

No. 606,669.

Patented July 5, 1898.

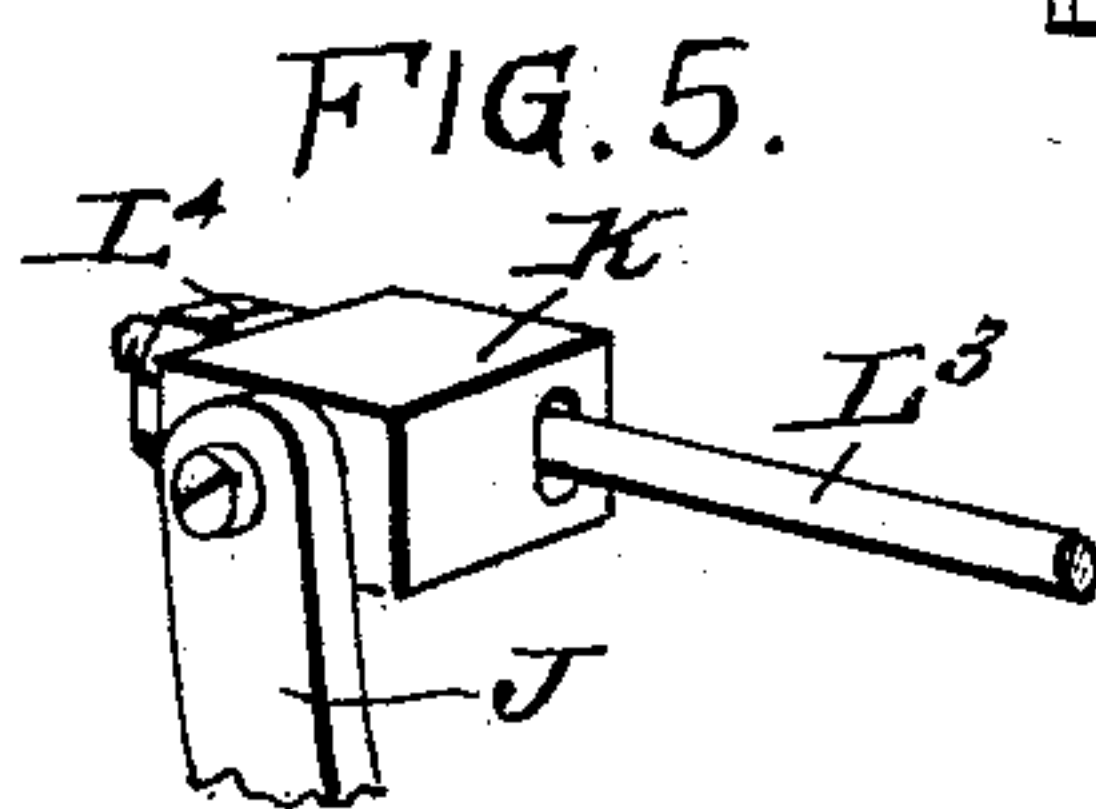
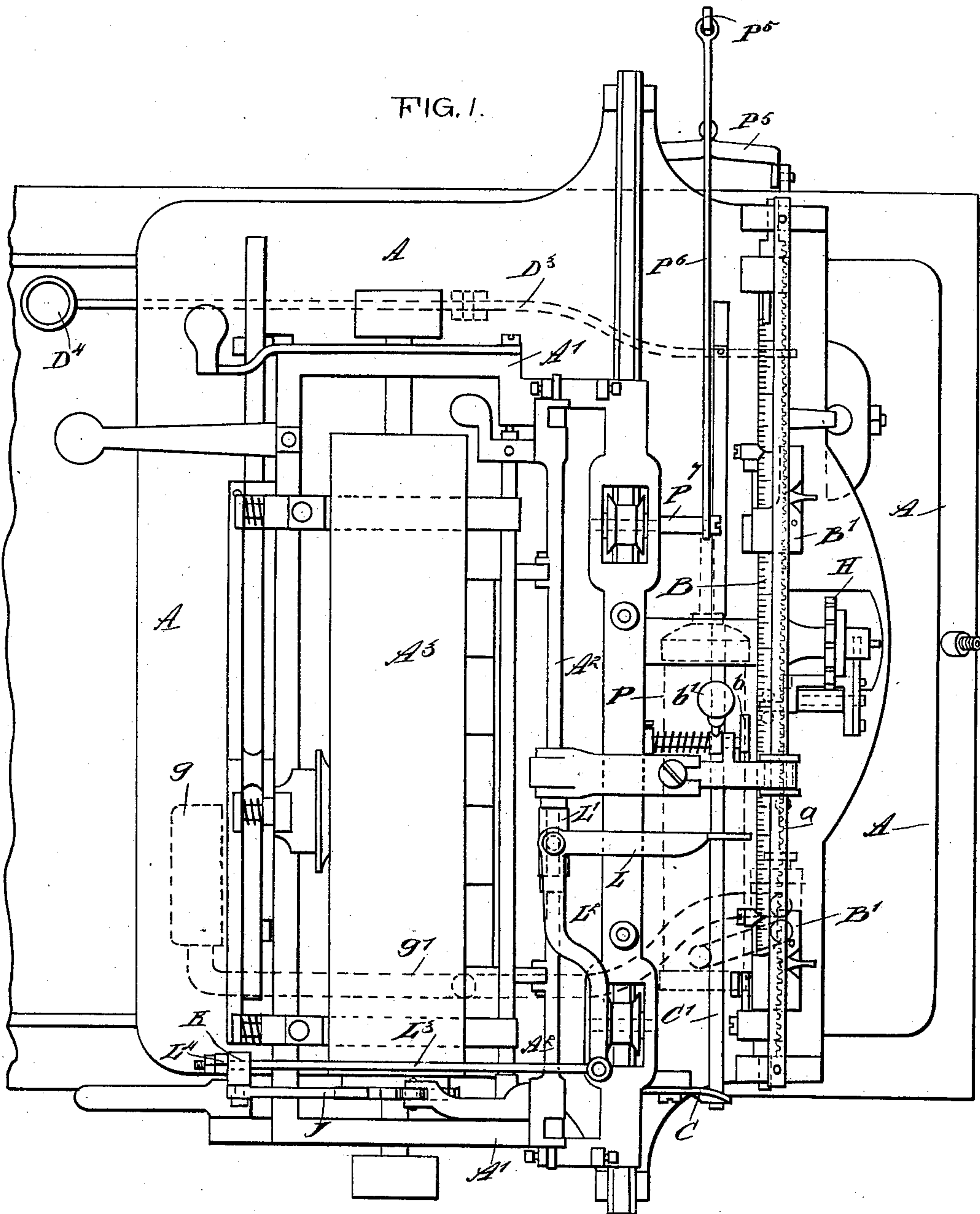
W. E. JACKSON, JR.

