

Aug. 20, 1935.

J. GELL

2,011,680

SAFETY RAZOR BLADE SHARPENER

Filed Sept. 12, 1933

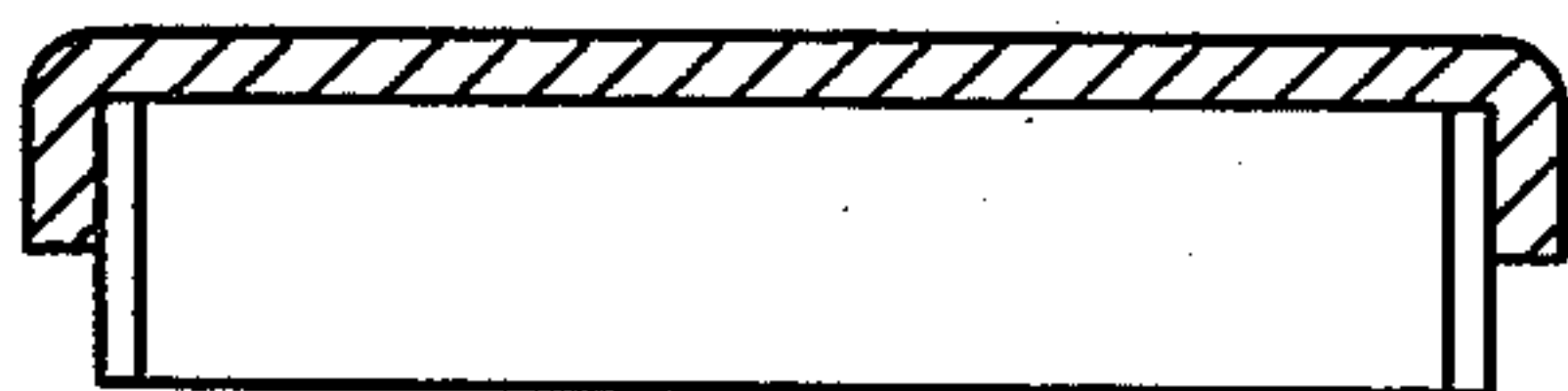


FIG. 2.

