

No. 682,028.

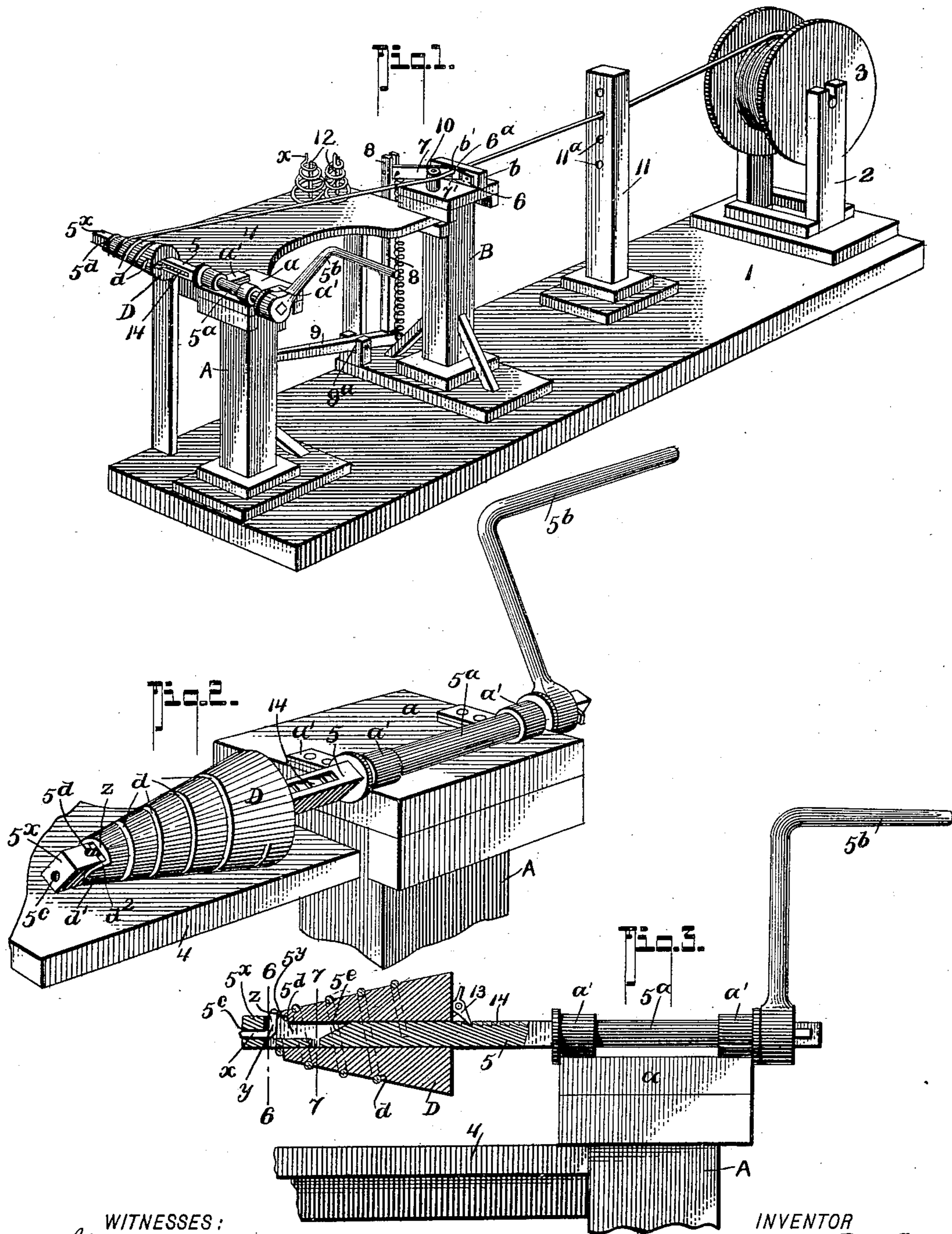
Patented Sept. 3, 1901.

