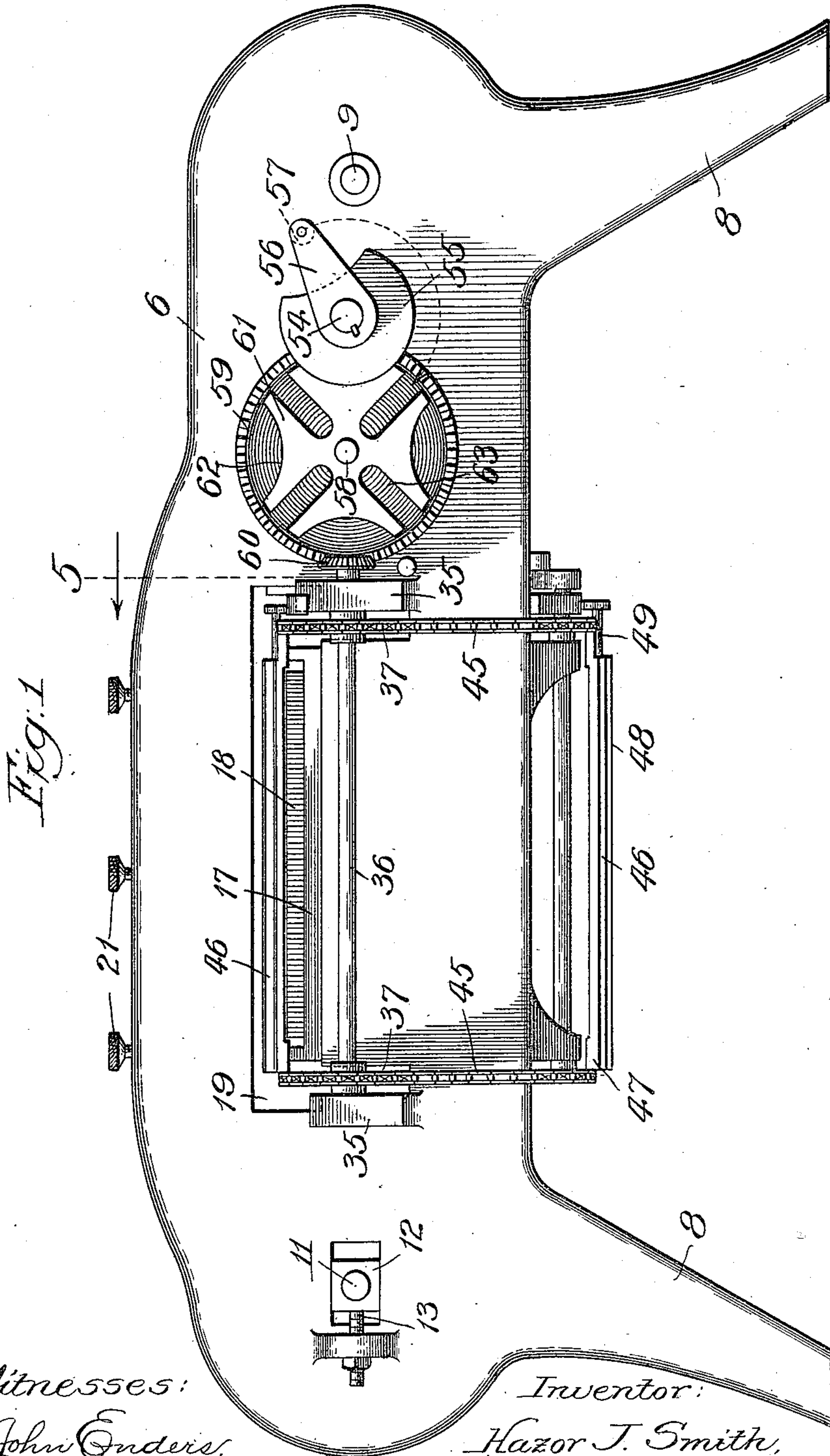


975,730.

H. J. SMITH.
PRINTING PRESS.
APPLICATION FILED FEB. 3, 1910.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 1.



Witnesses:
John Enders.
Chas. H. Buell.

