

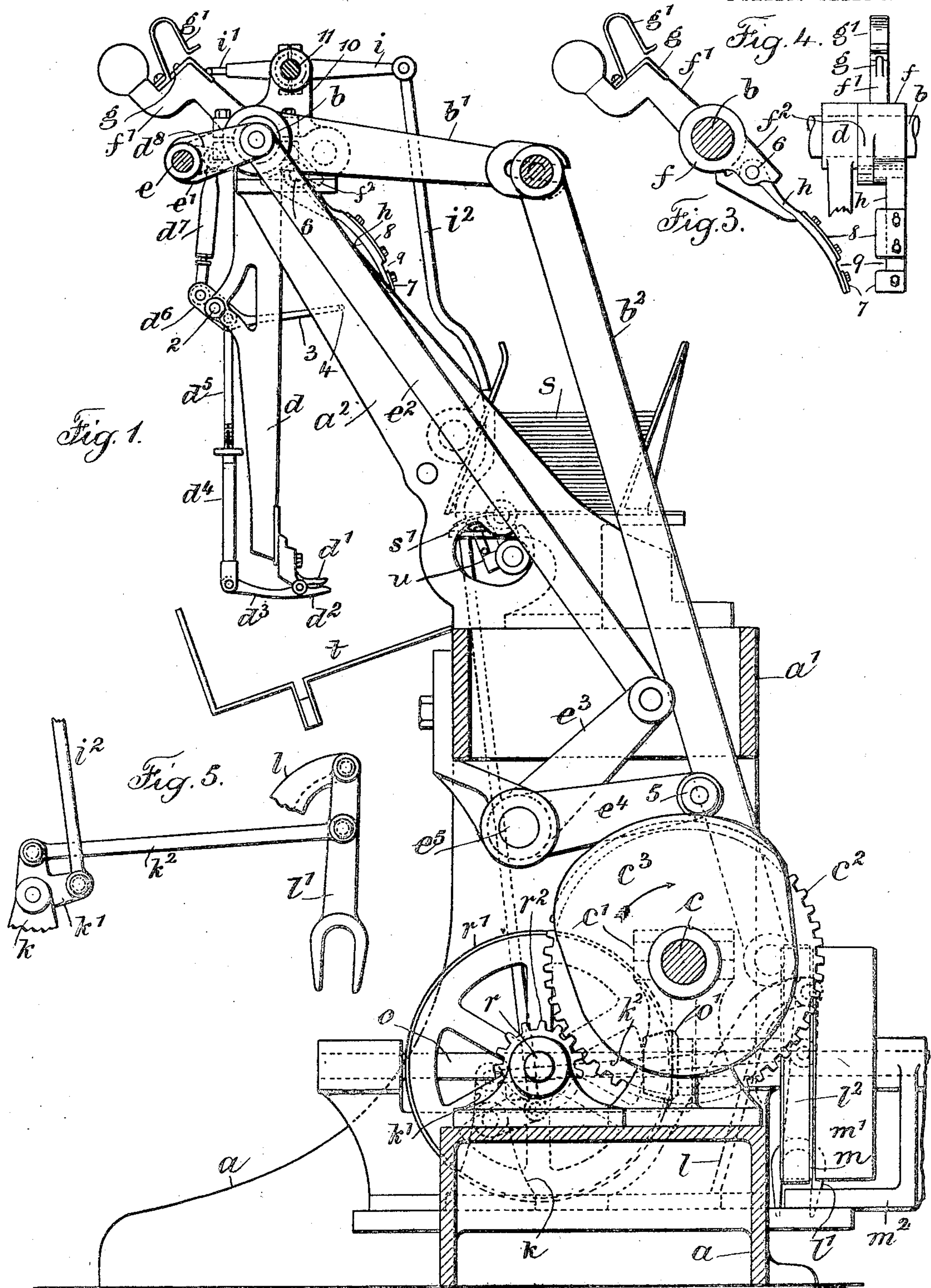
No. 828,665.

