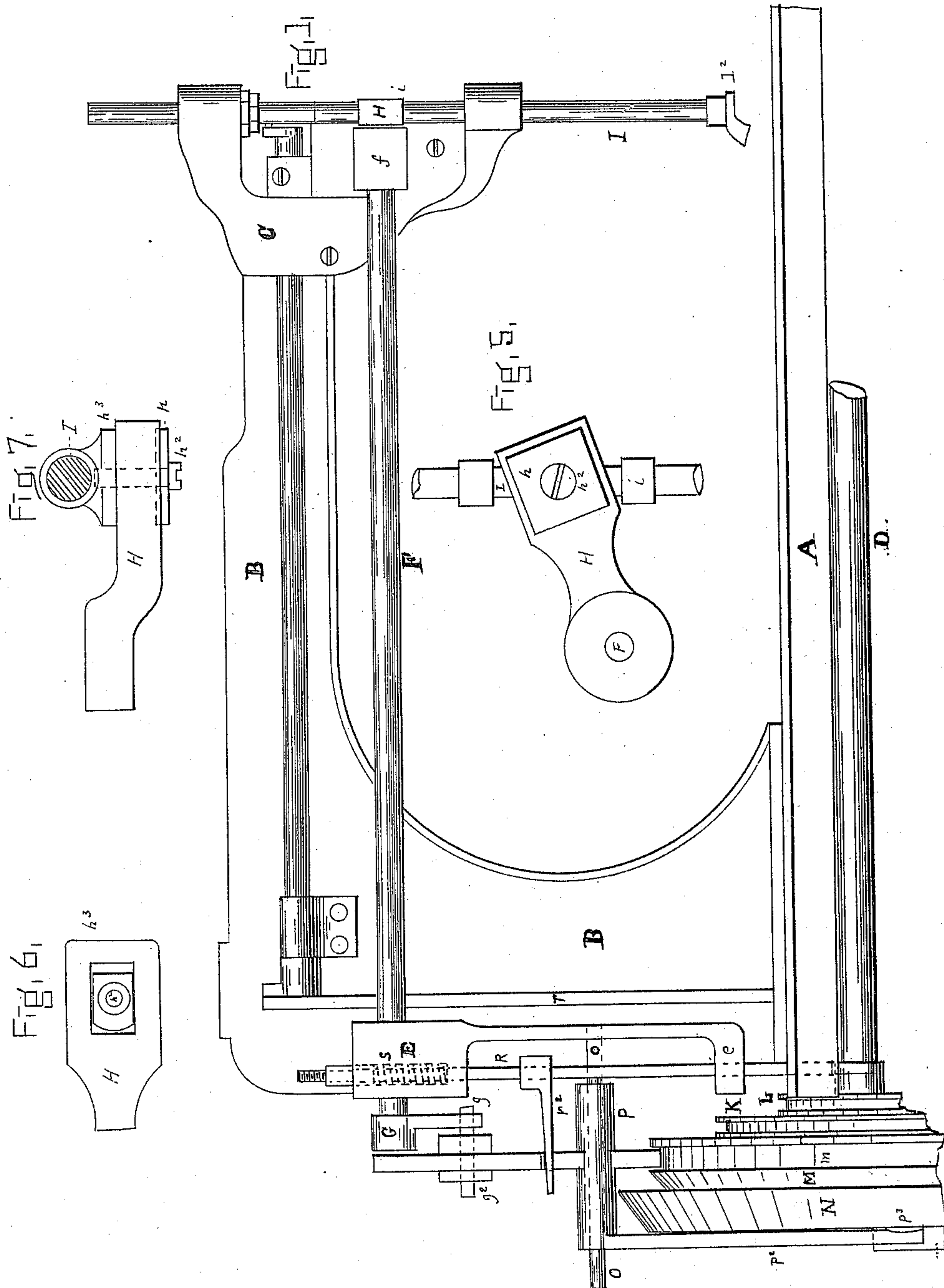


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Patented June 15, 1897.



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(No Model.)

