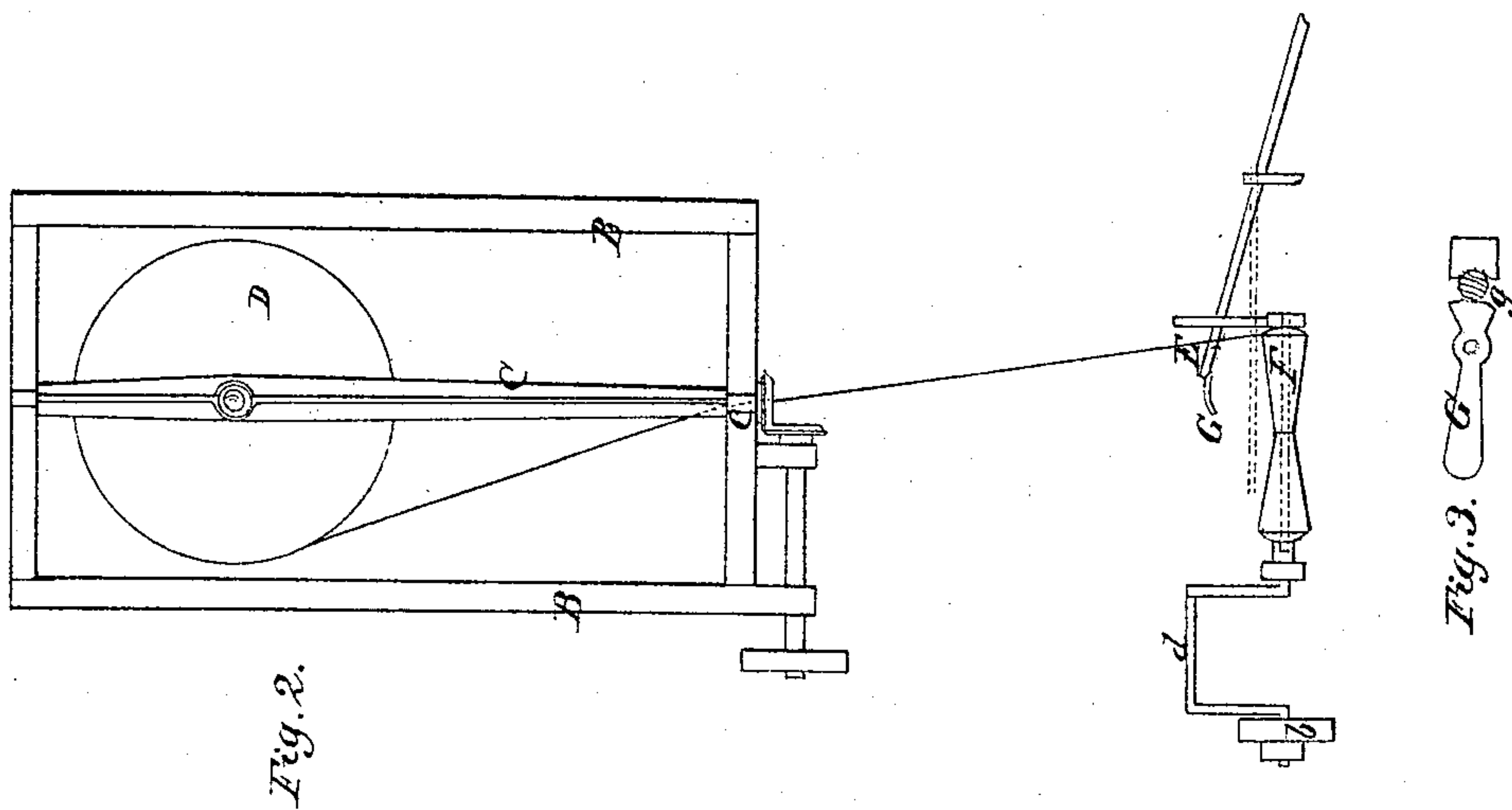
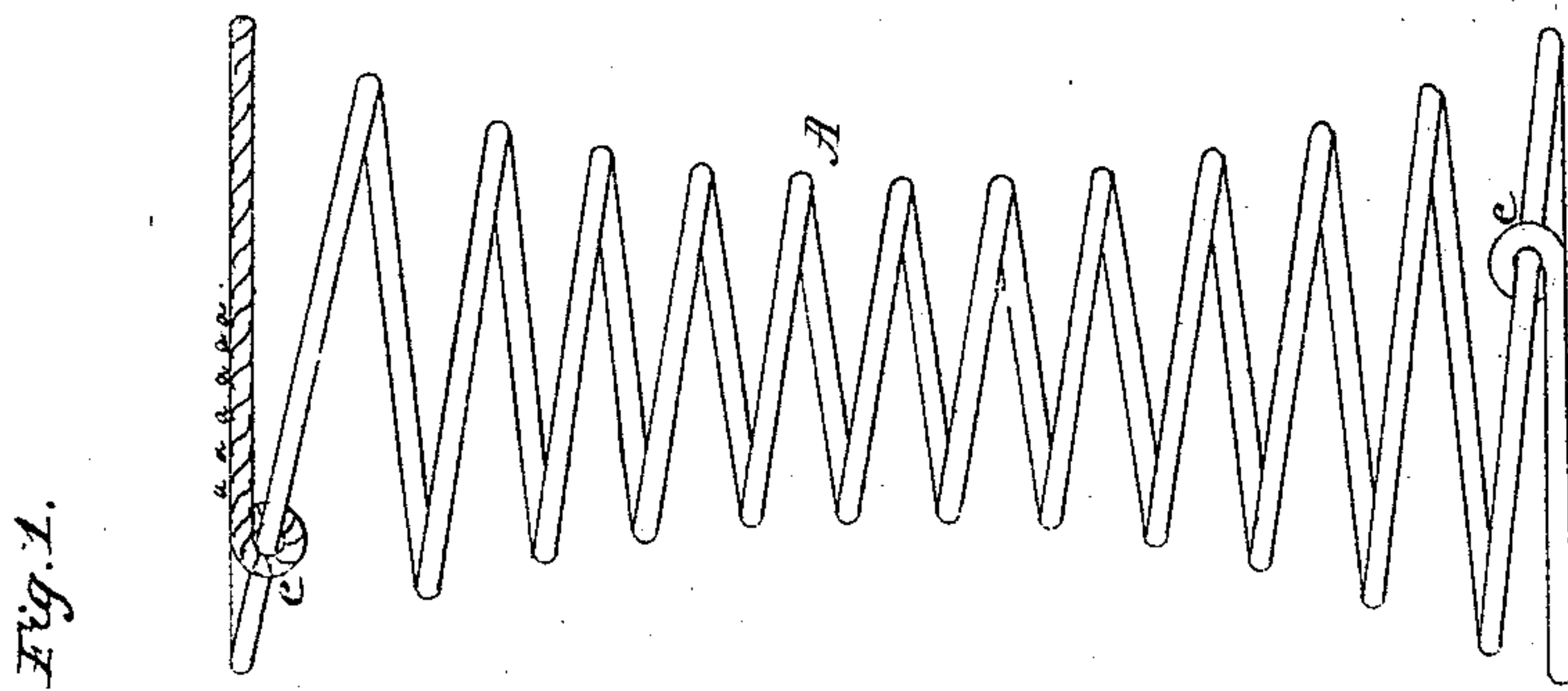


