

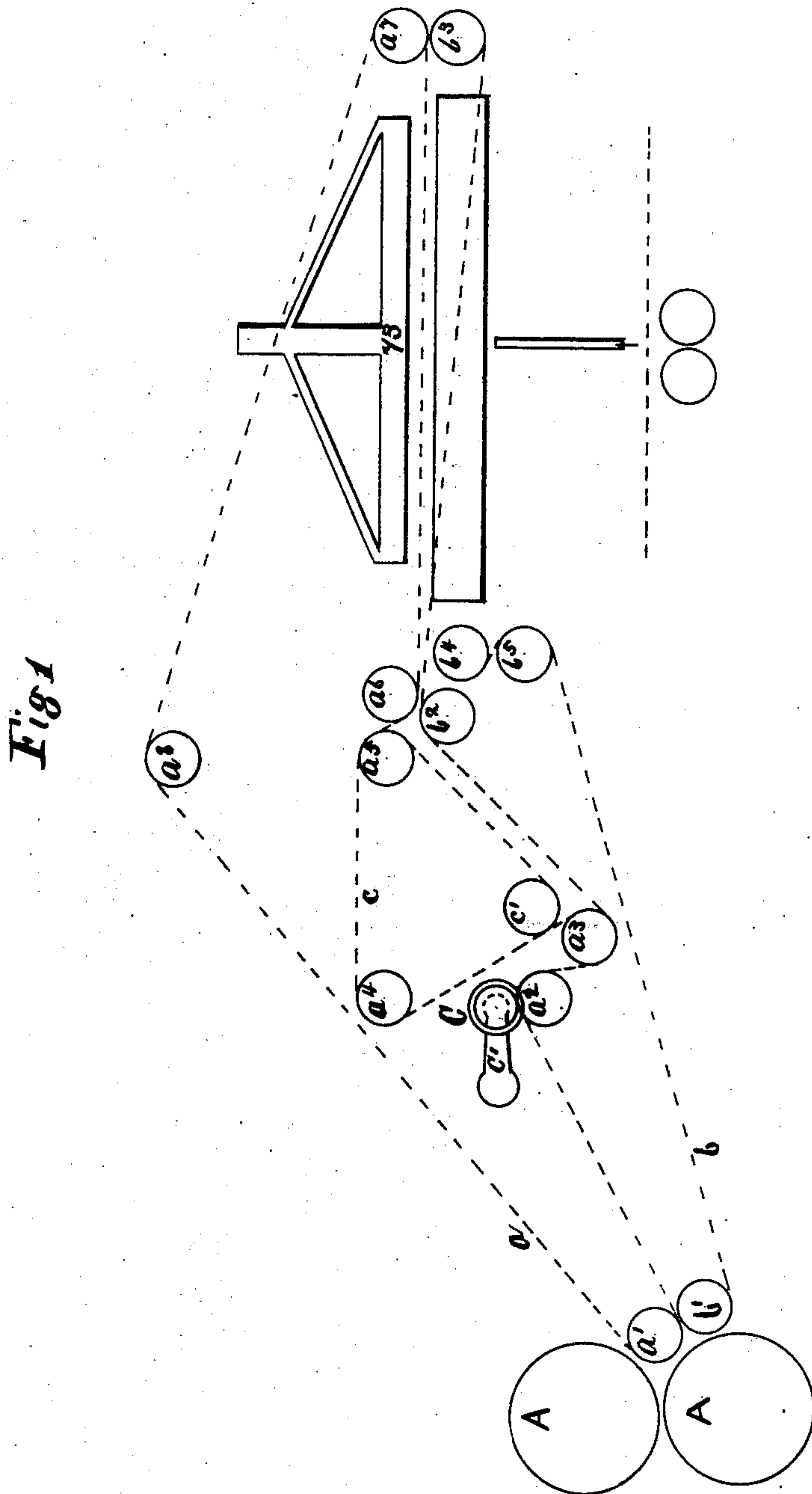
(No Model.)

