

March 6, 1956

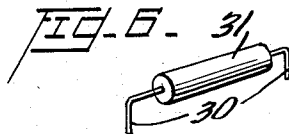
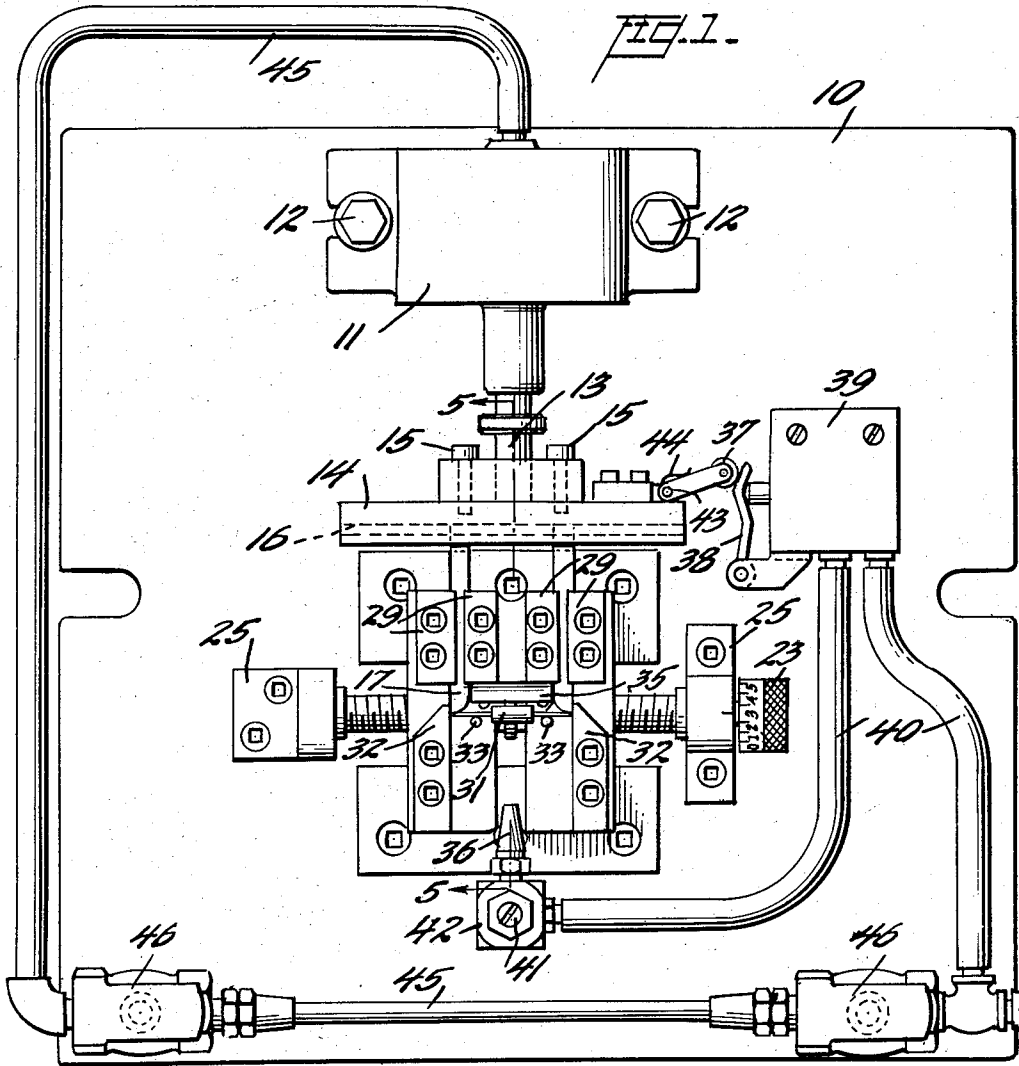
A. F. PERRY ET AL