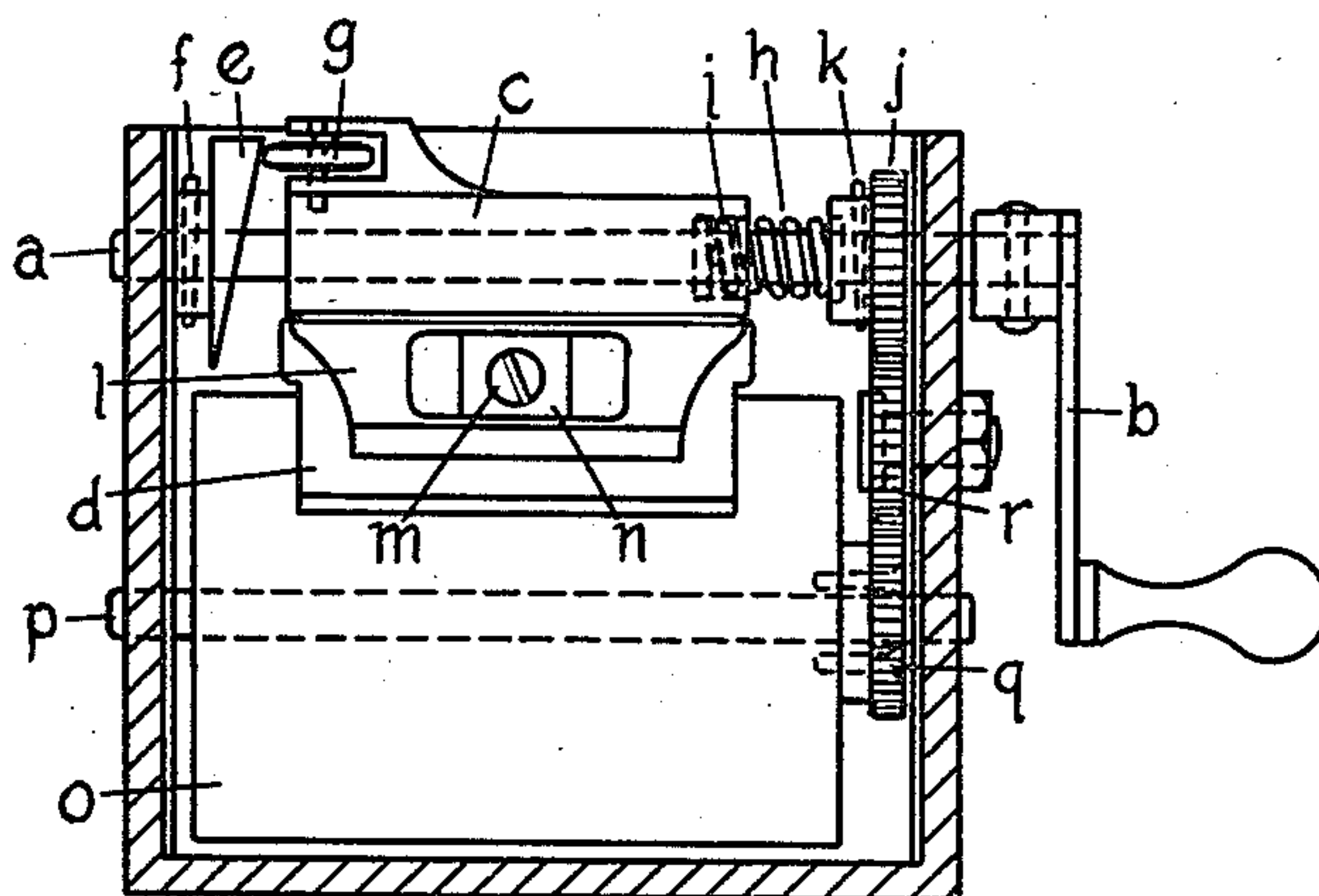


FIG. 1.

