

No. 743,904.

PATENTED NOV. 10, 1903.

H. MARSHALL.

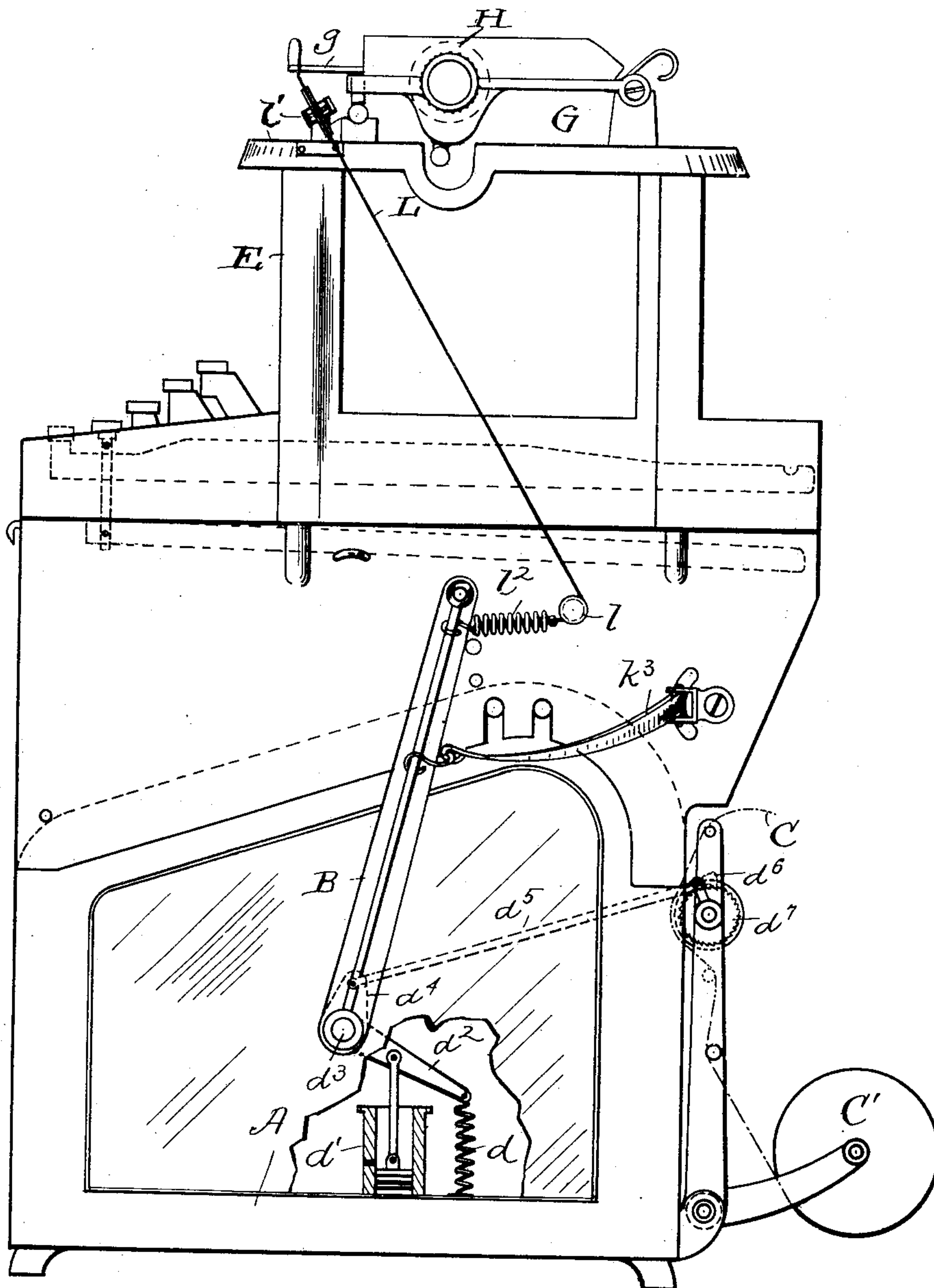
COMBINED TYPE WRITING AND COMPUTING MACHINE.

APPLICATION FILED MAR. 18, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

N. L. Brewster  
E. B. Gilchrist

Inventor:

Holmes Marshall,  
By his Attorneys,  
Thurston & Bates.

