

Aug. 2, 1938.

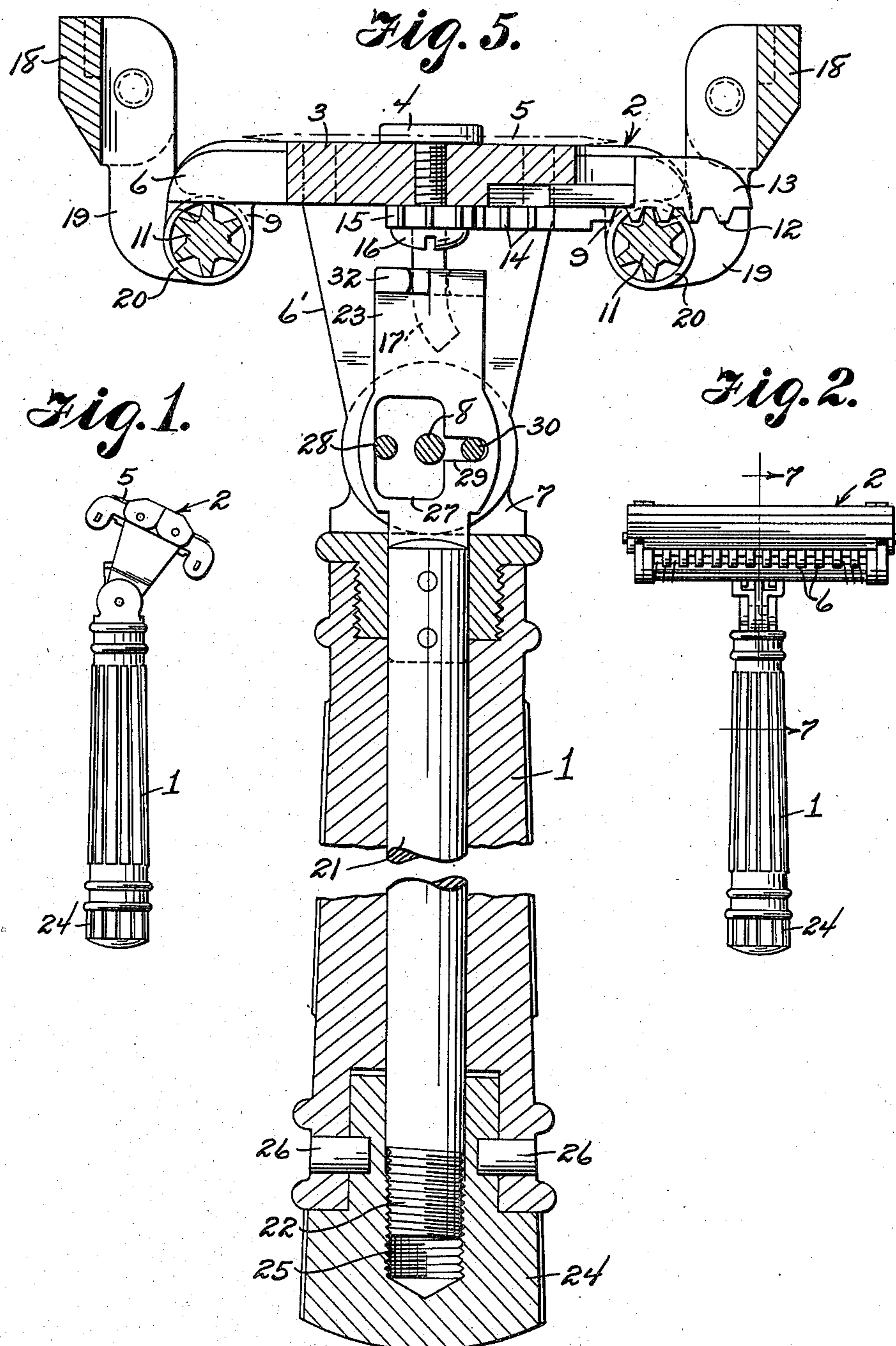
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2,125,811

ADJUSTABLE HEAD SAFETY RAZOR

Filed Aug. 24, 1937

3 Sheets-Sheet 1



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Fig. 3.

