April 21, 1931. T. W. PRICE 1,801,755

DICTATING MACHINE

Filed Sept. 28, 1925 3 Sheets-Sheet 1

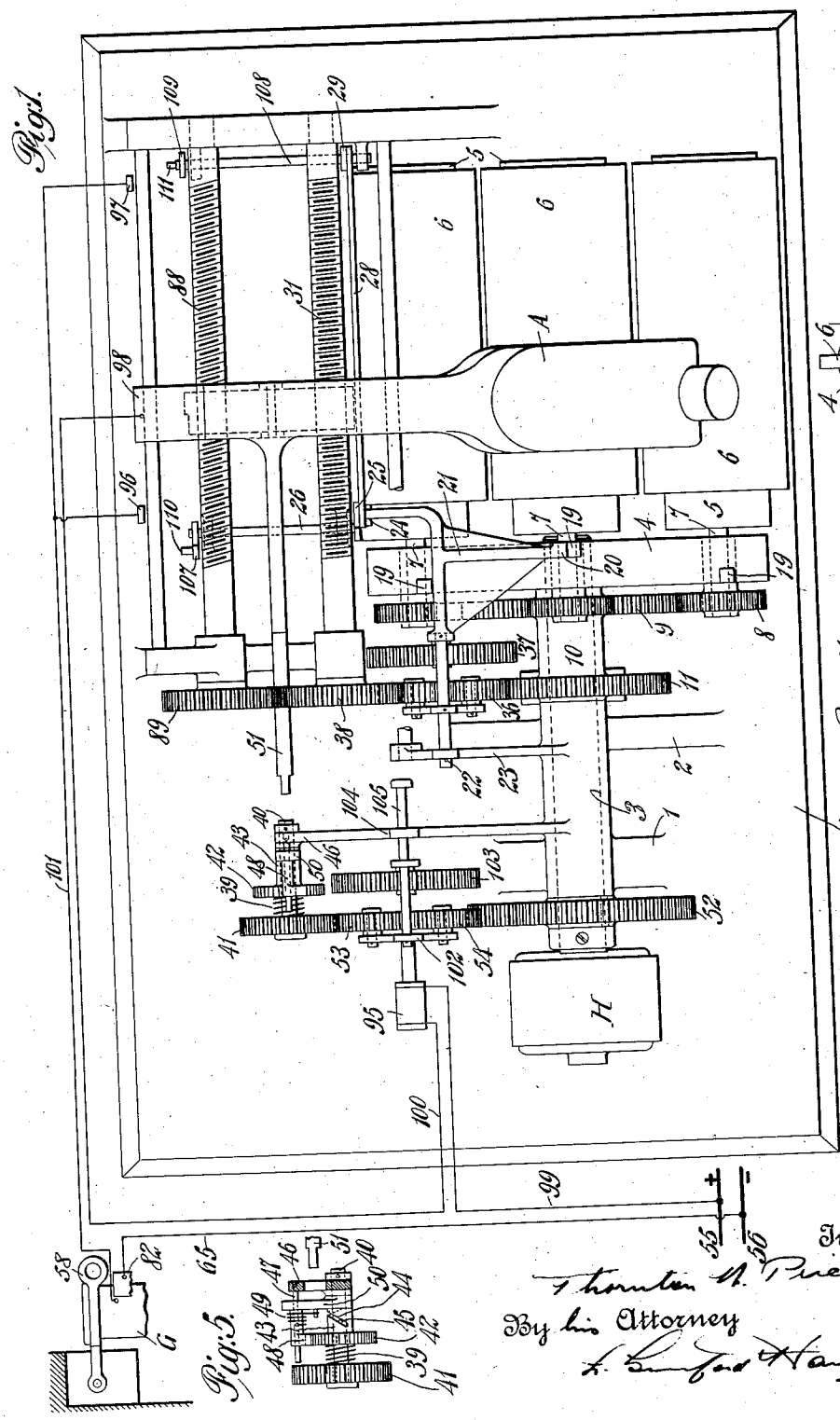


Fig. 1.

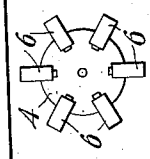


Fig. 8.

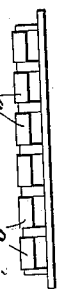


Fig. 7.

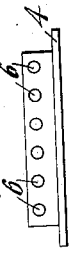


Fig. 6.

Fig. 5.

