

J. A. GROEBLI.
JACQUARD MECHANISM.
APPLICATION FILED JULY 3, 1908.

924,454.

Patented June 8, 1909.

4 SHEETS—SHEET 1.

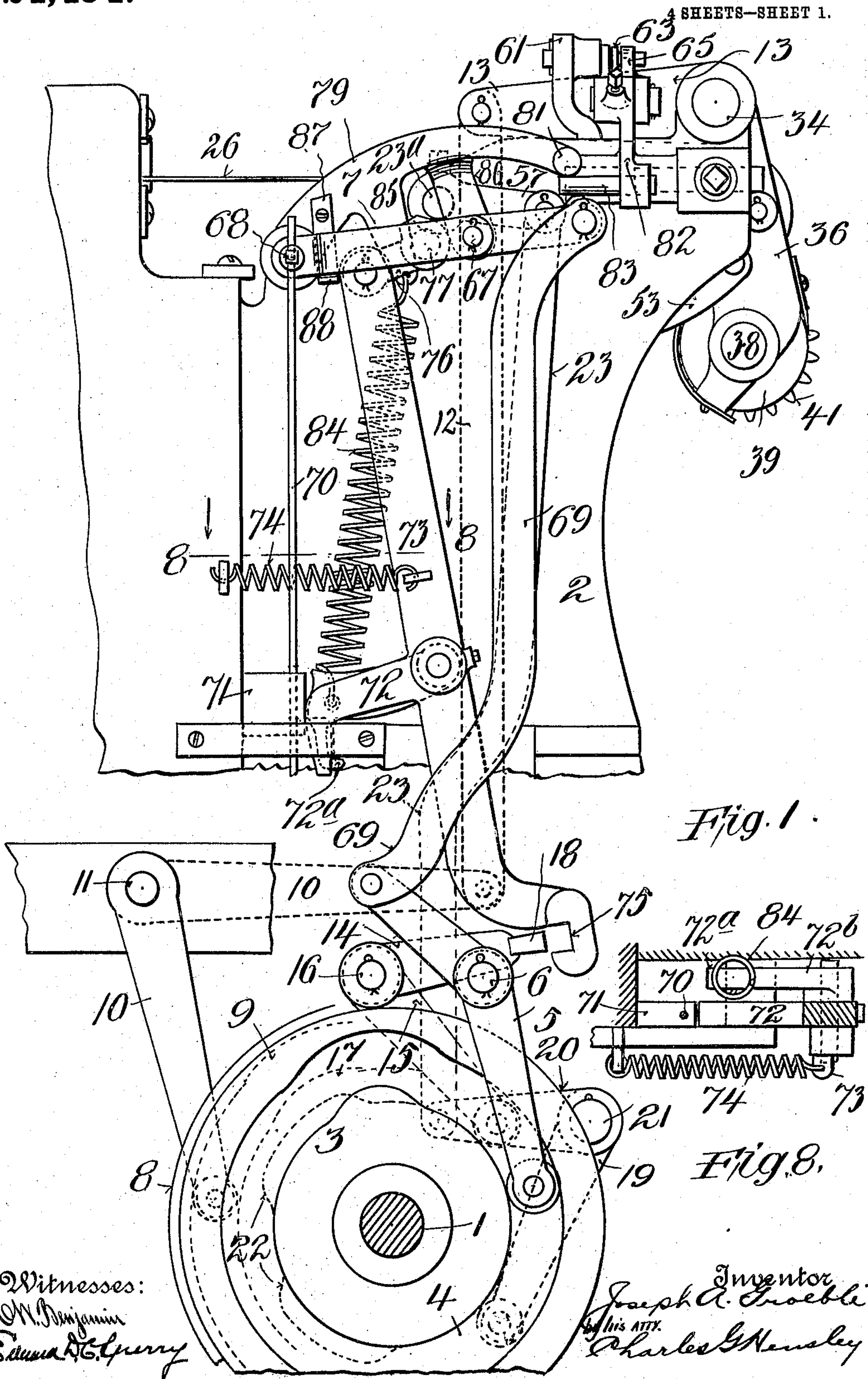


Fig. 1.

Fig. 8.

Witnesses:
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Edmund G. Perry

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Joseph A. Groebli
By His ATTY.
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924,454.

4 SHEETS—SHEET 2.

Fig. 2.

