

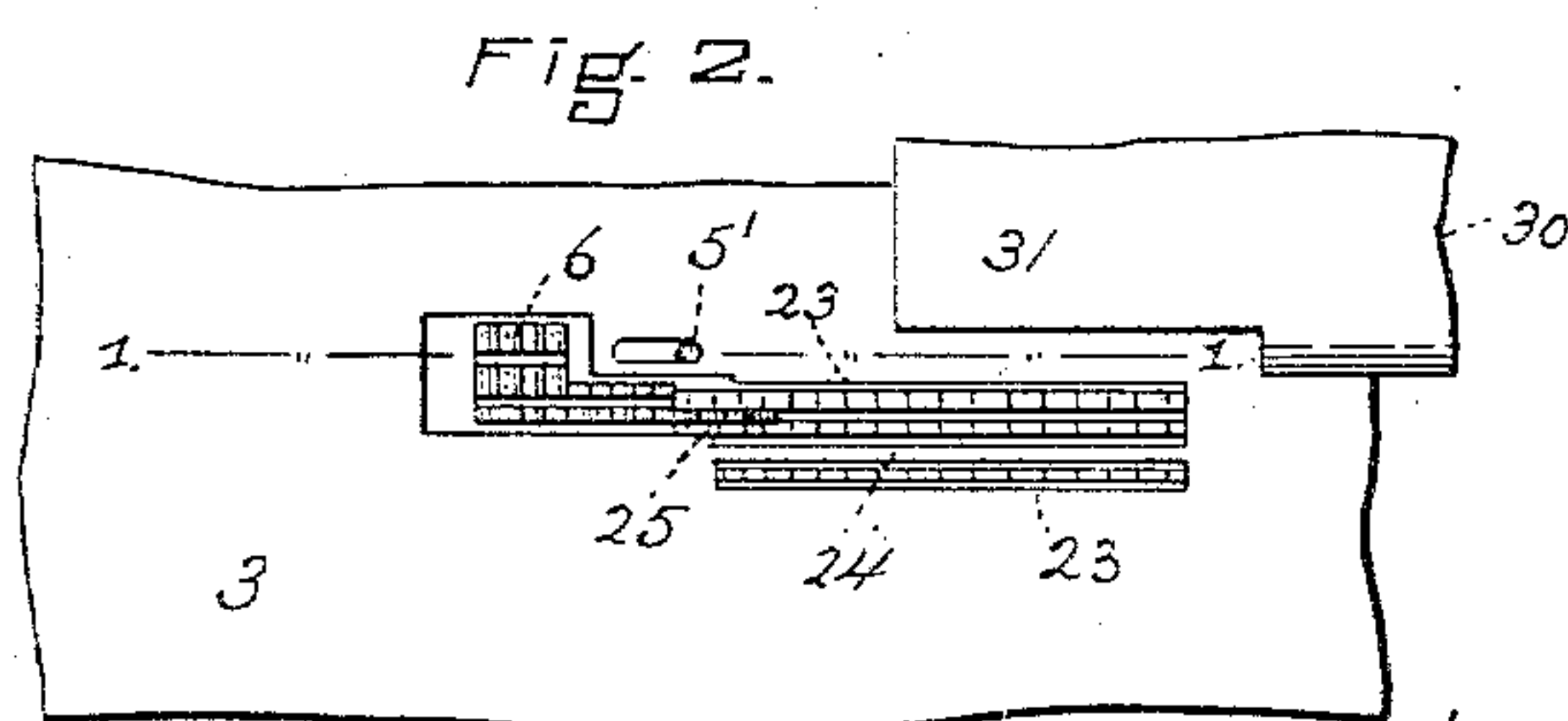
