

No. 802,964.

PATENTED OCT. 31, 1905.

W. BOYD.

MACHINE FOR FOLDING PAPER, &c., IN THE MANUFACTURE OF BOX SLIPS.

APPLICATION FILED DEC. 6, 1904.

5 SHEETS—SHEET 1.

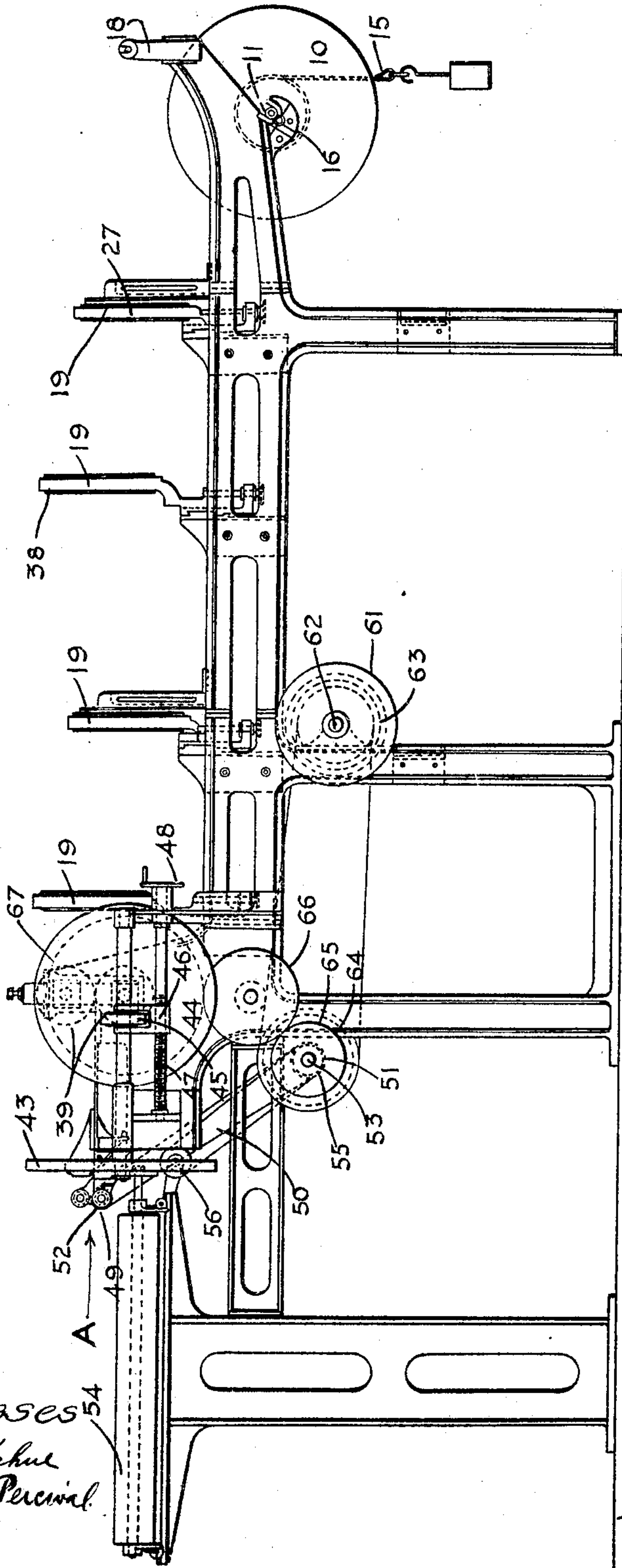


FIG. 1.

Witnesses
H. M. Kuehn
John A. Percival

Inventor
William Boyd

[Signature]

AT 75

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5 SHEETS—SHEET 2.

