June 5, 1934. J. MANN 1,962,023

FABRIC PINKING OR NOTCHING MECHANISM

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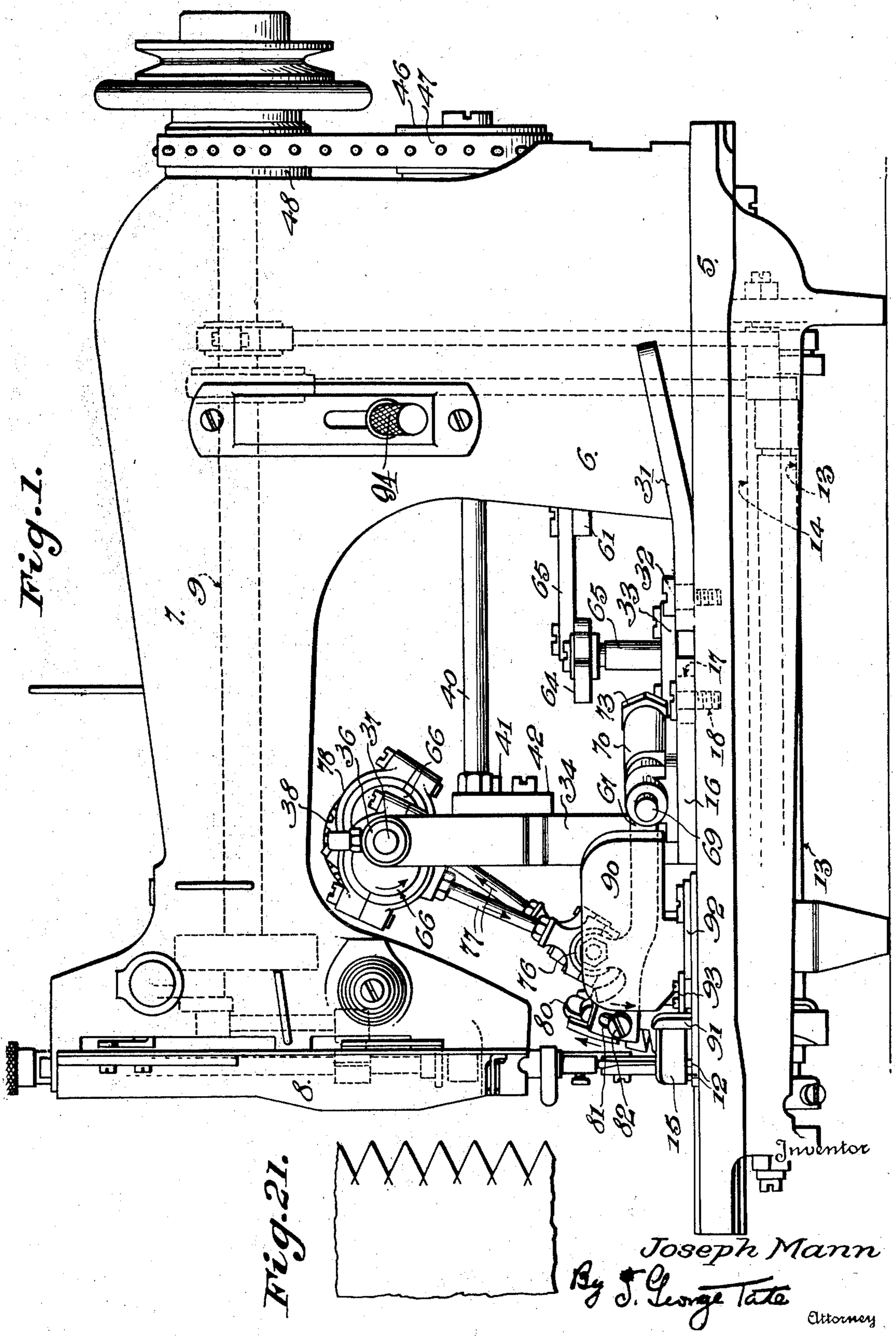


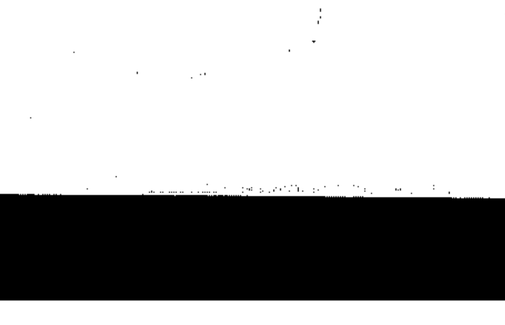

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FABRIC PINKING OR NOTCHING MECHANISM

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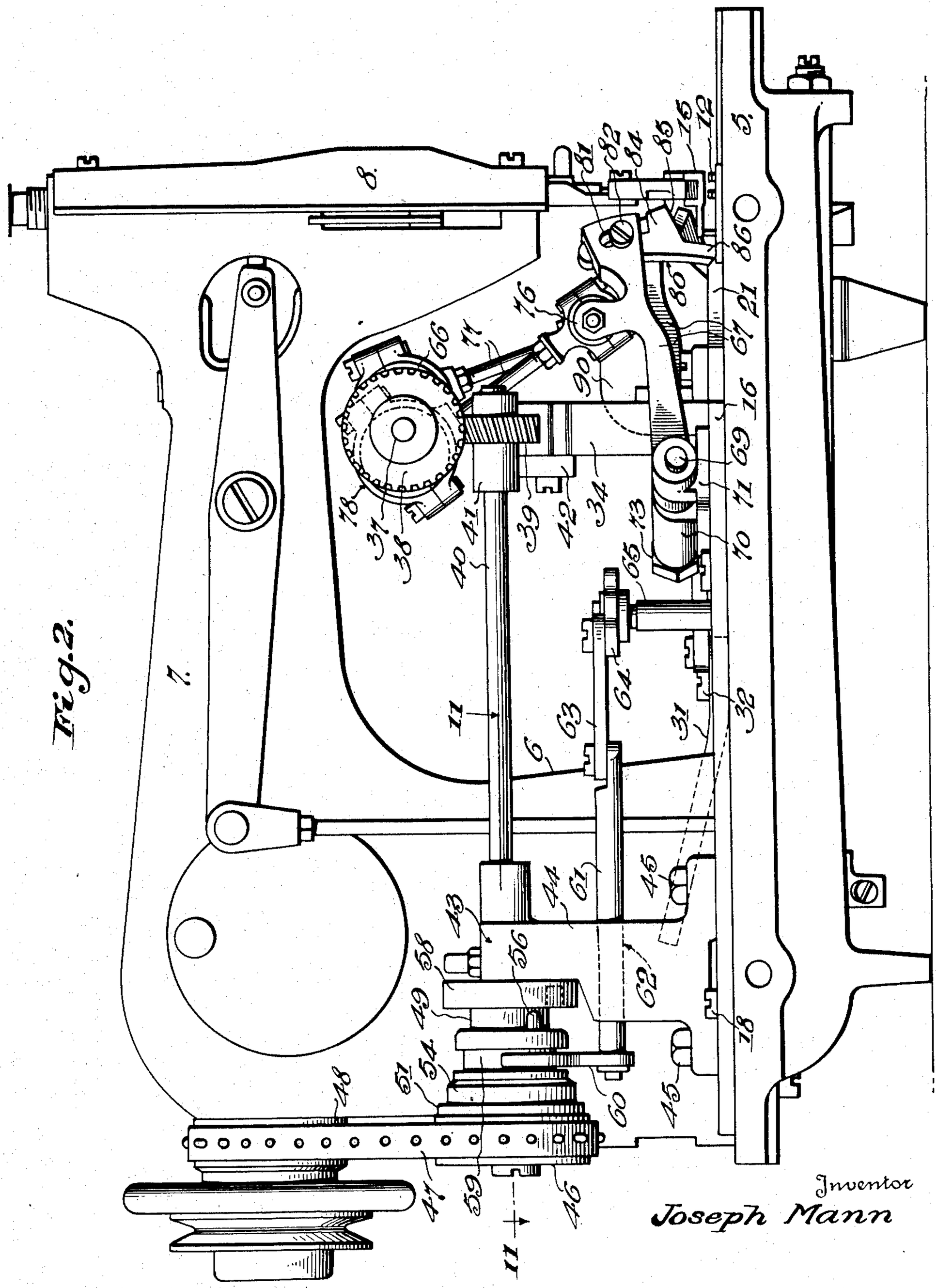


Fig. 2.

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FABRIC PINKING OR NOTCHING MECHANISM

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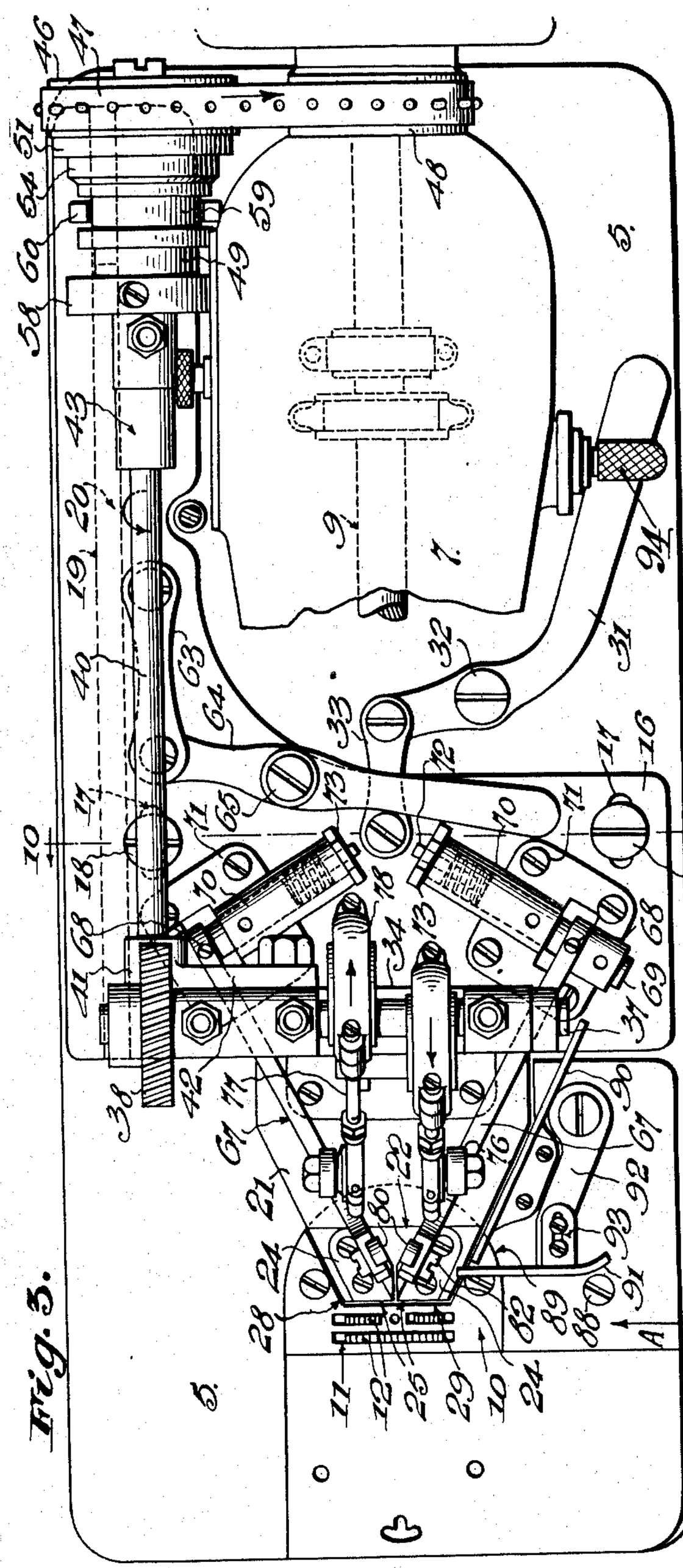

Fig. 3.

