

No. 875,384.

PATENTED DEC. 31, 1907.

C. L. SMITH.  
SIGNATURE GATHERER.  
APPLICATION FILED DEC. 31, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

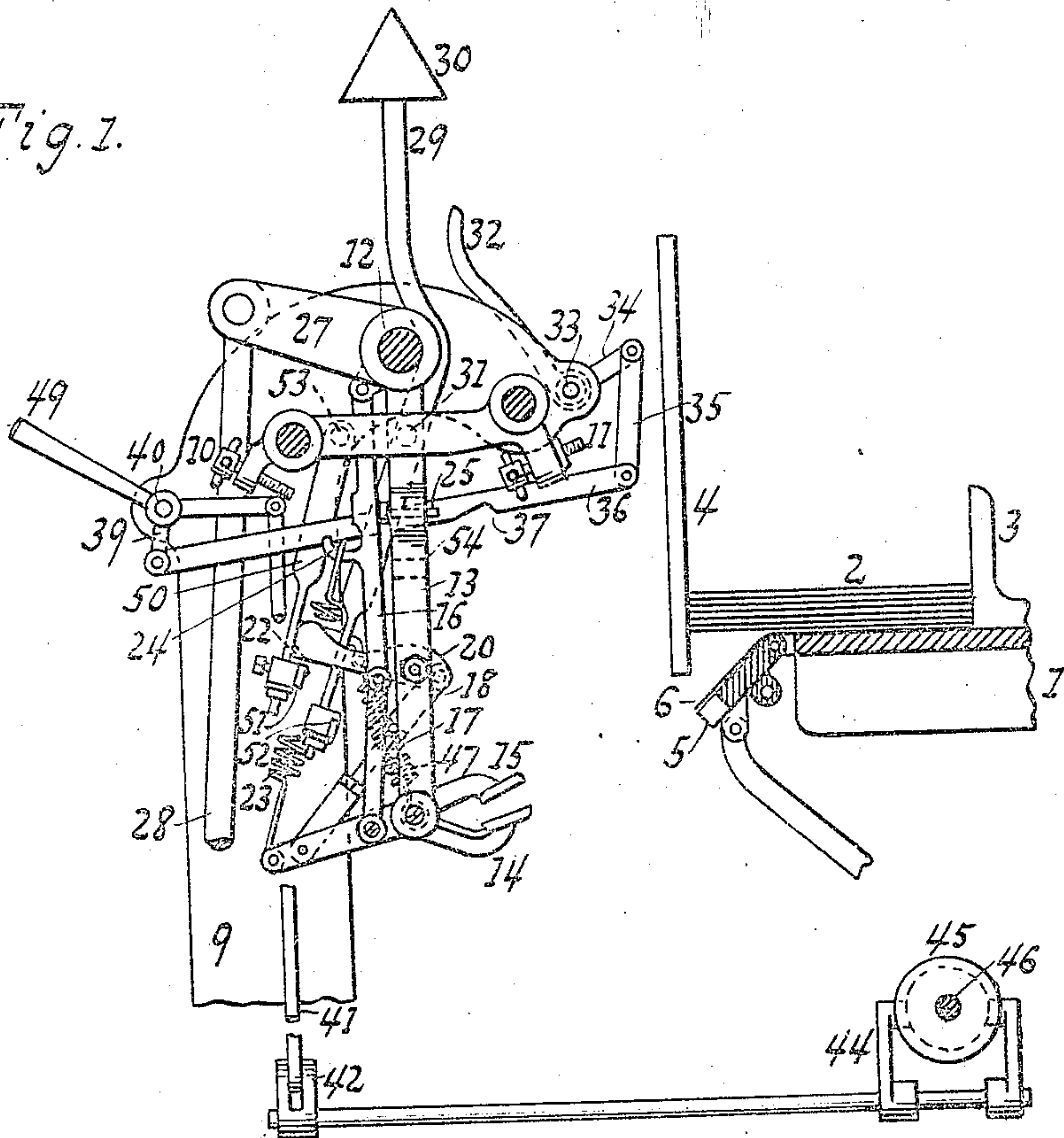
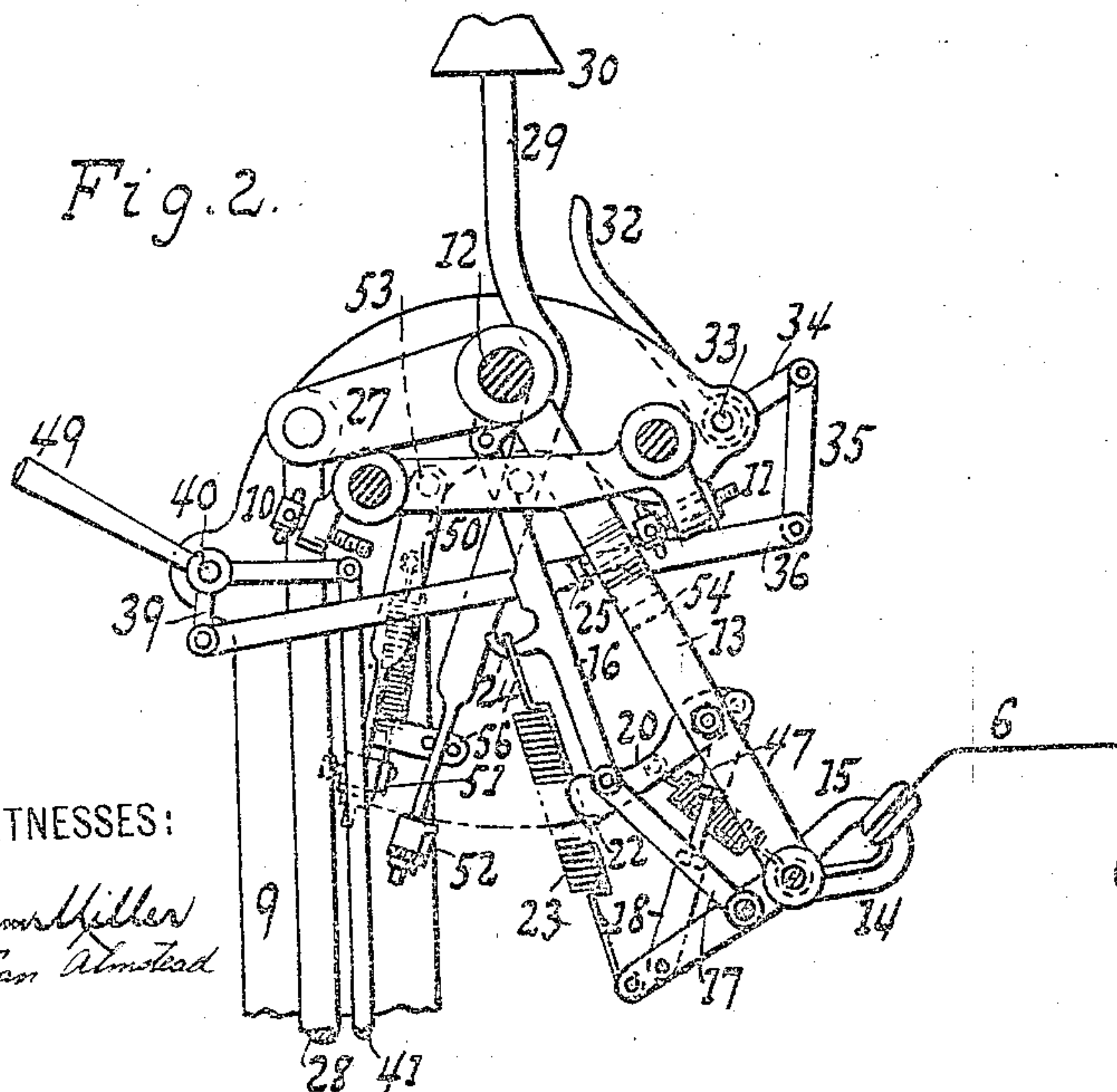


