

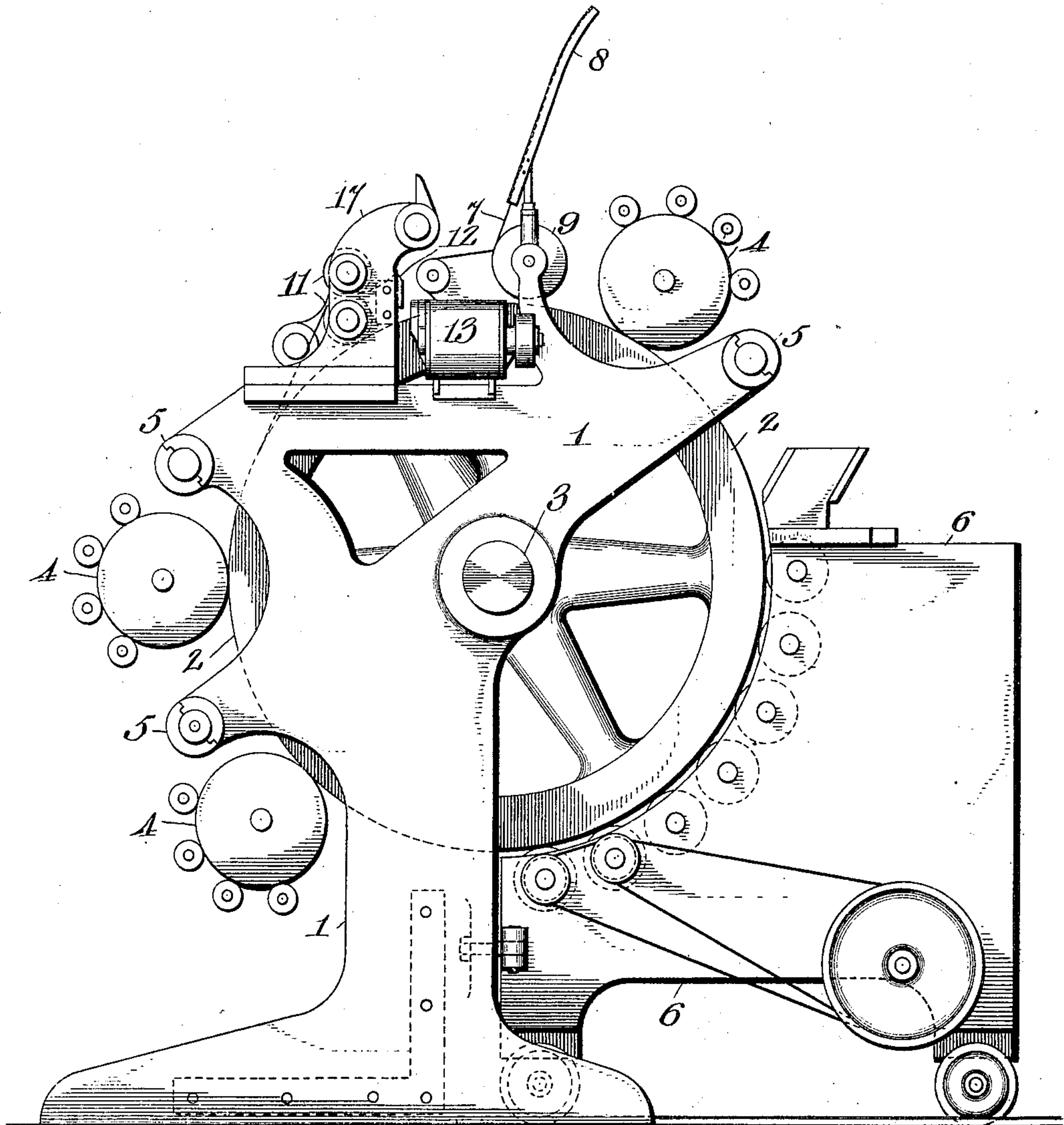
No. 828,688.

PATENTED AUG. 14, 1906.