B. R. BUTLER.
BED SPRING MAKING MACHINE.

(Application filed June 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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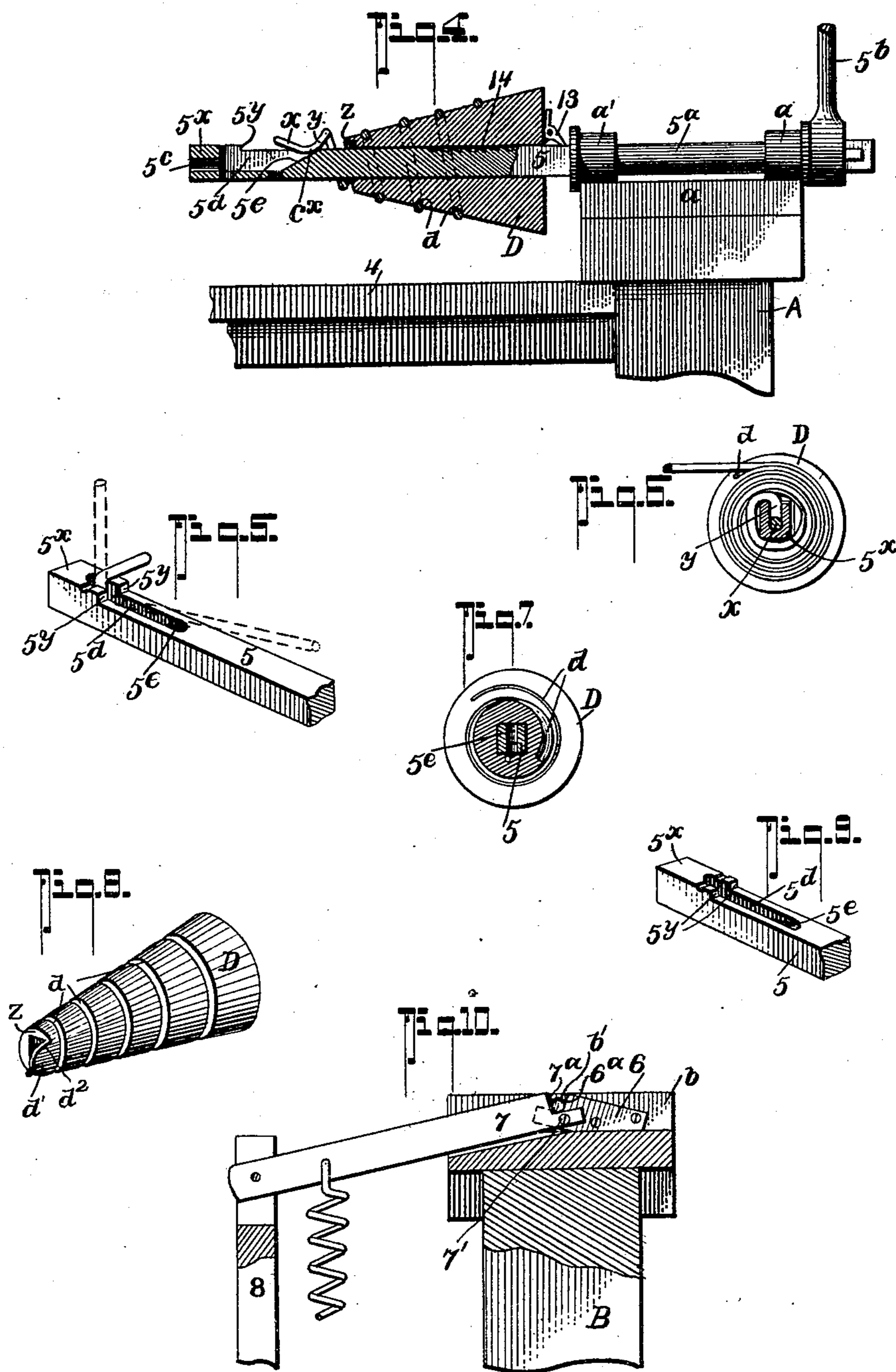
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BRAXTON R. BUTLER, OF FAYETTEVILLE, NORTH CAROLINA.

BED-SPRING-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,028, dated September 3, 1901.

Application filed June 6, 1901. Serial No. 63,416. (No model.)

To all whom it may concern:

Be it known that I, BRAXTON R. BUTLER, residing at Fayetteville, in the county of Cumberland and State of North Carolina, have invented certain new and useful Improvements in Bed-Spring-Making Machines, of which the following is a specification.

My invention relates to improvements in that class of bed-spring-making mechanisms especially designed for making the double or twin coils for bed-spring uses; and said invention primarily has for its purpose to provide a mechanism of this character of a very simple and inexpensive construction in which the several parts are compactly arranged, capable of being conveniently manipulated, and for forming the duplex spring-coils expeditiously and economically.