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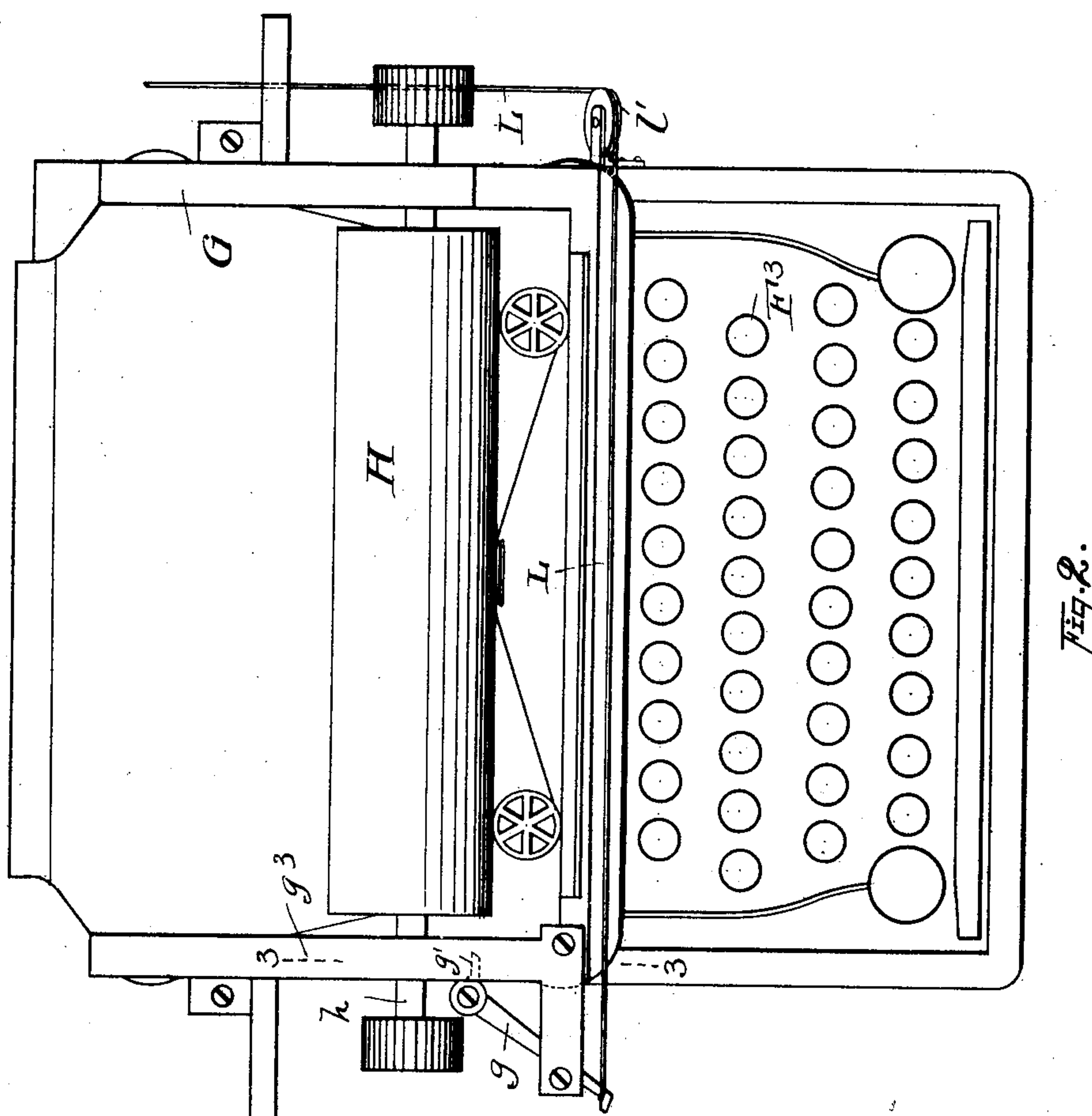