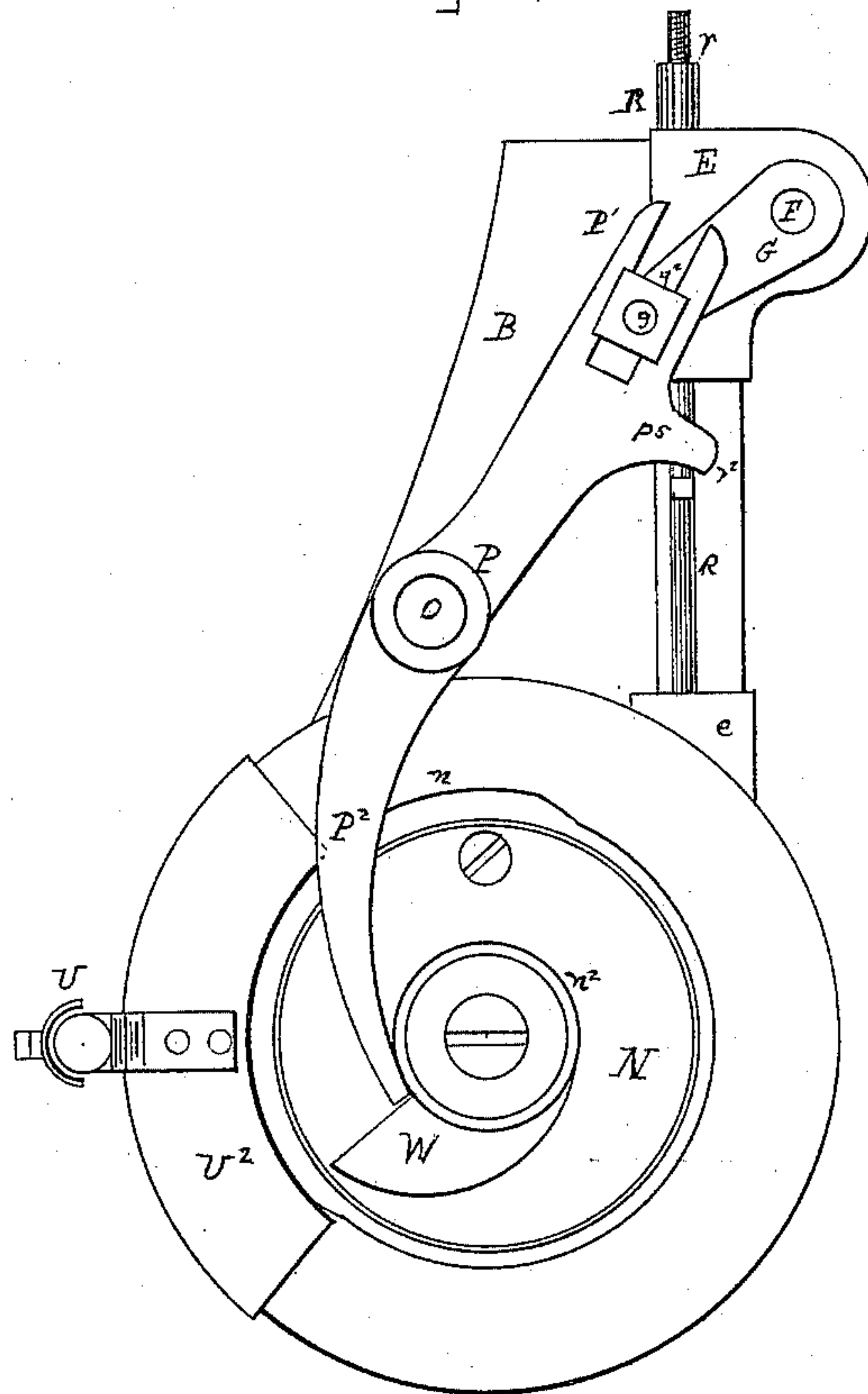
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T. E. & C. H. COLBY.
SEWING MACHINE.

No. 584,328.

Patented June 15, 1897.

Fig. 2.



