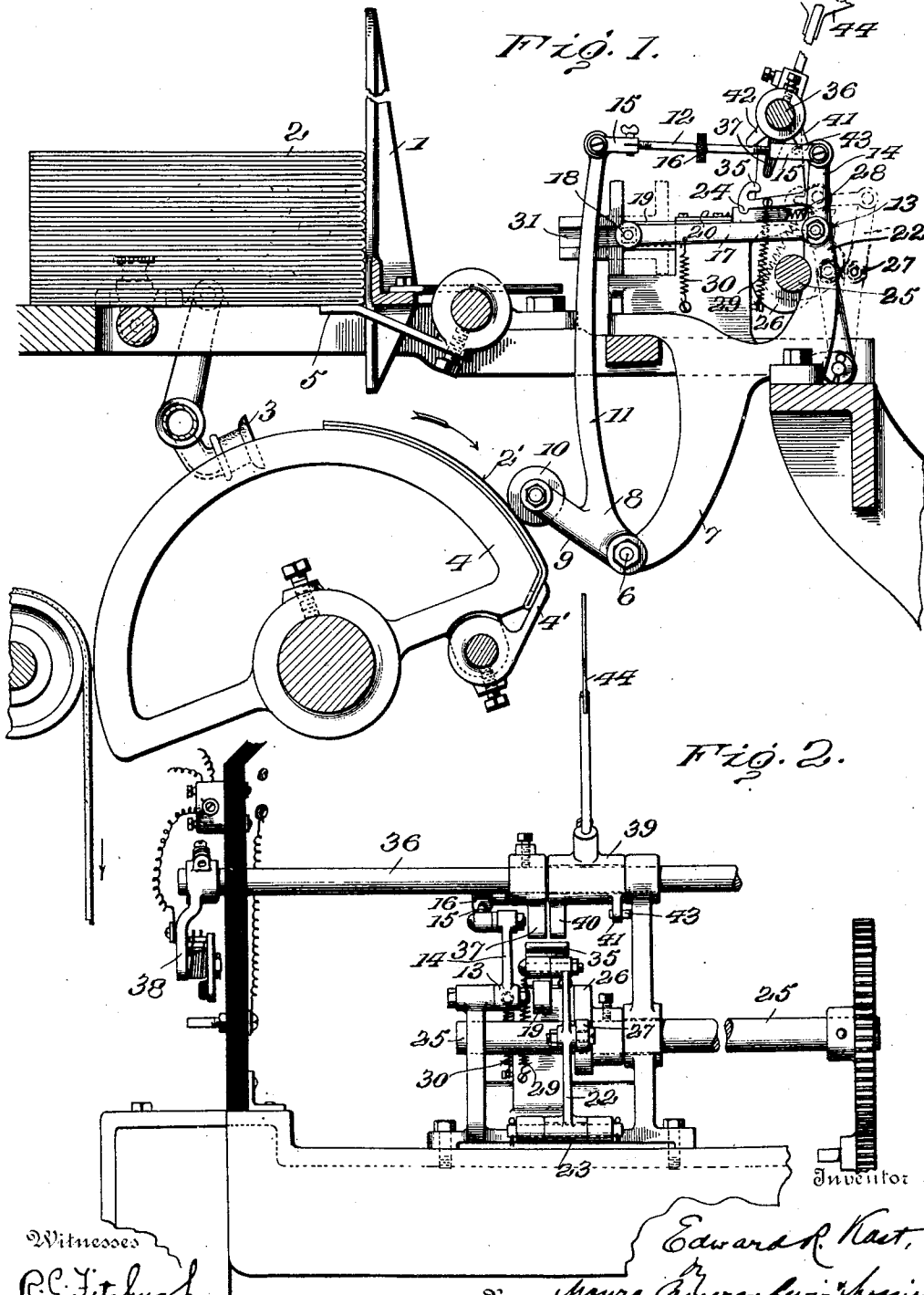


E. R. KAST.
 CALIPERING DEVICE FOR SIGNATURE GATHERING MACHINES.
 APPLICATION FILED DEC. 7, 1910.

1,039,541.

Patented Sept. 24, 1912.

