C. B. COTTRELL.

Sheet-Delivering Apparatus for Printing-Machines.

No. 203,710. Patented May 14, 1878.

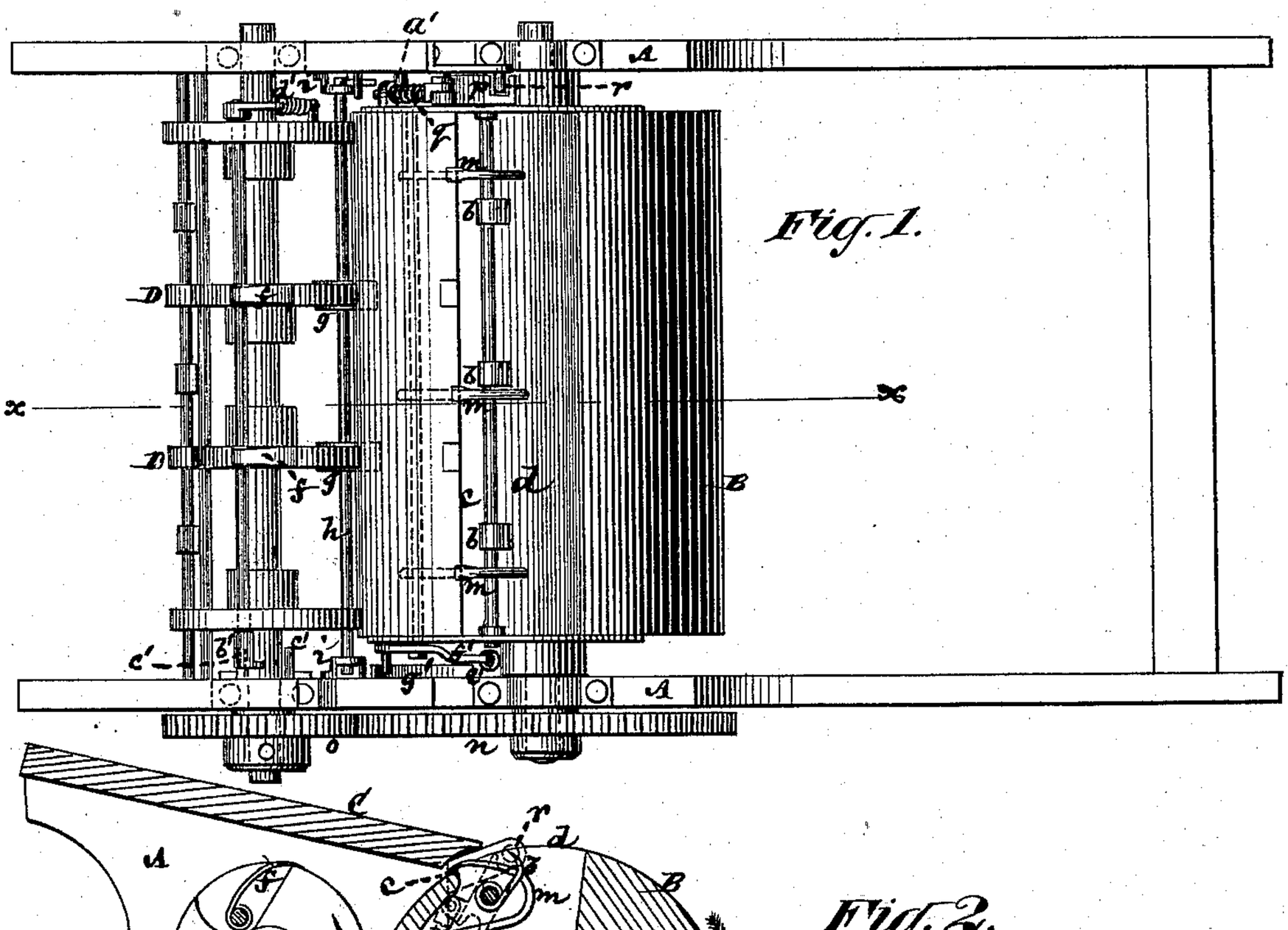

Fig. 1.

