No. 665,193. Patented Jan. 1, 1901.

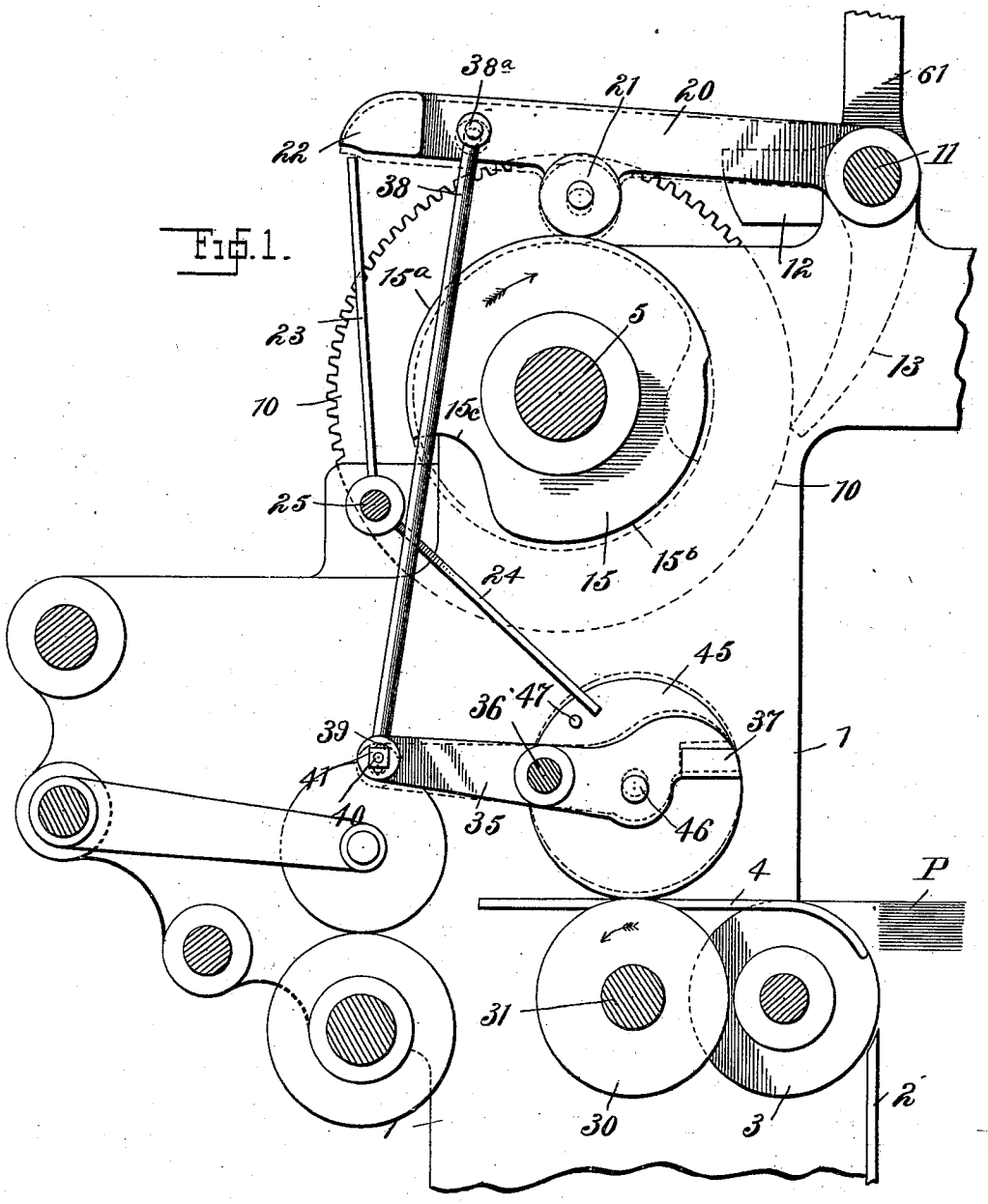
T. C. DEXTER.

SHEET CALIPERING DEVICE FOR PAPER FEEDING MACHINES.

(Application filed Oct. 5, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses.
H. P. Hammond
P. G. Smuck.

Inventor.
Talbot C. Dexter
By Knight Bros.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 665,193. Patented Jan. 1, 1901.

T. C. DEXTER.

SHEET CALIPERING DEVICE FOR PAPER FEEDING MACHINES.