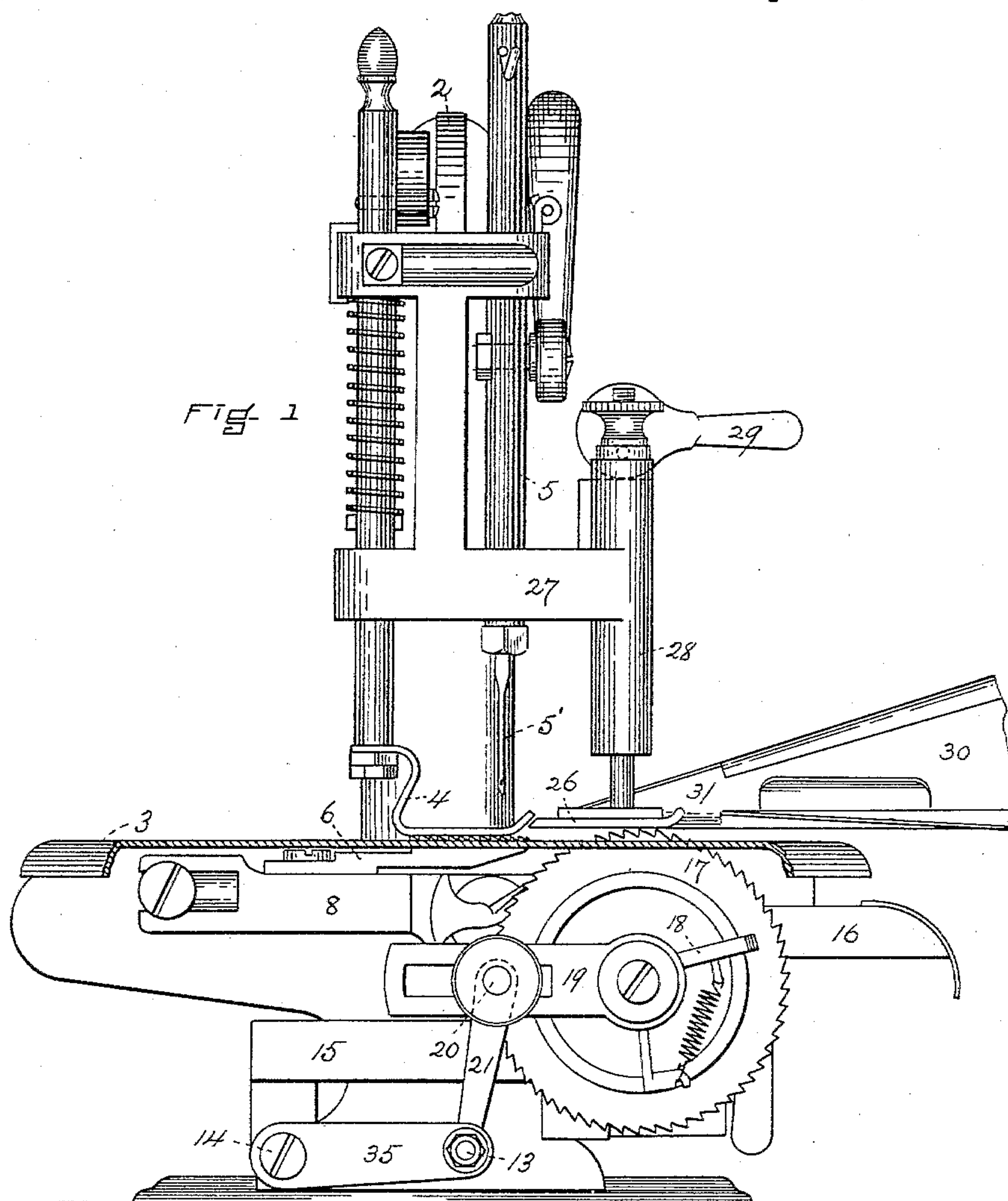
(No Model.)

