

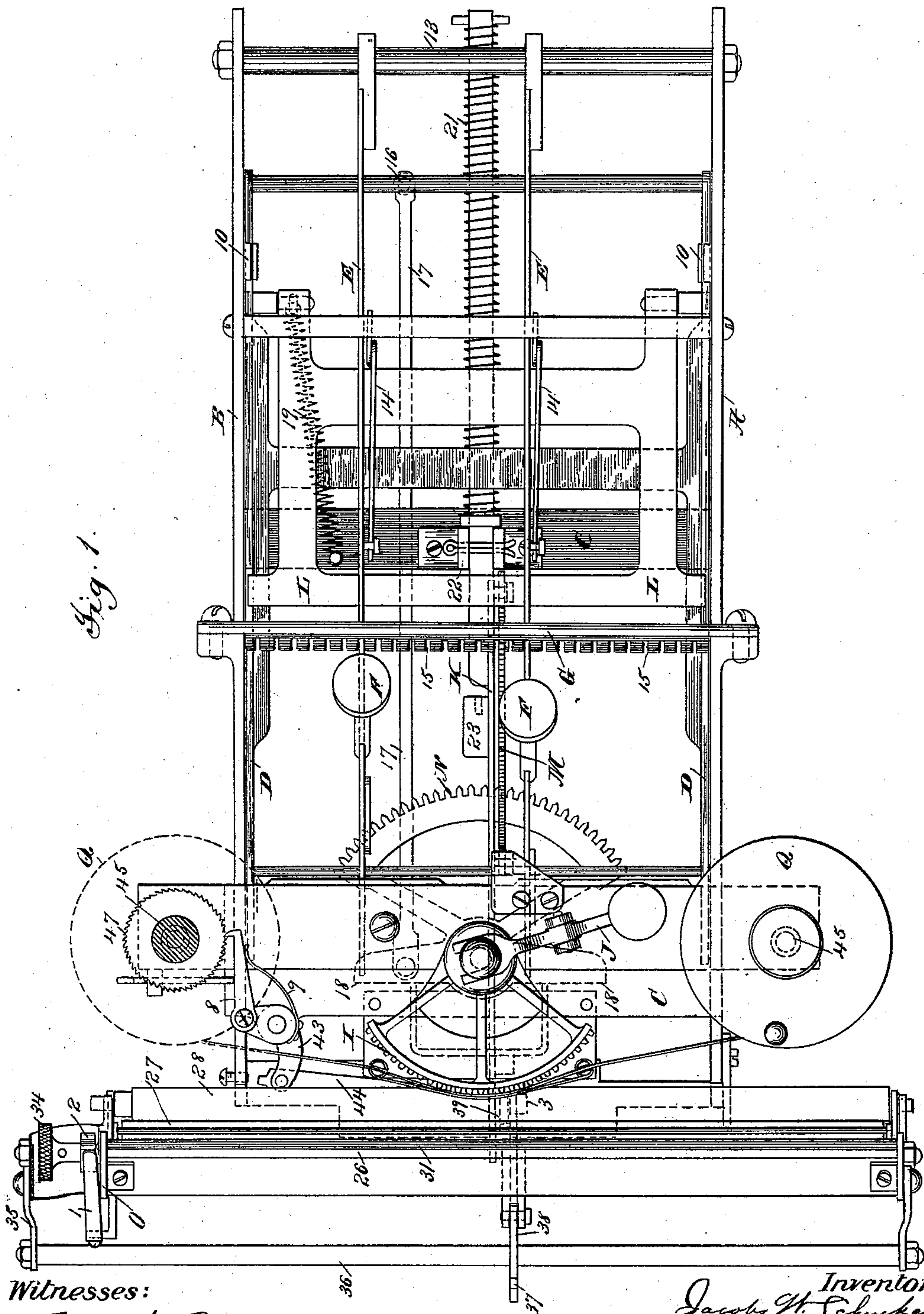
(No Model.)

4 Sheets—Sheet 1.

J. W. SCHUCKERS.
TYPE WRITING MACHINE.

No. 534,013.

Patented Feb. 12, 1895.



Witnesses:

Geo. H. Potts
S. Winthal

Inventor:

Jacob W. Schuckers
Chief Mennom & Chief
Atys.

