No. 656,852. Patented Aug. 28, 1900.

D. NOBLE.

OVERSEAMING SEWING MACHINE.

(Application filed Nov. 10, 1899.)

(No Model.) 6 Sheets—Sheet 1.

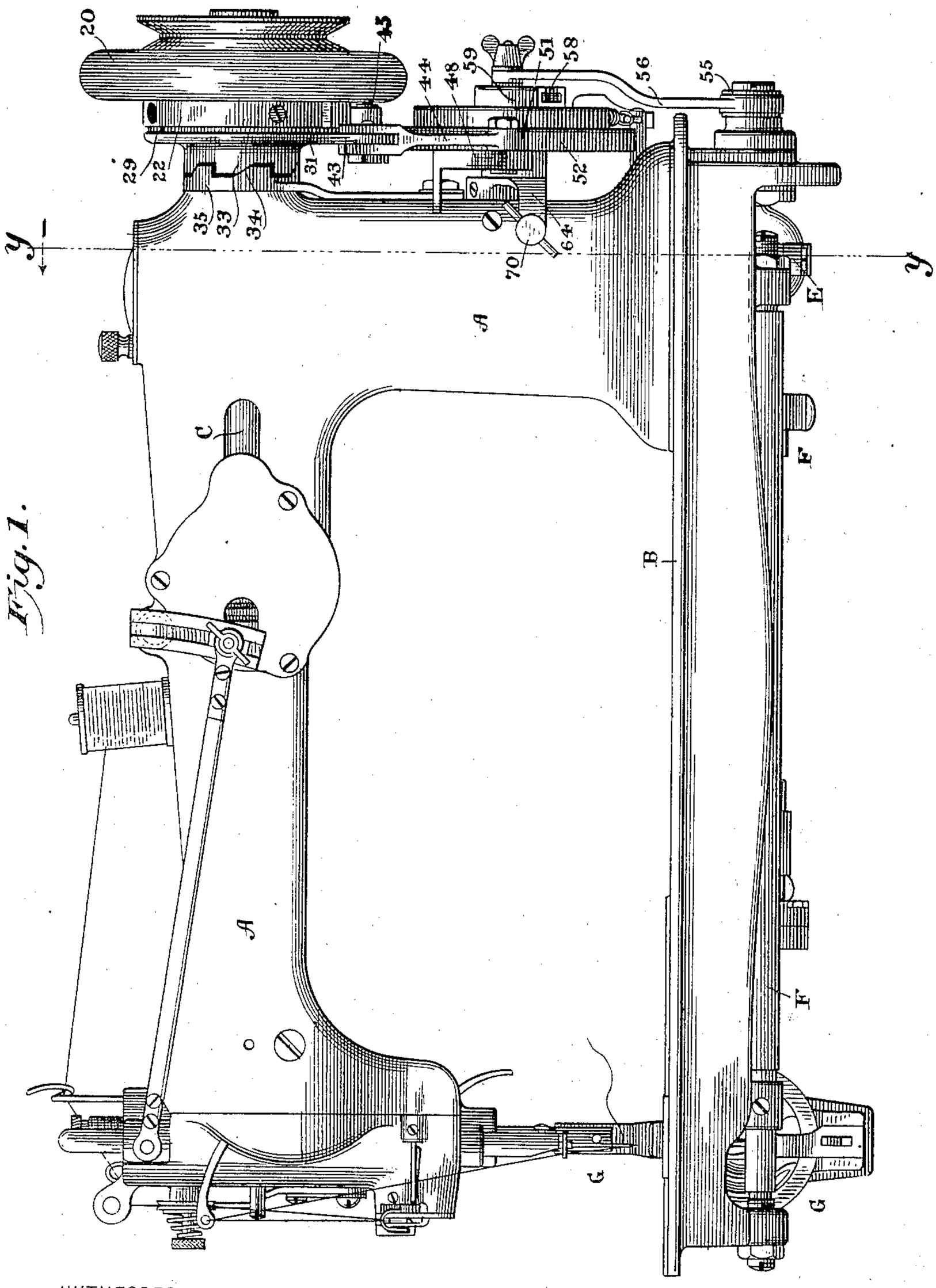

Fig. 1.

WITNESSES:

J. F. Finch.

S. H. Atherton.

INVENTOR

Donald Noble

BY

A. M. Wooster

ATTORNEY

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D. NOBLE.

OVERSEAMING SEWING MACHINE.

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(No Model.) 6 Sheets—Sheet 2.

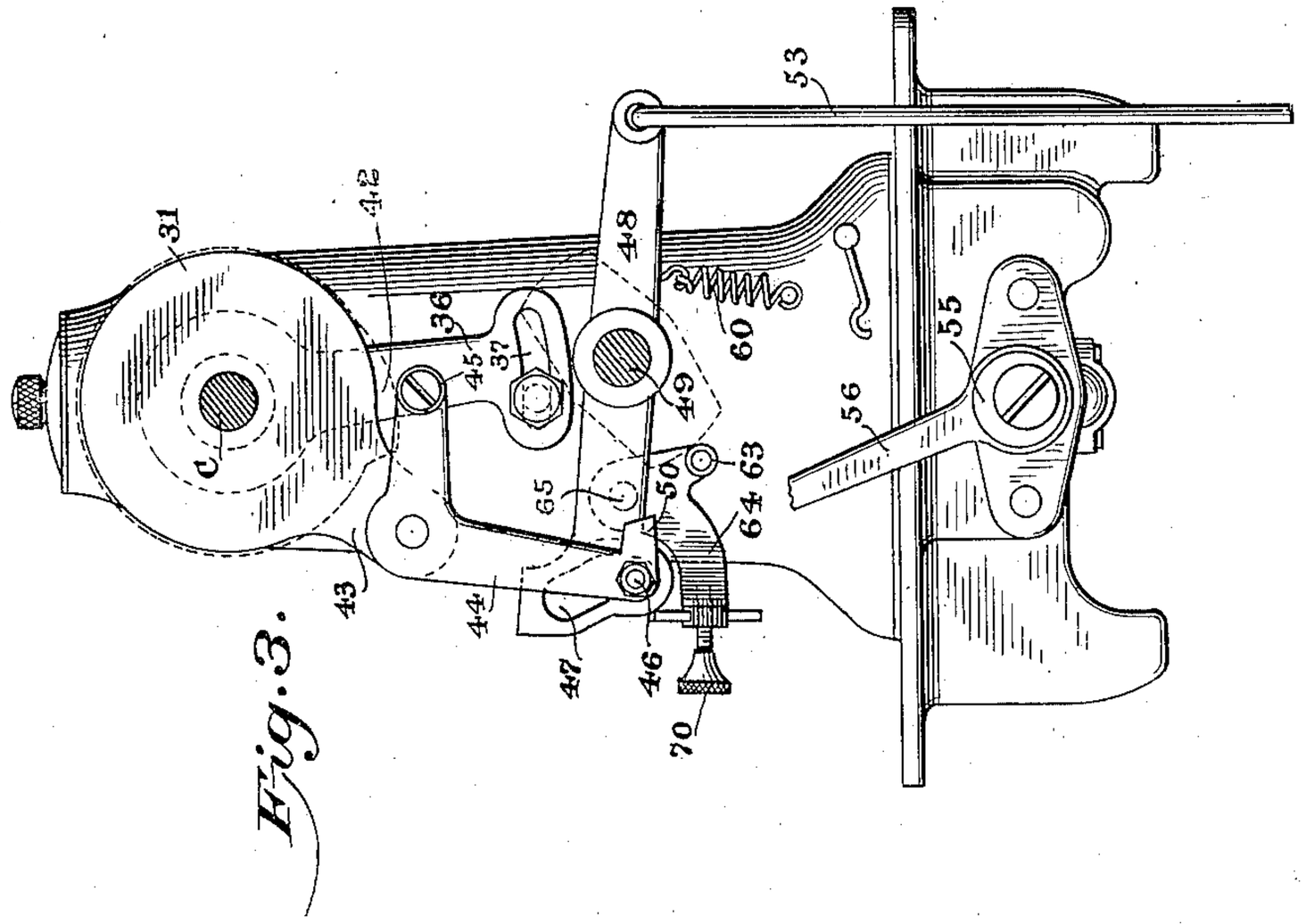

Fig. 3.

