

**No. 682,830.**

**Patented Sept. 17, 1901.**

**C. F. MELEN.**  
**TYPE WRITING MACHINE.**

(Application filed July 5, 1900.)

(No Model.)

**5 Sheets—Sheet 1.**

Fig. 1.

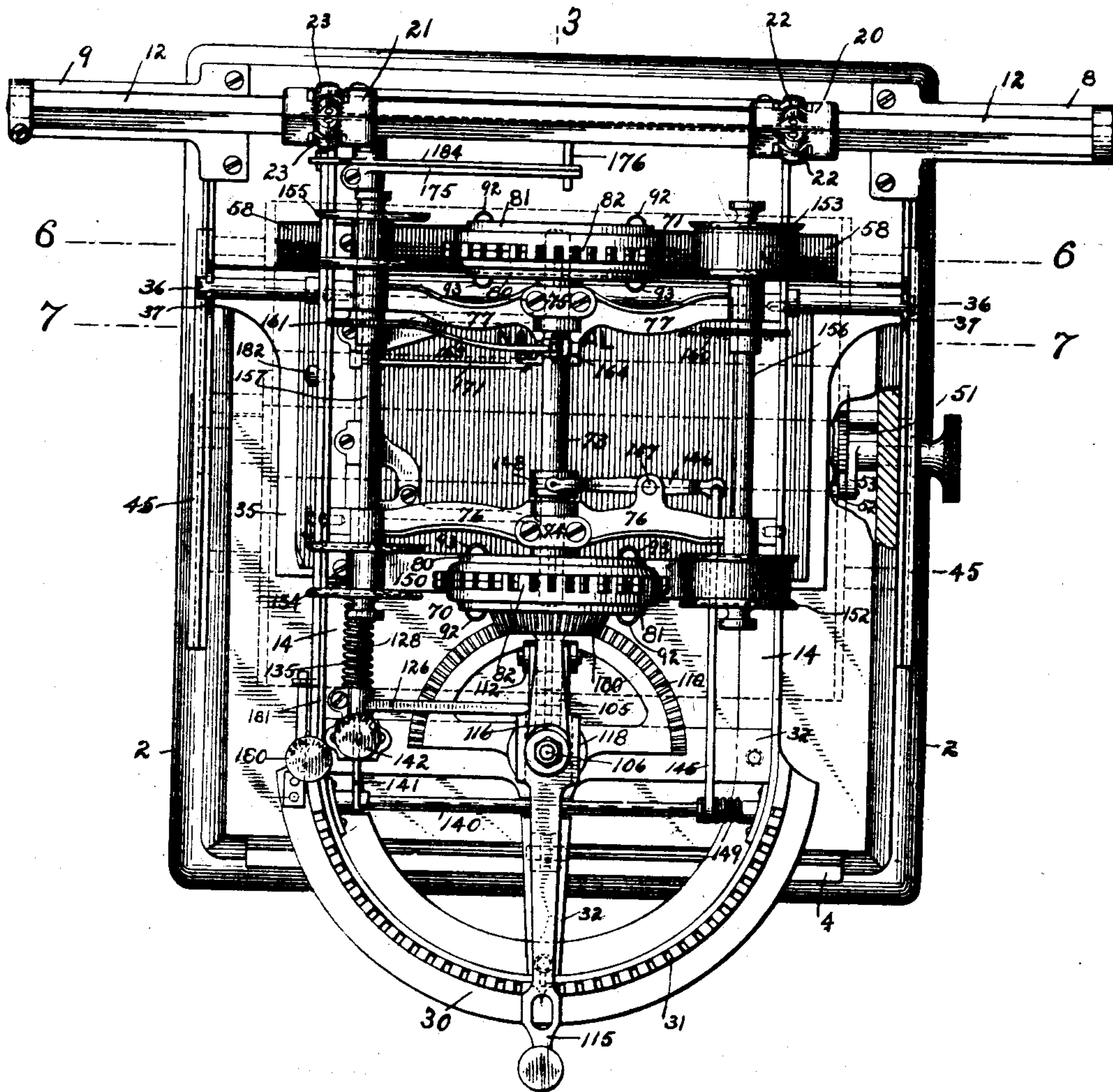
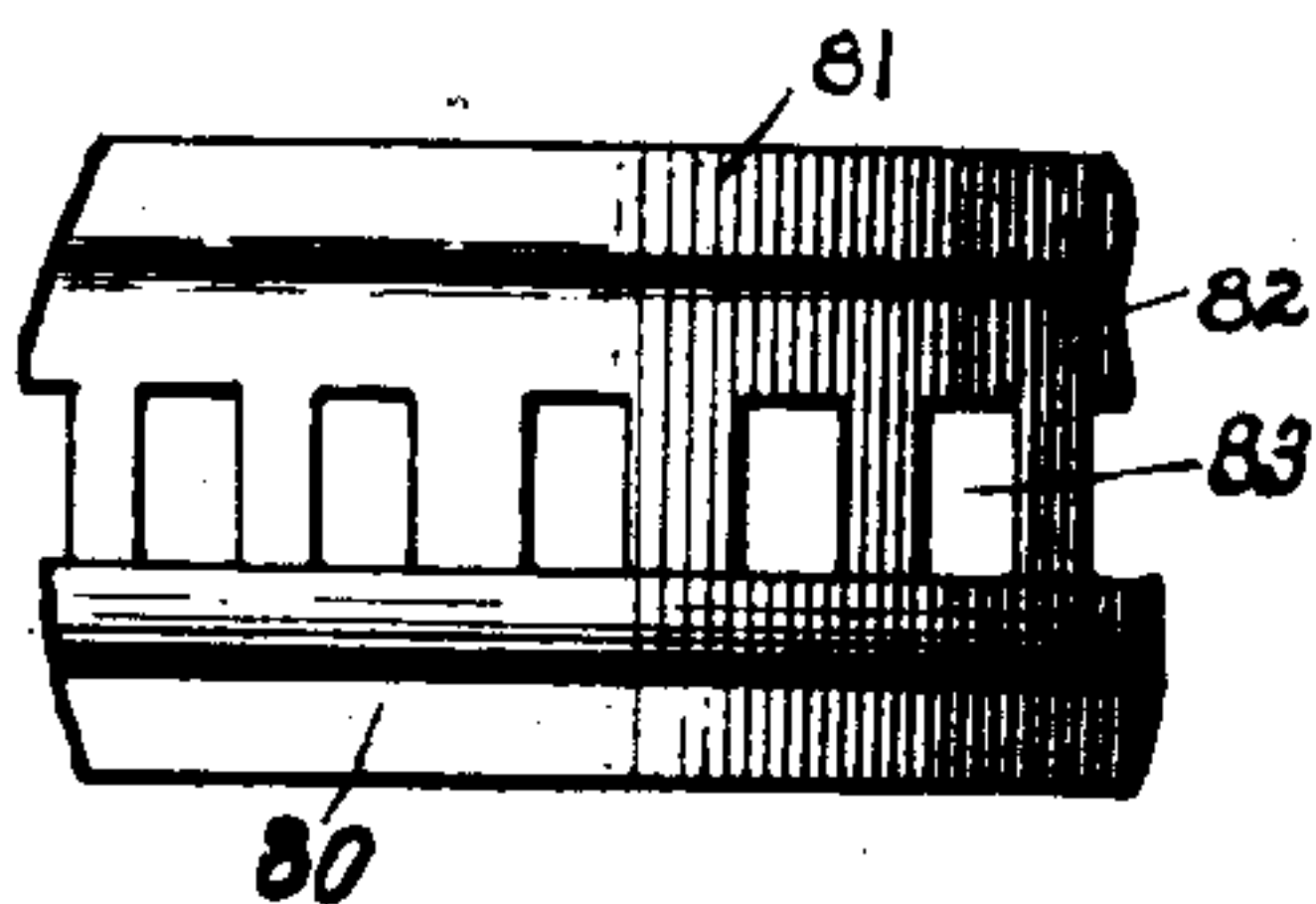


Fig. 15.

**WITNESSES:**

F. N. Rockrich.  
Henry N. Brown.



INVENTOR

Charles F. Melan

BY

BY  
Walter Brown  
his ATTORNEY.

ATTORNEY.

