J. HOOD & S. H. REYNOLDS.

FOIL-CONDENSER.

No. 182,442. Patented Sept. 19, 1876.

Fig. 1.

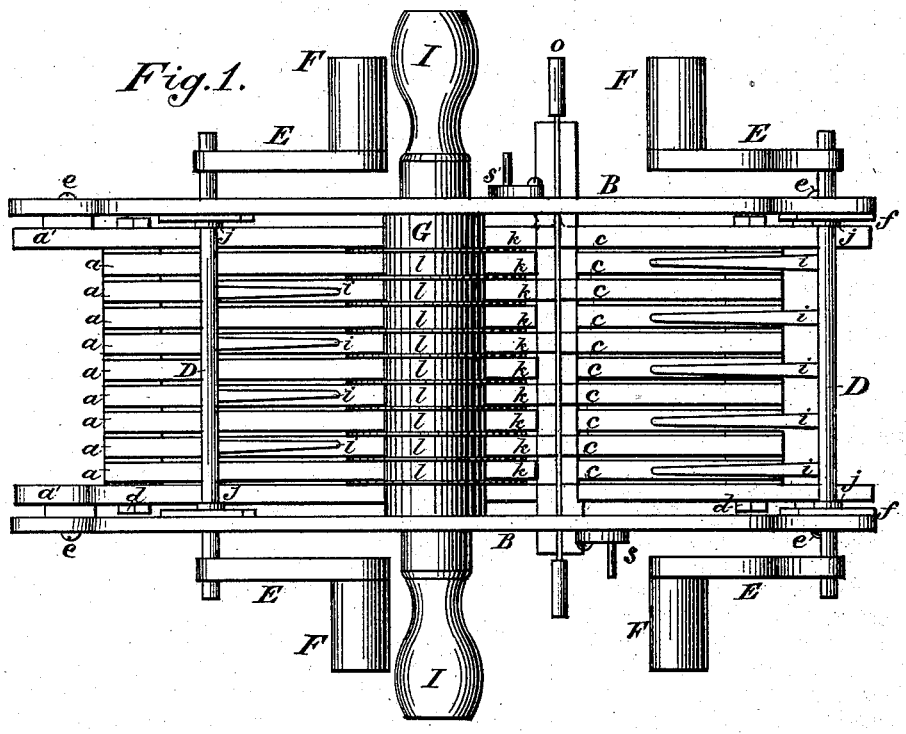


Fig. 2.

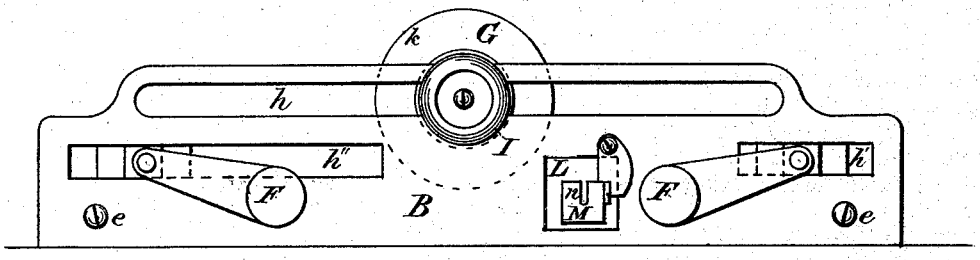
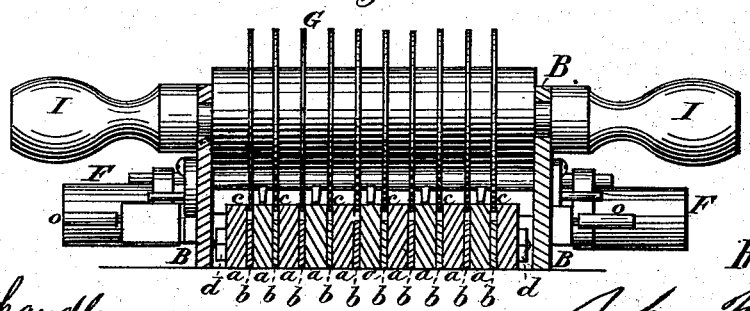


Fig. 3.



Attest:

S. E. Chandler

S. VanEyck

Inventor:

John Hood

Stephen H. Reynolds

UNITED STATES PATENT OFFICE.

JOHN HOOD AND STEPHEN H. REYNOLDS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN FOIL-CONDENSERS.

Specification forming part of Letters Patent No. **182,442**, dated September 19, 1876; application filed August 9, 1876.

To all whom it may concern:

Be it known that we, JOHN HOOD and STEPHEN HENRY REYNOLDS, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Foil-Condensers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to produce a machine which shall be capable of cutting leaves of gold or other foil into strips, and then rolling these strips into what are technically termed cylinders, to be used by dentists in filling cavities in teeth; and it consists in the use of a traveling cutting-roller, in combination with a longitudinally-recessed bed, and in other combinations and arrangements of devices, which will be hereinafter fully described, and then specifically pointed out in the claims.

Figure 1 of the drawing shows a plan of the machine; Fig. 2, a side view exhibiting the relative vertical arrangement of the parts. Fig. 3 is a transverse section on the line *x x* of Fig. 1.

