

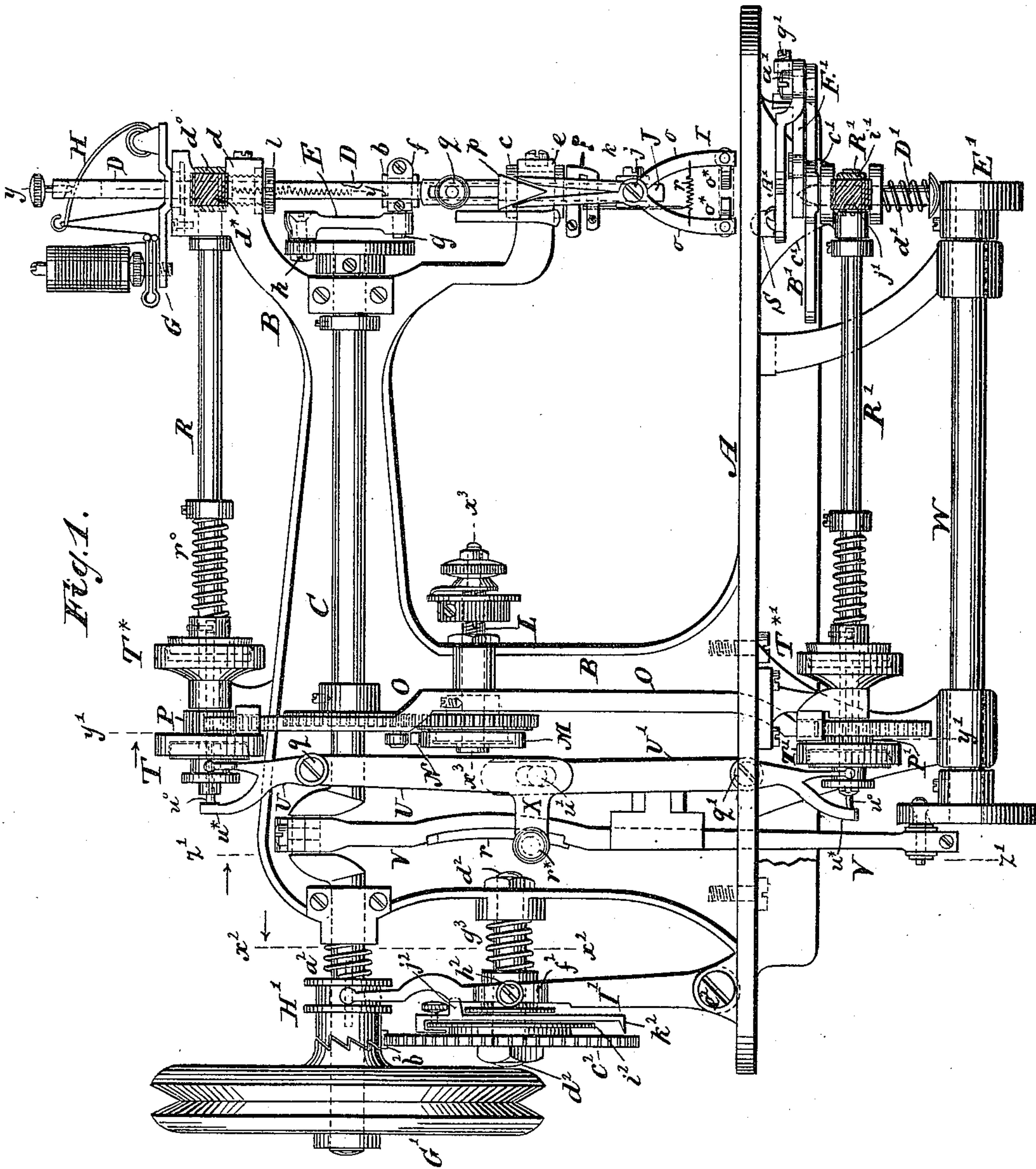
(No Model.)

3 Sheets—Sheet 1.

H. GANSERT.
SEWING MACHINE.

No. 438,074.

Patented Oct. 7, 1890.



WITNESSES:

Eduard Wolff.

William Miller

INVENTOR:

Hermann Gansert.

