No. 677,518. Patented July 2, 1901.

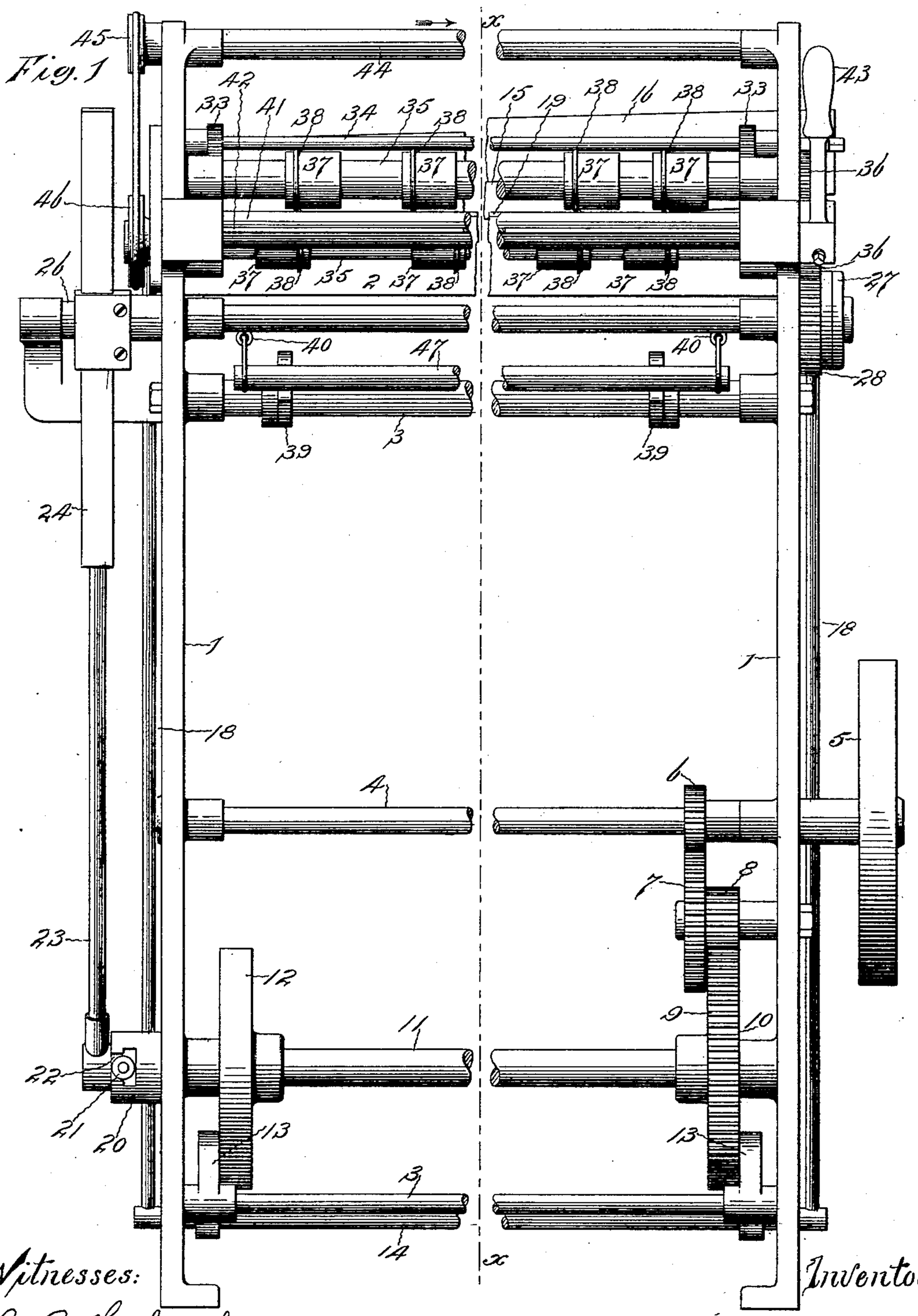
A. I. JACOBS.

SHEARING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1



Witnesses:
V. R. Holcomb.
C. E. Buckland.

Inventor:
Arthur I. Jacobs, by
Harry P. Williams
atty.

No. 677,518. Patented July 2, 1901.

