

(No Model.)

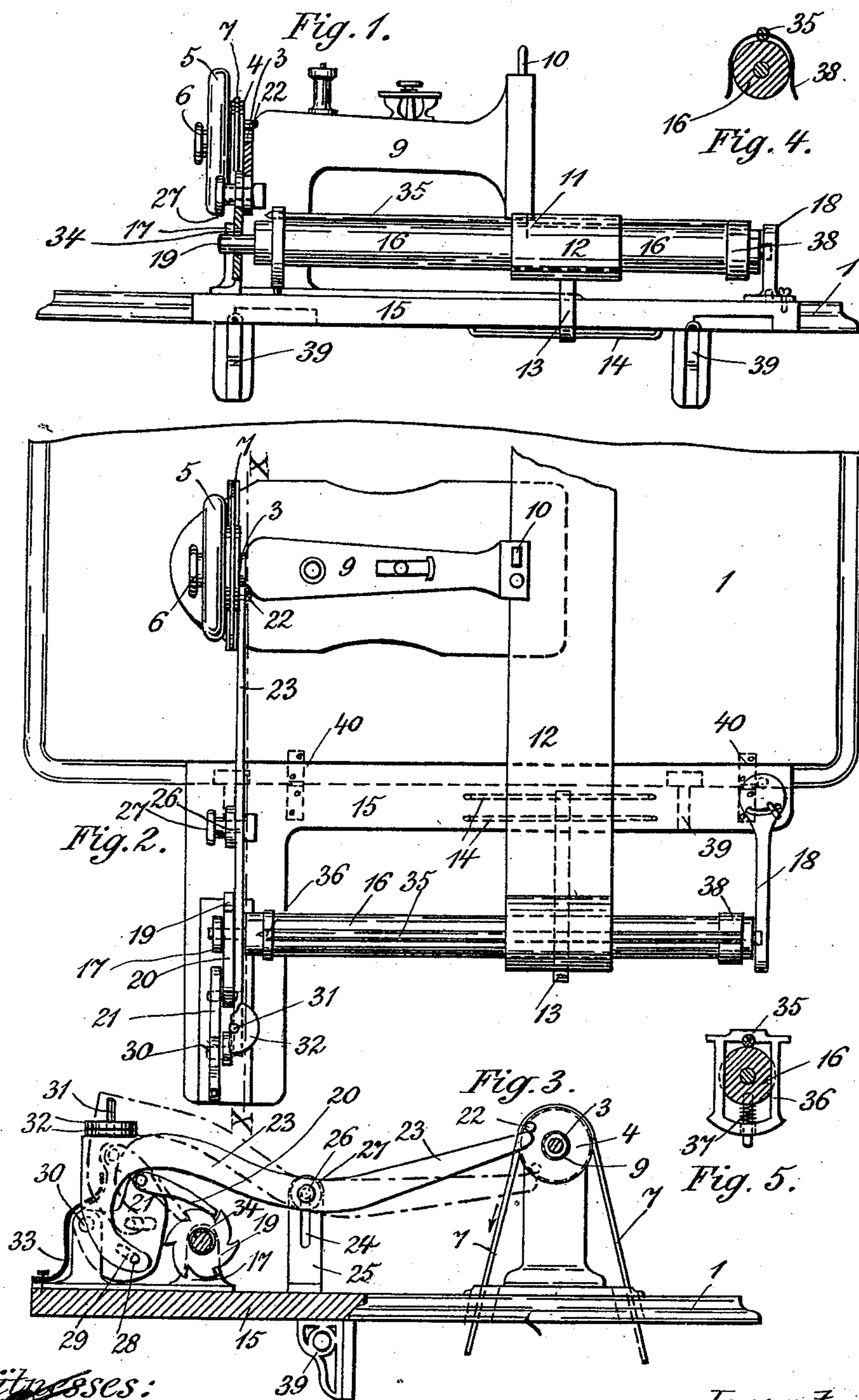
3 Sheets—Sheet 1.

