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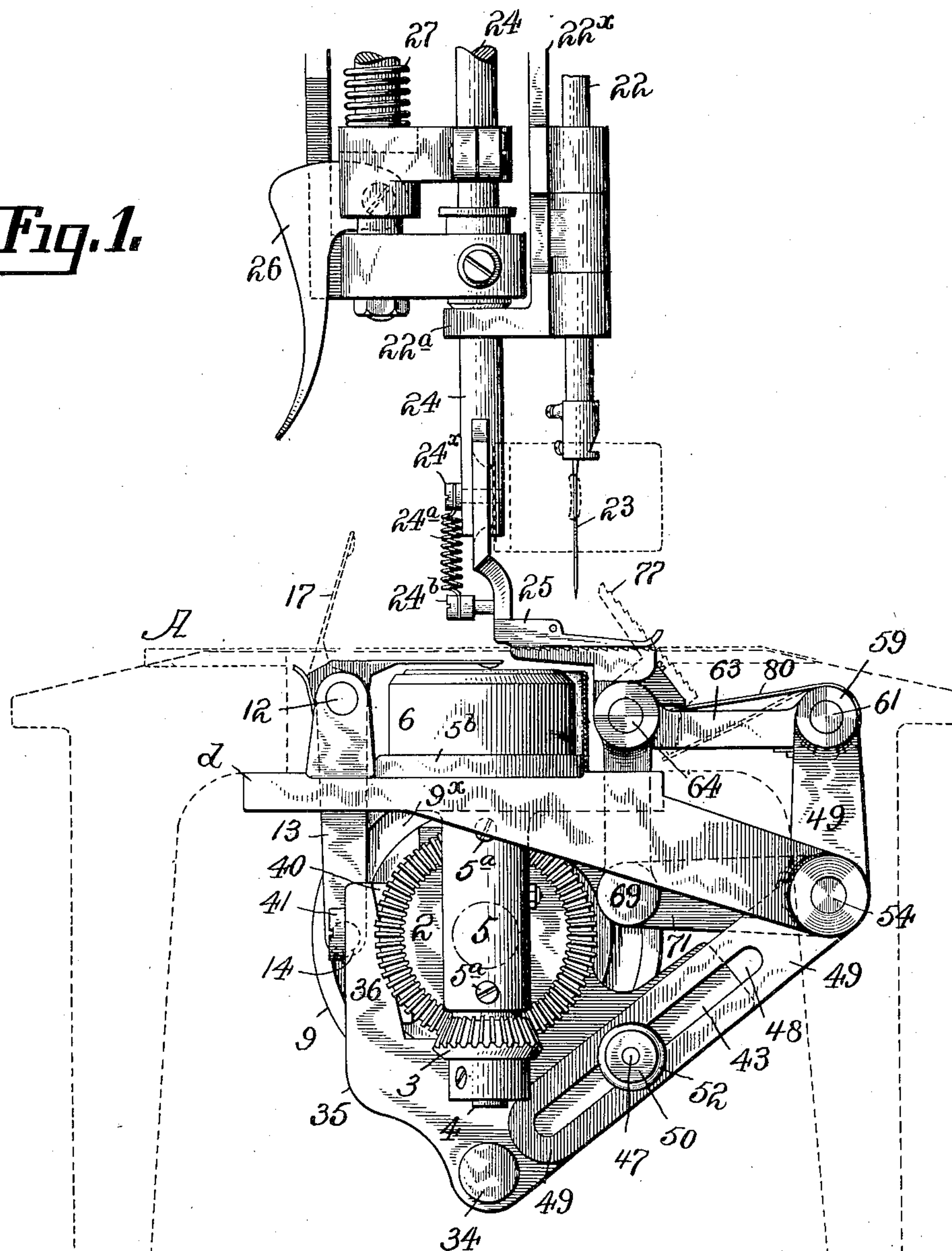
PATENTED DEC. 31, 1907.

W. N. PARKES.
FEEDING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED OCT. 26, 1903.

5 SHEETS—SHEET 1.

Fig. 1.



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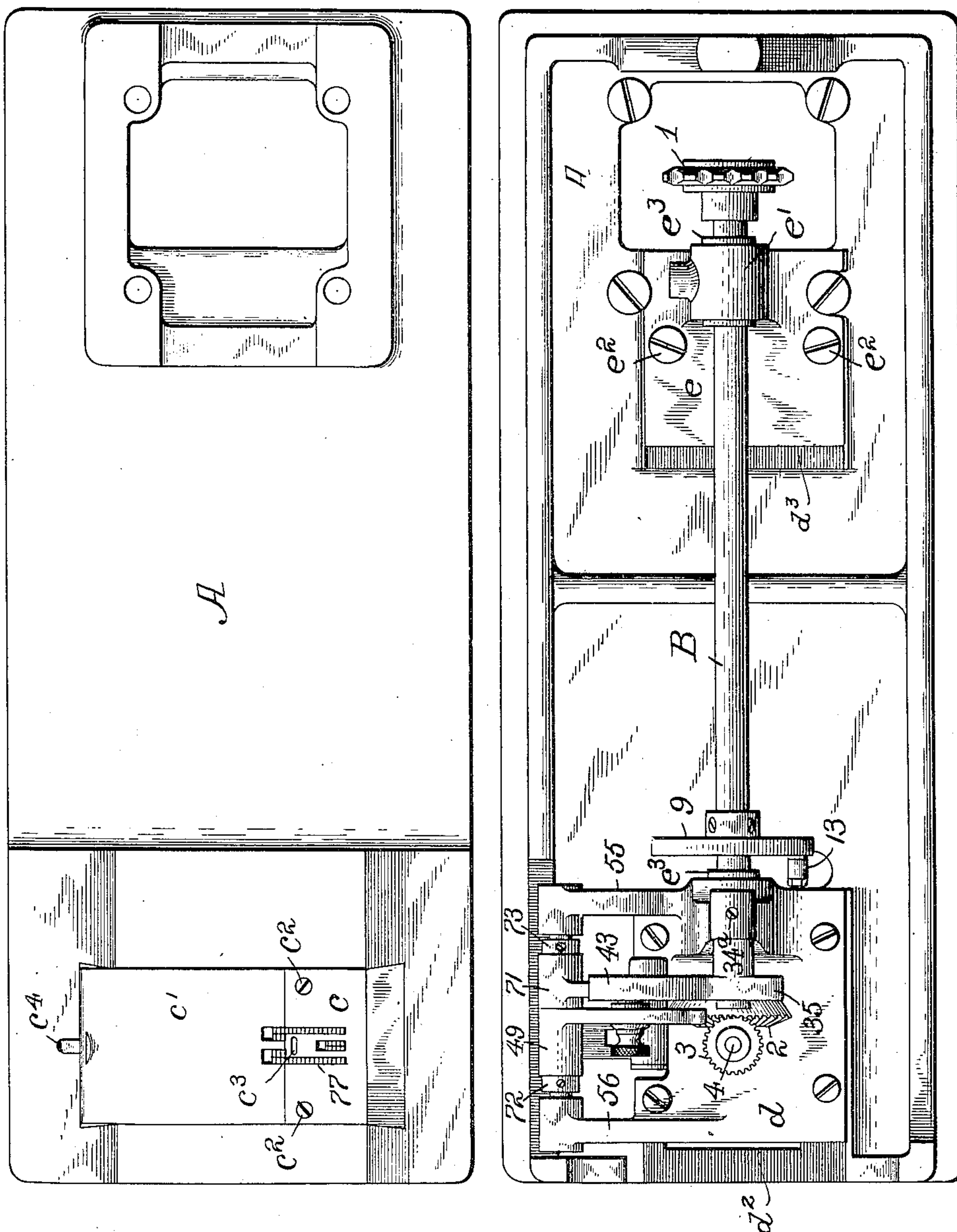
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5 SHEETS—SHEET 2.