Fig. 2.



WITNESSES:

*William Miller*  
*Christian Almstead*

INVENTOR

*Charles L. Smith*

BY

*W. C. Harhoff*

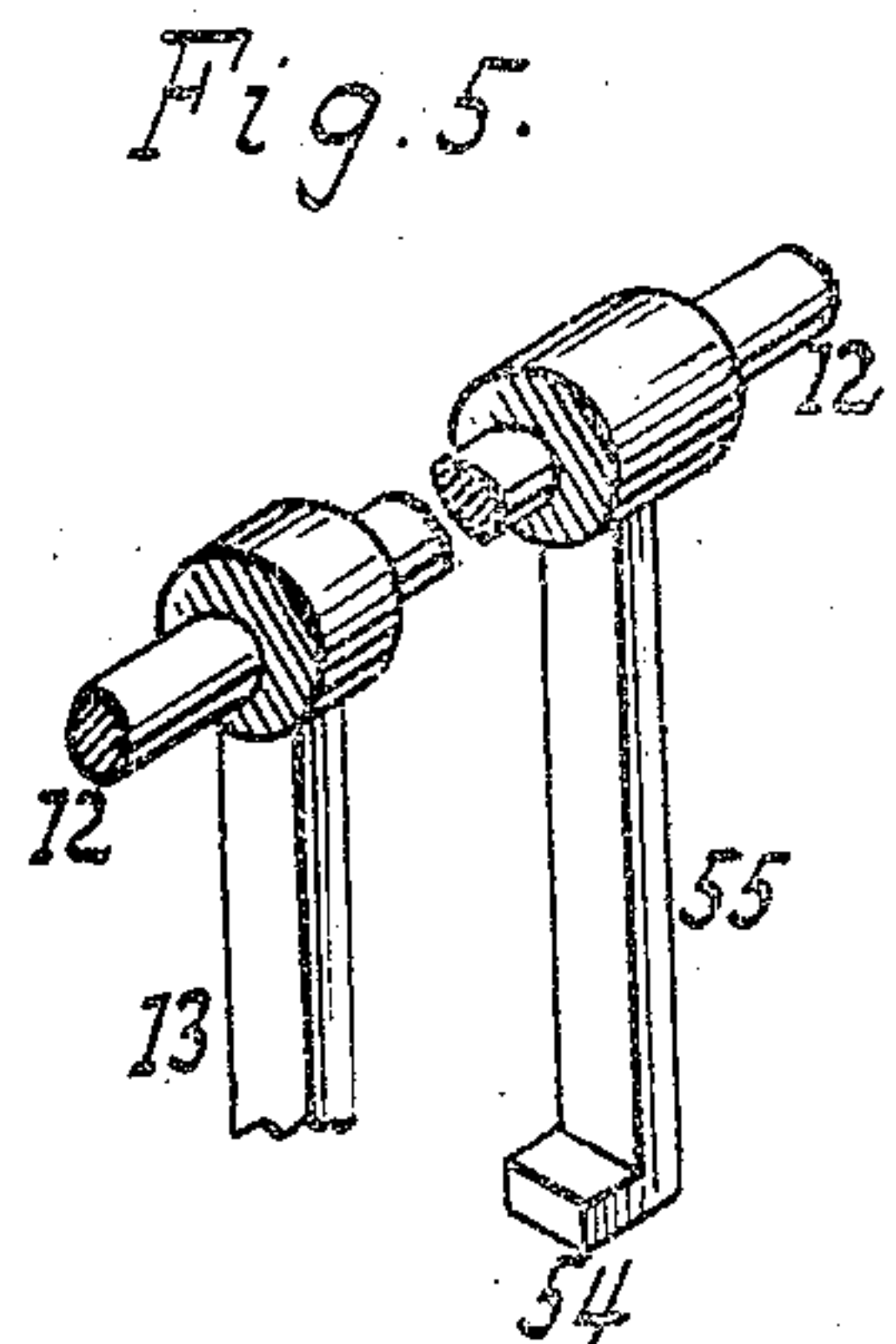
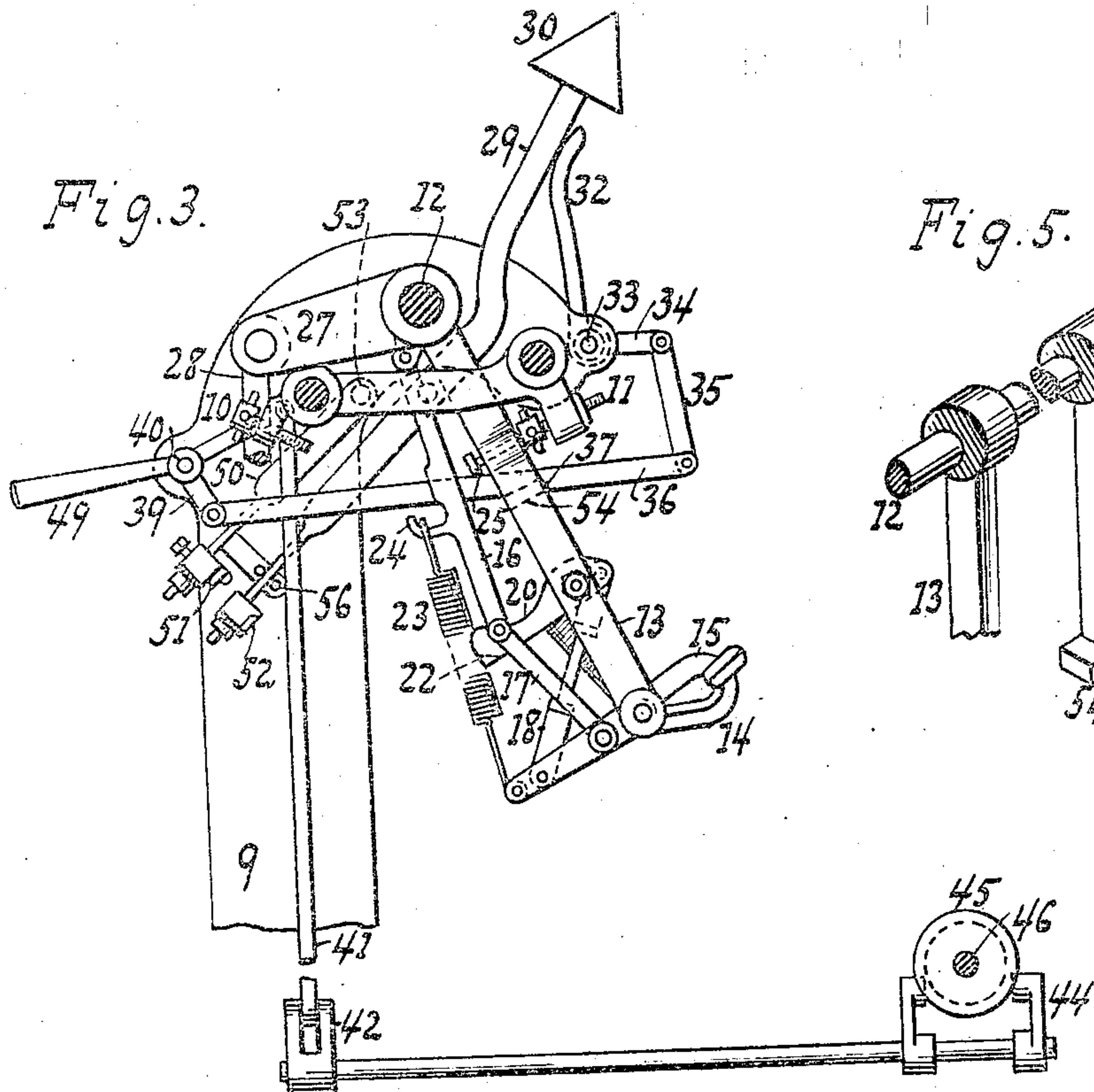
ATTORNEY

