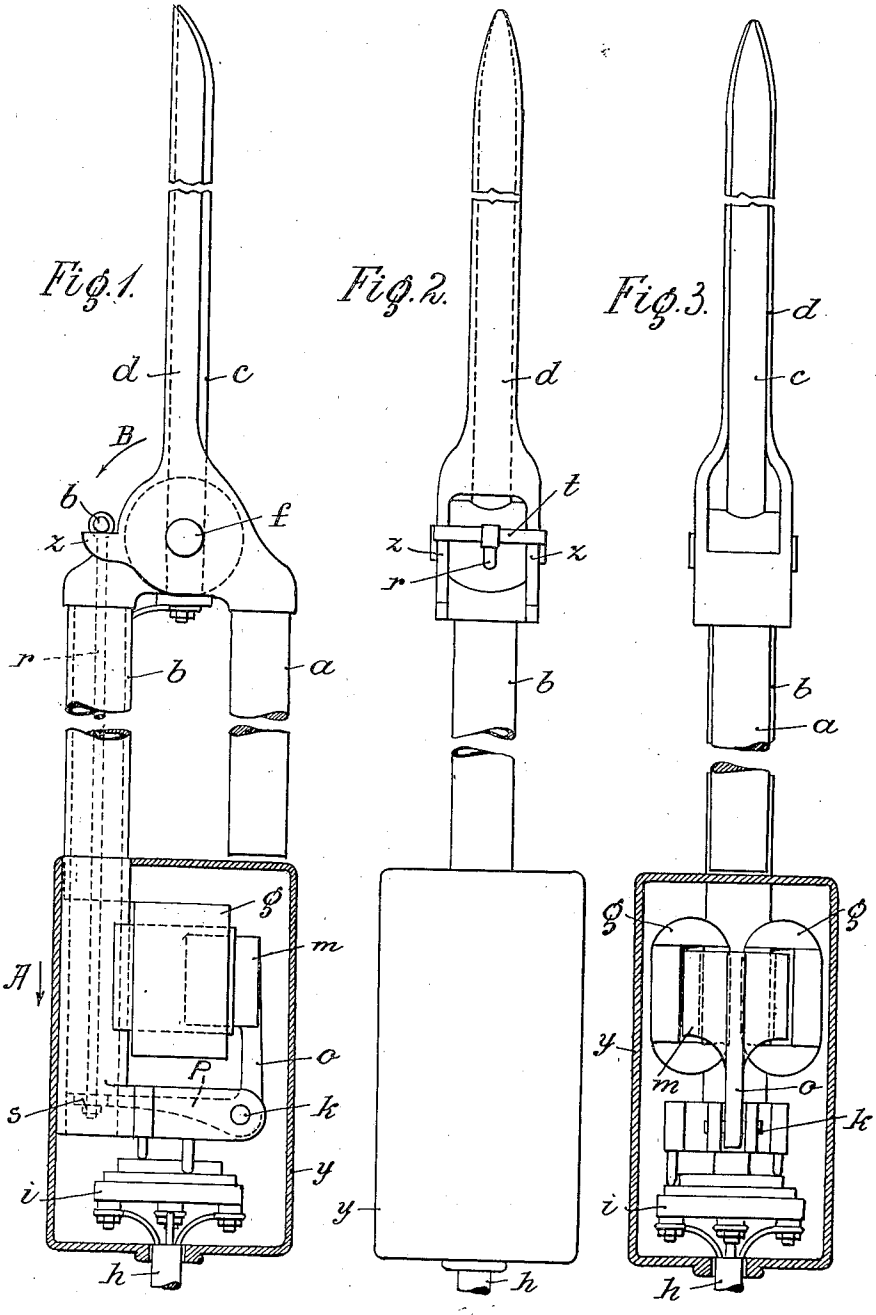
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HAIR CURLING APPARATUS

