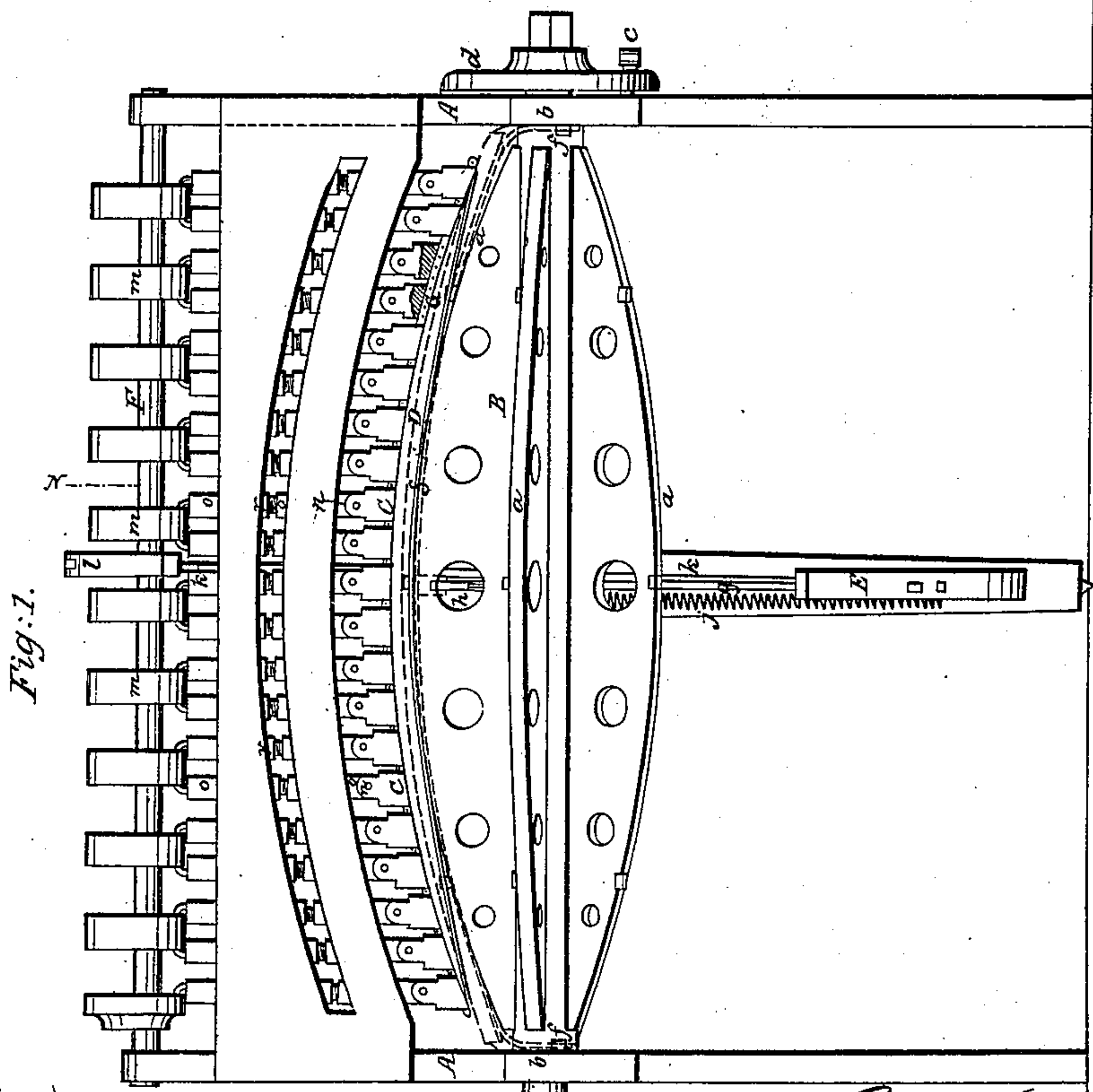