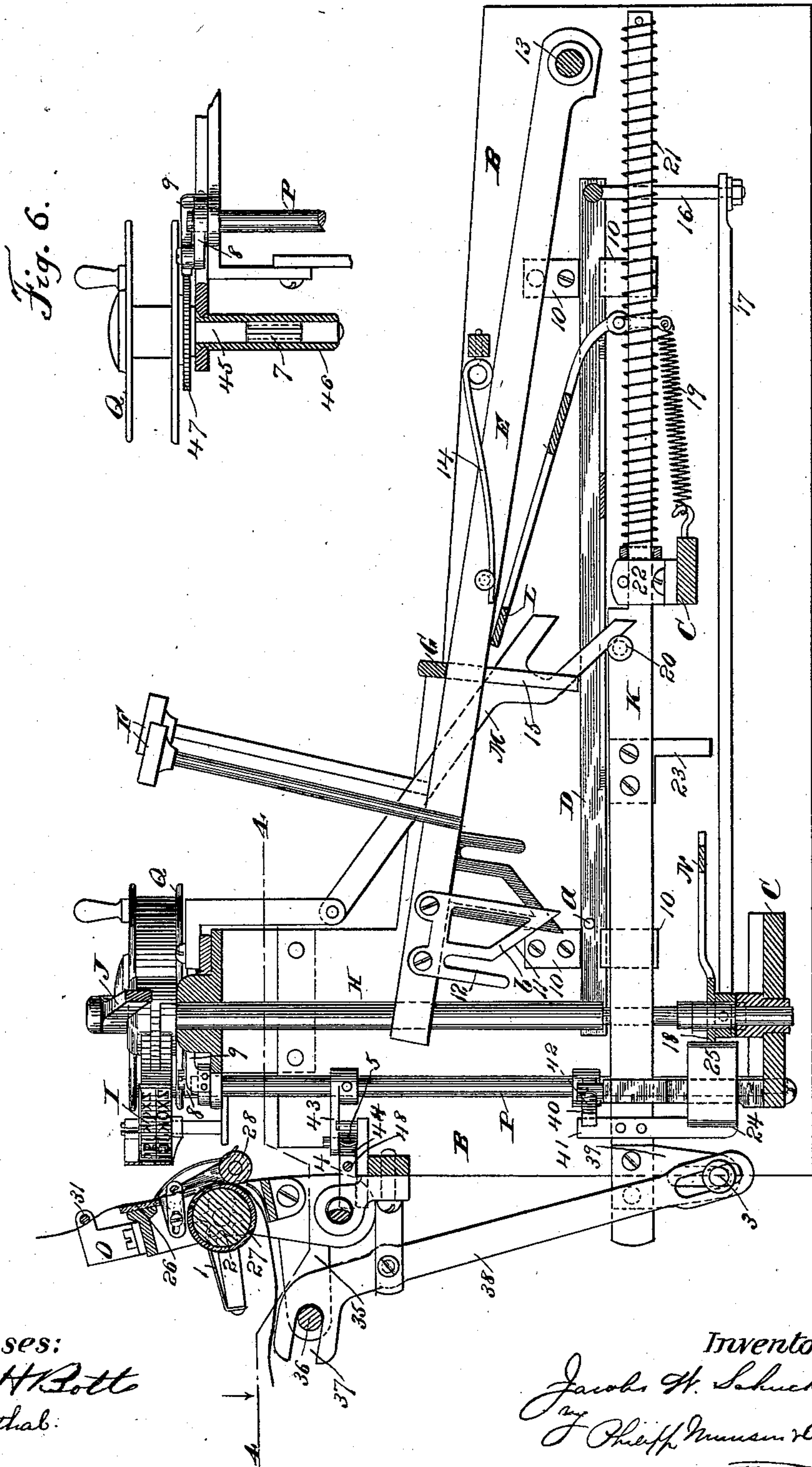
(No Model.)

4 Sheets—Sheet 2.

J. W. SCHUCKERS.
TYPE WRITING MACHINE.

No. 534,013.

Patented Feb. 12, 1895.



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(No Model.)