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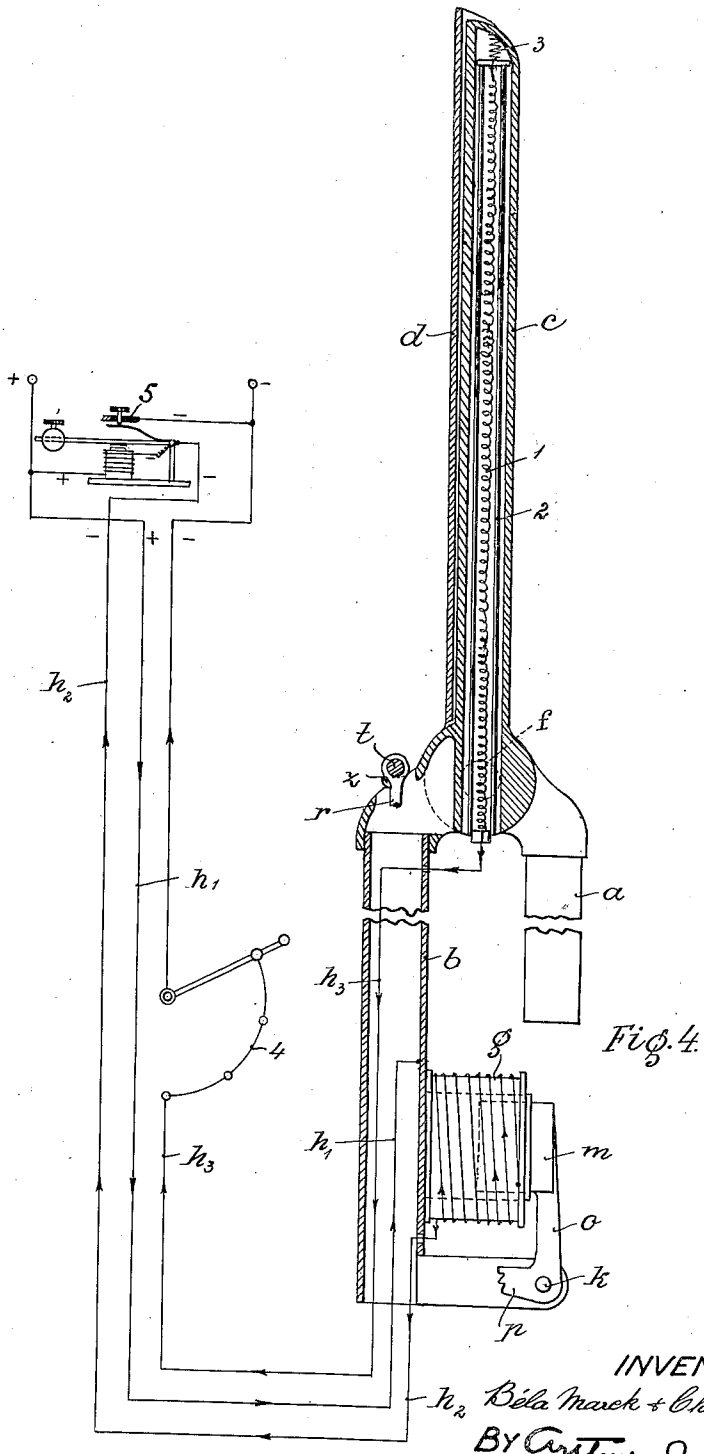


Fig. 4.

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HAIR CURLING APPARATUS

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5 Claims. (Cl. 219—24)

Hair curling apparatus is already known having in one of its clamping tongs opening like scissors an electric heating device and driven mechanically by means of a motor. This kind of hair curling apparatus has not turned out well, as its cost of making is very high and its working involves a great consumption of current, besides it becomes spoiled very easily and its continual repairing and spare-parts consumption, raise considerably the costs of working.

The invention consists in a hair curling apparatus which is operated by an electro-magnet connected in circuit through an automatic circuit-interrupter. As the apparatus does not need any driving motor, the cost of making of the same is very low, the manner of use is very simple, it works in a noiseless manner and is free of parts which get spoiled quickly.