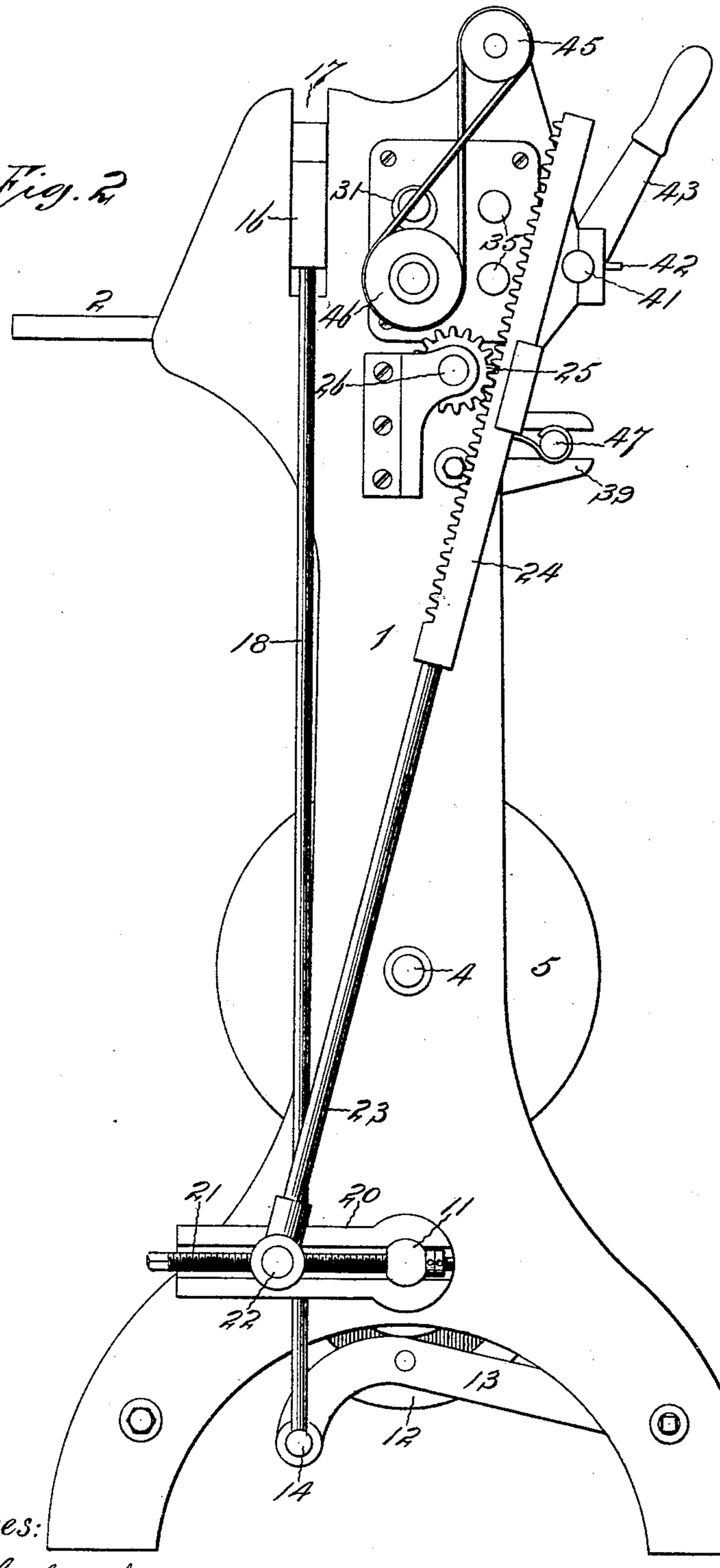
A. I. JACOBS.

SHEARING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.) 4 Sheets—Sheet 2.

Fig. 2.



Witnesses:
V. R. Holcomb.
C. E. Buckland.

Inventor:
Arthur I. Jacobs, by
Harry P. Williams
atty.

No. 677,518. Patented July 2, 1901.

A. I. JACOBS.

SHEARING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.) 4 Sheets—Sheet 3.