Inventor:
Hazor J. Smith,
By Dyrenforth, Lee, Chritton & Miles,
Attys.

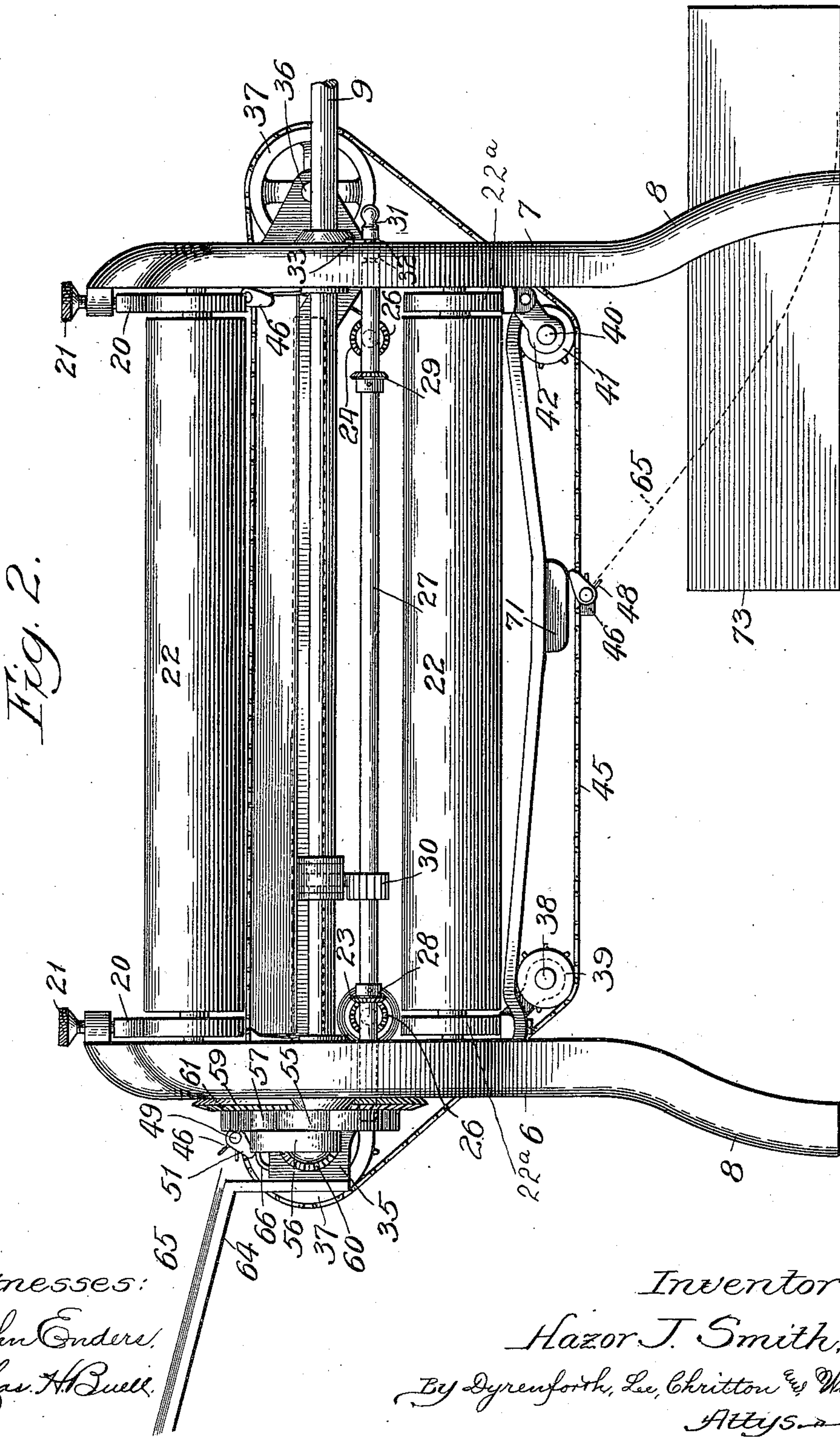
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975,730.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 2.