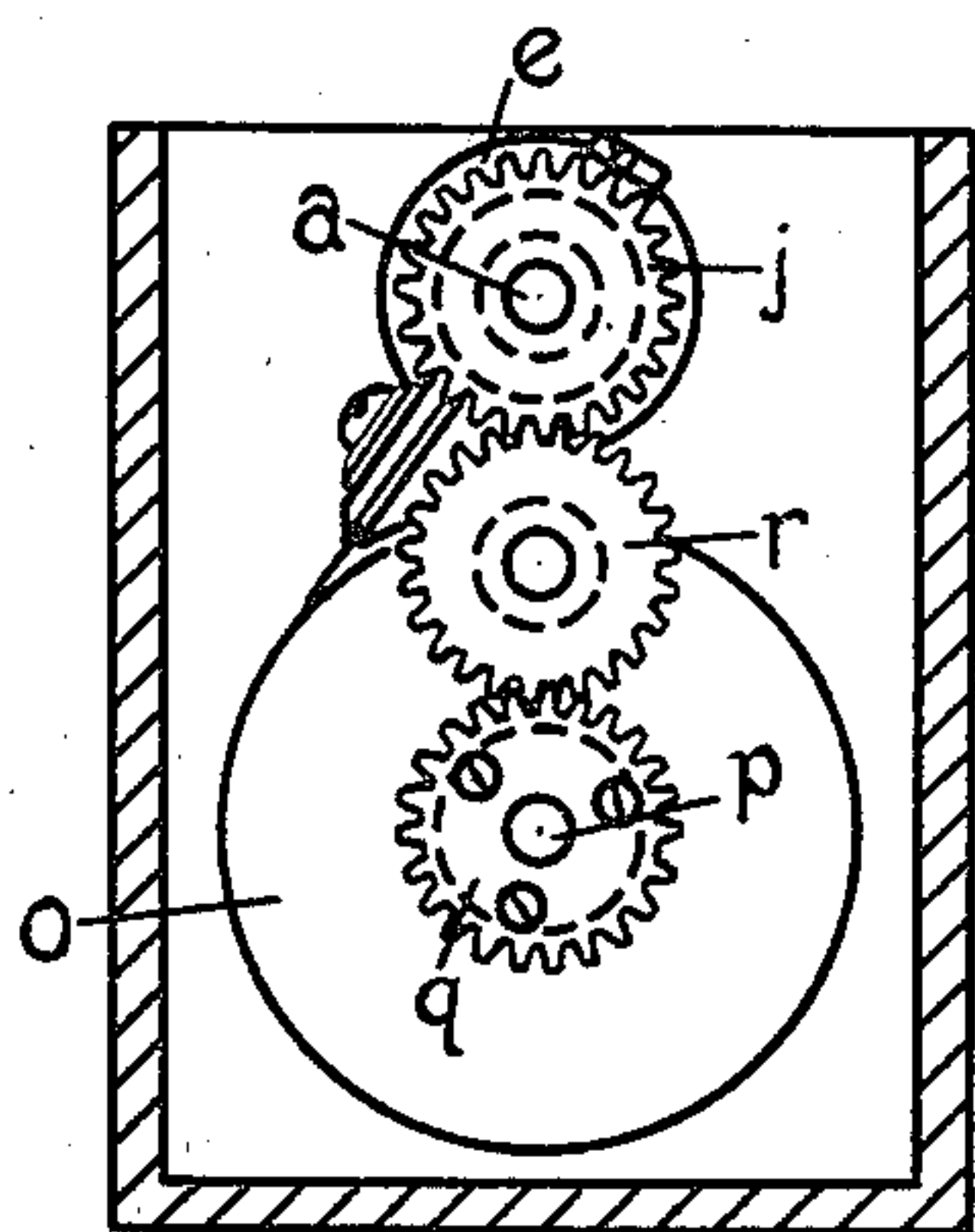


FIG. 3.

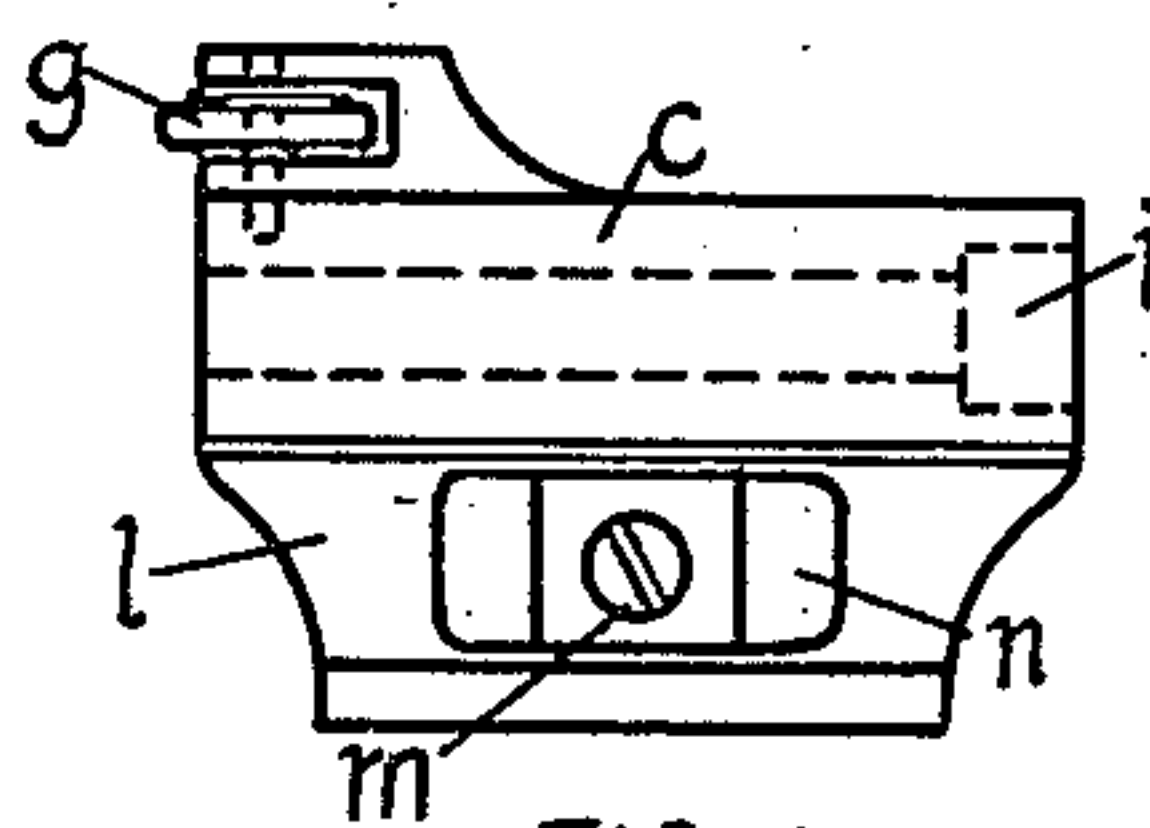


FIG. 4.

