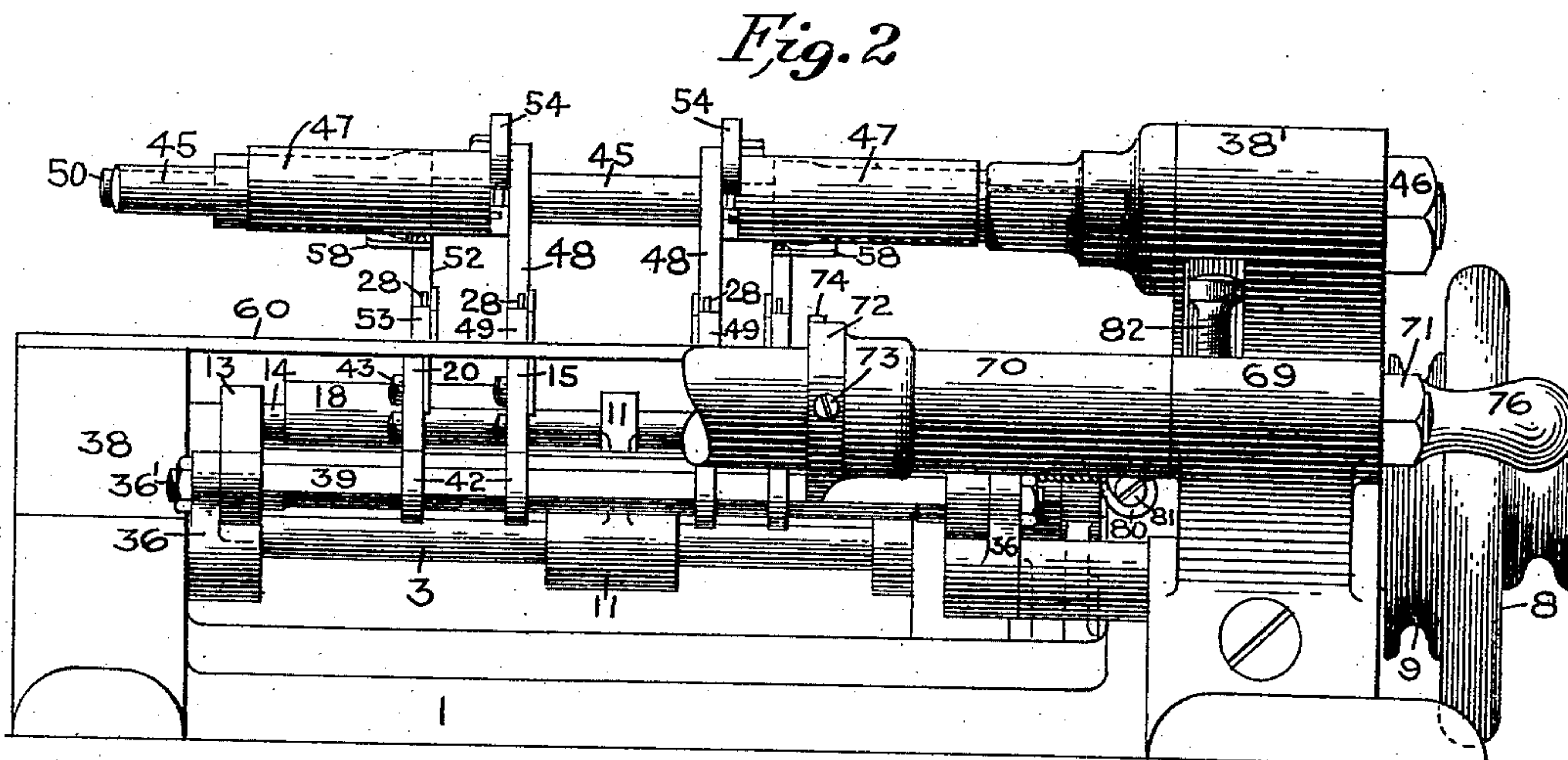
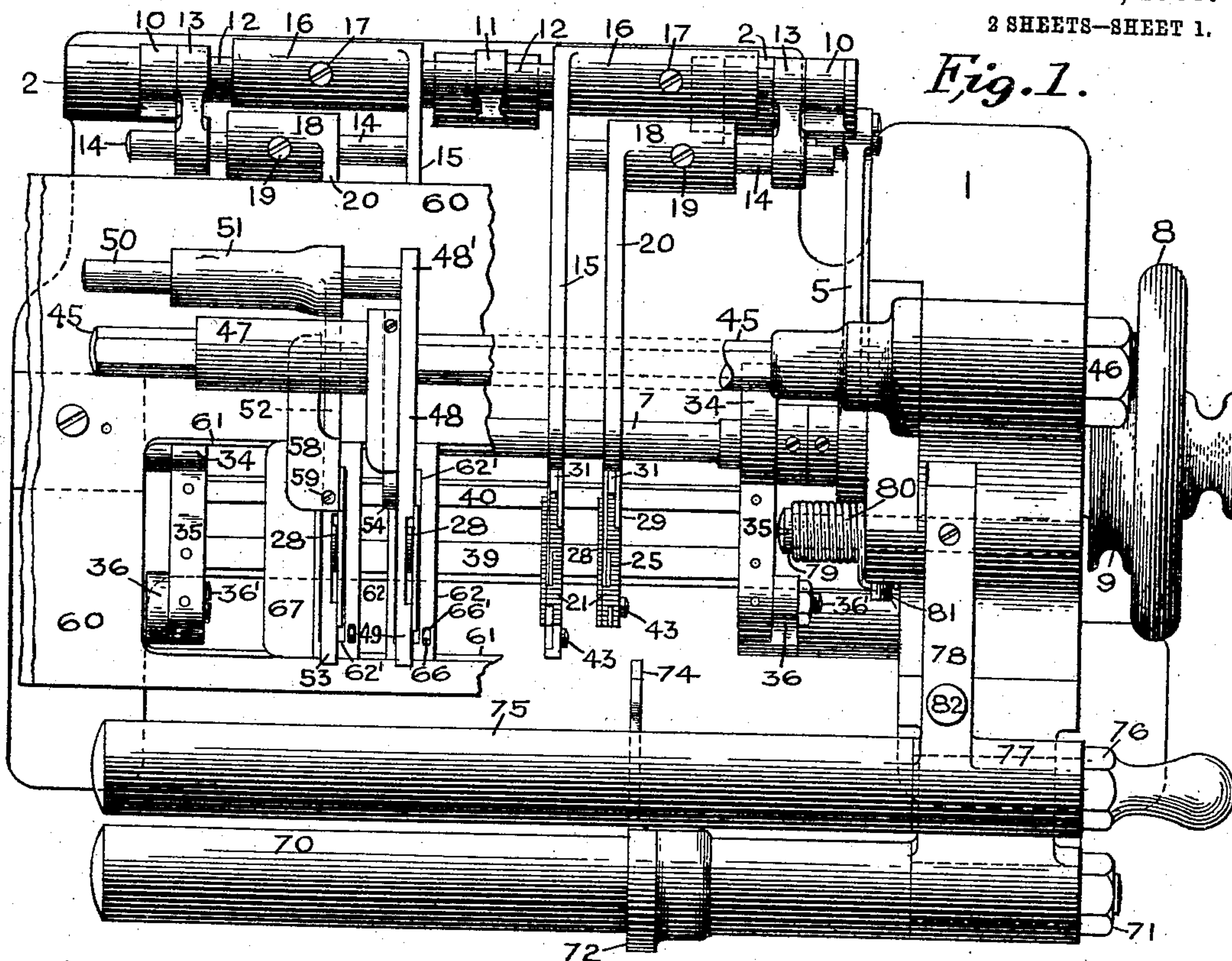


