

No. 880,499.

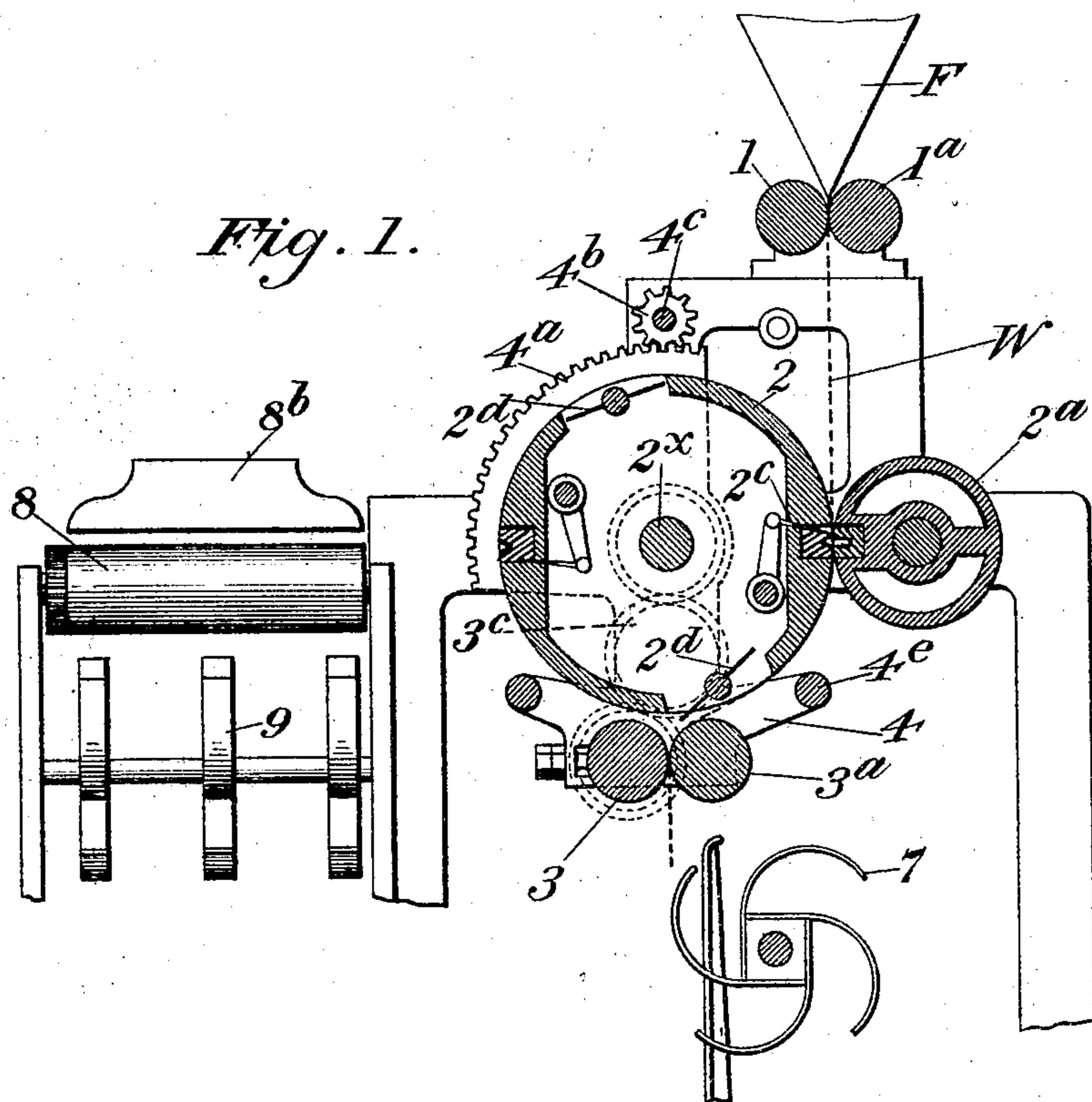
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H. F. BECHMAN.

