

(No Model.)

F. WOOD.

MACHINE FOR GATHERING THE FOLDED SHEETS OR SIGNATURES OF A  
BOOK FOR BINDING.

No. 336,878.

Patented Feb. 23, 1886.

Fig. 1.

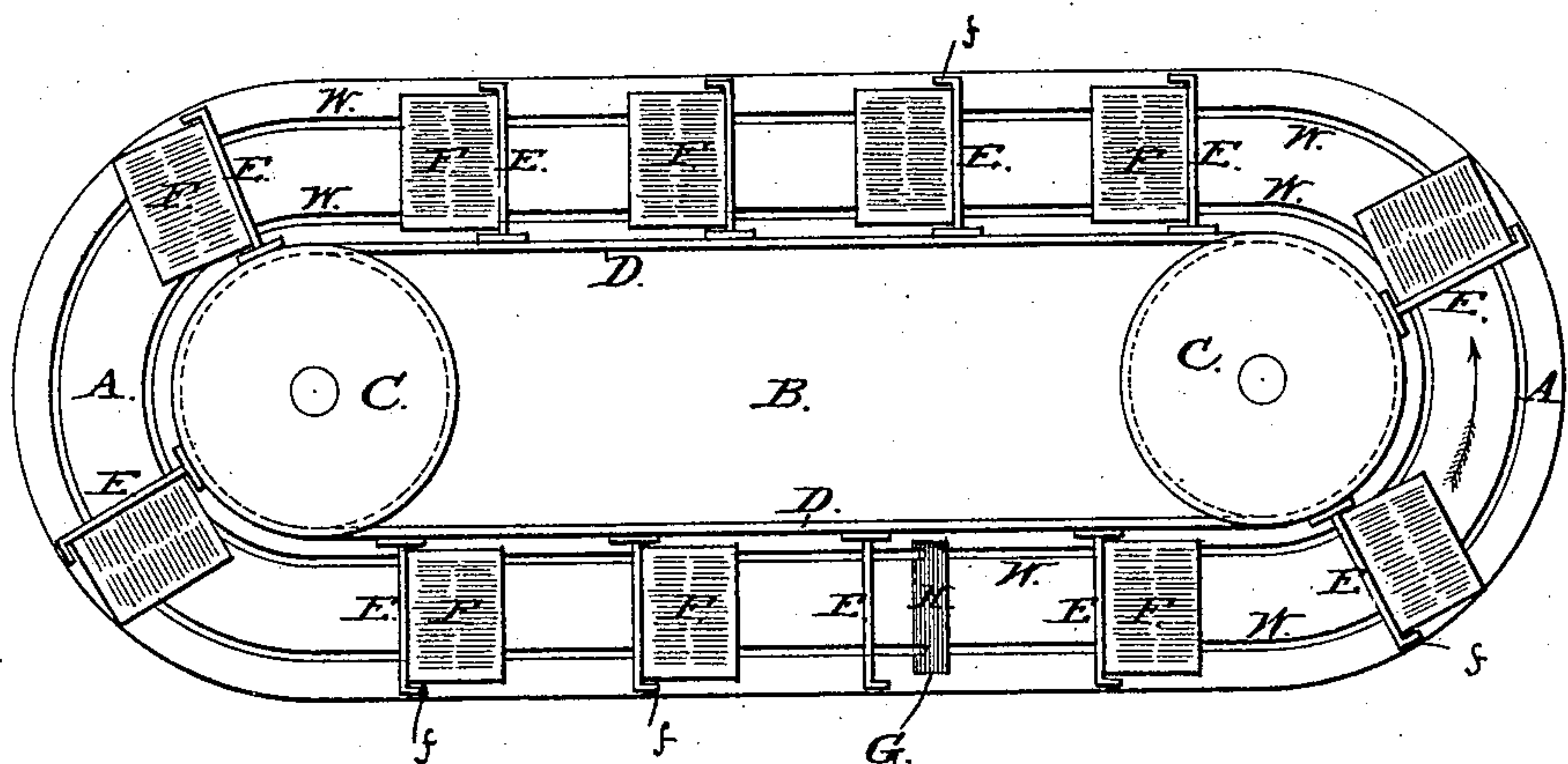


Fig. 2.

