

May 31, 1932.

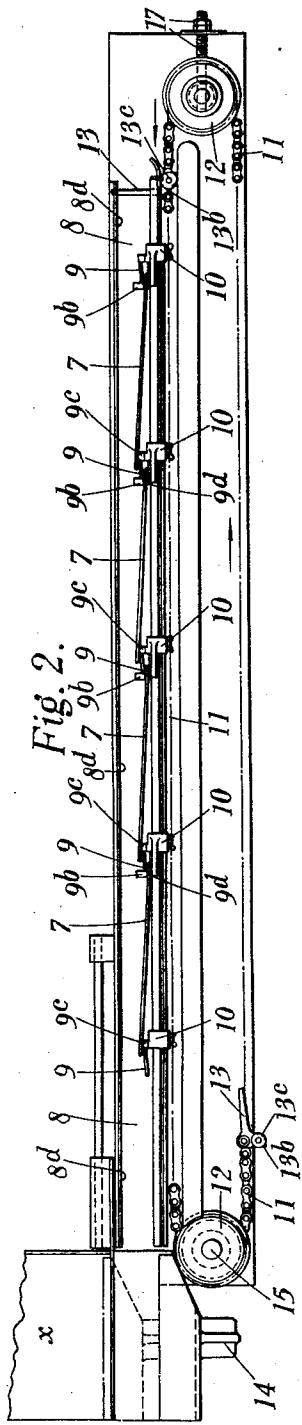
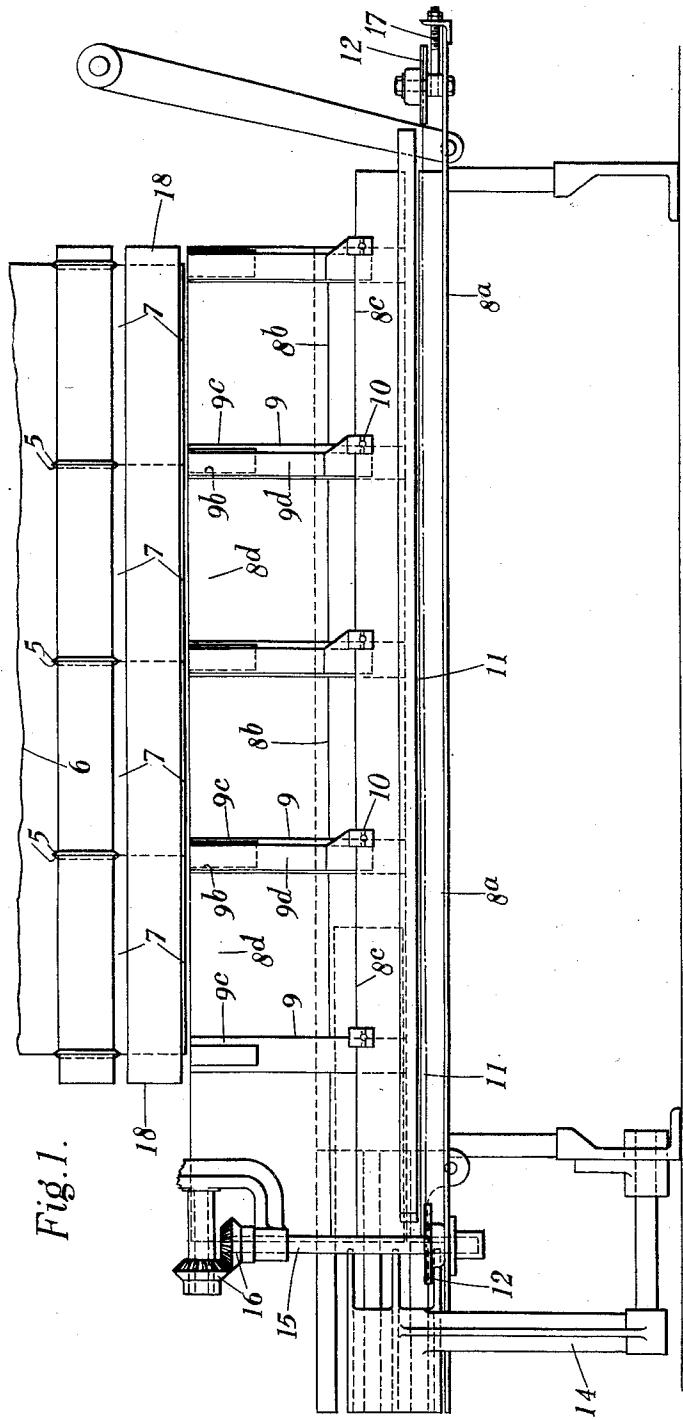
T. COOK