Witnesses:

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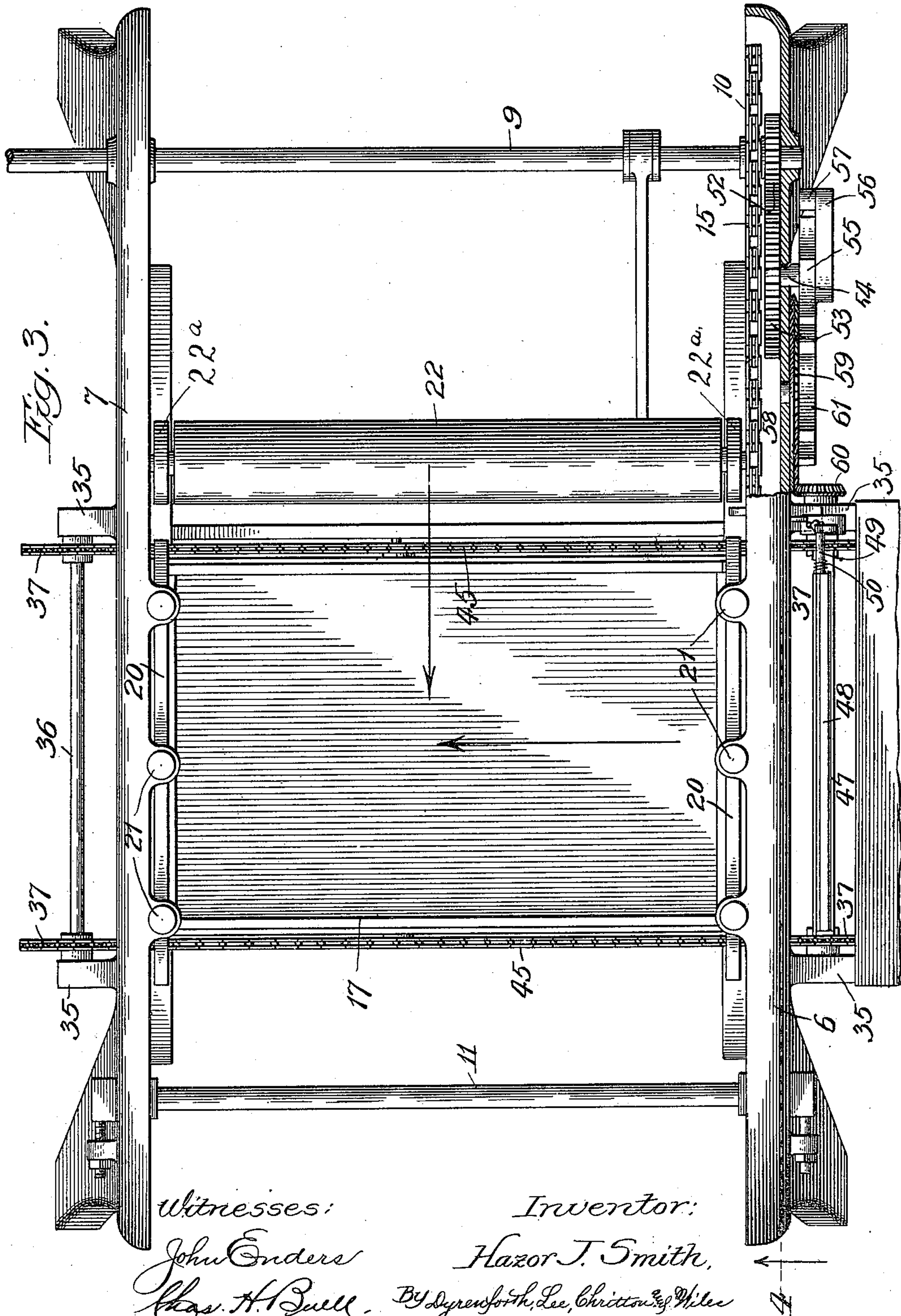
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5 SHEETS—SHEET 3.