2 Sheets—Sheet 1.

O. M. CHAMBERLAIN.  
SEWING MACHINE.

No. 566,741.

Patented Sept. 1, 1896.



WITNESSES.

*A. D. Brown.*  
*Francis C. Stenwood*

INVENTOR.

*O. M. Chamberlain.*  
*by H. E. Lodge Atty*

(No Model.)

2 Sheets—Sheet 2.

O. M. CHAMBERLAIN.  
SEWING MACHINE.

No. 566,741.

Patented Sept. 1, 1896.

FIG. 3.

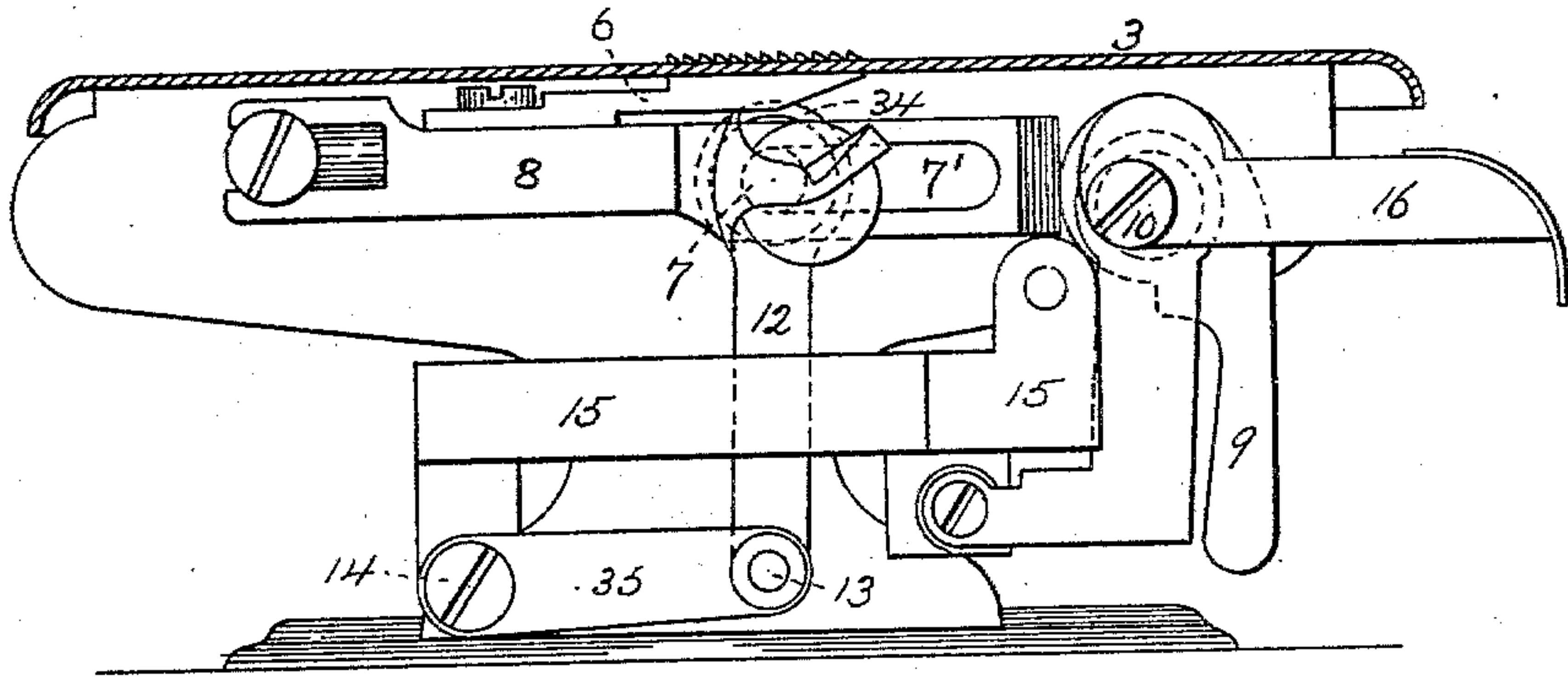


FIG. 4.