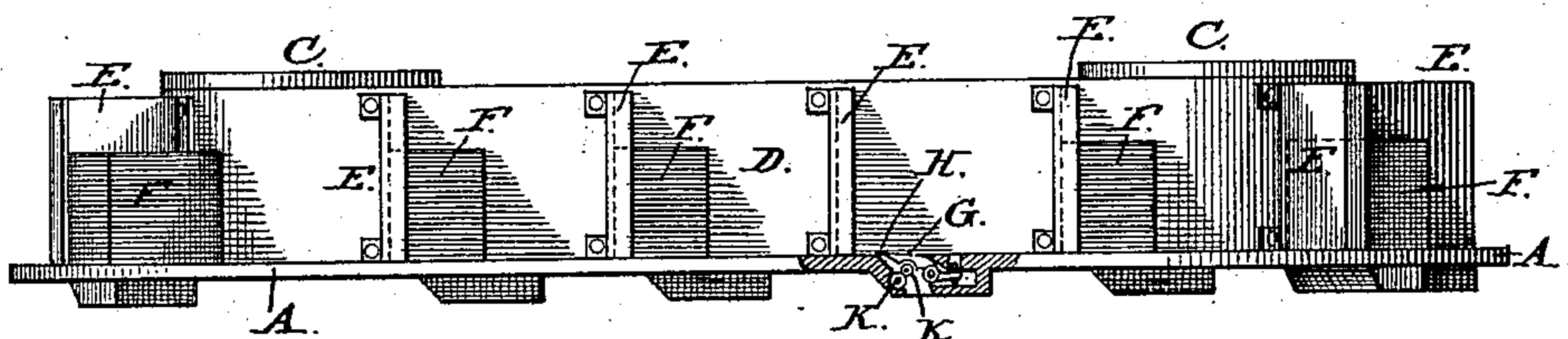


Fig. 3.