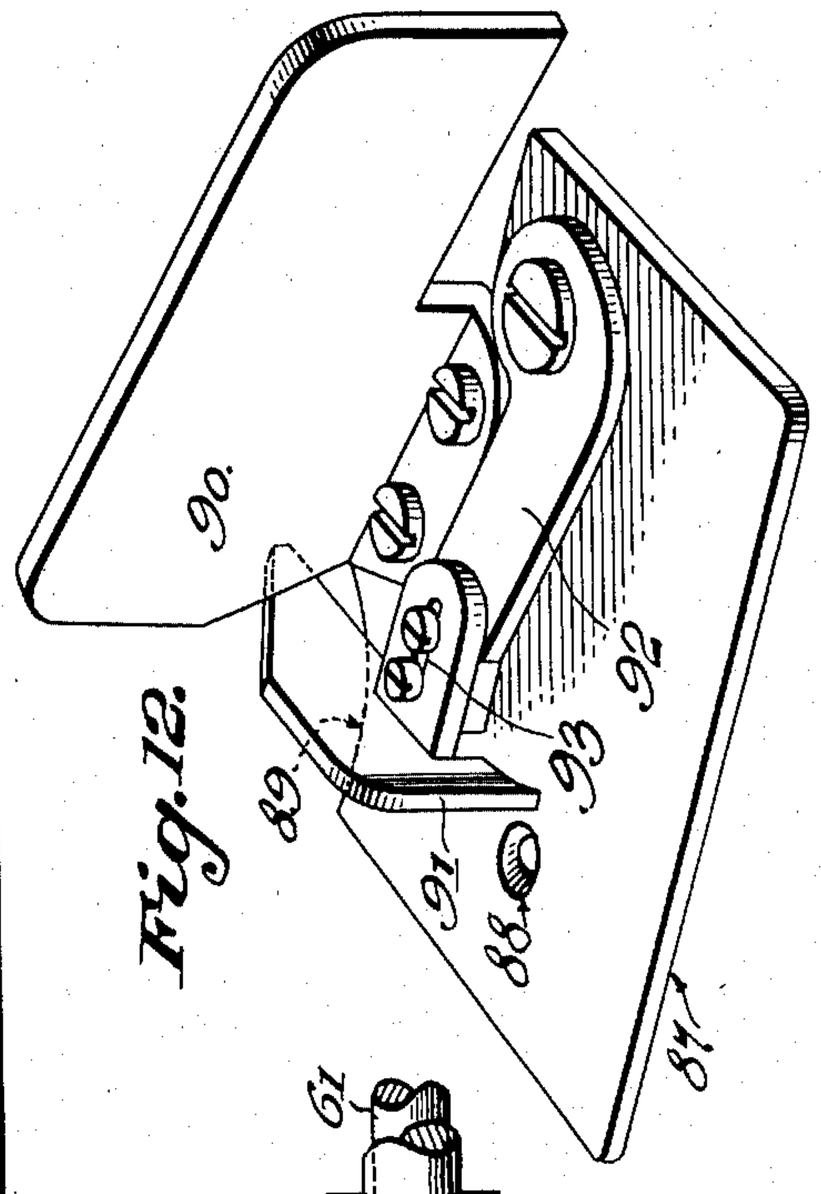

Fig. 12.

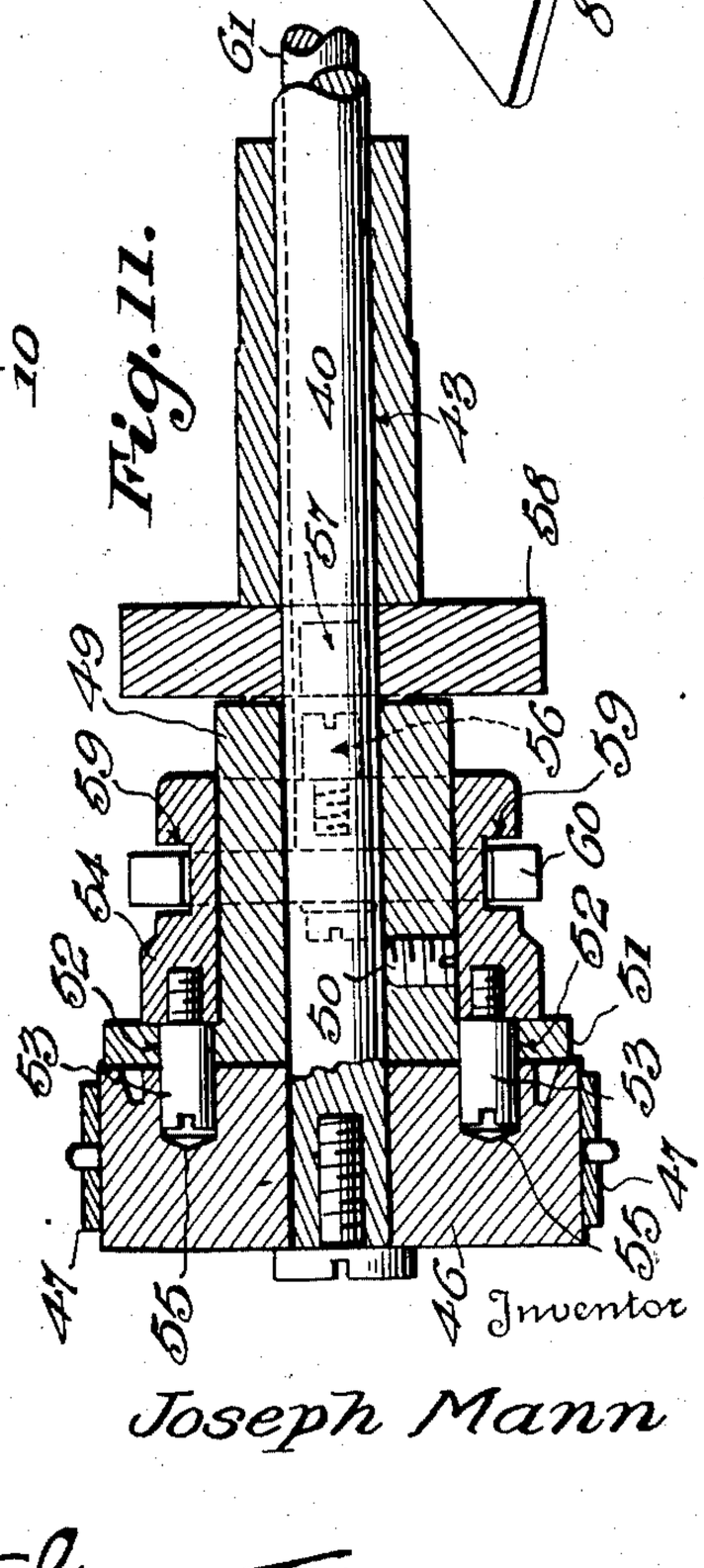

Fig. 11.

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FABRIC PINKING OR NOTCHING MECHANISM

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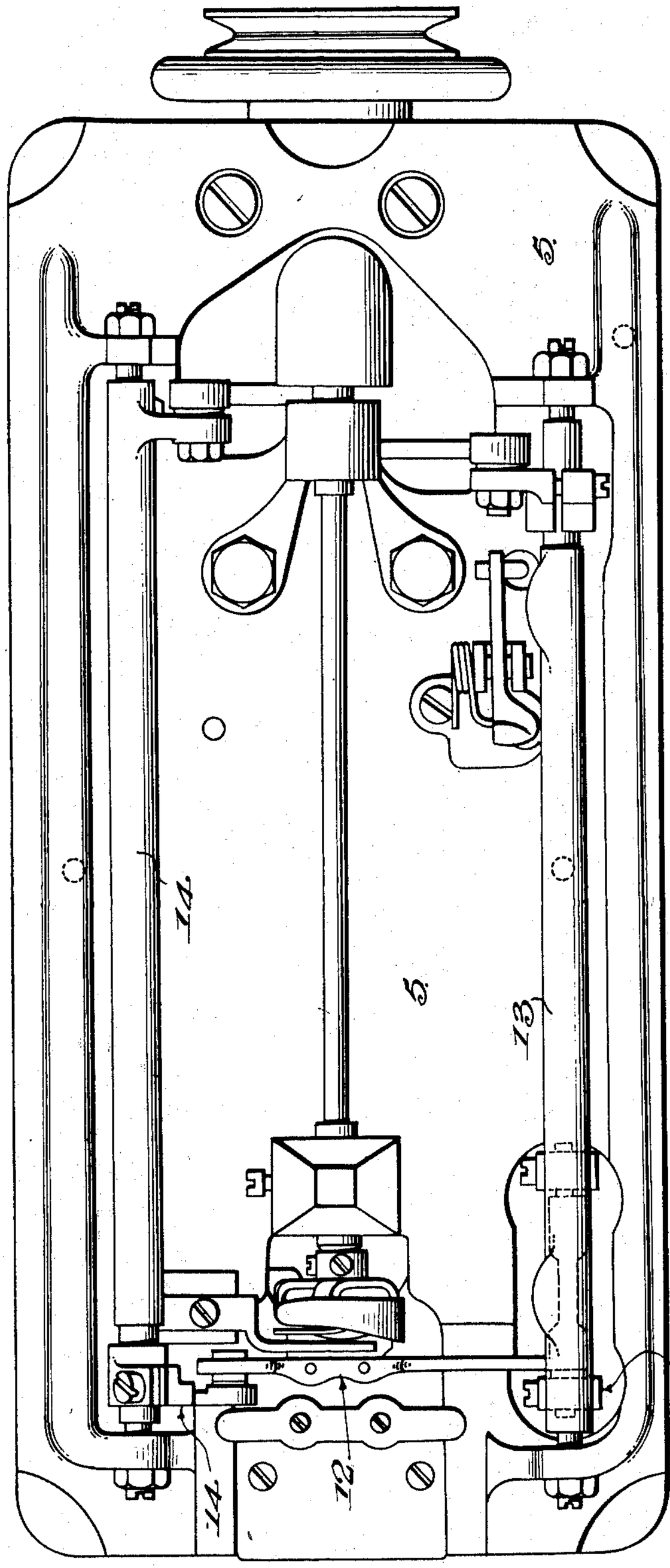


Fig. 4.