(Application filed Oct. 5, 1900.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

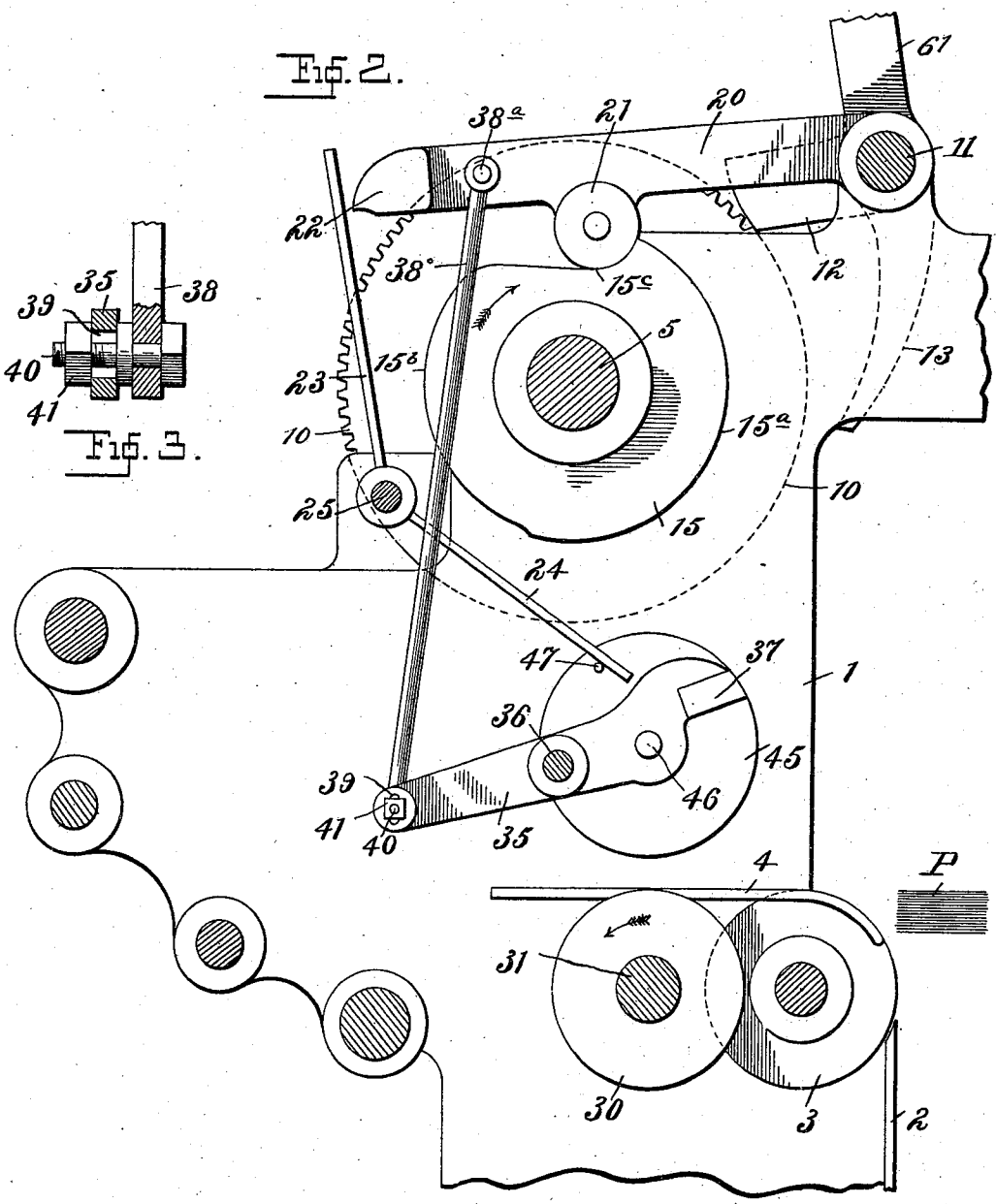


Fig. 3.

Witnesses.
H. P. Hammond.
C. F. Smeck.

Inventor.
Talbot C. Dexter
By Knight Bros.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 665,193. Patented Jan. 1, 1901.

T. C. DEXTER.

SHEET CALIPERING DEVICE FOR PAPER FEEDING MACHINES.

(Application filed Oct. 5, 1900.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

