

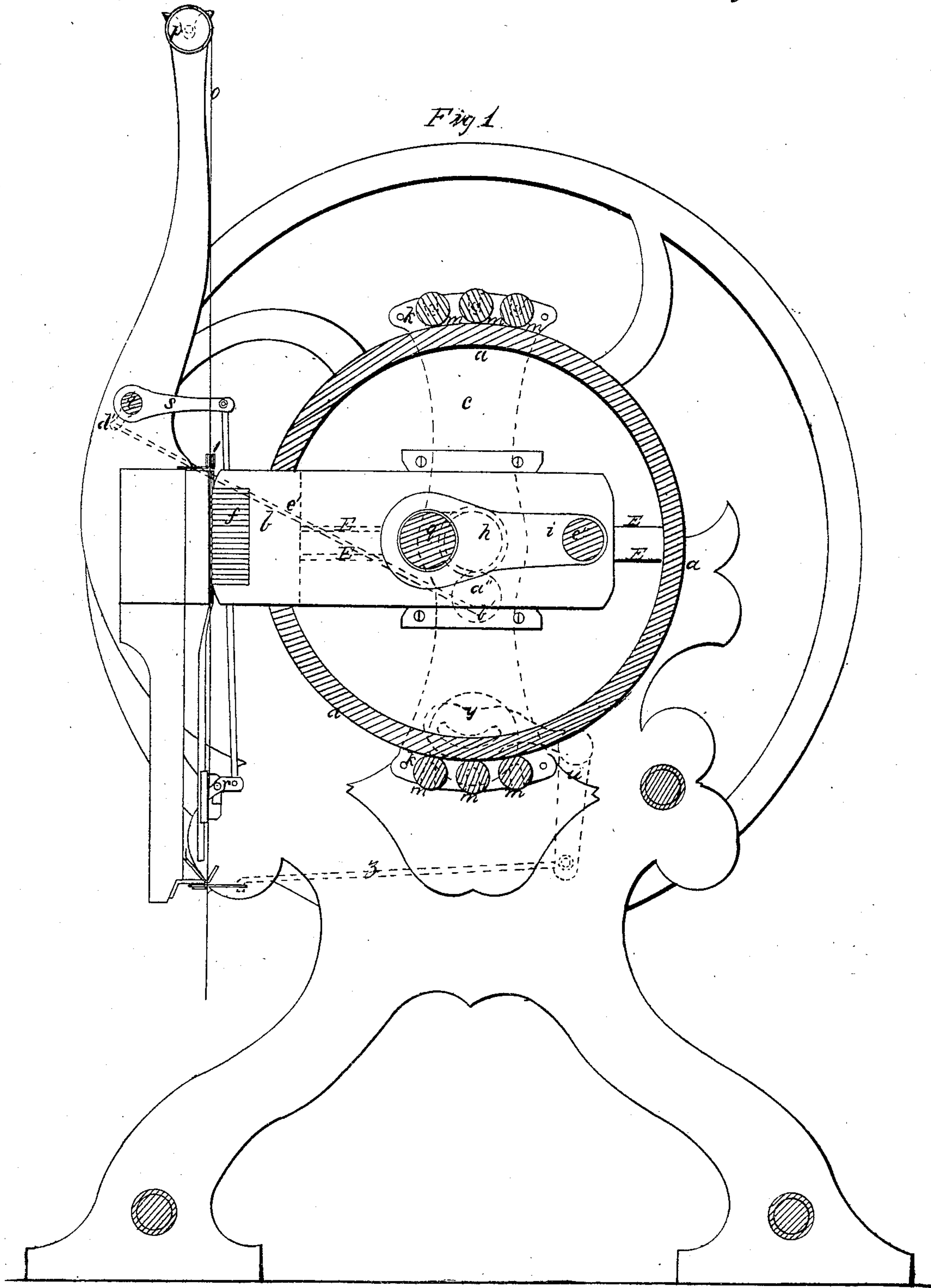
G. P. Gordon. Sheet 1. 2 Sheets.