PATENTED AUG. 14, 1906.

C. A. JUENGST.
SIGNATURE GATHERING MACHINE.

APPLICATION FILED JULY 10, 1905.

2 SHEETS—SHEET 1.



Witnesses
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Harold Terrell

Inventor
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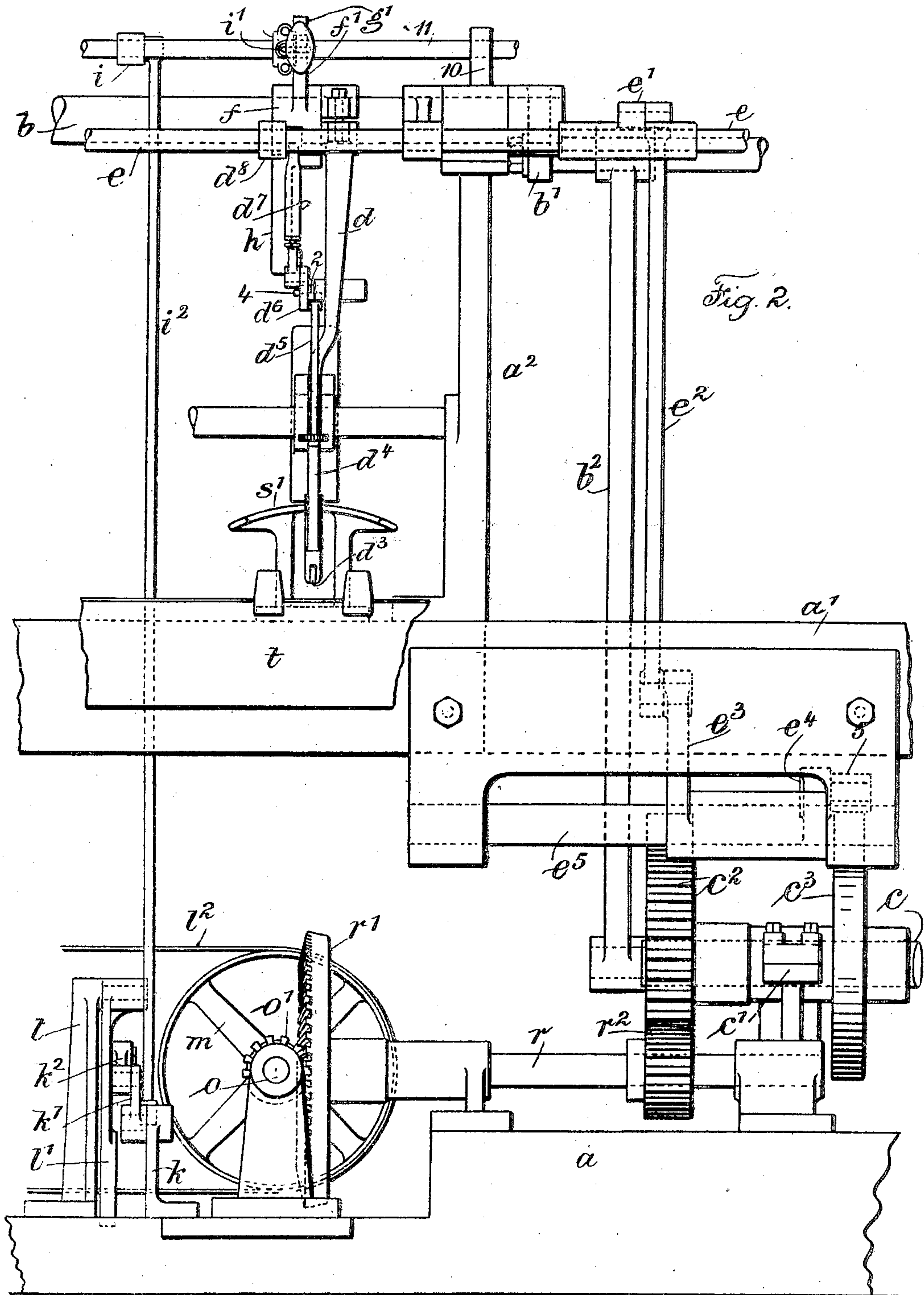
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UNITED STATES PATENT OFFICE.