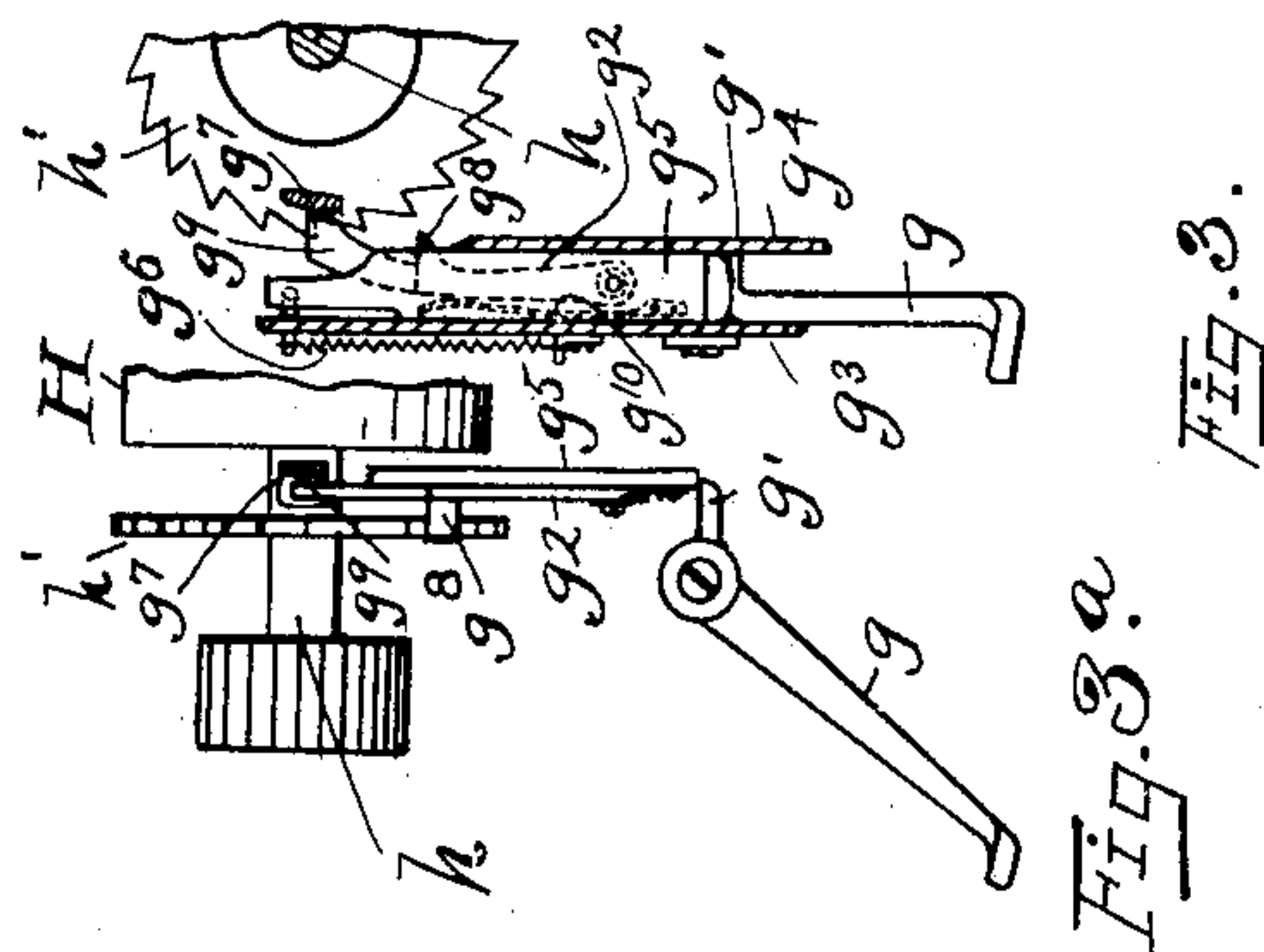
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4 SHEETS—SHEET 2.