Printing Press.

Patented Aug. 31. 1852.

N^o 9234.

Fig. 1.

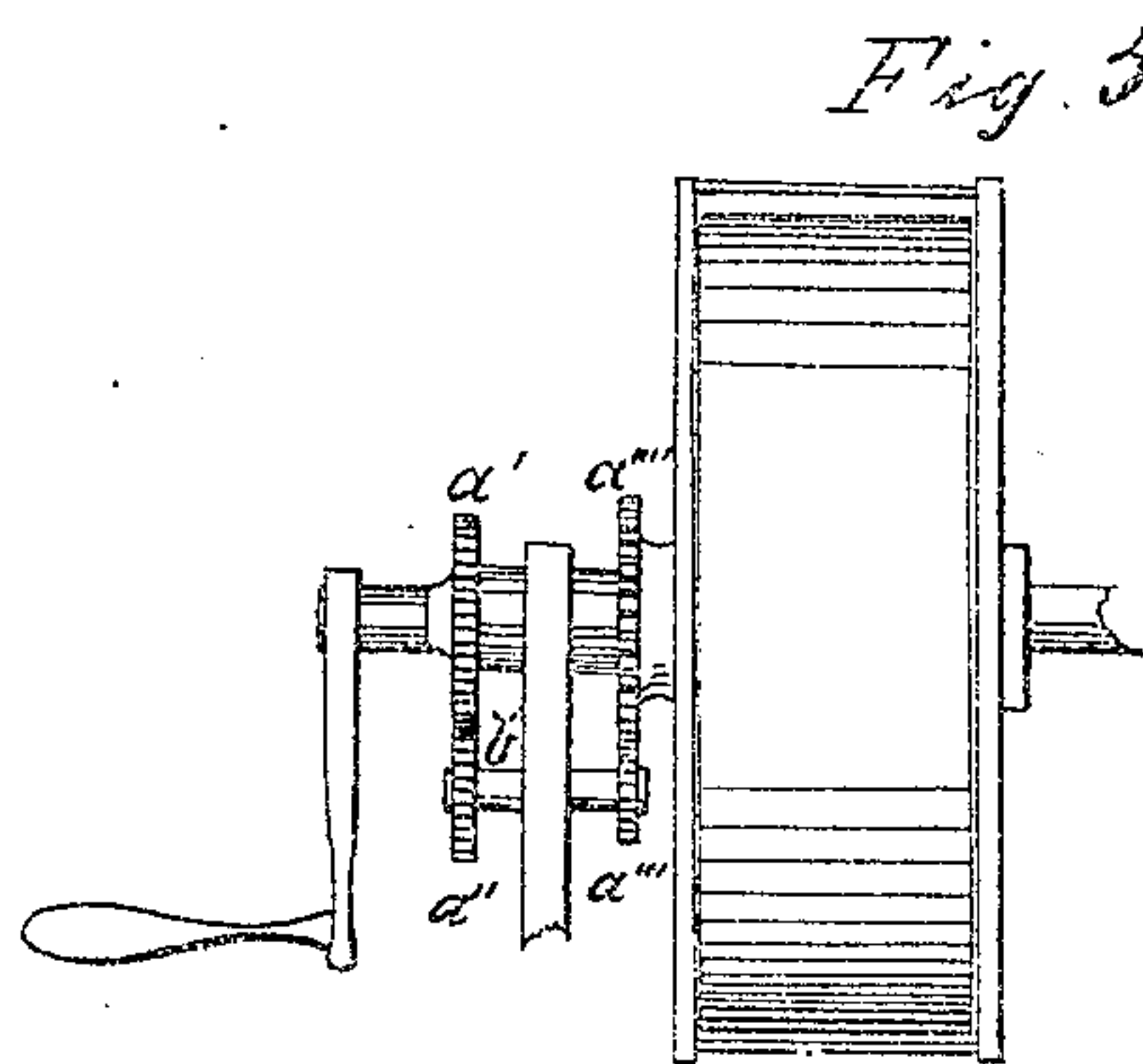
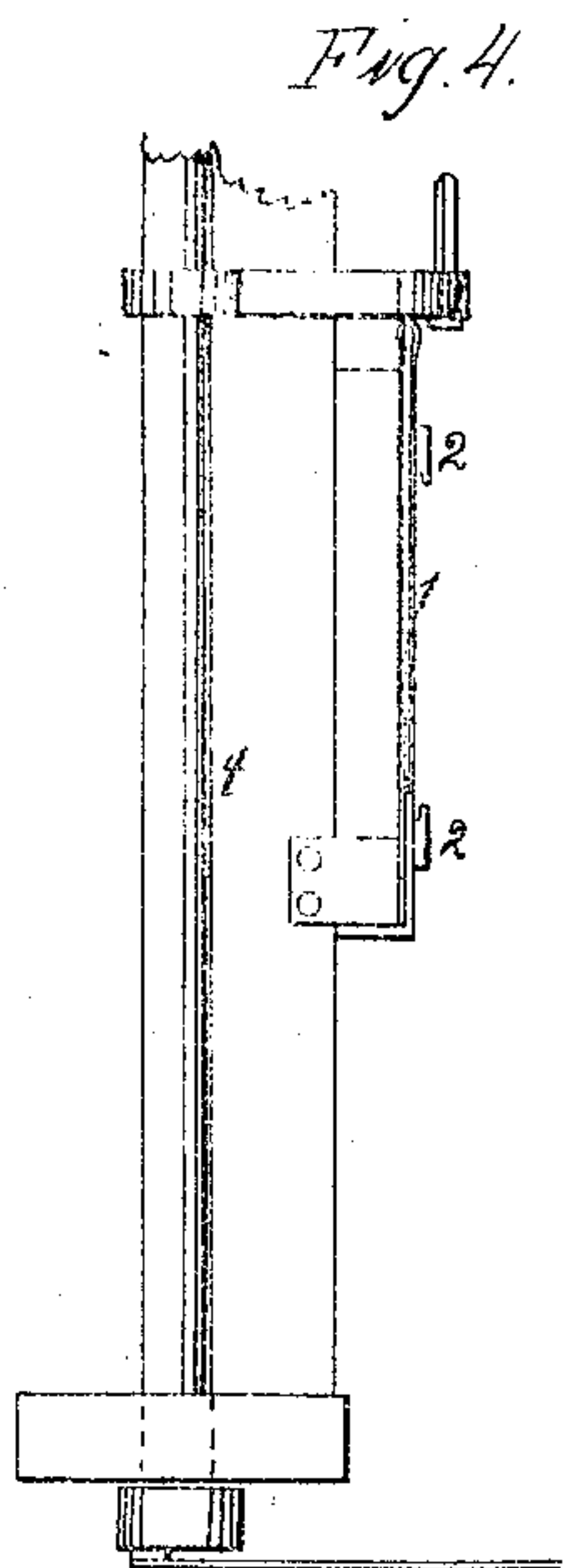