CHARLES A. JUENGST, OF CROTON FALLS, NEW YORK.

SIGNATURE-GATHERING MACHINE.

No. 823,835.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed July 10, 1905. Serial No. 288,910.

To all whom it may concern:

Be it known that I, CHARLES A. JUENGST, a citizen of the United States, residing at Croton Falls, in the county of Westchester and State of New York, have invented an Improvement in Signature-Gathering Machines, of which the following is a specification.

My invention relates to belt-shifting mechanism especially adapted for use in connection with signature-gathering machines, such as have heretofore been shown and described in Letters Patent granted to me. In Letters Patent granted to me June 28, 1904, No. 763,673, there is shown and described a belt-shifting and stop mechanism for use in signature-gathering machines and in connection with which the device of my present invention is an improvement by the employment of which I am enabled to dispense with the stop mechanism of said patent and employ the pneumatic devices shown and described in my patent of August 23, 1904, No. 768,462, as these latter devices are usually placed in my improved signature-gatherer.

The devices of my present invention are also an improvement upon the devices shown and described in Letters Patent granted to me May 31, 1904, No. 761,496.

In my present invention, as in the devices of my last aforesaid patent, the swinging gripper-arms carrying gripper-fingers engage the lowermost signatures or sheets of the superimposed piles and remove the same one at a time and deliver them into the conveyer-trough. Where the gripper-fingers fail to take a signature or sheet or take one of a thickness different from the predetermined thickness for which the gripper-fingers are set, then a hook-ended arm engages a swinging lever device, moving the same, and therethrough moving intermediate devices which affect the stop mechanism.

The special features of my present invention relate to the swinging lever device and parts associated therewith and extending therefrom to and including the belt-shifting mechanism for changing the belt from the fast to the loose pulley, and vice versa.

In the drawings, Figure 1 is a side elevation and partial section representing the devices of my present invention. Fig. 2 is an elevation of the same at right angles to Fig. 1. Fig. 3 is a side elevation, and Fig. 4 an end elevation, of the swinging lever device. the supporting-shaft being in section; and

Fig. 5 is an elevation of parts of the belt-shifting mechanism shown by dotted lines in Fig. 1, this figure being shown for the further clearness of the drawings. The parts shown in Fig. 2 are those at the central portion of a signature-gathering machine, it being a fact that if the machine was prolonged to the left hand it would show a succession of signature-gathering devices and if produced at the right hand a duplication of the parts shown at the left hand, the driving parts being in the center and the parts at either side thereof being a multiplication of the parts shown on the left-hand side.

a represents the base or support frame of the machine, *a'* a main frame, and *a''* a bracket-frame, the main frame extending along between several base or support frames and serving as a support for all of the bracket-frames employed.

b represents an oscillating shaft in bearings at the upper ends of the bracket-frames; *b'*, a crank-arm secured to the oscillating shaft *b* and bifurcated at its free end, where it receives the upper end of a connecting-rod *b''*, the lower end of said connecting-rod being secured to one face of a gear-wheel *c''*, the gear-wheel *c''* in turn being mounted upon a main shaft *c* in bearings *c'*, secured to the base or support frame *a*. Upon this main shaft *c* is a cam *c''*. The connection between the crank-arm *b'* and connecting-rod *b''* is adjustable in the bifurcated end of said crank-arm.