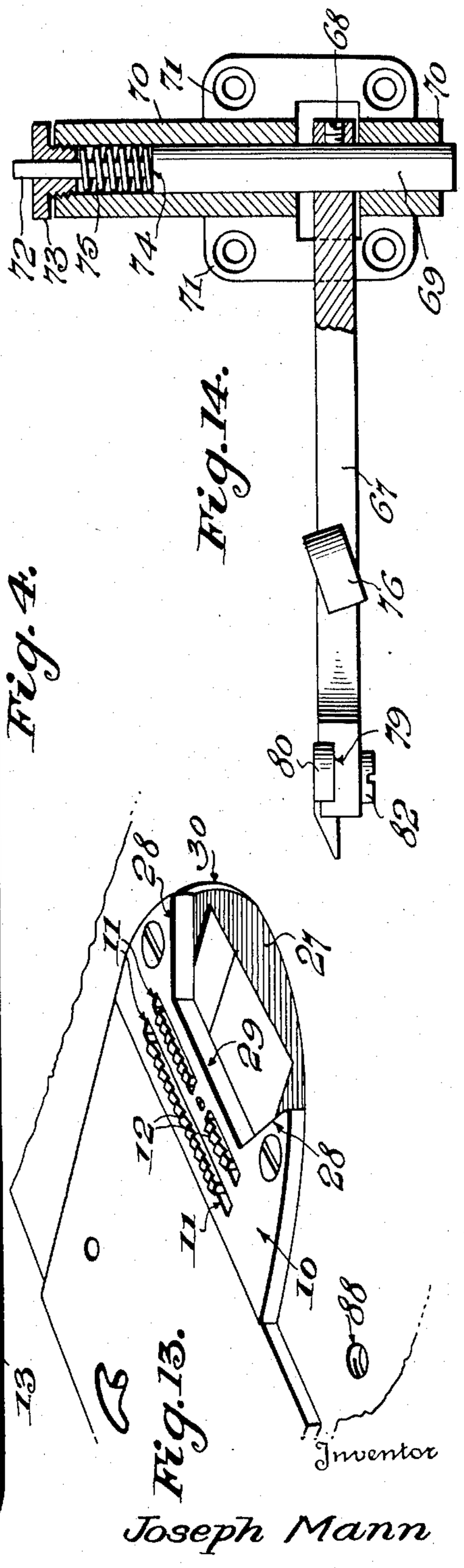


Fig. 14.




Fig. 13.

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FABRIC PINKING OR NOTCHING MECHANISM

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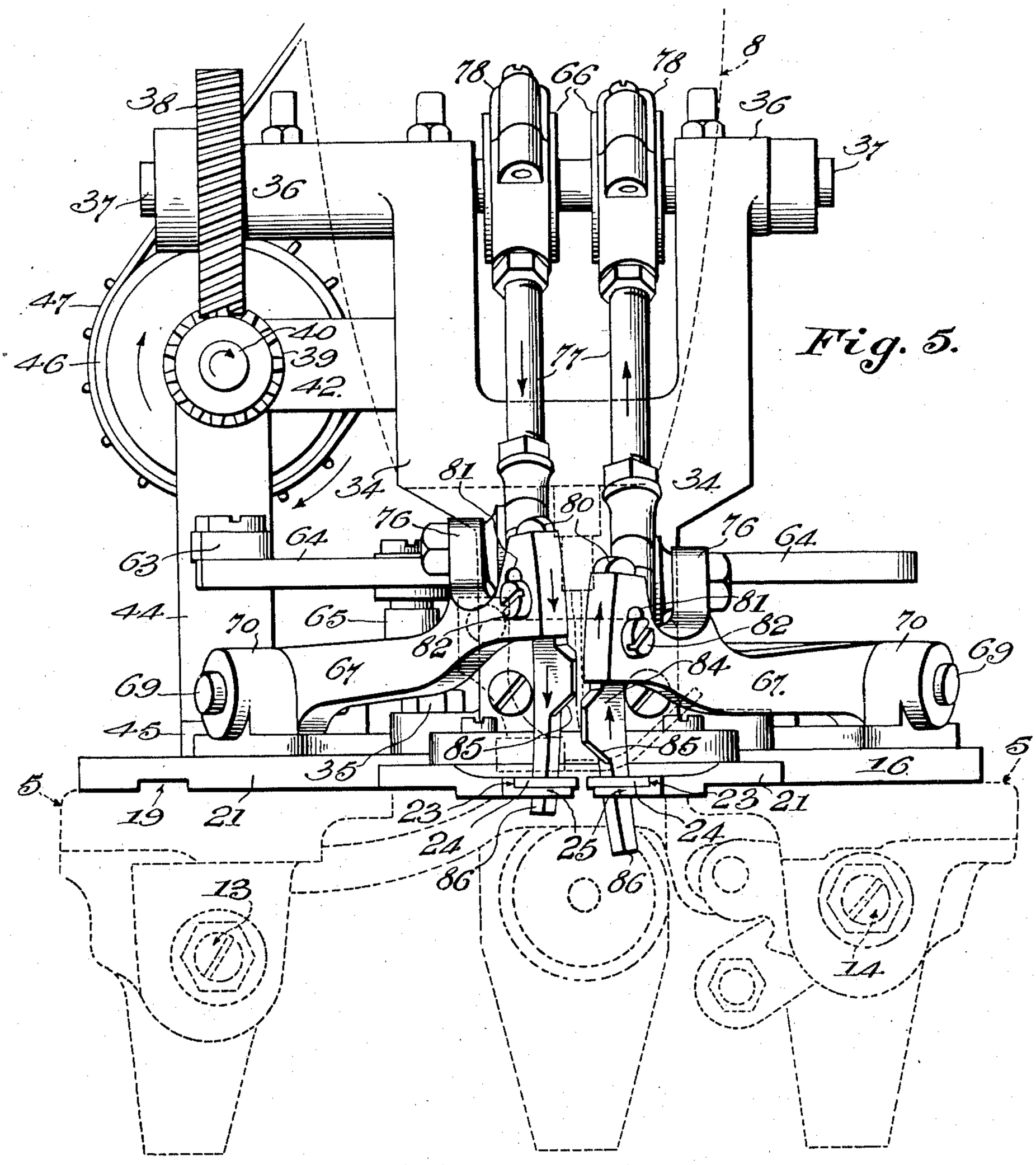


Fig. 5.

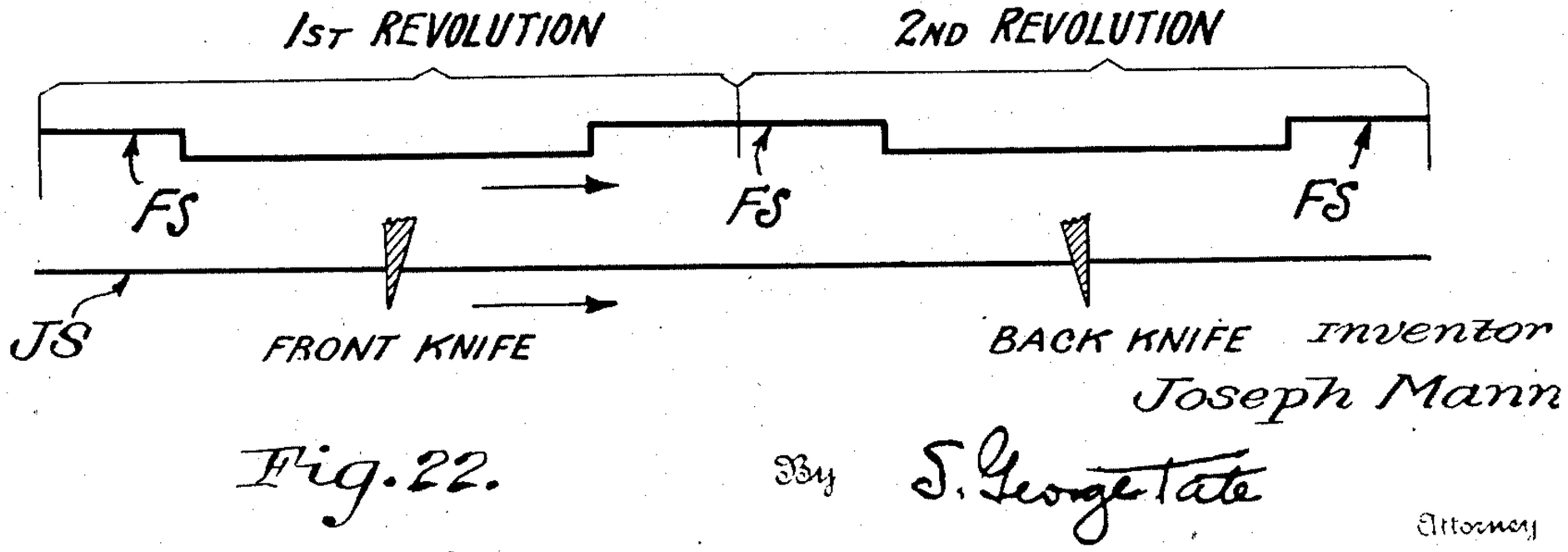


Fig. 22.

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FABRIC PINKING OR NOTCHING MECHANISM

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Fig. 6.

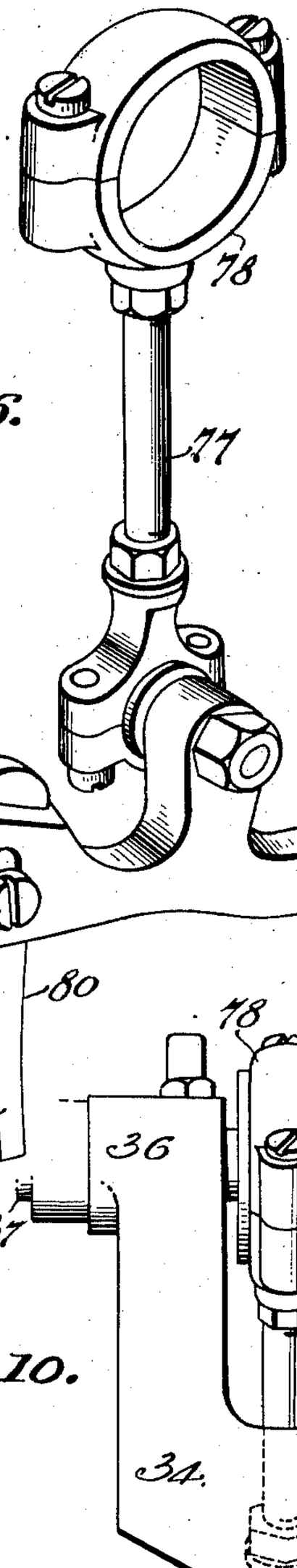


Fig. 8.

