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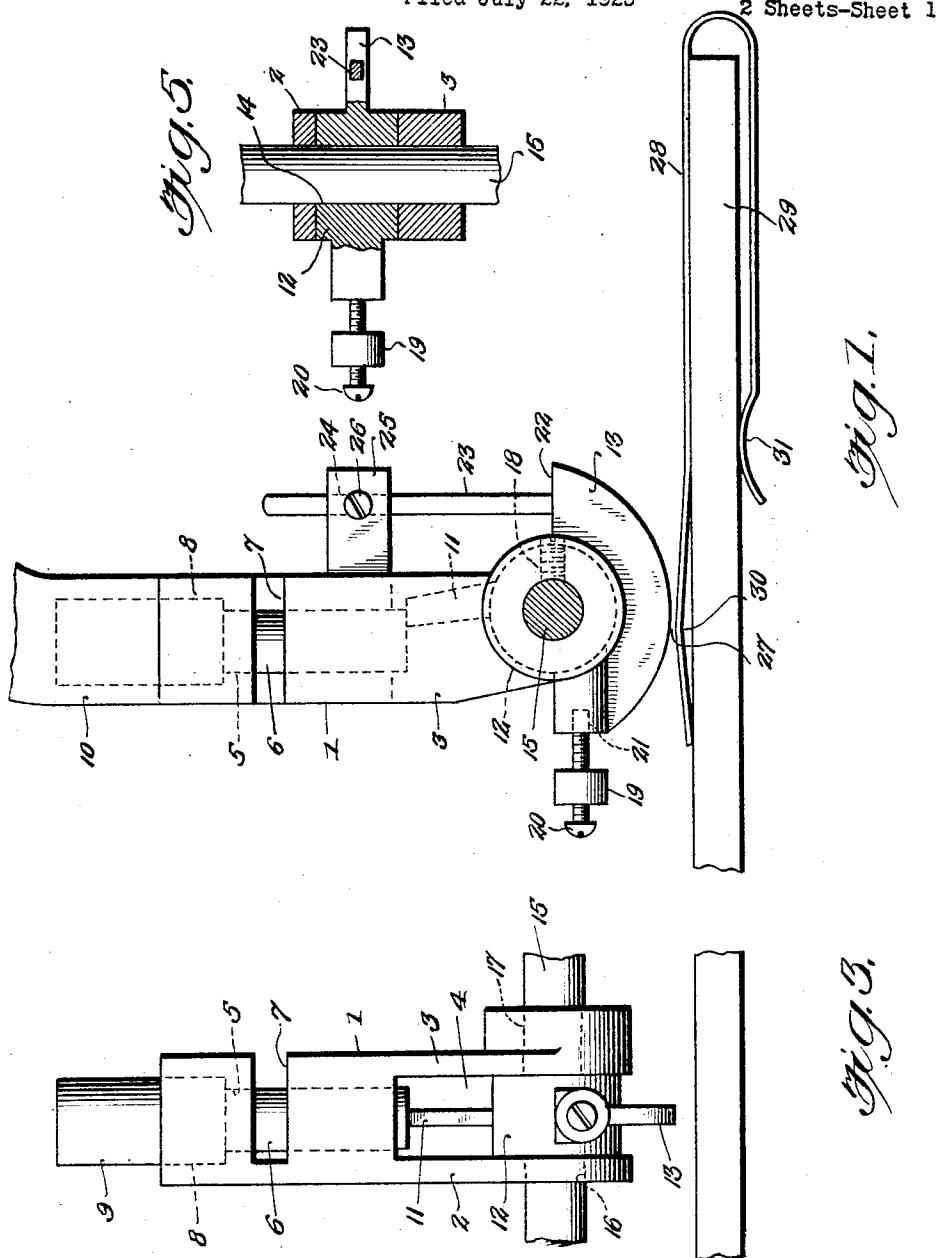
1,655,121