Gripper-arms *d*, rigidly secured upon the oscillating shaft *b*, are each provided with a stationary finger *d'*, with a pivoted gripper-finger *d''* and gripper-arm *d'''*. A tubular rod *d''''* is at one end connected to the gripper-arm *d'''* and at its upper end connected with the adjusting-rod *d'''''*. A rocker-arm *d''''''* is connected by a pivot 2 to a portion of the gripper-arm *d*, and the adjusting-rod *d'''''* is pivotally connected to one end of said rocker-arm *d''''''*, while a rod *d''''''''* is pivotally connected at its other end, the rod *d''''''''* extending upward to pivotal connection with a crank *d''''''''''* on the shaft *e*, said shaft *e* being mounted in suitable bearings at the upper end of the bracket-arm and occupying a position parallel to the oscillating shaft *b*.

The rocker-arm *d''''''* is provided with a forward extension in the form of a gage-arm 3, which terminates in a finger 4 at right angles thereto. The shaft *e* is provided with a crank *e'*, and extending from the free end of

said crank is a connecting-rod e^2 , the lower end of which is pivotally connected to a crank e^3 , mounted upon a shaft e^5 , and there is an adjacent crank e^4 set at an acute angle to the crank e^3 , also upon the shaft e^5 . A roller 5 on the free end of the crank e^4 bears upon the periphery or edge of the cam c^3 . Therefore with the rotation of the main shaft c and the cam c^3 the shaft e^5 is rocked and the crank e^3 swung by the action of the cam c^3 upon the roller 5 of the crank e^4 . This movement imparts a reciprocating motion to the connecting-rod e^2 and a swinging movement to the crank e^1 , so as to rock the shaft e , and simultaneously by the movement of the gear-wheel c^2 rod b^2 and arm b^1 to oscillate the shaft b and swing the gripper-arms to the place where the signatures are taken and also actuate the gripper-fingers, so as to remove a sheet at a time from the superimposed piles s of sheets mounted upon the table s' , provided therefor, and deliver the same into the signature trough or conveyer t .

The lever device comprises a hub f , loose on the oscillating shaft b , a weighted shouldered end f' , and a prolongation f^2 in a direction opposite to the part f' . The shouldered end f' of said lever device is provided with an angle-rib g , and a spring-arm g' of bent form is secured to the lever device in such a position that the free end of said spring-arm comes closely adjacent to the point of the angle of the rib g . An auxiliary lever h of slightly bent form is pivoted at 6 to the prolongation of the lever device, and it is provided with a projecting end adapted to bear on the surface of the hub f , so as to prevent the said auxiliary lever falling out of a certain relation to the said prolongation f^2 and the weighted end f' . This auxiliary lever is provided with a plate end 7, secured thereto and projecting beyond one side of the said lever, and also with an adjustable plate 8, also projecting beyond said side of said lever and spaced apart from the plate 7, so that there is an appreciable space forming a notch 9 in relation to the lever between said parts. (See Fig. 4.) The plate 8, provided with elongated slots and with bolts for securing the same in position, is adjustable in its relation to the plate 7, so as to increase or decrease the aperture of the notch 9 between said parts. This device bears a close relation to the structure shown and described in my Patent No. 761,496 and performs substantially the same function—that is to say, so long as the gripper device engages a signature or sheet of predetermined thickness for which the grippers were set then there is no change of relation of the gage-arm 3 and finger 4 with the other parts of the structure, and with the movement in this condition the said gage-arm swings past the edges of the plates 7 and 8 and its finger 4 sweeps over the surface of the plate 8 and passes through the notch 9;

but at once the gripper-fingers engage a signature or sheet of less or more than the predetermined thickness or failed to take any signature or sheet then the position of the parts is altered and the location of the finger 4 changed, so that when the same swings over the surface of the plate 8 it will not pass through the notch 9, but will contact forcibly with the surface of the plate 8 or the plate 7 and with the further movement of the gripper-arms will pull upon the lever device and swing the upper shouldered end thereof from the position shown in Fig. 1 to a more nearly vertical position.

