

973,844.

E. E. BARNEY.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 23, 1909.

Patented Oct. 25, 1910.
4 SHEETS—SHEET 1.

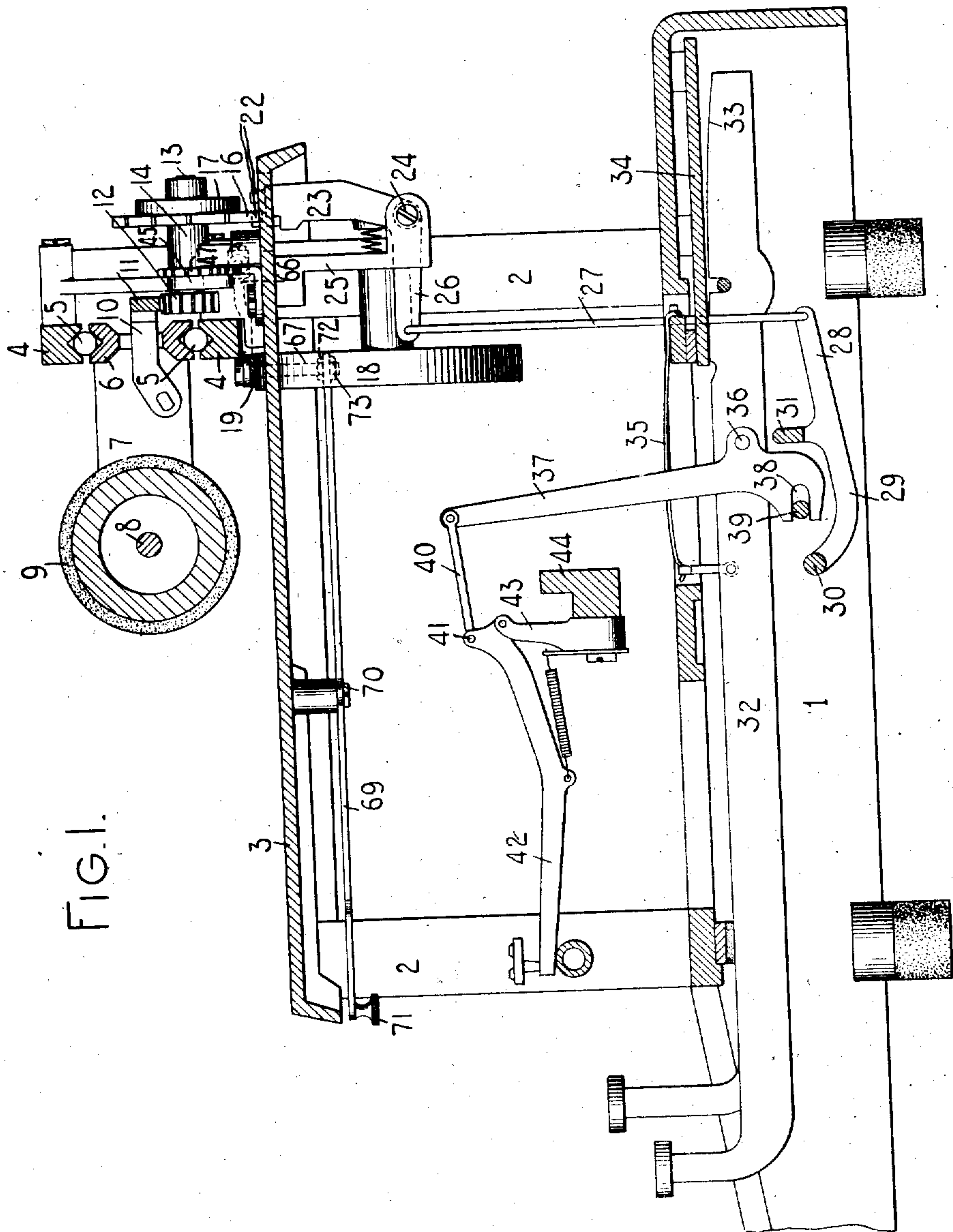


FIG. 1.

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Charles Smith

INVENTOR:

