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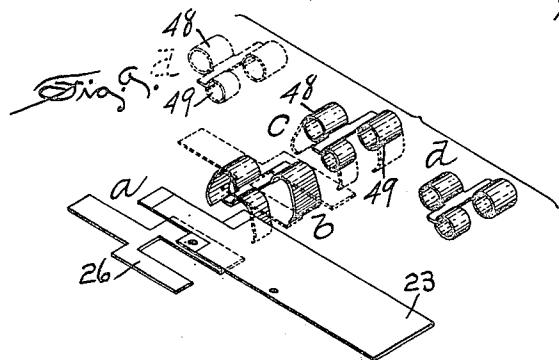
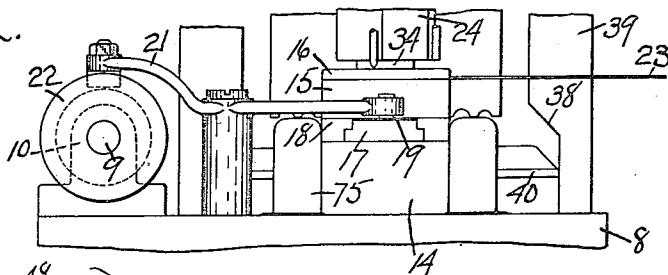
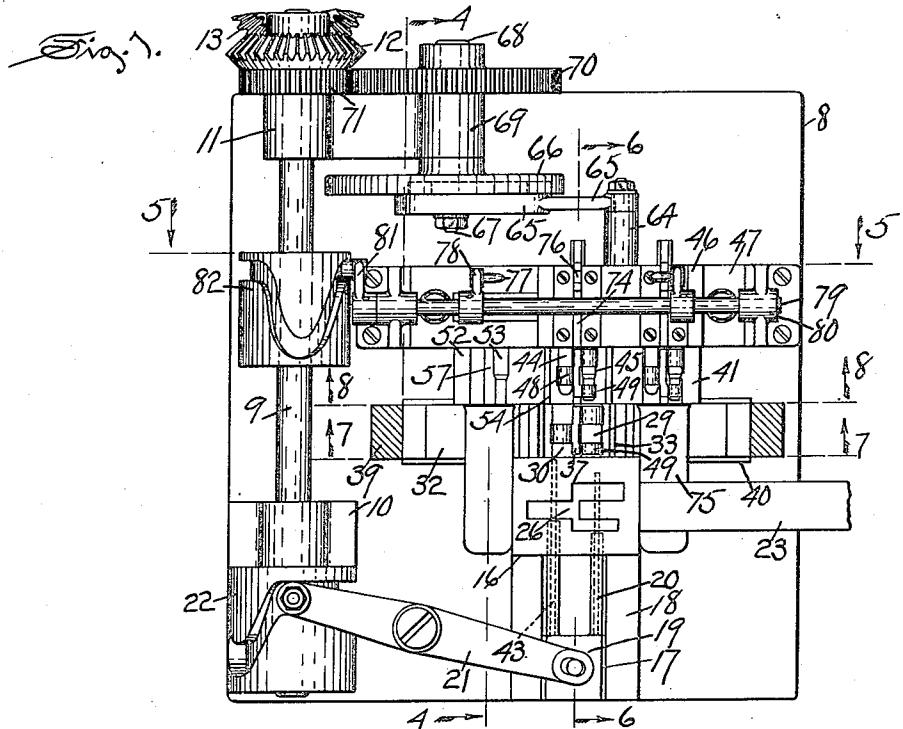
C. F. SHERMAN

2,266,997

DIEING MACHINE

Filed July 6, 1940

3 Sheets-Sheet 1



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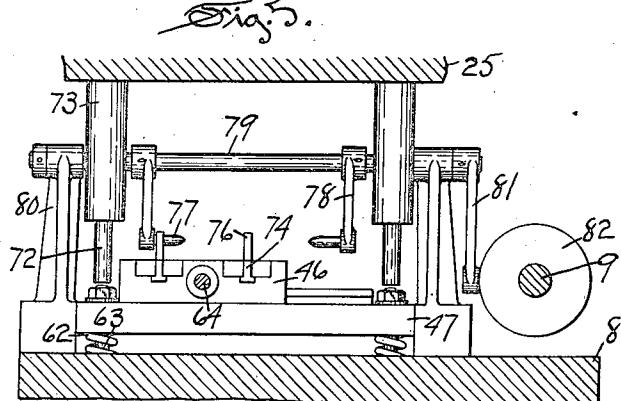
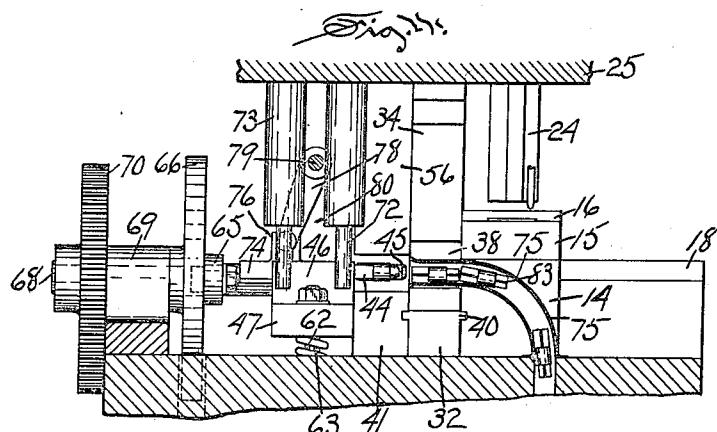
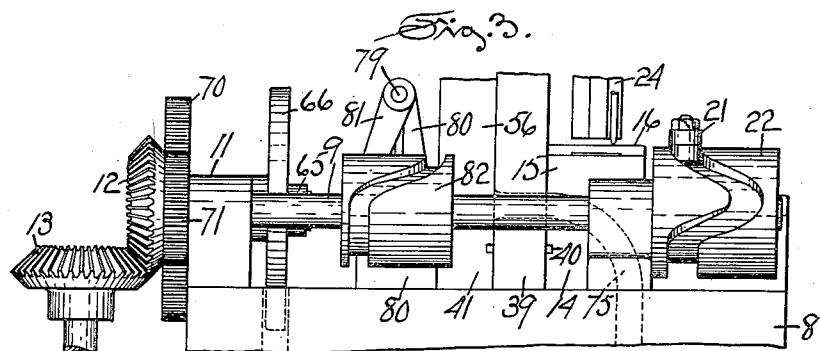
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2,266,997