AUTOMATIC DEVICE FOR RETURNING CARRIAGES FOR TYPE WRITING MACHINES.

(Application filed Mar. 12, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Donn Twitchell
H. L. Reynolds.

INVENTOR
W. E. Jackson Jr.

BY *muny*

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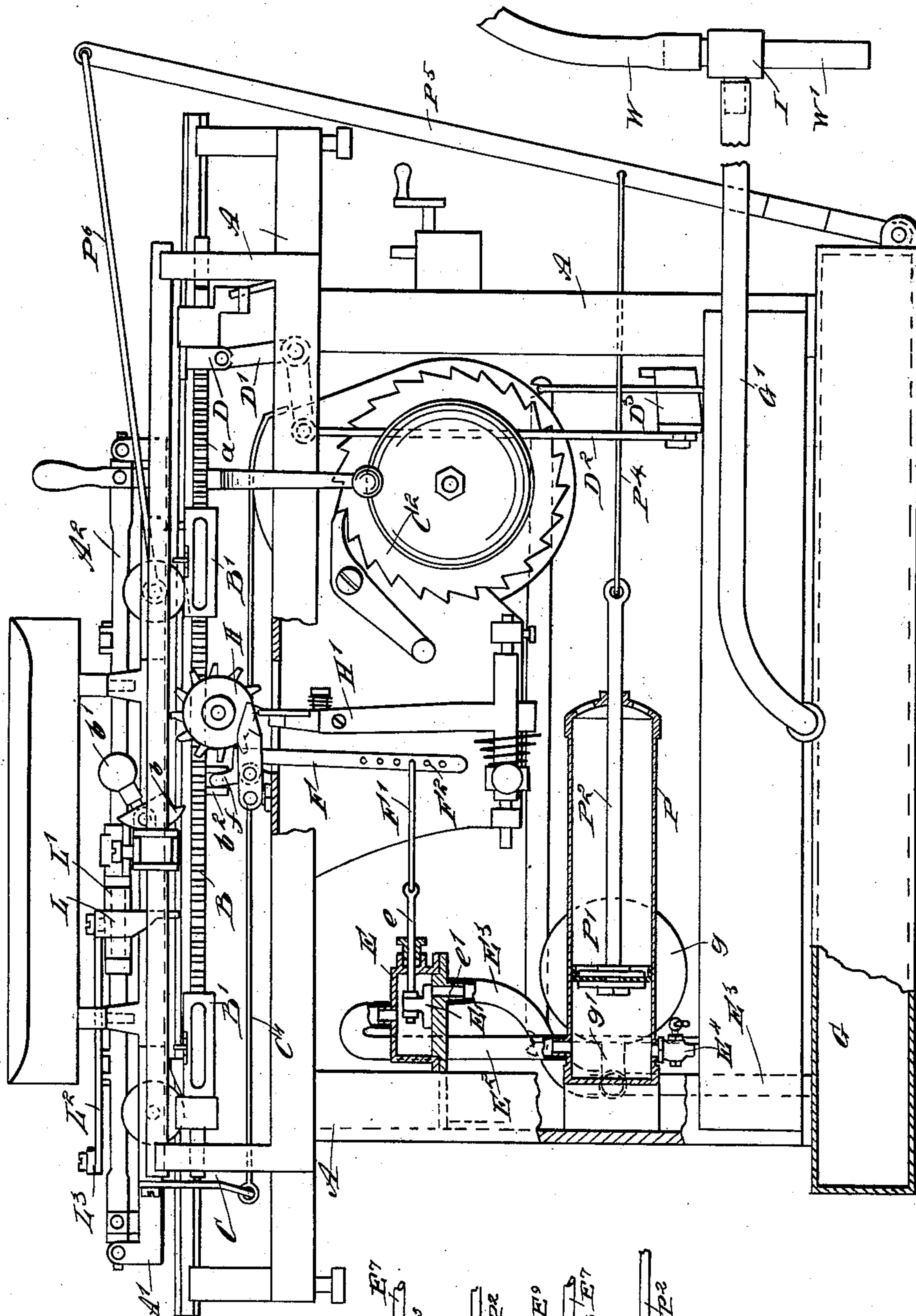
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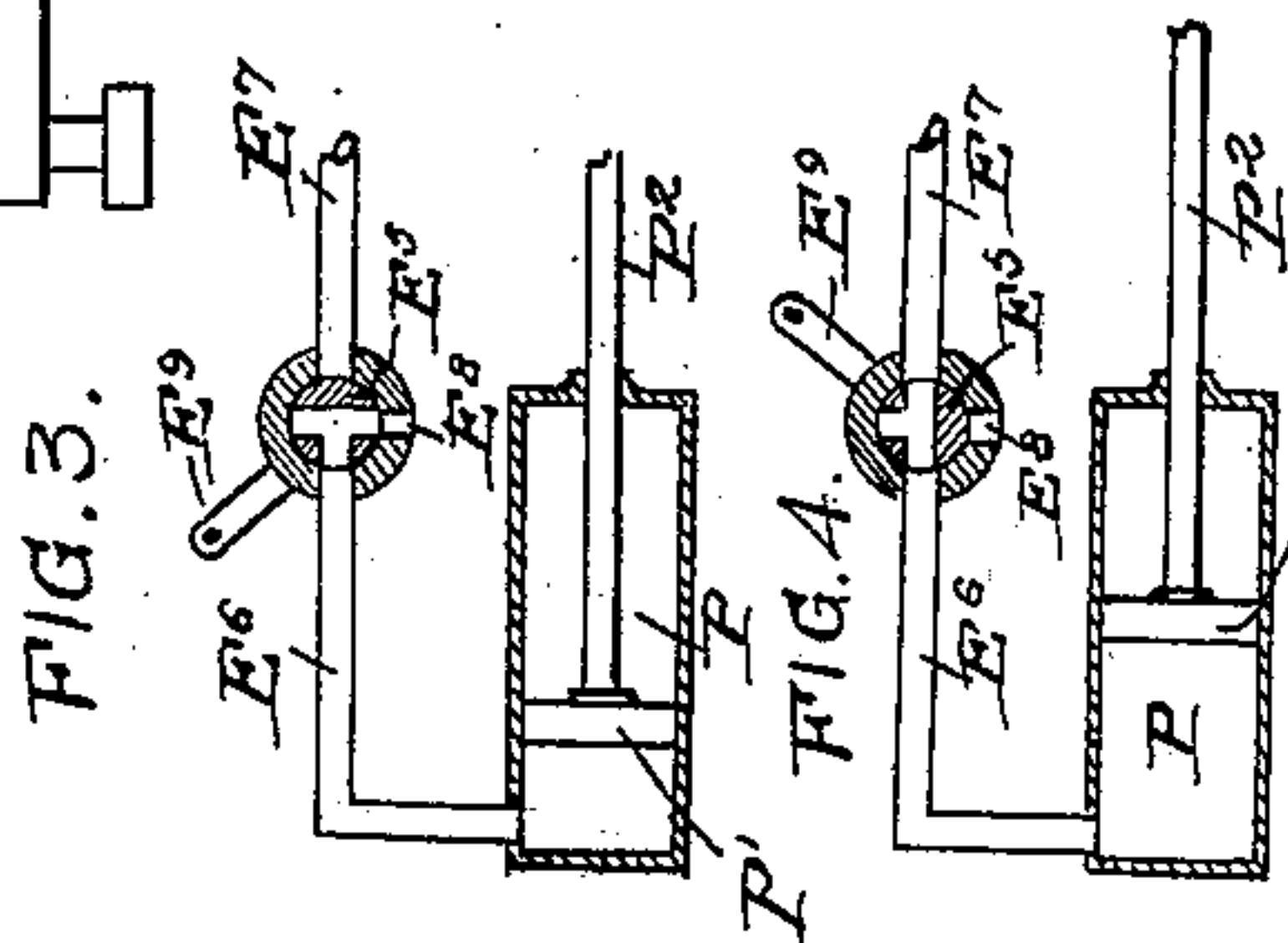
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2 Sheets—Sheet 2.