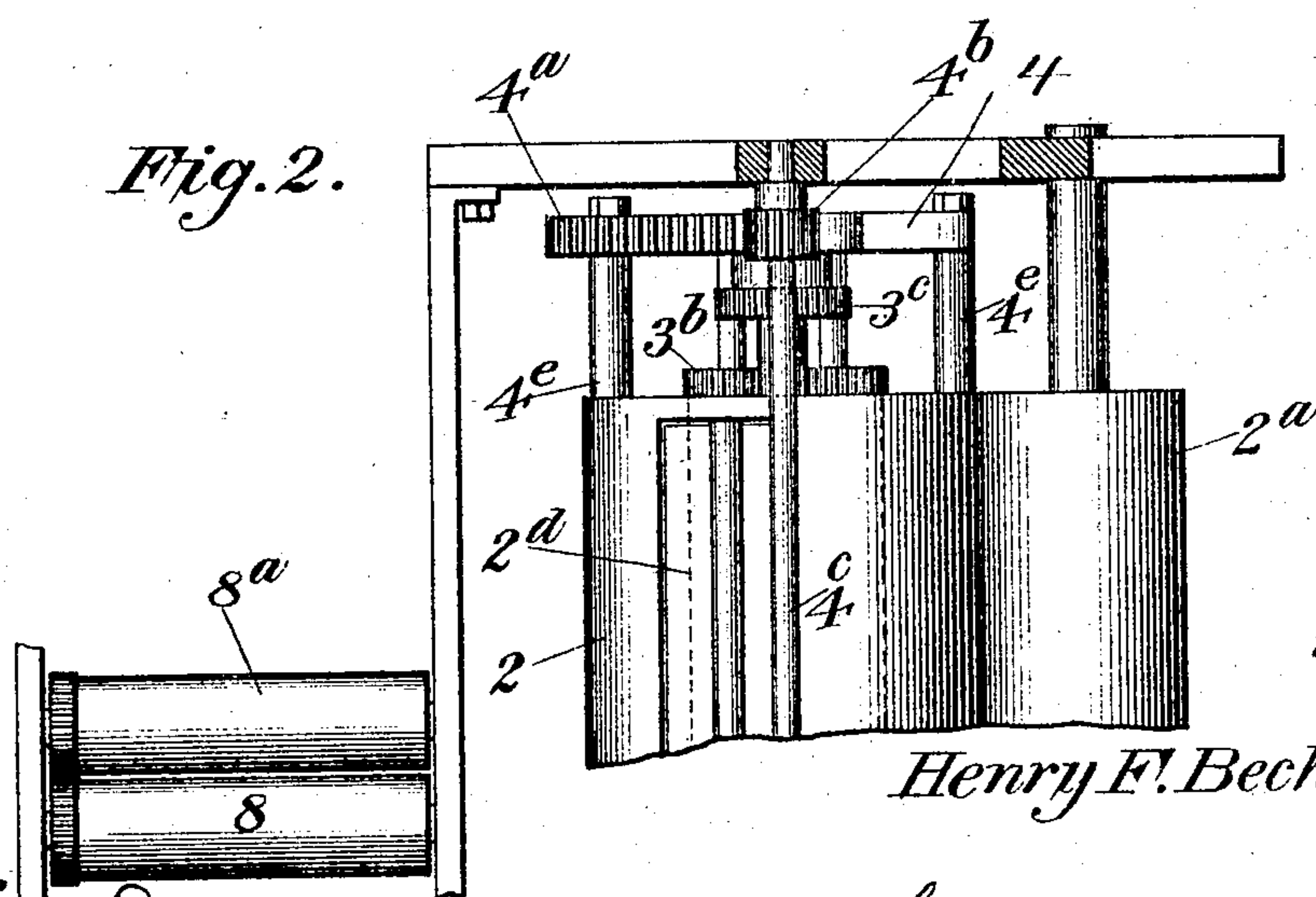
FOLDING MECHANISM FOR WEB PRINTING PRESSES.

APPLICATION FILED MAY 14, 1907.

2 SHEETS—SHEET 1.



*Fig. 2.*



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# FOLDING MECHANISM FOR WEB PRINTING PRESSES.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## FOLDING MECHANISM FOR WEB-PRINTING PRESSES.

No. 883,499.

Specification of Letters Patent.

Patented March 3, 1908.

Application filed May 14, 1907. Serial No. 373,864.

*To all whom it may concern:*

Be it known that I, HENRY F. BECHMAN, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Folding Mechanisms for Web-Printing Presses; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in folding mechanisms for web printing presses, and is particularly designed for use in connection with newspaper printing presses. Its object is to enable papers to be delivered folded either to half-size or to quarter-size at the will of the pressman, and to this end the invention consists in the novel construction whereby the second-fold rolls can be adjusted into position to deliver papers either direct to a stacker, or adjusted to another position to deliver papers to third-fold rolls or devices, this being accomplished by having the second-fold rolls mounted in adjustable supports and movable into one position to deliver papers folded half-size to the stacker, or into another position to deliver such papers to third-fold rolls or devices by which they may be folded to quarter-size before being delivered to the stacker.

