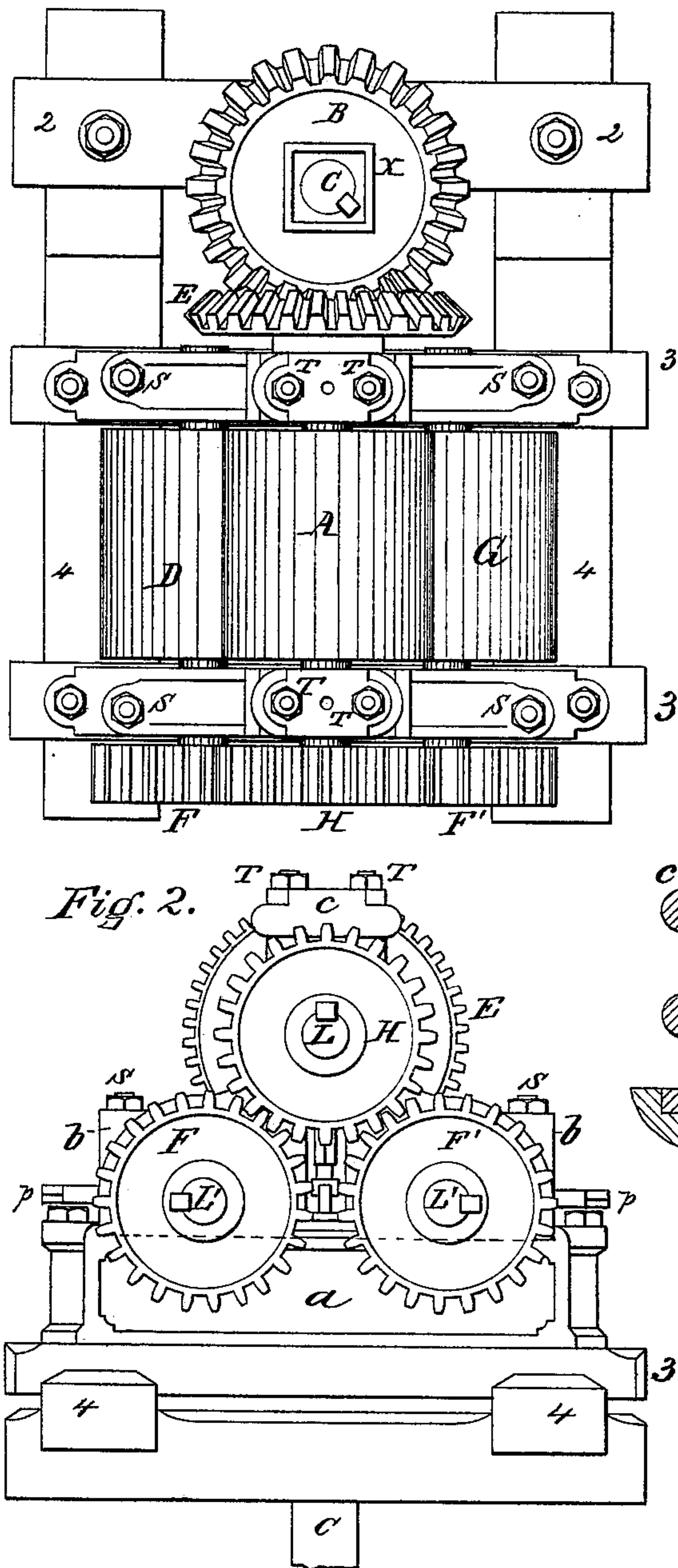


Fig. 6.

