(No Model.) 2 Sheets—Sheet 1.

C. CHAMBERS, Jr.

PAPER FOLDING MACHINE.

No. 386,296. Patented July 17, 1888.

Fig. 1.

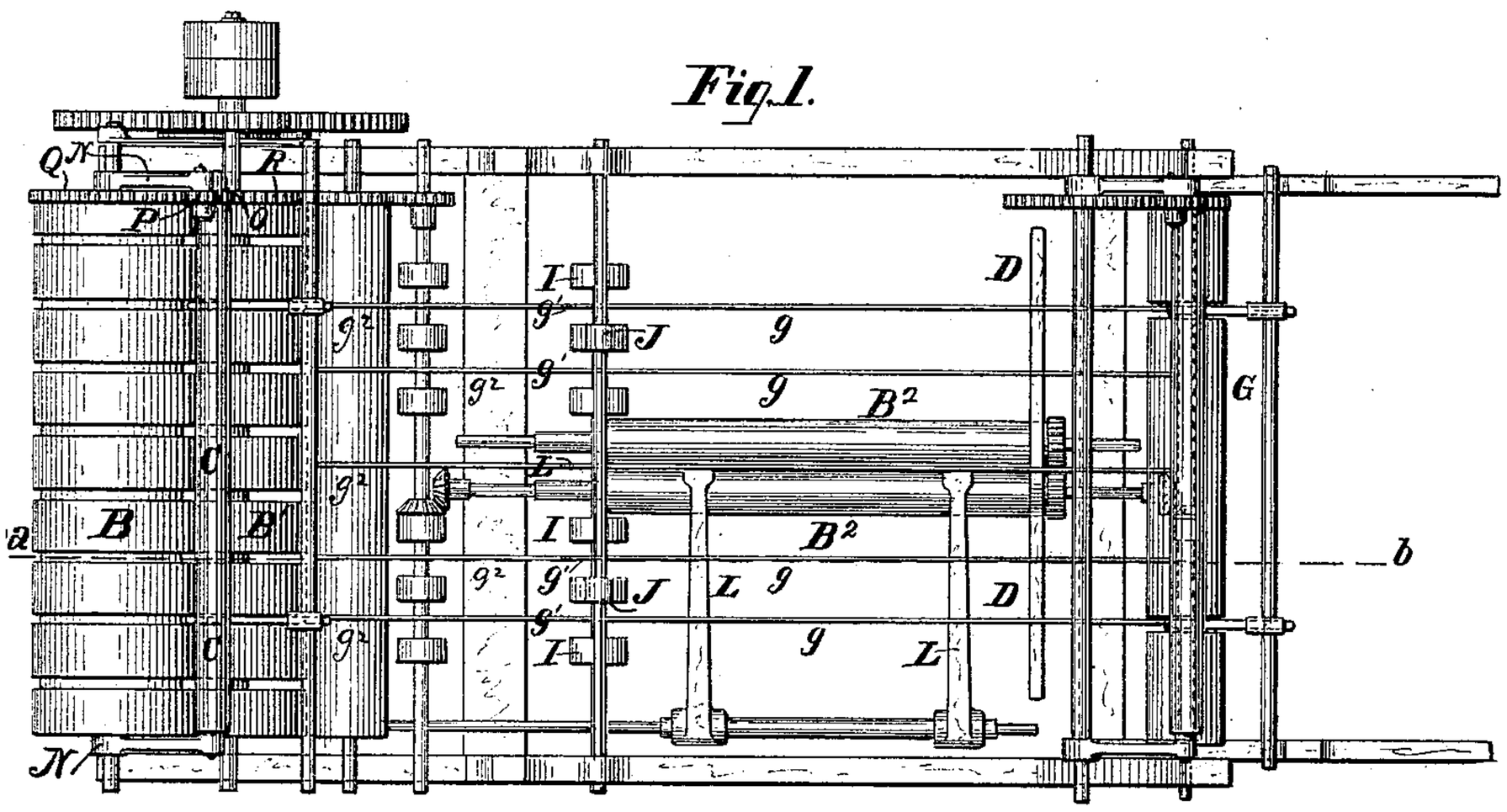
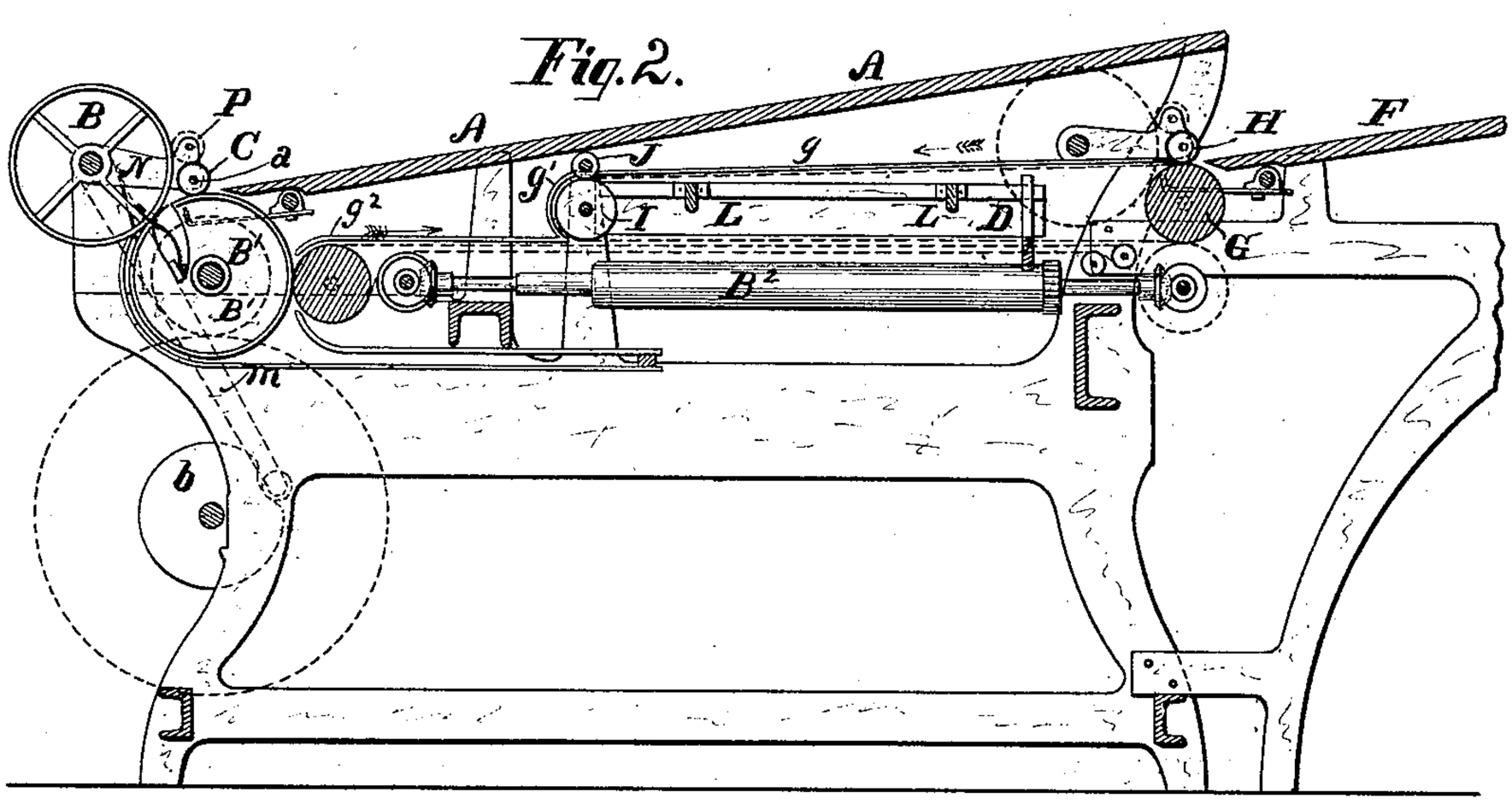