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By his Attorney

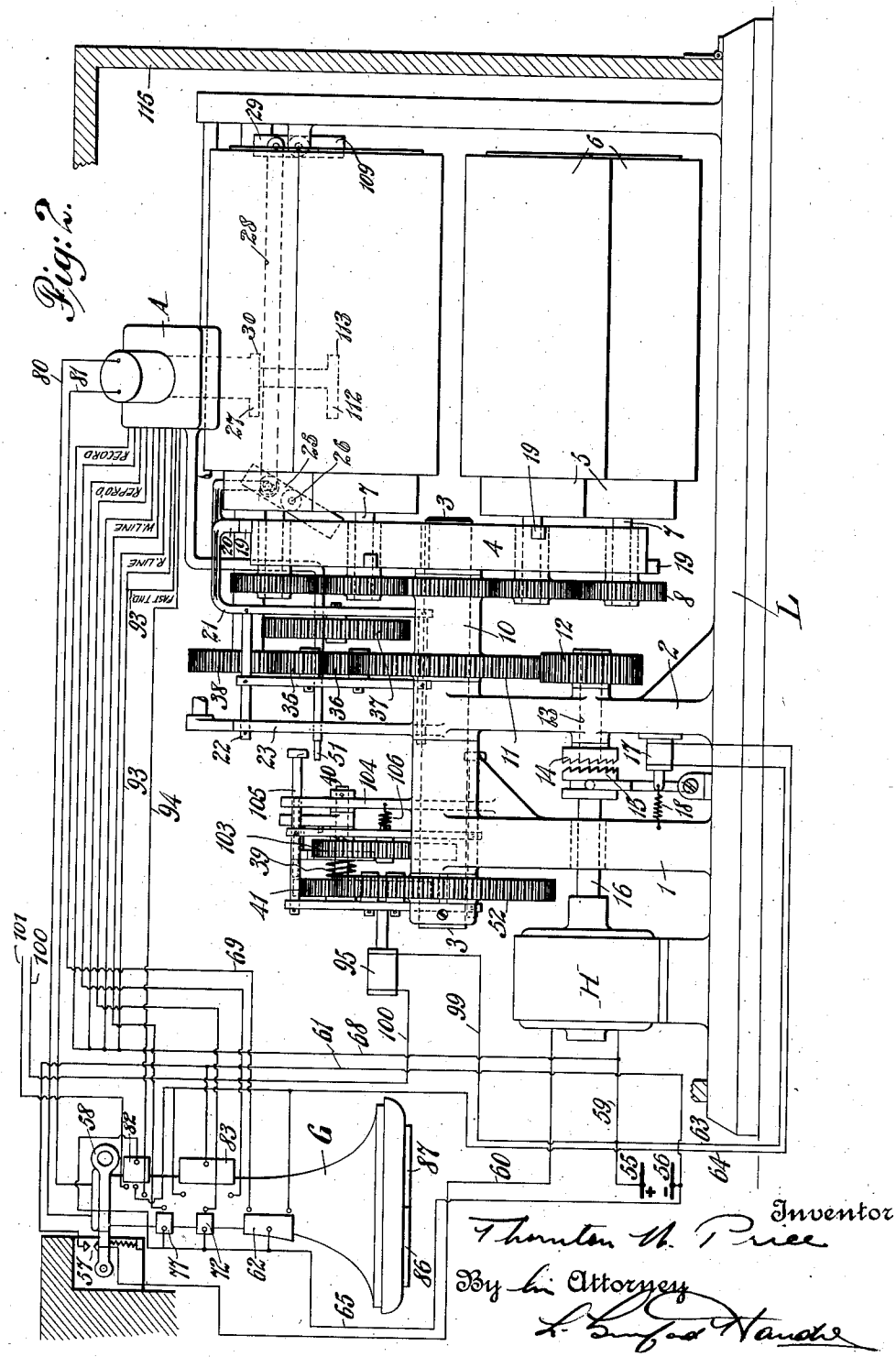
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DICTATING MACHINE

Filed Sept. 28, 1925 3 Sheets-Sheet 2

Fig. 2.



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DICTATING MACHINE

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Fig. 3.

