

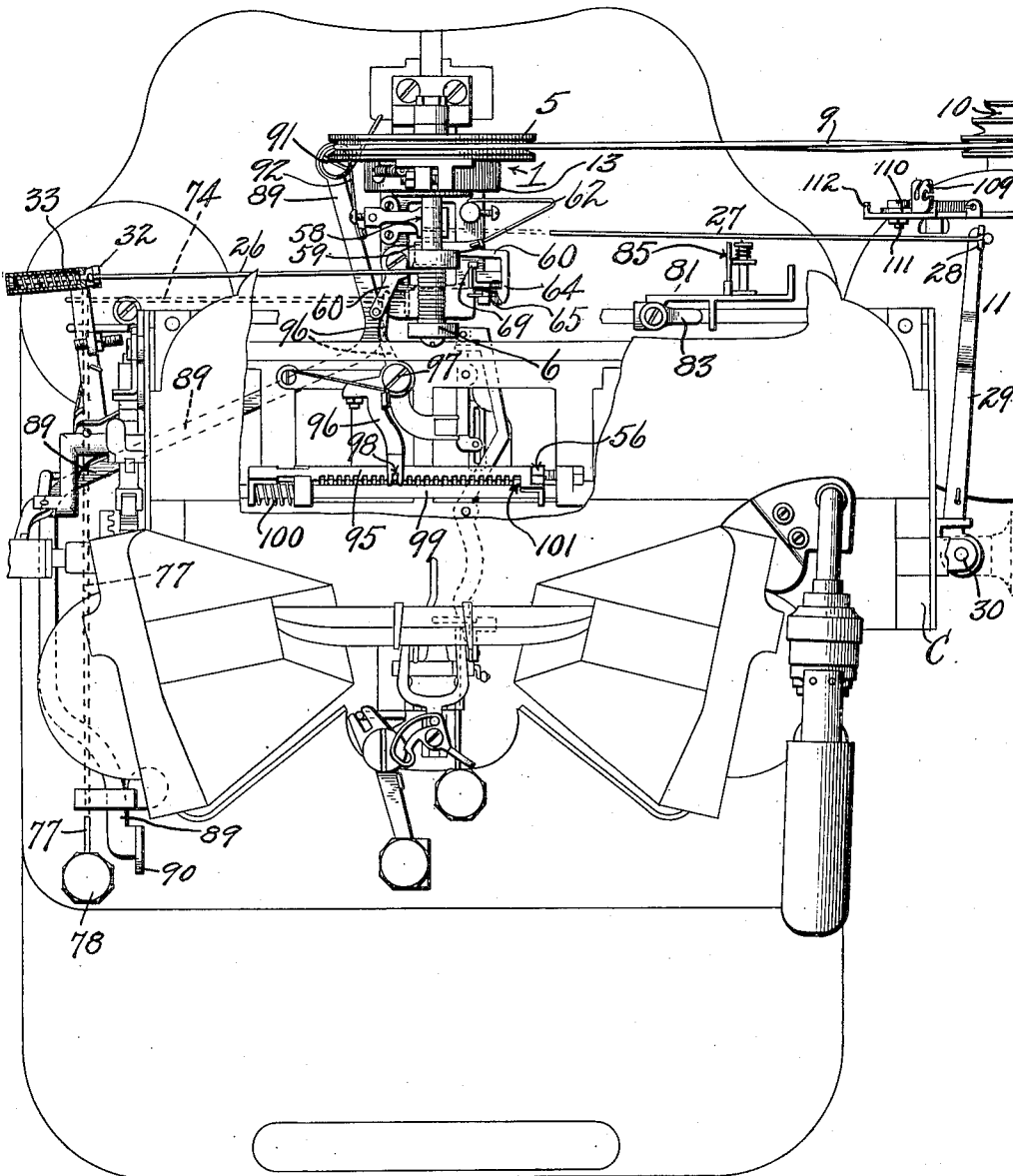
G. TREJO.
CARRIAGE RETURN AND LINE SPACING MECHANISM FOR TYPE WRITERS.
APPLICATION FILED NOV. 30, 1908.

938,801.

Patented Nov. 2, 1909.

6 SHEETS—SHEET 1.

Fig. 1.