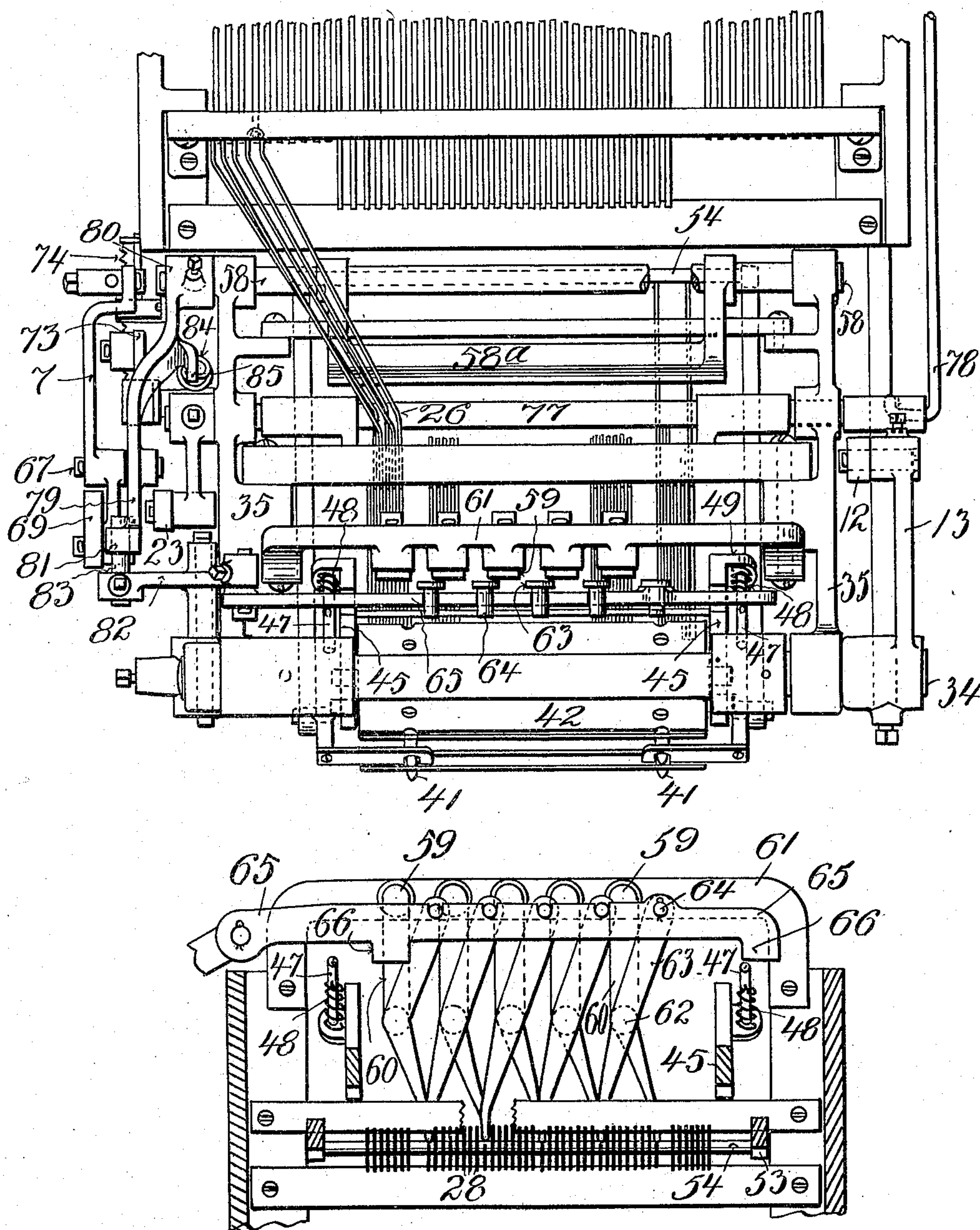


Fig. 4.

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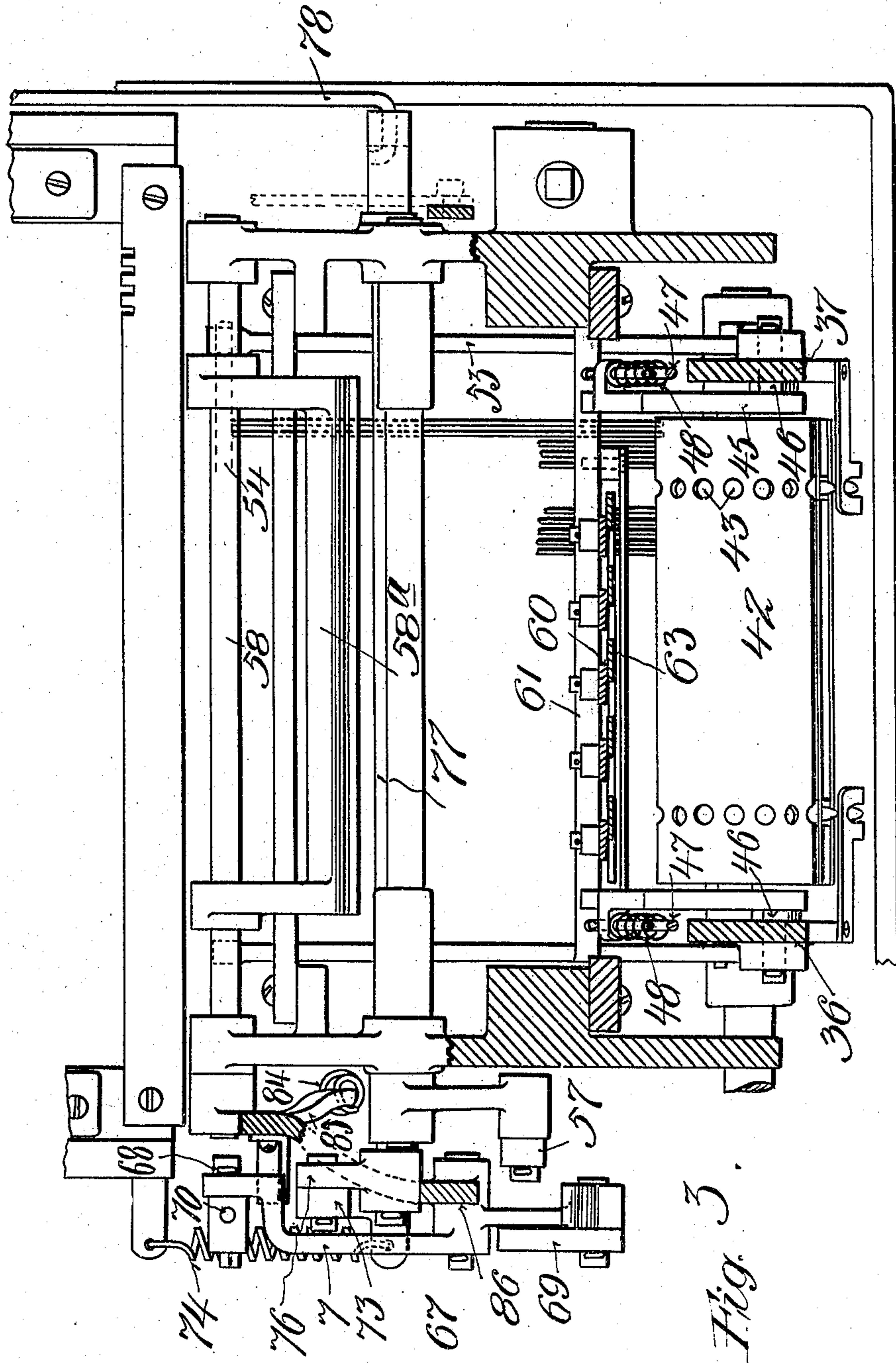


Fig. 3.

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4 SHEETS—SHEET 4.

