

(No Model.)

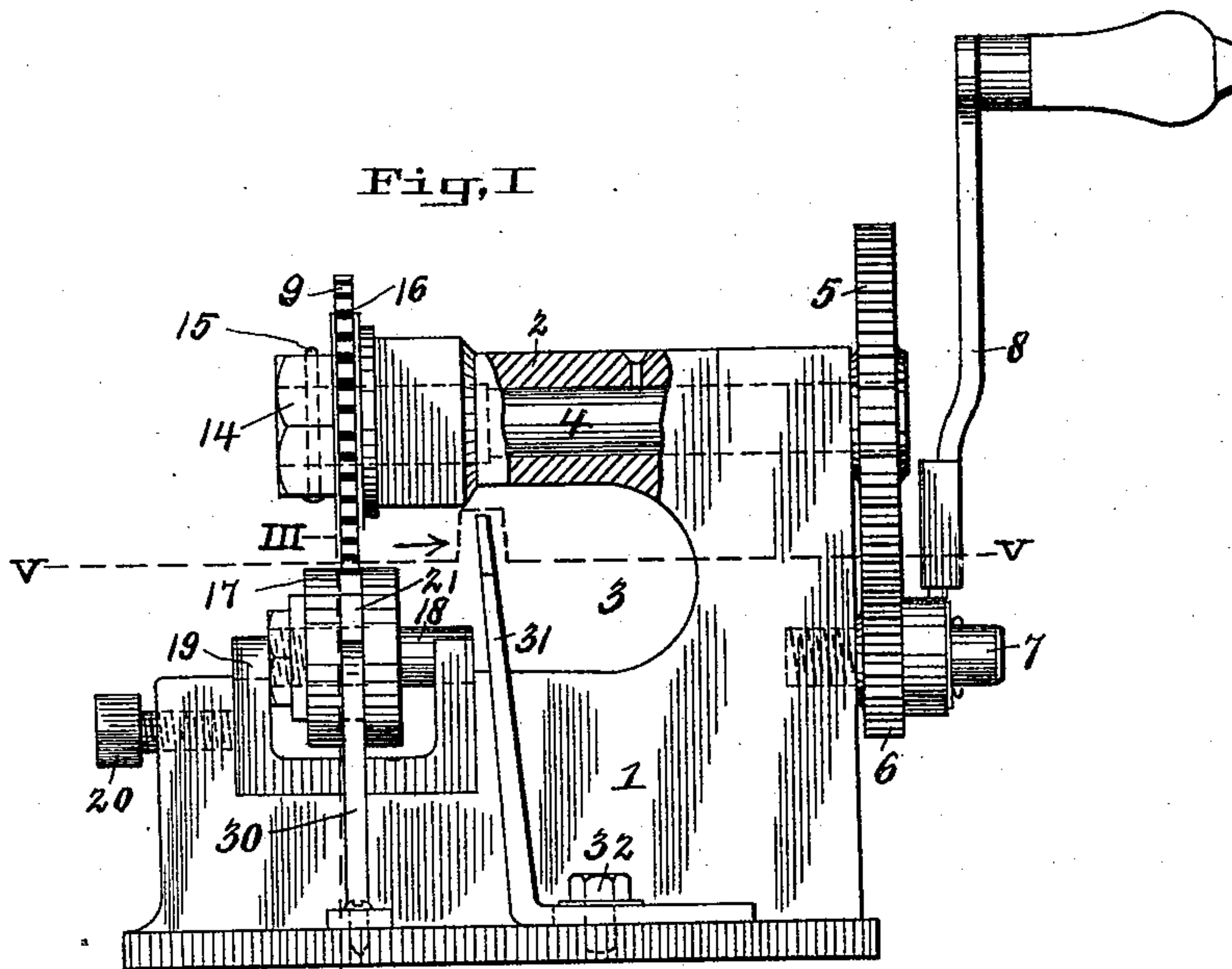
2 Sheets—Sheet 1.

C. KIESER.
SHEARING MACHINE.

No. 472,928.

Patented Apr. 12, 1892.

