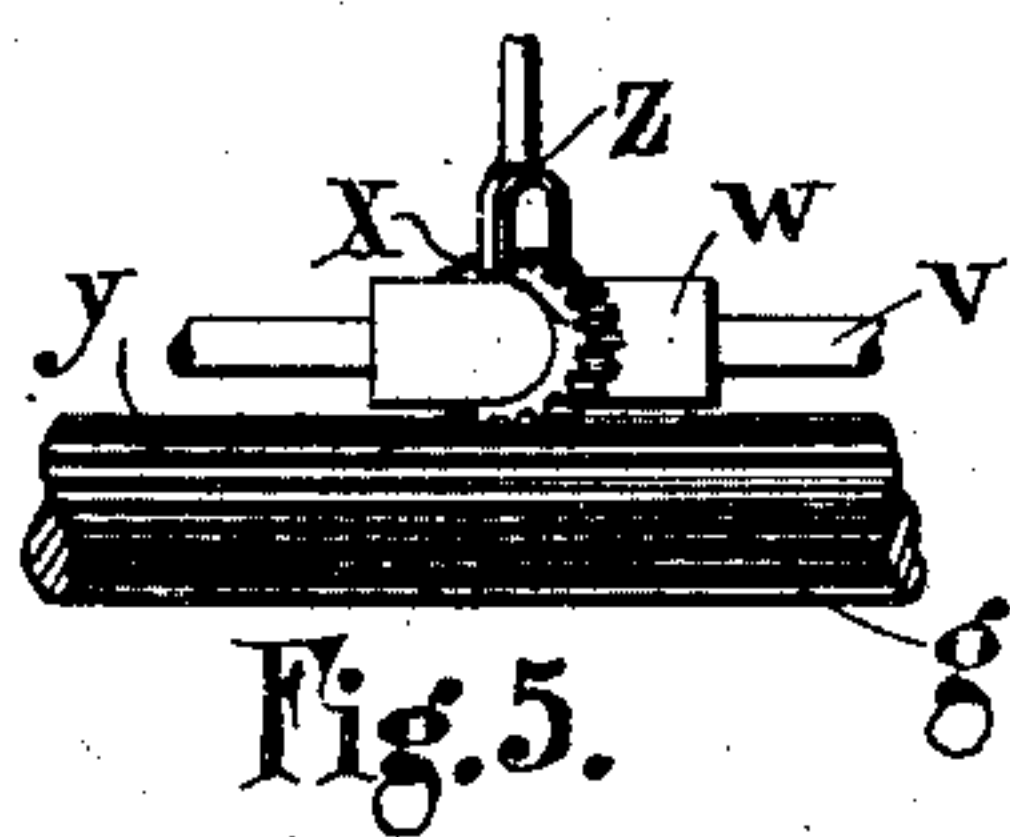
