

UNITED STATES PATENT OFFICE.

JOHN COTTER PELTON, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
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BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 652,219, dated June 19, 1900.

Application filed August 19, 1899. Serial No. 727,760. (No model.)

To all whom it may concern:

Be it known that I, JOHN COTTER PELTON, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Building Construction, of which the following is a full, clear, and exact description.

My invention relates to improvements in building construction, and particularly to the construction of a floor that shall possess unusual firmness and strength, while at the same time being unusually light in consequence of the economical employment and distribution of the several parts thereof. In addition to the above features the floor possesses the advantage of being fireproof.

My object, therefore, is to provide a flooring for buildings that may be simply and rapidly constructed and that shall combine the above advantages.

In the drawings, Figure 1 is a sectional view of a portion of flooring, said section being taken on a line parallel with the iron beams commonly employed. Fig. 2 is a side elevation of one of the details of construction, partly in section. Fig. 3 is a side elevation of another detail. Fig. 4 is a side elevation of a detached strengthening-core of what I shall hereinafter term a "lintel-block." Fig. 5 is a sectional modification. Fig. 6 is a section of a portion of a lintel and strengthening-core.

A is a floor block or tile. B is an internal metallic strengthening-core in the form of a perforated sheet of metal, the opposite edges of which may, if desired, be upset or swelled or wrapped around a rod B', by which said edges may be anchored. In constructing this floor-block any suitable material which can be molded—for example, concrete—may be employed to envelop the perforated strengthening-strip B, which material when once set is anchored through and through said strip, thus making the addition to the swelled edges merely an additional means of security. It is because the core B is captured by the material of the floor-block A at so many points that in many instances said core may comprise merely a comparatively-thin sheet of metal. While it is preferable

to have the perforated sheet-metal core B flat, or substantially so, the same may, if desired, be concaved. These blocks A in my preferred construction have their ends downwardly and inwardly inclined and have a flat, even, and comparatively-smooth bearing-surface to take up uniformly against the supporting member, termed the "lintel-block," which will now be referred to. The lintel-block F is shown in detail in Fig. 2, in which its position is illustrated with reference to the iron supporting-beams such as I prefer to employ.

D D are iron beams, commonly termed "I-beams," which derive their support in the usual manner. Between these beams D D the lintel is placed, and as many of them may be employed as may be determined is necessary. The lintel-block comprises a central strengthening-core E of suitable material, preferably metal, in which core are arranged rows of "obliquely-faced" perforations, by which I mean rows of perforations which are inclined in opposite directions away from the center of the arch, the pitch of which gradually decrease toward opposite ends of the core E, which may be readily understood by referring to Fig. 4. Around this core is formed an envelop of concrete or other suitable material, which preferably entirely covers the core and passes through the perforations therein, so as to form a secure anchorage for said core at each perforation, as shown in Fig. 6, which view merely illustrates a portion of a lintel F, said section being taken upon a line to indicate a perforation in said core through which the enveloping material passes. The finished lintel-block is of a shape which in general may be best seen by reference to Fig. 1, in which it will be observed that the lower portion thereof is the thickest and preferably of an angular outline. The sides of the lintel-block converge toward its upper edge at an angle corresponding as nearly as possible to the ends of the floor-blocks A which are to be supported thereby. If desired, abrupt shoulders F' may be formed on the outer surface of the lintel F at a point adjacent to the lower abutting surface of the floor-blocks, which arrangement will be found very desirable in fireproof construction. It is preferable that the web or core E, by which the