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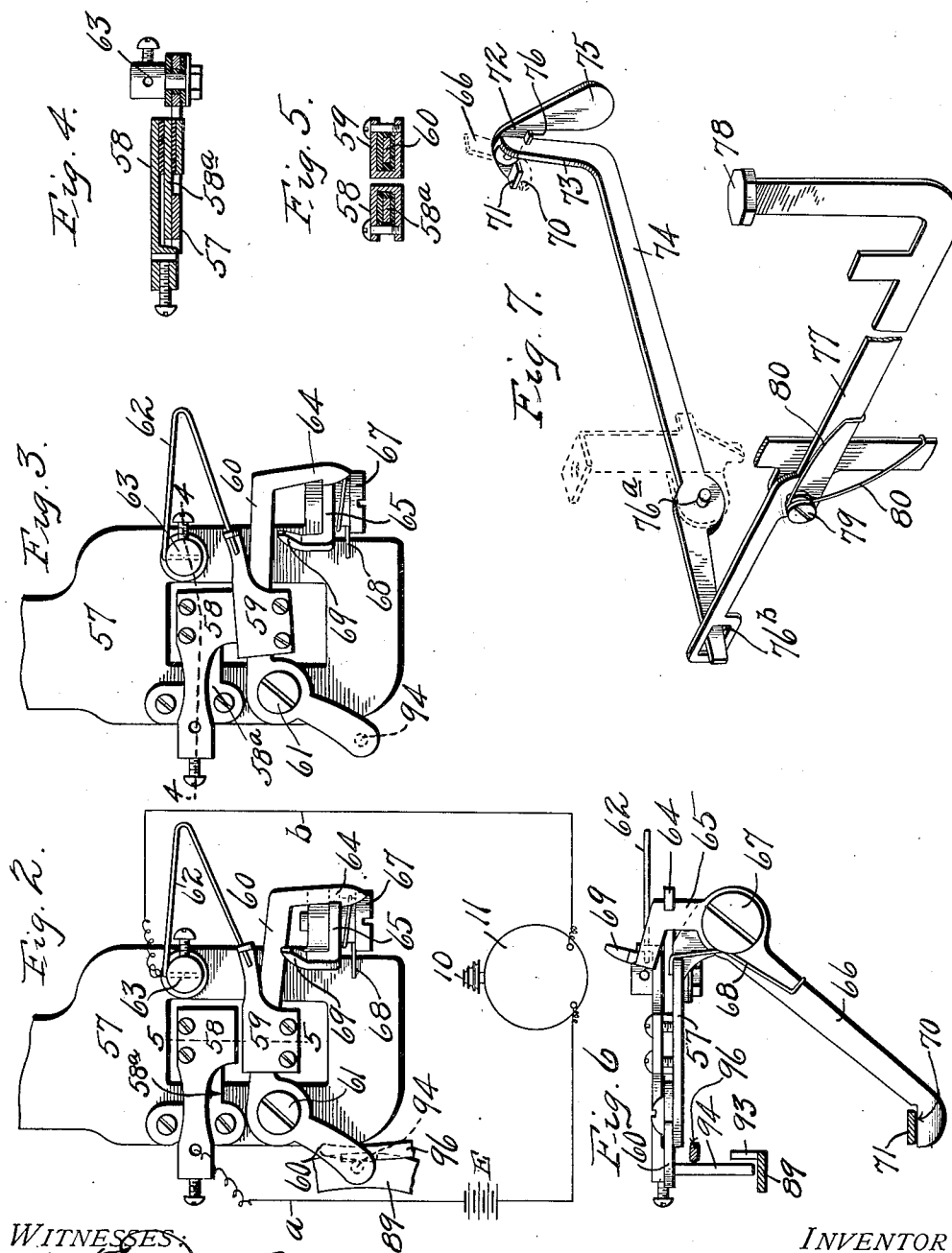
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6 SHEETS—SHEET 2.



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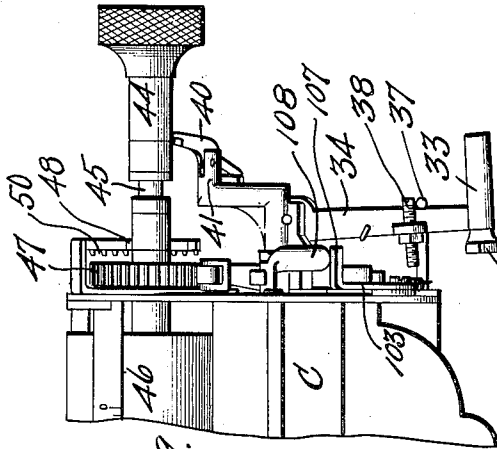


Fig. 9.

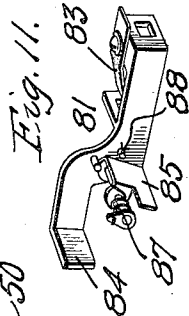


Fig. 11.

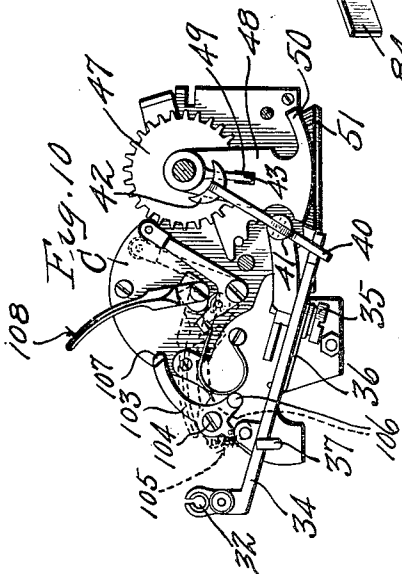
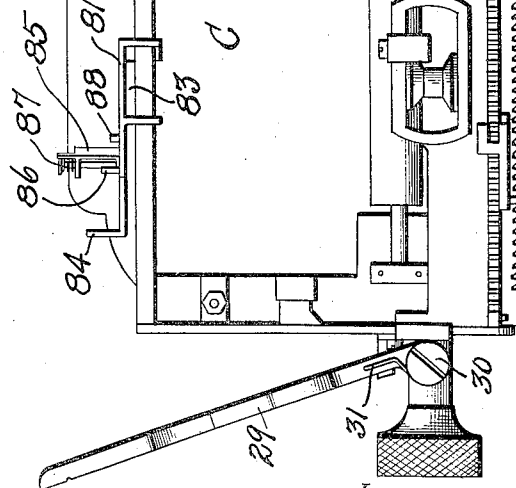


Fig. 10.

Fig. 8.