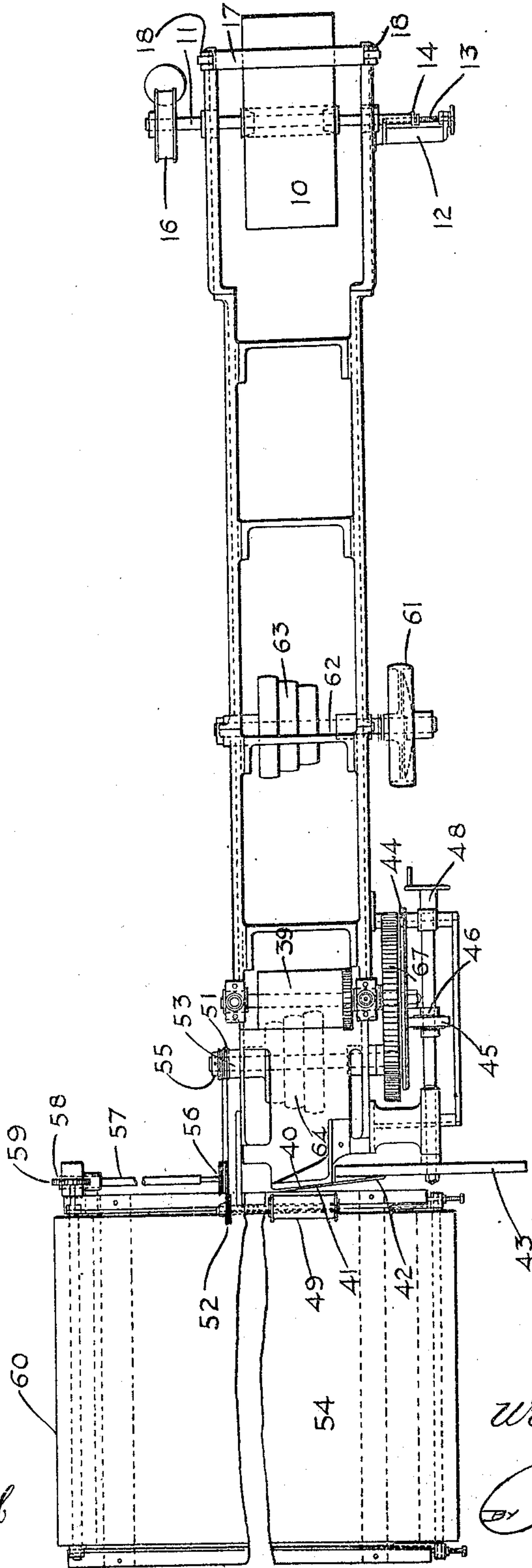


FIG. 2

Witnesses
Jm. Kuehne
John A. Percival

Inventor
William Boyd

By Richard R.

Att'y

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5 SHEETS—SHEET 3.