BY

Van Santvoord & Haupt

ATTORNEYS

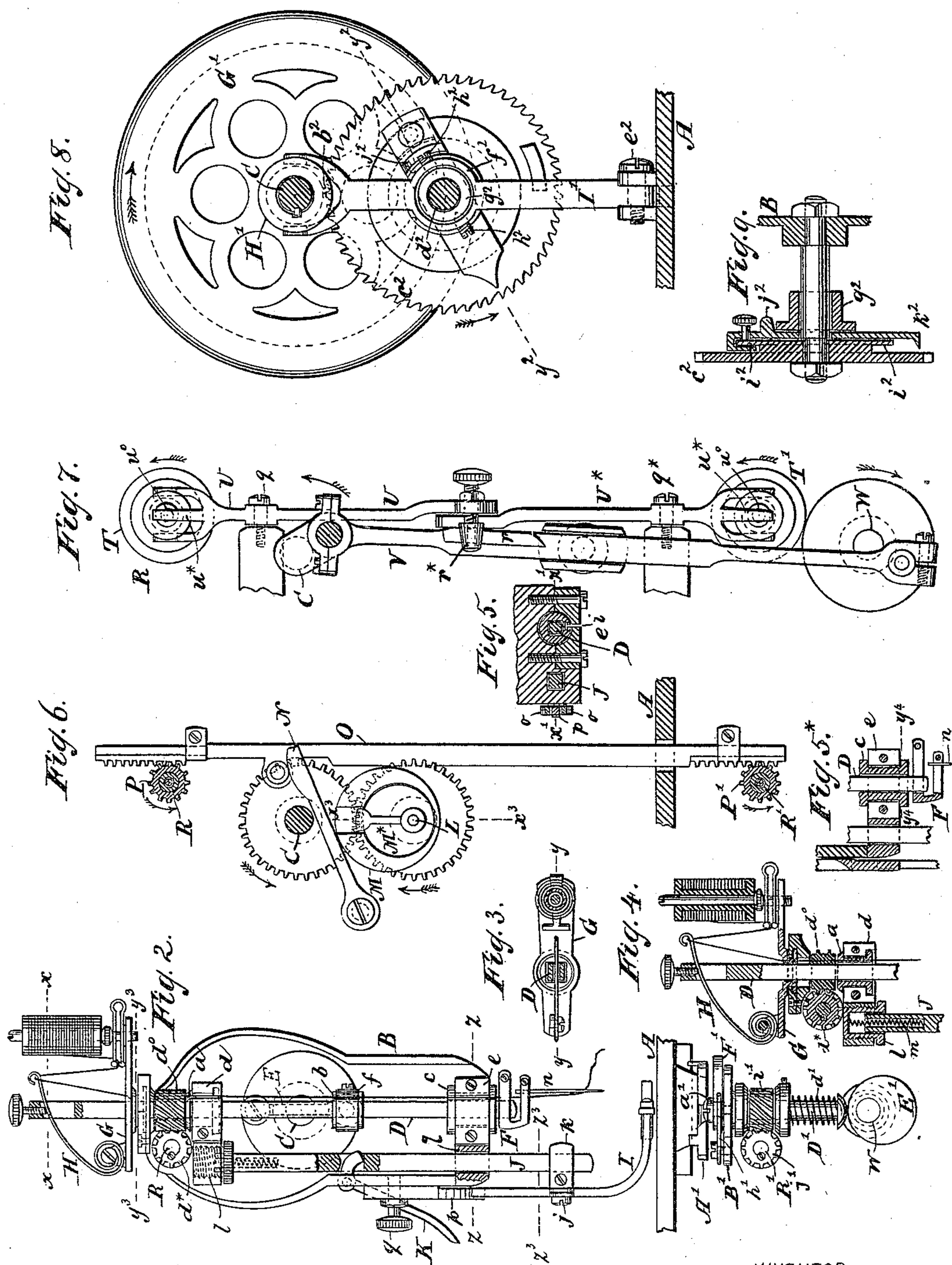
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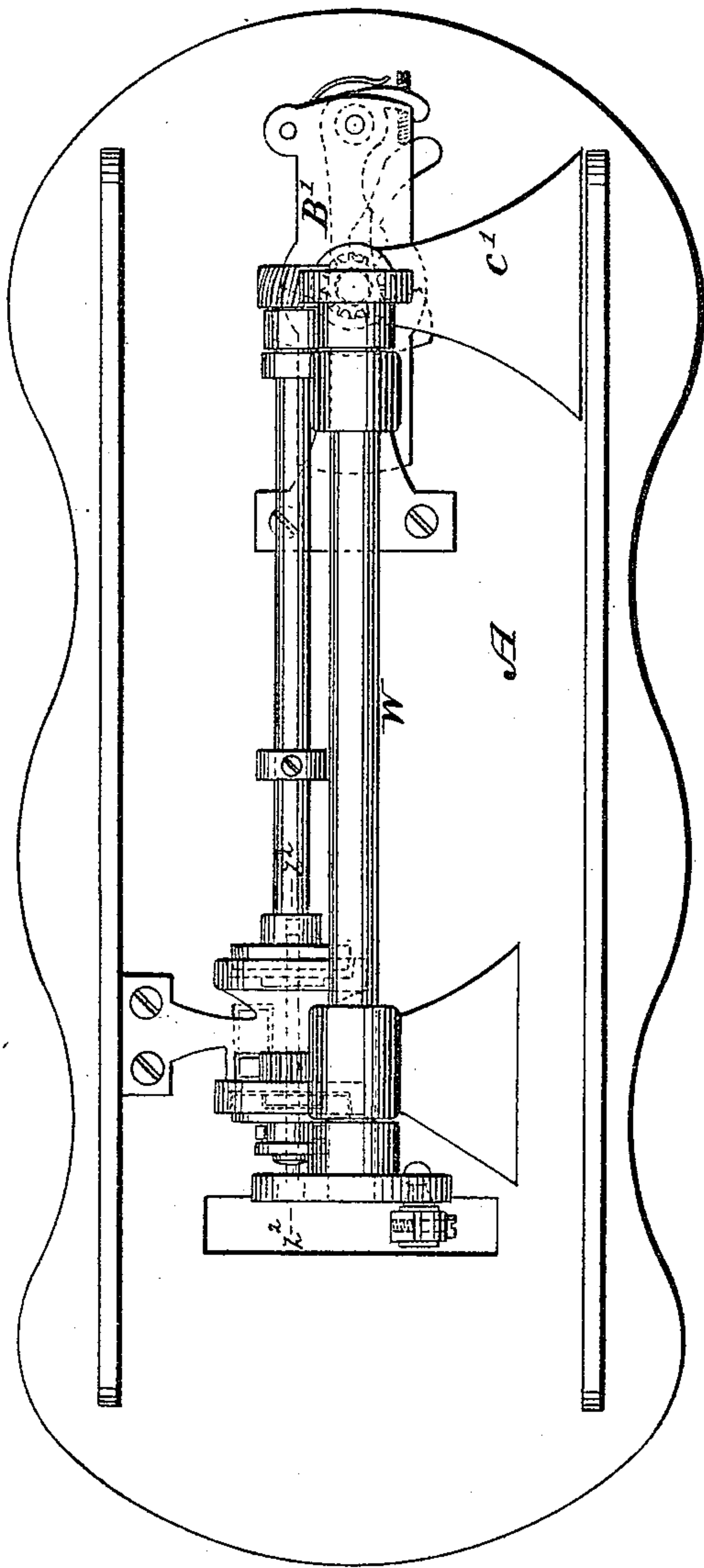
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Fig. 10.



