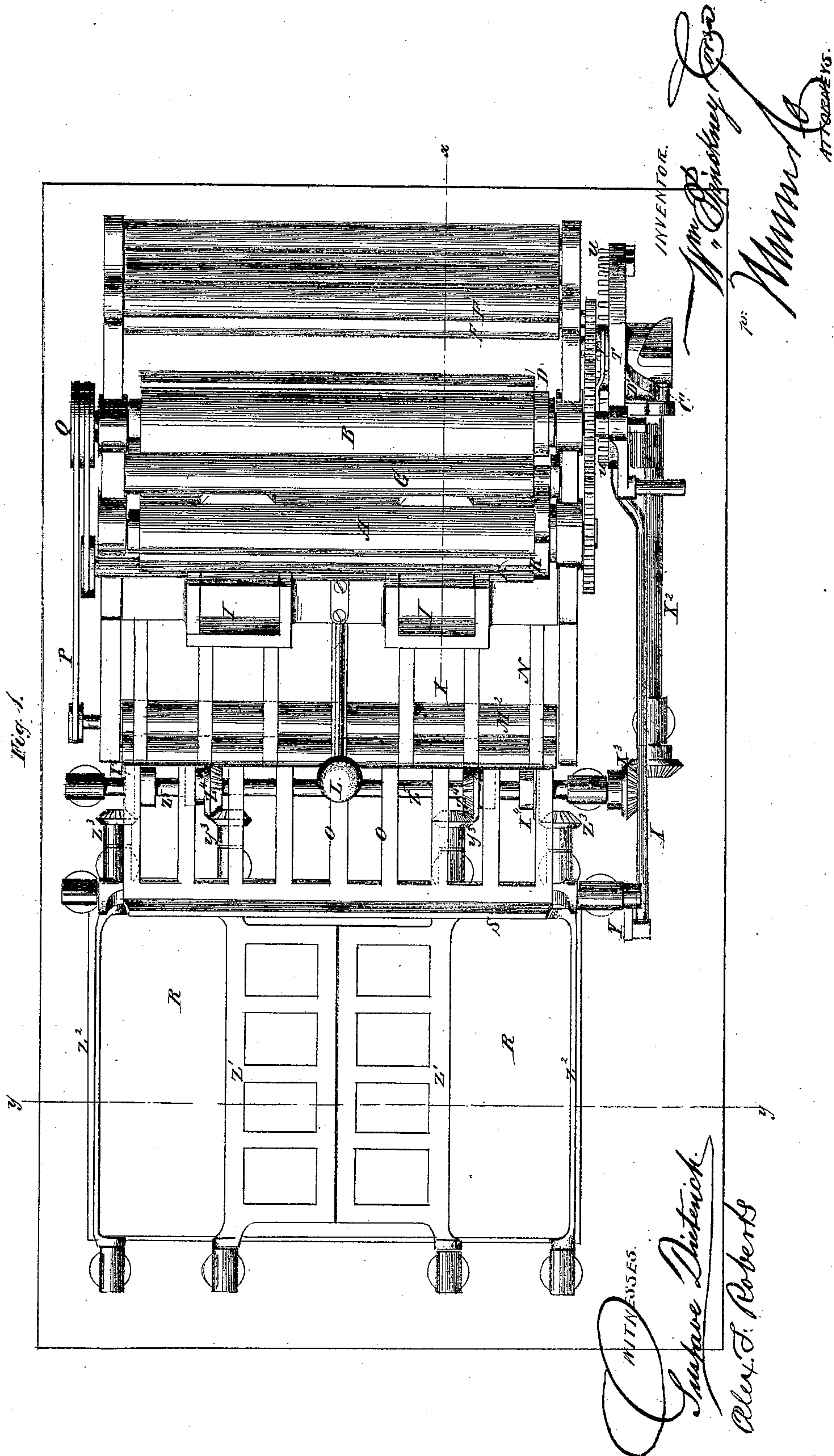
