

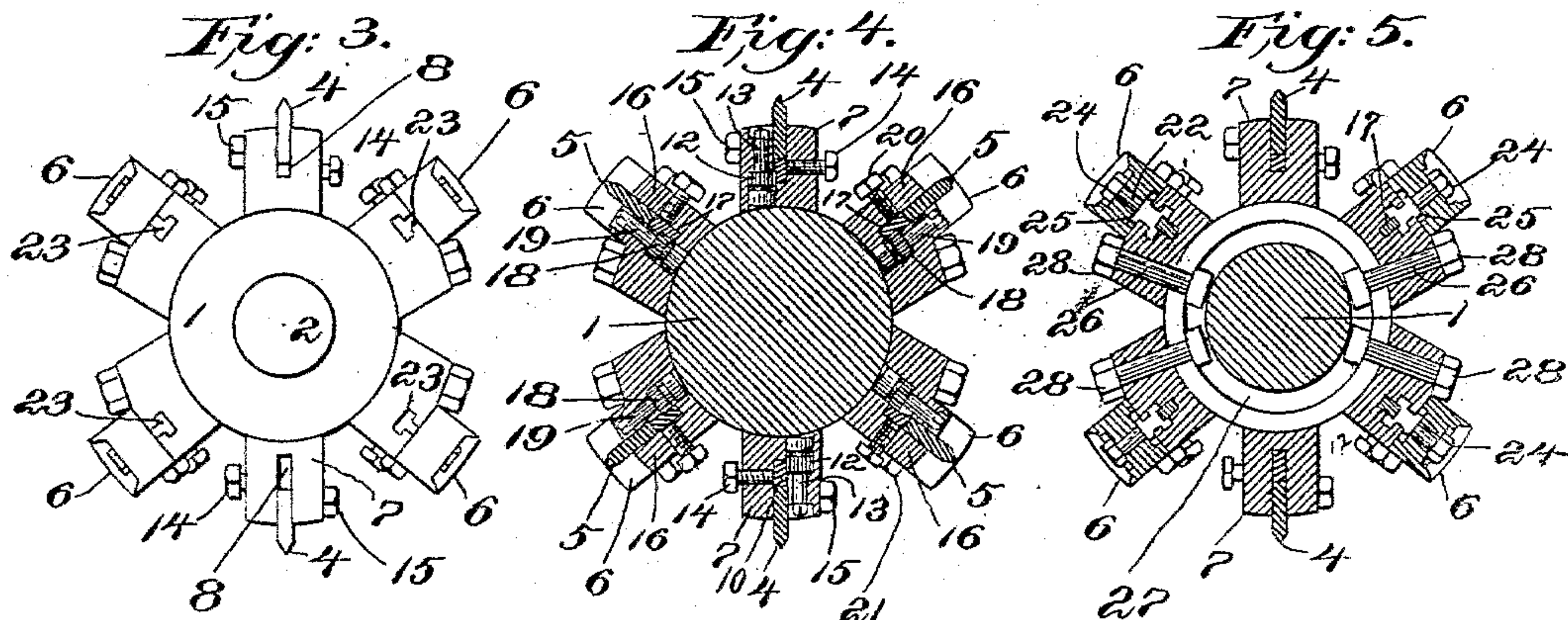
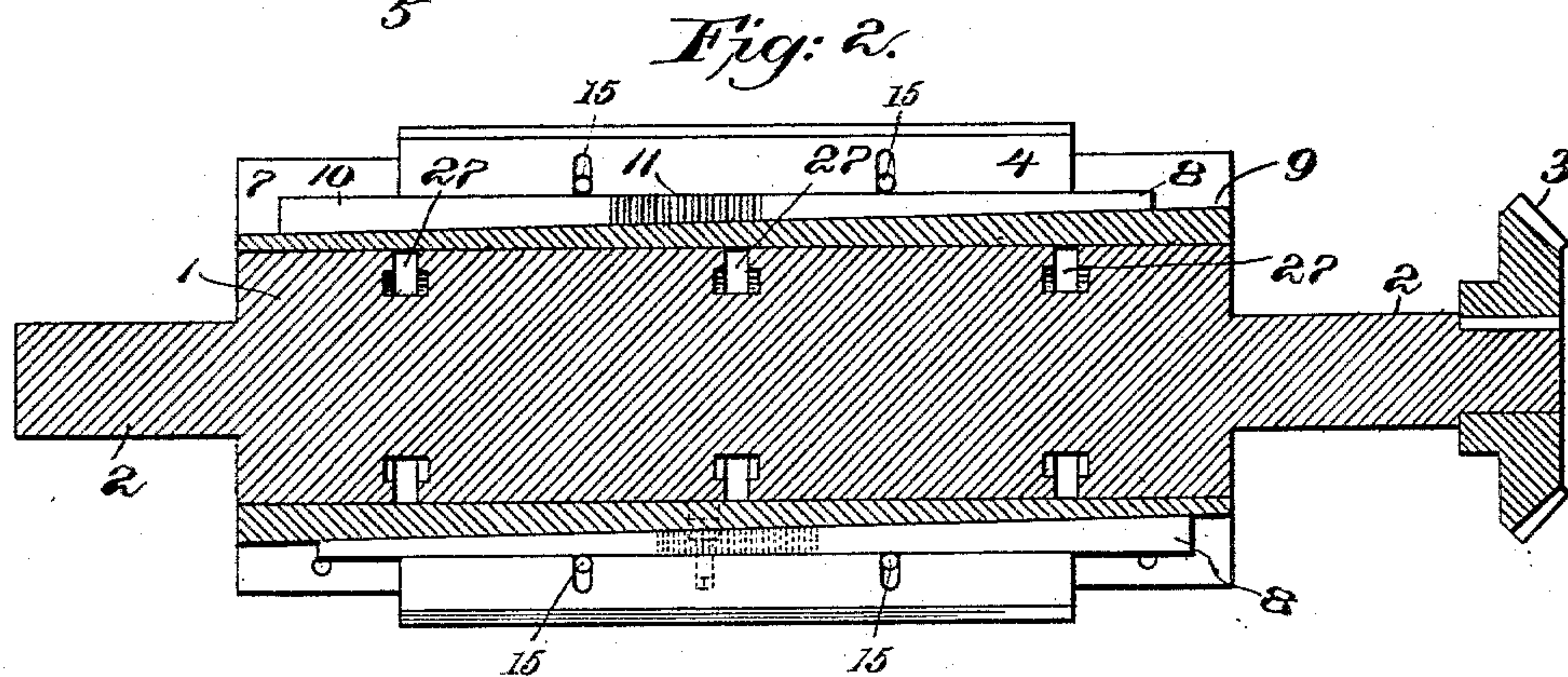