WITNESSES:

Edward Wolff

William Miller

Fig. 14.

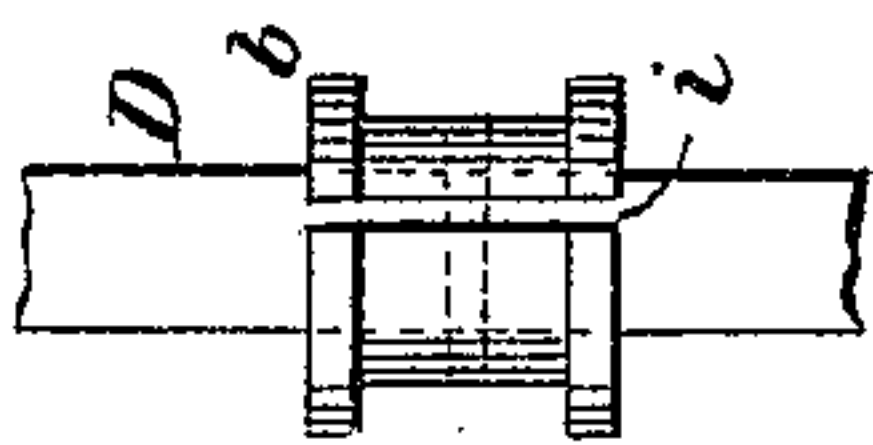


Fig. 17.

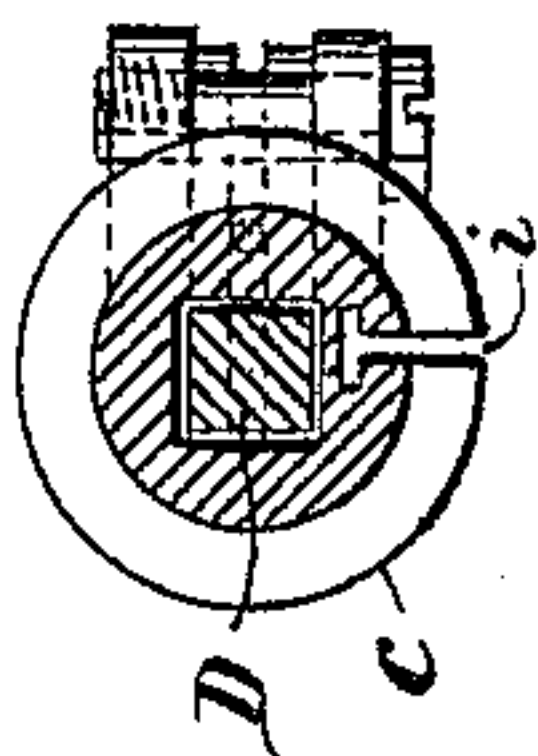


Fig. 18.

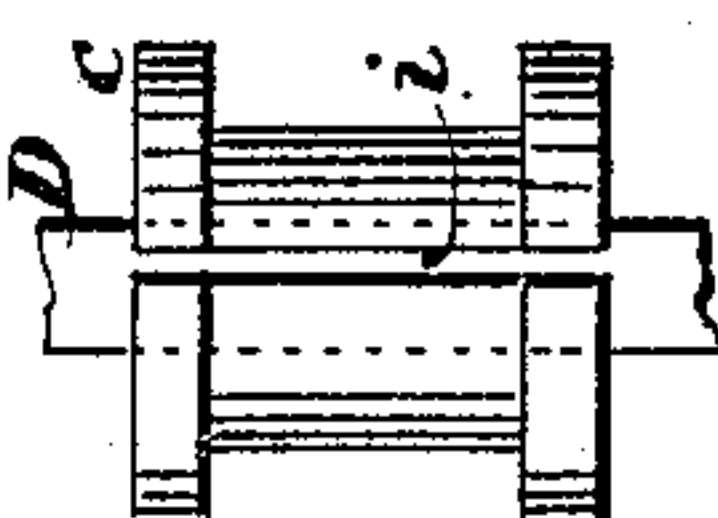


Fig. 15.