E. Z. TAYLOR.
PAPER CUTTING MACHINE.
APPLICATION FILED JULY 21, 1904.

5 SHEETS—SHEET 1.

Fig. 1



Witnesses
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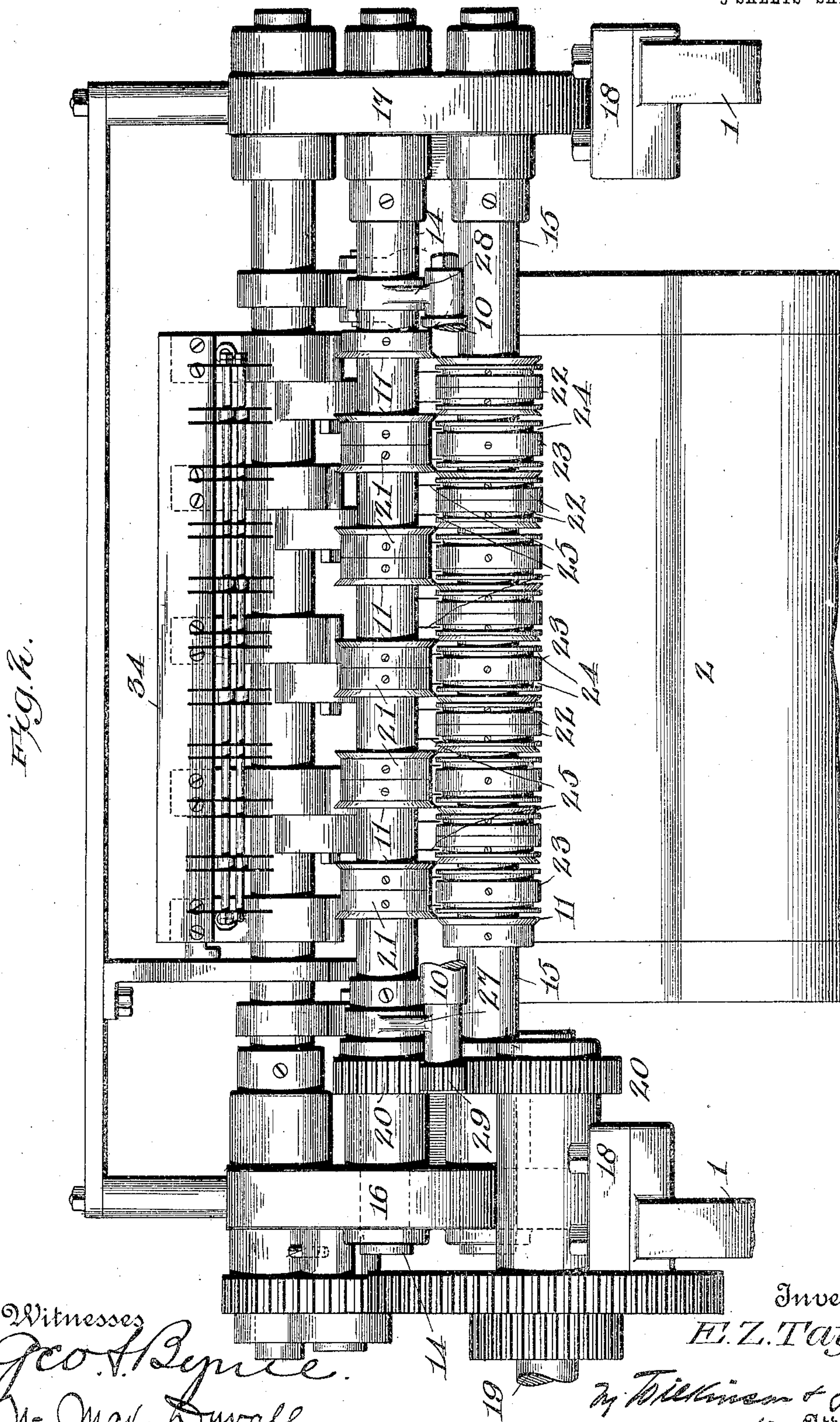
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5 SHEETS—SHEET 2.



