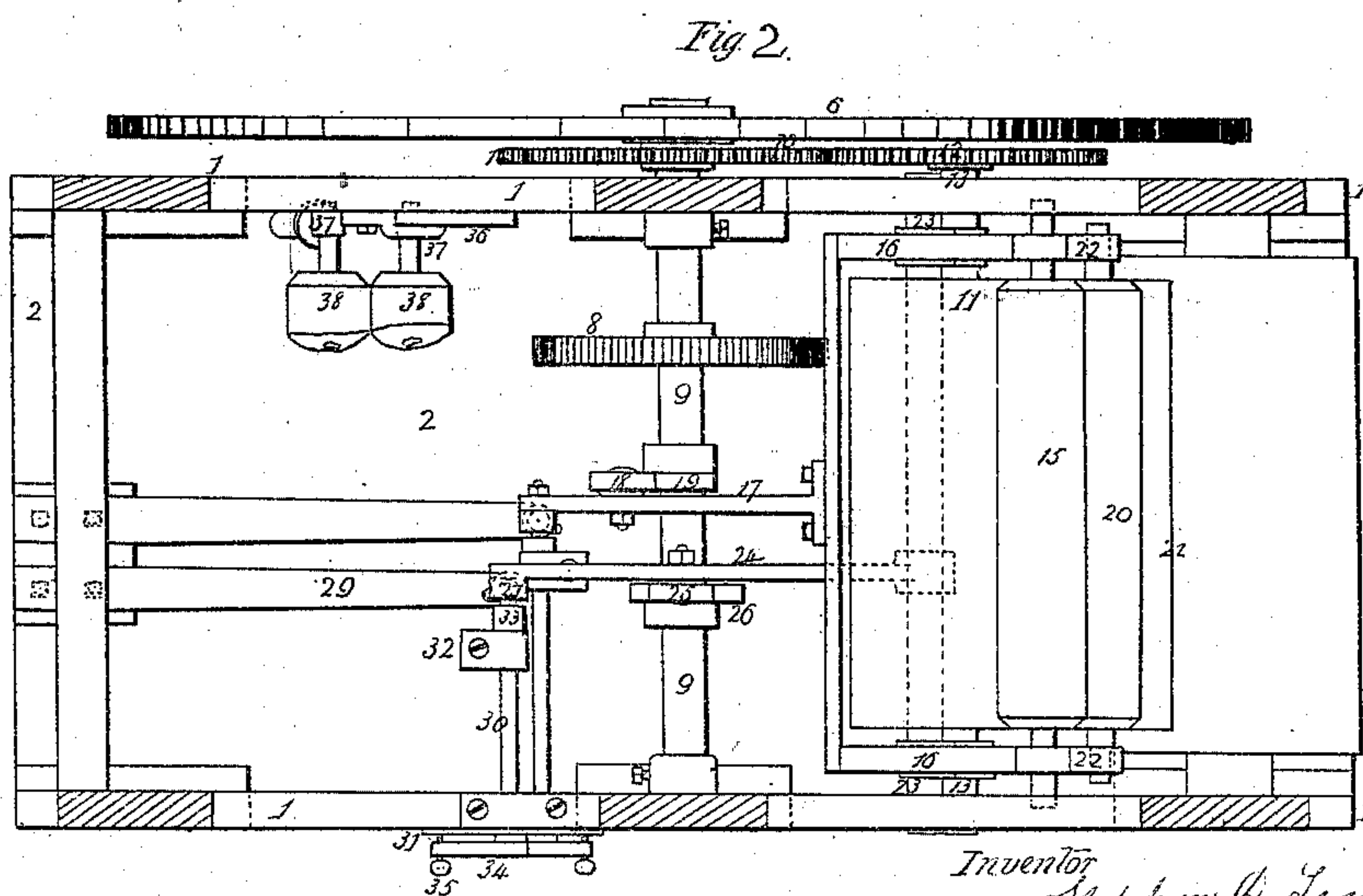