3 SHEETS-SHEET 1.



Witnesses
 R. C. Fitzhugh
 C. C. [illegible]

By

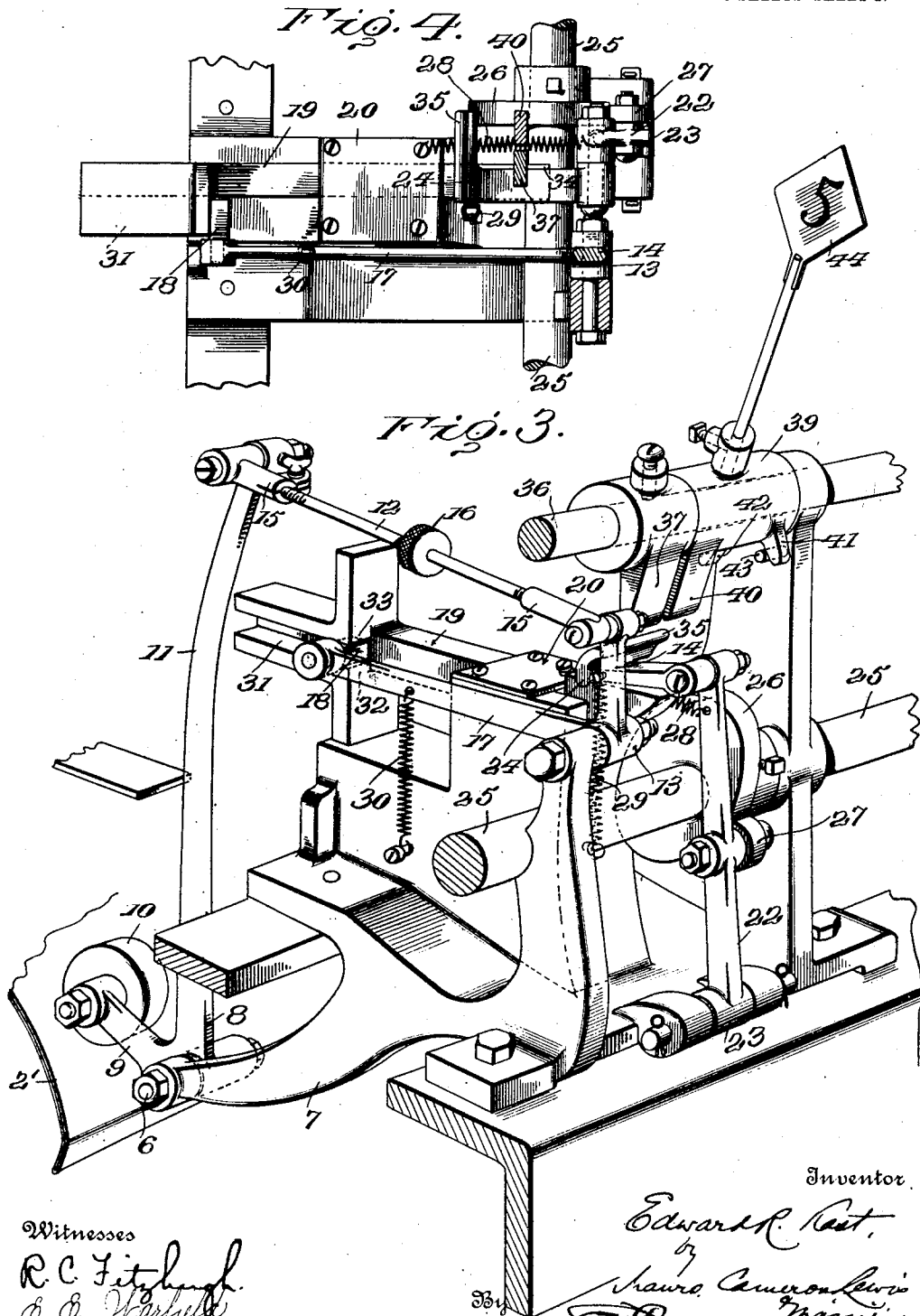
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3 SHEETS-SHEET 2.



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3 SHEETS—SHEET 3.

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POSITION WHEN NO SHEET.