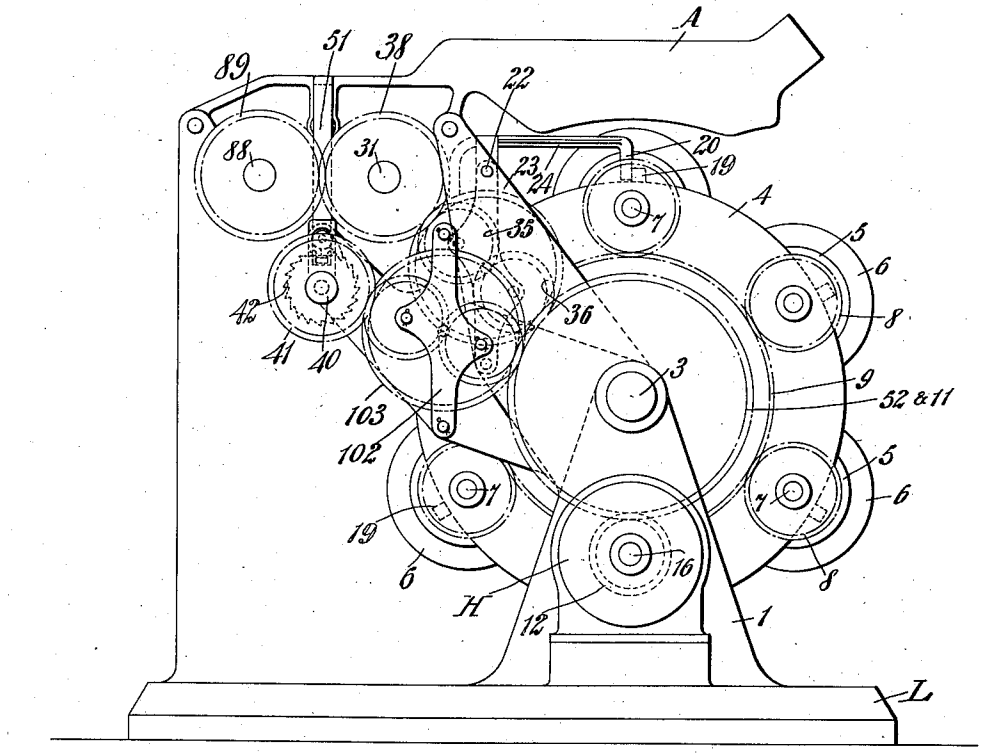
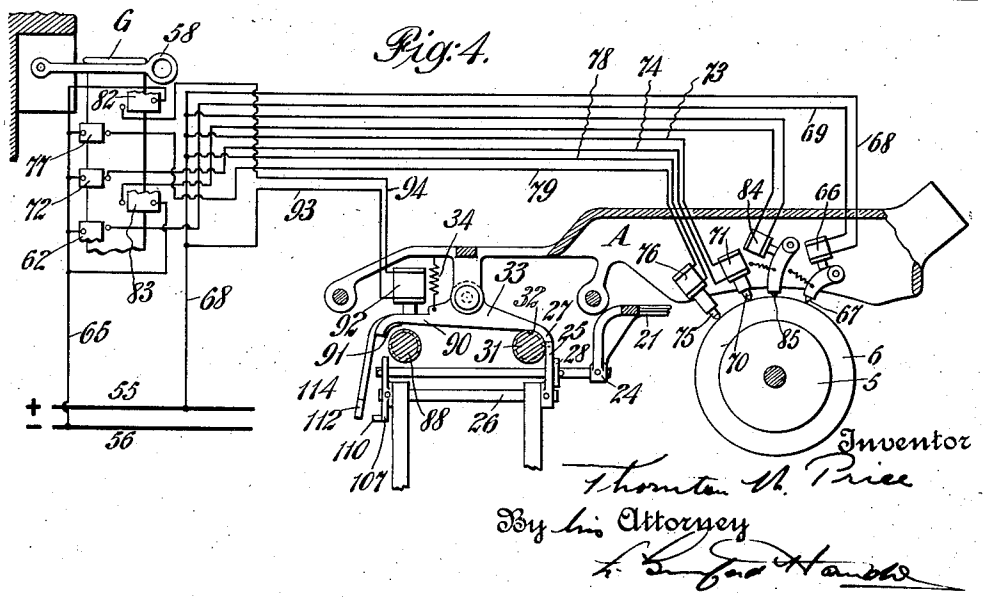


Fig. 4.



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UNITED STATES PATENT OFFICE

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DICTATING MACHINE

Application filed September 28, 1925. Serial No. 59,020.

This invention relates to a dictating machine.

An object of the invention is to provide a simple, practical and readily usable mechanism by which dictation may be received and recorded preparatory to being transcribed by a typist.

A further object is to so design the mechanism that the main portion thereof may be located at any desired distance from the dictator, the connection between the dictator and the main portion of the mechanism being solely by suitable electrical conductors or the like.

A further object is to provide a combined mouth and ear piece to be held by the dictator and by means of which he may either transmit his dictation to the distant mechanism or receive back a reproduction of dictated matter.

