

No. 840,470.

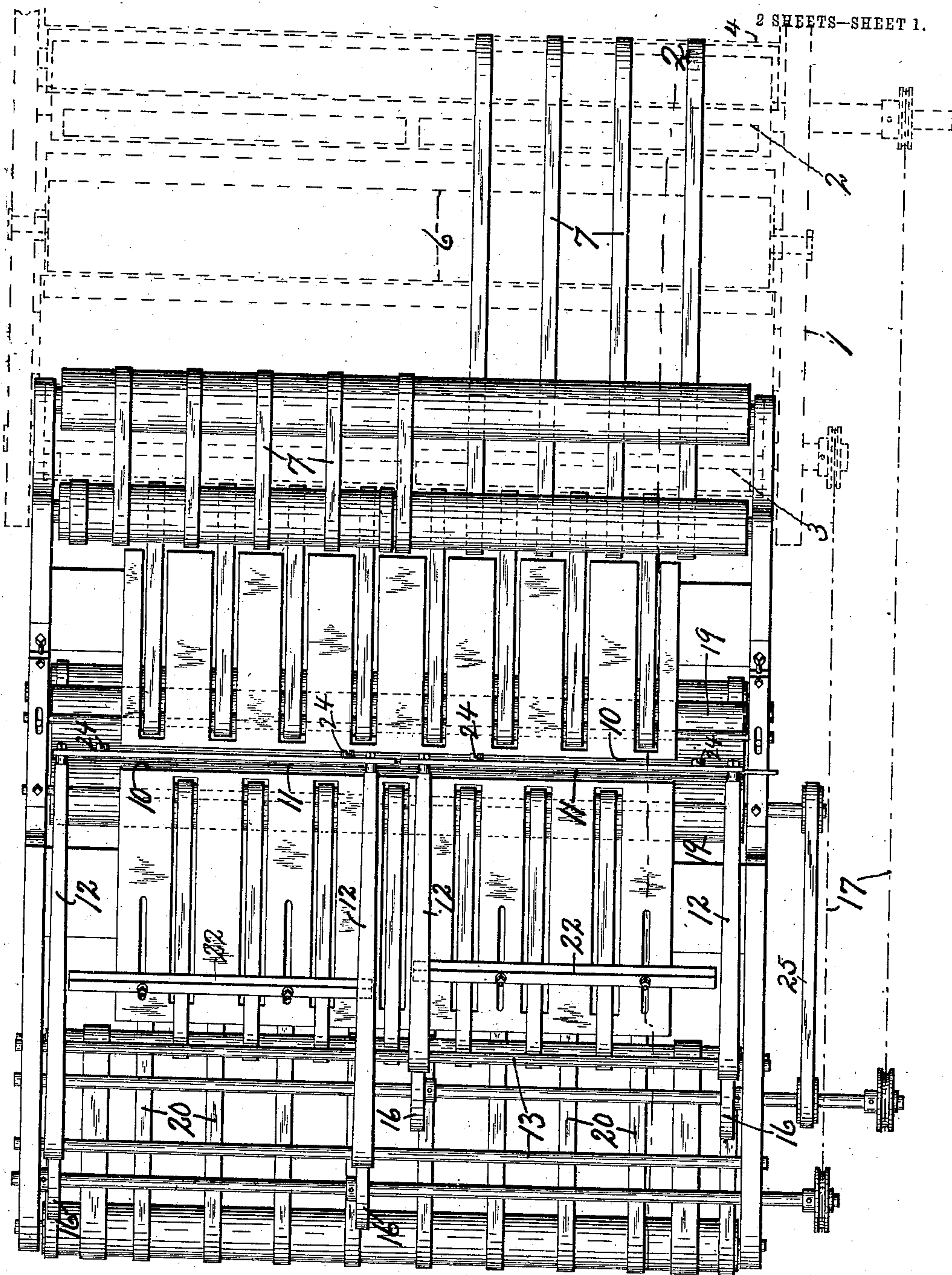
PATENTED JAN. 8, 1907.

J. BRANNAN.

PAPER FOLDING ATTACHMENT FOR PAPER CUTTING MACHINES.

APPLICATION FILED MAY 24, 1906.