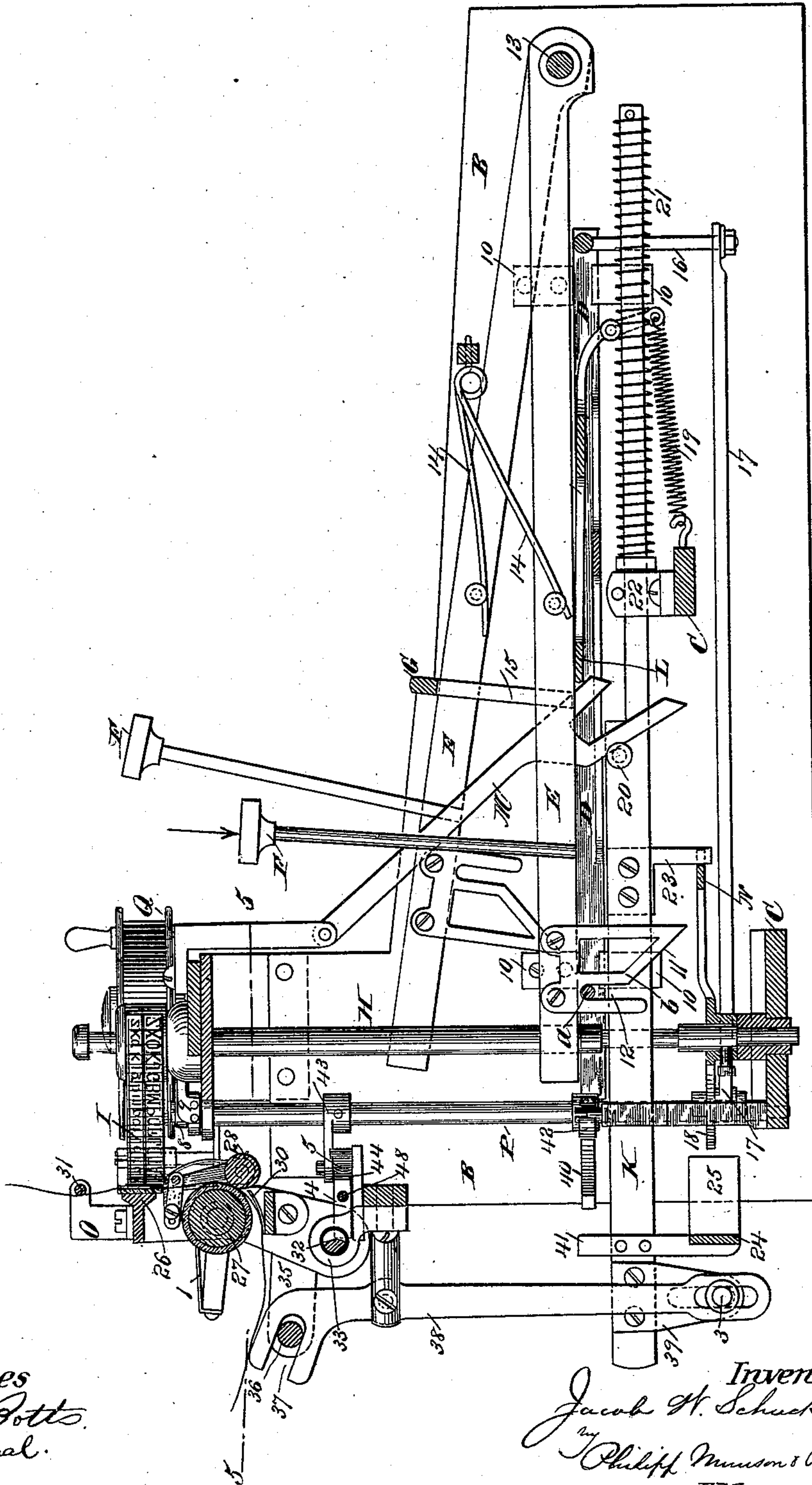
4 Sheets—Sheet 3.

J. W. SCHUCKERS.
TYPE WRITING MACHINE.

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Fig. 3.