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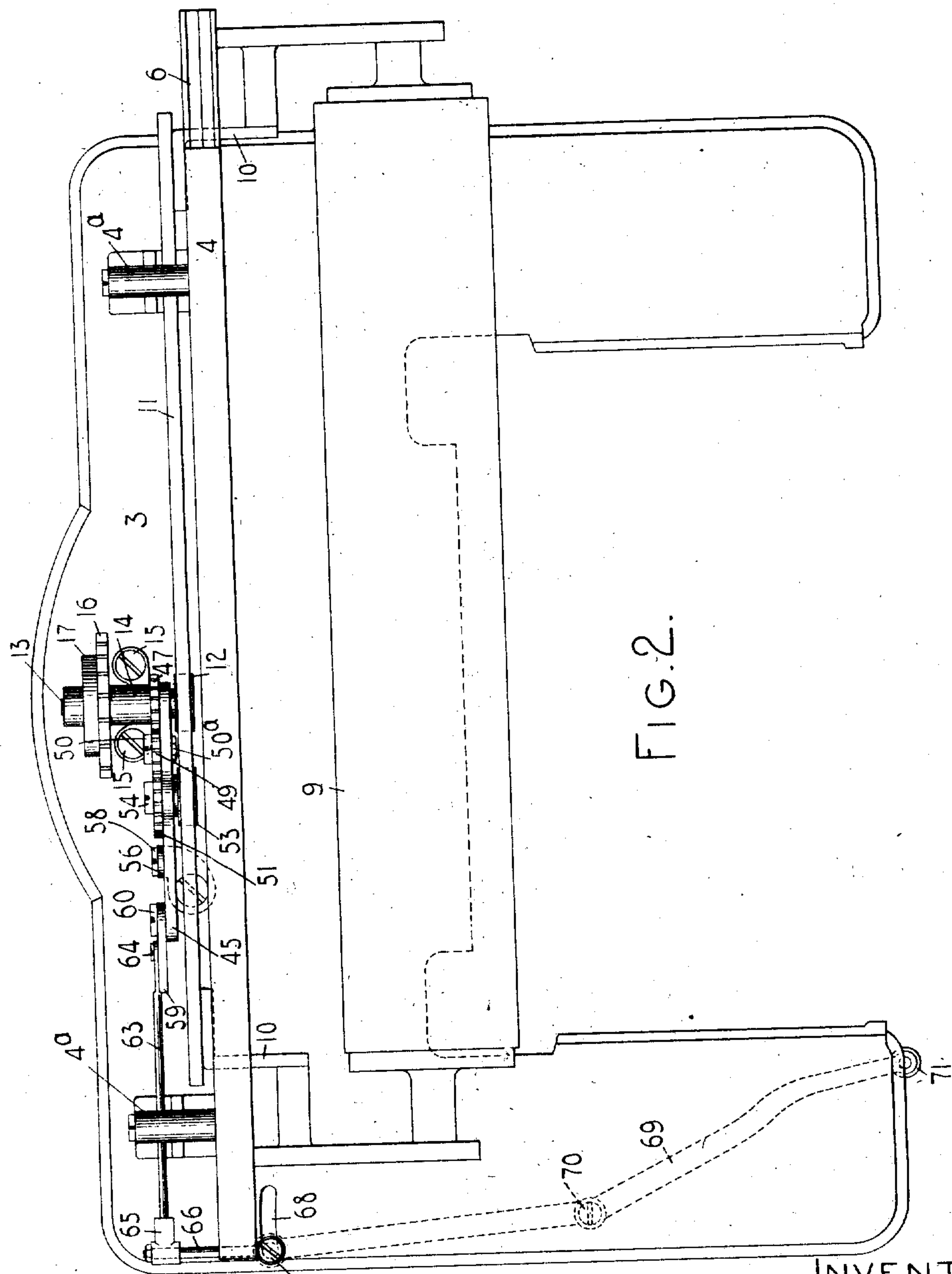
By Jacob Felt

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4 SHEETS—SHEET 2.



WITNESSES: 67

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4 SHEETS—SHEET 3.