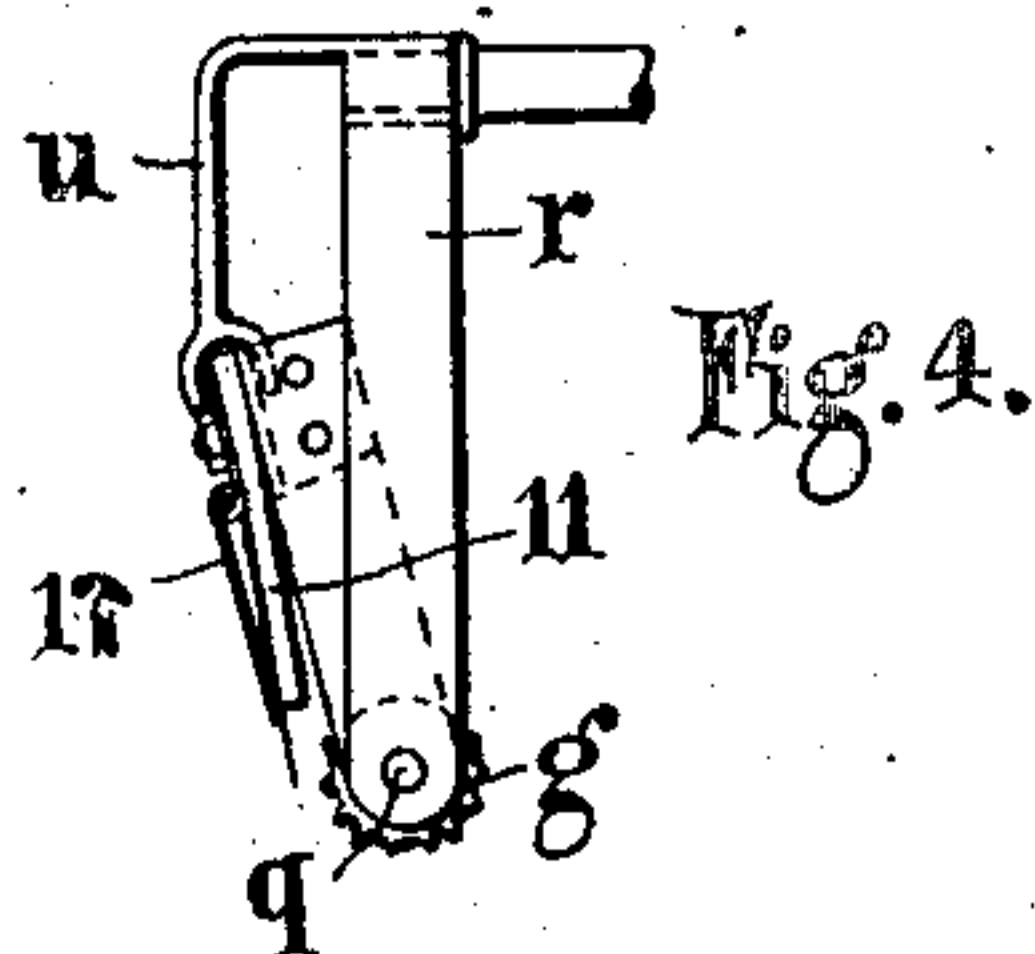
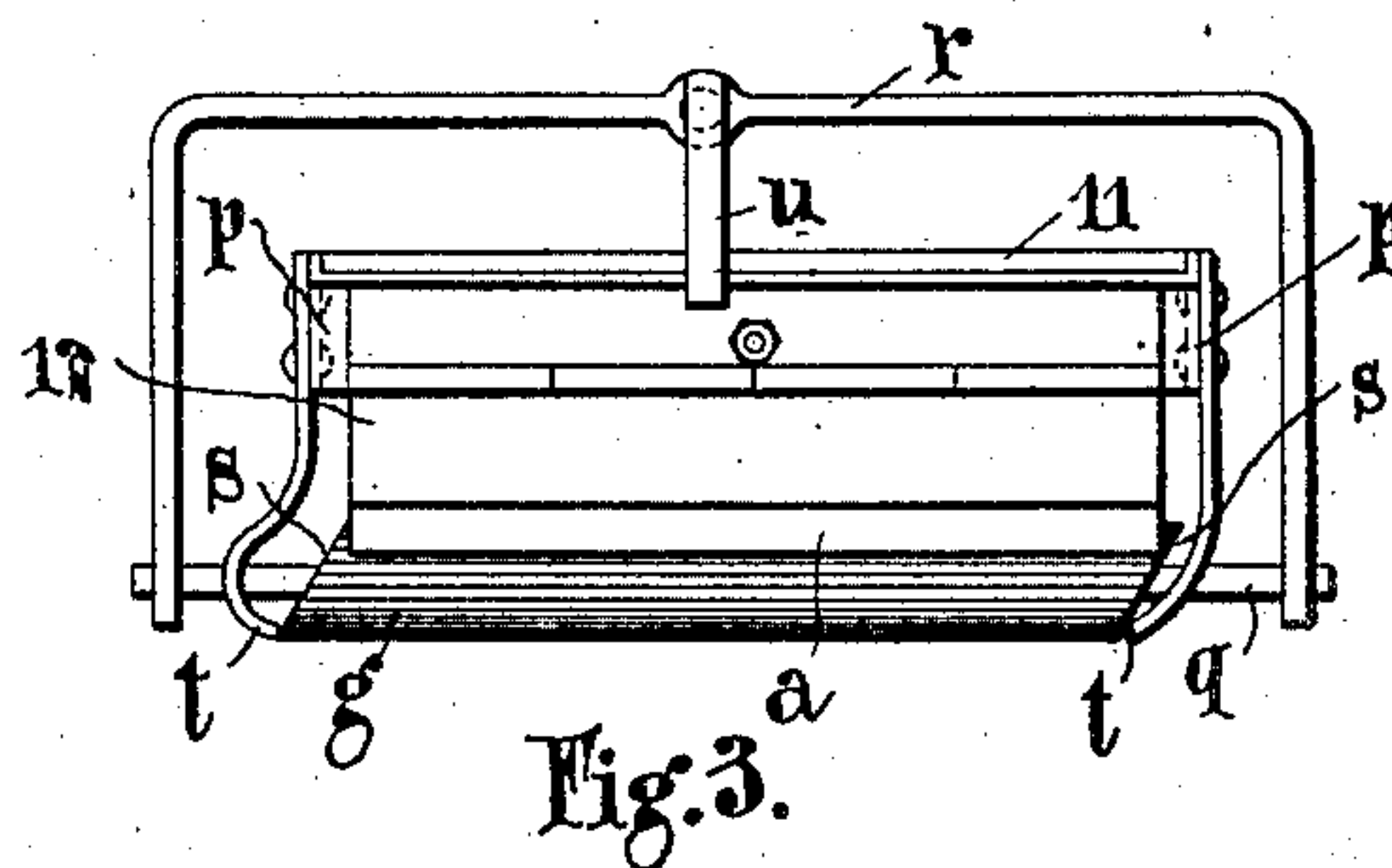