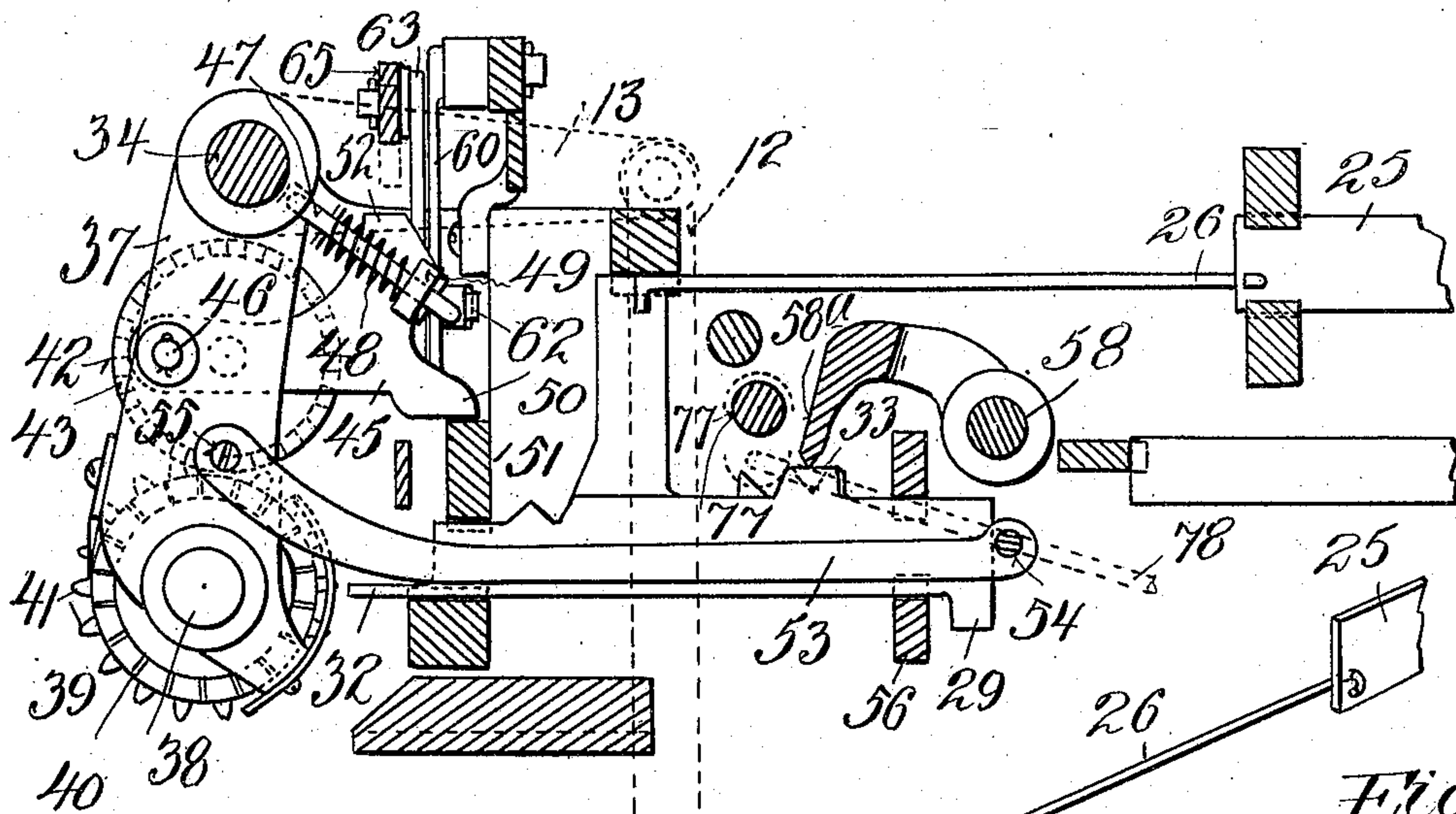


Fig. 5.