2,737,211

CUTOFF AND FORMING MACHINE FOR RESISTORS

Filed Sept. 12, 1951

3 Sheets-Sheet 1



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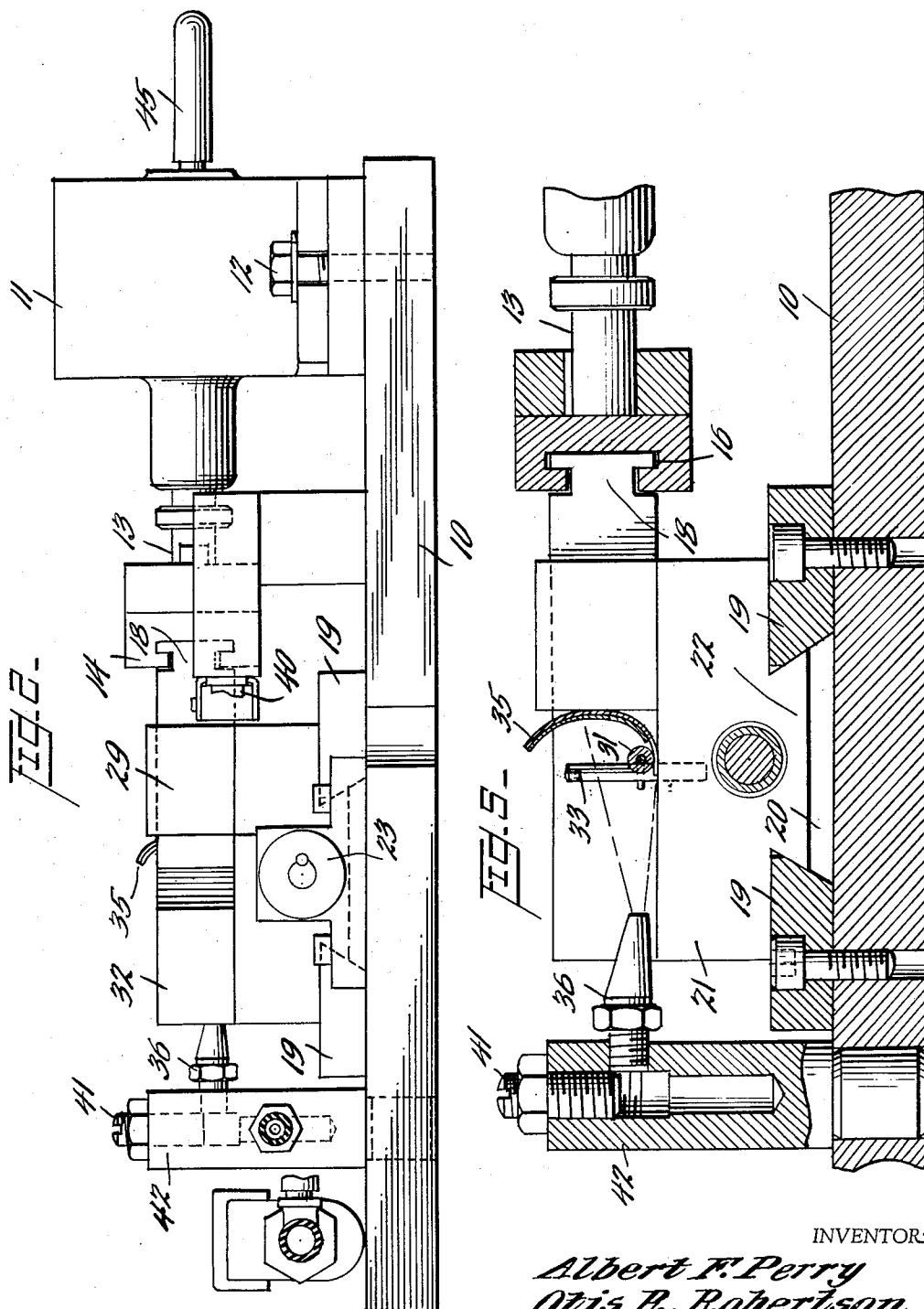
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3 Sheets-Sheet 2