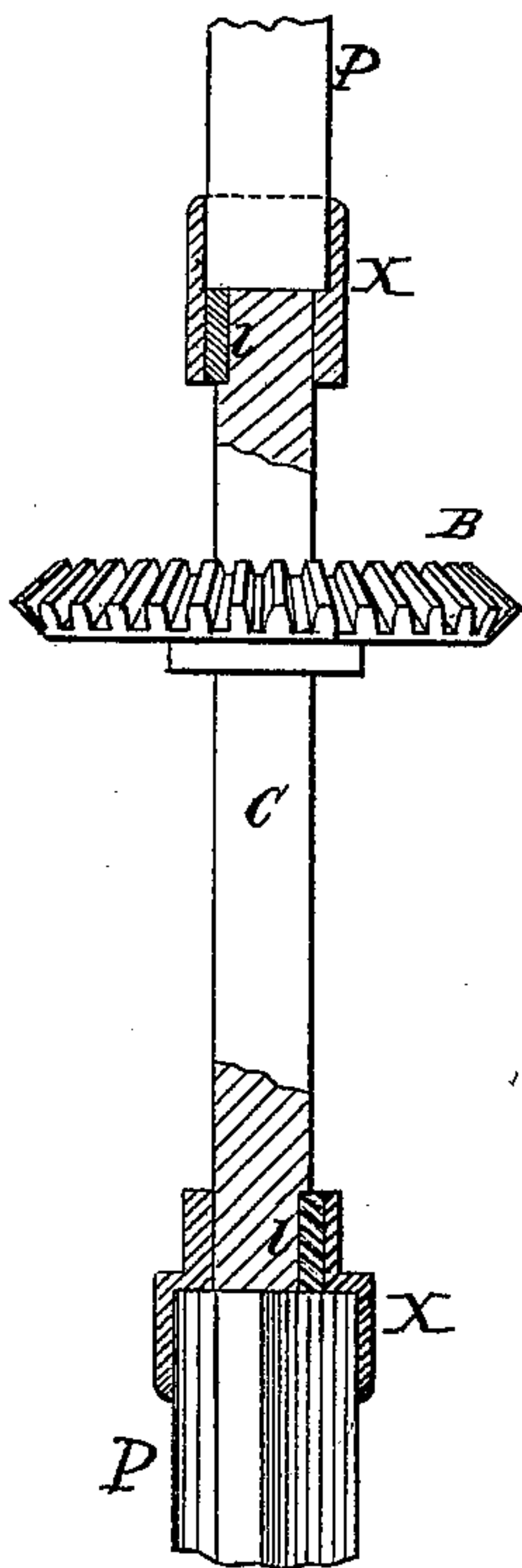


Fig. 2.