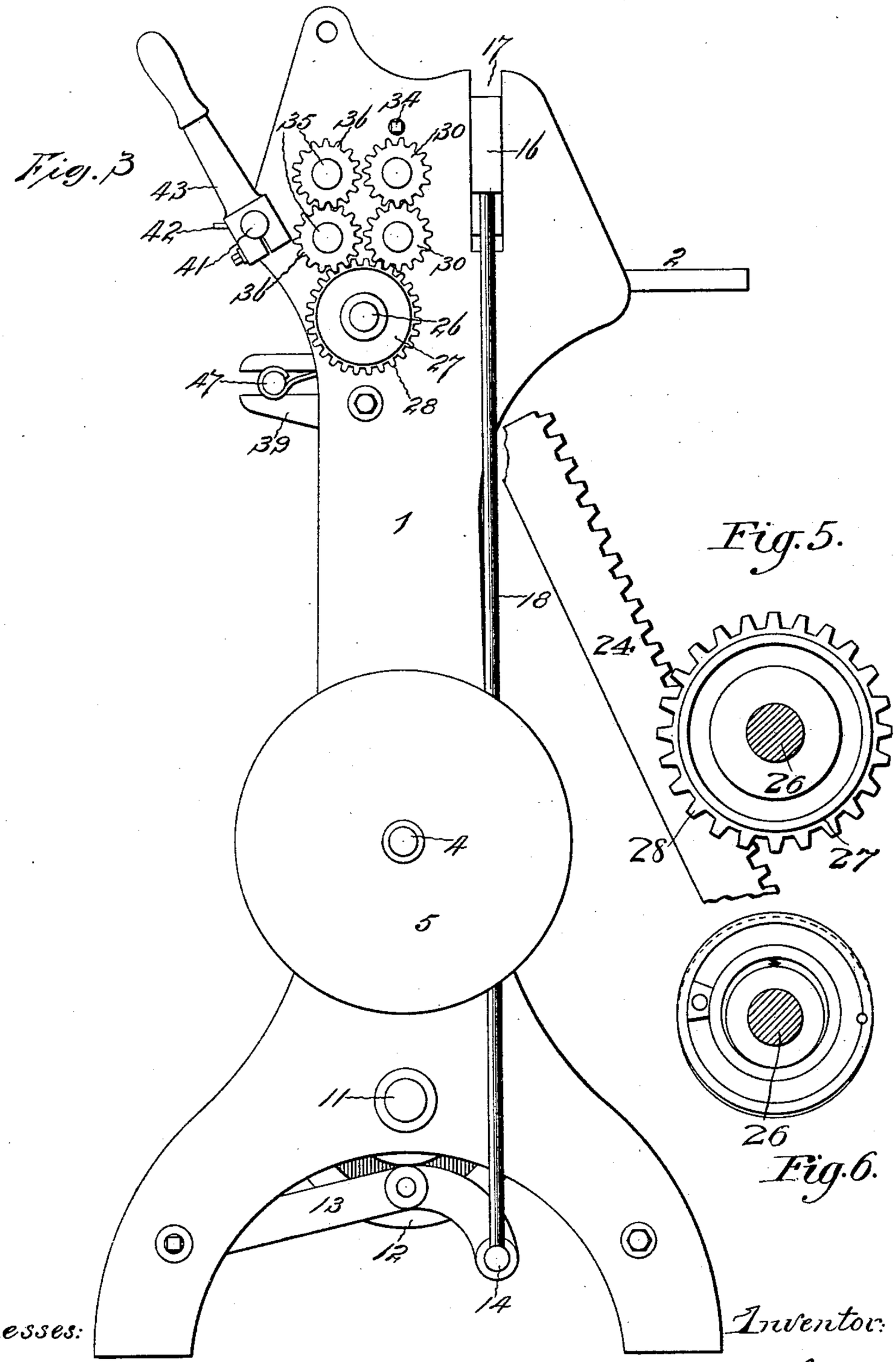


Fig. 3

Fig. 5.

Fig. 6.

Witnesses:
V. R. Holcomb.
C. E. Buckland.

Inventor:
Arthur I. Jacobs, by
Harry P. Williams atty.

No. 677,518. Patented July 2, 1901.