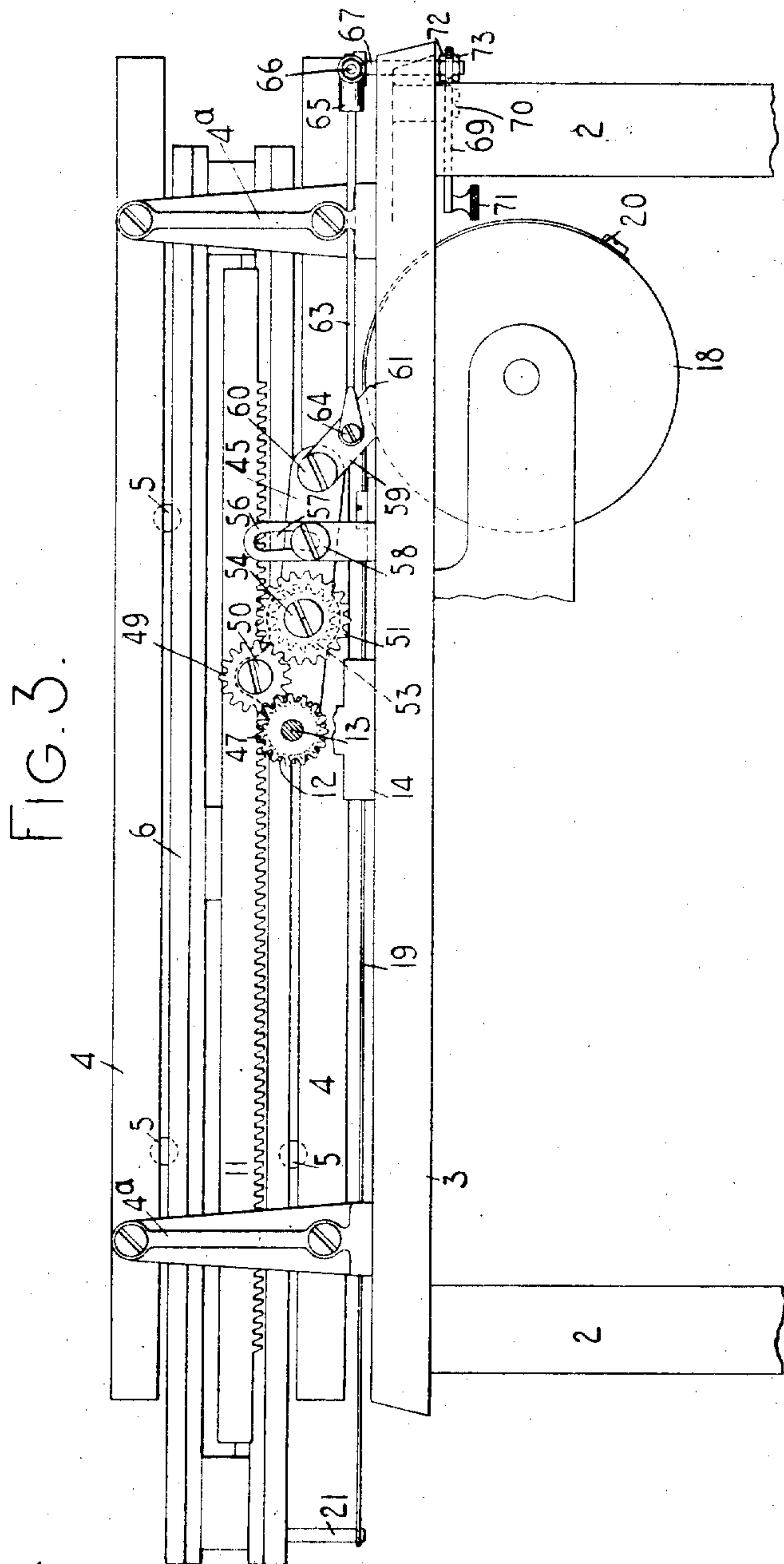


FIG. 3.