The invention will be fully understood from the following description in connection with the accompanying drawings, in which—

Figure 1 is a detail sectional elevation of so much of a folding mechanism as is necessary to impart a thorough understanding of the invention, and showing the means for adjusting the second-fold rolls to different positions relatively to the collecting cylinder, the second-fold rolls being shown in position to deliver papers folded to half-size to an underlying stacker or receiving-box. Fig. 2 is a detail plan view of Fig. 1 certain parts being broken away. Fig. 3 is a view similar to Fig. 1, showing the second-fold rolls adjusted to deliver papers folded to half-size to the third-fold rolls or devices by which they are folded to quarter-size. Fig. 4 is a detail plan view of Fig. 3 certain parts being cut away.

The web can be led from the press (not shown) over former F to and between the first-fold rolls 1, 1<sup>a</sup>; and is then led between cutting cylinder 2<sup>a</sup> and folding cylinder 2. Below the folding cylinder 2 may be arranged a receiving box for papers folded to half size,

into which such papers may be delivered by a rotary fly 7,— and at one side of the folding cylinder are located the third-fold devices or rolls 8, 8<sup>a</sup>, between which the papers can be tucked by a blade 8<sup>b</sup>. The parts thus far mentioned may be constructed and arranged in the usual well known manner.

3 and 3<sup>a</sup> designate the second-fold rolls which in this instance are journaled in hangers 4 which are pivoted concentrically of the shaft 2<sup>x</sup> of the folding cylinders 2, and can be swung so as to move the rolls 3, 3<sup>a</sup> to either position indicated in Figs. 1 and 3 respectively, of the drawings.

To facilitate adjustment of the second-fold rolls, the hangers 4 are provided with segments 4<sup>a</sup> on their upper ends meshing with gears 4<sup>b</sup> on a transverse shaft 4<sup>c</sup> journaled in the frame of the folder, and which shaft can be operated by any suitable crank or wrench so as to rock the hangers and swing the second-fold rolls to the desired position. The rolls 3 and 3<sup>a</sup> may be inter-gearred as indicated at 3<sup>b</sup>, but any other suitable driving means may be provided which will drive the second-fold rolls in either adjusted position. The hangers 4 may be connected by tie rods 4<sup>e</sup> as desired.

When the second-fold rolls are adjusted into the position shown in Fig. 1 they underlie the folding cylinder and the cams (not shown) which operate the rotary tucking blades 2<sup>d</sup> of the folding cylinder, are adjusted so that these tucking blades are operated at the proper time when they are opposite the second-fold rolls, and so discharge the papers carried on the collecting cylinder to and between the fold-rolls 3 and 3<sup>a</sup> by which said papers are given a second fold, and thereby folded to half-size and discharged into the receiving box underlying the folding cylinder by the rotary fly 7. The folding cylinder 2 is provided with rotary tuckers 2<sup>d</sup> and collecting pins 2<sup>e</sup>, which are constructed as usual and should be provided with the usual operating gears and cams (not shown), as will be readily understood by any one familiar with this class of folding machines. The cylinders 2 and 2<sup>a</sup> are driven at the same peripheral speed by suitable gearing (not shown.)

The web indicated by the dotted line W is drawn over the former F and longitudinally folded by and between rolls 1 and 1<sup>a</sup> which give the first fold. The web then passes be-



tween the cylinders 2 and 2<sup>a</sup> by which it is severed into sheet lengths, as shown, and the sheets are carried round by the pins 2<sup>c</sup> until the centers of the sheets come opposite the second-fold rolls 3, 3<sup>a</sup>, then, at the proper time, the rotary tucker 2<sup>d</sup> is operated and the sheets are discharged between the second-fold rolls 3 and 3<sup>a</sup>. The operation of the tuckers and pins of the collecting cylinder forms no part of the present invention, the same being well understood, and therefore requires no further explanation herein.

If it is desired to fold the papers to quarter-size, the machine is momentarily stopped and the operator by turning shaft 4<sup>c</sup> swings the second-fold rolls 3, 3<sup>a</sup> up beside the folding cylinder and adjacent to the third-fold rolls 8, 8<sup>a</sup>, into the position indicated in Fig. 3, and the controlling cams (not shown) for the tuckers 2<sup>d</sup> and pins 2<sup>c</sup> are set so as to operate the pins and tuckers at such times, that after the papers have been carried round until centrally opposite the rolls 3, 3<sup>a</sup>, they will be discharged by the tuckers 2<sup>d</sup> between said rolls 3, 3<sup>a</sup>, from which the papers, folded to half-size, are discharged to the third-fold rolls 8, 8<sup>a</sup>, by which the papers are folded to quarter-size and discharged into a suitable receiving box by the rotary fly 9. Thus papers folded to half-size are discharged at one point, and papers folded to quarter-size are discharged at another point.