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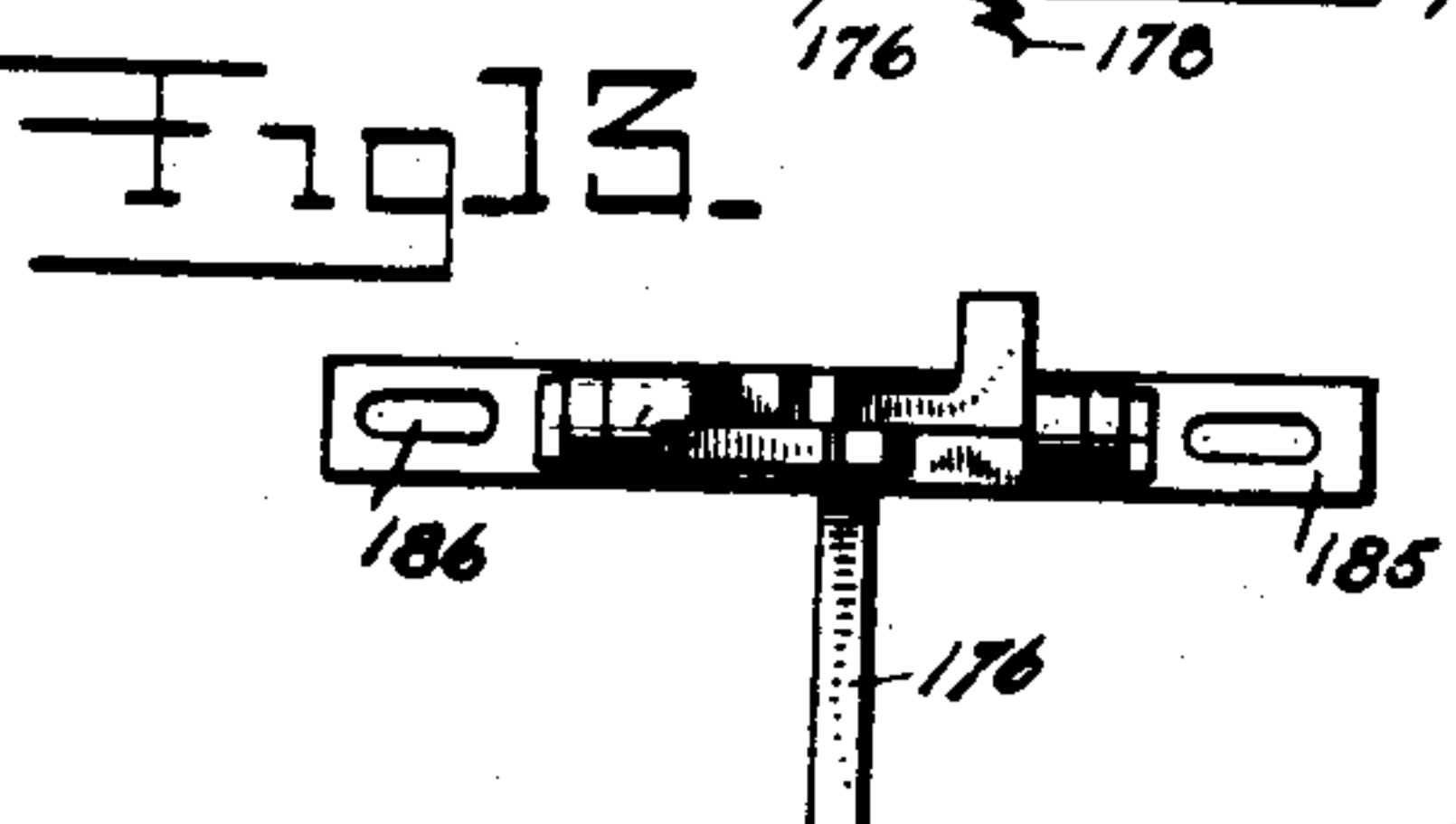
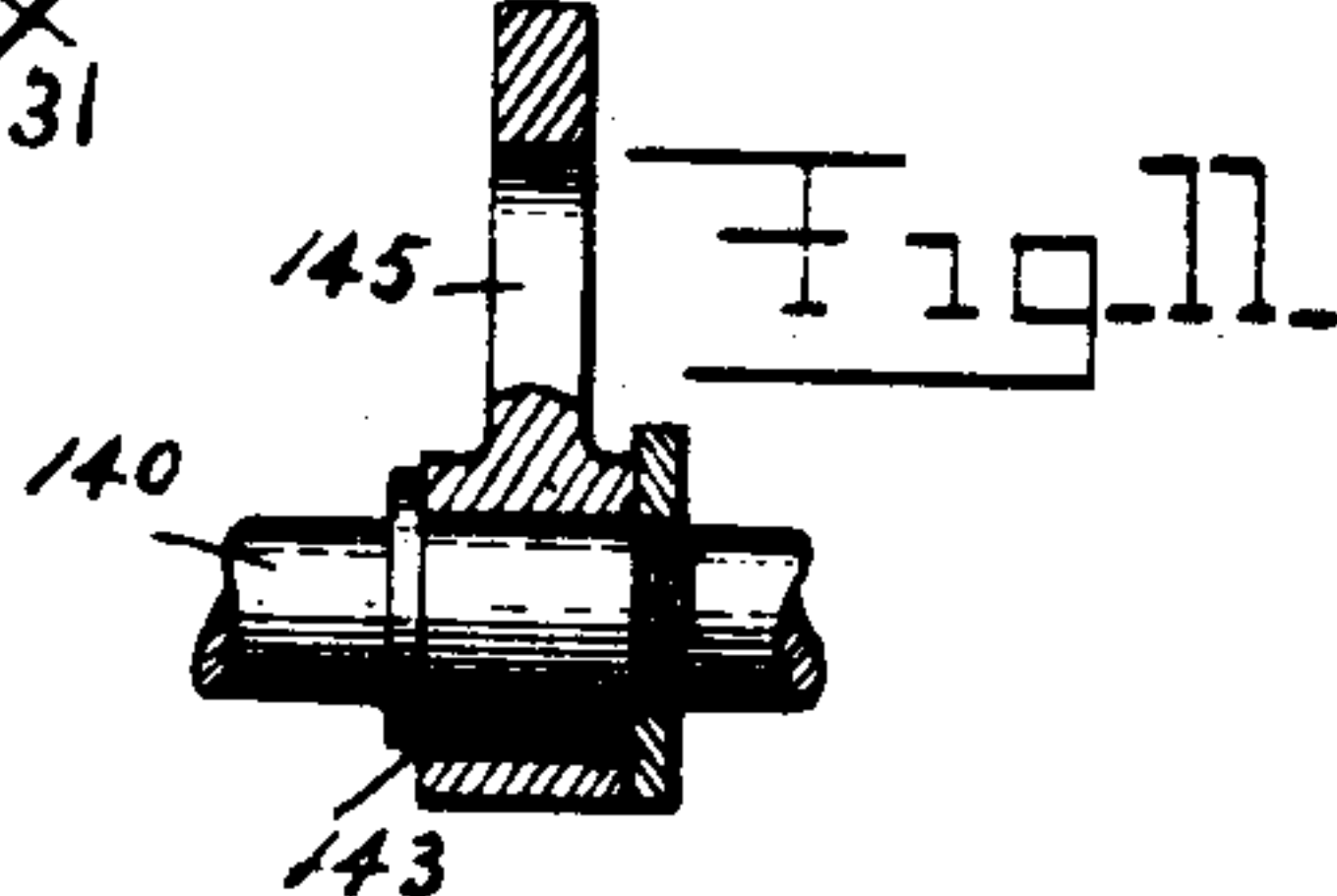
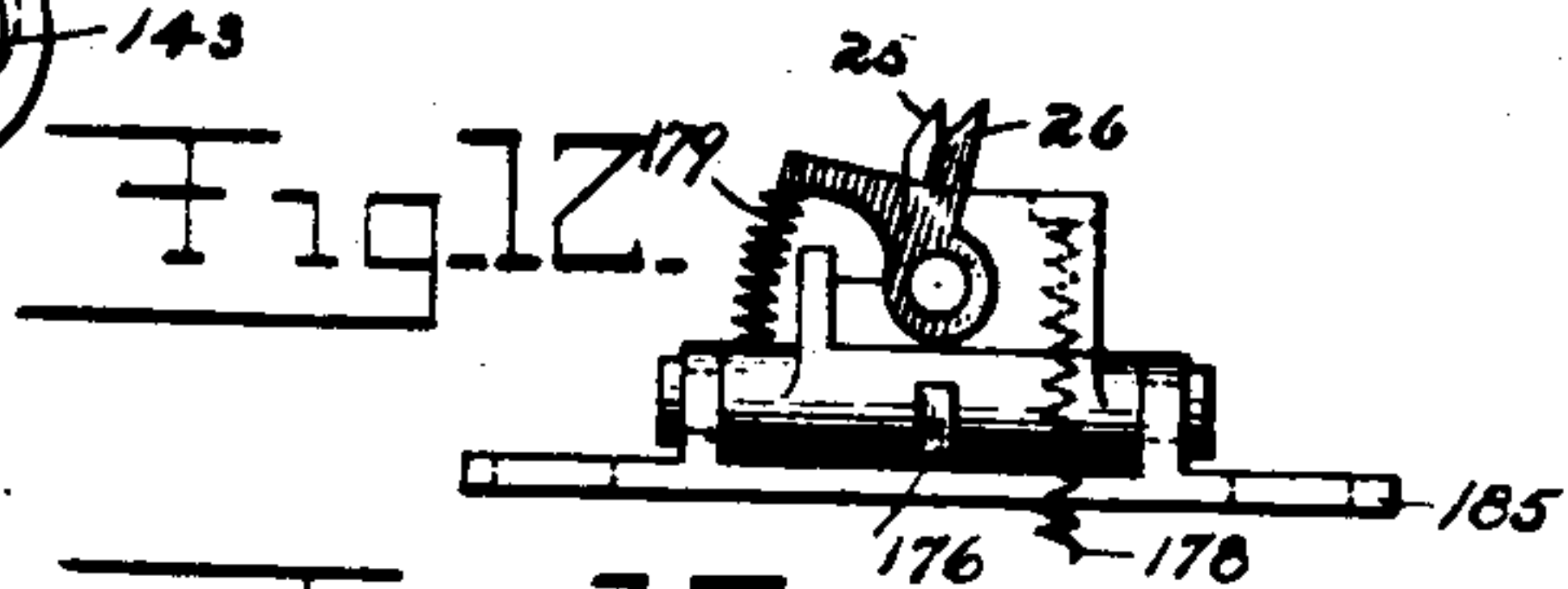
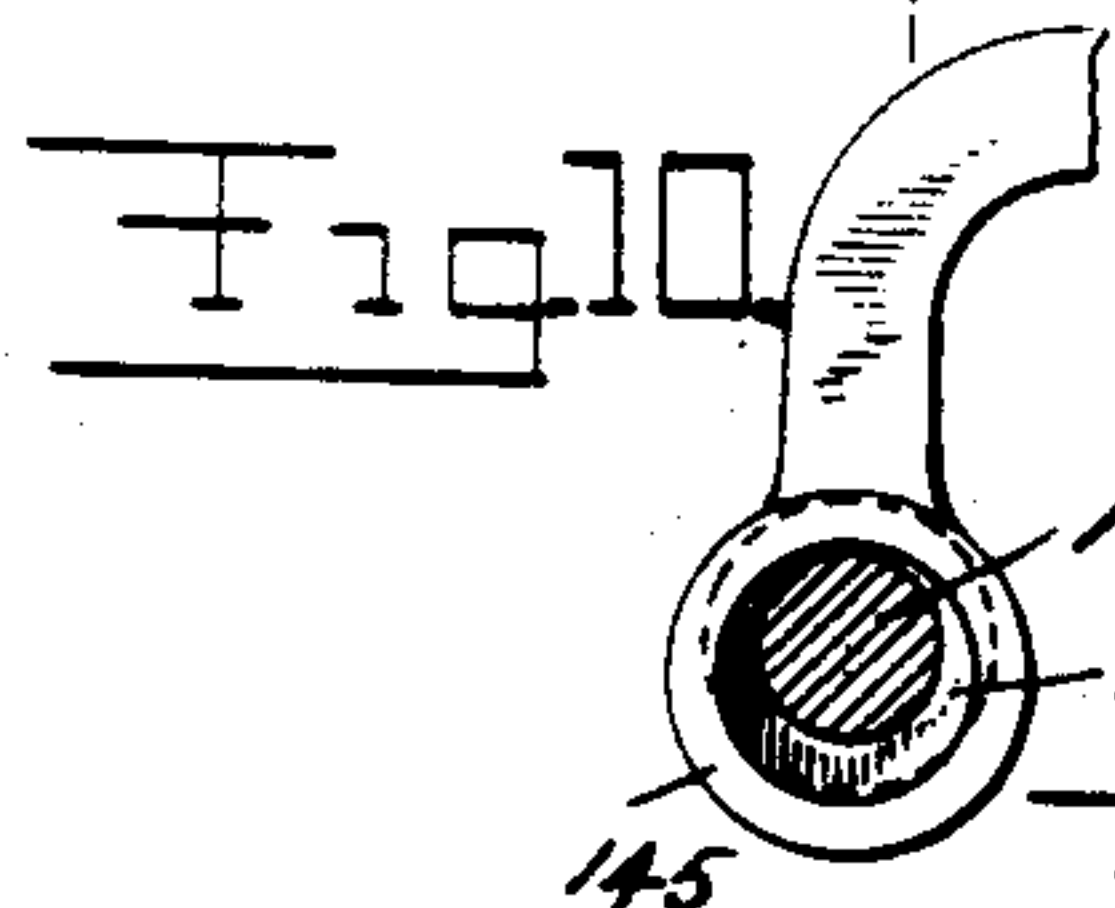
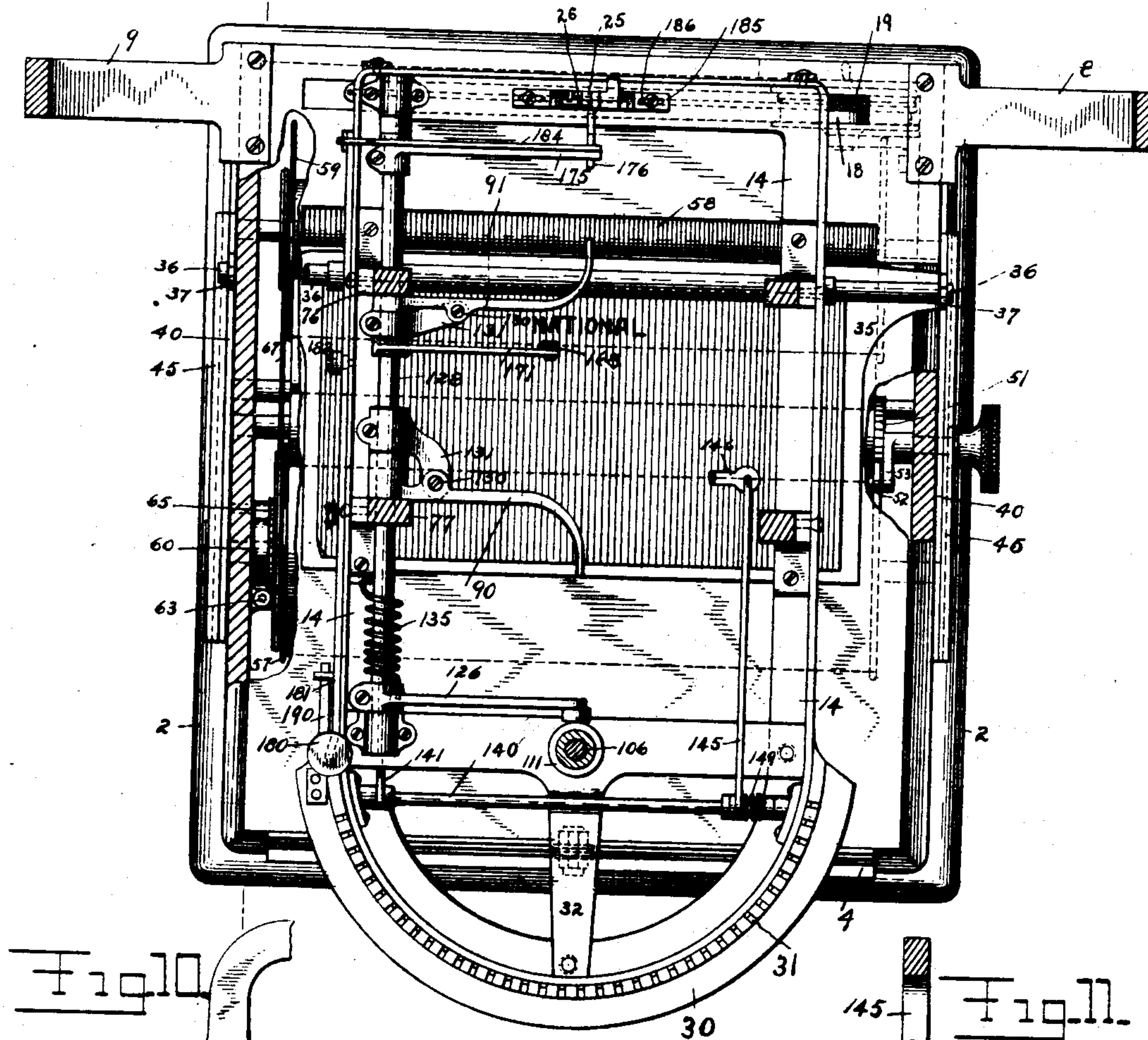
C. F. MELEN.  
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(No Model.)

