

No. 768,463.

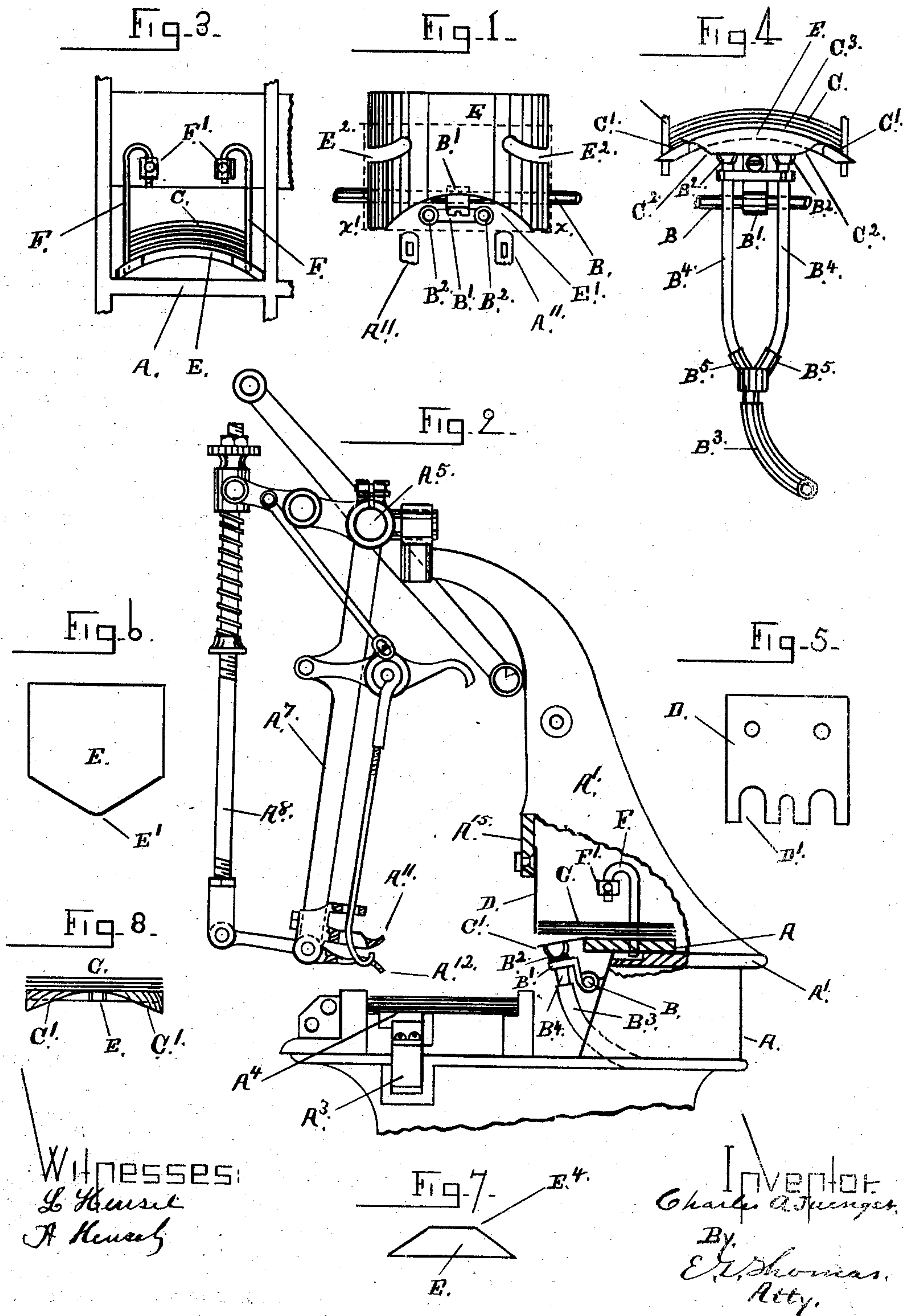
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C. A. JUENGST.

CURVED PLATE FOR SIGNATURES OR SHEETS.

APPLICATION FILED JAN. 18, 1902.

NO MODEL.



UNITED STATES PATENT OFFICE.

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CURVED PLATE FOR SIGNATURES OR SHEETS.

SPECIFICATION forming part of Letters Patent No. 768,463, dated August 23, 1904.

Original application filed July 18, 1900, Serial No. 24,017. Divided and this application filed January 18, 1902. Serial No. 90,270. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. JUENGST, a citizen of the United States, residing at Croton Falls, in the county of Westchester and State of New York, have invented a new and useful Improvement in Curved Support-Plates for Signatures or Sheets, of which the following is a specification.

My invention relates to gathering-machines for signatures or sheets, and particularly to the supports for the signatures or sheets, with the object of insuring the delivery of but a single signature or sheet at a time regardless of the number of folds of the signature or the thickness of the sheets.

