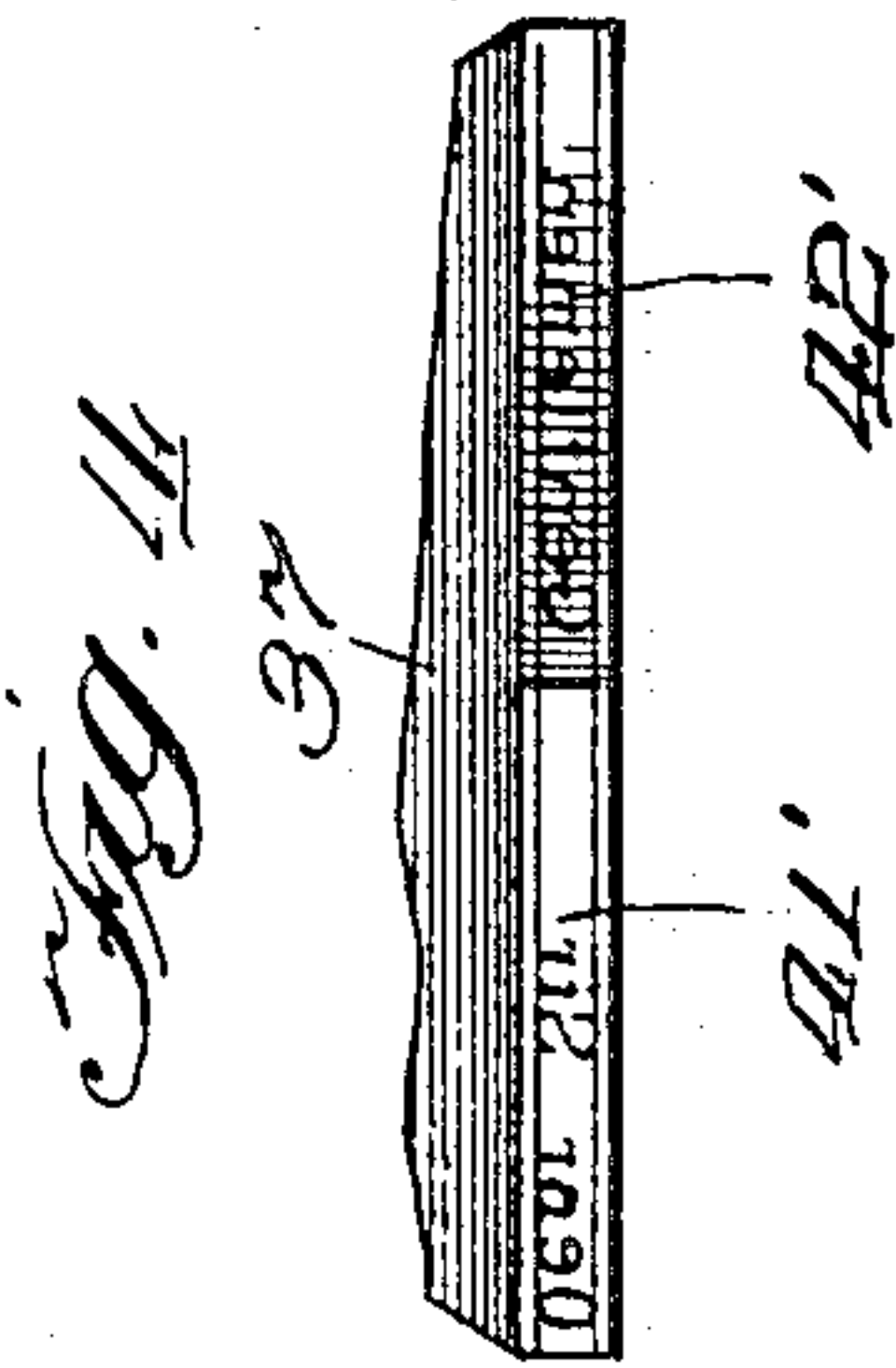
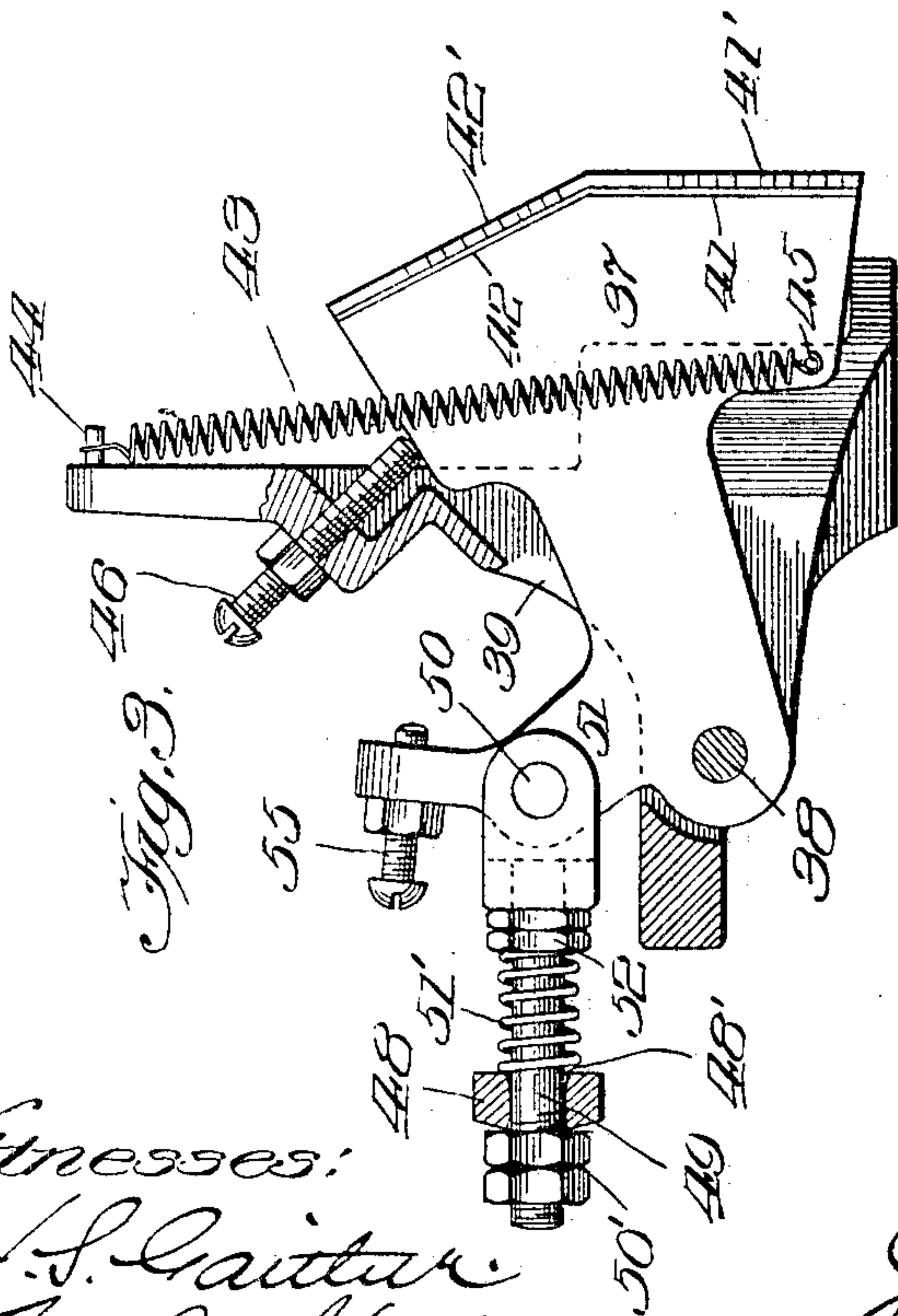