5 Sheets—Sheet 2.

Fig. 2.



WITNESSES:

*F. N. Roehrich*  
*Henry V. Brown*

INVENTOR

*Charles F. Melen*

BY

*Walter Brown*  
his ATTORNEY



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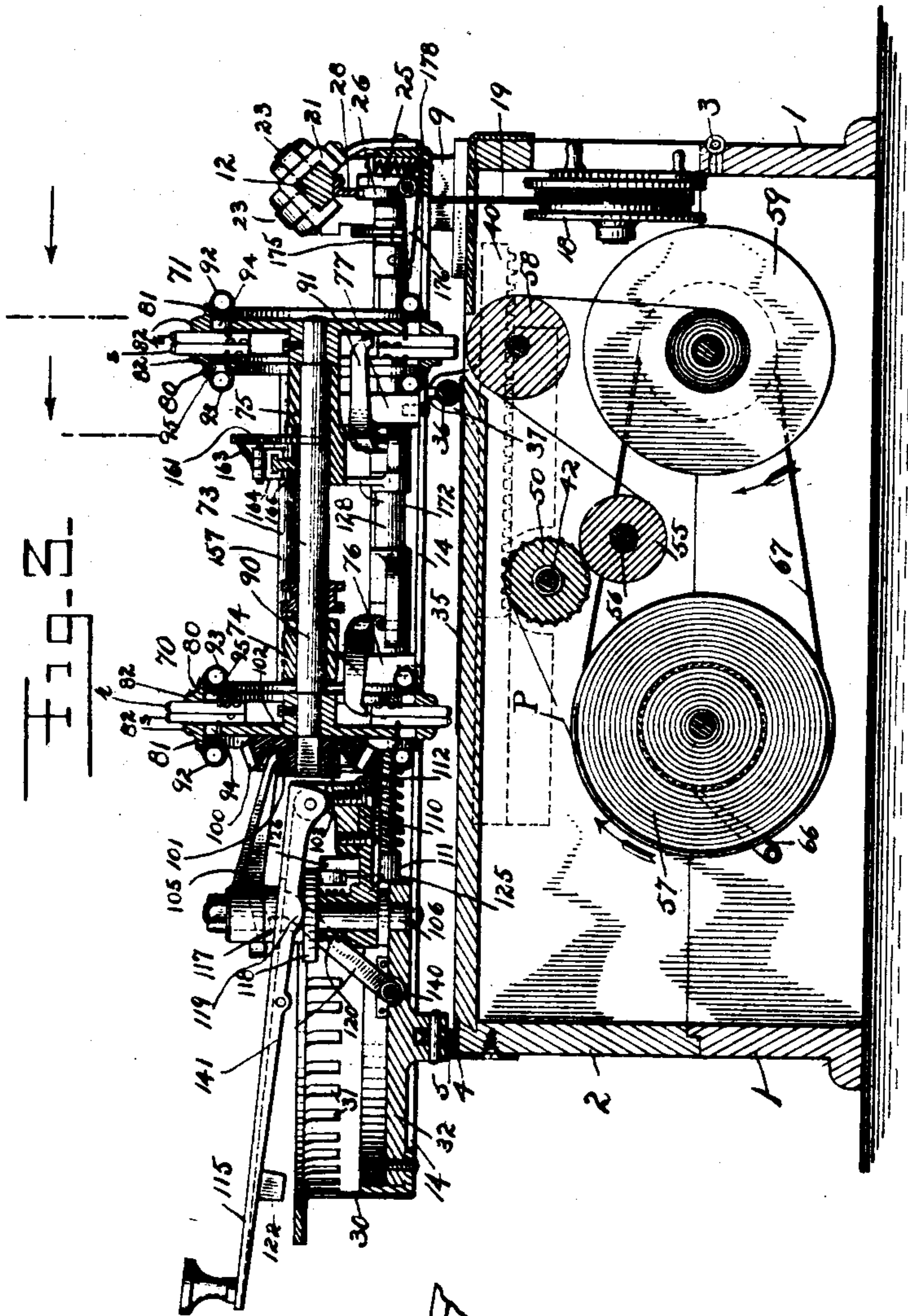
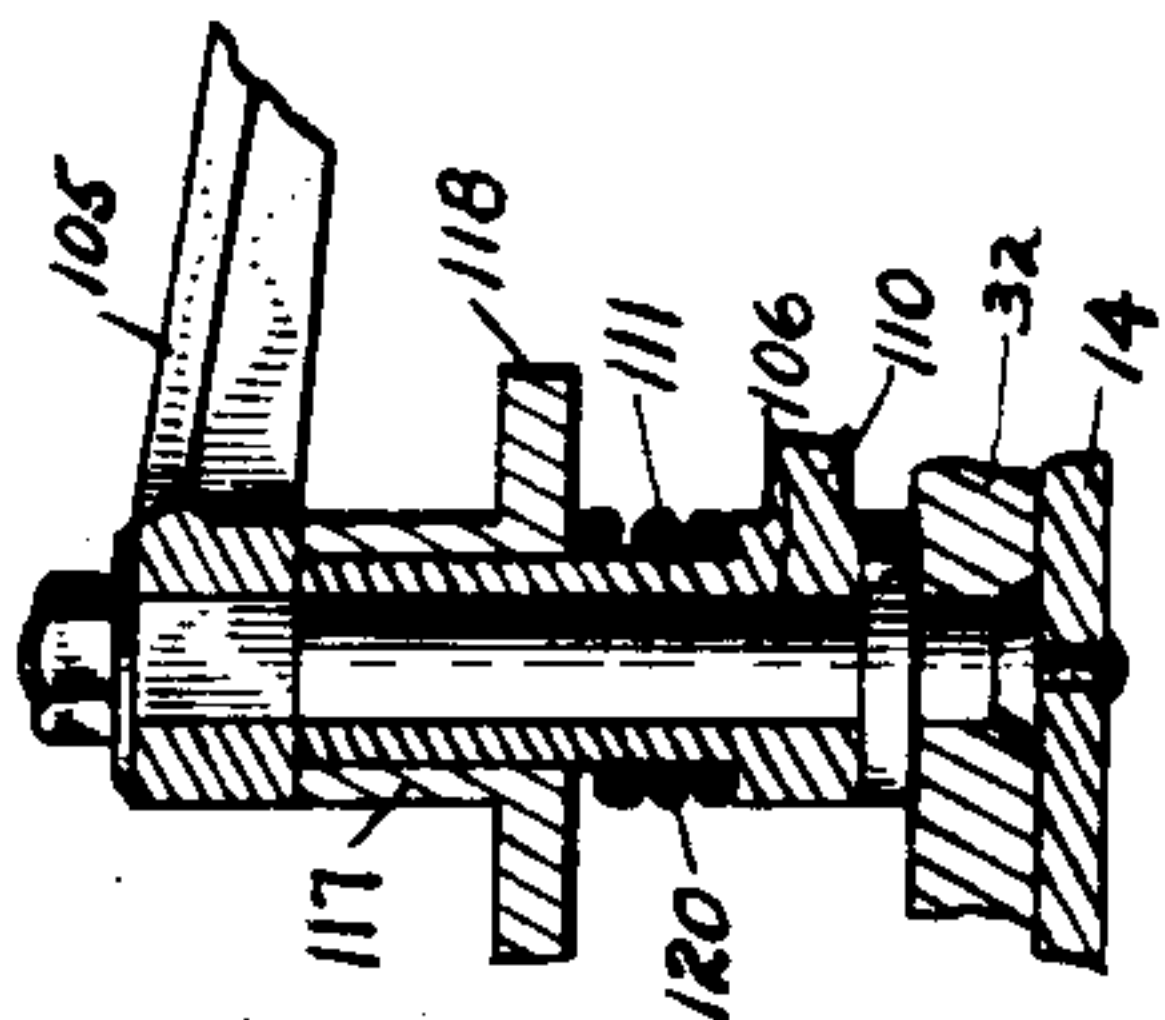