E. CALM.

CLOTH WINDING ATTACHMENT FOR SEWING MACHINES.

No. 497,425.

Patented May 16, 1893.



Witnesses:

Chas. L. Horack

Inventor

Elizabeth Calm

(No Model.)

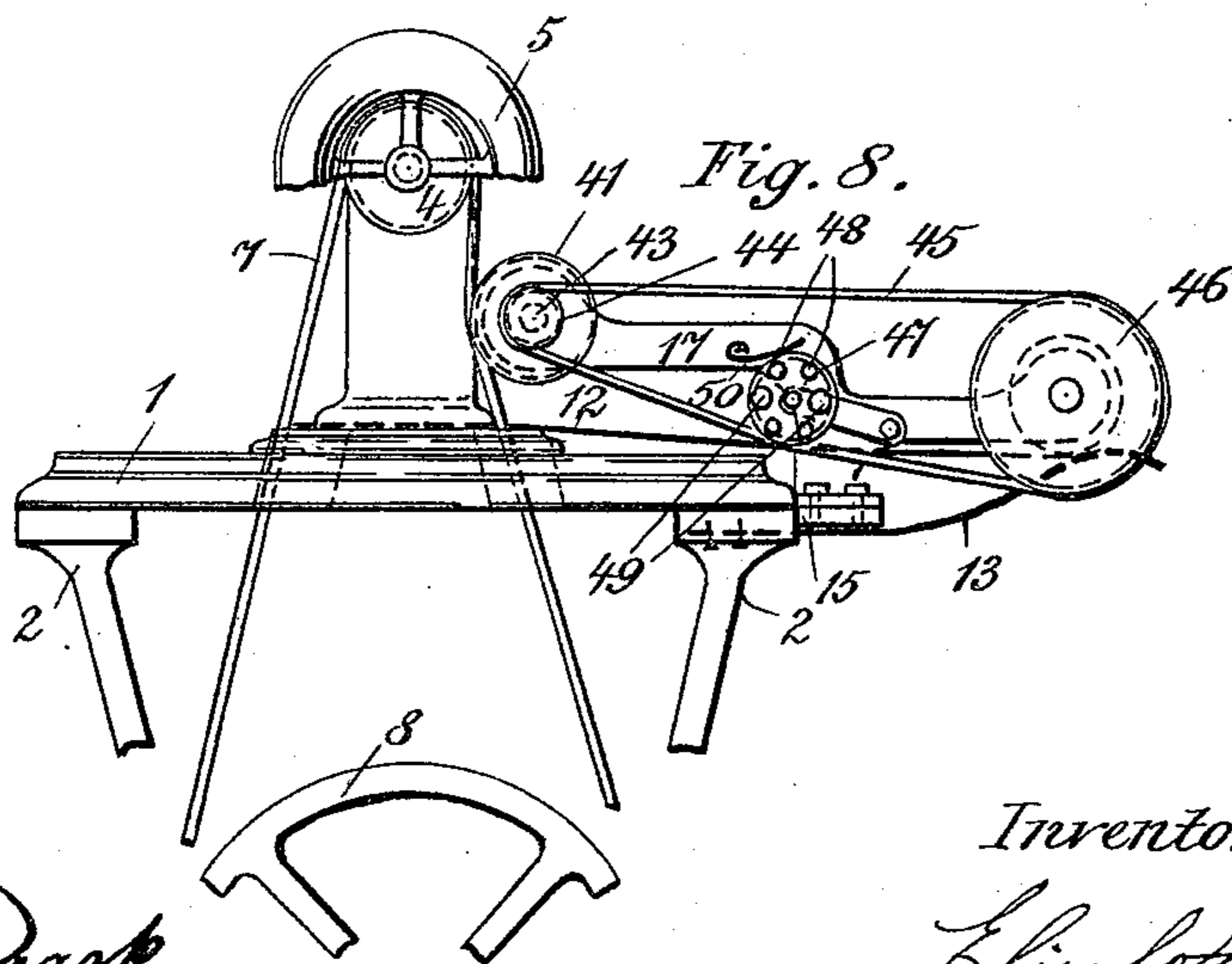