A further object is to provide the single mouth-ear piece with readily operable and conveniently located buttons or the like by which the operator may easily and quickly control the various functions of the distant mechanism.

A further object is to so construct the distant mechanism that it will be capable of receiving and recording dictation uninterruptedly, said mechanism being likewise capable of uninterruptedly reproducing for the dictator the dictated matter.

A further object is to provide improved means for indicating the beginning and ending of any article of dictated matter, also for directing particular attention of the typist to any selected portion of the dictated matter.

A further and more detailed object is to so construct the mechanism that the record of dictation will be made on the surface of wax or similar composition cylinders in substantially the same general way as is at the present in common use, but to provide the mechanism with a plurality of such cylinders and to arrange for the instant substitution of one cylinder for another with respect to the recording or reproducing needles.

A further detailed object is to so construct the mechanism that the recording-reproducing unit will move in one direction along one cylinder and in the opposite direction along a succeeding cylinder etc.

A further detailed object is to provide efficient means for reversing the direction of movement of the recording-reproducing unit, for altering the speed of travel of said unit upon occasion, for moving the record cylinders into and out of cooperative relation with the recording-reproducing unit, and for otherwise effecting proper operation of the numerous parts pursuant to electrical impulses from the devices in the hand of the dictator.

Other objects and aims of the invention more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts, and applications of principles constituting the invention, and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification and in which I have shown merely a preferred form of the embodiment of the invention:—

Fig. 1 is a top plan view of the structure seen in Fig. 2.

Fig. 2 is a side elevational view, partly diagrammatic, illustrating a mechanism constructed in accordance with this invention.

Fig. 3 is an end view of the structure Fig. 1, taken from the left hand end of said figure.

Fig. 4 is a fragmentary detail view, partly diagrammatic, illustrating the reproducing and recording unit and its closely associated features, and

Fig. 5 is a fragmentary detail view illustrating the spring motor element employed for rotating the cylinder carrying disc.

Figs. 6, 7 and 8 are diagrammatic views illustrating modified arrangements of the record cylinders, Fig. 6 suggesting the arrangement of said cylinders in a row side by side, Fig. 7 suggesting the arrangement of said cylinders in a line end to end, and Fig. 8 suggesting the arrangement of said cylinders projecting radially from the common center.

Referring to the drawings for describing in detail the structure therein indicated the

reference character L indicates a suitable base plate or platform upon which the main mechanism is mounted, the combined mouth and ear piece which is designed to be handled by the dictator at a distance being indicated by the reference character G and being connected with the main mechanism by suitable conductor wires as will be fully described hereinafter.

From the base L rises a pair of standards 1 and 2 within which is rotatably mounted a shaft 3. At the right hand end of the shaft 3 is fixed a disc 4 carrying a plurality of spindles 5—5 one for supporting each of a plurality of record cylinders 6—6. The spindles 5 have carrying shafts 7 rotatably supported in the disc 4 and having gears 8 fixed thereto all of said gears 8 being in constant mesh with a master gear 9 which is carried by a sleeve 10 freely rotatable upon the shaft 3. A drive gear 11 is fixed to the sleeve 10 and stands in constant mesh with a drive pinion 12.

The pinion 12 is carried by a shaft 13 upon which is mounted a clutch member 14 in cooperative relation with a clutch member 15 carried by a shaft 16 of a motor H.

The clutch member 15 is arranged to be thrown into engagement with the clutch member 14 by means of a solenoid 17 which operates in opposition to a spring 18 said spring being arranged to normally hold the clutch out of operative connection. Projecting from the peripheral surface of the disc 4 is a plurality of lugs 19 one for each spindle 5, and co-operating with these lugs is a stop member 20. The lugs are arranged in staggered relation to each other and the stop 20 is adapted to be moved back and forth from the path of one set of lugs to the path of the other set, said parts thereby constituting an escapement device which will permit the disc 4 to rotate step by step each step bringing a new spindle 5 and record 6 into cooperative relation with the recording-reproducing unit A.

The stop 20 is formed as part of a rigid frame element 21 which extends to and is horizontally slidably supported in a bearing 22 which is shown as formed in an arm 23 rising from the standard 1. At another point, as at 24, the frame 21 is pivotally connected and supported at the upper end of an arm 25 which is fixed to a rotatable cross shaft 26.

The arm 25 is arranged in the path of movement of a bumper 27 provided upon the recording-reproducing unit A so that said arm will be struck by said bumper when the recording-reproducing unit approaches the left hand extreme of its travel. The arm will be thus swung to the left and produce a corresponding shifting movement of the frame and stop 20.