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Witnesses:

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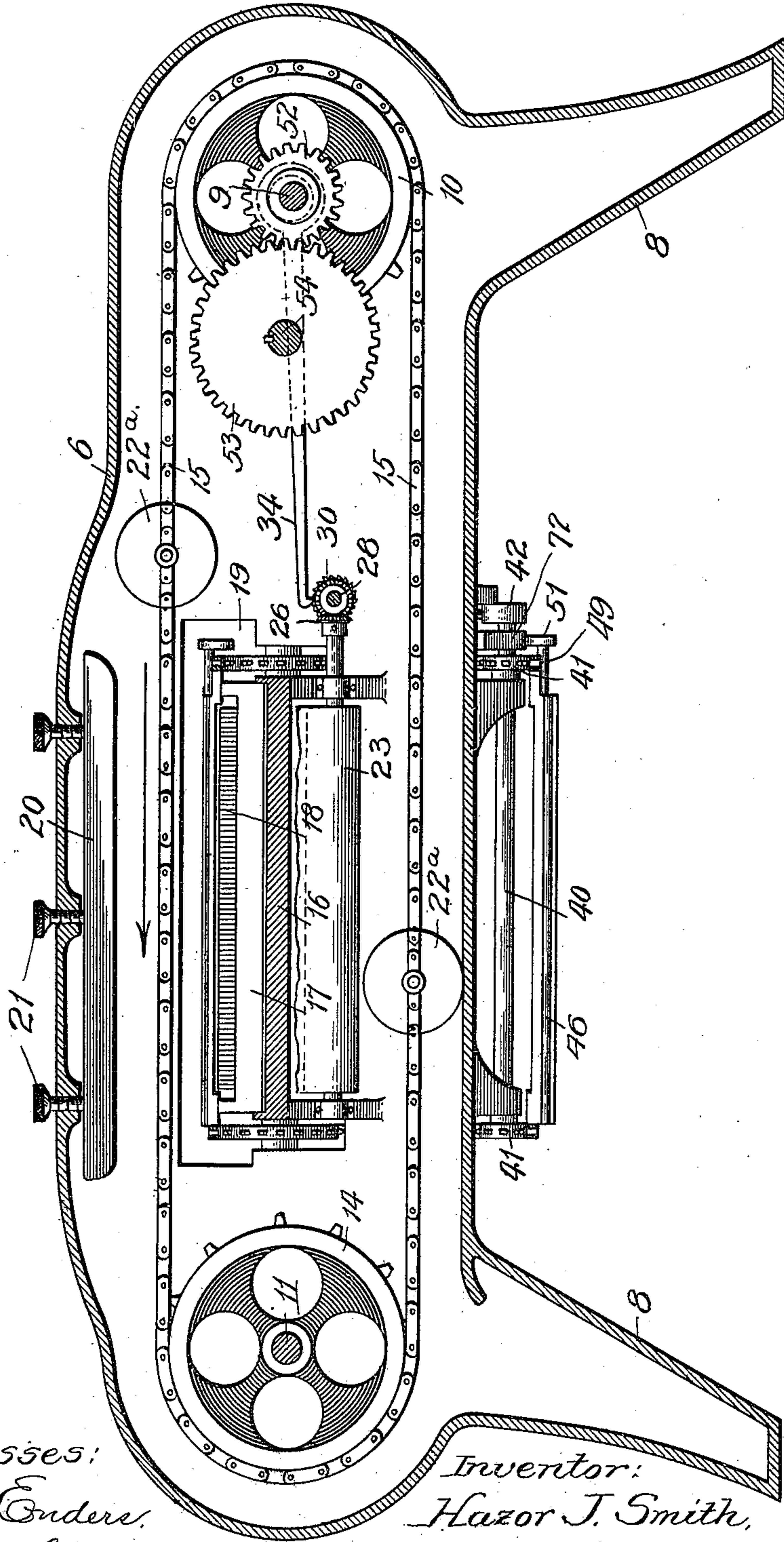
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Patented Nov. 15, 1910.

5 SHEETS—SHEET 4.

Fig. 4.



