

No. 896,667.

PATENTED AUG. 18, 1908.

S. SANTINO.
RAZOR HONE.

APPLICATION FILED MAR. 2, 1908.

3 SHEETS—SHEET 1.

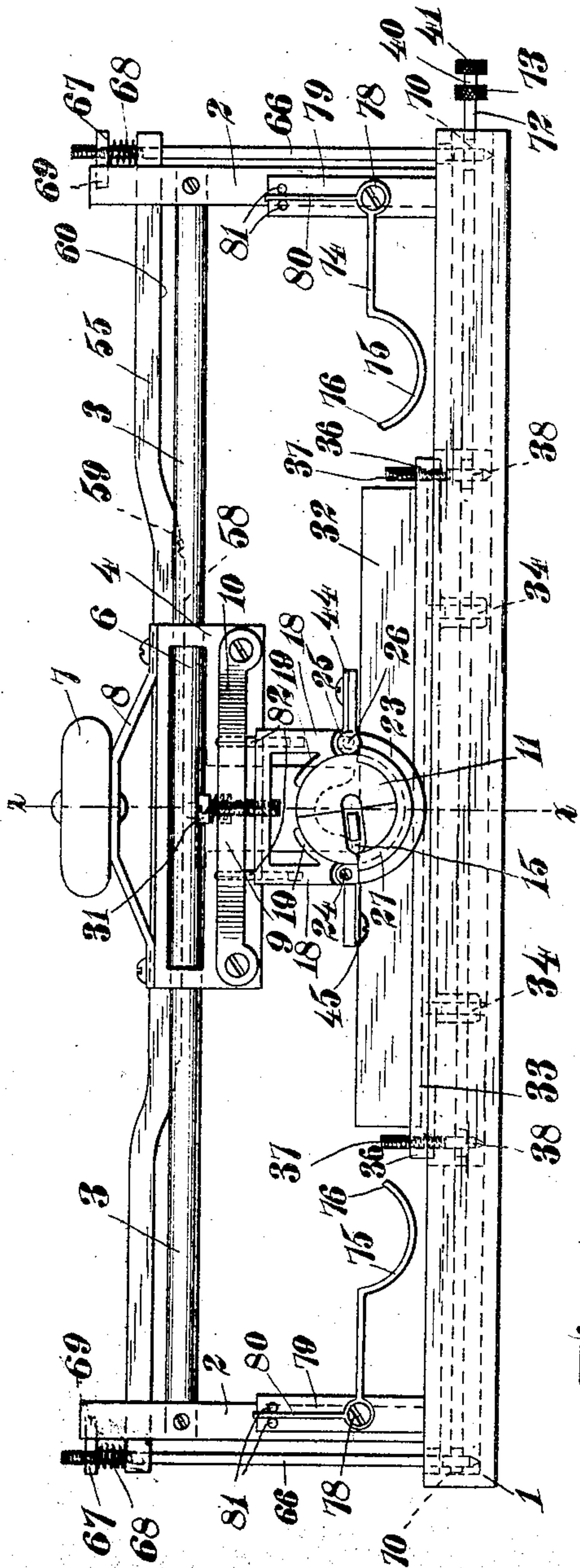
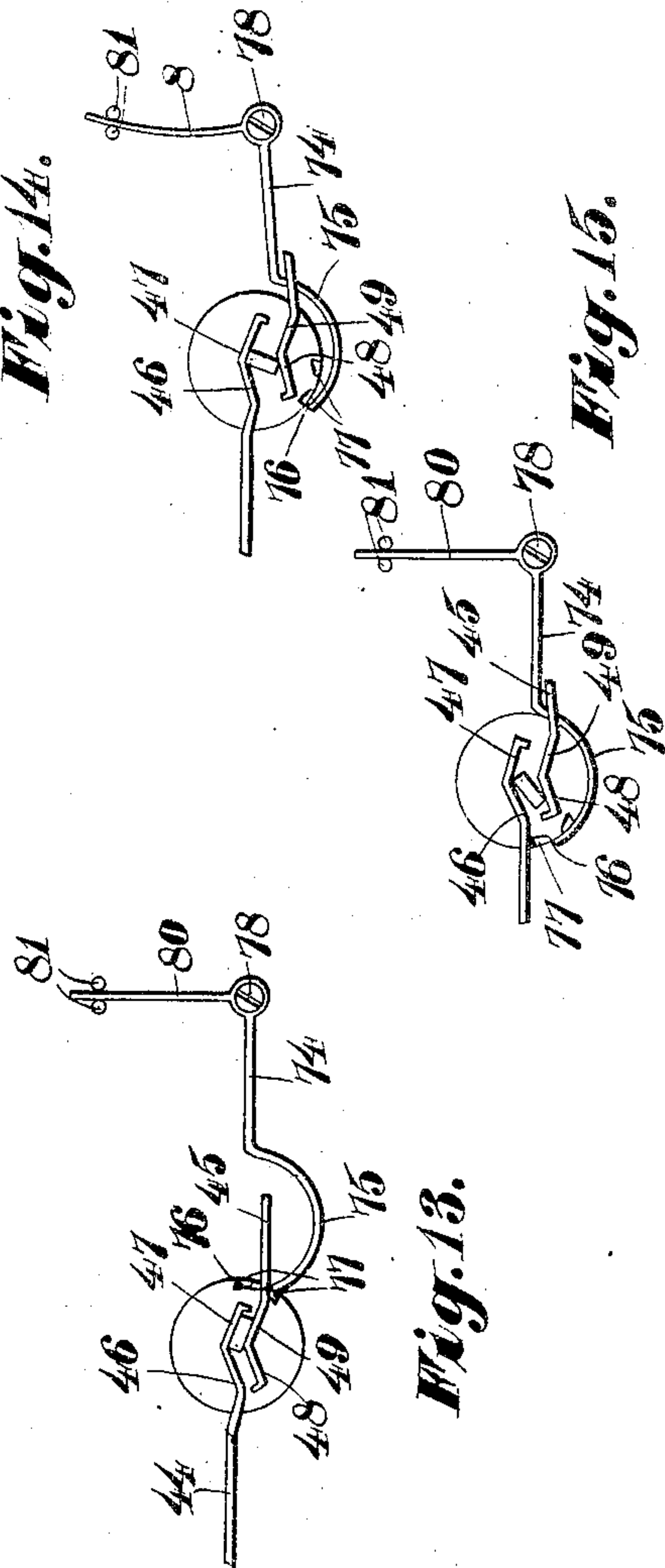


Fig. 1.



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3 SHEETS—SHEET 2.