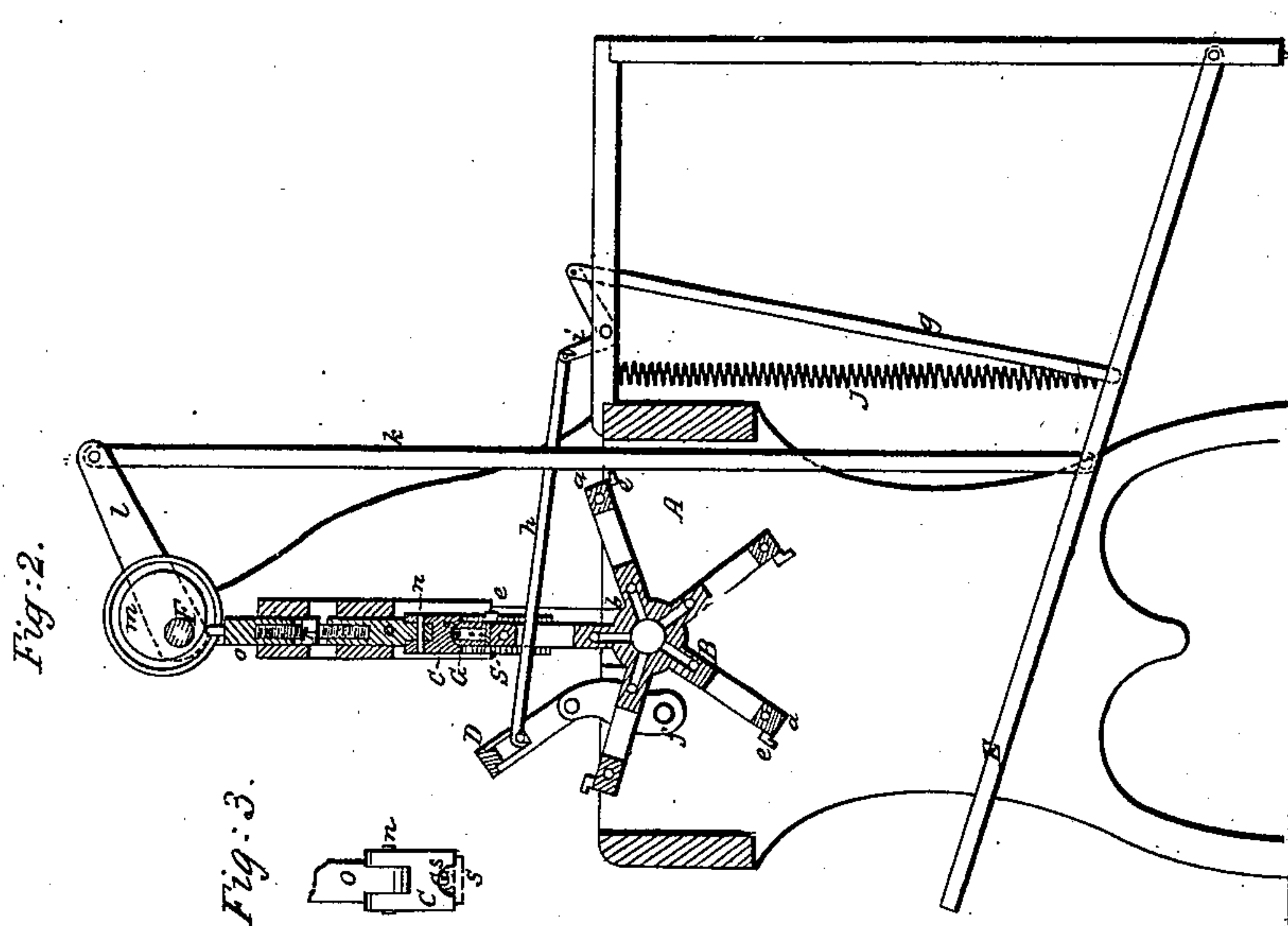