Witnesses:
John Enders,
Chas. H. Buell.

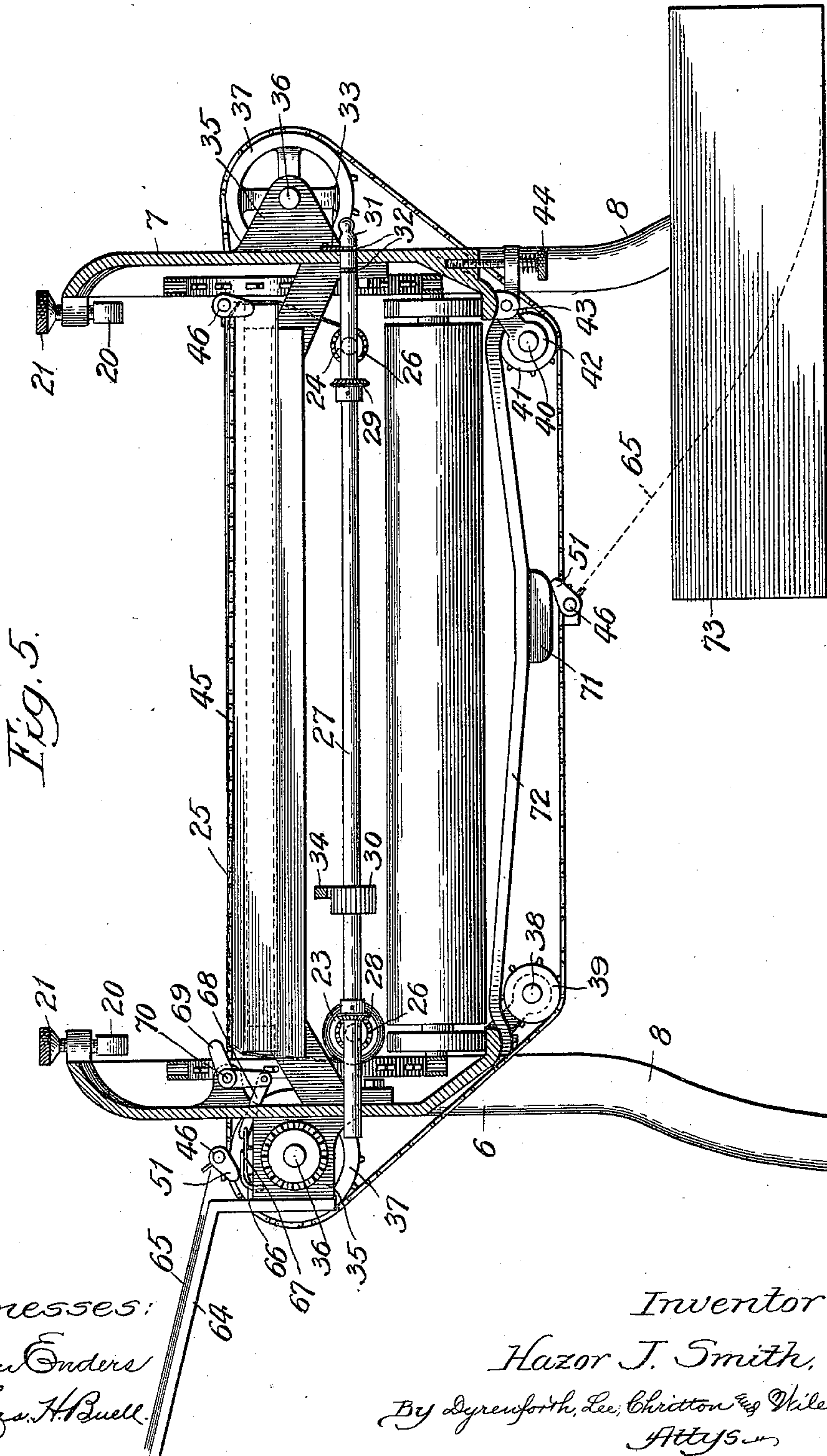
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975,730.