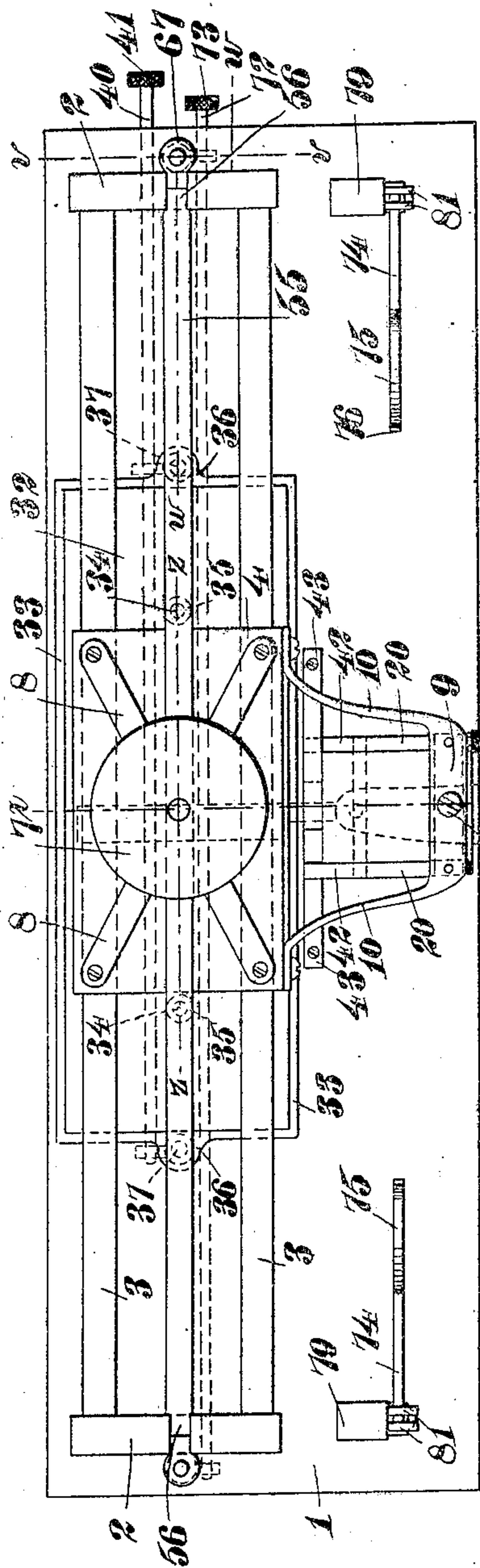


Fig. 2.

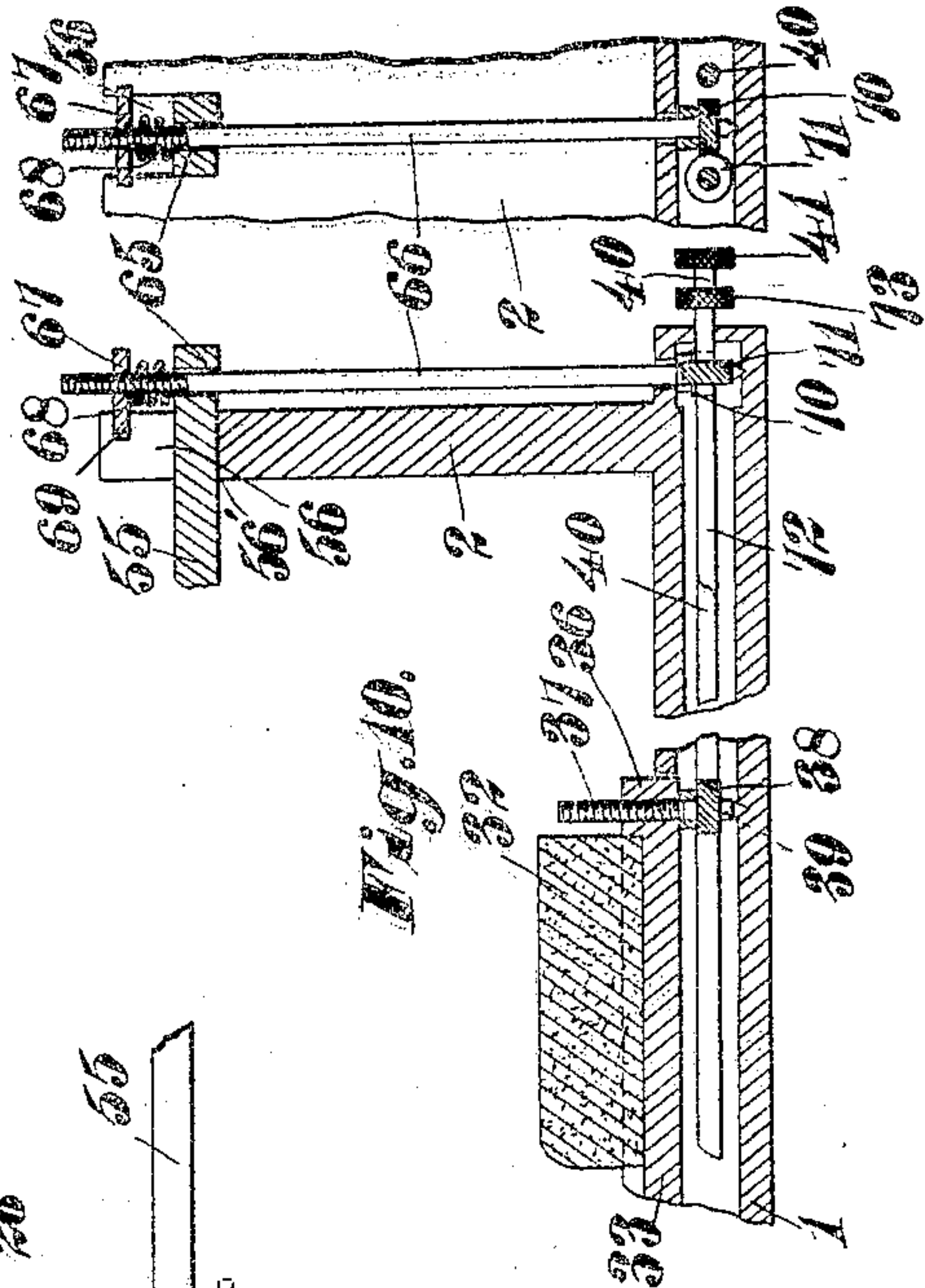


Fig. 10.

Fig. 11.