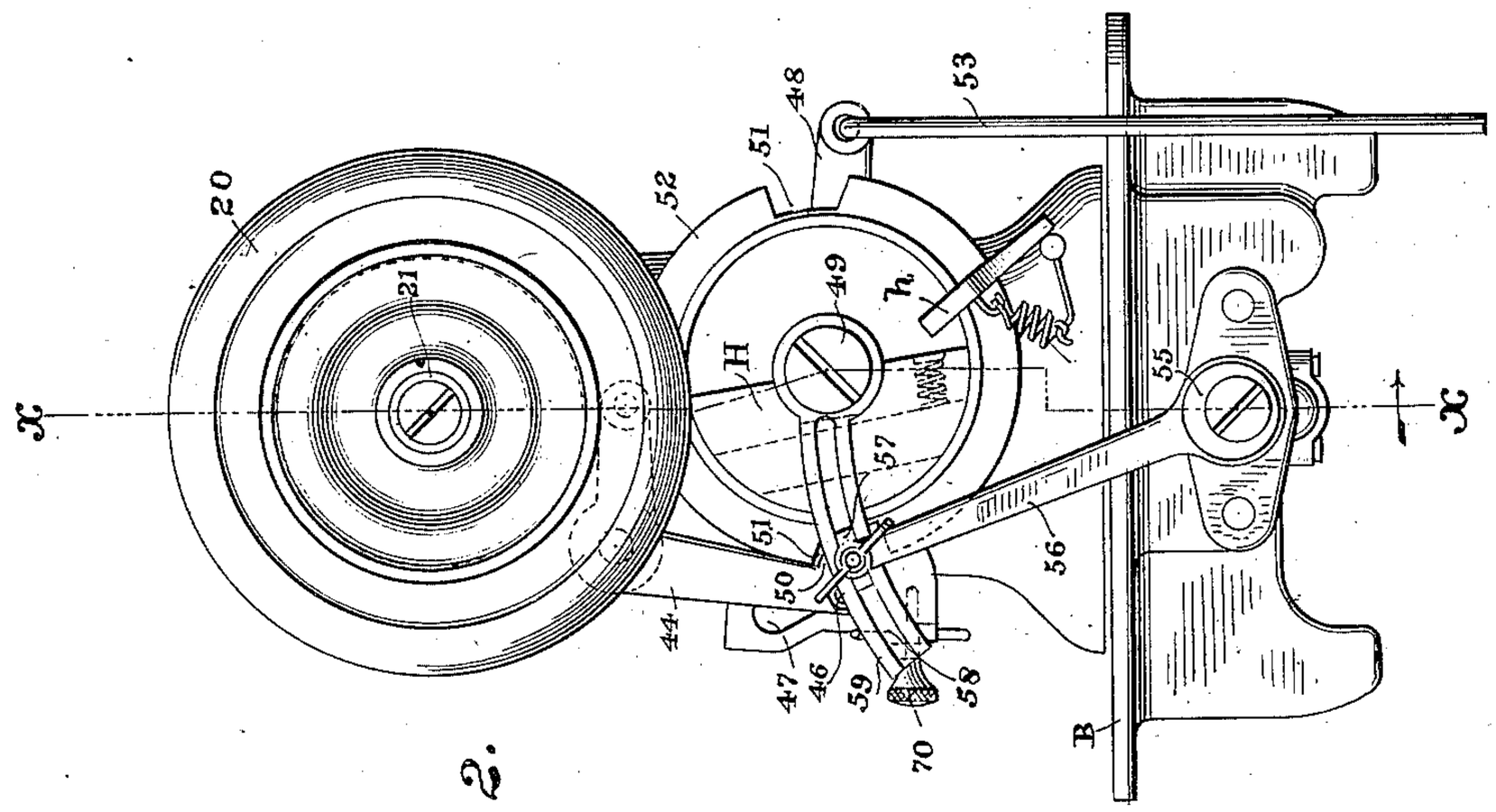

Fig. 2.

WITNESSES:
J. H. Finch.
S. H. Atherton.

INVENTOR
Donald Noble
BY
A. W. Wooster
ATTORNEY

No. 656,852. Patented Aug. 28, 1900

D. NOBLE.

OVERSEAMING SEWING MACHINE.

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(No Model.) 6 Sheets—Sheet 3.

Fig. 5.

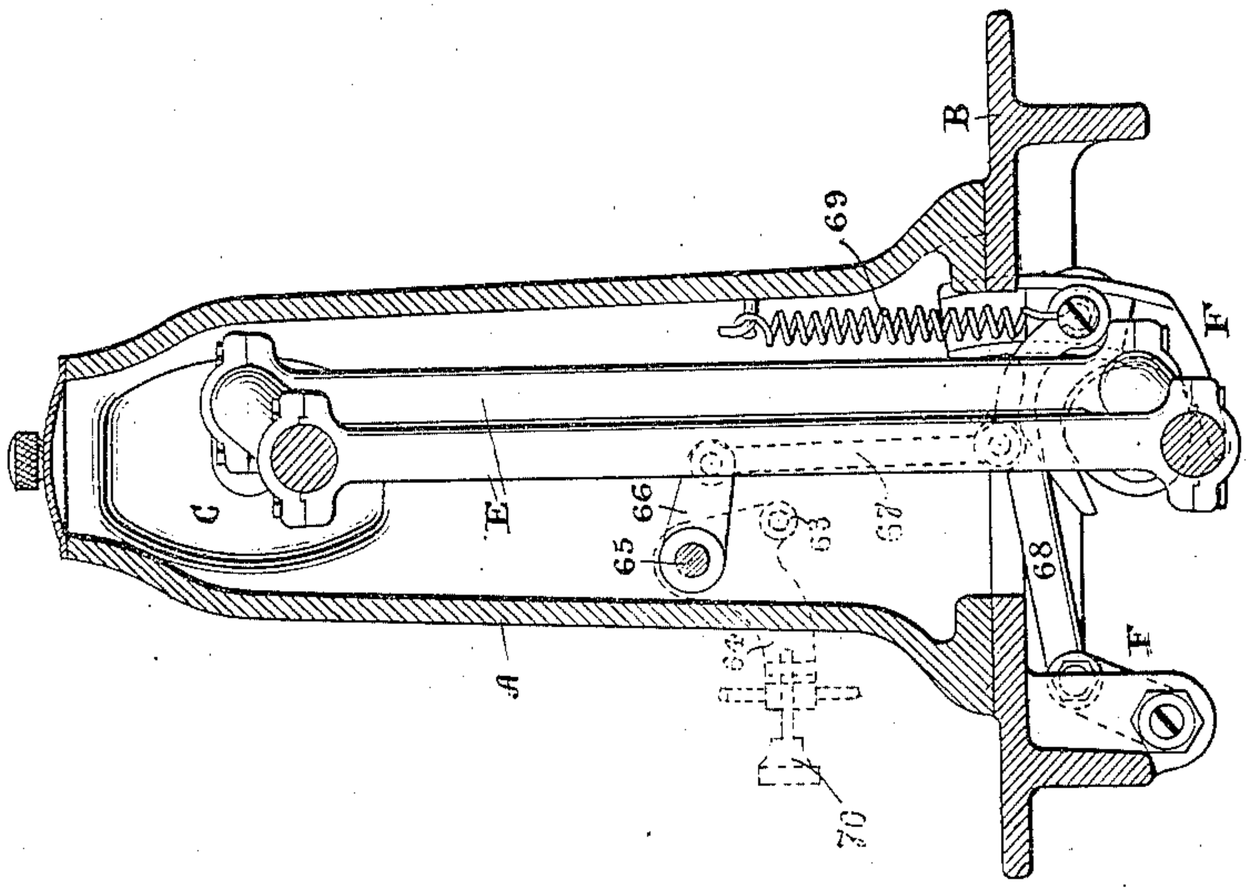
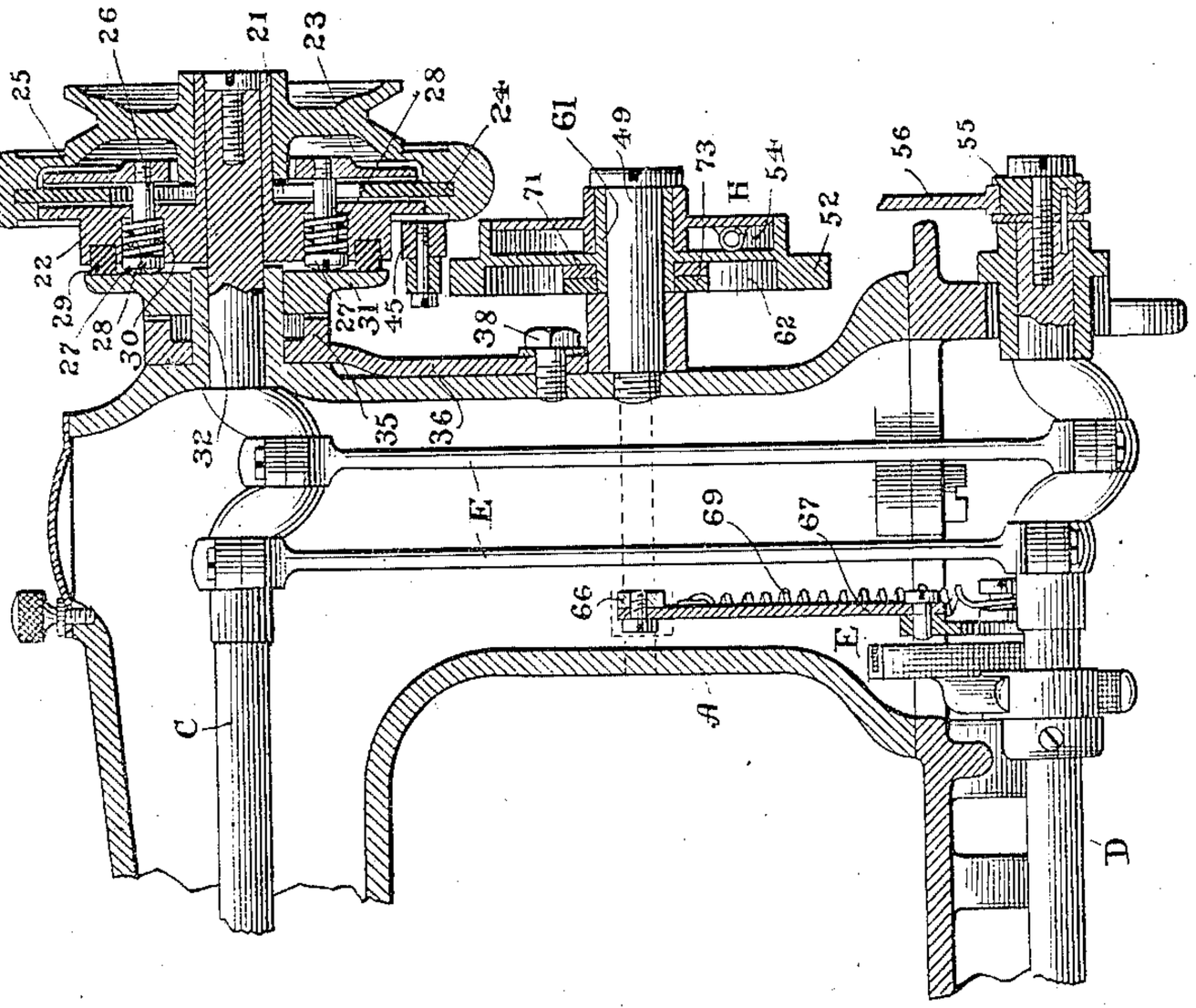


Fig. 4.