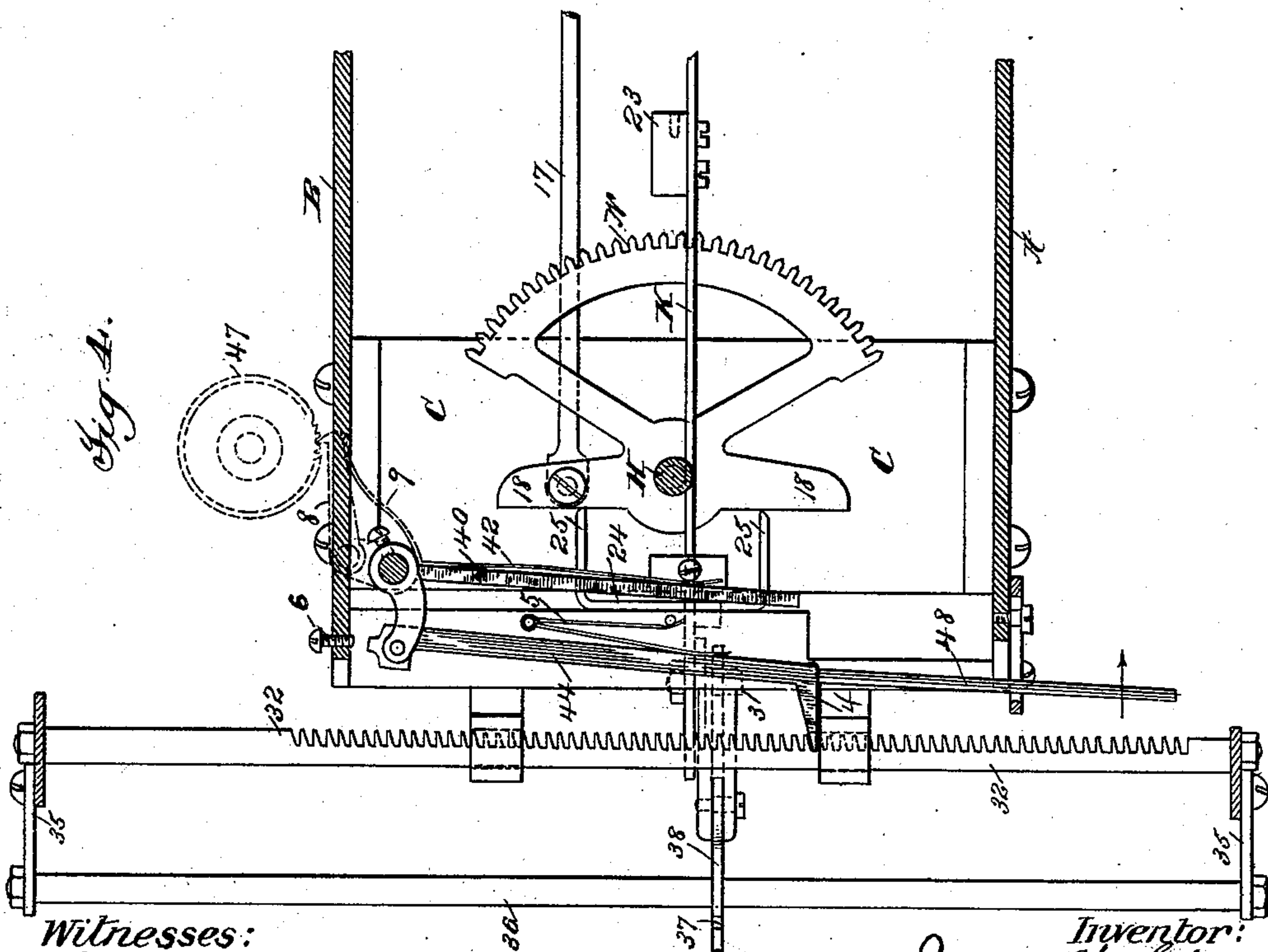
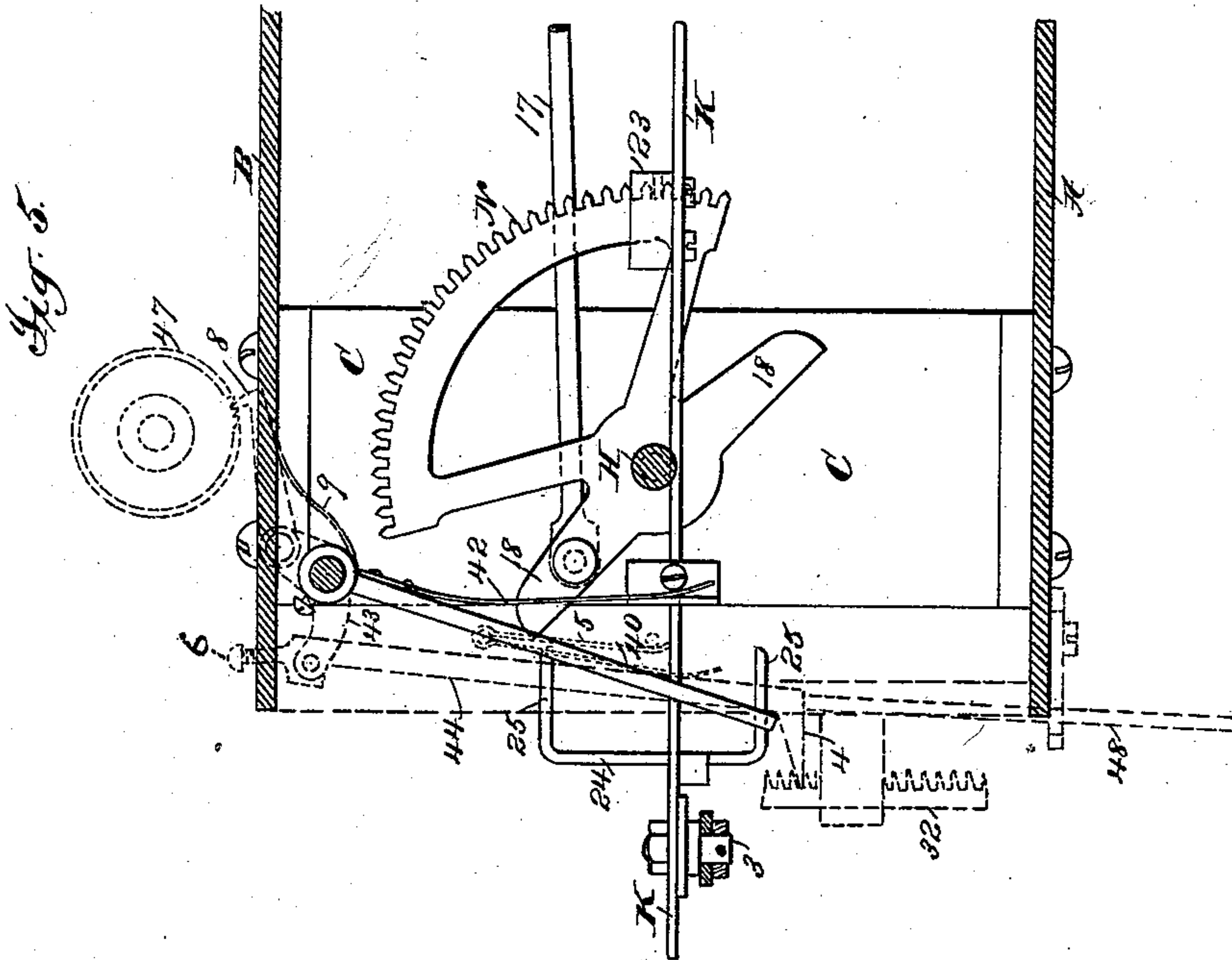
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Witnesses:
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UNITED STATES PATENT OFFICE.

JACOBS W. SCHUCKERS, OF NEWARK, NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 534,013, dated February 12, 1895.

Application filed August 30, 1892. Serial No. 444,526. (No model.)