Fig. I



III Fig. III

Fig. II

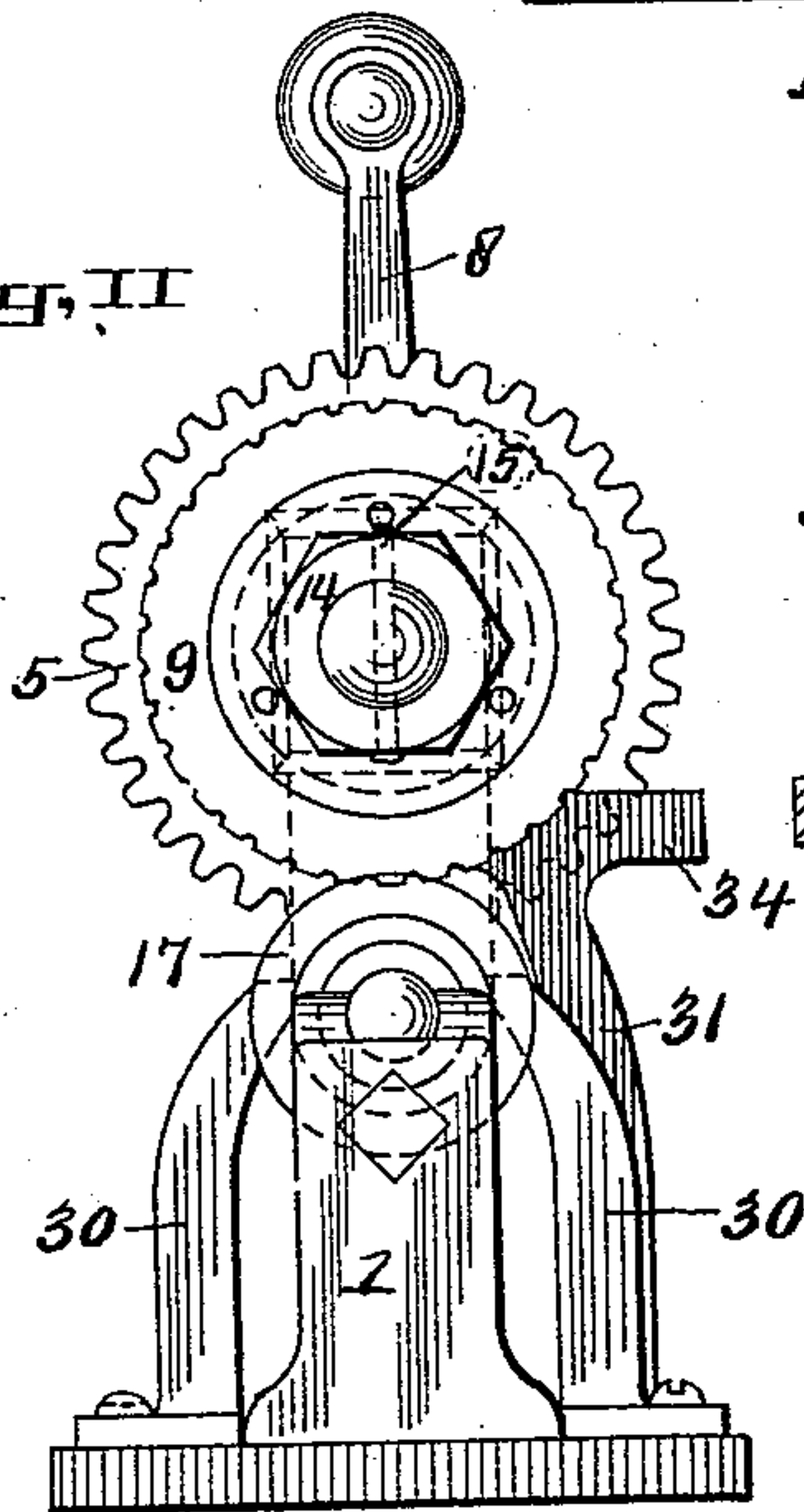


Fig. IV