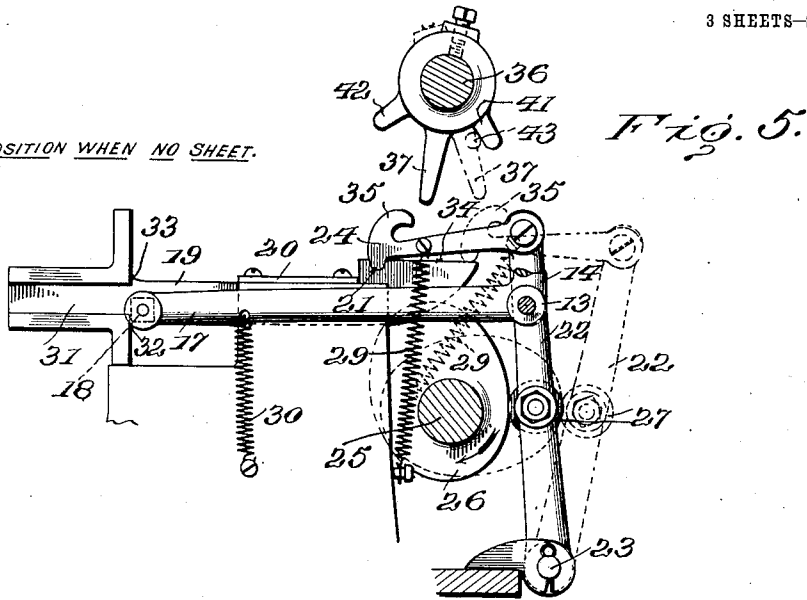


Fig. 5.

POSITION WHEN MORE THAN ONE SHEET.

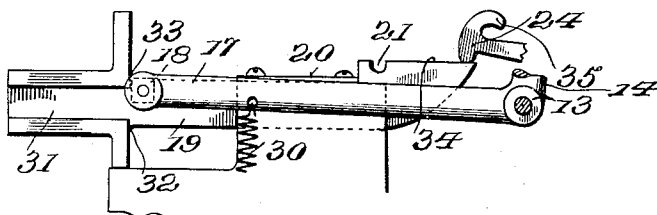


Fig. 6.

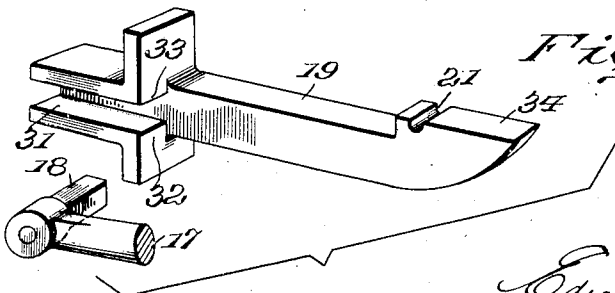


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

HOWARD R. KAST, OF BALTIMORE, MARYLAND.

CALIPERING DEVICE FOR SIGNATURE-GATHERING MACHINES.

1,039,341.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed December 7, 1910. Serial No. 596,014.

To all whom it may concern:

Be it known that I, EDWARD R. KAST, of Baltimore, Maryland, have invented a new and useful Improvement in Calipering Devices for Signature-Gathering Machines, which invention is fully set forth in the following specification.

This invention relates to a calipering device for signature-gathering machines, and has for its object to provide a device of this character which shall automatically stop the machine when the same in its operation withdraws from the hoppers of the machine more or less than the number of signatures (generally one) that it is desired it shall withdraw at each operation thereof, and incidental to the main portion of the invention, it has for its further object to provide means which shall indicate to the operator at what particular hopper or hoppers the inaccurate action of the machine has occurred.

In machines of this character, it is desirable, as a general thing, in the normal operation of the machine, that one signature at a time shall be withdrawn from the hopper and piled on a suitable table or tables for binding, and it sometimes occurs that the machine withdraws more than a single signature, where one is desired, or that it fails to withdraw a signature when one should be withdrawn, and the present invention is designed to provide means for detecting this inaccuracy in the operation of the gathering machine, and to at once stop the machine as a whole, and indicate to the operator at which hopper or hoppers such inaccuracy has occurred.

The inventive idea involved is capable of receiving a variety of mechanical expressions or embodiments, one of which, for the purpose of illustrating the invention, is shown in the accompanying drawings, but it is to be expressly understood that such drawings are designed for the purpose of illustrating the invention, and are not to be considered as defining the limits thereof, reference being had to the appended claims for this purpose.

In said drawings, Figure 1 is a transverse vertical section through a part of a signature-gathering machine, such, for example, as that shown and described in my pending application Serial No. 508,160, filed July 17th, 1909, showing the essential features of the present invention in side elevation;

Fig. 2 is a broken detail of a part of the machine with my invention attached thereto; Fig. 3 is a perspective view of the invention as applied to my signature-gathering machine; Fig. 4 is a top plan view illustrating my invention, parts being shown in section; and Figs. 5, 6 and 7 are details illustrating the construction and operation of the calipering device.

In said drawings, like reference numerals indicate like parts, 1 (Fig. 1) being a signature-hopper having signatures 2 arranged therein, 3, a suction device for drawing down the signatures one at a time in position to be seized by the revolving signature carrier 4, 4', and 5 is an oscillating arm, which supports the folded edges of the signatures between the withdrawing operations. The parts thus far described are, or may be, substantially as shown in my application above referred to.