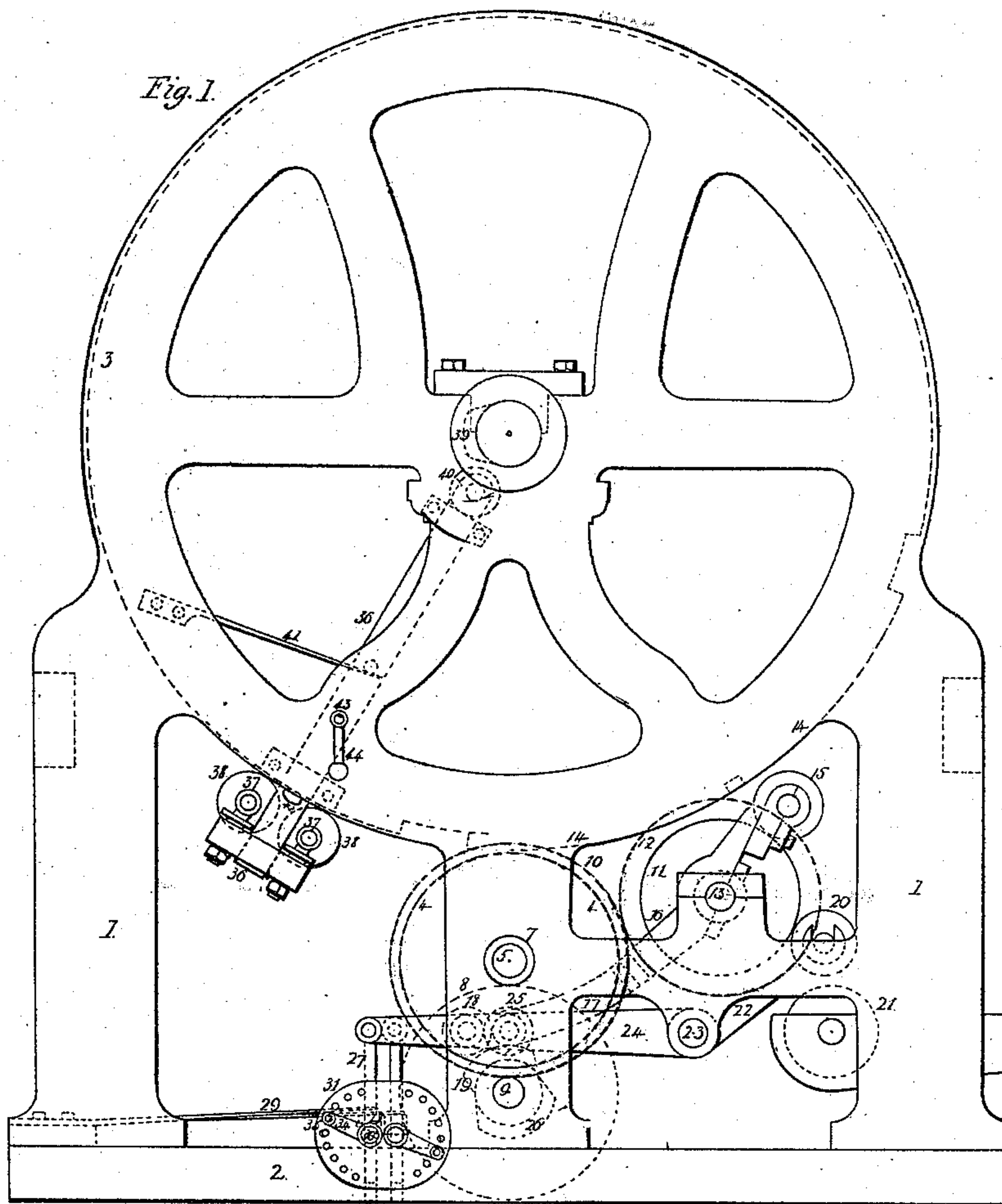