Fig. 14-



WITNESSES:

*F. N. Roehrich*  
*Henry V. Brown*

INVENTOR

*Charles F. Melen*

BY

*Walter Brown*  
his ATTORNEY

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5 Sheets—Sheet 4.

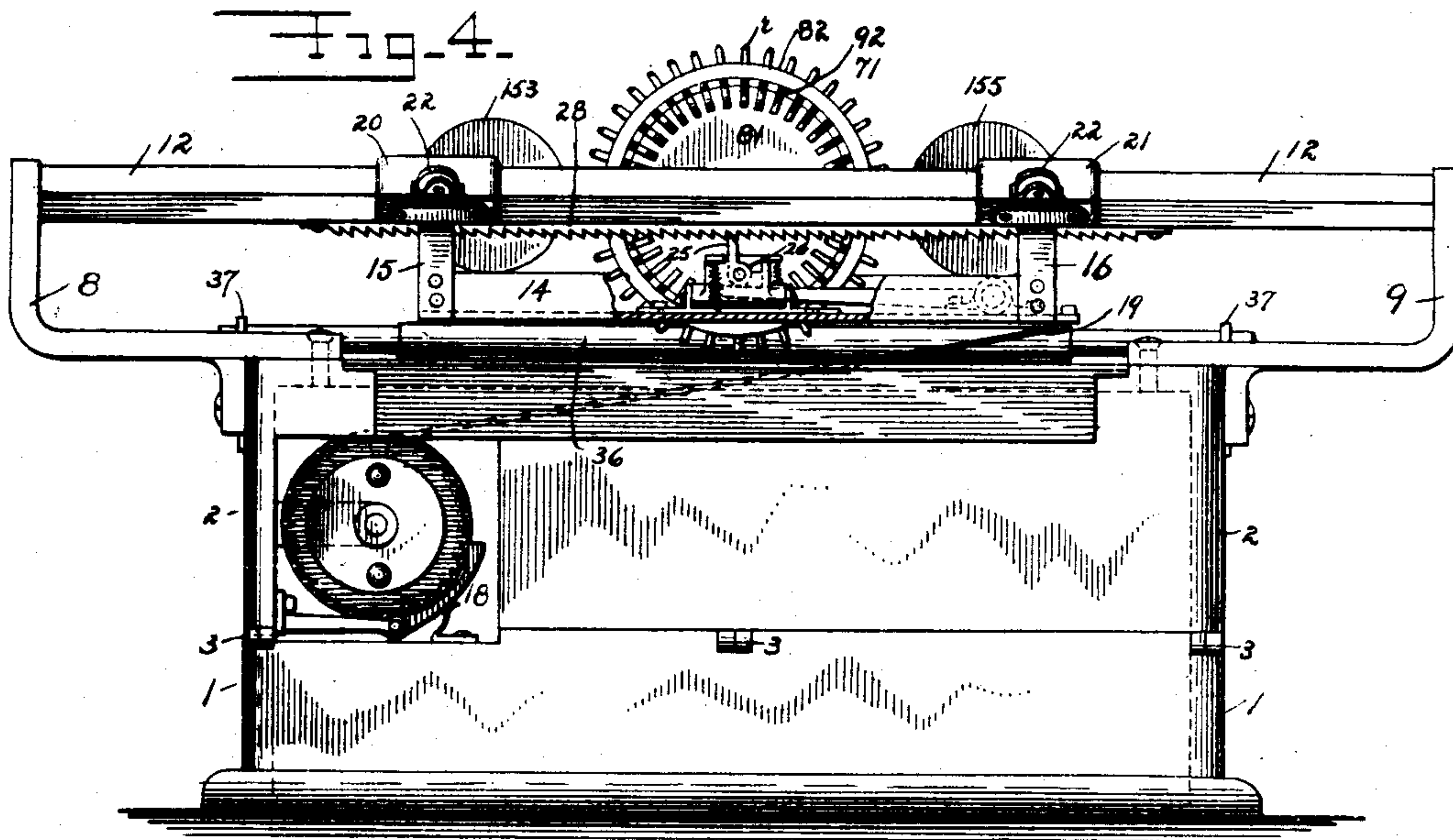
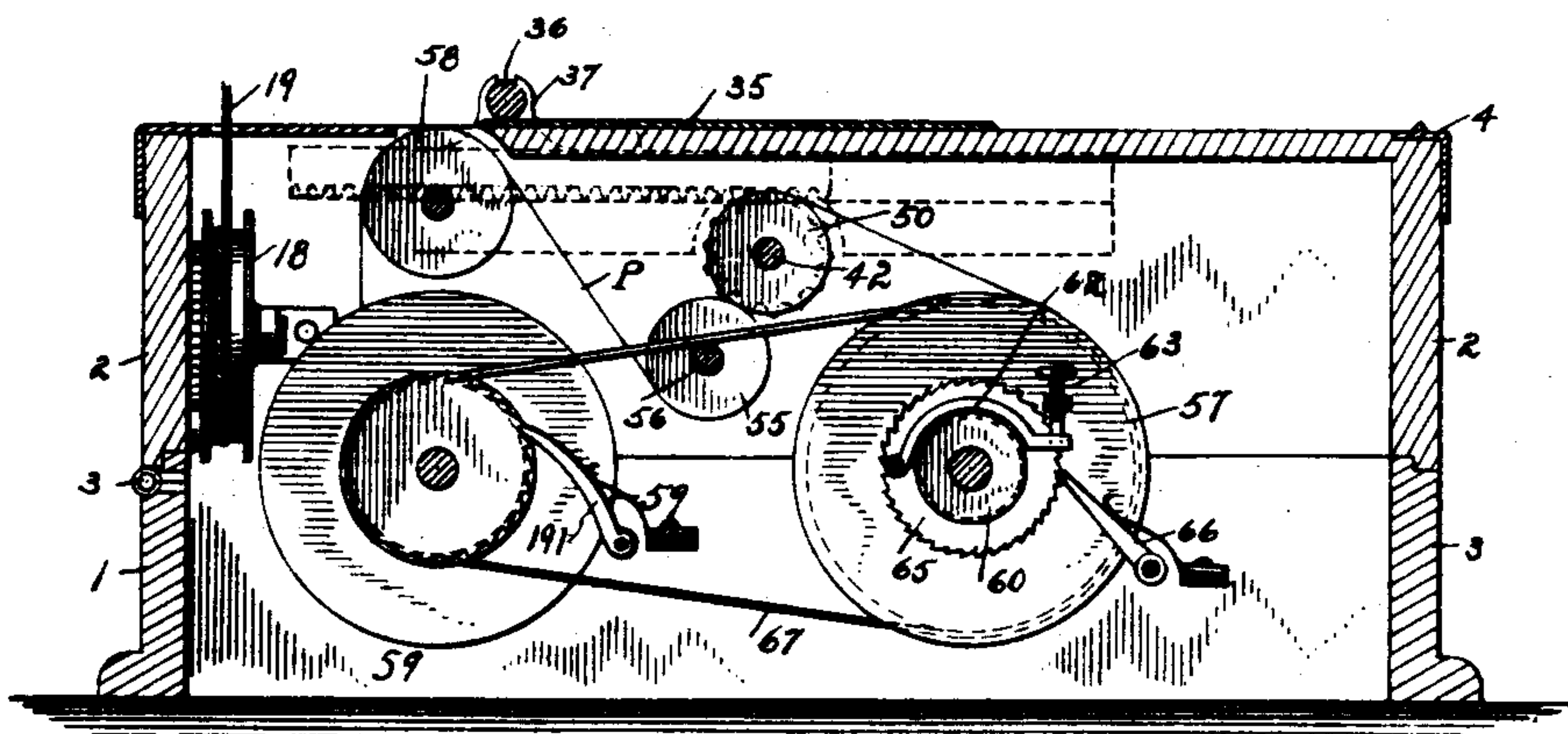


Fig. 5.



