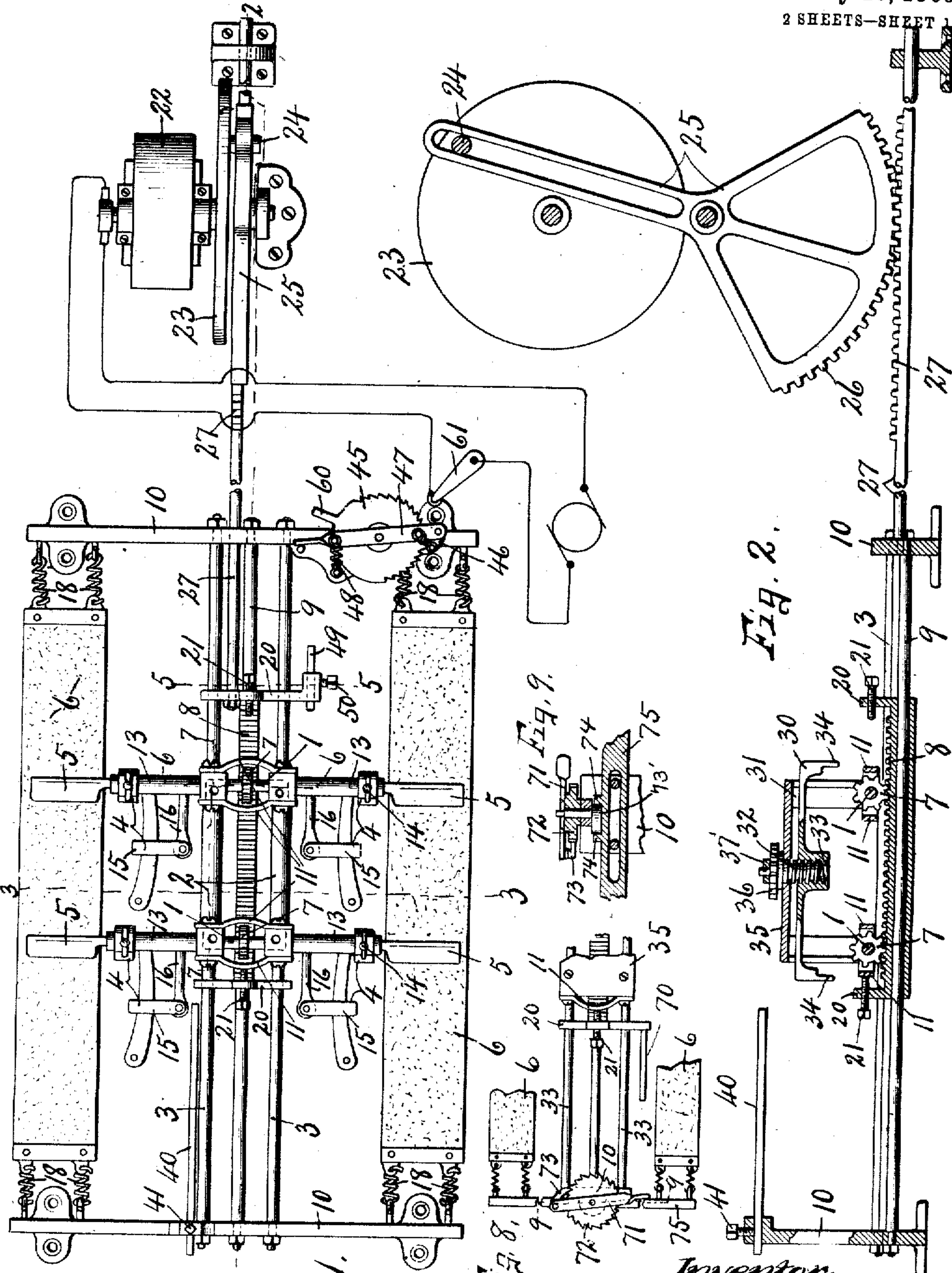


J. R. DIEVENDORF.
 RAZOR STROPPING MACHINE.
 APPLICATION FILED JUNE 8, 1908

922,102.

Patented May 18, 1909.

2 SHEETS—SHEET 1



Witnesses:
 T. C. Thomas
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Fig. 1.