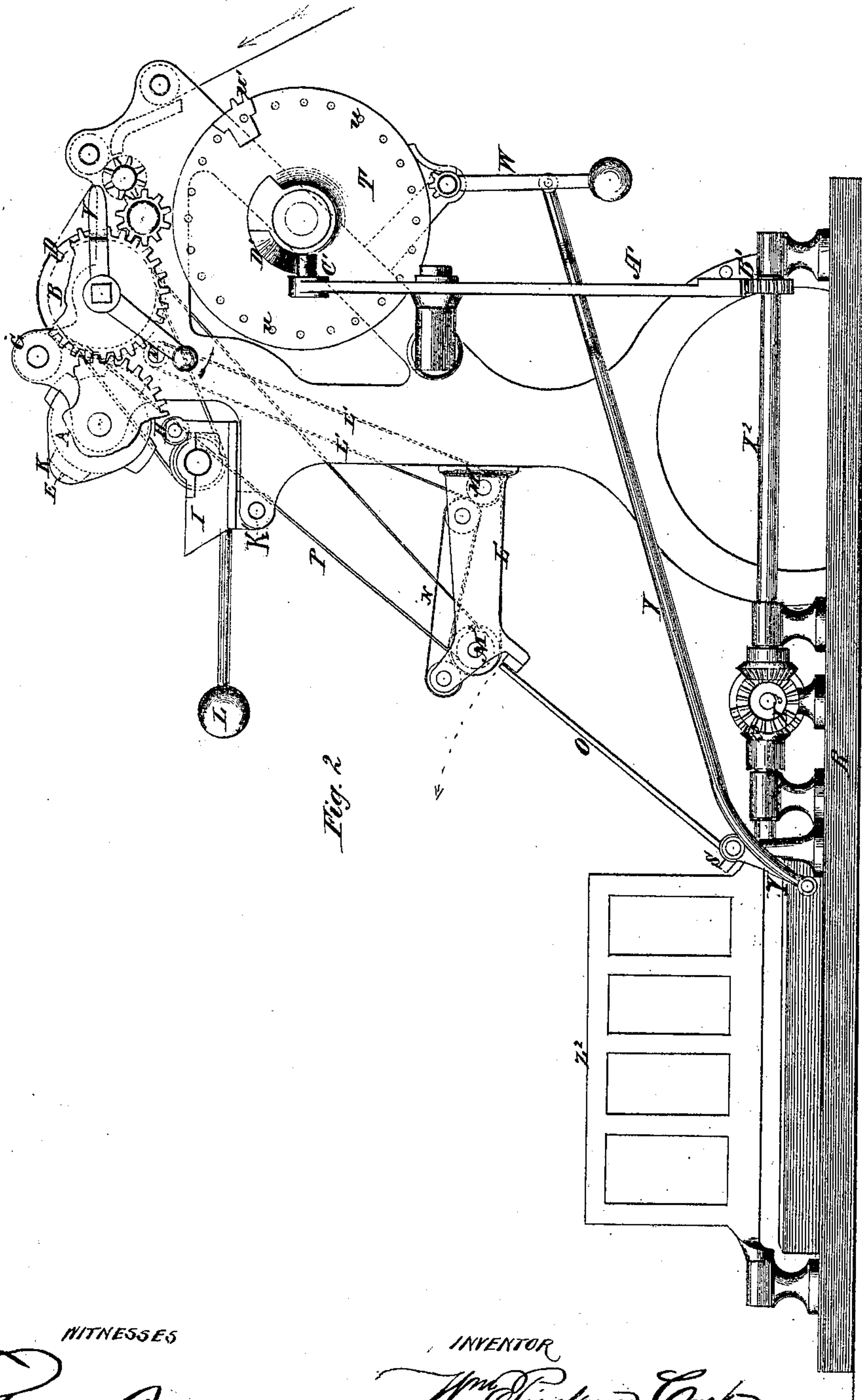


