

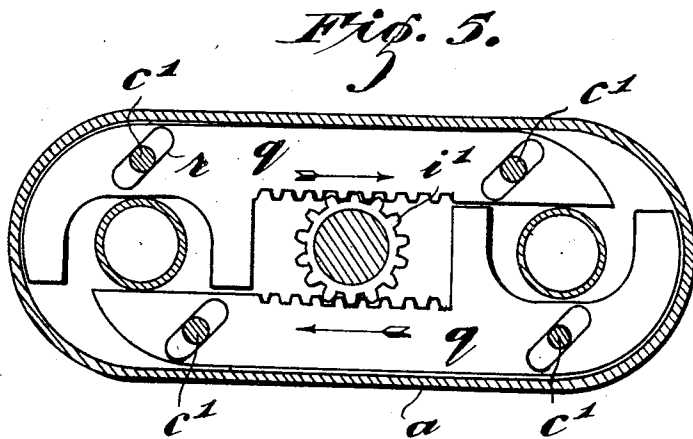
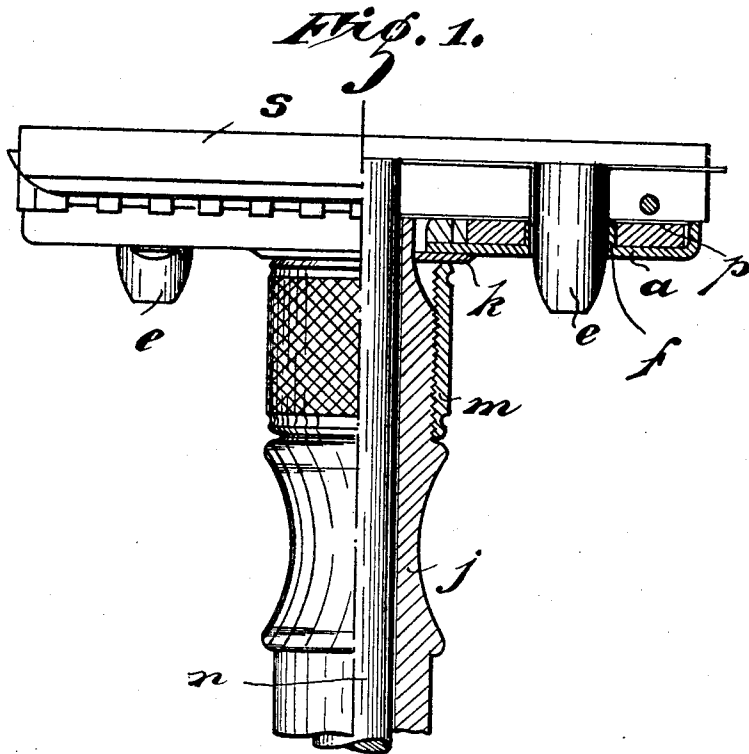
A. W. AND S. BUTTERFIELD AND A. NIELD.
SAFETY RAZOR.

APPLICATION FILED FEB. 25, 1919.

1,331,483.

Patented Feb. 24, 1920.

2 SHEETS—SHEET 1.



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Samuel Butterfield and
Arthur Nield,
By: H. Singer, atty.

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2 SHEETS—SHEET 2.

Fig. 4.

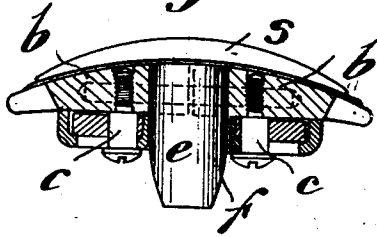


Fig. 2.

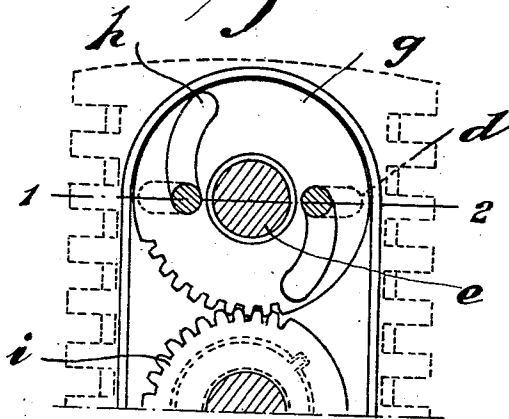
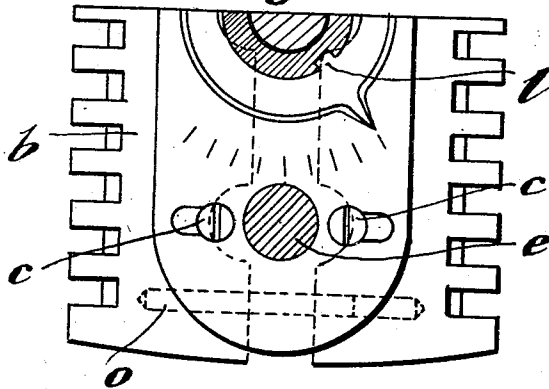


Fig. 3



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UNITED STATES PATENT OFFICE.

ARTHUR WILLIAM BUTTERFIELD, SAMUEL BUTTERFIELD, AND ARTHUR NIELD, OF
OLDHAM, ENGLAND.

SAFETY-RAZOR.

1,331,483.

Specification of Letters Patent. Patented Feb. 24, 1920.

Application filed February 25, 1919. Serial No. 279,159.