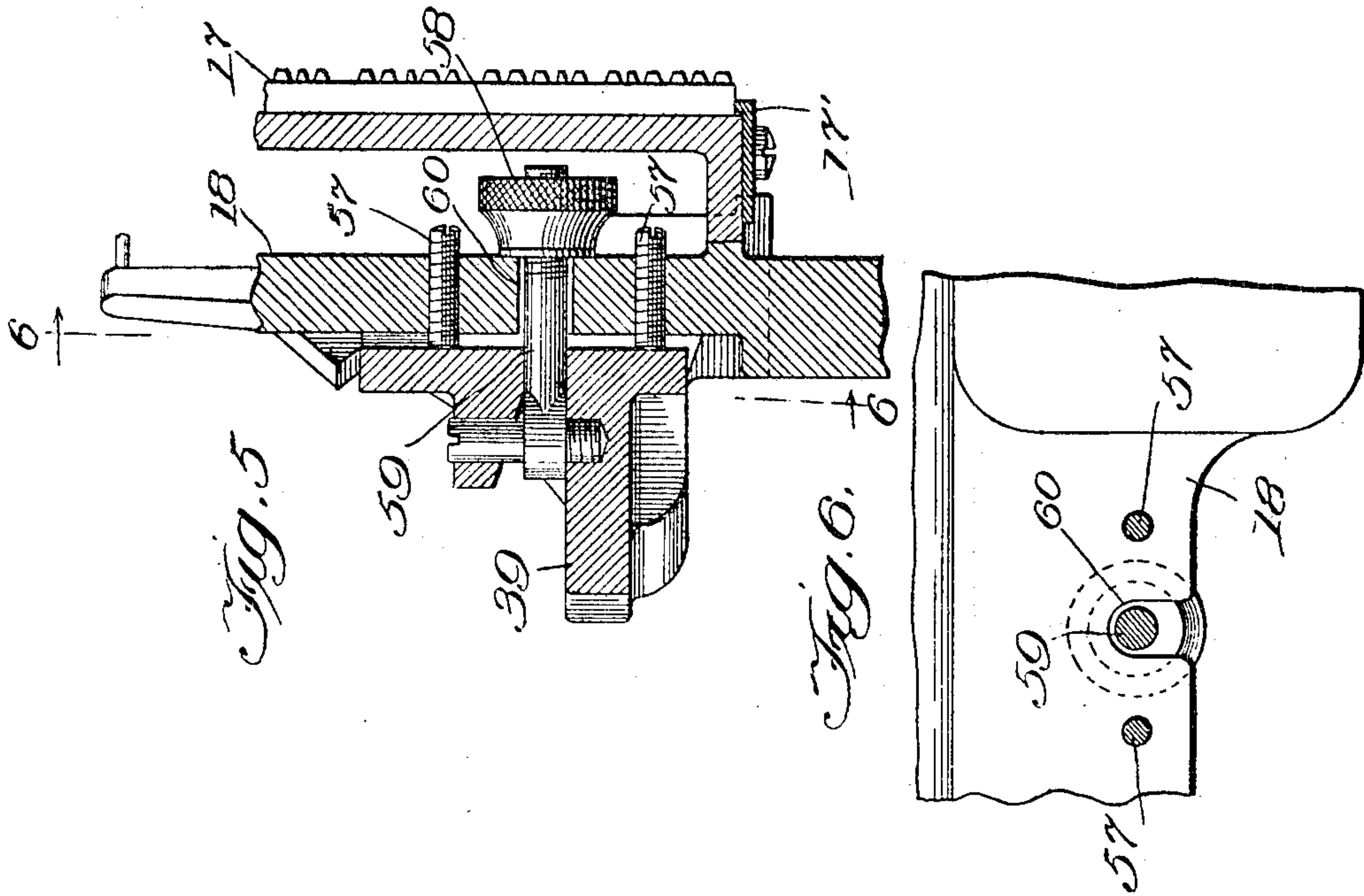