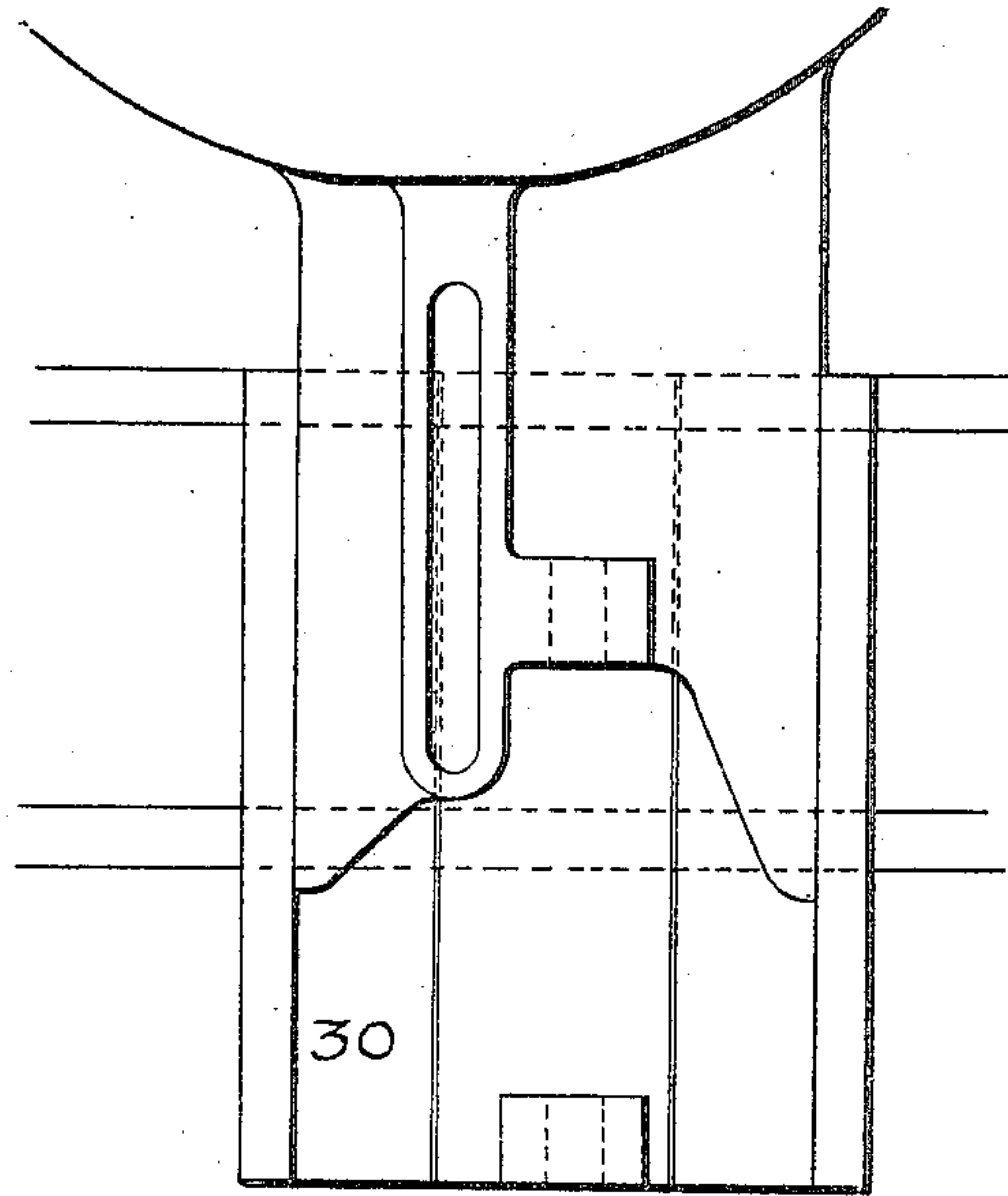


FIG. 6.

