

No. 708,940.

Patented Sept. 9, 1902.

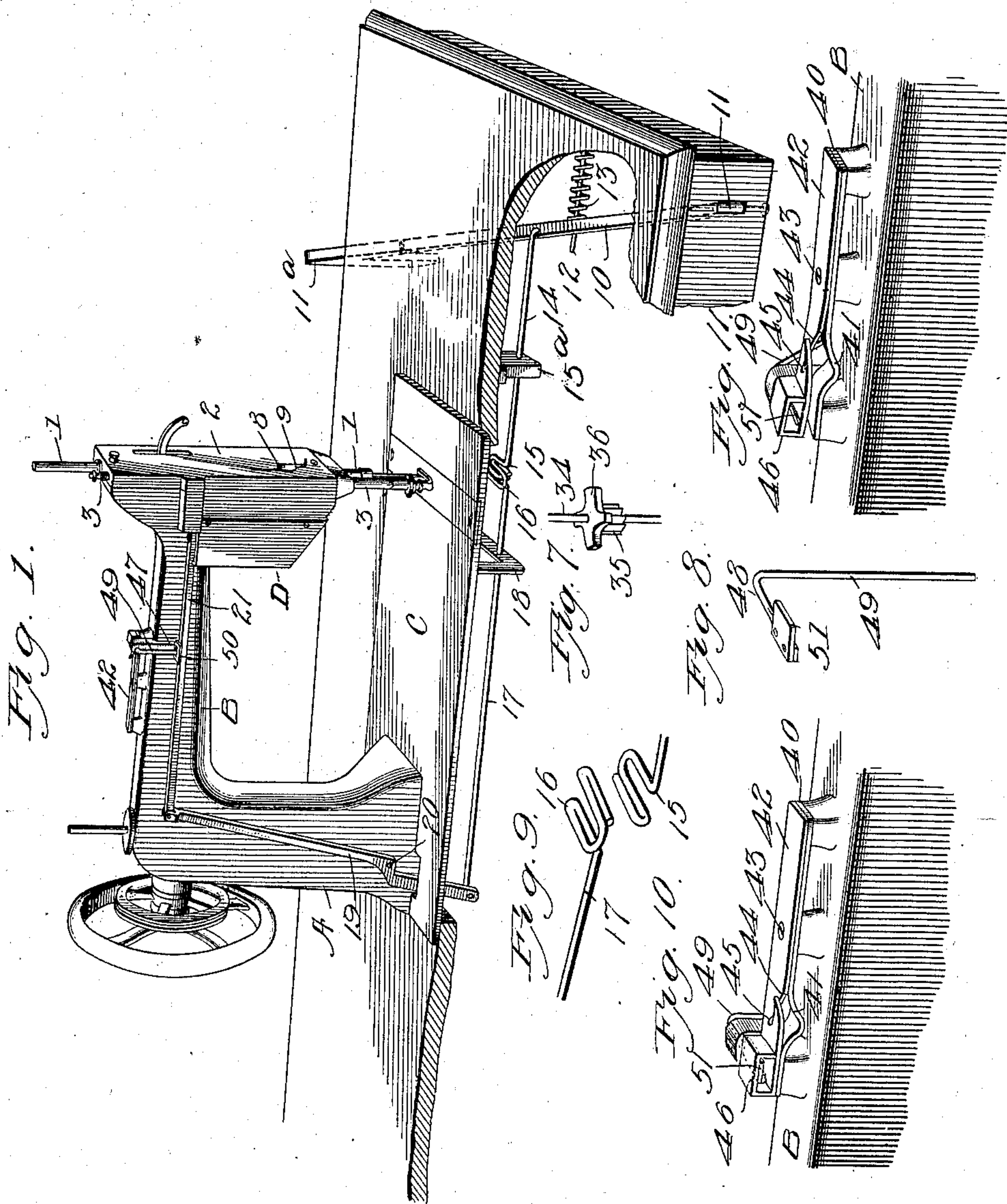
C. THEOBALD.

PRESSER FOOT LIFTING MECHANISM FOR SEWING MACHINES.