Fig. 2.



WITNESSES:

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A. E. Paige

INVENTOR.

Cyrus Chambers. Jr.
per Joshua Pusey, atty.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

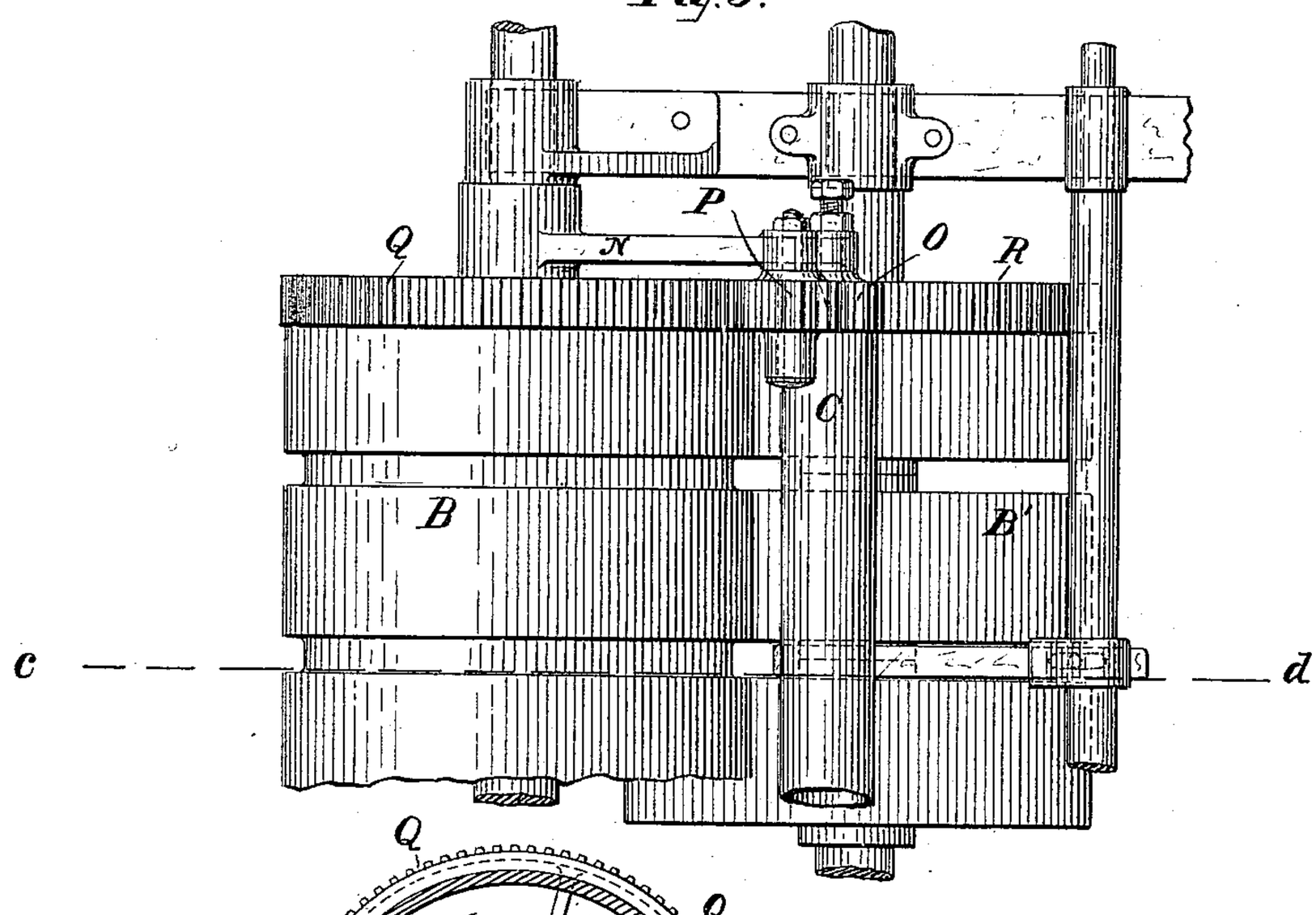

Fig. 4.

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UNITED STATES PATENT OFFICE.

CYRUS CHAMBERS, JR., OF PHILADELPHIA, PENNSYLVANIA.

PAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,296, dated July 17, 1888.

Application filed March 31, 1883. Serial No. 90,179. (No model.)

To all whom it may concern:

Be it known that I, CYRUS CHAMBERS, Jr., a citizen of the United States, residing at the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Paper-Folding Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

Figure 1, Sheet 1, is a plan of my invention with the feed-tables and conveying-tapes removed. Fig. 2 is a transverse section on the line *a b*, Fig. 1, with the feed-tables in place. Fig. 3, Sheet 2, is a plan view, enlarged, of part of the main feed-rolls, drop-roller, and gearing. Fig. 4 is a section on the line *c d*, Fig. 3.

The principal object of this invention is to provide a mechanism for feeding in and inserting a supplement-sheet within the main sheet in fast rotary newspaper-folders.