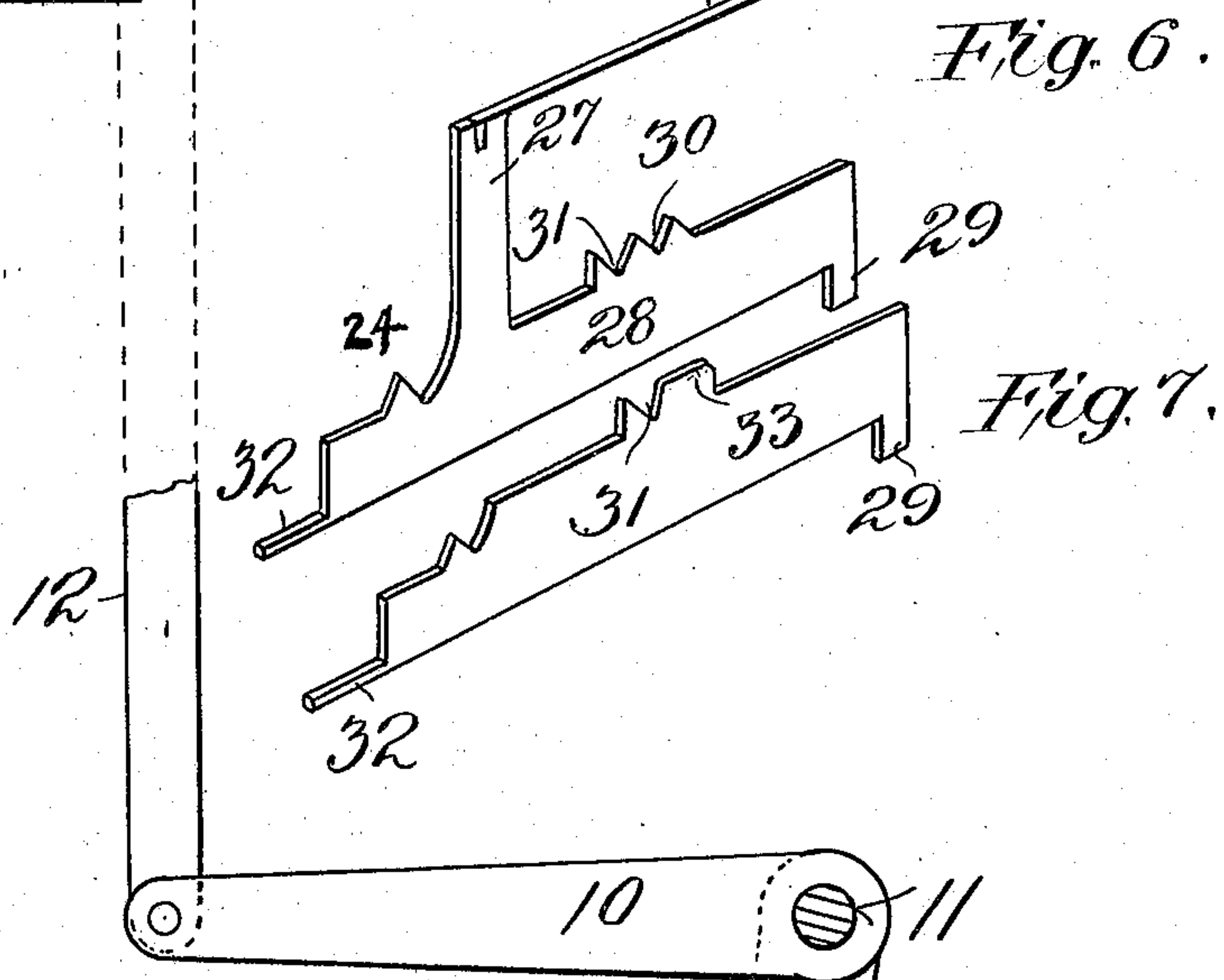
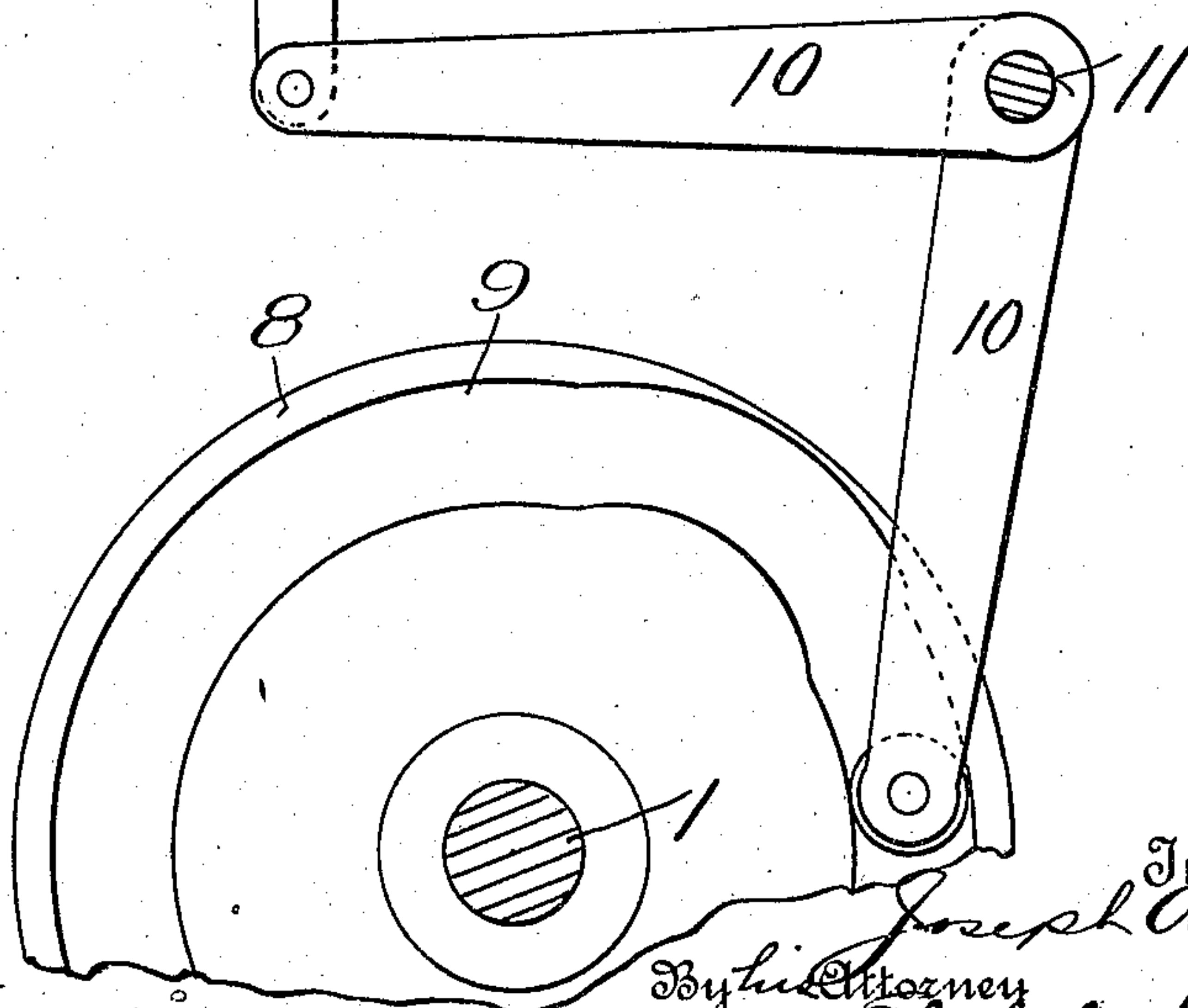


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOSEPH A. GROEBLI, OF NEW YORK, N. Y.

JACQUARD MECHANISM.

No. 924,454.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed July 3, 1908. Serial No. 441,744.

To all whom it may concern:

Be it known that I, JOSEPH A. GROEBLI, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Jacquard Mechanisms, of which the following is a specification.

The present invention relates to improvements in jacquard mechanism and the features thereof are especially applicable to a jacquard such as is shown in my U. S. Patent No. 528632, dated Nov. 6, 1894. Some of the parts illustrated in the present case to show the application of my invention are the same as some of the parts shown in said patent. There is shown in another application for patent filed by me on the 22nd day of June 1906 and serially numbered 323057, a form of brake mechanism and disconnecting mechanism which may be advantageously combined with the present invention and cross reference to that application is here made.

The object of my present improvements is to provide certain protective devices for a jacquard which will determine defects in the operation of the machine and bring the jacquard to a stop so as to prevent breakage and also the operation of the jacquard with a defective pattern roll. My invention has three principal objects, one being to detect any flaw in the paper pattern roll which operates the jacquard. It sometimes happens that the pattern roll is defective in having its outer edges torn, or in some way failing to present a perfect web of desired width. If the roll when so defective is allowed to operate on the jacquard it might not effect the proper operation thereof as slides which should be driven backward by the roll are left in the forward position owing to the defects and the machine is not properly operated. I have provided slides, tracers, or feelers for detecting such defects in the roll and when they detect any such defect they operate automatically to stop the jacquard to prevent further operation until the defect is obviated.

Another feature of my invention is a simple and efficient device by which the shears which operate in conjunction with the jacquard slides will detect when more than a given number, say one, of a series remain forward, and operate to stop the machine and prevent any conflict therein. My invention in its fullest aspect contemplates the

use of certain parts in common for both of the above devices.

Another object of my invention is to provide means which will automatically stop the machine when the rollers or cylinders on which the pattern roll engages are separated too far, as by the accidental dropping of anything between them.