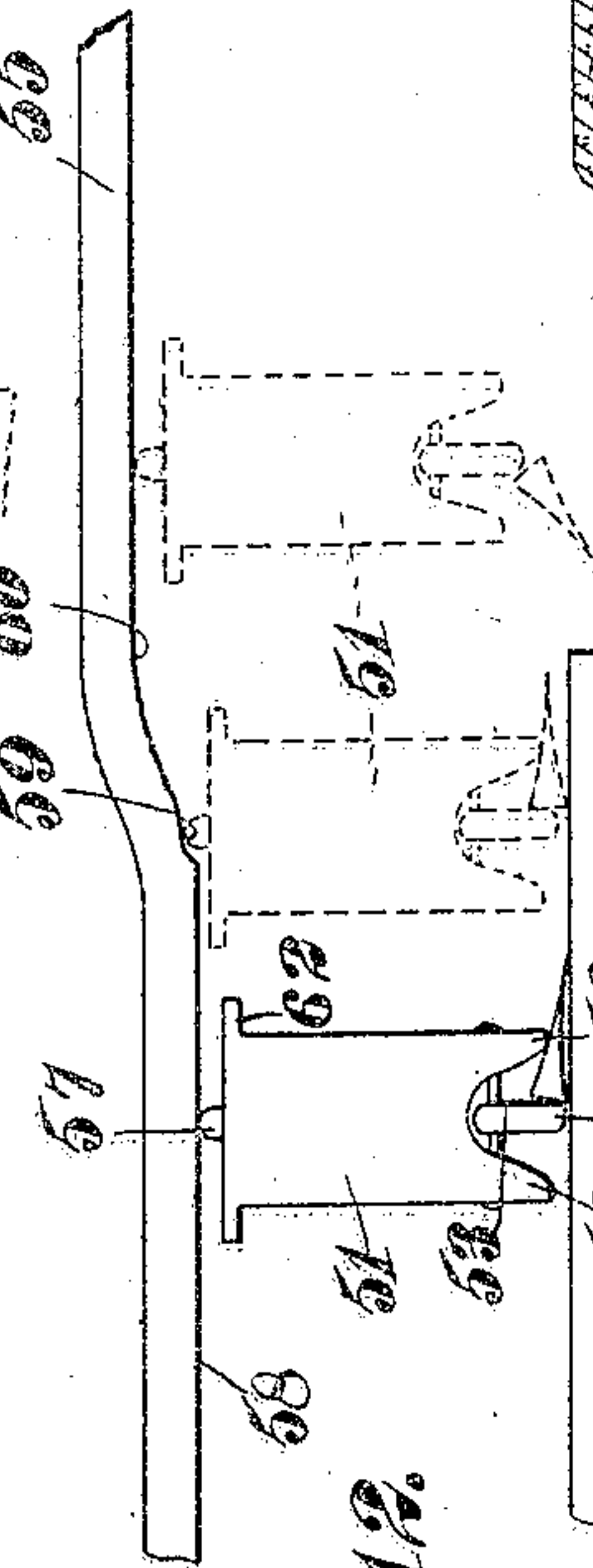


Fig. 12.

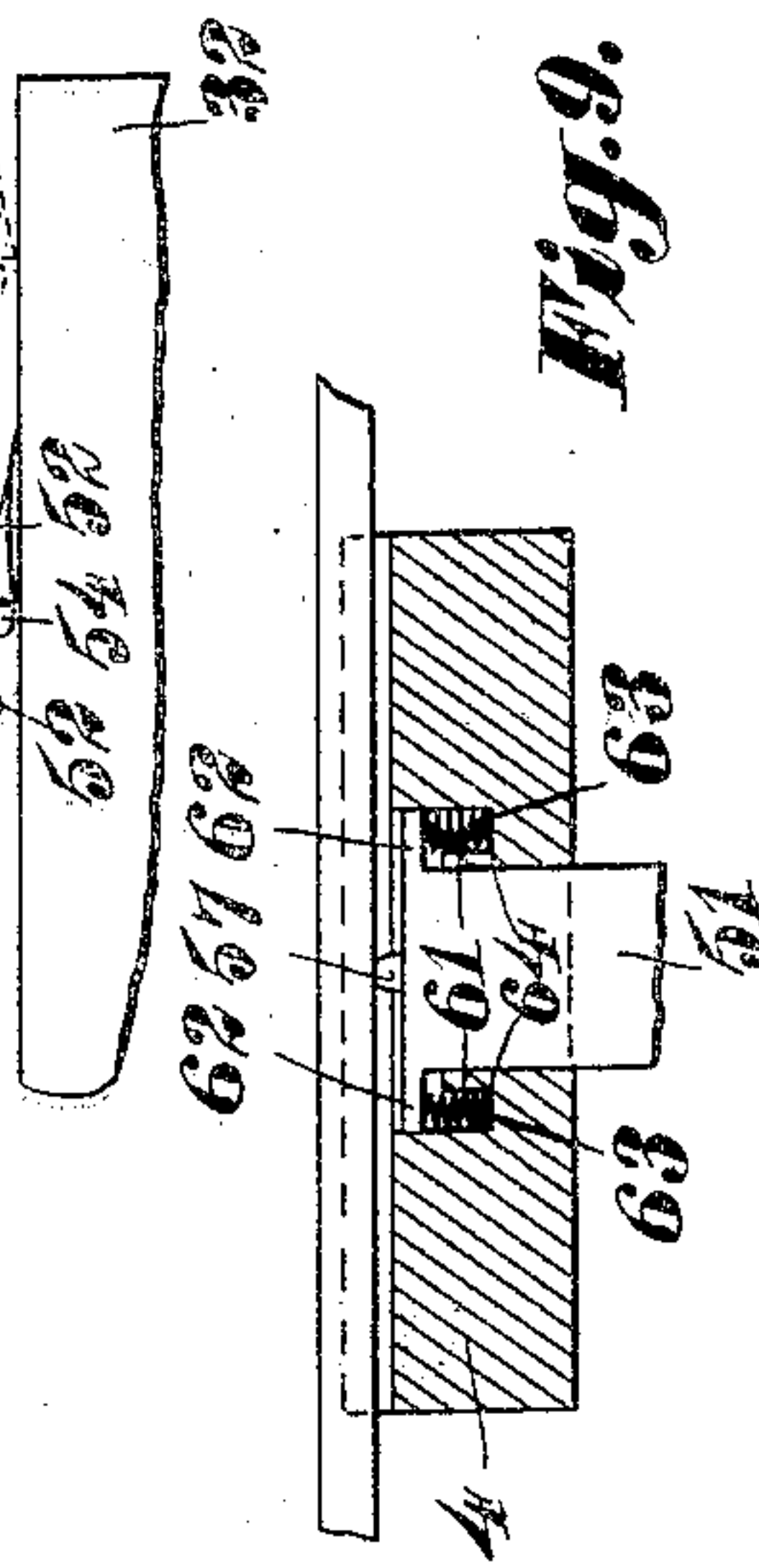


Fig. 9.

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3 SHEETS—SHEET 3.