Witnesses.

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4 SHEETS—SHEET 3.

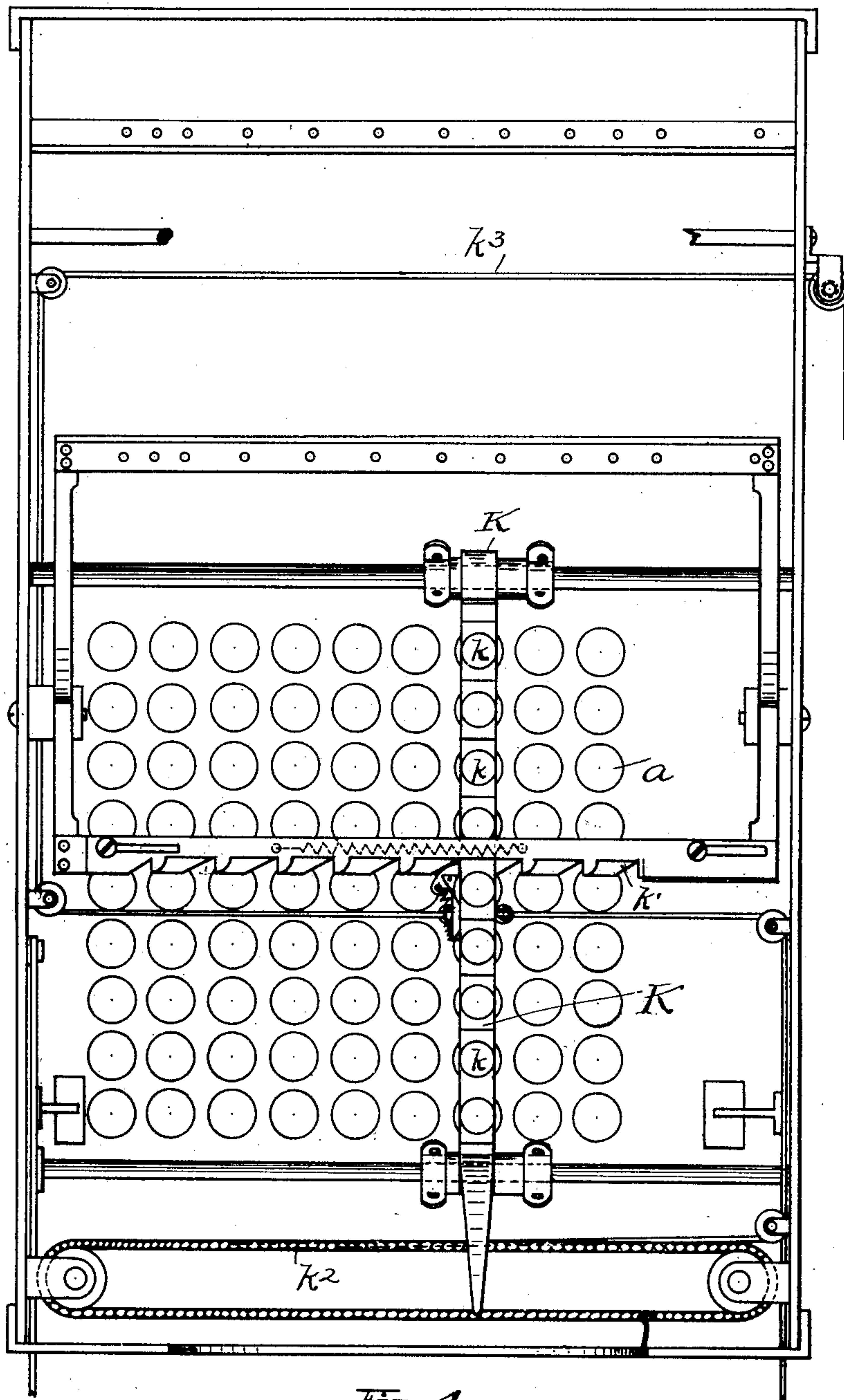


Fig. 4.

Witnesses.

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No. 743,904.