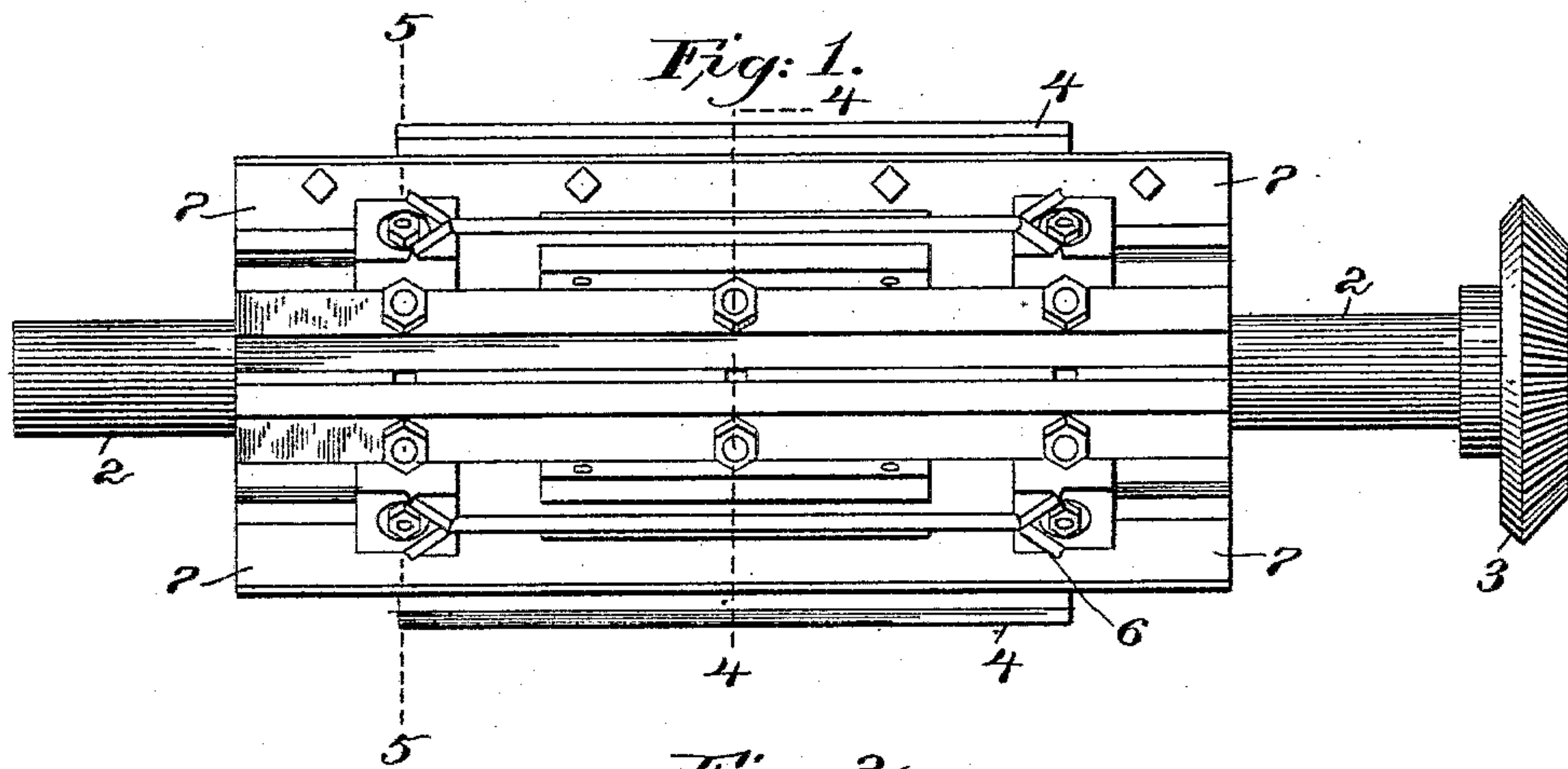
(No Model.)