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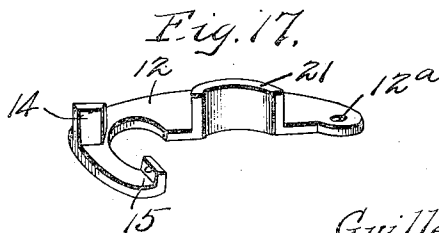
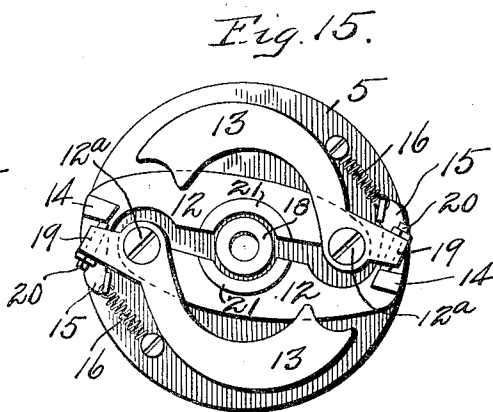
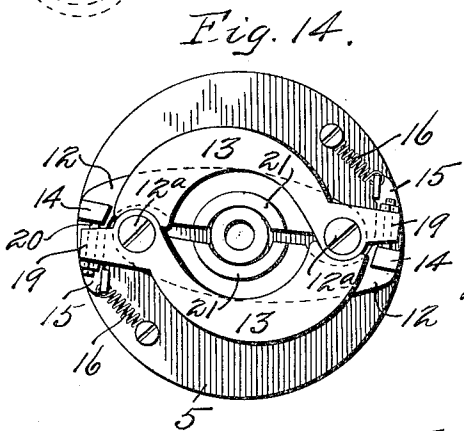
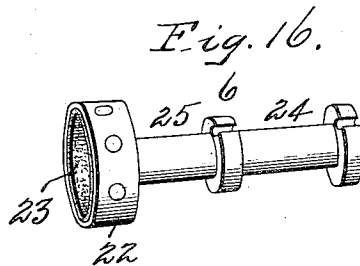
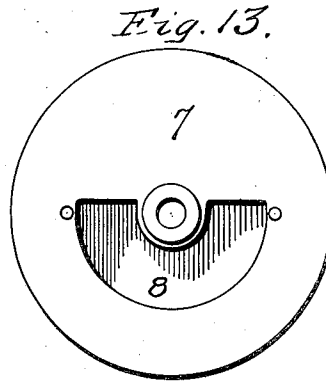
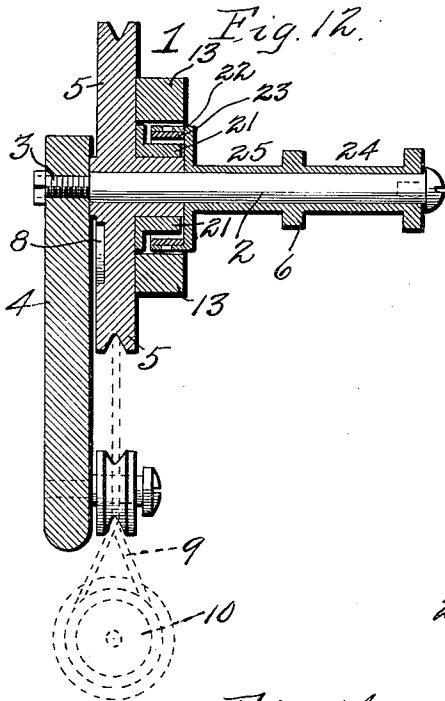
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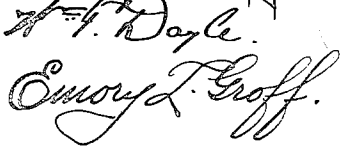
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6 SHEETS—SHEET 5.



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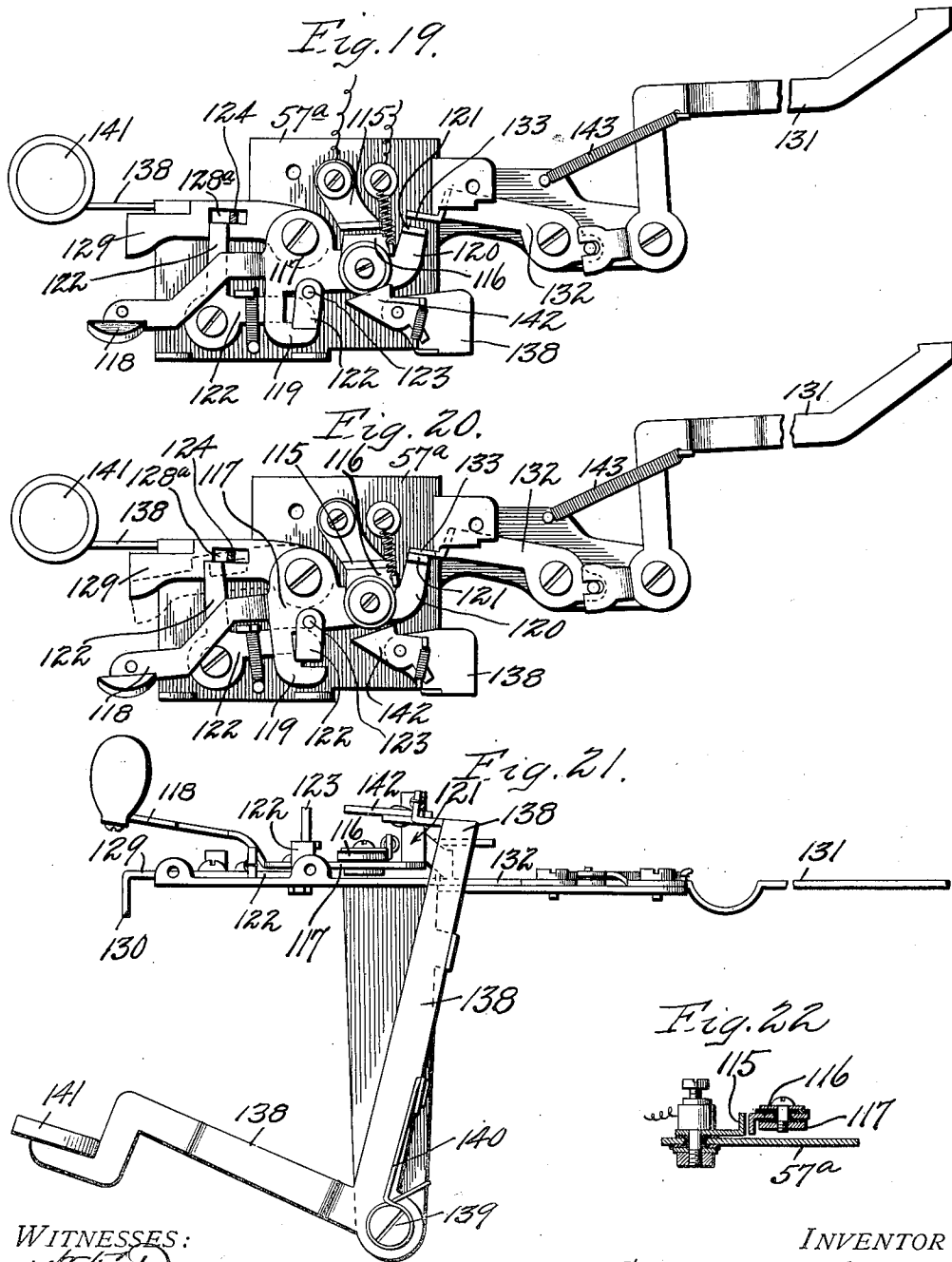
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

GUILLERMO TREJO, OF MEXICO, MEXICO.