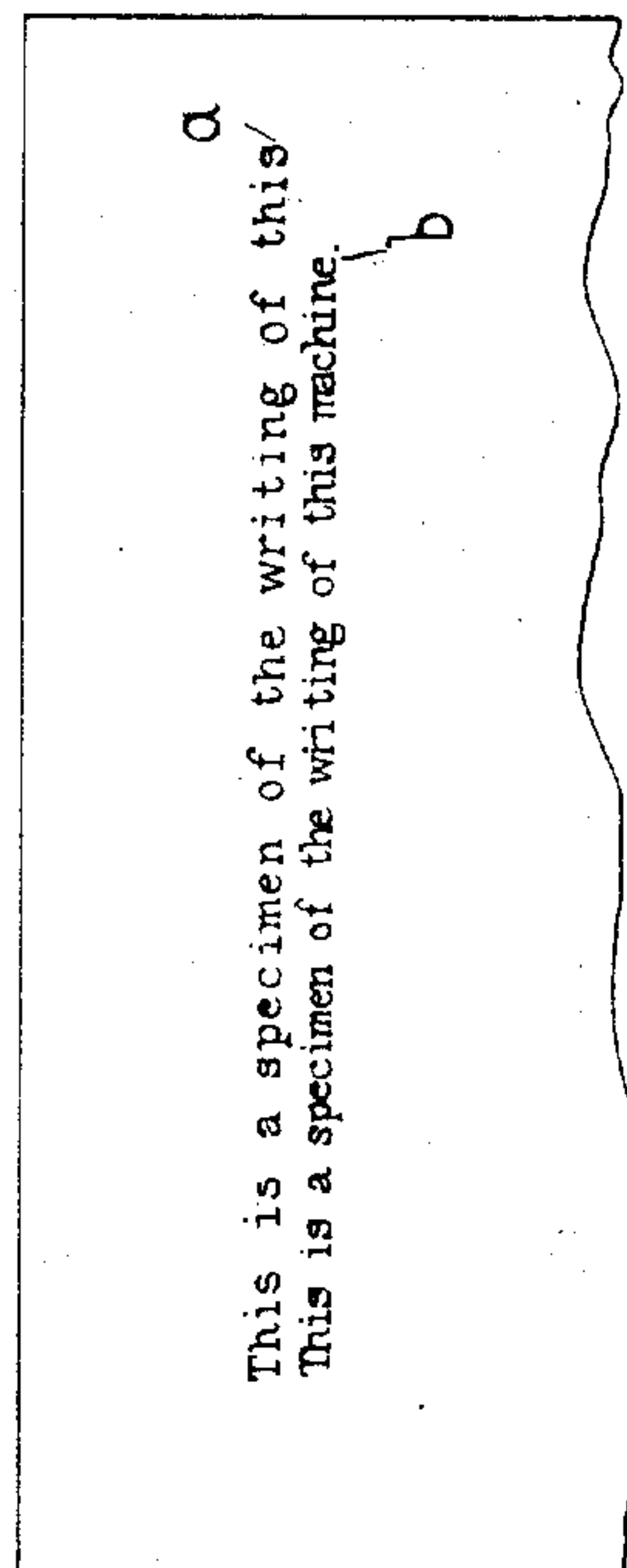


FIG. 4.

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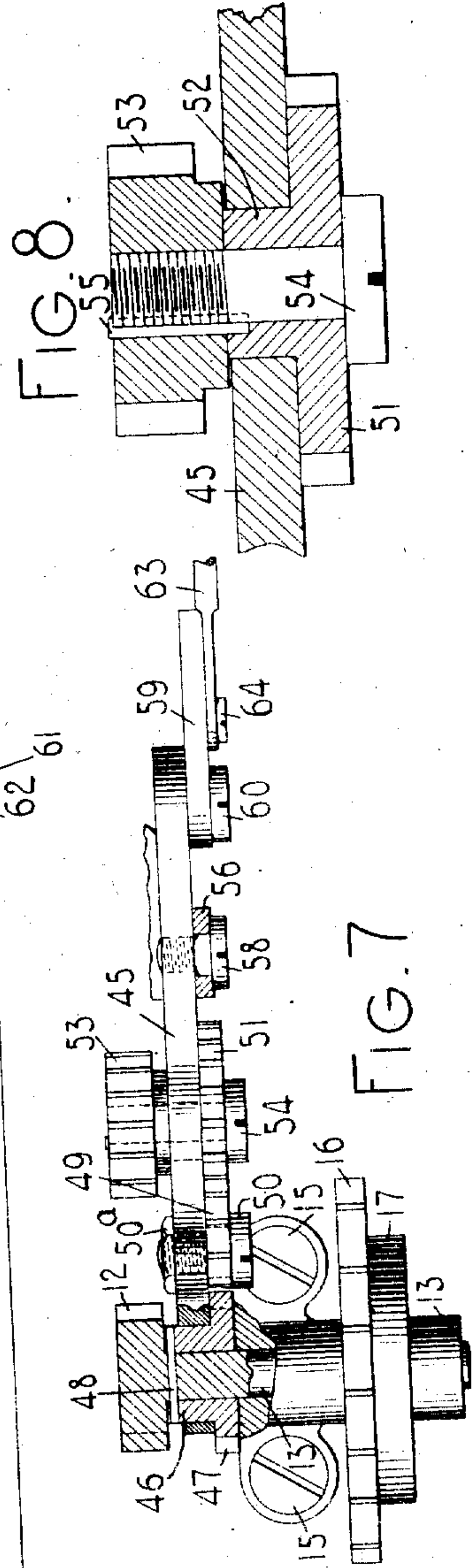
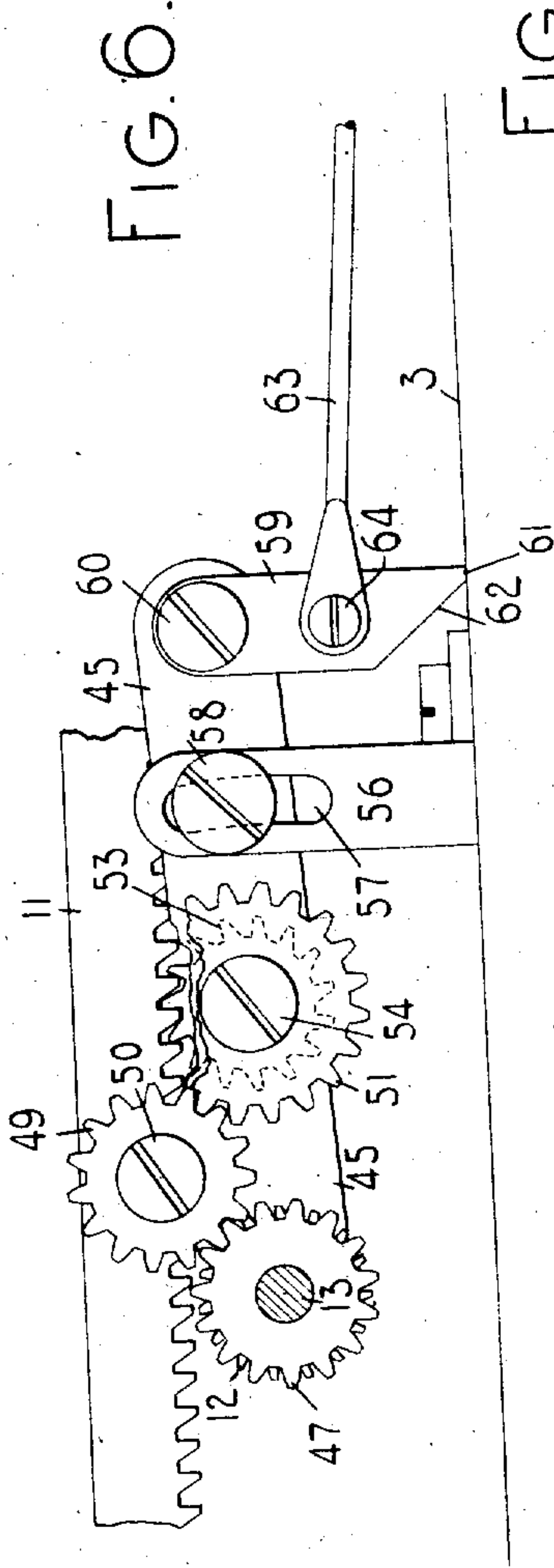
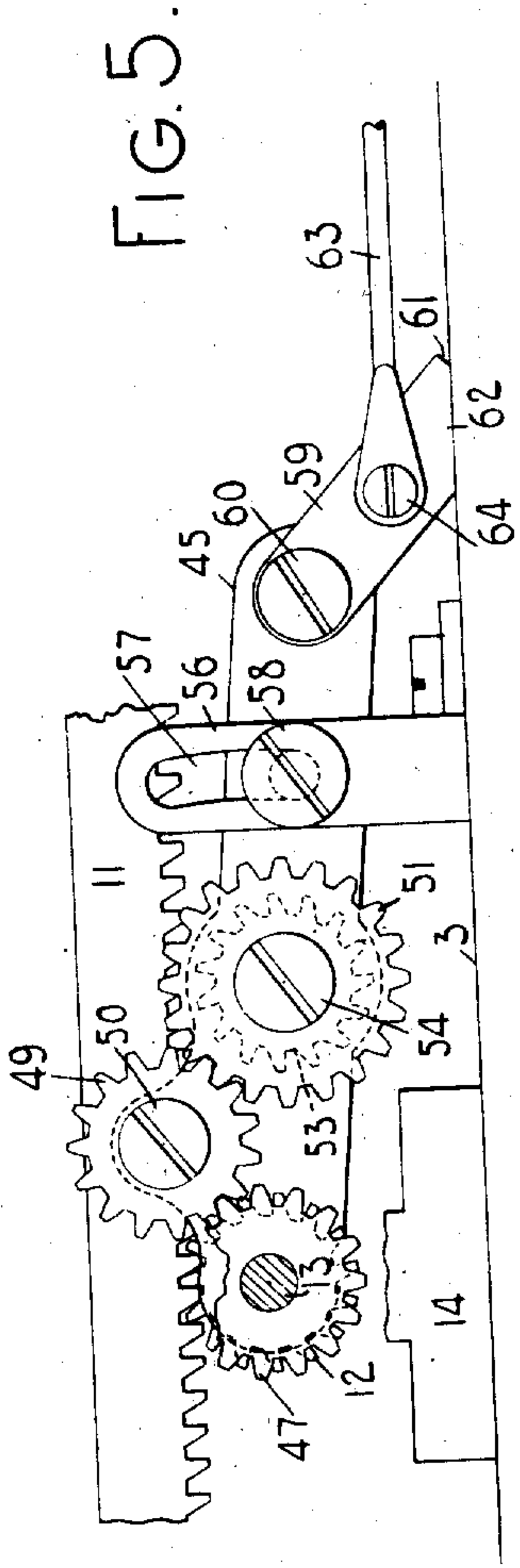
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4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWIN E. BARNEY, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-
WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