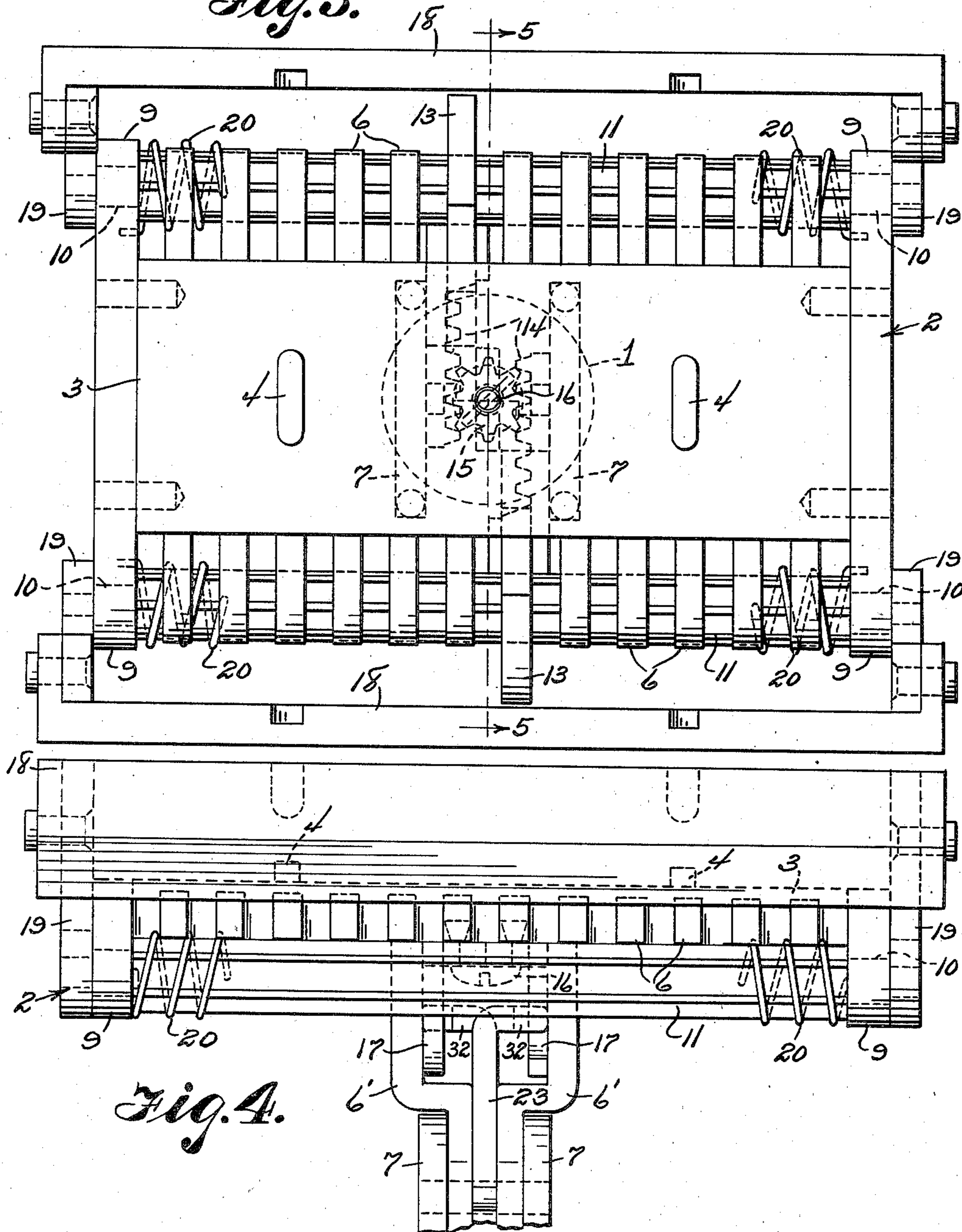


Fig. 4.

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Fig. 6.