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No. 103,575. Patented May 31, 1870.



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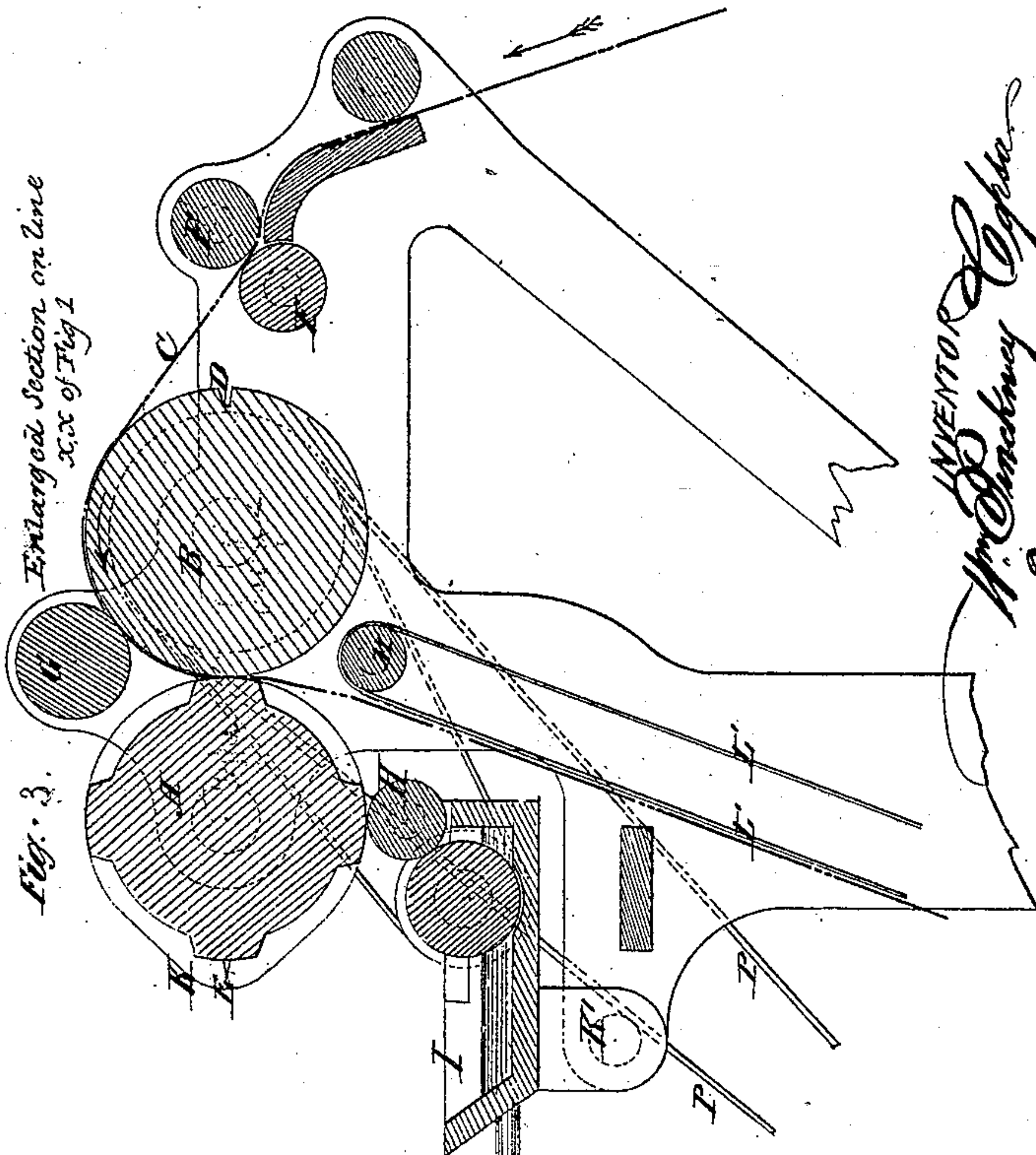
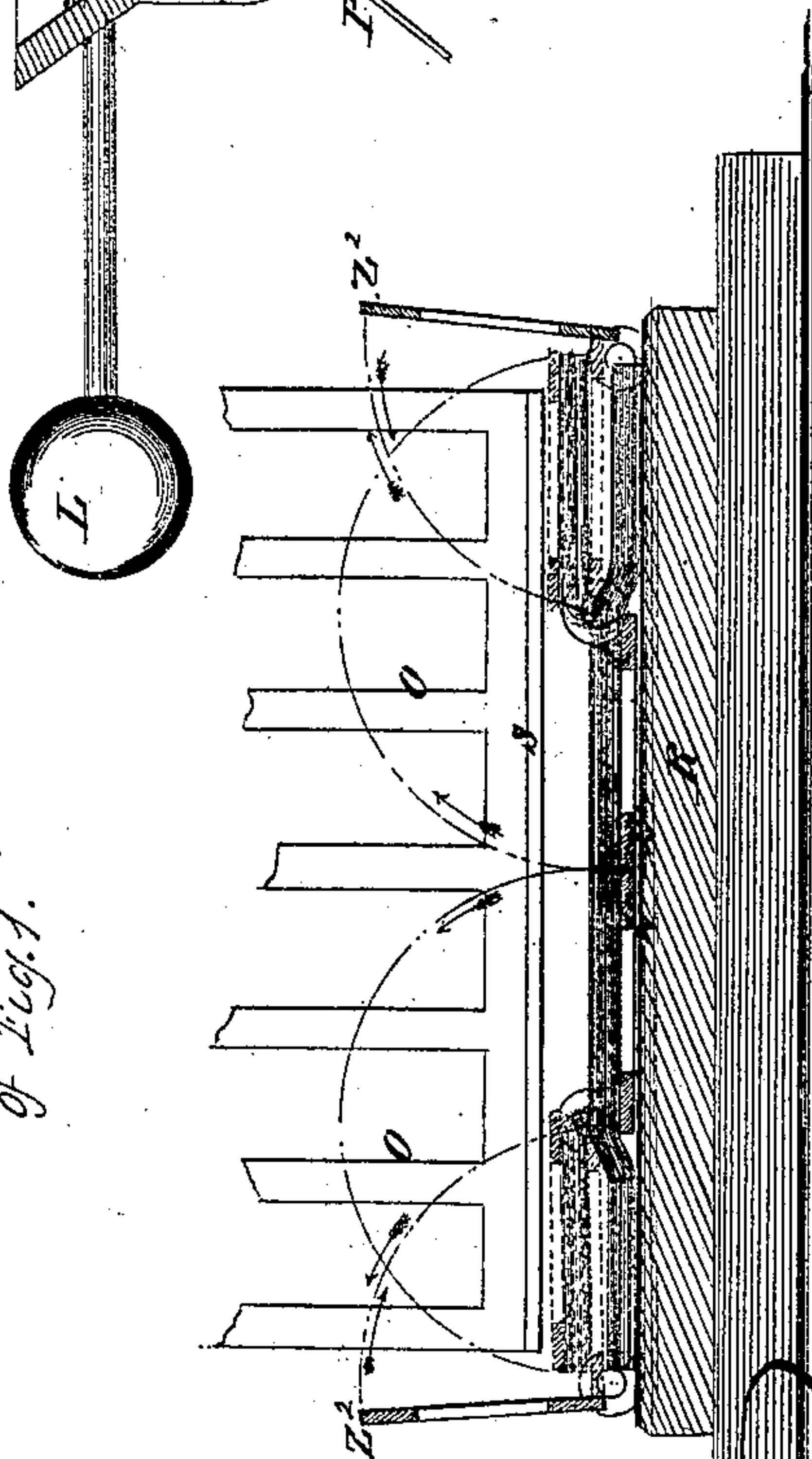