H. J. SMITH.
PRINTING PRESS.
APPLICATION FILED FEB. 3, 1910.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

HAZOR J. SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO AUTOMATIC LETTER MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PRINTING-PRESS.

975,730.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed February 3, 1910. Serial No. 541,793.

To all whom it may concern:

Be it known that I, HAZOR J. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Printing-Presses, of which the following is a specification.

My invention relates, generally stated, to improvement in printing-presses of the class wherein an impression-roller travels across a type-bed to print a sheet previously positioned upon the type-bed; and it relates more particularly to presses of this class wherein the printing is performed by the type through the medium of an inked, or carbon-coated, ribbon or sheet.

My object is to provide a simple and improved sheet-feeding means for such presses, and it is further my object to provide improved intermittent ribbon-advancing means coöperating with the impression-roller-operating and sheet-feeding mechanisms.

In the accompanying drawings I show my improvements applied to a machine employing two impression-rollers traveling in one direction through an endless path.

Figure 1 is an elevation of one side of the machine; Fig. 2, an end elevation; Fig. 3, a plan-view partly in section; Fig. 4, a longitudinal section taken on line 4 in Fig. 3; and Fig. 5, a cross-section on line 5 in Fig. 1. It is to be noted that Figs. 2 and 5 are on a scale somewhat larger than the other figures.

The frame of the machine consists of side cheeks 6 and 7 in rigid relation to each other and mounted upon legs 8. Journaled in the cheeks is a drive-shaft 9 provided just within the cheeks with sprocket-wheels 10; and near the opposite end of the frame is a shaft 11, journaled in adjustable sliding journal-boxes 12 mounted in the cheeks and positioned by means of adjusting screws 13. The shaft 11 carries the sprocket-wheels 14 in line with the sprocket-wheels 10; and extending around the companion sprockets 10, 14 are endless chains 15 tensioned by adjustment of the journal-boxes 12. Secured to or integral with the cheeks 6, 7 is a cross-extending bed-plate 16 adapted to hold a chase 17 containing a printing-form 18. Extending through each cheek is an opening 19 of the relative dimensions and in the position indicated. Each cheek carries a presser-bar or track 20 over opposite end-

portions of the bed 16 and suspended upon adjusting screws 21. The endless chains 15 carry two impression-rollers 22 positioned equidistant apart along said chains and provided with loose, metal end-wheels, or disks 22^a. The impression-rollers in moving over the bed 16 engage and move at their end-wheels along the under surfaces of the bars 20, which are adjusted to cause the rollers between their end-wheels to bear with the desired pressure against the form 18.

Journaled just within the cheeks 6, 7 below the bed 16, and extending parallel with the cheeks, are rollers 23, 24 to which are attached the opposite ends of an inking-ribbon 25 stretched over the form, as indicated in Fig. 5. On the ends of the shafts of the rollers 23, 24 are bevel-gears 26. Just beyond the ends of the rollers and journaled at opposite end-positions in the cheeks 6, 7 is a shaft 27 carrying bevel-gears 28, 29 and a ratchet-wheel 30. One end of the shaft 27 is provided with a handle 31 projecting beyond the cheek 7; and adjacent to the handle the shaft is provided with annular grooves 32 to be engaged by a swinging-latch 33 pivoted to the cheek 7. When the shaft 27 is thrust longitudinally to the position shown in Fig. 2, the bevel-gear 28 engages, in driving relation, the adjacent ribbon-roller 23, and when the shaft 27 is moved to the right to be engaged at its other groove 32 by the latch 33 the bevel-gear 29 engages, in driving relation, the bevel-gear of the roller 24.

34 is a pawl eccentrically connected with the drive-shaft 9 and engaging the ratchet 30, which latter is wide enough to be engaged by the pawl in either position, described, of the shaft 27. The relation between the driving sprocket-wheels for the chains 15, the rollers 22 and the pawl 34 is such that the latter is moved in the direction to the left in Fig. 4 when an impression-roller 22 is traveling over the form, and is moved in the reverse direction to advance the ribbon between printing-operations of the impression-rollers. The direction of movement of the ribbon between impressions is changed by the longitudinal adjustment of the shaft 27 to cause either the bevel-gear 28 or 29 to engage the bevel-gear of a ribbon-carrying roller.