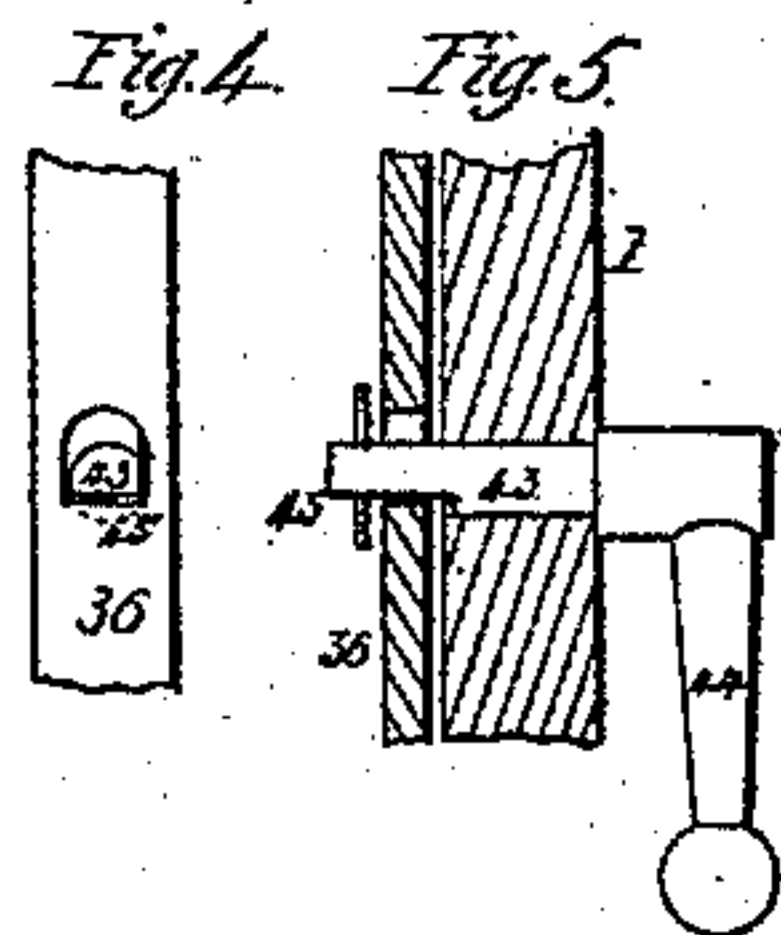