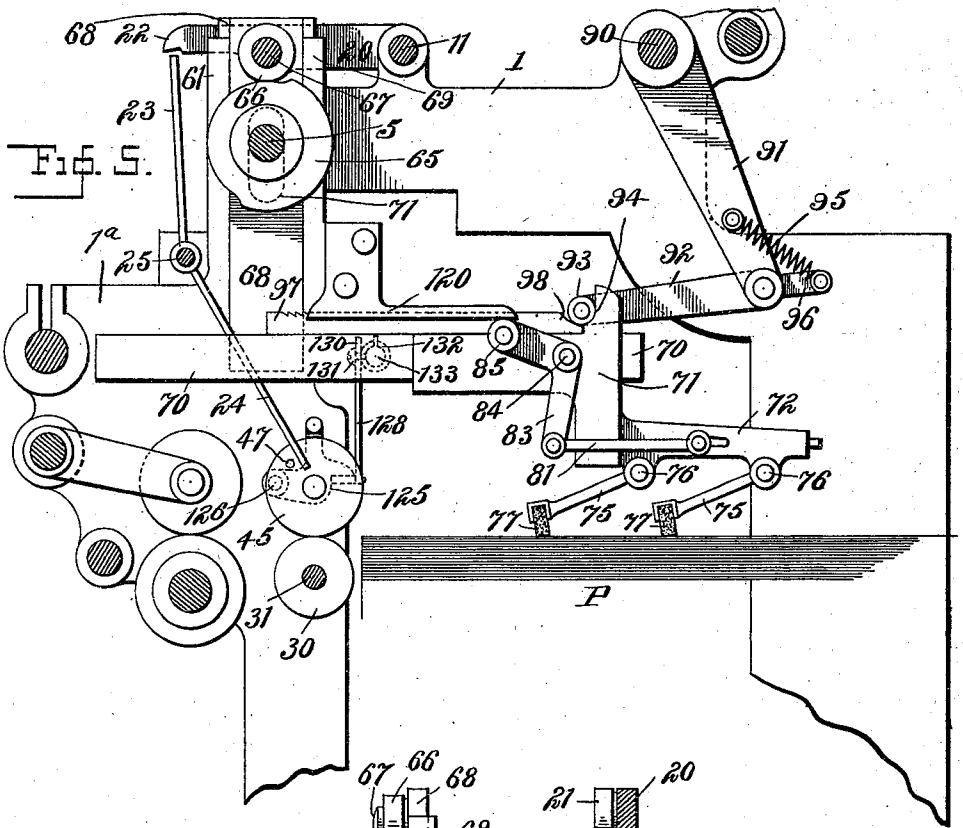


Fig. 6.

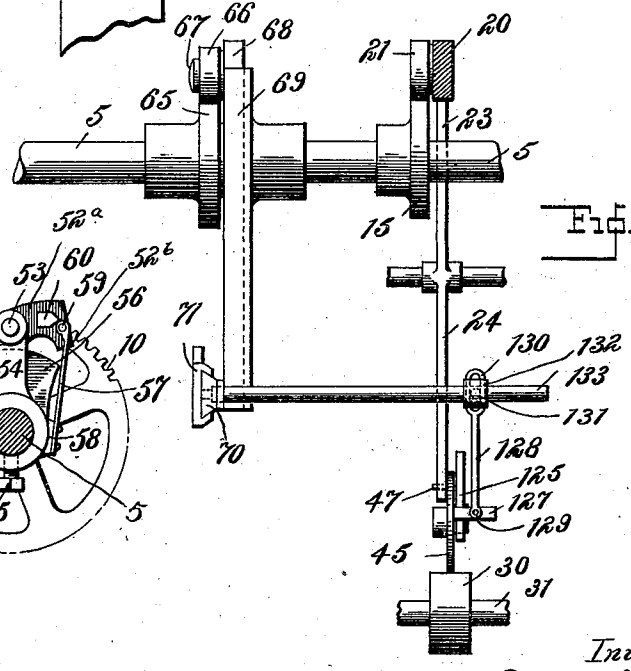
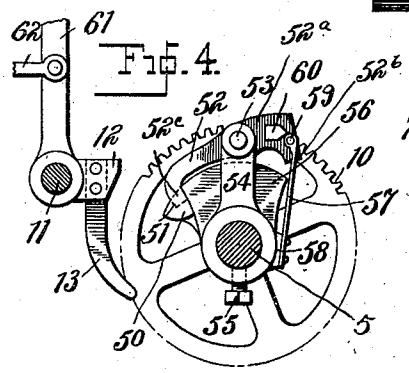


Fig. 4.



Witnesses.

H. P. Hammond

O. F. Lonsk.

Inventor.

Talbot C. Dexter

By Knight Bros.

Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

SHEET-CALIPERING DEVICE FOR PAPER-FEEDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 665,193, dated January 1, 1901.

Application filed October 5, 1900. Serial No. 32,082. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Sheet-Calipering Devices for Paper-Feeding Machines, of which the following is a specification.