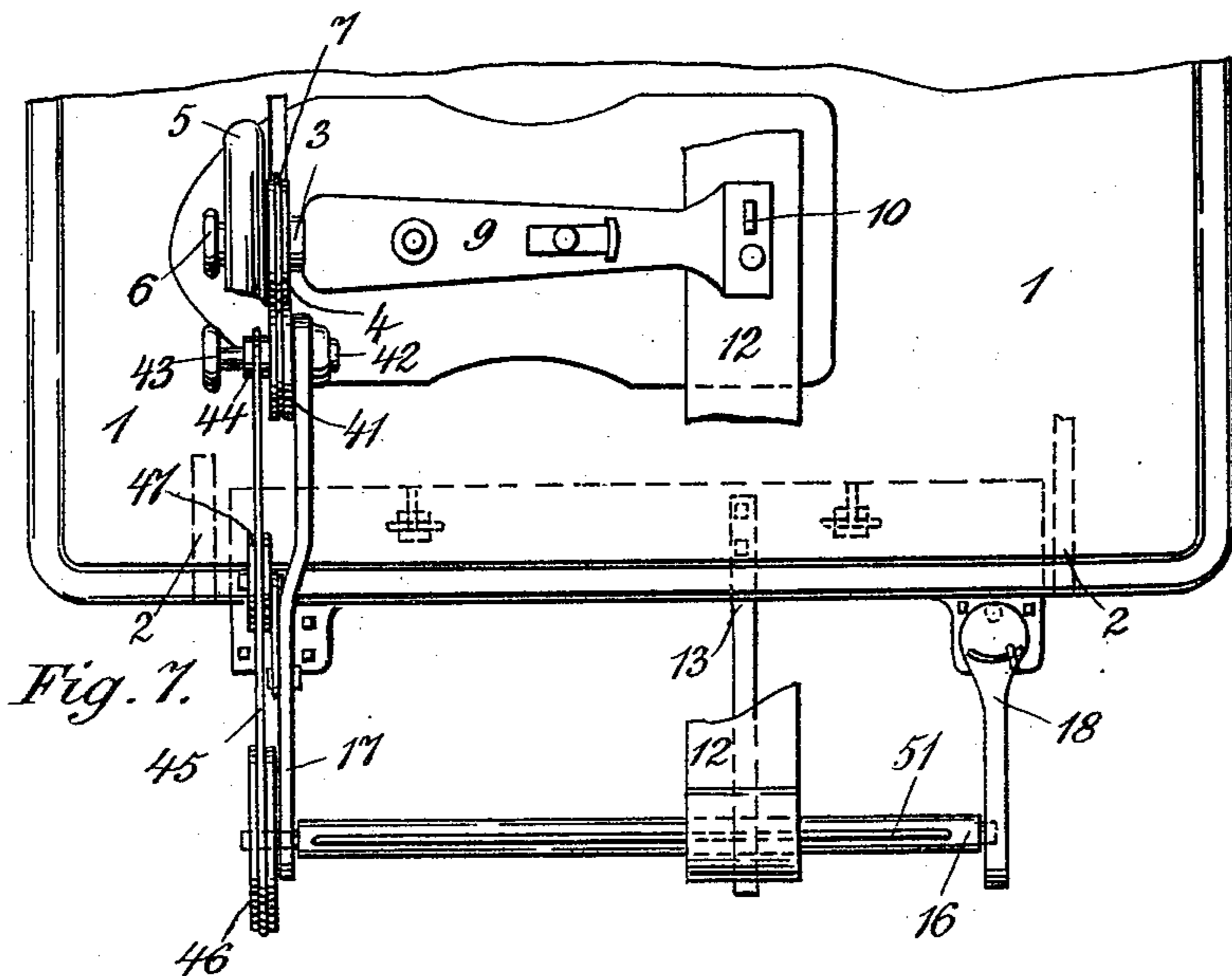
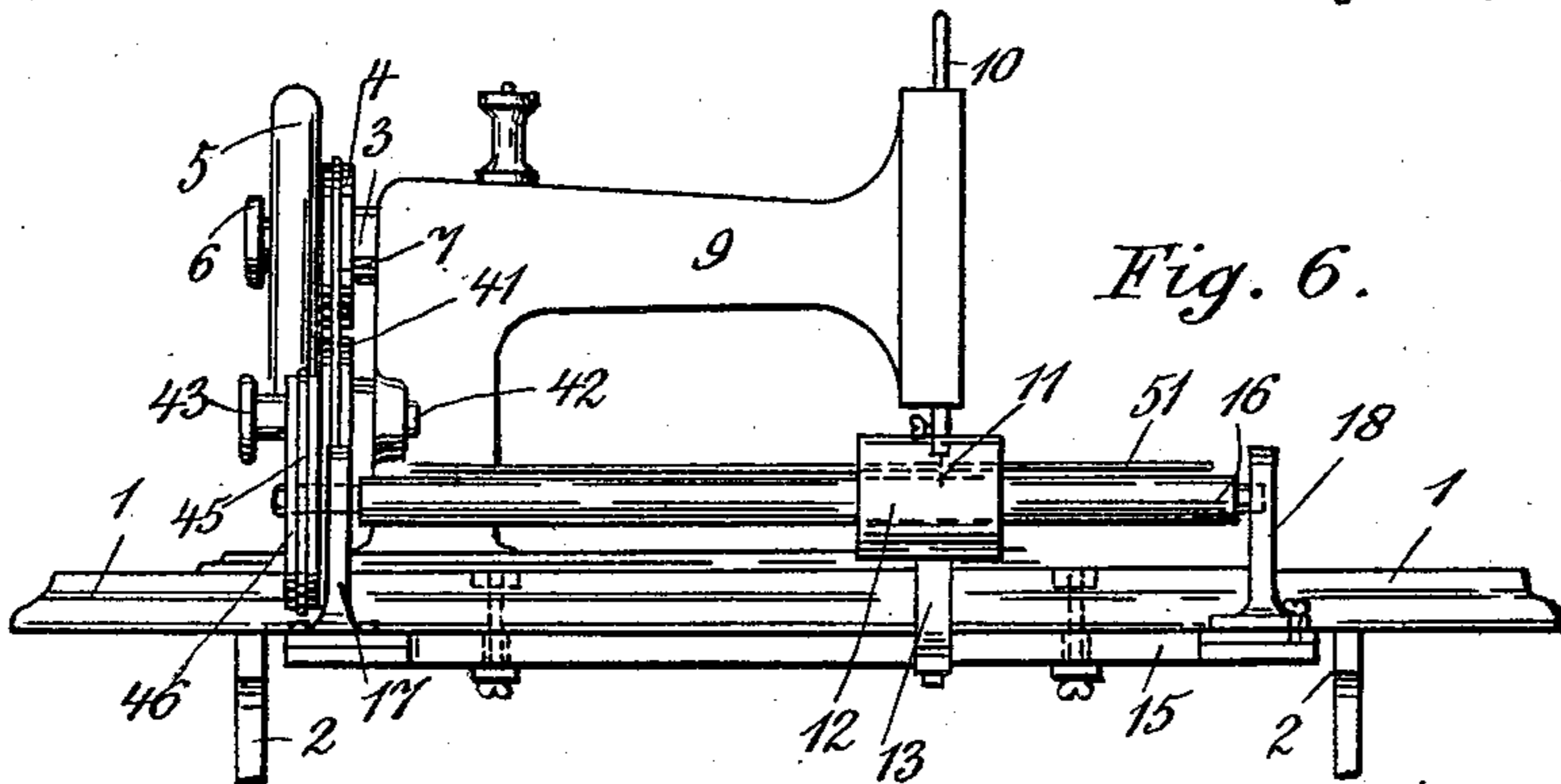
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