A. H. DE VOE.  
CLOTH CUTTING MACHINE.  
APPLICATION FILED MAR. 12, 1908.

936,424.

Patented Oct. 12, 1909.  
2 SHEETS—SHEET 1.



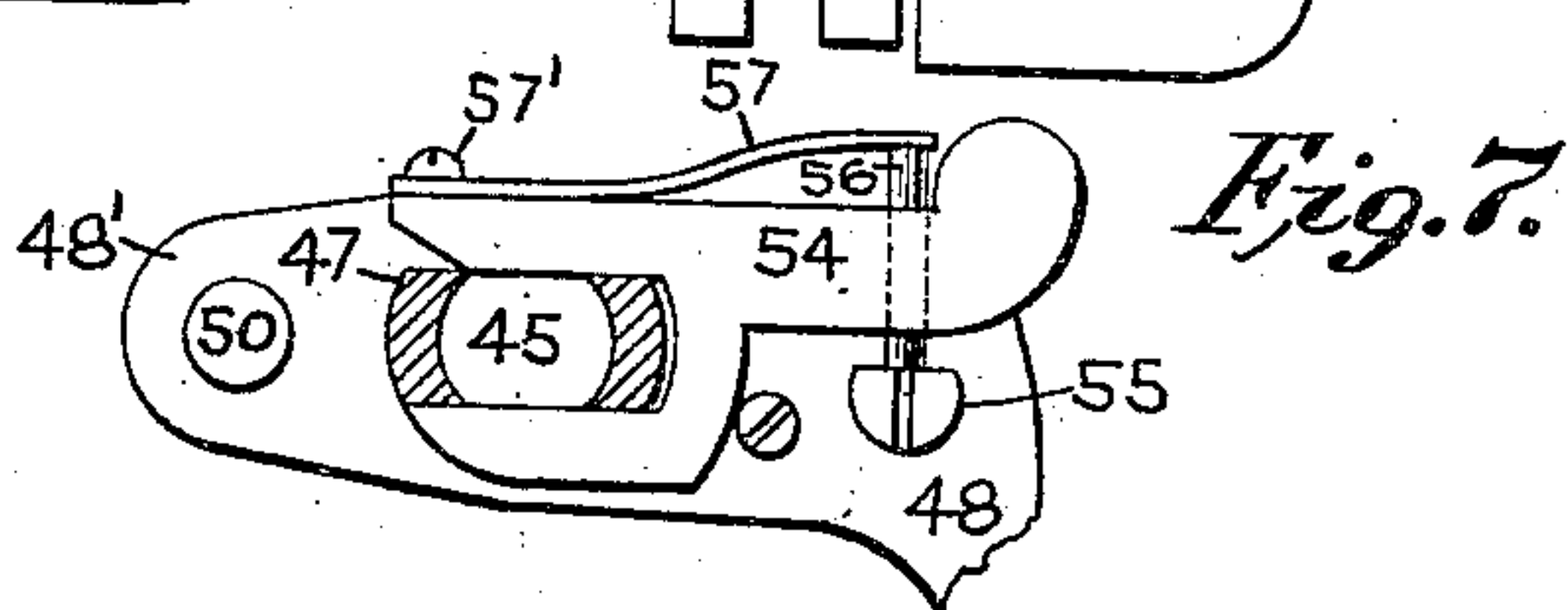
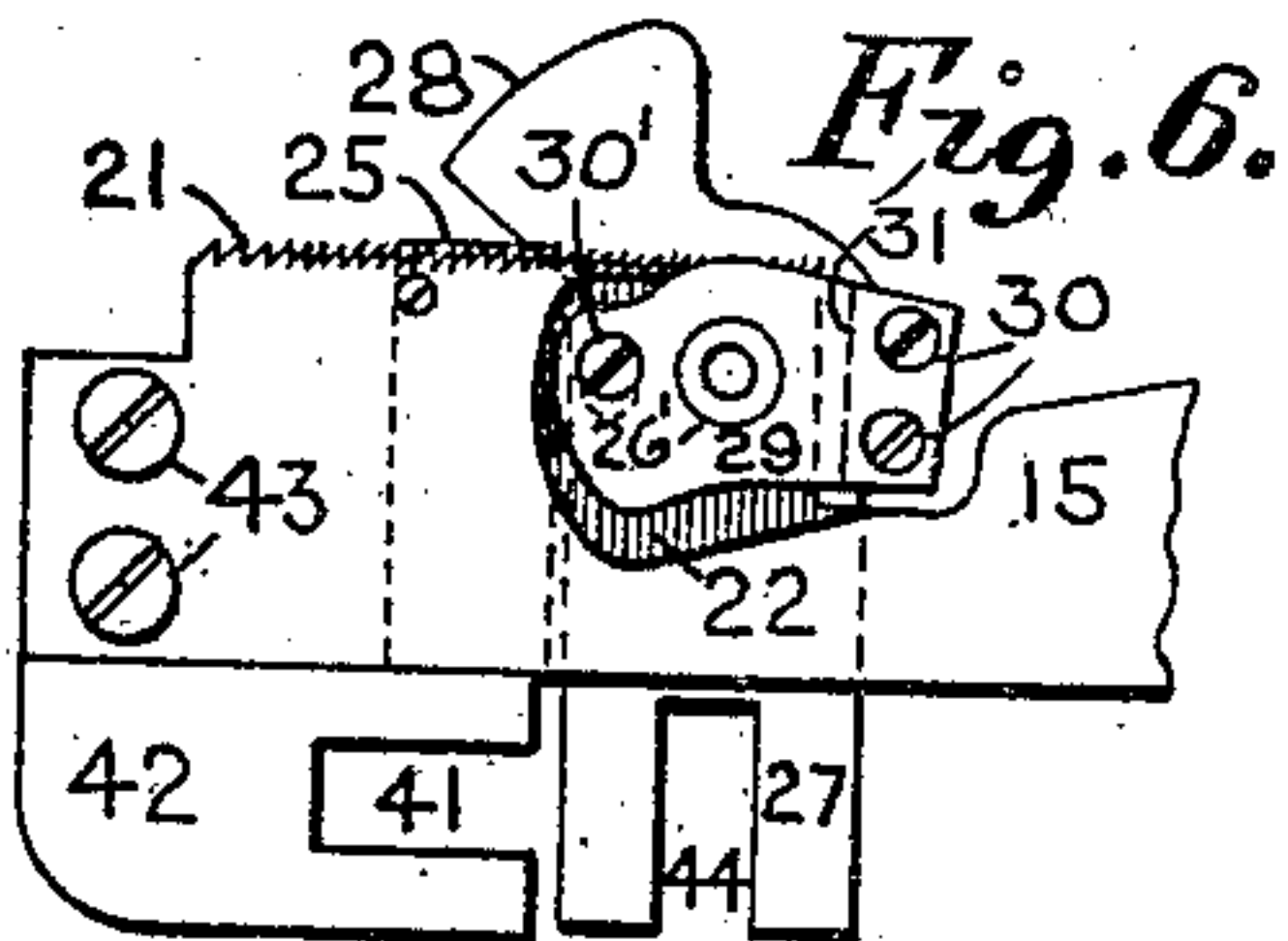
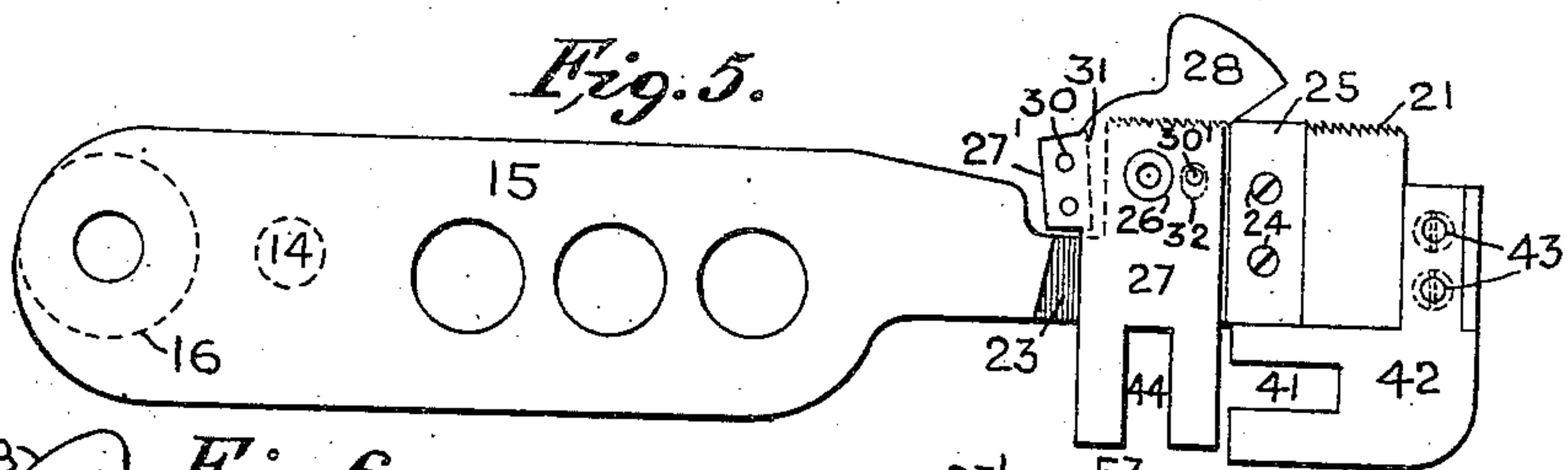
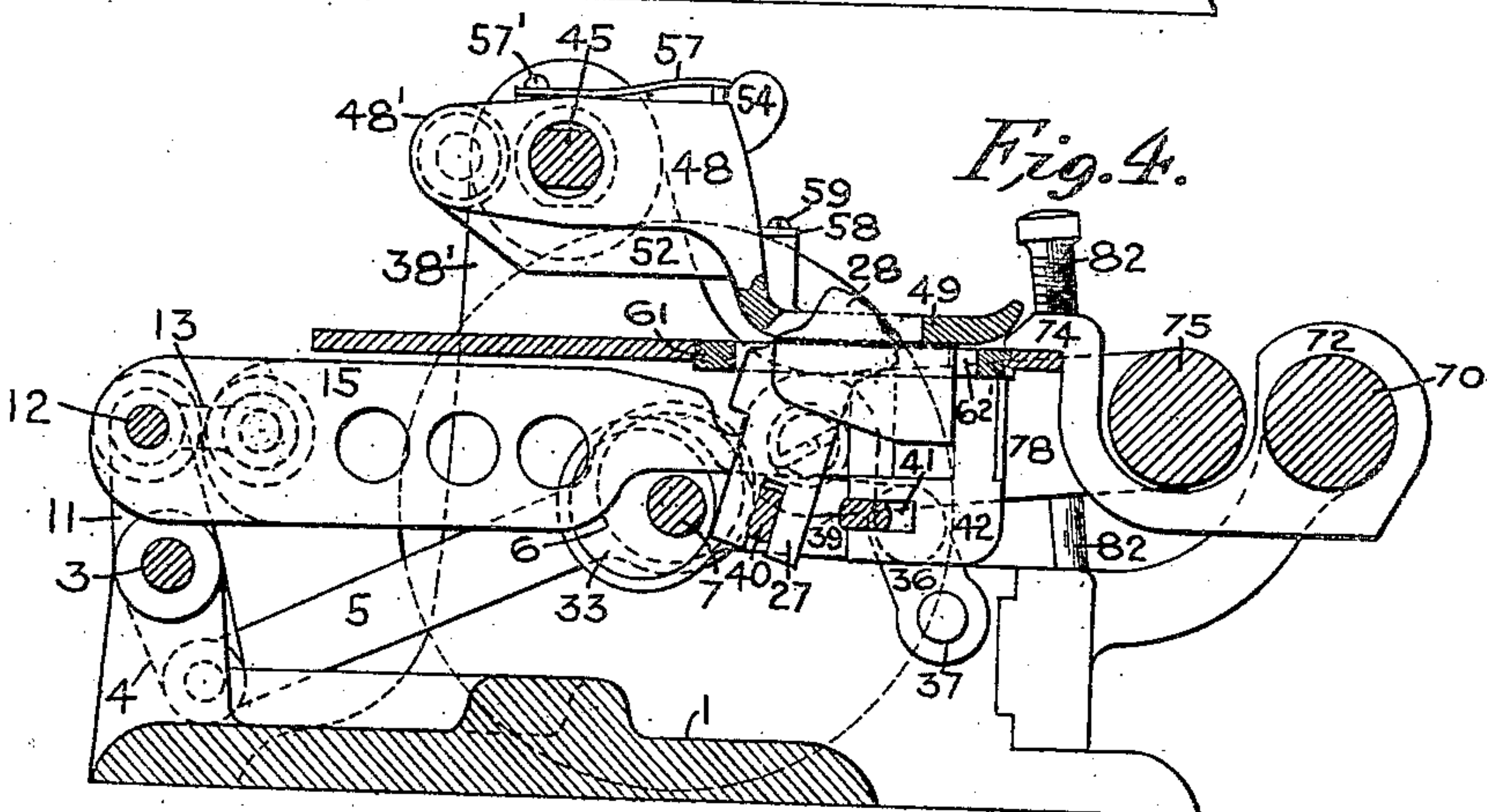