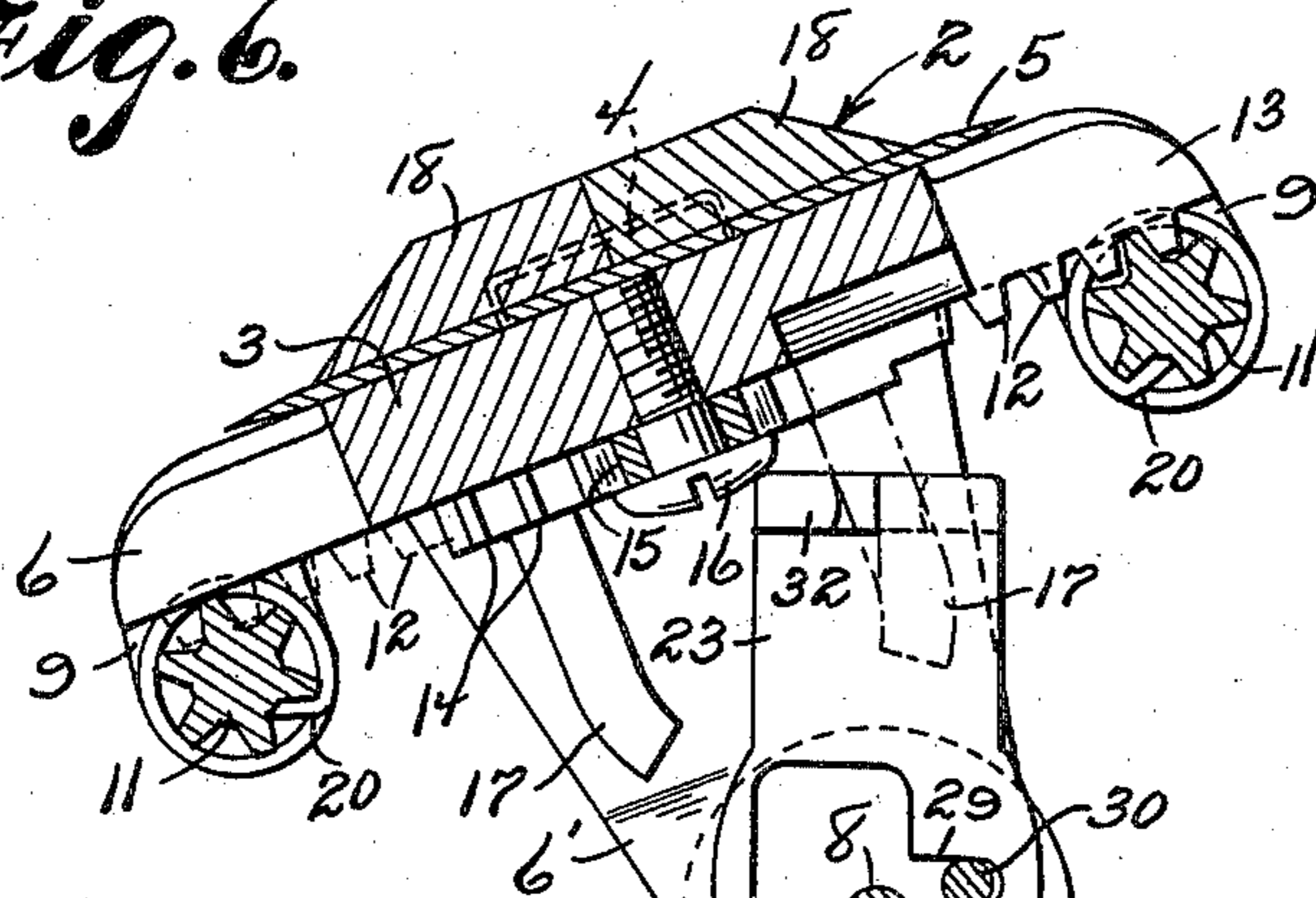


Fig. 8.