As the construction and operation of ordinary folding-machines, especially those known as the "Chambers folders," are familiar to those acquainted with the art, I shall not deem it necessary to further describe the same than shall be requisite for a clear comprehension of my present improvements.

Referring to the accompanying drawings, in which like letters of reference designate corresponding parts, A is the common inclined feed-table, upon which the main sheets are banked preparatory to being fed in between the first pair of rolls or drums, B B′, by the aid of the drop-roller C, and are folded and carried on in the usual manner under guide-bars g^2 and over tapes, as shown in dotted lines, Fig. 2, which operate, in connection with the guides, to carry the sheet against a stop, D, located above and at the farthest ends of the second pair of folding-rolls, B^2. The supplement-sheets to be folded in with the second or final fold of the main sheets are fed in from the feed-table F at the rear of the machine, upon which they are banked, to the drum G, and when the drop-roller H descends the sheet is carried between it (the drop-roller) and the drum, thence upon tapes (indicated by broken lines in Fig. 2) and under guide-bars *g* to a turn-over roll, I, and carried between the latter and a friction-roller, J, over roll I, between it and curved extension *g′* of the guide-bars, until it is brought by the tapes, which run over the two rolls C and I, against the stop D. At this instant the supplement-sheet is in position to be folded in with the just-arrived once-folded main sheet beneath it, when the folding-blade L descends. It is of course understood that the feed-roller H is timed to drop to take each supplement-sheet, so that the latter shall be brought into proper position—that is, over the second pair of rolls, B^2—simultaneously, or thereabout, with the main sheet.

The drop-rollers are driven positively by means of the gearing, as follows: Referring specially to the enlarged Figs. 3 and 4, Sheet 2, I represent the drop-roller and its connections at the front or main end of the machine. Those at the rear or supplement end are substantially the same and operate in the same manner. The shaft *a*, which carries the drop-roller C, is journaled at the extremity of an arm, N, which swings upon the shaft of the upper roll, B. Said arm is caused to vibrate, and thus at proper intervals to depress the feed-roller by means of a cam, *b*, and connection, *m*, Fig. 2, in the ordinary manner. To the journal of the feed-roller is secured a pinion-gear, O, whose teeth mesh into those of an idler-pinion, P, journaled in an upward extension of the arm N. The teeth of this idler in turn engage with those of a gear, Q, on the shaft of the upper roll, B, which engage with the teeth of the gear R on the shaft of the main drum B′. It will be obvious, now, that the rotation of gear Q turns the idler, which imparts its motion to the gear O of the drop-roller, and thus the latter is kept in continual motion in a direction opposite to that of the main drum.

The several gears are so proportioned, as shown, that the surface speeds of the drop-roller and of the lower roll or main drum will be the same.

When the arm N is caused to vibrate or rotate downward and the drop-roller descends, the teeth of its gear O mesh in with those of the gear R of the drum. This construction, however, is not essential, but merely convenient.

The idler-gear may as well be made with a wide face adapted to receive the teeth of the gear Q at one end and the gear of the drop-

roller at the other, in which case the gear of the lower drum would be located so as to be out of the way of the gear of the drop-roller.

It will be seen that by the foregoing-described combination and arrangement of mechanism additional or supplement sheets may be readily and simply folded in in proper position with the final fold of the main sheets, and also that the drop-rollers are kept in continuous rotation and positively driven in the right direction and with proper speed when they descend to feed in the sheets of paper.

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

1. In a folding-machine, the combination of mechanism, substantially as described, for folding the main sheet, the feed-table located at the rear end of the machine from which the supplemental sheets are fed, the tapes, the turn-over roll, the folding-blade, and the folding-rolls, also substantially as described, for feeding in the supplemental or inside sheets at the rear of the machine and conveying and turning them over and folding them with the folded main sheet, as set forth.

2. In a folding-machine, the combination of mechanism, substantially as described, for folding the main sheet and conveying the same toward the rear of the machine, a stop for arresting the folded sheet, the rolls B^2 and knife L, arranged at right angles to the first pair of folding-rolls, the roll G and means, substantially as described, for feeding in the supplemental sheet, the turn-over roll I, and means, also substantially as described, for conveying the supplemental sheet into position to be folded in with the main sheet, as set forth.

In testimony whereof I have hereunto affixed my signature this 14th day of February, A. D. 1883.

CYRUS CHAMBERS, JR.

Witnesses:

CURTIS PAXSON,

NATH. E. JANNEY.