In an application filed by me March 31, 1900, Serial No. 10,922, for improvements in paper-feeding machines, I have described and claimed a sheet-calipering device comprising, essentially, a normally stationary rotatable calipering member which engages and operates a suitable device controlling a throw-out mechanism which is adapted to arrest the operation of the machine. In the normal operation of the machine equipped with this rotary sheet-calipering device said rotatable calipering member is not affected by passing sheets, because it is so set with relation to its coöperating member (between which members the successive sheets pass) that the sheets will be allowed to move freely under said rotatable calipering member; but the moment an abnormal thickness of sheets attempts to pass the rotatable calipering member, as in the case of two sheets passing from the machine at the same time, said calipering member will be rotated sufficiently to actuate the device which releases the throw-out mechanism, resulting in the arrest of the operation of the feeding-machine. In the operation of the rotary calipers covered by said application, Serial No. 10,922, I have found that although the device is accurate in detecting the passage of an abnormal thickness of sheets from the machine and in arresting the operation of the machine in such cases there is still some trouble experienced with the device under certain conditions. In the form of sheet-calipers covered by said application the rotary calipering member is adjusted to the proper position with regard to its coöperating member to permit the free passage of only one sheet of paper, and it is allowed to remain in this position during the entire operation of the machine except when it is forced upwardly slightly by the presence of an abnormal thickness of sheets, when it is actuated to throw out the machine. I have found it objectionable to allow the calipers to remain always in calipering position, for the reason that in cases where a sheet passing from the machine has a fold or rumpled portion in it the sheet under the action of the drop-roller delivery mechanism is whipped rapidly from the pile, and in many cases the fold or rumpled portion of the sheet will suddenly come into engagement with the calipering device and tear a piece out of the sheet, and thereby destroy it. This old arrangement is also troublesome when a number of sheets become wedged between the calipering members, the friction caused by the extra thickness of sheets sometimes resulting in the sheets being fed so far forward before the machine is stopped that damage is caused, and, furthermore, the constant engagement of the upper calipering member with the extra thickness of sheets makes it troublesome for the operator to remove the sheets from the calipering device in preparation for restarting the machine.

My present invention obviates these difficulties by providing a sheet-calipering device which is automatically moved into calipering position as each sheet is fed forward from the pile to the delivery mechanism and which is moved slightly away from this calipering position immediately after the sheet has been calipered and just prior to the moment when the sheet is acted upon by the delivery mechanism, so as to relieve the sheet entirely from the engagement of the calipering member during its movement from the machine and avoid any possibility of any irregularity, such as a fold or rumpled portion, of the sheet coming in contact with the calipering device and causing trouble. In my new arrangement the means for moving the sheet-calipering device out of the way is also of great value when the caliper has detected the presence of an abnormal thickness of sheets, because the extra thickness of sheets is relieved of the pressure of the calipering device, and the movement of the plurality of sheets too far from the machine, as also the ramming of the abnormal thickness between the calipering members, is thereby avoided.

In the preferred construction of my present invention I mount the upper rotatable calipering member upon a pivoted arm or le-

ver which is adjustably connected through a suitable link with the throw-out controlling-arm, a pendulum-lever being supported normally in position to prevent the movement of the throw-out controlling-arm and a pin or lug being mounted upon the calipering member to engage said pendulum-lever when the calipering member is rotated by the presence of an abnormal thickness of sheets, to thereby release the throw-out controlling-arm to allow it to fall and operate the throw-out mechanism when its controlling-cam reaches proper position. By reason of the connection between the caliper-supporting lever and the throw-out controlling-arm the caliper will be moved away from the plane of feed of the sheets when said controlling-arm is dropped and will be moved toward the plane of feed when said controlling-arm is raised. The controlling-cam is formed with a high portion of about one-half its circumference to maintain the caliper member in calipering position for one-half of a revolution of the machine, a slightly lower portion for a little less than one-half of its circumference to support the calipering member a little above its calipering position while the calipered sheet is being carried out of the machine by the delivery mechanism, and an extreme low portion or notch, which is adapted to trip the throw-out controlling-arm and raise the sheet-calipering device to its extreme position immediately after the presence of an abnormal thickness of sheets has caused the calipering device to trip the pendulum-lever and allow the controlling-arm to fall into the low portion of the cam.

In another form of my invention I apply the principle of my improved calipering device to a feeding-machine having a feeding-carriage which is lowered into feeding position at the beginning of its forward stroke and is raised out of feeding position at the completion of its forward stroke and supported in raised position during its backward stroke. In this application of my invention I provide a suitable connection between the feeder-carriage-raising means and the moving caliper, so that the caliper will be in operative position while the feeding devices are operating and will be in raised position when the feeding devices are not operating.

My invention consists, broadly, of a sheet-calipering device with means for automatically moving it into and out of operative relation with the plane of feed of the sheets in any machine through which sheets of paper are passed.

In order that my invention may be fully understood, I will first describe the same with reference to the accompanying drawings and afterward point out the novelty more particularly in the annexed claims.