Pivotaly mounted at 6 on a depending arm 7, attached to the frame of the machine, is a bell-crank-lever 8, the short arm 9 of which carries a roller 10, in a position to engage the surface of the signature 2' that has been withdrawn, and is in the act of being carried over by the carrier 4, 4'. The upwardly projecting arm 11 of said bell-crank lever is connected by a link 12 to a rocking bell-crank-lever, pivoted at 13 to the frame-work of the machine, the short arm 14 of said bell-crank-lever being connected to the link 12, which preferably is screw-threaded at each end, and engages nuts 15, 15', and which link 12 is also provided with a knurled wheel or surface 16, by means of which it may be turned for the adjustment of the parts.

17 is a horizontal arm of the bell-crank-lever, which is pivoted at 13, said arm carrying on its outer end a laterally projecting squared lug 18 (see Fig. 7).

Mounted to reciprocate on the frame-work of the machine is a movable member such as a T-shaped slide 19, which is held in place to reciprocate in suitable ways by means of a plate 20, and which has formed in its upper surface, and on the opposite end from the T, a transverse groove 21, Fig. 7. A lever 22, pivoted at 23 to the frame-work of the machine, projects upward, and on its upper end has a pawl 24, having a rounded nose engaging in the groove 21 on the sliding T bar 19. Mounted on a revolving shaft 25, suitably connected to the operative parts

of the machine, is a cam 26, which engages the lever 22, preferably through the medium of a friction roll 27, pivoted to turn on a lug or bolt projecting from the side of said lever.

28 is a spring tending to throw the lever 22 from right to left, as shown in the drawings, and holding the lever in operative engagement with the cam 26.

29 is a spring yieldingly holding the pawl 24 in engagement with the groove 21, and 30 is a spring normally tending to depress the arm 17 of the bell-crank-lever 14-17.

On the side of the sliding T-bar 19, there is formed a rectangular groove 31, whose dimensions are such as to just receive freely and easily the squared lug 18 on the end of the lever bar 17, and the relative position of the parts when adjusted is such that the sliding T-bar 19, with its groove 31, registers with the squared lug 18 when a signature is in position on the signature-carrier 4, 4', as shown in Fig. 1. If, however, no signature is in position, the spring 30 slightly lowers the lever arm 17, so that the squared shoulder 32 of the groove on the sliding T-bar is engaged by a stop such as the squared lug 18, and the sliding T-bar 19 thereby held against movement. This position of the parts is shown in Fig. 5. If, on the other hand, more than one signature is withdrawn and passed under the roller 10 by the signature-carrier 4, 4', the lever arm 17 is raised slightly above the operative position, so that the upper squared shoulder of the lug 18 engages the squared shoulder 33 of the groove 31, and in this position the sliding T-bar is restrained from movement. This position of the parts is illustrated in Fig. 6.

When the sliding T-bar 19 is restrained from movement, by reason of the failure to withdraw a signature, or by reason of more than one signature being withdrawn, as indicated in Figs. 5 and 6, respectively, the action of the cam 26 in forcing the lever 22 to the right, causes the rounded nose on the pawl 24 to release its hold on the groove 21, the spring 29 yielding for this purpose, and the nose of the pawl then travels rearward on the upper face 34 of the T-bar, as shown in Fig. 6. Projecting upward from the pawl 24 is a broad lug 35, and immediately over said lug is a rock shaft 36 (see Figs. 2 and 3), having a downwardly extending lug 37 rigidly secured thereto, which, when the nose of the pawl 24 is in the groove 21, is just above the lug 35, but when the pawl 24 is raised out of the groove 21, the lug 35 engages the depending arm or lug 37, and acts to rock said rock shaft 36. The rocking of this shaft is utilized to throw the machine out of operation by disconnecting it from the motor. The particular means for effecting this disconnection from the motor will

depend upon the character of motor employed. For example, as shown in the drawings, the machine is operated by an electrical motor, and the rocking of the shaft 36 acts to shift a switch 38, whereby the current is cut off from the motor. Obviously, any other suitable means for disconnecting the motor might be employed, the specific means utilized for this purpose not forming an essential part of the invention, and being dependent, as stated above, upon the character of motor in use.

A sleeve 39 (Fig. 3) is loosely mounted on the rock shaft 36, and has a depending arm or lug 40, which is also in the line of travel of the broadened lug 35 on the pawl 24 when the latter is raised out of the groove 21 on the T-slide, but which is just above the lug 35 when the pawl 24 has its nose in said groove 21, so that when the shaft 36 is rocked to stop the machine, the sleeve 39 is also rocked on the shaft 36. Said sleeve is provided with two lugs 41 and 42, a pin 43 on a part of the frame-work of the machine projecting between them for limiting the rocking action of said sleeve 39. The sleeve 39 has an indicating target 44 secured thereto, and the rocking of the sleeve correspondingly rocks the target.

