

No. 883,401.

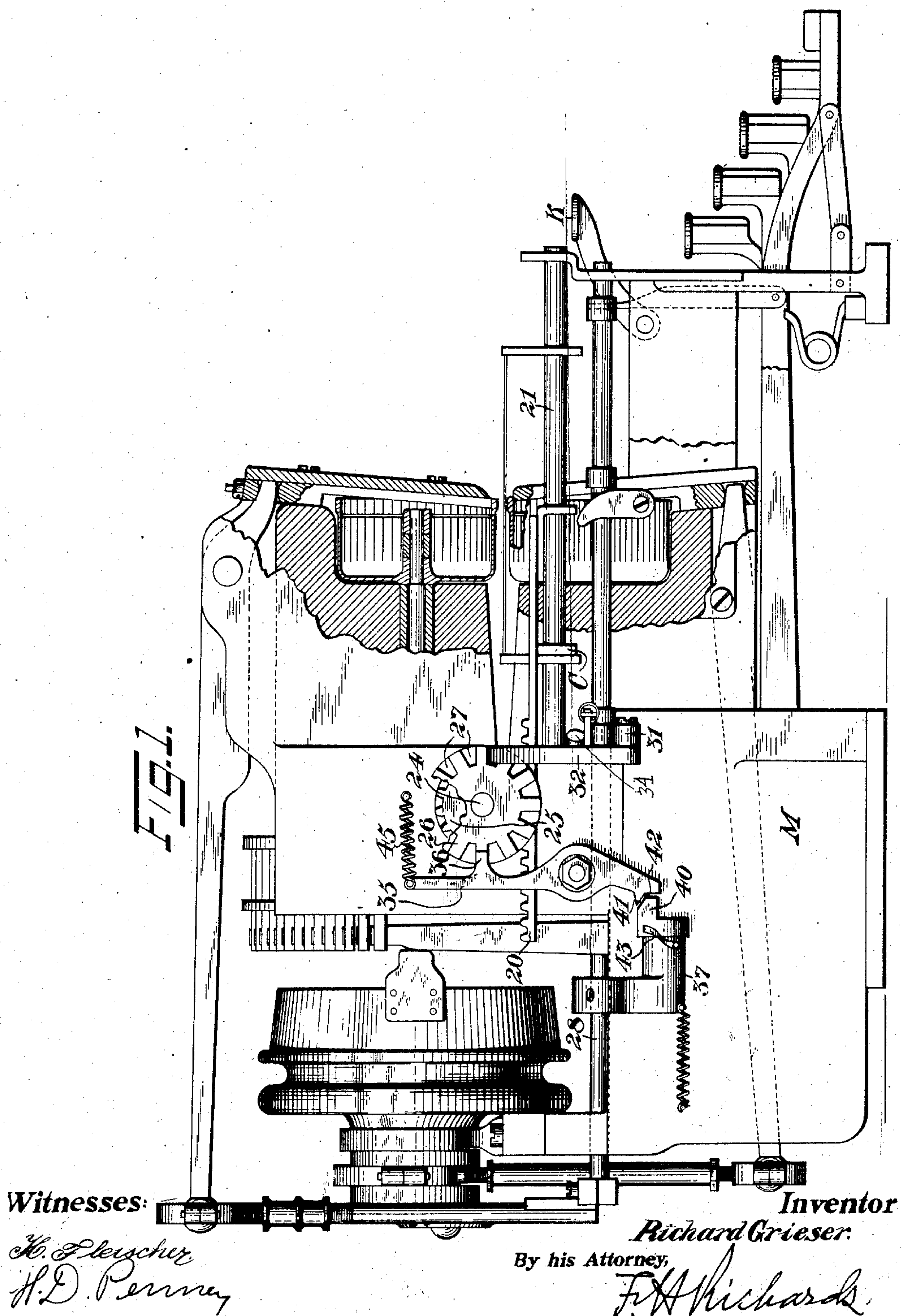
PATENTED MAR. 31, 1908.

R. GRIESER.

CARRIAGE OPERATING MECHANISM FOR RELIEFOGRAPHS.

APPLICATION FILED JAN. 29, 1907.