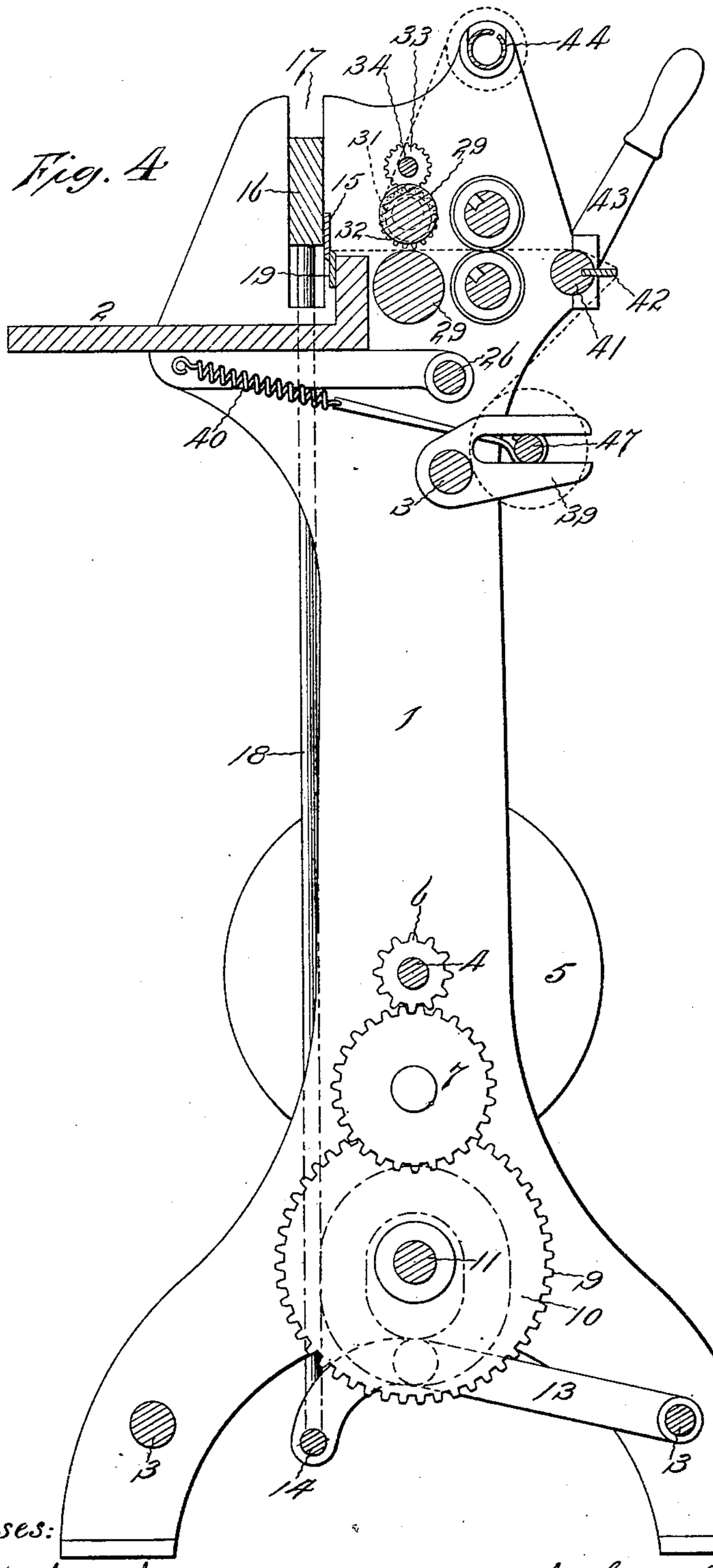
A. I. JACOBS.

SHEARING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 4



Witnesses:
V. R. Holcomb.
C. C. Buckland.

Inventor:
Arthur I. Jacobs, by
Harry P. Williams
atty.

UNITED STATES PATENT OFFICE.

ARTHUR I. JACOBS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE SMYTH MANUFACTURING COMPANY, OF SAME PLACE.

SHEARING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,518, dated July 2, 1901.

Application filed April 28, 1900. Serial No. 14,703. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR I. JACOBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Shearing-Machines, of which the following is a specification.

This invention relates to a machine designed to cut a continuous sheet of cloth or paper into blanks.

The object of the invention is to provide a simple machine which can be easily adjusted, so as to accurately cut the sheet into blanks of any required size.

The machine illustrated as embodying the invention has rotary feed-rolls for advancing the sheet to be cut, rotary cutters that are adjustable transversely of the machine for slitting the sheet longitudinally into strips of the desired width, and a blade that is moved vertically and coöperates with a fixed blade for shearing the slitted strips into blanks of the desired length.

Figure 1 of the drawings shows a front elevation of the ends of the machine, a part of the center being removed. Fig. 2 shows a view of the left-hand end. Fig. 3 shows a view of the right-hand end. Fig. 4 is a vertical section on the plane indicated by the broken line X X of Fig. 1 looking in the direction indicated by the arrow. Fig. 5 is an enlarged detail view of the ratchet mechanism that is used for driving the feed-rolls and slitting-cutters, and Fig. 6 is a face view of the pawl-plate of the ratchet mechanism.