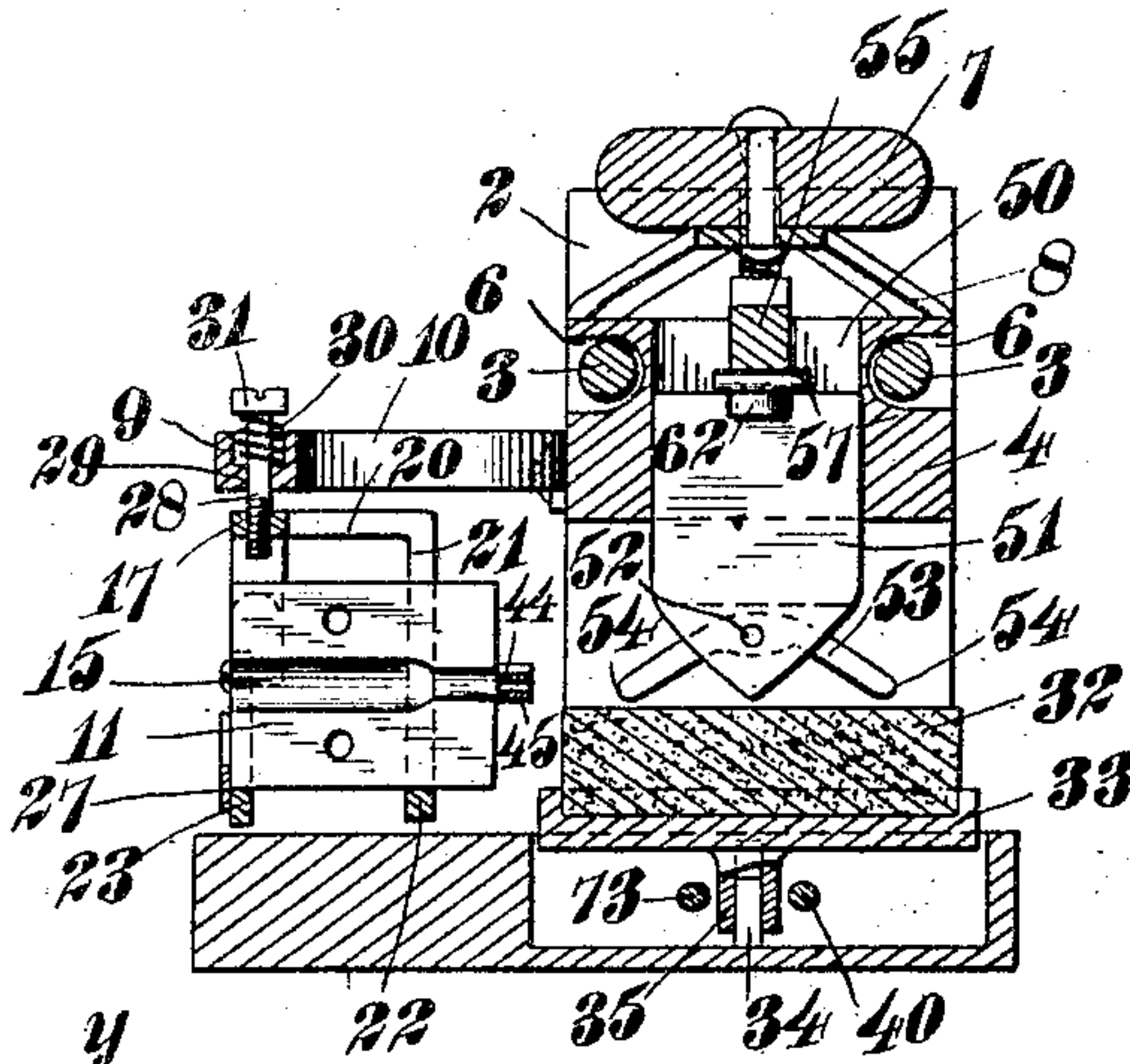


Fig. 3.

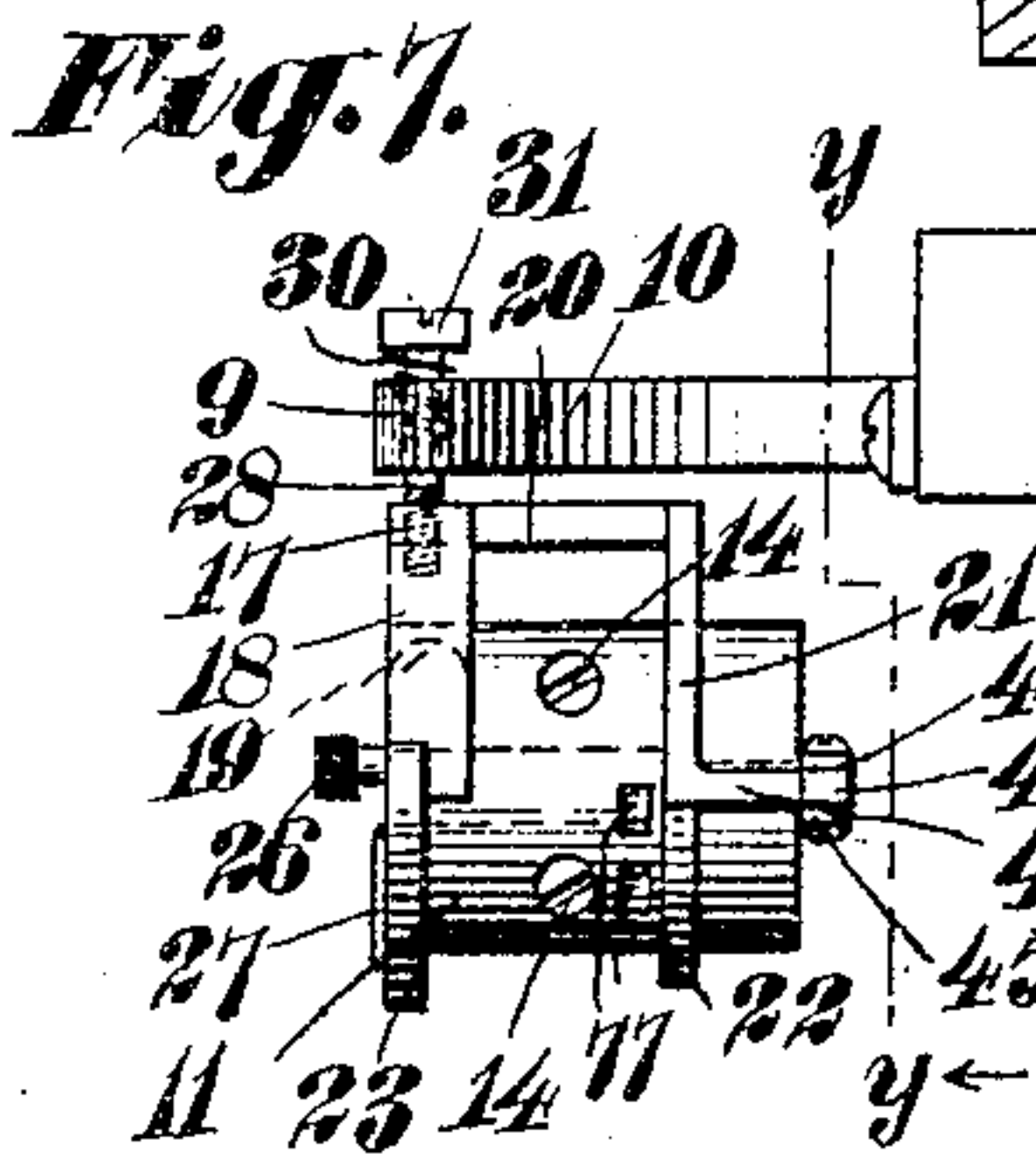


Fig. 8.