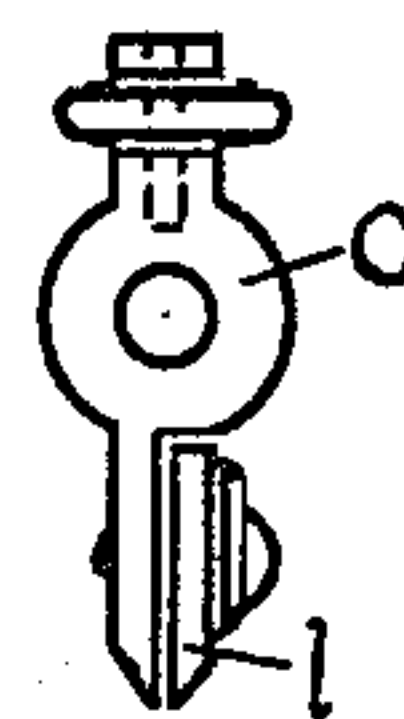


FIG. 5.

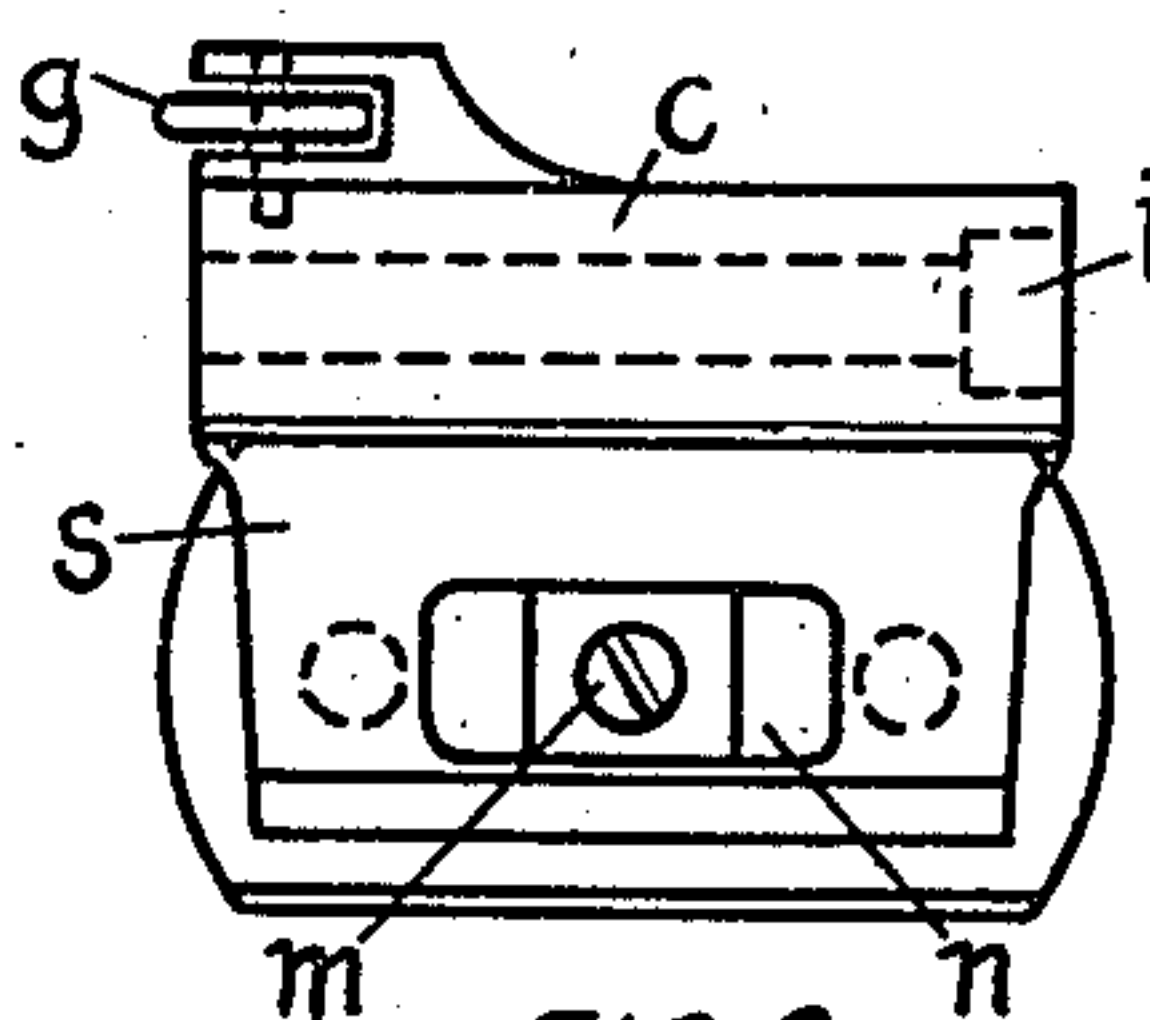


FIG. 6.