WITNESSES:

J. F. Frisch.

S. H. Atherton.

INVENTOR

Donald Noble.

BY

A. McCrooster

ATTORNEY

No. 656,852. Patented Aug. 28, 1900.

D. NOBLE.

OVERSEAMING SEWING MACHINE.

(Application filed Nov. 10, 1899.)

(No Model.) 6 Sheets—Sheet 4.

Fig. 10.

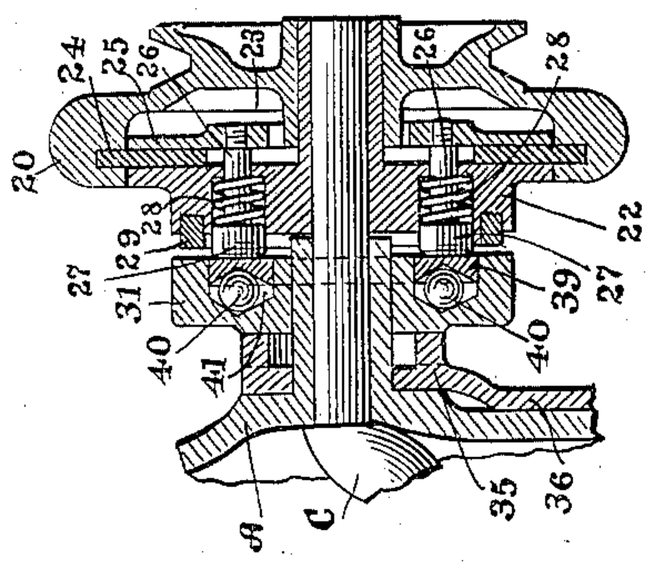


Fig. 6.

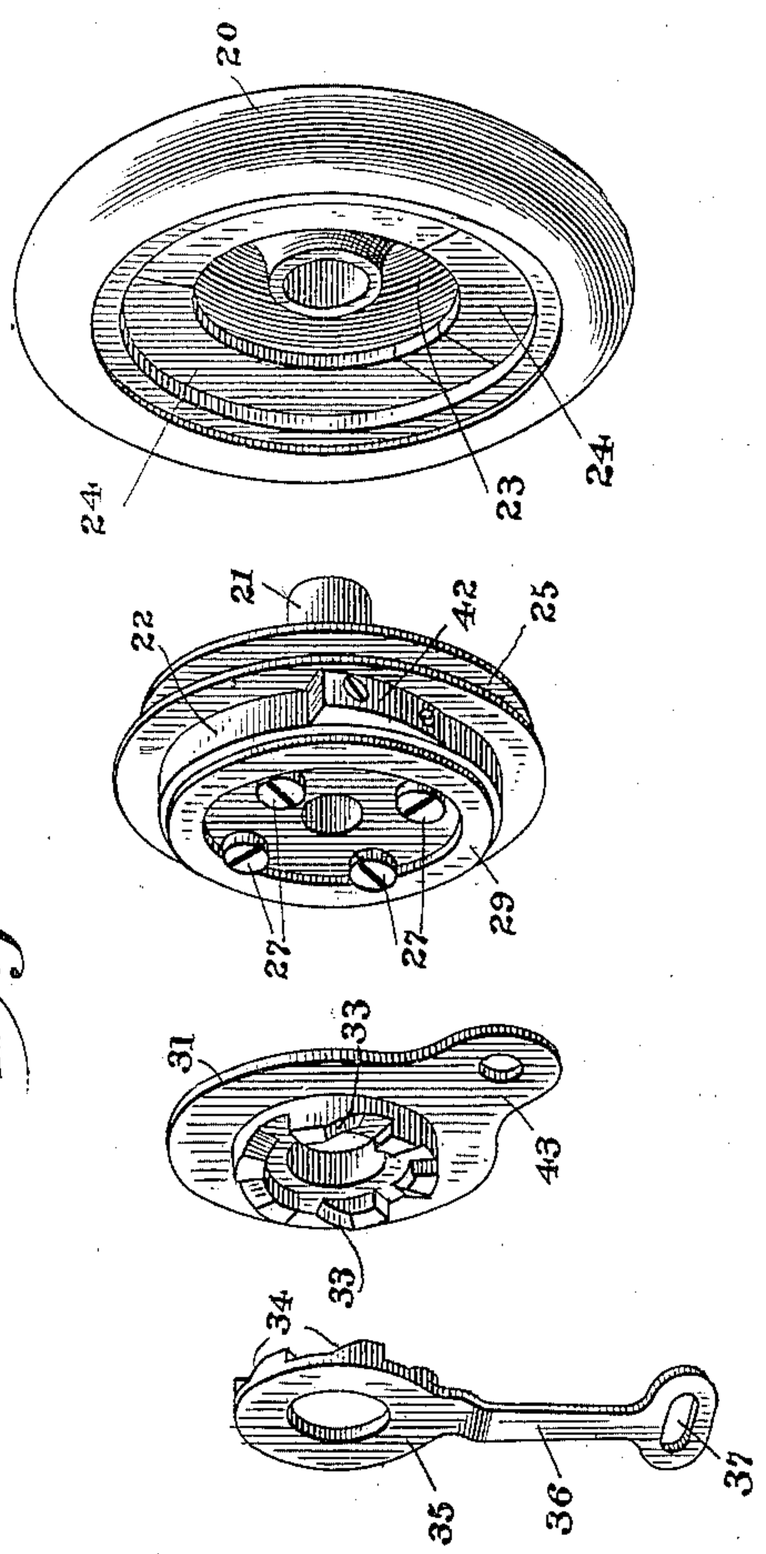


Fig. 9.

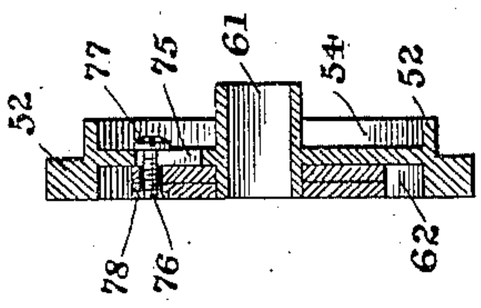


Fig. 8.

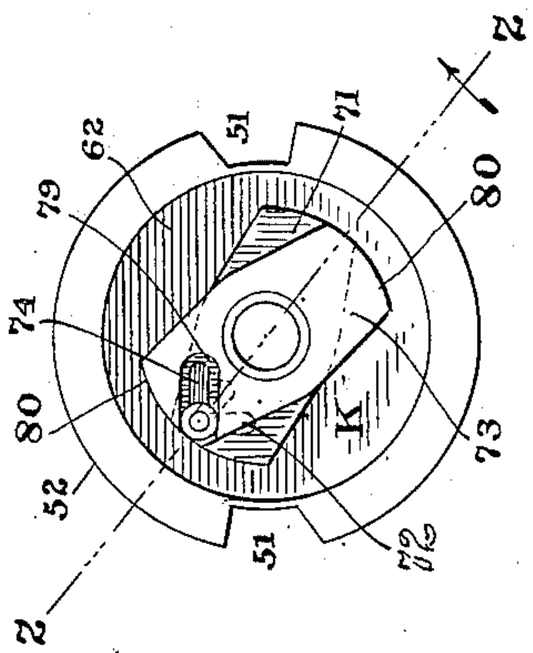
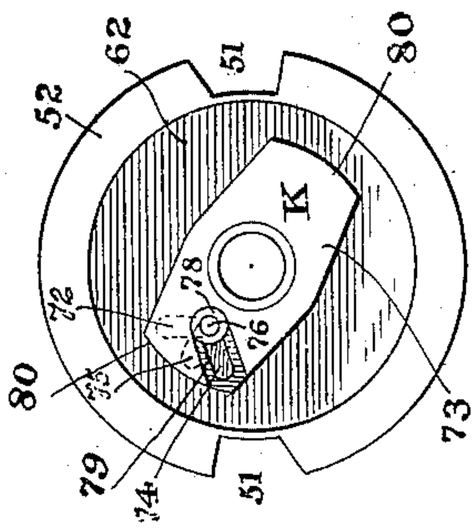


Fig. 7.



WITNESSES:

J. F. Leitch.

S. A. Atherton.

INVENTOR

Donald Noble

BY

A. M. Wooster

ATTORNEY

No. 656,852. Patented Aug. 28, 1900.

D. NOBLE.

OVERSEAMING SEWING MACHINE.

(Application filed Nov. 10, 1899.)

(No Model.) 6 Sheets—Sheet 5.

Fig. 12.