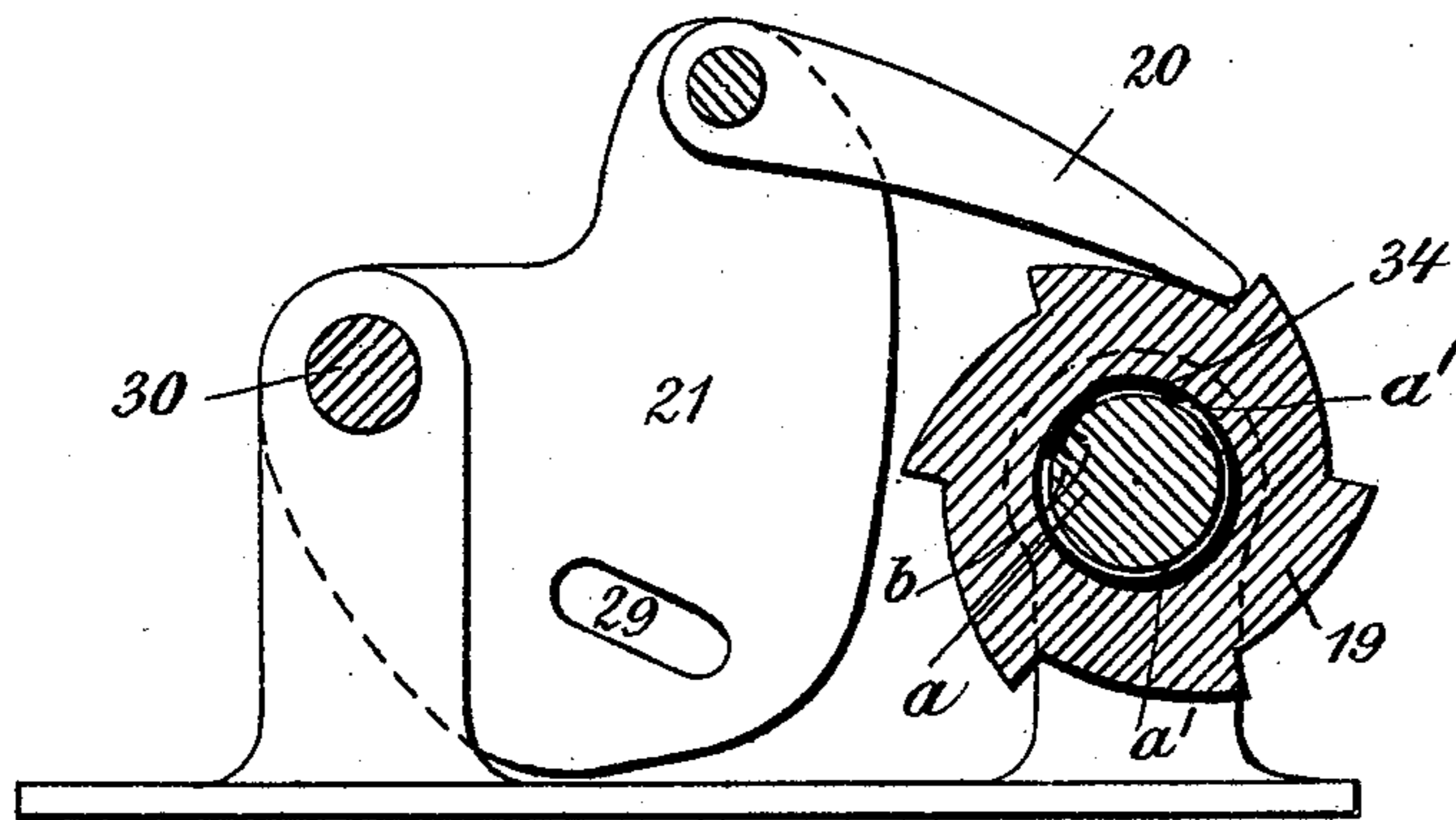
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Fig. 9.