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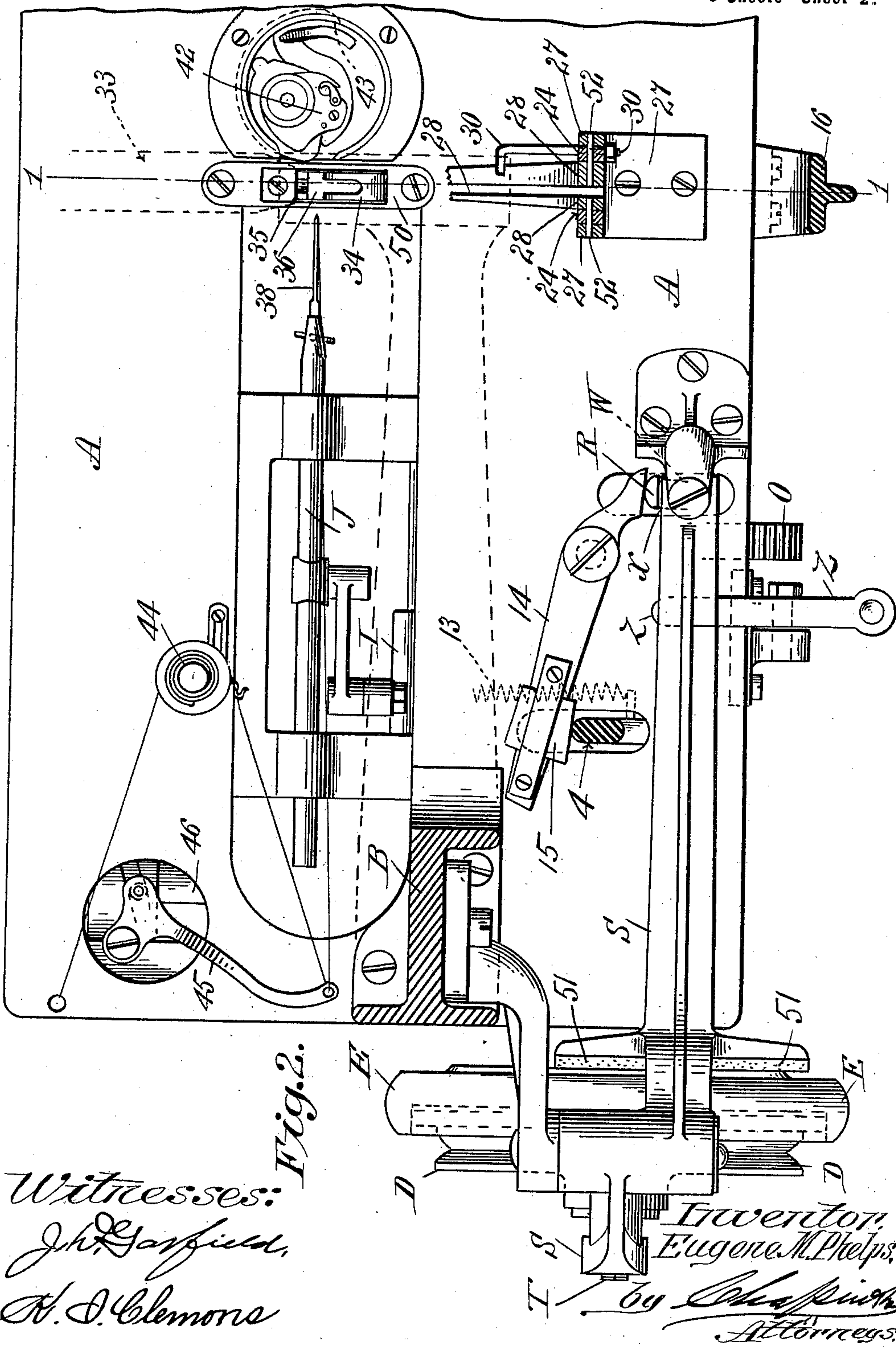
Patented June 19, 1900.

E. M. PHELPS.
BUTTON SEWING MACHINE.

(Application filed Aug. 5, 1898.)

(No Model.)