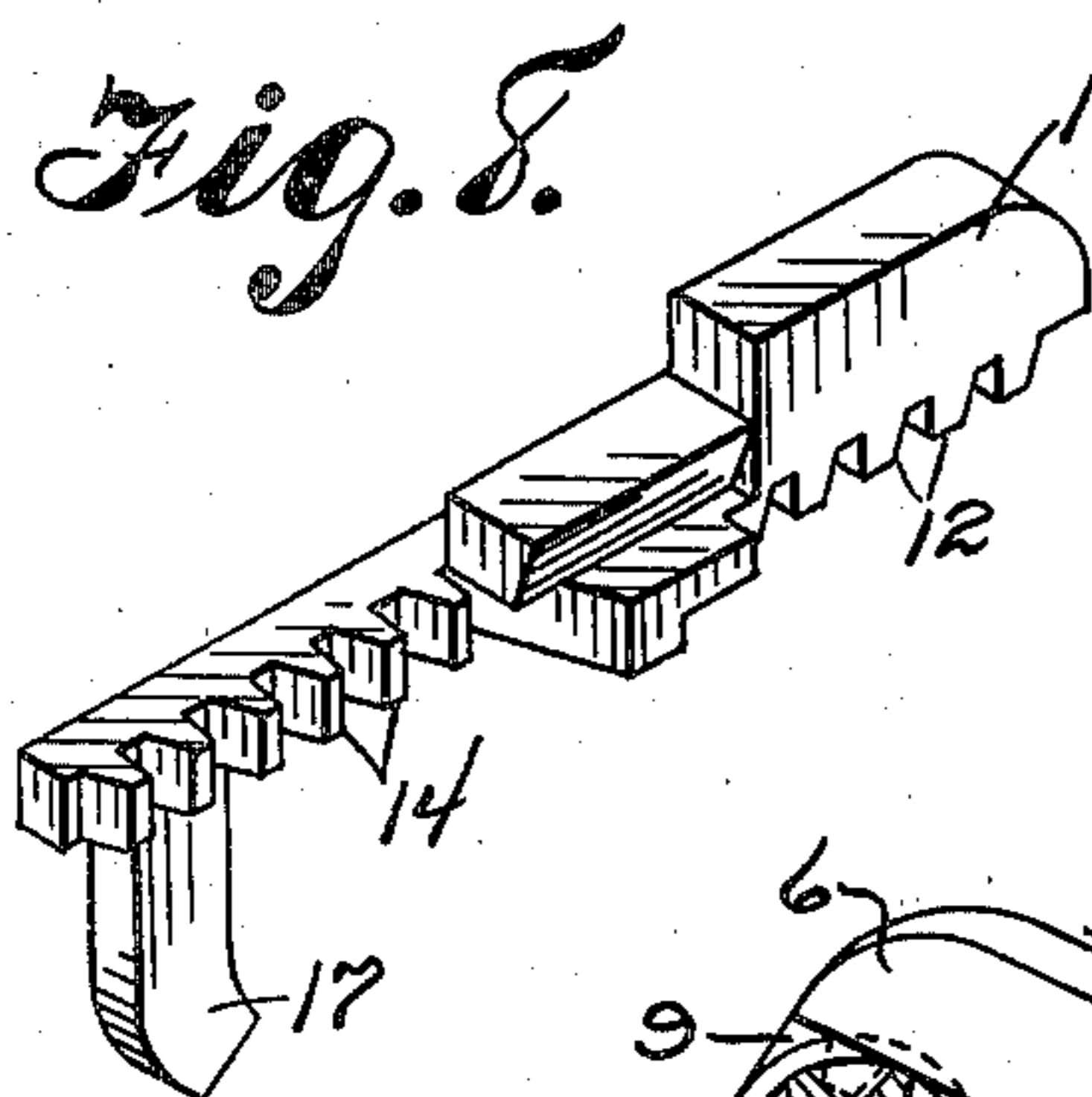


Fig. 9.