To all whom it may concern:

Be it known that I, JACOBS W. SCHUCKERS, a citizen of the United States, residing at Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to typewriting machines and especially to that class of machines in which the type are grouped upon one or more carriers, as distinguished from machines in which each type is mounted independently, the most common form of machines of this class being that known as wheel machines, in which the type are placed upon the periphery or side of a wheel or segment, and the latter rotated or oscillated to bring the desired type to position.

The object of my invention is to provide an improved machine of the class referred to and especially to provide an improved type movement and construction of the parts through which the movement of the keys is transmitted for the various operations of the machine.

For a full understanding of my invention, a detailed description of a machine of the preferred form embodying the same, will now be given, reference being had to the accompanying drawings, forming a part of this specification, and the features forming my invention specifically pointed out in the claims.

In the drawings—Figure 1 is a plan view of the machine, only two keys being illustrated in order that the other parts of the machine may be shown. Fig. 2 is a central, longitudinal section of the same, showing the parts in their normal position. Fig. 3 is a similar view showing the parts in the position they occupy when a key is fully depressed. Fig. 4 is a horizontal section on the line 4 of Fig. 2, and Fig. 5 is a similar section on the line 5 of Fig. 3. Fig. 6 is a detail section of the ribbon mechanism.

Referring to said drawings the frame of the machine may be of any suitable form to support the operating parts. As shown, it consists of two side plates A, B extending from front to rear of the machine and secured together in any suitable manner, as by cross-

bars C. At the front or key end of the machine, said frames A, B are provided with ways in which moves a sliding frame D. These ways may be formed in any suitable manner, either by grooving or slotting the side plates, but are shown as formed by separate plates 10 secured to the inside of the side plates A, B, so as to hold the side bars of the sliding frame D in position. This sliding frame D carries at its rear end a cross-bar *a* by which the frame is actuated, from the lever keys E having the usual finger pieces F. The keys engage and actuate the bar *a* by cam surfaces, the bar being preferably a simple round bar, as shown, and the cams being carried by the keys E. This sliding frame may be of any form and construction suitable to support the bar *a* rigidly in proper position and secure a steady, smooth movement of the latter, and the bar *a* is of sufficient strength to be rigid under the pressure of the keys so as to assure the same result.

The cams may be formed in one piece with the keys, or provided in any other suitable manner, but preferably are formed, as shown, of separate plates *b* secured upon the keys and depending therefrom, these plates being constructed so as to form cams which preferably have, as shown, an inclined or cam portion engaging the bar A to move the frame the desired distance in accordance with the construction of the cam, and a straight portion or slot 12 which engages the bar *a* after the frame E has been moved into proper position and holds the frame therein during the further movement of the key.

It will be understood that the cams for the different keys are of different form or located in different positions relatively to the bar *a* so that they actuate the frame different distances in accordance with the character to be printed, and the cams will preferably be constructed and arranged as shown so as to actuate the frame in both directions from a central position, thus reducing the distance through which the frame must be moved by any key.

The keys E are pivoted at the front of the machine on the bar 13 and are depressed by the fingers and returned by springs 14, being held in proper position and guided during their movement by a vertical slotted guide

plate G, extending across the machine and provided with slots forming guides 15, between which the keys play.

It will be understood that any other construction of devices for mounting, returning, and guiding the keys may be used, but that shown forms a simple, efficient construction.

Mounted at the rear end of the machine is the vertical type wheel shaft H carrying the type wheel or segment I, which preferably is provided with two or more rows of characters, as usual in such constructions, two rows, capitals and small letters, being shown. This type wheel is splined upon the shaft so as to rotate therewith but slide thereon and is normally held in position for printing the small letters, but may be shifted for printing the capitals by the usual shifting key J.

The connections between the sliding frame D and wheel shaft H for rotating the latter in accordance with the movements of the frame to position the type wheel for the impression of the type corresponding to any key depressed, may be of any suitable form. As shown, the frame and shaft are connected by a depending bar 16 at the front end of the frame, connected by a link 17 to an arm 18 on the shaft H, this arm 18 forming one of a pair upon the shaft H projecting upon opposite sides of the same and forming one member of shaft returning devices, presently to be described.

Below the keys and sliding frame D and preferably centrally of the machine, as shown, is a sliding bar K by which the impression mechanism and ribbon feeding devices are actuated and the type wheel and sliding frame returned to position. Above this bar and between it and the keys is mounted a bar or plate L extending entirely across the machine so as to form a universal bar engaged by each one of the keys when depressed, this bar being pivotally supported in the frame of the machine and returned to normal position on the release of the key by a spring 19 connected to a depending arm on the bar supports and to a fixed part of the frame of the machine. At the rear of this universal bar L, above the bar K a bar M is suspended so as to swing rearward, this bar being placed in an inclined position relatively to the bar L so that as the latter is depressed it engages the inclined surface of the bar M and swings it rearward, the bar M then by the inclined surface of its lower side, engaging a stud or bowl 20 on the bar K so as to force the latter rearward, the bar K being returned to position, when the bars L and M are released, by a coiled spring 21 compressed between a pin on the bar and the standard.