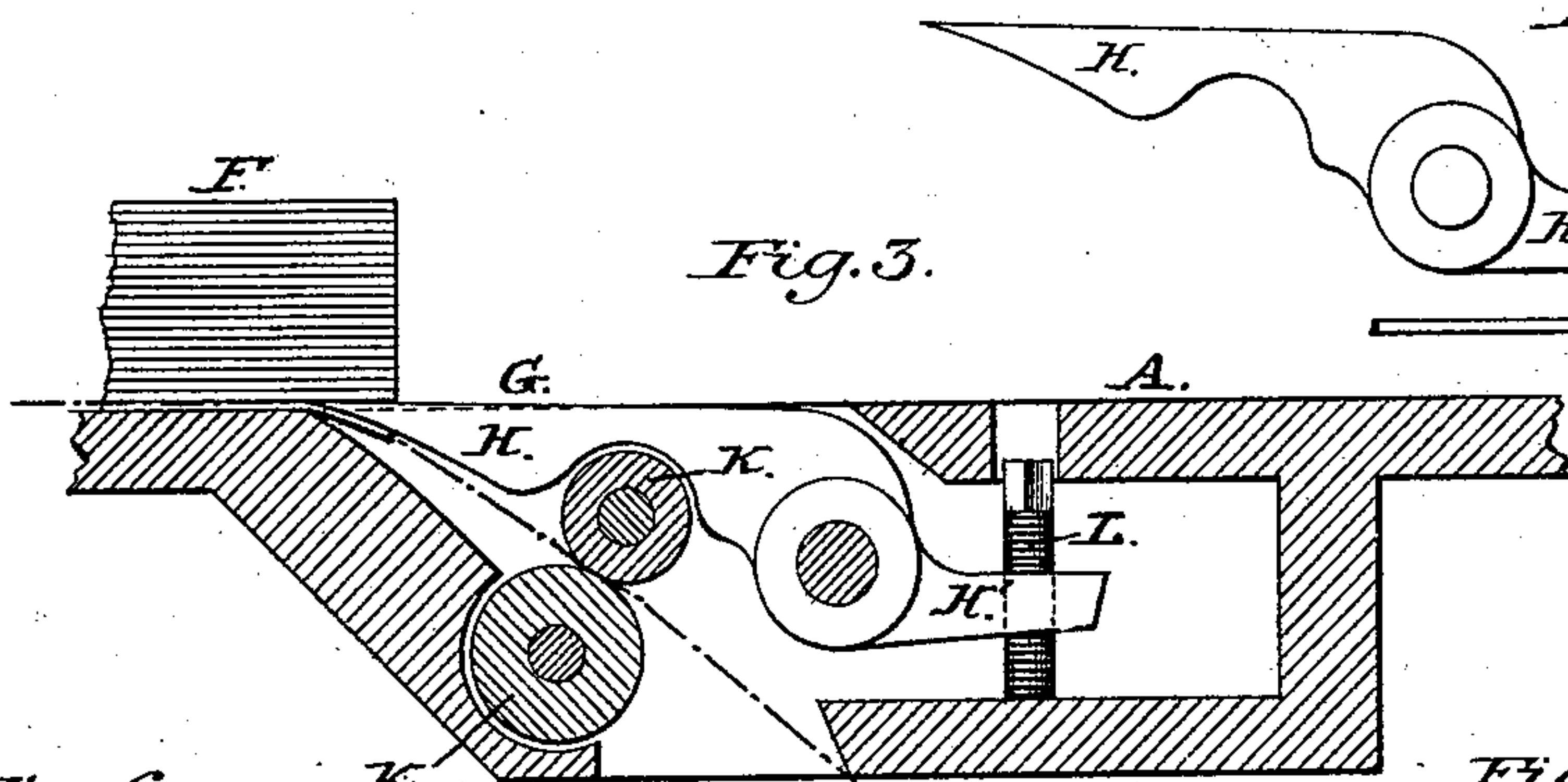


Fig. 5.

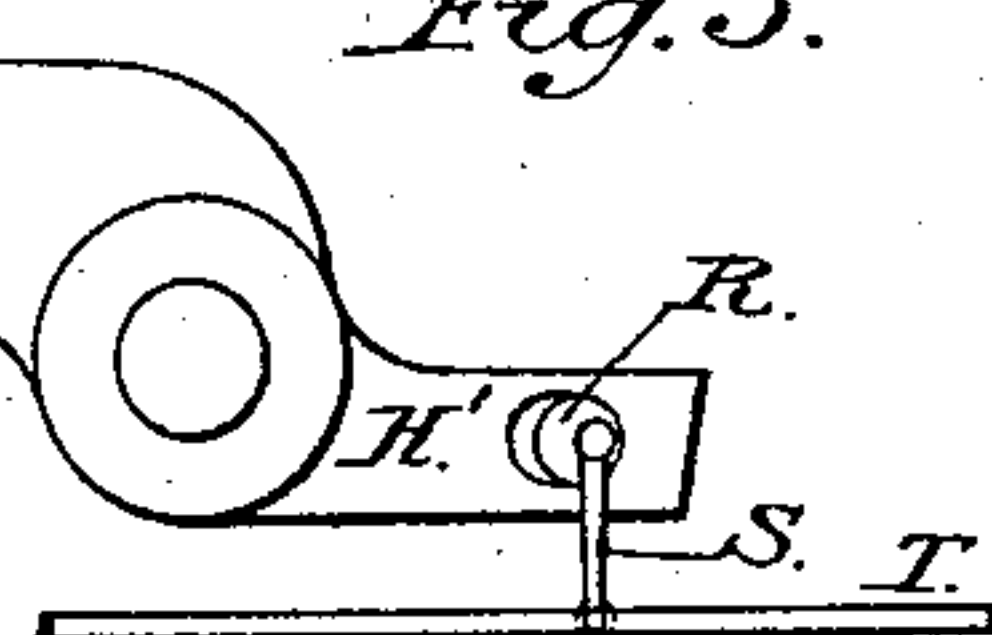


Fig. 6.