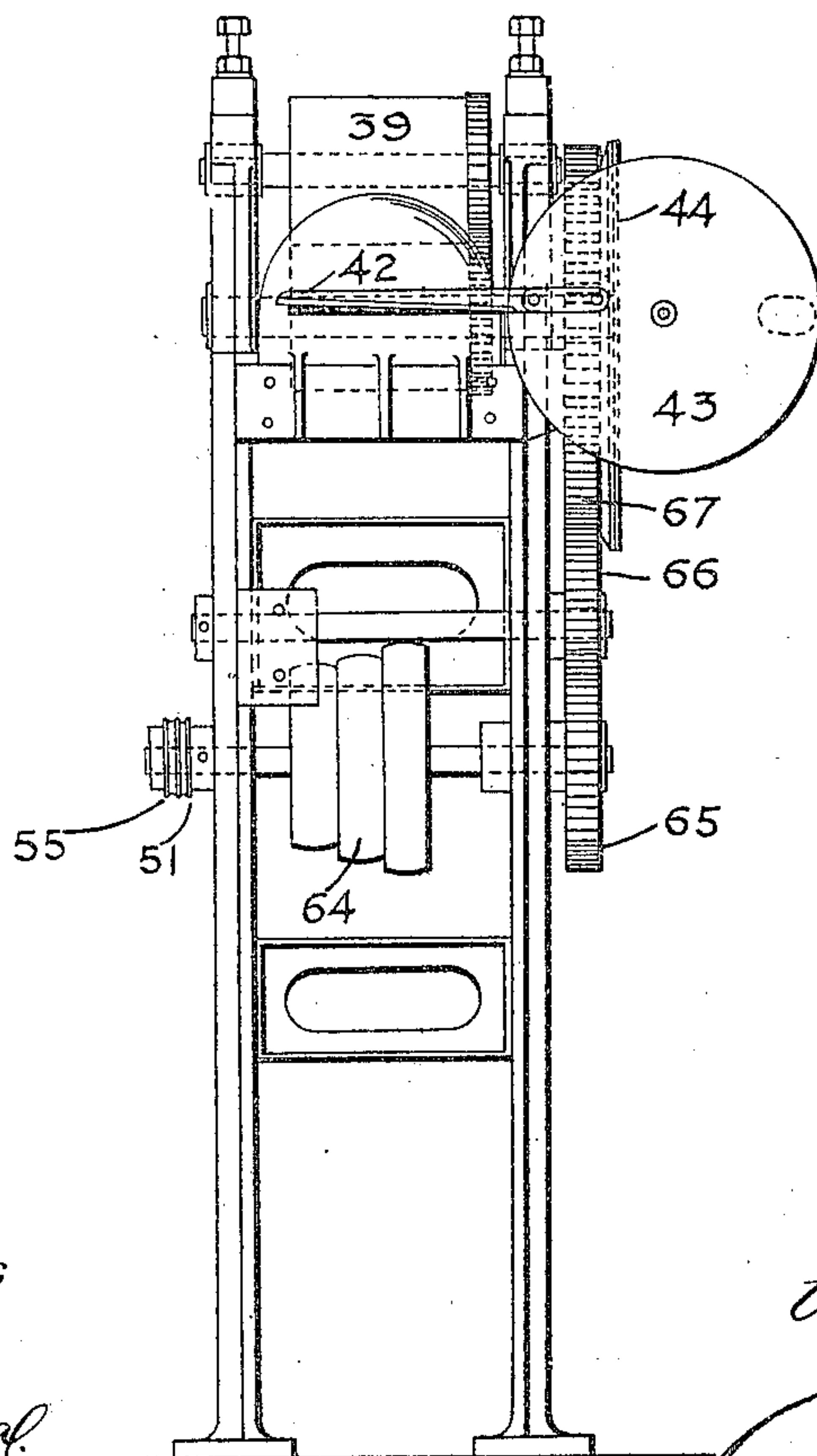


FIG. 3.

Witnesses
H. M. Threlkeld
John A. Percival

Inventor
William Boyd

BY *Richard H. [Signature]*

ATTY 4/5

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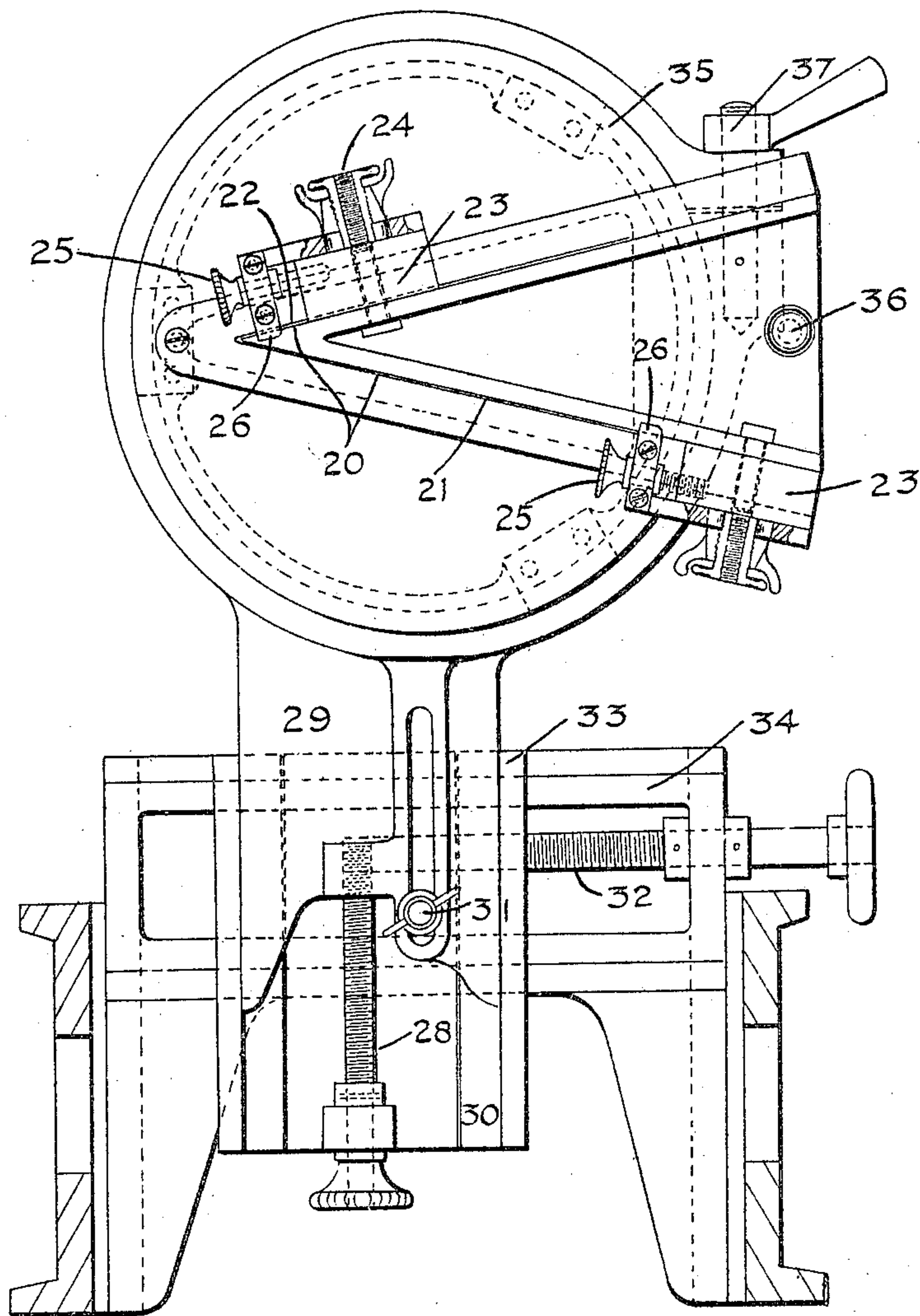