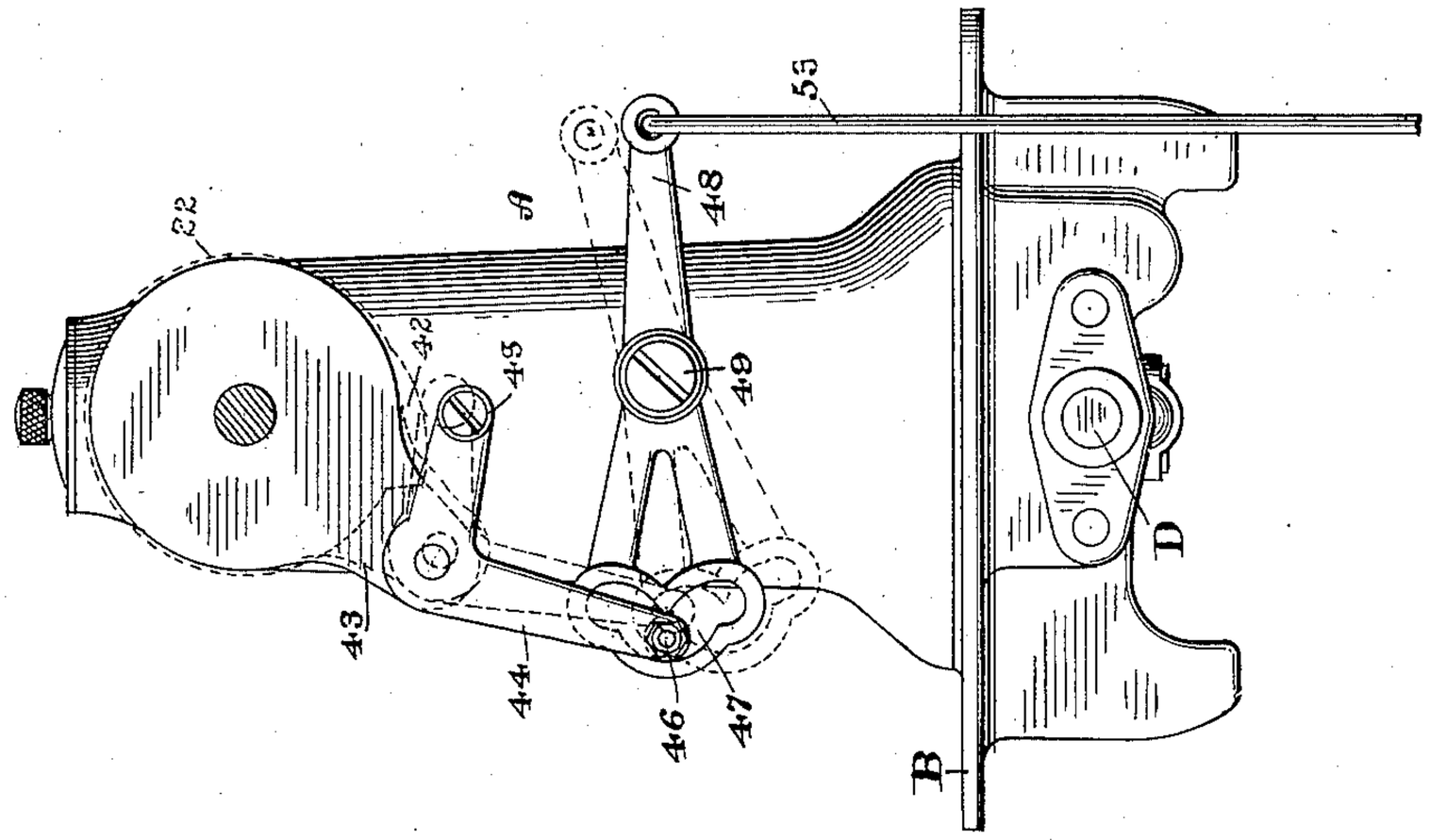
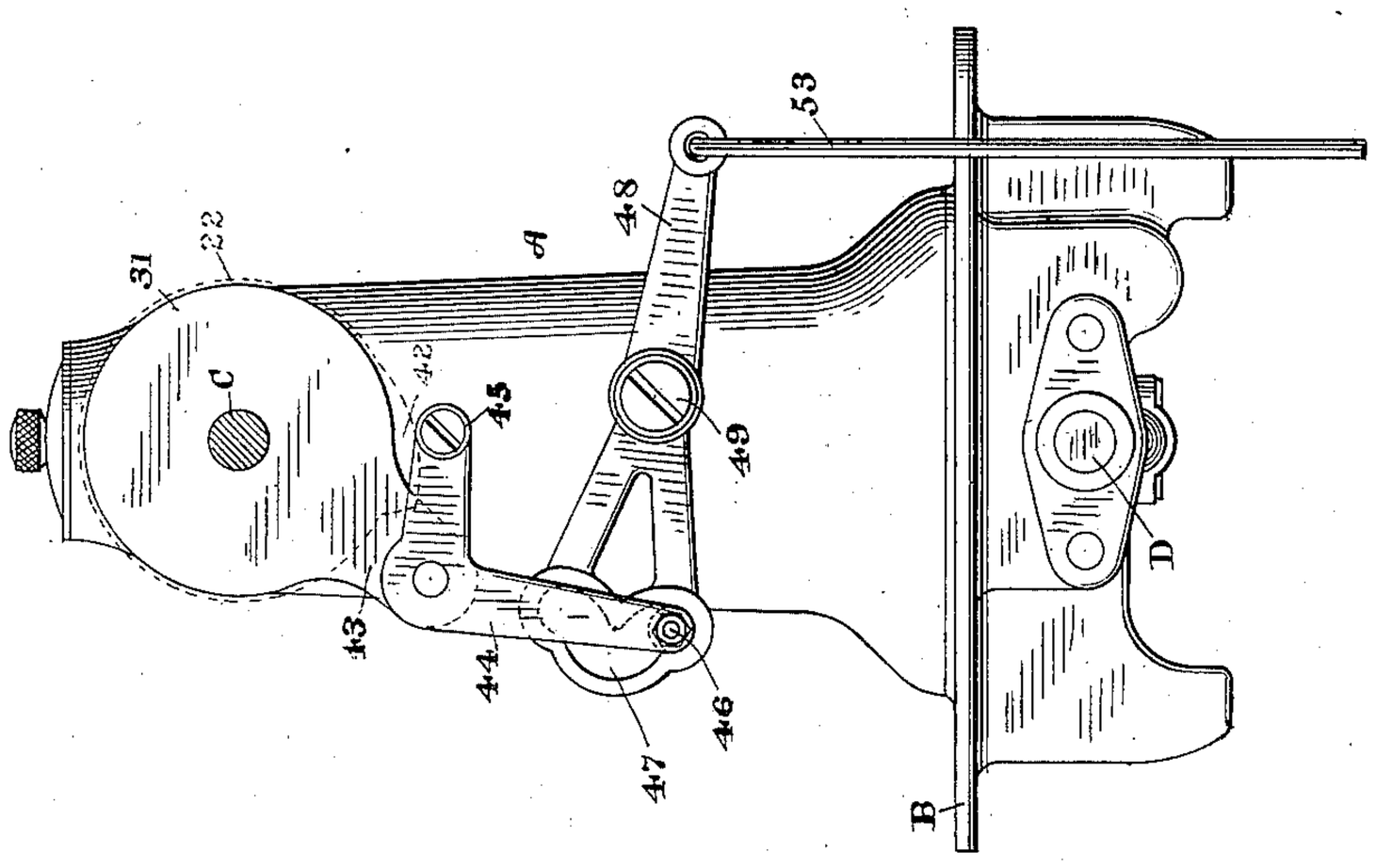


Fig. 11.



WITNESSES:

J. F. Finch.

S. H. Atherton.

INVENTOR

Donald Noble

BY

A. Wallbridge

ATTORNEY

No. 656,852. Patented Aug. 28, 1900.

D. NOBLE.

OVERSEAMING SEWING MACHINE.

(Application filed Nov. 10, 1899.)

(No Model.) 6 Sheets—Sheet 6.