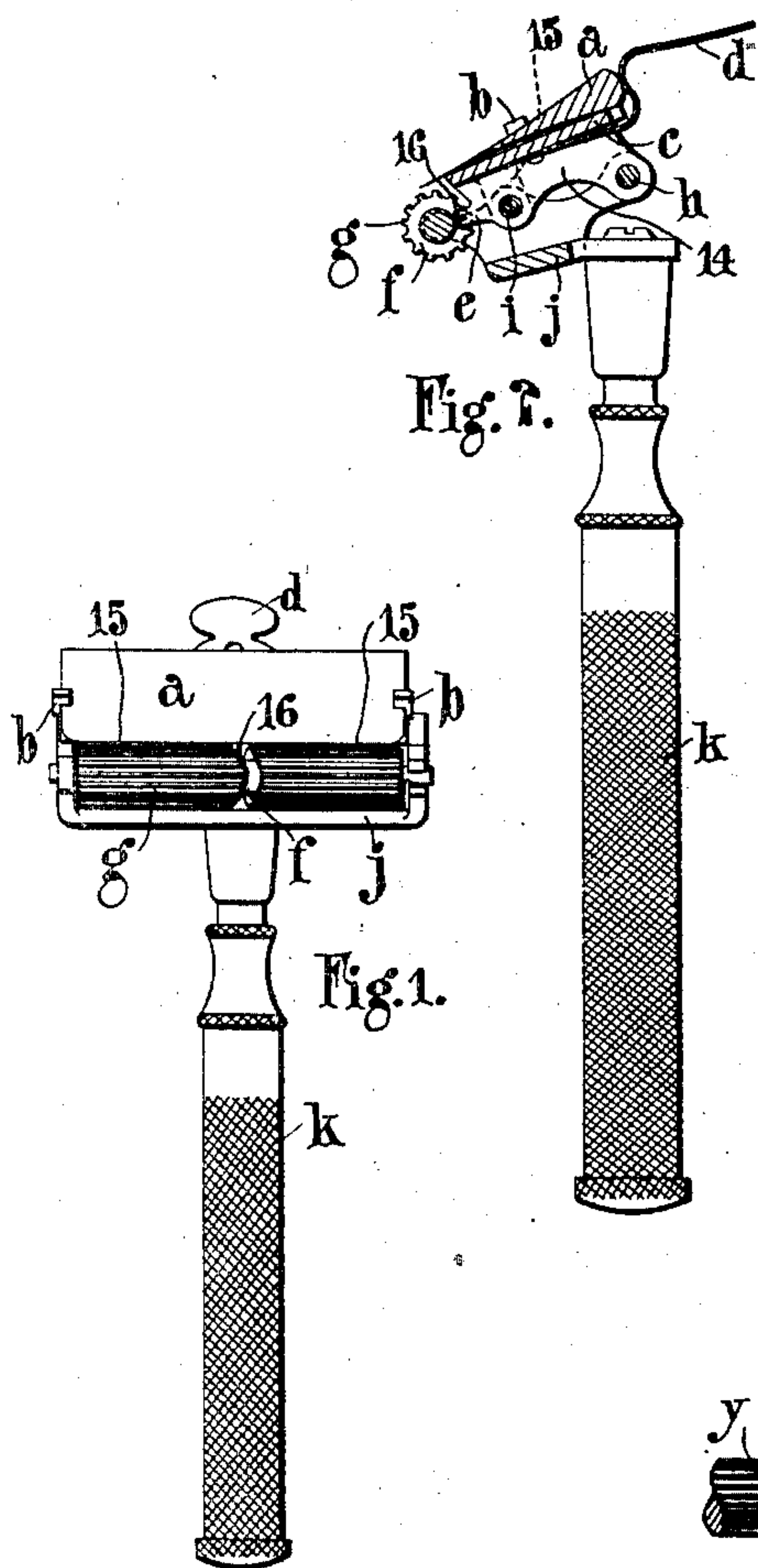