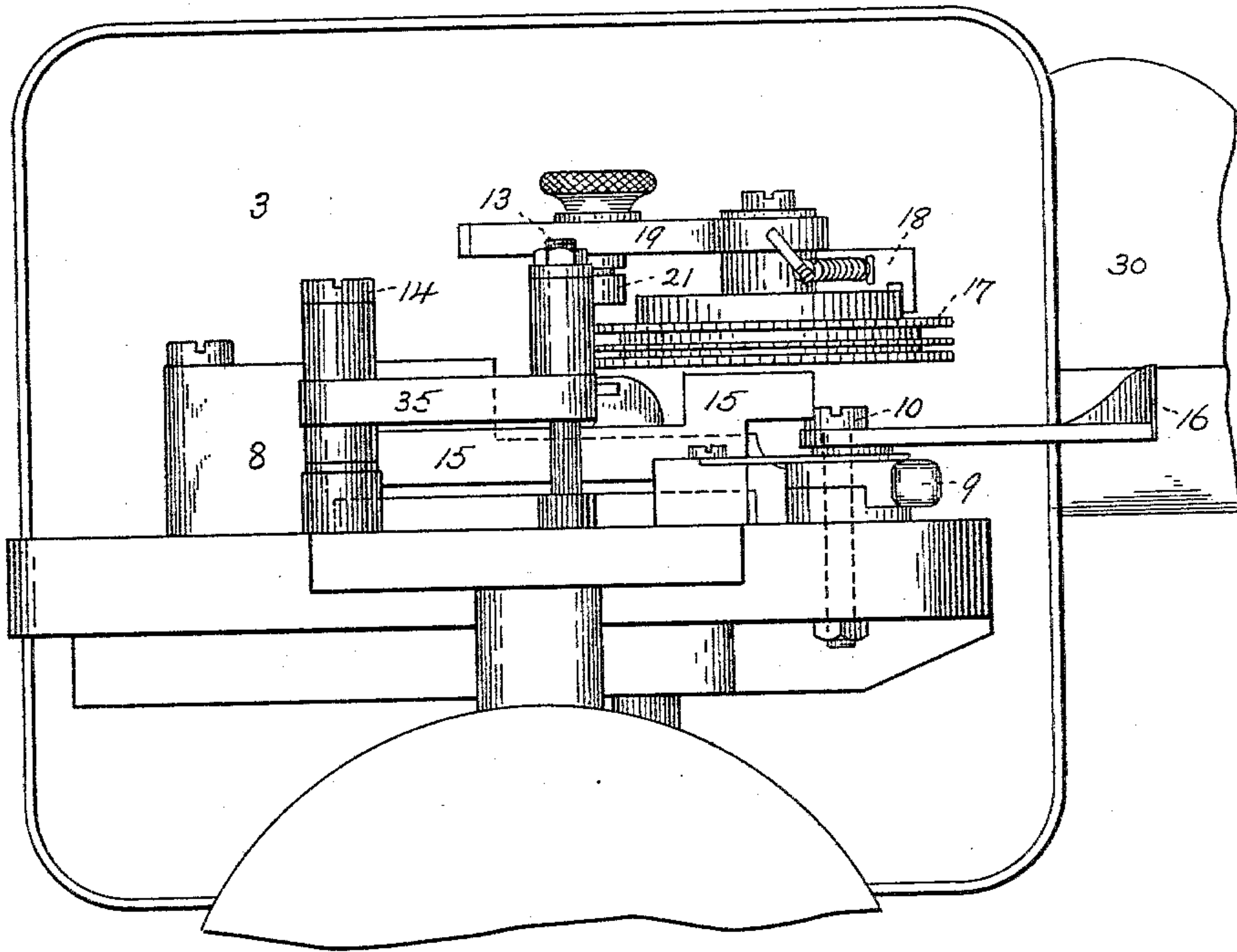
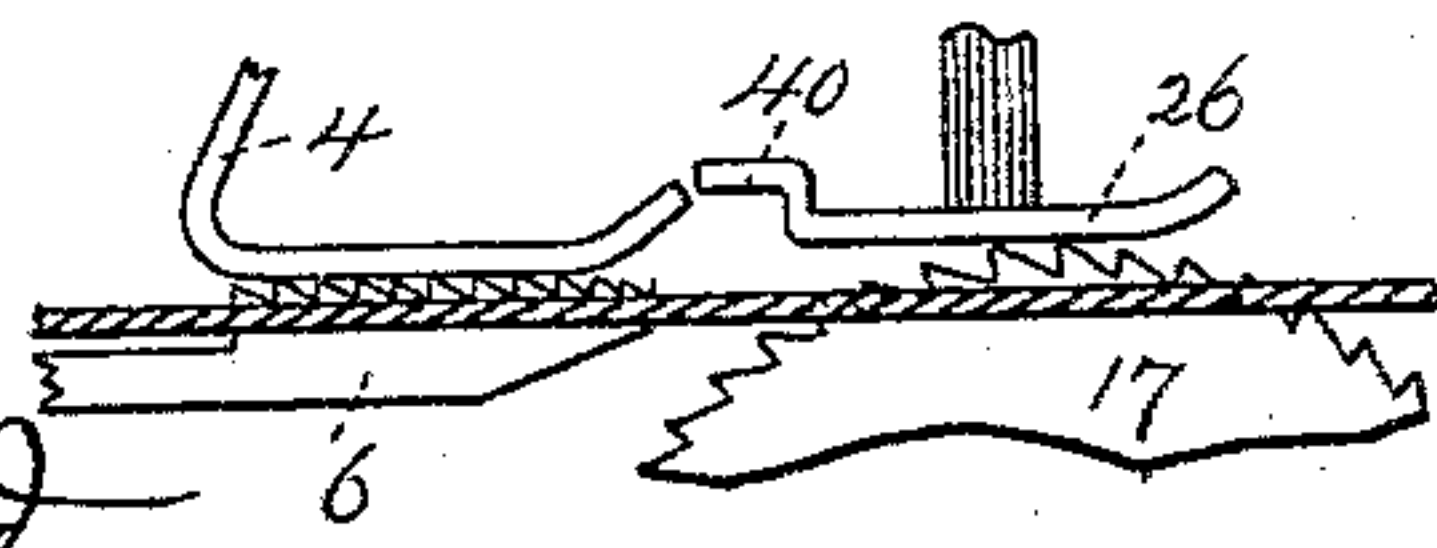