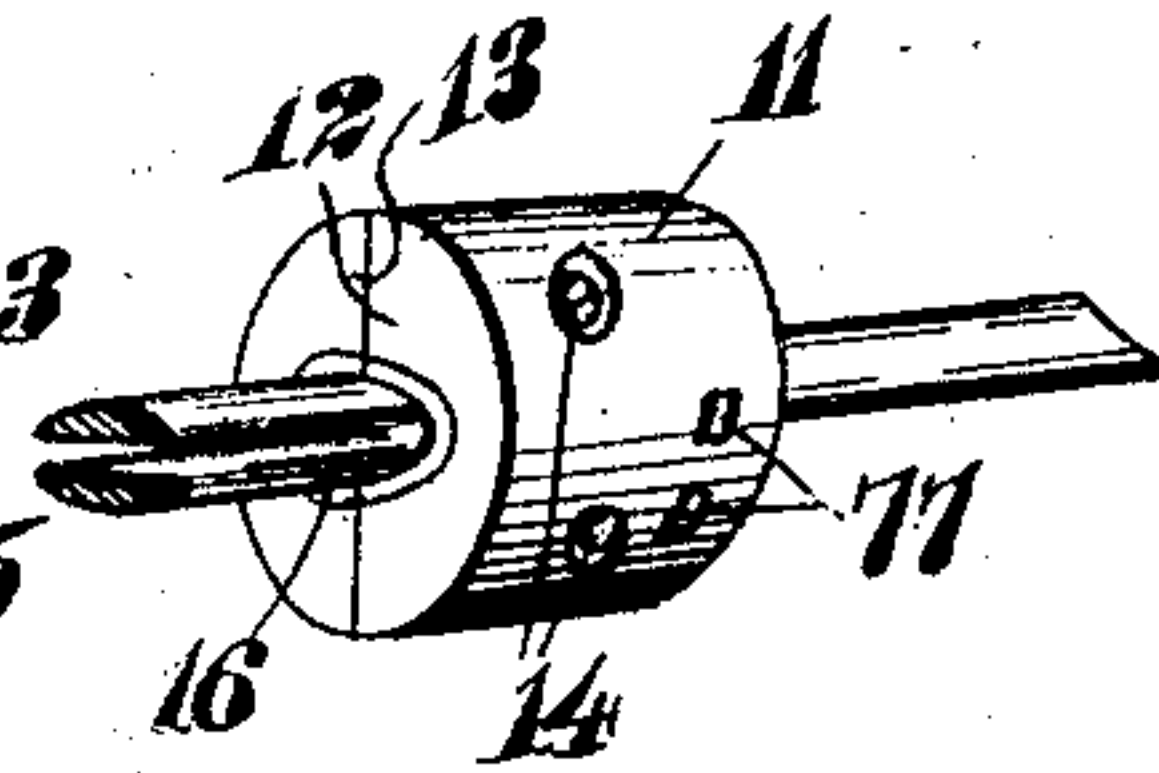


Fig. 6.

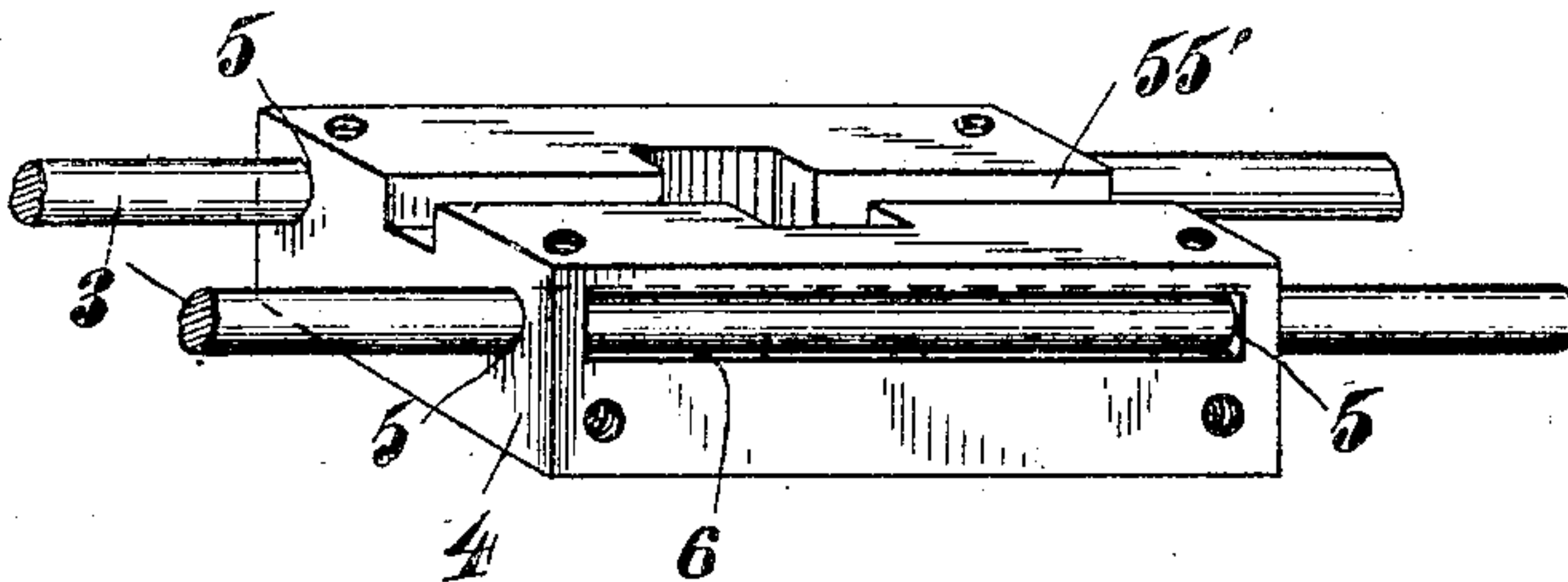


Fig. 4.