973,844.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed April 23, 1909. Serial No. 491,746.

To all whom it may concern:

Be it known that I, EDWIN E. BARNEY, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to variable carriage feed mechanism.

The main object of my invention is to provide simple and efficient carriage feed mechanism which may be regulated at will to afford one or another character of letter spacing as may be desired.

A further object of my invention is to provide a variable carriage feed mechanism of the character specified above in which the change from one width of letter space feed to another may be effected without altering the action of the carriage feed devices proper or changing them in any manner.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be described in the following specification and set forth in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a central, vertical, fore and aft sectional, view of a typewriting machine embodying my invention; only so much of the machine being shown as is necessary to illustrate my invention. Fig. 2 is a plan view of the same. Fig. 3 is a fragmentary rear elevation of the same, the view showing the upper portion only of a typewriting machine. Fig. 4 is a fragmentary face view of a sheet showing specimens of the work produced on the machine under different conditions. Fig. 5 is an enlarged detail rear elevation with parts in section and parts broken away of the transmitting means between the carriage and the escapement mechanism and the means for adjusting said transmitting means; the parts in this view being shown adjusted to afford ordinary letter spacing as indicated in the specimen *a* in Fig. 4. Fig. 6 is a view that corresponds to Fig. 5 except that the parts are shown adjusted to afford a spacing such as that represented at *b* in Fig. 4. Fig. 7 is a plan view of the parts represented in

Figs. 5 and 6 with parts in section and parts broken away. Fig. 8 is an enlarged detail transverse sectional view showing the means for mounting certain of the gears on the carrier.