No. 798,889.

PATENTED SEPT. 5, 1905.

J. S. DUNCAN.
PRINTING MACHINE.
APPLICATION FILED NOV. 4, 1904.

5 SHEETS—SHEET 2.



Witnesses:
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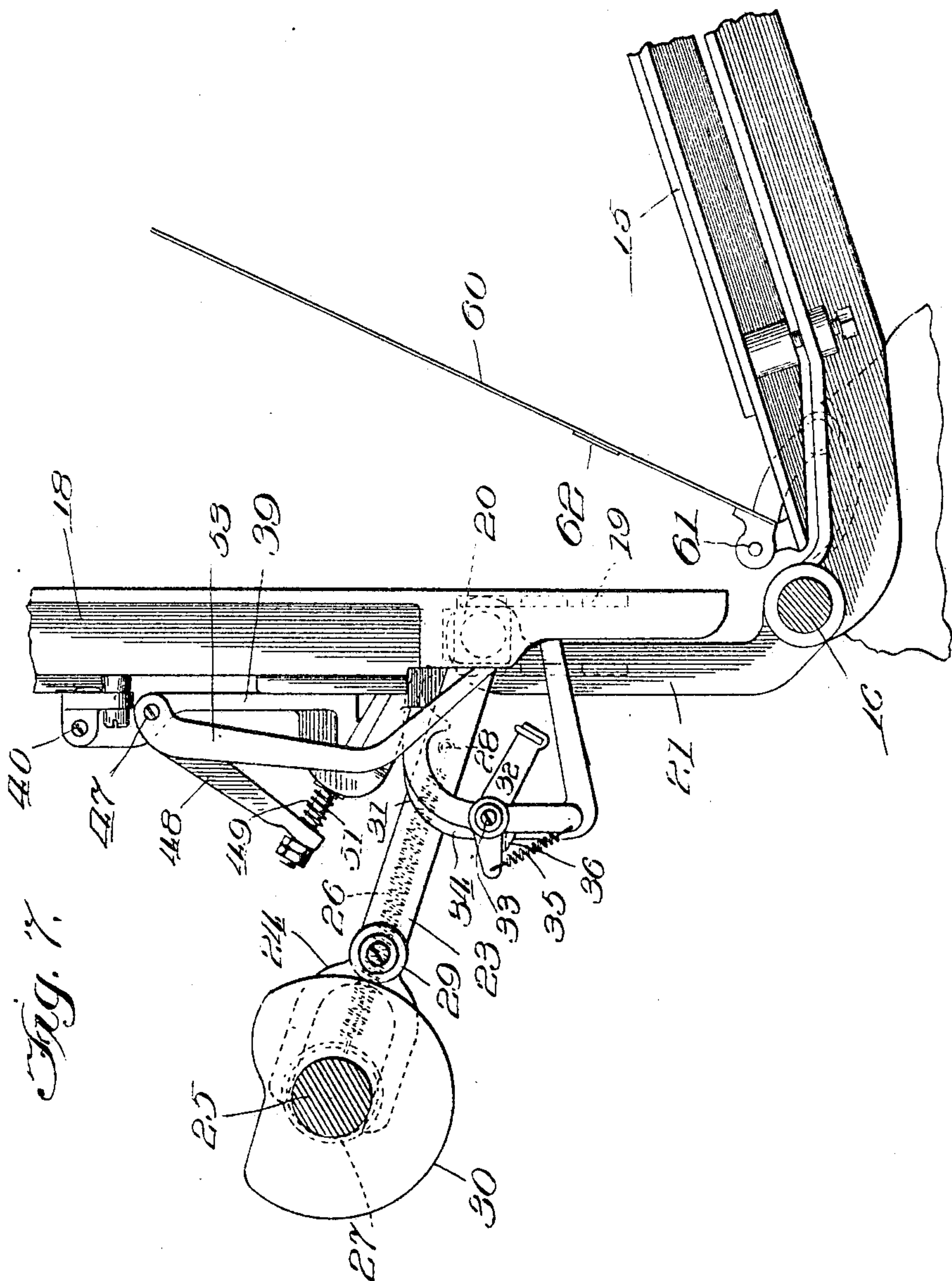
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5 SHEETS—SHEET 3.