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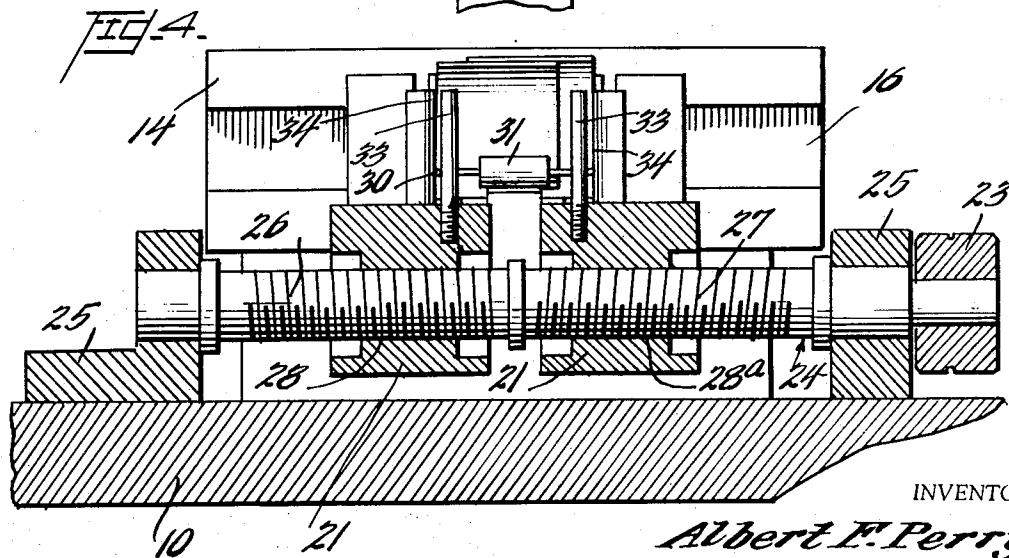
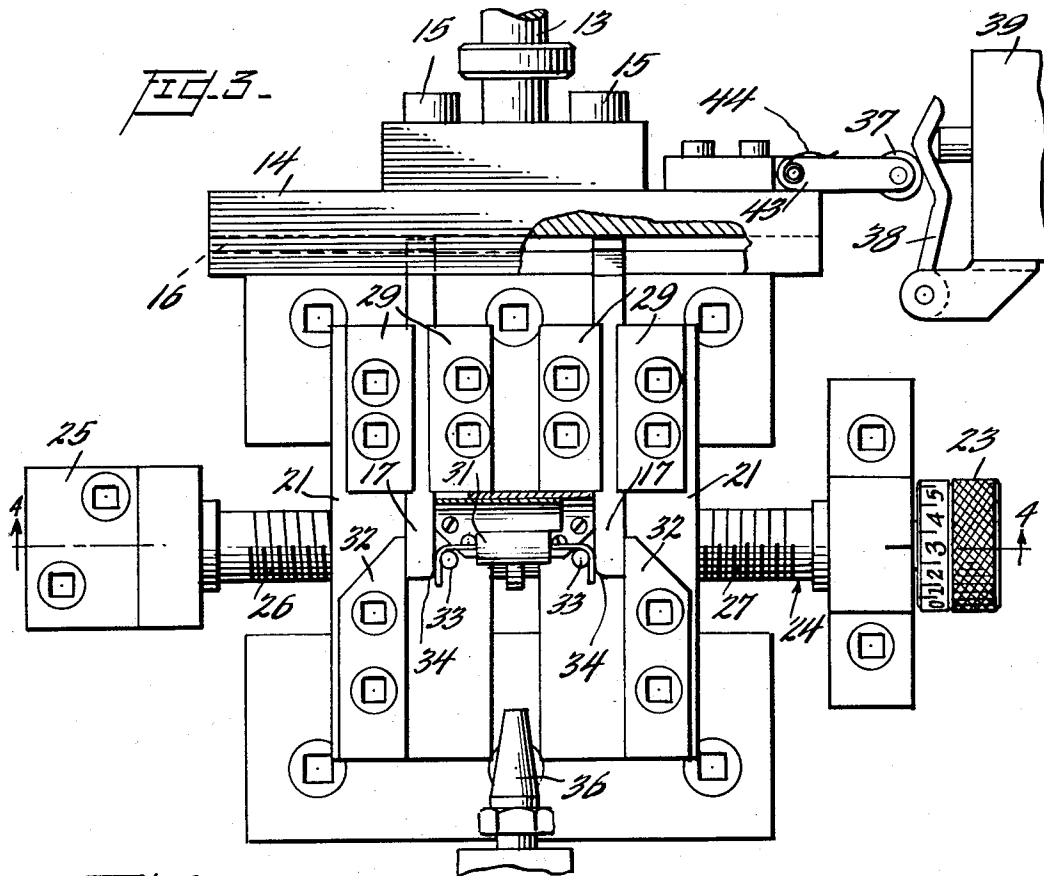
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CUTOFF AND FORMING MACHINE FOR RESISTORS

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Application September 12, 1951, Serial No. 246,258

5 Claims. (Cl. 140—71)

This invention relates generally to improvements in apparatus for cutting and bending materials to predetermined sizes and shapes, and more particularly to an apparatus for trimming and shaping the leads of resistors and capacitors.

An object of this invention is to provide a semi-automatic machine for trimming and shaping the wire leads to predetermined sizes and forms.