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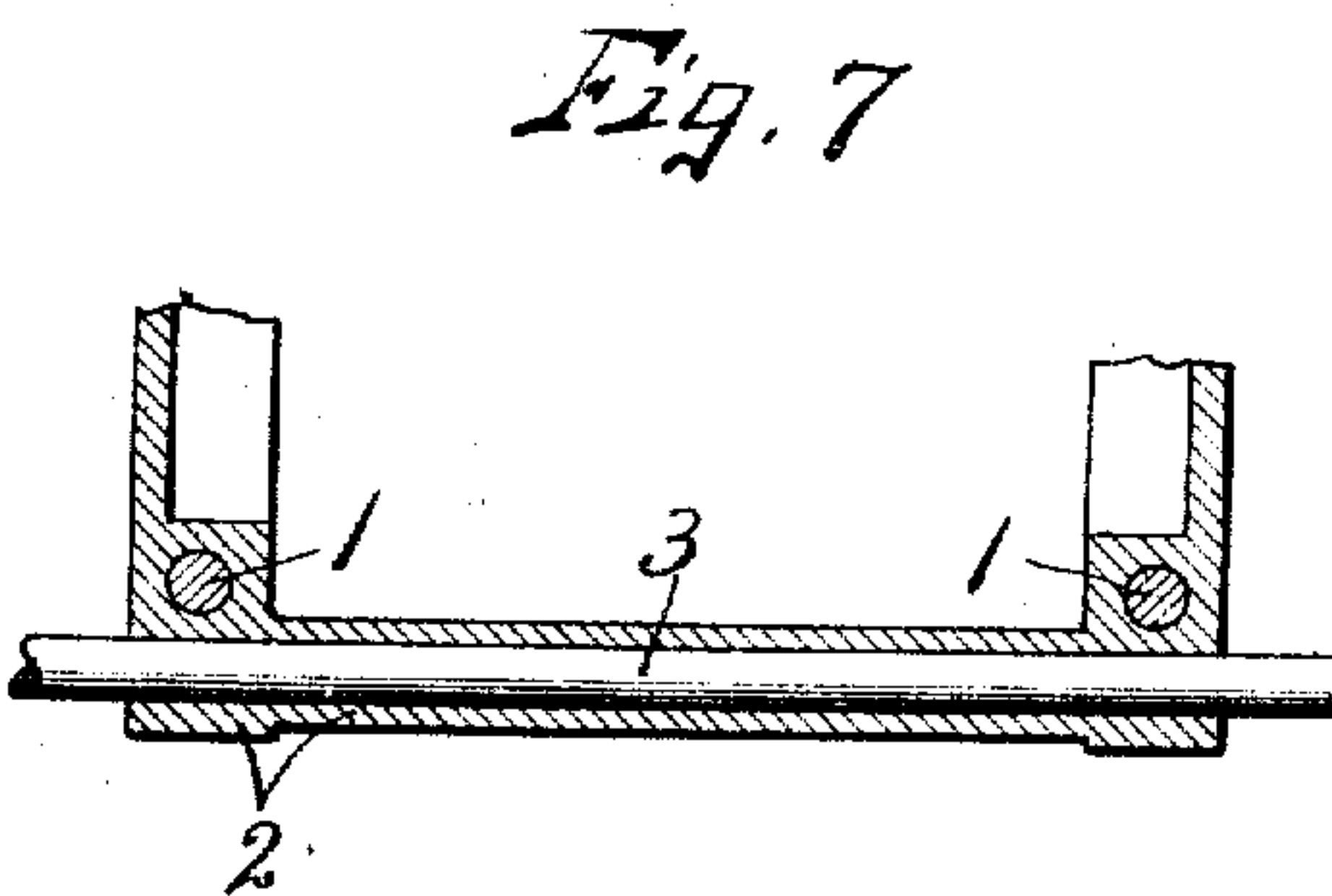