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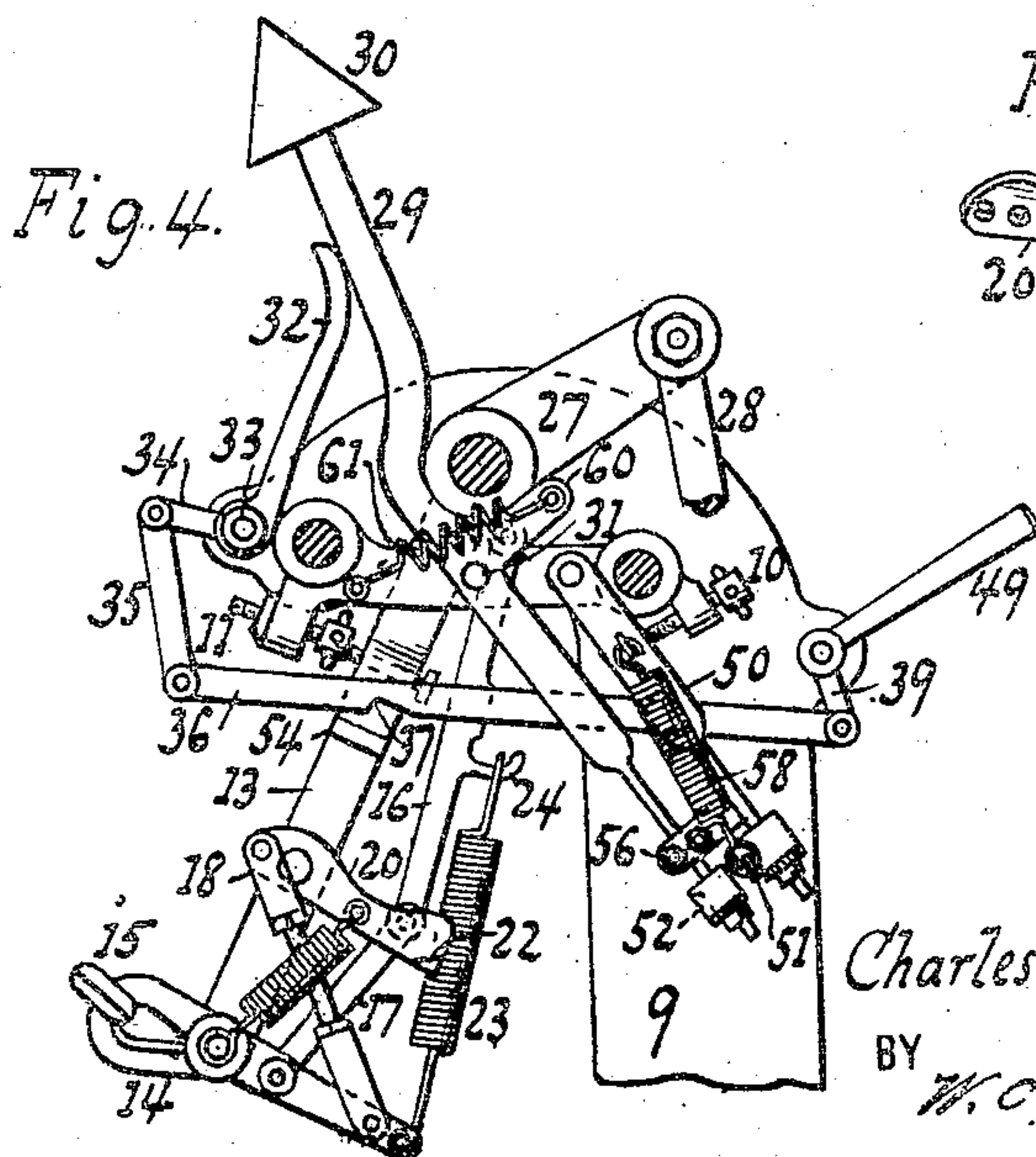
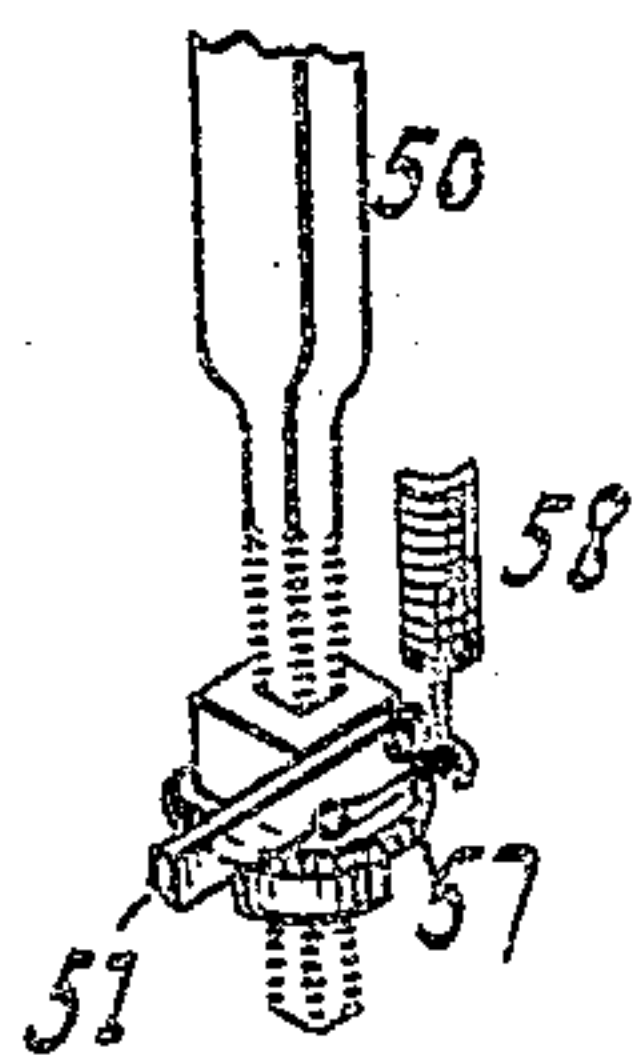
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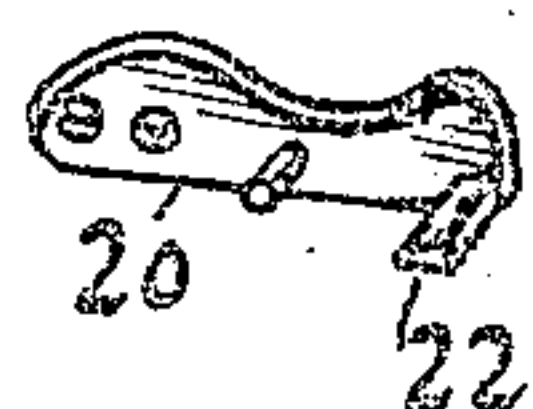
2 SHEETS—SHEET 2.