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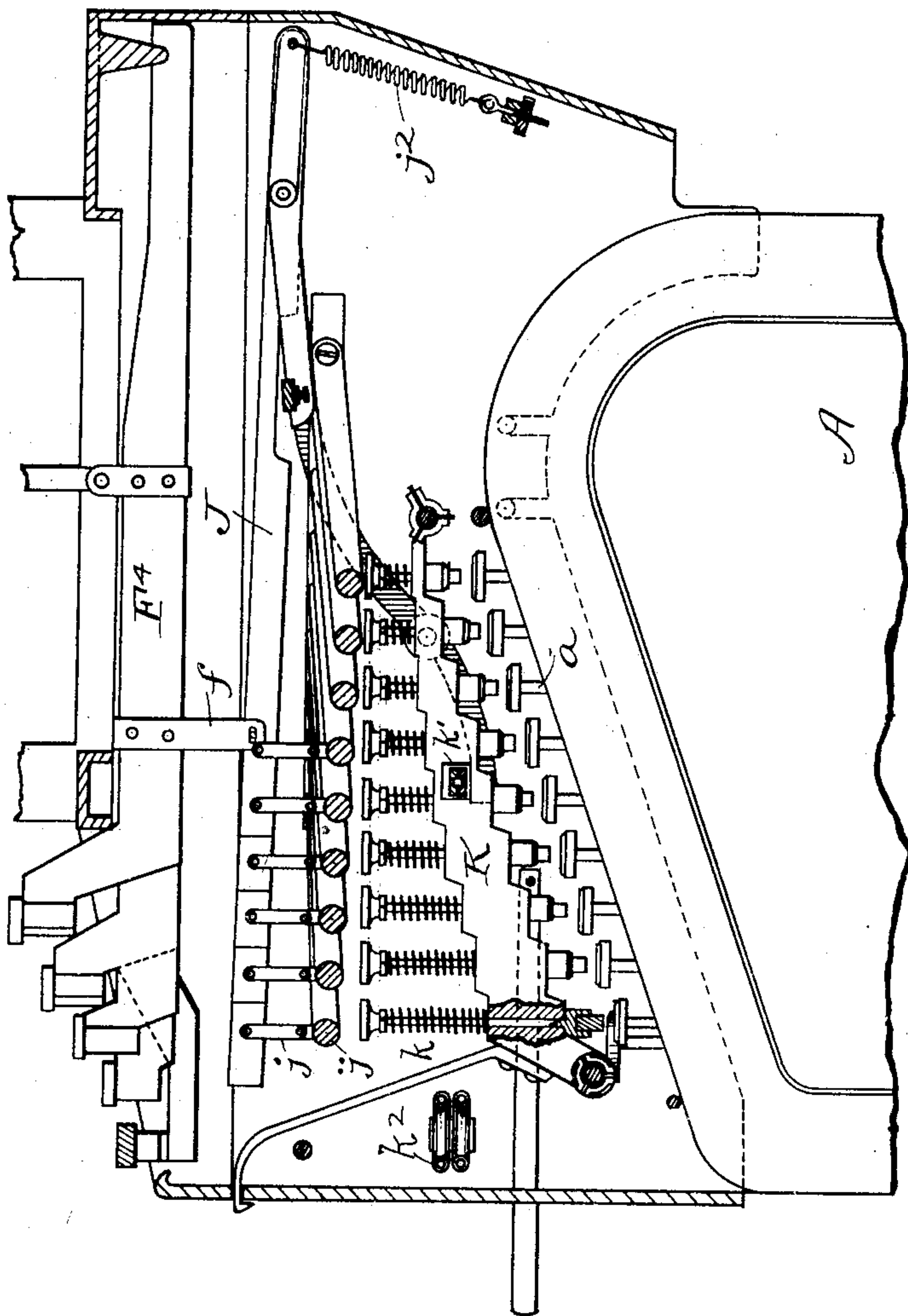
COMBINED TYPE WRITING AND COMPUTING MACHINE.

APPLICATION FILED MAR. 18, 1903.

NO MODEL.

4 SHEETS—SHEET 4.

Fig. 5.



Witnesses.

N. L. Oresman  
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# UNITED STATES PATENT OFFICE.

HOLMES MARSHALL, OF NEW YORK, N. Y.

## COMBINED TYPE-WRITING AND COMPUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 743,904, dated November 10, 1903.

Application filed March 18, 1903. Serial No. 148,280. (No model.)