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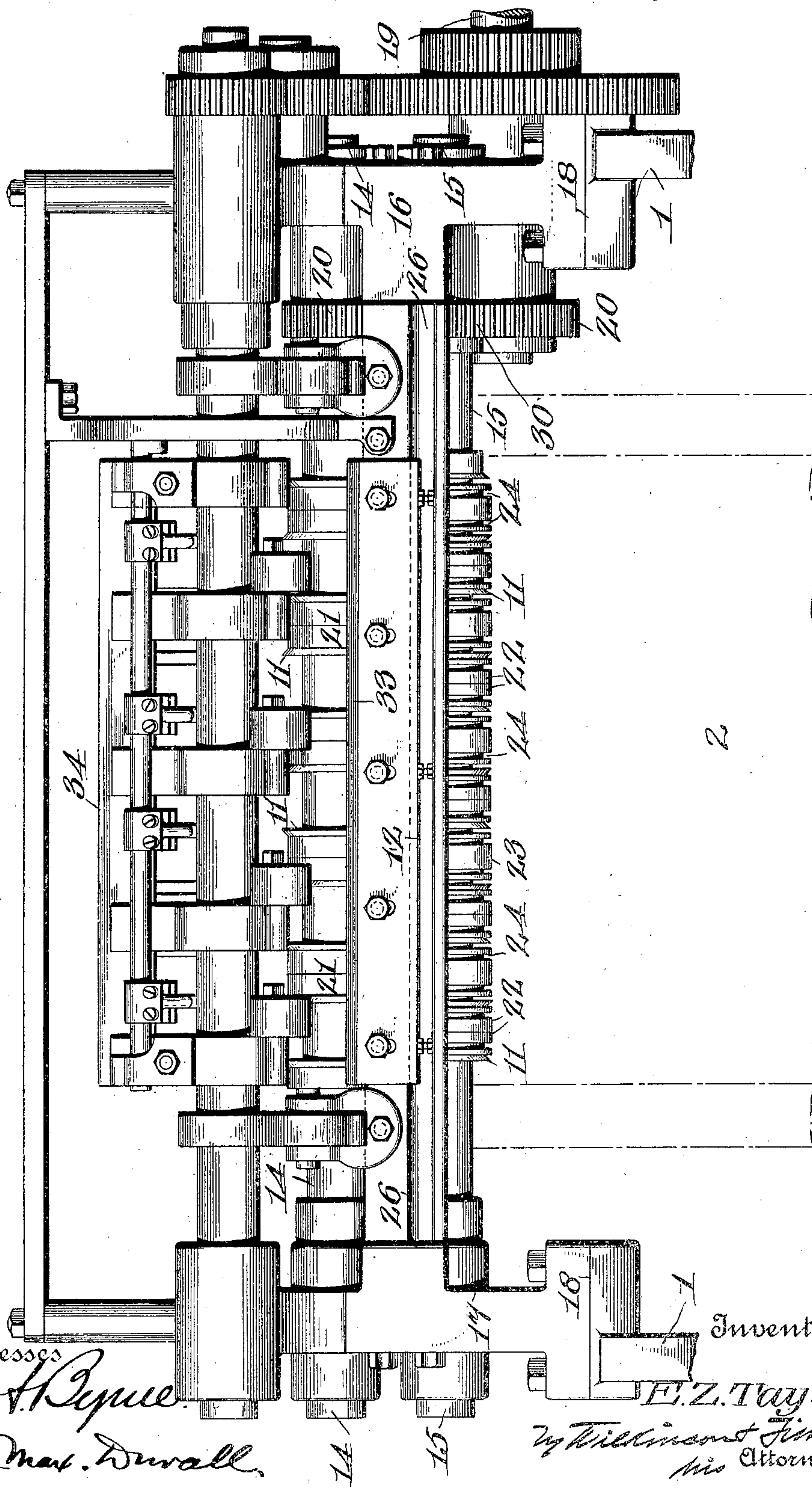
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5 SHEETS—SHEET 3.