The details of construction of one embodiment of my invention will appear in full hereinafter.

In the drawings forming a part of this application, Figure 1 is a side elevation of my improvements, Fig. 2, is a plan view thereof, Fig. 3, is a similar view, partly in section, Fig. 4, is a section showing the shear action, Fig. 5, is an end elevation, partly in section, Fig. 6, is a perspective view of one of the ordinary slides of the jacquard, Fig. 7, is a similar view of a slide for detecting defects in the outer edges of the pattern roll, and Fig. 8, is a section on the line 8—8 of Fig. 1.

As a complete jacquard to which my present improvements may be applied is fully shown and described in my patent herein referred to I will only refer to such parts thereof as are necessary to show the operation of my device.

In the use of a jacquard on embroidering machines the operating shaft such as 1, is usually disposed below the jacquard and has various operating members, such as cams and from these the force for operating the jacquard and embroidering machine is distributed. A frame 2 is provided as a part of the jacquard foundation and this frame may be advantageously used as a supporting means for some of the elements of the present device.

In carrying out my invention in that embodiment of it here shown I provide a lever which is continually operated by a source of power and which has a normal fulcrum when the machine is properly performing its functions and when difficulties arise through any one of the several causes, certain parts work automatically to change the point of fulcrum of such lever, when the operating force will cause it to rock at a different point and set certain mechanism into operation to stop the machine and preferably apply a brake as well. Certain of the operating elements are common to the several detecting and initiating devices so that the entire mechanism is thereby simplified.

On the main operating shaft 1, I have provided a plurality of grooved cams for operating certain levers used in the present combinations. One of the cams, 3, is shown in full in Fig. 1, which operates through its groove 4 to rock an angular lever 5 which is fulcrumed to a support 6 and this lever as will be seen later continually rocks the lever 7 whose fulcrum is changed to operate the stopping mechanism. Another cam 8 has a groove 9 in which the roller of a lever 10 operates. The lever 10 is an angular or bell crank lever having its elbow fulcrumed to a support 11, and its end secured to an upwardly extending rod 12 which latter connects above with the lever 13 by which the rollers having the pattern roll are reciprocated, for the purpose which will appear. The lever 10 is continually rocked by its cam as it is necessary for the pattern roll to be reciprocated whenever the machine operates. There is another bell crank lever 14, 15 which fulcrums on a support 16 and the roller of this lever engages in a groove 17 of another cam on shaft 1, which rocks it on its fulcrum continually. The lever 14, 15, performs no function during the proper operation of the machine, the block 18 on the end of it simply rocking up and down. There is still another bell crank lever 19, 20, having its elbow fulcrumed to a support 21 from which it rocks and the roller of this lever engages in the groove of another cam on the shaft 1, which has the two cam shoulders 22 (see dotted line, Fig. 1) which groove causes the lever 19, 20, to rock at each revolution of the shaft. The lever 19, 20, connects with a rod 23 through which it operates a shaft 23^a which forms no part of my present invention. The various levers and cams just described provide the operating force for such parts of the mechanism as will be necessary to describe to illustrate the application of my invention.

Passing to the elements of the jacquard mechanism it will be seen that the jacquard proper has a number of long slides 24, the number of which depends upon the particular jacquard mechanism and in the one here shown these slides are shown arranged in groups of seven and operate in the same manner as the slides in the prior patent herein mentioned. An example of such slide, which is the usual or normal slide of the machine, used for the positioning of the tambour frame and operating other elements of the machine, is shown in Fig. 6. The plate 25 is connected by a wire 26 to an upright portion 27 of a slide plate 28, which latter has on its forward end a pin 32 which engages against the pattern roll on the cylinder. It also has a stop shoulder 29 for determining its extreme forward movement and upon its upper side it has the two V shaped notches 30 and 31 which are engaged

by a locking bar, the notch 31 being engaged by the locking bar when the slide is in its forward position and the notch 30 when the slide is in its rearward position, the bar in either case locking the slide until the next successive operation of the machine. The slides of the several groups are similar to the one shown in Fig. 6. Outside of all the slides are arranged two special slides which engage with and trace the extreme edges of the pattern roll beyond the points where any of the usual perforations of the roll occur, including extra perforations such as may be provided for special function mechanism. That is to say, beyond all the ordinary slides, on each side, are these special slides. They engage the outer edges of the pattern roll and travel idly back and forth without causing any operation of the mechanism so long as the paper web of the design roll is perfect and has no tear in its edges. If there should be a tear in either edge of the paper as it sometimes happens, the roll would be defective and these special slides or feelers will immediately detect the defect, will be left behind on the movement of the cylinders and will set into operation certain mechanism for stopping the machine to prevent continuance of the operation by a defective roll. These special slides or feelers are somewhat similar to the others having the ends 32, and the stops 29 which serve the same purpose as the corresponding features in the other slides. In these slides however while I have formed the notch 31, I have provided a flat top blank or surface 33 at the place corresponding to the position of the notch 30 in the other slides. In this way the slide may be locked in its rearward position but if should remain forward through any defect in the pattern roll the flat shoulder 33 will prevent a locking bar from descending and through such action the machine will be stopped as will appear.

The means for sliding the slides back and forth to operate the machine while somewhat similar to that of the previous patent has certain features of novelty and operate as a part of the safety device. The shaft 34 mounted on brackets 35 is rocked by the lever 13 which, as was explained, receives its operations through the bell crank lever 10 and arm 12, at each revolution of the main shaft. On this shaft 34 are carried supporting plates 36 and 37 between which the shaft 38 of the roller or cylinder 39 is journaled. This roller, which is reticulated for the reception of the slides between the cross bars 40, is caused to move in unison with another cylinder 42 by pins 41 which pass through the design roll and into the holes 43 in cylinder 42, whereby the two cylinders and the pattern roll will always move in unison. The roller or cylinder 42 is journaled between the plates 45 and the latter are

journaled at 46 to the plates 36 and 37, so that while the cylinder 42 is carried by the plates 36 and 37 its journal is movable in relation thereto, whereby the cylinder may be separated from the cylinder 39 sufficiently to permit the pattern roll to be inserted therebetween. In order to press the cylinder 42 down near the cylinder 39 I provide pins 47 which are seated in the hubs of the plates 36 and 37, and surrounding which are springs 48 which press against the ears 49 on the plates 45 and keep the latter pressed downward from their fulcrum 46 whereby the shaft of the cylinder 42 will be moved downward to keep the cylinder 42 in contact with, or nearly so, the lower cylinder. The lower end 50 rests against the cross bar 51 which determines the extreme position of the upper cylinder. It is obvious that the journal of the lower cylinder is fixed in relation to the plates 36 and 37 so that any adjustment takes place through the movement of the journal of the upper cylinder with the plates 45. The upper ends 52 are adapted in certain instances to engage with the shear bar for stopping the machine as will appear.