WITNESSES:

Donn Twitchell
H. L. Reynolds.



INVENTOR

W. E. Jackson Jr.

BY

manus

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM E. JACKSON, JR., OF AUGUSTA, GEORGIA.

AUTOMATIC DEVICE FOR RETURNING CARRIAGES FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 606,669, dated July 5, 1898.

Application filed March 12, 1897. Serial No. 627,162. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. JACKSON, Jr., of Augusta, in the county of Richmond and State of Georgia, have invented a new and Improved Automatic Return for Type-Writer Carriages, of which the following is a full, clear, and exact description.

My invention relates to an improvement in type-writers, having for its object the provision of an automatic return for the carriage, by which it will be returned and the paper shifted for a new line, either by reason of the carriage reaching the end of the line or by the operation of a shifting-key.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a top plan view of a type-writer with my mechanism attached thereto. Fig. 2 is a rear elevation of a type-writer, showing my mechanism partially in section. Fig. 3 is a detail view of a modified form of valve that may be employed between the cylinder and the vacuum-chamber. Fig. 4 is a view of the valve shown in Fig. 3 in a different position, and Fig. 5 is a detail view of the sliding-joint connection between the carriage and the paper-feeding mechanism.

My invention consists, essentially, of a cylinder having its piston connected with the carriage of a type-writer, the cylinder being connected by suitable pipes having a valve therein with an exhaust chamber or reservoir, from which the air is exhausted by any suitable or desirable means.

The valve, which is located between the cylinder and the exhaust chamber or reservoir, is connected to the ordinary mechanism of the type-writer, so that it will be opened by the forward movement of the carriage when it has reached the end of the line. It is also connected with a lever-key, which may be operated by hand to return the carriage from any point. The carriage is also provided with a lever which acts as a stop to check the carriage at the end of the return and is connected with the paper-feeding mechanism, so that the feed-roller is actuated thereby at the end of the return, thus feeding the paper the amount of the spacing between lines.