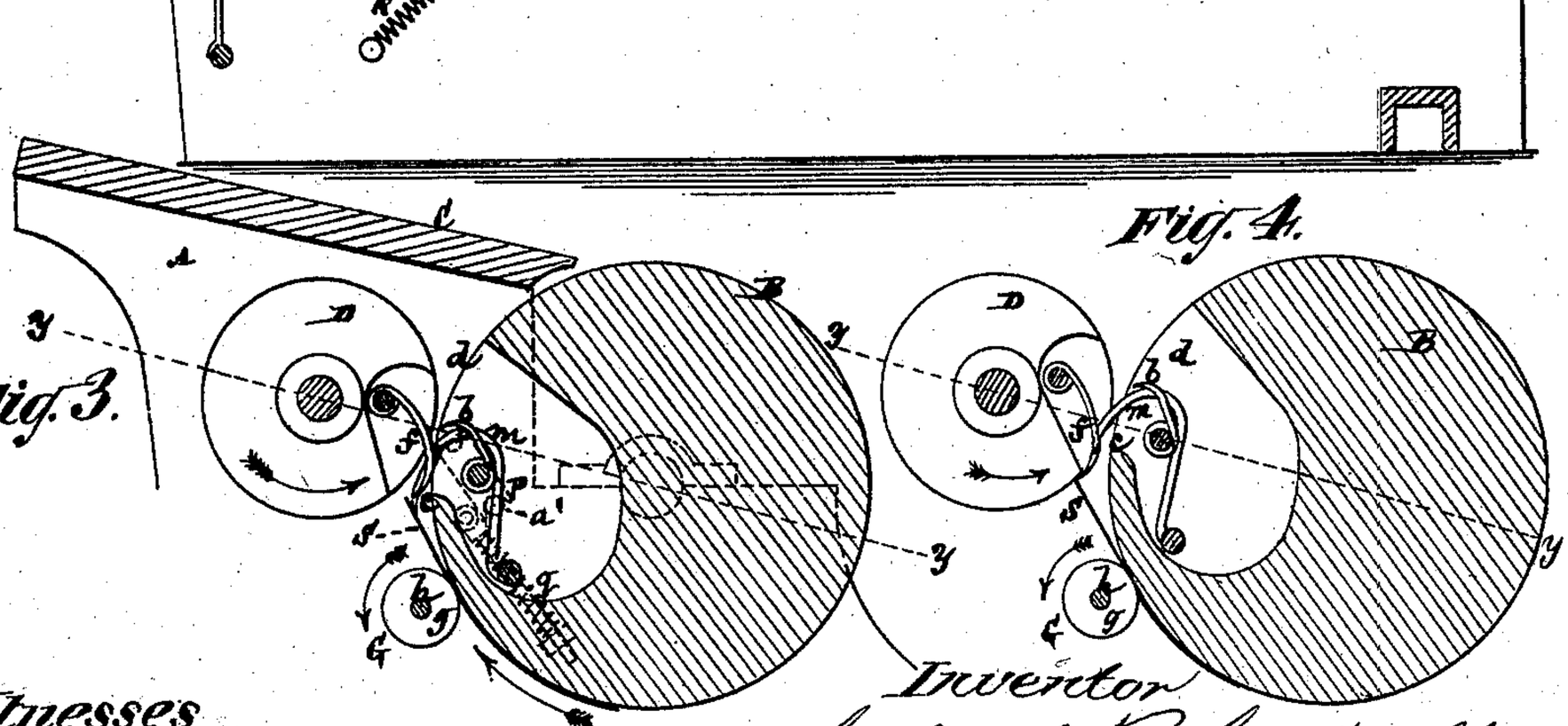

Fig. 2.