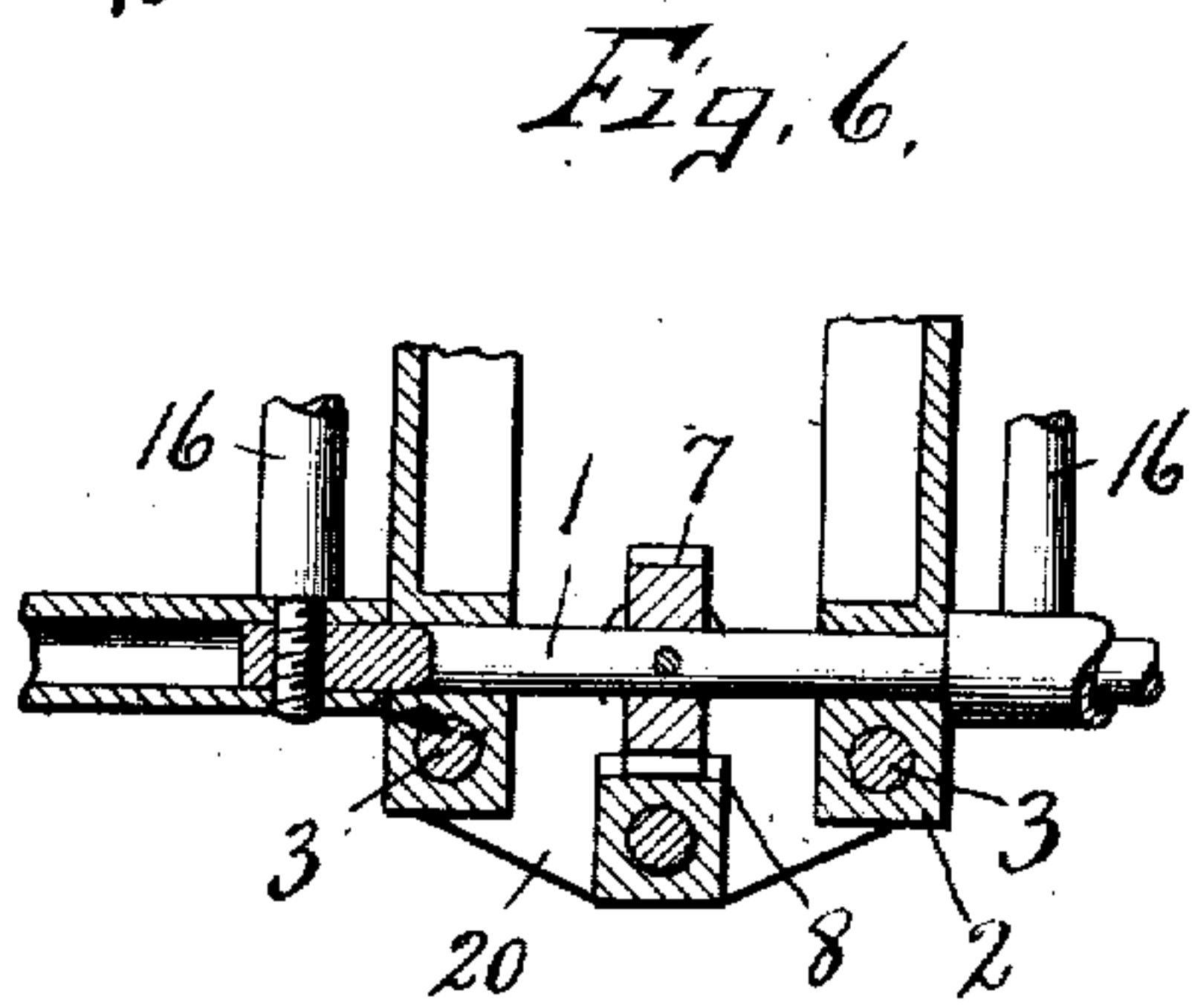
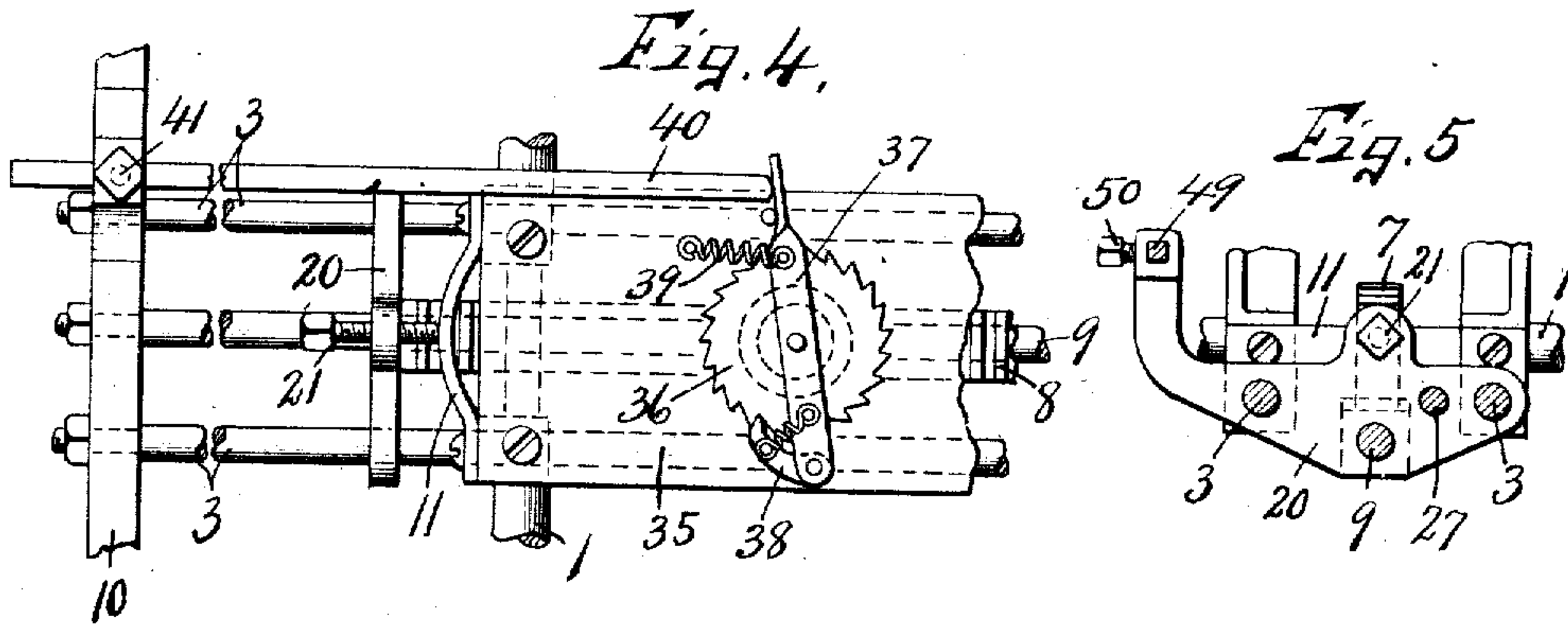
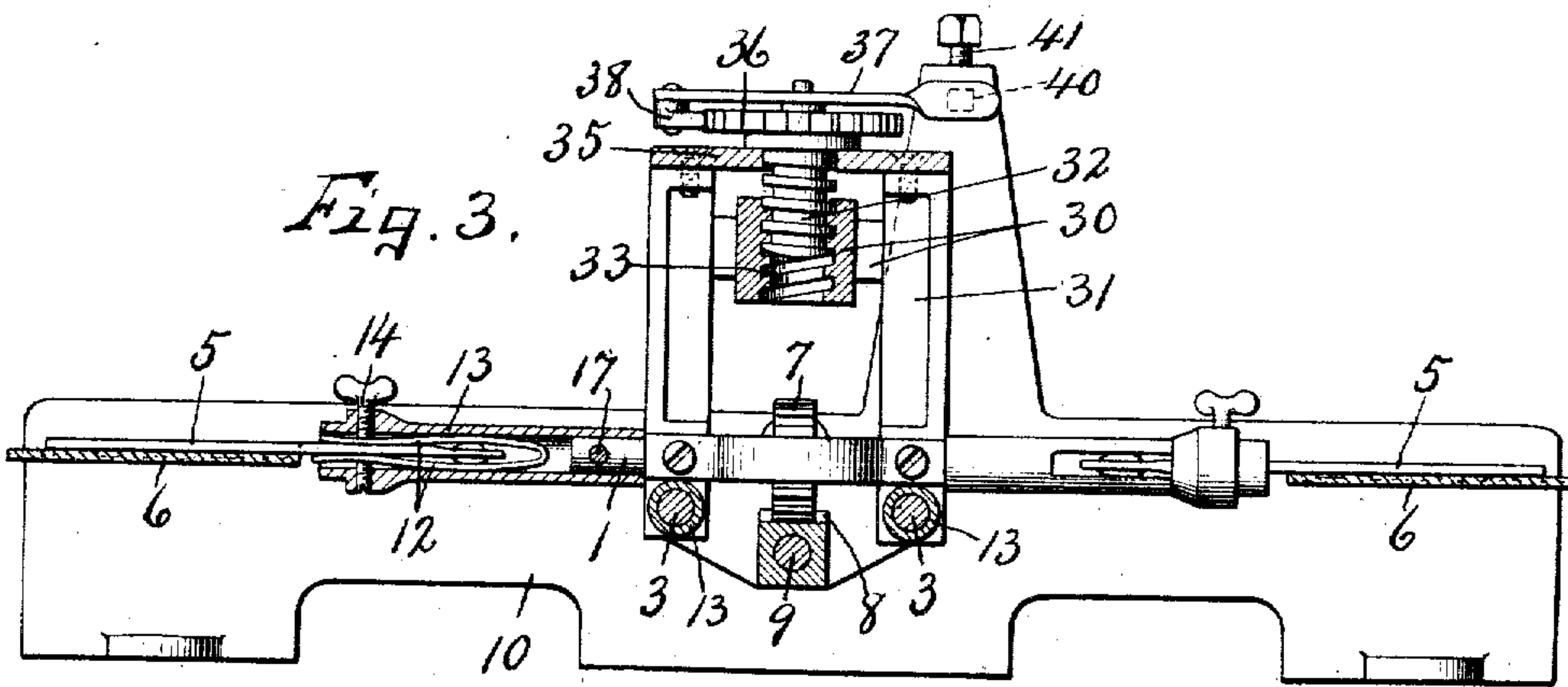
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2 SHEETS—SHEET 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