In said drawings, Figure 1 is a detail longitudinal vertical sectional view of a part of a paper-feeding machine equipped with one form of my improved sheet-calipering mechanism and showing in full lines the parts in position of calipering a sheet and in dotted lines the position of the parts after the sheet has been calipered and while it is being fed from the machine by the sheet-delivery mechanism. The two positions illustrated in this figure are the positions successively assumed during the normal operation of the mechanism. Fig. 2 is a similar view of the same, representing the parts in the position assumed after the throw-out mechanism has been tripped by the presence beneath the calipering device of an abnormal thickness of sheets. Fig. 3 is a detail view illustrating the adjustable connection between the caliper-supporting lever and its operating pitman. Fig. 4 is a detail view of a clutch mechanism which is operated by the calipering device for arresting the operation of the machine. Fig. 5 is a detail longitudinal sectional view of part of a paper-feeding machine, illustrating a modified form of my improved sheet-calipering device. Fig. 6 is a detail transverse sectional view of the same.

My improved sheet-calipering device may be applied to any machine through which sheets of paper are passed—such, for instance, as a folding-machine, a printing-press, a ruling-machine, or a paper-feeding machine—its purpose being to arrest the operation of the machine to which it is applied in case an abnormal thickness of sheets passes a certain point.

As an example of one form of machine to which my improved mechanism may be applied, I would refer to Patent No. 656,838, granted to me August 28, 1900, for improvements in paper-feeding machines. I would have it understood, however, that I do not intend to limit myself to any particular application of my invention, but desire to claim the same broadly, as hereinafter indicated in the claims.

The framework of my improved machine may be of any suitable construction to properly support the several mechanisms hereinafter referred to, and I will not specifically describe the same.

The pile P of paper to be fed to the folder, printing-press, ruling-machine, or other machine designed to operate upon the paper is mounted upon an automatically-adjustable table or platform which is intermittently elevated under the control of an automatic device in the manner well understood in the art. The pile-supporting table, elevating-screws, and the automatic controlling device are not shown in the drawings, as they do not form any part of my improvements covered in the present application.

1 indicates a part of the main frame of a paper-feeding machine. This machine is preferably equipped with suitable sheet-feeding devices which are adapted to separate the top sheet from the pile and feed it forward into position to be taken by suitable drop-roller sheet-delivery mechanism, which parts

may be of the construction illustrated in my Patent No. 656,838 above referred to or of any other approved construction.

2 indicates the front guides against which the pile of sheets P is stacked.

3 is one of a series of knurled rollers journaled at the front edge of the pile P and adapted to assist the movement of the front edge of the sheets in passing forward to the horizontal guide-bars 4, which are supported in the plane of feed. The drop-roller delivery mechanism of the machine is not shown, but may be of any approved construction, such as illustrated in my above-named patent.

5 indicates the main driving-shaft of the machine, which shaft is suitably journaled in the machine-frame 1 and is properly geared to the operative parts of the machine to drive them and is driven by any suitable mechanism geared to it through the medium of a throw-out clutch, whereby the rotation of the shaft 5 and the operation of the parts driven thereby may be arrested. I have illustrated in Fig. 4 of the drawings and will hereinafter describe the construction of the form of clutch which is disclosed in my above-named Patent No. 656,838, which may be employed in combination with my present improvements; but I would have it understood that I do not limit myself to the use of any particular throw-out clutch or operating mechanism in combination with my improved sheet-calipering device which controls the operation of the throw-out mechanism.

Referring now particularly to Figs. 1, 2, and 3 of the drawings, 15 is a throw-out controlling-cam keyed to the shaft 5 and formed with a high concentric portion 15^a for about one-half of its circumference, a lower or intermediate concentric portion 15^b for about one-third of its circumference, and an extreme low portion 15^c for the remainder of its circumference. The purpose of this cam will presently appear. 11 is a rock-shaft journaled in the machine-frame and provided with rock-arms 12 and 13, or any other suitable devices for throwing the clutch into or out of operation in the manner hereinafter explained. 20 is a rock-arm keyed to the rock-shaft 11 and projecting forwardly therefrom above the throw-out controlling-cam 15. 21 is an antifriction-roller journaled upon the arm 20 and operating upon the periphery of the cam 15. The rock-arm 20 has a forwardly-projecting nose 22, which normally rests above the upper end of a pendulum-lever 23 24, which is journaled at 25. The throw-out mechanism referred to is so arranged that when the antifriction-roller 21 of the rock-arm 20 drops into the low portion 15^c of the controlling-cam 15 the clutch will be thrown to arrest the operation of the machine. This operation will be more clearly explained after the sheet-calipering mechanism is described. 30 is a roller keyed to the constantly-driven shaft 31, which is journaled in the machine-frame in proper position to support the periphery of the roller 30 in the plane of feed of the sheets. The roller 30 constitutes the lower member of the sheet-calipering device. 35 is an arm or lever journaled at 36 and having a weighted end 37. 38 is a rod or pitman journaled at 38^a to the rock-arm 20 and adjustably journaled to the forward end of the arm or lever 35. The rod 38 connects the rock-arm 20 and the lever 35 to cause them to move in unison. Any suitable means may be employed for adjustably connecting rod 38 to lever 35, and for this purpose I have illustrated an elongated slot 39, formed in the lever 35, and a journal-screw 40, adjustably mounted in slot 39 and clamped by a nut 41 and having a rod or pitman 38 freely journaled upon it. (See Fig. 3.) The purpose of this adjustment is to enable the setting of the upper sheet-calipering member, which is carried upon the lever 35, in proper relation to the lower calipering member. 45 is the upper normally stationary rotatable sheet-calipering member, which is journaled at 46 in the arm or lever 35 and carries upon one face a pin or lug 47. The upper calipering member 45 is preferably weighted at the proper point to hold it in normal position, as shown in full lines in Fig. 1, with the pin or lug 48 just in front and below the lower arm 24 of the pendulum-lever 23 24, above referred to.