CARRIAGE-RETURN AND LINE-SPACING MECHANISM FOR TYPE-WRITERS.

938,801.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed November 30, 1908. Serial No. 465,164.

To all whom it may concern:

Be it known that I, GUILLERMO TREJO, a citizen of the Republic of Mexico, residing at Mexico city, Republic of Mexico, have invented certain new and useful Improvements in Carriage-Return and Line-Spacing Mechanism for Type-Writers, of which the following is a specification.

This invention relates to the subject of typewriting machines, and has special reference to an improved mechanism for automatically returning the carriage of the machine and simultaneously effecting a line spacing operation through the rotation of the platen of the carriage.

To this end, the invention contemplates an automatic carriage return and line spacing mechanism capable of application to various makes of typewriting machines and comprising simple, practical, and thoroughly reliable means for causing the return of the carriage of the machine, and at the same time automatically spacing the line, the return of the carriage being from any point or number on the scale bar to zero, or to any required marginal point. In carrying out this general object, the invention has in view a carriage return mechanism which is instantly, and with great rapidity, brought into play by the operator at any point in the travel of the carriage, and hence at any point or number on the scale bar, and which mechanism also coöperates with the tabulator and with the marginal devices of the typewriting machine so that every possible use and manipulation of the machine is permitted, and the return of the carriage provided for either through the manual manipulation of a key by the operator, or entirely automatically through the movement of the carriage when it reaches the end of a line of any predetermined length, which is regulated through the usual marginal stops of the machine.

A further and distinctive object of the invention is to provide a carriage return and line spacing mechanism which is electrically operated and electrically controlled, thus insuring instantaneous and rapid action, and consequently permitting the operator to attain the highest degree of speed and efficiency in the operation of the machine.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel con-

struction, combination, and arrangement of parts, hereinafter more fully described, illustrated and claimed.

The essential features of the invention, involved in carrying out the objects above indicated, are necessarily susceptible to wide range of structural modification in their application to different types and makes of machines without departing from the scope of the invention, but for illustrative purposes certain practical embodiments of the invention are shown in the accompanying drawings, in which:

Figure 1 is a diagrammatic skeleton plan view, partly broken away, of an Oliver typewriter machine equipped with the mechanism contemplated by the present invention. Fig. 2 is a detail plan view of the make and break device forming a part of the mechanism shown in the embodiment of the invention illustrated in Fig. 1; said view also showing a diagram the electrical circuit with the power motor. Fig. 3 is a detail plan view of the circuit closer showing the opposing contacts in engagement to close the circuit through the motor and hence operate the carriage return mechanism. Fig. 4 is a detail sectional view on the line 4-4 of Fig. 3 showing the insulation of opposite polarity parts of the electrical circuit closer. Fig. 5 is a detail view on the line 5-5 of Fig. 2 showing the insulation of certain elements. Fig. 6 is a detail edge view of the circuit closer shown in Figs. 2 and 3. Fig. 7 is a detail in perspective of the line of operating connections between the circuit closer and the operator's connection key. Fig. 8 is a diagrammatic bottom plan view of the carriage of an Oliver typewriter machine equipped with certain parts of the carriage return and line spacing mechanism. Fig. 9 is a top plan view of one end portion of the carriage showing the line spacing mechanism. Fig. 10 is an end view of the portion of the carriage and of the mechanism shown in Fig. 9. Fig. 11 is a detail in perspective of the right hand marginal connector carried by the carriage and coöperating with the electrical connector. Fig. 12 is a detail sectional view of the driving clutch. Fig. 13 is an elevation of one side of the drive pulley element of the clutch. Figs. 14 and 15 are side elevations of the drive clutch showing the same respectively closed and open, that is, with the elements thereof respectively in idle and operative

positions. Fig. 16 is a detail in perspective of the double winding spindle forming a part of the driving clutch. Fig. 17 is a detail in perspective of one of the clutch levers. Fig. 18 is a diagrammatic plan view of the Underwood make of typewriting machine illustrating the application of the invention thereto, and showing the wide range of modification that may be resorted to in carrying out the invention, and particularly in adapting the same to different makes of typewriters. Figs. 19 and 20 are similar detail plan views of a modified form of electrical circuit closer possessing special utility in its application to the Underwood attachment. Fig. 21 is a detail edge view of the electrical circuit closer shown in Figs. 19 and 20. Fig. 22 is a detail sectional view showing a means of insulating the opposite polarity parts of the circuit closer illustrated in Fig. 19. Fig. 23 is a detail sectional view of the Underwood attachment on the line 23—23 of Fig. 18. Figs. 24 and 25 are detail perspective views of certain parts of the mechanism adapted to the Underwood machine.

Like references designate corresponding parts in the several figures of the drawings.

The improvements contemplated by the present invention are applicable to various makes of typewriting machines to provide for controlling the return of the carriage from any point in the line of writing, and simultaneously effecting a line spacing operation through the rotation of the platen, and while minor structural modifications may be necessary to adapt the mechanism to the different makes of machine, the essential principles of construction and combinations of parts are preserved in all adaptations.

