

No. 722,291.

PATENTED MAR. 10, 1903.

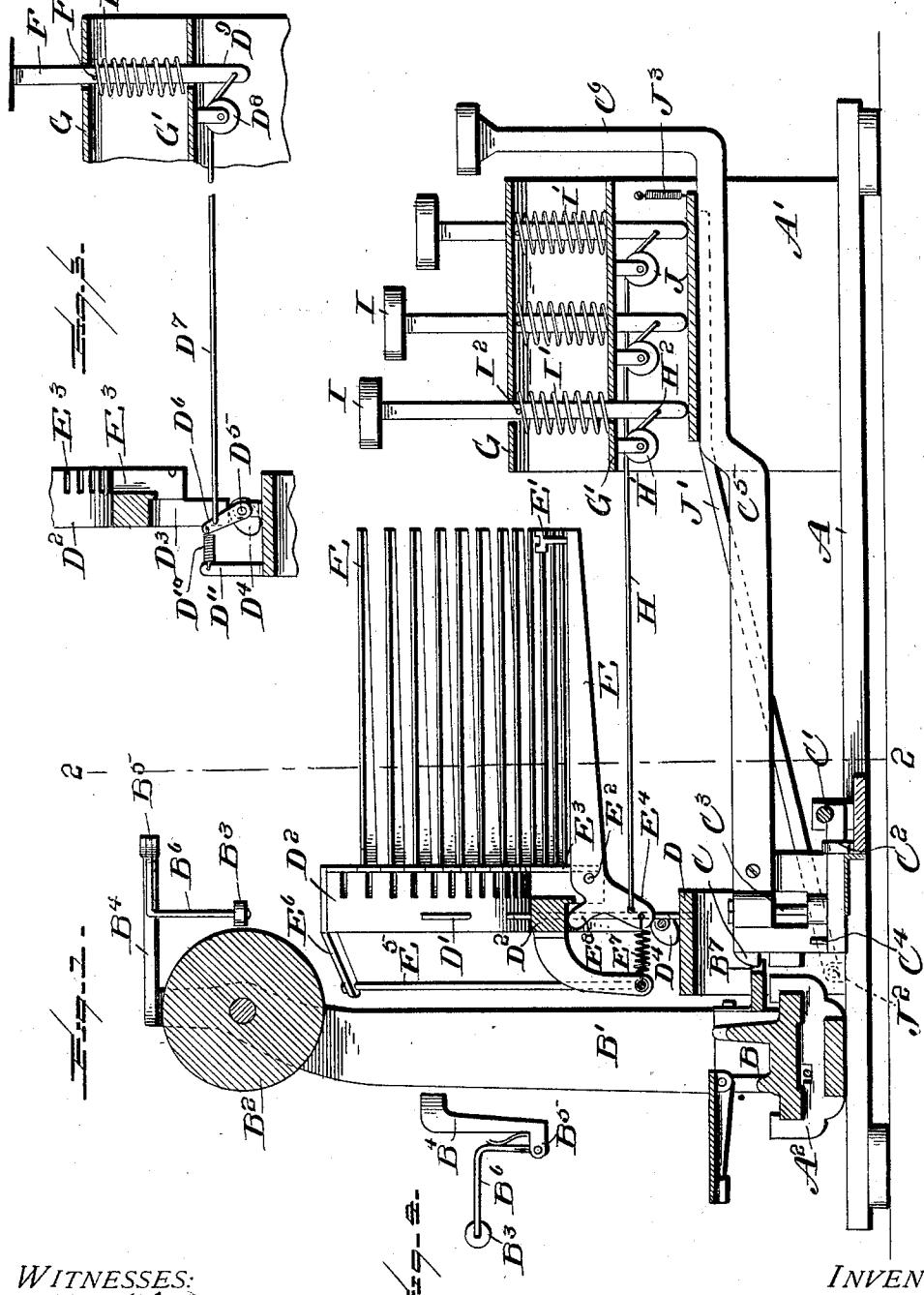
A. C. FERGUSON.