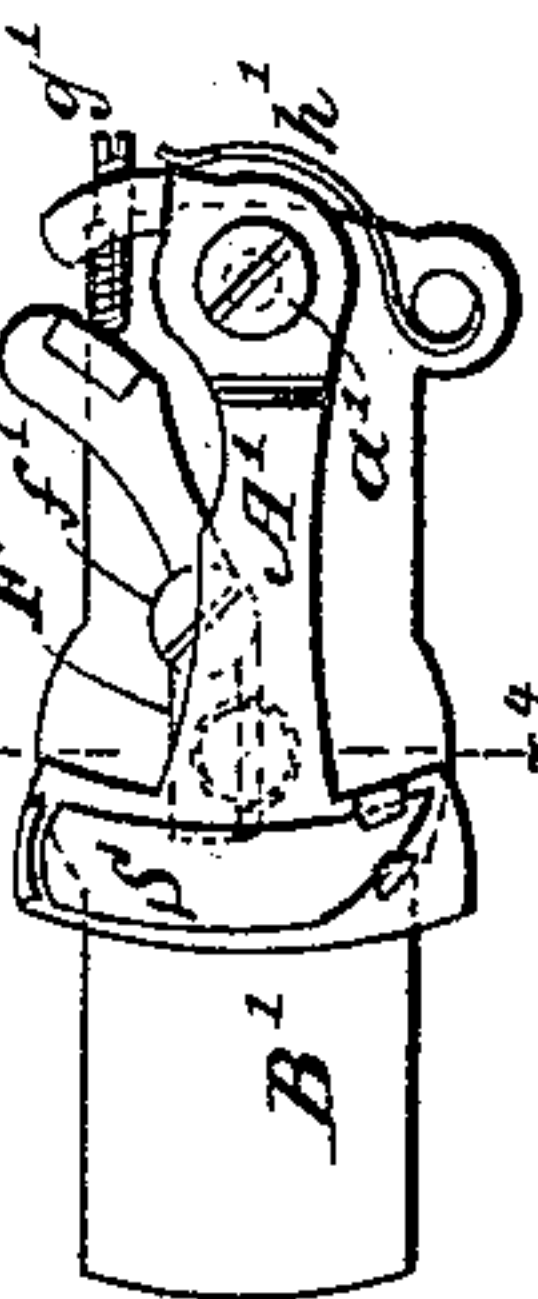


Fig. 16.

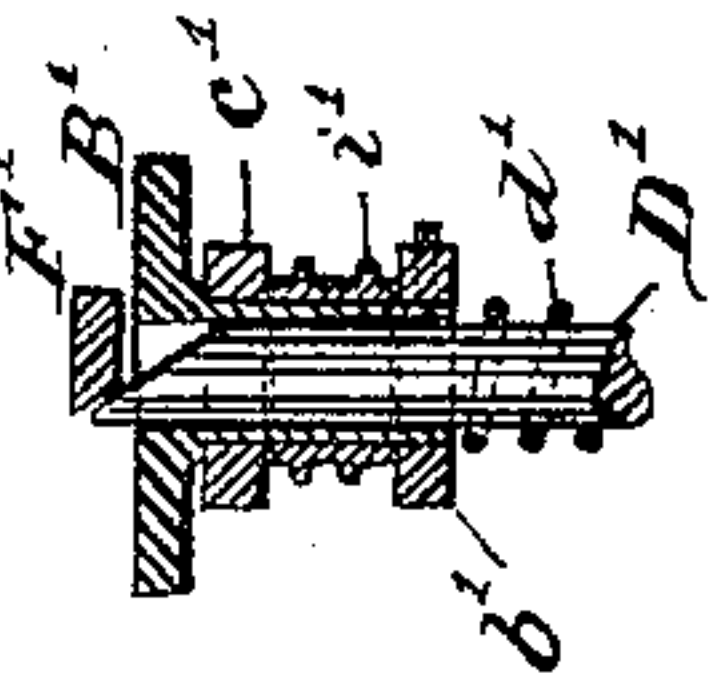


Fig. 13.

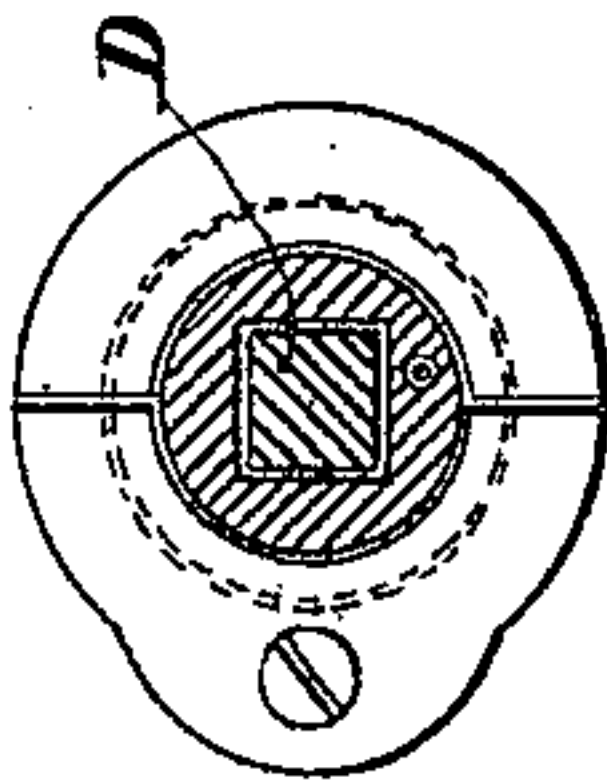


Fig. 11.

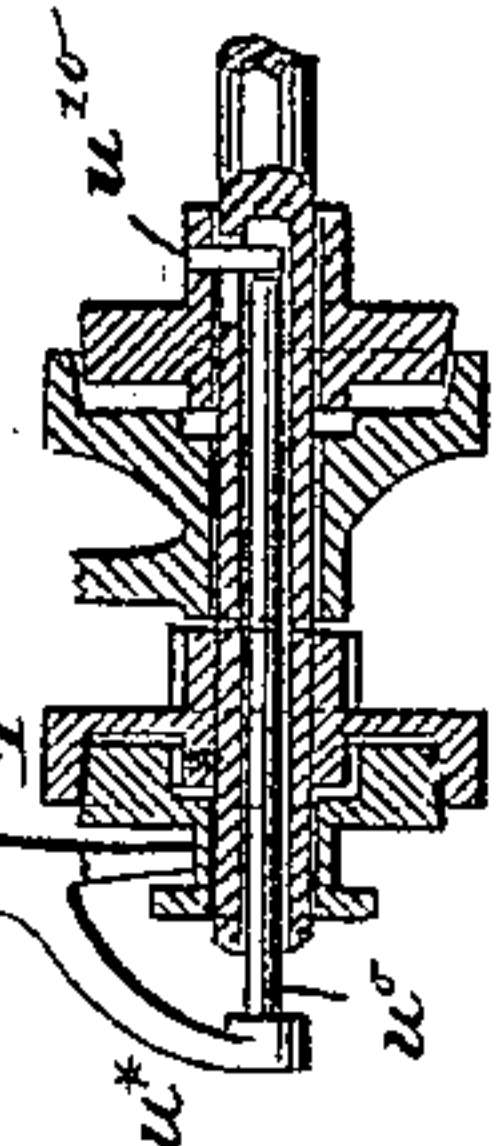


Fig. 12.