FIG. 4.

Witnesses

H. M. Kuehne

John A. Perewé

Inventor
William Boyd

BY *Richardson*

Att'y

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5 SHEETS—SHEET 5.

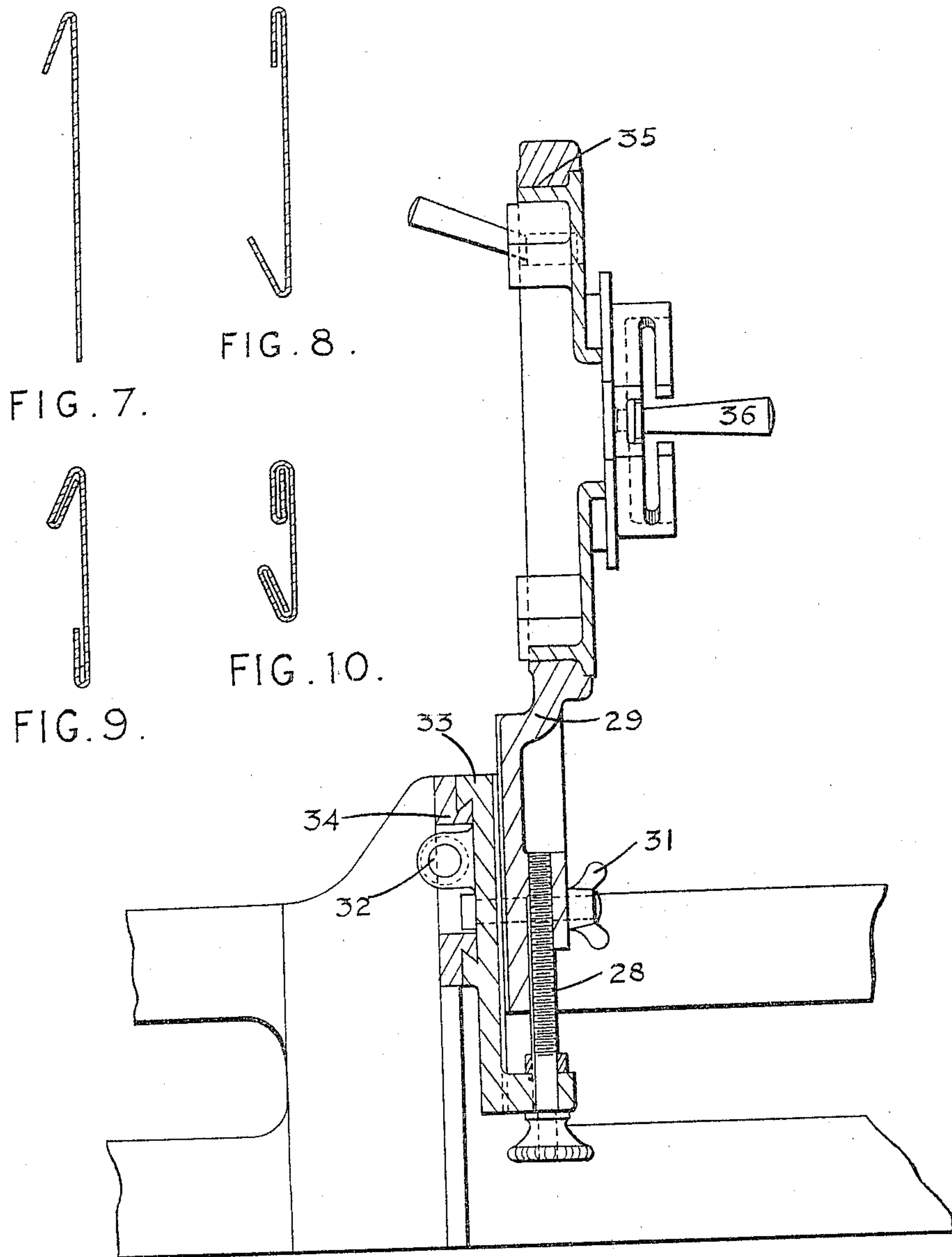


FIG. 5.