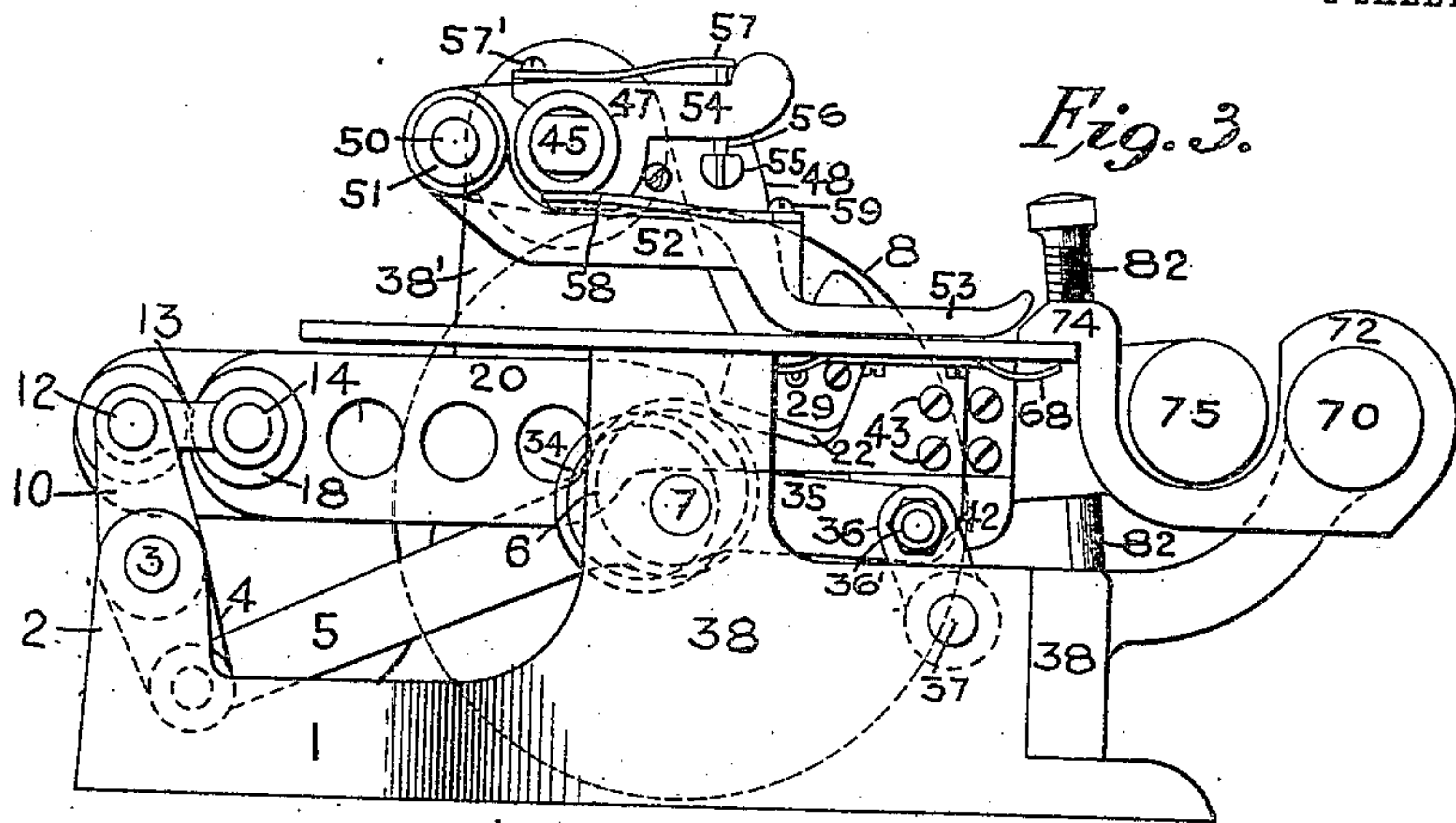
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# UNITED STATES PATENT OFFICE.