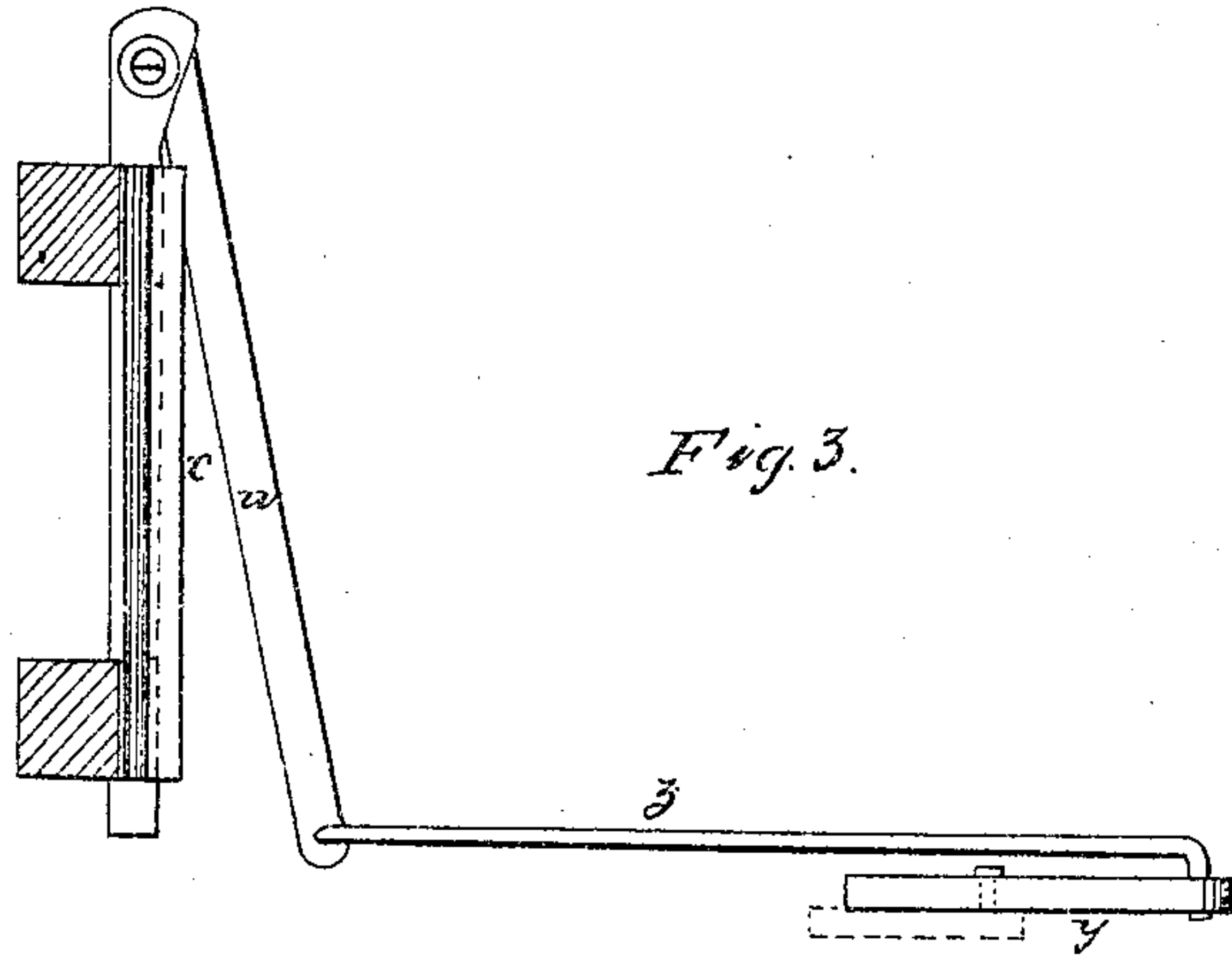
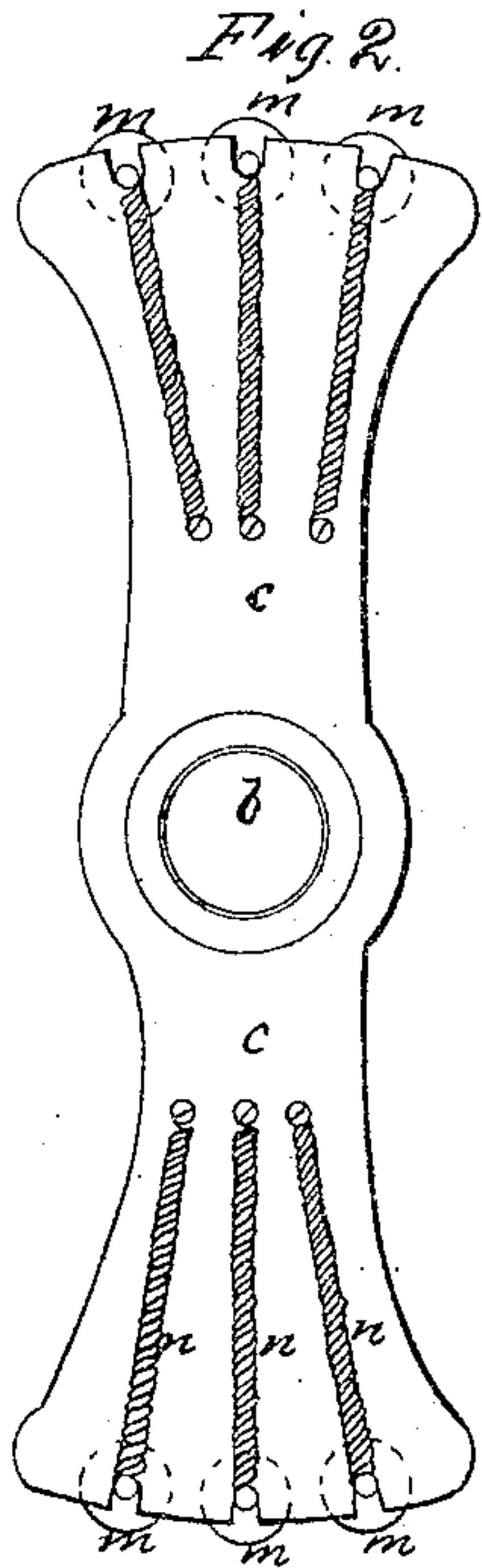