It will be understood that other means may be used for actuating the bar K from the universal bar L, such as a cam on the bar L engaging the bar K directly, or other equivalent means, but the bar M has been found a convenient means for securing a considerable movement of the bar K with a slight movement of the universal bar L.

The bar K carries a depending arm 23 which forms one member of the locking devices by which the type wheel is locked in position during the impression, this arm 23 engaging between the teeth of a toothed wheel N carried at the lower end of the wheel shaft H. The wheel N therefore is rotated with the wheel shaft H by the downward movement of the key until the bar *a* of the frame D has passed off the inclined portion 11 and onto the straight portion 12 of the cam *b* when the further movement of the key forces bar K backward and carries the arm 23 between two of the teeth of wheel N, thus locking the type wheel, and this position of the parts continues until the impression has been taken and the key released. It will be understood, however, that such locking devices are not absolutely essential, especially with the cams provided with straight extensions as shown, and they may be omitted. The bar K carries also at its rear end a plate 24 which is bent to form, or otherwise provided with, forks 25 extending forward in position to engage the arms 18 on the shaft previously referred to, these forks 25 with said arms 18 forming the shaft returning and locking devices by which the wheel shaft H is returned to position on the forward movement of bar K under the pressure of spring 21 and the shaft and type wheel held in position until the depression of another key, the proper central normal position of the type wheel thus being assured, this being important in order to secure the proper positioning of the type wheel by the cams *b*.

With the type movement described impression mechanisms of different forms may be used. I have shown, however, a construction in which the platen carries the paper against the type wheel for the impression, the paper carriage being pivotally mounted and rocked toward the type wheel for this purpose. The carriage O may be of any suitable construction, but as shown, consists of two end plates in which are mounted the platen 26, consisting of a bar extending the length of the carriage, paper feeding rollers 27, 28, the former being rubber faced for the line feed and the latter preferably spring pressed, as shown, and a curved plate 30 over which the paper is fed upward to the feeding rolls 27, 28, the paper being guided above the platen 26 by a guide rod 31 as it is fed upward, all as usual in such constructions. At the bottom of the carriage is secured in the end frames the rack bar 32 and this rack bar is mounted loosely in brackets 33 in the frame of the machine, so that the carriage is free to move longitudinally for letter spacing and to be rocked forward for the impression. The feed roll 27 is provided with the usual line feeding devices consisting of the roughened thumb wheel 34 and the spring 1 and notched wheel 2 to secure accurate line feed. This carriage is rocked forward to carry the platen against the type wheel for the impression and returned to position by the following means:

The end plates of the carriage O are provided with rearward extensions 35 in which is mounted a fixed bar 36 which runs in a groove or fork 37 on a lever 38 pivoted at the rear end of the machine and having a slotted connection at its lower end with a stud or roller 3 adjustable in a slot formed in a plate 39 carried by the bar K, so that by the adjustment of this stud 3 the exact throw of the platen desired may be secured and wear of the parts compensated for to secure the proper impression. The position of the carriage and operating parts in their normal position and in the position of impression are shown in Figs. 2 and 3.

The feeding devices for advancing the paper between impressions for letter spacing and for feeding the ribbon may be varied widely, but I have shown a simple construction which forms in itself a part of my invention. A vertical rock shaft P is mounted in brackets on the side frame B and carries at its lower end an arm 40, extending into the path of movement of an arm 41 on bar K and spring-pressed rearward by spring 42 so as to be returned to position thereby, together with the shaft P and parts connected thereto after each feeding operation. This shaft P carries also an arm 43 pivotally connected to a pawl arm 44 carrying a pawl 4 which engages the teeth of rack bar 32 for advancing the latter and the carriage for letter spacing, this pawl being held in position to engage the teeth by a light spring 5 pressing the pawl arm 44 and pawl rearward. By this construction, also, the carriage is locked by the engagement of the pawl with the teeth of rack bar 32 in both positions of the pawl. An adjustable stop 6 which may be a simple screw passing through the side frame B, as shown, is provided for stopping the shaft and the backward movement of the pawl arm, so that the latter is withdrawn into proper position to engage one of the teeth of rack bar 32 for the feeding movement. The feeding pawl 4 may be thrown out of contact with the teeth in rack pawl 42, so as to permit the latter to be returned to position, and for doing this conveniently I provide a rod 48 forming an extension of the pawl bar 44 and projecting outside of the frame A in convenient position for use, so that by throwing this rod forward by hand the pawl may be withdrawn by hand.

The ribbon spools Q are carried by the usual studs 45 set into vertical bearings 46 formed in the frame of the machine and pressed by tension springs 7 so as to hold the ribbon under proper tension. The ribbon spools are provided with the usual handles by which the ribbon may be run by hand from one spool onto another and one of the spools is provided with a feeding ratchet 47 by which the ribbon is automatically fed, this automatic feeding being produced by a pawl 8 carried by an arm on shaft P and spring pressed by spring 9 so as to be held in contact with the ratchet 47.

