No. 619,411. Patented Feb. 14, 1899.

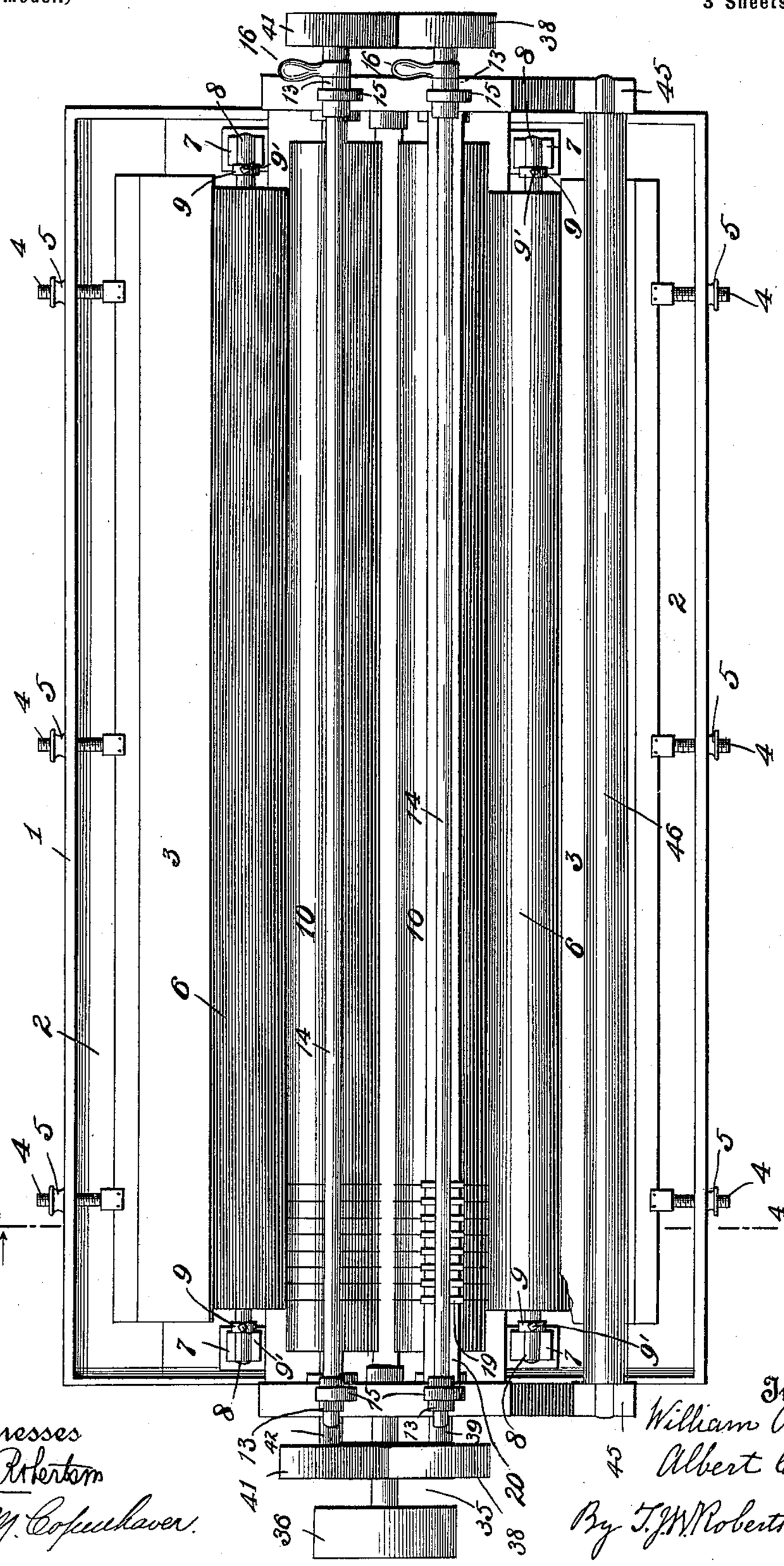
W. O. HICKOK, 3d & A. COOPER.

RULING MACHINE.

(Application filed June 18, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses
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Geo. M. Coffenhaver.