In the accompanying drawings an example is shown, embodying the invention. In the drawings

Fig. 1 is a side elevation of the apparatus showing the casing containing the electro-magnet in longitudinal section,

Fig. 2 is a front elevation of the apparatus, and

Fig. 3 is a back elevation of the apparatus in which the casing of the electro-magnet being likewise shown in section.

Figure 4 is a sectional view of the apparatus and shows diagrammatically the circuit breaker and the wiring of the magnet and heating element.

In the drawings *a* and *b* indicate the handle grips of the apparatus, while *c* and *d* are the clamping tongs, one, the tong *c* being of cylindrical shape and containing an electric heating device *l*, the other having a trough-like cross section. The tongs *c* and *d* can be opened around the cross shaft *f*.

The handle grip *b* is hollow and has a greater length than the handle grip *a*. On the free end of the handle grip *b* an electro-magnet *g* is arranged which is connected by means of an electric cable with an automatic circuit-breaker **5** connected in circuit. The positive terminal of the circuit-breaker is connected by the lead *h* to the handle *b*, the positive terminal of the winding of the electro-magnet being also connected to this handle, while the negative terminal of the winding of the electro-magnet is connected by means of the lead h_2 to the negative terminal of the circuit-breaker. The cylindrical tong *c* being connected to the handle grip *b* is also connected to the positive pole of the source of current, while the heating device *l* within the said clamping tong and insulated therefrom by means of a glass cover **2** is connected by means of the lead **3** to the clamping tong *c* and is connected by means of the lead h_3 through a rheostat **4** to the negative pole of the source of current (Figure 4). Thus the electro-magnet *g* is supplied through the circuit-breaker, while the heated clamping tong is connected in circuit independently of the circuit-breaker and is consequently steadily supplied independently of the circuit-interruptions. In Figures 1, 2, 3 of the drawings the leads h_1, h_2, h_3 are assembled in the cable *h*. Preferably the cable *h* is connected to the hair curling apparatus through an inserted rotatable coupling device *i*, whereby a twisting of the apparatus with respect to the cable is made possible. The armature *m* is formed on or attached to the arm *o* of an angle lever *op* pivoted on the shaft *k* and said armature extends into the electromagnet winding *g*, while the other arm *p* of the angle lever is adjustably fastened by means of a nut *s* to the screwed end of the operating rod *r* which is situated within the hollow handle grip *b*. The rod *r* extends through the whole length of the handle *b* and emerges at the end adjacent to the tongs and on the emerging end a transversely arranged stop-bolt *t* is provided. The clamping tong *d* of trough-shaped cross-section is provided with extensions *z* protruding under the stop-bolt *t*.

The electro-magnet *g*, the armature-lever *o*, *p* as well as the rotatable coupling *i* are enclosed together in a casing *y*.

The manner of use of the appaartus is as follows:

The hairdresser takes the handle-grips in his one hand while the other remains free to enable him to work on the hair. After switching-on of the electric current the armature *m* is pulled by the electro-magnet and after interruption of the current caused by the inserted circuit-breaker, the armature is again released. This movement will then be repeated continuously. When the armature *b* becomes pulled by the electro-magnet the angle-lever *o*, *p* is turned on its shaft *k* and the operating rod *r* will be moved by the lever-arm *p* in the direction of the arrow A. Now the bolt *t* on the end of rod *r* bearing against the extensions *z* of the clamping-tong *d* turns the tong *d* on the shaft *f* in the direction of the arrow B of Fig. 1, whereby the tongs of the curling apparatus are opened scissor-like. Immediately after this the circuit breaks so that owing to the pressure exerted by the hand on the handle-grips *a*, *b* the clamping-tongs are again closed. The opening and closing of the tongs follows each other in