ALBERT H. DE VOE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

## CLOTH-CUTTING MACHINE.

936,424.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed March 12, 1908. Serial No. 420,547.

*To all whom it may concern:*

Be it known that I, ALBERT H. DE VOE, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in cloth cutting mechanism, and more particularly to machines in which long lengths of fabric may be cut into strips of different widths.

The invention has for its object to provide a machine of the character described which is simple in construction, effective in operation, and adapted to withstand the effects of long use with little wear and deterioration; and the invention consists in the features of construction and arrangement herein shown and described and set forth in the appended claims.

In the accompanying drawings, Figure 1 is a plan and Fig. 2 a front elevation of the machine with portions of the work-plate removed to expose the parts beneath the same. Fig. 3 is an end elevation and Fig. 4 a transverse section of the machine. Fig. 5 is a side elevation of one of the carrier-bars upon which are mounted the feed-dog and the cutter-blades. Fig. 6 is a similar view of the opposite side of the outer end of said carrier-bar. Fig. 7 is a side elevation, partly in section, of the rearward end of one of the pressure bars. Fig. 8 is an edge view, partly in section, representing one of the adjustable throat-plates. Figs. 5, 6, 7 and 8 are upon a larger scale than the preceding figures.

The bed 1 of the machine is provided at the opposite ends of the rearward portion with the bearings 2 in which are mounted the opposite end portions of the carrier rock-shaft 3, upon the rearward end of which is mounted a depending crank-arm 4 connected to one end of the eccentric-rod 5 whose opposite end embraces the eccentric 6 upon the main-shaft 7, which is provided at its rear end with the balance-wheel 8 and grooved pulley 9 to receive a driving belt for transmission of motion to the machine from the source of power.

Fixed upon the rock-shaft 3 at opposite ends are the upwardly extending arms 10 and the intermediate crank-arm 11 jour-

naled in which is the supporting rod 12 carrying at the ends adjacent the upright arms 10 the lateral crank-arms 13 in the outer or forward end of each of which is mounted one end of a supporting rod 14 whose opposite end is fixed in a carrier-bar 15 extending forwardly from a sleeve 16 loosely fitted to and slidingly mounted upon the supporting rod 12, and secured in position by means of a set-screw 17. Each of the rods 14 has loosely fitted to and slidingly mounted thereon a sleeve 18 secured in position by means of a set-screw 19 and having a forwardly extending carrier-bar 20 arranged parallel with the bars 15.

Each of the carrier-bars 15 and 20 is provided with an integral feed-dog formed with a serrated feeding surface 21. Near its forward end, the carrier-bar is provided in its opposite faces with the recesses 22 and 23, the latter having a depression in which is secured by means of the screws 24 the fixed cutter-blade 25, while an integral hollow stud 26 is provided in the same recesses to afford a fulcrum for the movable knife-lever 27 having the integral movable knife-blade 28 whose lower operative edge forms a sharpened member cooperating with the upper edge of the fixed knife 25 to form a shear cutter of which the movable member oscillates upon the stud 26 as a fulcrum. From the bottom of the recess 22 projects a hollow stud 26' in alinement with the stud 26 to which is fitted an aperture in the cheek-plate 29 secured at one end to a rearwardly projecting lug 27' of the knife-lever 27 by means of screws 30 passing through a spacing block 31 and at the opposite end connected with the knife-lever 27 by means of a screw 30' passing through an aperture 32 in the reduced portion of the carrier-bar 15. The cheek-plate 29 thus constitutes a member of the knife-lever 27 which is spaced from the body of the same to embrace the reduced portion of the carrier-bar 15 provided with the fulcrum-studs 26 and 26' by which the cutter-blade reciprocates in a circular path.