2 SHEETS—SHEET 1.



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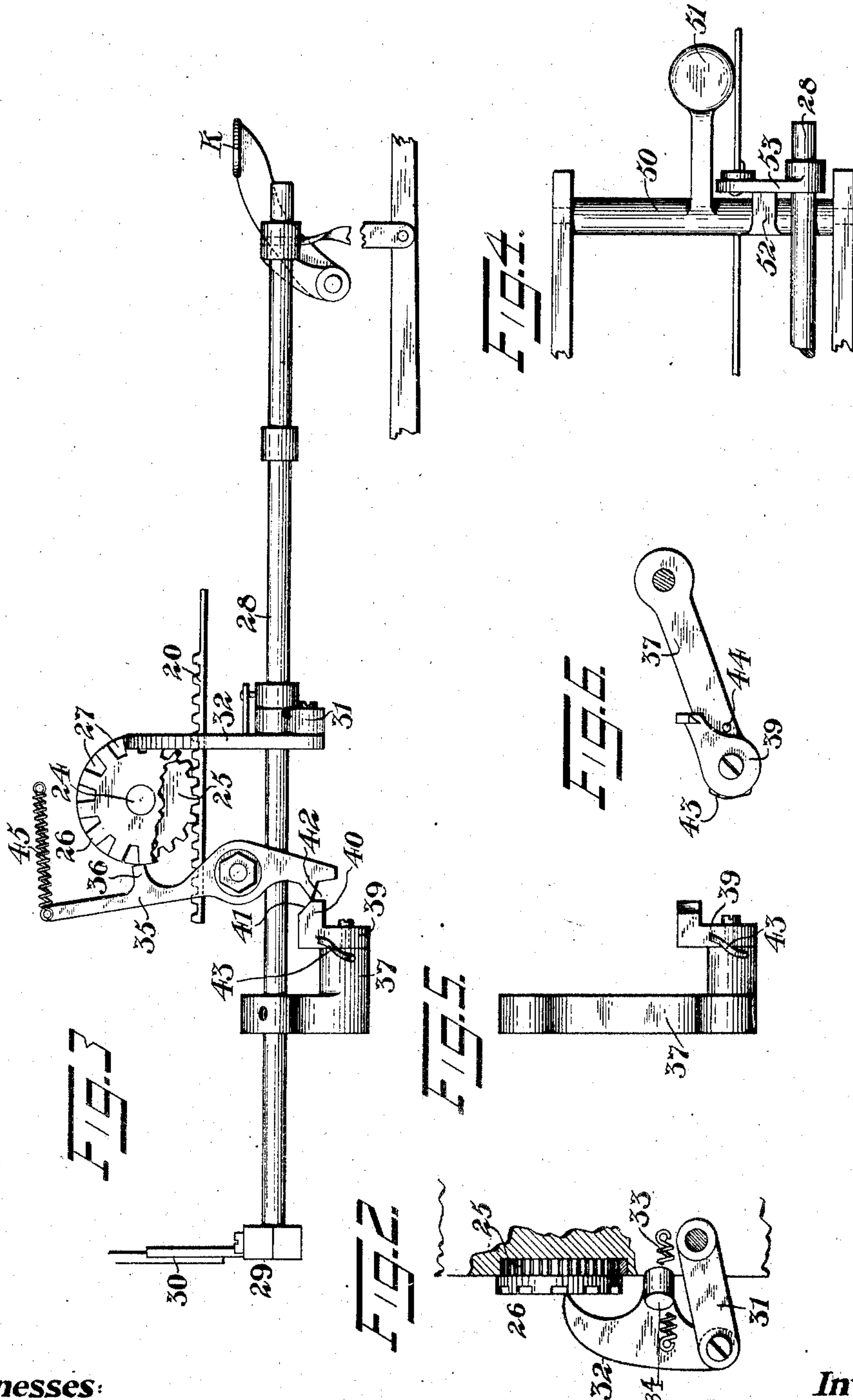
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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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CARRIAGE-OPERATING MECHANISM FOR RELIEFOGRAPHS.

No. 883,401.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed January 29, 1907. Serial No. 354,706.

To all whom it may concern:

Be it known that I, RICHARD GRIESER, a citizen of the United States, residing in the borough of Manhattan, city and county of New York, and State of New York, have invented certain new and useful Improvements in Carriage-Operating Mechanism for Reliefographs, of which the following is a specification.