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AUTOMATIC CALIPER STOP

Filed July 22, 1925

2 Sheets-Sheet 1



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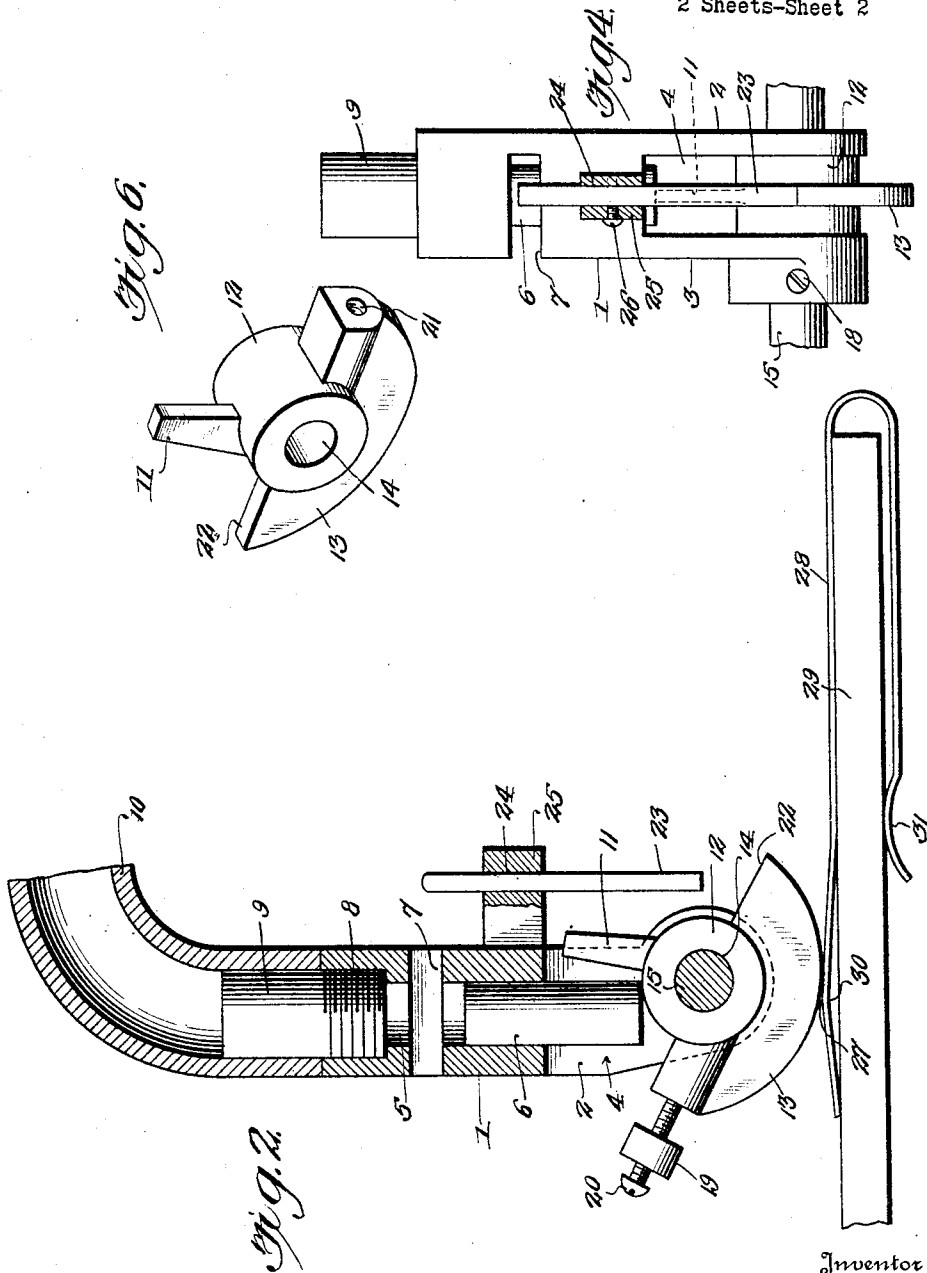
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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AUTOMATIC CALIPER STOP.