5 Sheets—Sheet 2.



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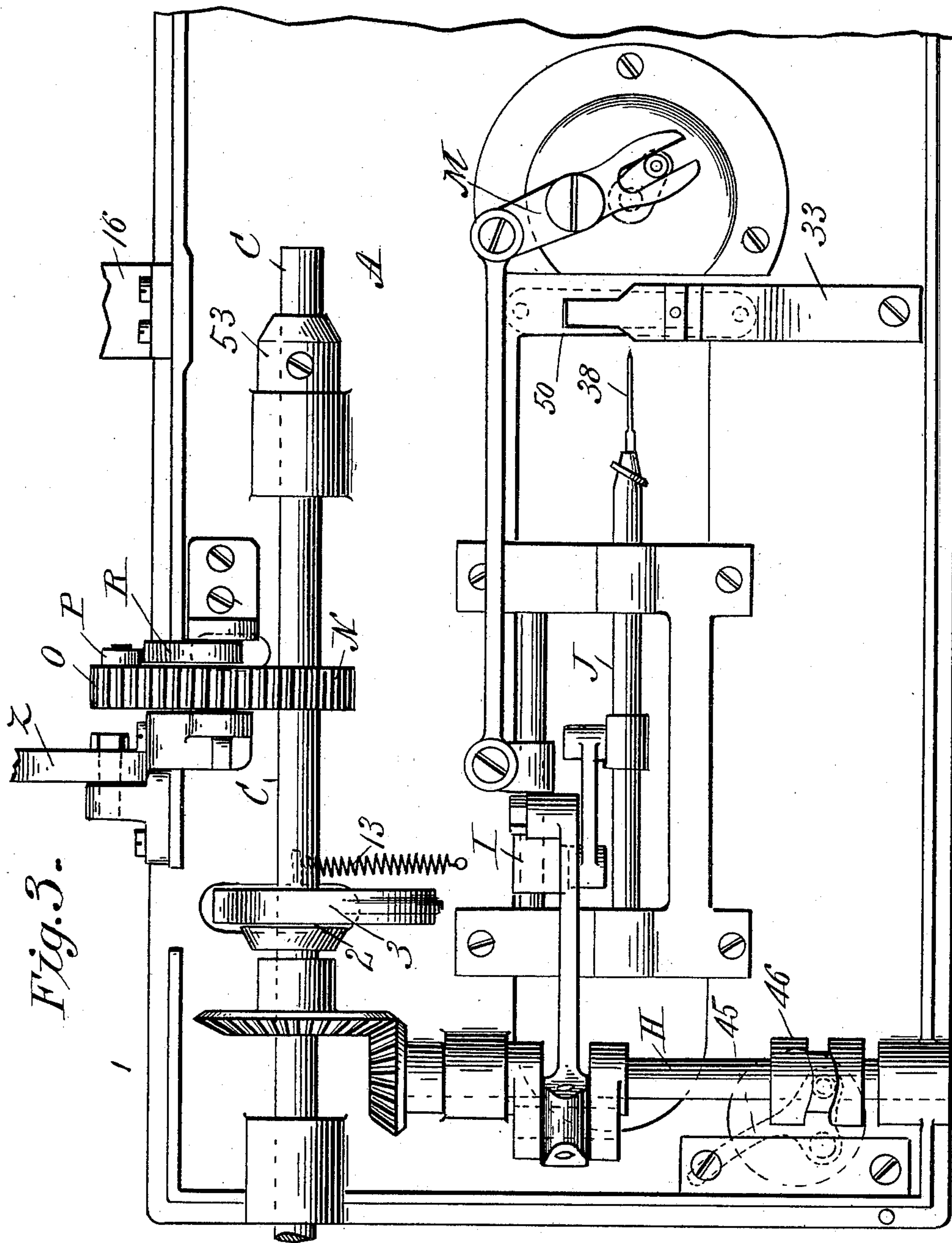


Fig. 3.