The upper end of the bracket-frame a^2 is provided with a bracket 10, and to this is pivotally connected a shaft 11, having a rocker-arm i . On one end of the rocker-arm i is a finger i' of angular form, the angular end of which lies normally against the angle-rib g of the lever device. From the other end of the rocker-arm i a connecting-rod i^2 extends down through the machine to pivotal connection with the bell-crank lever k' . This bell-crank lever is pivotally mounted upon a standard k , and from the opposite end of the bell-crank lever extends a link k^2 . I provide a standard l , mounted upon the base or support frame a and to which is pivoted a belt-shifter l' , whose lower end is forked to straddle the belt l^2 . This belt-shifter l' and the link k^2 are pivotally connected together.

Upon a shaft o in the bracket-support m^2 is the shaft of a fast pulley m and loose pulley m' . Upon this shaft o is a bevel-pinion o' , and upon a shaft r in suitable bearings at right angles to the shaft o is a bevel-wheel r' and on the shaft r a gear r^2 . The bevel-pinion o' and the bevel-wheel r' are in mesh, and the gear r^2 and the gear-wheel c^2 are in mesh. In the position of the parts shown the machine is presumed to be in operation, the belt l^2 being upon the fast pulley m .

Should the grippers in their succeeding movement or movements take a signature or sheet greater or less than the predetermined thickness, the finger 4 will engage the surface of the plates 7 or 8 and swing the lever device. This will turn the rocker-arm i and force its angular finger i' up over the corner of the angle-rib g , causing the spring-arm g' to yield as the end passes. The end of the said angular finger will then rest against the other surface of the angle-rib g , and said movement of the parts will force the connecting-rod i^2 downward and swing the bell-crank lever k' , moving the link k^2 and swinging the belt-shifter l' so as to move the belt l^2 from the fast pulley m to the loose pulley m' , and so cause the machine to stop. The finger i' is thus held by the spring-arm g' from accidental separation, insuring the performance of its function, and the parts are separated and returned to an initial position

by manually actuating the lever device and returning the same to the position Fig. 1.

In the device of my present invention, as in the devices of my aforesaid patents, the signature-gathering machine is composed of a multiplicity of plates s' for superimposed piles of signatures or sheets and a multiplicity of gripper-arms, and there are as many loosely-mounted lever devices as there are gripper-arms, and there are also as many fingers i' and arms that extend back to the shaft 11 as there are lever devices; but there need be only one connecting-rod i^2 and an arm therefrom to the shaft 11 for its operation, as there is only one, or need be only one, belt-shifting device and that preferably at the center of the machine. From this it will therefore be apparent that the failure of any of the gripper-fingers to take a signature or sheet of predetermined thickness will act at once upon its accompanying lever device to oscillate the shaft 11 and actuate the connecting-rod i^2 , the shaft, the belt, and stop the machine.

To start the machine and change the belt from the loose back to the fast pulley, it is only necessary to pull down into an initial position, as shown in Figs. 1 and 3, the lever device by placing the hand upon its upper weighted end. The object accomplished by pivotally connecting the auxiliary lever h to the projection f^2 is so that in case the finger 4 of the gage-arm c or any other part of the mechanism should strike against the under surface of the said auxiliary lever h while the machine is going through its motions the said auxiliary lever will yield, swinging on its pivot, and no damage will be done or any parts of the machine broken or injured thereby.

I have shown in the drawings part of a sucker device u coacting with the gripper-arm and gripper-fingers and the support upon which the signatures or sheets rest and acting in this class of devices to turn down the lowermost signature or sheet to be taken by the gripper-fingers, as is well known in this art.

I claim as my invention—

1. In a signature-gatherer, the combination with a signature-gripper, a belt-shifter and an oscillating shaft, of a lever device loosely mounted on said shaft and comprising a hub portion f , a weighted shouldered end f' , a spring-arm g' having a free end in proximity to the corner of the end f' , and means actuated by the movement of the lever device and extending to the belt-shifter device for shifting the belt.