Another object of this invention is to provide means whereby the predetermined length of the leads can be rapidly and accurately changed by a single adjustment in the machine.

These and other objects of the invention will become more apparent by reference to the following description and the accompanying drawings illustrating a preferred embodiment thereof, wherein:

Fig. 1 is a top plan view of the apparatus for trimming and shaping leads;

Fig. 2 is a side elevational view of the apparatus;

Fig. 3 is an enlarged fragmentary top plan view of the cutting and forming means;

Fig. 4 is a vertical section taken along line 4—4 of Fig. 3;

Fig. 5 is a vertical section taken along line 5—5 of Fig. 1; and

Fig. 6 is a perspective view of a resistor cut and formed by the machine.

Referring to the drawings, the apparatus comprises a base 10 upon which is mounted an air cylinder 11. This cylinder is secured to the base by threaded bolts 12 and operates a reciprocating ram 13 whose direction of travel is automatically reversed at the end of each downward stroke. A head 14 secured by cap screws 15 to the lower end of the reciprocating ram 13 is provided with a transversely disposed T-slot 16 (Figs. 1, 3 and 5) in which a pair of movable knives 17 are slidably mounted. The knives 17 are retained in the T-slot 16 by their complementary T-shaped projections 18 as shown in Fig. 5 and are independently and freely slidable therein. This arrangement facilitates the lateral spacing adjustment of the movable knives 17 in a single movement.

Way members 19 are secured to the base 10 in parallel relationship so that their opposed beveled edges form a transversely disposed dove-tail way 20, as is shown in Fig. 5. Each of a pair of adjustable blocks 21 (Fig. 3) is provided with a dovetail 22 which cooperates with the way 20 to allow transverse movement of the said adjustable blocks 21. Movement of the blocks is accomplished by turning a calibrated knob 23 affixed to one end of an adjusting screw 24 rotatably mounted in bearing brackets 25. The left-hand portion of the adjusting screw 24 is provided with right-handed threads 26 while the other half is provided with left-handed threads 27. Cooperating threaded apertures 28 and 28a are formed in the blocks 21 for engagement with the adjusting screw 24 (Fig. 4) and rotation of this screw causes simultaneous

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and opposed movement of the adjustable blocks in the way 20.

Flanged guide members 29 mounted on the adjustable blocks 21 (Fig. 3) form guideways for the reciprocating knives 17. These guideways prevent transverse movement of the knives relative to their respective adjustable blocks 21 and, therefore, a spacing adjustment of the blocks 21 produces an equal adjustment in the spaced relationship of the slidably mounted knives 17. The spacing of these knives, which determines the length of leads 30 to be cut on a resistor 31 (Fig. 6), is accomplished by rotating the knob 23 secured to the adjusting screw 24, said knob being calibrated to give an accurate reading of the spacing between the cutting edges of the knives 17.

Secured to the lower end of the adjustable blocks 21 are stationary knives 32 (Fig. 3). The cutting edges of these knives are accurately aligned for cooperation with the cutting edges of the movable knives 17.

A pair of projecting mandrels 33 is secured in the blocks 21 in proximity to rounded end portions 34 on the knives 17. After the cutting operation the trimmed leads 30 are bent about the mandrels 33 by the rounded portions 34 of the descending knives 17, as shown in Fig. 3.

An expansible deflector 35 (Figs. 2 and 3), comprising two overlapping sections of curved sheet metal, is mounted on the adjustable blocks 21. The overlapping feature permits relative movement of the blocks without destroying the continuity of the deflector. Upon completion of the cutting and forming operation the formed resistor 31 is ejected by an air blast from a nozzle 36. The air blast mechanism is actuated only on the return stroke of the ram 13 by a cam follower 37 hingedly mounted on the head 14 (Fig. 3). The follower momentarily depresses a lever 38 which causes a valve 39 in compressed air line 40 to emit a blast of compressed air through the nozzle 36. The force of the air blast is controlled by a set screw 41 in a nozzle supporting block 42. On the forward or work stroke the valve 39 remains inoperative, since a hinge 43 allows the cam follower 37 to move counterclockwise away from the lever 38 and hence no force is exerted upon it by the follower. The follower is normally urged to its extended position shown in Fig. 3 by a coiled spring 44.

An air line 45 connects a compressed air supply (not shown) with the air cylinder 11, and dual valves 46 in this line control the operation of the air cylinder. Since the valves 46 are connected in series, they must be manually operated simultaneously to allow passage of the compressed air to the air cylinder 11, thereby requiring as a safety measure the use of both hands of a machine operator.