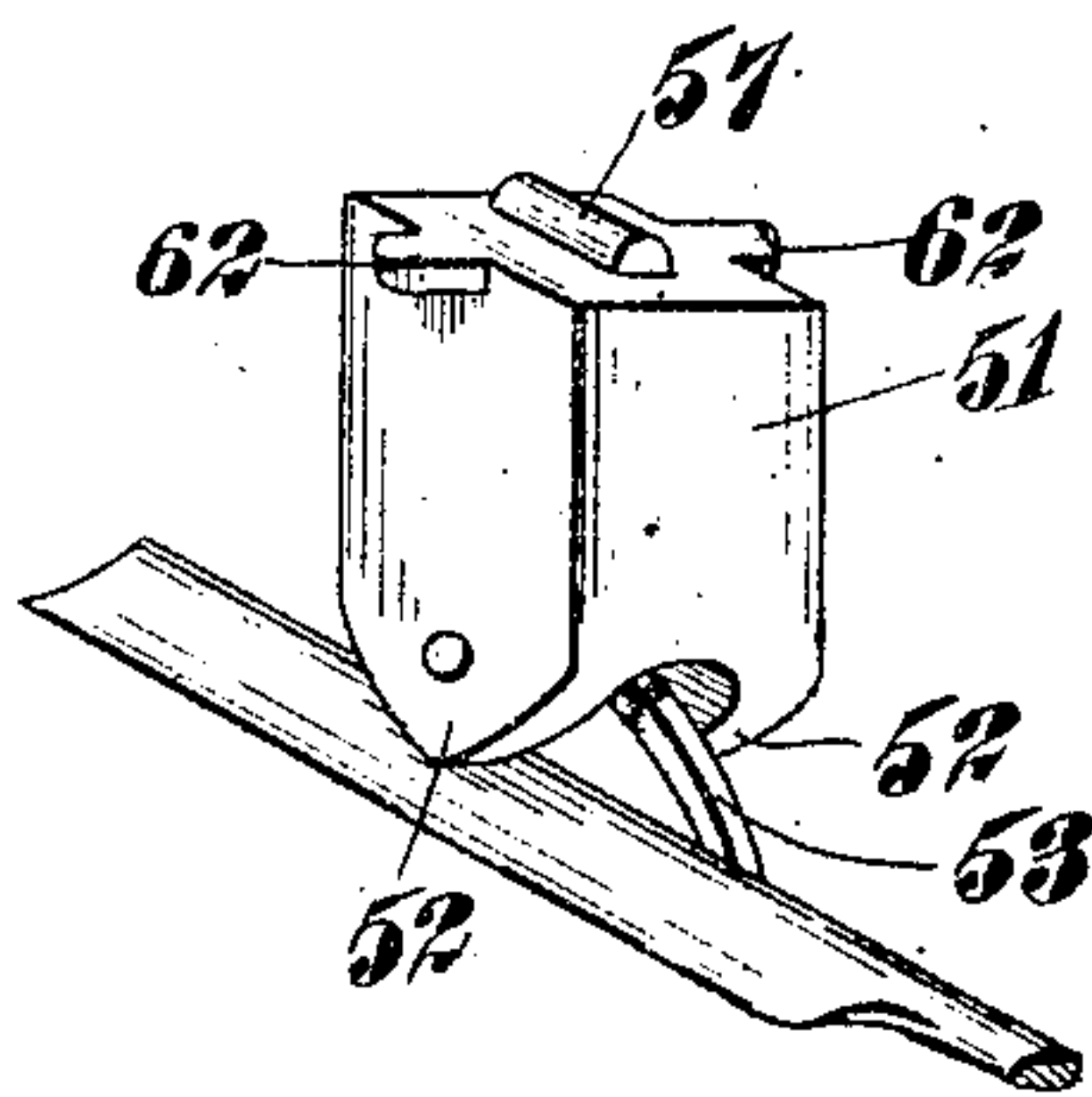


Fig. 5.

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UNITED STATES PATENT OFFICE.

SALVATORE SANTINO, OF CHICAGO, ILLINOIS.

RAZOR-HONE.

No. 896,667.

Specification of Letters Patent.

Patented Aug. 18, 1908.

Application filed March 2, 1908. Serial No. 418,775.

To all whom it may concern:

Be it known that I, SALVATORE SANTINO, a subject of the King of Italy, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Razor-Hones, of which the following is a specification.

My invention relates to razor hones and the object of my invention is to provide a machine which will operate to quickly and efficiently hone a razor, and that by a simple back and forward motion of the hand.

In carrying out my invention I provide a stationary stone and a reciprocating carriage having a razor holder, and equip the device with means for pressing the razor into engagement with the stone throughout substantially the length of the stone and means for turning the razor at the end of each stroke of the carriage.

My invention further includes means for regulating the pressure of the blade on the stone and means for adjusting the device to accommodate razors having blades of various thicknesses.

My invention further consists in means for adjusting the stone to accommodate razors of various degrees of thickness and to take up the wear of the stone.

My invention further consists in various details of construction and arrangements of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a front elevation of a razor honing machine embodying my invention in its preferred form, Fig. 2 is a plan view thereof, Fig. 3 is a vertical transverse section on the line $x-x$ of Figs. 1 and 2, the carriage being in central position, Fig. 4 is a perspective view of the carriage proper and a portion of the slides upon which it is mounted, Fig. 5 is a perspective view of the presser member, Fig. 6 is a perspective view of the razor clamp, Fig. 7 is a side elevation of the razor holding bracket, Fig. 8 is a rear elevation of the same, partially in section, the section being taken on the line $y-y$ of Fig. 7, Fig. 9 is a detail section on the line $z-z$ of Fig. 2, Fig. 10 is a detail vertical section on

the line $w-w$ of Fig. 2, Fig. 11 is a detail sectional view on the line $v-v$ of Fig. 2, Fig. 12 is a diagram illustrating the operation of the presser member and Figs. 13, 14 and 15 are diagrams illustrating the operation of turning the razor at the end of the stroke.

Referring to the drawings 1 indicates the base of the machine. This is a plain rectangular member formed of any suitable material, but preferably of metal. From each end of the block 1 rises a standard 2. These may be formed separately and secured to the base 1 or if made of metal may be cast integrally therewith. Secured to the standards 2 near the top thereof, and extending from one to the other are a pair of parallel rods 3 upon which the reciprocating carriage is slidably mounted.

The carriage proper comprises a rectangular oblong block 4. This may be slidably connected to the rods or ways 3 in any suitable manner but I prefer that illustrated in the drawings for obvious reasons. As shown therein the rods pass through longitudinal passageways 5 provided for them in the block 4 and the passageways are enlarged as at 6 throughout the greater portion of their length intermediate of the ends, to reduce the friction between the carriage and the rods. In this manner the carriage is provided with bearings for the rods at each of the four corners.

7 indicates a knob or handle secured to the carriage by a bracket or spider 8 and providing means for reciprocating the carriage.