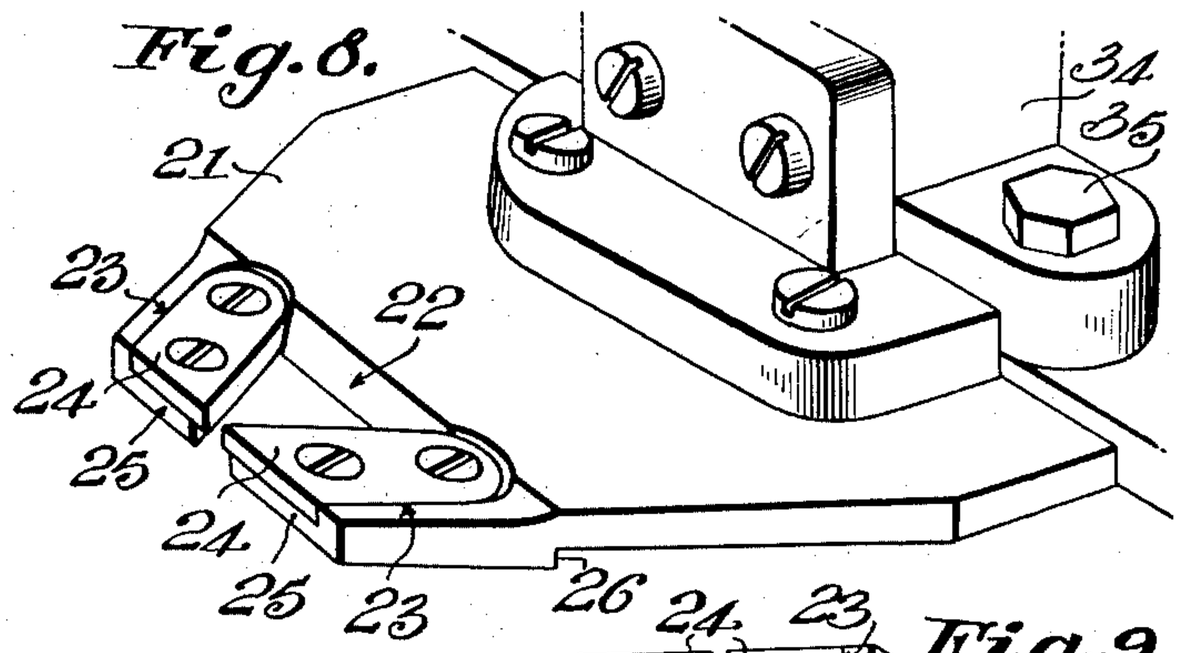


Fig. 9.

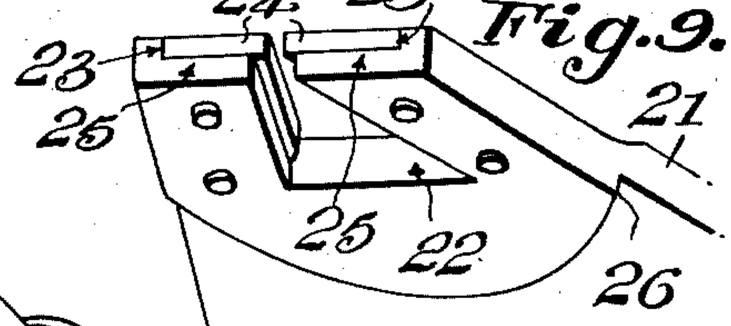


Fig. 10.

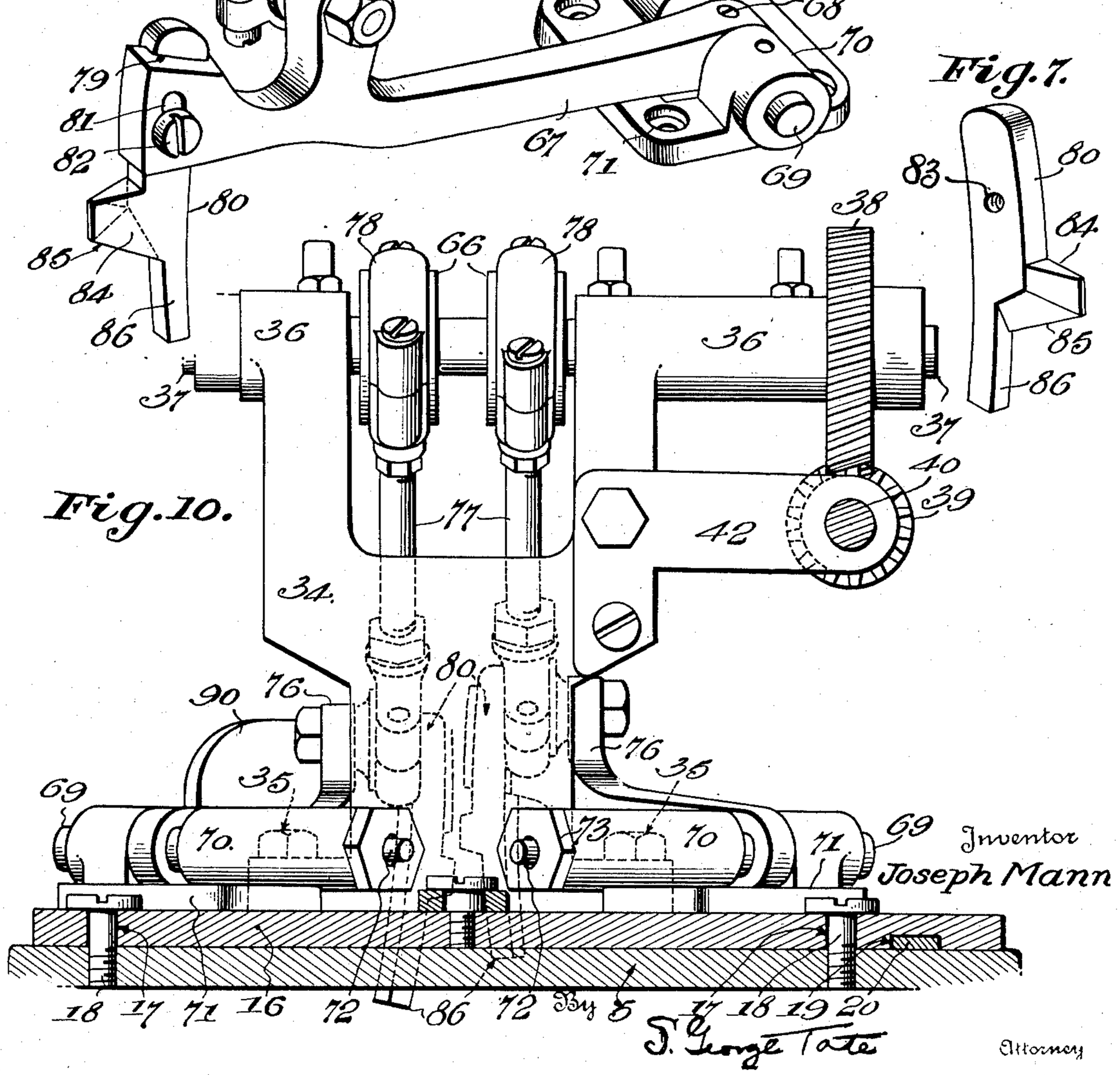


Fig. 7.




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FABRIC PINKING OR NOTCHING MECHANISM

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Fig. 15.

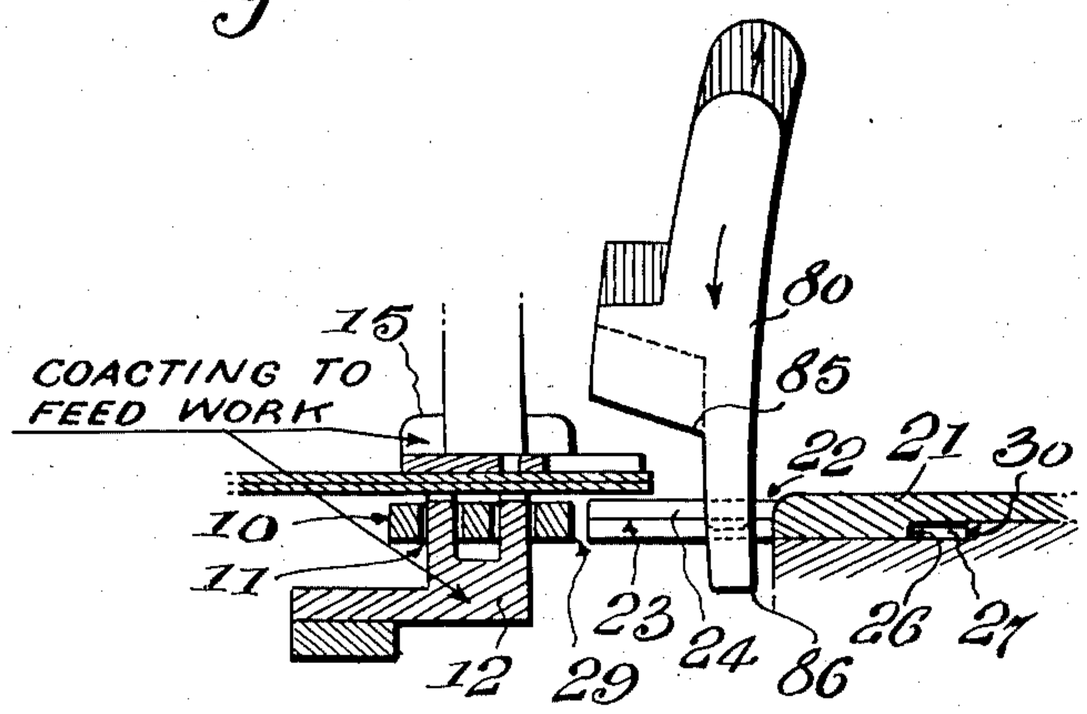



Fig. 17.

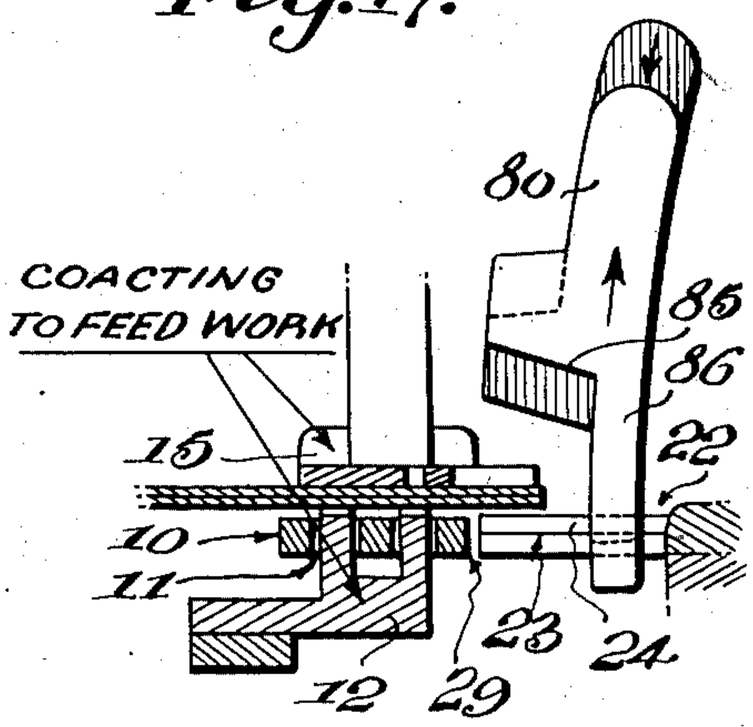



Fig. 16.