Witnesses:

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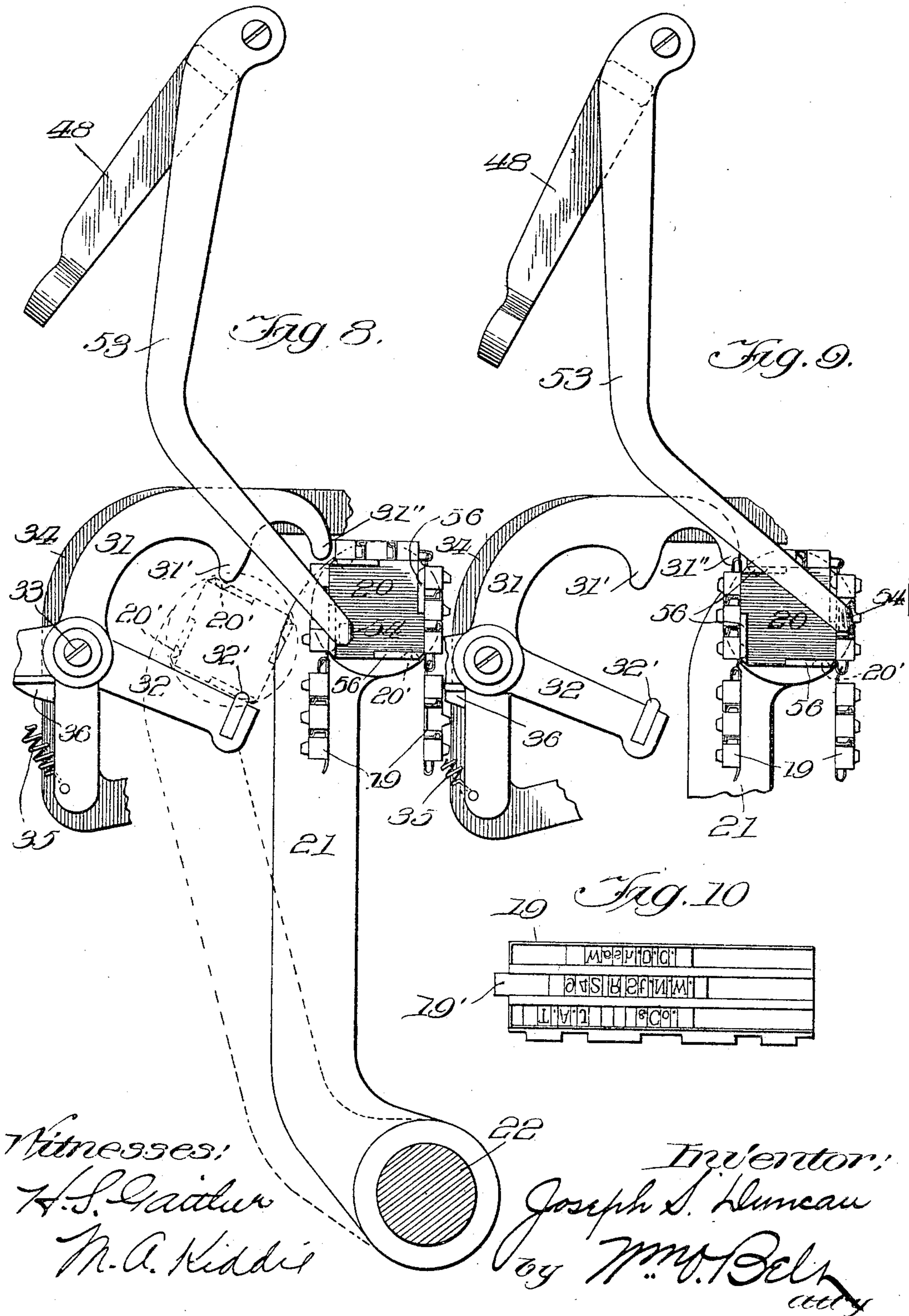
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 12.