G. P. Gordon. *Sheet 2. 2 Sheets*

Printing Press.

Patented Aug. 31, 1852.

N^o 9234



UNITED STATES PATENT OFFICE

GEORGE P. GORDON, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. 9,234, dated August 31, 1852.

To all whom it may concern:

Be it known that I, GEORGE P. GORDON, of New York, in the county and State of New York, have invented certain new and useful Improvements in Printing-Presses for Letter-Press Printing; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification.

In the drawings the same reference always denotes the same part of the machine in all the figures.

In the drawings, Figure 1 is a longitudinal section through the center of the machine, the cut parts being shown by the shading, and those parts which do not appear at the center are shown in dotted lines. Fig. 2 is a section of the side of one of the revolving arms or the revolving roller-frame, with the springs and rollers in place. Fig. 3 is a section or plan of the lower part of the machine, having the cylinder and upper parts of the machine removed, so as to show the shears, connecting-rod, and edge of the cam. Fig. 4 is a section of the top of sheet-feeding apparatus—that is, the platen—as connected with the gage, guides, and shears. Fig. 5 is a special section showing the method of giving the motion to the inking-frame or revolving arm and to the shaft passing through its center, as herein-after described.

I provide a segment of a cylinder *a*, which is a fixed or stationary cylinder, and within which are the impression-works properly attached. At the outside of this cylinder is the revolving frame or arms *c*, with the rollers *m* in place to traverse round, the rollers *m* being in contact with the periphery of the cylinder. A shaft *h* is made to revolve at the center of the cylinder, receiving its motion in any common way from power. This, which is the main shaft, conveys through ordinary gearing, motion to all parts of the machine. (See wheels and sub-shaft in Fig. 5.) The frame or revolving arms are closely fitted at the center of their length to the shaft upon which they or it revolve, and near their outer ends are connected by braces, so that the two arms, one on either side the cylinder, are connected and thus form a frame to carry the rollers round the cylinder, in manner presently to be fully described. It should be here under-