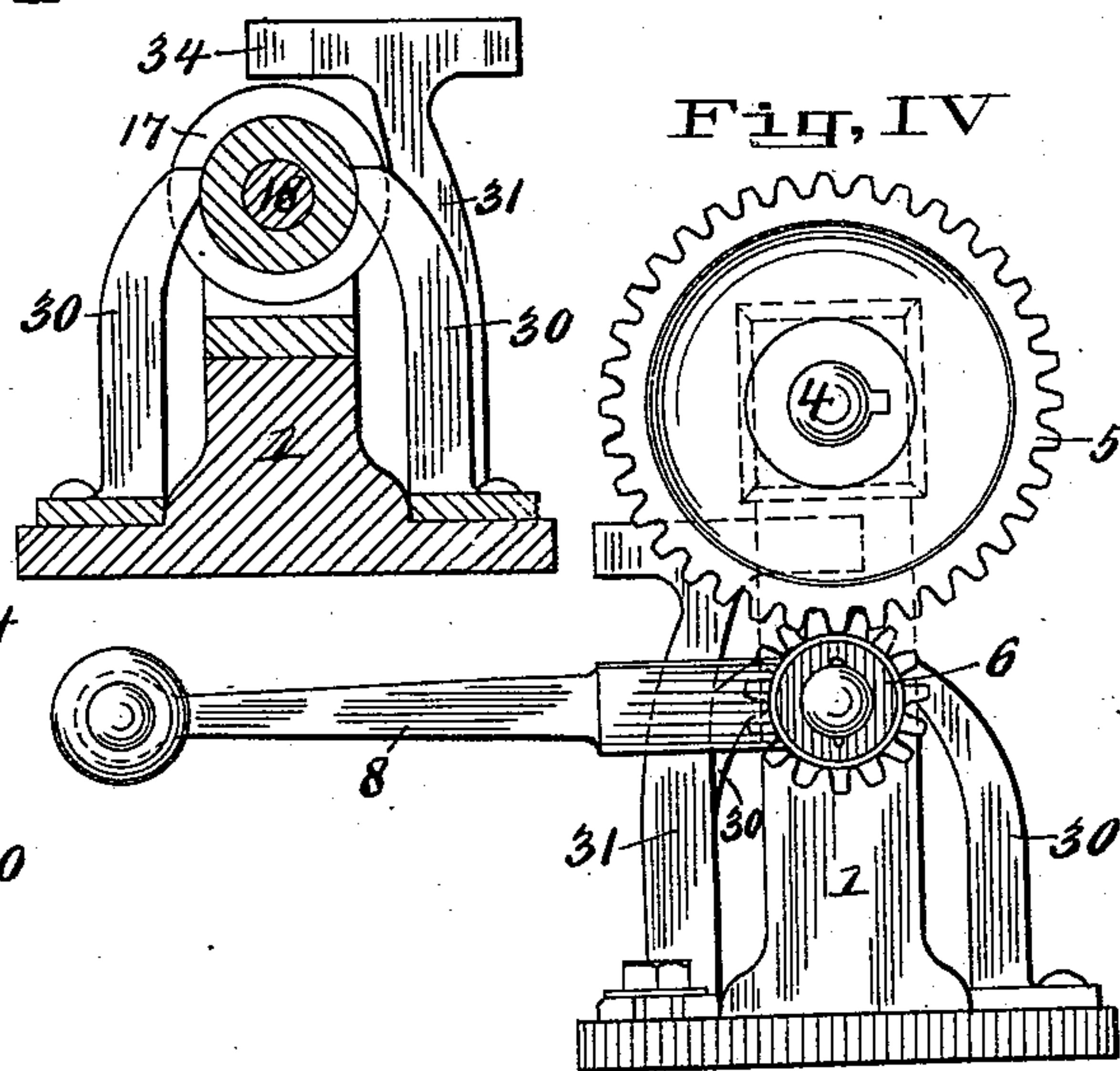
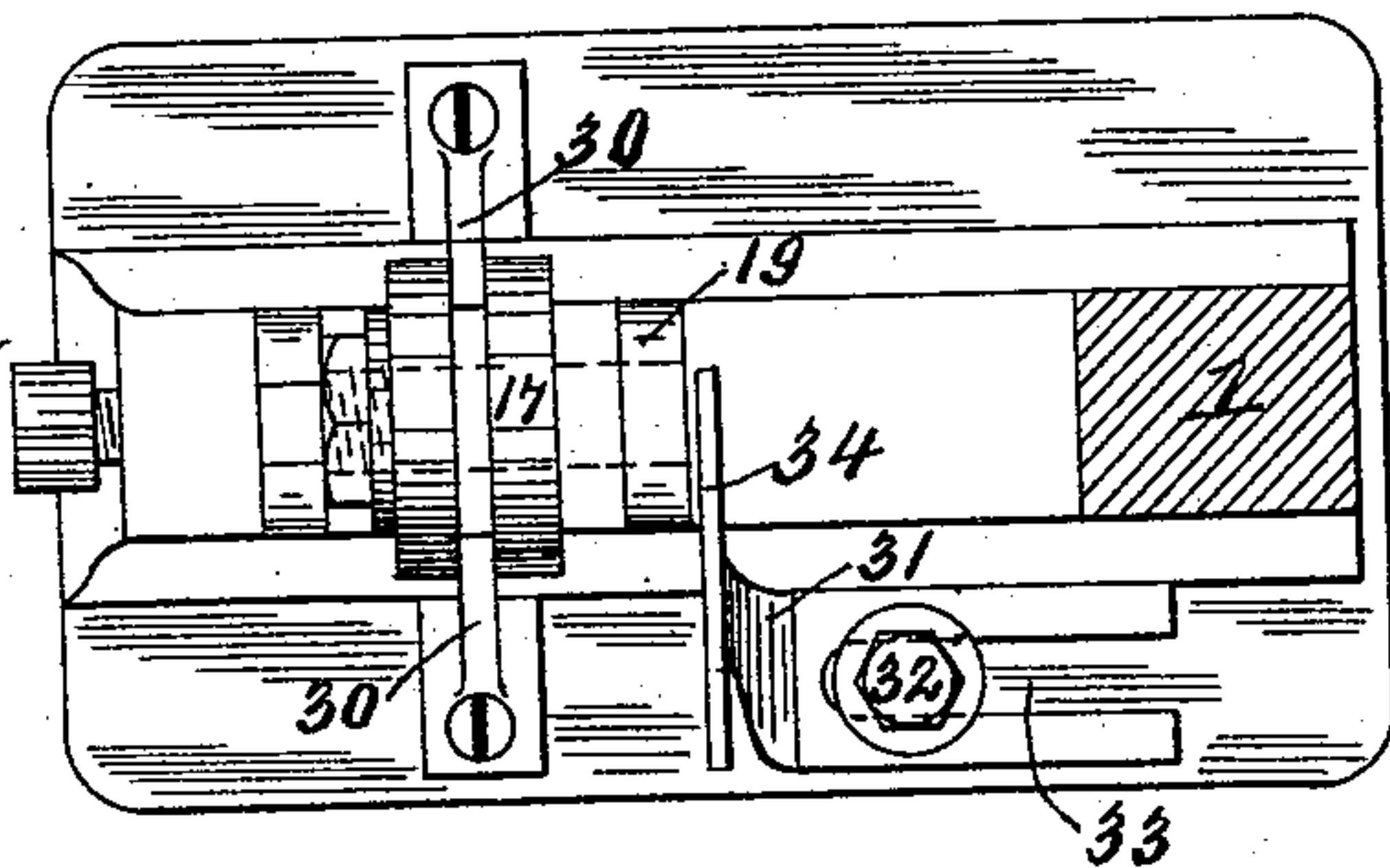