WITNESSES:

*F. N. Roehrich*  
*Henry H. Brown*

INVENTOR

*Charles F. Melen*

BY

*Walter Brown*  
his ATTORNEY



C. F. MELEN.  
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Fig. 6.

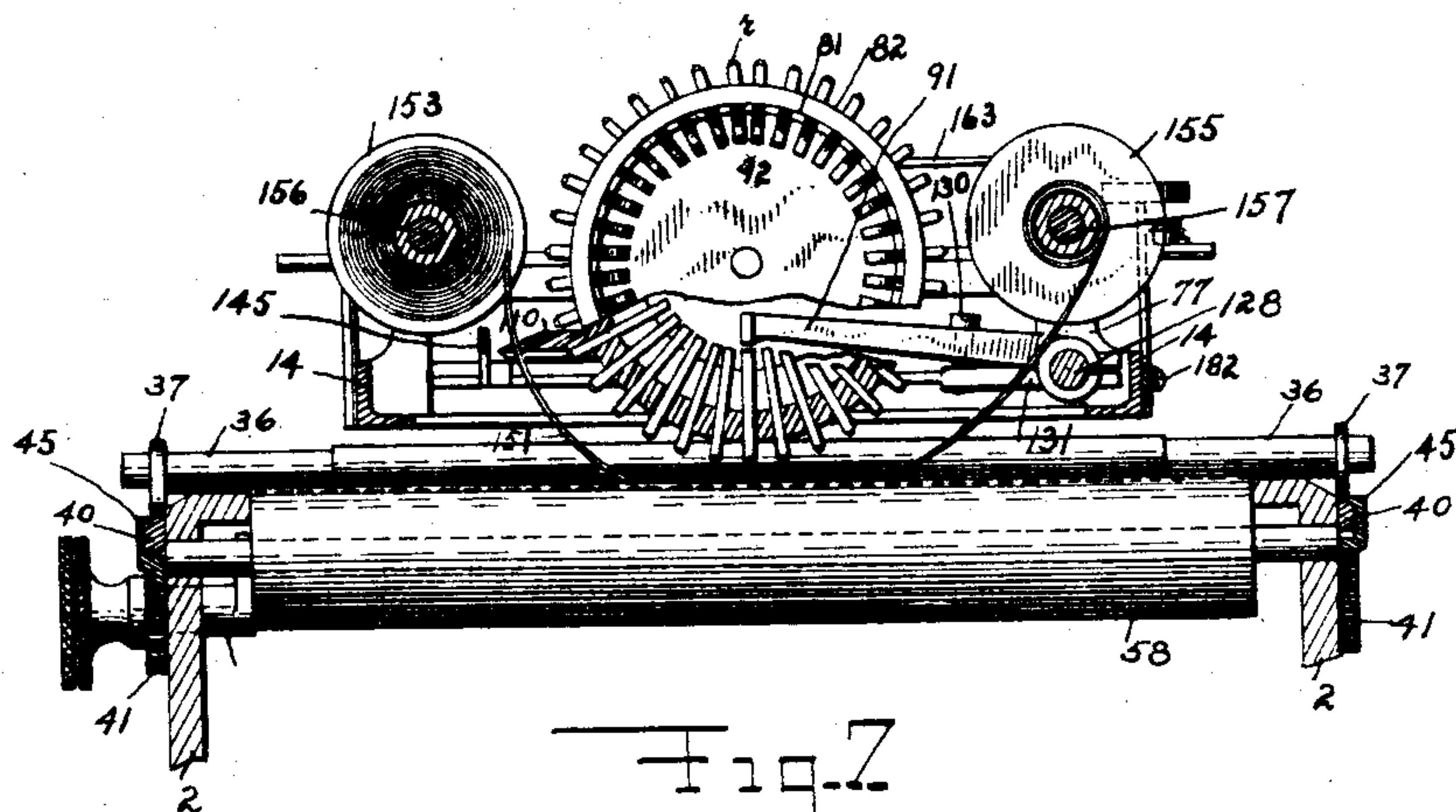


Fig. 7.

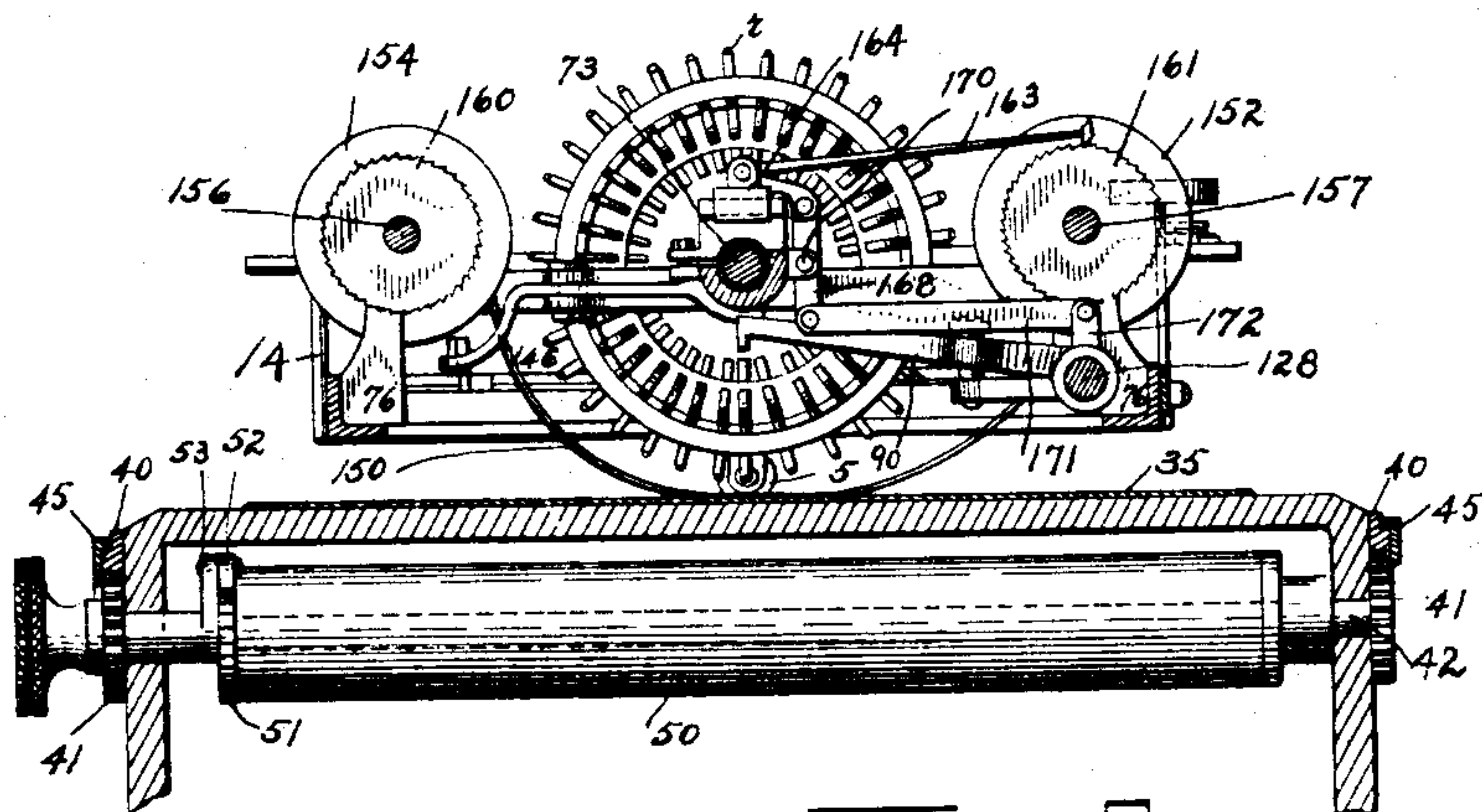


Fig. 8.