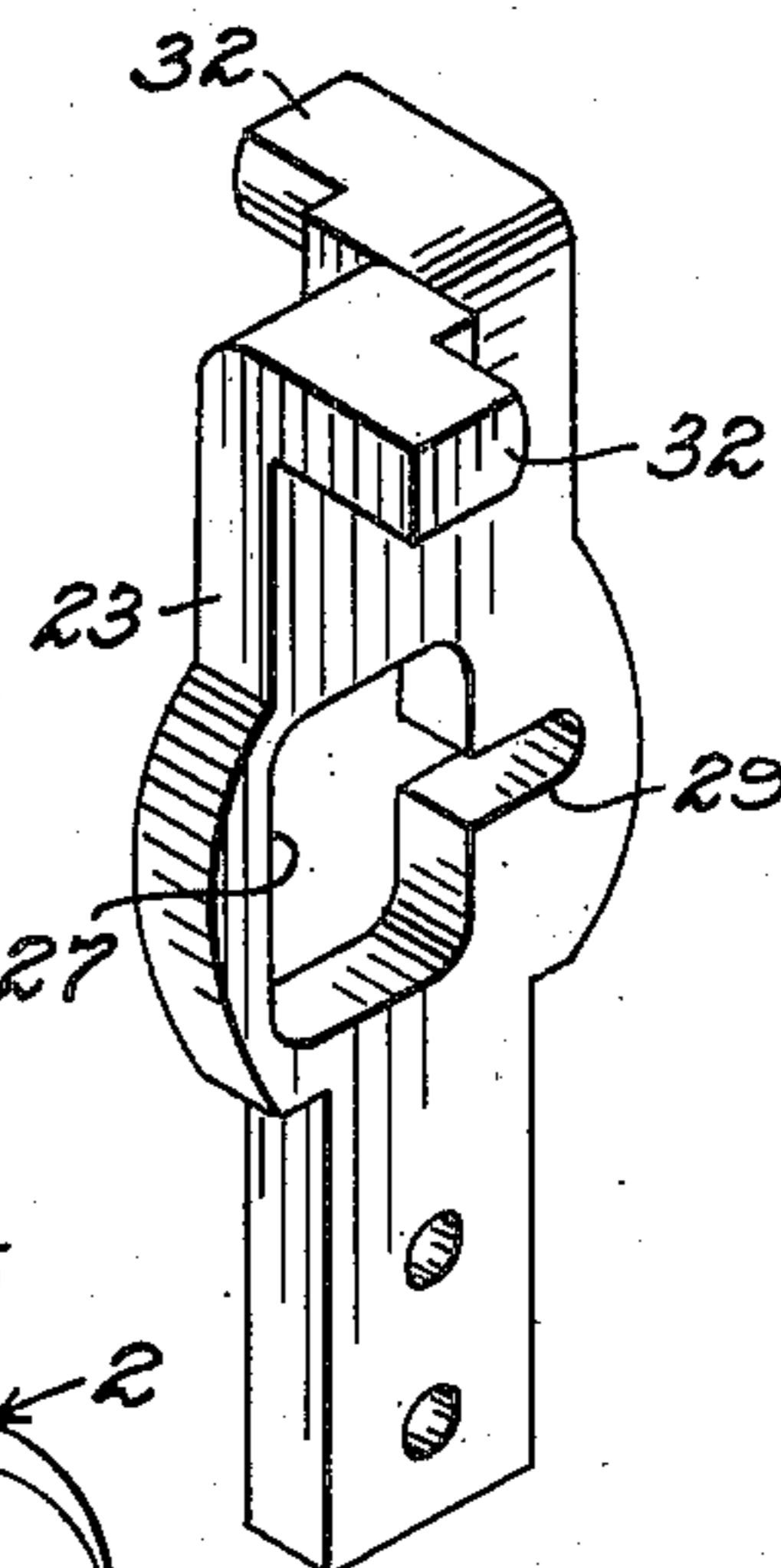
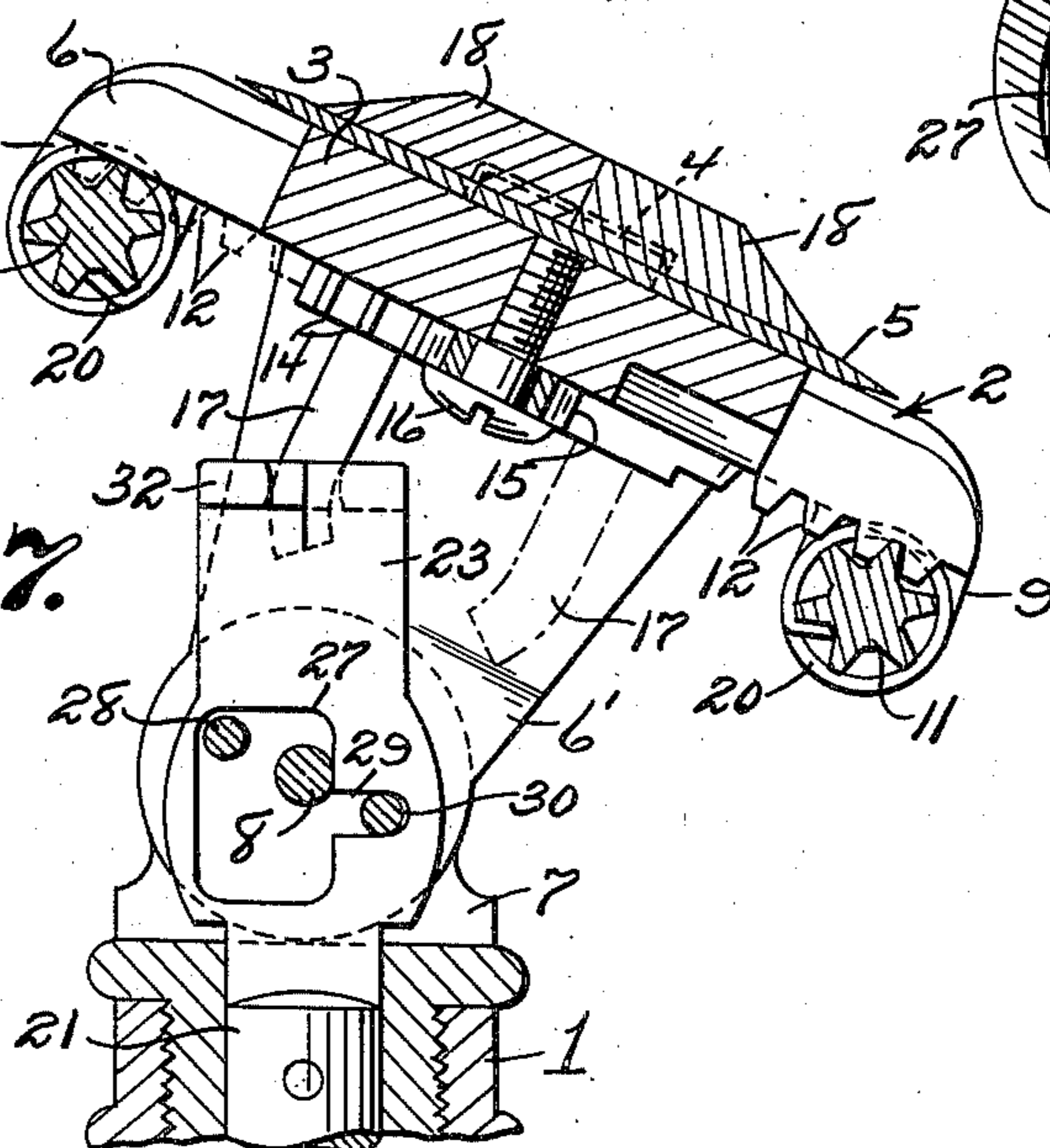