Inventors
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By T. J. W. Robertson, Attorney

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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

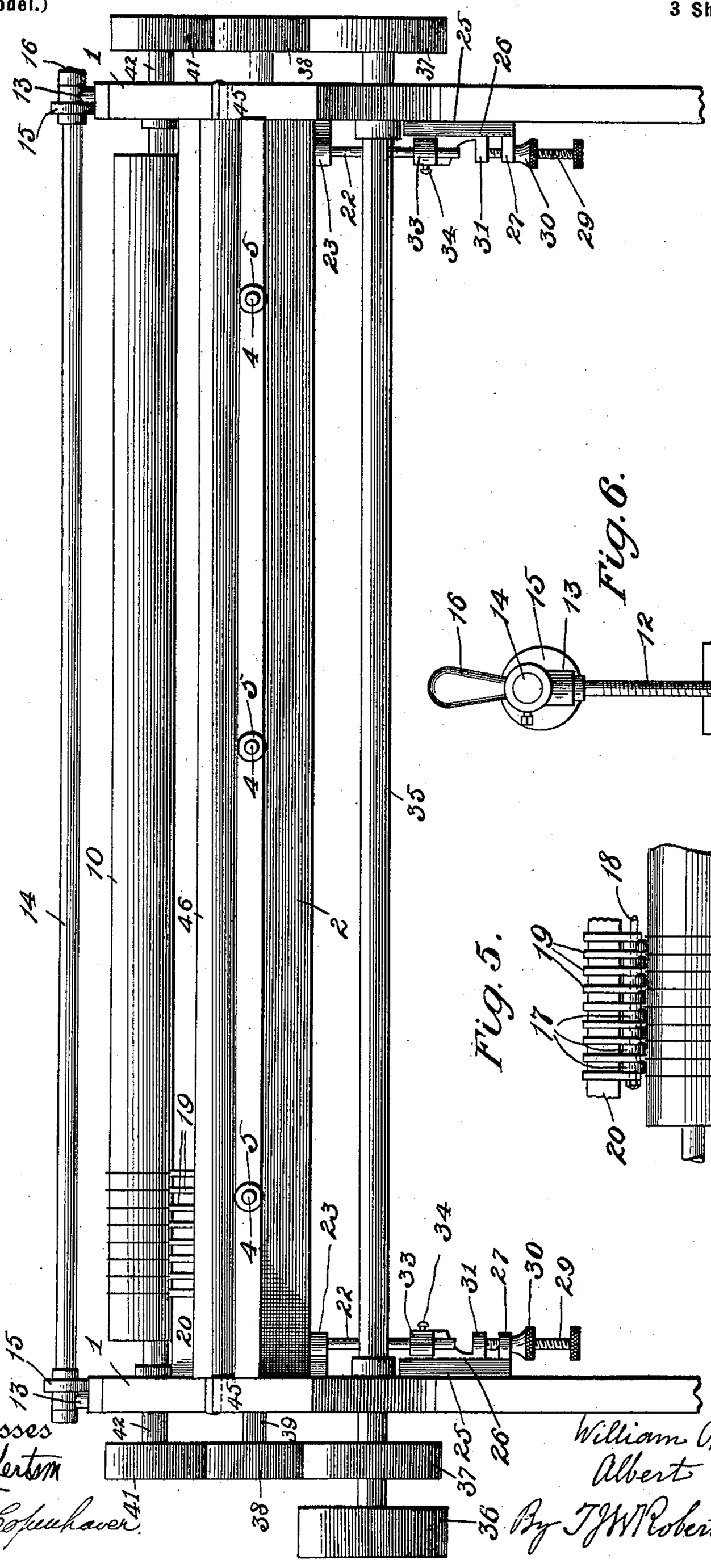

Fig. 6.

Fig. 5.

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Fig. 4.