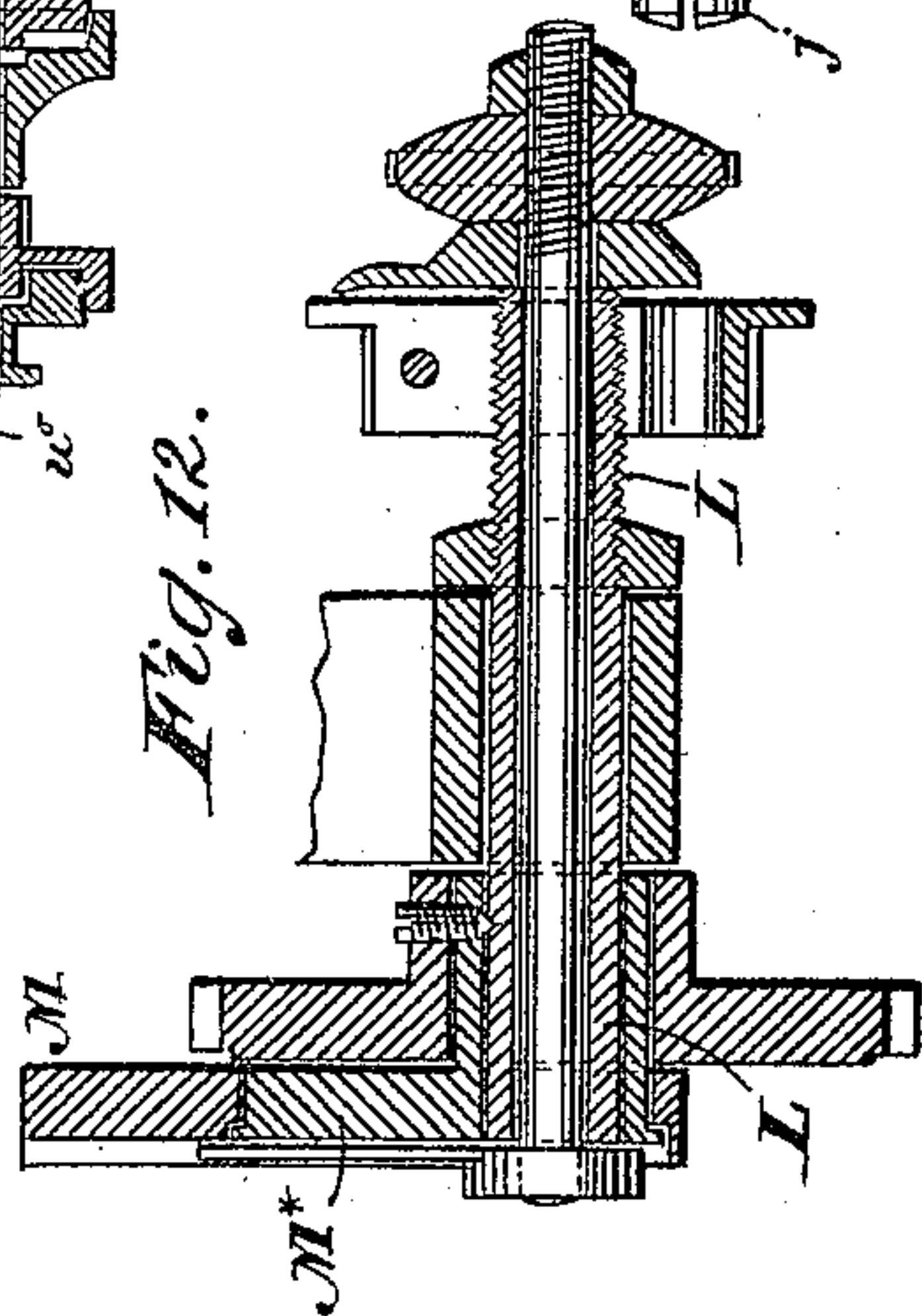
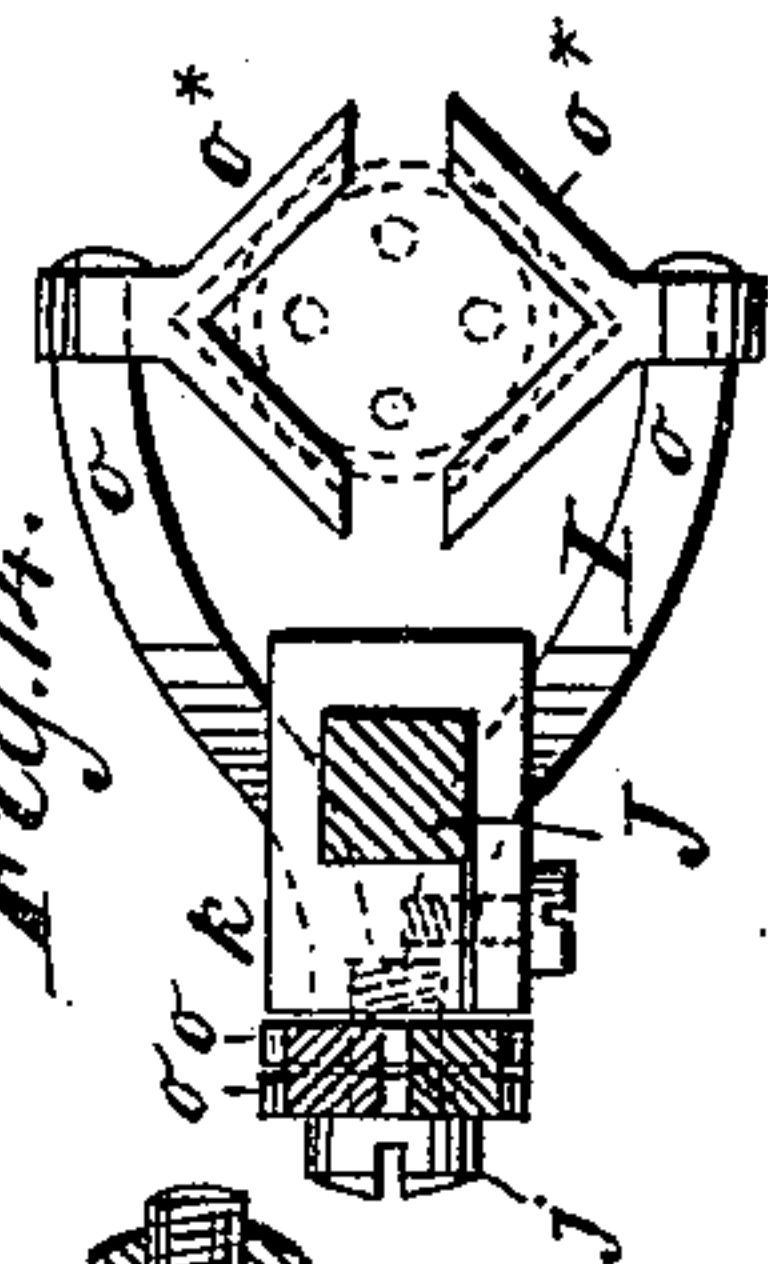