Journaled in bearing projections 35, on

the cheeks adjacent the openings 19, are shafts 36 provided toward opposite ends with coincident sprocket-wheels 37. Parallel with the shafts 36 in bearings beneath the cheek-portion 6 of the frame at one side is a shaft 38 carrying sprocket-pinions 39. In the planes of the sprocket-wheels 37, and adjacent to the lower edge of the cheek 7, is a transverse shaft 40 carrying sprocket-pinions 41 in the planes of the pinions 39 and wheels 37. The shaft 40 is mounted in swinging belt-tensioning bearings 42 pivoted to ears 43 carried by the cheek 7 and adjusted by means of screws 44, as indicated in Fig. 5. Extending around the sprocket-wheels and pinions 37, 39, 41 are parallel endless chains 45 carrying three sheet-engaging clips 46 spaced equidistant apart along the chains. Each clip consists of a relatively stationary bar, or jaw, 47 and a swinging jaw 48 carried by a shaft 49 journaled upon the bar 47. On each shaft 49 is a coiled spring 50 attached at one end to the jaw 47 and at its opposite end to the swinging jaw 48, tending normally to maintain the latter closed; and each shaft 49 has fixed thereto at one end a finger, or wiper, 51.

On the drive-shaft 9 adjacent to the cheek 6 is a pinion 52 meshing with a gear-wheel 53 keyed to a short shaft 54 journaled in the cheek. Keyed to the shaft 54 on the outer side of the cheek 6 is a segmental disk 55 and an arm 56 carrying at its free end a laterally-extending roller 57.

58 is a stub-shaft on the cheek 6 journaled upon which is a bevel-gear 59 engaging a bevel-pinion 60 carried by the adjacent shaft 36. On the side of the gear-wheel 59 is a wheel 61 formed with four segmental surfaces 62 separated by deep sockets 63. The wheel 55, arm 56 and wheel 61 form a Geneva-stop of a well-known construction, and it will be understood that as the gear 53 is rotated from the pinion 52 the roller 57 in each rotation of the arm 56 engages a notch 63 of the wheel 61 and rotates the latter and the bevel-gear 59 one-fourth of a revolution. Between movements of the wheel 61 it is engaged at a segmental surface 62 by the segment 55 and locked against rotation. The moving parts are so proportioned and timed with relation to the drive-shaft 9 that during the movement of an impression-roller 22 across the form the sprockets which operate the feed-chains 45 remain stationary with the three sheet-engaging clips in the positions indicated most plainly in Figs. 2 and 5; while during the movement of the chains 15 after a roller 22 has left the form, and before the other roller 22 is about to cross the form, the Geneva-stop mechanism is actuated to move the chains 45 one-third the length of their path.

Mounted against the cheek 6 is a stationary inclined feed-table 64 shown in Figs. 2

and 5, from which sheets 65 to be printed are fed by hand to the sheet-feeding and advancing mechanism described. As a sheet-engaging clip approaches its initial position adjacent to the feed-table 64, as shown in Figs. 2 and 5, its finger 51 engages the rests upon a cam 66 and is swung to open the moving jaw of the clip. The cam 66 comprises a short narrow strip curved, as shown, carried by, or integral with, a small plate 67 slidably mounted upon the adjacent bracket 35. The plate 67 is pivotally connected by a link 68 with the long arm of a bell-crank lever, 69, which is pivoted at 70 and has a short arm movable into and out of the path of the rollers. In the final movement of a clip to initial position its finger 51 engages the cam 66 and slides it to the position shown, causing the short arm of the bell-crank lever to project into the path of the impression rollers 22, and causing the finger 51 as it rides upon the cam to open the clip. While the clip remains open in the initial position a sheet 65 is slipped into it by the operator. As an impression-roller crosses the type-bed it rides over and turns the bell-crank lever and slides the cam 66 out of engagement with the finger 51, thus causing the swinging jaw to be closed by its spring 50 to grip the edge of the paper. In the next movement of the chains 45 the sheet is drawn into position upon the printing-form over the ribbon 25, and while an impression-roller 22 is traveling over the sheet to print the same, the sheet is held by the clip. After the impression, and in the next movement of the chains 45, the clip draws the sheet to the third or discharge position. As the clip nears this latter position its finger 51 engages a stationary cam 71, which is mounted upon a cross-bar 72 secured to the cheeks, to open the swinging jaw and permit the printed sheet to fall, as into the receptacle 73.