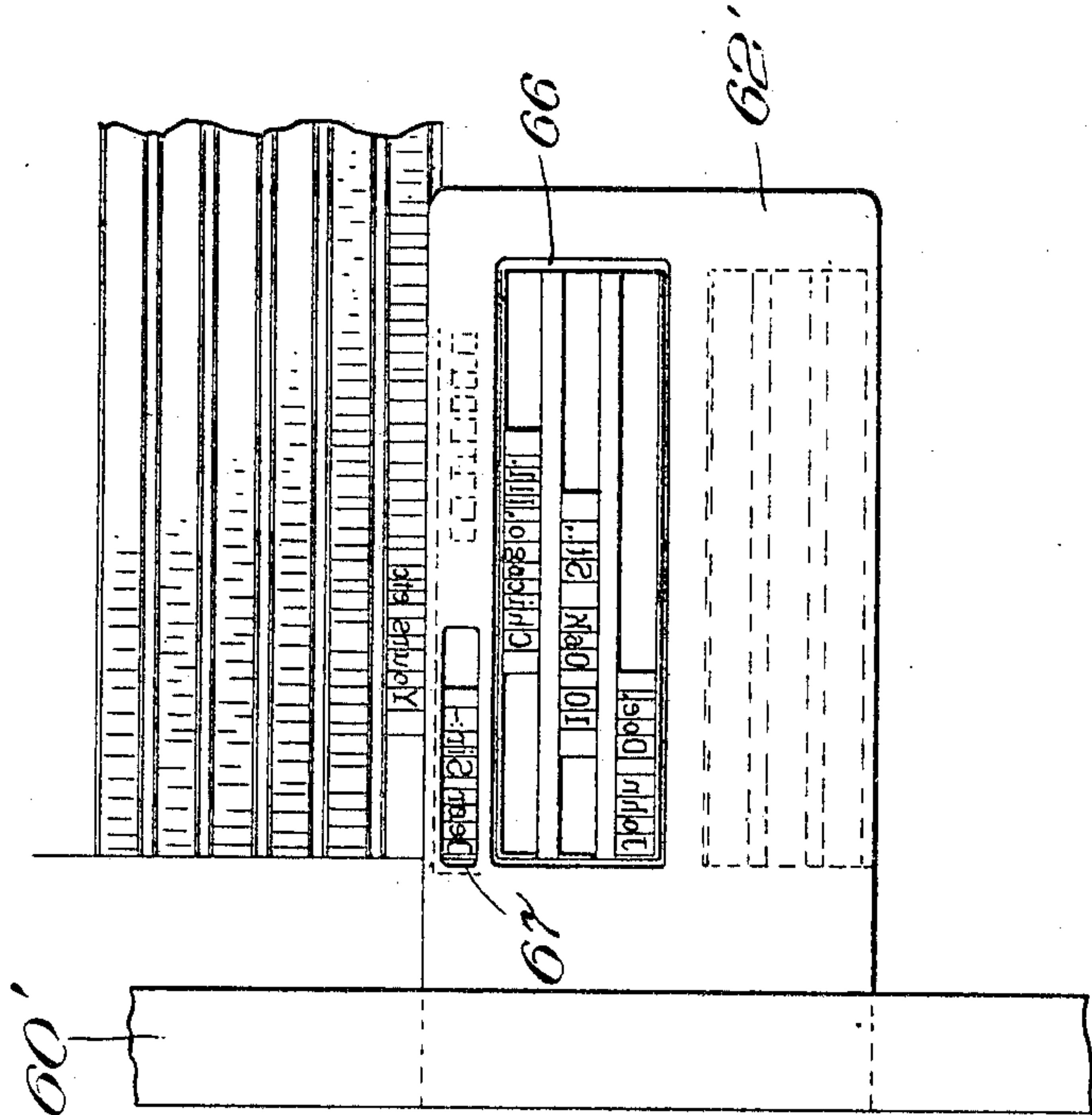
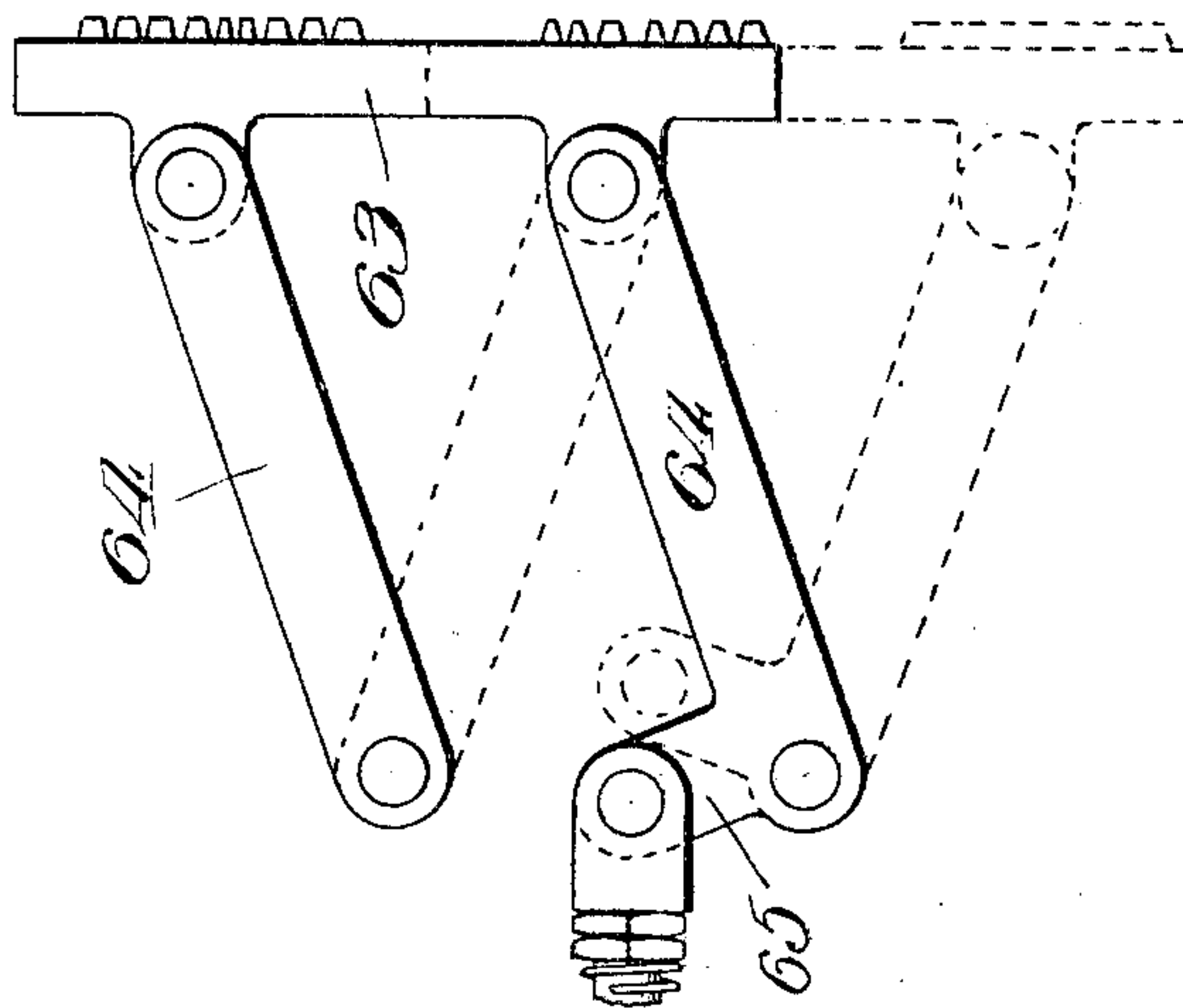