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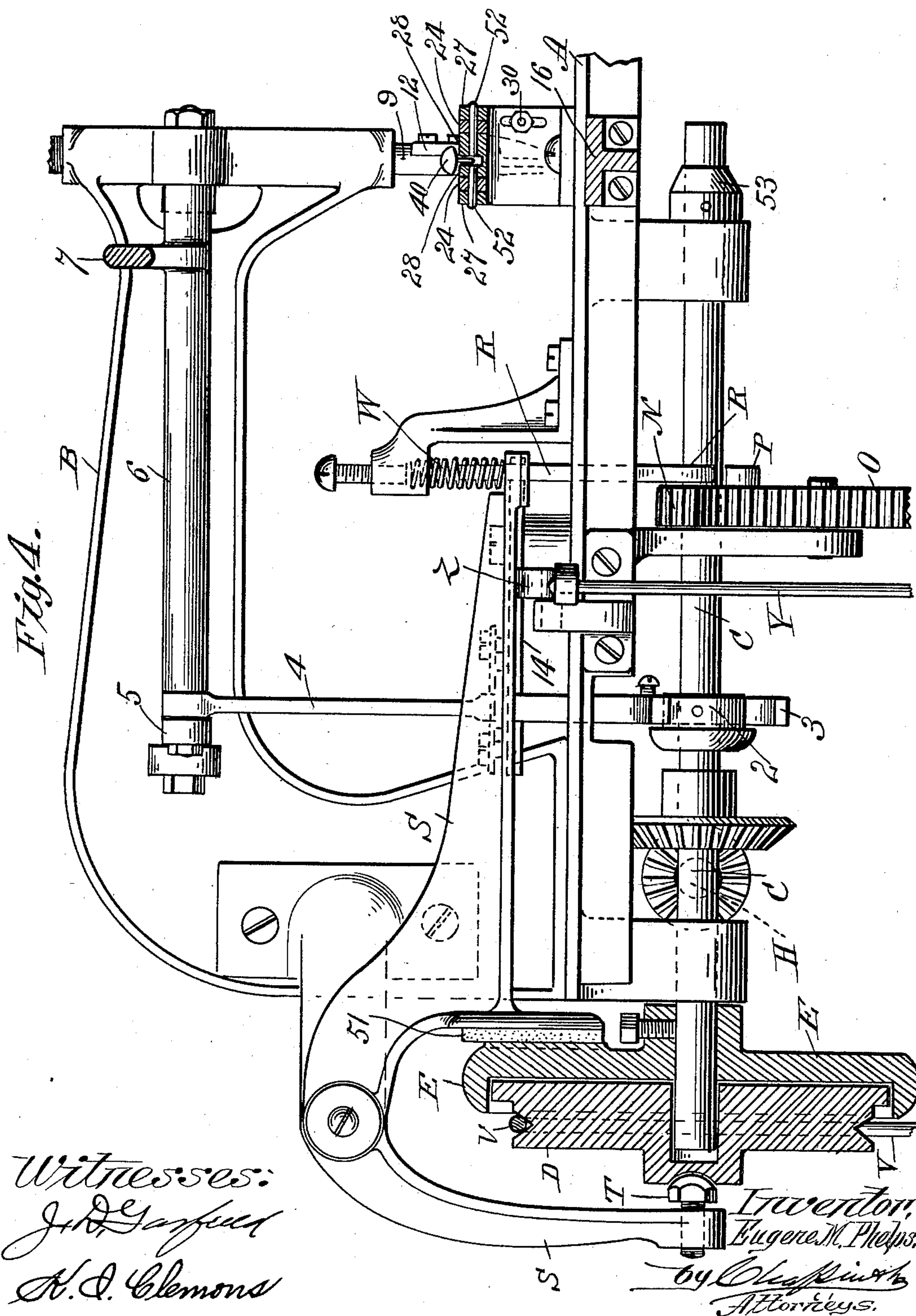
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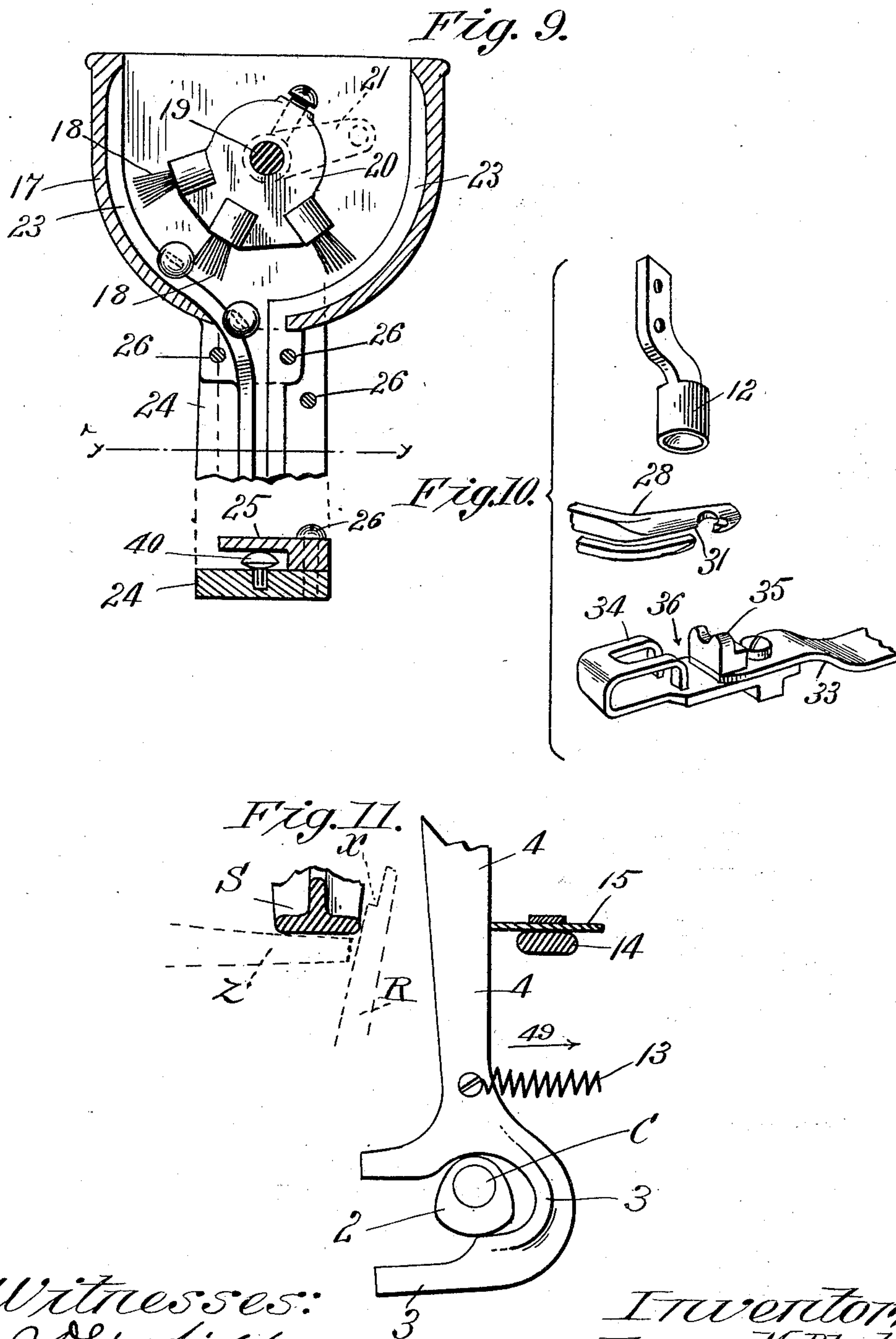
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5 Sheets—Sheet 5.