*To all whom it may concern:*

Be it known that I, HOLMES MARSHALL, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented a certain new and useful Improvement in a Combined Type-Writing and Computing Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

In Patent No. 686,627, granted to me November 12, 1901, for a combined computing-machine and type-writer is shown a computing-machine of the arithmometer type, a type-writer above this, and an intermediate mechanism between the two so arranged that the numeral-keys of the type-writer operate (by means of plungers mounted in a carriage in the intermediate mechanism) to depress the numeral-keys of the computing-machine. As soon as the line is completed a lever of the computing-machine is moved to add the amount represented by its depressed keys, print such amount on a strip of paper carried thereby, and at the same time return the computer-carriage to its initial position. Such a combination of mechanism is effective in allowing the words to be written on the type-writer, followed by numbers which are printed both on the type-writer and on the arithmometer-slip and added by the arithmometer; but I have found in the use of such combined machine, even after much skill is acquired, there is danger that the type-writer carriage will be shifted back for a new line without turning up the paper or that the next item may be written on the same line without pulling back the type-writer carriage at all. This causes either the writing of one line on top of another, destroying the result, or wrongly placing the numerals.

It sometimes happens when the machine is used for writing numerals alone or with only an occasional side heading of words where two consecutive amounts are the same, one of these, because the paper is not turned up, is struck directly on top of the other, so that one of the items of the page is omitted and the footing taken from the arithmometer does not represent the correct footing of the items appearing on the page. Moreover, two manual operations are required for each line—viz., first,

operating the arithmometer and returning the intermediate mechanism to its initial position, and, second, drawing back the type-writer carriage and turning up the paper. Inasmuch as the most frequent use of a machine of this kind is for writing and computing data taken from separate individual sources, as a pile of checks or way-bills, it is extremely desirable that the operator's left hand be free to turn over these checks or bills at the same time that his right hand is operating the arithmometer-lever.

An ordinary speed of operation of the combined type-writer and computer is perhaps five lines a minute, and I have found that the time required in operating the arithmometer-lever and in bringing back the type-writer carriage and turning up the paper is about two seconds or one-fifth of the total time. If I could cut that time in half, I could increase by ten per cent. at least the speed of operation of the combined machines.

The present invention is designed to eliminate the separate operation of drawing back the type-writer carriage and turning up the paper, with the twofold result that the one danger of inaccuracy in the operation of the machine is removed and the speed of the machine is increased. I accomplish this by connecting the lever of the arithmometer with mechanism mounted on the type-writer carriage arranged to turn up the paper, so that when the arithmometer-lever is drawn forward it not only causes the arithmometer to print and draws back the intermediate mechanism, but mechanically and automatically turns up the paper on the type-writer and returns the carriage to its initial position. Thus the pull on the handle by a single mechanical operation turns up two papers, one on the type-writer and one on the arithmometer, returns two carriages to their initial position—viz., type-writer carriage and the carriage of the intermediate mechanism—and thus sets three machines—the type-writer, the arithmometer, and the intermediate mechanism—in initial positions. The arithmometer is provided with a dash-pot to prevent its too sudden starting, and the type-writer carriage in the present invention receives the benefit of this dash-pot action. In order to overcome the requirement of too accurate an adjustment



of the cord connecting the arithmometer-lever and the type-writer carriage, I place in this cord a tension-spring stiff enough so that it is idle in operation when the lever is drawing back the carriage, but allows the lever to move farther, if necessary, after the carriage has come to a stop at its initial position.

The above novel features wherein the invention consists are clearly illustrated in the drawings and further description herein and are definitely set out in the claims.

In the drawings, Figure 1 is a side elevation of the complete combined type-writer and computer. Fig. 2 is a plan thereof. Fig. 3 is a vertical section on the line 3 3 of Fig. 2, showing the mechanism for turning up the type-writer paper. Fig. 3<sup>a</sup> is a detached plan of such mechanism. Fig. 4 is a plan of the intermediate connection between the type-writer and the computer. Fig. 5 is a vertical section through such intermediate connection.

A represents the adding-machine, which is what is known as an "arithmometer" and may be considered as constructed in accordance with Patents Nos. 388,116, 388,117, 388,118, and 388,119 to W. S. Burroughs for calculating-machines. It has on its upper surface several rows (nine being shown) of nine finger-keys each, (designated *a*.) Each fore and back row of keys carries the nine digits, the front key being numbered "1" and the rearmost key "9." The depression of these keys sets computing mechanism (not shown) within the body of the arithmometer. Thereafter when the lever B is drawn forward the mechanism within the arithmometer is caused to add the amount represented by the depressed keys to the preceding sum. As the lever B returns to its initial position, it turns up the paper C of the arithmometer. A spring is provided for returning the lever and a dash-pot for preventing its too sudden movement. These parts appear through the glass side of the arithmometer.