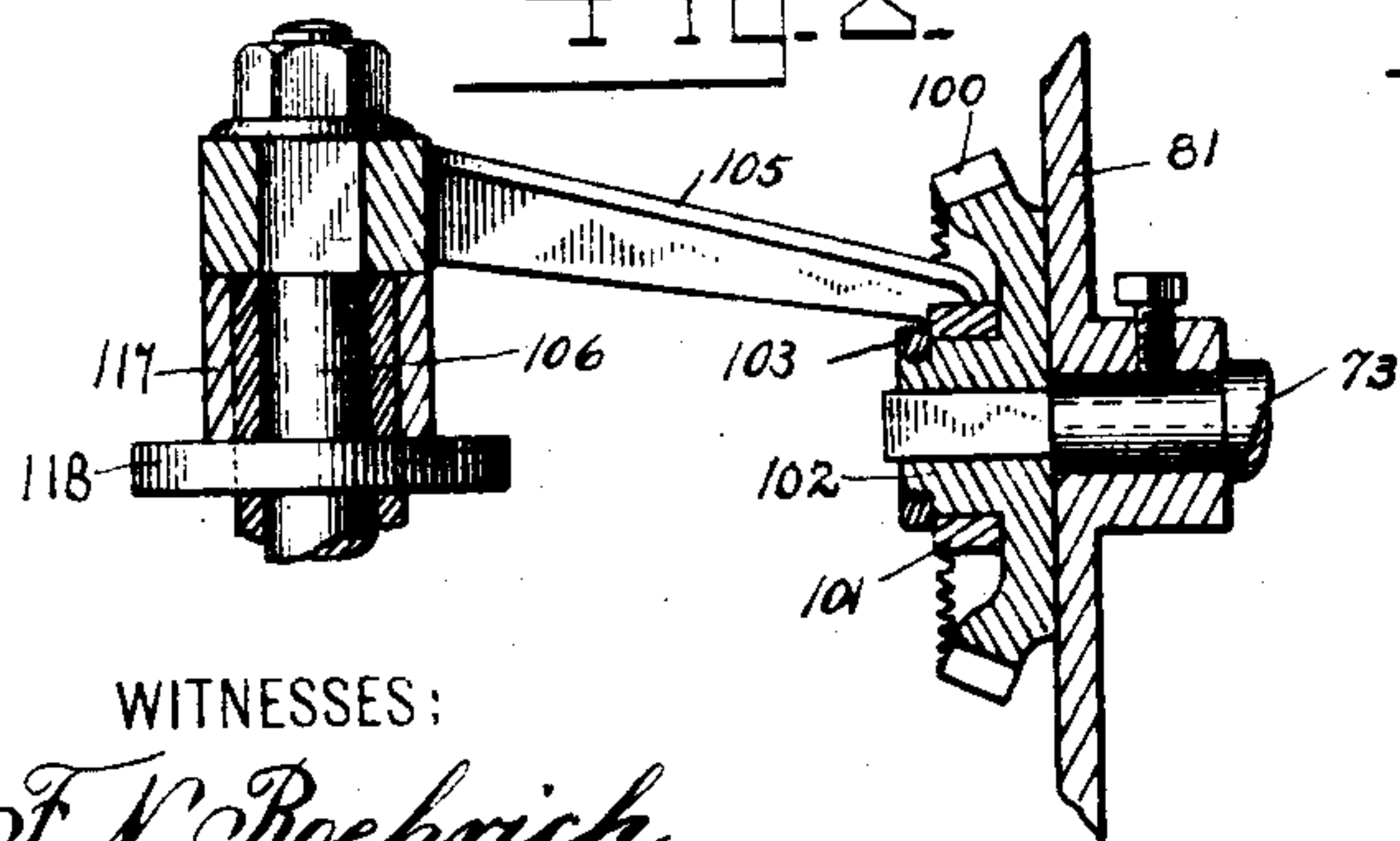
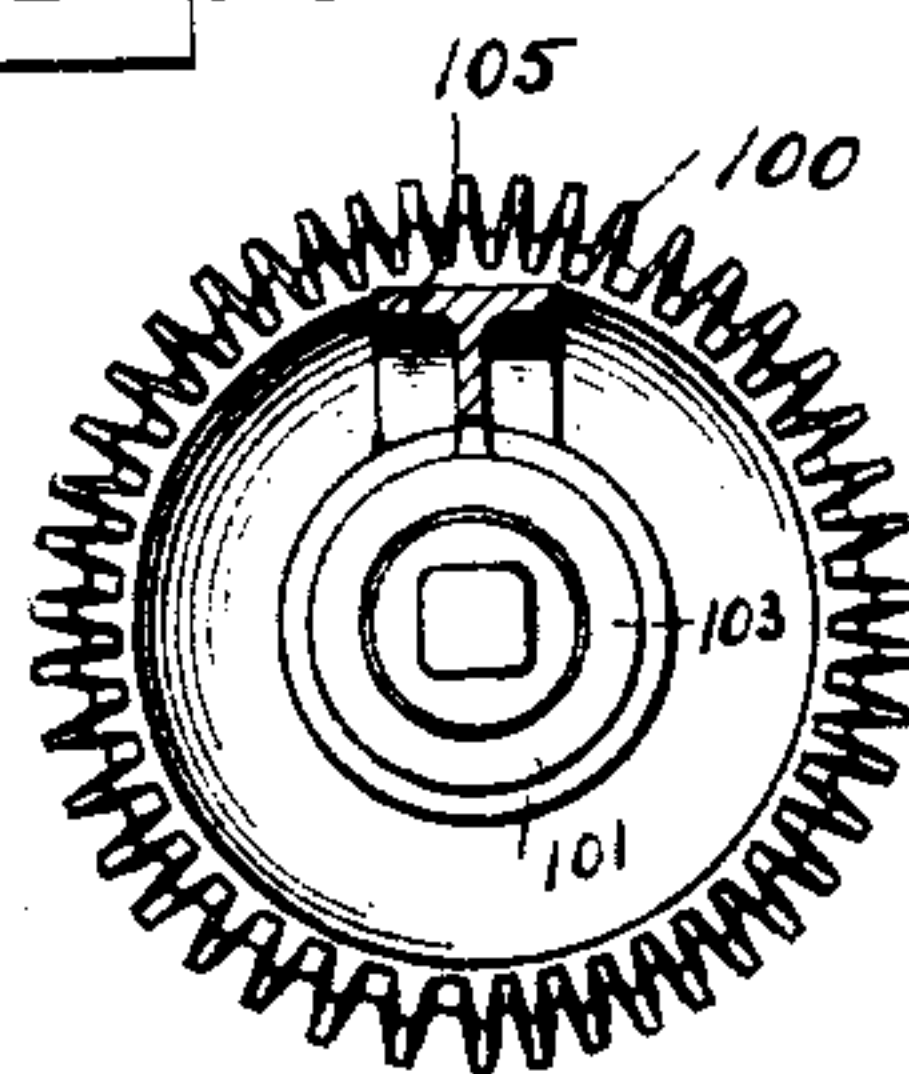


Fig. 9.



WITNESSES:

*F. N. Roehrich*  
*Henry V. Brown.*

INVENTOR

*Charles F. Melen*

BY

*Walter Brown*  
his ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES F. MELEN, OF EVERGREEN, NEW YORK, ASSIGNOR TO JAMES N. DARRAH, OF NEW YORK, N. Y.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,830, dated September 17, 1901.

Application filed July 5, 1900. Serial No. 22,572. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. MELEN, a subject of the Queen of Great Britain and Ireland, and a resident of the town of Evergreen, in the county of Queens and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

10 This invention relates to improvements in type-writers, and particularly of that kind known as "check-writers"—that is, machines wherein the body of the check is written in by the machine at the same time that  
15 a duplicate record is made, which latter is contained and preserved in a receptacle to which no one except the duly-authorized person can obtain access. Thus the duplicate record becomes a safeguard against altering  
20 the check, as it furnishes a means for immediately detecting any alteration.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a plan view, partly broken, of the  
25 machine. Fig. 2 is also a plan view, partly broken and sectioned, but with the type-wheels and parts which are above the level of the printing-shaft removed. Fig. 3 is a longitudinal vertical section on the line 3 3  
30 of Fig. 1. Fig. 4 is a rear elevation, partly broken, and showing the cross-shaft on which the carriage travels for the word and letter spacing. Parts of the carriage and one type-wheel are shown in this figure. Fig. 5 is a  
35 longitudinal vertical section of the base of the machine with the paper-feeding mechanism and as seen from the left side of Fig. 1. Fig. 6 is a cross-section and elevation, partly broken, on the line 6 6 of Fig. 1. Fig. 7 is a  
40 cross-section and elevation on the line 7 7 of Fig. 1. Fig. 8 is a detail, on large scale, of the bevel-gear for revolving the type-wheels and the collar which prevents lateral motion of said gear; and Fig. 9 is a front elevation  
45 of the gear and showing the arm of the collar in section. Fig. 10 is a cross-section, on large scale, of the eccentric which shifts the type-wheels in changing from small letters to capitals; and Fig. 11 is a longitudinal section of  
50 the same. Fig. 12 is a front elevation, on large scale, of the spacing-escapement dogs.

The movable dog is out of mesh with the spacing-rack. Fig. 13 is a plan view of the same parts. Fig. 14 is a vertical section, on large scale, of the pivot of the printing-lever. 55 Fig. 15 is a broken plan view, on a large scale, of a type-wheel without type.

*The base, framing, and carriage.*—The carriage is supported on a suitable base, which may be a rectangular frame 1, fastened to 60 any suitable support or a box.

2 is a cover carrying the proper feeding mechanism for the duplicate record and hinged to the frame 1 at 3. The cover and frame or box constitute a receptacle for the 65 duplicate record and will be locked by a suitable lock, of which the key is in the possession of only such person or persons as have the right of access to the duplicate record.

On a rail 4 on the front of cover 2 travel 70 the wheels 5 of the carriage 14 in its spacing movements, and in the upwardly and outwardly curved standards 8 9, Fig. 4, which are fixed on the rear end of said cover, is pivoted the square shaft 12, on which rear end 75 of the carriage 14 travels transversely in said spacing movements. Said carriage 14 is provided with an open substantially rectangular metal frame, but rounded at the front, as seen in Figs. 1 and 2, which frame depends 80 at the rear by the hangers 15 16 from said shaft 12. The upper ends of said hangers 15 16 are fastened, respectively, to rectangular sleeves 20 21, (clearly shown in end elevation in Fig. 3,) which sleeves carry antifriction- 85 rollers 22 22 23 23, which travel on said shaft 12. Escapement-dogs 25 26 on said carriage 14 are arranged to engage a rack 28 on said shaft 12 in the manner hereinafter described. The carriage 14 is moved by a step-by-step 90 movement by the spring-drum 18 and cord or chain 19 in the ordinary manner. The front of the carriage-frame being round, as shown, carries a segmental wall 30, in which are slots 31, one for each character which is to be 95 printed, and the carriage-frame is strengthened by a three-armed spider 32, in which is fixed the vertical fulcrum-post 106 of the printing-lever, as will be described. The character to which each slot corresponds is 100 indicated on the top flange of said wall 30.

*The platens and paper-feed.*—The check



(indicated by the shading on Figs. 1 and 2) is placed on a flat platen 35 and its rear edge secured under the roll or bar 36, which clamps the check to the platen, said roll 36 having flattened ends, which can rise in the slots of the ears 37 of the platen, Figs. 1 and 3, so that the edge of the check can be inserted under said roll 36. Said platen 35, being preferably a thin flat plate of metal and widened at its rear end, as seen in Figs. 1 and 2, at each side, is at those widened rear parts fixed to horizontal racks 40 40, with which mesh pinions 41 41, fixed on the cross-shaft 42, which turns in said cover 2 and is at its outer end provided with a knurled head, as shown. Said racks 40 are fastened to the bent-down edges of the platen 35, which edges move in parallel guides 45, which are formed on the sides of the cover 2. The construction is clearly indicated by dotted lines in Fig. 3, and the slots are seen in Fig. 1. Thus by turning the shaft 42 the platen can be moved toward the front or rear of the machine.