This invention has reference to machines in the nature of typewriting machines, wherein by the operation of a set of keys corresponding to various letters, numbers or other characters, such characters are printed or impressed upon a suitable printing or writing surface or member.

The invention has special application to the form of machines for performing such work by means of die members that are in pairs, male and female, for the purposes of raising or indenting such characters on sheet metal, or other impressionable material.

The invention is especially designed for the machines termed reliefographs, and patented to W. E. Crane, May 11, 1897, numbers 582,177 and 582,178. In these reliefographs, there are a pair of cylindrical members carrying the male and female dies; and these members are rotated to bring the corresponding characters on each into a position a short distance apart. The sheet metal is inserted between such positioned die members, and thereupon one or both of such members are moved toward the other, engaging the sheet metal between them to raise such character on the metal. The metal plate must be shifted after each impression in the manner of a typewriter carriage movement, so that the impressions align to produce the desired writing. There must also be a line shift of the plate to produce the usual succession of lines of writing. In these machines the sheet metal is fed in the form of a long strip or web, and where used for printing addresses, containing about five or six lines, the web must be severed between each address. And for facilitating the removable connection of a number of these address plates for use in a printing machine, the plates are removably hinged together. By this means any plate can be joined together. A construction of this

kind is illustrated in the United States patent application filed September 8, 1905, Serial No. 277,618.

One object of the invention is to provide an improved means for operating the carriage for character spacing, and which means will securely lock the carriage from movement except during the operative engagement of the actuating pawl or similar member.

Another object is to provide means for readily throwing such locking member and actuating member out of engagement, whereby the carriage is free to be shifted by hand or other means.

With these objects in view and others, the invention comprehends the construction hereinafter set forth with reference to the accompanying drawings and particularly pointed out in the claims.

In the drawings showing embodiments of my invention as applied to a reliefograph, Figure 1 represents a side elevation. Fig. 2 shows in detail the drive pawl. Fig. 3 is a view of certain parts of the carriage shifting mechanism shown in Fig. 1. Fig. 4 shows enlarged a plan view of the lever mechanism for shifting the rock bar operating the carriage shifting mechanism. Fig. 5 shows in plan the adjusting pawl and its supporting arm; and Fig. 6 shows the same parts in end view.

The carriage member, denoted by C, is moved from a rack 20, secured thereto, the carriage being supported for reciprocation in any suitable manner, such for instance, as being slidable on guide rods 21, only one being shown; the rack 20 extending parallel with such rods. On the frame of the machine, denoted generally by M, is a pin 24 pivotally carrying a gear 25 engaging the rack 20, the carriage being advanced by rotation of the shaft and gear. A wheel 26, in the nature of a ratchet wheel and performing such function, is fast on the shaft 24. In the construction shown the ratchet wheel 26 is provided with crown teeth 27, the opposing sides of adjacent teeth being parallel. A rock shaft 28 extends along the frame and is supported in suitable bearings. By any suitable mechanism this shaft is rocked at each operation of one of the keys K to produce an operation of the impression devices, or by

the operation of a similar key to produce spacing of the machine, in the manner usual with typewriting machines. Such operation is not shown in the present construction, but is set forth in the said patents to Crane. For the present purposes the rock shaft 28 has an arm 29 at its rear end that is engaged by a member 30 reciprocated at each said key operation.

On the rock shaft 28 is secured an arm 31 that carries pivoted thereto a drive pawl 32, whose extremity is drawn into engagement with the crown gear 26 by a coil spring 33. When the shaft is rocked the lever 31 will move the pawl upward and the latter will engage one of the teeth 27 and turn the gear on the shaft 26. But when the shaft 28 is rocked back to its normal position, the pawl 32 will ride back a sufficient distance to engage the adjacent tooth upon the next operation of the rock shaft. In the form shown, the pawl must move upward a short distance before engaging the tooth 27 and thereupon will turn the gear to advance the rack 20. The rock shaft 28 is supported for endwise movement a short distance by suitable means, and during such movement the drive pawl 32 will engage a stop pin 34, that is inclined outward, to shift the pawl outward away from engagement with the crown gear. Thereupon the gears will permit the free movement of the rack 20 and the carriage.