*d* is the spring, and *d'* the dash-pot. These are shown as taking onto a lever *d*<sup>2</sup>, which is on the rock-shaft *d*<sup>3</sup>, which the lever engages. Another arm *d*<sup>4</sup> on this rock-shaft is shown as connected by a link *d*<sup>5</sup> with a pawl *d*<sup>6</sup>, which is adapted to operate a ratchet-wheel *d*<sup>7</sup> as the lever returns, and thus feed upward the paper C from the roll C', the paper being printed on as the lever is drawn forward.

E represents the frame of the type-writer. It carries a paper-carriage G, having a paper-roller H. It has keys F<sup>3</sup>, connected with key-levers F<sup>4</sup>. The key-levers of the numeral-keys have depending bars *f*, which connect with longitudinal pivoted levers J in the intermediate mechanism. These levers J are connected by links *j*, with bails *j'* beneath them, which stand across the plungers *k*, carried by the plunger-carriage K. A spring *j*<sup>2</sup> tends to draw up the levers J and the bails, and an escapement *k'* is provided for the plunger-carriage. This construction of the

intermediate mechanism and its connection with the type-writer and with the arithmometer is clearly shown and described in my prior patent, No. 686,627, heretofore referred to, to which reference is hereby made for a fuller description.

In operation the depression of a numeral-key depresses the corresponding bail, which depresses the corresponding plunger onto the corresponding key of the arithmometer in whichever row is beneath the plunger, which row corresponds with the column in which the digit is being printed by the type-writer. Following the depression of each numeral-key the escapement allows the plunger-carriage K to pass one step to the right, the spring *k*<sup>2</sup> causing such movement. At the end of the line the plunger-carriage is drawn back by the arithmometer-lever B through the instrumentality of the strap *k*<sup>3</sup>, connected thereto. On the shaft *h* of the paper-roller H is mounted a ratchet-wheel *h'*. Pivoted to the paper-carriage is the lever *g*, having a toe *g'*, which operates a slide *g*<sup>5</sup>, which carries a pawl *g*<sup>2</sup>, having a lip *g*<sup>8</sup>, which turns the ratchet. The slide is guided between plates *g*<sup>3</sup> and *g*<sup>4</sup>, which form part of the carriage, and is given a forward tendency by the spring *g*<sup>6</sup>. A member *g*<sup>7</sup>, on which a nose *g*<sup>9</sup> of the pawl rides, prevents the pawl prematurely engaging the ratchet-wheel. With such construction if the lever is moved to the right the roller is turned on its axis to turn up the paper. The movement of the lever *g* being stopped by impingement against the body of the carriage, any further pull on this lever draws the carriage itself to the right. Now I connect the arithmometer-lever B with this lever *g* by a cord or strap L, running over a pulley *l*, carried by the frame of the intermediate mechanism, and over a pulley *l'*, carried by the frame of the type-writer. Thus when the lever B is drawn forward the paper on the type-writer is turned up and the paper-carriage is brought back to its initial position. A stiff spring *l*<sup>2</sup>, inserted in the cord L, allows that cord to draw back the carriage as if the spring were not there; but when the carriage reaches its final initial position the lever B may have further movement, stretching the spring *l*<sup>2</sup>, if necessary. Adjustment is provided by connecting the cord to the lever B at any of a number of points.

It will be seen that with the construction described the operator may write whatever words are desired on the type-writer without affecting the computer. Then by simply allowing the type-writer carriage to proceed to the proper point for the numeral-columns (either by the space-key or by a tabulating-key operating after the manner shown in my prior patent, No. 713, 468) the numbers are struck which both print on the type-writer and compute on the computing-machine and are printed by the computing-machine when the lever B is drawn forward at the completion of the line. This lever does all the me-



chanical work of returning the parts to their initial positions, printing on the computer, and turning up the paper on both the computer and the type-writer. The operator is thus relieved of the mental strain of thinking about anything except the matter he is writing, and all the other work is done quickly and accurately.

I claim—

1. The combination of a type-writer, a computer, an actuating connection between the numeral-keys of the type-writer and the computer, and mechanism arranged to be operated once for each line to operate the computer and to shift the carriage of the type-writer, substantially as described.