WITNESSES:

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Fig. 2.

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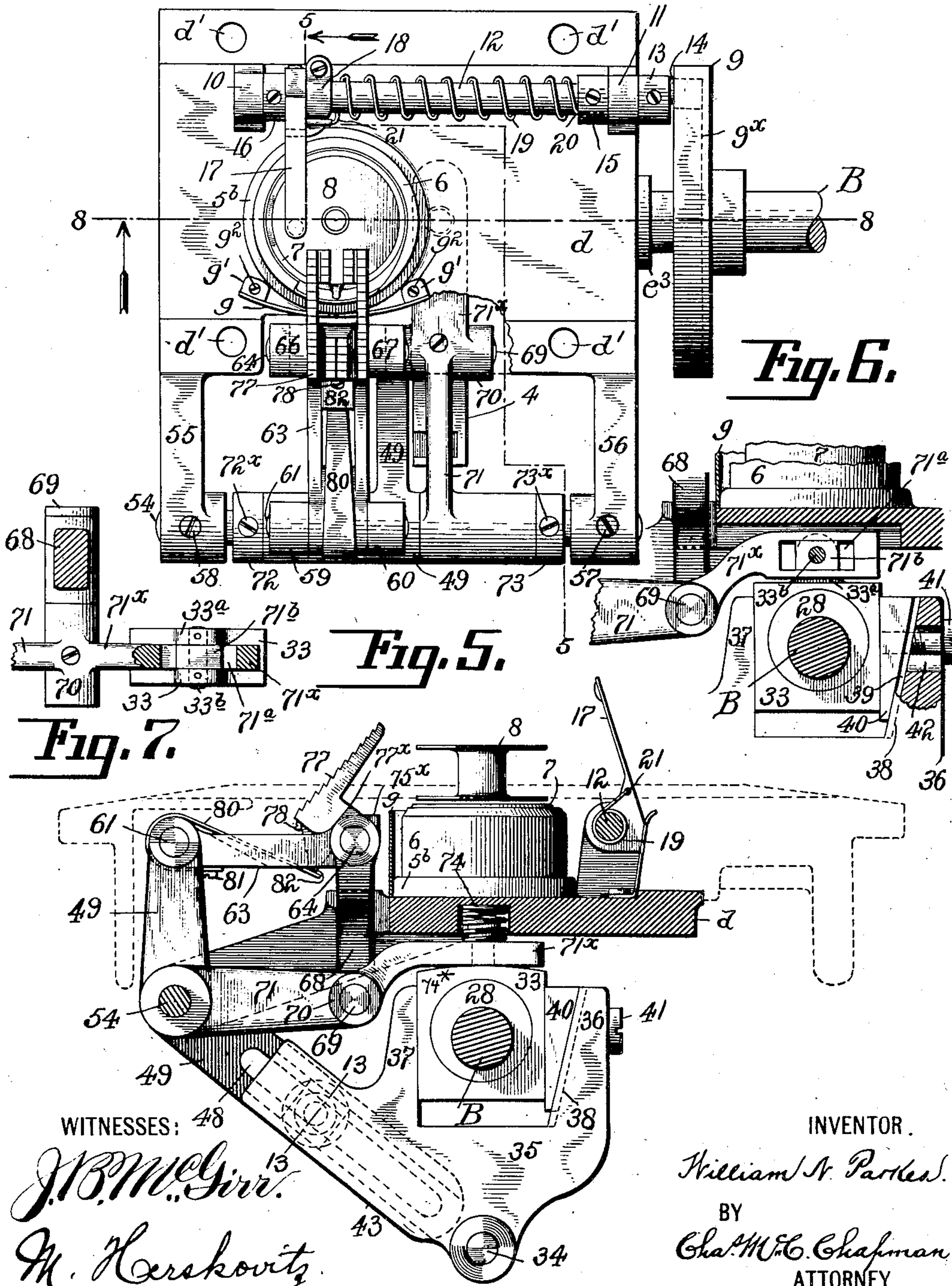
Fig. 2.

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5 SHEETS—SHEET 3

Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 8.

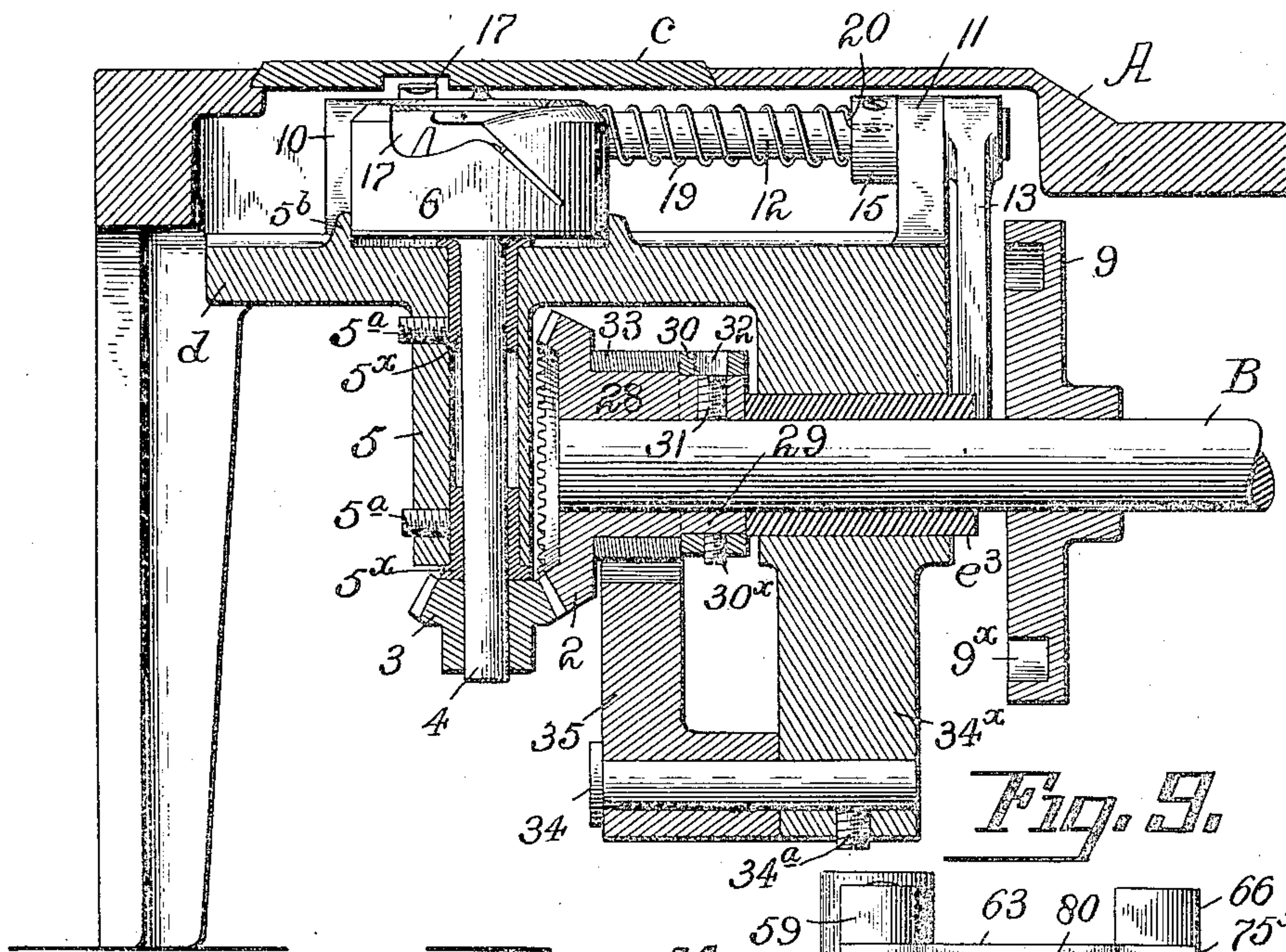


Fig. 9.