Fig. 14.



INVENTOR:
Hermann Gansert.

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ATTORNEYS

UNITED STATES PATENT OFFICE.

HERMANN GANSERT, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 438,074, dated October 7, 1890.

Application filed May 8, 1890. Serial No. 350,973. (No model.)

To all whom it may concern:

Be it known that I, HERMANN GANSERT, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to certain improvements in sewing-machines, as pointed out in the following specification and claims and illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation. Fig. 2 is a front view. Fig. 3 is a horizontal section in the plane $x x$, Fig. 2. Fig. 4 is a vertical section in the plane $y y$, Figs. 1 and 3. Fig. 5 is a horizontal section in the plane $z z$, Fig. 2. Fig. 5* is a vertical section in the plane $x' x'$, Fig. 5. Fig. 6 is a transverse vertical section in the plane $y' y'$, Fig. 1. Fig. 7 is a similar section in the plane $z' z'$, Fig. 1. Fig. 8 is a similar section in the plane $x^2 x^2$, Fig. 1. Fig. 9 is a section in the plane $y^2 y^2$, Fig. 8. Fig. 10 is an inverted plan view. Fig. 11 is a section in the plane $z^2 z^2$, Fig. 10. Fig. 12 is a section in the plane $x^3 x^3$, Figs. 1 and 6, on a larger scale than the previous figures. Fig. 13 is a horizontal section in the plane $y^3 y^3$, Fig. 2. Fig. 14 is a similar section in the plane $z^3 z^3$, Fig. 2. Fig. 15 is a plan view of the shuttle-carrier. Fig. 16 is a vertical section in the plane $x^4 x^4$, Fig. 15. Fig. 17 is a section in the plane $y^4 y^4$, Fig. 5*. Fig. 18 is a partial side elevation of the needle-bar. Fig. 19 is an elevation of the middle portion of the needle-bar.

In the drawings, the letter A designates the table or work-plate, from which rises the standard B, which forms the bearings for the driving-shaft C.

D is the needle bar or slide, which is square in cross-sections, as shown in Figs. 3, 5, 13, and 14, and which extends through three sleeves $a b c$. The sleeves a and c have their bearings in journal-boxes d and e , respectively, which are formed on arms extending from the standard B, and said sleeves are fitted into their journal-boxes so that they can freely revolve in the same; but they are prevented from moving in the direction of their axis. The sleeve b is firmly secured to the

needle-bar, as shown in Fig. 19, and it is fitted into a journal-box f so that it can turn therein but not move in the direction of its axis.

From the journal-box f extends a pin g , Fig. 1, into one end of a rod E, the opposite end of which engages an eccentric wrist-pin h , carried by the driving-shaft C. When this shaft is revolved, a reciprocating motion is imparted to the needle-bar D, while at the same time said needle-bar is free to be turned in either direction. On the lower end of the needle-bar D is secured a screw-clamp F, which has four jaws, two of which serve to secure the clamp on the needle-bar, while the other two serve to hold the needle n . (See Figs. 2 and 5*.) By referring to these figures it will be seen that the needle is not in line with the longitudinal axis of the needle-bar, so that when the needle-bar is rotated the needle is carried round in a circle the diameter of which can be increased or diminished by adjusting the needle in the clamp F.