When the rock shaft has turned sufficient to cause the pawl 32 to shift the gears the required distance and then the pawl moves back to its former position, during this latter return movement, the gears and rack bar would be free to shift their position. To prevent such movement of the gears, a stop pawl 35 is suitably pivoted on the frame and has its end 36 of sufficient size to fit between adjacent teeth 27, and thereby lock the gears from movement. It is consequently necessary to shift the stop pawl as soon as the drive pawl 32 engages the tooth 27 to release the crown wheel for movement. But immediately upon the pawl 32 completing its advancing movement, the stop pawl 36 is released and caused to permit it to enter the next space between adjacent teeth, and lock the gear against movement; during the return of the pawl 32, and until the next advancement of this pawl to engage the succeeding tooth.

In the construction illustrated a bent arm 37 is fast on a rock shaft 28 and carries a dog 39 pivoted at one end, that swings on an axis parallel with the shaft 28. The dog 39 projects toward the shaft 28 and has an arm 40 on one end, whose beveled edge 41 lies normally beneath a beveled abutment 42 on the lower end of the pawl 35. A spring 43 presses the dog 39 against the stop pin 44 on the arm 37 and normally holds it in this po-

sition. When the rock shaft 28 is swung to move the arm 37 upward, the engagement between the dog face 41 and the stop pawl 35 will swing the pawl from the position shown in Fig. 1 to that shown in Fig. 3, which will swing the teeth 36 of the stop pawl out of engagement with the gear 26. This operation is timed relative to the movement of the actuating pawl 32 so that the tooth 36 disengages the gear just as, or before, the actuating pawl 32 engages one of the teeth 27 to advance the gear. The continued swing of the rock shaft 28 to turn the gear, will cause a further upward movement of the dog 39, that will pass in front of the projection 42 on the stop pawl 35, and this end of the stop pawl will ride beneath the dog, the stop pawl 35 being returned to normal position by the spring 45. The stop pawl being released by the dog, its tooth 36 will be pressed against the outer end of the adjacent teeth on the crown gear, and at the limit of the upward movement of the actuating pawl 32, the space between adjacent teeth will be brought to register with the tooth 36 on the pawl, and it will be drawn into such position by the spring 45; thereby locking the crown gear against movement as soon as the actuating pawl has swung the gear to its full limit. And this stop pawl will remain in such position during the return movement of the actuating pawl; and in fact will hold it until the next advance of the actuating pawl brings it into engagement with the succeeding teeth. On the return movement of the dog 39, it will engage the upper portion and outer portion of the stop 42 on the lower end of the stop pawl and its spring will permit it to rise slightly and ride over this projection, without swinging the stop pawl; until it returns to its normal position. By this construction it will be seen that the crown gear 26 is securely locked until the engagement thereof by the actuating pawl 32, whereupon it is released. But as soon as the crown gear is advanced the full movement imparted by the pawl 32, the stop pawl again engages the crown gear and locks it in position until next moved.

Suitable means are provided for shifting the carriage by the operation of a lever or arm, in the form shown comprising a short rock shaft 50 from which extends an operating lever 51, and also a crank arm 52. A crank 53 fast on the rock shaft 28 is engaged by the end of the arm 52 when the shaft 50 is rocked, thereby shifting the rock shaft 28. A spring 54 secured between the frame and the arm 37 serves to retract the rock shaft and retain it in its normal position.

When the carriage reaches the limit of its forward movement, a projecting portion engages a lever 56 pivoted on the frame and rocks the lever to engage a stop collar 57 fast on the rock shaft and this latter will shift the

rock shaft forward to disengage the drive pawl and the stop pawl, thereby preventing operation of the latter.

Having described my invention I claim:

5 1. The combination with a carriage supported to be shifted, of a rotary member arranged to advance the carriage, a rock shaft, means connected with the rock shaft arranged to be advanced by the rock shaft to turn the
10 rotary member, a stop member arranged to engage and lock the rotary member, means for yieldably retaining the stop member in engagement with the rotary member, and means connected with the rock shaft ar-
15 ranged to move the stop member out of engagement with the rotary member upon the initial advance movement of said means to turn the rotary member, said means being also arranged to release the stop member to
20 permit it to return to locking position and to retain the rotary member locked until the next advance movement of said means.