Secured to the front of the carriage 4 is the razor holding device which comprises a bracket rigidly fixed thereto, a razor clamp, and a razor or clamp holder depending from said bracket. The bracket comprises a horizontal bar 9 arranged parallel with the front face of the carriage and connected thereto by a pair of arms 10. The razor clamp comprises a cylindrical member 11 formed of the two semi-cylindrical portions 12 and 13 secured together by a pair of screws 14. The members 12 and 13 are provided with registering longitudinal recesses 15 to receive the portion of the shank of the razor adjacent to the handle and the contiguous portions of the handle, and the recess in the portion 13 is

deeper than that in the portion 12 in order to throw the back or rib of the razor in alinement with the axis of the clamp. The recesses 15 are preferably lined with rubber, cork or other similar resilient material to hold the razor firmly without injuring the same. The razor clamp is rotatably mounted in a clamp holder secured to and depending from the bracket 9—10. The holder is a skeleton member consisting of the horizontal bar 17 arranged beneath and parallel with the bar 9, a pair of depending arms 18 extending downwardly from the ends of the bar 17 and having the bearing members 19 formed integrally therewith, a pair of arms 20 extending rearwardly from the ends of the bar 17 and a depending U shaped member 21 the bottom 22 of which forms bearings to support the clamp near its inner end. It should be noted that the bearings 19 at the forward end of the clamp are arranged above the same and the bearing 22 at the inner end is arranged below the same. It is obvious that suitable means must be provided for supporting the outer or front end of the clamp. This comprises a semi-circular arm 23 pivotally connected to one of the arms 18 as at 24 and having its opposite end slotted as at 25 to receive a thumb nut as at 26 threaded into the opposite arm 18. The members 19 and the arm 23 form a complete circular bearing for the outer end of the clamp and a plate or flange 27 on the arm 23 forms a stop to prevent outward movement of the clamp. To insert or remove the clamp 11, the thumb nut 26 is loosened and the arm 23 dropped. After the clamp is inserted the arm 23 is raised into position and the thumb screw tightened. The holder is secured to the bracket 9—10 by a screw 28. This is threaded into the bar 17 and passes through a bore 29 in the bar 9, through which it is free to reciprocate vertically. A spring 30 interposed between the bar 9 and the head 31 of the screw normally holds the holder and clamp in raised position. The tension of the spring 30 may be regulated by turning the screw 28.

32 indicates the stone. This is mounted longitudinally of the machine beneath the carriage 4 and with its upper face somewhat below the axis of the rotary clamp 11. The stone is mounted in a bed plate 33 which is vertically adjustable upon the guide pins 34 formed in the base 1, the bed plate being provided with depending lugs 35 which are drilled to receive said pins. The bed plate 33 is provided at each end with a lug 36 through which is threaded a vertically disposed screw 37 having a worm gear 38 formed thereon which meshes with a similar gear 39 on a shaft 40 extending longitudinally through the base 1. The shaft 40 extends beyond one end of the base and is provided with a knurled head 41 by which it is turned.

By turning the shaft 40 the height of the stone may be regulated for purposes herein-after described.

Extending rearwardly from the U shaped member 21 of the clamp holder are a pair of arms 42 which terminate in the oppositely extending horizontal portions or extensions 43, a short distance from the member 21 and parallel therewith. To the extensions 43 are secured a pair of spring arms 44—45 the former being secured to the upper face and the latter to the under face of their respective members 43. The inner or forward edges of the spring arms rest against the rear face of the clamp 11 forming a stop therefor. The free ends of the spring arms 44 and 45 overlap and the overlapping ends are bent as shown in Figs. 8, 13, 14 and 1 for reasons which will appear as the description proceeds. The arm 44 is formed with the upwardly inclined portion 46 and the downwardly inclined portion 47 and the end of the arm 45 is provided with the parallel portions 48 and 49, that is, the portions 48 and 49 are parallel with the portions 46 and 47 respectively of the arm 44. When a razor is in the machine the portion of the shank which extends beyond the clamp 11 is held between the portions 46 and 48 or the portions 47 and 49, and the angle of inclination of these portions of the spring arms is such as to normally hold the edge of the razor slightly raised from the stone.

The means for holding the razor and for moving it back and forth over the stone having been described, there still remains to be described means for holding the edge of the blade in contact with the stone throughout substantially the length of the stone, means for retracting the presser device as the blade approaches the end of the stone, and means for turning the blade at the end of each stroke preparatory for the next, also means for regulating the pressure.

Vertically slidable in the block or carriage 4 through a vertically disposed aperture 50 therein is a block 51 the lower end of which is bifurcated, forming the presser feet 52—52 one of which normally rests upon the blade of the razor. Pivotaly mounted between the feet 52 is a bent lever 53 the ends 54 of which are but a slight distance above the upper face of the stone 32 and rest against the back or rib of the blade as will be seen by referring to Fig. 12. As the carriage is reciprocated the lever 53 shoves the blade with a steady movement and prevents any loose play thereof which would injure the edge of the razor.

55 indicates a cam-bar extending from end to end of the machine and having its ends extending through vertically disposed slots or guide-ways 56 in the upper end of the standards 2. The lower edge of the bar 55 bears against a transverse lug 57 formed on the up-

per end of the block 51, and comprises a straight horizontal central portion 58 which is almost as long as the stone, a slightly elevated portion 59 at each end of the portion 58 and a further elevated portion 60 at each end of the bar. When the presser member 51 is beneath the portion 58 one of the presser feet 52 holds the blade, that is the edge thereof in engagement with the stone, but as the edge approaches the end of the stone the lug 57 reaches the elevated portion 59 of the cam-bar which permits the presser member to rise, the spring arms 44 and 45 immediately raise the edge out of contact with the stone. To raise the presser member I provide a pair of springs 61 interposed between a pair of lugs 62 on the presser member and the carriage 4, the walls of the aperture 50 being grooved or recessed as at 63 for said lugs and the bottom of said recesses being provided with the spring seats 64. To avoid having the member 51 extend above the carriage, the carriage is longitudinally grooved as at 55' to receive the cam-bar. The bar 55 rests on the bottom 56' of slot 56.

To regulate the pressure of the blade upon the stone I provide means for regulating the pressure of the cam-bar on the member 51. The ends of the cam-bar 55 extend beyond or outside of the standards 2 and are apertured as at 65 to receive the vertically disposed rod 66 upon which the bar is vertically slidable. Upon the upper end of the rods 66 is threaded a washer 67. The washer 67 is above the bar 55 and interposed between the same is a spring 68. The washer 67 is provided with a lug or tail 69 which extends into the slots 56 in the standards 2, preventing rotation of the same. It is obvious that by turning the rod 66 the pressure of the springs 68 upon the cam-bar may be regulated. The lower end of each rod 66 is provided with a worm gear 70 which meshes with similar gears 71 on a horizontal shaft 72 extending longitudinally of the machine.

73 is a knurled head on the shaft 72 to facilitate turning the same.

By turning the shafts 40 and 72 the device may be readily adjusted to accommodate razors having blades of various thicknesses and also to regulate the pressure of the blade on the stone, and incidentally to take up the wear of the stone.