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UNITED STATES PATENT OFFICE.

ELIZABETH CALM, OF NEW YORK, N. Y.

CLOTH-WINDING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 497,425, dated May 16, 1893.

Application filed February 18, 1892. Serial No. 421,955. (No model.)

To all whom it may concern:

Be it known that I, ELIZABETH CALM, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cloth-Winding Attachments for Sewing-Machines, of which the following is a specification.

The purposes of my invention are first, to provide simple and efficient means for winding pieces of fabric on rollers after they have been stitched on the machine, employing in doing so parts of the mechanism operating the needle; second, to so construct the winding mechanism as to be able to use the same intermittently, whether sewing be done at the time or not; third, to firmly hold the end of the fabric to the roller on which said fabric is to be wound; fourth, to provide for readily withdrawing such fabric from the roller after it has been wound upon the same; fifth, to guard against injurious tension being applied to the fabric while it is being wound up, and to adjust the tension of that part of the fabric located between the roller upon which it is being wound and the presser foot of the sewing machine; sixth, to provide means for readily adjusting the winding mechanism in an operative position.

The means employed by me for accomplishing these and other useful purposes are set forth in the following specification and in the claims annexed thereto.

In the accompanying drawings forming part of this specification, Figure 1 represents a rear view, partly in section, of the upper part of a sewing machine with my improvements attached; Fig. 2 a ground plan of the same; Fig. 3 a vertical section along line $x x$ in Fig. 2 (the fly-wheel being omitted), and Figs. 4 and 5 vertical sections of details. Figs. 6, 7 and 8, represent a modification of my improvements as applied to an apparatus illustrated in my application Serial No. 397,713, for a United States patent, Fig. 6 representing a rear view, Fig. 7 a ground plan and Fig. 8 an end view of my device attached to a sewing machine. Fig. 9 illustrates on an enlarged scale a detail of the apparatus as represented particularly in Fig. 3.

Corresponding figures and letters in the different views refer to corresponding parts.

1 is the sewing machine table, resting in the usual manner on legs 2, 2.

3 is the main shaft of the machine containing the pulley 4 which is capable of being made to run loose on said shaft.

5 is the fly-wheel rigidly connected with said shaft and 6 the handle of the friction clutch usually employed for so uniting pulley 4 and fly-wheel 5, as to thereby impart revolving motion of said pulley to said fly-wheel, and to the main shaft, when the needle is to be put in operation.

7 is the belt which drives pulley 4, 8 being part of the driving pulley underneath the table from which said belt derives its motion. Any suitable motive force may be employed in producing the revolving motion of pulley 8.

9 is the usual cast iron casing which incloses the larger parts of main shaft 3 and of needle bar 10, as well as the cross-head and crank disk.

11 is the needle underneath which the machine feed (not shown in the drawings) operates in the usual way.

12 represents a long piece of fabric such as a flounce, passing under the needle and in process of being wound up.

13 is a leaf spring attached to the under side of a board or shelf 15. In Figs. 1 and 2, two bars 14, 14, are shown to be fastened to the under side of said shelf, so as to run parallel with the edge of the sewing machine table, the lower end of spring 13 being curved around said bars so as to be capable of being moved along the same for the purpose of always placing such spring centrally with reference to the piece of fabric to be wound up, as this will materially aid in winding the same uniformly.

16 is the roller for receiving the fabric. The same is journaled in a stationary bracket 17 and in a bracket 18 adjusted to swing horizontally and outward, after a set screw which is inserted in a slot concentric with the pivot of said bracket, has been loosened, to permit of withdrawing the fabric from the roller.

19 is a ratchet wheel at the end of the shaft of roller 16, and 20 a pawl engaging with the

teeth of said ratchet and pivotally connected with the upper end of a swinging lug 21.

22 is a pin attached to the side of pulley 4 near its outer circumference and 23 a lever the central part of which is fulcrumed at the upper end of a slot 24 in a standard 25, such fulcrum being formed by a journal with a head at one end and screw thread at the other end, the screw-threaded portion after being passed through such lever and such standard being inserted in a nut 27 which engages with the screw-thread on the journal and when tightened serves to hold said pivot in the elevated position shown in Fig. 3.