Application filed July 22, 1925. Serial No. 45,235.

The invention relates to an automatic caliper stop.

The object of the present invention is to provide means for preventing the entrance of more than one sheet of paper at a time into any machine fed by an automatic feeder. The invention is designed particularly for printing presses with hard cylinders where two sheets of paper fed at one time would seriously damage either the type or the press.

A further object of the invention is to provide a simple, practical and efficient device of strong, durable and comparatively inexpensive construction adapted to arrest the movement of two or more simultaneous fed sheets of paper and capable also of breaking the vacuum of an automatic feeder and thereby preventing the feeding of more sheets which would cause a jam and a waste of paper.

A further object of the invention is to provide an automatic caliper stop of this character capable of ready adjustment to control the size of an opening through which the sheets of paper pass and equipped with yieldable paper supporting means adapted to prevent a plurality of simultaneous fed sheets from injuring the device and capable at the same time of increasing pressure and of insuring a positive proper operation of the automatic caliper stop.

It is also an object of the invention to provide an automatic caliper stop adapted after an operation of the device by two simultaneously fed sheets of paper of automatically resetting itself as soon as the sheets are removed and a vacuum breaking valve reset.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawing and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a side elevation of an automatic caliper stop constructed in accordance with this invention and illustrating the arrangement of the parts when set.

Fig. 2 is a vertical sectional view of the same, the device being tripped.

Fig. 3 is a rear elevation of the automatic caliper stop.

Fig. 4 is a front elevation of the device.

Fig. 5 is a horizontal sectional view through the eccentric element.

Fig. 6 is a detail perspective view of the eccentric element.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, the automatic caliper stop comprises in its construction, a vertical tubular body 1 having a bifurcated lower portion forming spaced sides 2 and 3 and an intervening recess 4. The upper portion of the tubular body is provided with a vertical bore or opening 5 in which is mounted a vertically movable valve core or member 6 which normally closes a port or opening 7 and which, when tripped by the means hereinafter described, is permitted to fall, opens the said port 7 to the atmosphere for breaking the vacuum of an automatic feeder. The upper portion of the tubular body 1 is counterbored and interiorly threaded at 8 and has mounted in it, a bushing 9 of brass or any other suitable material to which is connected an air hose 10 or other suitable air tube. The lower portion of the bushing is threaded to screw into the upper portion of the body and the air hose may be secured on the bushing in any desired manner or engage the same with sufficient friction to retain it thereon. The body 1 may be constructed of any suitable material and the port 7 is formed by a horizontal recess extending inwardly from one side of the body to a point beyond the opposite wall of the bore or opening so as to completely expose the bore or opening 5 to the atmosphere when the vertically movable valve member is tripped. When the vertically movable valve member is elevated as illustrated in Figs. 1 and 3 of the drawings the port or opening 7 is closed to the atmosphere and the vacuum of the automatic feeder to which the air pipe or hose 10 is connected will not be affected by the automatic caliper stop.

The automatic caliper stop is designed for use in connection with the automatic feeder shown and described in Patent No. 1,546,184, granted to me July 14, 1925 and similar automatic feeders and the vertically movable valve member 6 which forms a vacuum breaking valve is supported in an elevated