In all applications of the invention, the same include, as one of the primary and necessary parts thereof, a driving member designated in its entirety by the numeral 1 and termed herein a centrifugal rotary driving clutch, the control of which clutch in various ways provides for the control of the carriage return movement and of the line spacing action. This driving clutch 1 is mounted for rotation on a stationary bearing axle 2 supported at one end, as at 3, from a suitable supporting bracket 4 fastened to an out of the way position on the frame, base, or other convenient stationary part of the typewriting machine. The axle 2 is of sufficient length to accommodate the two principal elements of the driving clutch, and these elements are respectively a rotatable drive pulley 5 and a double winding spindle 6. The pulley 5 is preferably of the grooved form and counterweighted, as at 7, by recessing the back portion thereof, as at 8. Also, the pulley is designed to receive a drive belt or equivalent connection 9 which receives its motion from the driving pulley 10 on the shaft of an electrical power motor 11

arranged in a convenient position on the base board of the machine or any other convenient location.

The drive pulley 5 carries upon one side thereof the centrifugal clutch device consisting of a pair of duplicate, reversely arranged clutch levers 12, and a pair of duplicate, reversely arranged centrifugal weight levers 13 arranged to work over said other levers and serving to open or close the latter levers according to whether the pulley is rotating or is idle. Each of the clutch levers 12 is pivoted at one end upon the pivot 12^a to the body of the pulley 5, and at its opposite end carries an offstanding bearing lug 14 and a laterally deflected lever arm 15, to which arm is connected a retracting spring 16 for normally swinging the clutch lever toward the central hub 18 projecting from one side of the pulley 5. Each of the centrifugal weight levers is of a curved form so as to operate wholly within the plane of the pulley body and is sufficiently heavy to be readily influenced by centrifugal force when the pulley is rotated. At one end each radially swinging weight lever 13 is pivoted upon the pivot 12^a for one of the clutch levers 12, and contiguous to such pivot is formed with an engaging heel 19 carrying an adjustable strike pin 20 adapted to engage against the bearing lug 14 of the opposite clutch lever 12. The reverse arrangement of the opposite clutch levers and also of the weight levers provides for the weight lever at one side of the hub 18 moving against the bearing lug 14 of the clutch lever at the opposite side of the hub.

The clutch levers 12 are provided, intermediate their ends, with offstanding half-circle clutch shoe segments 21 which are concentric with the hub 18 and are located respectively on opposite sides thereof. The clutch/shoe segments 21 are adapted to lie within the friction cup 22 carried at one end of the spindle 6, and the inner face of the said cup 22 is provided with a leather or equivalent lining 23 suitably secured in place and presenting a frictional surface which is firmly gripped by the shoes 21 when the clutch levers are thrown open or spread apart through the centrifugal action of the weight levers 13, as will hereinafter more fully appear. The said double winding spindle 6 is provided with the separate reel portions 24 and 25, upon which wind and unwind the oppositely extending tapes 26 and 27. In the embodiment of the invention shown in Fig. 1 of the drawings, the tape 26 acts in the capacity of a pull tape for effecting the carriage return movement, while the tape 27 acts in the capacity of a tension tape for maintaining the stretch of the pull tape, thus insuring an immediate response of the pull tape when the double spindle is rotated by the clutching of the drive pulley

therewith. The two tapes 26 and 27 may consist of cord or metal tapes and are fastened at one end in any suitable manner to the winding spindle so as to respectively wind and unwind on the separate reel portions thereof. The other end of the tension tape 27 is detachably hooked, as at 28, in a fork at the free end of a stretcher lever 29 pivotally supported, as at 30, upon one end of the frame of the typewriter carriage C of the typewriting machine, and a suitably mounted tension spring 31 normally holds the lever 29 pressed outward from the carriage end under spring tension so that when the tape 27 is engaged with the lever 29, the latter holds both tapes in a stretched condition and hence under a proper working tension. The end of the tape 26 opposite its connection with the winding spindle, is detachably engaged, as at 32, in the work at the outer end of a spring held tape holder 33 supported at the swinging end of a pull lever 34 pivotally supported upon the pivot 35 at the end of the typewriter carriage C opposite the end which carries the stretcher lever 29. The pull of the tape 26 upon the lever 34 is in a direction for returning the carriage to the beginning of the line of writing and also for operating the line spacing mechanism. Hence, said pull lever 34 is a part of the line spacing mechanism. This lever is normally held outward under spring tension by a return spring 36 and is limited in such outward movement by a fixed stop 37 on the carriage frame and is limited in its inward movement by an adjustable stop pin 38 mounted in the lever 34 and engaging against the carriage frame. At one side of its pivot the pull lever 34 is provided with a heel extension 39 engaging against one arm of a presser lever 40 pivotally supported intermediate its ends in a pivot bracket 41 on the carriage frame, and whose opposite end is formed with a head piece 42 adapted to engage with a sliding pawl member 43 carried with the usual sliding and rotatable end knob 44 fitted to one of the spindle extremities 45 of the roller platen 46 of the machine.

The line spacing mechanism also includes, as a part thereof, the usual spacing pinion 47 on the spindle extremity 45 of the platen, the teeth of which are engaged by the pawl member 43 when the latter is slid inwardly. Also, the said mechanism includes a swinging carrier lever 48, through an opening 49 in which the pawl member 43 projects, and the lower swinging end of said lever (which is pivotally hung on the platen spindle 45) is provided with a curved rack 50 engaged by the teeth of an oscillating segment 51, pivoted at the under side of the carriage, as at 52, and having an arm extension 53, to which is pivotally connected at 54 one end of an operating rod 55 slidably supported

beneath the carriage frame and adapted to engage against the usual adjustable right hand marginal stop 56 of the machine. It will thus be seen that the first pull of the tape 26, when the spindle 6 starts to rotate, draws upon the pull lever 34 with the consequence of causing the presser lever 40 to thrust the pawl member 43 into engagement with the teeth of the spacing pinion 47, so that when the operating rod 55 comes against the right hand marginal stop 56, the segment 51 will be rocked with the result of swinging the carrier lever 48 and the pawl member 43 carried by such member and which is engaged with the pinion 47. This effects an automatic rotation of the platen 46 to provide for the line spacing, and when the carriage starts to move away from the right hand marginal stop, the parts of the line spacing mechanism resume their normal condition.