## TYPE WRITER.

APPLICATION FILED JUNE 2, 1902.

2 SHEETS—SHEET 1.

NO MODEL.



*WITNESSES:*

W<sup>th</sup> F<sup>th</sup> Doyle  
Alfred T. Gage.

*INVENTOR*

BY *Arthur Ferguson*  
*E B Stocking* Attorney

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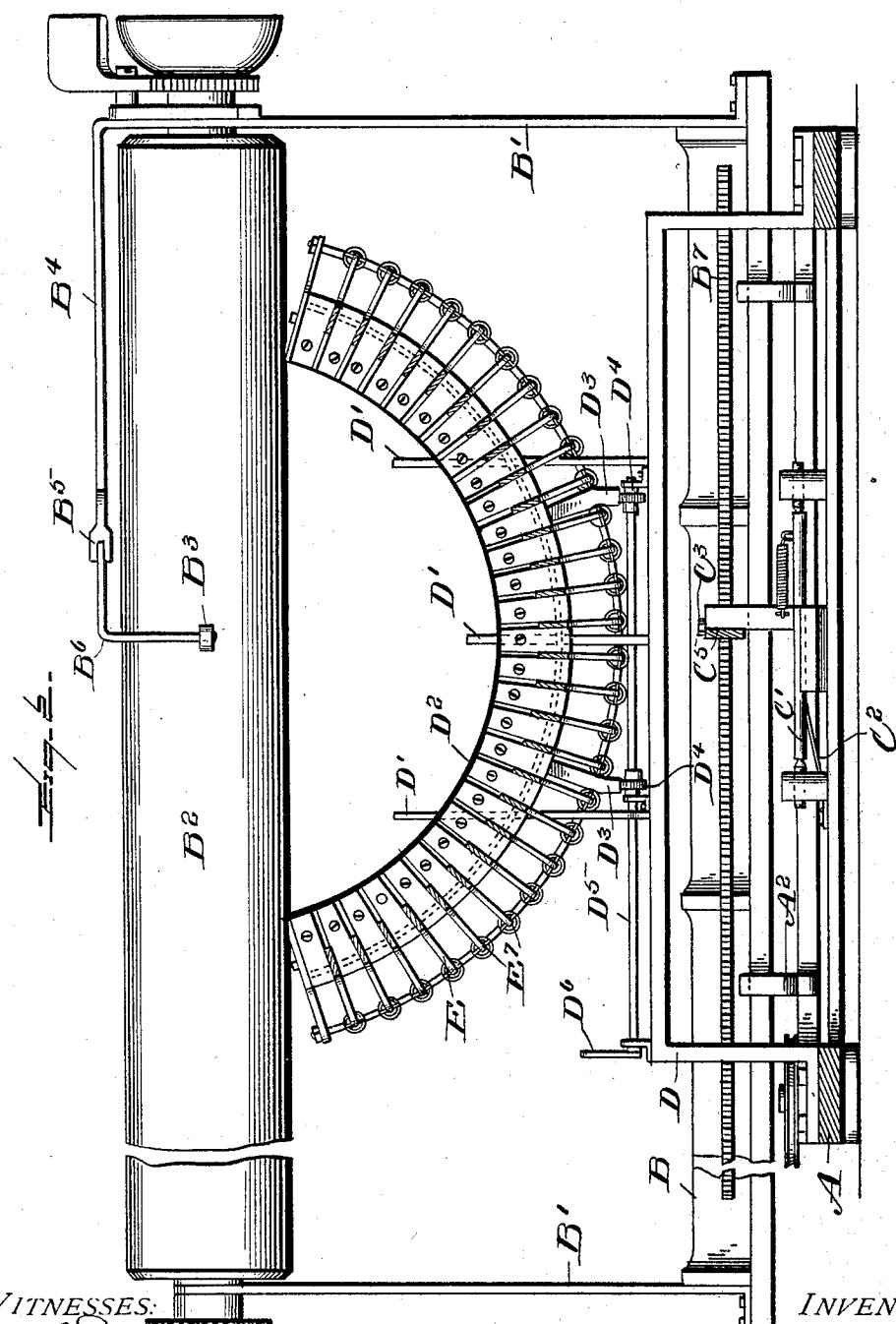
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WITNESSES:

*W. F. Hayes*  
*Alfred T. Gage.*

INVENTOR

*Arthur C. Ferguson*  
*E. B. Stockley, Attorney*

# UNITED STATES PATENT OFFICE.

ARTHUR C. FERGUSON, OF BROOKLYN, N. Y.

## TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 722,291, dated March 10, 1903.

Application filed June 2, 1902. Serial No. 109,966. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR C. FERGUSON, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a type-writer, and particularly to a machine in which the type-bar is shiftable in relation to the platen.

The invention has for an object to present a construction of type-writer in which the keys are flexibly connected to the type-bars for the purpose of operating the same; also, to provide improved means for vertically shifting the carrier for the type-bars relative to the platen supported by the paper-carriage.

A further object of the invention is to provide a type-writer having a platen supported above a vertically-disposed type-bar carrier, together with means for shifting said carrier, and a flexible connection from the carrier to a depressible key.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings, Figure 1 is a vertical cross-section through a type-writer embodying my invention. Fig. 2 is a vertical section on the line 2 of Fig. 1. Fig. 3 is a detail vertical section illustrating the shifting means for the type-bar carrier, and Fig. 4 is a plan of the inking-roll.

Like letters of reference refer to like parts in the several figures of the drawings.

The letter A designates the base of the machine, which is provided at its front portion with vertical standards A', adapted to support the keyboard, and at its rear with a track or way A<sup>2</sup>, in which the paper-carriage B is adapted to reciprocate, the latter being provided with standards B', supporting at their upper portions a platen B<sup>2</sup> and also an inking-roll B<sup>3</sup>, the latter being supported by an arm B<sup>4</sup>, extending above the platen from one standard and to which the inking-roll B<sup>3</sup> is pivotally mounted at the end B<sup>5</sup> by means of the angular hanger B<sup>6</sup>. This roll is slightly at one side of the point of contact of the type with the platen, so that the type by first con-

tacting with the roll forces it away therefrom and inks the type in its passage toward the platen. The platen may be of any ordinary construction, and also the sliding carriage and way. This carriage is also provided with a rack-bar B<sup>7</sup>, supported upon one face thereof and coöperating with an escapement mechanism C, which is pivoted at the point C' to oscillate in a vertical plane and normally held in the position shown in Fig. 1 by means of a spring C<sup>2</sup>. This escapement mechanism is also adapted to oscillate in a horizontal plane upon the central pivot C<sup>3</sup> for the purpose of disengaging the dogs from the rack, and this horizontal movement is limited by the stop-pin C<sup>4</sup>. The escapement mechanism is provided with a forwardly-extending lever or arm C<sup>5</sup>, which terminates at the front of the keyboard in a key C<sup>6</sup>.

Between the keyboard and the paper-carriage a supporting-arm D is secured to the base and extends over the escapement mechanism. This frame is provided with a series of vertical guide-rods D', upon which the segmental type-bar carrier D<sup>2</sup> is slidably mounted. This carrier D<sup>2</sup> is disposed in a vertical plane at one side of the platen and below the axis thereof, so that the type-bars E, carried thereby, lie in different horizontal planes completely away from the platen, so as to permit an unobstructed view of the writing at all times. Each of these type-bars is provided with a type E', having a plurality of characters thereon, and in order to print either of these characters it is necessary to shift the carrier in a vertical plane. For the purpose of vertically shifting the type-bar carrier any desired form of key and connector may be used; but Fig. 3 illustrates a preferred form which permits a movement of the type-bar carrier independent of all other parts of the machine. This shifting is accomplished by means of lugs D<sup>8</sup>, extending from the carrier and resting upon cams or eccentrics D<sup>4</sup>, carried by a shaft D<sup>5</sup>, which is provided with a crank-arm D<sup>6</sup>, connected with the keyboard of the type-writer by any suitable means—for instance, a flexible connector D<sup>7</sup>, extending over a pulley D<sup>8</sup> to the lower end D<sup>9</sup> of a shift-key F. This key is normally held in its raised position, as shown in Fig. 3, by means of a spring F', located