S. D. Tucker. Sheet 1 of 2 Sheets.
Inking Apparatus.
N^o 43,350. Patented Jun. 28, 1864.



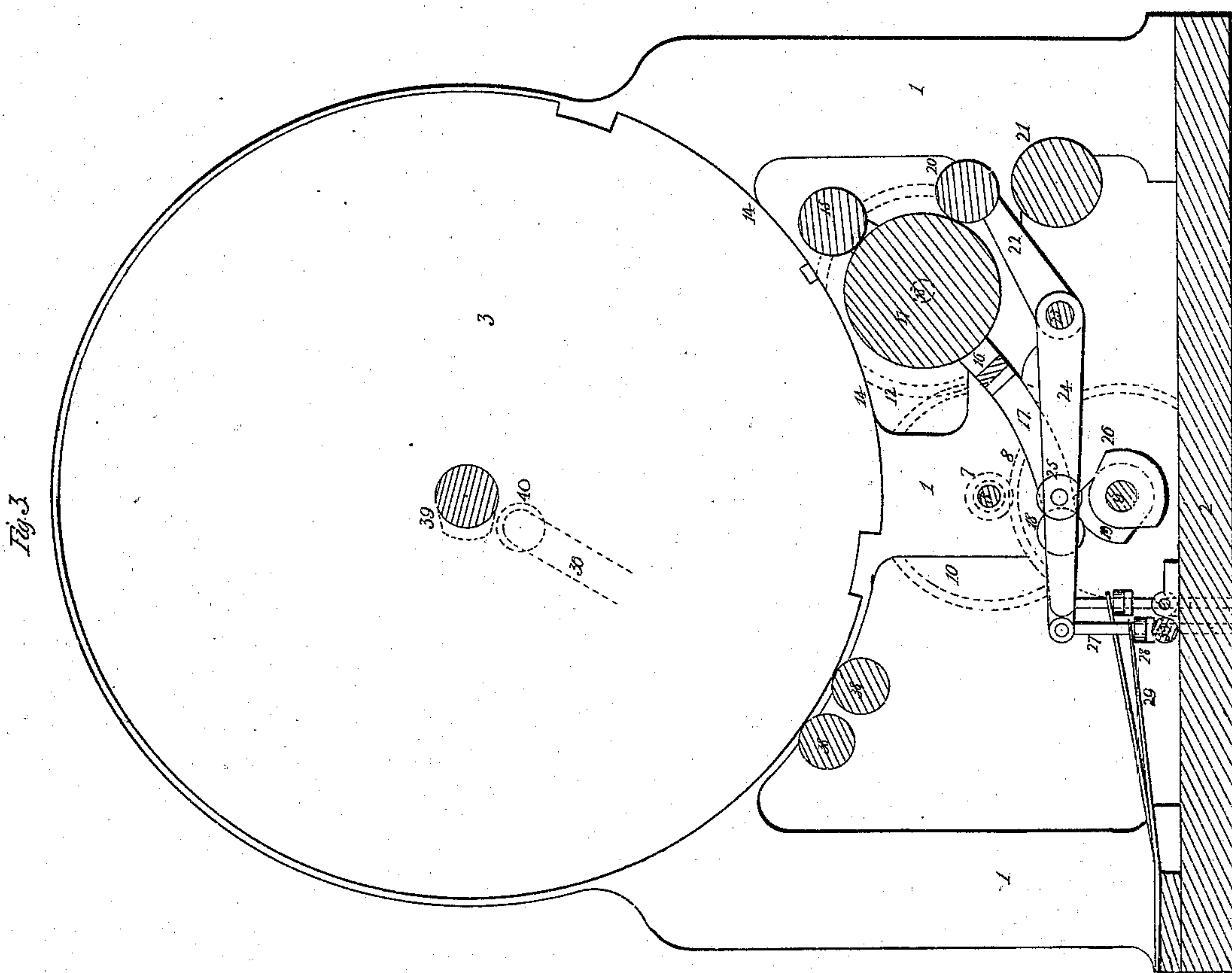
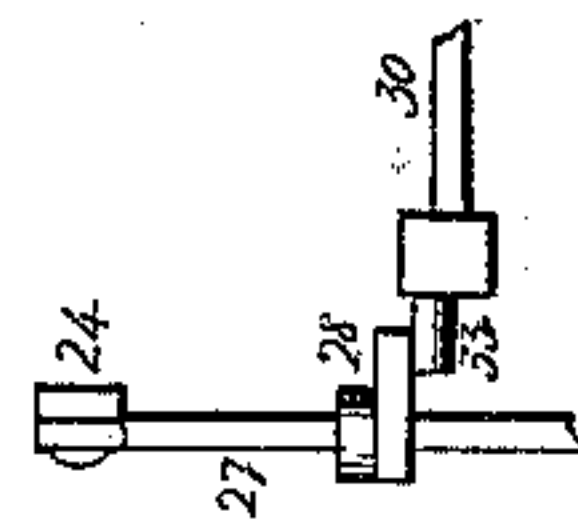
Witnesses:

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N^o 43,350.

Patented Jun. 28, 1864.



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UNITED STATES PATENT OFFICE.

STEPHEN D. TUCKER, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. 43,350, dated June 28, 1864.

To all whom it may concern:

Be it known that I, STEPHEN D. TUCKER, of the city, county, and State of New York, have invented certain new and useful Improvements in Type-Revolving Printing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a printing-machine; Fig. 2, a plan with the type-cylinder removed to exhibit the mechanism below; Fig. 3, a longitudinal vertical section, and Figs. 4 and 5 sections on an enlarged scale of part of one of the radial bars.

The same figures indicate like parts in the drawings.

In this class of printing-presses the form or forms of type are arranged on a segment or segments of a rotating cylinder, the ink-distributing surface being on part of the circumference of the same cylinder, and the ink is transferred from what is known as the "inking-cylinder" to the ink-distributing surface of the type-cylinder by a composition roller.