All the sleeves a , b , and c are provided with slots i , of the form shown in Figs. 5, 17, and 18, so that thread can be carried down from the spool to the needle n close to the needle-bar, as shown in Fig. 2. The spool is mounted on a platform G, which fits the needle-bar and turns with the same, and since that portion of the thread which passes down to the needle extends through the slots i in the sleeves it will be carried round with the needle-bar without the liability of getting entangled. The course of the thread from the spool is shown in Fig. 2, and it passes through an eye in the spring H, which extends through a slot in the needle-bar and forms the take-up.

I is the presser-foot, which is secured to a bar J by means of a screw j and clamp k . (See Fig. 14.) The bar J slides in sockets l , formed in one of the arms projecting from the standard B, (see Figs. 2 and 4,) and it is exposed to the action of the spring m , which has a tendency to force said bar downward. A lever K, Fig. 2, serves to force the bar J upward, so as to lift the presser-foot I clear of the table A. The presser-foot consists of two jaws $o o$, which swing on the screw j , and the tails of said jaws extend upward, and between their beveled ends is introduced a wedge p , Fig. 1, which

can be adjusted up or down by means of a set-screw q . The jaws $o o$ are provided with V-shaped clamping devices $o^* o^*$, Fig. 14, and a spring r , Fig. 1, has a tendency to force these clamping devices toward each other. These clamping devices are formed to retain a button, as shown in Fig. 14, and by depressing the wedge p they can be opened so that the button can be readily adjusted between them. In the example shown in the drawings the button has four sewing-holes, and the needle m must be adjusted in the clamp F at such a distance from the vertical axis of needle-bar that it will be able to pass through the holes in the button.

The driving-shaft C is geared together with a counter-shaft L , so that both turn with the same velocity. On this counter-shaft is mounted an eccentric M , which acts upon a lever N , Figs. 1 and 6, by means of which the needle-bar D is turned after each descent of the needle a sufficient distance to bring the needle over another hole in the button—that is to say, if the button has four sewing-holes a quarter-turn is imparted to the needle-bar after each descent of the needle; but if the button has only two sewing-holes a half-turn must be imparted to the needle-bar after each descent of the needle. For this purpose the lever N acts upon a bar O , the upper end of which is provided with cogs to engage a pinion P , which is mounted loosely upon the shaft R , but can be brought in gear with said shaft by a friction-clutch T , the female part of which is cast integral with the pinion P , while the male part is feathered upon the shaft R and can be moved in the direction of the axis of said shaft by means of a forked lever U . (Best seen in Figs. 1 and 7.) This lever has its fulcrum on a screw q , and it is actuated by means of a cam r , secured on the connecting-rod V , which serves to transmit motion from the driving-shaft C to a shaft W below the table or work-plate. When the cam r strikes the roller r^* , which is mounted in an arm X , connected to or formed on the lever U , the clutch T is closed and the movement of the bar O (imparted to the same by the eccentric M and lever N) is transmitted to the shaft R . This shaft is geared together with the needle-bar by pinions $d^0 d^*$, (best seen in Fig. 2,) so that the latter is turned the required distance. Of course the revolving movement of the needle-bar must take place during the time when the needle is clear of the work, and it is very desirable that during the time when the stitch is formed the needle-bar shall be retained, so that it can not rotate. For this purpose a counter-clutch T^* is provided, the female part of which is firmly connected to the standard B , Fig. 1, while the male part is feathered on the shaft R and exposed to the action of a spring r^0 , which has a tendency to keep the clutch in a locked position. When the needle-bar is to be turned, the counter-clutch T^* must be

opened, and for this purpose the lever U is provided with an arm u^* , which acts upon a slide u^0 , which is fitted into the shaft R and the inner end of which bears against a shoulder u^{10} formed in the interior of the male part of the counter-clutch T^* . (See Fig. 11.) When the lever U is moved to close the clutch T , the arm u^* of said lever opens the counter-clutch T^* , and when the lever U opens the clutch T the counter-clutch is closed by the action of the spring r^0 .

For the purpose of forming the stitches I use a shuttle S , which co-operates with the needle n , and which rests upon the shuttle-carrier A' , Figs. 1 and 15, which is secured by a pivot a' to a platform B' . This platform is provided with a hub b' , Fig. 16, which extends through and turns freely in a lug c' , extending from a hanger C' , which is secured to the table A , Figs. 1 and 10, and through said hub extends a pin D' , which is forced downward by a spring d' , and on which the platform B' , with the shuttle-carrier A' , can revolve. The pin D' rests upon a cam E' , which is mounted on the shaft W , so that for each revolution of the shaft the pin D' is forced up by the cam E' and then down by the spring d' . The upper end of the pin D' is beveled and bears against a lever F' , which is secured to the platform B' by a pivot f' , and is situated beneath the shuttle-carrier A' . The tail end of this lever F' bears against a set-screw g' , secured in a lug projecting from the shuttle-carrier, and a spring h' , Fig. 15, retains the set-screw g' in contact with the lever F' . It will be seen that the set-screw g' is close to the pivot a' of the shuttle-carrier, so that by the action of the beveled end of the pin D' on the short arm of the lever F' sufficient motion is imparted to the shuttle-carrier A' to throw the shuttle back and forward through the loop of the needle-thread. On the hub b' of the platform B' is firmly mounted a pinion j' , which gears into a pinion j , mounted on the end of a shaft R' , which is situated beneath a table A and which carries a clutch T' and a counter-clutch T'' the same as the shaft R , which serves to rotate the needle-bar D , as previously described. With the clutch T' is connected the pinion P' , which gears into cogs on the bottom end of the bar O . The clutch T' and the counter-clutch T'' are actuated by the lever U' , which has its fulcrum on the pivot q' , and is connected to the lever U by a pin u' , so that it is brought into action by the cam r precisely in the same manner and at the same time as the lever U .