Witnesses
H. M. Tuckue
John A. Percival.

Inventor
William Boyd
BY Richard J.

Att'y

UNITED STATES PATENT OFFICE.

WILLIAM BOYD, OF DUNDEE, SCOTLAND.

MACHINE FOR FOLDING PAPER, &c., IN THE MANUFACTURE OF BOX-SLIPS.

No. 802,964.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed December 6, 1904. Serial No. 235,696.

To all whom it may concern:

Be it known that I, WILLIAM BOYD, a subject of the King of Great Britain and Ireland, and a resident of Dundee, in the county of Forfar, Scotland, (whose post-office address is 9 Albert Square, Dundee,) have invented a certain new and useful Improvement in Machines for Folding Paper and the Like in the Manufacture of Box-Slips, (for which I have applied for a patent in Great Britain, No. 2,217, bearing date January 29, 1904,) of which the following is a specification.

This invention relates to a machine for folding paper and the like in the manufacture of box-slips, the object being to make slips for containing and displaying sweets in rows from a continuous roll of paper or the like; and in order that my said invention and the manner of performing or carrying the same into effect or practice may be properly understood, I have hereunto appended five explanatory sheets of drawings, in which the same reference-numerals are used to indicate corresponding parts in all the figures where shown.

Figure 1 is a side elevation of the machine. Fig. 2 is a plan of same; and Fig. 3 is an end view looking on the rotatory knife in the direction of the arrow A, Fig. 1, and with the delivering apparatus removed. Fig. 4 is a face view of one of the V-folders. Fig. 5 is a sectional elevation of same; and Fig. 6 is a view similar to the lower portion of Fig. 4, but showing the parts reversed—that is to say, suited for a left-hand standard. Figs. 7, 8, 9, and 10 are sections of the strip, showing four progressive folds.

In carrying out my invention I place the roll of paper 10 at one end of the machine and carry it on a spindle 11 in such a manner that it may be retained in its natural position relative to the guides, dies, or rollers through or between which the strip passes.

The means I employ to regulate the position of the roll consists of a bracket 12, in which rotates an adjusting-screw 13, which, engaging with the spindle at 14, can cause it to be moved along its bearing, and thus move the roll to one side or the other. Suitable tensional or retarding appliances are provided, and these may consist of a weighted strap 15, passing over a friction-pulley 16 on the roll-spindle, and in addition there may be a weighted roller 17, moving up and down in guides 18, thus bearing on such roll or the like. To give the strip of paper the initial fold, it is passed between a suitable guide or

die 19 or aperture 20, of V shape, the total length of the V opening being equal to the width of the paper. This part of my invention is shown in detail in Figs. 4, 5, and 6. The V-opening may have a long arm 21 and a short arm 22, according to the desired position of the first fold. Such guide may be in, or made up into one piece, in which case a separate guide will be required for each kind of slip, or it may be and preferably is constructed as shown, so that the length of each arm can be adjusted—that is to say, slides 23, adjusted longitudinally, are provided—which can allow of each arm 21 or 22 being opened or closed the required amount. The clamping-screws 24 are used for holding the slides in position after they are roughly adjusted to the required position, while the other screws 25 are used to finally set the adjustable end pieces 26.