JAY R. DIEVENDORF, OF FULTON, NEW YORK.

RAZOR-STROPPING MACHINE.

No. 922,102.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed June 8, 1908. Serial No. 437,328.

To all whom it may concern:

Be it known that I, JAY R. DIEVENDORF, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Razor-Stropping Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in razor stropping machines, in which one or more oscillatory razor-holders are mounted upon a reciprocatory carriage and move along and in contact with a suitable razor strop, the razor holders being intermittently oscillated by the movement of the carriage to reverse the position of the razor at the end of each stroke, and thereby draw said razor back foremost along the strop.

The primary object is to provide mechanism for stropping the razor under substantially the same movement as it would be given by hand in the usual manner.

Another object is to provide means whereby a plurality of razors may be stropped at the same time.

A further object is to gradually reduce the stroke or movement of the carriage and to automatically stop it after a predetermined number of strokes. In other words, I have sought to produce a motor-operated razor stropping machine which will be practically automatic in its action, at least, to the extent of automatically reversing the razor at each end of the stroke of the carriage and in stopping the carriage after a predetermined number of strokes or reciprocatory movements.

In the drawings—Figure 1 is a top plan of a razor stropping machine embodying the various features of my invention showing an electric motor for driving the carriage and also showing the motor-controlling circuit diagrammatically, the stop mechanism being omitted. Fig. 2 is a longitudinal vertical sectional view taken on line 2—2, Fig. 1. Fig. 3 is an enlarged transverse sectional view taken on line 3—3, Fig. 1. Fig. 4 is an enlarged top plan of a portion of the frame and carriage seen in Fig. 1, showing particularly the stop-controlling mechanism. Figs. 5, 6, and 7 are enlarged sectional views taken respectively on lines 5—5, 6—6, and 7—7—, Fig. 1.

In carrying out the objects stated, one or more, in this instance two rock shafts are

mounted in a horizontal position, one in advance of the other, in a horizontally movable carriage —2— which is reciprocated along fixed guide-rods —3—, each rock-shaft being provided with one or more, in this instance two, razor-holders —4— located at opposite sides of the guides —3— and adapted to receive and temporarily retain the razors, as —5—, which are movable along underlying strops —6—.

Each rock-shaft —1— is provided substantially midway its ends with a pinion —7— rigid thereon and meshing with a straight toothed rack —8— which is slidable on a fixed lengthwise bar —9— midway between and preferably in a plane below the guide rods —3—. These rods —3— and —9— are secured at their ends to cross bars —10—, which together with the rods —3— and 9—, constitute a supporting frame adapted to be secured to a table or other available support for carrying the strop —6— and other movable parts of the machine.

The carriage —2— comprises parallel tubular sleeves mounted with an easy sliding fit upon the guide-rods —3— and connected at their ends by cross-bars —11—, thus forming a rigid carriage frame in which the rock-shafts —1— are journaled directly above and in close proximity to the guide rods —3—.

I preferably provide each end of the carriage with a pair of cross-bars —11—, those of each pair being located at opposite sides of and in the same horizontal plane as the adjacent rock-shaft so as to embrace the intervening pinion —7—, and at the same time form suitable abutments for the adjustable limiting stops presently described.