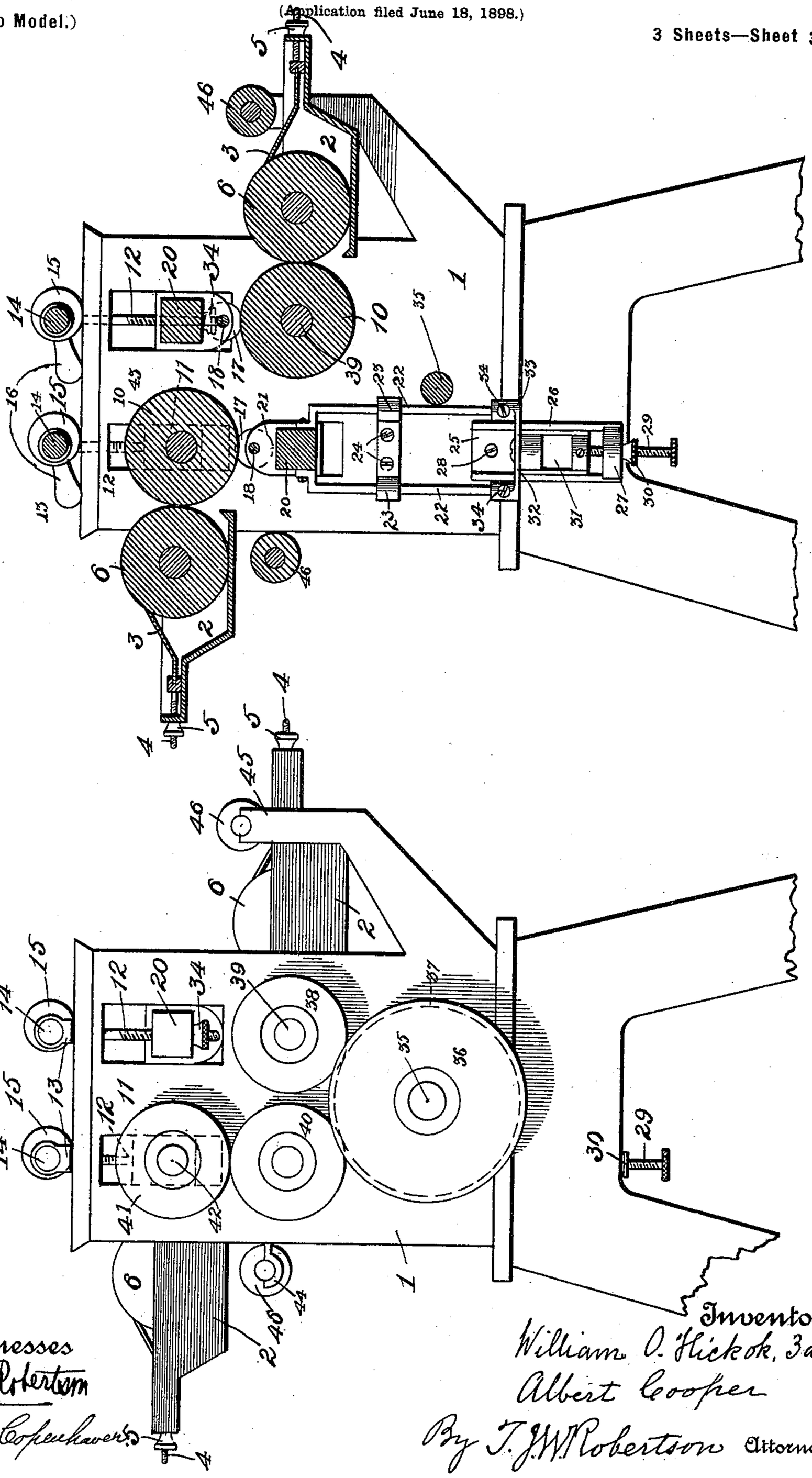

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM ORVILLE HICKOK, 3D, AND ALBERT COOPER, OF HARRISBURG, PENNSYLVANIA, ASSIGNORS TO THE W. O. HICKOK MANUFACTURING COMPANY, OF SAME PLACE.

RULING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,411, dated February 14, 1899.

Application filed June 18, 1898. Serial No. 683,853. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM ORVILLE HICKOK, 3d, and ALBERT COOPER, citizens of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a certain new and useful Improvement in Ruling-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This improvement relates to that class of ruling-machines in which disks arranged on cylinders are used for making the lines; and the object of the same is to provide a machine of this class which will be compact, convenient in operation, cheaply made, and not likely to get out of order.

To these ends the invention consists in the peculiar construction, arrangement, and combination of parts, hereinafter more particularly described and then definitely claimed.

In the accompanying drawings, Figure 1 is a plan of a machine constructed according to our improvement. Fig. 2 is an elevation of the same. Fig. 3 is an end view thereof. Fig. 4 is a vertical central cross-section of the same. Figs. 5 and 6 are details to be more fully described hereinafter.

Referring now to the details of the drawings by numerals, 1 represents the frame of the machine, on which rests the ink-troughs 2, each provided with a scraper 3, adjustable by the screw 4 and nut 5 to regulate the ink on the inking-roller 6, which is mounted on suitable bearings 7, and its shaft 8 carries adjustable collars 9, by which the longitudinal position of the inking-roller may be adjusted by means of the set-screw 9′. These parts are substantially the same on both sides of the machine, but are arranged on different planes, because the paper to be ruled passes under one ruling-disk and over the other, so that said ruling disks or cylinders are also arranged on different planes, and hence require rather different devices for adjusting the position of some of the parts.