position by an arm 11 extending upwardly from an eccentric paper engaging member, consisting of a disk 12 and an eccentric cam 13 carried by the disk and located at the bottom of the same and tapered rearwardly as clearly illustrated in Figs. 1 and 2 of the drawings. The disk is provided with a central opening 14 and is mounted on a fixed transverse shaft or rod 15 which passes through the lower portions of the sides 2 and 3 of the body 1. The lower portions of the sides are provided with aligned transverse openings 16 and 17 and the side 3 is enlarged at its lower portion and extended laterally as shown and is equipped with a set screw 18 which rigidly secures the body 1 in an upright position on the transverse shaft 15. The arm 11 which extends upwardly from the top of the disk is preferably formed integral with the same but it may be constructed in any other desired manner as will be readily understood and the eccentric cam 13 is also preferably formed integral with the disk 12. The eccentric cam is equipped at its rear portion with an adjustable weight 19 mounted on a screw 20 provided at its outer end with a head and threaded at its inner end into a threaded opening of the socket 21 in the rear portion of the cam 13 and the weight which consists of a block is adapted to be adjusted inwardly and outwardly to counterbalance and secure a proper operation and automatic return of the trigger or finger 11 of the eccentric member after an operation of the automatic caliper stop. By adjusting the weight inwardly and outwardly the rear portion of the cam may be properly weighted to over balance the front portion for swinging the trigger finger rearwardly beneath the lower end of the valve member when the latter is raised to the position shown in Fig. 3 after a tripping of the same. When the eccentric member is operated as hereinafter explained the trigger 11 will be moved forwardly from beneath the lower end of the valve member and the latter will drop to the position shown in Fig. 2 of the drawings and the lower portion of the valve member will be exposed at the opening or recess 4 in the lower portion of the body and may be readily lifted after the sheets of paper causing an operation of the device have been removed therefrom. The front portion of the cam extends in advance of the disk and presents a substantially horizontal upper surface 22 when the device is set as illustrated in Fig. 1 of the drawing and the said upper surface 22 abuts against a vertically adjustable stop rod 23 located above the front portion of the cam and extending through a vertical opening 24 in an arm 25 of the body 1. The arm 25 which is preferably formed integral with the body extends forwardly therefrom and

the rod 23 is clamped in its vertical adjustment by means of a lock screw or set screw 26 mounted in a threaded opening in one side of the arm and extending to and engaging the stop rod 23.

The cam 13 presents a lower eccentric surface and is adapted to be adjusted to vary the size of the opening or space 27 between the lower eccentric face of the cam and a yieldable sheet support consisting of an approximately U-shaped clip 28 composed of upper and lower sides and a connecting bend and yieldably engaging the inclined table or board 29 whereby it is retained in proper position with relation to the eccentric element. The upper side of the clip is provided with a band 30 having oppositely inclined portions as shown and presenting a front upwardly extending portion and a rear downwardly extending portion. The lower side of the clip is provided with a terminal bend 31 which frictionally engages the lower face of the inclined table or board 29.

In practice the cam is adjusted by means of the vertically movable stop rod 23 to provide a space between the lower face of the cam 13 and the bend 30 of the sheet supporting device 28 of slightly greater size than the thickness of a sheet of paper so that a single sheet will pass freely through the space or opening 27. Should two sheets be fed at a time the combined thickness of the two sheets will be greater than the size of the space or opening 27 and the sheets of paper will engage the bend 30 and the cam 13 and will force the yieldable support downwardly and at the same time create a sufficient friction and pressure against the lower face of the cam 13 to produce a rotary movement of the eccentric member and swing the trigger 11 forwardly from its normal position beneath the valve member. This will permit the valve member to fall and break the vacuum in the air pipe or hose 10 and stop the feeding of the paper. The sheets of paper causing the automatic operation of the device are then removed from the same and the device is reset by simply lifting the valve member 6 and permitting the weighted eccentric element to swing its trigger or finger 11 beneath the valve member. This resets the automatic caliper stop for another operation.

The pivotal adjustment of the weighted eccentric element is a secondary adjustment and is employed only to adjust the sensitiveness of the trip. The primary adjustment of the eccentric element for controlling the size of the passage formed by the opening or space between the cam 13 and the yieldable supporting surface formed by the bend 30 is effected by a pivotal adjustment of the device on the rod 15. By tipping the device forwardly or rearwardly the said space or

passage for the sheets of paper is either diminished or increased. After this primary adjustment is obtained and a space of approximately the required size to suit the character of the sheets of paper fed through the device a secondary or final adjustment is made through the vertically adjustable stop rod 23 which will render the tripping device as sensitive as desired. The set screw 18 of the enlarged bearing of the body of the device secures the device in its adjustment on the fixed supporting rod or pivot 15, and after the caliper is once secured to the shaft or rod 15 the screw which anchors or secures the body to the rod or shaft is never loosened. Any tipping of the body may then be accomplished by adjusting the rod or shaft by means of thumb screws or other suitable fastening means. Any means however, may be employed for pivotally mounting the caliper body and affecting the adjustment of the device.