The ordinary mechanism of the type-writer is not changed by the addition of my device. Moreover, it is not limited in its application to any particular style of type-writer. I have herein shown it as applied to a Remington type-writer; but it will be evident to any one familiar with type-writers that it may be applied to any type-writer having features of action at all similar to the Remington.

The frame of the type-writer in the drawings is indicated by the letter A, and the frame of the carriage by A'. This has not been altered at all by the application of my device. The stop-bar, which is the bar to which the movable stops are applied which limit the travel of the carriage, is the bar as used with the Remington No. 7 type-writer. This consists of a bar which is notched upon one edge, as at *a*, and provided with the movable stops B', which are adapted to be locked thereto at any point and engage the trip *b*, which is pivoted to the frame of the carriage and provided with a counterweight *b'*, which holds the same down in operative position or raised in inoperative position, the same being the usual construction.

I have made use of the trip *b* to actuate my automatic return mechanism. The bar B is mounted in bearings at its ends so that it has a slight longitudinal movement, the same being communicated through contact of the trip *b* with one of the stops B'. The under side of the bar B is provided with two small pins *b²*, which engage the upper end *f* of a lever F, which is pivoted to the frame A. This lever F is connected at its lower end by means of a link F' to a rod *e*, which passes through a stuffing-box into a valve-chamber E. This valve-chamber E is provided with a valve E', which is shown as an ordinary slide-valve. Any form of valve which may be opened and closed by a reciprocating movement may be substituted for this form of valve.

The valve-case is connected by means of pipes E² and E³ with a cylinder P and vacuum-chamber G. The cylinder P is mounted upon the frame A and has a piston P' with a stem P² extending outside one end of the cylinder. This stem P² is connected by a link P⁴, which may be of wire or any suitable form, to a lever P⁵, which is pivoted at its lower end to the base of the frame A. The upper

end of the lever P^5 is connected by a link P^6 with a pin P^7 upon the carriage or by any means which will enable it to return the carriage. This link P^6 should be stiff enough
5 to enable the carriage to be promptly returned without the link bending.

The vacuum-chamber G consists of a shallow box, which extends entirely beneath the base of the type-writer and is connected, as
10 before stated, by a pipe E^3 with the port e' of the valve-case E . It is also connected by a branch g' of the pipe E^3 to a vacuum indicator or gage g , placed upon the front of the type-writer, so as to be constantly visible to
15 the operator. The vacuum-chamber G is also connected by a pipe G' with some mechanism for exhausting air. A convenient mechanism to be used for this purpose is an exhaust-pump operated upon the injector principle
20 and using water from the ordinary water-supply or from any source of supply having a pressure of not less than five or ten pounds. I have indicated such a device as this at I , the water-supply pipe being shown at W and
25 the discharge-pipe at W' . This device is a simple one, which may be operated wherever a water-supply is available and is not likely to get out of order, besides being cheap in first cost. Any device which will exhaust
30 the air from the chamber G may be used.

At C^2 , Fig. 2, is indicated the ratchet-wheel, which is attached to the spring used for feeding the type-writer carriage. This is connected by a tape C' to an arm C , attached to
35 the carriage and feeds the carriage along as the keys are operated. The wheel H and lever H' are those of the ordinary mechanism used for securing the intermittent feed, which latter mechanism is that of the ordinary type-
40 writer.

The carriage is carried to the right of Fig. 2, but to the left of the machine, by the action of the ordinary feeding-spring. When the carriage reaches the end of its travel in
45 this direction, it will engage the movable stop B' and give the bar B a slight longitudinal movement toward the right. This will, through the engagement of the pins b^2 with the upper end of the lever F , move the valve
50 E' to the left sufficiently to uncover the port e' . The travel of the carriage to the right has resulted in the movement of the piston P' to the right in Fig. 2 in its cylinder. When the valve E' has uncovered the port e' , the cylinder P is placed in communication with
55 the vacuum-chamber G . In consequence of this the air within the cylinder P is suddenly exhausted, being drawn into the chamber G . The pressure of the air upon the outer side of the piston P' will then force the piston to
60 the left, carrying with it the carriage. The cylinder P should be of such a size that the pressure obtained in this way will be sufficiently large to quickly overcome the power of the carriage-feeding spring. To prevent
65 resistance from the piston P' during the forward-feeding motion of the carriage, I have