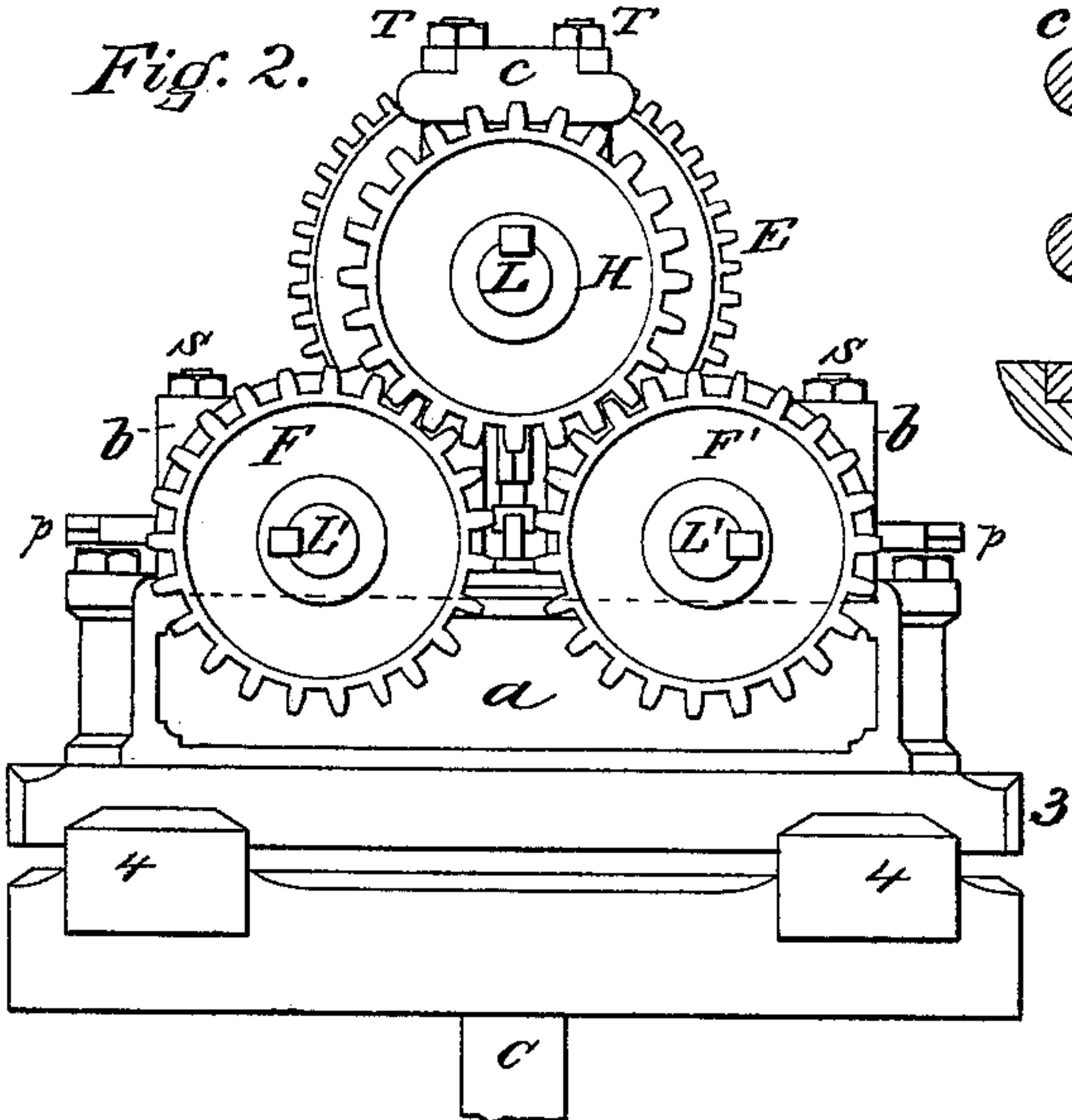
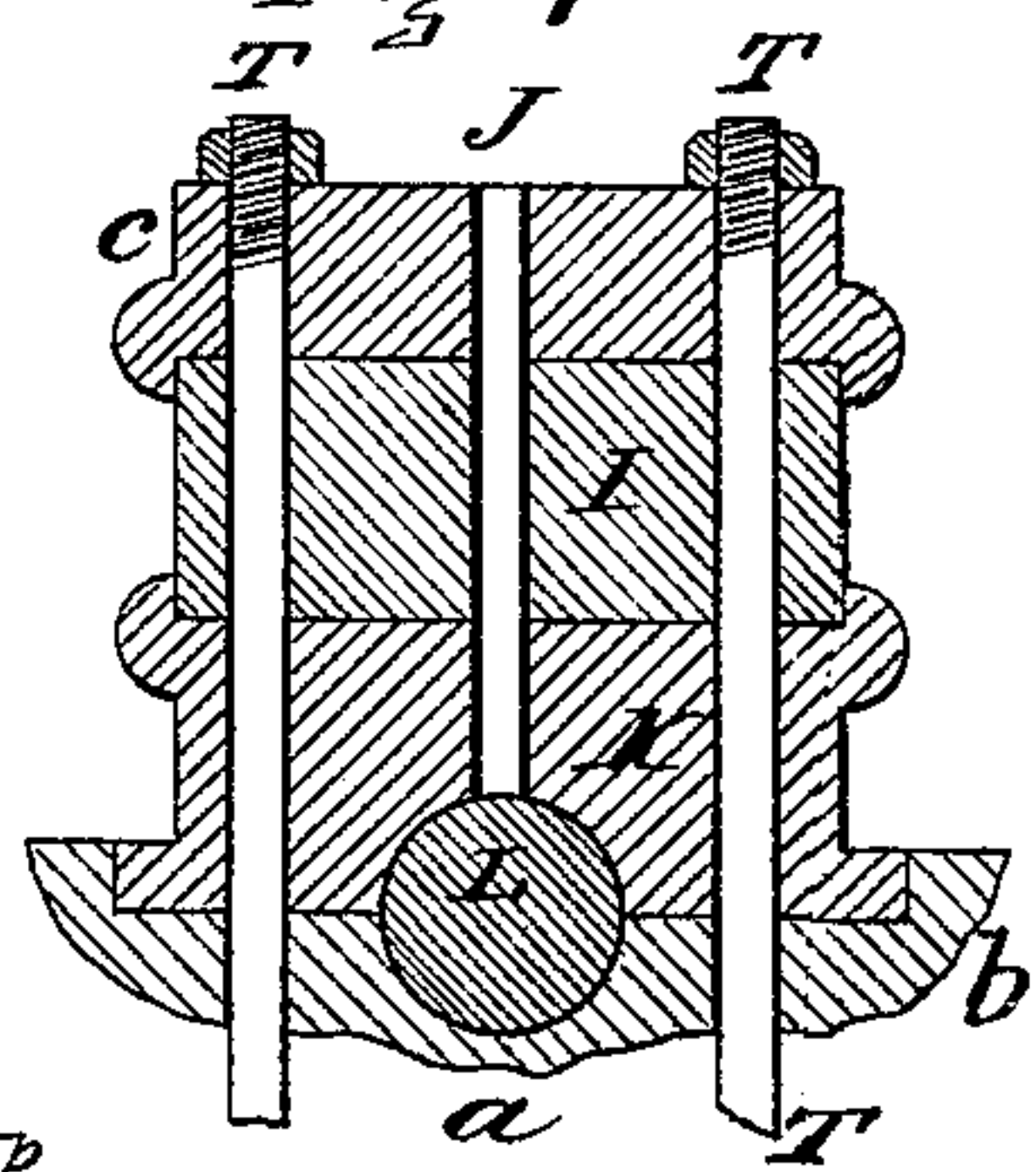