FIG. 5.

WITNESSES.

*A. D. Pratt.*

*Francis C. Stanwood*



INVENTOR.

*O. M. Chamberlain.*

*by H. E. Lodge Atty.*



# UNITED STATES PATENT OFFICE.

ORANGE MACCONNELL CHAMBERLAIN, OF BOSTON, MASSACHUSETTS,  
ASSIGNOR TO EDWARD STERN, OF SAME PLACE.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 566,741, dated September 1, 1896.

Application filed June 5, 1895. Serial No. 551,781. (No model.)

*To all whom it may concern:*

Be it known that I, ORANGE MACCONNELL CHAMBERLAIN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in sewing-machines; and it consists in the attachment to the elementary members of a machine for sewing cloth of mechanism whereby the following duties may be performed singly or conjointly, as the operator may wish: First, the machine is adapted for plain sewing; secondly, for ruffling and sewing conjointly; thirdly, for binding and sewing, and, lastly, for ruffling, binding, and sewing combined, and these several functions without detachment of one element from the other and coöperating elements.

My improvements are embodied in mechanism whereby the operations of ruffling or gathering and binding may be carried on in a sewing-machine directly from the cloth or other material without previous folding of the edges of the binding-strips.

A further object of my invention is to enable the machine-operator to bring into action or suspend the functions of the ruffling device without removal of any part of the machine or in any way interfering with the sewing functions of the latter, thereby permitting the operator, by a slight and rapid movement of a carriage which supports the ruffling feed-wheel, to transform the machine from a "ruffler or binder," or a "ruffler and a binder," to an ordinary sewing-machine, and vice versa.

Briefly stated, my improvements are embodied in a circular ruffling or gathering wheel adapted to rotate intermittently in one direction, preferably in unison with the advance of the sewing-feed; furthermore, in means whereby the periphery of the ruffling-

wheel may be raised above the surface of the cloth-plate or depressed below it, dependent upon the fact whether the act of ruffling is to be performed or otherwise. My improvements, moreover, consist in locating this ruffling-wheel in front of a vertical plane drawn in the stitch-line through the presser-foot and coincident with the longitudinal axis of the needle. My improvements further include a duplex binding or hemming guide of such construction that it may be located entirely above the "cloth-plate," so termed, and said guide is disposed to one side of the needle and behind said vertical plane drawn through the stitch-line and coincident with the longitudinal axis of the needle. Hence binding and ruffling can be performed simultaneously, since the edges of the binding-strip may project sufficiently to overlap the fabric and yet not be interfered with by the ruffling mechanism.