2. The combination with a carriage supported to be shifted, of a ratchet wheel ar-
25 ranged to advance the carriage, a rock shaft, a drive pawl connected with the rock shaft and arranged to be advanced upon oscillation of the rock shaft to turn the ratchet wheel, a stop pawl normally engaging the ratchet
30 wheel to lock it against movement, means for yieldably retaining the stop pawl engaging the ratchet wheel, and means connecting the stop pawl with the rock shaft and arranged to move the stop pawl out of engagement
35 with the ratchet wheel upon the initial movement of the drive pawl to turn the ratchet wheel, such means being also arranged to permit the stop pawl to return to normal position to lock the ratchet wheel at the limit of
40 the actuating movement of the drive pawl and to retain the ratchet wheel locked during the entire return movement of the drive pawl.

3. The combination of a shiftable carriage,
45 a ratchet wheel, means for advancing the carriage from the ratchet wheel, a rock shaft, means on the rock shaft arranged to engage the ratchet wheel to advance it upon the swinging of the rock shaft, a stop pawl ar-
50 ranged to engage the ratchet wheel, a spring normally holding the pawl in engagement with the ratchet wheel, a carrier fast on said rock shaft, a dog pivoted on the carrier and arranged to engage the stop pawl, said dog
55 and stop pawl being organized whereby upon the initial movement the pawl will be rocked out of engaging position with the ratchet wheel, and thereupon the dog will release the stop pawl permitting it to be returned by its
60 spring to engage the ratchet wheel upon the end of the advance movement of the actuating means.

4. The combination of a shiftable carriage, a ratchet wheel, means for advancing the

carriage from the ratchet wheel, a rock 65 shaft, an arm fixed on the shaft, a drive pawl pivoted on said arm and arranged to engage the ratchet wheel to advance it upon the swinging of the rock shaft, a spring tending to hold the pawl in engagement with the
70 ratchet wheel, a stop pawl arranged to engage the ratchet wheel, a spring normally holding the stop pawl in engagement with the ratchet wheel, a carrier fast on said rock shaft, a dog pivoted on the carrier and arranged to en-
75 gage the stop pawl, said dog and stop pawl being organized whereby upon the initial movement of the drive pawl the stop pawl will be rocked out of engaging position with the ratchet wheel, and thereupon the dog
80 will release the stop pawl permitting it to be returned by its spring to engage the ratchet wheel at the end of the advance movement of the drive pawl.

5. The combination of a shiftable car- 85 riage, a ratchet wheel, means for advancing the carriage from the ratchet wheel, a rock shaft, an arm fixed on the shaft, a drive pawl pivoted on said arm and arranged to engage the ratchet wheel to advance it
90 upon the swinging of the rock shaft, a spring tending to hold the pawl in engagement with the ratchet wheel, a stop pawl arranged to engage the ratchet wheel, a spring normally holding the stop pawl in engage-
95 ment with the ratchet wheel, a carrier fast on said rock shaft, a dog pivoted on the carrier and arranged to engage the stop pawl, a stop on the carrier, a spring holding the dog normally against the stop, said dog and stop
100 pawl being organized whereby upon the initial movement of the drive, the stop pawl will be rocked out of engagement with the ratchet wheel, and upon further advance of the drive pawl the dog will swing and release the stop
105 pawl permitting it to be returned by its spring to engage the ratchet wheel upon the end of the advance movement of the drive pawl.

6. The combination of a shiftable carriage, 110 a ratchet wheel, means for advancing the carriage from the ratchet wheel, a rock shaft, an arm fixed on the shaft, a drive pawl pivoted on said arm and arranged to engage the ratchet wheel to advance it upon the swinging
115 of the rock shaft, a spring tending to hold the pawl in engagement with the ratchet wheel, a stop pawl arranged to engage the ratchet wheel, a spring normally holding the stop pawl in engagement with the ratchet wheel,
120 a carrier fast on said rock shaft, a dog pivoted on the carrier, a stop on the carrier, a spring holding the dog normally against the stop the stop pawl having an inclined shoulder, the dog having an inclined shoulder in posi-
125 tion to engage the shoulder on the stop pawl to rock the pawl, said dog and stop pawl being organized whereby upon the initial

movement the drive pawl and stop pawl will be rocked out of engagement with the ratchet wheel, and upon further advance of the drive pawl the dog will shift and release the pawl permitting it to be returned by its spring to engage the ratchet wheel at the end of the advance movement of the drive pawl.