E. H. TAYLOR.

CUTTING AND SCORING ROLL FOR PAPER BOX MACHINES.

No. 565,186.

Patented Aug. 4, 1896.



Witnesses:

Arthur L. Randall,  
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# UNITED STATES PATENT OFFICE.

EUGENE H. TAYLOR, OF LYNN, MASSACHUSETTS.

## CUTTING AND SCORING ROLL FOR PAPER-BOX MACHINES.

SPECIFICATION forming part of Letters Patent No. 565,186, dated August 4, 1896.

Application filed October 18, 1895. Serial No. 566,039. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE H. TAYLOR, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Cutting and Scoring Rolls for Paper-Box Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a roll of novel and improved character and construction for use in the production of blanks for paper boxes.

The invention consists, accordingly, in a roll provided with means for severing successive blanks from a continuous strip or web of material, scoring the said blanks at opposite sides of each line of cut, and notching the ends of the blanks, the said roll being provided with convenient means for varying the total width of the respective blanks, and also for varying the distances of the scoring-lines or scores from the edges of the severed blanks, all as first will be described with reference to the accompanying drawings, and then will be more particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 of the drawings shows in side elevation a roll embodying my invention. Fig. 2 is a view of the said roll in central longitudinal section. Fig. 3 is a view of the said roll in end elevation, looking at it from the left-hand side of Figs. 1 and 2. Figs. 4 and 5, respectively, are views in section on the planes which are indicated, respectively, by the dotted lines 4 4 and 5 5 of Fig. 1.