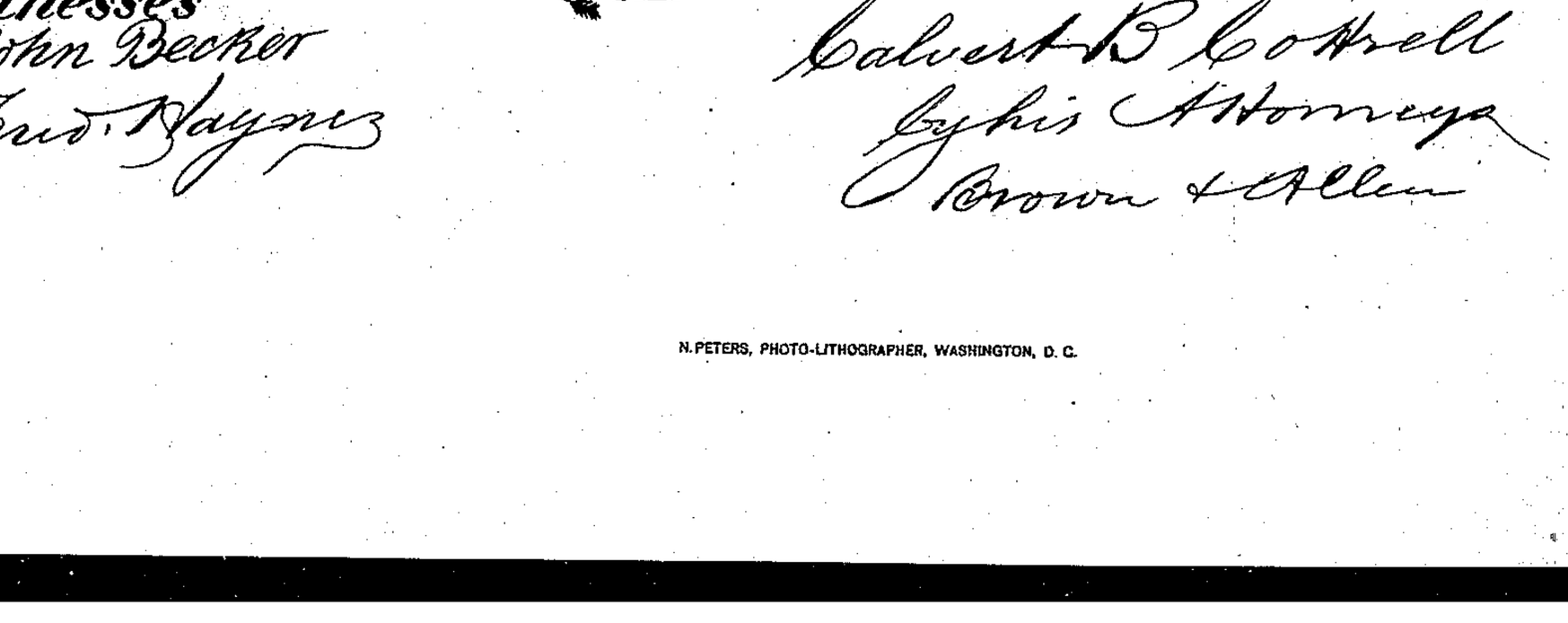

Fig. 4.

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF WESTERLY, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO NATHAN BABCOCK, OF SAME PLACE.

IMPROVEMENT IN SHEET-DELIVERING APPARATUS FOR PRINTING-MACHINES.

Specification forming part of Letters Patent No. **203,710**, dated May 14, 1878; application filed October 30, 1877.

To all whom it may concern:

Be it known that I, CALVERT B. COTTRELL, of Westerly, in the county of Washington and State of Rhode Island, have invented certain new and useful Improvements in Sheet-Delivering Apparatus for Printing-Machines, of which the following is a description, reference being had to the accompanying drawing, which forms part of this specification.

This invention consists in certain combinations of devices, organized to operate in certain relation with each other, whereby, with the use of transferring-gripers, attached to a rotating cylinder or wheels, I am enabled to print with as narrow a margin as may be desired; and other advantages are obtained, including the giving of ample time for the gripers on the impression-cylinder to let go before the gripers on the transferring cylinder or wheels take hold of the sheet.

Figure 1 represents a plan of a cylinder printing-press, in part, having my invention applied; and Fig. 2, a vertical section of the same on the line *x x*, showing, also, the feed-board of the press. Figs. 3 and 4 are transverse sections of the impression-cylinder and transferring apparatus in different working positions.