I have shown my invention embodied in a Monarch machine, although it should be understood that the invention is applicable to various styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Fixed guide rails 4 are secured on brackets 4^a fixed to the top plate of the machine, the guide rails being grooved on opposite faces for coöperation with anti-friction balls or rollers 5. These rollers 5 are likewise received in opposite grooved faces of a guide or slide bar 6 which constitutes the rear cross-bar of the carriage from which forwardly extending end bars 7 project, the end bars having bearing openings for a shaft 8 which supports a cylindrical platen 9. The carriage is adapted to travel in the usual manner from side to side of the machine and is provided with the usual arms 10 which are pivoted to the carriage and carry a feed rack 11. The feed rack coöperates with a feed pinion 12 formed on the forward end of a shaft 13 mounted in a bearing bracket 14 fixed to the top plate of the machine by screws 15. An escapement wheel 16 is operatively connected to the shaft 13 by the usual pawl and ratchet mechanism contained within a drum 17 so that the shaft 13 is free to turn independently of the escapement wheel during the movement of the carriage from left to right, but the escapement shaft 13 and feed pinion 12 rotate together as the carriage moves to the left under control of the escapement. A spring drum 18 is connected to the carriage by a band 19 secured at one end 20 to the drum and at the opposite end to a pin 21 which projects from the carriage to move the carriage in the letter feed direction. Feed dogs 22 coöperate with the escapement wheel in the usual manner, the feed dogs being carried by a dog rocker 23 pivoted at 24 to a bracket 25 secured to the top plate of the machine. A forwardly extending arm 26 projects from the dog rocker and is connected to a depending link 27 which in turn is connected to a rearwardly extending arm 28 of a universal bar frame 29, the rock shaft 30 of which is pivoted at its ends in suitable bear-

ings in the base of the machine. The universal bar frame carries a universal bar 31 which extends beneath the series of key levers 32 each having a curved contact tread 33 which coöperates with a fulcrum plate 34 secured to the base of the machine. Restoring springs 35 are connected to the key levers to restore the key levers and parts connected thereto to normal positions. Each key lever is pivotally connected at 36 to a sub-lever 37 slotted at 38 to receive a fixed fulcrum rod 39 which extends transversely of the machine beneath the key levers and is secured at its ends to the base of the machine. The upper end of each sub-lever is connected to a pull link 40 which in turn is pivotally connected at 41 to a type bar 42. Various type bars are segmentally arranged and adapted to strike upwardly and rearwardly against the front face of the platen 9, each type bar being pivoted on a hanger 43 supported on a type bar segment 44 adapted to be shifted vertically to change the case position of the types with reference to the platen.

The construction thus far described is or may be the same as that employed in the Monarch machine and further detailed description thereof is deemed unnecessary.

From an inspection of Figs. 5, 6, 7 and 8 it will be seen that a lever-like arm, carrier or plate 45 is pivoted on a reduced hub or portion 46 (Fig. 7) of a pinion 47 which surrounds the escapement wheel shaft 13 so that the carrier 45 may receive a pivotal movement around the hub 46 and around an axis which is coincident with the axis of the escapement wheel and feed pinion. The pinion 47 is mounted on the shaft 13 of the escapement wheel at the rear side of the carrier 45 and on the side of the carrier opposite the feed pinion 12. A pin 48 connects the pinion 47 with the shaft so that the feed pinion 12, pinion 47 and shaft 13 are fixed to rotate together. The pinion 47 meshes with an idle gear 49 adapted to turn on a shouldered pivot screw 50 received in a tapped opening in the carrier 45 and provided with a lock nut 50^a. The gear 49 likewise meshes with a larger gear 51 provided with a sleeve or hub 52 (Fig. 8) received in a bearing opening in the carrier 45 and extending therethrough. A gear 53 is connected by a headed screw 54 with the gear 51; the screw passing through the bearing hub of the gear 51 and taking in a tapped opening in the gear 53. A pin 55 may be driven into openings formed in the screw 54, sleeve 51 and gear 53, in order to lock these parts to rotate together. The gear 53 is a counterpart of the feed pinion 12 and is situated on the side of the carrier 45 opposite the gear 51 and in the same vertical transverse plane as the feed pinion 12, in order that the gear 53 may coöperate with the feed rack 11 of

