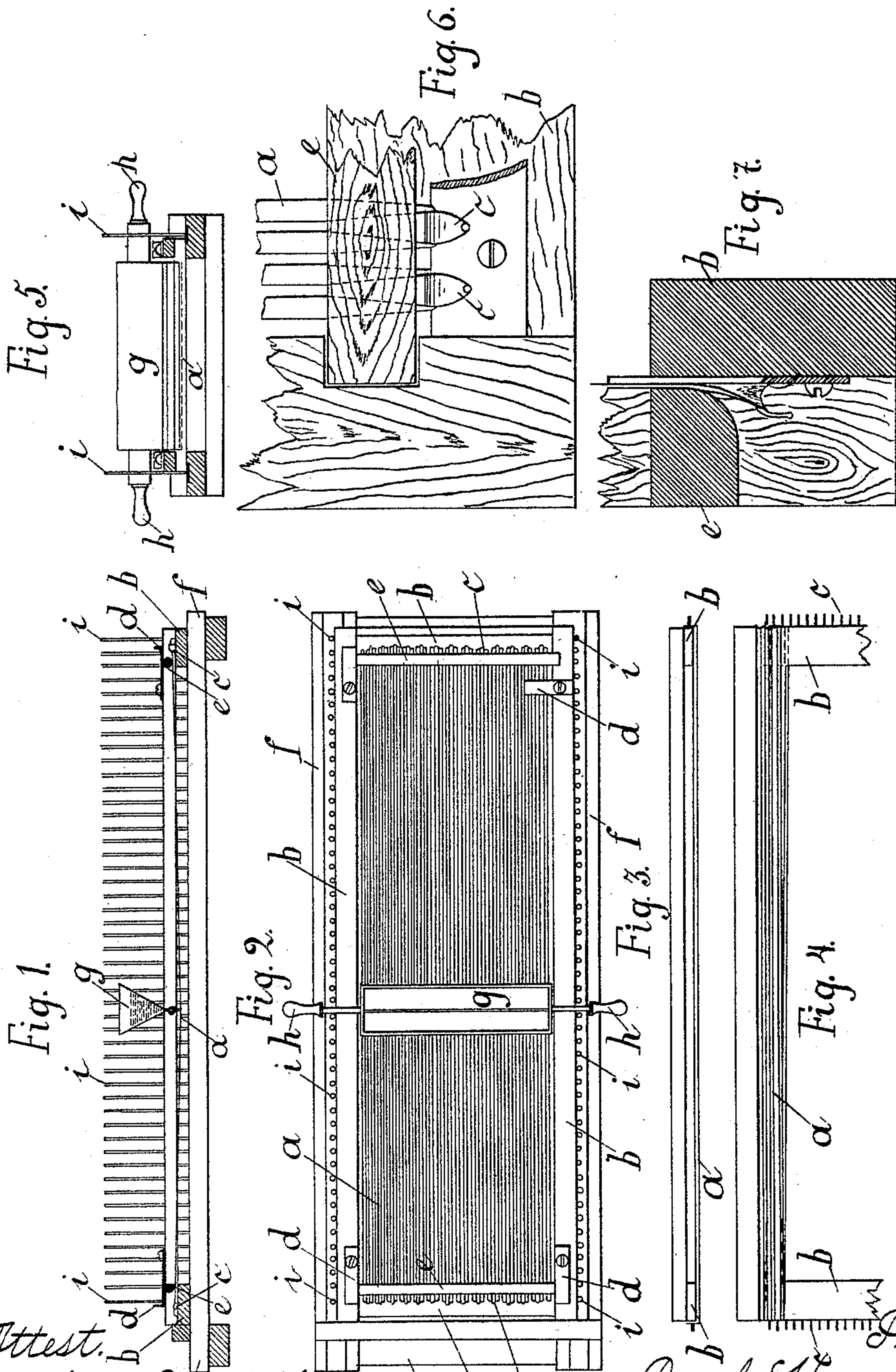


(No Model.)

C. H. WOLF.  
IGNITING MATERIAL.

No. 497,699.

Patented May 16, 1893.



Attest.  
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# UNITED STATES PATENT OFFICE.

CARL HUGO WOLF, OF ZWICKAU, GERMANY.

## IGNITING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 497,699, dated May 16, 1893.

Application filed November 30, 1892. Serial No. 453,654. (No model.)

*To all whom it may concern:*

Be it known that I, CARL HUGO WOLF, of Zwickau, in the Kingdom of Saxony and German Empire, have invented a new and useful Igniting Material, of which the following is a specification, reference being had therein to the accompanying drawings.