The main-shaft 7 is provided near the opposite ends of the machine with a pair of eccentrics 33 each embraced by a strap 34 at one end of a bar 35 whose opposite end is pivotally connected with a supporting crank-arm 36 mounted upon a fixed fulcrum 37 projecting from one of the end standards 38



of the machine. The parallel bars 35 are framed together by means of two longitudinally arranged parallel angular rods 39 and 40, the former of which is embraced by a lateral slot 41 in a depending lifting plate 42 secured by means of screws 43 within a suitable seat provided therefor in the outer end of the carrier-bar 15, while the latter of said angular rods 40 is embraced by a vertical slot 44 formed in the lower end of the knife-lever 27.

As will be observed, both of the angular rods 39 and 40 are disposed intermediate the eccentrics 33 and the pivotal points 36' of the bars 35, and they therefore partake in different degrees of the circular motions communicated to the eccentric straps 34. By reason of the different directions in which the slots 41 and 44 are arranged, and the differences in the spacing of such rods from the fulcrum points 36', the rod 40 communicates rising and falling movements to the member 42 of the carrier-bar 15, and corresponding movements to the feeding member 21 and cutter members 25 and 28, while the rod 40, in its travel toward and from the main-shaft 7, communicates oscillating or vibrating movements to the knife-lever 27, and thus imparts operative movements to the movable knife-blade 28 in relation to the fixed blade 25.

It will be observed that, by providing the primary carrier supporting rod 12 extending practically the entire length of the machine, and providing parallel secondary carrier-supporting rods 14 rigidly connected therewith through the members 13 and 15, the carrier-bars 15 and 20 are enabled to be formed with long bearing sleeves which insure rigidity of the carrier-bars at their outer or operative ends, while such bars are capable of a wide range of lateral adjustment to provide for the production of strips of cloth of corresponding widths.

At one end of the machine, the end standard is provided with an upright extension 38' affording a bearing in which is mounted the rearward end of an angular, and preferably flattened, presser-supporting bar 45 whose stock enters said bearing and is provided at the end with a nut 46 by which the same is clamped in position. The flattened portion of this bar is shown herein provided with two loosely fitted sleeves 47 each having a rigid forwardly projecting arm 48 terminating in the presser-foot 49 provided with a vertical slot to receive one of the movable knife-blades 28 and having its lower operative face adapted to rest in contact with the serrated surface 21 of one of the feeding members; while the rearward extension 48' of said arm carries a rigid supporting rod 50 parallel with the bar 45.

Each of the supporting rods 50 carries a sleeve 51 slidingly mounted thereon and pro-

vided with a rigid arm 52 extending forwardly beneath the sleeve 47 and formed with a presser-foot 53 slotted to receive its respective cutting blade 28 and having its lower operative face adapted to rest upon the serrated face of the adjacent feeding member.

As herein represented, the bar 45 is flattened at both top and bottom and each of the sleeves 47 is correspondingly notched adjacent the arm 48 to accommodate the forked rearward end of the rigid lever 54 engaging the flattened faces of the bar 45. Each of the arms 48 is provided with a screw-stud 55 affording a shoulder to receive the lower end of a pressure pin 56 passing through a vertical hole in the outer end of the lever 54 and having its upper end engaged by the outer end of a flat spring 57 whose opposite end is fastened by means of a screw 57' upon the rearward end of the lever 54; the spring 57 and pin 56 applying a yielding pressure upon the lever 48 to maintain its foot 49 yieldingly pressed upon the material introduced between the same and the feeding member.

As herein represented, the lower side of each sleeve 47 is flattened to serve as a seat to receive the free end of a flat pressure spring 58 which is secured by means of a screw 59 upon the forward portion of each of the presser-foot carrying arms 52, whereby the presser-feet 53 are yieldingly pressed downwardly similarly to the feet 49.

As the presser-feet 49 and 53 carried by their sustaining arms 48 and 52 are slotted to closely embrace the cutting blades 28 mounted upon the laterally adjustable carrier-bars 15 and 20, it will be seen that no special securing means for maintaining the sliding sleeves 47 and 51 in position upon their supporting rods are necessary, such parts being maintained frictionally in the required positions of adjustment corresponding with the cutting and feeding members.

The machine is provided with a work-plate 60 having a longitudinal opening surrounding the cutting and feeding members and provided along its opposite edges with inwardly projecting lips 61 to which are fitted the respectively grooved and notched opposite ends of each of a series of laterally adjustable throat-plates 62 each formed with an opening 62' to admit and afford the proper clearance for its respective feeding member. The end of the throat-plate which is undercut or notched has formed therein a socket 63 in which is fitted a latch-plug 64 having wedge-shaped outer end and pressed normally outward by means of a spring interposed between the inner end of the same and the bottom of the socket, the latch-plug being provided with a lateral screw-stud 66 entering a slot 66' in the upper side of the throat-plate whose ends form stops to limit



the movement of the latch-plug 64. As will be observed, by pressing the screw-stud 66 backwardly to retract the wedge-shaped operative end of the latch-plug 64 from engagement with the lip 61 of the work-plate, the forward end of the throat-plate may be inserted and removed from engagement with the lip 61 to permit the introduction or removal of the throat-plate, while the yielding action of the spring upon the plug 64 produces a frictional action upon the throat-plate to maintain it normally in position, but permits its being shifted with the parts which it embraces, when desired.