WITNESSES

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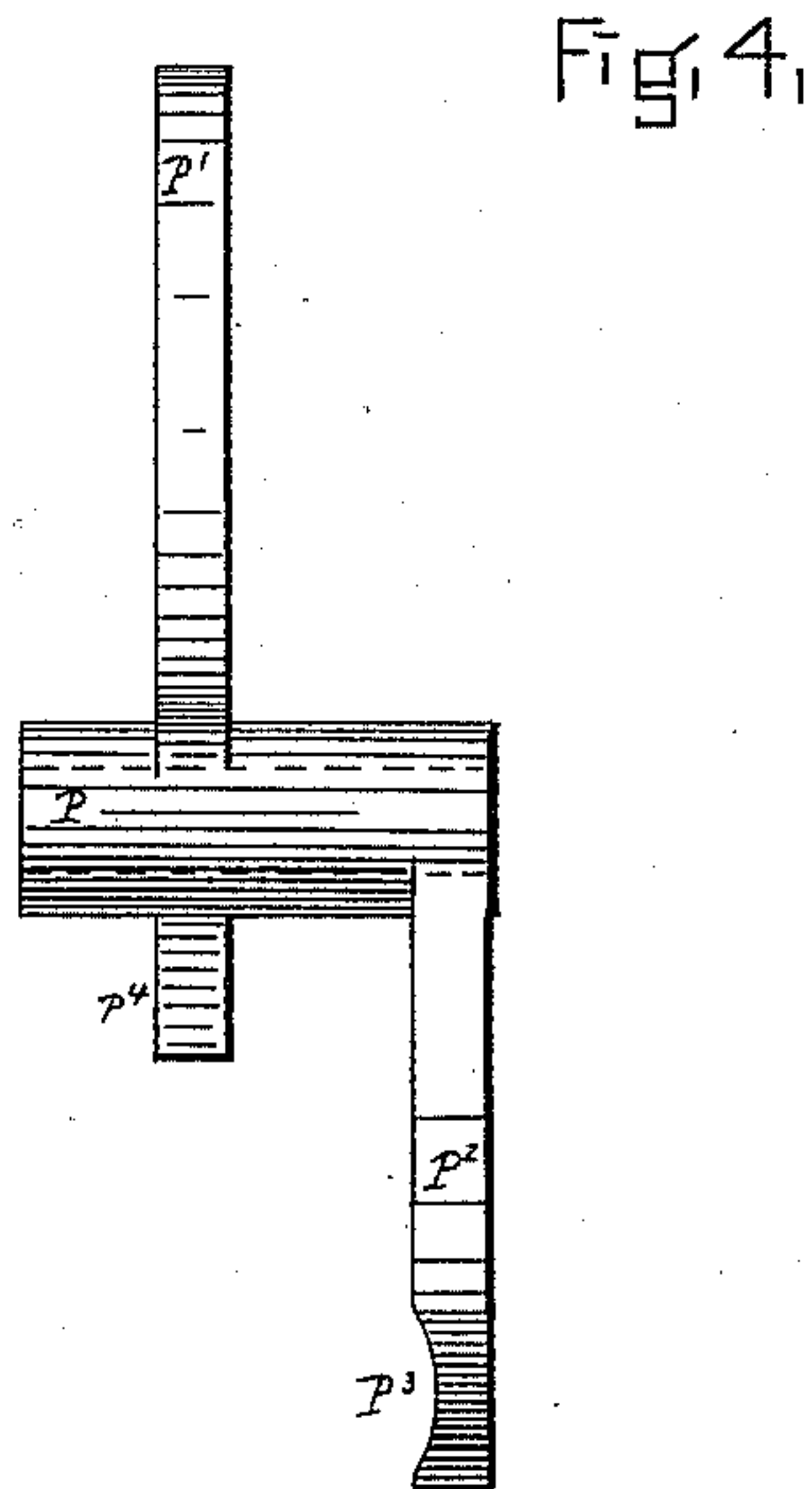
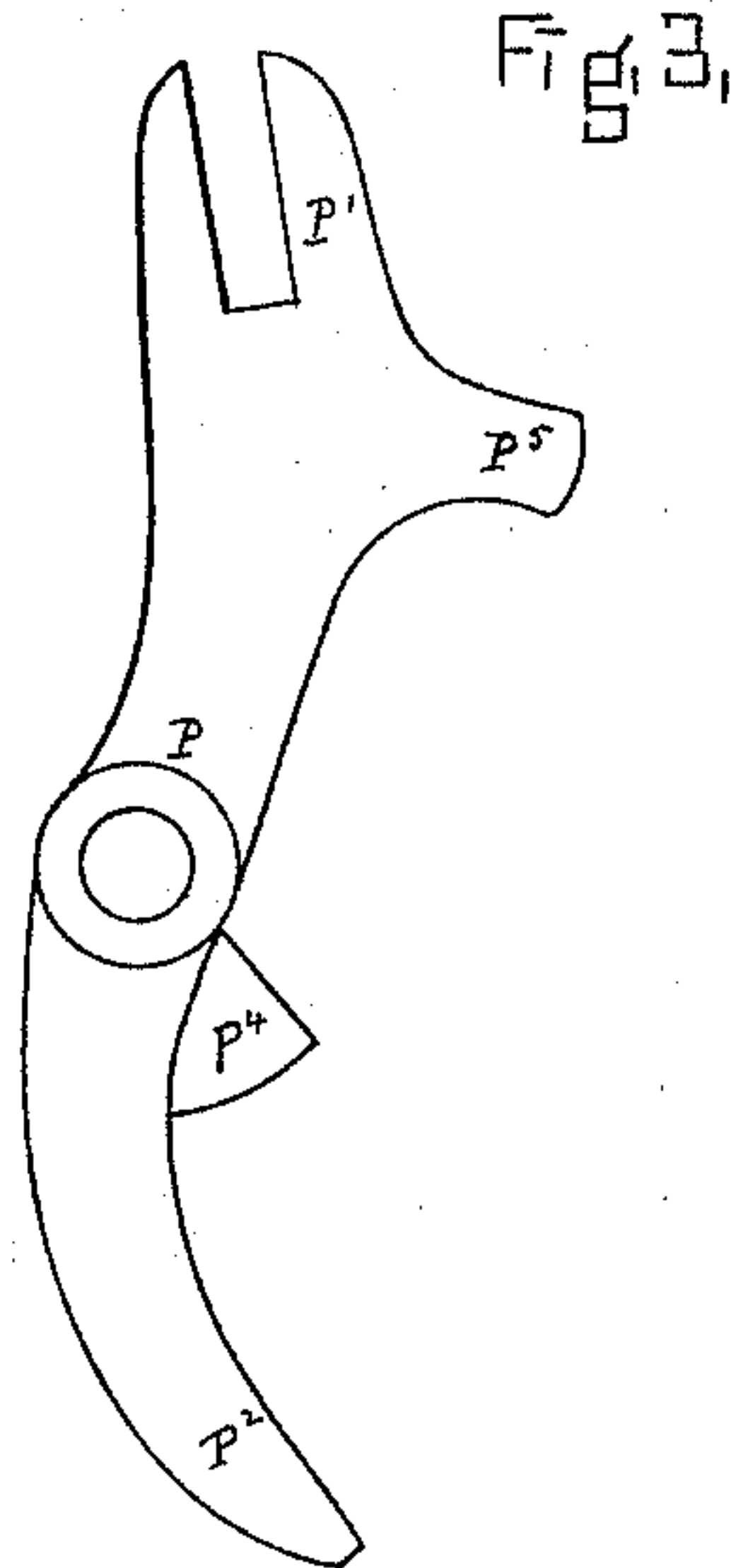
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SEWING MACHINE.

