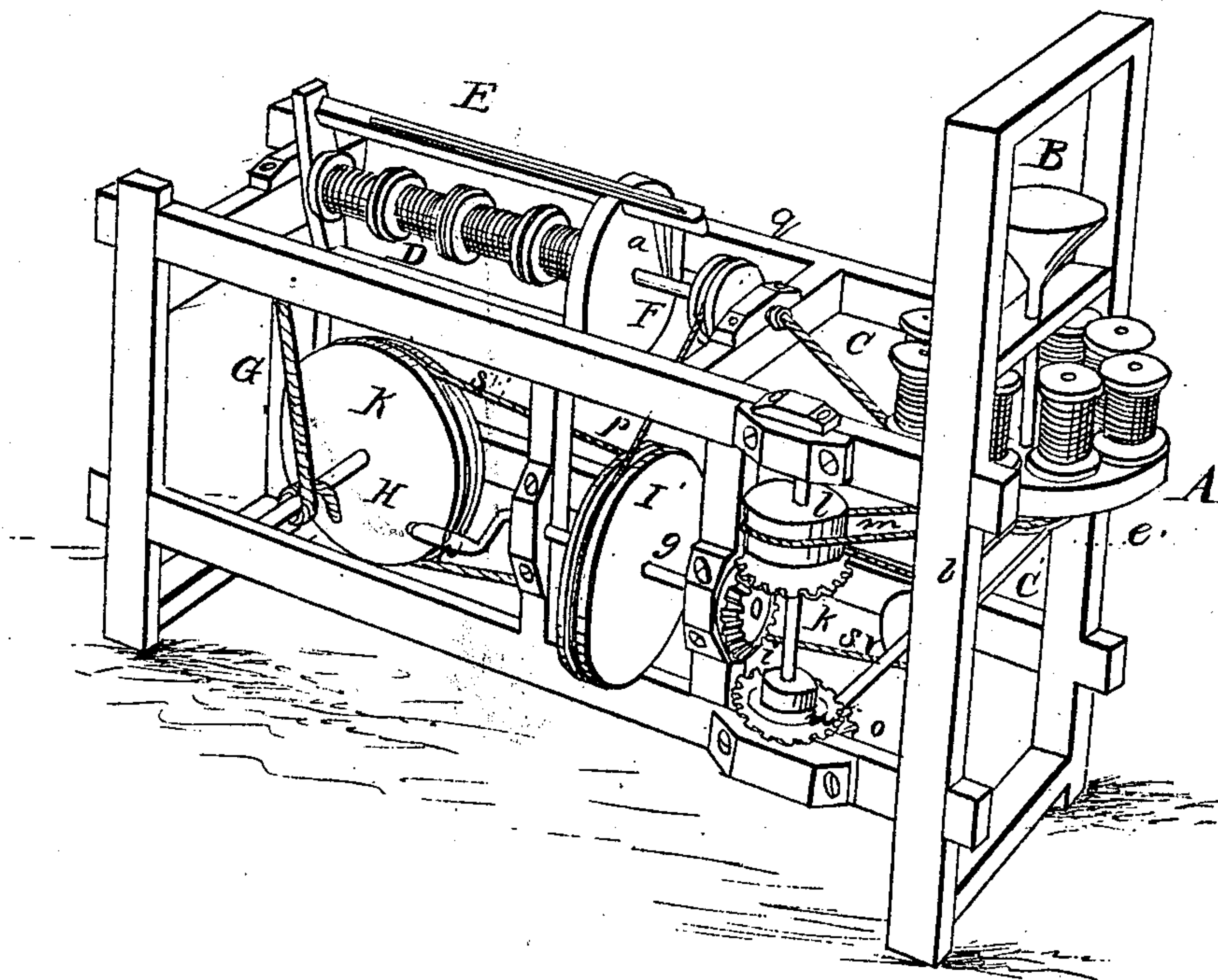


A. F. Andrews
Making Fuses.

N^o 8,963.

Patented May 25, 1852.



UNITED STATES PATENT OFFICE.

A. F. ANDREWS, OF AVON, CONNECTICUT.

MACHINE FOR MAKING FUSES.

Specification of Letters Patent No. 8,963, dated May 25, 1852.

To all whom it may concern:

Be it known that I, ALBERT F. ANDREWS, of Avon, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Manufacturing Fuses for Blasting, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, which make a part of this specification, in which—

A, is the spool stand, and spools which contain the yarn, or material of which the body of the fuse is made.

15 B, is the hopper in which the powder is placed.

C, is the fuse as twisted:—*a*, the threads which wind the fuse:—D, the spools which contain the winding thread:—E, the flyers which direct the thread:—F, the hollow tube through which the fuse passes to be wound:—G, the fuse as finished, and ready for tarring:—H, the shaft on which the fuse is wound to draw it through with the proper 25 velocity to suit the twisting, &c.

I make the frame of posts and bars of any suitable material, and in any suitable way, as seen in the drawings, and of a convenient size, say four to six feet long, &c. 30 I make a revolving spool stand A, capable of holding the requisite number of spools, (say eight,) with a hollow shaft passing down through its center, sustained in two suitable bearings, (as seen at *b*, and *c*,) on 35 which the spool stand is revolved, horizontally, by means of a pulley, *e*. I make the flyers, E, with a hollow arbor, or shaft, F. On this arbor (F,) I place a suitable number, (say four,) of spools of winding 40 thread, as seen at D. The ends of these winding threads pass through suitable holes, (or otherwise,) in the bar of the flyers, and are again carried down, from near the end, and are passed through holes, properly 45 graduated, in the hollow shaft, F, (as seen at *a*,) and wind around the twisted fuse as it passes through the hollow shaft, and thus finishes the fuse ready for tarring. The yarns from the spools, (on the spool 50 stand, A,) are passed down through the

hollow tube in the center of the stand, A, (around an anti-friction roller, if deemed necessary,) (where, by revolving the spool stand, A, the fuse is twisted,) and through the horizontal hollow shaft, F, of the flyers, 55 E, (where the fuse is wound, and then to the arbor, (or spool,) H, which receives the fuse when finished ready for tarring.

Having constructed the several parts, and arranged them in their proper positions, as 60 before described, and deposited the powder in the hopper, B, (the lower end of the tube of which communicates with the upper opening of the hollow shaft of the spool stand, with all the yarns around it.) I put 65 the machine in operation by applying the power to the arbor, or shaft, *g*, by means of a crank, *h*, or by any other suitable means.

On the arbor, *g*, is the bevel gear wheel, *i*, 70 which works the bevel gear wheel, *k*, above which is a pulley, *l*, which by means of the band, *m*, and the pulley, *e*, the spool stand, A, is revolved, so as to twist the fuse. The pulley, I, by means of the band, *p*, and 75 pulley, *q*, revolves the hollow arbor, F, and the flyers, E, so as to wind the fuse; while the bevel gear wheel, *n*, (on the same arbor with *k*,) works the bevel gear wheel, *o*, which by means of the pulley, *r*, the band, 80 *s*, and pulley, H, the shaft, H, is made to draw the fuse, (C, *g*,) forward as fast as it is twisted, and wound, so as to make the fuse even in its twist, winding, and supply 85 of powder.

What I claim as my invention, and desire to secure by Letters Patent, is—

Passing the hollow mandrel through the winding spools, in combination with the flyers, E, which direct the winding thread 90 from the different spools to the interior of said mandrel for the purpose of winding the fuse as it passes from the forming machine, when combined, substantially, as herein described.

ALBERT F. ANDREWS.

Witnesses:

ROMEO ANDREWS,
R. FITZGERALD.