Each rock-shaft —1— is provided at its opposite ends with a razor clamping device consisting of spring jaws 12— which are mounted in tubular heads —13—, the shank of the razor being adapted to be inserted between said jaws and clamped in place by a set screw —14— while the handle of the razor is deflected at an angle through the slot in the side of the head —13— and is held in place between spring jaws 15—, the latter being secured to a post 16— projecting radially from the tubular head 13—. These clamping heads 13— are rigidly secured to the adjacent ends of the corresponding rock-shaft —1— by keys or pins 17—,

as best seen in Fig. 3, and operate to hold the razors in fixed relation to the rock-shaft —1— and to draw the razor blades lengthwise of and against the stop —6— and to reverse said blades at the end of each stroke of the carriage.

When the rock-shafts 1— are provided at its ends with two razor-holders or clamps a corresponding number of, in this instance two, stops are used running lengthwise of the main supporting frame parallel with and equidistant from the bars —3— corresponding to the distance of the razor blades from said bars, the ends of the stops being yieldingly secured to the outer ends of the frame-bars —10— by suitable springs 18— which serve to maintain the stop under comparatively high tension, and at the same time permits said stop to yield slightly under pressure of the razor-blades while the latter are being drawn back and forth upon the same.

The rack —8— which meshes with both of the pinions —7— is provided with a tubular or perforated base fitted and slidable upon the center guide-rod —9— and is provided with end heads —20— having apertures for receiving the guide-rods —3— and additionally guiding the rack —8— in its reciprocatory movement, and also against turning upon the center rod —9—.

The length of the carriage —2— from end to end is somewhat less than the distance between the end heads —20— of the rack —8— to allow a limited endwise movement of the rack relatively to the carriage for the purpose of reversing the position of each razor-blade relatively to the stop at the end of each stroke of the rack. This clearance between the ends of the carriage —2— and heads —20— is adjustable to permit a partial rotation of the razor-supporting shafts through an arc of slightly more than 180° so as to cause the cutting edge of the razor to be brought flatwise into close contact with the stop at each reversal of position, such adjustment being closely regulated by means of adjusting screws —21— which are movable in threaded apertures in the heads —20— and are adapted to engage the adjacent cross bar —11— of the carriage. These adjusting screws —21—, therefore, not only limit the degree of rotation of the rock-shafts —1— and razors mounted thereon, but also impart sliding movement to the carriage as the rack —8— is reciprocated.

Any suitable means may be employed for reciprocating the rack —8— and for this purpose I have shown an electric motor —22— as provided with a disk —23— having an eccentric pin —24— which moves in a slotted lever —25— carrying a toothed segment —26—, the latter meshing with a toothed rod —27—, which in turn, is guided in one of the end bars —10— of the main

frame and is rigidly connected to the adjacent end head —20— of the rack —8—, said eccentric and lever being adjusted to give the desired movement to the rack for rocking the razor blade through substantially one-half revolution at the end of each stroke, and moving said blade a limited distance along and flatwise against the stop.

The distance from outside to outside of the heads —20— of the rack —8— is somewhat less than the distance between the cross-bars —10— of the main supporting frame to afford ample clearance for the movement of the rack and carriage to give the desired rotation of the razor-blades and to move them longitudinally some distance along and flatwise against the stops, producing substantially the same action as would be produced by hand in the usual manner.

In order that the machine may be as nearly automatic in its action as possible without requiring the careful watchfulness of an attendant, suitable means is provided for automatically lessening the degree of rocking movement of the razor holders after a predetermined number of strokes or reciprocatory movements of the carriage relatively to the stop, and for this purpose I provide a gravity stop —30— which is guided in a suitable upright —31— rising from the carriage —2— and is temporarily suspended immediately above the central portion of the carriage by a screw —32— which enters a central aperture —33— in the stop, said stop being slightly longer than the distance from outside to outside of the stops or abutments —11— and is provided with pendent arms —34— adapted to enter between the adjustable stops —21— and adjacent sides of the carriage when the stop —30— is released by the turning of the screw —32— therein in a manner hereinafter described, thereby interposing the thickness of the stop arms —34— between the adjustable stops —21— and adjacent abutments —11— to reduce or lessen the arc of rocking movement of the razor holders, thereby producing a light finishing stroke of the razors upon the stops after a predetermined number of movements back and forth lengthwise of said stops. This screw is journaled in a suitable bracket —35— connecting the upper ends of the guides —31—, and secured to said screw is a ratchet wheel —36—, as best seen in Figs. 2, 3, and 4.