2 Sheets—Sheet 1.

J. J. CLAUSE.
FOLDING MACHINE.

No. 244,980.

Patented Aug. 2, 1881.



WITNESSES:

N. Brown
C. F. Smith

INVENTOR

John J. Clause

BY
Munday Evans & Adcock
his ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

J. J. CLAUSE.
FOLDING MACHINE.

No. 244,980.

Patented Aug. 2, 1881.

Fig. 2

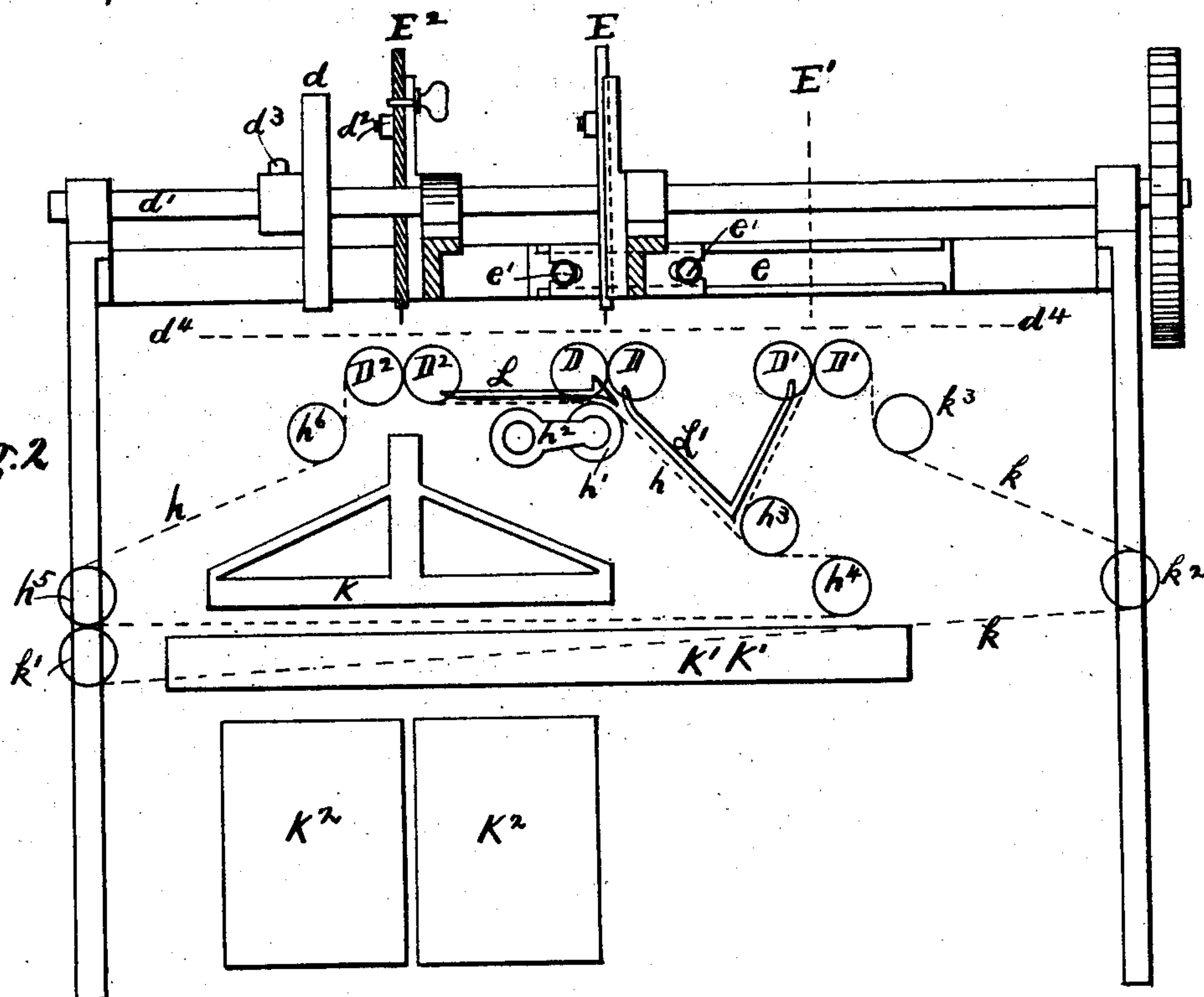
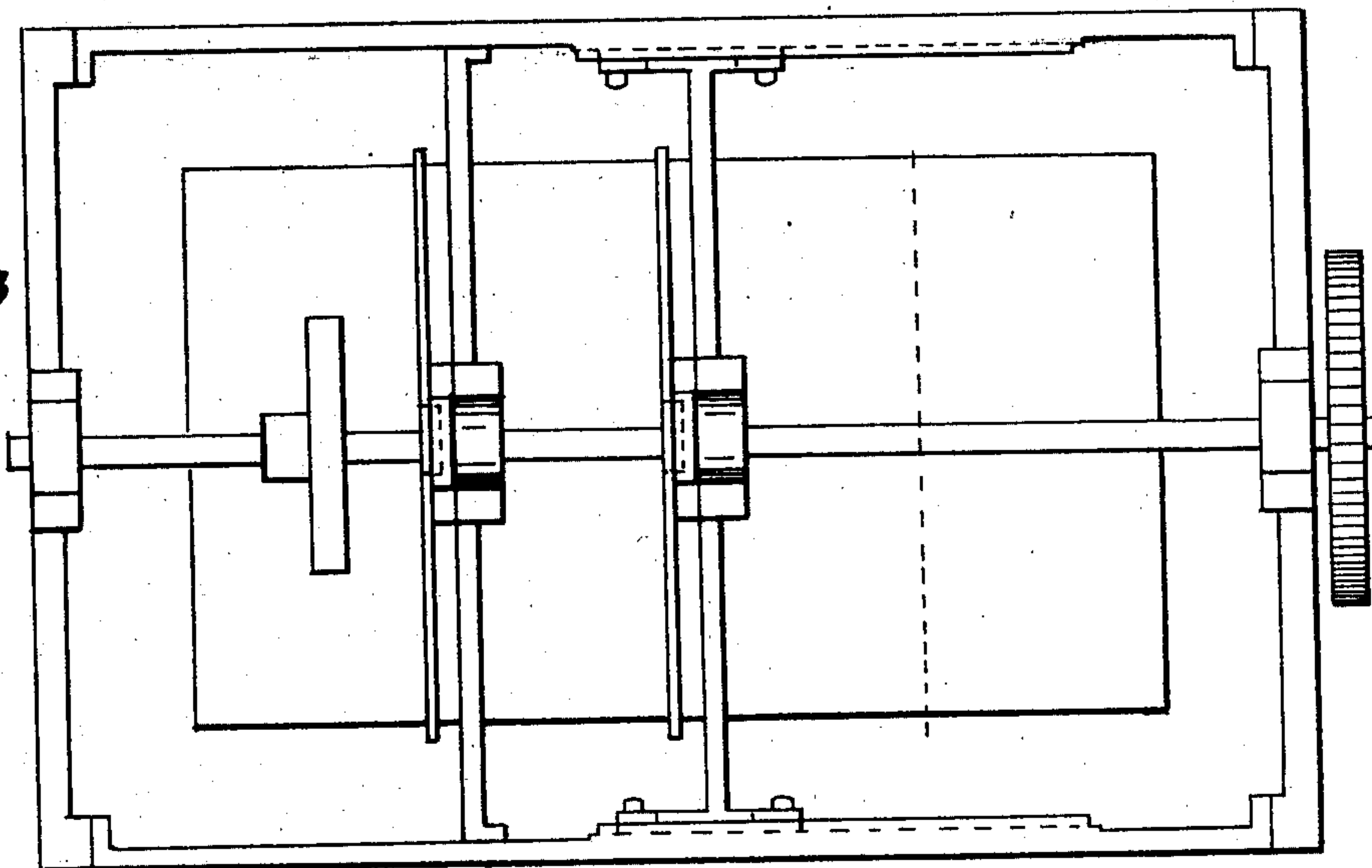


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN J. CLAUSE, OF CHICAGO, ILLINOIS.

FOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 244,980, dated August 2, 1881.

Application filed December 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. CLAUSE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Newspaper-Folding Machines, of which the following is a specification.

My invention relates to improvements in newspaper-folding machines designed to be used in connection with web-printing presses, in which sheets of several different sizes are printed from one continuous web of paper of even width; and the same relates more particularly to an improvement upon the newspaper-folding machine patented to Conrad Kahler, as appears by his Letters Patent of the United States No. 204,578, bearing date June 4, 1878.

The object of my invention is to provide a folding-machine which will fold and take care of the product of the press to which it is connected, whether the same be full-size sheets, half-size sheets, or quarter-size sheets, or other.

Heretofore in printing a half-size sheet or supplement it has been necessary not only to employ a separate and special folding-machine adapted to fold such sheet, but also to have a separate printing-press, as the folding-machine cannot be readily or quickly attached to the press. The said patented machine of Kahler is adapted to fold and take care of either full-size or half-size sheets as they come from the press by simply doubling the speed of the folding-machine; but the same machine cannot be used to fold two quarter-size sheets simultaneously as they are delivered side by side from the press; and my invention consists in the novel arrangement and combination of tapes, tape pulleys or rollers, folding rollers and blades, hereinafter described, whereby the same machine is adapted to receive, fold, and take care of the product of the press, whether the same be in full-size, half-size, or quarter-size sheets. I provide the said Kahler machine with a slit to the rear of the cutting-cylinders, for the purpose of cutting apart the quarter-size sheets as they come from the press.

After being thus separated the two sheets are carried along side by side the same as though they constituted a single half-size sheet, and by the same arrangement of tapes and mechanism as in the Kahler machine, until they

reach the point where the folding-rollers are located.

Instead of a single pair of folding-rollers, as in the Kahler machine, I provide three pairs of folding-rollers arranged parallel to each other side by side, and half the width of a quarter-size sheet apart—that is to say, a middle pair of folding-rollers, which are used when the product of the press is half-size or full-size sheets, and two side pair of folding-rollers, which are used when quarter-size sheets are being printed. The system of tapes and tape rollers or pulleys is so arranged on and below the three pairs of folding-rollers that it will, without requiring any change or adjustment, carry and deliver to the next succeeding folding-blade a half-size or full-size sheet as it comes from the middle pair of folding-rollers, or the two quarter-size sheets as they come simultaneously from the two side pairs of folding-rollers—that is to say, I pass the upper set of continuous tapes over the outer roller of one of the side pairs of folding-rollers and under its companion, and thence over a roller located immediately under the middle pair of folding-rollers; thence down under the junction-roller, and around the rollers arranged at the ends of the next folding-blade. The under set of continuous tapes pass between the other pair of side folding-rollers down to the junction pulley or roller, and thence around the pulleys or rollers arranged at the ends of the next folding-blade.

The location of the junction-roller or set of pulleys is such that the two quarter-size sheets leaving the two side pairs of folding-rollers simultaneously will reach the junction-roller, the one directly after the other, so that the two sheets will be delivered side by side to the next folding-blade and be folded simultaneously by it. The sheets are led from each of the three pairs of folding-rollers to the junction-roller on a single set of tapes, and guide-rods are accordingly provided between said points.