On shaft 42 is a loose roller 50, having a ratchet-wheel 51 fixed on one end, with which engages a pawl 52, which is carried on an arm 53, that is fixed on said shaft 42, and the teeth of ratchet-wheel 51 are so cut that when shaft 42 is turned to move platen 35 rearward roller 50 will be revolved, but that shaft 42 may be turned in the opposite direction without revolving said roller 50. In frictional contact with said roller 50 is roller 55, fixed on a shaft 56, which turns in the cover 2. The paper strip P for the duplicate record being originally wound on the spool 57 goes partly around roller 50 and between it and roller 55, partly around roller 55 and up over the paper-carrier or round platen 58, and then to the spool 59, on which it is wound as the machine is operated. The hub 60 of said spool 57 is provided with a friction-brake 62, carried on the cover 2, the pressure of the brake being regulated by the screw 63, Fig. 5. A ratchet-wheel 65 and pawl 66 permit spool 57 to turn for unwinding strip P, but prevent its turning in the reverse direction until pawl 66 is thrown out of engagement with said ratchet-wheel 65. A ratchet-wheel 193, with pawl 191, is also provided for spool 59. Said ratchet-wheel 193 and pawl 191 permit the spool 59 to turn in the direction of the arrow, Fig. 3, to wind up the strip P on said spool 59, and thereby draw said strip P through the machine in the required direction, but they prevent the said spool 59 from being accidentally or surreptitiously rotated in the reverse direction, and therefore the strip P cannot be drawn back so as to disclose a record that has been wound up on the said spool until the person who has the key for unlocking the box opens said box and by hand detaches said pawl 191 from said ratchet-wheel 193. A larger pulley on spool 57 and a smaller pulley on spool 59 are connected by belt 67, as shown. Thus when the movement of the platen 35 and its racks 40 revolve roller 50 in the manner hereinbefore

described the motion of said roller 50 pulls the strip P, which is held in frictional contact with the said roller 50 by the roller 55, and the strip revolves the spool 57 in the direction of the arrow in Fig. 3. The rotation of said spool 57 is communicated through its pulley to the said belt 67, Fig. 5, and said belt 67 causes the spool 59 to revolve, so as to take up the strip P as it is unwound from said spool 57. The pulley of spool 59 is made smaller than that of spool 57, so that the more rapid rotation of spool 59 shall compensate for the larger diameter of the roll of paper on said spool 57 when the strip is beginning to be wound on spool 59. As the paper unwinds from the spool 57 and winds upon spool 59, and spool 59 tends to wind up the strip more rapidly than it comes from spool 57, belt 67 slips on one or both of the pulleys, being loose enough for the purpose, and the strip continues to be wound without slack and without being torn.

*The type-wheels and printing mechanism.*— Two type-wheels—70 for the original and 71 for the duplicate record—each containing the same characters similarly arranged, are fixed on the shaft 73, which turns in boxes 74 75 on standards or brackets 76 77, which are fixed on the carriage 14. Both type-wheels have substantially the same construction, which is preferably the following: An inner annular plate 80 is bolted to an outer flanged plate 81, and the flange 82 of the latter is provided with radial slots 83 in number equal to the number of characters to be printed. All said slots terminate at their inner ends in an annular space around the hub 85 of said plate 81. Thus when the plates 80 81 are bolted together there are formed chambers, each of which is adapted to contain two type, "r" "S," "r" being the lower and "S" the upper case letters, and the inner ends of said type project into the aforesaid annular space, so that they can be struck by the hammers 90 91. Of course the chambers for figures, punctuation-marks, &c., will contain only one type. Each type is engaged by the end of a spring 92 or 93, which is fastened to the plates 80 or 81, the ends of the springs passing in through holes 94 95 in their respective plates to engage the type, so as to hold the same normally inward—i. e., out of the printing position. Said shaft 73 has a sliding fit in the boxes, and the bevel-gear 100, Figs. 1, 3, and 8, has a sliding fit on the square front end of said shaft 73. Said gear 100 is held against lateral movement by the collar 101, in which the hub 102 of said gear is centered, and the ring 103 on said hub, and said collar 101 is carried by the stationary arm 105, which is fixed on the upper end of the said fulcrum-post 106, which is fixed in the aforesaid spider 32 of the carriage 14. Said gear 100 meshes with the horizontal bevel-gear segment 110, the hub 111 of which fulcrums on said post 106, Figs. 3 and 14. In the standard said segment 110 is pivoted the printing-lever



115, the slot 116 of which spans with nice fit the neck of the flanged collar 117, which works on said hub 111. The under side of said printing-lever 115 is provided with bosses 5 119, which engage and depress the flange 118 of said collar 117 when said lever is depressed, and said collar is normally elevated by the spring 120. Said lever 115 is provided with a knife 122, which enters the slot 31 corresponding to the character which is to be 10 printed when the lever 115 is depressed. Said flange 118 engages a roller 125 on an arm 126, which is fixed on the shaft 128, on which are also fixed the aforesaid hammers 90 91. Thus 15 the depression of printing-lever 115 depresses arm 126, and that causes the said hammers 90 91, which are curved, as seen in Fig. 2, to knock down and impress that type which corresponds to the slot in which knife 122 20 has entered on the check and the duplicate strip. To facilitate accurate adjustment of said hammers, screws 130 in arms 131 of said shaft 128 are provided, suitable springs holding said hammers normally up from said arms 25 131. Said hammers 90 91 are normally held up and out of engagement with the type by the spring 135.

*The type-shift.*—Fulcrumed on a cross-shaft 140, Fig. 1, is an arm 141, on which is the 30 capital shift-key 142. Fitted on the eccentric 143 of said shaft 140 is one end of a rod 145, the other end of which connects with one end of a horizontal lever 146, which is pivoted at 147 in the standard 76, and on its 35 other end carries a fork which engages the collar 148 on the type-wheel shaft 73. Thus by depressing key 142 shaft 140 being rocked moves rod 145 and that lever 146, so as to 40 shift the shaft 73 and type-wheels 90 91 to the rear and so as to bring the capital letters "S" "S" under the hammers 90 91. A spring 149 normally holds shaft 140 in such position that the lower-case letters "r" "r" are under 45 said hammers.

*The ribbon-feed.*—The ribbons 150 151 for the type-wheels 70 71, being originally wound, respectively, on the spools 152 155, are led 50 under their respective wheels and their ends attached in the usual manner to the spools 154 153, spools 152 155 being both fixed on the shaft 157 and spools 154 153 being both 55 fixed on the shaft 156. On said shafts 156 157 are ratchet-wheels 160 161, respectively, with teeth suitably inclined. A pawl 163, pivoted in a slide 164, which moves transversely on a guide 165, which is fixed on one 60 of the boxes of shaft 73, Fig. 7, is adapted to engage one or the other ratchet-wheel 160 161, as desired, and said slide 164 is connected with a lever 168, pivoted at 170 and connected 65 by rod 171 with an arm 172 on said rock-shaft 128. Thus in the position of Fig. 7 when the shaft 128 is rocked to print a character the slide 164 moves to the right and the pawl 163 passes by the teeth of the ratchet-wheel 161 without moving it; but as the shaft 128 rocks back and the hammers 90 91 rise the said

pawl 163 rotates ratchet-wheel 161 with shaft 157 and spools 152 155 a little, so as to bring 70 a fresh part of the ribbons below the wheels. When desired, the pawl 163 can be thrown over into engagement with the ratchet-wheel 160, and then the operation of shaft 128 will move that wheel 160 with shaft 156 and spools 153 154 so as to reverse the movement of the 75 ribbons.

*The spacing mechanism and escapements.*—The line-spacing movements of the platen 35 are effected by the pinions 41 on the shaft 42, 80 as will be evident from the description hereinbefore given, the movement of said shaft 42 rotating the roller 50 and that feeding the strip P, so that the duplicate record will have proper line-spacing.

The letter and word spacing movements of 85 the carriage 14 are effected as follows: On shaft 128 is fixed an arm 175, which at its inner end engages an arm 176 of the escapement-dog 25, Figs. 2, 3 and 13, so that when said shaft 128 is rocked to impress a character 90 on the paper said dog 25 passes into engagement with the rack 28 on the shaft 12 and holds said carriage 14 at rest, while the pivoted dog 26 passes out of engagement with said rack. Then when shaft 128 returns to 95 its original position dog 25 passes out of and dog 26 into engagement with said rack 28 and the carriage moves one space in the ordinary manner. The springs 178 179 respectively 100 hold said dogs 25 and 26 in their normal positions. No further description of the escapement-dogs is necessary, as their construction and operation are well known in the art.

To enable the operator to space the carriage without printing, a space-key 180, Figs. 105 1 and 2, is provided on a lever 181, pivoted at 182. The rear end of lever 181 engages under the end of a cross-lever 184, which is loosely fulcrumed on shaft 128, the inner end of said lever 184 engaging on the aforesaid 110 arm 176 of the escapement-dog 25. A suitable spring 190, if necessary, normally holds space-key 180 up. The dogs 25 and 26 are preferably carried on a piece 185, which is 115 provided with slots 186, by which it can be accurately adjusted and screwed to the carriage 14.

The machine is operated as follows: The parts being in the position of Fig. 3, but the platen 35 being in its front or original position, the operator moves printing-lever 115 120 over that slot 31 which corresponds to the characters he wishes to print, thereby setting the type-wheels 70 71 for that character through the connection of the gear-segment 125 110 and gear 100. The operator then depresses said lever 115, engaging knife 122 into the said slot 31, whereby the lever 115 is held in a true lateral position. As it descends the flange 118 of collar 117 depresses 130 arm 126 and that rocks shaft 128, thereby causing the hammers 90 91 to knock down the proper type and make the proper impressions simultaneously on the check and the dupli-



cate strip, the type of wheel 71 passing down through a slot which is formed in the cover 2 for the purpose. As the hammers and type rise the carriage 14 moves one space. When a line is completed, the operator turns shaft 42, so as to move platen 35 rearward the proper distance to cause the next line to be spaced the proper distance from the preceding line, and the roller 50 moves the duplicate strip P a corresponding distance to cause the next line to be properly spaced on the duplicate record. Then the operator, having drawn carriage 14 back to the beginning of the line, writes another line on the check and duplicate, and so on. When securing a check on the platen, the carriage 14 is turned up on shaft 12 and platen 35 drawn forward. Then the check is secured on the platen under roll 36, as hereinbefore described, the carriage 14 lowered to writing position, and the check written, as before. To make corrections or for any other purpose, the carriage may also of course be turned up on shaft 12. The belt 67 can slip a little on its pulleys, so that no undue strain will be put on the duplicate strip P as the size of the roll of paper on the spool 59 increases, and the arrangement of the belt and pulleys is such as to keep the said strip taut.

Now, having described my improvements, I claim as my invention—

1. In a type-writing machine for making an original and a duplicate record, the combination of two type-wheels provided with individually-movable type, means for correspondingly moving both records, and means for impressing the type on their respective records, substantially as described.

2. In a type-writing machine for making an original and a duplicate record, the combination of two type-wheels, one for each record and provided with movable type, means for correspondingly moving the paper for both records in the direction of the line-spacing, means for moving both type-wheels in the direction of the letter and word spacing, and means for impressing the type on both their respective papers, substantially as described.

3. In a type-writing machine for making an original and a duplicate record, the combination of a receptacle for said duplicate record provided with a closure, type mechanism for writing both the original and the duplicate record, means for moving the type mechanism for the letter and word spacing, and means for moving the records for the line-spacing, substantially as described.