A represents the frame of a cylinder printing-press. This frame may be of any suitable construction. B is the impression-cylinder, provided with gripers *b b*, the function of which is as usual. C is the feed-board, over which the sheet is fed to the gripers of the impression-cylinder. The advance edge of the sheet need not necessarily project beyond the edge *c* of the opening *d* in the impression-cylinder, within which the gripers *b b* work, and said gripers, when closed, may only slightly overlap the edge *c*, in order to print the sheet with as narrow a margin as may be desired. Parallel with the impression-cylinder, on the delivery side of the latter, is a rotary transferring-cylinder or series of wheels, D D, provided with gripers *f f*, which convey the sheet to the flier or elsewhere. These gripers *f f* are organized to open and close below a line or plane intersecting the axes of the impression and transferring cylinders, as represented by the line *y y* in Figs. 3 and 4; and the gripers *b b* of the impression-cylinder are opened to let go the sheet some time or distance in advance of the transferring-gripers being closed to take hold of it, so that the one set of gripers in no way interferes with the other set of gripers. To make this practicable on sheets with narrow margins it is necessary that the advance edge of the sheet should be liberated from the impression-cylinder and turned out or off from it before said edge passes the line or plane intersecting the axes of the impression and transferring cylinders, in order that the transferring-gripers may get hold of it. Below the transferring cylinder or wheels D D, on the delivery side of the impression-cylinder B, is a presser, G, arranged to come into operation on the sheet before the gripers of the impression-cylinder let go, in order that the sheet may be held from dropping, and its passage, free from gripe of its advance edge, be continued by the rotation of the impression-cylinder till the transferring-gripers *f f* get hold of it.

Such presser, which thus operates on the sheet in the interval between its release by the gripers of the impression-cylinder and its seizure by the transferring-gripers, may be variously constructed. Thus, it may consist of a series of rollers, *g g*, upon a shaft, *h*, in pivoted or swinging bearings *i*, controlled by springs *k*, to keep the rollers in elastic contact with the impression-cylinder; or said presser may have pointed pins or other pressing devices substituted for the rollers *g g*.

In Fig. 3 the sheet S is represented as released from hold by the impression-gripers *b*, and as subjected to the control of the presser G prior to its seizure by the transferring-gripers *f*, and with the advance edge of the sheet turned outward or away from the impression-cylinder ready for the transferring-gripers *f* to take hold of it, which latter action or seizure takes place before the transferring-gripers cross the line or plane *y y*, as represented in Fig. 4.

A "shoo-fly," *m*, may, if desired, be used to cast off the edge of the sheet from the impression-cylinder after it has been liberated from the gripers of the latter; or the shoo-fly may be dispensed with, and the sheet be

thrown off by its elasticity, or by the action of the atmosphere, or by centrifugal action.

The rotating transferring-wheels D D or cylinder, as the case may be, may receive their or its necessary motion by gears *n o* from the impression-cylinder B.

The gripers *b* of the impression-cylinder may be closed when receiving the sheet from the feed-table C by a tumbler, *p*, on one end of their spindle, and controlled by a spring, *q*, said tumbler coming into contact with a stationary pin, *r*, and said gripers be opened again in due course by said tumbler striking another fixed pin or stop, *a'*. The transferring-gripers *f f* are opened to receive the edge of the sheet from the impression-cylinder, and to drop said sheet, after it has been transferred, by an arm, *b'*, on the spindle of said gripers, striking first one and then another fixed pin or stop, *c' c'*; and said gripers are kept closed, when not thus acted upon, by a spring, *d'*, applied to another arm on the opposite end of the griper-spindle to that which carries the arm *b'*.

In the example represented, the transferring cylinder or wheels D being geared to make two revolutions for each one of the impression-cylinder, the gripers *f f* only receive a sheet from the latter cylinder during each alternate rotation of their own cylinder or wheels D, and in the intermediate rotations they perform no duty.

When a shoo-fly, *m*, is used, it may be kept closed by a spring, *e'*, acting on a double-armed lever, *f'*, attached to the spindle of the shoo-fly, and the latter be opened to cast off the sheet by a pin on said lever *f'* riding over or against a fixed cam or incline, *g'*.

I claim—

1. The combination, with the impression-cylinder and the rotating transferring cylinder or wheels, of gripers attached to the impression-cylinder, which open in the delivery of the sheet below a line or plane intersecting the axes of the impression-cylinder and transferring cylinder or wheels, and gripers attached to the latter wheels or cylinder, which both open and close below the said line or plane, substantially as herein set forth.

2. The combination, with the impression-cylinder and its gripers and the transferring-cylinder or griper-wheels and its gripers, opening and closing in the positions or relations described, of a presser, G, arranged to hold the sheet up to the impression-cylinder as or before the sheet is released by the gripers of the latter, and till it is seized by the transferring-gripers by the closing action of the latter below a line or plane intersecting the axes of the impression-cylinder and transferring cylinder or wheels, essentially as described.

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Witnesses:

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