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4 Sheets—Sheet 4.

T. E. & C. H. COLBY.
SEWING MACHINE.

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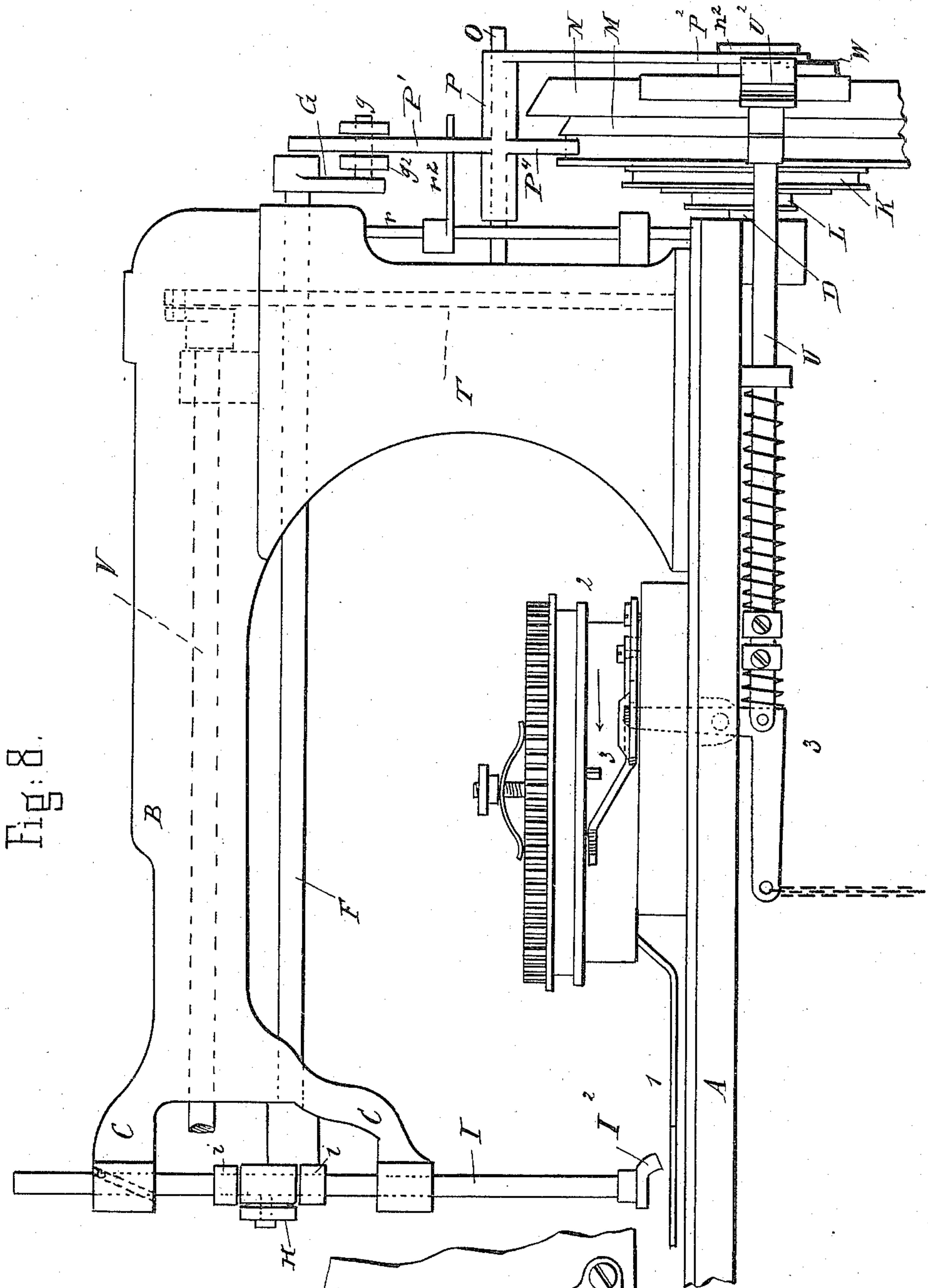
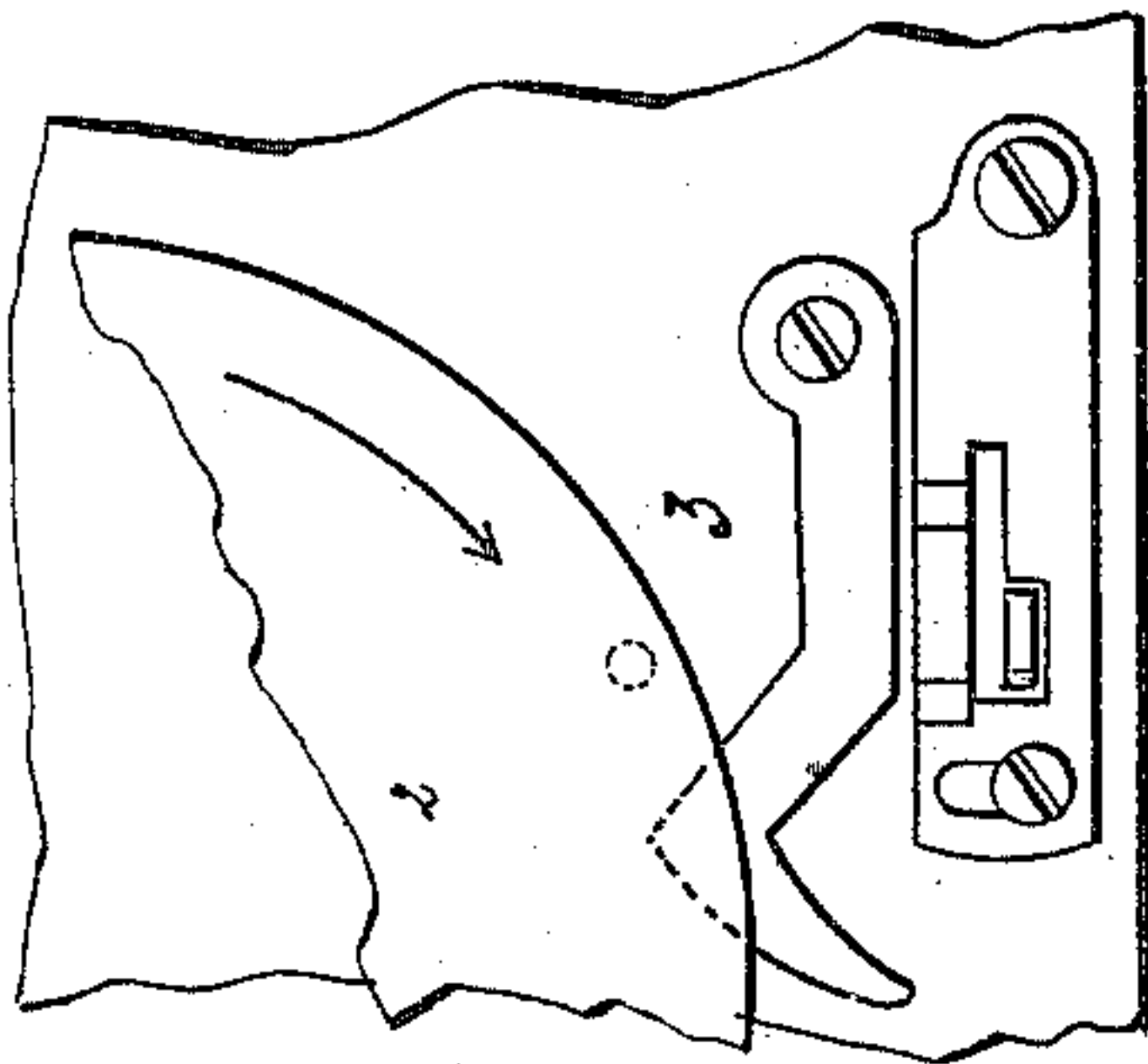


Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

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ASSIGNORS TO JAMES T. LAW, OF TARRYTOWN, NEW YORK.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,328, dated June 15, 1897.

Application filed March 2, 1887. Serial No. 229,635. (No model.)

To all whom it may concern:

Be it known that we, THOMAS E. COLBY and CHARLES H. COLBY, citizens of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Buttonhole-Machines, of which the following is a specification.

The object of our invention is to so construct a buttonhole-sewing machine that it will automatically cut the buttonhole when the sewing is completed, utilizing for this purpose the momentum of the machine, which would otherwise be unavoidably lost in stopping the machine to commence sewing the next buttonhole.

The invention consists of certain novel combinations of parts, substantially as hereinafter claimed, and in order that our invention may be fully understood we shall before specifically claiming the same set forth in detail the mode in which the same may be carried into effect.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a rear elevation of a buttonhole-machine embodying our invention. Fig. 2 is an end view of a portion of the same showing the working parts. Figs. 3, 4, 5, 6, and 7 are detail views of parts hereinafter referred to. Fig. 8 is a front elevation of part of the said machine. Fig. 9 is a detail plan view of part of the tripping device of the same.

Like letters and numerals of reference designate corresponding parts in the various figures.

We have herein for the sake of example shown our invention applied to an ordinary Wheeler & Wilson buttonhole-sewing machine, No. 10. The bed-plate A, overhanging arm B, head C, rotary driving-shaft D, fast and loose cone-pulleys N and M, main driving-pulley K, shifting-pulley L, pitman T, needle-bar-actuating rock-shaft V, the needle-bar and stitch-forming mechanism, (not shown,) the work-clamp 1, the work-clamp-operating mechanism 2, the tripping device 3, operated thereby, by which the cone-pulley M is automatically shifted and disengaged from the cone-pulley N when the but-

tonhole-stitching is completed, and the brake U^2 on the tripping-rod U, brought into the path of the swell n on the fast cone-pulley N, so as to stop the stitching mechanism, are all common to the Wheeler & Wilson buttonhole-sewing machine, style No. 10, above referred to, so need no further description herein. The cutter I^2 and cutter-bar I, which slides in vertical bearings in the head C and partially turns when it descends, are also the same as in the Wheeler & Wilson machine referred to.