Fig. V



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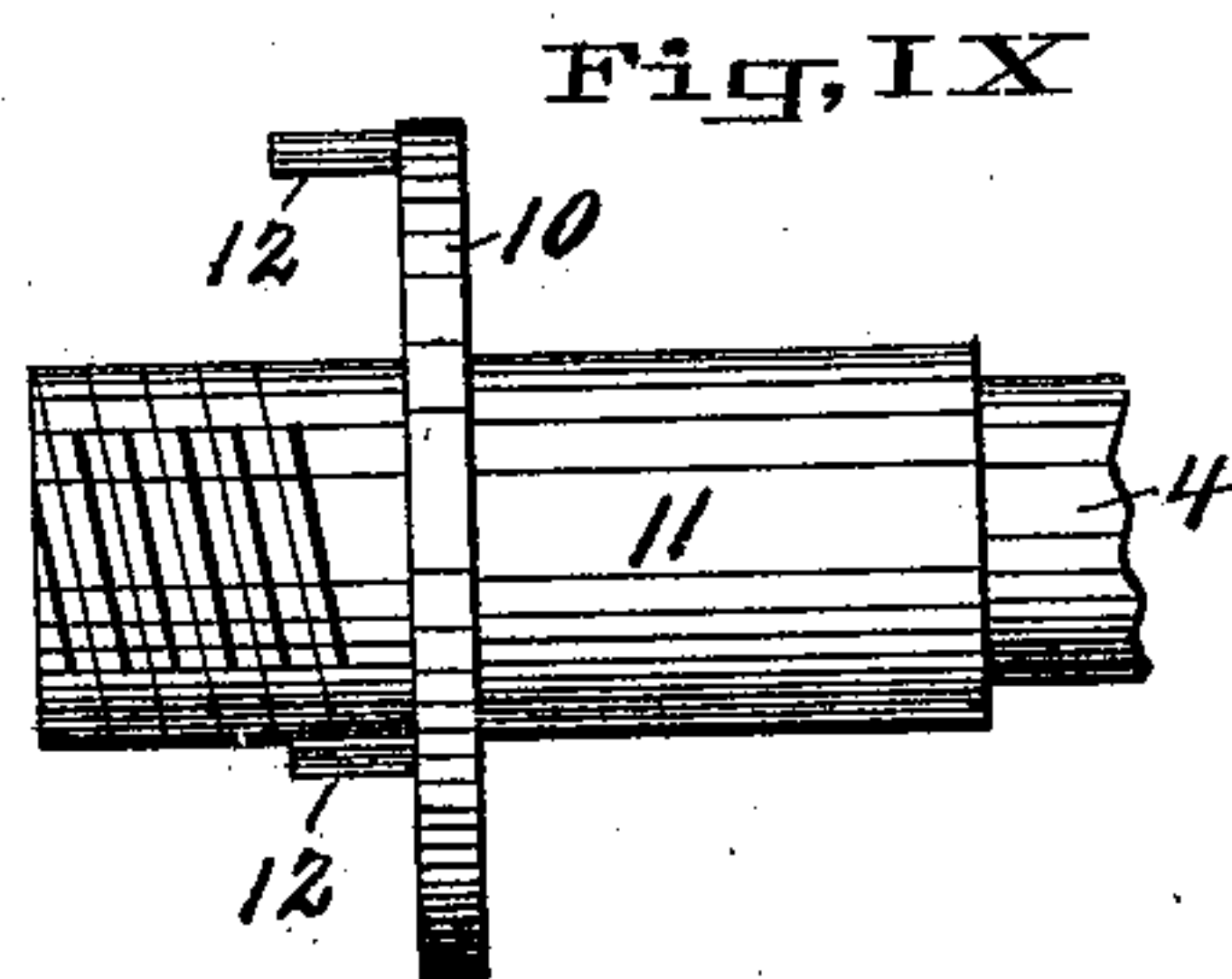
