2 Sheets—Sheet 1.

S. A. TISDALE.

MACHINE FOR PRODUCING OPEN-WORK IN COMBS.

No. 188,034. Patented March 6, 1877.

Fig 1.

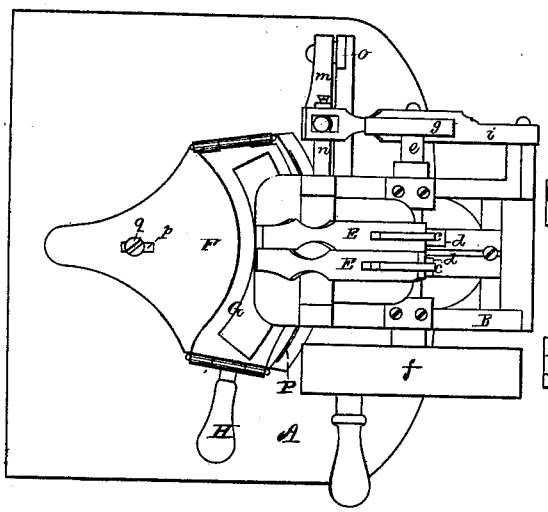


Fig 2.

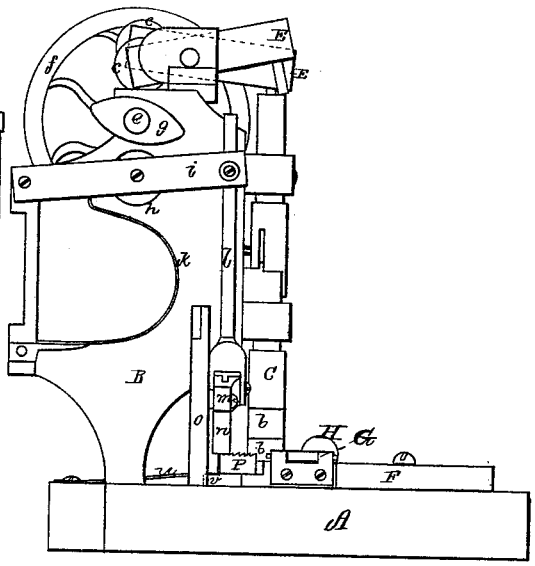


Fig 3.

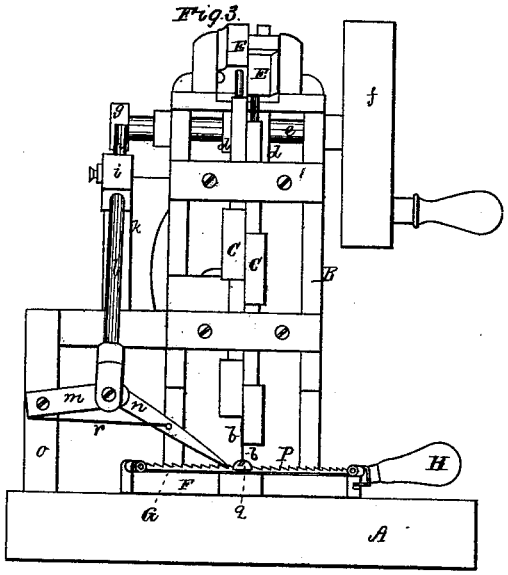
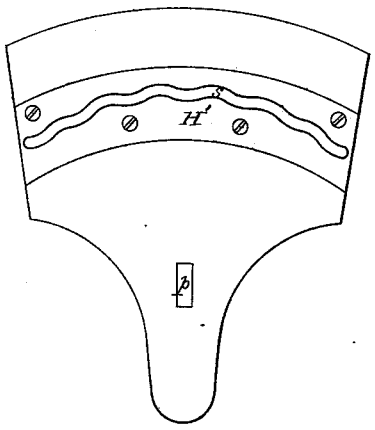


Fig 5.



Witnesses.

S. W. Piper

L. W. Mellen

Stephen A. Tisdale.

by his attorney

R. H. Eddy

2 Sheets—Sheet 2.

S. A. TISDALE.

MACHINE FOR PRODUCING OPEN-WORK IN COMBS.

No. 188,034. Patented March 6, 1877.