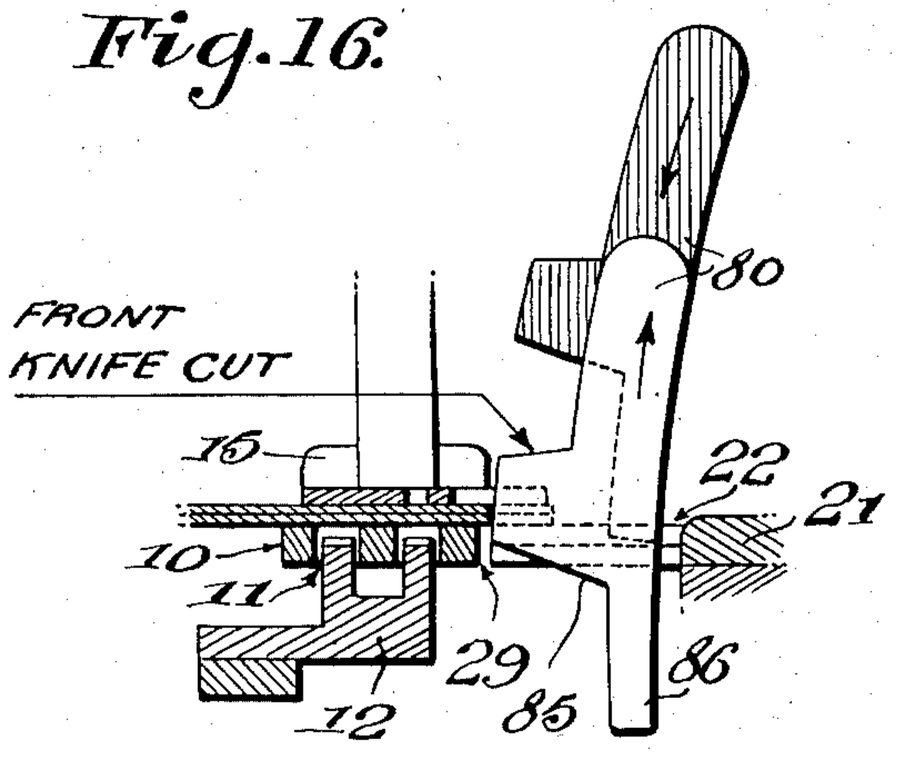



Fig. 19.

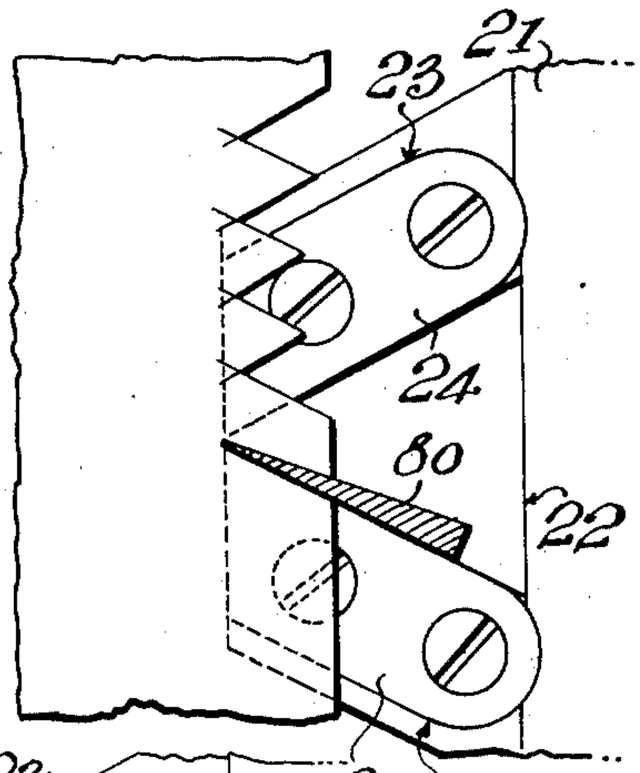



Fig. 18.

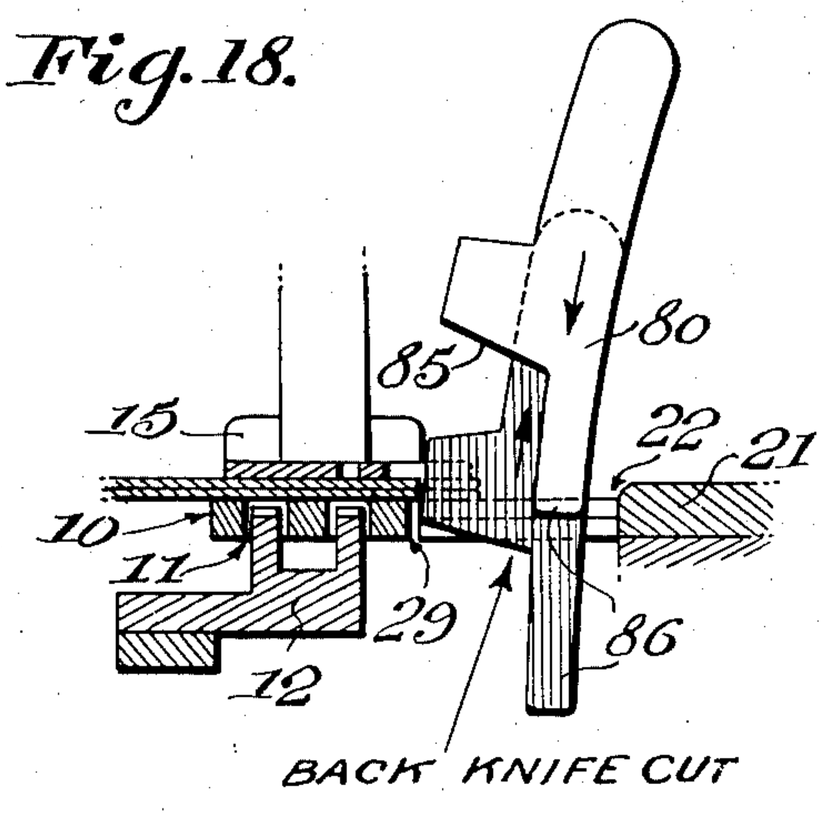
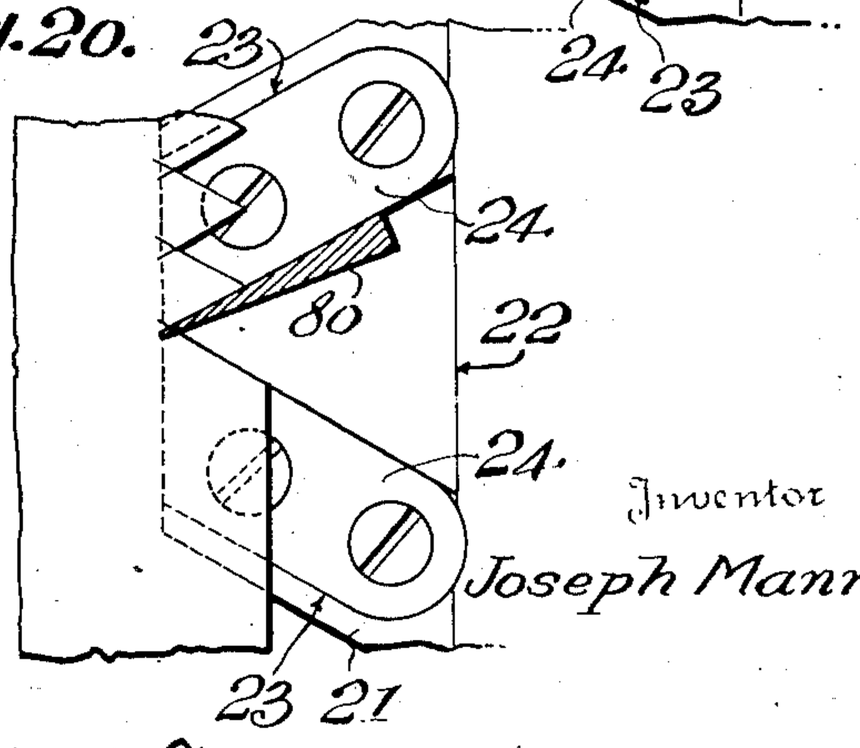



Fig. 20.

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Patented June 5, 1934 1,962,023

# UNITED STATES PATENT OFFICE

1,962,023

## FABRIC PINKING OR NOTCHING MECHANISM

Joseph Mann, Philadelphia, Pa., assignor, by mesne assignments, to Lewis Invisible Stitch Machine Co., St. Louis, Mo.

Application April 10, 1933, Serial No. 665,436

52 Claims. (Cl. 164—17.5)

The invention relates to mechanism for edge-notching or pinking fabrics. I am aware that mechanisms have heretofore been proposed for accomplishment of the purpose mentioned but all such devices of which I have knowledge have been limited in efficiency because of the type of pink cutting means employed therein. Some such devices have sought to employ rotary cutters having continuous zig-zag cutting edges to be presented to the work, and others have employed reciprocating cutters of the V-shaped type which effect a complete cutting of a pink or notch each time the cutter is brought into engagement with the work. The efficiency of pinking or notching devices of the character above mentioned is materially impaired because of the shape of the cutters and the resulting difficulty in maintaining the cutting edges thereof duly sharp. It is true also that when cutters of this character become even partially dulled it is impossible to make clean cuts at the angles defining the depth of the pinks or notches.

It is therefore an object of my invention to provide a simple and efficient fabric pinking or notching mechanism in which is employed novel means for making individual successive cuts bearing angular relation so as to provide the desired pinked or notched formation and including simple relatively inexpensive and easily sharpened flat-type cutter elements.

Another object of the invention is to provide a fabric pinking or notching mechanism employing individual cutter elements of the flat type in which the parts are so constructed and cooperatively arranged that the individual cuts which form the pinks or notches are caused to intersect in the angles defining the depth of the notches or pinks and thus assure clean cutting at all times.

Another object of the invention is to provide a novel fabric pinking or notching mechanism embodying a fabric supporting base, fabric feeding means and a pinking or notching unit mountable on and removable as a unit from the supporting base and which is bodily shiftable for varying the depth of the pinks or notches.

Another object of the invention is to provide a novel fabric pinking or notching mechanism embodying individual successively active cutting elements and ledger blade equipment cooperating therewith, and means for yieldably holding said elements in engagement with the associated ledger blade equipment during the cutting action to assure an efficient shearing relation.