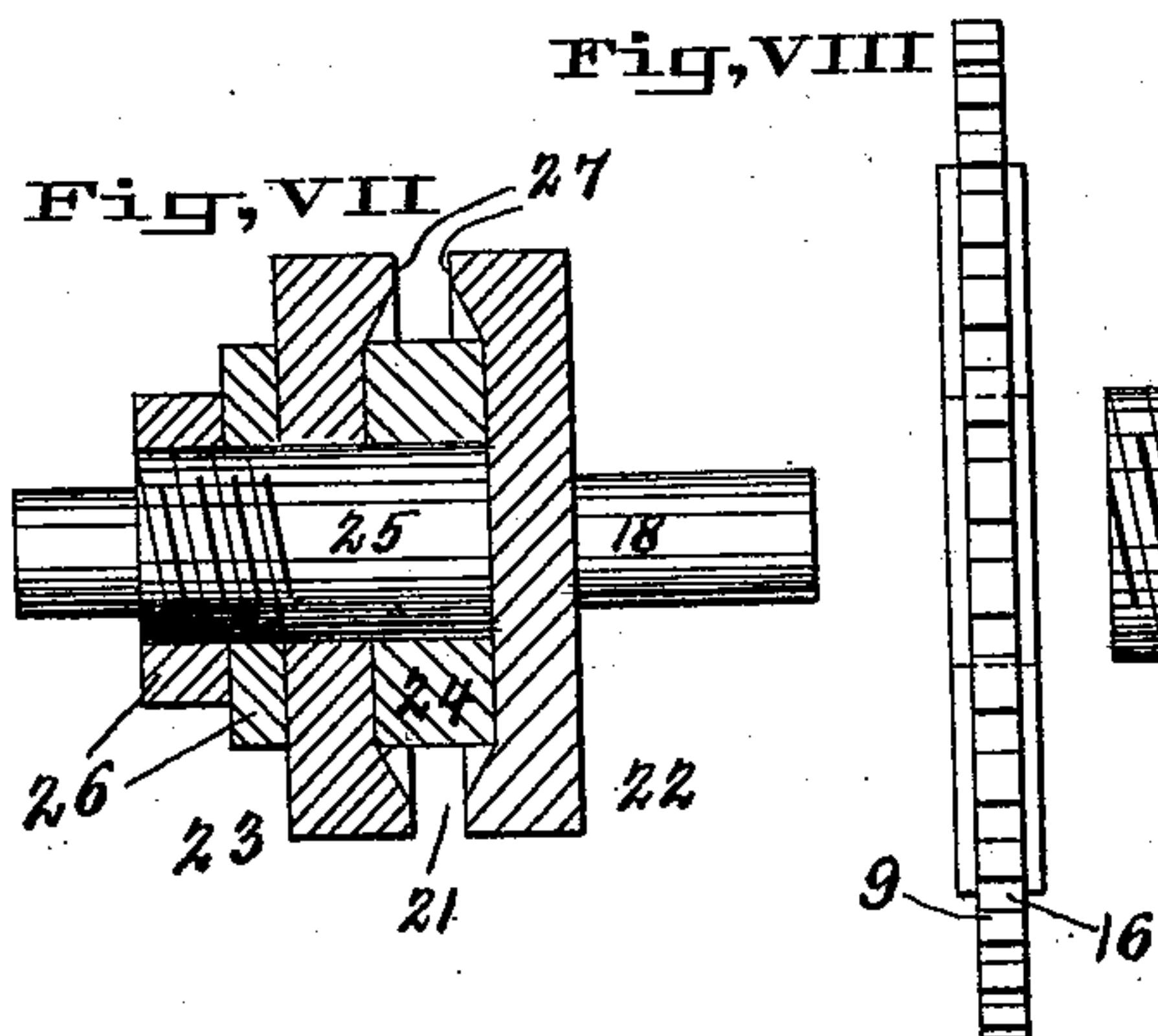
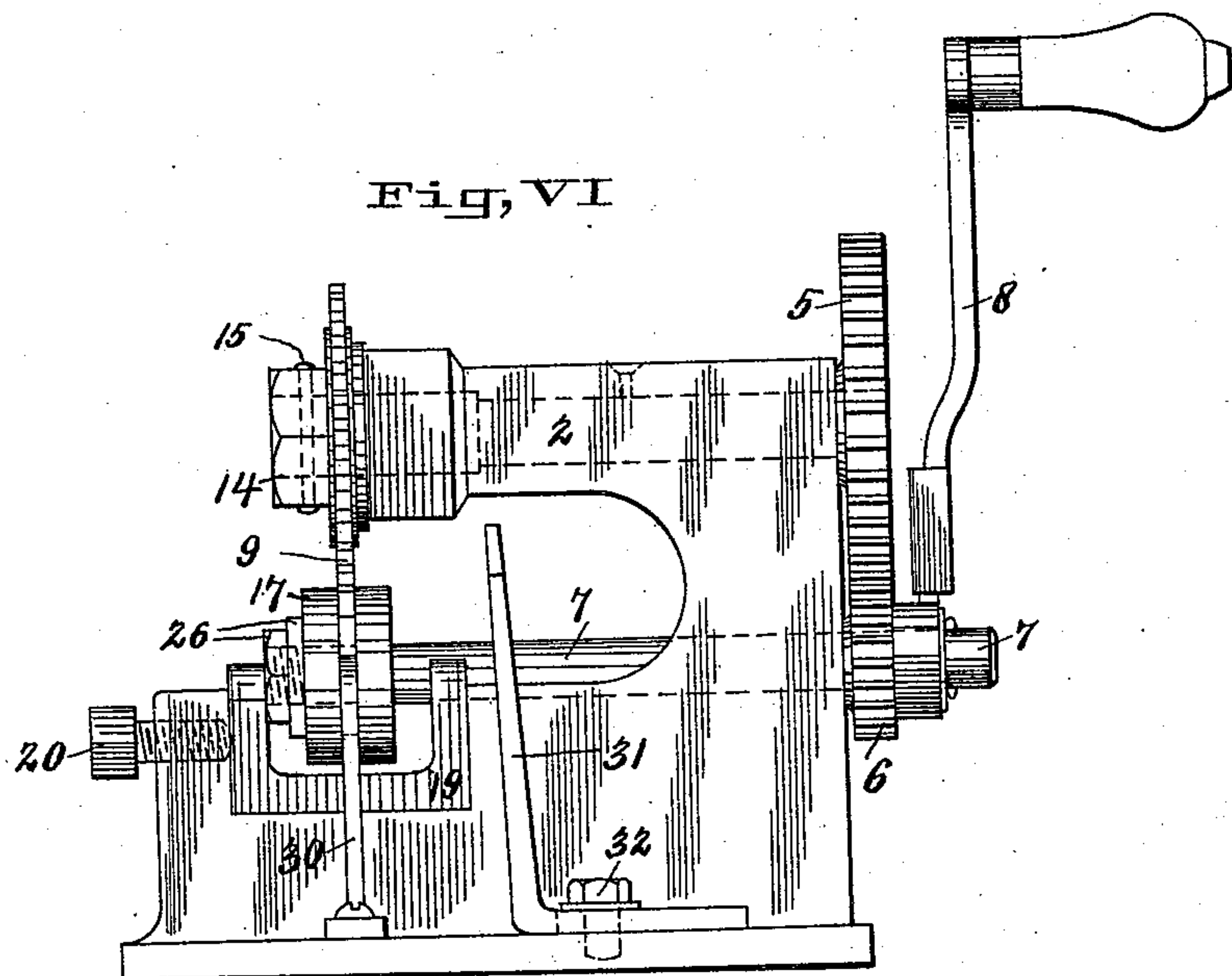
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