the carriage under conditions which will hereinafter more clearly appear. An upright bracket arm 56 is provided with a segmental slot 57 through which a shouldered headed screw 58 passes, the threaded end of the screw being received in a tapped opening in the carrier 45. This pin and slot connection constitutes a guiding means to accurately guide the free end of the carrier 45 in its pivotal movement around the axis of the shaft 13 and to limit the downward movement of the carrier. An arm 59 is pivoted by a shouldered screw 60 on the free end of the arm or lever 45, the lower end of the arm 59 being adapted to bear upon the top plate 3 of the machine. The arm 59 has two faces 61 and 62, the face 61 bearing against the top plate when the parts are in the position shown in Fig. 6 and the inclined face 62 bearing against the top plate when the parts are in the position shown in Fig. 5. The downward motion of the free end of the lever 45 is limited by the screw or pin 58 engaging the lower end of the slot 57 of the bracket 56. A link or arm 63 is pivoted at one end, as at 64, to the arm 59 and passes freely through an opening in one of the brackets 4^a. The opposite end of this link or arm 63 is threaded into a socket 65 rigidly connected to an arm 66 which projects rearwardly above the top plate from a pin 67. The pin 67 is rigidly connected with the arm 66 and passes downwardly through a segmental slot 68 in the top plate of the machine where it makes pivotal connection with the rear end of a lever 69. The lever 69 is pivoted at 70 to the top plate of the machine and extends forwardly beyond the front edge of the top plate where it is provided with a finger piece or head 71 by which the lever may be manipulated. It will be understood that the link 63, socket 65, arm 66 and depending pin 67 constitute a single rigid piece or frame by which the arm 59 and the carrier 45 may be adjusted. The pivotal connection between the pin 67 and the rear end of the lever 69 is best shown in Figs. 1 and 3 from which it will be seen that the pin 67 passes downwardly through an opening in the rear end of the lever arm and nuts 72 and 73 are threaded onto the end of the pin 67 on opposite sides of the arm.

From the foregoing description it will be understood that a swinging movement of the finger piece 71 to the left in Fig. 2 is effective to move the link or arm 63 to the position shown in Fig. 6 in order to effect an elevation of the free end of the carrier 45. This movement is operative to elevate the gear 53 to bring about an engagement between the gear 53 and the feed rack 11 and a continued upward movement of the gear elevates the feed rack 11 and disengages it from the feed pinion 12 while maintaining engagement between the rack and

the gear 53. The movement of the parts to the positions shown in Fig. 6 is effective to move the end 61 of the arm 59 into co-operation with the top plate so that the carrier 45 and the parts controlled thereby are thus maintained elevated in the positions to which they are moved in Fig. 6. The effect of thus disengaging the feed rack from the ordinary feed pinion 12 and engaging it with the gear 53 is to cause the transmission of movement from the carriage to the escapement wheel 16 to be effected through the gears 47, 49, 51 and 53 instead of directly through the feed pinion 12, as when the parts are in the normal position shown in Fig. 5. The effect of bringing this train of supplemental differential gearing into effective coöperation with the feed rack is to differentiate the extent of letter space feed movement to be given the carriage at each actuation of a key. The differential train of gearing in the particular construction shown, affords less movement of the carriage at each letter space actuation than when the feed rack is in direct engagement with the feed pinion 12. The effect of changing from one extent of feed to the other is best illustrated in the sample of the work shown in Fig. 4 in which the line of writing indicated at *a* corresponds to that produced when the feed rack is in direct engagement with the feed pinion 12; whereas, the line of writing indicated at *b* corresponds to a line produced when the rack is disengaged from the feed pinion 12 and transmission of motion is effected through the engagement of the feed rack with the gear wheel 53. It will be understood that the character of feed will remain the same as long as the finger piece 71 remains in one or the other of the two positions to which it may be set.

The invention is useful for a variety of purposes, such, for instance, as producing by the machine a distinctive effect as indicated at *b* that will be the equivalent of an italic insertion in the ordinary typewritten matter, and which is now ordinarily designated by underscoring. The mechanism is also useful where an erasure is to be made, and a new word or words, with one or more letters or words, are to be inserted within the original space, so that corrections may be readily and neatly made. This is made apparent from a comparison of the lines *a* and *b* in Fig. 4.

It will be understood, of course, that the effect of changing the engagement between the feed rack 11 and the gears 12 and 53 is to change the ratio of the operative connections between the escapement wheel and carriage and thus vary the extent of letter space feed movement without in any manner changing the action of the escapement mechanism proper or the extent of move-

ment thereof. The escapement devices will operate the same under all conditions and always have a uniform extent of letter space movement at each actuation. It will likewise be understood that the means whereby the variation of the extent of letter space feed is produced are separate from the escapement devices and comprise supplemental, differential or variable gearing between the escapement wheel and carriage; that means are provided for connecting one or another of the gears controlled by the escapement wheel with the carriage; that such means are hand controlled and are operable at will and remain operative indefinitely or until a change is effected at the will of the operator.