My invention comprises mainly a support-plate downwardly curved at its outer edges—that is, a plate whose upper surface is convex and in which the convex form in cross-section is at right angles to the discharge movement of the signature or sheet. Consequently the signatures or sheets superimposed upon the support-plate are convex on their upper surface and concave on their under surface, which condition is operatively apparent at the advancing edges thereof. The concave under surface is engaged by a sucker device, and the action thereof is to slightly buckle or pucker the signature or sheet and to draw down only a single signature or sheet at a time to be engaged by the gripper device. On this curved support-plate the signatures or sheets assume the curve of the plate by their weight.

In the drawings, Figure 1 is a top plan view of the curved support-plate and the sucker device. Fig. 2 is a side elevation of a portion of a signature-gathering machine and a cross-section of certain parts, including a cross-section of the curved support-plate. Fig. 3 is an elevation of the curved support-plate and the arms carrying the same from the frame of the machine. Fig. 4 is an elevation similar to Fig. 3, but including the sucker device with the plate and the signatures or sheets. Fig. 5 is a front elevation of a stop or guard-plate. Figs. 6 and 7 are respectively a plan and edge view of modified forms of the support-plate, and Fig. 8 is an edgewise elevation of the form of plate shown in Fig. 6.

This application is one of a number of divisional applications of an application for signature-gathering machines filed July 18, 1900, Serial No. 24,017.

A represents part of the base-frame of a signature-gathering machine; A', a bracket-frame secured to and rising therefrom. A³ and A⁴ are parts of a sheet-conveyer, which may be of well-known form, moving in suitable guides. A⁵ is a main oscillating shaft carrying a gripper-arm A⁷. A¹¹ represents a fixed gripper-finger on the lower end of the arm A⁷, and A¹² a movable gripper-finger pivoted to the lower end of the gripper-arm A⁷, while A⁸ is an actuating-rod for moving the movable gripper-finger. These parts, however, form no essential part of my present invention and are the subject of one of the divisional applications of said original application hereinbefore named.

B is a rock-shaft in suitable bearings secured to the base-frame A and provided with one or more bracket-frames B' for the pneumatic sucker device B². In Figs. 1 and 4 this sucker device is illustrated as double with tubes B⁴ extending downward therefrom connecting with a three-way coupling B⁵, from which there extends a single flexible tube B³ to a suitable exhaust device or pump. This sucker device forms no essential part of the present invention, but is embraced in one of the divisional applications of the said application, Serial No. 24,017.

C represents the pile of superimposed signatures or sheets, and C' the lowermost of said signatures or sheets engaged and bent downward by the sucker device B². These signatures or sheets are supported upon a curved convex support-plate E. This plate is downwardly curved at its outer parallel edges—that is, the upper surface is convex, as will be especially apparent from Figs. 3 and 4, the convex form in cross-section being at right angles to the discharge movement of the signatures or sheets under the action of the sucker and gripper devices. This convex plate E is supported by the frame A'. The signatures or sheets thereon are given the form of a flattened arch, and a portion of their advancing edges extends beyond or over-

hangs the edge of the plate E to give room for the action of the sucker device, which bends down the portion of the sheet engaged thereby, effecting an initial separation which permits the air to get in between the lower and the second sheet and with the further movement of the signature to act as an intervening layer. The forward edge of said plate E is provided with a recess E' of appreciable area and of sufficient area to make it possible for the sucker device either single or double to come up against the under side of the signature or sheet within the edge of the same and between the edge of the same and the edge of the plate and within the recess. (See especially Fig. 1.) This support-plate E is provided with slots E² in its opposite edges, which receive the adjustable posts F, which at each side of the superimposed signatures or sheets serve to line up the same. The upper ends of these posts are, as shown in Figs. 2 and 3, preferably bent over and passed through lugs which are provided with set-screws F' for clamping the same in an adjusted position.

D represents a guard-plate secured to the plate A¹⁵ of the bracket-frame A' and which guard-plate extends downward from the lower edge of the plate A¹⁵ and comes against the advancing ends of the signatures or sheets of the superimposed pile on the plate E. The lower edge of this guard-plate D is provided with notches D', which insure the room or space required for the complete operation of the gripper - fingers, if necessary. These notches are shown in Fig. 5.

Fig. 7 shows a form of the invention in which the support-plate E instead of being convex, or, in other words, provided with a gradually curved surface, is centrally flat with downwardly-inclined portions E⁴.

The form of plate shown in Figs. 6 and 8 represents the plate E as pointed in plan and in the edge view as flat at its back edge and curved toward its pointed edge, so that the forward corners are downwardly bent to impart to the supported signatures or sheets the required convex or curved form at their advancing edges.

I am aware that a concave support for sheets of paper has heretofore been employed and from which concave support the uppermost sheet was lifted by an overhead device, and such construction I distinctly disclaim.

I claim as my invention—

1. In a sheet or signature gathering machine, a support-plate for a superimposed pile of signatures or sheets, the same having a convex upper surface beyond which a portion of the pile of sheets extends and a sucker device adapted to engage and bend down the lowermost sheet at the portion engaged by the sucker.