The operation will be understood from a brief description. The parts being in the position shown in Figs. 1, 2, and 4 a key is depressed for the impression of a letter. On the depression of a key, the cam surface 11 of cam *b* first strikes the bar *a* on the sliding frame D and carries the latter forward or backward according to the position and arrangement of the cam, until the rod passes off the cam surface 11 and into the slot or straight portion of the cam 12. As the bar *a* enters this slot the frame is locked and held in position against movement as the key is further depressed. By the movement of the key during the engagement of the cam surface 11 with the bar *a*, the type wheel shaft H has been rocked by the movement of the frame D transmitted through bar 16, link 17 and arm 18 and brought to proper position for the impression of the type corresponding to the key depressed, the toothed wheel H has been carried with the shaft into a position corresponding with the type wheel, and the universal bar L has been carried downward so as to engage the bar M and carry the sliding bar K rearward a short distance so as to release the arms 18 from the pressure of the forks 25. On the further depression of the key, the type wheel and toothed wheel N are held normally in position by engagement of the bar *a* in the slot 12 and the bar K is carried rearward so as to rock lever 38, carry the lower end rearward and the upper forked end 37 upward, thus rocking the carriage forward and pressing the paper upon the platen 26 against the type wheel with a quick movement for the impression. The spring 42, released by the rearward movement of the bar K, forces the arm 40 on rock shaft P rearward from the position shown in Fig. 4 to that shown in Fig. 5 and the rock shaft P is thus rocked to carry the pawls 4 and 5 backward, over respectively the rack bar 32 and ratchet 47, so as to be in position to engage a new tooth when the shaft P is rocked in the opposite direction, the pawl 44 and the rock shaft being stopped in proper position by the adjustable stop 6. The position of all the parts at the time of making the impression is shown in Figs. 3 and 5. Upon the release of the key the parts resume their normal position, the key being returned by the key spring 14, the universal bar L by its spring 19 and all the other parts by the forward movement of the bar K under the pressure of spring 21. The forward movement of this bar K rocks the lever 38 so as to carry the carriage backward from the type wheel, the arm 41 on the bar engages the arm 40 so as to carry it forward against the tension of spring 42 and thus rocks shaft P so as to advance the pawls 4 and 5 and advance the carriage the distance of a letter space and feed the ribbon to bring a new portion into position for use. The arm 23 on the bar K is simultaneously carried out from between the teeth of the toothed wheel N so as to release the latter, and one of the forks 25 on the bar K

engages one of the arms 18 on the wheel shaft H and rocks the latter backward into its normal position until the two forks 25 engage the arms 18 on opposite sides of the shaft 5 when the shaft H and type wheel are in normal position, and the return of the shaft H returns also the sliding frame D through the connections between the arm 18 and the frame. The bar M is returned to position also by the 10 bar K, stud 20 engaging the lower side of the bar and forcing it forward as it is released by the universal bar L. The parts having thus been returned to their normal position and the carriage and paper advanced one letter 15 space, the next key may be depressed, and thus the operation is repeated.

It is obvious that many modifications may be made in the construction and arrangement of the parts of the machine shown, and I am 20 not to be limited to the specific form or arrangement of the device illustrated.

What I claim is—

1. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, 25 and a series of lever keys engaging and actuating said frame by cam surface engagement with said bar, connections between said frame and type carrier for positioning the latter by 30 the movement of the frame, impression mechanism, and means for locking the type carrier in position during the action of the impression mechanism substantially as described.

2. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, 35 a series of lever keys pivoted transversely to said bar and actuating said frame by cam surface engagement with said bar, connections between said frame and type carrier for positioning the latter by the movement of the frame, impression mechanism, and means for locking the type carrier in position during the action of the impression mechanism substantially as described. 45

3. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, a series of lever keys pivoted transversely to 50 said bar and provided with cam surfaces engaging said bar, connections between said frame and type carrier for positioning the latter by the movement of the frame, impression mechanism, and means for locking the 55 type carrier in position during the action of the impression mechanism substantially as described.

4. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, 60 a series of lever keys pivoted transversely to said bar and having depending plates engaging and actuating said frame by cam surface engagement with said bar, connections between said frame and type carrier for positioning the latter by the movement of the frame, impression mechanism, and means for 65

locking the type carrier in position during the action of the impression mechanism substantially as described. 70

5. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, a series of lever keys pivoted transversely to said bar and provided with cam surfaces engaging said bar and having extended straight portions, connections between said frame and carrier for positioning the latter by the movement of the frame, and an impression mechanism actuated by the further movement of 75 the keys after the type wheel is positioned, substantially as described. 80

6. The combination with a type carrier, and impression and feeding mechanisms, of a sliding frame, connections between said frame 85 and type carrier for positioning the latter by the movement of the frame, a series of keys engaging and actuating said frame by cam surfaces, and a locking mechanism actuated by but separate from the keys, for holding the 90 type carrier in position during the action of the impression mechanism, substantially as described.