A represents the bed of the machine, which is formed by placing side by side a number of pieces, *a a*, having the narrower and thinner strips *b b* interposed in such a manner as to leave open longitudinal recesses *c c* in the top of the bed, corresponding in width to the thickness of the strips *b*, and in depth equal to the difference in width of the strips *a* and *b*, the whole being firmly secured together by means of two or more bolts, *d*, which pass through the bed from side to side. Two of these pieces, *a' a'*, are of greater length than the others, and are placed at the outer sides of the bed, projecting to a considerable distance from each of its ends. To these projections the side pieces B are secured by means of the bolts *e*, which pass through not only the side pieces and projecting ends of the pieces *a'*, but also through the blocks *f*, which keep the side pieces away from the bed, leaving a space between them throughout their length. The side pieces B are each provided longitudinally with three slots, the upper ones, *h*, serving as a guide to the rolling cutter, and the lower ones, *h'* and *h''*, guiding the adjustable tongues *i*, which hold the foil upon the bed. These tongues are attached to two rock-shafts, D and D', journaled in sliding bearings *j*, which move in the slots *h' h''*. To each end of the two rock-shafts is attached, by means of the arms E, weights F, which cause the tongues to press upon the bed with a pressure corresponding to their weight and the length of the arms E.

The rolling cutter G consists of a series of sharp-edged disks, *k*, placed upon a shaft with washers *l* between them, the washers being of such thickness as to bring the edges of the disks at exactly the same distance from each other as the recesses *c* in the bed. The journals of this rolling cutter move in the slots *h*, so that by taking hold of the handles I upon each end of the cutter-shaft, it may be rolled from end to end of the bed, and the slots *h* being placed at such a height above the bed as to allow the peripheries of the cutting-disks to enter the recesses *c* a short distance, enables the cutter, as it is rolled along, to produce the necessary shearing-action required to divide the foil properly. In a transverse recess, L, through the bed, is placed the mandrel-carrier M, through the upper side of which is formed a longitudinal groove, *n*, for the reception of the split mandrel *o*. Transverse recesses *p* are also formed in it, into which the foil is pressed in order to be taken up by the split mandrels and rolled into cylinders. In order to retain this carrier in its proper position relatively to the strips of foil to be operated upon, two swinging catches, *s s*, are provided, which are pivoted to the side pieces B in such a position as to fall into notches formed in one side of the carrier, one being so placed as to hold the carrier in position to act upon each alternate strip of foil, after which it is moved along and retained in position by the other catch while the remaining strips are being acted upon.

The operation of the machine is as follows: The rolling cutter having been brought near one end of the machine, a sheet of foil is placed upon the bed in such a position that the tongues *i*, attached to the rock-shaft D, passing between the cutting-disks, shall rest upon it and hold down upon the bed one end

of each alternate strip as it is cut by rolling the cutter toward its opposite end, the remaining strips being held down at the opposite end by the tongues attached to the rock-shaft D′. The mandrel-carrier M is then inserted in the recess L, prepared for its reception in the bed, and secured by one of the swinging catches, so that it shall not be displaced by the passage of the cutting-disks. The latter are then rolled over the foil, cutting it into strips, every alternate one of which is retained upon the bed by the pressure of the tongues attached to the rock-shaft D. The others adhere to the disks, and are carried with them as they roll forward. One-half of the split mandrel is then inserted in the groove *n* in the carrier beneath the foil, and the other half above it, thus clasping the foil between them. The mandrel is now rotated until the strips are rolled into compact cylinders. The carrier, with the mandrel and cylinders, is then withdrawn and placed in a suitable annealing apparatus, where the cylinders are so annealed as to destroy their elasticity and retain their shape, when the split mandrel is withdrawn. The mandrel-carrier is now replaced in the bed of the machine, but in such a position that the transverse notches *p* are opposite the strips of foil retained between the disks. The latter are now rolled backward over the bed. The ends of the foil, being held by the tongues attached to the rock-shaft D′, will be laid flat upon the bed. The split mandrel is then inserted in the manner heretofore described, and the cylinders of foil rolled upon it. The carrier is then withdrawn, the cylinders annealed, and the machine placed in readiness for repeating the operation upon another sheet of foil.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent, the following:

1. The bed A, composed of the longitudinal pieces *a a′* and strips *b*, united by the bolts *d*, and provided with a transverse recess for the reception of the carrier M, as and for the purpose set forth.

2. In a foil-condensing machine, the combination of the bed A, side pieces B, mandrel-carrier M, and rolling cutter G, as specified.

3. The rock-shafts provided with the arms E, weights F, and tongues *i*, substantially as and for the purpose specified.

4. In a foil-condensing machine, the combination of the weighted rock-shafts, provided with the tongues *i*, with the bed A and rolling cutters, as set forth.

In testimony whereof we have hereunto affixed our signatures this 13th day of July, 1876, in the presence of two witnesses.

JOHN HOOD.
STEPHEN H. REYNOLDS.

Witnesses:
JAS. B. BELL,
HIRAM SHEPARDSON.