It will be seen that the devices are simple in construction, efficient in use and may be readily changed to vary the character of the letter space feed movements of the carriage.

While I have shown one form of mechanism embodying my invention it should be understood that various changes may be made without departing from the invention. Thus, for instance, the transmission gears may be varied to afford different styles of differential spacing, it being immaterial for the purpose of my present invention whether the greater spacing is afforded by the parts when they are disposed as shown in Fig. 5 or when they are disposed as shown in Fig. 6. For wide spacing for headings, etc. it might be desirable to change the proportions of the gears to afford greater width of spacing, than that afforded by the usual letter space feed, when the gear 53 is engaged by the feed rack.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a carriage, a feed rack carried thereby, escapement mechanism carried by the frame of the machine, intermediate gearing between said escapement mechanism and feed rack, and means whereby an engagement may be brought about between said feed rack and one or another of the members of said intermediate gearing to change the extent of letter spacing carriage feed movements.

2. In a typewriting machine, the combination of a carriage, a feed rack, escapement devices, gears between said escapement devices and the feed rack, and hand actuated means operable at will to shift one or another of said gears into engagement with said rack to change the character of the feed.

3. In a typewriting machine, the combination of a carriage, a feed rack carried thereby, a feed pinion carried by the frame of the machine and with which said feed rack coöperates, escapement devices which

control said pinion, supplemental gearing operatively connected with said feed pinion, and means for disengaging the feed rack and said feed pinion and for bringing about
5 an engagement between the feed rack and one of said supplemental gears to vary the feed of the carriage.

4. In a typewriting machine, the combination of a carriage, a feed rack carried
10 thereby, a feed pinion with which said feed rack coöperates, escapement devices which control said pinion, supplemental gearing operatively connected with said feed pinion,
15 hand actuated means operable at will for disengaging the feed rack and said feed pinion and for bringing about an engagement between the feed rack and one of said
20 supplemental gears to vary the feed of the carriage, and means whereby the engagement between the rack and pinion or the rack and gears may be maintained indefinitely.

5. In a typewriting machine, the combination of a carriage, a feed rack pivoted to
25 the carriage, escapement mechanism including an escapement wheel, a feed pinion controlled thereby, supplemental differential gearing which is likewise adapted to be controlled by said escapement wheel, and means
30 for effecting a disengagement between the feed rack and the feed pinion and for effecting an engagement between said feed rack and the differential gearing to vary the feed of the carriage.

35 6. In a typewriting machine, the combination of a carriage, escapement mechanism including an escapement wheel carried by the frame of the machine, a feed pinion controlled thereby, said feed pinion being
40 carried by the frame of the machine, a movable carrier carried by the frame of the machine, and gears carried by said carrier and adapted to be controlled by said escapement wheel, a movement of the carrier effecting an operative connection between the
45 carriage and said feed pinion or between the carriage and one of said gears to vary the feed of the carriage.

50 7. In a typewriting machine, the combination of a carriage, escapement mechanism including an escapement wheel, a feed pinion controlled thereby, a carrier pivoted to turn around an axis coincident with the axis around which said pinion turns, a train

of differential gearing carried by said carrier, a pivoted feed rack carried by the carriage and normally engaging said feed pinion to afford one character of letter spacing, and means for swinging said pivoted carrier to operatively connect one of said differential
60 gears with the feed rack and to disconnect the rack from said feed pinion to afford another character of letter spacing.

8. In a typewriting machine, the combination of a carriage, escapement mechanism
65 including an escapement wheel, a feed pinion controlled thereby, a carrier pivoted to turn around an axis coincident with the axis around which said pinion turns, a train of differential gearing carried by said carrier, a
70 pivoted feed rack carried by the carriage and normally engaging said feed pinion to afford one character of letter spacing, hand actuated means operable at will for swinging said pivoted carrier to operatively connect
75 one of said differential gears with the feed rack and to disconnect the rack from said feed pinion to afford another character of letter spacing, and means for retaining the carrier in said last mentioned position to
80 control the feed of the carriage indefinitely through said differential gearing.

9. In a typewriting machine, the combination of a platen carrying carriage, a
85 pivoted feed rack carried thereby, an escapement wheel carried by the frame of the machine, coöperating escapement devices, a feed pinion carried by the frame of the machine and operatively connected to said escapement wheel and with which the feed
90 rack is normally in mesh to afford one character of letter spacing, a movable carrier carried by the frame of the machine, and a train of differential gearing carried by said carrier, said carrier being operative to
95 bring about a disengagement between said feed rack and said feed pinion and to effect an engagement between the feed rack and one of the gears of said differential gearing to vary the feed of the carriage. 100

Signed at Syracuse, in the county of Onondaga and State of New York, this 21st day of April A. D. 1909.

EDWIN E. BARNEY.

Witnesses:

G. B. BRAND,

R. L. WILLIAMS.