Fig. 7.



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UNITED STATES PATENT OFFICE

2,125,811

ADJUSTABLE HEAD SAFETY RAZOR

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Application August 24, 1937, Serial No. 160,687

6 Claims. (Cl. 30—60)

This invention relates to safety razors, and has for the primary object the provision of an efficient and economical device of this character wherein the blade holder thereof may be easily and quickly adjusted to assume variable angular positions with respect to the handle thereby affecting the hoe style angle of the razor and to permit either cutting edge of the blade to be presented for use and at a selected angular position with respect to the handle.

Another object of this invention is the provision of means for adjusting the angle of the holder with respect to the handle and which closes clamping plates of the holder to the blade when the holder is adjusted into any of the angular shaving positions and adapted to permit the clamped plates to open when the holder is brought into a position at right angles to the handle or in a non-shaving position for releasing the blade to permit easy and quick removal thereof from the holder.

A further object of this invention is the provision of means for permitting a coarse shave to be had when using one edge of the blade as positioned in the holder and to permit a close shave to be had by using the opposite or other edge of the blade, thereby providing a razor having cutting edges presentable for first and second application of shaving.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a side elevation illustrating a safety razor constructed in accordance with my invention and showing the blade holder adjusted to assume one of its angular positions with respect to the handle.

Figure 2 is a front elevation illustrating the device.

Figure 3 is a top plan view showing the clamping plates in an open position.

Figure 4 is a fragmentary side elevation showing the clamping plates in an open position.

Figure 5 is a sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a fragmentary transverse sectional view showing the blade holder assuming an angular position at one side of the handle.

Figure 7 is a view similar to Figure 6 showing the blade holder adjusted to assume an angular

position to the opposite side of the handle from that shown in Figure 6.

Figure 8 is a perspective view illustrating one of the rack bars.

Figure 9 is a perspective view illustrating an adjusting plate.

Referring in detail to the drawings, the numeral 1 indicates a handle, 2 a blade holder pivotally connected on the handle whereby the holder may be swung to assume various angular positions with respect to the handle or to be positioned at right angles to the handle, as shown in Figure 5. The angular adjustment for the blade holder provides an adjustable hoe style razor whereby either of the cutting edges of a double edge blade supported by said holder may be presented for use or positioned in shaving positions, as clearly shown in Figures 6 and 7.

The holder 2 includes a bed plate 3 on which are formed one or more projections 4 to extend through slots or openings provided in the double edge blade 5. Opposite edges of the bed plate have formed thereon relatively spaced guard teeth 6 over which the cutting edges of the blade project and one group of guard teeth is positioned slightly farther from one cutting edge of the blade than the other group of guard teeth is positioned from the other cutting edge of the blade, the purpose of which is to permit a coarse shave to be had with one cutting edge of the blade and a close shave to be had by the use of the other cutting edge of the blade. Formed on the bed plate 3 are spaced attaching plates 6' having overlapping relation with spaced ears 7 carried by the handle 1. A pivot pin 8 connects the plates 6' with the ears 7 so that the blade holder may have pivotal movement with respect to the handle.

Carried by the bed plate 3 and located at the corners thereof are bearings 9. Shafts 10 are journaled in the bearings and underlie the guard fingers 6 and have secured thereon pinions 11 which mesh with teeth 12 of rack bars 13. The rack bars are slidably supported in grooves formed in the underside of the bed plate. Teeth 14 are also formed on the rack bars which mesh with a pinion 15 journaled on a bolt 16 secured in the bed plate 3 whereby the rack bars are connected together so that movement of one rack bar will impart movement to the other rack bar. Each rack bar 13 has formed thereon a curved arm 17 lying between the attaching plates 6'.