A connecting link 28 extends from arm 25 to a second arm 29 located adjacent the right hand of the spindles adapted to be struck by a bumper 30 of the recording-reproducing unit when said unit moves in the opposite direction, thus returning the frame 21 to its original position.

This lateral shifting of the frame 21, and its stop 20 back and forth from one position to another will occur each time the unit A completes its travel of a cylinder 6 and the movements of the stop 20 will permit the lugs 19 to pass one at a time and thus bring a new cylinder in to operative position beneath the unit A each time the record on the preceding cylinder has been completed.

The lateral movement of the unit A is caused by a horizontally arranged screw 31 the threads of which are engaged by a threaded portion 32 of an arm 33 which is carried by the unit A and which is held by a spring 34 so that said threaded section 32 stands normally in engagement with the screw. The bumpers 27 and 30 are formed on the arm 33.

Back and forth movement of the unit A is produced by reversing the direction of rotation of the screw 31. To effect the change in direction of rotation of this screw at proper intervals the laterally movable frame 21 carries a pair of small gears as 35 and 36 and a single gear 37. When the frame is in one position the pair of gears 35—36 stand in mesh between the drive gear 11 and a gear 38 which is fixed to the screw 31, while when the frame is moved to its opposite position the gears 35—36 are displaced by the single gear 37. When the gears 35—36 are functioning the screw 31 rotates in one direction while when the gear 37 is functioning the screw will of course rotate in the opposite direction, and since these gears are automatically shifted by movement of the same frame, 21, as carries the stop 20 it follows that by arranging these parts so as to secure proper timing the direction of travel of the unit A will be reversed just after the stop 20 has released a lug 19 and has permitted rotation of the disc 4.

The power for rotating disc 4 may be derived from any suitable source either from the motor H or otherwise, but as herein illustrated it is derived from a spring 39. This spring surrounds a shaft 40 and has its opposite ends fixedly connected with a gear 41 and a ratchet wheel 42 respectively, the spring being arranged to serve both as a torsion and a compression spring. The gear 41 is fixed rigidly to the shaft 40. The ratchet 42 is freely rotatable upon said shaft and has a hub portion 43 within which is formed a spiral groove 44 into which projects a pin 45 carried by the shaft.

The shaft 40 is mounted to rotate in a

suitable bearing provided in a stationary frame piece 46. This frame also carries a small stub shaft 47 upon which is mounted a pawl 48, a spring 49 being arranged to hold the pawl at all times against the teeth of the ratchet wheel 42.

A slide member 50 is mounted upon the shafts 40 and 47 and is adapted to be slid to the left by being engaged by an arm 51 which projects from the unit A whenever said unit approaches the left hand extreme of its travel.

The spring 49 has connection with the slide member 50 and serves to cause the pawl 48 to at all times slide with said slide member and thus maintain proper cooperative relationship with the ratchet 42.

When the arm 51 presses against the slide 50 and moves said slide along its guide shafts 40 and 47, the shaft 40 being at that time held against rotation, the effect of the pin 45 against the inclined walls of the spiral groove 44 will serve to rotate the ratchet 42 while moving said ratchet toward the gear 41. This rotation of the ratchet will wind the spring 39, contra-rotation of the ratchet being prevented at all times by the pawl 48.

Movement of the ratchet toward the gear 41 has also compressed the spring 39 and has thus generated a force tending to thereafter slide the ratchet again to the right.

Fixed to the shaft 3 is a gear 52 for receiving power from the gear 41 to rotate the disc 4. Intermediate the gears 52 and 41 is arranged a pair of gears 53 and 54 through which the power of gear 41 is transmitted to the gear 52.

It will be apparent that the energy stored in the spring 39 for rotating the gear 41, as the result of pressure from the arm 51, will be effective to rotate the disc 4 whenever the stop 20 is moved away from one of the lugs 19.

The power for operating the motor H may be derived from any suitable source as for instance from the positive and negative mains 55 and 56, the circuit being closed at a switch 57 whenever the mouth-ear piece G is lifted from its supporting hook 58, the wires illustrated for this purpose being traced as follows: From positive main 55 along wire 59 to one side of the motor thence along wire 60 to switch 57 and back to the negative main through wire 61. The clutch member 15 will thus begin to rotate as soon as the mouth-ear piece G is taken in hand by the dictator.

To operate the clutch member 15 for driving the remainder of the mechanism the dictator presses a button as 62 on the side of the mouth-ear piece which closes a circuit through the solenoid 17 as follows: From the positive main along wire 63 to the solenoid thence along wire 64 to the button 62 and back along wire 65 to the negative main.