From this description it will be seen that for each revolution of the shaft C a stitch is finished, and then the needle-bar and the shuttle-carrier receive a partial revolution before the formation of the next stitch begins. The magnitude of this partial revolution of the needle-bar and the shuttle-carrier is determined by the throw of the eccentric

M, and in order to be able to adjust this throw the eccentric M is mounted on a disk M*, which is firmly secured on the shaft L, Figs. 1 and 12. In Figs. 6 and 12 the eccentric M is shown in position to produce its maximum throw; but if said eccentric is turned from this position in either direction its throw is diminished and it can easily be adjusted so that the needle-bar and the shuttle-carrier will be turned a quarter-revolution or any other portion of a revolution after the formation of each stitch.

The driving-pulley G' turns loosely on the shaft C and is thrown in gear with the same by a clutch H', which is retained in engagement with the driving-pulley by a spring a^2 . On the clutch H' is formed a tooth b^2 , which meshes into a cog-wheel c^2 , mounted loosely on a stud d^2 , which projects from the standard B, Fig. 1.

I' is a lever the upper forked end of which engages the clutch H', and which has its fulcrum on a screw e^2 , secured in a lug projecting from the table A. This lever is provided with an eye f^2 , which embraces a sleeve g^2 , fitting the stud d^2 , and center-pointed screws h^2 serve to secure the eye f^2 to the sleeve g^2 . A spring g^3 acts upon the sleeve g^2 .

The cog-wheel c^2 is provided with a rim i^2 , on which is adjustably secured a lug j^2 and an index k^2 , Fig. 9. As the cog-wheel c^2 is propelled one tooth for each revolution of the shaft C, the lug j^2 is in the course of time brought in contact with the lever I', and this lever is forced back so as to throw the clutch H' out of gear with the driving-pulley G', when the motion of the shaft C will stop. By adjusting the index k^2 on the rim of the cog-wheel c^2 the time when the machine will stop can be fixed, or, in other words, the index can be adjusted so that the machine will stop after it has made a certain number of stitches.

From this description it will be seen that my machine can be used for sewing circular seams into a fabric.

If the machine is used for sewing on buttons, the throat-plate can be provided with a number of holes to correspond to the holes in the buttons; but for general use the throat-plate can be provided with a single hole and geared together with the shaft R. It must be also remarked that the slots i in the sleeves b and c are open, so that the thread can be readily introduced into the same.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the driving-shaft C and with the stitch-forming devices, such as a needle and shuttle, which receive motion from said driving-shaft, of mechanism, substantially as described, for imparting to the needle-bar and to the shuttle-carrier a partial revolution round the longitudinal axis of the needle-bar, and a device for attaching the needle to the needle-bar parallel to but

not in line with the axis of rotation of said needle-bar, substantially as described.

2. The combination, with the driving-shaft C and with the stitch-forming devices, such as a needle and shuttle, which receive motion from said driving-shaft, and with means for imparting to the needle-bar and to the shuttle-carrier a partial revolution round the longitudinal axis of the needle-bar, of an adjustable eccentric for regulating the revolving motion of the needle-bar and shuttle-carrier, substantially as described.

3. The combination, with the driving-shaft C and with the stitch-forming devices, such as a needle and shuttle, which receive motion from said driving-shaft, of mechanism, substantially as described, for imparting to the needle-bar and to the shuttle-carrier a partial revolution round the longitudinal axis of the needle-bar, a stop for preventing the needle-bar and the shuttle-carrier from turning during the time when the needle-bar is in the work, and a device for attaching the needle to the needle-bar parallel to but not in line with the axis of rotation of said needle-bar, as described.

4. The combination of the upper, lower, and intermediate journal-boxes d , e , and f , the shaft C, having a crank-connection with the intermediate journal-box, the sleeves a , b , c , adapted to oscillate in the journal-boxes and having angular orifices and thread-slots, and the angular needle-bar D, extending through orifices in the sleeves and adapted to oscillate, substantially as described.

5. The combination, with the driving-shaft C, the needle-bar D, the shuttle-carrier A', and the shafts R R', which are geared together and one of which is in gear with the needle-bar and the other with the shuttle-carrier, of a clutch and a counter-clutch and a cam for actuating these clutches, substantially as described.

6. The combination, with the driving-shaft C, the needle-bar D, the shuttle-carrier A', means, substantially as described, for imparting to the needle-bar and to the shuttle-carrier after the formation of each stitch a partial revolution round the longitudinal axis of the needle-bar, and a device for attaching the needle to the needle-bar parallel to but not in line with the axis of rotation of said needle-bar, of an automatic stop mechanism, substantially as herein described, for arresting the driving-shaft after the formation of a predetermined number of stitches.

7. The combination, with the driving-shaft C, the stitch-forming devices, such as a needle and shuttle, which receive motion from said driving-shaft, mechanism, substantially as described, for imparting to the needle-bar and to the shuttle-carrier a partial revolution round the longitudinal axis of the needle, and a device for attaching the needle to the needle-bar parallel to but not in line

with the axis of rotation of the needle-bar, of button-clamping jaws secured to the presser-foot, substantially as described.

- 5 8. The combination, with the shuttle-driver A', its pivot a' , and the platform B', of the lever F', the pin D', having its end chamfered for actuating the shuttle-driver, and the cam E', for actuating the pin D', substantially as described.

In testimony whereof I have hereunto set to my hand in the presence of two subscribing witnesses.

HERMANN GANSERT.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.