The drawings accompanying this specification represent, in Figure 1, a front elevation of a sewing-machine equipped with attachments embodying my invention. Fig. 2 is a plan of the cloth-plate with the presser-foot and ruffle-plate removed. Fig. 3 is a front elevation with the ruffler feed-wheel and parts attached thereto removed. Fig. 4 is an inverted plan view. Fig. 5 is a vertical section of the cloth-plate in part, showing the ruffle-foot.

In carrying out my invention I employ a sewing-machine of any ordinary type, that is, one which combines the ordinary gooseneck or overhanging arm 2, cloth-plate 3, presser-foot 4, needle-bar 5, reciprocating feed-dog 6, and the necessary mechanism for operating these several parts. The main shaft is formed with a terminal eccentric stud 7, which operates in a slot 7', cut in the free end of the feed-bar 8, by which rocking movement is imparted thereto. Upon said feed-bar is mounted the sewing feed-dog 6, the feed-dog being adjusted with respect to the needle 5 by means of the ordinary cam-lever 9, pivotally mounted on the post 10. The main shaft is further provided with a second cam 34, which engages one end of an oscillating link 12, while transversely at its free end is a short shaft 13. A connecting-rod 35 from this shaft



extends to a post 14, fast on the machine-standard. Beneath the cloth-plate and laterally of the reciprocating feed-dog I have disposed a carriage or frame 15, pivotally hung upon the post 14 and controlled by a cam-lever 16 on the post 10, which supports the feed-bar lever 9. This carriage is equipped with a circular ruffling or gathering wheel 17, comprising in the present instance three circular-toothed disks, which are separated by small spaces or peripheral channels or grooves. A friction-clutch 18, known as the "Howe feed," is applied to the face of the outside disk, but other devices may be substituted therefor, while a slotted arm 19 receives a stud 20, affixed in one end of a crank-arm 21, the opposite end of the latter being secured to the shaft 13 on the link 12. This ruffler-feed is operated by means of the second cam 34, and although both the sewing-feed and the ruffler-feed are operated by the main shaft said feeds are independent of each other.

By means of the above group of parts rotation of the main shaft rocks the link 12, and in this way imparts intermittent feed movement to the ruffling-wheel, which advances always in one direction. Thus, by the employment of a circular ruffler which, while ruffling is being done in the machine, exerts a firm grip upon the work at all times, I am enabled to prevent the slip or displacement of such work, which act is liable to occur in ruffling mechanism where reciprocating elastic toothed plates are employed to perform similar duties. In parallelism but above the ruffling-wheel I have cut slots or openings 23 in the cloth-plate for the passage of the ruffling-wheel, whereby a portion of the periphery of said wheel shall project above the surface of the cloth-plate at stated times. This raising or lowering of the ruffling-wheel is effected by means of the cam-lever 16 before mentioned, the center of oscillation of the carriage being about the fixed post 14.

In order to better support the fabric or cloth in process of ruffling, a strip 24 of the substance composing the cloth-plate may be allowed to remain and enters the peripheral channels in the ruffling-wheel. Coöperating with said strip or bars is the sewing feed-dog 6, which is furnished with a rearwardly-projecting spur or lip 25. These elements are designed when the wheel 17 is in an active position to engage in or be alined above the said peripheral channels and thereby operate to facilitate the passage of the material across the feed-dog and overcome any tendency of the cloth to clog or be held back by such wheel. It is to be noticed that the position of the ruffling-wheel is to one side or in front of a vertical plane coincident with the stitch-line and with the longitudinal axis of the needle, as designated by the line 1 1 in Fig. 2. In connection with this circular ruffling-wheel is a ruffler-foot 26, in the shape of a plate spring-actuated longitudinally above the said wheel. Said foot 26 is supported

and mounted in a bracket 27, affixed to the gooseneck 2. To maintain said ruffler-foot in proper alinement and to provide for vertical reciprocations, said foot is disposed in a tubular post 28, while a cam-lever 29 controls its rise or fall, which acts are dependent upon the fact whether work is to be introduced or removed. It is very evident that my invention is adapted to perform the act of plaiting equally with that of ruffling. Reference to Fig. 5 shows the relative positions of the presser-foot 4 and the ruffler-foot 26. This latter element is here provided at one end with an upraised lip or offset 40, which co-operates with the upturned adjacent portion of the presser-foot. The duty of this lip 40 is to create a space or chamber in which to receive the excess of material necessary to the formation of the plait. In the act of plaiting the movement of the ruffle-wheel will be greatly increased over that required for ruffling, but the material now delivered into the space created by the lip 40 has a predetermined shape imparted to it, and thus the successive plaits are similarly and regularly formed.