(Application filed Apr. 28, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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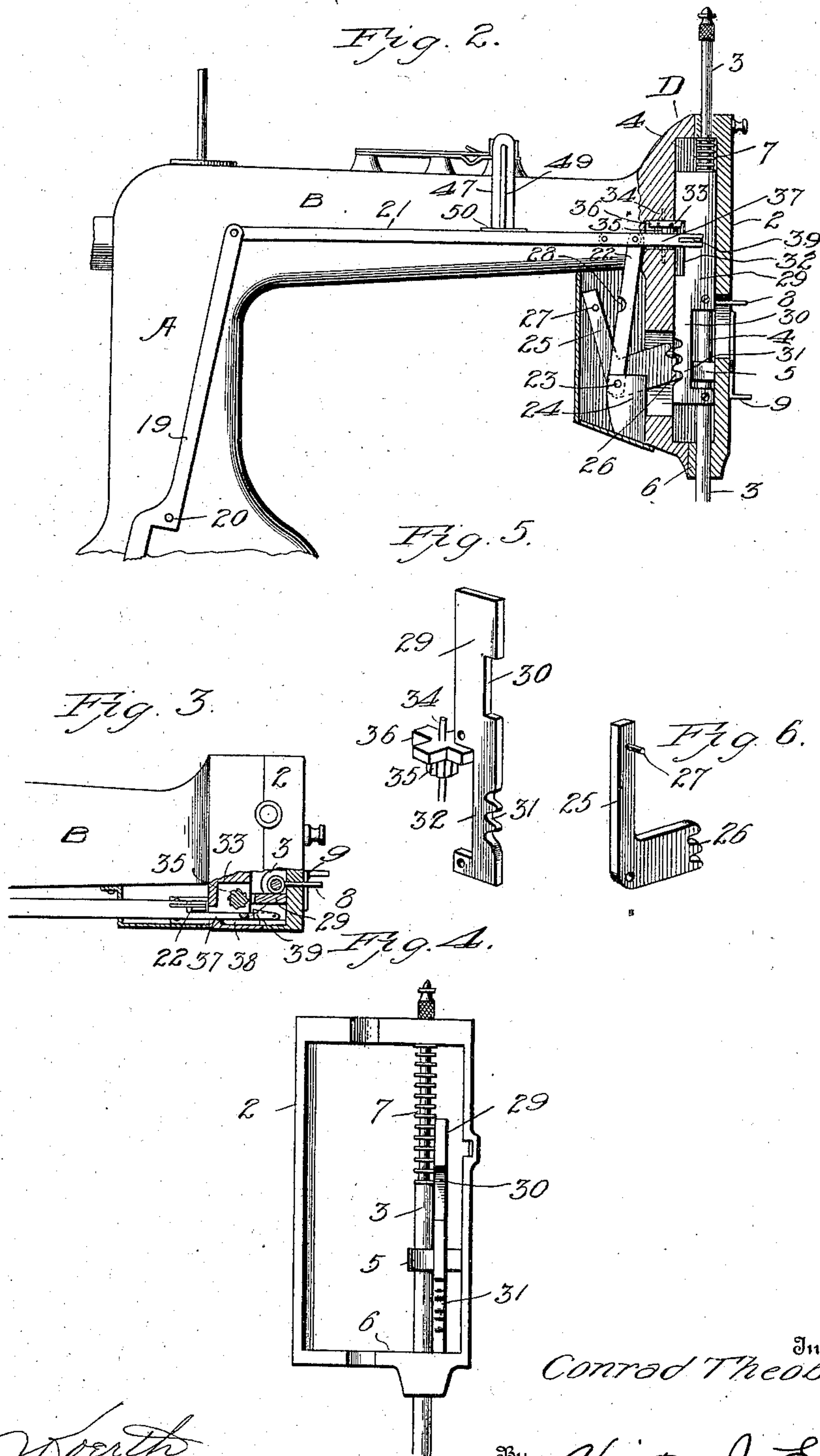
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2 Sheets—Sheet 2.



Witnesses

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CONRAD THEOBALD, OF BRUNING, NEBRASKA.

PRESSER-FOOT-LIFTING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 708,940, dated September 9, 1902.

Application filed April 28, 1902. Serial No. 105,081. (No model.)

To all whom it may concern:

Be it known that I, CONRAD THEOBALD, a citizen of the United States, residing at Bruning, in the county of Thayer and State of Nebraska, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to improvements in sewing-machines, and particularly relates to lifters for presser-bars and means for holding the bar elevated and combined therewith mechanism for adjusting or operating the tension device; and the objects are to provide improved mechanism for lifting and holding the presser-bar in raised position by a system of levers arranged to be actuated by the pressure of the knee or leg of the operator, and at the same time by the same mechanism release and apply the tension of the thread as fed from the spool, and also to provide improved means for engaging the presser-foot bar and hold it in elevated position.