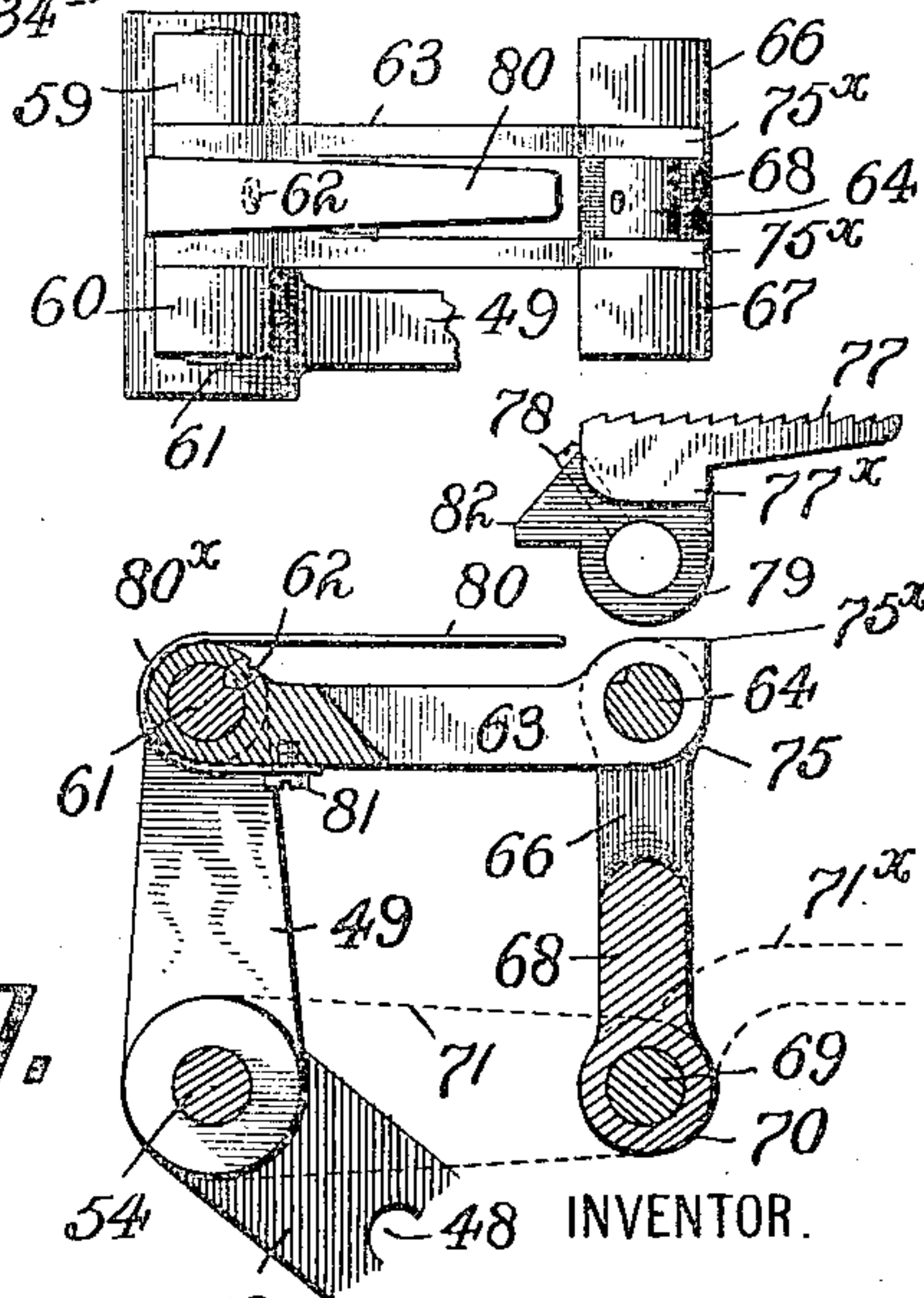


Fig. 11

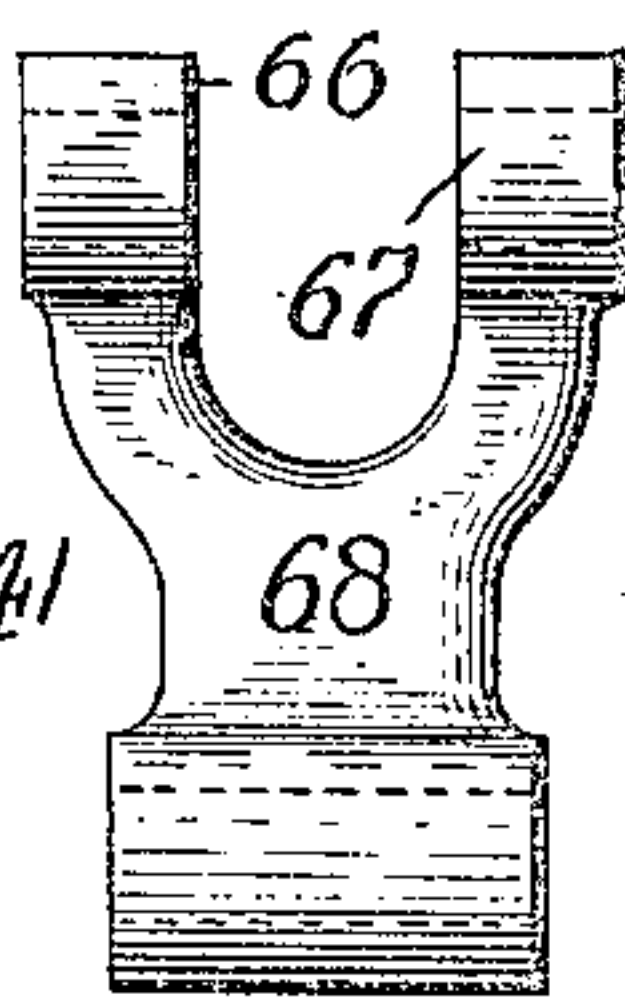


Fig. 12.