At 1 in the various figures is the body of the roll, and at 2 2 are the journals thereof, one of said journals having applied and secured thereto the bevel-pinion 3, through which latter power is transmitted to the said roll from a suitable train of actuating mechanism.

At 4 4 are cutters extending lengthwise of the roll, and which are shown located diametrically opposite to each other. In connection with each cutter 4 I employ a pair of scorers 5 5, which also extend lengthwise of the roll, one of these scorers being located at each side of the said cutter. In the rotation

of the roll each cutter severs from the continuous strip or web of material which is fed to the action of the roll a blank that is of a width corresponding with the distance between the edges of the two cutters measured along the circle which is described by the said edges in the rotation of the roll. At the same time the edges of the scoring devices produce a score at each side of each line of cut, thereby scoring each blank adjacent to both of the cut edges thereof.

At the opposite ends of each of the scorers 5 5 I apply notching-cutters 6, by means of which to remove from the blank, at each end of each of the scores that are produced therein, the triangular piece of material which is required to be removed in order to dispose of the excess of material at such points. As will be understood, the scores facilitate the operation of turning down the side portions of the blank. As will be perceived, the drawings show two groups of devices applied to the roll, each comprising a cutter, two scorers adjacent to such cutter, and notching-cutters at the opposite ends of the scorers.

The cutters 4 4 are applied to bars 7 7, which latter are secured to the periphery of the body 1 of the roll in any suitable and convenient manner. Each of the said bars 7 7 is grooved or recessed longitudinally, as at 8, for the reception of the cutter-blade 4, as shown, and the bottom 9 of the groove or recess is inclined from or near one end of the bar 7 to the other thereof, as shown clearly in Fig. 2. Thus one end of the bottom of each groove is farther from the axis of the roll than the other end thereof. Against this inclined bottom 9 rests the reversely-inclined inner face of a wedge 10, which is located in the groove and the outer surface of which is parallel with the axis of the roll. The inner edge of the cutter 4 rests in contact with the said outer surface of the wedge 10. The wedge 10 is provided for the purpose of effecting radial adjustment of the cutter 4. For convenience in effecting longitudinal adjustment of the said wedge within the groove, as required in effecting radial adjustment of the cutter-blade, I provide in connection therewith devices accessible from the exterior, by means of which the wedge



may be slid lengthwise in either direction, as required, and to the necessary extent.

The moving devices which I have shown comprise a rack 11, which is formed on or applied to one side of the wedge 10, and a pinion 12, which is located in a recess in the bar 7, and has a shaft 13, extending through a hole in the bar to near the peripheral surface of the latter. The said hole in the bar is counterbored or enlarged around the outer end of the said shaft, and the said outer end of the shaft is squared to fit it for having applied thereto a socket-wrench, by means of which the pinion may be rotated as and when desired. For the purpose of holding the parts in the position into which they have been adjusted a screw 14 is applied to a threaded hole that is made transversely in the bar 7, and the inner end of this screw is caused to contact with one side of the wedge 10. This prevents accidental movement of the wedge. Bolts 15 15 pass through the outer portions of the bar 7, and when the said bolts are tightened the sides of the groove or recess in the bar are drawn toward each other and compressed against the cutter-blade, thereby clamping the latter securely in place.

Each scorer 5 is mounted upon a bar 16, which is applied to the body of the roll. Each bar 16 is grooved or recessed longitudinally for the reception of the scorer-blade, and, as in the case of the groove or recess for the reception of a cutter-blade, the bottom of the groove or recess for the reception of each scorer-blade is inclined from end to end of the bar 16; also, within the said groove or recess is applied a wedge 17, that is provided with a rack engaged by the pinion 18, the latter having a shaft 19, which passes through a hole in the bar and is provided with an enlarged outer end located in the counterbored outer end of the said hole through the bar, all substantially as in the case of the device which has been described as being employed in connection with each cutter-blade. There are also applied to the bars 16 screws 20 to hold the wedges from longitudinal movement and the bolts 21 to clamp the sides of each bar upon the corresponding scorer-blade.