UNITED STATES PATENT OFFICE.

EUGENE M. PHELPS, OF LYNN, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MORLEY BUTTON-SEWING MACHINE COMPANY.

BUTTON-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 652,220, dated June 19, 1900.

Application filed August 5, 1898. Serial No. 687,848. (No model.)

To all whom it may concern:

Be it known that I, EUGENE M. PHELPS, a citizen of the United States of America, residing at Lynn, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Button-Sewing Machines, of which the following is a specification.

This invention relates to machines for sewing shank-buttons to fabric, leather, &c., the object being to provide an improved machine of this class in respect to means for attaching buttons by a definite and uniform number of stitches for each button or otherwise, if desired, in respect to improved means for transferring buttons from a hopper to the sewing devices, and to other details of construction hereinafter fully described; and the invention consists in the peculiar construction and arrangement of the button feeding and sewing devices, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a sectional elevation of a button-sewing machine embodying my improvements and is hereinafter fully described. The said section is about on line 1 1, Fig. 2. Fig. 1^a illustrates a detail of construction below described. Fig. 2 is a plan view of the table of the machine, showing certain parts removed therefrom for clearness of the illustration of others, as below described. Fig. 3 is an under side plan view of said table. Fig. 4 is a rear side elevation showing certain parts in section, as below set forth. Fig. 5 is a plan view of the lower end of the pivoted section of the button-trough. Figs. 6, 7, and 8 illustrate different parts of the button sewing and feeding devices in various operative positions relative to the button-trough and on line *xx* thereof, Fig. 5, and are fully described below, Fig. 8 also illustrating the manner of making the two-loop stitch of this machine. Fig. 9 is a vertical sectional view of the button-hopper about on line 9 9, Fig. 1, showing a portion of the button-trough in front view and a section of the trough with a button therein on line *yy*. Fig. 10 illustrates in perspective views the combined presser-foot and button-holder, the lower extremity of

the button-trough, and the end of the yielding material-supporting tongue, which is secured beneath the table. Fig. 11 illustrates details of devices which operate to determine the formation of a certain number of stitches through the eye of the button and to stop the sewing devices after such stitch formation.

Referring to the drawings, A indicates the table, and B the arm of the machine.

C is the main shaft, suitably hung for rotation under the table. D is the driving-pulley, driven by a band V and running loosely on the end of said main shaft C. A combined hand-wheel and friction clutch-pulley E is secured on said main shaft C opposite one side of said driving-pulley D, and the latter has a frictional engagement with the pulley E for running the machine and is freed from the latter for stopping the same by the action of a brake and clutching-lever S, which is pivotally hung above said table, as shown in Fig. 4. Said hand-wheel E is stopped quickly when the driving-pulley D is thrown out of contact therewith by its engagement with a leather-faced brake projection 51 on the clutching-lever S back of the pulley E, thereby insuring the "rest" position of the needle 38 backwardly of the throat-plate 50, so that the work or fabric 41 may be easily handled for successively attaching the buttons. A collar 53 on the main shaft C prevents end-wise movement in the latter when the brake is operated to stop the machine. Said clutching-lever S has an arm extending opposite the outer side of said driving-pulley D, having a convex-headed bolt T thereon, whose head engages said pulley centrally when said lever is swung to force and hold the driving-pulley against said hand-wheel E while the machine is running, and swinging away from the driving-wheel causes the machine to stop, as aforesaid. Said clutching-lever is held normally so that the said driving-pulley D is out of engagement with the hand-wheel E by a spring W, supported on a post, as shown in Fig. 4. A starting-lever Z is hung on said table, (see Figs. 1 and 4,) one end of which extends under said lever S, and a rod Y, connected to the outer end of said lever Z, forms a connection with a suitable foot-treadle, (not shown,) so that by operating the latter the