between the upper plate G and the lower plate G', forming the support for the keyboard. A pin F<sup>2</sup> bears upon the upper end of the spring, which is compressed in the downward movement of the key to restore the key, while the crank-arm D<sup>6</sup> and cams D<sup>4</sup>, actuated thereby, are restored to their initial position by means of a spring D<sup>10</sup>, extending from the arm D<sup>6</sup> to a standard D<sup>11</sup>. Each of the type-bars is pivoted at E<sup>2</sup> within the alining slots E<sup>3</sup>, formed in one face of the type-bar carrier D<sup>2</sup>, and the type-bar is also provided with an angular end portion E<sup>4</sup>, from which a connector H extends to the keys I, mounted in the keyboard. At the opposite side of the carrier D<sup>2</sup> from the type-bars a supporting-rod E<sup>5</sup> is mounted upon brackets E<sup>6</sup>, and to this rod a restoring-spring E<sup>7</sup> is secured at one end and attached at its opposite end to each type-bar. Between the connector H and the pivot of the bar a lateral extension E<sup>8</sup> is formed upon the type-bar and by engagement with the frame of the carrier E<sup>2</sup> limits the downward movement of the bar. The connector H is shown as of a flexible character and passes over a pulley H', supported from the under face of the plate G' and connected at H<sup>2</sup> to the lower end of the key I. This key is normally held in an elevated position by means of a spring I' bearing at one end upon the surface of the plate G' and at its opposite end upon a projection I<sup>2</sup>, carried by the key. Beneath all of the keys a univeral bail is provided, which is composed of a plate J, extending from oppositely-disposed levers J', which levers are pivoted at J<sup>2</sup> at the rear of the machine, while the forward edge of the plate and levers is supported by a spring J<sup>3</sup>, carried by the standard A', so that the depression of any key carries downward the plates J and also the extended arm C<sup>5</sup> of the escapement mechanism, which lies directly beneath this plate, during which movement the spring J<sup>3</sup> is placed under tension and immediately restores the plate to this elevated position when pressure is removed from the key.

In the operation of the invention it will be seen that the depression of the key transmits motion through the connector to the type-bar lying beneath the platen, thus raising this bar first into contact with the inking-roll and then with the paper carried upon the platen. This downward movement of the key also depresses the plate of the universal bail below governing the escapement mechanism, and when pressure is relieved from the key the escapement feeds the carriage forward and the type-bar is restored to its normal horizontal position by the restoring-spring therefor. When it is desired to shift the type-bars so as to print other characters thereon, the shift-key is depressed and through the connection with the crank-arm operates the cams beneath the type-bar carrier, raising this carrier to such a distance as to bring the proper character to the printing-point upon the platen

when the key therefor is depressed. It will be noted that at this time the connection between the type-bar carrier and the keyboard is not materially disturbed, nor does the relation thereof to the key lie in such manner as to affect the regular operation of the machine for either of the characters upon the type. It is also noted that the keys as herein mounted permit a direct downward movement thefeof and transmit this movement through the flexible connector to the type-bars, so as to secure the most advantageous stroke of the type against the platen and permit a shifting of the type-bar carrier relative to the platen.

It will be obvious that changes may be made in the details of construction and configuration without departing from the spirit of the invention as defined by the appended claims.

Having described my invention and set forth its merits, what I claim, and desire to secure by Letters Patent, is—

1. In a type-writer, a platen, a type-bar adapted to coöperate therewith, a sliding key, a bearing adjacent to the lower end of said key, and a flexible connection extending directly from the type-bar over said bearing and connected to the lower end of said key, substantially as specified.