1,861,406

MEANS FOR GATHERING AND/OR COLLATING SHEETS OF  
PAPER, BOOK SIGNATURES, OR THE LIKE

Filed Sept. 26, 1930

3 Sheets-Sheet 1



INVENTOR  
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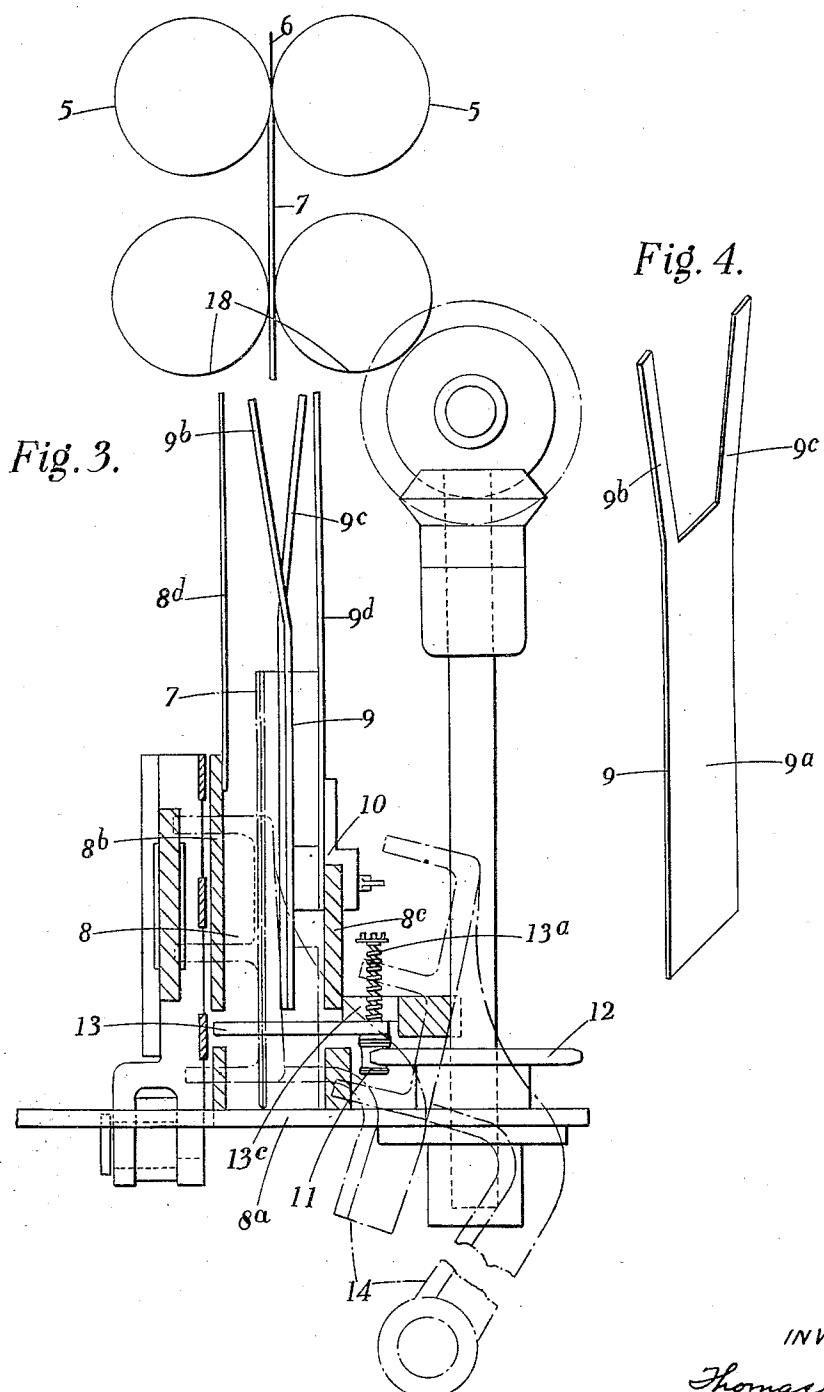
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Fig. 5.

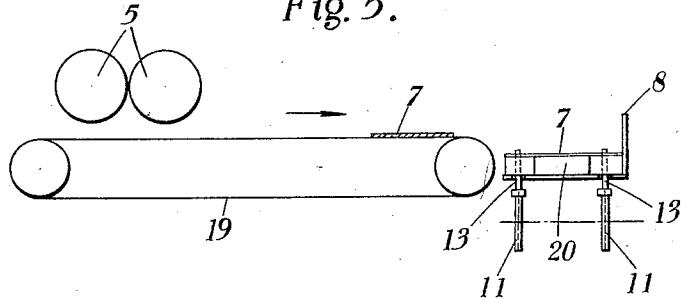


Fig. 6.