clutching-lever S and driving-pulley D are actuated to start the machine, as aforesaid. A lever R, Figs. 1 to 4, inclusive, pivoted under said table, has its upper end extending
 5 opposite one edge of the clutching-lever S and has a shoulder X for engaging the latter to hold it in the position which secures the operative contact of said pulleys D and E. Said lever R slips out of connection with the
 10 clutching-lever S when free to swing. Therefore a lever 14, Fig. 2, is pivoted on said table, having an adjustable bearing-plate 15 on its longer arm engaging a pitman 4, which has a certain degree of vibratory movement,
 15 whereby said lever 14 is so caused to swing that its short arm is moved against the upper end of said lever R and so holds the latter temporarily in engagement with said clutching-lever S, and then in the opposite direc-
 20 tion, leaving the said end of the lever R free to swing away from the lever S. The lower end of said lever R extends opposite the side of a gear-wheel O, Figs. 1, 3, and 4, which is rotated by a pinion N on said main shaft C.
 25 A roller-stud P is carried on said gear-wheel O, which once in a revolution of the latter trips said lever R and swings its said upper end out of engagement with the clutching-lever S, letting the latter swing to carry its
 30 said headed bolt T away from the driving-pulley D and stop the machine. The movement of the said roller-stud P relative to the lower end of the lever R is so timed that during its movement after passing said lever
 35 (the machine being then started again) the number of needle movements for sewing six (more or less) stitches through the fabric and the button-eye will be accomplished. The said pitman 4 is connected by its upper end
 40 to the end of an arm 5, secured on a rock-shaft 6, hung on the side of the machine-arm B. Said pitman carries on its lower end (see Fig. 11) a cam-yoke 3, in which are cam-engaging parts or surfaces normally at varying
 45 distances from the axis of the main shaft C, on which is the cam 2, which actuates said pitman for longitudinally-reciprocating movements and correspondingly varies the extent of the rocking movements of said rock-shaft
 50 6. The degree of the vertical movements of the presser-foot bar 9, on which is carried the cupped presser-foot 12, is also varied by the action of said cam 2. Said pitman cam-yoke 3 is held in the position shown in Fig. 11
 55 relative to the cam 2 by the engagement of said bearing-plate 15, (on lever 14,) and when the lever 14 is freed, as aforesaid, a spring 13 draws said cam-yoke laterally or in the direction of the arrow 49, Fig. 11, so that the
 60 more separated surfaces thereof are brought opposite the cam, and thus vary the movements of said pitman, as aforesaid. An arm 8 on said rock-shaft 6 is connected to said presser-foot bar 9, as shown in Fig. 1. Said
 65 presser-foot 12 has its lower end cupped or provided with a concavity of such depth and form as best adapts the same to receive, sub-

stantially, the entire upper convex section or face of the button, so that it may, as shown in various figures of the drawings, suitably
 70 engage and hold the button in a position vertical to the face of the fabric to which it is to be attached while the button is being sewed on.

A cross-shaft H is hung under the table, which is rotated by a bevel-gear connection
 75 with the main shaft C, as shown. Said cross-shaft has a grooved cam 46 thereon, which actuates the take-up 45, and to a crank on said cross-shaft is connected a pitman, and the latter is connected to a sliding yoke I, to
 80 which the needle-bar J and the shuttle-actuating lever M (engaging a crank on the shuttle-pivot) are connected, as shown, and whereby the needle 38 is given its requisite move-
 85 ments and said shuttle is reciprocally rotated, as usual.

The needle, oscillating shuttle 42, take-up 45, and tension 44, all of which are illustrated in Fig. 2 in their relative operative
 90 relations, constitute sewing devices of well-known character for making a stitch embodying a needle-thread and a shuttle-thread interlooped, as shown in Fig. 8, and are herein illustrated as one of the numerous stitch-
 95 forming mechanisms which is preferred for the purposes of this invention and whose operation is well known to those skilled in the use of sewing-machines.

Under the table A of the machine a spring-tongue 33 is rigidly secured by one end, Figs.
 100 1 and 3, which constitutes a yielding support on which are carried, beneath the usual throat-plate 50, the slotted work receiver or support 34 and the work-holding block 35. Fig. 1 clearly illustrates the normal positions
 105 of the last-named parts. The track of the needle while sewing is centrally through the button-space 36 between said parts 34 and 35, (see Figs. 1 and 10,) and the cupped presser-foot 12 has vertical movements centrally over
 110 said button-space.