For the three pairs of folding-rollers I employ but two folding-blades, one of the folding-blades being made adjustable, so that it may be shifted into position over one of the side pairs of folding-rollers for folding quarter-

size sheets or over the middle pair of folding-rollers for folding half-size or full-size sheets.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a vertical longitudinal section of a device embodying my invention, showing the arrangement of the longitudinal sets of tapes and their pulleys or rollers, the other parts being removed. Fig. 2 is a similar transverse section, showing the sets of tapes and pulleys or rollers by which the sheets are carried from the three pairs of folding-rollers to the next folding-blade, and Fig. 3 is a detail plan view, showing the adjustable folding-blade.

In said drawings, A represents the cutting-cylinders. *a* is the upper set of continuous tapes, passing around the upper receiving-roller, *a'*, over the slitting-roller *a²*, under the roller *a³*, at which the switch or blower is located, over the elevating-rollers *a⁴* and *a⁵*, under the rollers *a⁶* and *a⁷* located at each end of the folding-blades E, and over the tightener *a⁸* back to the receiving-roller *a'*. The under set of continuous tapes, *b*, passes around the under receiving-roller, *b'*, over slitting-roller *a²*, under roller *a³*, over roller *b²*, around roller *b³*, over roller *b⁴*, and under the tightener *b⁵* back to the receiving-roller *b'*. The intermediate set of continuous tapes, *c*, passes around the roller *c'* and the elevating-rollers *a⁴* and *a⁵*.

C is the slit, mounted on an adjustable arm, C', so that it may be put in operation to sever the quarter-size sheets when such is the product of the press, and be elevated out of the way when half-size or full-size sheets are being printed.

The arrangement of tapes and tape pulleys or rollers shown in Fig. 1 is the same as in the Kahler machine, and I would refer to his said Patent No. 204,578 for a fuller description of the same, the only difference in this part of the machine being in the addition of the slit.

D is the middle pair of folding-rollers, and D' and D² are the side pairs.

E is the adjustable folding-blade, which may be shifted in the guide-groove *e* so as to occupy the position over the middle pair of folding-rollers or the position indicated by the dotted line E' over the side pair. It is secured in position by the bolts *e'*.

E² is the other folding-blade, placed above the other side pair of folding-rollers. *d* is the adjustable or movable cam mounted on the cam-shaft *d'*, which actuates the folding-blade E². The cam which actuates the other blade is not shown in the drawings.

d² is the pin attached to the folding-blade which works in the cam-groove. When half-size or full-size sheets are being printed the blade E is secured in its middle position, and the cam *d* is shifted along on the shaft *d'*, so that the blade E² will not be operated. When quarter-size sheets are being printed the blade E is shifted to its side position, and the cam

d is fixed in position to actuate simultaneously the blade E² by means of the set-screw *d³*.

The dotted line *d⁴* *d⁴* shows the position of the sheet or sheets before being folded.

The upper set of tapes, *h*, passes between the pair of folding-rollers D² D², over the outside, and under the inside, roller; thence over the roller *h'*, which is mounted on adjustable arms *h²*, and which is located close under the middle pair of folding-rollers, so that the set of tapes *h* will also lead the sheets delivered from said middle rollers; thence down under the junction-roller *h³*, which is located equidistant from both pairs of rollers D D and D' D', and thence around the rollers *h⁴* and *h⁵*, arranged at each end of the succeeding folding-blade K, and back under the tightener *h⁶* to the pair of rollers D².

The under set of tapes, *k*, passes in like manner between the other pair of side rollers, D' D', under the junction-roller *h³*, around the roller *h³*, thence around the rollers *h'* and *h²*, arranged at each end of the folding-blade K, and back under the tightener *h³* to the pair of folding-rollers D' D'. K' K' is the pair of folding-rollers arranged under the folding-blade K, and K² K² represent the two twice-folded quarter-size sheets as they drop from said folding-rollers into the delivery-box. The folded sheet or sheets after leaving the folding-rollers D D or D' D' and D² D² are led to the junction-roller *h³* upon one set of tapes, and I provide a guide-rod, L, provided with a curved end at each extremity, which extends from the folding-rollers D² D² to the folding-rollers D D, and a forked guide-rod, L', provided with a curved end at each extremity of the fork, one of its forks extending from the side pair of folding-rollers, D' D', and the other from the middle pair of folding-rollers, D D, to the junction-roller *h³*.