What is claimed is:

1. An automatic caliper stop including a pivotally adjustable body having a passage in communication with the vacuum passage of an automatic feeder to be controlled, means for providing a passage for sheets of paper having an element carried by the body, and vacuum breaking mechanism carried by the said body and released by the said element to control the said passage of the body to break the vacuum of the said automatic feeder, the pivotal adjustment of the body being adapted to vary the size of the passage for the sheets of paper.

2. An automatic caliper stop including a pivotally adjustable body having a passage in communication with the vacuum of an automatic feeder to be controlled, mechanism for providing a passage for sheets of paper, having an element carried by the body, the pivotal adjustment of the body operating to control the size of the passage for the said sheets, and a vacuum breaking valve carried by the body and controlled by the said element to control the vacuum passage of the body and break the vacuum of the automatic feeder.

3. An automatic caliper stop including a body having a vacuum passage in communication with a vacuum passage of an automatic feeder to be controlled, mechanism for providing a passage for sheets of paper and for varying the size of the passage to suit the thickness of the paper, said mechanism having an adjustable member to vary the size of the passage and the said body and the member being mounted for pivotal adjustment on a common axis, and a vacuum breaking mechanism carried by said body in its pivotal adjustment and released by the said member to control the vacuum passage of the body and break the vacuum of the automatic feeder.

4. An automatic caliper stop including a body having a vacuum passage communicating with the vacuum of an automatic feeder, mechanism for providing a passage for sheets of paper and for varying the size of the passage to suit the thickness of the paper, said mechanism having an adjustable member to vary the size of the passage and the said body and the member being mounted for pivotal adjustment on a common axis, and a vacuum breaking valve carried by the said body in its pivotal adjustment and controlled by the said member for controlling the vacuum passage of the body to break the vacuum of the automatic feeder.

5. An automatic caliper stop including a pivotally adjustable body having a vacuum passage communicating with the vacuum of an automatic feeder, means comprising spaced members for providing a passage for sheets of paper, one of said members being carried by the body and the pivotal adjustment of the latter operating to vary the size of the paper passage, and a vacuum breaking valve carried by the body and controlled by one of the said members to control the vacuum passage of the body and break the vacuum.

6. An automatic caliper stop including a body having a vacuum passage in communication with the vacuum of an automatic feeder to be controlled, means comprising spaced members for providing a passage for sheets of paper, one of the said members being yieldable and the other member being adjustable to vary the size of the passage, the adjustable member and the body being mounted for pivotal movement on a common axis, and vacuum breaking mechanism carried by the body and controlling the vacuum passage thereof to break the vacuum of the automatic feeder and controlled by the other of the said members of the paper passage.

7. An automatic caliper stop including a body having a vacuum passage in communication with the vacuum passage of an automatic feeder to be controlled, means comprising spaced upper and lower members for providing a passage with sheets of paper, the lower member being yieldable and the other member being adjustable to vary the size of the passage, the adjustable member and the body being mounted for pivotal movement on a common axis, and vacuum breaking mechanism carried by said body and controlling the vacuum passage of the same to break the vacuum of the automatic feeder said vacuum breaking mechanism being controlled by the upper member of the paper passage and the said upper member being adapted to be actuated by a plurality of sheets of paper and movable by the same in a direction to constrict the passage and compress the yieldable member.