provided the valve E^4 , controlling an opening into the cylinder P . This valve E^4 can
be set so that there will be a slight leak into 70 the cylinder, which provides for a supply of air, which prevents the retaining of the vacuum behind the piston during the forward-feeding movement of the carriage. As the carriage returns to the left in Fig. 2 the bar B is
75 also returned to the left by the carriage engaging the stop B' , which is at the left, and the valve E' is moved to close the port e' through its connection therewith by means of the lever, thus breaking the communica-
80 tion between the cylinder P and the vacuum-chamber G . The bar B and valve E' remain in whatever position they are left until moved by the engagement of the carriage with the
85 bar B at either end of the travel of the carriage. Instead of using a valve of this character a three-way valve E^5 may be used, the valve-case being connected by means of pipes
90 E^6 and E^7 with the cylinder and the vacuum-chamber and having an opening E^8 communicating with the atmosphere. This form of valve is provided with an operating-lever E^9 . In one position, as shown in Fig. 3, the valve
is set to make communication between the 95 cylinder and the atmosphere and in the other position, as shown in Fig. 4, to connect between the cylinder and the vacuum-chamber. The opening in the valve E^4 will be sufficiently small to not materially reduce the
vacuum in the cylinder P when it is connected 100 with the vacuum-chamber G , but sufficiently large to permit air to pass as the piston is moved slowly outward by the action of the carriage.

To secure a forward feed of the paper by 105 the return of the carriage, I have devised the following mechanism:

Upon the bar A^2 , located upon the rear side of the carriage, is mounted a sleeve L' , which is free to rotate upon the bar, but restrained
110 from longitudinal movement thereon. Upon this sleeve is mounted a bell-crank lever, the outer end of the arm L being placed so as to engage the stop B' when returned. The other
115 end L^2 of the lever is connected by a link L^3 with a lug K , placed upon the paper-feeding mechanism. The connection shown for this is as follows: The lug K has a hole for the
120 reception of the link L^3 , which is slightly larger than the link and allows the free movement of the link therein. The outer end of the link is provided with lock-nuts L^4 , which
restrain the movement of the link L^3 . As the carriage is returned by the cylinder the end
125 of the arm L strikes the stop B' . This results in pulling down the link L^3 , which by its connection operates the paper-feeding mechanism. This paper-feeding mechanism is the
ordinary device which is operated by a rear- 130 ward movement of a lever J . The amount of this feeding mechanism may be set by adjustment of the device ordinarily used for such purposes. The form of connection described to this lever J is to allow for the va-

riations in distance between the end of this lever and the end of the lever L^2 , which follows when the carriage is raised in order to expose the writing. As the end of the lever L^2 is at one side of the bar A^2 upon which the carriage pivots, the distance between the point K and the end of the lever L^2 will be less when the carriage is raised than when it is in its working position. In this case the link L^3 will simply slide through the hole in the lug K and accommodate itself to the variable length.

It is evident that the chamber G instead of being operated as a vacuum-chamber may be operated as an air-compression chamber and the connection of the pipe E^2 be made to the cylinder, so as to act upon the opposite side of the piston P' . The same result may also be obtained by varying the outside connections between the cylinder and the carriage, so that the piston-rod will act under compression instead of tension. The use of this chamber as a vacuum-chamber is, however, preferable, as it avoids a number of difficulties which would arise in using it as a compression-chamber. In the first place it obviates any necessity for a valve to relieve or regulate the pressure.

The pressure of the atmosphere will be ample for all purposes, and in using the chamber as a vacuum-chamber this pressure cannot be exceeded. It is also possible to obtain an efficient and cheap exhausting device when it cannot be as easy to obtain an air-compression device. I do not, however, wish to be limited to using my device solely in connection with an exhaust-chamber, as it is evident that it may be as well used in connection with an air-pressure chamber.