Figs. 6, 7, and 8 each illustrate the different positions which the button, the fabric, and the lower free extremity 28 of the but-
 115 ton-raceway assume, respectively, in sewing on the buttons. Therefore to meet the requirements of said varying or different positions, to provide an efficient and constant supply of buttons at a point over said needle
 120 38, to provide a raceway having a vibratory movement between said fabric and presser-foot and in which the button is held while being sewed onto the fabric, and to provide for holding said raceway always in position over
 125 said work-receiver and for the convenient exit of the sewed-on button from said raceway through a side opening the button separating and feeding mechanism (illustrated in
 130 Figs. 1, 5, 6, 9, and 10) is provided and is constructed and operates as follows: The said button feeding and separating devices comprise a button-hopper 17, having button-conducting grooves 23 in the inner wall thereof, extending in opposite sides of the bowl from

near its border downwardly and each terminating at and communicating with the upper portion of the raceway 24, which adjoins said bowl. (See Figs. 1 and 9.) Said last-named part of said raceway, which is quite inclined, has a central button-eye groove, as shown, and the head of the button slides on the borders thereof as the buttons move down. The upper part of said raceway has a cover 25, as shown, secured thereon by one border by screws 26, one border of said cover being left open for free communication with buttons that may be in said groove to prevent the stoppage of buttons therein. Said covered portion of the raceway extends to a supporting-post 27, secured on said table. Buttons placed in said hopper 17 are acted upon for moving them to become engaged in said button-conducting grooves 23 by a series of brushes 18, as shown, secured in a carrier 20, the latter being hung on a shaft 19, extending through the wall of the button-hopper, and having a crank 21 on its outer end. An arm 7, secured on said rock-shaft 6, is connected by a link 22 with said crank 21, and thereby the brush-body and brushes are given a swinging motion, whereby the buttons are acted upon, as stated. In Fig. 2 the upper end of said post 27, which supports the lower end of said upper raceway-section 24, is shown in section and illustrates two fixed outside sections of said post and two next adjoining sections of the lower end of said raceway-section 24, and pins 52 lock said last-named parts to said post. The lower or vibratory section 28 of the raceway is hinged by its upper end to said post 27, said pins 52 also attaching it thereto, and they constitute the pintles of the uniting-joint of said sections 28 and post. A button-eye groove in said raceway-section 28 communicates with the like groove of said upper raceway-section 24 and extends nearly to the lower free end thereof, where the formation is as illustrated in Fig. 5—that is, having no exit at its extremity in line with the button-eye groove, but having such exit at one side of said groove, whereby each button after having been sewed to the fabric is drawn laterally out of the raceway. Furthermore, on the under side of the part of the latter which lies operatively over said slotted work-receiver 34 is a projecting lip 31, Fig. 10, for engagement in the slot of said part 34, whereby when a button is drawn out of the raceway the latter is supported against lateral strain. Said lower raceway-section 28 is normally held with its lower end swung upwardly by a spring 29 thereunder, as shown in Fig. 1, whereby the eyes of the buttons therein are primarily held above the fabric 41, to which they are to be sewed. The degree of upwardly-swinging movement of said section 28 is adjustable by means of a restraining-hook 30, having an arm engaging the latter, and means are thus provided for permitting a vertically-swinging movement of said raceway-

section in consonance with the movements of the presser-foot, thus causing the head of the button to be kept in engagement with the said concavity in the lower end of said presser-foot 12 to such extent as may be desired while the button is being sewed on. The lower screw-threaded end of said hook 30 passes through a vertical slot in said supporting-post 27, and a nut thereon (see Figs. 1^a and 4) serves to hold the same when adjusted vertically.

In Figs. 6 to 8, inclusive, the presser-foot 12, a button, a section of the raceway-section 28, the extremity of the loop-engaging hook 43 of the shuttle, the slotted work-receiver 34, and a part of the needle are shown, all somewhat enlarged, in order that the relative positions thereof in respect to the fabric 41 (there shown) in the different stages of the operation of sewing on a button may be clearly understood. The said button-sewing operation is as follows, and the positions of the presser-foot 12, the raceway-section 28, the lower button therein, and the fabric 41, held by the operator, are such as the said parts are brought to during said operation. In Figs. 1 to 4, inclusive, the parts are shown in the relative positions of rest which they occupy prior to sewing on a button.