quick sequence thus the dressing or curling of the hair can be accomplished with the apparatus held in one hand in a fast and comfortable manner. The tongs may open and close 10 to 15 times each second. In dressing the hair, a lock is lifted so that only the root end remains close to the head and the outer end is held in the free hand with the lock lightly tensioned. The lock is then introduced between the clamping tongs *c*, *d* and the apparatus slowly traversed in an intermittent manner from one end of the lock to the other while it is in operation. During the time the tongs are at any one position the portion of the lock between them is given a curvature due to the cross section of the tongs and as the tongs are moved along different places in succession the whole lock is waved. According to whether a thicker or thinner lock is waved, the apparatus will be moved slower or faster along it. Since the operator can decide how long to stay at each point, a thick lock can readily be waved. Burning of the hair is not to be feared because the tongs rapidly open and close and the actual periods of clamping of the hair are very short. The angle of the divergence of the tongs *c*, *d* is adjustable by setting of the screw *s*, while the speed of the opening and closing can be adjusted by setting of the current-breaker.

The electro-magnet *g* need not be on the handle grip of the apparatus but it can be disposed within the limits of the invention independently of the apparatus.

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

1. Hair curling apparatus comprising a pair of clamping tongs which can be opened and closed scissor-like, a handle grip on each tong, one of said tongs being cylindrical and the other having a trough-like cross section, an electric heating device in said cylindrical tong, an electro-magnet, an automatic circuit-breaker in series with said electro-magnet, an armature for said electro-magnet, and means connected with said armature for opening the tong of trough-like cross section each time the circuit of the electro-magnet is closed by said circuit breaker while when the circuit is broken said trough section tong can be closed by pressure of the hand.

2. Hair curling apparatus comprising a pair of clamping tongs which can be opened and closed scissor-like, a handle grip on each tong, one of said tongs being cylindrical and the other having a trough-like cross section, an electric heating device in said cylindrical tong member, an electro-magnet carried by one of said handle grips, an automatic circuit-breaker in series with said electro-magnet, an angle-lever pivoted on the same handle grip as said electro-magnet, an armature for said electro-magnet carried by one arm of said angle lever, and means connected to the other arm of said angle lever for opening scissor-like the clamping tong of trough-like cross section each time the circuit of the electro-magnet is closed by said automatic circuit breaker while when the circuit is broken said trough section tong can be closed by pressure of the hand.

3. Hair curling apparatus comprising a pair of clamping-tongs which can be opened and closed scissor-like, a handle grip on each tong, one of said tongs being cylindrical and the other having a trough-like cross section, an electric heating device in said cylindrical tong, an electro-magnet carried by the handle grip on the cylindrical tong member, an automatic circuit-breaker in series with said electro-magnet, an angle lever pivoted on the same handle grip as said electro-magnet, an armature for said electro-magnet carried on one arm of said angle lever, extensions on said tong member of trough section, a rod connected with the other arm of said angle lever, and a stop on said rod which bears against said extensions whereby the rod opens the clamping tong of trough-like cross section each time the circuit of said electro-magnet is closed by said automatic circuit breaker while when the circuit is broken said trough section tong can be closed by pressure of the hand.

4. Hair curling apparatus comprising a pair of clamping tongs which can be opened and closed scissor-like, a handle grip on each tong, one of said tongs being cylindrical and the other having a trough-like cross section, an electric heating device in said cylindrical tong member, an electro-magnet carried by one of said handle grips, an automatic circuit-breaker in series with said electro-magnet, an angle-lever pivoted on the same handle grip as said electro-magnet, an armature for said electro-magnet carried by one arm of said angle lever, and an adjustable rod connected with the other arm of said angle lever for adjusting the angular opening of the clamping tongs and for opening the clamping tong member of trough-like cross section each time the circuit of the electro-magnet is closed by said automatic circuit breaker while when the circuit is broken the said clamping tong can be closed by pressure of the hand.

5. Hair curling apparatus as set forth in claim 3 wherein said rod is within the handle grip of the cylindrical tong member.

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