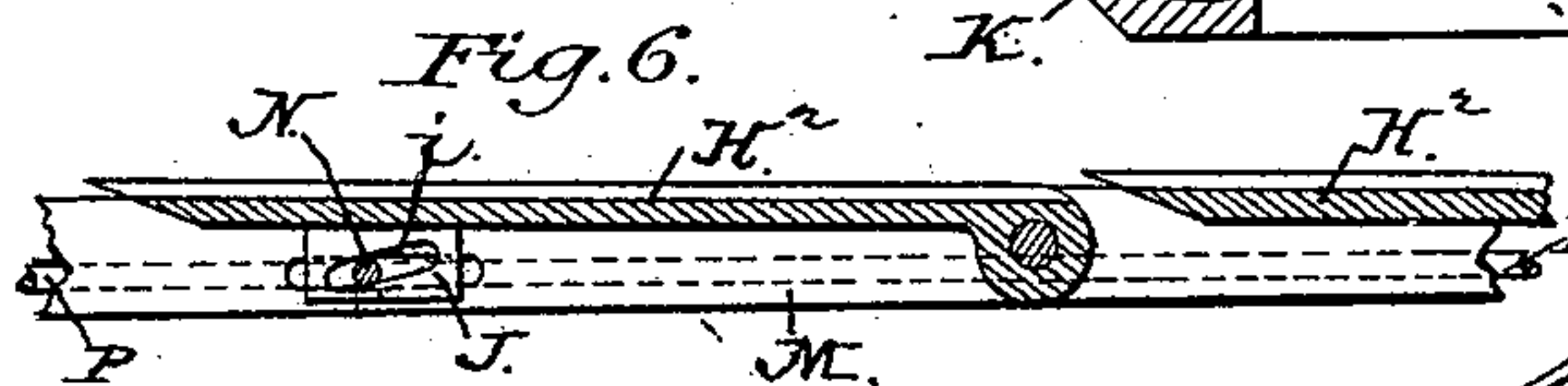
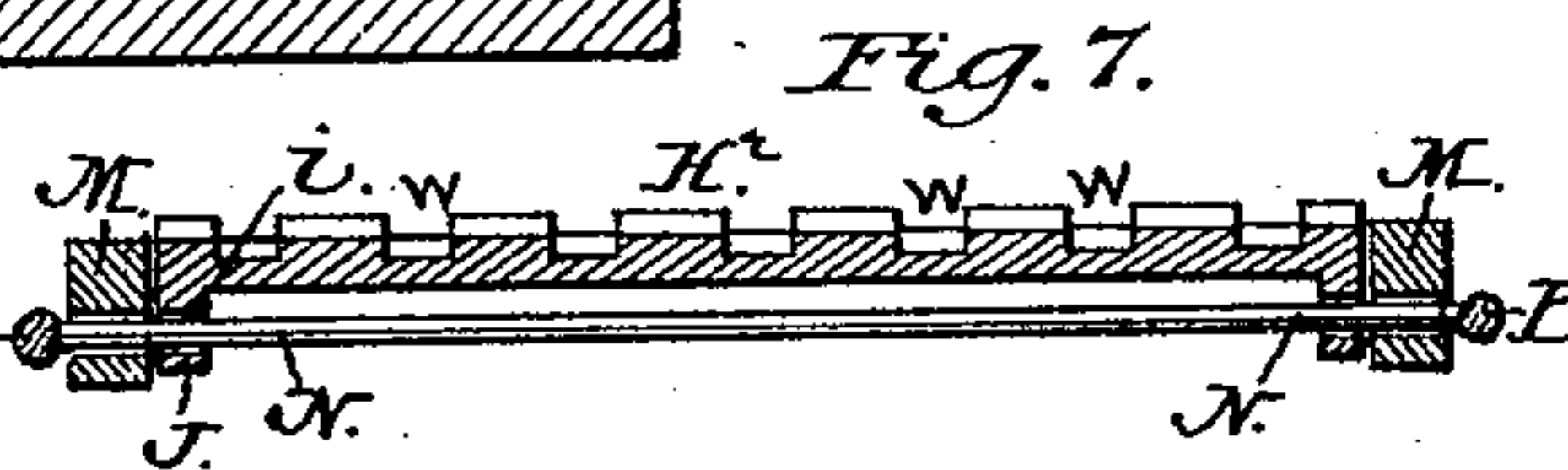


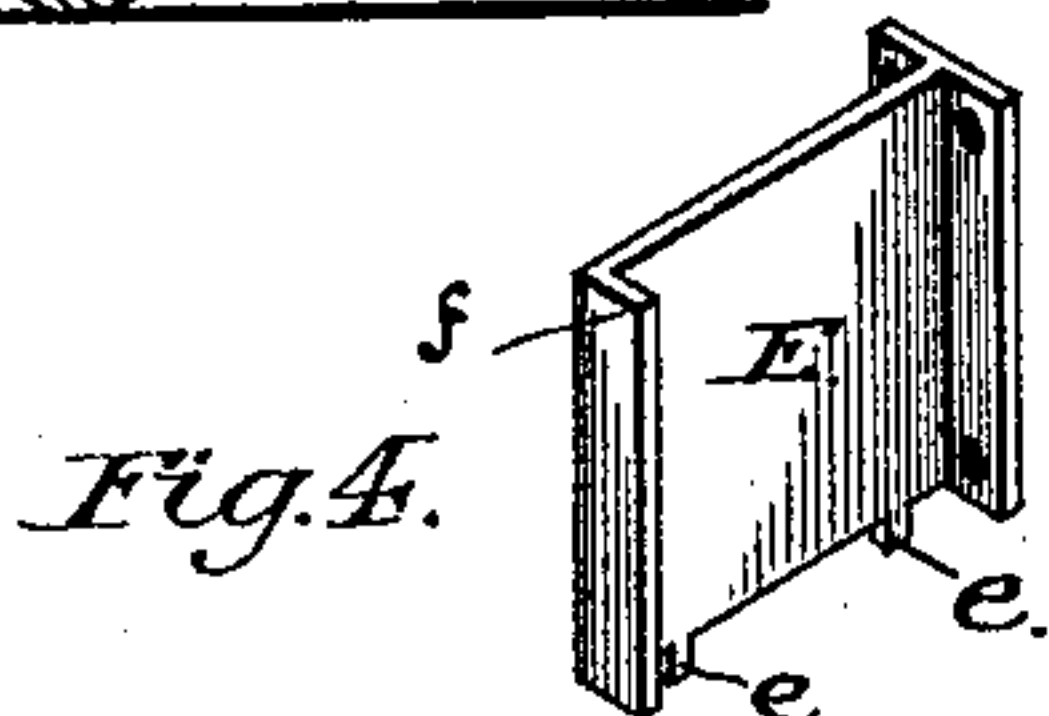
Fig. 7.