My invention comprehends generally a reel, a guide, a former, and a cutter coöperatively arranged and having a novel construction, whereby after the coiling of one end of a predetermined length of rod-wire the coiled end can be quickly detached from the former and the other end firmly held connected to the former to permit the said other end being formed into a cone-coil.

In its more complete nature my invention includes a special detailed construction of former, having a special arrangement of parts for holding one end of the wire in a manner to insure a proper coiling of the same on the former and produce the slat-engaging or seat member and guide and also permit of the coil being quickly slipped out of an interlocked engagement with the former; and in its more subordinate features my invention consists in the combination of the details of construction and peculiar relation of the several parts, all of which will be fully described and then pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my invention as set up for use. Fig. 2 is a similar view, on an enlarged scale, of the coil-former or mandrel. Fig. 3 is a vertical longitudinal section of the same, showing its position when the wire is coiled thereon. Fig. 4 is a similar view, the former-block being shifted to permit of a quick release of the spring-coil. Fig. 5 is a view illustrating the manner in

which the wire end is inserted into an interlocked engagement with the mandrel-shank. Figs. 6 and 7 are cross-sections of the mandrel or former, taken on the lines 6-6 and 7-7 of Fig. 3, respectively. Fig. 8 is a perspective view of the coiling-block or former. Fig. 9 is a similar view of one end of the mandrel or shank member. Fig. 10 is a cross-section of the machine, taken in front of the cutting-lever mechanism.

In the accompanying drawings, in which like characters indicate like parts in all the figures, 1 designates a suitable base, upon one end of which is mounted a standard 2, the upper end of which is constructed to receive a reel 3, upon which the rod-wire to be worked up into springs is detachably held. On the opposite end of the base is mounted a table 4, mounted upon the standards or posts A and B, the one, B, being adjacent to the reel end of the machine. The other one, A, is at the outer end of the base and has a bearing *a* at the top to accommodate the mandrel end 5^a, held to rotate in the boxes *a'*, its outer end being formed to receive an operating crank-handle 5^b, as shown. The upper end of the post B is provided with a guide-piece *b*, apertured at *b'* for the passage of the rod-wire, and said aperture *b'* is in line with the recess 6^a of a stationary cutting-plate 6, fixedly secured on the outer or wire-discharging face of the member *b*.

7 designates a cutting-blade that coöperates with the plate 6, and said blade is fulcrumed on the pivot-pin 7' at a point in front of the wire-aperture in member *b*, provided with a cutting edge 7^a and pivotally connected to the upper end of a vertically-extending arm 8, that joins at the lower end with the foot-lever 9, fulcrumed at 9^a to a bearing on the base 1, as shown.

10 designates a wire guide-roller disposed in front of the cutting-face of member *b*, and 11 designates a guide-post disposed between the reel and the post B and having a number of apertures 11^a, through any one of which the rod-wire is passed when operating the machine to provide for holding it in proper relation with the member *b*, as shown. At one edge the table has a pair of uprights 12, that serve as a convenient means of stacking the completed double springs, which in prac-

tice are stacked in tiers of twenty-four sets on said members 12 before removing same for packing.

Now comes the important and essential feature of my invention, which is best illustrated in Figs. 2 to 9, inclusive, by reference to which it will be observed the mandrel 5 is made non-circular (preferably square) in cross-section, and the squared portion is extended beyond the table edge. The outer end of the member 5 has a longitudinal aperture 5^c, that merges with an elongated socket 5^d, the inner end of which inclines to the upper edge to produce a beveled shoulder 5^e, the reason for which will presently appear, and at the outer end it merges with the projecting portion 5^x, the inner end of which terminates in a shoulder 5^y, the reason for which will also presently appear. The former D consists of a cone-shaped block, the apex of which coöperates with the recessed end of the mandrel 5, and said block is slidably held on the mandrel 5 to permit of the ready detaching of the wound coil in the manner presently described, and to hold the block to its outer or operative condition it is provided with a detent 13 to engage the indented portion 14 of the mandrel, as clearly shown in Figs. 3 and 4. Such arrangement of parts provides for firmly holding the block D in a proper operative condition during the winding of the coil. The former D has a spiral recess *d* in its outer surface, and at its apex it has a forwardly-projecting lip *d'*, which when the former is pushed out to its wire-twisting position extends beyond the front end of the socket 5^d and has a longitudinally-extending straight edge or projecting shoulder *d*².