8. An automatic caliper stop including a

body having a vacuum passage in communication with the vacuum passage of an automatic feeder to be controlled, means comprising upper and lower members for providing a passage for sheets of paper the lower member having a resilient paper supporting portion and the other member being adjustable to vary the size of the passage, the adjustable member and the body being mounted for pivotal movement on a common axis and a vacuum breaking valve carried by the said body and controlled by the upper member of the paper passage, said upper member being actuated by a plurality of sheets of paper and movable in a direction to constrict the portion and compress the lower yieldable member.

9. An automatic caliper stop including a body having a vacuum passage in communication with the vacuum passage of an automatic feeder to be controlled, means comprising spaced upper and lower members for providing a passage for sheets of paper, the lower member having a resilient loop arranged at the bottom of the passage to support the sheets of paper, and a vacuum breaking valve carried by said body and controlling the vacuum passage and controlled by the upper member of the paper passage, said upper member being movable by a plurality of sheets of paper in a direction to constrict the passage and compress the lower resilient loop.

10. An automatic caliper stop including a body having a vacuum passage in communication with the vacuum of an automatic feeder to be controlled, means comprising spaced upper and lower members for providing a passage for sheets of paper the lower member being a resilient loop arranged at the bottom of the passage to support the sheets of paper, said loop having oppositely inclined portions, and a vacuum breaking valve carried by the said body and controlling the vacuum passage thereof for breaking the vacuum of the automatic feeder, said valve being controlled by the upper member of the paper passage and the said upper member being adapted to be actuated by a plurality of sheets of paper and movable in a direction to constrict the passage and compress the resilient loop.

11. An automatic caliper stop including a body and having means comprising spaced members for providing a passage for sheets of paper, one of the said members consisting of a spring clip adapted to clamp a table and having a resilient paper supporting portion and a vacuum breaking valve carried by said body and controlled by the other member of the said means.

12. An automatic caliper stop including a body and having means comprising spaced members for providing a passage for sheets of paper, one of the said members consist-

ing of an approximately U-shaped spring clip adapted to clamp a table and provided at the terminals of its sides with bends, the lower bend engaging the table and the upper bend forming a yieldable paper supporting portion and a vacuum breaking valve carried by said body and controlled by the other of the said spaced members.

13. An automatic caliper stop including a pivotally adjustable body having a vacuum passage in communication with the vacuum passage of an automatic feeder to be controlled, a vacuum breaking valve carried by the said body and controlling the vacuum passage thereof to break the vacuum of the automatic feeder and a movable member carried by the said body in the pivotal adjustment thereof, the adjustment of the body and the movable member providing for a primary and a final adjustment of a passage for sheets of paper, the movable member being arranged to be actuated by a plurality of sheets of paper in a direction to constrict the passage and operating to release the valve to said movement.

14. An automatic caliper stop including a body, a gravity acting automatically opening vacuum breaking valve carried by said body and a movable member located directly beneath and normally supporting the valve closed and arranged to be actuated by a plurality of sheets of paper to release the valve.

15. An automatic caliper stop including a body, a gravity acting automatically opening vacuum breaking valve carried by said body and a movable member located directly beneath and normally supporting the valve closed having a cam adjustable to control the size of a passage for sheets of paper and adapted to be actuated by a plurality of sheets to release the valve.

16. An automatic caliper stop including a body, an automatically opening vacuum breaking valve carried by said body and a movable member normally holding the valve closed having a cam adjustable to control the size of a passage for sheets of paper and adapted to be actuated by a plurality of sheets to release the valve, and a yieldable device spaced from the cam and cooperating with the same to form the said passage.

17. An automatic caliper stop including a body, a gravity acting automatically opening vacuum breaking valve carried by said body and a pivoted member located directly beneath and normally supporting the valve closed and provided with a cam presenting an eccentric face to the sheets of paper and forming one wall of a passage for the said sheets, and adjustable to vary the size of the passage, said cam being adapted to be actuated by a plurality of sheets to release the valve.