Fig. 3.
Enlarged Section on line
x.x of Fig. 1

Fig. 4.
Sect. on line y.y
of Fig. 1.



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Letters Patent No. 103,575, dated May 31, 1870.

IMPROVEMENT IN MACHINES FOR CUTTING, PRINTING, AND FOLDING PAPER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM PINCKNEY CORSA, of Catskill, in the county of Greene and State of New York, have invented a new and improved Cutting, Printing, Counting, and Folding-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in machines for finishing the paper in the paper-mill, receiving it in continuous sheets therefrom, cutting, printing, counting, and folding it in quires or other packages, adapted for preparing grocers', druggists', and other wrapping-paper with the cards or other matter printed on it; and consists in an arrangement with the type-roller which carries the cutting-knife of a tilting ink-fountain, and inking-rollers, whereby they are moved out of contact with the roller by a cam thereon, when the cutter passes the inking-roller.

It also consists in an arrangement of the fly to receive and hold as many sheets as are to be contained in the package, and to deliver them in such quantities upon the folding and delivering apparatus; and

It consists in an improved double-folding apparatus, arranged in conjunction with the fly for the reception of the packages in two lines, formed by the sheet being divided centrally, previous to entering the machine, and folding and removing them from the bed of the folder, to be taken away by the attendants, all as hereinafter more fully specified.

Figure 1 is a plan view of my improved machine;

Figure 2 is a side elevation of the same;

Figure 3 is a longitudinal section, enlarged, through the printing and cutting apparatus, on the line *xx* of fig. 1; and

Figure 4 is a transverse section on the line *yy* of fig. 1.

A is the type-cylinder.

B, the smooth cylinder, over which the sheet of paper, C, is fed between it and the type-cylinder, and against which the impressions are made.

It has a groove, D, in which the cutter E of the type-cylinder works, to cut the printed sheets off the continuous roll as they are printed.

The paper is received from the paper-machine between the feed and guide-roller F and under the pressure-roller G, in the usual manner.

In order to make this application of the cutter E and its groove D to the printing-rollers, for separating the sheets without interfering with the composition-roller H, by which the ink is supplied from the fountains I, I have arranged the latter, on which the roller H is mounted, on journals, K', and provided it

with a counterbalance weight, L, by which the composition-roller is borne up against the type-roller, and which admits of forcing the said composition-roller and the fountains away, to permit the cutter to pass without contact with the said roller; and for forcing them away, I place a cam, K, on one end of the type-roller A, with a projection, at the same point of the circumference with the cutter, which, coming in contact with the composition-roller, or with any part of the inking-fountains, forces them away while the cutter passes.

As the sheets are delivered from the rollers, they fall upon the belts L', working on the rollers M¹ M², and are carried thereby under the belts N, working above the belt L', where it travels horizontally, or nearly so, and are delivered thereby to the fly O.

These belts, L' N, are operated by a belt, P, working on a large pulley, Q, on the end of cylinder B, and a small one on roller M², arranged to travel enough faster than the surface-speed of the cylinder to cause the delivery of the sheets so fast that a period of time may elapse between the delivery sufficient for the fly to be moved for the delivery of the sheets thereon and return.

The fly is journaled a short distance above the bed R of the machine, and has a projecting rib, S, at the lower edge, of sufficient breadth to hold the number of sheets to be contained in one package on the fly while in the inclined position represented in fig. 2, for the reception of the said number before delivery, and to cause it to move only when the required number, say twenty sheets, is received.

I have provided the pin-wheel T with twenty pins or teeth, U, and two or more teeth U', and the arm V, on the shaft of the cylinder B, for working it, through the medium of the weighted toothed arm W, connecting-rod X, and crank Y. The wheel T being moved the distance between one tooth at one revolution of the cylinder B, in which time a sheet is delivered on the fly, will allow the fly to stand till the number of sheets coinciding with the number of teeth U is received, and then the teeth U', coming in contact with the teeth of the arm W, will, at one movement of the wheel T, engage the teeth of arm W, move it to throw the fly, and become disengaged, so that the weight will immediately restore the fly to the receiving position.

The folding and delivering apparatus, to which the sheets are thus delivered by the fly, consists of two pairs of flies, Z¹ Z², journaled upon the bed in front of the fly O, and, in this instance, with their horizontal axes perpendicular to that of the said fly O.