R. TAYLOR.  
SAFETY RAZOR.  
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990,682.

Patented Apr. 25, 1911.



Witnesses  
C. P. Hardy  
S. M. M. Coll

Inventor  
R. Taylor  
by A. P. Wilson & Co.  
Attorneys



# UNITED STATES PATENT OFFICE.

ROBERT TAYLOR, OF CLAPTON, LONDON, ENGLAND.

## SAFETY-RAZOR.

990,682.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 15, 1908. Serial No. 448,738.

*To all whom it may concern:*

Be it known that I, ROBERT TAYLOR, a subject of the King of Great Britain and Ireland, and residing at 1 Pembury road, Clapton, London, NE., England, have invented certain new and useful Improvements in and Relating to Safety-Razors, of which the following is a specification.

This invention relates to safety razors with reciprocating blades and has for its object to obtain an improved razor of this type.

The invention consists in the improved safety razor hereinafter described.

Referring to the accompanying drawings:—Figures 1 and 2 represent a safety razor according to one form of the invention. Figs. 3 and 4 represent respectively the plan and side elevation of a safety razor according to a further form of my invention in which the blade is mounted in a secondary frame which slides on the roller spindle. Fig. 5 represents a detail of the form of my invention in which pinion wheels and the like are used for transmitting the motion of the grip roller to the frame carrying the razor blade.

In carrying out the invention according to the form illustrated in Figs. 3 and 4 I support the safety razor blade *a*, in a holder composed of a fixed member 11, and a spring hinged member 12, attached rigidly to a secondary frame *p* which is mounted so as to slide laterally to and fro along the thin and sufficiently long spindle *g* of a surface gripping roller *g* in such a way as to permit rotation of the spindled roller within a primary frame *r* or by like means. Then by truncating the ends of the said roller in parallel planes oblique to the roller axis as shown at *s* or in like manner and in such a way as to engage accurately and easily with rounded points *t* at the extremities of arms forming part of the secondary frame *p* both the said secondary frame *p* and obviously the blade *a* with it are moved to and fro so as to give the required zigzag sawing effect as the roller *g* rotates when drawn over the face in shaving. The truncation of the ends of the roller *g* in the manner above referred to, permits the to and fro action to occur with prompt alternate reversals, and thus any given point of the blade edge will, in action, describe not so much a wavy course as a course that is abruptly zigzag. Small roller or other antifriction devices as indi-

cated at 16 in Figs. 1 and 2 to assist easy working may also be supplied where desired.

It should be stated that the surface grip roller *g* mentioned in connection with the above described device constitutes the guard for the blade and is arranged in suitable close proximity to the blade *a* for this purpose, the actual distance between the guard and blade being set as desired. In the forms illustrated the roller is shown as not substantially longer than the blade and of equal external diameter throughout, but these features are by way of example and not necessary to the invention.

Proper blade skin angle is maintained by guide projections, *u*, or other suitable parts of the primary frame *r* constructed loosely to engage with the blade holder 11, 12 or secondary frame *p* and supporting it above the roller level.

In Fig. 5 is shown a detail of a modified construction in which the oblique ends of the roller *g* of Fig. 3 are replaced by a cam collar *x* on an enlargement *w* formed on a shaft *v* geared to the grip roller *g*. This connection is shown through teeth formed on the cam collar *x* and the grooves of the grip roller *g*. The cam collar *x* transmits a reciprocating motion to the blade *a* by a forked extension *Z* connected to or forming part of the frame *p*.