2. In a sheet or signature gathering machine, a support-plate for a superimposed pile

of signatures or sheets, the same having a convex upper surface which in cross-section is at right angles to the discharge movement of the signature or sheet and beyond which a portion of the pile of sheets extends and a sucker device adapted to engage and bend down the lowermost sheet at the portion engaged by the sucker.

3. In a sheet or signature gathering machine, a support-plate for a superimposed pile of signatures or sheets, the same having a convex upper surface which in cross-section is at right angles to the discharge movement of the signature or sheet, and the forward curved edge of which is recessed and beyond which a portion of the pile of sheets extends and a sucker device adapted to engage and bend down the lowermost sheet at the portion engaged by the sucker.

4. In a sheet or signature gathering machine, a support-plate for a superimposed pile of sheets or signatures, which is downwardly curved at its outer parallel edges so that its upper surface is convex, the convex form in cross-section being at right angles to the discharge movement of the sheets or signatures supported thereby, and means for supporting the plate and beyond which a portion of the pile of sheets extends, and a sucker device adapted to engage and bend down the lowermost sheet at the portion engaged by the sucker.

5. In a sheet or signature gathering machine, a support-plate for a superimposed pile of sheets or signatures, which is downwardly curved at its outer parallel edges, so that its upper surface is convex, the convex form in cross-section being at right angles to the discharge movement of the sheets or signatures supported thereby, the outer edges of said plate being provided with notches, and adjustable posts at one end connected to said plate at said notches and at their upper and other ends to a frame part of the signature-gathering machine.

6. In a sheet or signature gathering machine having a sucker device, a support-plate for a superimposed pile of sheets or signatures having a convex upper surface which in cross-section is at right angles to the discharge movement of the sheet or signature and the forward edge of which plate is provided with a curved recess of sufficient area to permit the sucker device to come up underneath the lowermost sheet or signature and engage the same.

7. In a sheet or signature gathering machine, a convex support-plate for a superimposed pile of sheets or signatures, in combination with a guard-plate placed vertically and at right angles to the line of said support-plate and against which the advancing edges of the signatures or sheets bear, and a support for the guard-plate.

8. In a sheet or signature gathering machine,

chine, a convex support-plate for a superimposed pile of sheets or signatures, in combination with a guard-plate placed vertically and having notches in the lower edges thereof and at right angles to the line of said support-plate and against which the advancing edges of the signatures or sheets bear, and a support for the guard-plate.

9. In a sheet or signature gathering machine, a support-plate for a superimposed pile of signatures or sheets, the same having a convex upper surface which in cross-section is at right angles to the discharge movement of the signature or sheet, and the forward curved edge of which is recessed, in combination with a guard-plate placed vertically having notches in the lower edge thereof and being suitably supported from the frame of the machine, and which guard-plate is at right angles to the discharge movement of the sheet and against the surface of which the advancing edges of the sheets or signatures bear.

10. In a sheet or signature gathering machine, a support-plate for a superimposed pile of signatures or sheets, the same having a convex upper surface which in cross-section is at right angles to the discharge movement of the signature or sheet, in combination with a guard-plate placed vertically and being suitably supported from the frame of the machine and which guard-plate is at right angles to the discharge movement of the sheet and against the surface of which the advancing edges of the sheets or signatures bear.

11. In a sheet or signature gathering machine, a support-plate for a superimposed pile of signatures or sheets, the same having a convex upper surface which in cross-section is at right angles to the discharge movement of the signature or sheet and the forward curved edge of which is recessed, in combination with a guard-plate placed vertically and suitably supported from the frame of the machine and which guard-plate is at right angles to the discharge movement of the sheet and against the

surface of which the advancing edges of the signatures or sheets bear.

12. In a sheet or signature gathering machine, a support-plate for the superimposed pile of sheets or signatures having a convex upper surface which in cross-section is at right angles to the discharge movement of the sheet or signature, and the forward edge of which plate is provided with a curved recess of sufficient area from the advancing edge of the sheet or signature to permit the sucker device to come up underneath the lowermost sheet or signature and engage the same, in combination with a guard-plate placed vertically and having notches in the lower edges thereof and at right angles to the line of said support-plate and against which the advancing edges of the signatures or sheets bear, and a support for the guard-plate.

13. In a sheet or signature gathering machine, a support-plate for a superimposed pile of sheets or signatures, which is downwardly curved at its outer parallel edges, so that its upper surface is convex, the convex form in cross-section being at right angles to the discharge movement of the sheets or signatures supported thereby, the outer edges of said plate being provided with notches and adjustable posts at one end connected to said plate at said notches, and at their upper and other ends to a frame part of the signature-gathering machine, in combination with a guard-plate placed vertically and at right angles to the support-plate and to the discharge movement of the sheet, and against which the advancing edges of the signatures or sheets bear, and a support for the guard-plate.

Signed at Croton Falls, in the county of Westchester and State of New York, this 22d day of August, A. D. 1901.

CHARLES A. JUENGST:

Witnesses:

E. T. THOMAS,
L. HENSEL.