Fig. 7.



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Fig. 3.

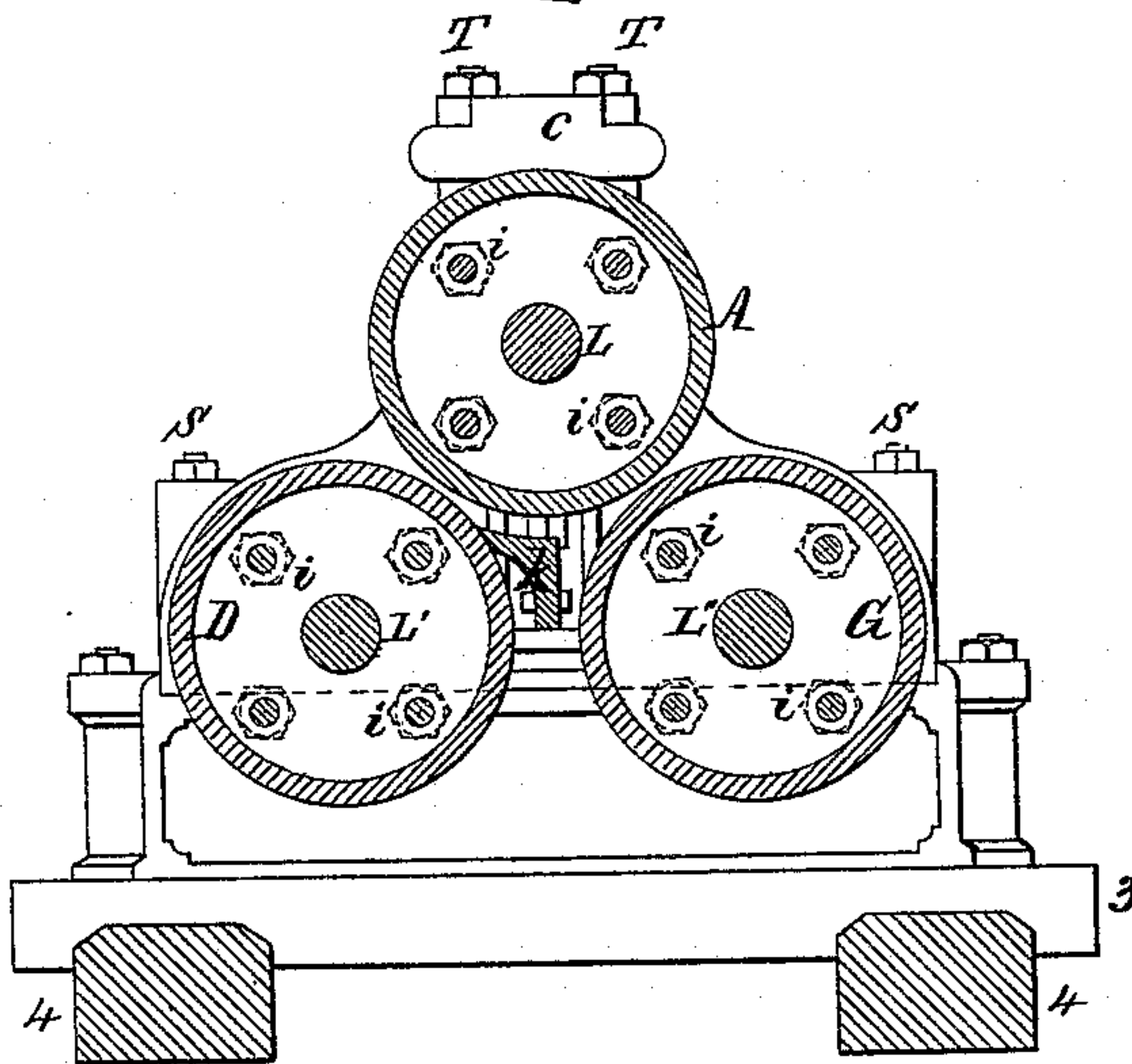


Fig. 4.