Attest:

John A. Ellis  
A. B. Moore.

Fig. 4.



Inventor:

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By David A. Burr  
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# UNITED STATES PATENT OFFICE.

FRANCIS WOOD, OF BROOKLYN, NEW YORK.

MACHINE FOR GATHERING THE FOLDED SHEETS OR SIGNATURES OF A BOOK FOR BINDING.

SPECIFICATION forming part of Letters Patent No. 336,878, dated February 23, 1886.

Application filed June 15, 1885. Serial No. 168,703. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS WOOD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Gathering the Folded Sheets or Signatures of a Book for Binding; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a plan view of my gathering-table; Fig. 2, a side elevation of the upper part thereof, partly in section, to illustrate the position and arrangement of the gathering-blade and receiving-rollers; Fig. 3, an enlarged sectional view of one of the blades and sets of rollers; Fig. 4, a detached view, in perspective, of one of the propelling-plates; Fig. 5, a view of one of the separating-blades, illustrating a modification in the means for its adjustment. Fig. 6 illustrates a modification in the construction of the table or way over which the forms are propelled, Fig. 7 being a transverse section in line *x x* of Fig. 6.

The object of my invention is to accomplish automatically and mechanically the work of gathering and assembling in proper order the printed and folded sheets or signatures for a book, preparatory to binding the same. This I accomplish by moving the piles of separate sheets in a continuous circuit over a suitable endless or extended fixed way or table by means of devices fitted to project over the way or table from an endless belt or carrier moving continuously along the table or from the radial arms of a central rotating shaft, the way or table being fitted with a gathering-blade or series of blades so adjusted as that the front or upper edge of the blade shall project slightly above the level of the table at an inclination opposed to the line of movement of the folded sheets or signatures, and in position to enter automatically between the lowermost signature in each pile and that next above it, and thereby deflect and guide the sheets downward through the opening as the pile is pushed forward by the movement of the carrier. A separation of the lowermost folded sheet or signature from those above it, as well as its delivery upon a pile

beneath, is thus effected; and the lower pile is made up thereby of one signature from each pile which has previously passed over the opening. The delivery of the separated sheet or signature after it passes under the gathering-blade down to the pile beneath is facilitated by means of receiving-rollers, and means are provided for adjusting the angle of the gathering blade or blades, and for simultaneously lowering all the blades, so as to arrest the gathering and delivery of the folded sheets or signatures at any moment as required, without arresting the movement of the carrier, if desired.

A represents the top of a table, made, preferably, of metal or lined with metal, to present a smooth surface, and constructed to surround a central open space, B, within which, at either end thereof, are mounted vertical rotating drums C C, driven by means of any suitable motive power, and over which an endless belt, D, is carried, so as to be made to travel continuously along the inner edge of the table, its ends being properly curved to conform to the curve followed by the carrier as it passes around the drums, all as clearly shown in Fig. 1.

E E E are the propelling-plates, secured at intervals to project across the table at a right angle with its length, so that their lower ends may sweep longitudinally over its face. The lower end of each plate is notched or provided with projecting pins or teeth, (see at *e e*, Fig. 4,) and the face of the table is grooved longitudinally, (see at W W, Figs. 1 and 7,) to permit these pins or teeth to drop therein below its level, so that the sheet resting upon the table and pushed forward over the same by the propelling plates may not work back under the lower edge of said plates.