The cylinders 6 will now all begin to revolve with their respective spindles and the unit A will start to move laterally. When the button 62 was pressed to start this mechanism it also served to close a circuit through the control solenoid as 66 for the recording needle 67 causing said needle to be brought into operative contact with the surface of the underlying record cylinder so that the speech of the dictator will be recorded on said cylinder in the usual way. The circuit for the solenoid 66 may be traced as follows: From the positive main and wire 59 along wire 68 through the solenoid, thence along wire 69 to the button 62 and back along the wire 65 to the negative main.

The means illustrated for indicating on a record cylinder the place of beginning and ending a section of dictated matter, as for instance a letter, consists of a suitable marker, as for instance a soft white crayon as 70 which is carried by the unit A and controlled by a solenoid 71. By closing a circuit through this solenoid the crayon will be brought into engagement with the surface of the record cylinder and, due to the rotation of the cylinder, will inscribe a line on said cylinder at any time or place at the will of the dictator. A suitable button as 72 may be provided upon the mouth-ear piece G for controlling this solenoid, the circuit as illustrated being as follows: From the positive main and wire 68 along wire 73 to the solenoid, thence along wire 74 to the button 72 and wire 65 to the negative main.

A second crayon, as for instance a red crayon 75, may be provided for marking upon the surface of the cylinder in this same manner whenever so desired by the dictator, as for instance when he desires to call particular attention of the typist to some matter which the typist should consider before proceeding with her transcription. Such a crayon may be controlled by a solenoid 76 and a further button as 77 on the mouth-ear piece, the circuit for such solenoid being traced as follows: From positive main and wire 68 along wire 78 to the solenoid, thence along wire 79 to the button 77 and wire 65 to the negative main.

The mouth-ear piece G is connected with the unit A by a suitable ordinary telephone circuit which is herein illustrated by the two wires 80 and 81.

From the above it will be understood that the unit A will travel at a uniform speed back and forth between its right and left hand extremes and that with each reversal a clean cylinder 6 will be brought into cooperative position beneath said unit, so that the record on succeeding finished cylinders will read in opposite directions.

If now the dictator desires to have reproduced for his hearing matter which he has dictated he places the end of the mouth-ear piece G to his ear and, having released the

button 62, he now presses a button 82 on said piece G. This will cause the unit A to move quickly backwardly over the dictated matter with the recording needle 67 out of operative engagement. When, in the opinion of the dictator, the unit or carriage A has travelled backwardly the desired distance then the button 82 is released and a button 83 is pressed which closes a circuit through a solenoid 84 controlling the reproducing needle 85. The unit or carriage A then moves forwardly again over the record and reproduces the same to the dictator.

Here it is noted that the mouth-ear piece G is constructed so that in its single entity it comprises both a transmitter and a receiver, said features being illustrated diagrammatically in Fig. 1 and indicated by the reference characters 86 and 87 respectively.

The mechanism which caused the unit or carriage A to move backwardly over the dictated matter when the button 82 was pressed consists of a second screw as 88 arranged parallel to the screw 31 but preferably having a steeper pitched thread than said screw 31. It is provided with a gear 89 which stands in constant mesh with the gear 38 of screw 31 and consequently turns at all times in a direction opposite to the direction of rotation of screw 31. The pivoted arm 33 which, as herein before pointed out normally engages the screw 31, is provided with an oppositely extending portion 90 formed with screw threads 91 for engaging the threads of the screw 88 when the arm 33 is swung to an abnormal position. A solenoid 92 is provided for swinging the arm 33 against the tension of the spring 34 and it will be seen that when the arm is swung by said solenoid into engagement with the screw 88 it is at the same time moved out of engagement with the screw 31.

The solenoid 92 is controlled by the button 82, the circuit being traced as follows: from positive main and wire 68 along wire 93 to the solenoid, thence along wire 94 to the button 82 and wire 65 to the negative main.

Pressure of the button 82 also at the same time closed a circuit through the solenoid 17 for connecting the motor H with the mechanism, said circuit being traced as follows: From the positive main along wire 63 to the solenoid 17, thence along wire 64 to button 82 and along wire 65 to the negative main.

Pressure of the button 82 at the same time partially closed a circuit through a solenoid 95, the completion of this later circuit being however controlled by movement of the carriage A between two spaced contacts 96 and 97 (see Fig. 1). With the button 82 pressed a portion as 98 of the carriage will come into engagement with one or the other of the contacts 96 or 97, according to the direction of movement of said carriage and will complete the circuit through the solenoid 95 as follows: from positive main, along wire 99 to the solenoid, thence along wire 100 to the carriage; from the carriage into one or the other of the contacts 96 and 97, along wire 101 to button 82 and wire 65 to the negative main.