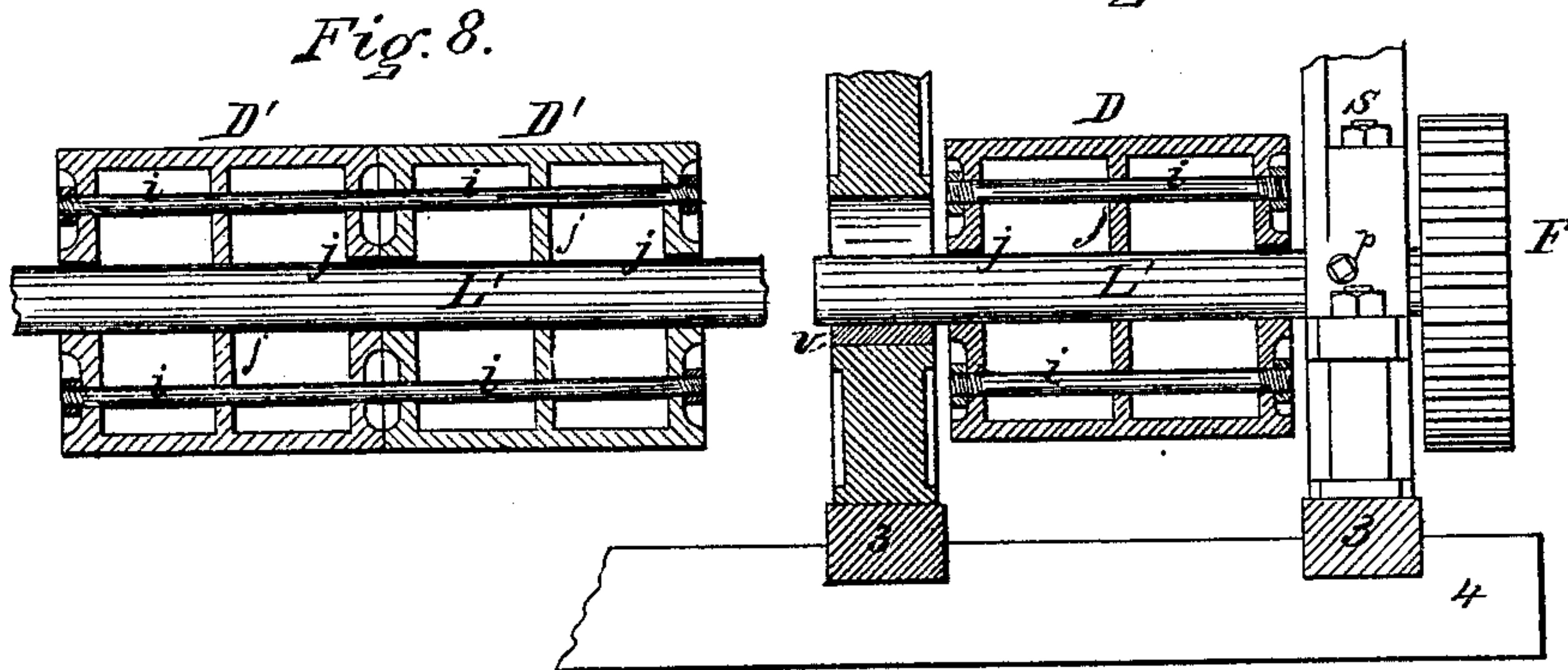


Fig. 8.