The exact manner of connecting the cylinder with the carriage is not material. I have shown and described a manner of connecting it, which makes it feasible to apply the device to type-writers already built. This manner of connection may, however, be varied at will. The part to which the valve-operating mechanism is connected would also vary, according to the type of machine to which the device was applied. The only essential feature in the matter is that the device should be operated by a forward movement of the carriage.

I have also shown a device by which the valve may be opened at will with the carriage in any position. This consists of a bell-crank lever D' , which is connected by a clamp D or in any other manner to the bar B. This bell-crank lever is connected by a lever D^2 to a lever D^3 , which is pivoted at its center and extends forward, having a key D^4 placed close to the keyboard. When this key D^4 is depressed, the bar B is carried to the right, so as to operate the valve E' to open the port e' .

The connection of the lever D^3 to the valve E' may be made in numerous ways. The desired point is that there shall be a lever placed so that it may be operated at will and con-

nected with the valve E' , so as to open the port e' .

The vacuum-chamber G might be removed from the type-writer and connections made therefrom to the pump-cylinder P by a pipe; but the location shown is preferred. The air-exhausting device may be located wherever convenient, even at a considerable distance from the type-writer. Connections therefrom to the vacuum-chamber G may be readily made from any distance by a small pipe, which will be unnoticeable and can be located in any position. The form and location of the power-cylinder are capable of great variations without in the least changing its principle or function, and I do not wish to be understood as limiting my invention to the exact construction herein shown. Neither is it essential what means are used for exhausting the air from the vacuum-chamber or for pumping the air if a pressure above the atmospheric is used. I have referred to the water-jet pump, because that is a simple and cheap device, which is applicable in most locations and may be operated by any one and cannot get out of order.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A carriage-return for type-writers, comprising a cylinder having its piston connected to the carriage, a pneumatic reservoir, means actuated by the carriage at one end of its travel to connect the reservoir and cylinder, and means similarly operated for disconnecting the reservoir and cylinder by the return movement of the carriage, substantially as described.

2. A carriage-return for type-writers, comprising a cylinder having its piston connected to the carriage, a pneumatic reservoir, connections from the reservoir to the cylinder containing a valve which is normally closed, and a lever connected therewith projecting into the path of the carriage, whereby it is engaged by the carriage to open and close said valve at opposite ends of the carriage travel, substantially as described.

3. A carriage-return for type-writers, comprising a cylinder having its piston connected to the carriage, a pneumatic reservoir, and means controlled by the travel d' of the carriage for temporarily connecting the reservoir and cylinder, said cylinder having a connection of small area with the outside air which can be closed at will substantially as described.

4. In a carriage-return for type-writers, the combination of a vacuum-chamber, with a cylinder having a connection of small area with the atmosphere which can be closed at will, the piston of said cylinder being connected to the carriage, connections from the cylinder to the vacuum-chamber containing a valve which is normally closed, means for automatically opening the said valve by the travel of the carriage, and means controlled

by a key for opening said valve at will, substantially as described.

5 5. A carriage-return for type-writers, comprising a pneumatically-operated device connected to the carriage to impart the return
movement to the same, means for throwing
said pneumatically-operated device into ac-
tion, and means actuated by the return move-
ment of the carriage for throwing said pneu-
10 matically-operated device out of action, sub-
stantially as described.

6. A carriage-return for type-writers, com-
prising a cylinder having its piston connected
to the carriage, a power-reservoir, a valve
15 adapted to establish communication between
the cylinder and reservoir, said valve being
normally closed, means actuated by the car-
riage at one end of its travel to move said
valve to connect the reservoir and the cylin-
20 der, and means similarly operated to move
said valve to close the communication be-
tween the reservoir and cylinder at the end
of the return movement of the carriage, sub-
stantially as described.

25 7. A carriage-return for type-writers, com-
prising a cylinder having its piston connected
to the carriage, a power-reservoir, a valve ar-
ranged to establish communication between
the cylinder and reservoir, the said valve be-
30 ing normally closed, a lever connected with
the valve to open and close the same, mech-
anism controlled by a key for moving said
lever to open the valve, and means connected
with the lever and operated by the travel of
35 the carriage to close said valve, substantially
as described.