The first part of my said invention consists in so mounting the composition roller that while it is bearing against the distributing-surface on the type-cylinder, and while moving from and toward the said type-cylinder, it shall continue in contact with the inking-cylinder, from which it takes the ink, by mounting the said roller in a frame which vibrates in the axis of the inking-cylinder from which it receives the ink.

The second part of my invention relates to an improved manner of adjusting the roller which transfers the ink to the ink-distributing surface of the type-cylinder so as to admit of more readily adjusting the periphery of the said roller to the ink-distributing surface of the type-cylinder, the said improved mode of adjustment being also applied to the roller which takes the ink from the fountain-roller and transfers it to the inking-cylinder.

The third part of my said invention consists in applying to the radial bars that carry the form-inking rollers a mechanism by which the said rollers can be drawn clear of the ink-distributing surface of the type-cylinder, that

they may be free to turn round, so that paper or any other substance that may chance to get on them may be easily taken off, such mechanism being self-acting to restore the rollers to their normal position.

In the accompanying drawings, 1 1 represent the side frames of a type-revolving printing-machine fixed to the foundation-plate 2. The type-cylinder 3 revolves in bearings in the side frames, and is actuated by a pinion, 4, fixed on the driving-shaft 5, gearing into and driving the large wheel 6, keyed on the outer end of the type-cylinder shaft. Another pinion, 7, on the driving-shaft 5 drives the wheel 8 and cam-shaft 9, to which it is fixed, and still another wheel, 10, on the driving-shaft 5 drives the inking-cylinder 11 through the wheel 12, fixed on its shaft 13, outside of the side frames.

The position of the forms of types on the periphery of the type-cylinder is represented at 14 14, and the remainder of the periphery of the said cylinder is made about one-quarter of an inch less radius than the forms, and is used as an ink-distributing surface. The composition roller 15, for supplying ink to and distributing it on the ink-distributing surface of the type-cylinder, always revolves in contact with the periphery of the inking-cylinder 11, and at intervals with the ink-distributing surface of the type-cylinder, but as the forms of type approach it is moved away from the type-cylinder, to let them pass without touching. This is effected by the roller 15, running in bearings in a frame, 16, that hangs freely on the shaft 13 of the inking-cylinder 11, and an arm, 17, projecting from the lower part of this frame, carries a friction-roller, 18, against which the cam 19 on the cam-shaft 9 operates, and the position of the cam 19 on the shaft is such that it lifts the arm 17, and consequently depresses the roller 15 for the passage of the form of types. The hanging of the frame 16 on or near the axis of rotation of the inking-cylinder 11 insures its running in contact with the said cylinder, notwithstanding its vibration to and fro from the ink-distributing surface of the type-cylinder to permit the forms to pass.

The composition roller 20, that supplies the ink from the fountain-roller 21 to the inking-cylinder 11, runs in bearings in a frame, 22, pivoted to the side frames, 1 1, at 23, and the

said frame has an arm, 24, extending backward and carrying a friction-roller, 25, that is operated by the cam 26 on the cam-shaft 9 in a similar manner to the frame 16, as described above. By these means the roller 20 is depressed to the fountain-roller 21, from which it receives a quantity of ink, and is lifted to the inking-cylinder to distribute it onto the surface thereof.

As the rollers 15 and 20 are required to have the motions above described, and as they are constantly decreasing in diameter and are required to make a given pressure suited to their elasticity, it is necessary to adjust them. To effect this a rod, 27, is jointed to the extreme end of the arm 24, and runs down through a hole in the foundation-plate 2. To this rod is fixed a collar, 28, upon which the end of a strong flat spring, 29, rests, the tension of which forces the roller 20 against the inking-cylinder 11; but to prevent the pressure from being too hard against the inking-cylinder 11, and also to adjust the roller as it becomes smaller from use, there is a regulating-shaft, 30, which extends from the outside of the side frame through an index-plate, 31, and journal-box 32 on the foundation-plate, and this shaft has an eccentric pin, 33, (see Sheet 2,) which projects from its inner end, and on this pin the collar 28 of the rod 27 descends, so that by turning the regulating-shaft 30 the elevation of the eccentric pin can be readily adjusted to determine the extent to which the collar 28 and rod 27 shall descend, and thereby regulate the roller 20 and its upward pressure against the inking-cylinder.