Fig. 3.



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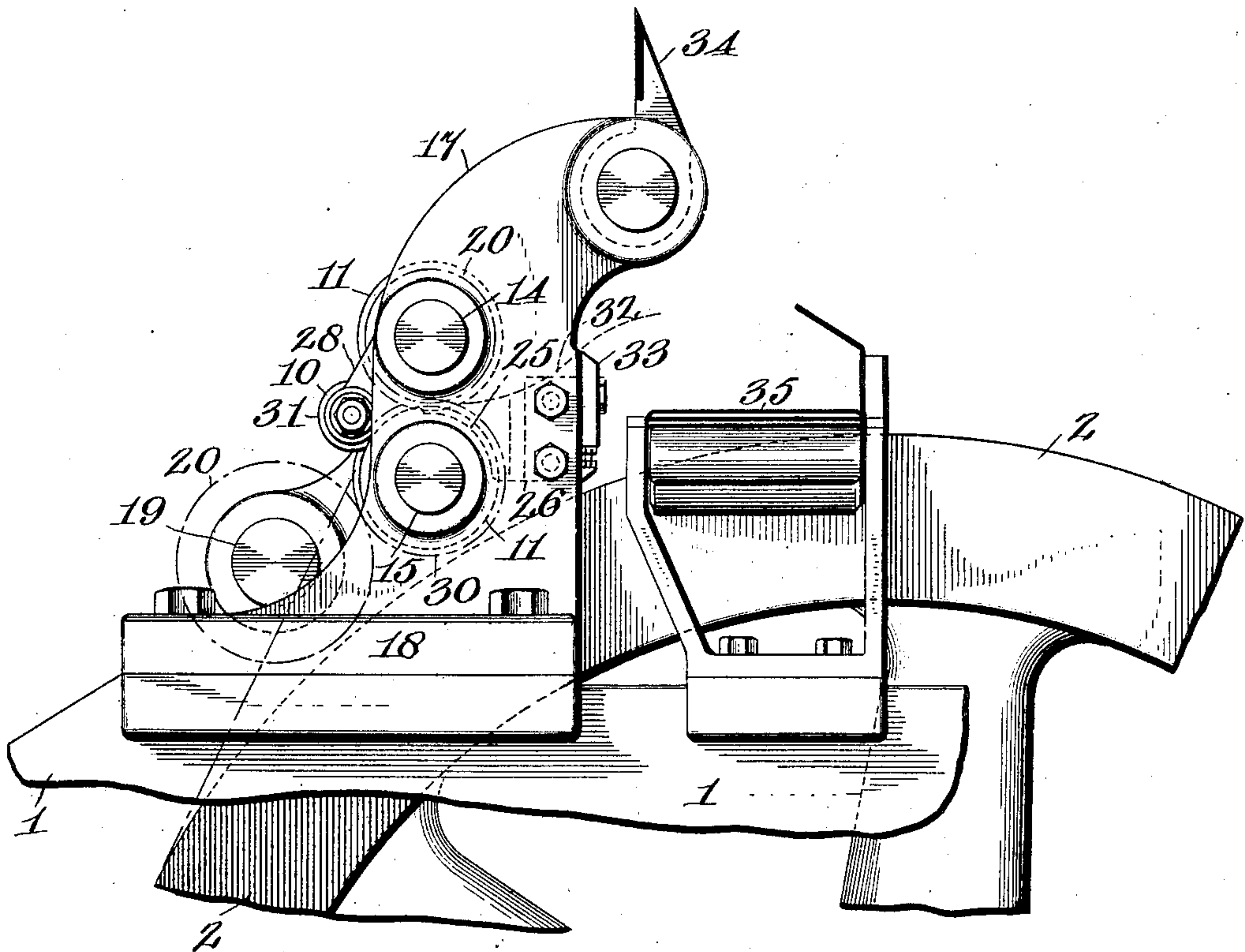
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5 SHEETS—SHEET 4.