*Fig. 6.*



*Fig. 7.*



WITNESSES:  
*William Miller*  
*Christian Amstead*

INVENTOR  
*Charles L. Smith*  
BY *W. C. Harhoff*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES L. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO GULLBERG & SMITH, OF NEW YORK, N. Y., A FIRM.

## SIGNATURE-GATHERER.

No. 875,384.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed December 31, 1906. Serial No. 350,224.

*To all whom it may concern:*

Be it known that I, CHARLES L. SMITH, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Signature-Gatherers, of which the following is a specification.

This invention relates to machines for gathering or collecting signatures or sheets, and the object of my improvement is the providing of means whereby the gripper, or other signature or sheet-removing means, will be rendered inoperative if it has seized or removed either more or less than the desired number or thickness of signatures or sheets, or signatures or sheets improperly fed to or grasped by the gripper.

My new combination of parts includes stop mechanism, by which I include any stopping or disconnecting means, as, for instance, a clutch, brake, etc.

In the operation of the device illustrated in the accompanying drawings and hereinafter especially described, the gripper and parts controlled thereby, or by the presence or absence of sheets or signatures, do not affect the stop mechanism (a clutch is shown) when the gripper is properly working and is properly seizing signatures or sheets properly fed thereto and of the predetermined thickness and number. If, however, the gripper does not work properly or improperly seizes signatures or sheets either thicker or thinner than predetermined, then the stop mechanism or stopping means is operated and the gripper is rendered inoperative, the entire machine being preferably stopped automatically for this purpose.

The accompanying drawings show one embodiment of my present improvements. While said improvements may be employed modified as desired, with any form of signature-gathering machine, and the operator may avail himself of any suitable devices to attain the object desired, yet I have preferred, in actual commercial use, to utilize the invention in a form of machine in which the gripper, transmitting parts controlled thereby, signal-display means, clutch and other connections, are all positively and mechanically controlled and without the interposition of parts controlled by electricity or compressed air.

Referring to the accompanying drawings, Figure 1 is a side view of part of a signature-gatherer, showing my improvements, with the jaws of the advancing gripper opened; Fig. 2 shows the gripper-jaws closed upon the lowermost of a pile of signatures or sheets; Fig. 3 is a view similar to Fig. 2, the stop mechanism having been brought into action because of a gripper having failed to operate as required on account of not having seized the proper thickness of material. Fig. 4 is a view from the opposite side, showing the spring employed in the operation of the signal-display means and the stop mechanism; Fig. 5 is a fragmentary, perspective view of the gripper-operating shaft and coupling-arm carried thereby; Fig. 6 shows a stop or block with a yielding or spring held arm. Fig. 7 shows a lever plate with projection.

1 indicates a support for a pile, 2, of signatures or sheets. 3 indicates an adjustable rear guide for said pile and 4 a front guide therefor. 5 indicates a pivoted plate or base for separating the lowermost signature, 6, from the pile, a suction device 7 and a link 8 being provided to assure proper working, as fully set out in the United States Patent No. 811,509, dated Jan. 30, 1906.

The gatherer is provided with a frame 9, which is strengthened or made rigid in the usual way by two longitudinal rods connected by one or more cross bars. The drawing Figs. 1 to 4 shows these two rods in section as also a bar which connects them. There is thus provided a rigid frame the upper overhanging end of which carries a bar having stops 10 and 11 adjustably fitted in the downwardly projecting ends of said bar. A shaft 12 is journaled in the several upper overhanging ends of frames such as 9, it being understood that there will be a number of such frames suitably spaced apart, and the several grippers are fixedly connected with said shaft 12.

The form of gripper shown comprises a main bar 13 rigidly connected at its upper end with shaft 12 and provided with an integral jaw 14 at its lower end. A movable jaw 15 is also pivoted at the lower end of the main bar 13, and is moved to and from the fixed jaw by the operation of the toggle members 16 and 17 which are respectively con-



connected with the movable jaw and the upper end of the main bar. The rear end of the movable jaw 15 actuates an adjustable link 18 and the upper end of said link is connected  
 5 to the short arm of a lever plate 20 pivoted on the main bar 13. The outer end of the long arm of the lever plate carries a triangular lug 22 whose co-relation effects with the lugs 51 & 52 the stoppage of the machine, as  
 0 hereinafter fully described.

A spring 23 is connected with the rear end of the movable gripper-jaw 15 and to a hook 24 (Fig. 1) of the toggle member 16, and assists in snapping the toggle to separate the  
 5 gripper jaws, while a spring 47 (Fig. 2) connects the lever plate 20 with the main bar 13 at about the pivot of the movable gripper jaw. The last-named spring assists the downward movement of the lever plate 20.

20 The main bar 13 of the gripper carries a sliding pin 25 and said pin is pushed by the stop 11, when the gripper is fully advanced, and then strikes and throws back the toggle member 16 and closes the jaws (as shown in  
 25 Fig. 2) upon the lowermost signature 6 of the pile. The toggle member 16 also abuts against the stop 10, when the gripper is fully retracted, whereupon the part 16 is thrown forward (to the position shown in Fig. 1, for  
 30 instance) and the gripper jaws are opened and release the signature to be carried away by a chain or other collecting device employed.

In order to oscillate the shaft 12, an arm 27  
 35 is connected thereto at a suitable point, and by means of a link 28 (which may be operated by an eccentric) rising and falling movements are given to the arm 27.