Referring now to the parts shown in the left-hand side of Figs. 3 and 4, the disk-cylinder is indicated by the numeral 10 and is held in boxes 11, sliding in guides in the frame. Connected to the boxes are rods 12, each having a boss 13 at top through which passes a shaft 14, carrying at each end an eccentric 15 and on one end a lever 16, by which the shaft 14 can be partly turned, thus changing the position of the eccentrics and raising the disk-cylinder when required.

Beneath the disk-cylinder is a series of impression spacing-wheels 17, which are mounted on a small shaft 18, and between these spacing-wheels are set spacing-washers 19, having small round holes to receive the shaft 18 and square holes to receive a square bar 20. At each end of this bar is a box 21, somewhat similar in shape to the washers, but thicker, to each of which is connected two rods 22, that pass through guides 23, secured fast to the inside of the frame 1 by the screws 24. A second guide 25, having side ribs 26 and a projection 27 at the bottom thereof, is also secured to the inside of the frame by a screw 28. Through the projection 27 passes a set-screw 29, provided with a lock-nut 30, which screw bears against a slide 31, working between the ribs 26 and carrying at its top a cross-bar 32, having at its opposite ends bosses 33, which receive the rods 22 and in which they are secured by the set-screws 34. From this it will be seen that by turning the screw 29 the bar 20, the washers, spacing-wheels, &c., can be adjusted as desired.

On the opposite side of the machine the spacing-wheels are above the disk-cylinder and are raised by devices similar to those used for raising the disk-wheels on the opposite side—viz., the rods 12, shafts 14, eccentric 15, and lever 16; but the rod 12 passes through the square bar 20, that carries the spacing-wheels, and has its lower end threaded to receive an adjusting-nut 34, so that by the aid of the nut the normal position of the spacing-wheels can be adjusted, while the bar and spacing-wheels can all be raised by the aid of the eccentric. The lower disk-cylinder may be provided with any suitable bearing. (Not shown.)

In the lower part of the side frames is mounted a shaft 35, having at one end a band-pulley 36, by which motion may be communi-

cated to the shaft, and at its opposite ends friction-pulleys 37, which give motion to the disk-cylinders by means of friction-pulleys 38 on the shaft 39 of the lower disk-cylinder, and idlers 40, which give motion to friction-pulleys 41 on the shaft 42 of the upper disk-cylinder 43. Mounted on suitable brackets 44 and 45 are loose cylinders 46, over which the paper travels on its way through the machine.

It will be seen that each spacing wheel or roller works independently of the others, and that while these do not actually press the paper directly on the disks they do indirectly by their pressure cause the paper to press on them. It will also be seen that the spacing-wheels are suitably spaced, so as not to receive the ink from the ruling-disk when no paper is passing through the machine.

With the construction above set forth a very convenient and compact ruling-machine is provided that may be cheaply made, be durable in use, and not likely to get out of order. The use of the separate spacing wheels and washers will allow of great facility in changing the spacing of the ruling, as by using spacing-washers of different thicknesses the lines may be made any desired width apart.

What we claim as new is—

1. In a ruling-machine, the combination with a disk-cylinder of a series of spacing-wheels each wheel revolving independently of the others, substantially as described.

2. In a ruling-machine, the combination with a disk-cylinder of a series of spacing-washers each wheel revolving independently of the others, a bar supporting said washers, and a series of spacing-wheels between the washers, substantially as described.

3. In a ruling-machine, the combination with a disk-cylinder of a series of washers, a series of spacing-wheels set between the washers each wheel revolving independently of the others, and a shaft running through the wheels and washers, substantially as described.

4. In a ruling-machine, the combination with a disk-cylinder of a bar, a series of washers mounted on said bar, a series of spacing-wheels set between the washers each wheel revolving independently of the others, and a shaft running through said wheels and washers, substantially as described.

5. In a ruling-machine, the combination with the bar 20 carrying the spacing-wheels, of the boxes 21, the rods 22 attached to said boxes, the guides 23, through which said rods work, the slide 31 working in guides 25, and carrying the rods 22 by means of the cross-bar 33 and the screw 29 for adjusting the position of the slide, substantially as described.

In testimony whereof we affix our signatures, in the presence of two witnesses, this 17th day of June, 1898.

WILLIAM ORVILLE HICKOK, 3D.
ALBERT COOPER.

Witnesses:
R. S. CARE,
H. G. KNIER.