In order to keep the regulating-shaft in any required position, an arm, 34, is fixed on its outer end, having a thumb-screw, 35, passing through its extremity, the point of which presses against the index-plate 31. The pressure and motion of the composition roller 15 upward against the ink-distributing surface of the type-cylinder is regulated by a precisely similar arrangement applied to the arm 17 of the frame 16, and the controlling of these rollers with exactness from the outside of the machine constitutes one of my improvements.

The rollers 38, for inking the forms of types, have their bearings 37 in radial bars 36 36. As the type-cylinder revolves, these rollers roll on the ink distributing surface of the type-cylinder 3; but as the form 14 approaches, the cams 39 39 (see Fig. 3) on the shaft of the type-cylinder operate against the friction-rollers 40 40 on the inner ends of the radial bars. They are thus pressed out from the center a distance equal to the difference of the radii of ink-distributing surface and the surface of the type, which, as before stated, is about one-quarter of an inch, while the form passes by them and is inked, when the radial arms are again pressed inward by the springs 41 41 until the stop-pins 42 42 rest against the side

frames. There are two short shafts, 43 43, that pass through and turn in holes in the side frames. They have each a weighted lever, 44, which tends to hang down in a perpendicular position. The inner ends of the shafts pass through square mortises in the radial bars. (See Figs. 4 and 5.) That portion of each of the said shafts which passes through the mortises in the radial bars is cut flat, as shown at 45, and in such a position that when the weighted levers hang perpendicularly the flat sides are at right angles to the line of the radial bars, and in that position of the shafts the bars can be pressed in toward the center, so that the inking-rollers 38 bear against the ink-distributing surface of the type-cylinder.

While the radial bars are in the position above described, if the shafts be turned until their weighted levers reach a horizontal position their inner ends will act as cams on the lower edge of the slots in the radial bars and draw them out from the center about three-sixteenths of an inch. Of course, this will draw the inking-rollers clear from the ink-distributing surface of the type-cylinder, so that paper or anything else which may have got in can readily be removed from their surface. The pressure of the bars against the lifters, caused by the springs 41 41, will be sufficient to prevent the outside levers from bringing them back to their original position, and thus the bars and rollers are held out. If the machine should be started without turning back the shafts 43 43, the cams 39 39, as they pass the friction-rollers 40 40 on the radial bars, will force them and the bars out about one-sixteenth of an inch farther, and thus relieve the shafts, which, by the gravity of their outside weighted levers, will turn them back to their original position, leaving the bars and rollers free to be operated as before.

When the machine is at rest, the rollers by this arrangement can be thrown out from the ink-distributing surface, thereby preventing the surfaces from being injured by contact.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Hanging the frame which carries the roller which transfers the ink from the inking-cylinder to the ink-distributing surface of the type-cylinder so that it shall vibrate on the axis of the inking-cylinder, substantially as and for the purpose described.

2. The manner of adjusting the pressure and range of motion of the roller which transfers the ink from the fountain-roller to the inking-cylinder, and the roller which transfers it from the inking-cylinder to the ink-distributing surface of the type-cylinder, or either of the said rollers, by the employment of the adjusting-shaft with its eccentric pin or the equivalent thereof, in combination with the swinging frame which carries the roller, and

vibrated in one direction and against the eccentric pin by a spring or the equivalent thereof, as and for the purpose specified.

3. In combination with the radial bars of the rollers for inking the form of types, the shafts with their weighted levers, or the equivalents thereof, for drawing the said rollers a short distance from the ink-distributing sur-

face of the type-cylinder, for the purpose set forth, and so that the rollers shall be restored to their operating condition when the form of types reaches them, as set forth.

STEPHEN D. TUCKER.

Witnesses:

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WM. H. BISHOP.