Fig. 4.



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5 SHEETS—SHEET 5.

Fig. 6.

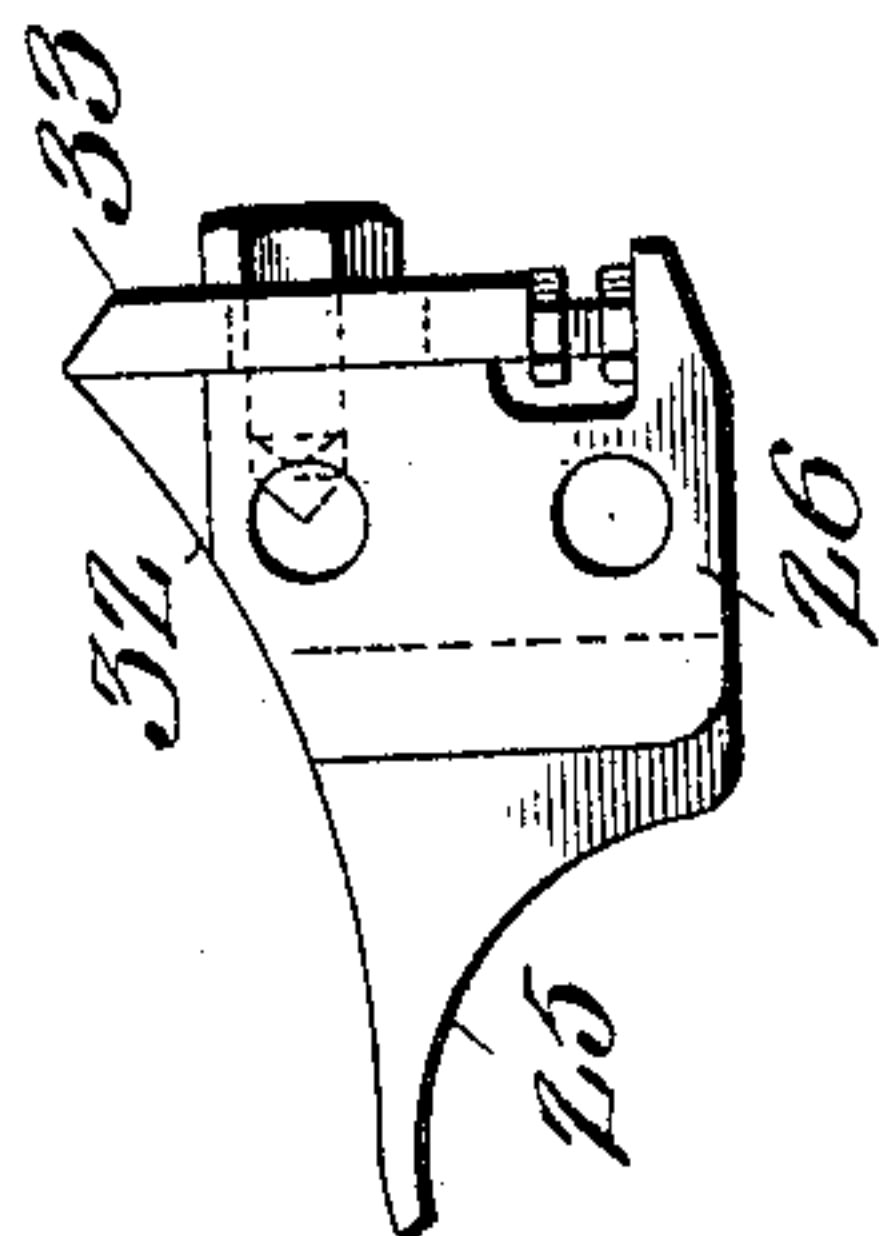
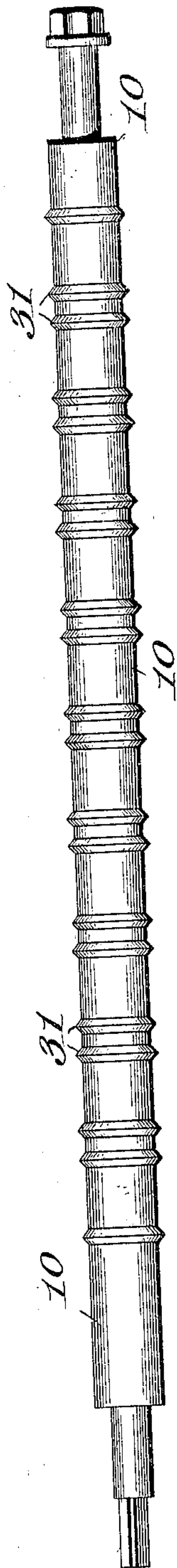