2 SHEETS—SHEET 1.



WITNESSES

W. E. Chace

1. by

INVENTOR

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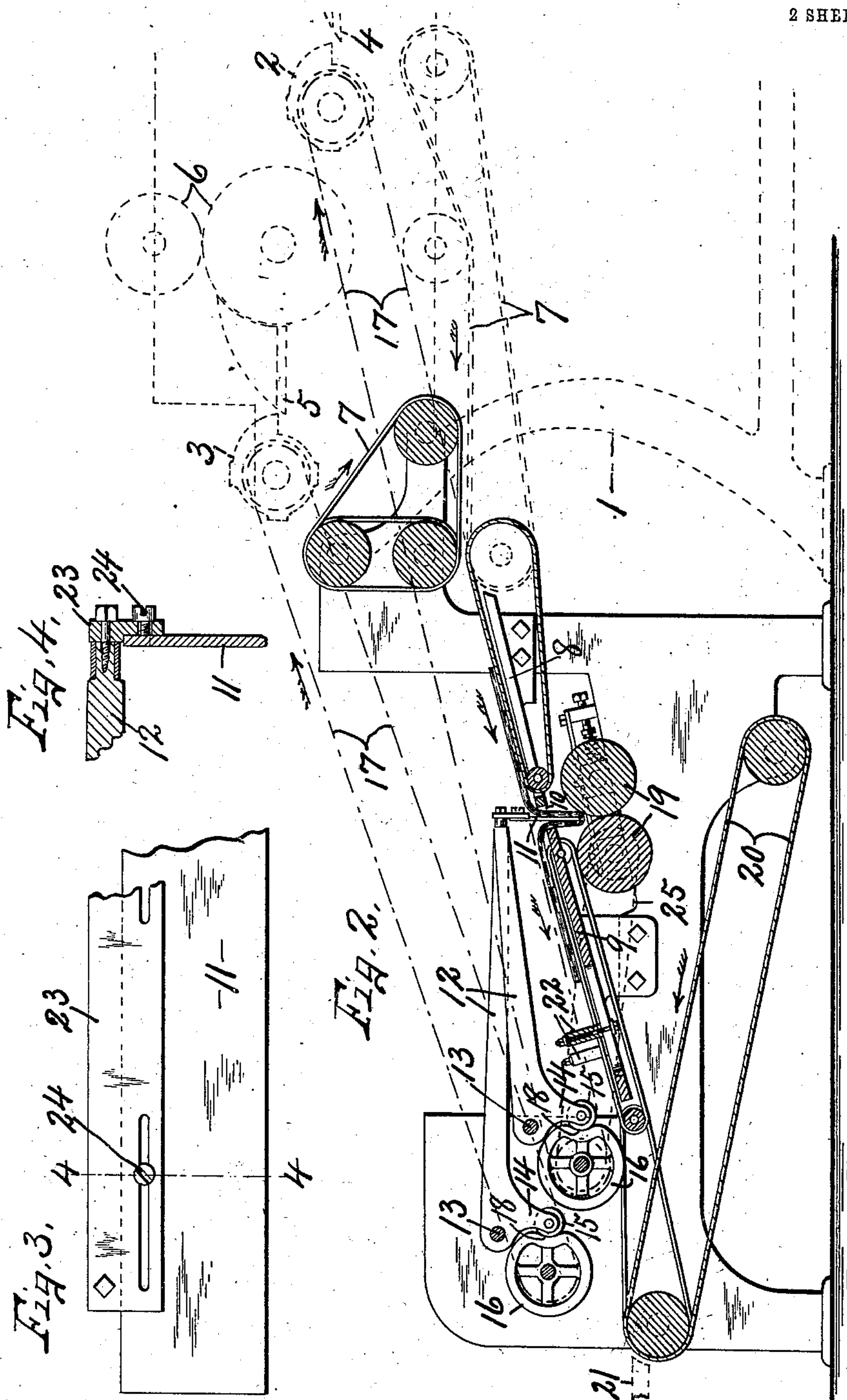
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WITNESSES

W. Schorneck
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UNITED STATES PATENT OFFICE.

JOHN BRANNAN, OF FULTON, NEW YORK.

PAPER-FOLDING ATTACHMENT FOR PAPER-CUTTING MACHINES.

No. 840,470.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed May 24, 1906. Serial No. 318,599.

To all whom it may concern:

Be it known that I, JOHN BRANNAN, of Fulton, in the county of Otsego, in the State of New York, have invented new and useful
5 Improvements in Paper-Folding Attachments for Paper-Cutting Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to a paper-folding attachment for paper-cutting machines in which the folding mechanism is operated in synchronism with and by certain rotary elements employed in the cutting-machine.