The side pairs of folding-rollers are each one-half the width of a quarter-size sheet from the middle pair, and the distance from the middle pair and from the side pairs, D' D', to the junction-roller *h³* is also one-half the width of a quarter-size sheet, so that the quarter-size sheet which leaves the rollers D² D² simultaneously with the similar sheet which leaves the rollers D' D' will reach the junction-roller *h³* immediately after the latter, and the two sheets will consequently be carried along and extended side by side over the folding-rollers K' K' in position to be simultaneously folded by the blade K.

In the operation of my improved machine, when quarter-size sheets are being printed, the slit is secured in position to sever the sheets and the adjustable blade E is secured in its side position. When half or full size sheets are the product of the press the slit is raised out of the way and the actuating-cam is disconnected from the blade E² and blade E moved to its middle position.

I have not thought it necessary herein to show or describe the gearing, driving mechan-

ism, and other parts of the complete folding-machine, as they do not differ, essentially, from the same as shown in the said Letters Patent No. 204,578, granted to Conrad Kahler, and dated June 4, 1878, as aforesaid, and for a full description thereof and for greater certainty herein I would refer to said Letters Patent. My improvement, however, may be used when applied to other folding-machines than the Kahler machine, and I do not wish to limit myself to its use in connection with that machine only.

By use of my improvement the same machine is adapted to fold and take care of the product of the press, whether it be full-size, half-size, or quarter-size sheets, which greatly increases the value and convenience of the machine, as often in printing newspapers it is desired to print a quarter-size sheet or supplement from the same press that prints the half-size or full-size sheets, which heretofore could not be done with the Kahler machine, as a separate folding-machine specially adapted to fold such size sheets had to be employed.

What I claim is—

1. In a folding-machine, the combination of the middle and side pairs of folding-rollers and their folding-blades, substantially as described, adapted and arranged to fold the several sized sheets, and sets of tapes *h* and *k*, adapted and arranged to lead and carry to the succeeding folding-blade not only the sheets delivered simultaneously from the two side pairs of folding-rollers, but also the sheets delivered from middle pair of folding-rollers, substantially as specified.

2. The combination of movable slit with mechanism for leading to the folding-rollers *D D*, *D' D'*, and *D² D²*, provided with folding-blades *E* and *E²*, adjustable substantially as described, and sets of tapes *h* and *k*, whereby the quarter-size sheets and half-size or full-size sheets are carried and extended over the next pair of folding-rollers, substantially as specified.

3. The combination of the folding-rollers *D D*, *D' D'*, and *D² D²*, arranged as described, upper set of tapes, *h*, under set of tapes, *k*, with their tape rollers or pulleys, whereby the sheets are led from said folding-rollers to the next pair of folding-rollers, substantially as specified.

4. The combination of folding-rollers *D D*, *D' D'*, and *D² D²*, arranged as described, under set of tapes, *k*, upper set of tapes, *h*, guide-rods *L* and *L'*, and tape rollers or pulleys, arranged as described, whereby the quarter-size sheets are carried and delivered side by side under the succeeding folding-blade, substantially as specified.

5. The combination of the movable slit *C*, sets of tapes *a*, *b*, and *c*, blade *E²*, adapted to be disconnected from its driving-cam, adjustable blade *E*, adapted to be secured in position to fold one of the two quarter-size sheets or in position to fold half-size or full-size sheets, and folding-rollers *D D*, *D' D'*, and *D² D²*, substantially as specified.

JNO. J. CLAUSE.

Witnesses:

EDMUND ADCOCK,
EDW. S. EVARTS.