Blade clamping plates are indicated by the character 18 and each includes arms 19 secured on the shafts 10 so that rotation of the shafts 10

in one direction will bring about positioning of the clamping plates to overlies and clamp the blade on the bed plate with the cutting edges of the blades exposed, also the guard fingers. A rotation of the shafts 10 in an opposite direction swings the clamping plates away from the blade and to assume positions at right angles to the bed plate whereby the blade may be removed and another substituted on the bed plate in lieu thereof. The reverse rotation of the shafts 10 is brought about by reverse sliding movement of the rack bars. Mounted on the shafts 10 are coil springs 20 each having an end secured to its respective shaft and its opposite end secured to a bearing 9, the latter being fixed against movement on the blade holder. The springs act to urge the clamping plates 18 into position for clamping the blade on the bed plate 3.

A rod 21 is slidably mounted in the handle 1 and one end is screw threaded, as shown at 22, and the other end has secured thereto an adjusting plate 23 which operates between the attaching plates 6' of the blade holder. A finger piece 24 is journaled on the handle 1 and has a threaded bore 25 receiving the screw threaded end 22 of the rod 21 whereby rotation of the finger piece in opposite directions will bring about sliding movement of the rod 21 in opposite directions. The finger piece is rotatably secured on the handle by pins 26 fixed to said handle and received in an annular groove formed in the finger piece. The adjusting plate 23 has a substantially rectangular shaped opening 27 through which the pivot pin 8 extends as well as a pin 28, while leading from this opening is a lateral slot 29, being midway of the said opening and through which is passed a pin 30. These pins 28 and 30 are secured to the connecting plates 6' of the blade holder and are disposed at diametrically opposite sides of the pivot pin 8. The purpose of the pin 30 engaging in the slot 29 is to cause the blade holder 2 to swing with respect to the handle on the sliding movement of the adjusting plate. The pin 28 coacting with the pin 30 gives a rigidity in the relationship of the head and the handle during the working of the finger piece 24 when coacting with the rod 21. The swing of the head constituted by the blade holder 2 is limited in either direction by contact of the clamping plates 18 with the blade when on the holder. Lugs 32 are formed on the adjusting plate to engage with the curved arms 17 of the rack bars, the purpose of which is to cause sliding movement of the rack bars relative to the blade holder for opening and closing the clamping plates 18. The sliding movement of the adjusting plate in one direction brings about swinging of the blade holder to the left of the handle, as shown in Figure 6, one of the lugs thereof contacting one of the arms 17 acting as a check therefor and due to the swinging movement of the blade holder and the resistance offered to one of the rack bars a relative movement is brought about between the blade holder and said rack bars which swings the clamping plates into position for clamping the blade on the bed plate. An opposite sliding movement of the adjusting plate, as shown in Figure 7, swings the blade holder to the right of the handle and at the same time brings the clamping plates into clamping position to secure the blade on the bed plate by the other shoulder of the adjusting plate resisting the movement of the other arm 17. The adjusting plate when brought to a neutral position, as shown in Figure 5, positions the blade holder at

right angles to the handle and permits the clamping plates to assume open position by the action of the springs 20 so that the blade can be removed for cleaning and wiping as well as other parts of the blade holder. The neutral position of the adjusting plate is midway between the ends of its sliding movement. Thus it will be seen that whenever the blade holder is adjusted into shaving position either as shown in Figure 6 or 7, the clamping plates are moved into clamping position automatically and when the blade holder assumes non-shaving position or at right angles to the handle the clamping plates are permitted to assume open position by the action of the springs. The angle of inclination of the blade holder with respect to the handle and the opening and closing of the clamping plates is all brought about through the rotation of the finger piece 24 thus providing a razor convenient for use and one wherein the blade can be easily removed for cleaning, sharpening or to be substituted by another blade.

What is claimed is:

1. A safety razor comprising a bed plate adapted to have a blade positioned thereon and provided with double cutting edges, means for preventing the blade from shifting on the bed plate, guard fingers formed on said bed plate for the cutting edges, clamping plates journaled on the bed plate to assume blade clamping position or blade releasing position, spring means acting on said clamping plates to normally position the latter in non-clamping position, a handle, pivotal means between the handle and the bed plate, an operating means carried by the handle and movable relative thereto, means cooperating with said operating means for swinging the bed plate to assume variable angular positions with respect to the handle, and means cooperating with the operating means for moving the clamping plates into clamping position on the bed plate assuming any of its angular positions with respect to the handle and to free said clamping plates to permit the latter to assume non-clamping position when the bed plate assumes a position at right angles to the handle.