My improvements preferably embody signal-display means, and I have shown an embodiment which employs a separate signal for each gripper, by which means the operator will identify the particular gripper which  
 40 has improperly operated or has failed to operate. The form of signal-display device shown by me, employs a lever 29 pivoted (Figs. 1 and 4) at 31 on the upper overhanging end of the frame 9. The upper arm of said lever carries a plate 30 (bearing a numeral  
 50 or colored, if desired) and the lower arm carries an adjustable lug 52 and another lug 51 is carried by an arm 50 pivoted at 53 to the frame. These lugs 52 and 51 can be adjusted along their arms which latter are screw  
 55 threaded or have a nut for such adjustment but such lugs can not turn or swivel on the arms as the latter are angular or the engagement is such as not to allow rotation of the lugs. The arms 29 and 50 are caused to  
 60 swing together being connected at a suitable point by a link 56 having a fork or studs clasping or engaging one of the arms to form a sliding or non binding connection for the arms 29 and 50 pivoted at different points.

65 The lugs 51 and 52 have one face or edge

part inclined to allow the catch 22 to slip by when on the return motion but said lug 22 strikes square when engaging the lugs 51 or 52 to move the signal. The lug 51 is pivoted  
 at 57 (Fig. 6) and yieldingly held by a spring 70 58 against a pin or stopping point to yield so that when triangular lug 22 in passing through lugs 51 and 52 should come into touch with lug 51 said lug 51 can yield with the upwardly swinging lug 22 to avoid break-  
 75 age. Such yielding or spring attachment 58 thus prevents breakage. By having the lugs 51 and 52 swinging about separate points or pivots each projection can be so set that when engaged by lug 22 the latter will keep  
 80 in engagement until the signal has been set or swung to required position.

Normally, the signal display means assumes the position shown in Figs. 1 and 2, and upon the retraction of the gripper, if the  
 85 jaws thereof are properly grasping a signature of the predetermined thickness, the lug 22 (of the lever plate 20) will pass freely between the adjusted lugs 51 and 52 of the lever 50 and arm 29 without disturbing such  
 90 parts; and when the toggle member 16 has butted against the stop 10, and the gripper jaws have been opened, the parts are brought to the position shown in Fig. 1, the lever plate 20 will raise the projection 22, so that upon  
 95 the advance of the gripper such projection (as shown in Fig. 1) will pass above the upper projection 51. If, however, the gripper jaws have failed to grasp a signature, or have grasped sheets of either less or greater thick-  
 100 ness than predetermined, the abnormal position of the movable jaw 15 will cause such positioning of the lug 22, that such lug will, upon retraction of the gripper, strike one of the lugs 51 or 52 and push the arm 50 and  
 105 the lower arm of the lever 29 backwardly.

As shown in Fig. 4 the lever 29 carries a short arm 60, and a heavy spring 61 is connected to said arm and to a fixed point of the frame. In the normal position of the lever,  
 110 such spring keeps the signal as shown in Figs. 1 and 2, but as the lever is thrown back (by engagement of projection 22 with either 51 or 52), the spring 61 is put under strain until the arm 60 moves past the pivot point,  
 115 whereupon the spring pulls upon the arm 60 and tends to draw the arm 29 and signal forward to the position shown in Figs. 3 and 4.

The stop mechanism or means for rendering the signature-gatherer inoperative or  
 120 stopping it entirely or in part, may be of any suitable construction, but I prefer a device having arms (corresponding in number to the signal-display devices). One such arm is shown, in its normal position, at 32 in Fig. 1,  
 125 The several arms are all fixed upon a slender shaft 33 and, at some point throughout its length, said shaft is connected with and moves a short arm 34 (Fig. 1) from the outer end of which depends a link 35. The lower  
 130



end of such link is loosely connected with the forward end of a bar 36 having a notch 37 in its lower edge. The rear end of said bar is pivoted to the short arm 39 fixed upon a shaft 40. Said shaft has a long arm which is pivotally connected with a rod 41, the lower end of which engages within the fork of an arm 42 rigidly connected with an oscillatory rod whose end carries forks 44 within the annular groove 45 of a clutch surrounding a driving shaft 46. A handle 49 (of which several are usually employed) is connected to the shaft 40, or otherwise arranged to move the clutch, through the aid of the rod 41, as desired.

The normal position of parts 32, 35 and 36—when the gripper (or grippers) is properly working—is that shown in Figs. 1 and 2, with the recess or notch 37 out of the path of a projection 54 moving with the gripper, and which is preferably a projection 54 formed (as shown in Fig. 5) upon the free end of an arm 55 secured, at any point desired, upon the shaft 12 and separate from the main bar 13 of the gripper. When however, an arm 50 of a signal display-lever has been thrown backward (as shown in Fig. 4) by reason of lug or finger 22 having failed to pass between the lugs 51 and 52, the arm 29 will be pulled (by spring 61) against arm 32 and drop the link 35 and bar 36 downwardly, so as to have such bar rest upon, and press downwardly upon, the projection 54 of arm 55, with the result that the bar drops to its lowermost position, upon the advance of the gripper, and as such advance is continued, the projection 54 enters the notch or recess 37 of the bar and, still engaged therewith (as shown in Fig. 3) moves the bar forward, swinging the arm 39 and moving the rod 41. This results in oscillating shaft 43, and operates the clutch to disconnect the driving shafts.