As before stated, a portion of my invention comprises a duplex binding or hemming guide. This element is shown at 30, and I consider its novelty is embodied in the arrangement and construction of said guide whereby the entire guide is disposed above the cloth-plate and in such relation with respect to the ruffler-wheel that the two acts of binding and ruffling may be simultaneously effected; further, in locating said guide to one side of the needle, but back of it, in other words, in the rear of the vertical plane 1 1 coincident with the stitch-line and the longitudinal axis of the needle, the front part 31 or delivery end of the guide being so located as to cause the edges of the binding-strip to overlap the material in process of binding and yet not be operated upon by the ruffler-wheel.

From the above description of parts it will be readily understood that the binding-strips without previous preparation are passed into the guide and delivered therefrom in a condition for immediate attachment to the fabric; moreover, that this act of sewing and binding may be performed while the ruffling-wheel is depressed below the surface of the cloth-plate. Conversely, if the act of ruffling is to occur the lever 16 is actuated to lift the carriage and bring the periphery of the wheel 17 against the ruffler-foot. The fabric is now passed beneath the said ruffler-foot and the presser-foot, both being lifted for this purpose, and when these are lowered the fabric is now operated upon conjointly by the reciprocating feed-dog, the ruffling-wheel, and the presser-foot and ruffler-foot. In such an instance the duplex binding-guide may remain idle, but if a binding-strip is to be applied in addition the relation of the various instrumentalities continues unchanged, it



merely being necessary to enter a strip suitable for the purpose in the mouth of the guide and continue the operation of ruffling and sewing, and as the binding-strip is fed along these three acts are performed simultaneously.

What I claim is—

1. The combination with a cloth-plate, presser-foot, needle-bar, and reciprocating feed-dog, of a duplex binder-guide disposed above the cloth-plate and behind and laterally of the needle, a rocking carriage, an intermittently rotary ruffle-wheel thereupon, and mechanism for operating the ruffle-wheel in unison with the reciprocating feed-dog, substantially as set forth.

2. The combination with a sewing-machine comprising a cloth-plate, presser-foot, needle-bar, and reciprocating sewing feed-dog, of an intermittently-rotating ruffler feed-wheel provided with one or more peripheral grooves, a pivotal carriage to support said ruffle-wheel, means to cause said wheel to advance or recede through an aperture in the cloth-plate, and a ruffler-foot to coöperate with the ruffler-wheel at stated times, substantially as stated.

3. The combination with a cloth-plate, presser-foot, needle, needle-bar, and reciprocating feed-dog, comprising a sewing-machine, an intermittently-rotating ruffler feed-wheel having a peripheral groove laterally of the needle but in front of a plane coincident with the stitch-line and the longitudinal axis of the

needle, and a rearwardly-extending lip upon the feed-dog adapted to enter the peripheral groove in the ruffle feed-wheel when the latter is actively employed, substantially as described.

4. In combination with the elementary members of a sewing-machine, a circular revoluble ruffle feed-wheel, and one or more peripheral grooves in said feed-wheel, a reciprocating sewing feed-dog, one or more rearwardly-extending spurs on said sewing feed-dog to enter the grooves on the ruffle feed-wheel, and a presser-foot, and a ruffle-foot to coöperate respectively with the sewing feed-wheel, and the ruffle feed-dog, substantially as specified.

5. The combination with the elementary members of a sewing-machine including a reciprocating sewing feed-dog, a presser-foot, and a circular revoluble ruffler feed-wheel adapted to project through the cloth-plate, of a ruffler-foot adapted to coöperate with the ruffler feed-wheel, and an upraised lip upon said ruffler-foot which coöperates with the presser-foot to inclose and gather the fabric advanced by the ruffler feed-wheel, substantially as explained.

In testimony whereof I affix my signature in presence of two witnesses.

ORANGE MACCONNELL CHAMBERLAIN.

Witnesses:

EDWARD STERN,  
H. E. LODGE.