From the above it will be understood that the guide consists of a male and female V placed sufficiently apart to permit of the strip of paper passing between them, and consequently folded to the shape of the V. The two edges of the paper bear on the ends 26 of the adjustable guides, thus keeping the apex of the V-fold at the desired position either at the center or to one side, as shown, according to the relative positions of the guides or the respective lengths of the arms of the V-guide. The apex of such V-guide 27 is preferably placed uppermost—that is, the central line is vertical. Means may be provided for adjusting the position of the guide either vertically, horizontally, or longitudinally. For vertical adjustment the screw 28 is employed, the bracket 29 moving in a slide 30, and it can be clamped in position after adjustment by the thumb-screw 31. The horizontal adjustment is similarly performed by means of the screw 32, the bracket 33 moving in slides 34. While saying that the first V-guide 27 may be vertical, yet its position may be varied to point to any angle in order to make the strip run truly. Such an adjustment is obtained by setting the V-guide in a round socket 35, the handle 36 being provided for easily moving it, and when it is in position it is gripped by means of the clamping-screw 37, which draws the two parts together. The second guide 38 is similar to the first, being also in the shape of a V, and is also provided with adjustable guides for determining the relative lengths of the V-arms for adjusting its relative position to the first guide 27 either vertically, hori-

zontally, or longitudinally, while the guide may also be adjusted as a whole radially in a vertical, horizontal, or other plane.

After the double-folded strip is dealt with 5 by the second or even other following guides (four, as shown in the drawings, the type of slip being illustrated by Figs. 7 to 10) it passes between drawing-rollers 39, plain or corrugated, and over a plate 40, in which is a slit 10 41, through which a cutter or knife 42, carried by a rotating disk 43, passes at stated intervals, thus cutting the slip into predetermined lengths. These lengths are determined by varying the rotation of the disk by change- 15 wheels, friction-gear, cone-pulleys, or the like. In the drawings I have shown the disk governed and rotated by friction-gearing. This mechanism consists of a disk 44, mounted on the spindle of the lower drawing-roller 20 39, such disk frictionally rotating a roller 45, the relative rotation of the roller depending on its distance from the axis of the driving-disk. Its position can be adjusted by the slide 46, operated by the screw 47 and the hand- 25 wheel 48.

In order to facilitate the bundling of the box-slips, they may pass on to a roller 49, which may or may not be rotated so that its surface speed may be equal to the rate of movement 30 of the slips. I have shown the roller driven by a cord 50, working on pulleys 51 and 52 on the shaft 53. From such roller they may fall onto a moving belt 54, running at right angles to the direction of motion of the slips. 35 The belt is driven from the shaft 53 by the pulleys 55 and 56, shaft 57, worm 58, and worm-wheel 59. From such belt they can fall into a suitable hopper. (Not shown).

In using the machine the strip to be folded 40 is made in the form of a roll 10. Such strip is drawn through the first V-guide 27, there receiving the first V-fold. It is then drawn through the second guide, where it receives the second V-fold, and so on, being folded 45 once for each guide through which it passes. After leaving the last guide it passes between the rollers 39 on to the plate 40 and is cut by the rotating knife 42, the momentum acquired in passing through the machine, aided by the

roller 49, causing each slip to fall onto the 50 moving belt 54, from whence it falls off at 60. The machine is driven by a belt-pulley 61 on the shaft 62, and on such shaft are belt cone-pulleys 63, which operate others 64, and the shaft 53 by gear-wheels 65, 66, and 67 oper- 55 ating the rollers 39, which draw the strip through the various guides, the shaft of the lower roller actuating the knife, as previously explained.

Having now described my invention, what 60 I claim as new, and desire to secure by Letters Patent, is—

1. In slip-folding machines, the combination of a spindle adapted to support a roll of paper, means for longitudinally adjusting said 65 spindle, a friction-pulley secured to said spindle, a weighted belt connected to the pulley, adjustable V-guides for folding the paper, rollers for drawing the paper through the guides, a rotatory knife for cutting the strip 70 into lengths, means for varying the rate of rotation of the knife, said knife having a spindle, a slidable friction-pulley thereon, a pulley on one of the drawing-rollers frictionally engaging with the knife-pulley to drive the 75 same, a screw and nut for varying the relative position of said pulleys, rollers for assisting in the delivery of the cut slips, a conveyer-band for receiving the slips and speed- 80 cones and belts for driving the machine.

2. In slip-folding machines the combination of the guides consisting of a portion having a V-aperture therein adjustable slides for controlling the length of the apertures forming the V, a circular clamping bracket carrying 85 the V-guide a horizontal slide and a vertical slide for adjusting the position of the clamping-bracket, substantially as described.

3. In slip-folding machines, the combination of a knife, a disk on which the knife is mounted, 90 a shaft connected to the disk, a slidable friction-pulley on the shaft, a nut and hand-screw for operating such pulley and a friction-pulley for driving the sliding pulley.

WILLIAM BOYD.

Witnesses:

H. AGNEW,
GEO. C. DOUGLAS.