With these objects in view my invention consists in the novel construction of parts and their arrangement and aggroupment in operative combination, as will be hereinafter fully described and the novelty thereof particularly pointed out and distinctly claimed.

I have fully and clearly illustrated the improvements in the accompanying drawings, wherein—

Figure 1 is a perspective view of a sewing-machine having my improvements connected thereto, the table being broken away to show the parts of the mechanism located thereunder. Fig. 2 is a side elevation of the arm of the sewing-machine, partly in vertical section, to show the mechanism assembled within the head of the arm. Fig. 3 is a top plan view of the head and portion of the arm, partly in horizontal section, and showing the ratchet-pinion and actuating-pawl arm of the pitman to operate the ratchet. Fig. 4 is a detail front view of the head, showing the presser-bar and attached rack plate or bar. Fig. 5 is a detail perspective of the rack-bar as removed from its connections to the presser-bar. Fig. 6 is a detail perspective of the bell-crank lever, showing the teeth to engage the rack-bar of the presser-bar. Fig. 7 is a detail perspective of the ratchet-pinion and trip-wheel for holding the presser-bar in

raised position. Fig. 8 is a detail perspective of the lever which engages the tension devices. Fig. 9 is a detail view of the coupling, the parts being shown as separated. Fig. 10 is a perspective view of the tension device, showing the parts as closed. Fig. 11 is a perspective view of the tension device, showing the upper plate as raised to relieve the tension on the thread.

Referring to the drawings, A designates the standard, and B the overhanging arms, of the sewing-machine, which may be of any of the well-known constructions, and C designates the base-plate, on which the standard is secured or forms an integral part.

It is not deemed essential to describe or show the various actuating mechanism common to all machines to operate the needle, since these are well known, and my invention forms no part thereof, being intimately associated with the presser-bar and tension devices.

D designates the head, formed on the free end of the arm and chambered out to receive the eccentric (not shown) which actuates the needle-bar 1 in the usual well-known manner. To the face of the head is secured by any well-known means the plate 2, which closes in the mechanism. The common form of presser-bar 3 is carried by the plate 2, being arranged in a half-circle vertical groove 4 and slidingly projected through a guide-bracket 5 and through the flange 6 at the lower end of the plate 1, as shown in the drawings, and on the presser-bar is arranged the usual expansive spring 7 to return and hold the bar to its lower position when the restraint on the spring is removed. My improvements do not interfere with the usual means for lifting and holding the presser-bar in raised position, which means consists of a pin 8, projected from the bar through a slot in the plate, and a cam disk or plate 9, pivotally supported on the plate 2 and bearing against the pin 8. My improvements are more particularly utilized when the operator is engaged in doing work where it is necessary or more convenient to use both hands in its manipulation. It does not, however, interfere with the use of the lifting and holding means above described.