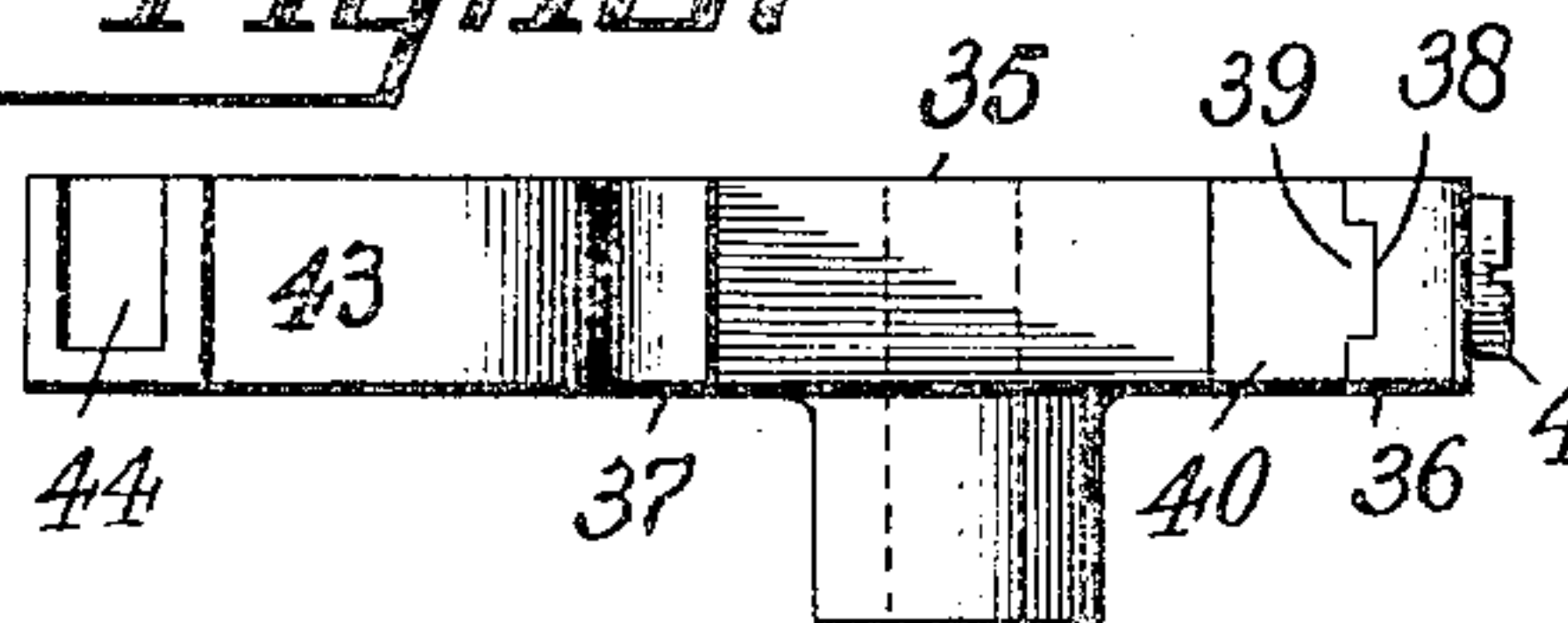


Fig. 13.

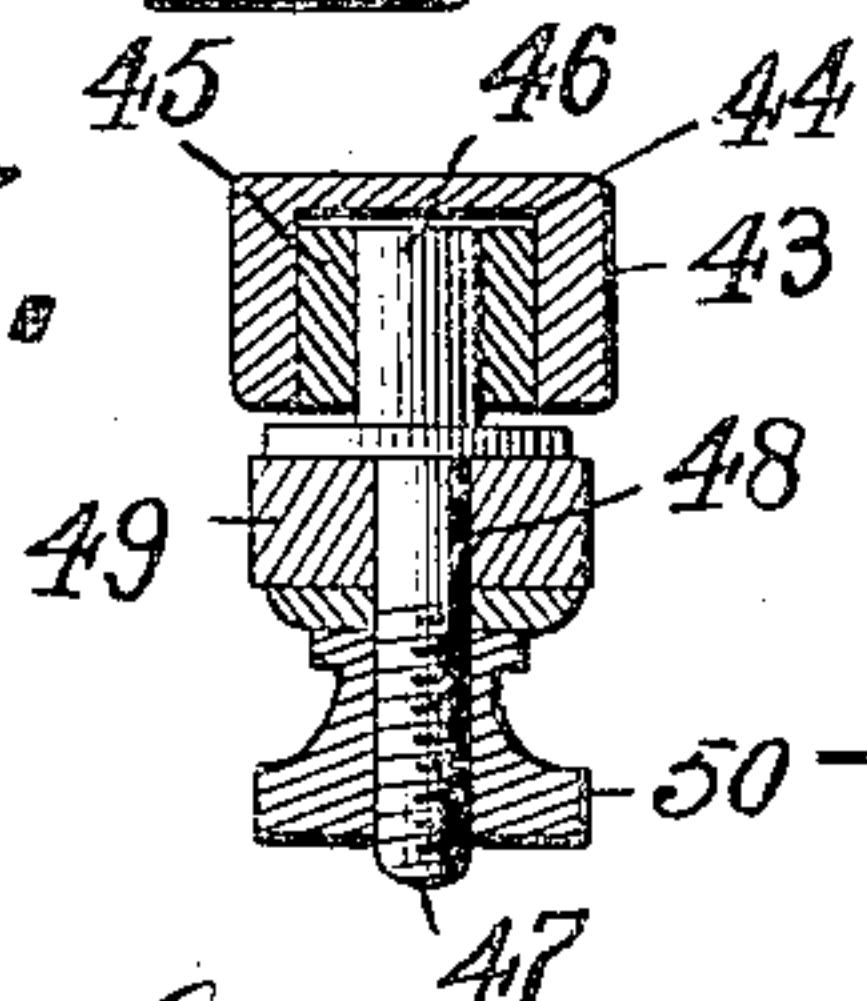


Fig. 10.



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5 SHEETS—SHEET 5.

Fig. 14.