F. C. PAYNE.  
MANUFACTURE OF SPIRAL SPRINGS

No. 50,622.

Patented Oct. 24, 1865.



Witnesses:  
H. Coombes  
L. Hobbs Jr

Inventor:  
F. C. Payne

# UNITED STATES PATENT OFFICE.

F. C. PAYNE, OF NEW YORK, N. Y.

## SPIRAL SPRING.

Specification forming part of Letters Patent No. 50,622, dated October 24, 1865.

*To all whom it may concern:*

Be it known that I, F. C. PAYNE, of the city, county, and State of New York, have invented a certain new and useful Improvement in Helical or Spiral Springs; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a side elevation of a spring constructed according to my invention. Fig. 2 is a plan view of the machine which is used in the manufacture of my improved spring. Fig. 3 is a view of a part of the same, to be hereinafter described.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a novel mode of manufacturing helical or spiral springs for cushions and other purposes, whereby with an inferior quality of iron or other wire used in the fabrication of the same, I can attain the same result and produce a spring having about the same amount of elastic properties as though it were constructed of the best charcoal or first quality wire; and to accomplish this end I twist the wire in a direction the reverse of the spiral coil, thereby rendering the spring both stiffer and more elastic than if the wire were left in its primary condition.

In order to instruct others skilled in the art to apply my invention, I will proceed to describe it with reference to the drawings.

The spring A, constructed, as shown in the drawings, of a shape suitable for a mattress or cushion, is formed upon a mold in the usual manner subsequent to the wire being twisted. The grain of the wire after being twisted runs in a spiral direction, as shown in the drawings by the faint lines *a a a a*, &c., and resembles in some degree the twist of the fibers in the strand of a cord or rope. This twist gives the wire, when coiled to form the spring, a highly-elastic property, besides giving greater stiffness and strength to the spring. Any press-

ure brought to bear upon either end of a spring so twisted has a tendency to still further twist the wire, and this, acting against the counter-acting tendency of the wire to untwist itself, almost doubles its elastic or springing properties.

The spring may be manufactured in various ways, but the machine represented in the drawings is well adapted for the purpose.

In a suitable frame-work, B, there revolves a flier, C, containing a bobbin or reel, D, for the purpose of holding the wire. This flier is set in motion by suitable gearing and pulleys, and has a hollow spindle or shaft at the end C. The wire passes from the bobbin or reel D through the hollow spindle *c* to the traveling guide E, through which it passes onto the mold F, which is made removable and in two parts, and can be turned either by power applied by a belt to the pulley *b*, or by means of hand-power applied to the crank *d*.

The mold should revolve about one-third as fast as the flier C, in order that the requisite degree of twist may be given to the wire, which twist takes place between the flier and the mold.

After there is a sufficient quantity of wire wound upon the mold the clamp or griper G is then brought into requisition. The wire which has not yet been wound upon the mold is secured by the eccentric clamp G, Fig. 3, which has a toothed or rasped surface, *g*, which securely holds the wire until the part wound on the mold has been cut off from the main wire. The ends of the spring is then fastened by twisting them around another part of the coil, as shown in Fig. 1 at *e e*.

Having described my invention, I claim and desire to secure by Letters Patent—

A spiral spring composed of wire having a twist, substantially as herein specified.

F. C. PAYNE.

Witnesses:

J. W. COOMBS,  
G. W. REED.