The manner in which my spring-making machine operates is best explained as follows: The rod-wire is passed from the reel through the guide-post 11 in front of it, then through the apertured guide member *b* over the guide-roll in front of it, and from thence to the coiling-head, the latter being spaced away from the member *b* a distance sufficient to allow for a wire length sufficient to produce one-half of the twin coils after the first coil is wound, it being understood that after the first coil is wound the operator by manipulating the foot-lever cuts off the wire and leaves enough length at one end to make the second or twin coil. By providing a mandrel having a longitudinal aperture, an elongated recess, and a transverse shoulder 5^y, arranged as shown, and a slidable former having its forward end constructed as shown and hereinafter described I am enabled to make the cone or coil spring quickly, accurately, and with its ends formed with the vertical extension *x*, that forms a guide to engage the edges of the bed-slats or extend through an aperture therein when desired to use the same and provide for making the first turn flat or at right angles to extension *x*, as indicated by *y*, and produce, as it were,

a proper flat or slat-engaging end. In practice the end of the wire is passed into the longitudinal aperture of the mandrel, and then it is bent at right angles to the axis of the mandrel at a point just in advance of the shoulder 5^y, with which it may also engage. This having been done, the former-block D is shoved outward until its lip *d'* extends beyond the shoulder 5^y. Its edge *z* at this time holds the wire strand in position, as clearly shown in Figs. 2, 3, and 4. The former being held up to its forward position on the turning of the mandrel will engage the wire with its edge *z* and in doing so turn the wire down into the entrant end of the spiral way on the former, which way the wire will follow until it reaches the frustum or inner end of said spiral way, which finishes the coiling of one end of the wire. This being done, the block D, with the coil, is slipped back on the mandrel to the position shown in Fig. 4, and in doing so that part of the coil indicated by *c*^x will engage the bevel edge of the recess in the mandrel, and by reason thereof the straight or guide end of the spring will be tripped up out of the recess 5^d and in a plane above the upper face of the mandrel end 5. A slight back turn of the crank-handle will cause the coil to loosen sufficiently on the former-block D to permit its sliding off the block and mandrel. The wire is then cut and the cut end is inserted into the mandrel and the same operation of making the coil and removing it is repeated until said end is made into the twin coil, the two, as shown, being joined by the central part of the entire length of wire from which the spring is made.

From the foregoing, taken in connection with the accompanying drawings, it is thought the complete operation and advantages of my invention will readily appear.

I am aware it is not broadly new to provide a machine for making a double or twin spring which includes a wire-holder, a coiler, and a cutting mechanism. My invention differs from what has heretofore been provided in this line, so far as I know, in the detailed combination and arrangement of the several parts and especially in the specific construction of the coiling head or mandrel.

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

1. In a machine for the purposes described, the combination, with a mandrel having a socket to receive and hold the free end of the wire, a conical former slidably mounted on the mandrel, with its apex coöperating with the socketed end of the mandrel, said socketed end having a beveled shoulder adapted to throw out the free end of the wire from the socket, when the former with the coil therein is slid back, as set forth.

2. In a machine as described, a mandrel having a wire-end-receiving aperture, and an elongated socket, communicating with said aperture, the inner end of the socket having

5 a beveled shoulder; of a single-body-forming head, slidably mounted on the mandrel, and adapted when slid back to bring the free end of the wire against the beveled shoulder, for the purposes specified.

10 3. The combination with the mandrel, having a longitudinal socket in its front end, a longitudinal recess merging with the socket, and a transverse shoulder 5^v; of the former-block D, slidable on the mandrel, said block having a forwardly-extending member adapted to extend beyond the shoulder 5^v, when in an operative position, and having a longitudinally-extending straight edge, substantially as shown and for the purposes described.

15 4. In a machine as described, the combination with the mandrel, having means for holding the free end of the wire; of a single-body conical former-block, having a projecting end to engage the wire, said block being slidably

held on the mandrel, and detent devices for holding the block locked to its forward or operative position, as set forth.

5. The hereinbefore - described improvements in spring-making machines, comprising in combination, a base, a reel, mounted at one end, a table at the other end, a cutter mechanism including a wire-guide on that end of the table adjacent the reel, a coiling-head on the other end of the table, said head including a mandrel, having means for gripping the end of the wire, and a single-body former-block, slidably mounted on the mandrel, all being arranged substantially as shown and for the purposes described.

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Witnesses:

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