From the foregoing description in connection with the drawing any one familiar with this class of machinery will be able to readily apply the invention to folding mechanism. The principal feature of the present invention is the mounting of the second-fold rolls in such manner that they can be adjusted either to discharge the papers folded thereby directly into a stacker or receiving box, so that the papers will be delivered folded only to half-size, or such second-fold rolls can be adjusted to another position so that the papers folded to half-size thereby will be subjected to the action of the third-folding devices and folded to quarter-size before being delivered from the machine. By this invention the necessity of employing two sets of folding devices in the machine is obviated, and the one rotary folding mechanism can be made to deliver papers folded either to half-size or to quarter-size at the will of the operator.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a folding machine, the combination of a cutting cylinder, a coacting folding cylinder, a pair of folding rolls beside said folding cylinder, and means for adjusting said rolls to different positions around the folding cylinder.

2. In a folding mechanism, the combination of a cutting cylinder, a coacting folding

cylinder, a pair of folding rolls beside said folding cylinder, swinging supports for said rolls, and means for moving said supports whereby said rolls can be adjusted to different positions around the folding cylinder.

3. The combination with a pair of cutting and folding cylinders, a pair of folding rolls adjacent said folding cylinder, hangers pivoted axially to the folding cylinder, a pair of folding rolls mounted in said hangers, and means for adjusting said hangers so as to move the said rolls to position below or to one side of the folding cylinder.

4. In a folding mechanism, the combination of cutting devices, a set of folding devices located at one side of said cutting devices, a pair of second-fold rolls adapted to receive papers from the cutting devices, and means for adjusting said rolls so that they will discharge the papers to or away from the said folding devices whereby papers folded to quarter-size or to half-size may be obtained.

5. In a folding mechanism, the combination of cutting and folding cylinders, a pair of third-fold rolls located at one side of said cutting and folding cylinders, a pair of second-fold rolls adapted to receive papers from the said cylinders, and means for adjusting said second-fold rolls so that they will discharge the papers to the said third-fold rolls, or away from said rolls whereby papers folded to quarter-size or to half-size may be obtained.

6. In a rotary folding mechanism, the combination of cutting cylinders, and a folding device at one side of the said cylinders, with a pair of folding rolls adapted to receive papers from the cylinders and fold the same to half-size, and means for adjusting said folding rolls into one position to discharge the papers to the said folding device to be folded to quarter-size, or to adjust said rolls to another position to discharge the papers folded to half-size away from said folding device.

7. The combination of a pair of cutting and folding cylinders, a pair of folding rolls adjacent said cylinders, hangers pivoted axially of the cutting cylinder, a pair of folding rolls mounted in said hangers, and means for adjusting said hangers so as to move said rolls below or to one side of the collecting cylinder.

8. In a folding mechanism, the combination of a cutting cylinder, a folding cylinder, hangers pivoted axially of said folding cylinder, a pair of folding rolls journaled in said hangers, a second pair of folding rolls mounted adjacent the folding cylinder, and means for adjusting said hangers so as to move the folding rolls thereon into position between the cutting cylinder and the second set of folding rolls or to a position remote from said folding rolls.



9. The combination of a pair of cutting cylinders, a pair of folding rolls adjacent said cylinders, hangers pivoted axially of one cylinder, a pair of folding rolls mounted in said hangers, means for adjusting said hangers so as to move said rolls to position below or to one side of such cylinder, and another folding device adjacent such cylinder adapted to receive papers from the said folding rolls when the latter are adjusted in one position.

10. In a folding mechanism, the combination of a cutting cylinder, a folding cylinder, a stacker below the folding cylinder, a set of folding rolls at one side of the folding cylinder, a stacker below the said folding rolls, and an adjustable set of folding rolls mounted beside the folding cylinder adapted to be adjusted between the said cylinder and the stacker thereunder, or between the said cylinder and the other set of folding rolls.

11. In a folding mechanism, the combina-

tion of a former, a pair of folding rolls at the apex thereof, cutting and folding cylinders adjacent said folding rolls, hangers pivoted axially of the folding cylinder, a pair of folding rolls journaled in said hangers, and a third pair of folding rolls adjacent the cylinders; with means for adjusting said hangers to move the rolls thereon to position below the cylinder so as to discharge the papers folded to half-size, or whereby said rolls may be adjusted to position adjacent the third-fold rolls so as to discharge the papers folded to half-size to the third-fold rolls, substantially as described.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

HENRY F. BECHMAN.

Witnesses:

CHAS. G. MECHAN.

F. W. DUNNING.