To provide for the opening and closing of the electrical circuit through the motor 11, and hence to control the starting and stopping of the driving clutch, there is employed an electrical circuit closer in the form of a make and break device supported in any suitable or appropriate location. The circuit closer which is shown in the drawings as adapted to the Oliver type of machine, (see Figs. 1 to 7) includes in its organization a suitable base plate 57, and the fixed and movable contact members 58 and 59 respectively, said separate contact members having separate wire connections *a* and *b* therewith, which wire connections are also included in an electrical circuit with a source of energy *E* and the power motor 11. The fixed contact member may be conveniently in the form of a cuff having an insulated support upon a supporting arm or plate 58^a carried by the base 57, while the movable contact member 59 may likewise be in the form of a cuff having an insulated mounting on the longer arm of a contact lever 60, swinging over the base 57 and having a pivotal support, as at 61, thereon. An opening spring 62 connected with a fixed point of attachment and with the lever 60 affords means for normally separating the contact members. The spring 62 may be conveniently used as a conductor between the contact member 59 and the binding post 63 for the circuit wire *b*. The long arm of the lever 60 is illustrated as provided with a shouldered keeper element 64 adapted to be engaged by the upstanding catch arm 65 of a release lever 66 pivotally supported between its ends, as at 67, beneath the base 57. This release lever 66 is normally moved into engagement with the keeper element 64 of the contact lever by a holding spring 68, and above its pivot the same is formed with a strike finger 69, while the long arm of the lever 66 below its pivot is

formed at its extremity with an engaging shoulder 70 over which operates the presser foot 71 which constitutes one end portion of a pivotal trigger 72. This trigger is pivoted on the upstanding arm 73 of a rocking lever 74, and at one side of its pivotal point, the said trigger is formed with a pendent weight member 75 carrying a stop projection 76 engaging against one side of the arm 73. The weighted member 75 normally holds the trigger 72 in the position shown in Fig. 7, in which position the trigger may be carried downward by the lever 74 until it entirely slips off of the shoulder 70 of the release lever 66. On the upward or return movement, the presser foot 71 idly trips over the lower end of the lever 66.

The rocking lever 74 is a part of the operator's connection device. It is pivotally mounted intermediate its ends, as at 76^a, within the machine base, and one end thereof loosely engages a slot 76^b formed in the inner end of a vertically oscillating operator's connection key lever 77 bearing a key 78 arranged at or near the key board of the machine. The lever 77 is pivoted intermediate its ends, as at 79, and the key end 78 thereof is normally and yieldingly held elevated by means of a suitably arranged return spring 80. It will be seen that a depression of the key end of the lever 70 will press the lever 72 with the result of moving the lever 66 in a direction to disengage the catch arm 65 from the keeper 64 and permit the movable contact member 59 to spring into contact with the fixed contact member 58 and thus close the electrical circuit through the motor, with the consequence of starting up the driving clutch to effect the return of the carriage and the spacing of the line. This operation, through the manipulation of the key 78, may be brought into play from any point in the line of writing, and hence with the carriage in any position away from the right hand marginal stop.

The automatic closing of the circuit closer through the release of the contact lever 60 is accomplished in the form of the invention now being described, by an adjustable right hand marginal connector carried by the carriage and shown in detail in Fig. 11 of the drawing. This connector essentially comprises a shiftable tappet frame 81 slidably mounted on the rear frame bar 82 of the carriage C and held in its adjusted position through the medium of a holding spring carried by said frame and frictionally engaging the frame bar 82. The frame 81 is provided with an offstanding finger piece 84 and has pivotally mounted at one side thereof a tappet plate 85 normally held against an abutment 86 by a spring 87 and having a play between said abutment and a stop projection 88. The tappet plate 85, in the letter spacing movement of the car-

riage, is adapted to move against the strike finger 69 and pass such finger. In such movement the release lever 66 is oscillated to disengage it from the keeper 64 and hence permit the closing of the electrical circuit through the contacts 58 and 59.

The manual disconnection of the circuit closer may be accomplished at any time in the operation or movement of the machine through the medium of a horizontally swinging operator's disconnection lever 89 presenting a finger piece or key 90 at the front of the machine and pivotally supported at its rear end, as at 91, upon the base or frame of the typewriting machine. A holding spring 92 arranged at the pivot of the lever 89 normally holds said lever in inactive position and returns it to such position, and the said lever carries a contact lug 93 adapted to engage against a pendent strike pin 94 carried by the short arm of the contact lever 60. A lateral movement of the lug 93 against the pin 94 oscillates the lever 60 to carry the contact member 59 out of contact with the member 58 at the same time bringing the shoulder of the keeper element to a position where it may be reengaged by the catch arm of the release lever 66.

The automatic disconnection of the circuit closer is accomplished through an automatic disconnection device comprising a longitudinally movable rack member 95 and a horizontally swinging press lever 96. The lever 96 is pivotally supported intermediate its ends, as at 97, on the track frame for the carriage of the machine, and one arm of said lever engages behind the pin 94 of the contact lever 60, while the other arm of said lever 96 is provided with a fork 98 adapted to engage with the teeth of the rack bar 95. The said rack bar is slidably feathered on the longitudinally shiftable rock shaft 99 which is found in the Oliver typewriter machine, and carries the right hand marginal stop 56. Hence, in first turning and then sliding the shaft 99 to shift the position of the stop 56 in the regular way, the rack 95 will be disengaged from the fork of the lever 96 and carried with said shaft 99 as it is shifted longitudinally to place the stop 56 where desired. Upon the rocking back of the shaft 99 to normal position, the rack becomes reengaged with the fork 98 in the new adjusted position. Hence, it will be apparent that the adjustment of the rack member 95 corresponds to that of the right hand marginal stop, and therefore provides for disconnecting the circuit closer when the carriage is returned to its right hand marginal stop. The said rack member 95 has a limited longitudinal movement and is yieldingly held to its limit of movement in one direction by a thrust spring 100, and at its end adjacent to the right hand marginal stop 56, the said rack member is provided

with a terminal stop shoulder 101 adapted to be engaged by a strike projection or tappet 102 carried by the carriage, and which strike projection is preferably the guide for the operating rod 55 of the line spacing mechanism. It will thus be seen that by the time the rotation of the platen has been effected through the engagement of the rod 55 with the stop 56, the tappet 102 will have moved the rack 95 sufficiently to cause the lever 96 to press the movable contact out of contact with the fixed contact, and the reengagement of the movable contact lever with the catch 65 of the release lever 66, whereupon the electric circuit is entirely disconnected and the driving clutch thrown out of action.