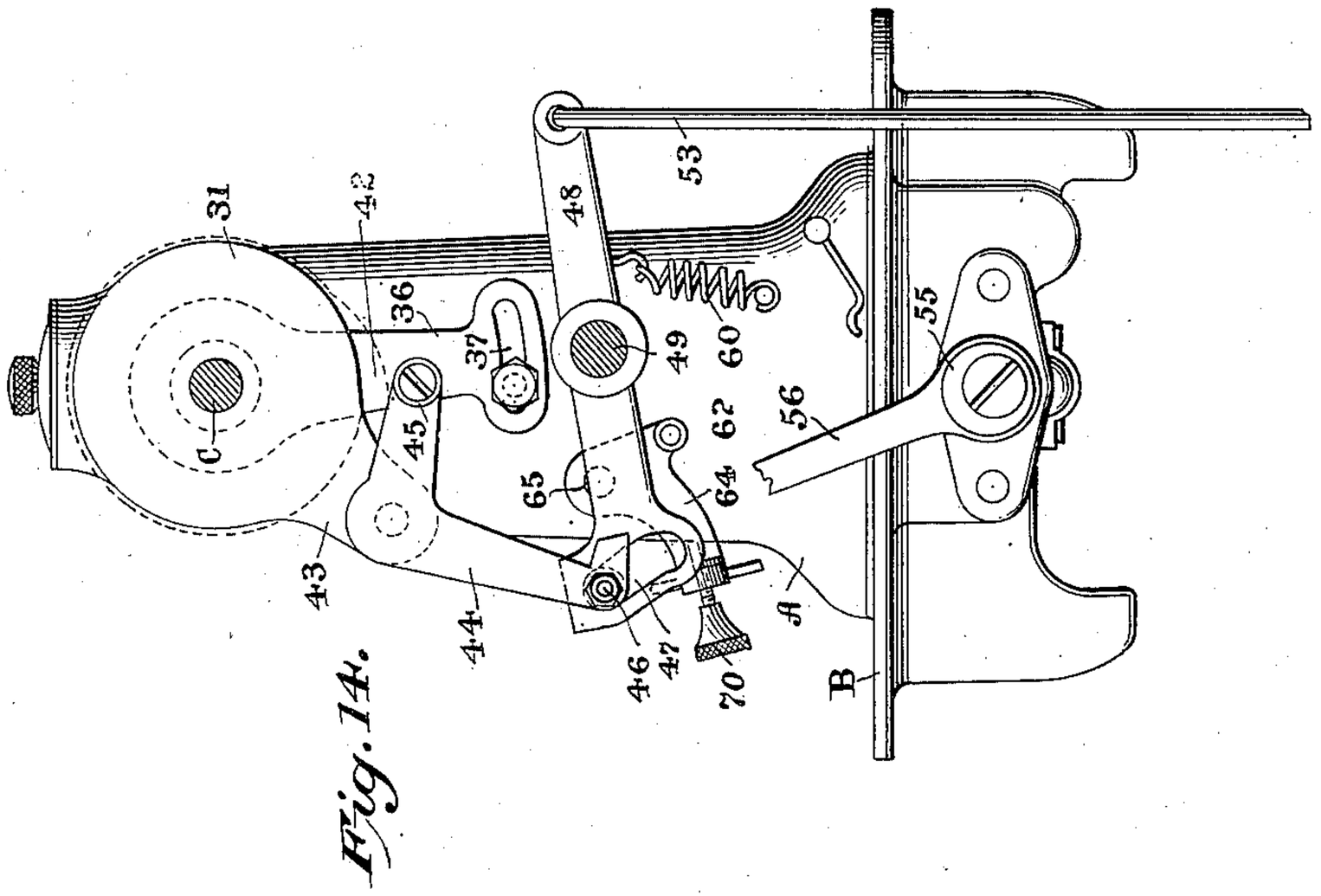


Fig. 14.

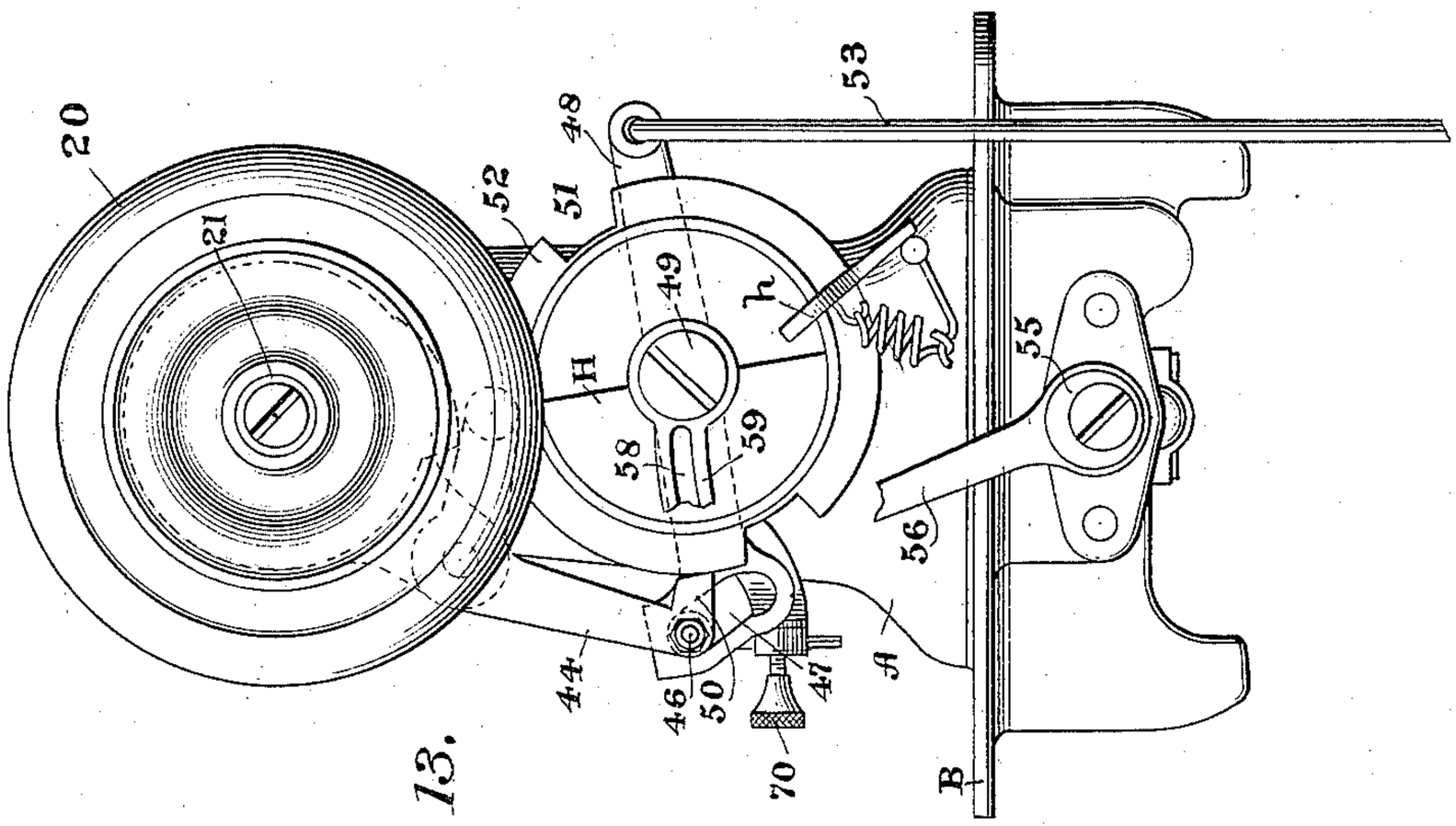


Fig. 13.

WITNESSES:

J. F. Finch.

S. W. Atherton.

INVENTOR

Donald Noble

BY

A. M. Wooster

ATTORNEY

UNITED STATES PATENT OFFICE.

DONALD NOBLE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

OVERSEAMING SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,852, dated August 28, 1900.

Application filed November 10, 1899. Serial No. 736,465. (No model.)

To all whom it may concern:

Be it known that I, DONALD NOBLE, a subject of the Queen of Great Britain, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Releasing and Stopping Mechanism, of which the following is a specification.

My invention relates to machines generally in which it is required to transmit power from a source of supply to operating mechanism and to stop and start the operating mechanism at the will of the operator; and with this end in view my invention consists in the details of construction hereinafter fully described and then specifically pointed out in the claims.

In view of the fact that my invention is especially adapted for use in connection with either regular or zigzag sewing machines I have illustrated its application to a sewing-machine and will describe its uses in connection therewith, this single application of the invention being deemed sufficient for the purposes of this specification.

The essential features of novelty are an automatic release of the operating mechanism after any predetermined number of stitches, automatic brake mechanism which stops the operating mechanism when the latter is released, and mechanism acting in connection with the stitch-regulator of a zigzag-sewing machine to put the feed out of action, so that any desired number of barring-stitches may be made before and after each stop. For example, suppose that the machine is adjusted to make twenty stitches between the stops. The stitches might be divided as follows: after starting four barring-stitches, then twelve regular stitches, then four barring-stitches, and then another stop. Any number of regular stitches may be provided for from eight to one hundred or more, and the number of barring-stitches before and after each stop may be regulated from four to any desired number.

In the accompanying drawings, which form a part of this specification, Figure 1 is a front elevation illustrating the application of my novel releasing and stopping mechanism to a Wheeler & Wilson sewing-machine; Fig. 2, an end elevation as seen from the right in Fig. 1, the parts being in the normal or released position; Fig. 3, a view similar to Fig. 2, the driving-pulley, counting-disk, friction-feed, &c., being removed; Fig. 4, a vertical longitudinal section on the line *x x* in Fig. 2; Fig. 5, a transverse section on the line *y y* in Fig. 1; Fig. 6, a perspective of the driving-pulley and the parts of the gripping and releasing mechanism detached; Fig. 7, an inner face view of the counting-disk, showing in elevation the expanding cam which determines the number of barring-stitches, the cam being in the collapsed position as when the smallest number of barring-stitches is desired; Fig. 8, a similar view showing the cam expanded as when a greater number of barring-stitches is desired; Fig. 9, a section of the counting-disk and expanding cam on the line *z z* in Fig. 8; Fig. 10, a detail sectional view corresponding substantially with Fig. 4, but showing the parts in the gripping position and also showing a modification in construction; Fig. 11, a view corresponding with Figs. 2 and 3, except that the counting-disk and link are dispensed with and the cam-slot in the operating-lever is so modified that but a single movement of the operating-lever is required to start the machine and to stop it when a single stitch has been formed, as in "flossing" or "fanning," the parts being in the stopped position; Fig. 12, a similar view, the parts being in the operating position; and Figs. 13 and 14 are views corresponding respectively with Figs. 2 and 3, showing the parts in the operating position—*i. e.*, a position of the parts while the upper shaft is being carried by the driving-pulley.

A denotes the arm of a sewing-machine; B, the bed-plate; C, the upper shaft; D, the lower shaft; E, the connecting-rods; F, feeding mechanism as a whole, and G stitch-forming mechanism as a whole.

It is not deemed necessary for the purposes of this specification to describe the stitch-forming mechanism of a sewing-machine in detail, for the reason that my novel releasing and stopping mechanism is not only applicable to other types of sewing-machines than the one illustrated, but is applicable to any

machine having intermittently-actuated operating mechanism.

20 denotes a driving pulley which is loose on shaft C, or in the present instance upon a sleeve 21, fixed to a clutch-disk 22, which is itself rigidly secured to the shaft. Power is applied to drive this pulley in any suitable manner, as by a belt. (Not shown.)

23 denotes a recess in the inner face of the driving-pulley, and 24 a friction-washer, which may be a leather ring and which projects from the inner periphery of the driving-pulley into the recess.