A lever —37— is fulcrumed upon a reducing portion of the screw above the ratchet wheel 36— and is provided at one end with a pawl —38— adapted to engage the teeth of the ratchet-wheel —36—, said lever being actuated against the action of the spring —39— at each forward stroke of the carriage by means of a stop —40— which is adjustably secured by a set screw —41— in the adjacent end head —20— of the rack

—8—, the stop —40— being adjusted so as to operate the lever to rotate the ratchet-wheel —36— one or more tooth-spaces at a time at each movement of the carriage toward said stops, thereby unscrewing the screw —32— from the stop —30— and allowing the latter to drop by gravity with its pendent arms —34— between the adjustable stops —21— and adjacent abutments —11—.

The stop —30— is normally suspended some distance above the plane of the adjustable stops —21—, but is gradually moved downward along the guides —31— at each movement of the carriage —2— toward the stop —40—, the number of strokes or reciprocal movements of the carriage before the release of the stop —30— depending somewhat upon the length of the screw —32— and also upon the adjustment of the stop —40— which may be adjusted to allow a predetermined number of reciprocal movements of the carriage before releasing the stop —30—.

I also provide means for stopping the action of the machine after a predetermined number of reciprocal movements of the carriage carrying the razor holders lengthwise of the stops, said means consisting in this instance, of a ratchet-wheel —45— and operating pawl —46— which is mounted on a lever —47— and actuated intermittently against the action of the spring —48— by a movable abutment —49— which is adjustably secured by a set screw —50— to the adjacent head —20— of the sliding rack —8—. This sliding rack it will be remembered is actuated by a motor —22— through the medium of a connecting rod —27—. The ratchet-wheel —45— is provided with a radially projecting arm —60— which after a predetermined number of movements of the ratchet-wheel is brought into engagement with and opens an electric switch member 61— for breaking the circuit to the electric motor —22—, thereby cutting off the power and stopping the machine. This ratchet-wheel is moved one or more tooth spaces at a time, according to the adjustment of the arm —49— so that after a predetermined number of movements of the rack —8— and carriage actuated thereby the switch 61— is opened to cut off the motor power and thereby stop the machine.

In operation, the shanks of the razor blades are inserted in their respective holders and clamped in place by the set screws 14— with their handles projecting through radial slots in the holders 13— and held in this position by the spring jaws —15—. The stop —30— is screwed by hand in place upon the screw —32— and the electric switch —61— is closed whereupon the rack —8— is reciprocated back and forth by the eccentric —23— and segmental rack —26— acting

upon the toothed connecting rod —27—. This reciprocal movement of the rack imparts rocking movement to the razor-holders —4— through practically half a revolution, thus bringing the blade from one flatwise position with its back edge moving in the direction of the carriage to the reverse position when the movement of the carriage is reversed, the razors being reversed at the beginning of each return stroke of the rack while the carriage is actuated back and forth by the engagement of the adjusting stops —21— with the adjacent cross bars 11— of the carriage. At each movement of the carriage in one direction the screw —32— is actuated or partially unscrewed by the action of the stop arm —40— upon the ratchet operating member —37—, such movement being repeated until the stop —30— is released by the screw, whereupon said stops drop by gravity into locking position with its arms —34— between the inner ends of the adjusting screws —21— and adjacent cross bars —11— of the carriage, thus lessening the rocking movement of the razor holders and affording a lighter pressure of the razor blades upon the stop. In like manner, the ratchet-wheel —45— is operated by the stop —49— at each movement of the carriage or rack —8— in one direction to cause the arms —60— to open the switch 61— after a predetermined number of movements of the carriage back and forth, thus cutting off the motor power and stopping the machine automatically.