15 My object therefore is to associate with the cutting-machine proper a paper-folding device adapted to fold a predetermined number of sheets, as a quire of paper, as said sheets are cut and fed forwardly by the cut-
20 ting-machine, so that the cutting and folding is continuous in the same machine.

Another object is to provide a plurality of folding mechanisms in the same attachment whereby sheets of different sizes discharged
25 from the cutting-machine may be folded centrally and the folded sheets conveyed away from the folder by suitable conveyers, thereby discharging the sheets of each size in different places.

30 Other objects and uses will appear in the following description.

In the drawings, Figure 1 is a top plan of a portion of a paper-cutting machine and my improved paper-folding attachment associ-
35 ated therewith. Fig. 2 is a longitudinal vertical sectional view taken on line 2 2, Fig. 1. Fig. 3 is a face view of a portion of one of the folding-blades and its supporting-bar. Fig. 4 is a sectional view taken on line 4 4, Fig. 3.

40 In my cutter and folder a predetermined number—as, in this instance, twenty-four—sheets of the paper to be cut and folded are simultaneously fed from as many continuous rolls through the cutting-machine, where the
45 paper is cut lengthwise and transversely to the desired dimensions, and the cut sheets are then delivered by suitable conveyers to the folding attachment, where the sheets of each bunch are folded collectively through their
50 longitudinal or transverse centers, as may be desired, and delivered upon conveyers to be carried to any locality away from the folder.

A portion of the paper-cutting machine is shown by dotted lines in Figs. 1 and 2 as
55 comprising in its organization a main supporting-frame 1, rotary cutters 2 and 3,

shearing, respectively, with suitable fixed blades 4 and 5, to which a number of sheets—in this instance twenty-four—are fed from as many continuous rolls by feeding-rollers 6, 60 the cut sheets of paper being then delivered upon one or more conveyer-belts 7, which carry the bunches of cut sheets collectively and flatwise to the folders. The folding attachment is therefore permanently associ- 65 ated with the tail end of the cutting-machine and comprises, essentially, inclined beds or tables 8 and 9, arranged one in advance of the other and having their meeting edges spaced some distance apart at 10 to receive 70 one or more—in this instance two—vertically-movable folding-blades 11. Each of these blades is mounted upon a vertically-rocking frame composed of rock-arms 12, which are mounted upon a shaft or fulcrum 75 13, and are provided with pendent extensions 14, carrying roller 15, which bear upon the periphery of the rotary cams 16. These cams 16 are driven from certain revolving parts—in this instance the rotary cutter- 80 heads 2 and 3—of the paper-cutting machine, said cutter-heads being provided with pulleys which are connected by belts 17 to pulleys on the shafts of the cams 16. Each of the cams is provided with a depression 18 85 in one side to allow the arm 12 to drop and to thereby cause the folder-blade 11 to press the center of the bunch of sheets of paper through the opening 10 and between suitable folding and feeding rollers 19, by which the 90 folded sheets are delivered upon a conveyer-belt 20 and thereby carried to the rear end of the folding attachment and deposited upon a bed 21. (Shown by dotted lines in Fig. 2.) It is now obvious that the move- 95 ment of the cams 16 and arms 12 and folding-blade 11 attached thereto are synchronized with the cutters 2 and 3, and in order that the different-sized sheets may be folded centrally I provide table 9 with stops 22, 100 which are adjustable lengthwise of the table at the rear of the folder-blade 11, and constitute abutments for the advancing ends of the sheets to temporarily stop the forward movement of the said sheets during the de- 105 pression of the folder-blade, while forcing the central portions of the sheets through the opening 10 and between the delivery-rollers 19. One of these rollers 19 is mounted upon movable bearings which are spring-pressed 110 toward the other roller, thereby enabling one of said rollers to yield under different thick-

nesses of paper and still be able to feed the folded paper between said rollers and onto the underlying conveyer-belt 20.

As best seen in Figs. 3 and 4, the blade 11 is made extensible or slidable laterally to accommodate itself to different widths of sheets as they are fed from the cutting-machine, and said blade is therefore mounted upon and adjustable along a bar 23, which is secured to the ends of the arms 12, the blade being held in its adjusted position by set-screws 24. These blades and their supporting elements are preferably arranged side by side transversely of the table 9, so that the strips of paper of different widths which are fed side by side upon the tables 8 and 9 beneath their respective folders 11 are each engaged and depressed, through the opening 10, by one of said folders, there being one of the stops or abutments 22 for each folder to permit sheets of different lengths to be folded centrally and simultaneously. Rotary motion is imparted to one of the rollers 19 through the medium of a belt 25, which connects the shaft of the rear roller 19 with the shaft of one of the cams 16, as best seen in Fig. 2.