A bar 53 is connected at 55 with each of the plates 36 and 37 and passes back to a cross bar 54 to which the bars 53 are each secured. It will be noted that the bar 54 lies against the ends of all of the plates 28 of the slides and that the projections 29 of the slides come in contact with the cross bar 56 of the framework and determine the extreme forward movement of the slides. At each operation of the lever 13 the shaft 34 is rocked and with it the plates 36 and 37, thus moving the two cylinders with the pattern roll thereon rearwardly. As the slides lie on a line with the reticulated portions of the cylinder 39 they will be engaged by the pattern roll on its rearward movement except where there are apertures in the pattern roll, and the slides opposite the apertures in the roll will remain behind and cause the necessary operations in the embroidering machine.

In the form of jacquard to which my invention has been applied the slides are arranged in series, and each series contains a plurality of slides, only one of each series being intended to operate at a given operation of the cylinders as conflict would arise if more than one of each series should be operated at a time. In order to prevent such conflict I have provided a series of shears which are closed laterally on the slides which remain forward when the jacquard cylinders operate and detect when more than one slide of a series remain back, there being a shear for each series or set of slides. The shears are so connected with the stopping mechanism that when the shears are prevented from closing sufficiently by more than one slide of a series remaining forward they

or any one of them will operate to stop the machine and prevent any conflict which would arise through the operation of more than one slide in each series. The shears here shown consist of blades or bars 60 which are fulcrumed to a stationary bar 61, at 59, with their ends extending down where they will lie outside of the extreme slides of each series as shown in Fig. 4; and fulcrumed or linked thereto are other blades or bars 63 which are connected at 62 by pins or the like and from this point the shears are adapted to open or close, the ends of each shear including in its open position the slides of a series. The bars or blades 63 are journaled at 64 to a movable bar 65 by which they are adapted to be opened or closed at each operation of the machine just after the slides have been moved back to their rearward position and before the machine has been able to be operated by the slides. This movable bar opens and closes the shears at each operation and as the shears are adapted to close on the slides only in their forward position, they will detect when more than one of a series of slides remain forward and the mechanism connected with this movable bar is such that when the shears can not close as far as when only one slide in each series remains forward it will operate the stopping mechanism. It will be seen that this same bar has two end projections 66 extending downwardly which will be engaged by the projections 52 on the cylinder plates 45, whenever either or both are raised into the path thereof and the bar 65 will be caused to stay back either by defects detected by the shears or by the cylinder 42 being raised above the normal or safe position, which may be caused as explained by something dropping between the cylinders or other causes such as the folding or puckering of the pattern roll.

I will now describe the mechanism by which the several safety devices previously described cause the machine to be stopped. A lever 7 is continually rocked by the rod or arm 69, which latter is connected to and is operated by the lever 5, from the point 68 which is the normal point of fulcrum thereof during all proper operations of the machine. A downward rod 70 is connected to the lever 7 at the point 68 which is the normal point of fulcrum thereof, and this rod has a block 71 on its lower end which wedges against an arm 72 on the rod 73, to keep the latter out of the path of the lever 14 and in resistance to the spring 74. If at any time the rod 70 should be raised in any one of the ways which I will describe, the block 71 will be raised and as the same is drawn away from the path of the arm 72 the rod 73 will be drawn over by the spring 74 until the end of the trigger 72^a on the rod 73 is released from under the plate 72^b when the

jaws 75 on the rod 73 will move into engagement with the piece 18 on the lever 14, which latter being continually rocked by its cam will move the rod 73 upwardly. The rod 5 73 is fulcrumed at its upper end to a short lever 76 which is connected with a shaft 77, and on the other end of this shaft is a rod 78, the movement of which will cause the machine to stop. In the mechanism to which 10 my invention has been applied this rod 78 is the same rod as is numbered a^{24} in my pending application herein referred to and the mechanism connected with it may be the same, the operation of which is fully 15 described in the said pending application. I do not wish to limit myself to the mechanism therein described however as other forms of stopping mechanism may be used with the present device. The three safety or detecting 20 ing devices which I have previously described herein are adapted to effect the stopping of the machine through this trigger and lever action which I have just described. The shaft 58 as was explained carries a bar 25 58^a having a V shaped lower edge which engages in the notches 30 and 31 of the slides according to whether the slides are in their forward or rearward position and it is necessary to rock the bar 58^a on the shaft 58 in 30 order to allow the slides to move from their forward to their rearward position. I have provided a lever 79 which is connected to the shaft 58 so as to rock the latter, at 80, and this lever has a pin 81 which is raised by 35 the pin 83 on the lever 82, to which the shear bar 65 is connected. The pin 83 is itself raised at each revolution of the main shaft by the lever 7, in the path of which the pin 83 lies. In order to return the lever 79 at 40 each operation I have connected a spring 84 to an ear 85 on the lever 79 and to the trigger 72^a which draws the lever 79 downward after each operation, so long as the machine is in proper operation. The lever 79 is ful- 45 crumed to the lever 7 at 67. The plate 87 on the lever 79 has a lip 88 which passes under the end of lever 7 and prevents the outer end of the lever, which is connected to the constantly moving part, from being 50 closed up toward the end of the other lever 79, that is, it maintains an opening which cannot be less than what is required for the free working of the stud 83 of the elbow lever between the same.