The shafts of these flies have bevel wheels, Z³ Y³, by which they are geared with wheels Z⁴ X⁴ on a horizontal shaft, Z⁵. The said wheels are about twice

the size of wheels $Z^3 Y^3$, and toothed only on a part of their faces, and the wheels Y^3 are set to turn the shafts to the fly to which they are attached in opposite directions to the movements of the wheel Z^3 .

The two wheels $Z^4 X^4$, for each pair of flies, are set with their toothed and smooth parts in such relation with the pinions $Z^3 Y^3$, that a half turn of shaft Z^3 forward and back, will turn each fly of the pairs a half turn forward and back, the flies Z^2 first moving over upon the bed, and remaining there while the flies Z^1 swing over upon them and back again.

The shaft Z^3 gears with the shaft X^2 , which is turned back and forth by the vibrating bar A' , having a toothed segment at the lower end, gearing with the pinion B' on the shaft X^2 , and a stud, C' , at the upper end, taking into a cam-groove, D' , in the hub of the wheel T , arranged to engage the stud soon after the movement of the fly O , and to effect the forward and back movement while it is making about half a revolution.

These devices are so arranged that, for the reception of the package of sheets, the folding flies will stand in the position represented in fig. 1, *i. e.*, the flies Z^1 folded down on the central part of the bed, and the others raised and projecting from each side, so that the said packages will fall on the flies Z^1 , and on the part of the bed above which the flies Z^2 come when turned down on that side of their axes. The first part of the movement of the shaft Z^3 then causes the flies Z^2 to turn down over the paper, where they are allowed to remain, by the arrival of the smooth or toothless parts of the wheels X^4 on the shaft Z^3 , at the point of action with the wheels Z^3 of the shafts of the said flies Z^2 at the time the flies Z^2 cease to move. The flies Z^1 are set in motion by the arrival of the toothed parts of the wheels Z^3 which drive them at the point of action with the wheels Y^3 of the said flies, and turned over on the flies Z^2 , folding the sheets of their several packages upon them. The movement of the shaft Z^3 is then reversed by the action of the cam D' , and the flies Z^1 are carried back to the position shown in fig. 1.

At the moment of the arrival of these flies in the last-mentioned position, the toothed parts of the wheels

X^4 arrive, in their return movement, at the point of contact with the wheels Z^1 , and, by the continuation of the said return movement, turn the flies Z^2 back to their original position, carrying the folded packages of paper with them, from which they may be removed by attendants, leaving the folded flies in readiness for the reception of succeeding packages.

In some cases, I arrange these folding flies with their axes parallel with the axis of the fly O , placing the two flies Z^2 at the edge of the bed, fronting the said fly O , and both on one shaft; also, placing the others on one shaft traversing the bed a short distance from fly O , and suitably modifying the driving mechanism. It is important, for the successful operation of these flies in folding over each other, that the sides which act on the paper and the lower edges be arranged in planes, cutting the axes of the journals; and I have arranged them in this way.

Having thus described my invention,

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

1. The combination with the type-cylinder and the impression-cylinder, provided with the cutter and the cutting-groove of tilting inking-fountains, and composition-roller, and a cam, arranged for causing the tilting action, substantially as specified.

2. The arrangement of the male or knife-cylinder for use as the type-cylinder, and the female cylinder as the impression-cylinder, substantially as specified.

3. The combination with the type-cylinder, cylinder B and the fly O , of the arm V , pin-wheel T , weighted arm, and connecting-rod X , all substantially as specified.

4. The combination with the shaft Z^3 and the flies Z^1 and Z^2 , geared together, as described, and the intermittently moving wheel T of the cam D' on the hub thereof, the oscillating segmental bar A' , and the intermediate shaft X^2 , all substantially as specified.

The above specification of my invention signed by me this 8th day of February, 1870.

WM. PINCKNEY CORSA.

Witnesses:

GEO. W. MABEE,

ALEX. F. ROBERTS.