While one end of lever 23 is adjusted to engage with the under side of pin 22, its other end which is curved downward is provided with a pin 28 inserted in a suitable slot 29 in lug 21 in such a manner that as pin 22 swings downward, such lever 23 and lug 21 together with pawl 20 will assume the elevated positions indicated in broken lines in Fig. 3, 30 being the pivot around which lug 21 swings. Thus the pawl 20 will be made to engage with the next tooth of ratchet 19, but it will be seen that only as lever 23 and with it lug 21 move downward again into their original positions, will such pawl move forward sufficiently to revolve ratchet 19 to the extent of one tooth. The force exerted in accomplishing this depends upon the gravity of the parts mentioned and, as more power will be required to wind up a piece of wide and heavy fabric, than a piece of narrow and light material, I make provision to adjust the weight of the parts so operating the pawl by providing a standard 31 on the upper edge of that part of lever 23 which is nearest the lug 21 and securing to the same such a number of detachable weights 32, 32, as will in each case be sufficient to produce the power required, without unduly straining or tightening the fabric between roller 16 and the needle. It is important to be able to do so as otherwise pulling of the fabric would occur which would have a tendency to lengthen the stitches and make the same uneven. A spring 33 may be adjusted so as to bear against the outer surface of lug 21 when the latter is in its most elevated position so as to start the same and with it lever 23 and pawl 20 on their return motion.

If it be desired to temporarily discontinue the operation of the winding mechanism, it is only necessary to loosen nut 27 sufficiently so as to permit pivot 26 to slide downward in slot 24 until pin 22 cannot come any further in contact with the end of lever 23. It will thus be seen that the mechanism for revolving the roller which receives the fabric is constructed in two sections, the first section being represented by the pin 22, and the second section by the remaining parts of the mechanism. Having standard 25 in which lever 23 is fulcrumed as described remain stationary, whether the sewing mechanism and the wind-

ing mechanism be in motion, or at rest, offers the advantage that the two sections can readily be brought in operative contact with each other, or can be detached from each other so as to stop the winding operation, while the sewing mechanism is in operation.

34 is a leaf spring which may be placed between ratchet-wheel 19 and its axle, so as to make the former bind sufficiently on the latter as to make the two revolve jointly under all ordinary conditions, but to permit the ratchet wheel to revolve on its axle when an accidental and excessive strain from any cause is applied to the fabric while it is held by the needle. Such spring is inserted in such a manner as to be capable of being removed easily, so that springs of different strength may be inserted, as circumstances may require.

In Fig. 9 wherein ratchet wheel 19 and its axle *a* are both illustrated in vertical section on an enlarged scale, spring 34 is shown to be placed in a groove *a'* cut into said axle, and having one of its ends fastened to the latter by pins or studs *b, b*.

It will be readily seen how lever 23 might be adjusted so as to transfer positive motion, somewhat slower than the motion of the machine feed, from pulley 4 to ratchet-wheel 19, thereby leaving the part of the fabric between the roller and the needle in a loose condition, but I prefer the arrangement illustrated by me, as it permits of making ample provision for regulating the tension of the fabric while winding up the same as fast as it passes from under the needle.

It is necessary before beginning of the winding operation, to secure the fabric to the roller. I accomplish this by placing the end of the same between roller 16 and rod 35, the pointed end of said rod being inserted between such roller and a yoke 36 which surrounds such roller.

37 is a spiral spring inserted between the yoke and the roller so as to always force such yoke downward and thereby clamp the pointed end of rod 35. The other end of such rod is clamped as close as practicable to said roller by means of a horse-shoe spring 38. When the fabric is to be removed from the roller I swing open bracket 18, detach the horse-shoe spring from the roller and withdraw the pointed end of rod 35 from the yoke, also withdrawing rod 35 from the fabric surrounding it. This will relieve any tension of the fabric which may have been produced while winding it on the roller, and will permit it to be withdrawn from it without difficulty. 39, 39, are swinging brackets attached to the under side of shelf 15 in the usual manner, so as to permit of folding such shelf downward when not in use, by means of suitable hinges 40, 40.