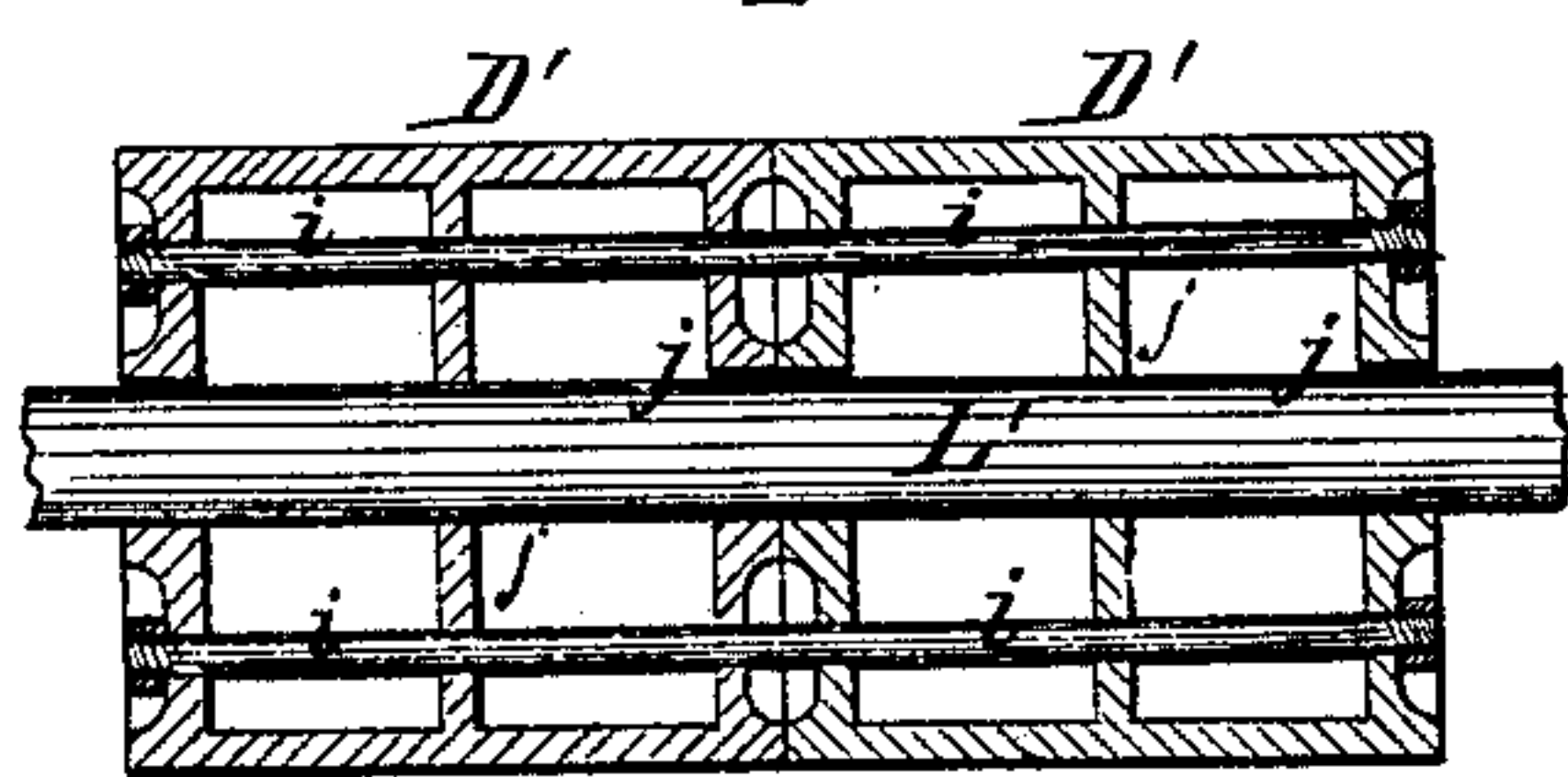
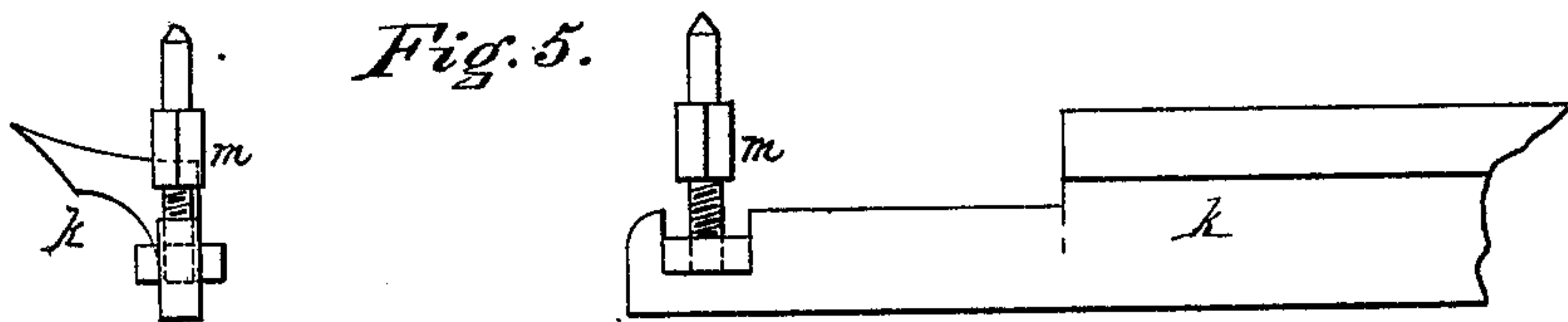