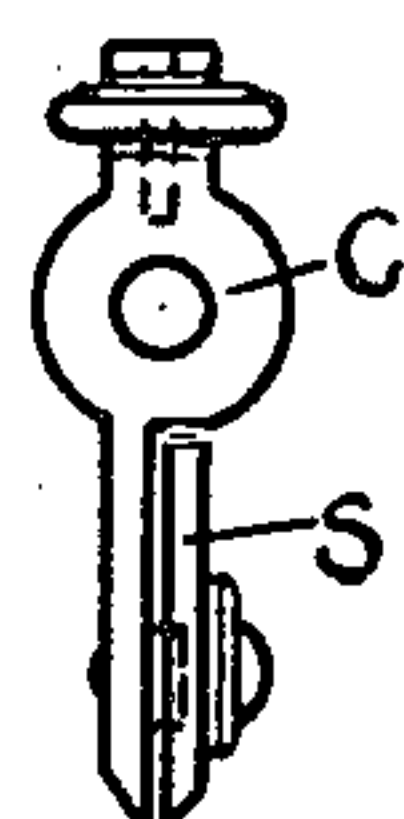


FIG. 7.

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UNITED STATES PATENT OFFICE

2,011,680

SAFETY RAZOR BLADE SHARPENER

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Application September 12, 1933, Serial No. 689,133

In Great Britain September 16, 1932

3 Claims. (Cl. 51—94)

This invention relates to a safety razor blade sharpener, and consists of a container which acts as an assembly and bearing surface for the moving members. The main drive consists of a cranked handle fixed to the main drive shaft at the upper end of the container. Upon this shaft is positioned a blade holder free to rotate and move endways upon the shaft. On the end of this shaft remote from the handle end is fixed a cam of circular form with a wedge shaped face towards the blade holder. On the razor blade holder is fixed a small wheel to operate in connection with the cam. At the end of the razor blade holder nearest the handle the hole is enlarged to carry the end of a spring. The opposite end of this spring rests against the end of the drive pinion fixed to the main shaft. The main abrasive cylinder is pivoted towards the bottom of the container, and in a direct line parallel to the main drive shaft. Fixed to the end of the abrasive cylinder at the handle end is a pinion wheel. On the same inside end of the container is pivoted an intermediate gear so that when the handle is turned not only the main shaft is rotated, but also the cylinder, in a direction specially suited to act as a sharpening member.

My invention will be more clearly understood from the following description aided by the accompanying drawing in which:—

Figure 1 represents an elevation with the side of the container removed.

Figure 2 represents the cover of the container.

Figure 3 represents an end elevation with the end of the container removed.

Figure 4 represents the blade holder for use with single edged safety razor blades.

Figure 5 represents the end view of the blade holder, Fig. 4.

Figure 6 represents an alternative blade holder for use with double edged safety razor blades.

Figure 7 represents the end view of the blade holder, Fig. 6.

The same letters apply to the same part in the respective figures of the drawing.

In Fig. 1, *a* represents the main drive shaft connected to crank handle *b*. *c* is the blade holder free to rotate and travel along shaft *a*. *d* is the single edged razor blade. *e* is the cam fixed to the shaft *a* by pin *f*. *g* is the cam wheel pivoted to the blade holder *c* in such a manner that the edge of wheel *g* rests in contact with the face of the cam *e*. *h* is the pressure spring, one end of which is positioned in a recess *i* in the blade holder *c*, and the other end of the spring

h presses against the gear wheel *j* fixed to the main shaft *a* by pin *k*. *l* is the movable part of the blade holder *c*, held in position by screw *m* and spring clamp *n*. *o* is the abrasive cylinder firmly fixed to the shaft *p*, and with gear wheel *q* fixed to the cylinder *o*. *r* is the intermediate gear wheel.