There is a calipering device of the construction shown arranged in connection with each signature-carrier, that is, one for each hopper on the gathering machine, and the indicating targets 44 are preferably numbered from "1" upward, so that when the stoppage of the machine occurs, as the result of a defective operation, beside any given hopper or carrier, the displacement of such target will indicate to the operator at which hopper the defective operation has occurred.

It will be at once apparent to those skilled in the art that, within the limits defined in the claims, there may be certain changes in the relative arrangement of the parts and in the mechanical form of the various elements entering into the structure, without departing from the spirit of my invention, and such variations are meant to be included in the claims.

What is claimed is:—

1. In a signature-gathering machine, the combination of means for controlling the application of power to operate the machine, a calipering device, a movable member for supporting and releasing said calipering device and means releasable from said member for actuating said controlling means and controlled by said calipering device through said movable member.

2. In a signature-gathering machine, the combination of means controlling the application of power to operate the machine, a calipering device, a slide adapted to support and release said device, means releasable from and imparting movement to said

slide and adapted to be shifted into engagement with said power-controlling means to cut-off power upon the arrest of movement of the slide by said calipering device.

5 3. In a signature-gathering machine, the combination of a revolving signature-carrier, means delivering signatures one at a time to said carrier, means controlling the application of power to the machine, connections for operating said controlling means to disconnect the power from the machine, a slide, means for operating said slide and releasable into engagement with said connections to operate the latter, a calipering device in operative relation with said carrier and controlling the release and engagement of said operating means through said slide by the improper delivery of signatures on said carrier.

20 4. In a signature-gathering machine, the combination of a revolving signature-carrier, means delivering signatures one at a time to said carrier, a pivoted lever having one arm in operative engagement with the signature on said carrier, a slide operated by a moving part of the machine through a yielding connection, a stop for said slide controlled by said lever, means controlling the application of power to the machine, and means actuated by said yielding connection to shift said controlling means when said stop engages said slide, whereby power is cut off from the machine.

35 5. In a signature-gathering machine, the combination of a signature-carrier and means for delivering signatures one at a time to said carrier, with means controlling the application of power to the machine, a pivoted lever having one arm engaging the signature on the carrier, means for actuating said controlling means but normally out of operative relation therewith, and connections from said pivoted lever for shifting said actuating means into operative position when more or less than one signature is delivered to said carrier, whereby said power-controlling means is actuated to disconnect the power upon the abnormal or improper delivery of signatures to the carrier.

50 6. In a signature-gathering machine, the combination of a signature-carrier, and means for delivering signatures one at a time to said carrier, with means controlling the application of power to the machine, a device to actuate said controlling means to disconnect the power, but normally out of operative relation therewith, a slide having

yielding engagement with said actuating device, a pivoted lever having one arm engaging the signature on the carrier, and a stop 60 actuated by said lever and engaging said slide when more than one or less than one signature is on said carrier, whereby said actuating device is shifted from its yielding engagement with said slide and into operative engagement with said power-controlling means.

7. In a signature-gathering machine, the combination of a signature-carrier, means controlling the application of power to said machine, an oscillating member for actuating said means but normally out of engagement therewith, a pivoted lever having a calipering arm for engaging the signature on the carrier, a stop actuated by said lever, 75 a slide normally actuated by and in yielding engagement with said oscillating member, said slide being provided with a groove for normally receiving said stop, said stop engaging said slide to stop the same upon 80 movement of the lever greater or less than normal thereby rendering the power-controlling means active.

8. In combination with a signature-gathering machine, means for controlling the 85 application of power to operate the machine, a reciprocating slide provided at one end with a notch, an oscillating pawl yieldingly engaging said notch to reciprocate the slide, said slide being provided with a groove, a 90 pivoted lever having a calipering roll, a stop actuated by said roll in the path of said slide to stop the same and shift said pawl into operation with said power-controlling means upon abnormal movement of 95 said calipering roll.

9. In a signature gathering machine, means controlling the application of power to the machine, a calipering device, a power-driven member alternately supporting and 100 releasing said calipering device, yielding means for connecting said member to and releasing the same from the driving power, said yielding means being controlled by the calipering device and actuating said controlling means upon being disconnected from 105 said power driven member.

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

EDWARD R. KAST.

Witnesses:

JOHN W. HEWES,
M. E. WELLENER.