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN MILLS FOR CRUSHING SUGAR-CANE, &c.

Specification forming part of Letters Patent No. 126,341, dated April 30, 1872.

### SPECIFICATION.

*To whom it may concern:*

Be it known that I, HENRY B. STEVENS, of Buffalo, in Erie county, State of New York, have invented certain Improvements in Mills for Crushing Sugar-Cane, and other purposes; and I do hereby declare the following to be a full and exact description of the same, reference being had to the drawing that accompanies and forms a part of these specifications.

My invention consists, first, in constructing the rollers of a cane-mill in sections, to be placed on a single shaft or journal; second, in the combination of stay-bolts with sectional rollers; third, in making the housing in sections provided with cups, and the use of springs in combination with such housing; fourth, in a peculiar adjustable sweep-socket upon the shaft, and capable of being placed on the lower end of the shaft, so as to attach or work the horses or mules below the mill; and in other improvements, as hereinafter described and shown.

In the accompanying drawing, Figure 1 is a top view of my mill, the sweep being removed to show the sweep-socket. Fig. 2 is an end view of the machine. Fig. 3 is a transverse section showing the hollow rollers and the guide for directing the cane through the mill. Fig. 4 is a longitudinal and vertical section of one of the lower rollers, with stay-bolts. Fig. 5 is a detached view of the guide for directing the canes through the mill. Fig. 6 is a detached view of the vertical driving-shaft and coupling for attaching the sweeps either above or below the mill. Fig. 7 is a vertical section of the box-cap and spring for giving the upper roller an elastic or adjustable bearing in working. Fig. 8 is a longitudinal vertical section, showing two sections of the hollow rollers with the stay-bolts.