Operation: The treadle actuating the starting-lever Z is pressed, thereby lifting the end of the clutching-lever S, freeing the brake projection 51 thereon from the hand-wheel E, and at the same time carrying the driving-pulley D against said hand-wheel E. The lever S is now engaged by the lever R, as stated, and the lower arm of the lever R is subject to be acted upon by said roller-stud P on the gear-wheel O, as described. The positions now assumed by the last-named parts result in the movement of the lower end of the pitman 4 by the spring 13 in the direction indicated by the arrow 49, Fig. 11, thereby bringing the free extremities of the cam-yoke 3 nearer the axis of the main driving-shaft C, thereby giving to the presser-foot 12 the extremes of movement illustrated in Figs. 7 and 8 and in which positions the sewing on of the button is effected, after which the presser-foot is lifted sufficiently through the action of the cam 2 upon said open extremities of the cam-yoke 3 (substantially as shown in Fig. 1) to let another button come to position between the presser-foot and the fabric and over the track of the needle 38 to be operated upon for sewing on. In sewing the form of the cam 2, in which is provided a longer curved face, (shown on its lower side in Fig. 11,) provides for certain so-called "dwells" of the presser-foot at its extreme upper and lower positions, as in Figs. 7 and 8, during each of which dwells the needle completes a forward-and-backward movement at one time through both fabric and button-eye, (see Fig. 7,) and, next, forward and back under said fabric. (See Fig. 8.) The buttons follow down the two race-

way-sections, the lower button stopping at a point over the needle, as shown in Fig. 1. The rapid vibratory movements of the lower section of the raceway, caused by the action of the presser-foot, serve to so agitate the buttons that they slide freely down. Fig. 6 illustrates the position of the button supported upon the end of the raceway when to prepare for sewing on the button the fabric 41 is laid on the machine under the button, as there shown. In starting the machine the first downward movement of the presser-foot and button brings the parts to the positions shown in Fig. 7, and the needle then (as aforesaid) passes through the fabric and button-eye, the loop of the thread on the needle being looped by the shuttle-thread in the usual way, and, as in Fig. 8, the needle is then drawn back. The presser-foot now rises, and the fabric and button, carried by the spring-actuated work-receiver 34, move upward therewith high enough, Fig. 8, to allow the needle to pass once back and forth under the part of the fabric directly under the button-eye, the shuttle-thread being disposed as before, and then the parts again come to the positions of Fig. 7. Thus several interlocking stitches are taken alternately through the button-eye and fabric and outside the latter by moving the button-eye and fabric into and to one side of the path of movement of the needle, and when the number of stitches for which the machine is set is completed the machine automatically stops, as described. The fabric and the sewed-on button are then moved backwardly, drawing the button away from the raceway through the slot or opening 32 in one side thereof, Fig. 5. The operator then moves the fabric again under the raceway to space the next button, and the sewing operation is repeated.

What I claim as my invention is—

1. The combination in a machine for sewing shank-buttons to fabric, of sewing mechanism, button-feeding mechanism comprising a hopper, and a raceway conducting buttons from said hopper to the fabric, means in said raceway for retaining a button therein while being sewed on, means acting in conjunction with said raceway for retaining a button therein while being sewed on, consisting of a presser-foot engaging the upper convex section of each button, and means for moving the button-eye and fabric into and to one side

of the path of movement of the needle, substantially as described.

2. The combination in a machine for sewing shank-buttons to fabric, of sewing mechanism, having a presser-foot engaging the head of a button while being sewed on, means for governing the action of the sewing devices whereby said action ceases after a predetermined number of button-attaching stitches has been taken, button-feeding mechanism comprising a hopper, a raceway conducting buttons from said hopper to the fabric, having a vibratory lower section, means for swinging said lower section upwardly, and for adjusting the degree of said swinging movement, substantially as set forth.

3. In a machine for sewing shank-buttons to fabric, sewing mechanism containing a presser-foot having a concavity retaining the head of a button therein while the latter is being sewed on, flexible fabric-supporting devices in the table of the machine beneath said presser-foot, a button-hopper, a raceway conducting buttons from said hopper to the sewing mechanism having a vibratory lower section, means on said lower section for engagement with said fabric-supporting devices, whereby said section is held against lateral movement, and means for imparting vertically-reciprocating movements to said presser-foot, of successively-varying degrees, substantially as set forth.

4. The combination in a machine for sewing shank-buttons to fabric, sewing mechanism, flexible fabric-supporting devices in the table of the machine, a presser-foot having a concavity for receiving the head of a button, button-feeding mechanism, comprising a hopper, and a raceway having a vibratory lower section conducting buttons from said hopper to the fabric, a part on said vibratory section engaging said fabric-supporting devices whereby said section is guarded against undue lateral movement, means for imparting vertically-reciprocating movements to said presser-foot of successively-varying degrees, and means for swinging the extremity of said vibratory section toward the presser-foot, substantially as described.

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