8. A carriage-return for type-writers, com-
prising a cylinder having its piston connected
to the carriage, a power-reservoir, a valve
40 adapted to establish communication between
the cylinder and reservoir and normally
closed, a bar mounted upon the machine to
have a limited longitudinal movement, a le-
ver operated by the movement of the said
45 bar and connected with the said valve to open
the same, and means controlled by a key for
moving said bar, substantially as described.

9. A carriage-return for type-writers, com-
prising a cylinder having its piston connected
50 to the carriage, a pneumatic reservoir, a con-
nection between the reservoir and the cylin-
der, containing a normally-closed valve, a bar
mounted upon the machine-frame to have a
limited longitudinal movement, stops upon
55 said bar, a trip carried by the carriage and
adapted to engage the said stops on the bar
to move the latter, and a lever operated by
the movement of the said bar, and connected
with the said valve to move the same to con-
60 nect and disconnect the cylinder and reser-
voir, substantially as described.

10. In a carriage-return for type-writers,
the combination with a vacuum-chamber, and
mechanism for exhausting air therefrom, of
65 a cylinder having its piston connected to the
carriage, connections from the cylinder to the
vacuum-chamber containing a valve which is

normally closed, means for opening said valve
at will, and means for closing said valve by
the travel of the carriage, substantially as 70
described.

11. In a carriage-return for type-writers,
the combination with a vacuum-chamber, and
mechanism for exhausting air therefrom, of
a cylinder having its piston connected to the 75
carriage, connections between the cylinder
and vacuum-chamber containing a normally-
closed valve, means actuated by the carriage
at one end of its travel to open said valve to
connect the reservoir and cylinder, and means 80
similarly operated for closing said valve by
the return movement of the carriage, substan-
tially as described.

12. In a type-writer, the combination with
a carriage provided with a power-return, of 85
a sleeve mounted to turn upon a bar located
upon the rear side of the carriage, a bell-crank
lever mounted upon said sleeve, a stop adapt-
ed to engage one end of said lever at the end
of the return movement, and a link connect- 90
ed at one end to the other end of said lever,
the opposite end of the said link having a
sliding connection with the paper-feeding
mechanism, substantially as described.

13. In a type-writer, the combination with 95
a carriage provided with a power-return, of
a sleeve mounted to turn, a bell-crank lever
mounted upon said sleeve, a stop engaging
one end of the lever at the end of the return
movement, a perforated lug on the paper-feed- 100
ing mechanism, a link connected at one end
with the said lever, the other end of the said
link extending through the perforation in the
lug and having free movement therein in one 105
direction, and means for limiting the move-
ment of the link in the opposite direction,
substantially as described.

14. In a type-writer, the combination with
a carriage, of a power-return normally inac- 110
tive, a lever pivoted at its lower end to the
frame of the type-writer, the upper end of
said lever being connected with the carriage,
a connection between the power-return and
the said lever, a bar mounted upon the ma- 115
chine-frame, to have a limited longitudinal
movement, stops upon said bar, a trip carried
by the carriage and adapted to engage the
said stops on the bar to move the latter, pro-
jections from the under side of the said bar, 120
and a second lever connected with the power-
return and engaged by the said projections,
the said lever being operated by the move-
ment of the said bar to throw the power-re-
turn into and out of operation, substantially
as described. 125

15. In a type-writer, the combination with
a lever pivoted at its lower end to the frame
of the type-writer and connected at its upper
end with the carriage, of a pneumatically-op- 130
erated device connected with said lever to
impart the return movement to the carriage,
a second lever pivoted to the frame of the
type-writer and connected with the said pneu-
matically-operated device, to throw the same

into or out of operation, means for moving the said lever to throw the pneumatically-operated device into action, and means actuated by the return movement of the carriage for moving the said lever to throw the device out of action, substantially as described.

16. In a type-writer, the combination with a lever pivoted at its lower end to the frame of the type-writer, and a link connecting the upper end of said lever with the carriage, of a vacuum-chamber, means for exhausting air therefrom, a cylinder having its piston con-

nected with the said lever, connections from the said chamber to the cylinder containing a normally-closed valve, and a lever connected with the said valve and operated by the movement of the carriage to open and close said valve at opposite ends of the carriage travel, substantially as described.

WILLIAM E. JACKSON, JR.

Witnesses;

G. M. McLAUGHLIN,
S. C. HAYES.