C. A. COGGESHALL.

# MACHINE FOR BENDING AND HARDENING SPRINGS.

No. 92,268.

Patented July 6, 1869.



Witnesses.

Melcomb.  
Fred: Haynes.

*Inventor*

C a Coggeshall  
per Brown & Coombs



# United States Patent Office.

CORNELIUS A. COGGESHALL, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO HIMSELF, ROBERT T. CLARKE, AND SALATHIEL T. NICKERSON.

Letters Patent No. 92,268, dated July 6, 1869.

## IMPROVED MACHINE FOR BENDING AND HARDENING SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CORNELIUS A. COGGESHALL, of Bridgeport, in the county of Fairfield, and State of Connecticut, have invented a new and useful Improvement in "Machines for Bending and Hardening Springs," of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a front elevation of a machine for bending and hardening springs, constructed in accordance with my invention, with the front brace of the frame removed;

Figure 2, a transverse section of the same through the line *x x* in fig. 1; and

Figure 3, an end view, on an enlarged scale, of one of the pressers or benders, as applied to the spring, and with a pipe for distributing water passing through the same.

Similar letters of reference indicate corresponding parts.

My invention consists in certain mechanism, or devices, of a novel character and construction, for bending and hardening springs, and is more especially designed for bending and hardening the leaves of which elliptic or semi-elliptic springs are composed, said invention including a "former," so shaped and made capable of axial adjustment as to present faces of different curvatures, for the formation of leaves or springs of different sweep; a device for holding the springs up against stops in the "former;" adjustable and jointed benders or pressers for bearing down on the spring to bend it to the shape of the "former."

Referring to the accompanying drawing,

A represents the frame of the machine, which may be of any suitable construction to carry the working parts.

B is the "former," that is here shown as of a skeleton character or construction, but which may be of a close or body-form, so long as it is made up of a series, comprising any number, of forming faces or edges, *a a*, of different curvatures, corresponding to the different sweeps of the leaves or springs required to be bent, or bent and hardened, as, for instance, in making semi-elliptic springs.

Said "former" is hung in end-bearings *b b*, so as to be capable of axial rotation, for the purpose of bringing any one of its forming-faces *a a* under the benders or pressers *C C*, when it may be locked, as, for instance, by a pin, *c*, passing through any one of a series of holes in a disk, *d*, connected with the "former," and entering an aperture in the frame.

Each of the forming-faces *a a* has stops or rests *e e* at its back, for the one edge of the leaf or spring *S* to

lie against, and up against which, in the operation of the machine, it is borne and held by a curved adjuster and retainer *D*, hung to rock or swing, as on pivots *f f*, and which may be operated by a treadle, *E*, through pitmen *g h*, and a bell-crank, *i*, a spring, *j*, serving to throw the adjuster back after it has performed its duty of bearing and holding up the spring *S* against the stops *e e*.

Simultaneously with this retaining-action of the adjuster *D*, the benders or pressers *C C* are brought down to bear on and shape the spring to the configuration of the forming-face *a*, on which it rests.

This may be done by means of a treadle, *E*, through a pitman, *k*, and arm or lever, *l*, fast to a shaft, *F*, carrying a number of eccentrically-grooved disks, *m m*, with which the pressers *C C* are in gear.

In the upward motion of the treadle through the spring *j*, the pressers *C C* are lifted from the face of the spring after the latter has been bent and hardened.

These benders and pressers *C C* are, as it were, independent of each other, though acting in concert, and are set to occupy different altitudes, so that in their united arrangement their lower faces, or portions of them, lie in a sweep corresponding to the outer curvature of the spring under operation; and in order that they may adjust themselves to varied curvatures, so as to bear at closely recurring points on the spring, said pressers are jointed, as at *n n*, to vertical guiding-bars *o o*, working in suitable ways, and divided in their connection with the eccentrically-grooved disks *m m*, by adjusting-nuts and right and left-hand screws *r r*, to provide for separate vertical adjustment of the pressers, when springs of materially different curvatures are required to be bent.

The lower faces of the benders or pressers *C C* are grooved or shaped, as by hollows *s*, formed in them, so that they only bear on the surface of the spring along opposite edges of it, leaving the main portion of the face, or back of the spring, exposed.

This allows of the introduction of water on to and over the spring, while under pressure by the benders, for the purpose of hardening the spring.

To effect the proper introduction and distribution of the water, a perforated pipe, *G*, is arranged to pass through the several cavities *s* in the faces of the pressers and water fed into or through the same.

The "former" *B* may also be constructed and made hollow to supply water through it, for the chilling or hardening of the spring *S* from below.

In practice, and where a number of elliptic or semi-elliptic springs, of the same size and shape have to be made, it is preferred to bend and harden the whole of the corresponding leaves of the several springs

having a given sweep, before altering the set or adjustment of the pressers C C, (should alteration of them be necessary,) and before turning the former B, to present a differently-curved forming-face, *a*, for making leaves of a different curvature, and so on till the several leaves of all the springs are made.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A "former," B, either hollow or solid, made capable of axial adjustment or rotation, and constructed so as to present forming-faces *a a* of different curvatures, substantially as specified.

2. The combination of the adjuster D, gauges *e*, and supporting-former B, operating together substantially as described.

3. The construction and arrangement of mechanism, by which the adjuster D and pressers C are simultaneously operated, substantially as set forth.

CORNELIUS A. COGGESHALL.

Witnesses:

CURTIS THOMPSON,  
CHARLES BENNETT.