It is desirable to shift the stop a slight distance laterally during the stopping operation to prevent wearing of the stop in the same place, and also to prevent undue abrasion of any particular part of the edge of the razor blade by any abradant which may lodge on the stop, and for this purpose I have provided automatic means for shifting the stop laterally a slight distance at each end of the stroke of the razor holders, said means comprising in this instance an arm —70— on one or both of the heads —20— adapted to engage and operate a lever —71— as the rack —8— is reciprocated, said lever —71— being fulcrumed on the axis of a ratchet wheel —72— and is provided with a pawl —73— for engaging and rotating the ratchet wheel one tooth space at a time. Rigidly connected to this ratchet wheel is an eccentric —73'— which rides between and against a pair of opposite pins or shoulders —74— the latter being secured to a laterally movable bar —75— carrying the adjacent ends of the stops —6— so that as the eccentric —73'— is rotated by the rotation of the ratchet wheel —72— the bar —75— and stops —6— will be shifted a slight distance laterally relatively to the razor holders.

What I claim is:

1. In a razor stropping machine, a reciprocating rack —8— 130

catory toothed rack, actuating means for the rack, an oscillatory razor holder actuated in reverse directions by the rack as the holder is moved back and forth, and a carriage for the razor holder actuated by the rack.

2. In a razor stropping machine, a stationary strop, a reciprocating carriage movable lengthwise of the strop, an oscillatory razor holder on the carriage, reciprocatory means for oscillating the razor holder in reverse directions, and adjustable means actuated by the reciprocatory means for shifting the carriage.

3. In a razor stropping machine, a reciprocatory rack, actuating means for the rack, a reciprocatory carriage actuated by the rack, said rack having a limited movement independent of the carriage, a rock shaft on the carriage, a razor holder on the rock shaft, and a pinion on the rock shaft meshing with the rack whereby the razor holder is oscillated during a limited movement of the rack independently of the carriage.

4. In a razor stropping machine, a reciprocatory carriage, an oscillatory razor holder on the carriage, a strop extending lengthwise of the movable carriage, a reciprocatory driving member, actuating means for the driving member, said driving member having a limited movement independent of the carriage, means actuated by said driving member for rocking the razor holder during such independent movement, and connection between the driving member and carriage for reciprocating the latter.

5. In a razor stropping machine, a strop, a reciprocatory carriage, a rock shaft on the carriage having a pinion and a razor holder thereon, a reciprocatory rack engaging the pinion and having a limited movement independent of the carriage, and adjustable means actuated by the rack for engaging and reciprocating the carriage.

6. In a razor stropping machine, a strop, a razor holder, means for moving the razor holder lengthwise of the strop, additional means actuated by the first named means for rocking the razor holder in reverse directions at the ends of its movement lengthwise of the strop, and adjustable means for limiting the rocking movement of the razor holder.

7. In a razor stropping machine, a strop, a razor holder, means for moving one of the parts back and forth relatively to the other, additional means actuated by the first named means for rocking the razor support in reverse directions at the ends of movement of the reciprocatory part.

8. In a razor stropping machine, a strop, a razor holder, means for moving one of the parts back and forth relatively to the other, additional means actuated by the first named means for rocking the razor support in reverse directions at the ends of movement of the reciprocatory part, and automatic means for lessening the degree of rocking movement of the razor holder after a predetermined number of strokes of the reciprocatory part.

9. In a razor stropping machine, a strop, a razor holder, means for moving one of the parts back and forth relatively to the other, additional means actuated by the first named means for rocking the razor support in reverse directions at the ends of movement of the reciprocatory part, and automatic means for stopping the movement of the reciprocatory part after a predetermined number of strokes.

10. In a razor stropping machine, a strop, a razor holder, means for moving one of the parts back and forth relatively to the other, additional means actuated by the first named means for rocking the razor support in reverse directions at the ends of movement of the reciprocatory part, and automatic means for lessening the degree of rocking movement of the razor holder after a predetermined number of strokes of the reciprocatory part, and automatic means for stopping the movement of the reciprocatory part after a predetermined number of strokes.

11. In a razor stropping machine, a razor strop, a razor holder, means for moving the razor holder back and forth lengthwise of the strop, additional means for oscillating the razor holder in reverse directions at the end of each stroke, and automatic means for lessening the rocking movement of the razor holder after a predetermined number of strokes back and forth along the strop.

12. In a razor stropping machine, a strop, a razor holder, means for moving the razor holder back and forth lengthwise of the strop, additional means actuated by the first named means for rocking the razor holder in reverse directions at the ends of its reciprocatory movement, and automatic means for stopping the movement of the razor holder after a predetermined number of strokes.

In witness whereof I have hereunto set my hand this 3d day of June 1908.

JAY R. DIEVENDORF.

Witnesses:

HARRY L. STOUT,
PEARL L. SEARLE.