In operation the continuous strips of paper, which are of considerable width, are fed through the cutting-machine in any well-known manner not necessary to herein describe, where they are cut to the desired width and length, and the cut sheets are then delivered upon the endless belt 7, by which they are conveyed upon the tables 8 and 9 under their respective folding-blades 11 until their advancing ends abut against their respective stops or abutments 22, at which time the arms 12 and their folding-blades 11 are allowed to descend by the depression 18 in the cams 16, thereby causing the blades 11 to force the central portions of the sheets collectively through the openings 10 and between the feeding-rollers 19, which deliver the folded papers upon the endless carrier 20, the latter serving to convey the folded sheets upon the delivery-bed 21, where they may be removed in bunches, each having a predetermined number—in this instance twenty-four sheets, or one quire. When sheets of different lengths or widths are required, the abutments 22 are adjusted toward or from the opening 10, so that the intervening distance is substantially equal to one-half of the length of the sheets, while the blades 11 are adjusted to suit the width of the sheets.

The improved device may be constructed in any required width and with any required number of the adjustable stops 22 and with stops of any required length to correspond to the different widths of paper to be folded; but for the purpose of illustration two of the stops 22 only are shown. The longitudinal slots in the table 9, whereby the stops 22 are rendered adjustable, enable the latter to be adjusted to correspond to the different widths

of the paper, so that each width of paper will be discharged at a predetermined point or in a different place upon the conveyer-belts 20.

What I claim is—

1. In a device of the class described, a supporting-frame, two tables disposed transversely of said frame and with their adjacent edges spaced at a relatively short distance, one of said tables having a plurality of longitudinal slots, folding-rollers operating below the spaces between the adjacent edges of said tables, a plurality of stop members bearing over said slotted table, a clamping means carried by said stop members and operating through said slots, means for simultaneously feeding paper in varying lengths over said tables and against said several stop members, folding-blades corresponding in number to said stop members, means for simultaneously actuating said folding-blades to cause them to extend through a space between the adjacent edges of said tables and carrying the paper to the folding-rollers.

2. In a device of the class described, a supporting-frame, two tables disposed transversely of said frame and with their adjacent edges spaced at a relatively short distance, folding-rollers operating below the space between the adjacent edges of said table, stop members corresponding in number with the varying widths of paper to be folded and disposed transversely of one of said tables, means for independently adjusting said stop members to correspond with the varying widths to be folded, means for simultaneously feeding paper in varying lengths over said tables and against said several stop members, folding-blades corresponding in number to said stop members, means for simultaneously actuating said folding-blades to cause them to extend through a space between the adjacent edges of said tables and carrying the paper to the folding-rollers.

3. In a device of the class described, a supporting-frame, two tables disposed transversely of said frame with their adjacent edges spaced at a relatively short distance, folding-rollers operating below the space between the adjacent edges of said tables, stop members corresponding in number with the varying widths of paper to be folded and disposed transversely of one of said tables, means for independently adjusting said stop members to correspond with the varying widths of paper to be folded, means for simultaneously feeding paper in varying lengths over said tables and against said several stop members, arms swinging from said frame and provided with head members corresponding to the stop members and each provided with spaced longitudinal slots, folding-blades bearing upon each of said heads and secured adjustably thereto by clamp-screws operating through the slots in said head members, and means for simultaneously actuating said

arms and the folding-blades carried thereby.

4. In a device of the class described, a supporting-frame, two tables disposed transversely of said frame with their adjacent
5 edges spaced at a relatively short distance, folding-rollers operating below the space between the adjacent edges of said tables, stop members corresponding in number with the varying widths of paper to be folded and disposed transversely of one of said tables,
10 means for independently adjusting said stop members to correspond with the varying widths of paper to be folded, means for simultaneously feeding paper in varying lengths
15 over said tables and against said several stop

members, arms mounted to swing upon said frame and provided with head members corresponding to the various widths of paper to be folded and each arm provided with a depending projection, the folding-blades carried by each of said heads, and cams arranged
20 to simultaneously engage said projections and elevate said folding-blades after each action.

In witness whereof I have hereunto set my
hand this 21st day of May, 1906.

JOHN BRANNAN.

Witnesses:

H. P. DENISON,
MILDRED M. NOTT.