Energization of the solenoid 95 in this way will cause the two gears 53—54, which normally stand between the gears 41 and 52, and which are carried in a frame 102, to move out of engagement with said gears 41 and 52 and will at the same time cause a large gear 103, mounted in the frame 102, to move into position between said gears 41 and 52 so that energy from the spring 39 through gear 41 will now be transmitted to the gear 52 in an opposite direction whereby to cause the disc 4 to at once rotate in a reversed direction as compared with the direction in which it had been impelled while the gears 53 and 54 were functioning.

The frame 102, carrying the gears, 53, 54 and 103, is slidably mounted in a suitable stationary bracket part 104 by means of guide rods 105 which are engaged within slide bearings of said bracket part. A tension spring as 106 is provided to hold the frame normally with gears 53 and 54 functioning, the action of the solenoid 95 being opposed to said spring for bringing the gear 103 into functioning relation with gears 41 and 52 whenever the button 82 is pressed and the circuit closed at contacts 96 or 97.

The shaft 26, which as hereinbefore explained is fixed to the arm 25, extends to the vicinity of the screw 88 and there has fixed thereto a second arm as 107 projecting downwardly from said shaft whereas the arm 25 projects upwardly from said shaft. The arm 29 at the opposite end of the screw 31 is fixed to and projects upwardly from a cross shaft 108 which also carries a downwardly projecting arm 109 adjacent the screw 88.

The arms 107 and 109 are provided with lugs 110 and 111 respectively which are arranged to be struck by bumpers 112 and 113, formed at the lower end of a bumper finger 114 rigidly connected with the arm 33, whenever said arm is swung over to engage the screw 88.

When the arm 33 is in its normal position engaging the screw 31 its bumpers 27 and 30 will strike the arms 25 and 29, its bumpers 112 and 113 being meanwhile clear of the arms 107 and 109. While when the arm 33 is swung to abnormal position engaging the screw 88 the bumpers 27 and 30 will stand free of the arms 25 and 29 and the bumpers 112 and 113 will function against the lugs 110 and 111 of arms 108 and 109, it being noted particularly that movement of the carriage in one direction will cause the frame 21 to move in a given direction if the arm 33 is in engagement with the screw 31 but in an op-

posite direction if the arm 33 is in engagement with the screw 88.

If the material which the dictator desires to have reproduced happens to be wholly on the same cylinder 6 as that upon which he is at the time recording, the function of the parts is as follows: Pressure of the button 82 holds the clutch 14—15 connected so that the entire machine is in full operation. It has also swung the arm 33 out of engagement with the screw 31 and into engagement with the screw 88. Since the screw 88 is rotating in a direction opposite to the direction of rotation of screw 31 and since it is of a steeper pitch as compared with screw 31 the carriage will immediately and quickly move backwardly over the dictated matter until after an estimated lapse of time, the button 82 is released by the dictator. This will restore the arm 33 into engagement with screw 31 and out of engagement with screw 88. Due to the deenergization of the solenoid 17 the mechanism will momentarily stop with the carriage A presumably at the point where it is desired that the reproduction shall begin. The dictator presses the button 83 which, as hereinbefore explained, will close the clutch 14—15 to restart the mechanism and will energize the solenoid 84 to bring the reproducing needle 85 against the record. The carriage A, now travelling under the influence of screw 31, will reproduce the dictated matter and will continue thus to the end of said matter or until the dictator releases the button 83.

If, on the other hand, the matter which is to be reproduced happens to be partly on a preceding cylinder 6 the operation of securing reproduction from said preceding cylinder will be automatically accomplished as follows: The button 82 being pressed the carriage A will move quickly backwardly over the dictated matter under the influence of the steep thread of screw 88 as just above referred to. When it has reached the extreme of its movement, say for instance the right hand extreme in Fig. 2, the bumper 113 on finger 114 will strike the lug 111 on pendant arm 109. This will rotate the shaft 108 and, through link 28 will shift the frame 21 toward the left so that the stop 20 of said frame will move away from the lug 19 of disc 4 which it had previously arrested. At the proper moment the contact 97 is struck by the portion 98 of the carriage and the solenoid 95 thereby energized to move the gear 103 into position for causing the disc 4 to move in its reverse or abnormal direction. The stop 20 will serve to arrest this movement when the next lug 19 comes against it.