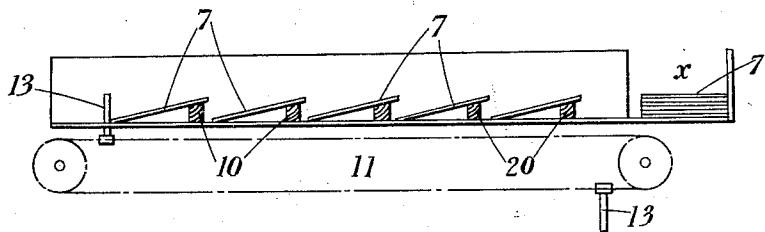
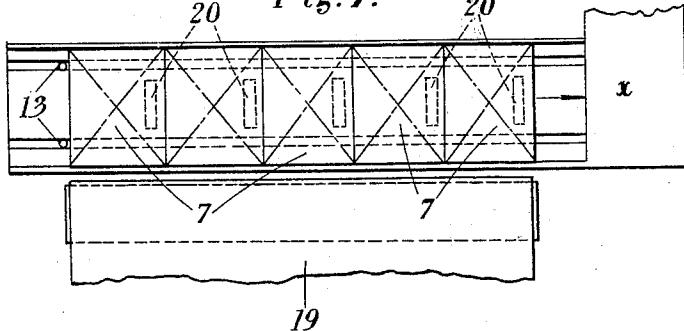


Fig. 7.



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## UNITED STATES PATENT OFFICE

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MEANS FOR GATHERING AND/OR COLLATING SHEETS OF PAPER, BOOK SIGNATURES, OR THE LIKE

Application filed September 26, 1930, Serial No. 484,533, and in Great Britain October 3, 1929.

This invention has reference to means for collating sheets of paper, book signatures or the like, and it has for its object to provide improved, simple and efficient means whereby sheets or sections of paper, book signatures or the like may be collated in desired order or sequence.

According to the invention the sheets, book signatures, or the like are fed or delivered to guiding means or devices whereby the sheets or book signatures or the like are so relatively staggered, diverted, positioned or spaced that when they are moved into line with each other or into a common plane they are assembled or collated in ordered sequence.

The invention will be hereinafter fully described in connection with the embodiments of my invention illustrated in the accompanying drawings, in which Fig. 1 is a front elevation of one arrangement of collating means embodying my invention, Fig. 2 is a plan of Fig. 1, Fig. 3 is a transverse section of Fig. 1 to a larger scale, and Fig. 4 is a perspective view of one of the guide devices hereinafter more particularly referred to. Figs. 5, 6 and 7 are respectively a diagrammatic side view, longitudinal section and plan, illustrating an alternative arrangement.

Referring to the drawings, 5—5 indicate pairs of cutting discs between which the finally folded sheet of paper 6 is passed and which cut the folded sheet transversely into four sections 7—7. Below the cutters 5—5 is arranged a guide channel 8, constituted by a bottom plate 8<sup>a</sup> a rear wall 8<sup>b</sup> and a front bar 8<sup>c</sup>, into which the sections issue or are delivered vertically from the cutters. In the guide channel 8 are provided guide devices 9 each of which consists, as shown best in Fig. 4, of a metal strip 9<sup>a</sup> formed at the upper end with spaced guide parts 9<sup>b</sup>, 9<sup>c</sup>, respectively, bent or inclined, one rearwardly and the other forwardly. The guide devices 9 are carried by clips 10 adjustably mounted on the front bar 8<sup>c</sup> in order that they may be adjusted relatively to each other according to the spacing of the cutters 5, 5 and the size or width of the section 7—7. The rear wall 8<sup>b</sup> of the guide channel 8 is

provided with an extension 8<sup>d</sup> which reaches to the top of the guide parts 9<sup>b</sup>, 9<sup>c</sup> of the guide 9 for adequate vertical support of the sections and for a like purpose the clips 10 carrying the guides also carry vertical strips 9<sup>d</sup>.

The guides 9 are adjusted in line with the cutters and as the sections 7 issue or are delivered from the cutters 5—5 into the guide channel 8, one end of a section comes into engagement with the guide part 9<sup>b</sup> of the corresponding guide 9 and is thereby pushed forward or diverted between the guide and the strip 9<sup>d</sup>, while the contiguous end of an adjacent section comes into engagement with the guide part 9<sup>c</sup> of the guide and is pushed or diverted rearward between the guide and the rear wall 8<sup>b</sup> of the guide channel. In this way the sections are delivered into the guide channel in the (when viewed in plan) inclined or staggered relation, illustrated in Fig. 2, with one end of a section to the rear of the contiguous end of an adjacent section.