In the operation of the apparatus described hereinabove, a resistor 31 or a capacitor (not shown) is placed behind the projecting mandrels or pins 33 in the adjustable blocks 21 as shown in Figs. 1 and 3. The lead length is predetermined by adjusting the spacing between the knives 17 by turning the calibrated knob 23 to the desired setting. The cutting and forming operation is then initiated by simultaneously depressing the dual valves 46 in the air line 45. The compressed air forces the ram 13 and attached head 14 forward, causing the movable knives 17 to cooperate with the stationary knives 32 to sever any excess material from the leads. The ends of the leads 30 are then bent at right angles about the mandrels or pins 33 by the rounded edges 34 of the descending knives 17.

With the cutting and forming operations completed, the ram automatically reverses its direction of travel. On the return stroke the cam follower 37 depresses the

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lever 38 actuating the air blast valve 39. A blast of air from the nozzle 36 ejects the formed resistor 31, which is directed from the machine by the deflector 35. Upon completion of the cycle, the movable knives are again in their original starting position for another cutting and forming operation on a resistor 31.

It will be understood that the apparatus herein described is merely illustrative and that various applications can be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A machine for cutting materials to predetermined lengths and forming them comprising a base, a ram, means secured to the base for actuating the ram, a head operated by the ram, a pair of movable cutting and forming members slidably mounted in said head for spaced lateral adjustment, a pair of blocks adjustably secured to the base, guide members attached to said blocks for retaining said cutting and forming members in vertical sliding engagement with said blocks, a pair of stationary knives mounted on said blocks for cooperation with said movable cutting and forming members, stationary forming means on said blocks for cooperating with said cutting and forming members, and screw means secured to the base for actuating said blocks to adjust simultaneously the spaced relationship of said members and knives.

2. A machine for cutting and bending material to predetermined configurations comprising a base, a ram, means secured to the base for actuating the ram, a head secured to the ram, a pair of movable dies slidably mounted in said head, a pair of blocks adjustably secured to the base, guide members attached to said blocks for retaining said movable dies in vertical sliding engagement with said blocks, a pair of stationary dies mounted on said blocks for cooperation with said movable dies to sever said material, means mounted on each adjustable block to engage the material while the said dies form the cut material, a screw secured to the base threadably engaging each of said blocks, and means for operating said screw for actuating said blocks to adjust the spaced relationship of said movable dies.

3. A machine for cutting and bending a material to a predetermined length and configuration comprising a base, a reciprocating ram, means secured to the base for reciprocating the ram, a head secured to the ram, a pair of dies slidably mounted for lateral adjustment in said head and reciprocable therewith, a pair of blocks adjustably secured to the base, guide members attached to said blocks for retaining said movable dies in vertical sliding engagement with said blocks, separate stationary means mounted on said blocks for cooperation with said movable dies to cut and form the material, screw means secured to the base simultaneously actuating said blocks to adjust the spaced relationship of said movable dies, and means actuated by the moving ram for ejecting the

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material from said machine upon completion of the cutting and forming operation.

4. A machine for cutting and bending an article to a predetermined length and form comprising a base, a reciprocable ram, a head secured to the ram, a pair of movable dies slidably mounted in said head for spaced lateral adjustment, a pair of blocks adjustably secured to the base, guide members attached to said blocks for retaining said movable dies in vertical sliding engagement with said blocks, separate stationary means mounted on said blocks for cooperation with said movable dies for cutting and forming the article, screw means secured to the base for simultaneously actuating said blocks to adjust the spaced relationship of said movable dies and stationary means, means secured to the base for operating the ram to actuate the movable dies in cooperation with the stationary means to cut and form the article, means for delivering an air blast to eject the formed article from said machine, and means actuated by the reciprocating ram for controlling said blast.

5. In an apparatus for cutting and forming the leads of electrical articles, a base, a pair of blocks adjustably secured to the base, cutting and forming members reciprocable in said blocks, stationary means secured to said blocks for cooperation with said reciprocating cutting and forming members to cut and form the leads on an electrical article, screw means secured to the base for simultaneously moving the blocks relative to each other to vary the length of and the forming of said leads, means secured to the base for reciprocating the said cutting and forming members to cut and form the leads, means for ejecting the finished article, means for rendering the ejecting means ineffective during the forward stroke of the reciprocation of the cutting and forming members when the article is being cut and formed, and means for rendering the ejecting means effective on the return stroke of the cutting and forming members.

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