7. The combination of a shiftable carriage, a ratchet wheel, means for advancing the carriage from the ratchet wheel, a rock shaft, an arm fixed on the shaft, a drive pawl pivoted on said arm and arranged to engage the ratchet wheel to advance it upon the swinging of the rock shaft, a spring tending to hold the pawl in engagement with the ratchet wheel, a stop pawl arranged to engage the ratchet wheel, a spring normally holding the stop pawl in engagement with the ratchet wheel, a carrier fast on said rock shaft, a dog pivoted on the carrier and arranged to engage the stop pawl, a stop on the carrier, a spring holding the dog normally against the stop, said dog and stop pawl being organized whereby upon the initial movement of the drive pawl, the stop pawl will be rocked out of engagement with the ratchet wheel, and upon further advance of the drive pawl the dog will swing and release the stop pawl permitting it to be returned by its spring to engage the ratchet wheel upon the end of the advance movement of the drive pawl, said rock shaft being endwise movable, and means for causing the said pawls to disengage on endwise movement of the rock shaft.

8. The combination with a carriage supported to be shifted, a ratchet wheel arranged to advance the carriage, a rock shaft endwise movable, a drive pawl connected with the rock shaft and arranged to turn the ratchet wheel upon oscillation of the rock shaft, a stop pawl arranged to engage the ratchet wheel, means connecting the stop pawl with the rock shaft arranged to move the stop pawl out of engagement with the ratchet wheel upon the engagement of the drive pawl to turn the ratchet wheel and also arranged to permit the stop pawl to return to normal position and lock the ratchet wheel at the limit of movement of the drive pawl, and means for shifting both pawls out of position for engagement with the ratchet wheel permitting free movement of the carriage.

9. The combination with a carriage supported to be shifted, a ratchet wheel arranged to advance the carriage, a rock shaft endwise movable, a drive pawl connected with the rock shaft and arranged to turn the ratchet wheel upon oscillation of the rock shaft, a stop pawl arranged to engage the ratchet wheel, means connecting the stop pawl with the rock shaft arranged to move the stop pawl out of engagement with the ratchet wheel upon the engagement of the drive pawl to turn the

ratchet wheel and also arranged to permit the stop pawl to return to normal position and lock the ratchet wheel at the limit of movement of the drive pawl, and means for causing both pawls to disengage the ratchet wheel on movement endwise of the rock shaft.

10. The combination with a carriage supported to be shifted, of means for advancing the carriage intermittently including a member having a reciprocatory movement, and means operably connecting said means and organized to lock the carriage against movement during the entire return movement and during a part of the advance movement of said reciprocatory member.

11. The combination with a carriage supported to be shifted, of means for advancing the carriage intermittently including a member having a reciprocatory movement, means operably connecting said means and organized to lock the carriage against movement except during a part of the advance movement of said reciprocatory member, and means arranged to shift both the locking means and also the reciprocatory means out of position for engagement, thereby permitting free movement of the carriage.

12. The combination with a carriage supported for movement, and a rock shaft, endwise movable of means operably connecting the rock shaft and the carriage arranged to advance the carriage at each oscillation of the rock shaft, and locking means connected between the rock shaft and the carriage arranged to lock the carriage against movement except during a portion only of the advance movement of said operating means.

13. The combination with a carriage supported for movement, and a rock shaft endwise movable, of means operably connecting the rock shaft and the carriage arranged to advance the carriage at each oscillation of the rock shaft, and locking means connected between the rock shaft and the carriage arranged to lock the carriage against movement except during a portion of the movement of said operating means between the rock shaft and the carriage, said mechanism being arranged to be disengaged from the carriage by endwise movement of the rock shaft, thereby permitting free movement of the carriage.

14. The combination with a carriage supported for movement, and a rock shaft endwise movable, of means operably connecting the rock shaft and the carriage arranged to advance the carriage at each oscillation of the rock shaft, and locking means connected between the rock shaft and the carriage arranged to lock the carriage against movement except during a portion of the movement of said operating means between the rock shaft and the carriage, said mechanism

being arranged to be disengaged from the carriage by endwise movement of the rock shaft, thereby permitting free movement of the carriage, and a rock arm operably connected with the rock shaft arranged to shift the rock shaft endwise to effect said release of the carriage.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 26th day of January, 1907.

RICHARD GRIESER.

Witnesses:

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