My mill is made with horizontal and sectional rollers, and is intended to be driven by animals attached to sweeps, either above or below the mill, according to the place of the mill, whether on the ground or in an upper story of a building, or otherwise.

My invention consists chiefly in a sectional roller with two or more sections on the same shaft; second, in a sectional housing and a

roller cap, in combination with a spring to give the rollers an elastic or adjustable bearing; third, in making the sweep-socket or coupling adjustable on the shaft, and so that it can be attached to said shaft, either above or below the mill.

My cane-mill may be constructed as follows: Upon a suitable frame, 2, 3, and 4, Fig. 1, are arranged three rollers, A D G. The rollers are cast hollow, with three disks, *j*, to strengthen the periphery, as shown in Fig. 4. They are also strengthened by stay-bolts *i*, in order to use less metal, and thus afford lighter rollers for transportation. These rollers are also made in two or more sections in the practical mill, and several of these sections put on the same shaft or journal L', as seen at D' D', in Fig. 8. These sections are connected by the stay-bolts *i*, above mentioned. On account of the rollers being hollow and light, their journals may be smaller than would be required for solid rollers; also the journal bearings and housings may be small. These housings are made in two sections, *a* and *b*, Fig. 2, the sections being connected by bolts S. The journal of the upper roller A is provided with a box-cap in two sections, *c* and K, Fig. 7, held in place by the bolts T. These sections have rims or lips to receive and hold the rubber spring I. An oil-tube, J, passes through the spring to conduct the oil to the journal L. Thus the rubber spring is protected from being injured by exposure to the action of oil.

By this arrangement the journal L' has an elastic bearing, the section K rising and falling as the spring is compressed or expanded; and by turning the nuts on bolts T, Fig. 7, the pressure of the spring I may be increased or diminished at pleasure.

My improved sweep-coupling is seen at X, Figs. 1 and 6, in connection with the shaft and gear-wheel thereon, the same being all detached from the mill. This coupling may be put on the upper or lower end of the shaft C, as represented in the figure. It is fixed on the shaft by a key, *l*. The sweeps are set in mortises in the shaft P in the usual manner. Between the two lower rollers F F' is placed a guide-plate, Fig. 5 and Fig. 3, to direct the canes through the mill.

Motion is transmitted from the main shaft



as follows: The bevel-gear wheel B gives motion to the bevel-gear wheel E and roller A, which in turn gives motion to the rollers D and G by means of the gear-wheels H, F, and F'. By casting the rollers in two or more sections to be put on the same shaft or journal, and also by casting the housings in sections, the separate pieces of castings for these parts and also the roller journals, or shafts L', Fig. 8, may be comparatively light, and thus they may be easily transported on the backs of mules or other animals in those mountainous countries where there are no wagon-roads. By reducing the core the hollow casting may be strengthened indefinitely, and the same patterns used for different-sized mills.

As the cane is fed into the mill in the usual manner, the spring I allows the upper roller A to adjust itself to the quantity of cane passing between the rollers, and yet gives sufficient pressure to thoroughly crush the cane.

Having described my invention, I claim—

1. The crushing rollers, constructed and ar-

ranged, as described, in two or more sections on one shaft, said sections being connected by stay-bolts, as and for the purposes specified.

2. I claim the sections C and K of the box-cap, said sections being provided with lips for embracing the circumference of the rubber springs I, in combination with the bolts T T and the oil-tube J, substantially as set forth.

3. I claim the hollow sectional housing *a b*, constructed in the manner described, and connected by bolts S, in combination with the crushing-rollers, as and for the purposes set forth.

4. I also claim the crushing-rollers and gears, in combination with sweep-socket or coupling X and shaft C, constructed as described, and arranged to operate from above or below, substantially as set forth.

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Witnesses.

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