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

ELMER ZEBLEY TAYLOR, OF LONDON, ENGLAND.

PAPER-CUTTING MACHINE.

No. 828,688.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed July 21, 1904. Serial No. 217,577.

To all whom it may concern:

Be it known that I, ELMER ZEBLEY TAYLOR, a subject of the King of Great Britain, residing at 4 Montague street, London, in the county of Middlesex, England, have invented new and useful Improvements in Paper-Cutting Machines, of which the following is a specification.

My invention relates to improvements in mechanism for automatically cutting into longitudinal strips a continuous roll of paper or other material supplied either from the impression-cylinder of a multicolor or other printing machine or from other source; and the objects of my invention are, first, to provide mechanism by which a continuous sheet of paper, delivered from a cylinder printing-machine in which designs in two or more colors have been printed upon the paper, is automatically cut by adjustable revolving cutting-disks into continuous longitudinal strips of any desired width; second, to deliver the strips from the revolving cutters to be afterward cut transversely by hand or otherwise, so as to form rectangular labels or tablets having upon one surface the finished colored design; third, to provide means by which the cutting-disks are adjusted and fixed upon the spindles which carry them, and, fourth, to direct the paper accurately between the cutting-disks and to remove and guide the separated strips of paper from the spaces between the cutting-disks after having been cut. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a cylinder printing-machine having my present invention applied to and forming a part of it. Fig. 2 is a front view of the longitudinal cutting device. Fig. 3 is a back view of the longitudinal cutting device. Fig. 4 is an end view of part of the printing-machine with the present invention applied to it. Fig. 5 is a front view of a guiding-cylinder by which the paper is introduced accurately between the cutting-disks, and Fig. 6 is a side view of one of the curved guides and fingers over which the paper passes after having been cut by the disks.

Similar numerals refer to similar parts throughout the several views.

1 is the framing of a cylinder printing-machine, and 2 is the impression-cylinder, carried on the shaft 3, by which it is driven. 4 4 are the "forms" on cylinders supplied with

different-colored inks and carried upon arms (not shown in the drawings) turning upon centers 5. Movable bronzing apparatus is shown at 6, to be used when desired. This printing-machine forms no part of my present invention.

7 is the paper, coming from a continuous roll along a guide 8, passing under a roller 9 to the impression-cylinder 2, and drawn between its surface and that of the printing-forms 4. The paper is then drawn under a guide-cylinder 10 and from it passes between the cutting-disks 11 11, Figs. 1 and 2, which cut it into longitudinal strips, which may be afterward cut transversely by hand or may be made to pass over a straight cutting-blade 12, by which they are cut transversely and from which they may be delivered upon a traveling belt 13.

The knives for cutting the paper into longitudinal strips consist of circular blades 11, fixed upon two strong parallel spindles 14 15, which themselves revolve accurately in bearings in separate standards or frames 16 17, which are firmly bolted at 18 upon the frame 1 of the printing-machine. The spindles 14 15 are arranged one directly above the other and are set in revolution at the proper speed by the driving-shaft 19 and toothed wheels (shown at 20 in Figs. 2 and 3.) The shaft 19 is set in revolution exactly at the required relative speed from the driving-shaft of the machine.