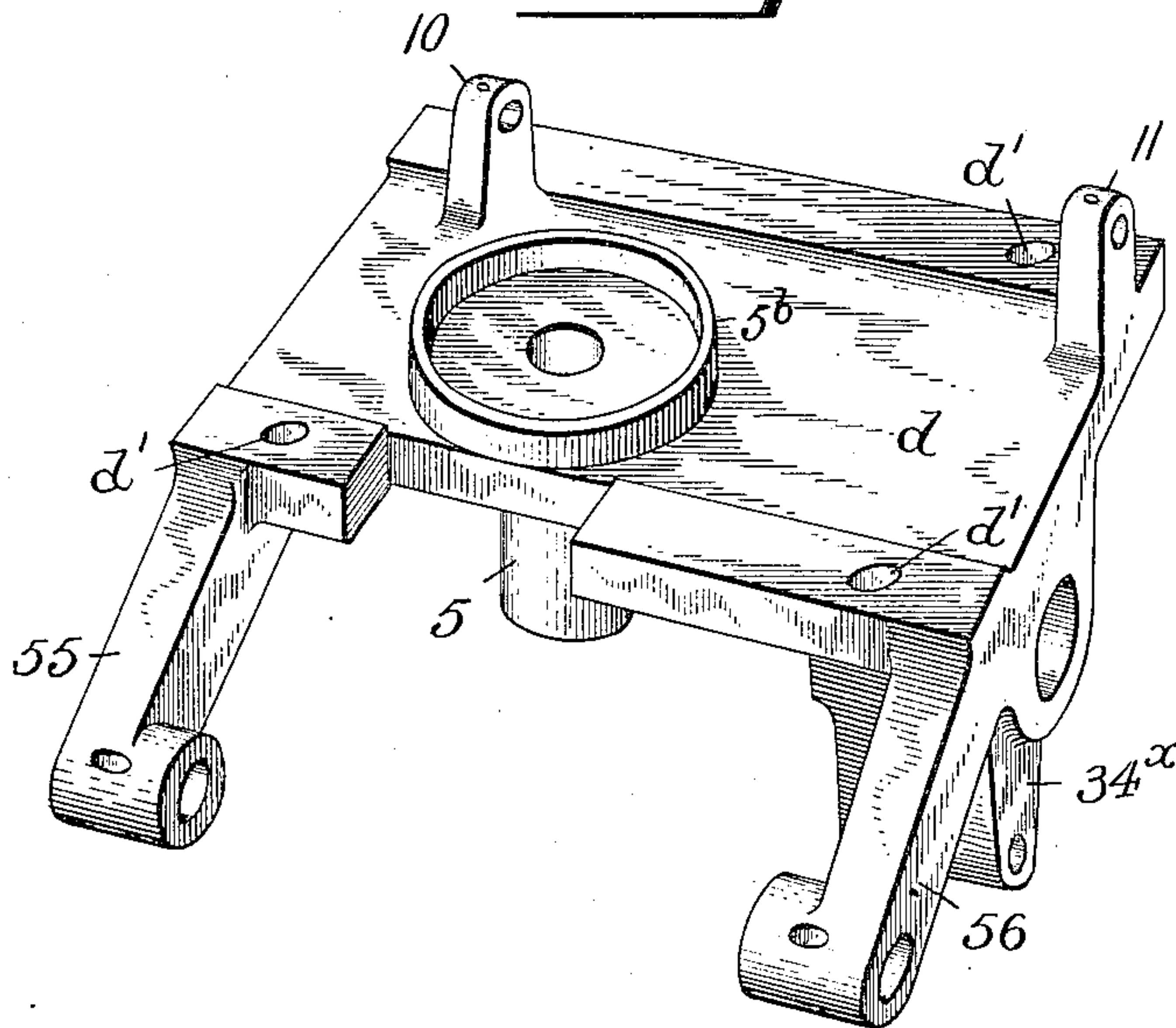
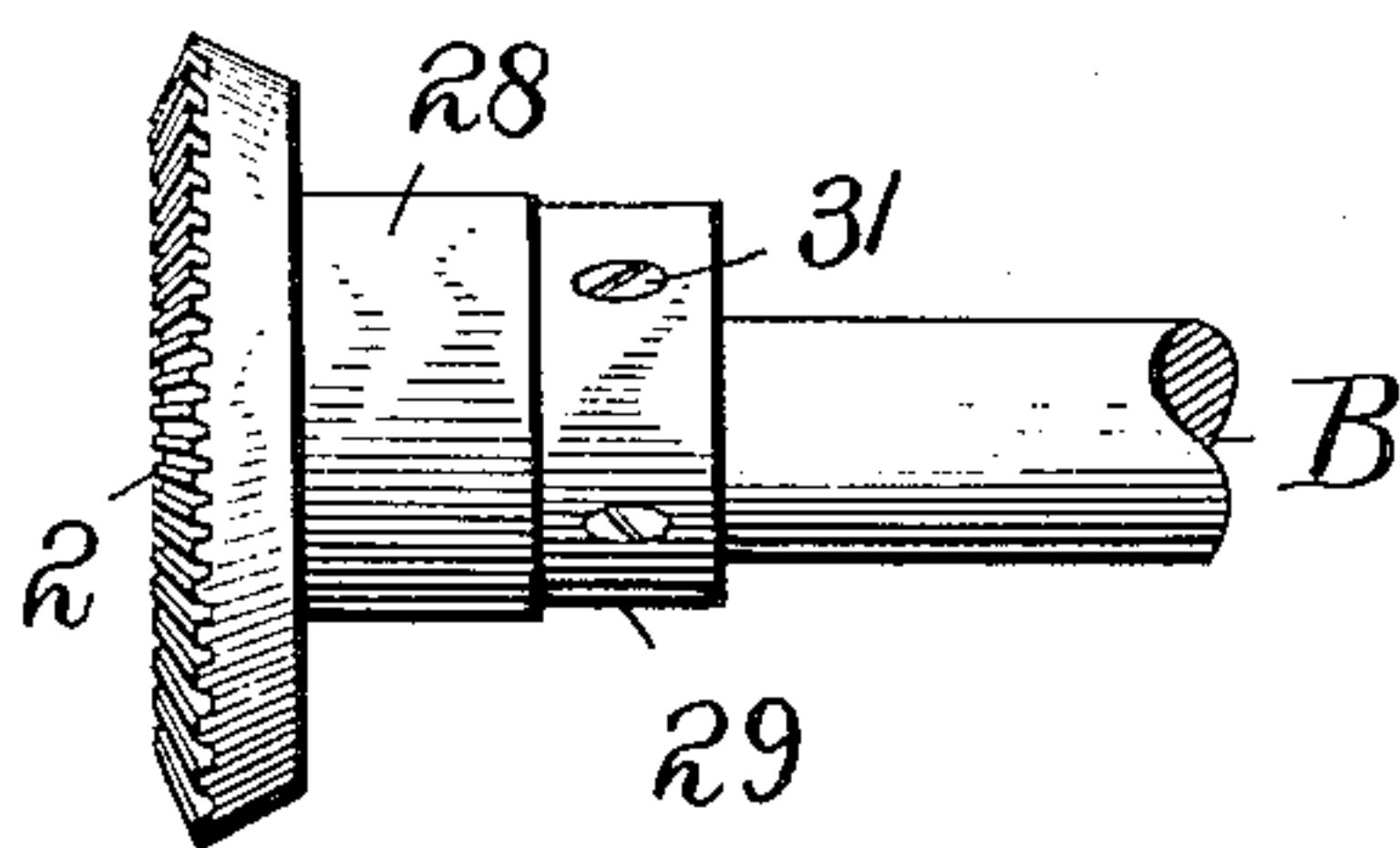


Fig. 15.



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UNITED STATES PATENT OFFICE.

WILLIAM N. PARKES, OF BROOKLYN, NEW YORK.

FEEDING MECHANISM FOR SEWING-MACHINES.

No. 875,616.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed October 26, 1903. Serial No. 178,628.

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Feeding Mechanism for Sewing-Machines, of which the following is a description.

This invention relates to sewing machines, and particularly to the feeding mechanism thereof.

It has for its main object a simple compact mechanism for feeding the work which may be run at a very high rate of speed.

It also has for its objects a compact device, the dog of which receives all of its movements from a single eccentric, said device constructed and adapted to operate in combination with a special form of hook mechanism, and said feeding and hook mechanism so constructed that both of said mechanisms may be mounted on a single detachable bracket.

It is a further object of said device to so construct it that the feed dog of the same may extend over a hook which revolves in a horizontal plane, and to so mount said dog that it may be readily moved from above said hook without detaching the dog from its carrier, thereby permitting the bobbin to be readily inserted and removed from the bobbin case. And still another object of said invention is to construct said feeding mechanism, said hook mechanism, and the bracket on which said mechanisms are mounted so that a bobbin controller mechanism may also be mounted on said bracket, and all of these mechanisms be operated in combination on said bracket.

It is also an important object of this invention to construct said feeding mechanism to cooperate with a hook which revolves in a horizontal plane, and that has two revolutions to each reciprocation of the needle.

The invention as a whole comprises in combination a feeding mechanism, a revolving looper mechanism, a bobbin controller mechanism, all mounted on a detachable bracket, and all operated from the revolving movement of a single revolving shaft, and all adapted to cooperate with a reciprocating needle that may be moved laterally.