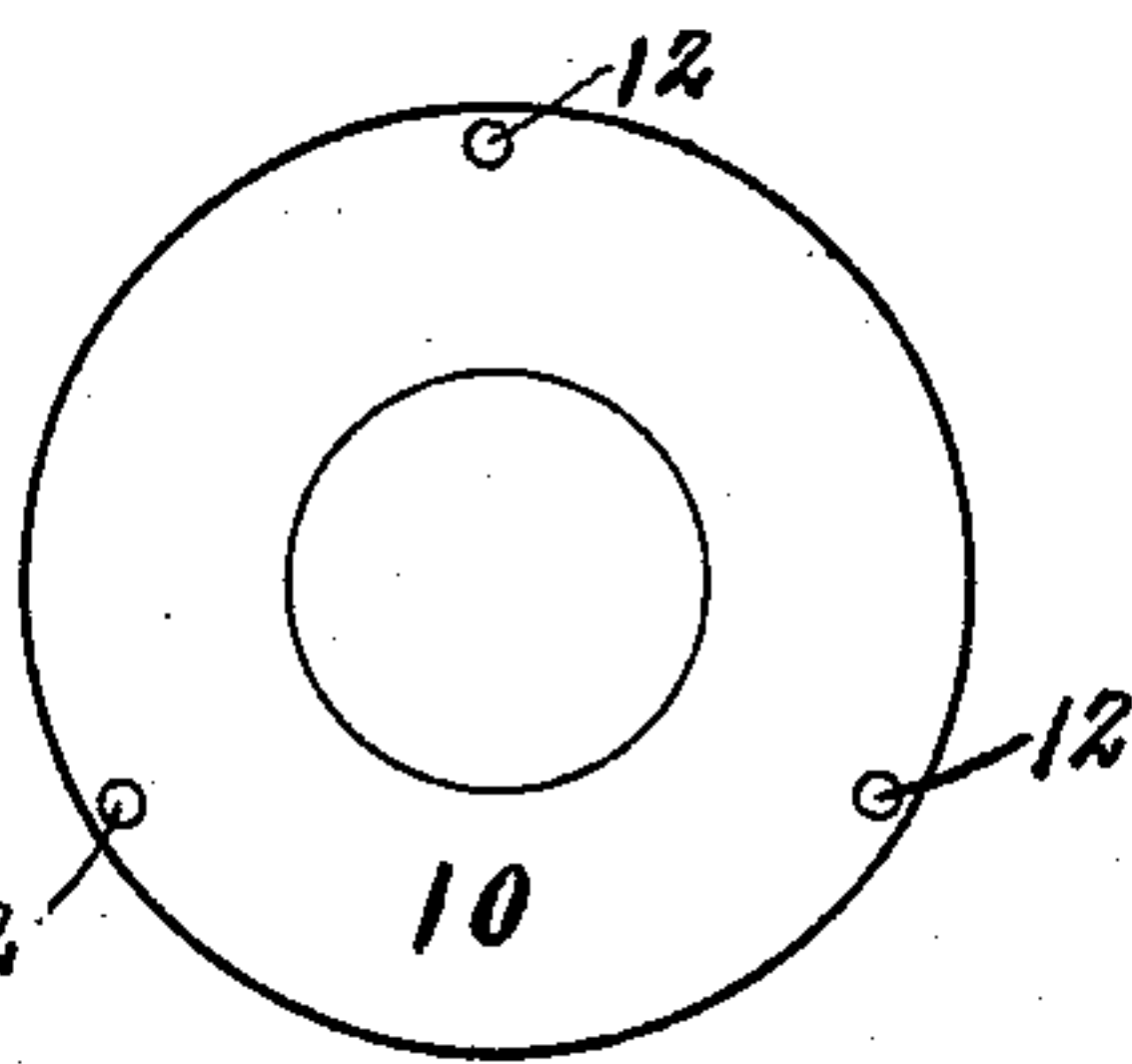
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Fig, X