As herein represented, an auxiliary work-supporting plate 67 is also shown fitted to the opening in the work-plate 60 and resting upon the lips 61, this plate being held in position by the engagement with the under side of the work of the ends of a flat spring 68 secured to the bottom of the plate 67, which latter is thus retained in position while being adjustable similarly to the throat-plates 62.

At the rearward end, the frame of the machine is provided with a forwardly projecting bearing 69 in which is inserted the reduced rearward end of a rigid work-supporting bar 70 secured therein by means of the clamp-nut 71. The bar 70 is provided with a sliding guide-collar 72 adapted to be secured in position by means of a set-screw 73, and provided with a guide-arm 74 overlying the forward margin of the work-plate, as represented in Fig. 1.

Disposed parallel with and slightly in advance of the supporting bar 70 is a smoothing bar 75 secured by means of a nut 76 in a socket 77 at the free end of a swinging arm 78 mounted upon a fulcrum-pin 79 journaled in the rear end of the machine frame and provided with a pressure spring 80 one end of which is attached to said fulcrum pin and the other end is attached to a screw 81 upon the machine frame. The bar 75 is normally pressed downwardly by means of the spring 80, and is supported in its lower position by means of the adjustable stop-pin 82 passing through the arm 78 and resting upon a fixed portion of the machine frame, as represented in Figs. 3 and 4. By turning the screw-pin 82, it is evident that the normal position of the bar 75 may be determined.

In the use of the machine, the carrier-bars 15 and 20 are relatively adjusted in such manner as to bring the cutting line of the shear cutters comprising the blades 25 and 28 in the desired spacing to produce strips of fabric of the required width, the presser-feet 49 and 53 being similarly adjusted, as previously indicated. The web of fabric is then introduced over the supporting bar 70 and under the smoothing bar 75, with its edge in contact with the guide-collar 72 and guide-arm 74, with its forward edge intro-

duced between the several presser-feet and the respective feeding members. The machine is then set in motion, and the fabric is subjected to a succession of intermittent feeding and cutting motions, which occur simultaneously, the dip of the feeding members beneath the surface of the work preparatory to taking a fresh hold upon the lower face of the fabric being accompanied by the opening of the shear blades to cause the upper blade to take a fresh hold upon the top of the fabric. It will thus be observed that, while the cutting operation comprises a succession of shearing actions due to the successive opening and closing of the shear blades, the shear-cutters thus formed move bodily with the fabric, and therefore produce a clean cut without any tendency to disturb the fabric under pressure between the feeding member and the presser-foot.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a machine of the class described, the combination with a reciprocating support and means for actuating it, of a plurality of carriers loosely mounted upon and adapted for lateral adjustment on said support, means applied to said carriers for securing them in position upon said support, a shear-cutter mounted upon each of said carriers, and means independent of the actuating means for said support for actuating said cutters.

2. In a machine of the class described, the combination with suitable work-feeding mechanism, of a plurality of relatively adjustable shear-cutters each comprising a reciprocating cutting blade disposed substantially parallel with the direction of feed, and means for actuating said cutters.

3. In a machine of the class described, the combination with suitable work-feeding mechanism, of a plurality of relatively adjustable shear-cutters, each comprising a pair of pivotally connected cutting blades of which one is movable in relation to the other and arranged in planes substantially parallel with the direction of feed, and means for actuating said cutters.

4. In a machine of the class described, the combination with suitable work-feeding mechanism, of a plurality of relatively adjustable shear-cutters each comprising a reciprocating cutting blade, and a common reciprocating actuating member for all of said cutters.

5. In a machine of the class described, the combination with a plurality of suitable intermittently-acting work-feeding members, of a plurality of shear-cutters each connected to and movable bodily with one of said work-feeding members and comprising a pair of pivotally connected and relatively movable cutting blades, and means for actuating said cutters.