Having pointed out some of the advantages and objects of my invention, it is to be understood that my invention consists in certain features, elements and combinations

of mechanisms, producing and tending to produce such objects and advantages and also others hereinafter detailed, as herein-after described and claimed.

Referring to the drawings, Figure 1 is a front end elevation of a sewing machine embodying my invention, the work-plate or bed being in dotted lines to clearly show the location and arrangement of the mechanism supported by the same; Fig. 2 is a top plan of the work-plate or bed, the arm being removed; Fig. 3 is a bottom plan view of the same; Fig. 4 is a top plan of the detachable supporting bracket showing arrangement of parts thereon; Fig. 5 is a vertical sectional view of the same taken on the line 5—5 of Fig. 4 looking in the direction of the arrow; Fig. 6 shows a detail, partially in section, of one form of means for operating the feed; Fig. 7 is a top plan view of a portion of such means of Fig. 6; Fig. 8 is a vertical sectional view on the line 8—8 of Fig. 4; Figs. 9 to 13 are detail views of several parts of the feeding mechanism; Fig. 14 is a perspective view of the detachable bracket *d*, the view being from a right-hand elevated position; and Fig. 15 is a side elevation of a portion of the driving-shaft, showing the looper driving gear, feed-eccentric and reduced portion thereof.

In the drawings A represents the bed of the machine and B the lower shaft. The lower shaft B may be driven in any suitable manner, but preferably by a sprocket on the main shaft and a sprocket-chain therefrom to the sprocket 1, on the lower shaft B. This shaft B has a one-to-one movement with respect to the main shaft (not shown) which actuates the needle holder and operating mechanism. These parts last described have not been shown more in detail because not essential to and not forming part of my present invention.

To the forward end of the shaft B is attached a bevel gear 2, which meshes with a bevel gear 3, the latter being attached to the lower end of a shaft 4, mounted in a suitable bearing 5 depending from a bracket *d*. The bearing 5, is provided with bushings 5^x, affording journals for the shaft 4, said journals being fixed in place by set-screws 5^a. To the upper end of shaft 4 is attached a hook 6 which is suitably constructed to carry a bobbin-case 7 in which is located a bobbin 8. The bevel gear 2 is twice the diameter of the gear 3 and therefore the hook 6 rotates twice

to each reciprocation of the needle. The hook mechanism used in combination with this feed mechanism is substantially the same as is shown and described by me in my Patent No. 730,692, dated June 9, 1903. This hook as therein described alternately engages a loop of needle-thread and casts the same very rapidly about the bobbin or cop of under-thread

10 The feeding mechanism herein shown is especially designed for use in combination with the hook mechanism shown in said patent, and as will be noticed the said hook mechanism of said patent, or more especially the driving mechanism for said hook mechanism has been modified to make it more adapted for use in combination with my improved feeding mechanism.

The bobbin controller mechanism is as follows: To the shaft B, is attached a cam disk 9, which has a cam-groove 9^x formed in it as indicated in Figs. 4 and 8. Extending upwardly from the top of the bracket *d* are lugs or bearings 10 and 11, in which are mounted to turn a shaft 12, to one end of which is attached an arm 13, the lower end of which carries a roller 14, which operates in the cam-groove 9^x formed in the cam-disk 9. On the shaft 12 are located collars 15 and 16, which serve to retain the shaft 12 longitudinally in the bearings 10 and 11. On a reduced portion, (not shown) formed on the collar 16 is located a bobbin-controlling arm 17, which is free to turn on the said reduced portion, an adjustable clamping-piece 18 being constructed to retain the said controlling arm on the said reduced portion of the collar 16 and at the same time to locate the working position of the controller 17. On the shaft 12 is coiled a spring 19, the end 20 of which enters the collar 15 and the end 21, entering a small tubular piece extending from the controller 17, rotary adjustment of collar 15 serving as a means to regulate the tension of the spring 19 and through it the pressure of the controller 17 on the bobbin. This bobbin controller mechanism is more fully described and claimed in my copending application Serial No. 154,457, filed April 27, 1903. In itself this bobbin controller mechanism is not a part of my present invention, but as an element of my combination looper and feeding mechanism, it is a part of my present invention, and in this respect it will be herein claimed.

In suitable bearings in the head of the machine is located a presser-bar 24 to the lower end of which is attached a presser-foot 25, a presser lifter 26 serving to lift the presser-bar 24 and a spring 27 partly shown, serving as a means for depressing the presser-bar. A needle-bar 22 which carries a needle 23 is reciprocated from the main shaft in any usual manner. Said needle-bar is mounted in a vibrating gate 22^x having its journal bear-

ings on the presser-bar 24 as shown at 22^a. The said gate is vibrated in any usual manner.

Hook 6, parts in connection with it, means for operating and carrying it, bobbin-controller, needle-bar and operating mechanism, presser-bar, presser-foot, etc., which have been partly described and shown, form no part of this invention by themselves, but they do form a part of this invention in respect of their combination and location, as will be hereinafter specified.

On the hub of the gear wheel 2, I form an eccentric 28 having a slightly reduced end portion 29, which serves as a means for carrying a collar 30 and also as a means through which the eccentric may be adjusted on the shaft B by means of set screws 31, one only of which is shown, (Fig. 8). Holes 32, (one only of which is shown,) serve as a means through which the screws 31 may be manipulated to adjust the eccentric 28. The collar 30 is attached to the reduced portion 29 by means of a set screw 30^x. A jacket or angular block 33 is mounted on the eccentric 28, the collar 30 and the back of the gear 2, retaining the block from longitudinal movement on the eccentric, but permitting it to turn freely, the reduced portion 29 preventing the collar from being adjusted too close to the block 33. On a stud 34 secured in a downwardly extending part 34^x of the bracket *d*, by a screw 34^a, I mount a lever 35 having jaws 36 and 37 formed thereon. In the jaw 36, see Figs. 5 and 12, I form a key-way 38, in which is located a tongue 39 formed on an adjustable piece 40, a screw 41 passing through a slot 42, see Fig. 6, and having a seat in the adjustable piece 40 serving as a means for retaining the said piece in position. The adjacent surfaces of the piece 40 and the jaw 36 are inclined as is clearly shown in Fig. 7, the piece 40 being a wedge, and, therefore, by adjusting the piece 40 downwardly, any lost motion between the jaws 36 and 37 and block 33 may be taken up. Integral with the lever 35 is the extension or arm 43 having a way or groove 44 in which is located a shoe 45 loosely mounted on an end 46 of a clamping bolt 47, the said bolt being secured in a slot 48 formed in a lever 49. The lever 49 is pivoted on a shaft 54, held rigidly in arms 55 and 56 of the bracket *d*, by means of set screws 57 and 58. The upper end of the lever 49 is broadened and extended into parallel arms 59 and 60, in which is journaled to turn a short shaft 61. On the shaft 61 and intermediate the arms 59 and 60, is secured, by means of a set screw 62, one end of a duplex feed-bar 63, the other end of which feed-bar is journaled to turn on a short shaft 64, said shaft 64 being mounted at its ends in parallel arms 66 and 67 formed on a link 68, the lower end of which is pivoted on a shaft 69, which

latter is securely held in a bearing 70 formed in a lever 71 pivoted on the shaft 54, Figs. 4, 5 and 10. Collars 72 and 73 serve as means for locating the levers on the shaft 54, and also as a means for adjusting the same laterally, the shaft 54 between the bearings 55 and 56 being long enough to permit of this adjustment and the collars 72 and 73 being held by screws 72^x and 73^x. In the under side of the bracket *d*, I form a receptacle in which is housed one end of a spring 74, the other end being in engagement with the outer end 71^x of the lever 71 as shown in Fig. 5. This spring serves as a means for depressing the outer end of the lever 71 and keeping the same in sliding engagement with the block 33. The spring 74 may be centered by pin 74^x on lever-end 71^x. The arms 75 and 76 of the duplex feed-bar 63 have placed between them a feed-dog 77, which is rigidly attached to the shaft 64 by means of a set-screw 78, a downwardly extending portion 79 being formed on said feed dog for the bearing for the dog on the shaft 64. The portion 79 of the feed-dog 77 just fits between the arms 75 and 76 of the feed-bar 63, and the arms 75 and 76 just fit between the arms 66 and 67 of the link 68. Thus it will be seen, all the parts are securely held in place on the said shaft 64, arms 66 and 67 and arms 75 and 76, being free to turn on the shaft and the latter, being rigidly attached to the dog 77, turns with the said dog.