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH S. DUNCAN, OF CHICAGO, ILLINOIS.

PRINTING-MACHINE.

No. 798,889.

Specification of Letters Patent.

Patented Sept. 5, 1905.

Application filed November 4, 1904. Serial No. 231,343.

To all whom it may concern:

Be it known that I, JOSEPH S. DUNCAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Printing-Machines, of which the following is a specification.

The primary object of this invention is to print separate addresses and the proper salutation for each address on circular-letters and the like.

The invention also has for its object to print the address, salutation, and letter in one printing operation and to automatically provide the proper salutation required by each address, such as "Dear sir" for a singular address and "Gentlemen" for a plural address.

In the accompanying drawings I have shown one embodiment of the invention in a job-printing press in which an oscillating platen carries the sheet to be printed into contact with a form fastened to a bed. I have not considered it necessary to show a complete printing-machine, as the general construction and operation of such machines are well understood. I have therefore shown the parts only with which my invention is immediately associated.

Referring to the drawings, Figure 1 is a rear view of a portion of the bed-plate of a printing-machine with my invention applied thereto. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Fig. 3 is a sectional view on the line 3 3 of Fig. 2. Fig. 4 is a detail front edge view of the salutation-form holder. Fig. 5 is a sectional view on the line 5 5 of Fig. 2. Fig. 6 is a sectional view on the line 6 6 of Fig. 5. Fig. 7 is a side elevation (partly in section) showing as much of an ordinary job-printing machine as is necessary to understand the arrangement and operation of my invention. Figs. 8 and 9 illustrate the parts which turn the drum carrying the printing device. Fig. 10 illustrates a printing device which may be used. Figs. 11 and 12 show another form of the support for the salutation-forms.

Referring to Fig. 7, the platen 15 is oscillated in any suitable manner on the shaft 16 to carry the sheet to be printed into printing position against a main form 17, Fig. 2, supported on the bed-plate 18 of the machine for printing the body of the letter. This form may be made of rubber type, as shown in Fig. 2, or in any other suitable manner.

I may employ address-forms made up of

rubber or other type or printing-plates or other equivalent devices adapted to be fed in a proper manner to bring the addresses successively into printing position adjacent to the main form. In the drawings, Figs. 8 to 10, I have shown a chain or belt made up of address-forms consisting of rubber type mounted in holders 19, which are linked together in any suitable manner. The chain of address-forms is arranged to travel on a rectangular drum 20, which is carried by an oscillating drum-frame 21, mounted on a shaft 22. A rod 23 is connected at one end to the drum, and its other end is provided with a fork 24 to receive the counter-shaft 25. A spring 26 is fastened at one end to a collar 27 on the counter-shaft and at its other end to the rod 23 at 28, the purpose of this spring being to hold the anti-friction-roller 29 on the rod in operative position against the cam 30 on the counter-shaft and to pull the drum back from printing position after the printing operation has been completed. The counter-shaft is operated by any suitable means, and in the swinging movement of the drum caused by the spring and cam the drum is revolved a quarter-turn to bring a new address-form into printing position, and this feeding movement of the drum is accomplished by two arms in the nature of pawls 31 32, pivoted at 33 on a bracket 34 on the main frame of the machine. When the spring 26 pulls the drum rearward from the position shown in full lines to the position shown in broken lines in Fig. 8, a projection 32' of suitable character on the pawl 32 engages the recess 20' on that side of the drum which has been the back during the preceding printing operation, and on the continued rearward movement of the drum against the pawl 32 the drum is revolved a portion of a quarter-turn, as indicated by the broken lines in Fig. 8. Thereafter when the cam 30 moves the drum forward a projection 31' on the pawl 31 engages the recess 20' on the uppermost side of the drum, and on the continued forward movement of the drum this pawl causes the drum to complete its quarter-turn, moving from the position shown in broken lines to the position shown in full lines in Fig. 8. The rear ends of the pawls behind the pivot 33 are connected by a spring 35 to hold the pawls in proper position for their work, and a lug 36 on the bracket 34 projects across the pawls to prevent the spring from pulling them out of operative position. A safety projection 31'' on the pawl 31 is preferably

provided to engage the drum in event the projection 31' fails to do so, and this insures the completion of the quarter-turn of the drum.