From the foregoing description it will be understood that in the operation of the machine the impression-rollers travel continuously; that when an impression-roller has finished its traverse across the form, the sheet-feeder is moved to carry a fresh sheet into printing position, and that when this has been done the next impression-roller travels across the form; that while one clip is carrying a sheet into printing-position the clip next in advance of it is moving a sheet to discharge-position; and that between impressions the printing-ribbon is moved a short distance, for reasons well understood in the letter-press art.

While I prefer to mount the sheet-feeding clips on endless chains, other flexible carrying-means therefor would be the mechanical equivalent.

Various changes may be made in the construction shown and described without de-

parting from the spirit of the invention as defined in the claims.

What I claim as new and desire to secure by Letters Patent is—

5 1. In a printing-machine, the combination with a type-bed, of an impression-roller and means for moving it along a path extending in one direction across the type-bed, a sheet-feeder, sheet-engaging and releasing means 10 on the feeder, and means for moving the feeder across the type-bed along a path extending transversely of the path of the impression-roller.

2. In a printing-machine, the combination 15 with a type-bed of an impression-roller and means for moving it along a path extending in one direction across the type-bed, a sheet-feeder, sheet-engaging and releasing means on the feeder and intermittently-actuated 20 means for moving the feeder, intermediate the printing operations of the impression-roller, across the type-bed along a path extending transversely of the path of the impression-roller.

25 3. In a printing-machine, the combination with a type-bed and drive-shaft, of impression-rollers mounted equidistant apart and geared to the drive-shaft to move continuously along an endless path extending in 30 one direction across the type-bed, sheet-feeding mechanism comprising parallel, endless chains, movable in a path extending transversely of the path of the impression-rollers, and sheet-engaging clips mounted equidis- 35 tant apart along the chains, intermittent-driving mechanism for the chains actuated, by rotation of the drive-shaft, to move the clips, intermediate the printing-operations of successive impression-rollers, a distance 40 equal to that between successive clips, first to sheet-receiving, then to sheet-positioning, and then to sheet-discharging, positions, means for opening the clips as they reach the sheet-receiving position, means for caus- 45 ing closure thereof before they leave said

position, and means adjacent to their discharging-position for opening the clips.

4. In a printing-machine, the combination with a type-bed, an impression-roller and means for moving it along a path extending 50 in one direction across the type-bed, of sheet-feeding mechanism comprising a pair of endless parallel chains passing adjacent to opposite edges of the type-bed in a direction transversely of the path of the impression- 55 roller, a plurality of normally-closed, sheet-engaging clips carried by the chains, intermittently-actuated chain-moving means operating to advance the clips successively into sheet-receiving position, and then across the 60 type-bed intermediate the printing operations, means in the path of the clips for engaging and opening them as they near their sheet-receiving position, and means actuated by the impression-roller in its printing move- 65 ment to effect closure of the clips before they leave said position.

5. In a printing-machine, the combination with a type-bed, an impression-roller and means for moving it along a path extending 70 in one direction across the type-bed, of sheet-feeding mechanism comprising a pair of endless, parallel chains, passing adjacent to opposite edges of the type-bed in a direction transversely of the path of the impression- 75 roller, a plurality of normally-closed, sheet-engaging clips carried by the chains, intermittently-actuated chain-moving means operating to advance the clips successively into sheet-receiving position, and then across the 80 type-bed intermediate the printing operations, a printing-ribbon, ribbon-winding rollers, and actuating-means for said winding rollers timed to operate intermediate the printing movements of the impression-roller. 85

HAZOR J. SMITH.

In the presence of—

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