2. In a signature-gatherer, the combination with a signature-gripper, a belt-shifter and an oscillating shaft, of a lever device loosely mounted on said shaft and comprising a hub portion f , a weighted shouldered end f' and oppositely-extending projection f^2 , an angle-rib g on the shouldered portion of f' , a

spring-arm g' secured to the weighted shouldered end and having an angular free member in close proximity to the corner of the angle-rib g , and means actuated by the movement of the said lever device and extending to the belt-shifter device for shifting the belt.

3. In a signature-gatherer, the combination with a signature-gripper and an oscillating shaft, of a lever device loosely mounted on said shaft and comprising a hub portion f , a weighted shouldered end f' and oppositely-extending projection f^2 , a spring-arm g' secured to the weighted end and having an angular free member, a shaft 11, a finger i' , an arm extending therefrom to said shaft, an arm i extending from said shaft and a connecting-rod i^2 , a belt-shifter, an arm extending therefrom, a bell-crank to which one end of said arm is connected and to which also one end of the said connecting-rod is secured whereby with the movement of the lever device said belt-shifter devices are actuated for moving the belt.

4. In a signature-gatherer, the combination with a signature-gripper and an oscillating shaft, of a lever device loosely mounted on said shaft and comprising a hub portion f , a weighted shouldered end f' and oppositely-extending projection f^2 , an angle-rib g on the shouldered portion of f' , a spring-arm g' secured to the weighted end and having an angular free member in close proximity to the corner of the angle-rib g , a shaft 11, a finger i' , an arm extending therefrom to said shaft, an arm i extending from said shaft and a connecting-rod i^2 , a belt-shifter, an arm extending therefrom, a bell-crank to which one end of said arm is connected and to which also one end of the said connecting-rod is secured whereby with the movement of the lever device said belt-shifter devices are actuated for moving the belt.

5. In a signature-gatherer, the combination with a signature-gripper and an oscillating shaft, of a lever device loosely mounted on said shaft and comprising a hub portion f , a weighted shouldered end f' and oppositely-extending projection f^2 , an angle-rib g on the shouldered portion of f' , a spring-arm g' secured to the weighted shouldered end and having an angular free member in close proximity to the corner of the angle-rib g , an auxiliary lever h pivotally mounted to the projection f^2 of the lever device and having a stop coming against the hub of the lever device to limit its movement in one direction, a plate 7 on the end of said auxiliary lever, and an adjustable plate 8 adjacent to the end thereof and between which plates the notch 9 is produced, and means actuated by the movement of said lever device for stopping and starting the machine.

6. In a signature-gatherer, the combination with a signature-gripper and an oscillating shaft, of a lever device loosely mounted

on said shaft and formed with an edge angle
or corner and an adjacent spring having a
free end in proximity to said angle, a shaft 11,
a finger end *i'* and an arm therefrom to said
5 shaft, the finger *i'* normally bearing upon the
edge of said lever and adapted to pass be-
neath the free end of said spring and to be
held thereby, and means actuated by the
movement of said parts for stopping the ma-
10 chine.

7. In a signature-gatherer, the combina-
tion with a signature-gripper and an oscillat-
ing shaft, of a lever device, means for actu-
ating the same from the signature-gripper,
15 means actuated by the swinging of the lever

device, and including a connecting-rod, a
bell-crank lever to one arm of which said con-
necting-rod is pivoted, a link extending from
the other arm of the bell-crank lever, a belt-
shifter and a support therefor to which the 20
belt-shifter is pivoted, the other end of said
link being pivoted to the belt-shifter for
swinging the same by the movement of the
bell-crank lever.

Signed by me this 23d day of June, 1905. 25

CHAS. A. JUENGST.

Witnesses:

GEO. T. PINCKNEY,

S. T. HAVILAND.