ATTEST

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UNITED STATES PATENT OFFICE.

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SHEARING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,928, dated April 12, 1892.

Application filed August 29, 1891. Serial No. 404,137. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KIESER, of the city of Baltimore, in the State of Maryland, have invented a certain new and useful Improvement in Shearing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a machine for shearing or cutting, and is more particularly intended for shearing or cutting metal sheets, although it may be used for cutting any material.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a side elevation, part in section, illustrative of my invention. Fig. II is a front end view. Fig. III is a vertical section taken on line III III, Fig. I, and looking in the direction of the arrow. Fig. IV is a view looking at the crank end. Fig. V is a horizontal section taken on line V V, Fig. I, with the crank and gearing removed. Fig. VI is an elevation showing the invention in a slightly-modified form. Fig. VII is an enlarged vertical section of the die or female member of the cutter. Fig. VIII is an enlarged edge view of the disk or male member of the cutter. Fig. IX is an enlarged detail view showing the manner of securing the disk or male member of the cutter to its mandrel or shaft. Fig. X is an enlarged face view of the collar which holds the disk or male member of the cutter from turning on its shaft or mandrel.

Referring to the drawings, 1 represents the frame or body of the machine, which may be of any desired shape, size, or form, and which has an upper portion or arm 2, between which and the lower portion is an opening or space 3.