stood that the wheel *a'* upon the main shaft gives motion to wheel *a''* on sub-shaft *b'*, and from this it is given to *a'''*, which gears into and conveys it to *a''''*. This wheel *a''''* is fast with and forms a part of one of the revolving arms—that is, to one side of the roller-frame—and by this means the frame is driven round the shaft, its axis, independent of the motion of the shaft and at a different speed than the shaft itself. Ordinary toothed wheels are employed in giving these motions of such pitch and number of teeth as may be required to give the proper time of motion to the shafts on which they may be placed. Thus the shaft *h* or main shaft at the center of the cylinder gives motion to the several parts of the machine. It passes through from side to side of the press, and is so constructed within the cylinder as to give motion to the bed by common and well-known devices, for the purpose of giving the impression.

Impression apparatus.—The bed is so arranged as to have its face on edge, or in a vertical position, (in the machine as presented, but may be placed in horizontal position.) The impression is given by the bed advancing to meet the face of the type upon it to and against the sheet upon or against the tympan and platen, and for this purpose is provided with extended slides on its sides, as seen in dotted lines at *e*, Fig. 1. The type *f* will be as shown. A crank *g* is made in the shaft *h*, near or at the center of the width of cylinder. A half-toggle piece, fast at the joint *c'*, is held in suspense when the bed is back or off impression, and comes forward when the crank in its revolution comes in contact with the end of the half-toggle *i*, and pressing the toggle down into a line with the center of the crank pushes the bed to the impression. When the impression is on, the crank will be in position, as seen at *g*, its center or shaft being *h*. (See Fig. 1.) The bed is thus drawn forward for impression each revolution of the crank. It also reverses or draws the bed into the cylinder to the place of inking the form, at which time the bed is virtually a continuous part of the periphery of the cylinder—that is, the face of the type is such. The toggle and crank being a common and well-known device for giving impression in printing-presses, and its use being nothing new in this machine, it will be

clearly understood, by merely showing its position at rest, by any person familiar with building such machinery, or any other toggle would do as well as the one shown. I do not confine myself to any particular sizes or extent of motions, as the discretion of builder will always dictate these in accordance with the size of press he desires to build. I do not claim the impression as new in any of its machinery or operations.

Inking apparatus.—The exterior of the segment of the stationary cylinder a is the surface for distributing the ink properly by the inking-rollers running upon its periphery surface, and being there distributed by these rollers. One of these rollers in each set has a vibratory motion while upon the cylinder, but only an onward motion while passing over the form. This motion is produced when the rollers pass round the cylinder by an arm from a stationary cam in the ordinary way, and therefore needs no particular description. The ink is supplied from a fountain of ordinary construction to the surface of the cylinder a . The revolving arms or frame c will be seen in section, Fig. 2, the rollers m being in place and their pressure-springs n shown upon the outside of the arms. One of these arms is placed opposite the other on each side of the press, and each arm is confined to the other by connecting-rods, so that the two form a frame to revolve and carry the rollers, a set of rollers being placed at each end of the arms—that is, two or more sets of rollers may be made to be used in combination with a set of revolving arms or a revolving frame, the speed of its revolution being so governed as to bring one set slowly over the form before the impression, and a succeeding set before the next impression, and so on continuously. Thus motion being given to the revolving arms from the gearing, each set of rollers is brought in contact with the form as it passes round the cylinder, the motion of the arms being slow in proportion to the number of sets used as compared with the number of impressions and their rapidity as governed by the gearing.

Sheet apparatus.—A long or continuous sheet of paper o is placed upon a drum p at the upper part of the frame. The end of this sheet of paper then passes through a gage 1 (to press it tight and prevent its feeding in too fast) and between guides 2, Fig. 4, to keep it in a direct line down along the face of the platen to the shears for cutting it off. It is fed down to the place of cutting by a pawl r , which gets its motion from a crank s on the shaft t , connected with the gearing by a second crank d' and the connecting-rod e' to the eccentric-pin f' on the toothed wheel a'' . The shears are placed and act horizontally. They act as common shears and get their motion from a cam y on a sub-shaft provided as the axis of said cam. This cam is shown in its position by dotted lines, (see Fig. 1,) which

as it travels moves its opposite end (of a crank-like shape) w , causing it to vibrate to and fro, and by the connecting-rod z draw the shears open and push them shut. The shears cut when they shut, and the two parts of them are known, the stationary as x and the moving as w . (See Fig. 3.) An edge view of the cam y is shown in Fig. 3, also the connecting-rod z and a top view of the shears. The frame is arranged to receive and accommodate the several parts of the machine for the operations described.