2. In a type-writer, a platen, a type-bar adapted to coöperate therewith, a vertically-sliding key, a roller-bearing adjacent to the lower end of said key, and a flexible strand extending in a horizontal plane from the type-bar over said bearing and connected to the lower portion of said key, substantially as specified.

3. In a type-writer, a platen, a type-bar adapted to coöperate therewith, a key, a flexible connection from said key to said type-bar, means for shifting said type-bar in a vertical plane relative to said platen, a carriage

for said platen below said type-bar, an escapement-operating mechanism extending beneath said shifting means for engaging said carriage, and means beneath said keys for operating said escapement; substantially as specified.

4. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar mounted therein, a shaft beneath said carrier having a cam and crank-arm thereon, a key for operating said shaft, a bearing adjacent to said key, and a flexible connector extending from the lower portion of said key over said bearing to the free end of said crank-arm, substantially as specified.

5. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar mounted therein, a shaft beneath said carrier having a cam and crank-arm thereon, a key for operating said shaft, a bearing adjacent to said key, a flexible connector extending from the lower portion of said key over said bearing

to the free end of said crank-arm, a vertically-sliding type-bar key, a bearing adjacent to the lower end thereof, and a flexible connection extending horizontally from the type-bar over said bearing therefor and connected to the type-bar key at its lower portion, substantially as specified.

5 6. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar pivoted therein, a key for operating said type-bar, a connector extending from said key to said bar, an escapement mechanism extending beneath said carrier to coöperate with said carriage and having an arm extending beneath the keyboard, and a universal bail disposed between the key and arm and adapted by the depression of the key to engage and operate said escapement mechanism; substantially as specified.

15 7. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar pivoted therein, a key for operating said type-bar, a connector extending from said key to said bar, an escapement mechanism coöperating with said carriage and having an arm extending beneath the keyboard, a universal bail actuated by the depression of the key to engage 25 and operate said escapement mechanism, a horizontal shaft disposed beneath said type-carrier, a crank-arm on said shaft, means for rotating said shaft, and means carried by said shaft for raising said type-carrier; substantially as specified.

30 8. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar pivoted therein, a key for operating said type-bar, a connector extending from said key to said bar, an escapement mechanism coöperating with said carriage and having an arm extending beneath the keyboard, a universal bail actuated by the depression of the key to en-

45 gage and operate said escapement mechanism, a horizontal shaft disposed beneath said type-carrier, a crank-arm on said shaft, means for rotating said shaft, means carried by said shaft for raising said type-carrier, a support-ing-spring for one end of said universal bail, a restoring-spring for said type-bar, and an inking-roll supported in front of said platen; substantially as specified.

50 9. In a type-writer, the combination with a carriage having a platen thereon, a vertically-shiftable type-carrier, a type-bar pivoted therein, a key for operating said type-bar, a connector extending from said key to said bar, an escapement mechanism coöperating 55 with said carriage and having an arm extending beneath the keyboard, a universal bail actuated by the depression of the key to engage and operate said escapement mechanism, a horizontal shaft disposed beneath said type-carrier, a crank-arm on said shaft, means for rotating said shaft, means carried by said

60 ing-spring for one end of said universal bail, a restoring-spring for said type-bar, an inking-roll supported in front of said platen, and a pivoted hanger to permit oscillation of said roll; substantially as specified.

65 10. In a type-writer, a support having vertical standards, a vertically-disposed segmental type-bar carrier slidably mounted upon said standards, type-bars pivoted in said carrier, a supporting-rod supported from one face of said carrier, and a restoring-spring extending from said rod to said type-bars, and means beneath said carrier for shifting 70 the same upon said standards; substantially as specified.

75 11. In a type-writer, a support having vertical standards, a segmental type-bar carrier slidably mounted upon said standards, type-bars pivoted in said carrier, a supporting-rod supported from one face of said carrier, a restoring-spring, extending from said rod to said type-bars, a lug formed upon said carrier, a horizontal shaft beneath said lug provided 80 with a cam thereon, a crank-arm upon said shaft for shifting said cam, and a restoring-spring extending from said arm to said support; substantially as specified.