The side frames 1 of the machine are held together by the table 2 and bars 3. The shaft 4, provided with a suitable driving-pulley 5, is supported by bearings formed in the side frames. This shaft near one side has a pinion 6, that meshes with a gear 7, attached to which is a pinion 8. This latter pinion meshes with a gear 9, cut on the periphery of a cam-disk 10, mounted on the shaft 11, that near the other side of the machine bears a cam-disk 12. The cams formed on the sides of these disks are arranged to oscillate the levers 13, which are pivoted to the side frames. The free ends of these levers are joined by a rod 14. The upper blade 15 is secured to a bar 16, the ends of which are loosely held in ways 17, formed in the upper ends of the side frames. Rods 18 connect the ends of this bar with the ends of the rod that joins the levers that are oscillated by the cams when the main shaft is driven. The lower blade 19 is secured to a flange extending upwardly from the inner edge of the table. It is preferred that the cutting edge of the fixed blade be substantially horizontal and that the cutting edge of the movable blade be inclined, so that the blades will shear the strips from one edge to the other. In the machine shown the movable blade is caused to incline by holding one end of the blade-bar higher than the other.

At one side of the machine the cam-shaft 11 bears a mortised crank-arm 20, and adjustable along the slot in the crank-arm on a screw 21 is a nut 22, that is connected by a rod 23 with a rack 24. The rack engages a pinion 25 on a shaft 26, that extends across the machine. On the other end this shaft bears a friction-pawl 27 and a loose gear 28. By means of the crank, the rack is reciprocated, the extent of the movement being determined by the adjustment of the nut along the crank-arm. The reciprocation of the rack through the pinion 25 oscillates the shaft 26, and this through the friction-pawl 27 gives an intermittent rotary movement to the loose gear 28.

The shafts of the feed-rolls 29 at their ends on one side are provided with intermeshing pinions 30, the lower end of which is in mesh with the intermittently-rotated gear 28. The journals of the upper feed-roll are preferably supported eccentrically by bushings 31, that are provided with pinions 32, and meshing with these are pinions 33 on a shaft 34, that at one end is arranged to receive a crank-handle. By turning this shaft the pinions so rotate the bushings that the upper feed-roll may be lifted from or moved toward the lower feed-roll for the purpose of admitting a sheet and then feeding the sheet.

Parallel with the feed-rolls are a pair of shafts 35. These are at one end provided with intermeshing pinions 36, the lower of which meshes with the intermittenly-rotated gear 28 in such manner that these shafts and the feed-rolls are intermittently rotated simulta-

neously. Any desired number of collars 37 are splined upon the shafts 35, and held by these collars are the annular slitting-cutters 38.

The spindle 47, upon which is wound the roll of cloth to be cut, is supported by brackets 39 and is drawn rearwardly by springs 40. The cloth is passed around a straightening-bar 41, then between the rotary slitting-cutters, the feed-rolls, and the shear-blades. The straightening-bar is provided with a rib 42 and a handle 43, so that the amount of drawing of the cloth over the rib may be regulated and any curl removed.

A slotted shaft 44 is supported by the side frames above the rotary cutters, and this shaft may be provided with a pulley 45, around which a belt passes to a pulley 46 on one end of a feed-roll shaft. Should the size of the blanks being cut be such that all of the sheet could not be economically used, that portion which is not utilized instead of being passed between the shearing-blades is rolled upon this slotted shaft for future use. The sheet is advanced at intervals by the intermittently-rotating feed-rolls, the amount of feed being determined by the period of rotation of the rolls, which is controlled by the adjustment of the rack-nut along the crank-arm. As the sheet is being drawn into the machine by the feed-rolls, the simultaneously-rotating annular cutters slit the sheet into strips, and during the interval of rest of the feed-rolls and slitters the movable blade is brought down and shears the strip into blanks.

The movable blade is reciprocated regularly by the cams. Thus by adjusting the position of the rack-nut along the crank-arm and determining the amount of feed of the rolls any desired length of strips may be passed between the shear-blades before the movable blade is caused to shear the strips into blanks. The width of the strips is determined by adjusting the annular cutters along the shafts upon which they are splined.

By means of this simple machine blanks of any desired length and width may be continuously cut from a sheet of cloth or paper, and the accuracy and uniformity of the blanks cut by this machine renders them particularly useful for the purpose of covering the boards and back-pieces making up the covers of books.

I claim as my invention—

In combination in a shearing-machine, annular slitting-cutters adjustably mounted upon parallel shafts, feed-rolls mounted upon parallel shafts, a rewinding-roll mounted upon a shaft parallel with the cutter and feed shafts, gearing connecting the cutter and feed shafts, a driving connection between a feed-shaft and the rewinding-shaft, a reciprocating shearing-blade, a driving-shaft bearing an adjustable crank and cams, a rack, pinion and pawl mechanism connecting the crank and the cutter and feed gearing, and levers and rods connecting the cams and the shearing-blade, substantially as specified.

ARTHUR I. JACOBS.

Witnesses:
H. R. WILLIAMS,
V. R. HOLCOMB.