Operation: Motion being given to the center or main shaft by any power or means, the whole will move in its proper order as governed by the gearing—that is, as soon as one set of rollers has passed the form of types an impression is given. Meantime, the moment the impression is off the sheet moves onto the length-gagers, being carried by the pawl r . (Two of these pawls may be used, if preferred, one on each side of the sheet.) The shears then move forward and cut it off, and it falls below to a box for its reception. These operations are repeated and continued as long as motion is given and the sheet supplied.

Explanatory remarks.—Such is the competition in printing-presses that everything which increases speed and diminishes labor without loss in quality of workmanship is considered important. All these I claim to have accomplished in this press. By the use of the continuous sheet of paper I am enabled to overcome the difficulty in feeding separate sheets to each impression and can feed as rapidly as rotary motion can cause the sheet to be drawn in. By placing the impression apparatus within the cylinder I economize in the room which the press occupies and render it very simple and not liable to get out of repair. The bed thus arranged is not liable to the heavy concussions in reversing motion, so great an evil in the revolving-cylinder press, known as the “Napier” press. The extent of surface over the stationary cylinder’s periphery insures an equal distribution of the ink before it reaches the form, while the slow motion of the rollers around it prevents their heating from friction. No objection exists to rapid impression where the form is properly inked. Therefore the absence of reversion and concussion enables much less power to drive the machine more rapidly than the old cylinder-press, while the arrangements of parts are not repugnant to the most rapid production of printed sheets. It will also be seen that sheets of paper are here allowed to drop into place in the same manner as now in use in the “paper-mill,” thus saving all necessity of a flying apparatus as in other presses, where the single sheet to the impression is used. For register it surpasses others, as the sheet is drawn in evenly and equally, thus dispensing with all necessity for pointing the sheets, as required for such purposes in other presses. As a press

for cards it is equally applicable, as these are as easy if not more easy to feed in a continuous sheet than paper.

With one of these presses from six to ten thousand impressions have been made per hour, while other registering-presses have only been able to reach two thousand impressions per hour.

Having thus fully described and explained my improvements, I do not claim the periphery of a cylinder as a distributing-surface for the ink, nor the segment of the cylinder to form a place for the form of types so arranged by catches and stops that it may be turned over any distance to receive the form, as in the Voorhies press; but

What I do claim is—

1. The arrangement and application of a cylinder which always remains stationary in its own position as well while receiving the form as when used as a distributing-surface.

2. I do not claim an arm or single frame to carry one set of rollers around the periphery of a cylinder, as in the Voorhies press; but I do claim the combination and arrangement

of several sets of rollers in one frame to traverse round the periphery of a cylinder when these sets of rollers alternately or consecutively pass over the form and admit an impression to be taken between the time one of the sets leaves the form and the next set arrives to it for the purpose of giving slow motions to the inking with rapid impressions upon the same form, thus effecting more speed as regards the amount or number of impressions to be produced in a given time.

3. I do not claim the continuous sheet, nor feeding a continuous sheet of paper to a printing-press; but I do claim the arrangement of the gage 1, guides 2, pawl *r*, cranks *s* and *d'*, rod *e'*, pin *f*, and wheels *a''*, in combination with the shears for cutting off the sheet after it is printed, and the cam *y*, from which it receives its motion, the whole of these parts operating as described.

GEO. P. GORDON.

Witnesses:

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A. LONGWORTH.