The invention contemplates providing a plurality of salutation-forms adapted to be shifted as required to provide the proper salutation for each address. In this connection I have illustrated the "Dear sir" and "Gentlemen" forms, which are most commonly used; but I may use singular salutations exclusively, such as "Dear sir" and "Dear madam," or any other forms and for printing any subject-matter that may be desired. As the salutation "Dear sir" is more often used than "Gentlemen," I generally arrange the "Dear sir" form normally to print at each operation of the machine and provide for moving it out of printing position and the "Gentlemen" form into printing position when the plural salutation is required by a plural address. This order may be changed as occasion requires by simply changing the relative position of the salutation-forms. The salutation-forms are supported end to end on the front edge of a plate 37, Fig. 3, which is pivoted at 38 on the supporting-frame 39, this frame being itself pivotally mounted at its upper end 40 to the back of the bed. The front edge of the plate 37 has two straight sections 41 and 42, angularly disposed with relation to each other and forming the bases of contiguous segments of a circle described from the pivot 38, the "Dear sir" form 41' being mounted on the section 41 and the "Gentlemen" form 42' on the section 42. These salutation-forms may be made up of rubber type or logotypes or otherwise and secured in any suitable manner on the plate. A spring 43, fastened at one end 44 to the frame 39 and at its other end 45 to the plate 37, holds the plate with the "Dear sir" form normally in printing position and the "Gentlemen" form out of printing position, a screw-stop 46 being provided on the drum 39 to engage the plate 37 for properly positioning the "Dear sir" form. A bell-crank lever is pivoted at 47 on the frame 39, Fig. 2, and one arm 48 of said lever is engaged with a bar 49, pivotally mounted at 50 on a projection 51 at the side of the plate, 37 Fig. 3. To provide for a proper relative adjustment of the arm 48 and bar 49, the arm 48 has an opening 48' to receive the bar 49, which is screw-threaded at its outer end to receive the nuts 50', which secure the arm on the bar. I also arrange a spring 51' on the bar between the arm 48 and the nuts 52 to provide for some loss motion. The lower end of the other arm 53 of the bell-crank lever is arranged opposite the end of the drum and is turned inwardly at 54, Fig. 1. All plural-address forms requiring the salutation "Gentlemen" are provided with an end projection 19', Fig. 10, and as the drum is carried forward from the position shown in broken lines in Fig. 8

with a plural-address form in printing position the intumed end 54 of the arm 53 is engaged by the projection 19' and moved forward with the drum, as shown in Fig. 9. This movement of the arm 53 is communicated through the arm 48 and the bar 49 to the plate 37, which swings on its pivot 38 and carries the "Dear sir" form out of printing position and the "Gentlemen" form into printing position in time for the printing operation.

When the plural address has been printed and the drum moves back to the position shown in broken lines in Fig. 8, the arm 53 is released from engagement with the projection 19' and the spring 43 swings the plate back against the stop 46 with the "Dear sir" form in printing position again. A screw-stop 55 on the plate is arranged to engage the frame 39 to limit the swinging movement of the plate which brings the "Gentlemen" form into printing position, and the loss motion provided by the spring 51 avoids the necessity for a delicate adjustment of the lever and plate. An extension 56 on the end of the drum is arranged to form a backing for the projection 19' on the address-form to prevent the arm 53 from bending said projection during the foregoing operation.

When the singular-address forms, which do not have the projection 19', are moved into printing position, the arm 53 is not engaged and remains stationary and the spring 43 holds the "Dear sir" form in printing position. The lower end of the holder 17', carrying the main form 17, is preferably cut away at 17'' to accommodate the plate 37, which is shown arranged in angular relation to the main form in order to clear the chain of address-forms and hold the salutation-form in its proper position relative to the main form and the address-form, Fig. 2.

The supporting-frame is adjusted relative to the bed of the machine to properly position the plate 37 by the screws 57, and this frame is secured in adjusted position by the nut 58 on the bolt 59, pivoted on the frame at 59' and projecting through a slot 60 in the bed, Figs. 5, 6. By loosening the nut 58 the bolt may be permitted to swing down through the slot 60 to release the frame from the bed, and the frame can then be pushed back to carry the salutation-forms out of operative position.

The usual sheet-holder 60, pivoted at 61 on the platen, carries a flat plate 62, which covers the address-form below the one in printing position to prevent it from printing during the printing operation.

Instead of mounting the salutation-forms in an angular relation as previously described I may arrange them in alinement, as shown in Figs. 11, 12. In this construction the salutation-forms are supported end to end in a suitable manner on a bar 63, which is carried by parallel links 64, pivoted on the frame 39 and to said bar. The bolt 49 is connected to

a projection 65 on one of the links, and the other parts are the same as previously described. In this construction I provide the sheet-holder 60' with a plate 62', which not only covers the address-form below the one in printing position, but also covers the salutation-form not in printing position, as shown in Fig. 12. This plate 62' has an opening 66, through which the address-form in printing position prints, and an opening 67, through which either one of the salutation-forms may print while the other is completely covered by the plate. In Fig. 12 I have shown the "Dear sir" form in printing position and the "Gentlemen" form covered. When a plural address is brought into printing position, the same operation takes place as previously described, except that the salutation-forms move in a straight line (to the left in Fig. 12) instead of in the arc of a circle to carry the "Dear sir" form out of printing position and behind the plate 62' and move the "Gentlemen" form into printing position opposite the opening 67.