For depressing the cutter-bar I^2 we preferably mount an additional rock-shaft F horizontally in bearings E and f on the overhanging arm B of the machine, said rock-shaft having crank-arms H and G on its front and rear ends, respectively, and connect the front crank H with the cutter-bar I by means of a loose block h^3 , sliding in a slot in the crank H, and secured together with an outer retaining-plate h by a pivot-screw h^2 to a part of the cutter-bar I between collars i , as clearly shown in Figs. 5, 6, and 7, so as to cause the cutter-bar to descend when the shaft F is rocked. We further connect the rear end crank G by a long pivot-pin g with a loose block g^2 , adapted to slide on said pivot-pin and in a slot in the arm P' of a lever P, which is both pivoted to turn on and adapted to slide lengthwise of a spindle O, projecting horizontally from the overhanging arm B, so that on swinging said lever P the shaft F will be rocked and the cutter I^2 depressed to cut the buttonhole in a well-known manner.

For swinging the lever P, and thus depressing the cutter I^2 by the action of the needle-bar-actuating mechanism, we provide in this instance the face of the outer fast cone-wheel N with a circular hub n^2 and inside thereof a cam W, the bearing-surface of which forms in this instance a circular segment coincident with the hub n^2 for about two hundred and seventy degrees, and then an evolute curve of about ninety degrees rising gradually from the circular curve, but terminating abruptly in a radial shoulder. This cam engages a follower connected with the cutter-depressing mechanism, as the curved arm P^2 of the lever P, which has a concave P^3 and normally rests on the circular hub n^2 , so as

not to affect the cutter-depressing mechanism as the pulley N revolves, but when engaged by the evolute portion of the revolving cam is swung outward, so as to depress the cutter, after which the terminal shoulder of the cam permits the return of the follower to its normal position. This return, and therefore that of the cutter I², is effected by a spring-retracting device, which is herein shown as consisting of a spring-actuated rod R, working vertically in the fixed bearings E e and having an arm r² pressing upward against a cam-like projection P⁵ on the arm P' of the lever P.

To control the coaction of the cam W and follower P² from the clamp-operating mechanism 2, so as to secure the automatic depression of the cutter L² when the stitching is completed, we in this case provide the inner loose cone-pulley M with an annular groove m, in which is seated loosely a short arm P⁴ of the lever P, so that when the loose cone-pulley M is automatically moved inward out of engagement with the fast cone-pulley N at the completion of the buttonhole-stitching by the action of the work-clamp-operating device 2 on the tripping device 3 in the ordinary manner the lever P will be simultaneously shifted inward without affecting the operative relation of the follower P² and the cutter-depressing mechanism and said follower, which before rested on the circular hub n² outside the cam W, brought into the circular part of said cam in the path of the evolute portion thereof. Then, although the revolving fast cone-pulley N is no longer engaged by the driving cone-pulley M, its mo-

mentum will cause it to continue its revolution and its cam W to consequently operate the follower P² and depress the cutter until as the terminal shoulder of the cam permits the follower P² and cutter I² to be retracted the swell n is engaged by the brake U² on the tripping-rod N, which has been drawn inward, as before described, and the machine thus stopped.

When, in again starting the machine to form the next buttonhole, the loose driving-pulley M is forced outward against the fast pulley N, as by the tripping-rod and common knee-latch in the usual manner, the follower P² will be simultaneously shifted outward beyond the path of the evolute portion of the cam, so that the cutter will be unaffected by the operation of the stitch-forming mechanism until the completion of the same, as before described.

What we claim is—

In a buttonhole-sewing machine, containing a stop-motion whereby the sewing mechanism is disconnected from the source of power at or near the termination of the buttonhole, in combination with said stop-motion, a buttonhole-cutter and connections between said buttonhole-cutter and said stop-motion whereby said cutter is thrown into action by the movement of said stop-motion, but is permitted to remain inactive until said stop-motion moves, substantially as described.

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Witnesses:

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