When the frame 21 moved to the left it of course carried the gear 37 into position beneath gears 11 and 38 so that the direction of rotation of screw 88 was reversed.

The preceding cylinder has by these means been brought back to position beneath the reproducing needle and, with the arm 33 still in engagement with the screw 88, by reason of continued pressure of the dictator's finger on button 82, the carriage will now move rapidly to the left. A still further preceding cylinder would be brought beneath the reproducing needle if the left hand movement of the carriage were continued until the bumper 112 engages arm 107 to again throw the frame 21 to release another lug 19.

The travel of the carriage will stop at any point as soon as the button 82 is released. And then the reproduction may begin by pressing the button 83 to bring the reproducing needle against the record while the carriage moves slowly forwardly again under the influence of the screw 31. The reproduction will of course be carried onto the succeeding cylinder in the same manner as herein above described for straight dictation, it being noted that the solenoid 95 is now deenergized and the gears 53 and 54 again in functioning relation for moving the disc 4 in its normal direction.

It is desired to note that although the drawing and description herein show the cylinders 6 to be arranged concentrically spaced about a rotating disc for convenient interpositioning of the cylinders during operation nevertheless it will be understood that the several cylinders 6 may be if desired carried in other relations, as for instance they may be arranged side by side upon a sliding plate as suggested in the drawing Fig. 6 or they may be arranged end to end on a sliding plate as suggested by the illustration Fig. 7, or they may be even arranged to project radially outwardly from a central carrier as suggested by the illustration Fig. 8.

In all instances the record cylinders are removably supported upon their spindles so that they may be taken off from said spindles and replaced by clean cylinders as required. Since the entire mechanism which is carried by the base plate L is located preferably at a convenient position beside the typist it will naturally be the typist's duty to remove the filled cylinders and to replace them by clean cylinders at all times in order that the dictation coming over the wires from the dictator will always find a clean cylinder and may proceed without interruption or annoyance. The filled cylinders when removed will have directly upon either surfaces suitable marks, made by the crayons 70 and 75, for directing attention of the typist to all features of concern to her, and these filled cylinders may be placed in a suitable machine of the common well known type for reproduction and transcription after which they may be cleaned and returned again to the spindles of the present device.

It is suggested that if desired the several spindles 5 with their carrying disc 4 may be

formed as a detachable unit which may be readily lifted off from the shaft 3 for transposition into a reproducing machine at the typist's desk, or for transposition into a shaving machine, in which instance a similar substitute unit with a new set of cylinders would preferably be at once placed onto the present machine.

If desired the entire mechanism supported by the base plate L may be covered by a hinged and sound proof cover element as indicated by the reference character 115, such a cover being effective not only to protect the mechanism from dust and dirt but also to prevent any sound from being audible about the room in which the device is situated.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A dictating machine comprising means for supporting and rotating a plurality of record cylinders, means operable at a distance to transmit to said cylinders material for record, and said means comprising also parts by which to impress visible instruction marks upon the record cylinders.

2. In a dictating machine, comprising a record cylinder, a recording unit adapted to move back and forth along said cylinder in the usual manner, the combination therewith of a crayon mounted adjacent the cylinder, a part adapted to be arranged at a distance by which to transmit to the cylinder material for record, and said part comprising means operable at will to cause the crayon to move into engagement with the cylinder.

3. In a dictating machine, comprising a record cylinder, a recording unit adapted to move back and forth along said cylinder in the usual manner, the combination therewith of a plurality of crayons of different kinds, mounted adjacent the cylinder, a part adapted to be arranged at a distance by which to transmit to the cylinder material for record, and said part comprising means operable to cause the crayons to move against the cylinder selectively at will.

4. A dictating machine comprising a plurality of record cylinders, means for rotating said cylinders, a reproducing unit for traversing said cylinders, and means whereby said unit will travel in opposite directions longitudinally along said cylinders successively.

5. A dictating machine comprising a plurality of record cylinders, means for rotating said cylinders, a reproducing unit for traversing said cylinders, means to move said unit in opposite directions, and means whereby a new cylinder will be moved into cooperative relation with said unit at each reversal of the direction of movement of said unit.

6. A dictating machine comprising a plurality of record cylinders, means for rotating said cylinders, a reproducing unit for traversing said cylinders, means to move said unit, means to automatically reverse the direction of movement of said unit at opposite ends of its travel, and means to automatically bring a new cylinder into cooperative relation with said unit at each reversal of the direction of travel.

In testimony whereof I affix my signature.

THORNTON W. PRICE.