4 represents a shaft or mandrel journaled in the upper portion or arm 2 of the body of the machine, and to one end of which the power is applied, preferably through means of a gear-wheel 5, secured to the shaft or mandrel 4 and engaged by a pinion 6 upon a short shaft 7, secured to the body 1, and upon which a crank 8 is located, which is connected to the pinion, so that the two will turn together and impart motion to the shaft or mandrel 4

through the cog-wheel 5. It is obvious that any other form of power can be used to turn the shaft 4, and it may be in the form of a pulley on the shaft or mandrel to receive a belt from a suitable motor, or the pulley might be on the shaft 7 or other counter-shaft through which the power would be imparted to the shaft or mandrel 4.

9 represents a circular plate or disk, forming the male die or member of a cutter, and which is secured to the shaft or mandrel 4, preferably through means of a collar or flange 10, formed upon or secured to the end 11 of the shaft or mandrel 4. (See Fig. IX.) This collar or flange has a number of pins 12, (see Figs. IX and X,) which enter perforations in the disk 9 when the latter is slipped onto the mandrel 4, thus rigidly holding the disk from turning upon the mandrel. The disk is held up against the collar or flange 10 by means of a nut 14, screwed on the outer threaded end of the shaft or mandrel, and when it is tightened up it may be held from turning by a pin 15. (See Fig. I.) The outer face or periphery of the disk is made flat or of some little width, (see Figs. I and VIII,) as distinguished from being brought to a sharp edge, and preferably has a number of shallow grooves 16, which serve to cause the disk to be self-feeding or to act upon the material being cut to move it through the machine.

17 represents the cylindrical female die or member of the cutter. It is mounted upon a shaft 18, preferably journaled in a box 19, fitting in a recess in the body 1 and clamped in the recess by a set-screw 20, so that it may be adjusted, if necessary, relatively to the disk 9. This die has a circumferential opening or groove 21, which in width equals the thickness of the disk 9 and into which the disk enters, as shown in Figs. I and VI. My preferred manner of forming and arranging this die is shown in Fig. VII, where it is represented as composed of two members 22 23, held the necessary distance apart by a ring 24, fitting over a hollow stem or hub 25 on the member 22, the member 23 also fitting upon the stem or hub 25 and held thereon against the ring 24 by means of a nut and washer 26. The inner faces of the two members 22 23 of

the die are dished out, as shown in Fig. VII, to receive the ring 24, and when their edges 27 become worn or dull they may be sharpened and a thinner ring 24 placed between them to maintain the same-sized opening 21, and it is also obvious that these members may be placed nearer together or farther apart to make a smaller or larger opening 21 to correspond with any thickness of disk 9 which it may be desired to use. In Fig. I, I have shown the shaft 18 as quite short; but in Fig. VI, I have shown it as extending through the body 1 and receiving the pinion 6 and crank 8, in which case it, as well as the shaft 4, would be turned by the crank.

30 represents arms secured to the body 1, (one on each side of the machine,) and the upper ends of which fit in the opening 21 of the die or female member of the cutter, as shown clearly in Fig. III, and the office or function of which is to free the die of the cuttings and keep it clean.

31 represents a gage, secured to the body 1 by a bolt 32, fitting in a slot 33 of the gage. The upper end of the gage has, preferably, a cross-head 34. The function of this gage is to form a guide in cutting a piece of material, which is brought with its inner edge up against the gage, and the gage may be adjusted, as desired, through means of the set-screw 32, fitting in the slot 33.

The operation of the machine is as follows: The mandrel or shaft 4 is turned to impart movement to the disk 9. The sheet to be cut is presented to the point of contact between the disk 9 and die 17, and the turning of the disk will cause the sheet to be moved between the disk and the die and to be sheared or cut, a portion equal to the width or thickness of the disk being removed from the sheet, the

effect being that a clean clearcut is made and the material has no disposition to turn up or to be forced out of shape or out of a flat condition, as is the case in cutting a piece of metal with sharp-edged instruments. As the material passes through the machine the strip removed by the disk in producing the cut is forced from the groove or opening of the die by means of the arms 30. With a machine thus constructed a straight circular elliptical or other form of cut may be made with great ease.

I claim as my invention—

1. In a shearing-machine, the combination of the circular plate or disk having a broad notched periphery and cutting-edges, the grooved die having corresponding cutting-edges, and suitable operating mechanism, substantially as set forth.

2. In a shearing-machine, the combination of the circular plate or disk having a broad notched periphery and cutting-edges, the cylindrical grooved female die provided with correspondingly smooth cutting-edges, and suitable operating mechanism, substantially as set forth.

3. In a shearing-machine, the combination of a circular plate or disk, a female die, and suitable operating mechanism, said female die being composed of two members with their adjacent faces dished out, and a ring interposed between the members, one member having a hub, upon which said ring and the other member are held, substantially as and for the purpose set forth.

CHARLES KIESER.

In presence of—

A. M. EBERSOLE,
E. S. KNIGHT.