During each stroke the edge of the razor is forward, hence means must be provided for turning the razor at the end of each stroke preparatory for the next stroke. Arranged at each end of the machine and in the path of the clamp 11 is a spring arm 74 having curved end 75, the curvature of which conforms substantially to the circumference of the clamp. As the clamp reaches the arm the end 76 of the arm engages a notch 77 in the peripheral face of the clamp after which further movement of the carriage and clamp

causes the latter to be turned. This portion of the operation is illustrated in diagram in Figs. 13 to 15 inclusive. The notch 77 is normally a short distance below the horizontal plane of the axis of the clamp hence the arm slides under the clamp and causes it to rotate. When the end 76 of the arm passes beneath the center of the clamp it begins to rise on the opposite side and it is for this reason that the portion 75 is curved as described. It should be noted that as the clamp turns and thereby turns the razor, the shank of the razor A is turned against the tension of the spring arms 44 and 45. Assuming that the carriage is moving toward the right hand end of the machine the shank of the razor will be held between the portions 47 and 49 of said arms, but as the clamp is turned the shank is turned into the position shown in Fig. 14 between the portions 46 and 48. As soon as the shank of the razor passes the vertical position, the resiliency or clamping action of the arms 44 and 45 quickly turns it into position for the next stroke, the notch 77 being then past center is disengaged from the end of the arm 74. In turning the razor the back or rib thereof passes under the arm 53 as shown in Fig. 12. This raises the presser member 51, and it is to permit the member to rise at this time that the end portions 60 of the cam-bar are elevated as before mentioned. It should be noted that the end 76 of the arms are at a sufficient distance from the ends of the stone to prevent the edge of the razor engaging the stone when turning.

The spring arms 74 are preferably rigid but pivotally connected and spring pressed to give sufficient resiliency thereto. To this end each arm is pivotally mounted as at 78 upon a post or standard 79 rising from the bed 1 near each end thereof and in front of the standards 2.

Formed integrally with the arms 74 is a flexible or spring arm 80 which extends vertically upwards with its free end held between lugs 81 at the top of the standards 79. This normally holds the arm in horizontal position and gives sufficient resiliency or spring thereto.

It is obvious that in pressing the razor against the stone, and in turning the same, the razor clamp must be free for a slight vertical movement and it is to this end that the clamp holder is supported by the spring 30. However it is evident that side or torsional movement of the clamp must be avoided and to this end the clamp holder is arranged to slide vertically on the pins 82 depending from the ends of the arm 9, the arms 18 being drilled to receive said pins.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a razor hone a stone in combination

with a reciprocating razor holder, means for pressing the razor into engagement with the stone throughout substantially the length of the stone, and means for regulating said pressing means to adjust the pressure of the blade on the stone, substantially as described.

2. A razor hone comprising a stone and a reciprocating carriage in combination with a razor holder fixed to said carriage and yieldingly held in raised position, means for depressing the razor into engagement with the stone throughout substantially the length of the stone and means for adjusting the pressure of the blade on the stone, substantially as described.

3. A razor hone comprising a base and a stone mounted on said base in combination with a track supported above said stone, a carriage slidably mounted on said track, a razor holder secured to said carriage and means for holding the razor in engagement with said stone, substantially as described.

4. A razor hone comprising a base and a stone mounted thereon in combination with a standard extending upwardly from each end of said base, a pair of rods extending from one standard to the other, a carriage slidably mounted on said rods, a razor holder secured to said carriage, means normally holding the edge of the razor out of engagement with said stone, means for depressing the razor into engagement with said stone throughout substantially the length of the stone, and means for permitting the edge of the razor to rise out of engagement with said stone as it approaches the end thereof, substantially as described.

5. In a razor hone a reciprocating carriage and a holder secured thereto, said holder having the slight vertical movement, means for normally maintaining said holder in raised position and a razor clamp mounted in said holder substantially as described.

6. In a razor hone a razor clamp in combination with a reciprocating clamp holder, means on said holder for locking said clamp therein, a pair of spring arms on said holder adapted to engage the shank of the razor to yieldingly hold the same and said clamp in normal position and constituting with said locking means stops to prevent longitudinal movement of the clamp, substantially as described.

7. A razor hone comprising a stone and a reciprocating carriage in combination with a razor holder secured to said carriage, means for normally holding the edge of the razor out of engagement with the stone, a vertically movable presser member mounted in said carriage, and a cam-bar adapted to engage said presser member to hold the edge of the blade in engagement with said stone throughout substantially the length of the stone, substantially as described.

8. A razor hone comprising a stone and a reciprocating carriage in combination with a razor holder secured to said carriage, means for normally holding the edge of the razor out of engagement with said stone, a vertically movable presser member slidably mounted in said carriage, means for normally holding said presser member in raised position, and means for depressing said presser member into engagement with the blade of the razor to hold the edge thereof in engagement with said stone throughout substantially the length of said stone, substantially as described.

9. A razor hone comprising a stone and a reciprocating razor holder, in combination with a presser member, means for normally holding said presser member in raised position, a cam-bar adapted to engage said presser member to hold the razor in engagement with the stone throughout a portion of its stroke, and means for adjusting the pressure of said cam-bar on said presser member, substantially as described.

10. In a razor hone a stone and a reciprocating carriage, in combination with a razor holder on said carriage means for normally holding the edge of the razor out of engagement with said stone, a cam-bar for depressing the blade into engagement with said stone throughout a portion of the stone, and means for adjusting the stone with relation to said cam-bar, substantially as described.

11. In a razor hone, a stone, and a reciprocating carriage arranged above said stone, in combination with a clamp holder suspended from said carriage, a razor clamp rotatably mounted in said holder, and means for turning said clamp at the end of each stroke, substantially as described.

12. In a razor hone, a stone, and a reciprocating carriage arranged above said stone, in combination with a clamp holder suspended from and to one side of said carriage, a razor clamp mounted in said holder, means for normally holding the clamp holder and the clamp in raised position, and means for depressing the same to hold the razor blade in engagement with said stone throughout the greater part of each stroke, substantially as described.

13. In a razor hone, a stone and a reciprocating carriage arranged above said stone, in combination with a razor holder suspended from said carriage and arranged at one side of said stone, means normally holding said holder in raised position, and a vertically reciprocatory member on said carriage adapted to engage the blade of the razor to depress the same into engagement with the stone, substantially as described.

14. In a razor hone, a razor clamp comprising a cylindrical member formed of two semi-cylindrical portions detachably connected, said portions being provided with

registering longitudinal recesses in their adjacent faces and one of said recesses being of greater depth than the other, substantially as described.

- 5 15. A razor hone comprising a base, and a stone mounted thereon, in combination with a reciprocating razor holder, means operable from the end of said base for adjusting said stone with relation to said holder, means for
10 pressing the razor into engagement with said stone, and means operable from the end of

the base for adjusting said presser means for regulating the pressure of the blade on the stone, substantially as described.

In testimony whereof I have signed my 15 name to this specification in the presence of two subscribing witnesses.

SALVATORE SANTINO.

Witnesses:

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HOWARD S. AUSTIN.