In Figs. 6, 7, and 8, 41 is a grooved pulley running loose on a shaft 42 until connected by means of a hand friction clutch 43 with an

adjoining smaller grooved pulley 44, from which a belt 45 runs to a larger pulley 46 attached to the end of the shaft of roller 16. Shaft 42 runs in a long bearing on bracket 17 so located that when my improvements have been attached to the machine the groove of pulley 41 will be in sufficient frictional contact with belt 7 as to thereby cause said pulley to revolve. When friction clutch 43 is applied, pulleys 41 and 44 will become so attached to each other as to revolve together, and thus belt 45 will communicate revolving motion to pulley 46 and roller 16, thereby causing the winding of the fabric upon such roller. When the sewing operation is to be stopped, while winding of the fabric is to be continued, it is only necessary to loosen clutch 6, while when it is desired to temporarily discontinue the use of the winding mechanism, it is only required to loosen clutch 43.

It will generally be best to so gear the winding apparatus that the same will not wind up the fabric any farther than will correspond with the normal velocity imparted to the fabric by the machine feed. But as this cannot always be accomplished, particularly as the diameter of the roll of fabric is constantly increasing, (which increases the lineal velocity of such fabric) I provide a hinged drop weight 47 preferably made in the form of a grooved wooden pulley resting on the lower part of belt 45, so that as soon as sufficient tension of the fabric is produced, the tightening of the belt caused thereby will throw off weight 47, thus giving temporary relief as often as required, by causing belt 45 to slide on pulleys 44 and 46.

48, 48, are recesses on the face of pulley 47 into which metallic pins 49, 49 may be inserted, so as to secure the exact tension which the weight and nature of the fabric may permit of or call for. 50 is a spring which may be employed to give to pulley 47 proper contact with belt 45. In this case an elastic metallic rod 51 is shown to be attached to roller 16 near bracket 17 for the purpose of securing to said roller the end of the fabric, or a hollow roller which is to receive the fabric.

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

1. In combination with a sewing mechanism, a roller for receiving the fabric, a lever for communicating motion from the sewing mechanism to such roller, a stationary support for the fulcrum of the lever, and means for changing the position of such fulcrum, for the purpose of alternately placing such lever

into an operative and an inoperative position, substantially as set forth.

2. In an apparatus for sewing and winding fabric, in combination with mechanism for operating the needle, a receiving roller, and winding mechanism operated by the mechanism for operating the needle and containing a friction joint or bearing, whereby injurious tension of the fabric is prevented, substantially as set forth.

3. In a cloth winding attachment for sewing machines, the combination with the drive shaft of a sewing machine, a fabric receiving roller, means for revolving such roller comprising a projection, as 22, attached to said drive shaft, an oscillating lever, one end of which is in position to be struck by the projection on the drive shaft, and pawl and ratchet mechanism connecting said lever with the fabric receiving roller, substantially as set forth.

4. In combination with a sewing machine, a roller for receiving the fabric, mechanism for propelling such roller, a spring for tightening the fabric while being wound on the roller and means for adjusting the position of the spring with reference to that of the fabric, substantially as set forth.

5. In a sewing machine apparatus, the combination with mechanism for operating the needle, a roller for receiving the fabric, apparatus for revolving such roller, a bar or rod for confining the end of the fabric held in proximity to such roller by a spring, substantially as set forth.

6. In a sewing machine apparatus, the combination with mechanism for operating the needle, of a roller for receiving the fabric, a bar, as 35, for confining the end of the fabric, held to such roller by springs near both ends, substantially as set forth.

7. In a sewing machine apparatus the combination with mechanism for operating the needle, a roller for receiving the fabric, a bar, as 35, for confining the end of the fabric, a yoke actuated by a spring for receiving one end of such bar and means for confining the other end of such bar, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 17th day of February, A. D. 1892.

ELIZABETH CALM.

Witnesses:

A. CALM,
ISAAC HATTENBACH.