55 Assuming the machine to be set as shown in the drawings, which is the position the parts assume when ready for normal or regular operation, the operation will be as follows: The lever 14, 15, is continually 60 rocked by its cam but the lever performs no function unless there is trouble in the machine. The lever 19, 20, and its arm or rod 23 are rocked by their cam. The lever 5 is continually rocked by its cam and through 65 the arm 69 the motion is transmitted to

lever 7, which now rocks from the point 68 as its fulcrum. The rocking of lever 7 causes the lever 82 and the shear bar 65 and also lever 79, shaft 58 and bar 58^a to rock in one direction through engagement with 70 the pin 83. The return of the shear bar and the lever is caused by the spring 84 pulling down on lever 79, which latter having its pin 81 pressed down on pin 83 returns the shear bar after each operation. In this way 75 the upward action of the shear bar and lever is positive, while the downward action is by spring action and may be resisted. The upward movement of the shear lever 82 moves the shear bar 65 to open the shears to allow 80 slides to lie in their forward position. The slides while in their forward position are locked against accidental dislocation by the locking bar 58^a engaging in notches 30. The rocking of the lever 13, by the arm 12 moves 85 the cylinder plates rearwardly, with the pattern web thereon and wherever there are apertures in the web in alinement with the slides such slides remain forward to operate the machine. If more than one slide of a 90 series remain forward the shears will not close sufficiently and the shear bar 65 will be held back. The engagement of the pin 83 with the pin 81 will cause the lever 79 to remain in its elevated position and as the ear 95 thereof is fulcrumed to lever 7, the fulcrum of the latter will be changed from the point 68 to the point 67. The operation of the rod 69 will then cause the lever 7 to rock at 67 instead of at 68 and the result will be 100 that the lever 7 will be raised at the point 68 carrying with it the rod 70. This will move the block 71 away from and release the arm 72 and allow the rod 73 to be moved by the spring 74 until the trigger 72^a 105 is released and the jaw 75 is engaged by the piece 18 on the end of the lever 14, when the rocking of the latter will move the rod 73 and the latter through the arm 76 and shaft 77 will move the rod 78 to stop the machine. 110 The machine will not be started until the defect has been rectified, when the trigger and other parts will have to be returned to their former positions.

Should anything drop between the pat- 115 tern cylinders, or if they should be improperly separated during the operation of the machine they will operate to stop the machine. The under cylinder has its journals permanently fixed with relation to the 120 plates 36 and 37, while the journals of the cylinder 42 being located in the pivotal plates 45, they move therewith. If the upper cylinder is separated from the other as stated, one or both of the plates 45 will be 125 rocked against the action of the springs 48 until the upper ends 52 come into the path of the projections 66 of the shear bar 65. The shear bar will then be prevented from moving to its return position the same as 130

previously described and the effect will be to change the point of fulcrum of lever 7 and cause the stopping of the machine the same as if the shears had prevented the movement of bar 65. In this way the one mechanism answers for both safety devices.

The rocking of the plates 36 and 37 with the cylinders reciprocates the rods 53, which carries the cross bar 54 and the latter returning at each movement of the rods 53, engages on the ends of the slides and returns them after each operation to their forward position. As previously explained, the locking bar 58^a engages in the notches in the slides to lock them while they are performing their functions. They are operated by the pattern roll on the cylinders, the slides opposite the perforations in the roll remaining forward, while those which contact with the paper are pushed back. During the movement of the slides the locking bar is raised and as soon as the slides are positioned the locking bar is rocked to engage in the notches and lock the slides. The locking bar engages the notches 30 in the slides which remain forward and in the notches 31 of those which are forced back, preventing movement of the slides until they have performed their functions and are ready to be returned by the bar 54. The slides or feelers on the sides which engage the edges of the paper roll are moved back and forth at each operation of the cylinders so long as the web is sufficiently wide and has no tears on the edge, and the locking bar engages the notches 31 and locks the slides the same as the other or ordinary slides. If there should be any imperfection on either or both sides of the web one or both of the special slides will remain forward and as the raised surface 33 of the slide or slides will remain under the locking bar the latter will be held up. As the shaft of the locking bar and the shaft of the lever 79 are the same, the holding up of the locking bar by the slides will also hold up the lever 79. This will cause the lever 7 to fulcrum at 67 instead of at 68 and the trigger 72 will be released in the same manner as heretofore explained and the machine will be stopped.

By the arrangement herein described each of the several safety devices operate independently of each other and by providing parts in common for the several safety stop mechanisms the entire device is simplified.

While I have carefully described a specific embodiment of my invention I do not wish to be limited thereby, as it is obvious that other forms may be employed without departing from the spirit and scope of the annexed claims.

Having described my invention what I claim is:

1. In a jacquard mechanism, the combination of reciprocating jacquard slides adapted

to control the functions of an embroidering or similar machine, reciprocating pattern roll operating means adapted to cause the pattern roll to reciprocate the jacquard slides and other slides engaging the pattern roll outside of the said jacquard slides and adapted to be operated simultaneously with and independent of the latter by the pattern roll, a jacquard stop mechanism and means whereby the said second slides will cause the operation of the stop mechanism when the pattern roll fails to operate them upon a reciprocation of the pattern roll.

2. In a jacquard mechanism, stop mechanism, means for operating the stop mechanism, comprising a constantly operated lever, means connected with the normal fulcrum of the lever and adapted to effect the operation of the stop mechanism, a plurality of rollers between which the jacquard roll is adapted to pass, means whereby the abnormal separation of the rollers operates a device for shifting the fulcrum of the lever and thereby allowing the means connected with the normal fulcrum of said lever to operate the stop mechanism.

3. In a jacquard mechanism, a stop mechanism, means for operating the stop mechanism, comprising a constantly operating rocking lever, means connecting the normal fulcrum of the lever with the stop mechanism, a plurality of rollers between which the pattern roll is adapted to pass, one of which is provided with a movable journal, means whereby the abnormal separation of the rollers operates a device for shifting the fulcrum of the lever and thereby allowing the means connected to the stop mechanism to operate the same.

4. In a jacquard mechanism, stop mechanism, means for operating the stop mechanism, comprising a constantly operated rocking lever, means connecting the normal fulcrum of the lever with the stop mechanism, a plurality of rollers between which the jacquard roll is adapted to pass, one of said rollers having independently movable journals, means whereby the movement of the movable roller away from the other roller operates a device for shifting the fulcrum of the lever and thereby allowing the means connected to the stop mechanism to operate the same.

5. In a jacquard mechanism, a stop mechanism, a plurality of rollers between which a pattern roll is adapted to pass, one of said rollers having separately movable journals whereby the rollers may be separated, springs for independently forcing the journals of said movable roller to hold the rollers in juxtaposition and means whereby the abnormal separation of either journal of said movable roller from the journals of the other roller will operate the stop mechanism.

6. In a jacquard mechanism, a stop mechanism,

anism, a plurality of reciprocating pattern operating rollers between which a pattern roll is adapted to pass, means for reciprocating said rollers, one of the rollers having 5 movable journals, whereby it may be separated from the other roller and means whereby the abnormal separation of said rollers will cause the operation of the stop mechanism.