In connection with the action of the line spacing mechanism, it is to be observed that there is associated with the same a lock lever 103 pivoted intermediate its ends, as at 104, upon one end of the carriage frame and normally held in inactive position through the medium of a holding spring 105 connected therewith at one side of the pivot. The lock lever 103 is provided at one side of its pivot with a short obstructing arm 106 adapted to be moved into interfering relation with the stop 38 of the pull lever 34. At the other side of its pivot, the lock lever 103 is provided with an offstanding finger 107 which lies in the path of, and is adapted to be engaged by, the usual release key lever 108 forming a part of the equipment of an ordinary Oliver typewriter machine which, when depressed, releases the ratchet wheel or spacing pinion of the carriage platen of cylinder in the usual way. When thus depressed, the said key lever 108 engages the finger 107 and rocks the lever 103 into obstructing relation to the pull lever 34 of the line spacing mechanism. By this means, a change of line may be prevented from taking place upon the return of the carriage, this being sometimes desirable, as for instance when writing on ruled paper.

When, for any purpose, the carriage is to be removed from the machine, the pull and tension tapes 26 and 27 may be conveniently held temporarily out of the way by engaging the same with the double hooked plate 109 carried by a spring-held temporary holding arm 110 pivotally mounted, as at 111, on a suitably arranged support 112.

For the purposes of illustrating the wide application of the invention to different makes of typewriting machines, there is shown in Fig. 18 of the drawings the same applied to the well known Underwood typewriting machine. Also, there is shown in connection with this application of the invention a modified construction of the circuit closer. Referring particularly to the adaptation suggested in Fig. 18, it will be observed that the pull lever 34 may simply have a direct tappet engagement 113 with

the ordinary operator's return and line spacing lever 114 forming a part of the ordinary equipment of the Underwood machine. In all other respects the carriage return and line spacing operation is the same as already described. As for the modified form of circuit closer suggested in Fig. 18 and following of the drawings, it will be observed that this circuit closer includes in its general organization the fixed and movable contact members 115 and 116 respectively, the latter being carried by a spring drawn pivotal contact lever 117 provided with a forwardly extending operator's disconnection key 118 and a laterally projecting shouldered keeper element 119, and a rearwardly projecting arm 120 having an upstanding strike finger 121. The shouldered keeper element 119 is engaged by one arm of a spring retracted angled catch lever 122, which arm of said catch lever carries an upstanding strike pin 123, while the other arm of said lever lies in the path of a tripping trigger 124 carried by a rocker piece 125 pivoted on the front marginal stop bar 126 of the Underwood typewriting machine and having a rearwardly projecting fork 127 engaging the vertically movable rack or tooth bar 128 with which the marginal stops of the Underwood machine are interlocked in the usual manner. The lower end of the trigger 124 engages in a slot 128^a provided in an operator's throw-off lever 129 having a front finger piece 130 and mounted on the base 57^a of the circuit closer. The movement of the trigger 124 against one arm of the catch lever 122 serves to release the catch lever 122 from the keeper 119 so as to permit the contact lever to carry its contact into connection with the fixed contact member 115 and thus start the motor and the driving clutch for the purposes hereinbefore explained. By swinging the lever 129 to the left, the trigger 124 may be moved to, and held in, an idle position.

The disconnection of the contacts 115 and 116 is accomplished in various ways. First, from the tabulator stop through the medium of a two part disconnection lever 131—132, the lever member 132 having a contact terminal 133 adapted to move against the upstanding strike finger 121 of the contact lever 117. Second, the upstanding strike lever 121 is adapted to be engaged by a tappet arm 134 carried upon the front guide rod 135 of the Underwood machine. This guide rod is mounted so as to have a slight longitudinal play and is held in its limit of movement in one direction by a flat thrust spring 136 and contiguous to its spring engaged end carries a stop projection 137 adapted to be engaged just in advance of the carriage reaching its right hand marginal stop with the result of effecting a longitudinal movement of said guide rod sufficiently to carry the tappet arm 134 against

the strike finger 121 so as to disconnect the movable contact lever 117. Third, this same disconnecting action is accomplished through the operator's disconnection key 118.

5 The manual closing of the circuit closer just described, from the key board, is accomplished by means of an operator's connection key lever 138 having a pivotal support at 139 and normally held in an inoperative position by a return spring 140. The lower arm of said lever 138 carries an operator's key 141, and the upstanding arm of said lever carries a pivotal spring held tappet head 142, adapted to ride against the upstanding strike pin 123 of the catch lever 122, and to trail idly back across said pin on the return movement. Hence, this lever 138 corresponds in action and function to the connection lever 77 hereinbefore described.

20 The two part lever 131-132 is normally held in inactive position through the medium of a suitably arranged holding spring 143, and the member 131 thereof is adapted to be engaged by one of the end pieces of the tabulator stop carrying frame 144 with which the Underwood machine is equipped at the rear thereof. The tabulator stop carrying frame 144 occupies the usual position on the machine frame and has a limited longitudinal movement. The said frame is also yieldingly held to its limit of movement in one direction by a return spring 145. In this connection, it will be observed that the movement of the tabulator stop carrying frame in one direction, against the tension of the return spring 145, operates the lever 131-132 in a direction for opening the contact lever 117 away from the fixed contact member and permitting the catch to become reengaged with the keeper element of the contact lever, thus effecting an automatic disconnection of the circuit closer in the tabulating operation.

Various other embodiments of the invention and various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

50 I claim:

1. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for said motor, key-controlled means for manually connecting and disconnecting the circuit closer, and adjustable means for automatically both connecting and disconnecting the circuit closer through the carriage movement, from variable positions of the latter.