In carrying the invention into effect in the form illustrated in Figs. 1 and 2, the razor blade, *a* is carried in suitable clips *b* attached to a plate *c* of a frame formed of the plate *c* and depending side pieces 15. A spring piece *d* attached to this plate *c* presses the blade *a* into the clips *b* and keeps the same in position. Depending from the plate *c* is a plate 14 having a projection *e*, adapted to enter a groove *f* in the rotatably mounted gripping roller *g*, so that when this roller revolves the plate *c* and with it the blade *a* receive a lateral motion, the frame being loosely mounted on shafts *i* and *h* which pass through the side members 15 and through the plate 14 respectively. The main frame *j* carrying these shafts has a handle *k* attached thereto of any suitable form. As the gripping roller *g* is moved over the face the blade *a* receives the required zigzag motion from the cam groove *f* by the engagement therewith of projection *e* rigidly connected to the plate *c* to which this blade *a* is attached.



If the shaft *i* is made removable the blade carrying structure can be turned about  $\frac{1}{2}$  for the purpose of cleaning.

It has heretofore been proposed to use 5 rollers with cam grooves or other cam surfaces for the purpose of moving one blade with respect to another blade in order to effect the cutting action between the two in lawn mowers, and it is perfectly well known 10 that it is not new to reciprocate cutter bars by means of cam or cam grooves, and such movements or elements do not constitute the present invention.

I claim—

15 1. In a safety razor, the combination of a frame, a razor blade removably mounted on said frame, a roller disposed in close proximity to the cutting edge of the blade to act as a blade guard, a cam surface on said 20 roller, and means connected with the frame and contacting with said surface, whereby the movement of the roller over the face during shaving causes the blade to reciprocate.

25 2. In a safety razor, the combination of a frame, a carrier movably mounted upon said frame, a razor blade removably supported on said carrier, a roller disposed in close proximity to the cutting edge of the blade 30 to act as a blade guard, a cam surface on said roller and a projection on said frame coacting with the cam surface whereby the movement of the roller over the face during shaving causes the blade to reciprocate.

35 3. In a safety razor, a frame, a carrier movably mounted upon said frame, a blade supported by said carrier, a projection on said frame, a roller situated in close proximity to the blade edge and constituting a 40 blade guard, and a cam surface on said roller adapted to coact with the projection on said frame whereby the movement of the roller over the face during shaving causes the blade to reciprocate.

45 4. In a safety razor, a holder, a frame adjustably carried by said holder, a carrier movably mounted upon said frame, a blade removably secured upon said carrier, guides for guiding said carrier in the direction of 50 the length of said blade, a roller disposed in close proximity to said blade constituting a blade guard and a cam surface on said roller adapted to coact with a projection on said frame whereby the act of shaving

causes the blade to have a motion com- 55 pounded of the motion in the direction of its length and the motion in the direction of the line of travel of the holder.

5. In a safety razor, a holder, a frame adjustably carried by said holder, a guard 60 disposed in close proximity to the razor blade, said guard being in the form of a roller with a cam surface adapted to convert a motion of the holder into a reciprocating motion of the razor blade, and a 65 movable member carried by said holder operated by said cam surface.

6. A safety razor comprising a frame, a razor blade detachably mounted on said frame, a roller situated in close proximity 70 to said razor blade to act as a face guard and also to transmit motion to the razor blade, a cam surface on said roller, a blade carrier comprising a spring member and hinged clip, a frame supporting said blade 75 carrier and means connected with said frame and contacting with the cam surface of the roller.

7. A safety razor comprising a blade having a longitudinally continuous cutting edge, 80 a roller disposed in close proximity to said blade and constituting a blade guard, a cam groove in said roller, a blade carrier, and a projection on said carrier adapted to engage said groove. 85

8. A safety razor including in combination a blade having a longitudinally continuous cutting edge, a cam roller disposed in close proximity to said blade and constituting a blade guard, a pivotally mounted 90 blade carrier and a projection on said carrier adapted to engage said cam roller.

9. In a safety razor, the combination of a frame, a razor blade removably mounted on said frame, a roller disposed in close 95 proximity to the cutting edge of the blade to form a blade guard, and means connecting the frame and roller to effect reciprocation of the said frame on the rotation of the said roller to cause the blade to reciprocate. 100

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT TAYLOR.

Witnesses:

PERCY RAYNER-SMITH,  
B. H. MATTHEWS.