It will be observed by referring to Fig. 5, that the top of the block 33 is curved so as to form a rocking contact between the end 71^x of the lever 71, and the top of the said block 33. It will also be observed, that the spring 74 is located directly over the center of the shaft B, which is the most favorable position for the action of said spring, and that the pin 74^x retains the spring central with respect to the house in which it is located, so the said spring is adapted to act very freely, and be always retained in its proper location. It may be further noted in connection with said spring 74, that its function is simply to keep the end 71^x of the lever 71 in engagement with the top of the block 33, and that when the feed dog is making its functional movement, it receives a positive action upwardly, and in a direction with the movement of the work. This will be more fully noticed further on in the description.

To the feed-bar 63, I attach a spring 80 by means of a screw 81, a way being formed on the bottom and around the end of the feed-bar 63 for the location of the said spring and to prevent the same from turning, as shown in Fig. 10, at 80^x, by dotted lines. The spring as is clearly shown in Figs. 1 and 5, is bent around the end of the feed-bar and extends downwardly between the bifurcations of the same, the free end of the spring engaging an extension 82 formed

on the feed-dog. This extension 82 of the feed-dog is so constructed that when the dog is lifted so as to permit the removal of the bobbin 8 from the hook, or the removal of the hook or bobbin-case, spring 80 will hold the said feed-dog in its inoperative position; then when the dog is returned to its operative position, the spring will also securely hold it in this position. The manner in which this feed dog is removed from its operative position, and the manner in which it is held in its operative position, will be clearly understood by referring to Figs. 1 and 5. It will be understood that not only the pressure of the spring 80, but also the pressure of the presser-bar 27 tend to hold the feed-dog in its operative position, as the said dog extends beyond its pivot under the presser-foot. The bottom of the feed-dog 77, is provided with flat portions 77^x, on opposite sides of its portion 79, which rest on corresponding flat portions 75^x of the arms 75 and 76 of the feed-bar 63, thus insuring the proper horizontal position of the dog during the operation of the machine.

I have found by actual test that a comparatively light spring may be used to hold the feed-dog in its operative position so that the said dog may be easily turned out of the way of the bobbin and that with this comparatively light spring the feed-dog may be run at any rate required of it in a sewing machine. In fact, I have tested this feed-dog under these conditions with a light spring up to over 3,500 stitches a minute and found it to work perfectly and feed the work just the same as a feed-dog that is rigidly attached to its bearings. I found also under this very high rate of speed, that the spring 74 kept the lever 71 properly in engagement with the block 33 and that the said spring 74 can also be a comparatively light spring. As can be readily understood, the presser-bar spring, by reason of its pressure on the foot and through it on the feed-dog, also operates to keep the said lever 71 in engagement with the jacket or block 33.

In the modified form of my invention shown in Figs. 6 and 7 of the drawings, the jacket or block 33 is provided with lugs 33^a which embrace the arm 71^x of the lever 71, the latter being slotted at 71^a for the reception of a sliding shoe 71^b, pivotally supported on the pin 33^b, extending through the lugs 33^a and fixed thereto in any suitable manner. In this modified form it is to be noted, that the end 71^x of the lever 71 is moved positively vertically, and the spring 74 is dispensed with.

An apron or guard-plate *g*, is located between the looper and the feeding mechanism, the same being curved around the front of the looper, as shown in Figs. 1, 4 and 5 and of a height to extend above the feed-dog actuating mechanism. The plate is secured in

place on the top of the bracket d , by means of ears g' , through which extend screws g^2 into said bracket. The function of this guard-plate or apron is to prevent any possibility of the loop of needle-thread, as it slips from the hook of the looper, from contacting, or in any manner becoming entangled, with the adjacent parts of the feed mechanism, or being soiled thereby.

The throat-plate is composed of two parts c and c' , the former being fixed to the bed-plate by screws c^2 , and the latter sliding in ways in the cloth-plate. The part c is provided with the needle-slot c^3 , and several feed-slots, and the part c' is provided with feed-slots in continuity of feed-slots in the part c . The part c' , is retained in place by a latch c^4 . The presser-foot 25 is pivoted to its bar at 24^x , being retained in its proper position shown in Fig. 1, by means of a spring 24^a connected to the pivot screw 24^x and to a screw 24^b carried by the foot. This construction permits the foot to be turned into dotted line position shown in Fig. 1. These several parts of the presser foot form no part of my present invention and have been shown and described only to clearly portray the invention of this application.

In the operation of my feeding device it is to be noted that the lever 35, is oscillated positively on its axis by means of the block 33 engaging the lateral walls of the jaws of said lever 35, see Fig. 5. This oscillation of the said lever is transmitted to the arm 43 of the same. And by reason of the connection between the same and the lever 49, the said oscillating movement is transmitted to said lever 49, and through it to the feed dog 77. It is by this means that the feed dog 77, is given its horizontal movement which carries the work forward. The parts are so constructed that the pivots 54 and 69 lie in substantially a horizontal plane, during the time the feed dog is exposed above the needle plate, and the same is moving the work forward. It is thus seen that during this movement the upper end of the lever 49, moves about the axis of the pivot 54, and the upper end of the link 68 moves about the axis of the pivot 69, it will thus be understood that the feed dog is in substantially a horizontal position during its functional movement of carrying the work forward. In Figs. 5 and 6 the parts are shown substantially in the position of having made one half of said functional movement.

Referring now to the vertical movement of the feed dog, it will be seen that the rotation of the shaft B, and of the eccentric 28, carried by it, from the position shown in Fig. 5 for example, reciprocate the block 33 vertically between the jaws of the lever 35. And this movement of the said block is transmitted to the end 71^x of the lever 71, and through it

to the connection 68, and the feed dog carried by the same. Thus it is seen a vertical movement is transmitted to the feed dog at right angles to its horizontal movement, and it will be noticed that the pivot 69 being located about intermediate of the distance between the shaft B, and the pivot 54, that the movement of the eccentric 28 is reduced at the feed dog vertically. These parts are so proportioned that considerably less than half of the cycle of movement of the eccentric 28 is used during the time the work is moved forward, and the balance of the cycle of movement of said eccentric is used in carrying the feed dog away from the work below the needle plate, and back again into engagement with the work.

The operation of the modified form of my device, is substantially the same as in the form just described, the only difference being the feed dog is moved positively at all times while in the previous form just described, it is depressed by the spring 74. The length of the stitch is increased or decreased by the adjustable connection between the lever 49 and the lever 35. It is obvious that by loosening the clamping nut 50, and adjusting the bolt 46 which carries the shoe 45, towards the pivot of the lever 35, the movement transmitted from said lever will be reduced and vice versa, and of course by reason of the connection between said lever 49 and the feed dog the length of the stitch will be accordingly changed.