4. In a type-writing machine for making an original and a duplicate record, a receptacle for the duplicate record provided with a closure, type-wheels with movable type for each record, a reciprocating platen for the original record, and a rotatable carrier for the duplicate record, means for impressing the type on each record, and means for correspondingly moving said platen and said carrier, substantially as described.

5. In a type-writing machine for making an original and a duplicate record, a receptacle for the duplicate record provided with a closure, type-wheels with movable type for each record, a reciprocating platen for the original record and a rotatable carrier for the duplicate record, and means operatively connected with both said platen and said carrier for simultaneously and correspondingly moving the paper for both records, substantially as described.

6. In a type-writing machine for making an original and a duplicate record, the combination of type-wheels for each record provided with individually-movable lower and upper case type, hammers for impressing said type on said records, and means for relatively shifting said wheels and said hammers so as to write either lower or upper case characters, substantially as described.

7. In a type-writing machine for making an original and a duplicate record, the combination of type-wheels for each record provided with individually-movable lower and upper case type, hammers for impressing said type on said records, means for relatively shifting said wheels and said hammers, a reciprocating platen for the original record, a rotatable carrier for the duplicate record, and means for shifting said platen and said carrier, substantially as described.

8. In a type-writing machine for making an original and a duplicate record, the combination of a carriage, type-wheels thereon for each record provided with individually-movable upper and lower case type, hammers for impressing the type on each record, means for relatively shifting said type-wheels and said hammers, escapement mechanism for moving said carriage, means for actuating said hammers to impress the type on the records, and an operative connection between said means and said escapement devices, substantially as described.

9. In a type-writing machine for making an original and a duplicate record, the combination of a carriage, type-wheels thereon for each record, means for shifting the carriage to effect the letter and word spacing, carriers for the original and the duplicate records, and means for shifting them to effect the line-spacing, and a receptacle for the duplicate record provided with a closure, substantially as described.

10. In a type-writing machine for making an original and a duplicate record, the combination of type-wheels for each record provided with individually-movable type, a vertically-vibrating and laterally-oscillating printing-lever and a gear actuated thereby, and said lever being adapted to vibrate vertically without vibrating said gear, and a gear meshing with said first-named gear and adapted to rotate said type-wheels to the printing position, substantially as described.

11. In a type-writing machine for making an original and a duplicate record, the com-



5 combination of a vertically-vibrating and later-  
ally-oscillating printing-lever, a gear actuated  
thereby, a gear meshing with said first-named  
gear and supported against lateral move-  
ment, and type-wheels for each of said records  
operatively connected with said last-named  
gear so as to be rotated thereby but have  
lateral motion with respect thereto, substan-  
tially as described.

10 12. In a type-writing machine for making  
an original and a duplicate record, the com-  
bination of a gear-segment, a gear meshing  
therewith and held against lateral movement,  
type-wheels for both said records provided  
15 with individually-movable upper and lower  
case type, hammers for impressing said type  
on their records, an operative connection be-  
tween said type-wheels and said gear where-  
by said type-wheels may be shifted laterally  
20 without disconnecting them from said gear,  
and a vibrating and oscillating printing-lever  
adapted to actuate said hammers and to shift  
said type-wheels, substantially as described.

25 13. In a type-writing machine for making  
an original and a duplicate record, the com-  
bination of a vertically-vibrating and later-  
ally-oscillating printing-lever, an index to de-  
fine the printing positions of said lever, a  
gear-segment operatively connected with said  
30 lever, so as to be oscillated but not vibrated  
thereby, a bevel-gear meshing therewith,  
type-wheels for each record provided with  
individually-movable upper and lower case  
type, an operative connection between said  
35 type-wheels and said bevel-gear whereby the  
said wheels may have lateral movement with-  
out disconnecting from said gear, hammers  
for impressing the type on their respective  
records, and an operative connection between  
40 said hammers and said printing-lever, sub-  
stantially as described.

45 14. The combination in a type-writing ma-  
chine for making an original and a duplicate  
record, of type-wheels for each record pro-  
vided with individually-movable lower and  
upper case type, hammers for impressing  
said type on their records, a capital shift-key,  
and an operative connection between said  
key and said type-wheels adapted to laterally  
50 shift said wheels to change from lower to  
upper case type, substantially as described.

55 15. In a type-writing machine for making  
an original and a duplicate record, a plurality  
of type-wheels each provided with individu-  
ally-movable type, hammers for impressing  
the type on their records, a ribbon and feed  
mechanism, and an operative connection be-  
tween said feed mechanism and said ham-  
mers whereby the moving of said hammers  
60 effects the feeding of said ribbons, substan-  
tially as described.

65 16. In a type-writing machine for making  
an original and a duplicate record, the com-  
bination of a gear, two type-wheels fixed on  
a common shaft, and said shaft turned by  
but adapted to shift through said gear, sub-  
stantially as described.

17. In a type-writing machine for making  
an original and a duplicate record, a gear, a  
shaft turned thereby but adapted to shift  
therethrough, two type-wheels fixed on said  
shaft, a capital shift-key, and an operative  
connection between said key and said shaft  
adapted to shift said shaft, substantially as  
described.

75 18. In a type-writing machine for making  
an original and a duplicate record, the com-  
bination of a gear, a shaft turned thereby  
but adapted to shift therethrough, two type-  
wheels fixed on said shaft and provided with  
80 individually-movable lower and upper case  
type, hammers for impressing said type on  
their records, a capital shift-key and an op-  
erative connection between said key and said  
shaft adapted to shift said shaft, substan-  
85 tially as described.

19. In a type-writing machine for making  
an original and a duplicate record, the com-  
bination of a printing-lever, a gear 100 op-  
eratively connected therewith, a shaft driven  
90 thereby but adapted to shift therethrough,  
two type-wheels fixed on said shaft and pro-  
vided with individually-movable lower and  
uppercase type, hammers for impressing said  
type on their records, and operative connec-  
95 tions between said printing-lever and said  
shaft and said hammers, substantially as de-  
scribed.

20. The combination in a type-writing mech-  
anism of the kind described, of the vertically-  
100 vibrating and laterally-oscillating printing-  
lever 115, the segmental gear 110 operatively  
connected with said printing-lever so as to  
be rotated by the lateral oscillation of said  
printing-lever, the gear 100 meshing with  
105 said segmental gear, and type-wheels actu-  
ated by said gear 100, substantially as de-  
scribed.

21. The combination in a type-writing ma-  
chine of the kind described, of the printing-  
110 lever 115, type-wheels provided with indi-  
vidually-movable type, hammers 90 and 91, a  
shaft 128 on which said hammers are fixed, a  
flanged collar adapted to be actuated by said  
printing-lever, and an operative connection  
115 between said collar and said shaft 128 where-  
by the raising and depressing of said lever  
rocks said shaft, substantially as described.

22. The combination in a type-writing ma-  
chine of the kind described, of a printing-  
120 lever 115, a gear-segment 110 adapted to be  
rotated by said lever, a gear 100 meshing with  
said segment, type-wheels 70, 71 provided  
with individually-movable lower and upper  
case type and adapted to be actuated by said  
125 gear 100, hammers 90, 91 adapted to impress  
said type on their records, a shaft 128 on  
which said hammers are fixed, an operative  
connection between said hammers and said  
printing-lever, a capital shift-key, and an op-  
130 erative connection between said key and said  
shaft adapted to shift said shaft to change  
from lower to upper case type and the re-  
verse, substantially as described.



23. The combination in a type-writing machine of the kind described, of two type-wheels, one for an original and the other for a duplicate record, and each wheel being  
5 provided with a plurality of chambers, each chamber being adapted to contain individually-movable upper and lower case type, springs adapted to normally hold said type out of the printing position, and hammers one  
10 for each wheel and arranged to simultaneously imprint the same character on its respective record-strip, substantially as described.

24. The combination in a type-writing machine of the kind described, of a receptacle  
15 for a duplicate record provided with a closure, two type-wheels each provided with a plurality of radial chambers adapted to contain individually-movable lower and upper case type, a central space communicating  
20 with each radial chamber, a hammer projecting into said central space of each type-wheel, means for shifting the type-wheels relatively to said hammers and for rotating said type-wheels, and means for actuating said hammers, substantially as described.

25. The combination in a type-writing machine of the kind described, of type-wheels for an original and a duplicate record, a receptacle provided with a closure for said duplicate record, a reciprocating platen on said  
30 receptacle for the original record, a rotatable platen for the duplicate record in said receptacle, and a slot in said receptacle adjacent to said carrier to permit the type to impress  
35 on said duplicate record, substantially as described.

26. In a type-writing machine of the kind described, a device for feeding the duplicate-record strip comprising a spool 57, friction-  
40 rolls 50, 55, a rotatable platen 58, a receiving-spool 59, pawl-and-ratchet devices to prevent the surreptitious reversing of the motion of the strip, a belt operatively connecting said spools 57 and 59, and an adjustable brake on  
45 said spool 57, substantially as described.

27. The combination in a type-writer of the kind described, of a reciprocating platen 35 for an original record, racks on said platen, a shaft 42 equipped with pinions which mesh with said rack, a roller 50 for moving a duplicate-record strip in unison with the movement of said platen 35, and a ratchet-and-pawl connection between said shaft 42 and said roller 50, substantially as described.

28. The combination in a type-writing machine of the kind described, of a receptacle  
55 for a duplicate record provided with a closure, type mechanism supported on the cover of the receptacle, feed mechanism for the duplicate-record strip also supported on said cover, 60 and a slot in said cover to admit of the type making impressions on the said record-strip, substantially as described.

29. The combination in a type-writing machine of the kind described, of a receptacle  
65 for a duplicate-record strip provided with a closure, a type-carriage provided with an open-base frame adapted to move transversely over said receptacle, a reciprocating platen on said receptacle for the original record, 70 mechanism in said receptacle for moving said duplicate-record strip, and type mechanism for the original and the duplicate records, substantially as described.

30. The combination in a type-writing machine of the kind described, of a type-carriage rack and escapement-dogs for letter and word spacing, type-wheels provided with individually-movable type, hammers for impressing said type on their records, and an  
80 operative connection between said hammers and said escapement-dogs, substantially as described.

In testimony whereof I have signed my name hereto, in the presence of two witnesses, 85 this 6th day of June, 1900.

CHARLES F. MELEN.

Witnesses:

BERNARD J. ISECKE,  
D. WALTER BROWN.