25 denotes a movable clutch-disk lying in recess 23 and on the inner side of the friction-washer, so that in practice the friction-washer carried by the driving-pulley, lies between the movable clutch-disk and clutch-disk 22, which is fixed to the shaft. The movable clutch-disk is rigidly secured to and is carried by bolts or rods 26, which pass through the friction-washer and through clutch-disk 22 and whose heads 27 project from the face of said disk. (See Fig. 6.)

28 denotes springs bearing against the under sides of heads 27 and against clutch-disk 22 and normally acting to draw clutch-disk 25 outward, so that friction-washer 24, carried by the driving-pulley, will be gripped between movable clutch-disk 25 and clutch-disk 22, and the shaft to which said disk is fixed will be carried by the driving-pulley, as shown in Fig. 10. In the present instance I have shown the springs 28 as seated in recesses 30 in clutch-disk 22.

29 denotes a brake-ring made of leather or other suitable material, which projects from the face of clutch-disk 22.

In use the movable clutch-disk is moved inward to release the friction-washer upon the driving-pulley by means of a brake-disk 31, the face of which is adapted to engage heads 27. This brake-disk is loose relatively to the shaft (in the present instance it is mounted on a fixed sleeve 32) and is adapted to oscillate thereon and at the same time to move laterally thereon. This movement of the brake-disk is effected by means of inclines 33 on the opposite face thereof, which are adapted to engage corresponding inclines 34 on a disk 35, also concentric with the shaft, which is fixed to the machine. In the present instance I have shown disk 35 as provided with an arm 36, having at its outer end a slot 37, through which a bolt or screw 38 passes to lock the part in place, the slot being provided in order that the fixed inclines may be adjusted to compensate for wear in use. If preferred, a loose ring 39 may be interposed between the brake-disk and heads 27. This ring, as shown in Fig. 10, may rest upon balls or rollers 40 in a race 41 between the ring and the brake-disk. In use when the brake-disk is turned slightly inclines 33 will ride up inclines 34, so that in addition to its axial movement the brake-disk will be moved inward against heads 27, forcing said heads and clutch-disk 25 inward away from the friction-washer, and thereby releasing the friction-washer from its engagement by clutch-disks 22 and 25 and disconnecting the shaft from the driving-pulley. It will be understood that the first action of the clutch-disk as it is moved inward is upon heads 27 to effect the release of the shaft from the driving mechanism. An instant later, however, the brake-disk comes in contact with brake-ring 29, which projects from the face of the clutch-disk 22 and stops the rotation of disk 22 and the shaft. The brake-disk is actuated to release the shaft and also to stop its rotation in the manner which I will now describe.

42 denotes a cam-incline extending outward from the periphery of clutch-disk 22, the function of which I shall presently explain.

43 denotes an arm extending from the periphery of the brake-disk, to which a brake-lever 44 is pivoted. This brake-lever is in shape a bell-crank lever, the pivotal point being at the angle thereof, one arm of said lever carrying a roller 45, which is adapted to engage cam-incline 42, and the other arm carrying a roller 46, which is adapted to engage a cam-slot 47 in an operating-lever 48, fulcrumed on a stud 49, the arm carrying roller 46 being also provided with a dog 50, adapted to engage a recess 51 in the periphery of a counting-disk 52, which is mounted on stud 49, as will presently be fully explained.

Operating-lever 48 may be actuated by hand or by a treadle, as preferred. When my novel releasing and stopping mechanism is applied to a sewing-machine, it will be found convenient to actuate the operating-lever by means of a rod 53, extending to a rocking treadle. (Not shown.) The counting-disk is not used when the operating mechanism is stopped after each stitch, as in flossing or fanning; but when it is required that a number of stitches be made between each stop the counting-disk is an essential element. In practice the counting-disk is actuated by means of a friction-feed, which as a whole I have designated by H, and the stop-pawl operating in connection therewith by *h*. This friction-feed, which specifically is not of the essence of my invention, as any preferred style of friction-feed may be used, lies in a recess 54 in the outer face of the counting-disk and is itself actuated by means of an eccentric or crank 55 on the lower shaft D, from which a rod 56 extends to a block 57, adjustably secured in an arc-shaped groove 58 in an arm 59, which is made integral with or is rigidly secured to a part of the friction-feed, this part of the friction-feed being free to oscillate on a sleeve 61, by which the counting-disk is carried and which itself is free to rotate on stud 49. The counting-disk may be provided with one or more recesses 51, depending, of course, upon the size of the disk and the special work to which the machine

is to be applied. In the present instance I have shown the counting-disk as provided with two recesses, which provide for two stops during each rotation of the disk, the stop being effected when dog 50 drops into one of the recesses and the parts assume the position in which they are shown in Figs. 2 and 3.

60 denotes a spring the normal action of which is to raise the end of the operating-lever in which cam-slot 47 is formed. This raised position of the operating-lever is the stopping position and is clearly illustrated in Figs. 2 and 3. Roller 46 is at the lower end of the cam-slot which swings that arm of the brake-lever inward, so that dog 50 will enter the recess in the counting-disk. In this position of the parts friction-washer 24, carried by the driving-pulley, is released—*i. e.*, not gripped by the clutch-disks 22 and 25—so that the shaft will remain stationary. To start the machine, it is simply necessary to throw the operating-lever from the position shown in Figs. 2 and 3 to the position shown in Figs. 13 and 14, the effect of which is to place roller 46 at the upper end of the cam-slot and to swing the brake-lever outward, withdrawing dog 50 from the recess in the counting-disk, so that the latter is now free to be actuated by the friction-feed. This I term the "operating position." The effect of the oscillation of the brake-lever, just above described, is to oscillate brake-disk 31 and through the action of springs 28 to cause the inclines 33 thereon to ride down fixed inclines 34, so that the brake-disk, as seen in Figs. 4 and 10, will move slightly toward the left heads 27 of bolts 26, following the brake-disk and causing movable clutch-disk 25 to clamp the friction-washer on the driving-pulley between itself and clutch-disk 22 on the shaft, so that the latter will be carried by the driving-pulley. While the machine is operating, dog 50 will rest upon the periphery of the counting-disk, the operating-lever remaining in the position shown in Figs. 13 and 14, with roller 46 at the upper end of the cam-slot, roller 45 now being out of the path of the cam-incline. The instant, however, that the rotation or partial rotation, as may be, of the counting-disk is completed and a recess 51 is brought into alinement with dog 50, spring 60 will act to throw the operating-lever from the position shown in Figs. 13 and 14 back to the position shown in Figs. 2 and 3. This movement causes roller 46 to travel down the cam-slot, swings the brake-lever inward again, and causes dog 50 to enter the recess 51 in the counting-disk. At the instant the counting-disk has reached a position in which dog 50 is in alinement with a recess 51 cam-incline 42 on clutch-disk 22 will have reached the position indicated by dotted lines in Fig. 3—*i. e.*, a position in which it will be engaged by roller 45 on the brake-lever when the last-above-described oscillation of said lever takes place. The effect of this oscillation of the brake-lever is to release the driving-pulley and to stop the rotation of clutch-disk 22 and the shaft, in the manner I will now describe. It should be borne in mind that the brake-lever is, in fact, a bell-crank lever, that arm 43, extending from brake-disk 31, is pivoted to the angle of said lever, and that the arm of said lever which carries roller 45 is in the present position of the parts locked in place through the engagement of said roller with cam-incline 42 on clutch-disk 22. It follows, therefore, that oscillation of the operating-lever will impart a toggle movement to the brake-lever and will through the connection of arm 43 with the angle thereof oscillate the brake-disk and cause inclines 33 to ride up the fixed inclines, the effect of which is to move the brake-disk slightly toward the right, as seen in Figs. 4 and 10, against the power of springs 28, so that clutch-disk 25, carried by bolts 26, will be moved away from the friction-washer on the driving-pulley and said friction-washer will be released from its engagement by said clutch-disk and clutch-disk 22, leaving the shaft disconnected from the driving-pulley. The instant this release of the shaft is effected the rotation of the shaft will be stopped through the engagement of the brake-disk with brake-ring 29, which projects from the face of clutch-disk 22, the action of the inclines being to press the brake-disk against this brake-ring with a force proportional to the momentum of clutch-disk 22. This utilization of the momentum of clutch-disk 22 to stop its own rotation when it is in a certain definite position will be readily understood from the fact that cam-incline 42, by which the brake-disk is actuated through the brake-lever, is a fixed part of said clutch-disk 22. The momentum of said clutch-disk and cam-incline is communicated to the brake-lever through the engagement of roller 45 on said lever with the cam-incline, and the brake-lever in turn oscillates the brake-disk and the inclines move said disk laterally with more or less force against the brake-ring on clutch-disk 22, carried by the shaft. The machine is started again by another oscillation of the operating-lever—*i. e.*, throwing said lever from the position shown in Figs. 2 and 3 back to the position shown in Figs. 13 and 14. This movement throws dog 50 out of recess 51, releasing the counting-disk and leaving the friction-feed free to act, and also imparts another toggle movement to the brake-lever, owing to the fact that roller 45 is still in engagement with the cam-incline on disk 22, as clearly indicated by dotted lines in Fig. 14. The effect of this last-described oscillation of the brake-lever is to oscillate the brake-disk and permit springs 28, which press the heads 27 of bolts 26 against the brake-disk, to cause the inclines on the brake-disk to ride down the fixed inclines, moving said brake-disk laterally toward the left and again causing clutch-disk 25, carried by said bolts, to clamp the friction-washer upon the driving-pulley between said clutch-disk and clutch-

disk 22, so that the movement of the driving-pulley will be communicated to clutch-disk 22 and the shaft. The cam-incline will now pass out of engagement with roller 45, but the parts will remain in the position shown in Figs. 13 and 14, owing to the engagement of dog 50 with the periphery of the counting-disk until recess 51, is again in alinement with the dog and the cam-incline is in position to engage roller 45 on the brake-lever the instant the latter is oscillated through the action of spring 60 and the operating-lever. This last oscillation of the brake-lever oscillates the brake-disk, the inclines again move it laterally toward the right, and by engagement with the heads 27 of bolts 26 move clutch-disk 25 toward the right and release the friction-washer upon the driving-pulley, the rotation of clutch-disk 22 and the shaft being stopped, as before, at the required position and without shock to the machine by the engagement of the brake-disk with the brake-ring.