Fig. 4

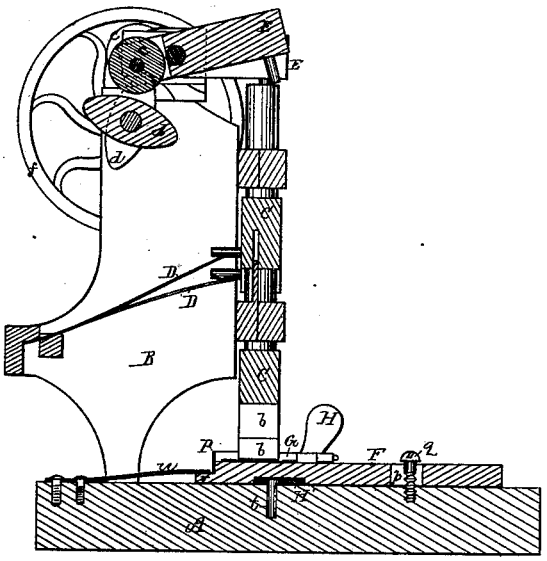
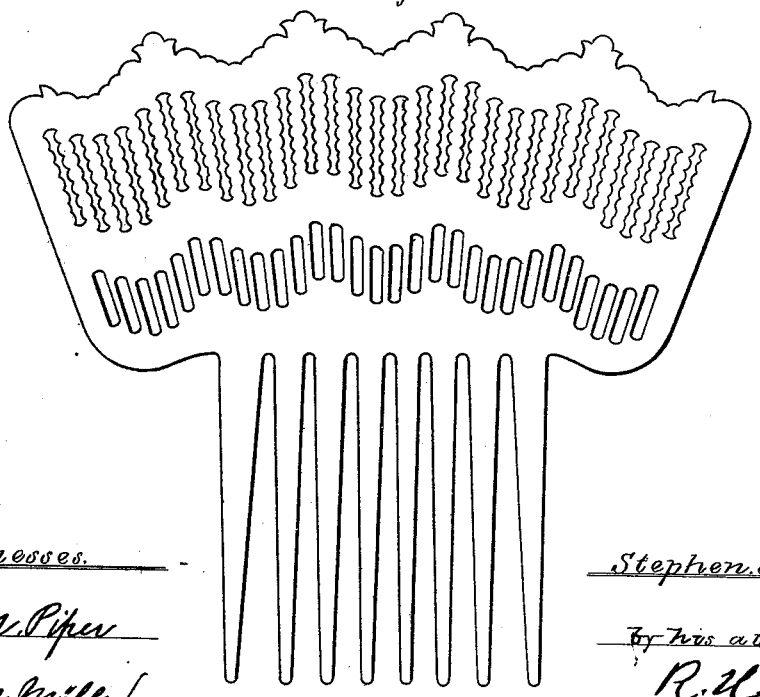


Fig. 6.



Witnesses.

S. W. Piper

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R. H. Eddy.

UNITED STATES PATENT OFFICE.

STEPHEN A. TISDALE, OF LEOMINSTER, MASSACHUSETTS, ASSIGNOR TO UNION COMB COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR PRODUCING OPEN-WORK IN COMBS.

Specification forming part of Letters Patent No. **188,034**, dated March 6, 1877; application filed February 6, 1877.

To all whom it may concern:

Be it known that I, STEPHEN A. TISDALE, of Leominster, of the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Machinery for Producing in Combs what is termed "Open-Work;" and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a front view, and Fig. 4 a vertical and longitudinal section, of the machine as improved by me. Fig. 5 is an under-side view of its comb supporter or carrier. Fig. 6 is a view of a comb having on its back open-work, or two sinuous series of fanciful slots as formed by the machine.

My invention in the open-work-cutting machine, having one or more cutters, consists in the comb supporter or carrier provided with mechanism for imparting to it an intermittent sinuous or serpentine movement under the cutter or cutters, such being for the purpose of imparting to either or each range of cuts or slots in the comb-back a sinuous or serpentine form, as shown in Fig. 6, in which the ranges are shown at *a a*.

In the drawings, A denotes the bed-plate, and B a standard or frame elevated thereon. Within this frame are two vertical cutter-carriers, C C, each of which has a knife or cutter, *b*, of suitable form extending down from it at its lower end. The said carriers are furnished with springs D D for elevating them, and, besides such springs, these carriers have mechanisms for alternately depressing them. Two levers, E E, arranged as shown, rest on the heads of the cutter-carriers, and are provided with friction-rollers *c c*, to bear against the peripheries of two cams, *d d*, fixed upon a shaft, *e*, arranged and provided with a driving-wheel, *f*, as represented. On the outer end of the shaft *e* is a cam, *g*, which is placed over another friction-wheel, *h*, in another lever, *i*, that is also furnished with a spring, *k*, for effecting its upward movements. This lever, by means of a pitman, *l*, pivoted to it, is connected with two toggles, *m n*, one of which (viz., *m*) is pivoted to a standard, *o*. The other toggle serves as an impelling-pawl to operate with a curved and serrated rack, P, fixed to the inner edge of the comb-carrier F, which, formed as shown, rests flatwise on the top of the bed-plate A, and is provided with a slot, *p*, arranged in it radially, to receive a pivot or screw, *q*, fixed on the base.

The said carrier F has, as usual, hinged to it a slotted clamp-plate, G, having at its free end a clamping-lever, H, for fastening such end down. This slotted plate and its clamping-lever are such as are in use in machines for producing open-work in comb-backs.

A comb to be cut is to be placed on the carrier or "drag" F, as it is termed by many comb-makers, and is to be held in place thereon by the clamping-plate G and its locking-lever H. A spring, *r*, applied to the toggles as represented, serves to keep the pawl down to the neck. Furthermore, there is fixed to the under side of the comb-carrier F a curved plate, H′, having on it a sinuous or serpentine slot, *s*; or such slot may be made in the supporter. There projects up from the bed A a stationary stud, *t*, which enters the said sinuous slot. A spring, *u*, extended from the bed, bears upon a flange or lip, *v*, extending from the supporter, as shown, and serves to keep the supporter while in motion from rising off the bed. By the operation of the machine as described, for actuating the supporter, it will have imparted to it an intermittent sinuous motion, whereby, during the operations of the cutter or cutters on the comb, a sinuous or serpentine series of slots or cuts will be produced in the comb-back, the cutter being suitably formed for the purpose.

I claim—

In the open-work-cutting machine, having one or more cutters, the comb-supporter provided with mechanism for imparting to it an intermittent sinuous or serpentine movement under the cutter or cutters, substantially as and for the purpose specified.

STEPHEN A. TISDALE.

Witnesses:

R. H. EDDY,

J. R. SNOW.