The following invention relates to an expeditious and convenient mode of producing fuses (especially for fireworks) of an exceedingly regular and uniform character. These advantages are obtained by a band or cord being wound in a circuitous form upon a frame or the like and the fluid fuse material laid thereon in the special manner hereinafter described by means of a vessel provided with a small slit therein. If fuse points are desired to be put on both sides the band or cord is wound in spiral form upon the side of a frame on pins placed at equal distances and by means of horizontal cross bars turned round toward the one side or the other. In order to facilitate the formation of the fuse points at exactly uniform distances on the long side of the frame or of the trestle carrying the frame pins or guiding rods are placed at equal distances apart between which the holder of the fuse material is placed. The distance of these guide pins from one another is regulated by the desired distance of the firing points.

In order that my present invention may be easily understood and readily carried into practice I will proceed to fully describe same with reference to the accompanying drawings.

In the said accompanying drawings (representing an apparatus for the carrying out of the process):—Figure 1 is a vertical section, and Fig. 2 is a horizontal section of such apparatus. Figs. 3 and 4 are horizontal sections through a modified apparatus for carrying out my invention. Figs. 5 to 7 are detail views.

The band or cord *a* Figs. 1 and 2 is wound round the pins, hooks or pegs *c* placed at equal distances along the small side (and from end to end) of the metal or wooden frame *b* and the strips *a* thus formed are held down horizontally by means of the rods *e* fastened by means of bolts, hooks, clamps or screws *d* Figs. 1, 2, 6 and 7. The hooks *c* must naturally lie so far apart from each other that the strips *a* upon being laid round do not touch. After

the frame *b* so strung has been laid down and secured upon the trestle or base *f* the receptacle *g* Figs. 1, 2 and 5 is filled with the fuse material and set in the following manner between each two of the pins *i* (set equidistant apart) placed down each side (*i. e.* the long side) of the trestle. The fuse material then passes (or is caused to pass) through a small slit in the lower part of the receptacle *g* onto the strips *a*. When the whole length of the strips is thus treated upon one side the frame *b* is lifted from the trestle *f* turned over and set down again and treated in above described manner upon the other side. If only one side of the strips is to be thus treated the band is simply wound flat upon the frame *b* (Figs. 3 and 4) the narrow side of which for the facilitating of a uniform winding can also be provided with pins *c*. After thus being treated and prepared the strips are placed with the frame in a drying room and after perfect drying overlaid with paraffine wax or other suitable material by being drawn through the melted mass; and for the uniform distribution of the latter may be allowed to pass through soft pads of india rubber, leather or other suitable material.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In the manufacture of fuses, the combination of a frame upon which the cord is wound in a circuitous form, and constructed to receive a receptacle above it, and a receptacle for the fluid fuse material movable above the cord thus arranged for laying the fluid upon the whole of the strips, substantially as and for the purpose set forth.

2. In the manufacture of fuses for fire works and similar purposes, the combination of a suitable frame arranged to receive the cord in parallel lines and a receptacle for fuse material movable over the frame thus formed, and having an escape opening which directs the material on all of the parallel strips simultaneously, said frame and receptacle being separable so that the frame may be removed and be exposed to a suitable drying medium, substantially as and for the purpose explained.

3. In the manufacture of fuses, the combination of a frame having means for engaging the cord at its opposite sides whereby the cord



may be wound upon the frame in a circuitous manner, forming a series of parallel strips, and a receptacle having an opening for escape of fuse material onto the strips thus arranged; 5 said receptacle being movable above the strips, and said frame being reversible so that the opposite sides of the strips may be treated successively as and for the purpose explained.

4. In the manufacture of fuses, the combination of a suitable frame upon which the cord 10 is wound, clamps at the ends of said frame for holding the cords wound upon it, and the movable receptacle for fuse material having an opening for directing the fuse material 15 onto the cord thus secured, all substantially as set forth.

5. In the manufacture of fuses, the combination of a frame having at opposite ends the rows of pins upon which the cord is wound, 20 in a circuitous manner forming a number of parallel strips in the same horizontal plane, and the receptacle for fuse material adapted to be set upon the strips thus formed for depositing the fuse material on them, substantially 25 as set forth.

6. In the manufacture of fuses, the combination of a base upon which the cord or strips are arranged, the series of uniformly spaced pins projecting from opposite sides of said base, and the receptacle for fuse material constructed to enter between the pins, and having the bottom outlet for the fuse material, substantially as and for the purpose set forth.

7. In the manufacture of fuses, the combination of a suitable base having projecting 35 therefrom the two series of uniformly spaced guide pins, the removable frame mounted upon the base and having the pins or hooks upon which the cord is wound, and the receptacle for fuse material constructed to enter 40 between the guide pins, and having the opening for escape of the fuse material onto the cord, all substantially as and for the purpose set forth.

In witness whereof I have hereunto set my 45 hand in presence of two witnesses.

CARL HUGO WOLF.

Witnesses:

SIDNEY P. TOWNSHEND,

ADOLF DITTRICH.