To prevent the sheets F, laid upon the table and pushed forward by the plates E E, from working out, especially in turning the curves, the outer end of each propelling-plate is bent at a right angle, or nearly so, to project forward from the plate in line parallel with the straight edge of the table, as shown at *f f*. (See Figs. 1 and 4 of the drawings.)

G G, Fig. 1, are slots or openings cut transversely in the table, through which the signatures are delivered, and within which the gathering-blades H H, for separating the sig-



natures, are fitted. The front edge of each gathering-blade is notched to permit the passage of the pins or teeth upon the lower edge of the propelling-plates, the teeth or pins of the plate being arranged to register with and pass through the notches of the blade. Each blade is pivoted under the table, so that its front edge may project slightly above the face of the table through the transverse slot G therein, the blade being inclined toward the direction in which the propelling-plates move to enter readily in between, and so separate, the two lower folded sheets moving toward it, and cause the lowest one to pass under the blade through the opening in the table, as illustrated in Fig. 3.

K K are receiving-rollers, mounted under each gathering-blade, to seize the sheets guided into the opening by the plate, and produce their proper delivery uniformly and in due order in a pile beneath.

L, Fig. 3, is a set-screw, adapted to engage an arm or projection, H', from the gathering-blade H, in the rear of its pivotal axis, and by its movement to adjust the inclination of the front edge of the blade and the extent of its projection above the face of the table.

Adjusting-wedges, cams, or other equivalent mechanical devices may be substituted for the set-screw L, to cause the front edge of the blade to lift into proper position, and to permit it to be lowered so as to clear the top of the table, and I contemplate coupling or gearing these adjusting devices so that all the blades may be moved and adjusted simultaneously—as, for example, an eccentric, R, (see Fig. 5,) engaging an opening in the arm H', may be connected by means of an arm, S, projecting from the axial shaft or spindle of the eccentric, with a rod or cord, T, connecting the arms of all of the eccentrics, and by means whereof all the cams may be turned back or forth simultaneously to operate all of the blades.

Figs. 6 and 7 illustrate a further modification in the construction of my apparatus, in which the way is composed of a series of plates or blades, H<sup>2</sup> H<sup>2</sup>, pivoted each in a horizontal plane between two parallel side bars, M M, so that the rear ends of the plates shall all be on a common level, with the front thin edge of each in close proximity to the rear edge of the one preceding it, as shown in Fig. 6, sufficient space only being left between the two to permit of the free delivery between them of a folded sheet. The front edges of these plates are each adjusted and held firmly in position when adjusted by means of a trans-

verse rod, N, projecting from lateral rods P P through straight longitudinal slots in the outer side bars, M M, of the way, and into inclined slots *i i*, cut in plates J J, depending from the lateral edges of the gathering-plate H<sup>2</sup> near its front edge and parallel with the inner face of the side bars. A longitudinal movement of the rods P P will, by forcing the pins N back or forth in the inclined slots *i i*, cause the front edge of the gathering-plate H<sup>2</sup> to rise or fall, as required.

I contemplate also making the table or way over which the folded sheets are propelled or caused to slide of a circular form, so that the propelling-plates may be moved thereon by radial arms projecting from a central spindle, as an equivalent for the endless belt or carrier hereinbefore described, and that open frames or connected fingers may be substituted for the propelling-plates. It is also evident that the movement and the position of the belt or carrier carrying the propelling devices may be varied without departing from my invention—as, for example, the carrier belt or chain may be made to pass at a suitable distance above the table, instead of at the side thereof. Furthermore, that the table or way, if long enough, need not be circular or endless.

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

1. The combination, with a supporting table or way, of a series of propelling devices, substantially as described, moving longitudinally over the same, and of a series of blades whose front edges project up to and slightly above its level, each in position to engage and divert under it the lowermost sheet of paper in a pile sliding over the table or way, substantially in the manner and for the purpose herein set forth.

2. The combination, with an extended or endless table or way for the support of the loose folded sheets or signatures of a book, of a series of blades or gathering-plates mounted transversely to the length of the table, with their thin front edges projecting slightly above it, and of an endless belt or chain moving longitudinally parallel with the table, and carrying a series of propelling plates or fingers sliding over the same, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS WOOD.

Witnesses:

J. F. ACKER, Jr.,  
A. B. MOORE.