Upon the spindles 14 15 are fitted and firmly and accurately fixed the pairs of adjustable circular cutting blades or disks 11, the edges of each pair (on the spindles 14 15, respectively) overlapping each other, so that they form circular shears between which the paper passes and is cut into a series of parallel longitudinal strips. Each cutting-blade 11 of the upper set is fixed upon the outer side or end of an adjustable cylinder or block 21 of less diameter, which is firmly fixed and screwed upon the spindle 14, the distance between the cutting edges of each pair of disks being exactly equal to the width of the longitudinal strips of paper to be cut. Each cutting-disk 11 of the lower set is first fixed upon the side or end of an adjustable cylinder or block 22 of the same diameter as the disk 11, which is firmly fixed and screwed upon the spindle 15, the cutting sides or edges of each pair of cutters being in contact with or closely adjoining each other.

Between the cylinders 22, which carry each

pair of the cutting-disks 11 on the lower spindle 15, is fixed a similar independent cylinder 23 of about the same diameter as the blade, but of somewhat less width than the lateral distance between the two blades, and around the circumference of all the cylinders 22 and 23 grooves 24 are formed (two between each set of blades) and arranged so that all the grooves are nearly at equal distances apart. Stripping guides or fingers 25 are shown in Figs. 2, 4, and 6, carried by a cross-stay 26, fixed between the frames or standards 16 17, the points of the fingers projecting freely into the grooves 24, so that when the paper is cut longitudinally it is prevented from adhering to or being carried along with the blades and is gently raised, the parallel strips of paper being delivered direct to a transverse cutting device.

A small transverse guide-roller 10, Figs. 2 and 5, turns in bearings at the free ends of arms 27 28, the other ends of which turn freely upon the upper spindle 14, so that the guide-roller 10 can be raised when desired. It is driven (so that its surface travels at the same speed as the paper) by a toothed pinion 29, which is itself driven by a toothed wheel 30, fixed upon the spindle 15. The roller 10 is shown in Fig. 5 provided with angular ribs 31 round it, the ribs indenting somewhat the paper upon which they rest and keeping it more certainly guided to the cutters 11 and also tending to feed the paper forward.

From the cutting-disks 11 the strips into which the paper has been divided longitudinally are carried along a guide 32, Figs. 4 and 6, formed by the fingers 25 and cross-bar 26, and between a transverse fixed blade 33 and a revolving blade 34 to a traveling belt 35 or are removed to be cut up by hand. These form no part, however, of my present invention.

The devices described for cutting the sheet of paper into longitudinal strips may be used (either together or separately) for treating an endless roll of paper supplied from any kind of cylinder printing-machine instead of for

that described and illustrated, or they may be used to cut paper supplied from any source whatever or for cutting other flexible material as well as paper.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a paper-cutting machine, the combination with a pair of parallel revoluble spindles provided with cutting-disks, of a guide-roller mounted on one of said spindles substantially opposite the cutting edges of said disks, substantially as described.

2. In a paper-cutting machine, the combination with a pair of parallel revoluble spindles provided with cutting-disks, of a guide-roller mounted on one of said spindles substantially opposite the cutting edges of said disks, and means for rotating said roller, substantially as described.

3. In a paper-cutting machine, the combination with a pair of parallel revoluble spindles provided with cutting-disks, of a guide-roller loosely mounted on one of said spindles substantially opposite the cutting edges of said disks, and means for rotating said roller from the other of said spindles, substantially as described.

4. In a paper-cutting machine, the combination with a pair of parallel revoluble spindles provided with cutting-disks, of a ribbed guide-roller mounted on one of said spindles substantially opposite the cutting edges of said disks, substantially as described.

5. In a paper-cutting machine, the combination with upper and lower parallel spindles, of cutting-disks arranged in pairs upon said spindles, the edges of the pairs on one spindle overlapping those on the other, and a guide-roller suspended from said upper spindle substantially opposite said overlapping edges, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ELMER ZEBLEY TAYLOR.

Witnesses:

ALFRED T. BRATTON,
H. D. JAMESON.