It will of course be understood that the time which elapses between two stops is the time that it takes for the counting-disk to turn far enough so that dog 50 will engage the next recess, if there are more than one, or make an entire revolution if there is but one recess. It follows, therefore, that if a relatively-small number of stitches is required between stops the counting-disk must be moved relatively farther at each actuation, and if a relatively-large number of stitches is required between the stops the counting-disk must receive relatively-less forward movement at each actuation of the machine. The adjustment to accomplish this result is effected by moving block 57, to which rod 56 is pivoted, inward or outward in arc-shaped groove 58. To produce a relatively-small number of stitches between stops, the block is moved inward in said slot, so as to produce greater movement of the counting-disk at each actuation, and if a relatively-large number of stitches is required between stops the block is moved outward in the groove, so that the counting-disk will receive less forward movement at each actuation.

It will be obvious that the releasing and stopping mechanism which I have just described is admirably adapted for use in connection with zigzag-sewing machines and that in using this class of machines it is frequently desirable to make a certain number of barring-stitches between each group of regular stitches, as in various uses to which the machine is applied in the manufacture of clothing, and especially in making underwear. In order to provide for the making of any desired number of barring-stitches between each group of regular stitches, I provide an expanding barring-cam K, which lies in a recess 62 in the inner face of the counting-disk, the periphery of said cam being engaged by a roller 63, carried by the stitch-regulator 64, to place the feed of the machine out of action when barring-stitches are to be made, (see Figs. 3 and 7, in connection with Fig. 1.) This stitch-regulator is rigidly secured to a rock-shaft 65, from which an arm 66 extends, which is itself connected by means of a rod 67 with feed connection 68. 69 is a spring one end of which is fixed to the arm of the machine and the other to the feed connection, the action of which is to raise the feed connection and through connecting-rod 67 and arm 66 to oscillate the rock-shaft and swing the stitch-regulator toward the arm of the machine, at the same time retaining roller 63 in a position to engage the high portion of the periphery of the expanding cam. The inward movement of the stitch-regulator is determined by a set-screw 70, the inner end of which is adapted to engage the arm of the machine, the length of the stitches made being determined by adjustment in or out of this set-screw.

The construction of the expanding cam will be readily understood from Figs. 7, 8, and 9. This cam consists, essentially, of an inner plate 71, having an oblique slot 72, and an outer plate 73, having an oblique slot 74, said slots extending in opposite directions, so as to cross each other. The plates 71 and 73 are both free to oscillate on sleeve 61. 75 denotes a radial slot in the counting-disk and 76 a screw-bolt whose head 77 lies in recess 54 in the counting-disk and which extends through radial slot 75 and through oblique slots 72 and 74 at their point of intersection and engages a nut 78, which is adapted to slide in a recess 79 in the outer face of plate 73. This expanding cam is inoperative during the making of regular stitches—that is to say, roller 63 upon the stitch-regulator does not come in contact therewith; but said cam is so adjusted that roller 63 will come in contact therewith and will ride up on the operative or high portion of the periphery thereof, as at 80, at the instant the predetermined number of regular stitches has been made. The effect of this engagement of roller 63 with the high portion 80 of the expanding cam is to oscillate the rock-shaft against the power of spring 69 and through said rock-shaft and the feed connection to render the feed inoperative until roller 63 shall have passed off from the high portion of the periphery of the cam, at which instant spring 69 will again place the feed in operation. When plates 71 and 73 are close together, as in Fig. 7, the smallest number of barring-stitches is made. When it is desired to increase the number of barring-stitches, screw 76 is loosened in nut 78 and said screw and nut are then moved outward in the radial slot and in recess 79, respectively, the effect of which is to throw the outer ends of plates 71 and 73, which comprise the operative portions 80 of the cam, outward past each other, thereby enlarging the operative portion 80 of the cam, as will be clearly understood from Fig. 8. It is of course obvious that if the

counting-disk were provided with but one recess 51 the plates 71 and 73 would not be made double-ended—that is to say, the expanding cam would have one high portion only instead of two, as in the drawings. Should the necessities of construction make it desirable that the counting-disk be provided with three recesses 51, the expanding cam instead of having two high portions, as in the drawings, would be provided with three high portions to correspond with the number of recesses in the periphery of the counting-disk to be engaged by dog 50.

Should it be desired to have the operating mechanism stop after each stitch, as in flossing or fanning, the counting-disk and the friction-feed would be removed and the operating mechanism would be stopped and started, in the manner already described, by means of the operating-lever, brake-lever, clutch-disks, &c., it being of course understood that an upward-and-downward movement of the operating-lever would be required in order to start the machine and to stop it again after each stitch. For convenience in operation where this form of work only is to be performed by the machine I preferably use the form of operating-lever illustrated in Figs. 11 and 12. This form differs from the other form only in that cam-slot 47 consists of a double incline instead of a single incline. In the form illustrated in Figs. 11 and 12 but a single movement of the operating-lever is required to start the machine and to stop it again after each stitch. Roller 46 travels from one end of the cam-slot to the other at each actuation of the operating-lever, the stitch-forming mechanism being stopped when the roller is at either end of the slot and released only when said roller is in the mid-position, as in Fig. 12.

The operation of the machine as a whole is, briefly, as follows: Suppose that it is required to make a certain definite number of stitches between stops and that the counting-disk upon the machine is provided with two notches 51. Block 57 would first be so adjusted in the arc-shaped groove as to produce a half-rotation of the counting-disk by means of a number of actuations corresponding to the number of stitches it is required to make between stops. In practice the upper side of arm 59, in which block 57 slides, is provided with a scale for convenience in making this adjustment. If barring-stitches are not required, the expanding cam may be removed, or it may be placed out of action without removal by simply removing screw-bolt 76, leaving plates 71 and 73 loose on the sleeve. When the operator has the work in place and everything is ready, the machine is started by oscillation of the operating-lever. The automatic action of the releasing mechanism and the brake to stop the machine when the predetermined number of stitches has been formed has already been fully explained. The machine is again started by oscillation of the operating-lever, as before. When my novel releasing and stopping mechanism is applied to a zigzag-sewing machine and barring-stitches are desired, it is of course obvious that they will be required at each end of a series of ordinary stitches. The expanding cam is therefore so adjusted relatively to the counting-disk that at each stop roller 63 upon the feed-regulator will be in engagement with the center of the operative or high portion 80 of the expanding cam. If a small number of barring-stitches is desired, the expanding cam remains in the unexpanded position, as in Fig. 7. If more barring-stitches are required, the cam is expanded, as in Fig. 8. For example, suppose that twelve ordinary stitches were required with four barring-stitches at each end of the series of ordinary stitches, this would require an adjustment of the friction-feed, by which the counting-disk is actuated, to produce twenty stitches between stops and an adjustment of the expanding cam to produce eight barring-stitches. The machine would start with roller 63 in engagement with the center of the operative or high portion of the expanding cam. The first four stitches made therefore after starting would be barring-stitches. After the fourth stitch roller 63 would pass off from the operative portion of the expanding cam and spring 69 would again put the feed in operation. After twelve ordinary stitches had been made the operative portion of the expanding cam would again engage roller 63, which would ride up said portion of the cam against the power of spring 69 and put the feed out of operation again. The next four stitches would be barring-stitches, after which the machine would automatically stop. After starting again the first four stitches would be barring-stitches, followed by twelve ordinary stitches, followed by four barring-stitches, and stop, as before.

When my novel mechanism is applied to a flossing or fanning machine, in which use it is required that the machine stop after each stitch, the counting-disk and friction-feed are of course dispensed with; otherwise the operation is the same as before. When the operating-lever is oscillated, it oscillates the brake-lever in the same manner as before and moves roller 45 out of engagement with cam-incline 42 on clutch-disk 22, and then immediately brings said roller back into engagement with the cam-incline again; but in the meantime, through the action of the brake-disk, springs 28, the clutch-disks, &c., the shaft will have been engaged and have made a revolution, whereby a stitch was formed, and have been again released and stopped and will be ready to be started again by another oscillation of the operating-lever, hundreds of stitches being made in less time than the operation can be described. In the form illustrated in Figs. 2, 3, 13, and 14 the operation of starting and stopping requires a movement of the operating-lever in each di-

rection, owing to the fact that the cam-slot is formed with a single incline; but in the form illustrated in Figs. 11 and 12 the cam-slot is formed with a double incline, so that a movement of the operating-lever in either direction will start and stop the machine—*i. e.*, cause the clutch-disks to grip the friction-washer on the driving-pulley, and then release it, and the brake-disk and brake-ring will act to stop the rotation of the shaft.

Having thus described my invention, I claim—

1. In a device of the character described, the combination with stitch forming and feeding mechanism, of a shaft for operating said mechanisms, clutch and brake mechanism including a disk 22 fixed to said shaft and having on its periphery a cam-incline, an oscillatory laterally-movable brake-disk, an operating-lever having a cam-slot, a brake-lever to which the brake-disk is connected one arm of said brake-lever being provided with a roller 45 adapted to engage the cam-incline and the other with a roller 46 engaging the cam-slot, the arm carrying the roller 46 being also provided with a dog 50, and a counting mechanism including a disk having in its periphery a recess adapted to receive dog 50 when roller 46 is in the stopping position in the cam-slot.