In addition to the other advantages of this feed mechanism, simplicity of construction and compactness of the parts, and the very limited number of said parts is to be observed. By the use of a single eccentric the feed dog is given all of its movements, and all of these are positive, if it is so desired, or if preferred the spring 74 may be used to depress the feed dog. All the adjustments required for increasing or decreasing the length of the stitches are present in this feed mechanism, and the said adjustments can be made by the thumb nut 50 as herein shown, or a lock nut may be used in place of said thumb nut.

Another feature of the invention is its adaptation for use in combination with a hook mechanism that rotates in a horizontal plane, so constructed and disposed that a reciprocating needle or a reciprocating and laterally moving needle may be used in combination therewith. And a further feature of the invention is the adaptation of the feed dog so that it may extend over the looper, and be readily removed from above the same without detaching it from its bearings. The bobbin controller as before noted is also an element of my complete invention, and the bracket which is adapted to carry my feeding mechanism, my looper mechanism and all of my said bobbin controller mechanism, is also

an element of said invention. It is obvious that it is very advantageous to have all this mechanism mounted on a detachable bracket which may be readily secured to the under side of the bed plate of the machine. It is to be noted that not only these mechanisms are mounted on this bracket, but also the forward end of the shaft B.

It is obvious that changes can be made in the foregoing described invention without departing from the spirit of the same, therefore I do not wish to be confined to the form of my invention herein disclosed.

My invention having been described in detail and the operation thereof set forth, the following important features are claimed as new.

1. A feeding mechanism for sewing machines comprising a shaft, an eccentric secured to said shaft, a block mounted on said eccentric, a pivoted lever having jaws that embrace said block, a feed dog, means adapting said lever to move said feed dog horizontally, and means adapting said block to move said feed dog vertically.

2. A feeding mechanism for sewing machines comprising a revolving shaft, an eccentric secured to said shaft, a feed dog, means operated by said eccentric for giving the feed dog a vertical and a horizontal movement said means comprising a lever having jaws between which said eccentric is located, a second lever adapted to reciprocate said feed dog horizontally, an adjustable connection between said levers whereby the extent of the horizontal movement of the feed dog is controlled, and means adapting said eccentric to reciprocate said feed dog vertically.

3. A feeding mechanism for sewing machines comprising a revolving shaft, an eccentric mounted on said shaft, a block mounted on said eccentric, a part in engagement with said block whereby the block is restrained from revolving with the eccentric, a feed dog, and a connection between said part and said feed dog whereby the dog is reciprocated horizontally, a lever one end of which is positively oscillated from the movement of said block, and means whereby the feed dog is operated vertically from the movement of said lever.

4. A feeding mechanism comprising a feed dog, a revolving shaft, a single eccentric secured to said shaft, a single part mounted on said eccentric, a lever having jaws between which said part is located, and means intermediate said part and the feed dog whereby the dog is reciprocated horizontally and vertically from the movement of said part.

5. A feeding mechanism for sewing machines comprising a feed dog, a revolving shaft, an eccentric secured to said shaft, a block mounted on said eccentric, a lever hav-

ing jaws that embrace said block, adjustable means for reducing or increasing the space between said jaws, and means whereby the feed dog is reciprocated horizontally and vertically from the movement of said block.

6. A feeding mechanism comprising a feed-bar pivotally supported at one end, a shaft, the other end of said feed-bar being mounted on the shaft, a bearing for said shaft to turn in, a feed-dog rigidly attached to the shaft, yielding means for holding said dog in operative position on the feed-bar, and means for actuating the said feed-bar to feed the work.

7. A feeding mechanism for sewing machines comprising a revolving cam, a pivoted lever having an end that extends oblique to the vertical, means adapting said cam to oscillate said lever, a second pivoted lever one end of which is parallel with the oblique extending part of said first lever and the other end of which extends vertically, an adjustable connection between the oblique extending parts of said levers, a feed dog, a connection between the vertically extending end of said second lever and said feed dog whereby the dog is operated horizontally, and means for operating said feed dog vertically.

8. A feeding mechanism comprising a feed-dog having oppositely extending journals, a feed-bar supported on said journals, means for supporting said journals so that the dog may be movable independently of said bar, and means for imparting feed-movements to said bar and dog.

9. A feeding mechanism for sewing machines comprising a detachable bracket, a revolving shaft one end of which is located in a bearing in said bracket, an eccentric secured to said shaft, a block mounted on said eccentric, a lever one end of which is in engagement with said block, means adapting said lever to operate the feed dog horizontally, a feed dog, and means intermediate said block and said feed dog whereby said dog is reciprocated vertically.

10. A feeding mechanism for sewing machines comprising a detachable bracket, a revolving shaft having a bearing in said bracket, an eccentric secured to said shaft, a block mounted on said eccentric, a lug projecting downwardly from said bracket below said shaft, a lever pivoted on said lug one end of which embraces said block, a feed dog and means for carrying the same pivoted on said bracket, means intermediate said lever and said feed dog whereby the dog is operated horizontally from the movement of said lever, and means for operating said feed dog vertically.

11. In combination in a sewing machine, a feeding mechanism comprising a shaft, a cam secured to said shaft, a block mounted on said cam, a feed dog, means intermediate said block and said feed dog whereby said

dog is operated vertically and horizontally from the movement of said block, and a detachable bracket adapted to carry said feeding mechanism.

5 12. In combination, a looper mechanism comprising a looper, means for revolving said looper comprising a revolving shaft, a gear wheel mounted on said shaft, an eccentric formed on the hub of said gear wheel, a feed
10 dog, and means intermediate said eccentric and said feed dog whereby the dog is operated vertically and horizontally from the movement of said eccentric.

13. A feeding mechanism having in combination a driving-shaft carrying an eccentric, a block surrounding said eccentric, a lever having arms embracing said block, a bell-crank lever adjustably connected to
15 said lever, a feed-bar supported by said bell-crank lever, a feed-dog carried by the bar, and means connecting said bar with the block.

14. A feeding mechanism comprising a driving-shaft carrying an eccentric, a lever
25 pivoted below the driving-shaft, a bell-crank lever, an adjustable connection between the two said levers, a feed-bar carried by the bell-crank lever, a horizontally disposed lever, connection between the feed-bar
30 and said latter lever, a feed-dog carried by the bar, and operative connections between the eccentric and the horizontally disposed

lever and the first said lever, substantially as described.

15. In combination, a feeding mechanism 35 comprising a feed dog, means for operating said feed dog, a looper mechanism comprising a looper, means for revolving said looper twice to each horizontal reciprocating movement of said feed dog, and a detachable
40 bracket adapted to carry said mechanisms.

16. In combination, a detachable bracket for sewing machines, a looper mechanism carried by said bracket, a feeding mechanism carried by said bracket, a bobbin controller 45 mechanism carried by said bracket, a revolving shaft having a bearing in said bracket, and means adapting said revolving shaft to operate said mechanisms.

17. In combination, a detachable bracket 50 for sewing machines, a looper mechanism having a revolving part carried by said bracket, a feeding mechanism carried by said bracket, and means operated by said revolving part of said looper mechanism 55 adapted to operate said feeding mechanism.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:

CHAS. McC. CHAPMAN,
M. HERSKOVITZ.