10 7. In a jacquard mechanism, a stop mechanism, slides movable plates 36, 37, carrying a roller, plates 45 journaled in said first plates and carrying second roller, pins on the plates 45, seated in the hubs of plates 36 and 15 37, springs on the said pins adapted to press the plates 45 and means whereby when the plates 45 are rocked by the separation of the rollers the said stop mechanism will be operated.

20 8. In a jacquard mechanism, a stop mechanism, jacquard slides and shears adapted to close on said slides, a reciprocating shear bar adapted for opening and closing the shears, a plurality of separable pattern rollers 25 means for reciprocating the rollers and means whereby the separation of the said rollers and the action of said shears will operate through the said shear bar to cause the operation of the said stop mechanism.

30 9. In a jacquard mechanism, a stop mechanism, jacquard slides pattern rollers and means for operating them to operate the jacquard slides and shears adapted to close on the slides, slides adapted to trace the edges 35 of the pattern roll and common mechanism through which the said shears and tracing slides are adapted to effect the operation of the said stop mechanism.

40 10. In a jacquard mechanism, a stop mechanism jacquard slides and shears adapted to close thereon, slides adapted to trace the edges of the pattern roll, pattern rollers adapted to be separated and means for operating the pattern rollers to reciprocate the 45 slides and common means by which the shears, tracer slides and the said rollers may operate the said stop mechanism.

50 11. In a jacquard mechanism, a stop mechanism, reciprocating slides, a rocking bar adapted to lock the said slides, pattern rollers and means for operating them to operate the jacquard slides, reciprocating tracer slides adapted to engage the edges of the pattern roll, means whereby the failure of a tracer 55 slide to be reciprocated by the pattern roll will prevent the operation of the said locking bar and means whereby such action will cause the action of the said stop mechanism.

60 12. In a jacquard mechanism, a stop mechanism, and means for operating the stop mechanism, a releasing device for controlling the operation of the stop mechanism operating means, a continually operated lever having means connected with the normal ful- 65 crum thereof for operating the releasing

device, means for detecting defects in the jacquard roll and means whereby the detecting device will change the fulcrum of said lever to effect the operation of the releasing device. 70

13. In a jacquard mechanism, a stop mechanism, a continually operated member adapted to effect the operation of the stop mechanism and means for coupling the operating member with the stop mechanism for action, 75 comprising a releasing device, a rocking lever with the normal fulcrum of which the releasing device has a connection and a jacquard safety device adapted to change the fulcrum of said lever to cause the operation 80 of the releasing device.

14. In a jacquard mechanism, a stop mechanism, and means for operating it, comprising a moving operating element adapted to be coupled with the stop mechanism to actuate the latter, a continually operated lever 85 having a releasing device connected near its normal fulcrum and adapted to effect the coupling of the operating element with the stop mechanism, a second lever fulcrumed 90 to the first lever and a jacquard safety device for operating through the second lever to change the fulcrum of the first lever and thereby cause the operation of the releasing device. 95

15. In a jacquard mechanism, a stop mechanism, a continually operated lever and means connected with the lever adapted to control the operation of the stop mechanism, a second lever engaging the first lever, 100 adapted to be operated in one direction by positive means and a jacquard safety device adapted to resist the return of the said second lever and thereby change the fulcrum of the first lever, the operation of the first 105 lever on its changed fulcrum being adapted to operate the stop mechanism controlling means.

16. In a jacquard mechanism, a stop mechanism, a continually operated lever and means connected with the lever adapted to control the operation of the stop mechanism, a second lever engaging the first lever, adapted to be operated in one direction by positive means and to be returned by resist- 110 able means and a jacquard safety device adapted to resist the return of the said second lever and thereby cause a change in the fulcrum of the first lever, the operation of the first lever on its changed fulcrum being 115 adapted to operate the stop mechanism controlling means. 120

17. In a jacquard mechanism, a stop mechanism, and means for operating the same, comprising a releasing device, a plurality of 125 levers adapted to rock from a common point, one of which is adapted to operate a releasing device to effect the operation of the stop mechanism and the other being adapted to change the fulcrum of the first 130

lever, means for rocking the said levers in unison and a jacquard safety device adapted to resist said second lever and cause it to change the fulcrum of the first lever to operate the stop mechanism.

18. In a jacquard mechanism, a stop mechanism, and means for operating the same, comprising an operated element, an arm adapted to be coupled therewith and to operate the stop mechanism, a lever and means for positively operating it from a normal fulcrum, a releasing device connected near the normal fulcrum of the lever adapted to set the said arm into engagement with the operated element, a second lever moving with the first lever and fulcrumed thereto and a jacquard safety device for resisting the said second lever to change the fulcrum of the first lever and thereby operate the releasing device.

19. In a jacquard mechanism, a stop mechanism, pattern rollers and jacquard slides operated thereby, slides engaging the edges of the pattern roll, a locking bar for locking the slides and adapted to be operated by a lever, another lever having a normal fulcrum and means connected with the lever adapted to effect the operation of the stop mechanism upon a change in its fulcrum, the said levers being adapted to be operated simultaneously, the said edge engaging slides being adapted to resist the locking bar when the pattern roll fails to operate them, whereby the said first lever will be resisted and means whereby such resistance will cause a

change in the fulcrum of the second lever and cause the operation of the stop mechanism operating means.

20. In a jacquard mechanism, a stop mechanism, a lever having a normal fulcrum, means connected with said lever and adapted to effect the operation of the stop mechanism upon a change in the fulcrum of said lever, a second lever having a supporting element for supporting the first lever at its normal fulcrum the said second lever being adapted to change the fulcrum of the first lever to cause the operation of the stop mechanism operating means, and the jacquard safety device for operating the second lever.

21. In a jacquard mechanism, a stop mechanism and means for operating it comprising a moving operating element adapted to be coupled with the stop mechanism to actuate the stop mechanism, an operated lever having a normal fulcrum and a releasing block connected from the normal fulcrum of said lever and adapted to hold the said operating element out of engagement with the stop mechanism and a second lever adapted to change the fulcrum of the first lever and thereby release said block and a jacquard safety device adapted to operate the said second lever.

Signed at the city, county and State of New York, this 30th day of June, 1908.

JOSEPH A. GROEBLI.

Witnesses:

HENRY EGLI,
ADOLPH LEIBUNDGUT.