With this invention a circular-letter can be printed and addressed with the proper salutation in one operation of the machine. It avoids the necessity of separating the addresses according to the character of the salutation required and changing the salutations accordingly and enables the order of filing the addresses, alphabetically by States or cities, by class, or otherwise, to be constantly maintained. The salutation-form is properly aligned to be inked at the same time and by the same means which ink the main and address forms, and by printing the entire letter in one operation I am able to produce a very close imitation of a type-written letter. The body of the letter may, if desired, be printed separately and the address and salutation supplied afterward.

While the invention is particularly adapted for printing salutations on letters, it can be used for other purposes, and in referring to the printing of salutations I do not wish to be strictly confined thereto. Nor is the invention restricted to use with a printing-machine having an oscillating platen, although this is a very desirable embodiment.

Without limiting myself to the exact construction and arrangement of parts or the particular adaptation thereof herein shown and described, what I claim, and desire to secure by Letters Patent, is—

1. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms, and means for automatically moving the proper salutation-form into printing position as each address requires.

2. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a

plurality of separate salutation-forms, and means operated by an address-form for moving the proper salutation-form into printing position as such address requires.

3. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms arranged end to end, and means for moving the proper salutation-form into printing position as each address requires.

4. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms, one of said salutation-forms being normally in printing position, and means for automatically moving said salutation-form out of printing position and the other salutation-form into printing position when required by the address-form to be printed.

5. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a movable support, a plurality of separate salutation-forms on said support, and means for automatically moving said support to bring the proper salutation-form into printing position as each address requires.

6. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a support mounted to swing, a plurality of separate salutation-forms arranged end to end on said support, and means for swinging the support to bring the proper salutation-form into printing position as each address requires.

7. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a support mounted to swing, a plurality of separate salutation-forms arranged end to end on the front edge of said support, and means for swinging said support to bring the proper salutation-form into printing position as each address requires.

8. In a printing-machine, a main form, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms angularly disposed with relation to each other, and means for moving the proper salutation-form into printing position as required by the address-form to be printed.

9. In a printing-machine, a main form, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms arranged end to end and in an angular relation to each other, and means for supporting said salutation-forms in proper position between the main form and the address-form to be printed with one of the salutation-forms in printing position.

10. In a printing-machine, a number of ad-

dress-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms, a movable support for said forms having angularly-disposed sections to receive said salutation-forms, and means for moving the support to bring the proper salutation-form into printing position as each address requires.

11. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms, a plate mounted to swing, said plate having its front edge provided with angularly-disposed sections to receive the salutation-forms, and means for swinging said plate to bring the proper salutation-form into printing position as each address requires.

12. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plate mounted to swing, said plate being provided at its front edge with angularly-disposed sections forming the bases of contiguous segments of a circle described from the pivot of said plate, a plurality of separate salutation-forms mounted on said angular sections of the plate, and means for swinging the plate to bring the proper salutation-form into printing position as each address requires.

13. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a movable support, a plurality of separate salutation-forms on said support, one of said salutation-forms being normally in printing position, a projection on each address-form which requires the other salutation-form, and means connected with said movable support adapted to be operated by said projection to move said support and carry out of printing position the salutation-form normally in printing position and move up the other salutation-form into printing position.

14. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plate mounted to swing, a plurality of separate salutation-forms arranged end to end on the front edge of said plate, one of said salutation-forms being normally in printing position, a projection on each address-form requiring the other salutation-form, and means connected with said plate and adapted to be operated by said projection to swing the plate and carry the other salutation-form into printing position.

15. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a

plate mounted to swing, a plurality of separate salutation-forms on said plate, one of said salutation-forms being normally in printing position, a projection on each address-form requiring the other salutation-form, and a bell-crank lever having one arm connected to the plate and its other arm arranged to be engaged and operated by said projection on the address-form to swing said plate and move the other salutation-form into printing position.

16. In a printing-machine, the combination of a chain of address-forms, a drum carrying said chain, means for moving said drum rearward and forward after each printing operation, means for turning the drum to bring a new address-form into printing position, a plurality of separate salutation-forms, a projection on each address-form requiring one of the salutation-forms, a lever arranged to be engaged by said projection to move the required salutation-form into printing position, and a projection on the drum to form a backing for said projection.

17. In a printing-machine, a bed to receive the main form, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of salutation-forms, a frame pivoted on the bed and carrying said salutation-forms, a bolt pivoted on said frame and arranged to enter a slot in the bed, a nut on the end of said bolt to lock the frame to the bed, and means for adjusting the frame.

18. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a plurality of separate salutation-forms, a plate adapted to swing and carrying said salutation-forms, a frame supporting said plate, a spring attached to the plate and the frame to hold one of the salutation-forms normally in printing position, and an adjustable stop for the plate.

19. In a printing-machine, a number of address-forms, means for bringing said address-forms successively into printing position, a bed, a main form mounted on the bed above the address-forms the lower rear end of said main form being cut away, a plurality of separate salutation-forms, a plate carrying said salutation-forms between the main and address forms, said plate being inclined to clear the address-forms, and means for moving the plate to bring the proper salutation-form in printing position.

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