18. An automatic caliper stop including

a body, a gravity acting automatically opening vacuum breaking valve carried by said body and a pivoted member located directly beneath and normally supporting the valve closed and provided with a cam presenting an eccentric face to the sheets of paper, and adjustable to vary the size of a passage, said cam being adapted to be actuated by a plurality of sheets to release the valve, and an adjustable abutment for the said cam.

19. An automatic caliper stop including a body having an air passage and provided with a port opening, a gravity valve operating in the body and closing the port opening and a pivoted member normally supporting the valve in closed position and adapted to be actuated by a plurality of sheets of paper to release the valve.

20. An automatic caliper stop including a body having an air passage and provided with a bifurcated lower portion, said body having an outlet port at the said passage, a valve member operating in the said passage and a movable member consisting substantially of a disk pivoted within the said bifurcation and having a vertically extending trigger arm normally supporting the valve in closed position, said member having a cam arranged at the bottom and adapted to be engaged by a plurality of sheets to move the trigger out of supporting position for permitting the valve to open to break the vacuum.

21. An automatic caliper stop including a body having an air passage and provided with a bifurcated lower portion, said body having an outlet port at the said passage, a valve member operating in the said passage and a movable member consisting substantially of a disk pivoted within the said bifurcation and having a vertically extending trigger arm normally supporting the valve in closed position, said member having a cam arranged at the bottom and adapted to be engaged by a plurality of sheets to move the trigger out of supporting position for permitting the valve to open to break the vacuum, said cam being adjustable to control the size of a passage for the sheets of paper, and an adjustable abutment for the cam.

22. An automatic caliper stop including a vertical body having an air passage and provided with a projecting arm, a rod piercing the lower portion of the body and supporting the same, a vacuum breaking valve operating in the passage of the body for normally closing the same, a pivoted member mounted on the said rod and having an upwardly extending valve supporting portion and provided with a lower cam projecting beneath the arm and a stop rod mounted in the arm and forming an adjustable abutment for the cam.

23. An automatic caliper stop including a body having a passage in its upper portion and having a lower bifurcated portion, a rod extending through the sides of the bifurcation, a gravity acting valve operating in the said passage for normally closing the same, a pivoted member mounted on the rod and having a trigger arm normally supporting the valve in closed position, said body being provided at the bottom with a cam and adjustable to control the size of a passage for sheets of paper, an adjustable stop forming an abutment for the cam and yieldable paper supporting means spaced from the said cam and forming the bottom wall of the said passage.

24. An automatic caliper stop including an adjustable body having a vacuum passage, a valve member operating in the body for controlling the said passage, an eccentric member pivotally mounted in the body and controlling the said valve member and provided at the bottom with a cam adapted to be engaged by a plurality of sheets for causing an operation of the valve and means to effect an adjustment of the cam to vary the size of the passage for the said sheets, the adjustment of the body carrying with it the said cam and operating to provide a preliminary adjustment of the said passage.

25. An automatic caliper stop including an adjustable body having a vacuum passage, a valve member operating in the body for controlling the said passage, an eccentric member pivotally mounted in the body and controlling the said valve member and provided at the bottom with a cam adapted to be engaged by a plurality of sheets for causing an operation of the valve and means to effect an adjustment of the cam to vary the size of a passage for the said sheets and means carried by the body for adjusting the cam with respect to the body to control the sensitivity of the device, the adjustment of the body providing a preliminary adjustment of the said passage.

26. An automatic caliper stop including an adjustable body mounted for pivotal movement, an automatically opening vacuum valve carried by the body in its adjustment, a movable member also carried by the body and normally holding the vacuum valve closed and having an eccentric surface arranged in the path of sheets of paper and adapted to be engaged by a plurality of sheets for releasing the valve, said member and the body being simultaneously adjustable to vary the passage of the eccentric surface with relation to the sheets of paper for varying the size of a passage for the said sheets.

In testimony whereof I affix my signature.
LESTER KYLE ALDRICH.