85 12. In a type-writer, a support having vertical standards, a segmental type-bar carrier slidably mounted upon said standards, type-bars pivoted in said carrier, a supporting-rod supported from one face of said carrier, a restoring-spring extending from said rod to said 90 type-bars, lugs formed upon said carrier, a horizontal shaft beneath said lugs provided with cams thereon, a crank-arm upon said shaft for shifting said cams, a restoring-spring extending from said arm to said support, a 95 depressible key, a spring for restoring the same, a bearing-pulley supported adjacent to the lower end of said key, and a flexible connector extending from said crank-arm over said pulley to said key; substantially as specified.

100 13. In a type-writer, a support having vertical standards, a segmental type-bar carrier, slidably mounted upon said standards, type-bars pivoted in said carrier, a supporting-rod 105 supported from one face of said carrier, a restoring-spring extending from said rod to said type-bars, lugs formed upon said carrier, a horizontal shaft beneath said lugs provided with cams thereon, a crank-arm upon said 110 shaft for shifting said cams, a restoring-spring extending from said arm to said support, a de-pressible key, a spring for restoring the same, a bearing-pulley supported adjacent to the lower end of said key, a flexible connector 115 extending from said crank-arm over said pulley to said key, spring-supported keys for said type-bars, bearing-pulleys adjacent to the lower end of said bar-keys, and a flexible connection for said type-bars over said pulleys to said bar-keys; substantially as specified.

120 14. In a type-writer, a carriage provided with a platen, a type-bar carrier, type-bars

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supported in said carrier, a keyboard, depressible keys mounted in said board for operating said type-bars, an escapement mechanism coöperating with said carriage and provided 5 with an extended arm lying beneath said keyboard, and a universal bail provided with a plate disposed between the keys in said keyboard and said extended arm; substantially as specified.

10 15. In a type-writer, a carriage provided with a platen, a type-bar carrier, type-bars supported in said carrier, a keyboard, depressible keys mounted in said board for operating said type-bars, an escapement mechanism 15 coöperating with said carriage and provided with an extended arm lying beneath said keyboard, a universal bail provided with a plate disposed between the keys in said keyboard and said extended arm, a key upon the 20 arm from said escapement mechanism for depressing the same independently of the universal bail, and means for restoring said arm and escapement mechanism; substantially as specified.

25 16. In a type-writer, a carriage provided with a platen, a type-bar carrier, type-bars supported in said carrier, a keyboard, depressible keys mounted in said board for operating said type-bars, an escapement mechanism 30 coöperating with said carriage and provided with an extended arm lying beneath said keyboard, a universal bail provided with a plate disposed between the keys in said keyboard and said extended arm, a key upon the 35 arm from said escapement mechanism for depressing the same independently of the universal bail, means for restoring said arm and

escapement mechanism, a supporting-arm extending longitudinally of said platen, and an inking-roll pivotally mounted by an angular 40 hanger at the end of said arm; substantially as specified.

17. In a type-writer, a carriage provided with a platen, a type-bar carrier, type-bars supported in said carrier, a keyboard, depressible keys mounted in said keyboard for operating said type-bars, an escapement mechanism coöperating with said carriage and provided with an extended arm lying beneath said keyboard, a universal bail provided with 45 a plate disposed between the keys in said keyboard and said extended arm, a key upon the 50 arm from said escapement mechanism for depressing the same independently of the universal bail, means for restoring said arm and 55 escapement mechanism, a supporting-arm extending longitudinally of said platen, an inking - roll pivotally mounted by an angular hanger at the end of said arm, a supporting-spring for the front end of the plate upon 60 said universal bail, a supporting-rod extending from one face of said type-carrier, a restoring-spring extending from said rod to said type-bar, and a projection carried by said type-bars to engage the frame of said carrier 65 in their downward movement; substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR C. FERGUSON.

Witnesses:

ALFRED T. GAGE,  
E. J. BURNSTOCK.