The arm 55 fixed to shaft 12 forms engaging or transmission means since such arm when in engagement with bar 36 transmits motion from shaft 12 to the bar 36 and thereby to the arm 39 and link 41.

The device described and shown by me is, therefore, one in which the gripper shaft 12 (or gripper) is normally disconnected from the stopping connections which are normally out of position to be operated, but upon abnormal positioning or operation of the gripper, the stopping connections are dropped to operative position and are then positively driven to effective position.

If the machine has been arrested with the parts in the position shown in Fig. 3, the jaws can be reopened by the attendant gripping the toggle links 16 and 17 or one of them and pressing them into line as seen in Fig. 1 to reopen the jaws. The signal 30 is moved by hand from the position shown in Fig. 3 to that shown in Fig. 1 and the arm 32 being

also set by hand from the position Fig. 3 to the position Fig. 1, will, by arm 34 and link 35, raise the link 36 to clear or rise from transmission arm 55 or its hook 54. The handle 49 being then moved from the position shown in Fig. 3 to that shown in Fig. 1 said handle will move link 41 to rock the shaft carrying fork 44 which fork engages the clutch.

What I claim is:—

1. In a signature gatherer, an oscillating shaft, a gripper carried by the shaft, means for opening and closing the gripper, a clutch, a shaft for causing the clutch to open or release, links for moving the clutch actuating shaft, a transmission arm on the oscillating shaft, a signal, and an arm actuated by the signal for allowing one of the links to move to engagement with the transmission arm.

2. In a signature-gatherer, a plurality of gripper-devices, a shaft connected with and oscillating the several gripper-devices, an arm connected with said shaft, signal-devices one for each gripper-device, means for moving the signal devices a second shaft, lever arms on said shaft corresponding in number with and arranged to be moved by the signal-devices for operating said second shaft, and means for rendering the gatherer inoperative moved by the second shaft into engagement with the arm aforesaid.

3. In a signature gatherer, a plurality of gripper devices, a shaft connected with and oscillating the several gripper devices, an arm with a lug carried and oscillated by said shaft, signals actuated by the respective gripper devices, an arm actuated by the signals, a link forced down to engage the lug of the oscillating arm when the signal actuated arm is actuated by the signals, a lever actuated by the link, and a clutch with operating shaft actuated by the lever.

4. A signature-gatherer comprising a gripper-jaw, and an oscillating arm to which said jaw is fixed, a second jaw pivoted to the fixed jaw, means for swinging the jaw on its pivot, a plate independent of the jaw swinging means pivoted upon said arm and carrying a projection, and a link connecting the movable gripper-jaw with said plate.

5. A signature gatherer comprising a pair of gripper jaws and an oscillating arm carrying said jaws, a plate pivoted upon said arm and carrying at one end a stop, a signal actuated by said stop, a link connecting the other end of the plate to one of the gripper jaws, and a pair of toggle members independent of the link for actuating one of the gripper jaws.

6. A signature-gatherer comprising gripper jaws, an oscillating arm for carrying the jaws, a signal actuating projection carried by said arm, a pivoted signal arm, and a second arm pivoted independently of and connected to swing with the signal arm, both said last



named arms having projections adapted for engagement by the signal actuating projection.

7. A signature gatherer comprising swinging gripper-jaws, a projection and connection whereby said projection is set and actuated by the gripper jaws, a signal arm, a second arm separately mounted from and connected to the signal arm, and projections carried by said arms and engaged by the projection of the jaws.

8. A signature-gatherer comprising swinging gripper-jaws, a projection and connection whereby said projection is set and actuated by the gripper jaws, a signal arm, a second arm mounted independently of and connected to the signal arm, and projections carried by said arms and engaged by the projection set by the jaws said projections set by the jaws being made to respectively engage one or the other of the projections on the arms as the jaws are open above or below a certain extent.

9. A signature-gatherer comprising gripper jaws, a projection and connections whereby it is moved by the jaws, a signal, and separately pivoted connected arms having connections for moving the signal, said arms having projections adapted for engagement by the projection on the gripper.

10. A signature-gatherer comprising gripper jaws, a projection and connections whereby it is moved by the jaws, a signal, and separately pivoted connected arms having connections for moving the signal, said arms having projections adapted for engagement by the projection moved by the gripper jaws one of said projections being yielding or held in position by a spring.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES L. SMITH.

Witnesses:

EDWARD WIESNER,  
CHRISTIAN ALMSTEAD.