Another object of the invention is to provide a novel fabric pinking or notching mechanism embodying coacting reciprocating cutting elements, and driving means for said elements including clutch devices for silencing said cutter elements and locking said elements in a predetermined position when silenced.

With these and other objects in view which will more fully appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:—

Figure 1 is a front elevation illustrating the invention applied to a sewing machine.

Figure 2 is a rear elevation of the parts shown in Figure 1.

Figure 3 is a plan view of the parts shown in Figure 1, the overhanging arm being broken away.

Figure 4 is an inverted plan of the parts shown in Figure 1.

Figure 5 is a left hand end view of the pinking or notching attachment, portions of the work supporting base and work feeding means being shown in dotted line phantom.

Figure 6 is a detail perspective view illustrating one cutter element, its mounting and its driving connection.

Figure 7 is a detail perspective view of a cutter element.

Figure 8 is a detail perspective view of a portion of the pinking or notching attachment base and illustrates the ledger blade equipment.

Figure 9 is an inverted perspective view of the base portion shown in Figure 8.

Figure 10 is a vertical cross section taken on the line 10—10 on Figure 3.

Figure 11 is a detail horizontal section taken on the line 11—11 on Figure 2.

Figure 12 is a detail perspective view illustrating the guard and guide unit.

Figure 13 is a detail perspective view of a portion of the work supporting base.

Figure 14 is a plan view of one cutter element and the pivotal mounting therefor, said mounting being shown in section.

Figures 15, 16, 17 and 18 are diagrammatic sectional views illustrating four events of the cycle of operations effective in forming one complete pink or notch; namely, a feed step, front blade cut, a second feed step, and the back blade cut.

Figure 19 is a diagrammatic plan view illus-

trating the position of parts shown in Figure 16.

Figure 20 is a diagrammatic plan view illustrating the position of parts shown in Figure 18.

Figure 21 is a diagrammatic plan view illustrating a completed pinked or notched work portion.

Figure 22 is a view diagrammatically illustrating the timed relation of the feed steps and the individual pink forming cuts.

Like numerals of reference designate corresponding parts throughout the several figures of the drawings.

In this particular disclosure of the invention I have shown my improved mechanisms applied to use on a conventional sewing machine but it is to be understood that the work supporting base, the work feeding means and the power source for driving the feeding means afforded by the sewing machine all are merely exemplary showings and may take various forms other than customary sewing machine construction within the scope of the invention as particularly pointed out in the appended claims. No claim is made herein to the combination of pinking means and seaming means, claims to that combination being made in my co-pending application filed April 10, 1933, Serial No. 665,435.

In the drawings, 5 designates the frame base or work support of a sewing machine which includes the usual frame standard 6 supporting an overhanging arm 7 and the sewing head 8 mounted on the free end of said arm. A main shaft 9 is rotatably mounted in the overhanging arm and serves as a source of power for driving the work feeding means and the pinking means soon to be described.

A throat plate 10 is mounted on the work support base 5 and is slotted as at 11 to accommodate the intermittent 4-motion feed dog 12 to which feed movement is imparted by devices generally designated 13, and to which lift movement is imparted by devices generally designated 14, said devices 13 and 14 having the usual connection with the rotary shaft 9 as indicated in dotted lines in Figures 1 and 3 of the drawings. See also Figure 4. A presser foot 15 co-operates with the feed dog 12 in the usual manner.

All of the parts above described will be recognized as conventional, except insofar as they combine with the pinking mechanism to be described hereinafter, and the details of construction of these parts form no part of my present invention.

In the practical development of my invention, I provide a base plate 16 which is longitudinally slotted as at 17 to receive the clamp screws 18 by which it may be removably secured upon the work support base 5 as illustrated in Figures 1, 3 and 10 of the drawings. A longitudinal keyway 19 is formed in the under face of the base plate 16 to receive the guide key 20 secured to and projecting upwardly from the work support base 5. See Figures 3, 5 and 10.

The base plate 16 includes an extended nose portion 21 having a cut-out as indicated at 22 to provide operating clearance for the pinking cutters to be described in detail hereinafter, and the fingers defining this cut-out are recessed as at 23 to removably receive ledger blades 24 disposed in angular relation as illustrated in Figures 3, 8 and 9.

The fingers forming the end of the base plate nose 21 and defining the nose cut-out 22 also form abutment shoulders 25 which co-operate with the abutment boss 26 depending from said nose portion 21 to limit shifting movement of said base plate in a manner soon to be described. See Figures 8, 9 and 15.

The boss 26 depending from the base plate nose portion is slidable in a recess 27 formed in the upper surface of the work supporting base 5 and the throat plate 10 is cut out as at 28 to receive the abutment shoulder portions 25 of the nose portion and to provide a suitable abutment or movement limiting face 29 to be engaged by said abutment shoulders. The right hand end of the recess 27 serves a like purpose in engaging the adjacent portion of the boss 26 and by this equipment the degree of movement of which the base plate 16 is capable toward and away from the feed mechanism or work guide line, is suitably limited. The limiting stop shoulder formed by said recessed portion is indicated at 30. See Figure 13.

My improved pinking mechanism preferably is in the nature of a unit attachment, its component parts being mounted wholly upon and bodily movable with the base plate 16. By shifting the base plate along its guided mountings and between the stop limits hereinbefore described, it is possible to vary the distance of the line of pinking from the feed mechanism or work guide line, to vary the depth of the pinks or notches, or to vary both said distance and said pink or notch depth. For this purpose, I have provided means for effecting the shifting of said base plate 16. This means comprises an angled shifter lever 31 which is pivoted at 32 to the work supporting base 5 and link-connected as at 33 to the base plate 16. See Figures 1 and 3.

A forked bearing standard 34 is secured as at 35 upon the base plate 16 and in its forked arms are provided bearings 36 for rotatably receiving a horizontally disposed jack shaft 37. A large gear 38 is mounted on the jack shaft 37 and with the small gear 39 mounted on the driver shaft 40 to form a part of a 1-to-2 ratio gear couple for imparting to the jack shaft 37 one rotation for each two rotations of the main shaft 9.

It will be observed by reference to Figures 2 and 3, that the driver shaft 40 parallels the main shaft 9 and has rotative bearing at one end in a bearing 41 secured as at 42 to the forked standard 34 and its other end in a bearing 43 supported on a standard 44 secured as at 45 upon the base 16. Rotation is imparted to the driver shaft 40 through the medium of a toothed pulley 46 mounted on the end thereof and driven by a belt 47 from a like size pulley 48 secured upon the main shaft 9. The belt 47 is of course sufficiently flexible to permit the slight shifting movements of the base plate 16 without in any way effecting driving of the cutting devices from the main shaft 9.

In order to permit silencing of the pinking mechanism at will, without disconnecting the belt and pulley of the power transmission, I provide a suitable clutch equipment which is so constructed that when it is shifted to effect silencing of the pinking mechanism operation it serves to lock the pinking cutters in a predetermined inoperative position, and, upon reclutching, to assure a reestablishing of the desired timed relation between the work feeding means and the reciprocations of the cutting elements.

The clutching devices above referred to include a driver hub 49 secured as at 50 upon the driver shaft 40 and including a driving flange 51. The

flange 51 is apertured as at 52 to slidably receive driving pins 53 which project from a shifter sleeve 54 slidably mounted on the hub 49. It will be understood that the pulley 46 is loosely mounted on the end of the driver shaft 40 and imparts its rotation to the flange 51, hub 49 and shaft 40 only when the driver pins 53 are received in the sockets 55 as illustrated in Figures 2 and 11 of the drawings. When the sleeve 54 is shifted to withdraw the driver pins 53 from the pulley sockets 55 the pulley 46 may rotate freely about the driver shaft 40 without imparting rotation thereto.

It will be observed by reference to Figures 2 and 11 of the drawings that the sleeve 54 also carries a lock pin 56 which enters a socket 57 in a stationary or stop collar 58 supported upon the standard 44 each time the clutch sleeve 54 is shifted to the pinker unit silencing position thereby serving to lock the shaft 40, and consequently the pinking cutters, stationary. The single lock pin receiving socket 57 is so positioned with relation to the pinker unit cutting elements and the driving means therefor that said cutting elements will, upon silencing of the pinking mechanism, always be locked stationary in the elevated horizontally alined position. The driver pins 53 are not diametrically oppositely disposed, one thereof being slightly below an imaginary line intersecting the axis of the shaft 40 and the axis of the companion pin. For this reason it is necessary, after releasing the pins 53 from driving relation with the pulley sockets 55, to make a complete revolution of the pulley 46 before the pins and sockets will again register. Thus reestablishment of the timed relation between the work feeding means and the cutter element reciprocations is assured each time the clutch is shifted to throw the pinking unit into operation.

To provide for proper shifting of the clutch sleeve 54 the sleeve is grooved as at 59 to receive a forked shifter 60 carried by a shifter rod 61 slidable in a bearing 62 provided in the standard 44, said rod being link-connected as at 63 to a shifter lever 64 pivoted as at 65 on the work support base 5 and through the medium of which shifting of the clutch sleeve 64 may easily be effected.

My improved cutting devices which are supported upon the base plate 16 and driven by connections described above include a pair of eccentrics 66 secured in spaced relation on the jack shaft 37. It being desired that the cutting elements should reciprocate alternately, the eccentrics 66 are arranged 180 degrees apart in the direction of their rotation and thus as the cutting element driven by one eccentric is advanced toward the work the companion cutting element will be moved away from the work.

The pinking or cutting members each comprises a carrier arm 67 secured as at 68 on a pivot stud 69 having pivot bearing in a sleeve bearing 70 removably secured as at 71 upon the base plate 16.

Each carrier arm pivot stud 69 has a reduced end 72 slidable through a plug screw 73 secured in the end of the respective sleeve bearing 70, which reduced end forms a shoulder 74. A coil spring 75 is interposed between each shoulder 74 and its associated plug screw 73 and tends to force the stud in a direction of its axis in a manner causing the cutting element carried by the respective arm 67 to be yieldably held against the ledger blade with which it is associated, assuring perfect shearing relation. See Figures 3 and 14.

Each of the carrier arms 72 has an ear portion 76 which is connected by pitman 77 and strap 78 to one of the eccentrics 66, and by this means the rotation imparted to the jack shaft 42 is transmitted in the form of oscillatory movement to the pivotally mounted carrier arms 67. See Figures 1, 3, 5, 6 and 14.

At its free end each of the pivoted carrier arms 67 is recessed as at 79 to receive a cutter element 80 and is slotted as at 81 to receive a screw 82, said screw being adapted to pass through the slot and enter a tap 83 formed in the particular cutter element 80 to receive it. By this means the cutting elements 80 are secured to the ends of the carrier arms 67 in a manner permitting a degree of up and down adjustment of said elements relative to said carrier arms.