To all whom it may concern:

Be it known that we, ARTHUR WILLIAM BUTTERFIELD, cutler; SAMUEL BUTTERFIELD, cutler, and ARTHUR NIELD, electrical engineer, subjects of the Kingdom of Great Britain, residing, respectively, at 48 Yorkshire street, Oldham, in the county of Lancaster, England; 48 Yorkshire street, Oldham, in the county of Lancaster, England, and 33 College road, Oldham, in the county of Lancaster, England, have invented certain new and useful Improvements in or Relating to Safety-Razors, of which the following is a specification.

15 This invention relates to safety razors, of the type in which the handle is arranged at right angles to the plane of the double-edged blade, which latter is clamped between a guard and backing-plate, the guard being composed of two parts with means for adjusting the two parts in relation to each other to accommodate varying widths of blade. According to the present invention, in this type of razor the adjustment is adapted to be effected by rotation of the handle. Means are then provided for locking the parts in the adjusted condition.

20 Advantageously the handle carries a toothed pinion or wheel which engages with a plurality of other toothed members, by which the adjustment of the guard sections is effected. Such other toothed members may be rotary or sliding members, and they may impart movement to the guard sections by virtue of the function of the cam slots. The guard sections may carry studs or projections which work in elongated slots in a guard base or support located transversely to the length of the latter, and said studs may also engage within the cam slots which are displaced by the rotary or sliding members which cooperate with the toothed wheel carried by the handle.

25 In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheet of drawings, upon which:—

30 Figure 1 illustrates partly in elevation, and partly in sectional elevation, an embodiment of the present invention.

35 Figure 2 illustrates in plan the internal mechanism of the razor shown in Fig. 1.

Fig. 3 is an inverted sectional plan of the razor shown in Fig. 1.

Fig. 4 is a section on plane 1—2 of Fig. 2.

Fig. 5 is a similar view to Fig. 2, illustrating a modified embodiment of the present invention.

In a convenient embodiment of the present invention, *a* is the guard base or support which is in the nature of a shallow pan. *b, b* are the guard sections, each of which is furnished with two studs *c* which project through elongated slots *d* arranged transversely in the guard base. *s* is the backing-plate which is furnished with studs *e* passing through perforations in the guard base. Sleeve-like portions *f* encircle these perforations, and said sleeve-like portions form bearings for rotary members *g* located within the base *a*, and between the latter and the guard sections *b*. In these rotary members *g*, cam slots *h* are provided. These cam slots receive the studs or projections *c*. Thus when the members *g* are rotated, the guard sections *b* are collectively displaced outwardly or inwardly. In order to provide for the collective rotation of the members *g*, an intermediate rotary member *i* is provided. This rotary member is furnished with teeth which are in mesh with teeth upon the members *g*, said rotary members *g* and *i* being gears. The said member *i* is suitably secured to the handle *j*. By rotation of the latter the guards are thus effectively adjusted. The handle *j* is appropriately shouldered, and a plate *k* is incorporated between the shoulder and the underside of the base *a*. This plate has a key *l* engaging with a key-way in the handle *j* so that it is rotated with the latter. The plate *k* has a pointer which operates in relation to graduations upon the under surface of the base *a*. The degree of adjustment is thereby indicated. *m* is a sleeve which is screwed upon the handle *j*, and which can be tightened to lock the latter in its adjusted condition. To permit of this the plate *k* is axially movable in relation to the handle *j*. The backing-plate *s* carries a stem *n* which extends axially through the handle and is adapted to be operated in the usual or in any approved manner after the handle has been locked. *o, o* represent rods which project into the openings provided in

the guard sections and assist in positioning the latter during their movements.

p is a plate adapted to be applied to the base in order to inclose the gear mechanism and thereby exclude foreign matter.

In order to adjust the guard sections it is only necessary to first release the backing-plate *s*, then to unlock the handle by the sleeve *m*, and adjustment can be effected. The handle is then again locked, and subsequently the backing-plate *s* is tightened in the usual manner.

The modification illustrated by Fig. 5 differs from that already described in that the rotary members *g* are replaced by sliding members *g* having racks which are in mesh with the gear wheel *i*¹ provided upon the handle. These members *g* are so incorporated within the base that they are incapable of lateral derangement and their rack portions thus remain in effective coöperation with the wheel *i*¹ throughout the process of their longitudinal displacement. The members *g* are each furnished with two inclined slots *r* through which the studs *c*¹ provided upon the guard sections pass. These studs *c*¹ also pass through transverse slots in the base as in the previous modifications so that longitudinal movement of the members *g* effects the transverse dis-

placement of the guard sections in the desired manner.

What we claim as our invention and desire to secure by Letters Patent is:—

1. A safety razor, a base having transverse slots, guard sections movable toward and from each other and having studs movable in said slots; gears mounted for rotation in the base and having cam slots in which said studs of the guard sections are also engaged, a handle mounted for rotation, and a gear revolved by the handle and arranged between and in engagement with the first named gears.

2. In a safety razor, a base, guard sections movable toward and from each other, guiding means for the guard sections, a handle mounted in the base for rotation, adjusting means for the guard sections, and means operated by the handle and engaging the adjusting means.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

ARTHUR WILLIAM BUTTERFIELD.
SAMUEL BUTTERFIELD.
ARTHUR NIELD.

Witnesses:

ERNAULD SIMPSON MOSELEY,
JOHN WILLIAM THOMAS.