7. The combination with a type carrier, of a sliding frame, connections between said frame 95 and type carrier for positioning the latter by the movement of the frame, a series of keys engaging and actuating said frame by cam surfaces having extended straight portions holding the frame in position during the further depression of the key, impression mechanism operated by the further movement of a key, and a locking mechanism for holding the type carrier in position during the action of the impression mechanism, substantially as described. 105

8. The combination with a type carrier, of a sliding frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of keys 110 engaging and actuating said frame by cam surfaces, impression mechanism, means for locking the type carrier in position during the action of the impression mechanism and carrier returning and locking devices for returning the carrier to normal position and locking it therein, substantially as described. 115

9. The combination with a type carrier, of a sliding frame, connections between said frame and type carrier for positioning the latter by 120 the movement of the frame, a series of keys engaging and actuating said frame by cam surfaces, carrier returning and locking devices for returning the carrier to normal position and locking it therein, and a locking mechanism actuated by but separate from the keys for holding the carrier during the action of the impression mechanism, substantially as described. 125

10. The combination with a type carrier, of a frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of keys engaging and actuating said frame by cam sur- 130

faces having extended straight portions holding the frame in position during the further depression of the key, impression mechanism operated by the further movement of the key, and carrier returning and locking devices for returning the carrier to normal position and locking it therein, substantially as described.

11. The combination with a type carrier, and impression and feeding mechanisms, of a sliding frame having a bar extending transversely to the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of lever keys pivoted transversely to said bar and actuating said frame by cam surface engagement with said bar, and a locking mechanism actuated by but separate from the keys, for holding the type carrier in position during the action of the impression mechanism, substantially as described.

12. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of lever keys pivoted transversely to said bar and actuating said frame by engagement with said bar by cam surfaces having extended straight portions holding the frame in position during the further depression of the key, impression mechanism operated by the further movement of a key, and a locking mechanism for holding the type carrier in position during the action of the impression mechanism, substantially as described.

13. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of lever keys pivoted transversely to said bar and actuating said frame by cam surface engagement with said bar, impression mechanism and carrier returning and locking devices returning the carrier to normal position and locking it therein, substantially as described.

14. The combination with a type carrier, of a sliding frame having a bar extending transversely to the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of lever keys pivoted transversely to said bar and actuating said frame by cam surface engagement with said bar, carrier returning and locking devices for returning the carrier to normal position and locking it therein, and a locking mechanism actuated by but separate from the keys for holding the carrier during the action of the impression mechanism, substantially as described.

15. The combination with a type carrier, of a frame having a bar extending transversely

to the line of movement of the frame, connections between said frame and type carrier for positioning the latter by the movement of the frame, a series of lever keys pivoted transversely to said bar and actuating said frame by engagement with said bar by cam surfaces having extended straight portions holding the frame in position during the further depression of the key, impression mechanism operated by the further movement of the key, and carrier returning and locking devices for returning the carrier to normal position and locking it therein, substantially as described.

16. The combination with a type carrier, of sliding frame D having transverse bar *a*, connections between said frame and type carrier, and lever keys E having plates *b* provided with cam surfaces 11 and straight extended portions 12 engaging said bar, and an impression mechanism operated by keys E while said straight portions 12 are in engagement with said bar, substantially as described.

17. The combination with a type carrier, of sliding frame D, connections between the frame and type carrier, keys E engaging and actuating said frame by cam surfaces, sliding bar K actuated by said keys and returned by spring pressure and an impression mechanism operated by said bar, substantially as described.

18. The combination with a type carrier, of sliding frame D, connections between the frame and type carrier, keys E engaging and actuating said frame by cam surfaces, sliding bar K actuated by said keys and returned by spring pressure, and impression and feeding mechanisms operated by said bar, substantially as described.

19. The combination with a type carrier, of sliding frame D, connections between the frame and type carrier, keys E engaging and actuating said frame by cam surfaces, sliding bar K actuated by said keys and returned by spring pressure, and impression, feeding and carrier returning devices operated by said bar, substantially as described.

20. The combination with a type carrier, of sliding frame D, connections between the frame and type carrier, keys E engaging and actuating said frame by cam surfaces, sliding bar K actuated by said keys and returned by spring pressure, and impression, feeding and ribbon feeding devices operated by said bar, substantially as described.

21. The combination with a type carrier, of sliding frame D, connections between the frame and type carrier, keys E engaging and actuating said frame by cam surfaces, sliding bar K actuated by said keys and returned by spring pressure, and impression and feeding devices for locking the type wheel in position during the impression operated by said bar, substantially as described.

22. The combination with type wheel I and its shaft H, of a series of keys and connections for positioning said type wheel, sliding

bar K actuated by said keys and returned by spring pressure, and carrying forks 25 and arms 18 on the wheel shaft engaged by said forks to return the type wheel to normal position, substantially as described.

23. The combination with type wheel I and its shaft H, of a series of keys and connections for positioning said type wheel, sliding bar K actuated by said keys and returned by spring pressure and having arm 23 and forks 25 and toothed wheel N and arms 18 on the wheel shaft engaged by said arm and forks for locking the type wheel in position, substantially as described.

24. The combination with the carriage and rack bar 32, of rock shaft P and spring pressed pawl arm 44 on said shaft carrying pawl 4, ribbon spools Q, one having ratchet 47, spring pressed pawl 8 carried by said shaft and engaging said ratchet, and means for rocking said shaft, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JACOBS W. SCHUCKERS.

Witnesses:

J. J. KENNEDY,
GEO. H. BOTTS.