As will be apparent by reference to Figures 6 and 7 of the drawings, each of the cutter elements 80 includes a flat wall 84 having a portion thereof terminating in an angled and beveled cutting edge 85 and another portion thereof extended downwardly as indicated at 86 to form a guide finger which engages an associated ledger blade while the wall portion proper 84 is lifted out of engagement therewith. As hereinbefore described the flat continuous wall portions 84, 86 are yieldably held in engagement with the cooperating surface of the respective ledger blade 24 by the associated spring equipment 75 to assure efficient shearing relation of the ledger blade and the cutting edge 85 during pinking.

In order to facilitate feeding of the work to the pinking means and to protect the hands of the workers from contact with the reciprocating cutters, I provide a combined guard and guide unit disclosed in detail in Figures 3 and 12 of the drawings. This unit includes a base plate 87 which is secured to the work supporting base 5 by a single screw means as indicated at 88, the base plate 87 being provided with a curved positioning shoulder 89 which engages the adjacent upstanding shoulder presented by the throat plate 10 thus rendering additional securing means unnecessary. See Figures 3, 12 and 13. The unit also includes a rigidly mounted upstanding guard plate 90 and a guide member 91 supported upon an arm 92 pivotally mounted on the base plate 87 and to which said guide member is adjustably secured as indicated at 93. By use of the member 91, it is possible to guide the work to the pinking mechanism, and the flange 90 serves efficiently to guard against contact with the reciprocating cutting elements.

In the foregoing description I have disclosed a simple and efficient pinking machine in which the pinking mechanism is constructed in the form of a unit shiftable bodily to vary the distance of the pinked edge from the feeding mechanism or work guide line or to vary the depth of the pinks and which includes simple individual alternately reciprocated pinking or cutting elements of the flat type easily sharpened, and clutch equipment by which the pinking mechanism may be silenced at the will of the operator and in a manner for locking the cutters in the inoperative position and for assuring reestablishment of the desired timed relation of the work feed mechanism and the cutter element reciprocations when the clutch is again shifted to the operative position. The cutting elements bear such relation and the parts are so operated that the cutter elements form successive cuts bearing angular relation and cooperating to form the pinks, provision also

being made for causing the successive cuts to intersect slightly and thereby assure clean cutting of the fabric in the angles defining the depth of the pinks.

The mechanisms which impart movement to the intermittent or step-by-step work feeding means and the pink cutting means from the common power source or power shaft 9 are so related or synchronized that the cuts effected alternately and successively by the individual cutter elements each take place during a rest interval of the work feeding means.

Means may be provided for varying the length of the feed steps imparted to the work by the feeding mechanism and by this means the depth of the pinks and the degree to which the successive cuts intersect at the angle defining the depth of the pinks may be varied. This feed step adjusting means is generally indicated at 94 and may be of any approved type. This form of sewing machine work feed adjustment being conventional and well known to workers in the art, it is considered unnecessary to disclose the structure thereof in detail. One simple form of such mechanism is disclosed in detail in the patent issued to E. B. Allen, April 18, 1899, and identified by Number 623,271. Obviously any approved form of such mechanism may be employed.

As has been described hereinbefore, the clutch can be shifted to silence the pinking mechanism only when the pin 56 and socket 57 register, at which time the cutting edges 85 are raised out of cutting position a like distance, or in other words, are horizontally alined.

I will now describe briefly the operation of my pinking machine presuming the parts to be in the position described in the preceding paragraph. In this description I make reference to "front" and "back" cutting elements. By "front" element I consider the cutting element first encountered by work being advanced in the direction of the arrow A in Figure 3. The front cutting element therefore is the cutting element lowermost in Figure 3 of the drawings and the back cutting element is the cutting element nearest the top of Figure 3. With the parts in the position stated, and the power shaft 9 moving in the direction indicated by the arrows on Figure 3, the first event in the cycle of operations is a feed step of the work or fabric. See Figure 15. Just before the shaft 9 completes a half turn the downwardly moving front knife starts to make its cut in the edge of the fabric, as indicated in Figure 16. At this time the back knife is moving upwardly. During the next half turn the cutter elements reverse their direction of travel and return to their position of alinement above referred to. It will be remembered that the jack shaft 37 makes one revolution for each two revolutions of the main shaft 9.

With the cutting elements elevated, the fabric is given another step feed as indicated in Figure 17 and during the second revolution of the main shaft 9, the above sequence of operation is repeated except for reversal of direction of travel of the cutting elements.

In Figure 19 of the drawings, I have illustrated in plan view the position of the parts shown in Figure 16 and in Figure 20 of the drawings I have shown in plan view the position of the parts illustrated in Figure 18.

From the foregoing, it will be apparent that the cycle of operations forming a single pink or edge notch in the fabric may be summarized as including four events, namely, (1) fabric feed step, (2) front element cut, (3) fabric feed step, and (4) back element cut.

This sequence of operation is illustrated in comparative diagram in Figure 22 of the drawings. In this figure the line FS indicates two revolutions of the main or power shaft 9 and the two feed steps which occur during said revolutions. Beneath the line FS is a line JS representing a single revolution of the jack shaft 37 which occurs during the two revolutions of the shaft 9. Traversing the line JS I have diagrammatically indicated the front and back knives and the approximate intervals at which they individually make their cuts.

It is of course to be understood that the details of structure and arrangements of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:—

1. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, pink cutting means including movable shearing blade and stationary ledger blade equipment, and means to move said cutting means to form successive individual cuts bearing angular relation and cooperating to form said pinks, the successive cuts being formed during successive rest intervals of said feeding means.

2. In pinking mechanism, work feeding means, and pink cutting means operable to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutting means whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks.

3. In pinking mechanism, ledger blade equipment, pink cutting means, means to move said cutting means into and out of engagement with said ledger blade equipment to form successive cuts bearing angular relation and cooperating to form said pinks, and means to yieldably hold said cutting means against said ledger blade equipment during the making of said successive cuts.

4. In pinking mechanism, ledger blade equipment, pink cutting means, means to move said cutting means into and out of engagement with said ledger blade equipment to form successive intersecting cuts bearing angular relation and cooperating to form said pinks, and means to yieldably hold said cutting means against said ledger blade equipment during the making of said successive intersecting cuts.

5. In pinking mechanism, work feeding means, ledger blade equipment, pink cutting means engageable with said ledger blade equipment to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutting means whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks, and means to yieldably hold said cutting means against said ledger blade equipment during the making of said successive cuts.

6. In pinking mechanism, individually reciprocable pink cutters, and means to reciprocate the cutters to form successive cuts bearing angular relation and cooperating to form said pinks.

7. In pinking mechanism, individually reciprocable pink cutters, and means to reciprocate the cutters to form successive intersecting cuts bearing angular relation and cooperating to form said pinks.

8. In pinking mechanism, intermittently actuated work feeding means for feeding work step-

by-step, individually reciprocable pink cutters, and means to reciprocate the cutters to form successive cuts bearing angular relation and cooperating to form said pinks, the successive cuts being formed during successive rest intervals of said feeding means.

9. In pinking mechanism, work feeding means, and individual pink cutters reciprocable to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutter reciprocations whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks.

10. In pinking mechanism, ledger blade equipment, individual reciprocable pink cutters, means to reciprocate said cutters into and out of engagement with said ledger blade equipment to form successive cuts bearing angular relation and cooperating to form said pinks, and means to yieldably hold said cutters against said ledger blade equipment during the making of said successive cuts.

11. In pinking mechanism, ledger blade equipment, individual reciprocable pink cutters, means to reciprocate said cutters into and out of engagement with said ledger blade equipment to form successive intersecting cuts bearing angular relation and cooperating to form said pinks, and means to yieldably hold said cutters against said ledger blade equipment during the making of said successive intersecting cuts.

12. In pinking mechanism, work feeding means, ledger blade equipment, individual reciprocable pink cutters, means to reciprocate said cutters into and out of engagement with said ledger blade equipment to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutter reciprocations whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks, and means to yieldably hold said cutters against said ledger blade equipment during the making of said successive cuts.

13. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, pink cutting means, means to move said cutting means to form successive cuts bearing angular relation and cooperating to form said pinks, the successive cuts being formed during successive rest intervals of said feeding means, and means to adjust the feeding means to vary the length of feed steps effected thereby.

14. In pinking mechanism, work feeding means, pink cutting means operable to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutting means whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks, and means to adjust said feeding means to vary the degree of intersection of said cuts.

15. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, individual reciprocable pink cutters, means to reciprocate the cutters to form successive cuts bearing angular relation and cooperating to form said pinks, the successive cuts being formed during successive rest intervals of said feeding means, and means to ajust the feeding means to vary the length of feed steps effected thereby.

16. In pinking mechanism, work feeding means, individual pink cutters reciprocable to form successive cuts in the edge of the work bearing angular relation, said work feeding means serving to feed the work in timed relation to said cutter reciprocations whereby to cause said successive cuts to intersect at the angle defining the depth of said pinks, and means to adjust said feeding means to vary the degree of intersection of said cuts.

17. In pinking mechanism, a work supporting base, work guiding means, a pinker unit mounted on said base and including pinking means, and means to bodily shift the position of the pinker unit to vary the distance between the pinking means and the guiding means, said pinker unit and said base having cooperating key and keyway equipment for guiding said distance varying movement.

18. In pinking mechanism, a work supporting base, work guiding means, a pinker unit mounted on said base and including pinking means, and lever and link connections between said unit and said base to bodily shift the position of said unit to vary the distance between the pinking means and the guiding means.

19. In pinking mechanism, a work supporting base, work guiding means, a pinker unit mounted on said base and including pinking means, and lever and link connections between said unit and said base to bodily shift the position of said unit to vary the distance between the pinking means and the guiding means, said pinker unit and said base having cooperating key and keyway equipment for guiding said distance varying movement.

20. In pinking mechanism, a pair of alternately reciprocable pink cutting blades, and driving means for reciprocating the blades and including clutch means enabling silencing of the cutting means and embodying devices interengageable upon silencing of the cutting means to secure a predetermined stationary positioning of said cutting means.

21. In pinking mechanism, reciprocable pink cutting means, intermittently actuated work feeding means for feeding work step-by-step, and driving means for reciprocating the cutting means and actuating said feeding means in cooperative timed relation and including clutch means enabling silencing of the cutting means and embodying devices interengageable upon silencing of the cutting means to secure a predetermined stationary positioning of said cutting means, and other devices bearing fixed relation to said first mentioned devices and active upon restoration of the clutched condition to assure re-establishment of the timed relation of the feeding means and the cutting means.

22. In a pinking machine, a work supporting base, a jack shaft rotatably mounted adjacent the base, individual reciprocably mounted pinker knives, and means including the jack shaft for alternately reciprocating the knives to cause them to coact in forming pinks.

23. In a pinking machine, a work supporting base, a jack shaft rotatably mounted adjacent the base, individual reciprocably mounted pinker knives, and means including eccentric and pitman and strap connections between the jack shaft and said knives.

24. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, reciprocable pink cutting means, driving means for actuating said feeding means and said cutting means in timed relation, and clutch means for silencing said cutting means dis-

engageable from driving connection with said driving means only when said cutting means is elevated out of active cutting position.

25. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, reciprocable pink cutting means, driving means for actuating said feeding means and said cutting means in timed relation, and clutch means for silencing said cutting means disengageable from driving connection with said driving means only when said cutting means is elevated out of active cutting position and including means to lock said cutting means in silenced position.

26. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, reciprocable pink cutting means, driving means for actuating said feeding means and said cutting means in timed relation, and clutch means for silencing said cutting means disengageable from driving connection with said driving means only when said cutting means is elevated out of active cutting position and including means to lock said cutting means in silenced position, and devices coacting upon restoration of the clutched condition to assure reestablishment of the timed relation of the feeding and the cutting means.

27. In pinking mechanism, a work supporting base, work guiding means, a pinker unit mounted on said base and including pinking means, means to bodily shift the position of the pinker unit to vary the distance between the pinking means and the guiding means, and means to limit the shifting of said unit toward and from said guiding means.

28. In pinking mechanism, a work supporting base, work guiding means, a pinker unit mounted on said base and including a base plate and pinking means, and means to bodily shift the position of the pinker unit to vary the distance between the pinking means and the guiding means, said work supporting base having a recess therein forming stop shoulders, and said base plate having an extension depending in said recess and including abutment elements engageable with the stop shoulders to limit shifting of said unit.

29. In pinking mechanism, a work supporting base, a rotatably mounted jack shaft, means for imparting rotation to the jack shaft, individual reciprocable pink cutters, and means actuated by the jack shaft for reciprocating the cutters to form successive intersecting cuts bearing angular relation and cooperating to form said pinks.

30. In pinking mechanism, a work supporting base, a rotatably mounted jack shaft, means for imparting rotation to the jack shaft, individual reciprocable pink cutters, means actuated by the jack shaft for reciprocating the cutters to form successive cuts bearing angular relation and cooperating to form said pinks, and means to feed work step-by-step in timed relation to said cutter reciprocations to cause said successive cuts to intersect at the angle defining the depth of said pinks.

31. In pinking mechanism, a work supporting base, a rotatably mounted jack shaft, means for imparting rotation to the jack shaft, individual reciprocable pink cutters, and means actuated by the jack shaft for reciprocating the cutters to form successive intersecting cuts bearing angular relation and cooperating to form said pinks, and comprising cutter driving eccentrics on the jack shaft one for each cutter, and a pitman and strap connecting each cutter with an associated eccentric.

32. In pinking mechanism, work feeding means for feeding work step-by-step, a rotatably mounted jack shaft, individual reciprocable pink cutters movable alternately to form successive cuts bearing angular relation and cooperating to form said pinks, cutter driving eccentrics on said jack shaft one for each cutter, a pitman and strap connecting each cutter with an associated eccentric, and means for imparting rotation to the jack shaft in timed relation to the feeding means to cause the cutters to move into cutting position only during positions of rest of said feed means.

33. In pinking mechanism, work feeding means for feeding work step-by-step, a rotatably mounted jack shaft, individual reciprocable pink cutters movable alternately to form successive cuts bearing angular relation and cooperating to form said pinks, cutter driving eccentrics on said jack shaft one for each cutter, a pitman and strap connecting each cutter with an associated eccentric, means for imparting rotation to the jack shaft in timed relation to the feeding means to cause the cutters to move into cutting position only during positions of rest of said feed means, and clutch devices for silencing said cutters interposed in said means for imparting rotation to the jack shaft and disengageable only when said cutters are elevated out of cutting position.

34. In pinking mechanism, work feeding means for feeding work step-by-step, a rotatably mounted jack shaft, individual reciprocable pink cutters movable alternately to form successive cuts bearing angular relation and cooperating to form said pinks, cutter driving eccentrics on said jack shaft one for each cutter, a pitman and strap connecting each cutter with an associated eccentric, means for imparting rotation to the jack shaft and for driving the feeding means in cooperative timed relation to cause the cutters to move into cutting position only during positions of rest of said feed means, and clutch devices for silencing said cutters interposed in said means for imparting rotation to the jack shaft and disengageable only when said cutters are elevated out of cutting position, said clutch devices including means to lock the cutters in the position at which they are silenced and for assuring reestablishment of the timed relation with the feeding means when the silenced condition is discontinued.

35. In pinking mechanism, ledger blades bearing angular relation, individual reciprocable pink cutters movable alternately into and out of engagement with the ledger blades to form successive cuts bearing angular relation and cooperating to form said pinks, a jack shaft, cutter driving eccentrics on said jack shaft one for each cutter, a pitman and strap connecting each cutter with an associated eccentric, and means to yieldably hold each cutter against its associated ledger blade while in cutting engagement therewith.

36. In pinking mechanism, a work supporting base, means to feed work over the base, work pinking means operable in timed relation to the work feeding means, and a guard and guide unit mounted on said base in position for guarding said pinking means and for guiding work being fed by said feeding means.

37. In pinking mechanism; a work supporting base; means to feed work over the base; work pinking means operable in timed relation to the work feeding means; and a guard and guide unit comprising a base plate mountable on and removable from said work supporting base, a guard

flange upstanding in position to guard operation of said pinking means, and an upstanding guide flange for guiding work being fed by said feeding means.

38. In pinking mechanism; a work supporting base; means to feed work over the base; work pinking means operable in timed relation to the work feeding means; a guard and guide unit comprising a base plate mountable on and removable from said work supporting base, a guard flange upstanding in position to guard operation of said pinking means, and an upstanding guide flange for guiding work being fed by said feeding means; and a supporting arm carrying said guide flange and swingable to move said guide flange into or out of effective position.

39. In pinking mechanism; a work supporting base; means to feed work over the base; work pinking means operable in timed relation to the work feeding means; a guard and guide unit comprising a base plate mountable on and removable from said work supporting base, a guard flange upstanding in position to guard operation of said pinking means, and an upstanding guide flange for guiding work being fed by said feeding means; a supporting arm carrying said guide flange and swingable to move said guide flange into or out of effective position; and means to adjustably support the guide flange on the supporting arm to enable adjustment of the guiding relation between the guide flange and the feeding means.

40. In pinking mechanism, a work supporting base, a main rotary shaft, a work guide, and a pinker unit including a base plate slidably guided on and supported by the work support base, pinking means, means for operating the pinking means including a jack shaft and a driver shaft rotatably supported on the base plate, means for connecting the driver and jack shafts in driving relation, said driver shaft lying parallel the main rotary shaft, pulley and belt equipment connecting the driver shaft and the main rotary shaft in driving relation, and means to bodily shift the position of the base plate to vary the distance between the work guide and the pinking means.

41. In pinking mechanism, a work supporting base, a main rotary shaft, work feeding means driven from the main rotary shaft, and a pinker unit including a base plate slidably guided on and supported by the work support base, pinking means, means for operating the pinking means in timed relation to the work feeding means including a jack shaft and a driver shaft rotatably supported on the base plate, means for connecting the driver and jack shafts in driving relation, said driver shaft lying parallel the main rotary shaft, pulley and belt equipment connecting the driver shaft and the main rotary shaft in driving relation, and means to bodily shift the position of the base plate to vary the distance between the work feeding means and the pinking means.

42. In pinking mechanism, a ledger blade, a cutter blade, a cutter blade carrier arm, means to pivotally mount the carrier arm including a pivot stud projecting from said carrier arm and having a reduced shank portion forming an abutment shoulder, a sleeve bearing for the pivot stud, a guide bearing for the shank portion and forming an abutment shoulder opposed to the stud abutment shoulder, and a spring interposed between the opposed abutment shoulders to urge the carrier arm bodily laterally and yieldably hold said ledger and cutter blades in shearing relation.

43. In pinking mechanism, a pair of spaced angularly disposed ledger blades, a cutter blade associated with each ledger blade, a pivotally mounted carrier arm carrying each cutter blade, means to oscillate the arms in timed relation to form successive cuts cooperating in forming pinks, and means to urge each arm laterally to yieldably hold the cutter blades in shearing relation to the ledger blades.

44. In pinking mechanism, a pair of spaced angularly disposed ledger blades, a cutter blade associated with each ledger blade, a pivotally mounted carrier arm carrying each cutter blade, means to oscillate the arms in timed relation to form successive cuts cooperating in forming pinks, and means to urge each arm bodily laterally to yieldably hold the cutter blades in shearing relation to the ledger blades.

45. In pinking mechanism, a pair of spaced angularly disposed ledger blades, a cutter blade associated with each ledger blade, a pivotally mounted carrier arm carrying each cutter blade, means to oscillate the arms in timed relation to form successive cuts cooperating in forming pinks, and means to urge each arm bodily laterally to yieldably hold the cutter blades in shearing relation to the ledger blades, said last named means comprising a pivot stud projecting from each carrier arm and having a reduced shank portion forming an abutment shoulder, a sleeve bearing for each pivot stud, a guide bearing for each shank portion and forming an abutment shoulder opposed to the stud abutment shoulder, and a spring interposed between the opposed abutment shoulders.

46. In pinking mechanism, a pair of spaced angularly disposed ledger blades, a cutter blade associated with each ledger blade, a pivotally mounted carrier arm carrying each cutter blade, means to oscillate the arms in timed relation to form successive cuts cooperating in forming pinks, and means to urge each arm bodily laterally to yieldably hold the cutter blades in shearing relation to the ledger blades, said arm oscillating means including a rotary shaft, a pair of eccentrics on said shaft spaced 180° apart in the direction of rotation of said shaft, and pitman and strap connections between each eccentric and an associated carrier arm.

47. In pinking mechanism, a pair of cutting blades, and means to individually move said blades whereby each blade moves alternately-oppositely to its companion blade to form successive cuts bearing angular relation and cooperating to form said pinks.

48. In pinking mechanism, a pair of cutting blades, and means to individually move said blades whereby each blade moves alternately-oppositely to its companion blade to form successive intersecting cuts bearing angular relation and cooperating to form said pinks.

49. In pinking mechanism, intermittently actuated work feeding means for feeding work step-by-step, a pair of pink cutting blades, and means to individually move said blades whereby each blade moves alternately-oppositely to its companion blade to form successive cuts bearing angular relation and cooperating to form said pinks, the successive cuts being formed during successive rest intervals of said feeding means.

50. In pinking mechanism, two cutter devices disposed in spaced and angular relation and each limited in operation to a single plane of move-

ment, work feeding means, and means to move said cutting devices to form individual cuts bearing angular relation whereby companion pairs of said cuts form single pinks in the edge of the work.

51. In pinking mechanism, two ledger blades disposed in spaced and angular relation, two cutter blades cooperative with said ledger blades and each limited in operation to a single plane of movement, work feeding means, and means to move said cutter blades to form individual cuts bearing angular relation whereby companion cuts form single pinks in the edge of the work.

52. In pinking mechanism, two ledger blades disposed in spaced and angular relation, two cutter blades cooperative with said ledger blades and each limited in operation to a single plane of movement, work feeding means, and means to move said cutter blades to form individual cuts bearing angular relation whereby companion cuts form single pinks in the edge of the work, said work feeding means serving to feed the work before and after each cut and remaining ineffective during the making of each cut.

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