2. A safety razor comprising a bed plate adapted to support a blade having double cutting edges, guard fingers for the cutting edges of the blade and formed on the bed plate, journals carried by the bed plate, shafts supported by said journals, arms secured to said shafts, clamping plates carried by said arms to clamp or release the blade on the bed plate, spring means acting on said shafts to normally position said clamping plates in non-clamping position, pinions secured to said shafts, rack bars slidable on the bed plate and meshing with the pinions, means connecting said rack bars whereby movement of one will impart movement to the other, a handle, pivotal means connecting the handle to the bed plate, an operating means carried by the handle, means cooperating with the operating means for the positioning of the bed plate at right angles to the handle or in various inclined positions laterally of the longitudinal axis of the handle, and means cooperating with the operating means and the rack bars for moving the clamping plates into clamping position on the bed plate assuming an angular position laterally of either side of the longitudinal axis of the handle and to free the clamping plates to assume non-clamping position when the bed plate assumes a position at right angles to the handle.

3. A safety razor comprising a bed plate

adapted to have a blade mounted thereon, guard fingers formed on said bed plate, clamping plates journaled on the bed plate to assume clamping and non-clamping position, spring means acting to normally urge the clamping plates into non-clamping position, a handle, a pivotal connection between the handle and the bed plate, a rod slidable in said handle, means for rotating the rod in either direction, an adjusting plate secured to the rod and having a notch, a pin carried by said pivotal means and received by the notch for adjusting the bed plate into various inclined positions laterally of either side of the longitudinal axis of the handle or to assume a position at right angles to the handle, and means between said adjusting plate and the clamping plate to cause the latter to assume clamping position on the swinging movement of the bed plate in any of its angular positions laterally of either side of the longitudinal axis of the handle and to permit said clamping plates to assume non-clamping position on the bed plate moving into a position at right angles to the handle.

4. A safety razor comprising a bed plate adapted to have a blade mounted thereon, guard fingers formed on said bed plate, clamping plates journaled on the bed plate to assume clamping and non-clamping position, spring means acting to normally urge the clamping plates into non-clamping position, a handle, a pivotal connection between the handle and the bed plate, a rod slidable in said handle, means for rotating the rod in either direction, an adjusting plate secured to the rod and having a notch, a pin carried by said pivotal means and received by the notch for adjusting the bed plate into various inclined positions laterally of either side of the longitudinal axis of the handle or to assume a position at right angles to the handle, rack bars slidable on the bed plate, means connecting the rack bars where movement of one will impart movement to the other, means connecting the rack bars to said clamping plates, curved arms formed on the rack bars, and lugs formed on the adjusting plate for cooperation with said arms to move the clamping plates into clamping position and to free the clamping plates during the adjustment of the bed plate relative to the handle.

5. A safety razor comprising a bed plate adapted to have a blade mounted thereon, guard fingers

formed on said bed plate, clamping plates journaled on the bed plate to assume clamping and non-clamping position, spring means acting to normally urge the clamping plates into non-clamping position, a handle, a pivotal connection between the handle and the bed plate, a rod slidable in said handle, means for rotating the rod in either direction, an adjusting plate secured to the rod and having a notch, a pin carried by said pivotal means and received by the notch for adjusting the bed plate into various inclined positions laterally of either side of the longitudinal axis of the handle or to assume a position at right angles to the handle, rack bars slidable on the bed plate, means connecting the rack bars where movement of one will impart movement to the other, means connecting the rack bars to said clamping plates, curved arms formed on the rack bars, lugs formed on the adjusting plate for cooperation with said arms to move the clamping plates into clamping position and to free the clamping plates during the adjustment of the bed plate relative to the handle, and means for limiting the sliding movement of the adjusting plate.

6. A safety razor comprising a bed plate, a handle pivoted to said bed plate, guard fingers formed on said bed plate, clamping plates journaled on said bed plate, rack bars slidable on said bed plates, means connecting the rack bars to each other, means connecting the rack bars to the clamping plates, curved arms formed on the rack bars, an operating rod slidable in said handle, an adjusting plate secured to said rod, means connecting the adjusting plate to said pivot between the handle and the bed plate, means for limiting the sliding movement of the clamping plates, lugs formed on the clamping plate to coact with the curved arms in resisting movement of the rack bars and thereby bring about relative movement of the rack bars and bed plate during the adjustment of the bed plate relative to the handle for closing the clamping plates and to permit opening of said clamping plates, spring means normally acting to open said clamping plates, and a finger piece journaled on the handle and threaded on said rods whereby rotation thereof in opposite directions brings about sliding movement of the rod and the adjusting plate connected thereto.

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