Now describing my improvements as illus-

5 trated in the drawings, 10 designates a lever
 pivotally mounted under the table, as at 11,
 and at its free end has jointed to it a leg-
 piece 11^a, having a vertically-depending arm
 10 against which the knee or leg of the operator
 may engage to operate the lever, the hinged
 connection of the sections or parts of the le-
 ver being such that the leg-section turns only
 to alinement with the lever, as indicated,
 15 and so that when not in use it may be swung
 around under the table and lie against the
 lever. The lever 10 is slidably supported
 on a rigid rod 12, and between the lever and
 the wall of the table on the rod 12 is placed
 20 an expansive spring 13, by the force of which
 when the lever is moved to compress the
 spring it is returned to initial position on re-
 lease of the compressing force. At about mid-
 way the length of the lever 10 is pivotally con-
 25 nected one end of a rod 14, loosely projected
 through a hanger 15^a, depending from the
 table. The other and free end of the rod 14
 is formed with a hooked coupling-head 15,
 which detachably engages with a counterpart
 30 coupling 16 on the end of a rod 17, loosely
 supported in a hanger 18, depending from the
 bottom side of the base of the sewing-ma-
 chine, the other and outer end of the rod 17 be-
 ing pivotally connected to the lower end of a
 35 rocking lever or rod 19, pivotally supported
 by a pin 20, fixed in the standard A. To the
 upper end of the rock-lever is pivotally se-
 cured a horizontally-arranged pitman 21, to
 the forward end portion of which, adjacent
 40 to the headpiece, is pivotally hung a link or
 bar 22, constituting a lever, the lower end of
 which is pivotally arranged on a pin 23, fixed
 in a block or support 24. To the inner pro-
 jecting end of the pin 23 is mounted, to rock
 45 thereon, a bell-crank lever 25, having formed
 on the end of its lower and forwardly-pro-
 jecting arm a determined number of teeth 26,
 which engage with a rack carried by the
 presser-bar. The vertical arm of the bell-
 50 crank lever is provided with a laterally-pro-
 jecting pin 27, which engages in a notch or
 recess 28 in the lever 22, so that when the le-
 ver is drawn back by the pitman 21 the re-
 cess engages the pin and rocks the bell-crank
 55 lever. To the presser-bar is secured or formed
 integral therewith a plate 29, formed with a
 recess 30 to set over the bracket 5 on the
 head-plate to permit the raising and lowering
 of the presser-bar, and on the inner edge of
 60 the plate 29 is formed a rack 31, which is en-
 gaged by the teeth on the end of the bell-
 crank lever. The plate 29 is also formed
 with an elongated recess 32 to afford room for
 the engagement of the trip wheel or spider to
 65 hold the presser-bar in elevated position. In
 the inner wall of the head is formed a cham-
 ber or housing 33, wherein is journaled a ver-
 tical shaft or arbor 34, on which is mounted
 a ratchet-pinion 35, having a determined
 number of ratchet-teeth thereon, usually
 eight, and above the ratchet-pinion on the
 shaft 34 is fixed a trip-spider 36, having four

70 diametrically-disposed arms arranged to pro-
 ject beyond the perimeter of the ratchet-pin-
 ion and into the recess 32 of the plate 29, car-
 ried by the presser-bar, so that when the bar
 is lifted and an arm of the spider is turned
 to engage in the recess the arm will rest un-
 der the upper wall of the recess 32 and hold
 the presser-bar from further descent until the
 75 arm of the spider is moved from under the
 end of the recess, when the presser-bar drops
 under the force of the spring. To actuate
 the ratchet-pinion and spider, the pitman 21
 is extended beyond the connection to the link
 80 22, as at 37, the extension being arranged in
 a sleeve or way 38, which opens into the cham-
 ber 33, wherein the ratchet-pinion and spider
 are contained, and on the end of the exten-
 sion is provided or formed a pawl-catch 39,
 85 which moves in the path of the ratchets and
 by its engagement therewith turns the pin-
 ion to carry the spider-arms into the recess
 of the plate on the presser-bar and under the
 end thereof to hold the presser-bar lifted and
 90 at the next movement turns the spider-arm
 from its engagement and so that the plate of
 the presser-bar stands free between two arms
 of the spider.

It will be perceived from the foregoing de- 95
 scription and reference to the drawings in
 connection therewith that the operation of
 the described mechanism may be stated as
 follows: The hinged leg-piece is first turned
 in alinement with the main bar of lever 10, 100
 so as to be accessible to the knee or leg of
 the operator, and the coupling having been
 hooked up the mechanism is ready for being
 utilized. Then by pressing the lever 10 to-
 ward the adjacent end of the table the bars 105
 14 17 are moved in the same direction, rock-
 ing the lever 19 to move its upper end out-
 ward, which pulls the pitman in same direc-
 tion, and with the pitman moves the lever 22
 into contact with the pin 27 in the bell-crank 110
 lever and raising the lower arm of that lever,
 which, being in engagement with the rack,
 raises the presser-bar, and when the upper
 end of the recess 32 has passed the spider the
 pawl-catch on the extension of the pitman 115
 engages the ratchet-pinion and turns it so as
 to bring an arm of the spider into the recess
 in the plate of the presser-bar when the pres-
 sure on the lever is removed, and the force
 of the spring 13 throws the lever, with the 120
 pitman, in opposite direction and the presser-
 bar is free to move down and lodge on the
 arm of the spider in its path. Of course the
 presser-foot is raised by these movements
 from off the work, and the operator has both 125
 hands free to adjust the work as may be de-
 sired or required. When it is necessary to
 release the presser-bar, the mechanism is
 again brought into requisition and the presser-
 bar lifted or raised off its contact with the 130
 arm of the spider, which is then turned by
 the pawl catch and ratchet from under the
 end of the recess and until the plate on the
 presser-foot will stand in the angle between

two of the arms of the spider and the presser-bar free to descend, when the pressure on the leg-piece can be removed and the mechanism disengaged, in which position the connection between the teeth of the bell-crank lever and the rack on the presser-bar imposes no interference with the free movement of the bar.