2. The combination of a computing-machine having an operative lever, a type-writer having a traveling carriage, and a connection between said lever and the type-writer carriage, substantially as described.

3. The combination with a type-writer having mechanism for feeding the paper thereon, of a computer, an actuating mechanism between the numeral-keys of the type-writer and the computer, an operating mechanism for the computer, and a connection between said operating mechanism and the paper-feeding mechanism of the type-writer, substantially as described.

4. The combination with a type-writer having a traveling carriage and mechanism mounted thereon for feeding the paper, of a computer having actuating mechanism and an operating-lever, and a connection between the lever of the computer and the paper-feeding device of the type-writer, substantially as described.

5. The combination of a type-writer having a movable carriage and a paper-feeding device mounted thereon, with a computing-machine having actuating-keys and printing mechanism governed thereby and a lever for operating said printing mechanism, an intermediate connection between the numeral-keys of the type-writer and the actuating-keys of the computer, and a connection between said keys and said paper-feeding mechanism, whereby the lever at once prints the amount on the computer and feeds the paper on the type-writer and returns the type-writer carriage, substantially as described.

6. The combination of a type-writer having a movable carriage and a paper-feeding device mounted thereon, with a computing-machine having actuating-keys and printing mechanism governed thereby and a lever operating said printing mechanism, an intermediate connection between the numeral-keys of the type-writer and the actuating-keys of the computer, and a connection between said lever and said paper-feeding device and mechanism operated by said lever for feeding the paper on the computer, substantially as described.

7. The combination of a type-writer having a traveling carriage, a computer having actu-

ating mechanism and an operating-lever, a connection between the numeral-keys of the type-writer and the actuating mechanism of the computer, a connection between the lever of the computer and the type-writer carriage, and a dash-pot operating to check the movement of the lever, substantially as described.

8. The combination of a computing-machine having actuating-keys and an operating-lever, a type-writing machine having a traveling carriage and numeral-keys, an intermediate carriage between the type-writer and computer having a series of plungers adapted to operate the actuating-keys of the computer, and connections between said operating-lever and said plunger-carriage and said operating-lever and said type-writer carriage, whereby one operation of the lever operates the computer and returns both the type-writer carriage and the plunger-carriage, substantially as described.

9. The combination of a computing-machine having actuating mechanism and an operating-lever, a type-writing machine having a traveling carriage and numeral-keys, an intermediate carriage between the type-writer and computer having a series of plungers adapted to operate the actuating mechanism of the computer, a connection between said operating-lever and said plunger-carriage, a device mounted on the type-writer carriage for feeding the paper of the type-writer, a flexible cord connecting said device with said lever, and a device for feeding the paper to the computing-machine operated also by said lever, whereby said lever feeds two papers and returns two carriages, substantially as described.

10. The combination of a computing-machine having actuating-keys and an operating-lever, a type-writing machine having a traveling carriage and numeral-keys, an intermediate carriage between the type-writer and computer having a series of plungers adapted to operate the actuating-keys of the computer, and connections between the said operating-lever and said plunger-carriage and said operating-lever and said type-writer carriage, a device mounted on the type-writer carriage for feeding the paper of the type-writer and operated by the connection to the lever, and a device for feeding the paper to the computing-machine operated also by said lever, substantially as described.

11. The combination of a type-writer having a traveling carriage, a computer having actuating mechanism, and mechanism for operating the same, and an intermediate connection between the numeral-keys of the type-writer and the actuating mechanism of the computer, and a connection between the type-writer carriage and the operating mechanism of the computer, a spring included in said last-mentioned connection to provide for unequal movement of the type-writer carriage and said operating mechanism, substantially as described.



12. The combination of a type-writer having  
a traveling carriage, a computer having actu-  
ating mechanism and an operating-lever, a  
connection between the numeral-keys of the  
5 type-writer and said actuating mechanism, a  
cord connecting said type-writer carriage and  
said lever, and a tension-spring included in  
said cord and normally idle but allowing said

lever to move after the carriage has stopped,  
substantially as described.

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

HOLMES MARSHALL.

Witnesses:

A. C. JOPLING,

ALBERT H. WALKER.