Each notching-cutter 6 is secured to the corresponding end of its bar 16 by means of a bolt 22, passing through the block of the said cutter and into a slot 23, that is formed longitudinally in the bar. The said slot 23 is T-shaped or undercut. To the said slot is applied the enlarged end 25 of the bolt, said end being grooved to receive the lips at the sides of the slot. A nut 24 is applied to the outer end of the bolt 23, and by tightening up the said nut the notching-cutter may be secured at the desired point in the length of the bar 16. The ends 25 25 of the bolts 22 22 are slotted, as shown in Fig. 5, to accommodate the outer ends of the wedges. It is contemplated that the notching-cutters shall be adjusted longitudinally on the bars 16 whenever it is desired to replace a given length of

scorer-blade by another length thereof. For the purpose of enabling the distance of the scorers from the adjacent cutter to be varied the bars 16 are secured to the surface or periphery of the body of the roll in an adjustable manner. To this end bolts 26 are passed through holes in lugs on the said bars, the heads of the said bolts entering the undercut or enlarged portions of T-shaped slots 27, which are formed around the body of the roll 1 at suitable distances apart in the length thereof. Nuts 28 28 are applied to the outer ends of the said bolts, and by tightening up the said nuts the bars 16 are secured in the desired positions around the periphery of the body of the roll.

The radial adjustment of the cutter-blades and scorer-blades, as will be apparent, varies the diameter of the circle which the edge of each blade describes in the rotation of the roll. It also varies the distance by which the edges of the various blades are separated from one another when such distances are measured along the curved paths which are described by the said edges in the rotation of the roll. Hence, as will be obvious, by making radial adjustment of the cutters I am enabled to vary within certain limits the dimensions of the blank, that is to say, the distances apart of the lines of severance. The radial adjustment of the scorers also varies the distances which separate the scored lines of each blank from each other and from the cut edges thereof. A more marked adjustment of these distances is effected by making adjustment of the bars 16 16 circumferentially of the body of the roll, by which means the width of the box-blank after the sides thereof have been folded at the scored lines and also the height of the sides or flanges thereof may be varied as required.

The roll which I have shown and described is more particularly fitted for use in the production of the blanks for box-bodies.

When making adjustment of the parts, both of the cutters will be adjusted to bring their cutting edges to the same distance from the axis of the roll. The making of radial adjustment of the cutters is equivalent to varying the diameter of the roll, and the length of the circular path which is described by the edge of each cutter in the rotation of the roll will vary proportionately as the cutter is adjusted toward and from the axis of the roll, so that the distance between the cuts and the width of the blanks will be varied accordingly. The radial adjustment of the scorers accompanies that of the cutters and is necessary in order to cause the edges of the scorers to enter the material to the proper depth. The circumferential adjustment of the scorers enables the latter to be placed at the required distances from the cutters in order to secure sides or flanges of the proper height on the box-blank.

The notching-cutters are replaced by others of appropriate radial length when the radial



adjustments of the cutter and scorer plates necessitate such replacement.

I claim as my invention—

5 1. A roll for producing blanks for use in the manufacture of paper boxes, provided with cutting and scoring devices at the periphery thereof, and also provided with means to adjust the edges of the cutting and scoring devices into positions nearer to or farther from the axis of the roll, whereby to vary as required the widths of the blanks and the distances of the scores from the edges of the blanks, substantially as described.

15 2. A roll for producing blanks for use in the manufacture of paper boxes, provided with a cutter for severing successive blanks from a continuous strip of material, scorers to score the blanks on opposite sides of each line of cut, means to adjust the said scorers toward and from the cutter, and means to effect adjustment of the cutter and scorers

toward and from the axis of the roll, substantially as described.

3. A roll for producing blanks for use in the manufacture of paper boxes, having undercut slots extending in a direction around the body of the same, bars applied to the surface of the body of the roll, blades carried by the said bars, and bolts to secure the said bars to the body of the roll, said bolts having their heads located within the undercut portions of the slots, whereby to adjust the bars and the blades carried thereby circumferentially of the roll, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE H. TAYLOR.

Witnesses:

CHAS. F. RANDALL,  
ALICE H. MORRISON.