6. In a machine of the class described, cutting mechanism comprising a rocking member carrying a primary supporting rod parallel with its axis of motion, means for actuating said rocker, a secondary supporting rod rigidly connected to and sustained parallel with said primary supporting rod, independent carrier-bars each provided with a sleeve mounted upon and slidably fitted to one of said supporting rods, and a cutter mounted upon each of said carrier-bars.
7. In a machine of the class described, cutting mechanism comprising a rocking member carrying a primary supporting rod parallel with its axis of motion, means for actuating said rocker, a secondary supporting rod rigidly connected to and sustained parallel with said primary supporting rod, independent carrier-bars each provided with a sleeve mounted upon and slidably fitted to one of said supporting rods, a cutter mounted upon each of said carrier-bars and comprising a pair of relatively movable shear-blades, and means for actuating the movable member of each of said cutters.
8. In a machine of the class described, cutting mechanism comprising a rocking member, a plurality of carrier-bars pivotally connected with and laterally adjustable in relation to said rocking member, means for actuating said rocking member, an actuating rod extending transversely of and beneath the outer ends of said carrier-bars, means for communicating movement to said actuating bar crosswise of its length, and a pair of shear-blades mounted upon each of said carrier-bars, one of which is pivotally mounted and operatively connected with said actuating rod.
9. In a machine of the class described, cutting mechanism comprising a rocking member, a plurality of carrier-bars pivotally connected with and laterally adjustable in relation to said rocking member, means for actuating said rocking member, two parallel actuating rods extending transversely of and beneath the outer ends of said carrier-bars, means for communicating rising and falling and to-and-fro movements to said rods crosswise of their length, a pair of shear-blades mounted upon each of said carrier-bars, one of which is pivotally mounted and operatively connected with one of said actuating rods, and a yoke rigidly connected with the outer end of each of said carrier-bars and operatively connected with the other of said actuating rods through which rising and falling movements are imparted to the carrier-bars.
10. In a machine of the class described, the combination with a main-shaft, of a rocking member, a plurality of carrier-bars pivotally connected with and laterally adjustable in relation to said rocking member, means for actuating said rocking member, a pair of cranks or eccentrics upon the main-shaft, a pair of crank-arms mounted upon fixed fulcra, eccentric rods embracing said eccentrics and each connected with one of said crank-arms, two parallel actuating rods connected at opposite ends with said eccentric-rods and lying beneath and transversely of the outer ends of said carrier-bars, a pair of shear-blades mounted upon each of said carrier-bars, one of which is pivotally mounted and provided with a depending fork embracing one of said actuating rods, and a lifting plate depending from each carrier-bar and having a lateral slot embracing the other of said actuating rods.
11. In a machine of the class described, cutting mechanism comprising a rocking member, a plurality of carrier-bars pivotally connected with and laterally adjustable in relation to said rocking member, and each provided at the outer end with a serrated feeding surface, means for actuating said rocking member, an actuating rod extending transversely of and beneath the outer ends of said carrier-bars, means for communicating movement to said actuating bar crosswise of its length, and a pair of shear-blades mounted upon each of said carrier-bars adjacent its feeding surface, one of which is pivotally mounted and operatively connected with said actuating rod.
12. In a machine of the class described, the combination with the frame and a work-plate secured thereon, of a plurality of laterally adjustable carrier-bars disposed below said work-plate and each sustaining a feeding member and an adjacent cutter, means for actuating said carrier-bar, a primary presser-supporting bar rigidly sustained by said frame above said work-plate, an arm pivotally and slidably mounted upon said bar and carrying a depending and forwardly extending presser-foot and having a rearward extension carrying a secondary presser-supporting bar, an arm pivotally and slidably connected with said secondary supporting bar, and provided with a depending and forwardly extending presser-foot, and means for yieldingly pressing each of said presser-feet toward the feeding member to which it is opposed.
13. In a machine of the class described, the combination with the frame and a work-plate secured thereon, of a plurality of laterally adjustable carrier-bars disposed below said work-plate and each sustaining a cutter, means for actuating said carrier-bar, a laterally adjustable throat-plate above the outer end of each carrier-bar and having an opening therein to receive one of said cutters, a primary presser-supporting bar of angular form rigidly sustained by said frame above said work-plate, a presser-arm having a tubular boss or sleeve fitted to and circularly and endwise movable upon said supporting



bar, said arm carrying a depending and forwardly extending presser-foot and having a rearward extension carrying a secondary presser-supporting bar, a presser-arm provided with a tubular boss or sleeve fitted to and circularly and endwise movable upon said secondary supporting bar, a rigidly sustained pressure lever forked to embrace the primary supporting bar, a pressure spring intermediate said pressure lever and the first-named presser-arm whereby the presser-foot carried by the latter is pressed downwardly upon the throat-plate adjacent the cutter, and a pressure spring intermediate the second-named presser-arm and the sleeve of the first-named presser-arm whereby the presser-foot of the latter is pressed upon its respective throat-plate.

14. In a machine of the class described, the combination with the frame and a work-plate secured thereon and provided with a longitudinal opening, of a plurality of laterally adjustable carrier-bars disposed below said work-plate and each sustaining a feeding member and an adjacent cutter, means for actuating said carrier-bar, a laterally adjustable throat-plate fitted to the opposite edges of said work-plate and having an aperture embracing said feeding member and cutter, a presser-supporting bar rigidly sustained by said frame above said work-plate, a plurality of presser-feet pivotally connected with and laterally movable in relation to said supporting bar and opposed to said feeding member, and means for yieldingly pressing each of said presser-feet toward the feeding member to which it is opposed.

15. In a machine of the class described, the combination with the frame and a work-plate secured thereon and provided with a longitudinal opening with supporting lips along the opposite edges, of a plurality of laterally adjustable cutters extending upwardly through said opening in the work-plate, means for actuating said cutters, a plurality of throat-plates each having an opening adapted to embrace one of said cutters, with its ends fitted to and resting upon the supporting lips of said opening in the work-plate and each having in one end a spring-pressed latch-plug adapted to engage the supporting lip for locking the throat-

plate in position, and a plurality of relatively adjustable spring-pressed presser-feet opposed to said throat-plates.

16. In a machine of the class described, the combination with the frame and a work-plate secured thereon, of a plurality of relatively adjustable cutters adapted to operate through said work-plate, and means for actuating said cutters, spring-pressed presser-feet disposed adjacent and laterally adjustable with said cutters, a rigid work-supporting bar disposed in advance of said work-plate, and a vertically yielding work-smoothing bar disposed intermediate said work-supporting bar and said work-plate.

17. In a machine of the class described, the combination with the frame and a work-plate secured thereon, of a plurality of relatively adjustable cutters adapted to operate through said work-plate, and means for actuating said cutters, spring-pressed presser-feet disposed adjacent and laterally adjustable with said cutters, a rigid work-supporting bar disposed in advance of said work-plate, an edge-guide longitudinally adjustable upon said work-supporting bar, and a vertically yielding work-smoothing bar disposed intermediate said work-supporting bar and said work-plate.

18. In a machine of the class described, the combination with the frame and a work-plate secured thereon, of a plurality of relatively adjustable cutters adapted to operate through said work-plate, and means for actuating said cutters, spring-pressed presser-feet disposed adjacent and laterally adjustable with said cutters, a rigid work-supporting bar disposed in advance of said work-plate, an edge-guide longitudinally adjustable upon said work-supporting bar and having a guide-finger overlying the forward margin of the work-plate, and a vertically yielding work-smoothing bar disposed intermediate said work-supporting bar and said work-plate.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALBERT H. DE VOE.

Witnesses:

JOSEPH F. JAQUITH,  
HENRY J. MILLER.