It will be apparent that when the sections are lying in the guide channel in the inclined or staggered relation shown in Fig. 2, the sections will, if moved towards the left hand in Fig. 2, pass into line with each other, or into a common plane, in the packing trough  $\alpha$ , in ordered sequence one behind the other. For so moving the sections along the guide channel into the packing trough, there is provided an endless chain 11 mounted on sprocket wheels 12 and carrying pivotally mounted fingers 13, adapted to operate in the lower part of the guide channel 8 and below the guides 9, and below the rear wall 8<sup>b</sup> and the front bar 8<sup>c</sup> or in gaps or slots therein. The chain 11 is driven in the direction indicated by the arrows in Fig. 2 and as a finger 13 travels along in the lower part of the guide channel 8, it picks up each section in turn and moves the same behind the next, until the whole of the sections collated one behind the other are delivered as a pack into the trough  $\alpha$  wherein they are acted upon by the packer 14 which operates in the usual manner. The pack of collated sections may, however, be acted upon, or dealt with, by

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any other desired means or in any other desired way.

One of the sprocket wheels 12 over which the chain 11 runs is driven by a shaft 15 and bevel gearing 16 from any suitable moving part of the folding and cutting machine and the other wheel is mounted in a slot in the plate 8<sup>a</sup> in which it can be adjusted by screw and nut mechanism 17 to adjust the tension of the chain.

10 The pivoted fingers 13 are preferably acted upon by springs 13<sup>a</sup> Fig. 3, which tend to cause the fingers to fold parallel to the chain as shown at the left hand side of Fig. 2, and the fingers are provided with tail pieces 13<sup>b</sup> carrying bowls 13<sup>c</sup>, which, when the fingers are about to enter the guide channels 8, engage the front bar 8<sup>e</sup> which then causes the fingers to turn on their pivots, more or less at right angles to the chain as shown at the right hand side of Fig. 2 to pick up the sections, and maintains the fingers in such position until, when they pass out of the guide channel, the bowls 13<sup>c</sup> disengage the front bar 8<sup>e</sup> and allow the fingers to be again turned parallel to the chain by the springs 13<sup>a</sup>. It will be obvious that the operations of the fingers 13 must be appropriately timed relatively to the delivery of the sections from the cutters 5—5 into the guide channel 8.

15 Preferably, a pair of rollers 18 is provided between the cutters 5 and the guide channel 8 to maintain control of the severed sections as they issue from the cutters and until they come into engagement with the guides 9—9.

Instead of the sections 7 being relatively displaced or staggered by the guides 9—9 when they are delivered into the guide channel 8, they may be delivered into the channel in alignment with each other, and as they are moved along in the channel they may be acted upon by pushers which deflect them relatively to each other, so that they pass one behind the other and are collated into a pack in ordered sequence.

20 In some cases the sections may be delivered into the guide channel so that they lie more or less horizontally or at any suitable angle to the horizontal and/or vertical with the contiguous ends of adjacent sections so raised and lowered or otherwise relatively displaced, that when the sections are moved into line with each other they are collated one in front of the other. For example, and as ill-

25 lustrated in Figs. 5, 6 and 7, the sections 7 may be delivered from the cutters 5—5 horizontally or flat upon an endless traveling belt 19 which in turn delivers them in like manner to a guide channel or equivalent 8, which has arranged in it appropriately spaced projections 20 by means of which the forward end of each section is raised relative to the rear end of the adjacent section. The sections are moved along in the guide channel by means of fingers 13 carried by endless

chains 11, 11 appropriately spaced so that the fingers clear the projections 20. As the sections are moved along each in turn is pushed over the projection on which its forward end rests on to the next section, and the pack of sections collated one above the other is delivered into the trough  $\alpha$ .

What I claim as my invention and desire to secure by Letters Patent is:—

1. A device for collating sections of paper comprising means for dividing the paper into sections, a guide channel, means for delivering the paper sections vertically into the guide channel, vertical guide members adapted to engage the edges of the paper sections, said guide members including straight sections and inclined sections adapted to move the contiguous edge of one section transversely relative to the adjacent section, and means for moving the several sections longitudinally of the guide channel into transverse alignment.

2. A device for collating sections of paper comprising a guide channel, means for delivering the paper sections in a vertical direction into the guide channel, vertical guide members adapted to engage the contiguous edges of adjacent sections including a straight vertical solid portion and a bifurcated end portion, the arms of the bifurcated end portion being inclined to the vertical portion in opposite directions for causing the edge of one section to extend along one side of the vertical guide member and the contiguous edge of an adjacent section to extend along the opposite side of the guide member, and means for moving the several sections longitudinally of the guide channel into transverse alignment.

3. In a device for collating sections of paper, a guide member adapted to engage the contiguous edges of adjacent sections comprising a solid portion and a bifurcated portion, the arms of the bifurcated end portion being inclined to the plane of the solid portion in opposite directions for causing the edge of one section to extend along one side of the solid portion of the guide member and the contiguous edge of an adjacent section to extend along the opposite side of the solid portion of the guide member.

In witness whereof I have hereunto set my hand.

THOMAS COOK.

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