When it is required to sharpen a single cutting edged blade, the blade *d* is inserted into the blade holder *c* between the rigid projection *c*, shown in Fig. 5, and the spring held clamp *l*. This applies to blades which have a slot to clear the screw *m*, but in the case of blades which have a central hole clamp *s* is removed, the blade placed in position, and then the clamp replaced. Upon turning the handle *b* to the right the pressure of spring *h* causes the blade holder *c* to turn with the shaft *a* until one face of the cutting edge of the blade rests against the face of the abrasive cylinder *o*. As the handle *b* is further rotated the following action takes place. The razor blade edge is pressed in contact with the face of the cylinder *o* and oscillated endways to and fro by the action of the cam wheel *g* moving in contact with cam *e* under the influence of spring *h*. Upon reversing the direction of rotation of the handle *b* the cutting edge of the blade is carried over to the opposite side of the abrasive cylinder *o*. By continuing the rotation of the handle *b* the other cutting edge of the razor blade is sharpened. By alternately varying the rotation of the handle *b* the razor blade is correctly sharpened by the double action of the abrasive cylinder *o* and the to and fro reciprocal movement controlled by the cam. When it is desired to sharpen a double edged safety razor blade, the holder Fig. 4, is replaced by holder Fig. 6, and the double edged blade is fixed in position by removing the clamping member *s*, inserting the blade in position and replacing the clamp *s*.

The sharpener is operated as follows: A blade is inserted in the holder and held in position by the screw adjusting spring clamp, and when the handle is turned to the right the following action takes place. Owing to the pressure of the spring positioned round the main shaft the razor blade holder is turned to the right until its motion in that direction is arrested by one cutting edge of the razor blade resting against the abrasive cylinder; the degree of pressure being determined by the strength and friction of the spring pressing against the recessed end of the razor blade holder. As the shaft is rotated the cam fixed to the main shaft acts on the razor blade holder through the cam wheel in such a manner that the following

action takes place. One cutting edge of the blade is sharpened and at the same time the blade is moved to and fro in an endwise direction. Upon reversing the direction of motion of the handle 5 the cutting edge is raised from the abrasive cylinder and the blade carried round until its motion is arrested by the other cutting edge of the razor blade being arrested against the abrasive cylinder. Upon continuing the motion of the handle, this 10 second edge of the blade is sharpened. By alternately turning the handle to the right and left the razor blade is correctly sharpened. The angle of the cutting edge is determined by the degree of separation of the top and bottom bearings. The intermediate gear wheel is used for 15 the purpose of sharpening the blade in the direction towards the cutting edge. The bearing is not too closely meshed so that upon turning the handle, the first action is the lifting of the cutting edge from the cylinder before the cylinder 20 begins to rotate, and thus prevents any tendency of the cutting edge of the blade biting into the cylinder. In addition to the sharpening of a single cutting edge blade as described, the sharpener may also be used to sharpen in turn both 25 the cutting edges of a two cutting edge razor blade by the use of the double edge razor blade holder.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a machine for sharpening safety razor blades and the like, a shaft rotatable continuously 35 in either direction, a cam carried by the shaft, a blade holder also carried by said shaft and rotatable and axially reciprocable with respect thereto, said blade holder being carried by a part along the length of said shaft other than the part thereof carrying said cam, means exerting a dragging 40 effect between the shaft and the blade holder and tending to cause rotation of the blade holder

with the shaft, a movable member having a blade sharpening surface disposed to prevent complete rotation of the blade holder by engagement with a blade carried by the blade holder, said cam 5 rotating with the shaft and having engagement with the blade holder to cause reciprocation of the blade holder along the shaft upon rotation of the shaft.

2. A sharpening machine according to claim 1 in which said means includes a spring carried 10 by the shaft at a portion thereof other than that carrying the cam and blade holder and being disposed on the side of the blade holder opposite from said cam, said resilient member bearing upon the blade holder to urge it into contact with 15 said cam so that the blade holder will follow the cam contour and be reciprocated along the shaft.

3. In a machine for sharpening safety razor blades and the like, a shaft rotatable continuously in either direction, a blade holder carried 20 by said shaft and rotatable and axially reciprocable with respect thereto, a cam fixedly carried by said shaft wholly to one side of said blade holder and having its cam surface facing the blade holder, a coiled spring carried by the shaft wholly 25 to the opposite side of the blade holder from the cam, one end of said spring bearing upon the blade holder to force it into contact with said cam, the other end of said spring being sustained by said shaft whereby a dragging effect is present 30 between the blade holder and shaft tending to cause their uniform rotation, a movable member having a blade sharpening surface disposed to prevent complete rotation of the blade holder by engagement with a blade carried by the blade 35 holder, the relative rotation between the cam and blade holder causing reciprocation of the blade holder along the shaft as the blade holder follows the cam conformation under influence of said spring.

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