2. In a typewriting machine, the carriage, a rotary driving clutch comprising a drive pulley provided with a central clutch device and a normally idle winding spindle adapted to be engaged by the clutch device and rota-

table therewith, a carriage return connection between said spindle and the carriage, and operating means for the clutch.

3. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for said motor, means for closing said circuit closer, a device for holding the circuit closer open, and means for manually and automatically releasing said device to permit the closing of the circuit closer.

4. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer, means for closing the circuit closer, means for holding the circuit closer open, a key controlled operator's connection device operatively connected to the circuit closer, and a right hand marginal connector adjustably fitted to the carriage and operatively related to the circuit closer.

5. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for the motor, means for closing the circuit closer, means for holding the circuit closer open, means for manually and automatically releasing the circuit closer to permit the closing thereof, an operator's disconnection device operatively related to the circuit closer, and a carriage controlled automatic disconnecter operatively related to the circuit closer.

6. In a typewriting machine, the carriage, a rotary driving clutch having a double winding spindle, tape connections respectively between opposite end portions of the carriage and the separate portions of the winding spindle, an operating motor, and controlling means for the motor.

7. In a typewriting machine, the carriage, a rotary driving clutch having a double winding spindle, the line spacing mechanism carried by the carriage including a pull lever, a pull tape connection between said lever and one portion of the winding spindle, a tension tape connection between the other portion of the winding spindle and the opposite end of the carriage, an operating motor, and controlling means for the motor.

8. In a typewriting machine, the carriage, line spacing mechanism including a pull lever, a spring pressed stretcher lever arranged at the end of the carriage opposite the pull lever, a rotary driving clutch having a normally idle winding spindle having separate tape connections respectively with said opposite levers, an operating motor, and controlling means for the motor.

9. In a typewriting machine, the carriage, line spacing mechanism carried by the carriage and including a pull lever, a pivotal lock lever mounted at one end of the carriage and movable into an obstructing relation with respect to said pull lever to prevent the

operation of the line spacing mechanism, and a carriage return mechanism having an operative connection with said pull lever.

10. In a typewriting machine, the carriage, the line spacing mechanism carried by the carriage and including a spring held pull lever, a pivotally mounted spring held stretcher lever arranged in the carriage in opposition to the pull lever of the line spacing mechanism, a rotary driving clutch having a double winding spindle, pull and tension tapes respectively connected with the pull and stretcher levers and winding and unwinding on the separate portions of said spindle, an operating motor, and controlling means for said motor.

11. In a typewriting machine, the carriage, a rotary driving clutch having opposing pull and tension connections with the carriage, an operating motor, and controlling means for the motor.

12. In a typewriting machine, the carriage, a driving clutch comprising a winding spindle having a friction cup, and a drive pulley carrying a centrifugal clutch device consisting of a pair of duplicate reversely arranged spring retracted clutch levers having clutch shoe segments lying within and engaging said friction cup, and duplicate reversely arranged centrifugal weight levers pivoted to the drive pulley, each weight lever having a bearing engagement with one of the clutch levers for opening the same by centrifugal force, a carriage return connection between the winding spindle and the carriage, and operating means for the clutch.

13. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for said motor having spring closed contacts, a lever carrying a movable contact and having a keeper element, a spring pressed catch engaging said keeper element, and means for manually and automatically releasing said catch.

14. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for said motor having spring closed contacts, a contact lever carrying a movable contact and provided with a keeper element, a spring pressed release lever having a catch arm engaging said keeper element and a strike finger, and an operator's key controlled connection device operatively related to said release lever.

15. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for the motor having spring closed contacts, a contact lever carrying a movable contact and having a keeper element, a spring pressed release lever engaging said keeper element and provided at

its upper end with a strike finger, a key controlled operator's connection device having an operative engagement with the lower end portion of the release lever, and a right hand marginal connector adjustably fitted to the carriage and having a pivotally mounted tappet plate operatively engaging said strike finger when the carriage reaches the end of the predetermined line.

16. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for the motor having spring closed contacts, a contact lever carrying a movable contact and having a keeper element, a spring pressed release lever engaging said keeper element and having an engaging shoulder, a key controlled operator's connection device consisting of a rocking lever carrying a pivotal weighted trigger having a presser foot engaging with said release lever, and a spring-returned key-bearing lever having an operative connection with said rocking lever.

17. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for the motor having spring closed contacts, a contact lever carrying a movable contact member, a catch for said contact lever, means for manually and automatically releasing said catch for connecting the circuit closer, an operator's disconnection lever operatively related to said connected lever, and a carriage controlled automatic disconnecter operatively related to said contact lever.

18. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating motor, a circuit closer for the motor having spring closed contacts, a contact lever carrying a movable contact, a catch for the contact lever, means for manually and automatically releasing the catch, and an automatic disconnecter consisting of a press lever operatively related to the contact lever for moving the same to a disconnected position, and a longitudinally movable and adjustable rack member adjustably engaging the press lever and having a right hand terminal stop adapted to be engaged by a fixed projection on the carriage.

19. In a typewriting machine, the carriage, a driving clutch having a carriage return connection, an operating member, a circuit closer for the motor having spring closed contacts, a contact lever carrying a movable contact, a catch for the contact lever, means for manually and automatically releasing the catch, and an automatic disconnecter consisting of a press lever operatively related to the contact lever for moving the same to a disconnected position, and a spring pressed longitudinally slidable and longitu-

dinally adjustable rack member adjustably engaging with the press lever and provided with a right hand terminal stop engaged by a fixed projection on the carriage.

- 5 20. In a typewriting machine, the carriage, carriage return mechanism having oppositely extending tapes respectively connected with opposite end portions of the carriage, and a temporary tape holder consist-

ing of a spring held double hook for receiving the terminals of both tapes.

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

GMO. TREJO.

Witnesses:

HERAN D. VILLA,
JOSE DE LA LUIZ GASCA.