2. In a device of the character described, the combination with stitch forming and feeding mechanism, of a shaft for operating said mechanisms, clutch mechanism including a disk 22 fixed to said shaft and having on its periphery a cam-incline, an oscillatory laterally-movable brake-disk, an operating-lever having a cam-slot, a brake-lever to which the brake-disk is connected one arm of said brake-lever being adapted to engage the cam-incline and the other to engage the cam-slot and having also a dog 50 and a counting mechanism including a disk having in its periphery a recess which receives dog 50 when roller 45 is in engagement with the cam-incline and the operating-lever is oscillated to stop the machine.

3. In a device of the character described, the combination with stitch forming and feeding mechanism, of shaft C, a driving-pulley loose thereon, an oscillatory laterally-movable brake-disk, clutch and brake mechanism intermediate said shaft and the driving-pulley, the brake-lever having dog 50, the operating-lever, shaft D carrying an eccentric 55, means for actuating shaft D, a counting-disk having a recess in its periphery adapted to receive dog 50 and an adjustable friction-feed intermediate the eccentric and the counting-disk whereby the latter may be rotated to place the recess in alinement with the dog by any required number of actuations.

4. In a device of the character described, the combination with stitch forming and feeding mechanism and operating connections therefor, of shaft D having eccentric 55, means for actuating shaft D, brake and clutch mechanism, the operating-lever having a cam-slot and the brake-lever coacting with the brake and clutch mechanism and engaging the cam-slot and having a dog 50, the counting-disk having a recess in its periphery adapted to receive the dog, a friction-feed whereby the counting-disk is actuated and which is provided with an arm having an arc-shaped groove, a block adjustable in said groove and a rod pivoted to said block and actuated by said eccentric so that by adjustment of said block in the groove the counting-disk may be rotated to place the recess in alinement with the dog by any required number of actuations of the friction-feed.

5. In a device of the character described the combination with stitch forming and feeding mechanism, of a shaft for operating said mechanisms, a disk 22 fixed to said shaft and having on its periphery a cam-incline, an oscillatory laterally-movable brake-disk, clutch and brake mechanism, a brake-lever to which the brake-disk is connected one arm of said brake-lever carrying a roller 45 adapted to engage the cam-incline and the other arm carrying a roller 46 and having a dog 50, an operating-lever having a cam-slot engaged by roller 46, said cam-slot having operating and stopping positions for said roller, a counting mechanism including a disk whose periphery is engaged by dog 50 when the parts are in the operating position and which is provided with a recess adapted to receive the dog when the parts are in the stopping position and a spring 60 normally acting to hold the operating-lever in the stopping position and the dog in engagement with the recess.

6. In a device of the character described the combination with stitch forming and feeding mechanism, of a shaft for operating said mechanisms, a disk 22 fixed to said shaft and having on its periphery a cam-incline, an oscillatory laterally-movable brake-disk and clutch and brake mechanism, an operating-lever having a cam-slot, a brake-lever to which the brake-disk is connected, one arm of said brake-lever being adapted to engage the cam-incline and the other arm engaging the cam-slot and having a dog 50, a spring 60 normally acting to hold the operating-lever in the stopping position, a rotating counting-disk normally acting to retain the operating-lever and the brake-lever in the operating position and having a recess which receives the dog in the stopping position and mechanism for rotating the counting-disk by any required number of actuations, whereby the number of rotations of disk 22 between stops is determined.

7. In a device of the character described the combination with stitch forming and feeding mechanism, of shaft C, shaft D driven therefrom, a disk 22 on shaft C having on its periphery a cam-incline, a loose driving-pulley, an oscillatory laterally-movable brake-disk and clutch and brake mechanism intermediate the brake-disk and the driving-pul-

ley, an operating-lever having a cam-slot, a brake-lever to which the brake-disk is connected one arm of said brake-lever being adapted to engage the cam-incline and the other arm engaging the cam-slot and having a dog 50, a spring 60 normally acting to hold the operating-lever in the stopping position, a counting-disk normally acting to retain the operating-lever and the brake-lever in the operating position, and having a recess which receives the dog in the stopping position, a friction-feed actuated from shaft D and operatively connected to the counting-disk and means for adjusting said friction-feed so that the recess will be placed in alinement with the dog and spring 60 will actuate the operating-lever to stop said shafts after a desired number of rotations.

8. In a device of the character described the combination with shaft C, stitch-forming mechanism driven therefrom, shaft D, feeding mechanism driven therefrom, and an independent driving-pulley, a disk 22 fixed to shaft C and having on its periphery a cam-incline, an oscillatory laterally-movable brake-disk and clutch and brake mechanism intermediate the brake-disk and the driving-pulley, of an operating-lever having a cam-slot, a brake-lever to which the brake-disk is connected, one arm of said brake-lever being adapted to engage the cam-incline and the other arm engaging the cam-slot and having a dog 50, a spring 60 normally acting to hold the operating-lever in the stopping position, a rotating counting-disk normally acting to retain the operating-lever and the brake-lever in the operating position and having a recess which receives the dog in the stopping position, mechanism intermediate shaft D and the counting-disk for rotating said disk to place the recess in alinement with the dog by any required number of actuations, an expanding barring-cam K rotating with the counting-disk and mechanism intermediate said barring-cam and the feeding mechanism for throwing the feeding mechanism out of action during a required number of actuations.

9. In a device of the character described the combination with a driving-pulley, shafts C and D, stitch forming and feeding mechanism respectively actuated therefrom, and clutch and brake mechanism intermediate shaft C and the driving-pulley, of an oscillating operating-lever, connecting mechanism intermediate the operating-lever and the clutch and brake mechanism, counting-disk 52 whereby the number of stitches between stops is determined, an expanding barring-cam K and means for actuating said disk and cam, whereby the feeding mechanism may be suspended during a required number of actuations of shaft D, substantially as and for the purpose set forth.

10. In a device of the character described the combination with a driving-pulley, shaft C, stitch forming and feeding mechanism and clutch and brake mechanism intermediate said shaft and the driving-pulley, of an oscillating operating-lever, connecting mechanism intermediate the operating-lever and the clutch and brake mechanism, and a counting mechanism including a disk 52 whereby the number of stitches between stops is determined, substantially as shown, for the purpose specified.

11. The combination with stitch forming and feeding mechanism, of the expanding barring-cam K consisting of inner and outer oscillatory plates having oblique slots which cross each other, the outer plate having a recess 79 surrounding the slot, a nut in said recess, a screw-bolt which passes through the slots and engages the nut, means for actuating said cam and means operated by said cam for placing the feeding mechanism out of operation, substantially as shown, for the purpose specified.

12. In a device of the character described the combination with stitch forming and feeding mechanism, of the counting-disk 52 which regulates the number of stitches between stops and which is provided with a radial slot, the expanding barring-cam K consisting of inner and outer oscillatory plates having radial slots which cross each other, the outer plate having a recess 79 surrounding the slot, a nut in said recess and a screw-bolt which passes through the slots in the counting-disk and the plates and engages the nut, means for actuating said cam and means operated by said cam for placing the feeding mechanism out of operation, substantially as shown, for the purpose specified.

13. In a device of the character described the combination with counting-disk 52 which regulates the number of stitches between stops, barring-cam K which determines the number of barring-stitches and means for actuating said disk and cam, of stitch forming and feeding mechanism, a driving-pulley, an operating-lever and mechanism whereby the machine is stopped after the desired number of stitches have been made.

14. In a device of the character described the combination with a driving-pulley, stitch forming and feeding mechanism and a stitch-regulator, of counting-disk 52, for the purpose set forth, barring-cam K which acts in connection with the stitch-regulator to determine the number of barring-stitches, means for actuating said disk and cam, an operating-lever and mechanism whereby the machine is stopped after a required number of barring and regular stitches have been made.

15. In a device of the character described the combination with a driving-pulley, stitch forming and feeding mechanism and a stitch-regulator having a roller 63, of counting-disk 52, for the purpose set forth, barring-cam K which acts in connection with the stitch-regulator to determine the number of barring-stitches, means for actuating said disk and cam, an operating-lever and mechanism inter-

mediate the driving-pulley and the operating-lever whereby the machine is stopped after a required number of stitches have been made, said barring-cam being so adjusted relatively to the counting-disk that at each stop roller 63 will be in engagement with the center of the operative portion of said cam so that half of the barring-stitches will be made immediately after starting and before said roller passes off from the cam and the other half will be made after said roller again engages the cam and immediately before stopping.

16. In a device of the character described the combination with a driving-pulley, stitch forming and feeding mechanism and a stitch-regulator having a roller 63, of counting-disk 52, for the purpose set forth, barring-cam K which when engaged by roller 63 places the feeding mechanism out of action, means for actuating said disk and cam, an operating-lever and clutch, brake and connecting mechanism intermediate the driving-pulley and the operating-lever, substantially as and for the purpose set forth.

17. In a device of the character described the combination with a driving-pulley, stitch forming and feeding mechanism and a stitch-regulator, of counting-disk 52, barring-cam K having an operative portion adapted to be engaged by the stitch-regulator to place the feeding mechanism out of action, means for actuating said disk and cam, an operating-lever, and clutch, brake and connecting mechanism intermediate the driving-pulley and the operating-lever, substantially as and for the purpose set forth.

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

DONALD NOBLE.

Witnesses:
A. M. WOOSTER,
CLARA D. MACKIE.