I will now describe the clutch mechanism for arresting the operation of the machine under the control of the sheet-calipering device. The clutch is shown in detail in Fig. 4. Upon the end of shaft 5 outside of the side frame of the machine is freely journaled a main power-gear 10, having attached to or formed integral with it one member of the automatic clutch. This member of the clutch on gear 10 is shown in the form of a cam-shaped shoulder 50, having a notch 51 for the engagement of the clutch-dog 52. The dog 52 is journaled at 53 to an arm 54, which is adjustably secured to the shaft 5 outside of gear 10 by means of a tap-bolt 55. Formed integral with an arm 54 is a plate or flange 56, for the purpose presently to be explained. 57 is a spring-arm secured to shoulder 58 of arm 54 and having journaled to its free end a small antifriction-roller 59, which is adapted to engage the angular faces of the lug 60, attached to or formed upon the face of the rear portion of dog 52 to hold the dog in engaged or disengaged position. The clutch-operating arm 12 and depending finger 13, which project from the rock-shaft 11, are supported in the same longitudinal plane with the clutch-dog 52. Keyed to the rock-shaft 11 inside the side frames of the machine is one or more operating rock-arms 61, to one of which may be connected an operating-rod, such as 62, extending forward or backward to a convenient point of operation. The rock-arms 61 are for returning the parts to normal operative position after the machine has been thrown out by the calipering mechanism.

During the normal operation of the feeding-machine or other machine to which my improved calipering device is applied the rock-arm 20 and the connected lever 35, carrying the upper calipering member 45, are constantly vibrated, as indicated by the full lines and dotted lines in Fig. 1 of the drawings. When a sheet of paper is passing from the pile P into position between the calipering members 30 and 45, the member 45 is held in the calipering position shown in full lines in Fig. 1 by reason of the high concentric portion 15^a of the controlling-cam supporting the rock-arm 20 in the position shown in full lines. Immediately after the sheet has been calipered and before the sheet-delivery mechanism comes into operation upon the sheet to feed it from the machine (the controlling-cam 15 traveling in the direction indicated by the arrow) the extreme low portion 15^c of the controlling-cam will arrive beneath the antifriction-roller 21, tending to drop rock-arm 20; but when only a single sheet of paper has passed to the caliper the pendulum-lever 23 24 will be in position beneath the nose 22 of the rock-shaft 20 to support the rock-shaft while the low portion 15^c of the cam 15 is passing the antifriction-roller 21. The length of arm 23 of pendulum-lever 23 24 is such, however, that the rock-arm 20 will be allowed to drop to the position indicated in dotted lines in Fig. 1 while the intermediate portion 15^b of the controlling-cam is passing the antifriction-roller 21. The result of this is that the upper calipering member 45 will be raised slightly above the sheet which has just been calipered, as indicated in dotted lines in Fig. 1, releasing the sheet to the free action of the sheet-delivery mechanism. This is the normal operation of my improved sheet, calipering mechanism during the time that the sheets are passing singly and properly from the machine. Assuming now that the paper-feeding machine has failed to properly separate the top sheet from the pile and has fed forward two or three sheets together, this abnormal thickness of sheets reaches the calipering device when the parts are in the position indicated in full lines in Fig. 1 of the drawings. The presence of this abnormal thickness of sheets between the constantly-driven calipering member 30 and the upper normally stationary rotary caliper member 45 will create sufficient friction between the sheets and the upper calipering member to rotate the upper member slightly and cause the pin or lug 47 to engage the arm or lever 24 and move the pendulum-lever 23 24 into the position shown in Fig. 2 of the drawings. Immediately following this movement of the pendulum-lever the extreme low portion 15^c of the controlling-cam reaches the antifriction roller 21. As there is no support left for the rock-arm 20, said arm will drop to the limit of the low portion 15^c of the cam, and thereby rock the shaft 11 and operate the throw-out mechanism and arrest the operation of the machine. The downward movement of the rock-arm 20 raises the upper calipering member 45 into its extreme raised position, as represented in Fig. 2, thereby releasing the improperly-fed sheets between the calipering members, so that they may be readily removed by the operator. After the troublesome sheets are removed the parts are reset to the position shown in Fig. 1 of the drawings, and the machine is again started by reshifting the clutch in any suitable manner. The movement of the rock-shaft 11 caused by the dropping of rock-arm 20, as first explained, will throw arm 12 into engagement with the cam-surface 52^a of dog 52, thereby forcing the heel 52^b of said dog downwardly into engagement with the plate or flange 56, the nose of the dog being withdrawn from the notch 51 to release the main gear 10 and arrest the operation of shaft 5 and all the operating parts of the machine which are driven therefrom. When the dog is disengaged in this manner, the spring-arm 57 yields outwardly under the action of angular lug 60 upon antifriction-roller 59, causing said roller to disengage the under angular face of said lug and engage its upper angular face for holding the dog in disengaged position. When it is desired to start the operation of the machine, the rock-shaft 11 is rocked rearwardly by one of the hand-levers, causing finger 13 to engage the forward end of dog 52 and force it downwardly until the lug 52^c rests upon the plate or flange 56, the spring-arm 57 operating as before to give the dog a spring tendency to move into engagement with the other clutch member. The continuously-rotating gear 10 brings the cam-shoulder 50 around into engagement with the nose of the dog and lifts it slightly till the dog springs into engagement with the notch to again lock the clutch members together when the machine immediately starts off.