I also provide a tension device operated by the mechanism which lifts the presser-bar and which relieves the tension on the thread simultaneously with the operation of the raising of the presser-bar and restores the tension when the presser-bar is lowered to resume sewing. This tension device is shown in Figs. 1 and 2 in connection with the pitman and illustrated with particularity in Figs. 10 and 11, and reference being thereto had it will be disclosed that on vertical studs formed on the upper side of the arm B is arranged a flat metal plate 40, formed with a recess or indentation 41 to afford space for manipulating the thread and its insertion in the tension. On the plate 40 is laid and secured a coincident spring-plate 42, secured by a screw 43, let through both plates and projecting into one of the studs, substantially as shown. In the plate 42 is a thread-slit 44, leading into a thread hole or eye 45, and the end of this plate is formed with a hollow angular sleeve 46. The thread is yieldingly held between the surfaces of the plates under the spring portion and is fed up through the eye 45 to the usual eyes on the head of the arms to the needle. To the side of the overhanging arm B is secured a standard 47, provided with a bearing wherein is journaled a rod 48, having a vertically-depending arm 49, which loosely engages in a slot formed in a plate 50, secured to the pitman 21. On the free end of the rod 48 is a plate 51, which is arranged within the angular sleeve 46 and is adapted to turn or rock with the rod 48 and lift the upper spring-tension plate, so as to have the thread free to be pulled forward when required. It will be perceived that when the pitman is drawn back to lift the presser-bar the arm 49 will engage the front end of the slot in plate 50 on the pitman, and be moved therewith, and eventuate in turning the plate 51 and lift the spring-tension plate, thereby releasing the tension on the thread and permit it to be drawn forward. When the pitman moves forward, the arm 49 is free again and the spring-tension plate automatically closes down on the lower plate and renews the tension of the thread.

Having thus described the invention, what is claimed as new is—

1. A mechanism for lifting the presser-bar of a sewing-machine, comprising a presser-bar formed with rack-teeth, a bell-crank lever having teeth on the end of one arm to engage the said rack, a pivotally-supported lever to engage the other arm of the bell-crank lever, a reciprocable pitman to operate the lever, and means to reciprocate the pitman.

2. In a mechanism for lifting the presser-bar of a sewing-machine, the combination of a presser-bar formed with rack-teeth, a bell-crank lever having teeth on one arm to engage the said rack-teeth and provided with a pin in its upper end, a pivotally-supported lever 22 to engage the pin in the free arm of the bell-crank lever, a reciprocable pitman to which the upper end of the lever 22 is connected, a rocking lever to operate the pitman, and a lever under the table of the machine to rock the rocking lever.

3. In a mechanism for lifting the presser-bar of a sewing-machine, the combination with a reciprocable pitman having a pawl-catch on its inner end and means connected thereto for lifting the presser-bar, of a vertical shaft, a spider-wheel mounted on the shaft, a ratchet-pinion mounted on said shaft in the path of the pawl-catch, and means to actuate the pitman to engage the pawl-catch with the ratchet-pinion and turn the spider-wheel to engage and hold the presser-bar elevated.

4. In a mechanism for lifting the presser-bar of a sewing-machine, the combination of the lifting mechanism, the presser-bar formed with a recess, a ratchet-pinion, a spider-wheel turned thereby, and means to turn the ratchet-pinion with the spider-wheel whereby an arm of the spider is carried within the recess to support the presser-bar in raised position.

5. In a mechanism for raising and supporting the presser-bar of a sewing-machine, the combination of the presser-bar, a rotatable ratchet-pinion, a spider-wheel rotated thereby, means to lift the presser-bar, a pitman to actuate the lifting mechanism and to rotate the ratchet-pinion and bring the spider into engagement with the presser-bar, and a lever to operate the pitman.

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

CONRAD THEOBALD.

Witnesses:

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