Referring now to Figs. 5 and 6 of the drawings, I will proceed to describe a modified arrangement of my improved sheet-calipering device. Keyed to the main operating-shaft 5 within the side frames of the machine at each side is a cam 65, upon which operates an antifriction-roller 66, journaled upon a stud 67, projecting from the face of a slide 68. The slide 68 is mounted in vertical guideways 69, formed in a frame-piece 1^a of the machine. The slide 68 is formed with an elongated slot 71, through which the shaft 5 extends, the slot allowing the slide to reciprocate vertically in the guideways 69. Mounted rigidly upon the lower end of the slide 68 is a track-bar 70, upon which is mounted the horizontally-reciprocating carriage 71. The carriage 71 has secured to it a bracket-arm 72. 75 75 indicate the push-fingers, which are journaled at 76 in the bracket-arm 72 and are provided at their forward ends with rubber blocks 77. The push-fingers are provided with adjustable tension-springs, which hold them into engagement with the pile of sheets when they are in operation. 83 is a bell-crank lever

pivoted to the carriage at 84 and connected with a rod 81, which rod has suitable connection with the feed-fingers 75, whereby said fingers are raised upon the carriage. This structure is more fully set forth in my above-named patent. 90 is a rock-shaft journaled in the side frames of the machine and operated in any suitable manner. 91 is a rock-arm keyed to the shaft 90 and having journaled to its lower end a link 92, provided with an antifriction-roller 93, which engages a notch 94 in the upper face of the carriage 71. 95 is a spring connecting the heel 96 of arm 92 with the rock-arm 91. 97 is a longitudinally-movable rack-bar supported upon the carriage 71 and formed with a beveled rear end 98, which rests normally directly beneath the antifriction-roller 93. When the rack-bar 97 is forced rearwardly upon the carriage 71, the antifriction-roller 93 of arm 92 is lifted out of engagement with the notch 94, thereby effectively disconnecting the operating device from the carriage and arresting the feeding motion of the carriage. The movement of the rack-bar for accomplishing this purpose is effected by any suitable automatic tripping mechanism, which I will not describe, but will refer to my above-named patent for an explanation. 120 is a cam-plate secured to frame 65 just above the reciprocating carriage 71 in position to engage the antifriction-roller 85 of lever 83 when the carriage is elevated by the cam 60, the engagement of said plate with the antifriction-roller causing the push-fingers 75 to be raised upon the carriage simultaneously with the vertical movement of the carriage away from the pile. This operation takes place immediately after the operating mechanism has been disengaged from the carriage by the tripping mechanism just referred to. In this modified structure the sheet-calipering device proper comprises the lower member or roll 30, mounted upon the constantly-driven shaft 31, and the upper member or roll 45, journaled upon an arm or lever, as in the preferred construction above described and illustrated in Figs. 1 and 2 of the drawings. The same pendulum-lever 23 24, actuated by the pin 47 of the upper member 45, and the same throw-out-operating arm 20 upon the rock-shaft 11 operates upon the same cam 15, keyed to the shaft 5, and is controlled by the pendulum-lever 23 24. The means for moving the upper calipering member into and out of operative relation with the lower member is, however, changed in this modification, as I will now explain. The connection between rock-arm 20 and caliper-supporting arm or lever 35 of the preferred form is omitted from this modified form. The upper caliper member 45 is journaled upon an arm 125, which is journaled at 126 to a part of the machine-frame. An arm 127 is rigidly attached to and projects laterally from the arm 125, and a link 128 is pivotally connected at its lower end 129 with said arm 127. The upper end of link 128 is formed with a yoke 130, through which passes a set-screw 131, seated in a collar 132, which is adjustably mounted upon a rod or bar 133, projecting rigidly from the face of the track-bar 70, upon which the feed-carriage 72 slides. By reason of the adjustable connections between the caliper-supporting arm 125 and the rod or bar 133 the caliper may be adjusted to the desired position transversely of the machine, and its relation to the lower member 30 can be fixed to suit the thickness of sheets to be calipered. In the operation of this modified form of the device it will be clear that the bar 133 will move vertically with the feeder-carriage, so that the caliper will be in calipering position when the feed-fingers are in operative position and will be in readiness to caliper the thickness of sheets fed forward from the pile. The feed mechanism is raised from the pile just prior to the operation of the drop-roller-delivery mechanism, and by reason of the connection between the carriage track-bar and the caliper-supporting arm the upper caliper member will also be raised prior to the delivery of the sheet from the machine.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a sheet-calipering device normally preventing the operation of the throw-out mechanism and adapted to be actuated by the passage of an abnormal thickness of sheets, and by its movement release the throw-out mechanism and allow it to operate, and means for intermittently moving the sheet-calipering device into and out of calipering position, whereby the successive sheets may be first calipered and then freed from the calipering device, substantially as and for the purpose set forth.

2. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a sheet-calipering device controlling the operation of the throw-out mechanism and adapted to allow said mechanism to operate when an abnormal thickness of sheets is detected by the calipering device, and means for moving the sheet-calipering device away from the plane of feed when the throw-out mechanism operates, substantially as set forth.

3. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a sheet-calipering device constructed and arranged to control the throw-out mechanism, means for intermittently moving the sheet-calipering device into and out of calipering position to first caliper and then free the successive sheets, and means for moving the calipering device

away from the plane of feed of sheets when the throw-out mechanism operates, substantially as and for the purpose set forth.

4. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a lever adapted to normally prevent the operation of the throw-out mechanism, a rotatable sheet-calipering device adapted to be rotated by the presence of an abnormal thickness of sheets, suitable means of engagement between the calipering device and the throw-out-controlling lever, and means for intermittently moving the sheet-calipering device into and out of caliper-ing position, substantially as and for the purpose set forth.

5. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a lever adapted to normally prevent the operation of the throw-out mechanism, a rotatable sheet-calipering device adapted to be operated by an abnormal thickness of sheets, means of engagement between the calipering device and the throw-out-controlling lever, whereby the throw-out mechanism will be allowed to operate when the calipering device is operated upon by an abnormal thickness of sheets, and means for moving the sheet-calipering device away from the plane of feed of the sheets when the throw-out mechanism operates, substantially as set forth.

6. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a throw-out-operating arm, a sheet-calipering device adapted to control the operation of said operating-arm and a suitable connection between the throw-out-operating arm and the calipering device, whereby the latter is moved by the former, substantially as set forth.

7. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a throw-out-operating arm, a cam adapted to time the operation of said arm, a sheet-calipering device, suitable means operated by the sheet-calipering device for normally preventing the operation of said throw-out-operating arm, and suitable connection between said throw-out-operating arm and the sheet-calipering device, substantially as and for the purpose set forth.

8. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, a throw-out-operating arm, a controlling-cam adapted to time the operation of said arm, a sheet-calipering device comprising a pivotally-mounted arm or lever and a rotatable calipering member journaled in said arm or lever, suitable means operated by said rotatable calipering member for controlling the operation of said throw-out-operating arm, and a rod or pitman connecting the throw-out-operating arm and the arm or lever of the calipering device, substantially as and for the purpose set forth.

9. In combination with a machine through which sheets of paper are passed, and suitable throw-out mechanism adapted to arrest the operation of said machine, of a throw-out-operating arm, a sheet-calipering device including a pivotally-mounted arm or lever, and a rotatable calipering member journaled upon said arm or lever, means connecting the throw-out-operating arm and the caliper arm or lever, a device operated by the rotatable calipering member adapted to control the operation of the throw-out-operating arm, and a controlling-cam formed with a high concentric portion, an intermediate concentric portion, and an extreme low portion, substantially as and for the purpose set forth.

TALBOT C. DEXTER.

Witnesses:
J. GREEN,
WM. E. KNIGHT.