DIEING MACHINE

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3 Sheets-Sheet 2



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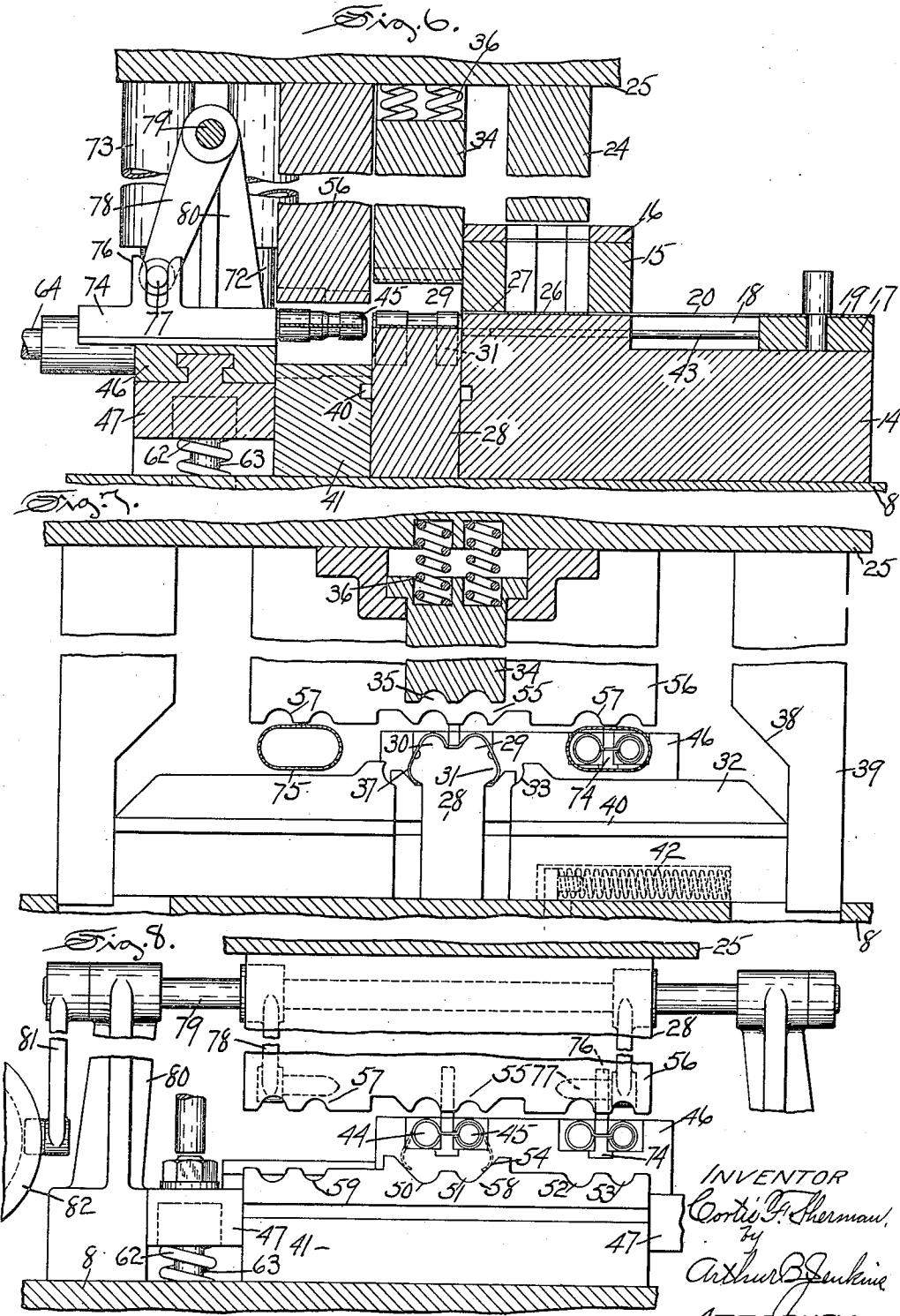
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DIEING MACHINE

Filed July 6, 1940

3 Sheets-Sheet 3



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2,266,997

DIEING MACHINE

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Application July 6, 1940, Serial No. 344,246

28 Claims. (Cl. 59—6)

My invention relates to dieing machines more especially equipped for producing links for machine gun belts, and an object of my invention, among others, is a machine of this type for rapidly producing such links in an efficient and economical manner and which utilizes a minimum amount of stock, thereby effecting a saving in this respect.

One form of a machine embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a die holder and parts mounted thereon.

Figure 2 is an end view of the same and including a portion of the punches.

Figure 3 is a side view looking from the left in Fig. 1.

Figure 4 is a view in section on a plane denoted by the broken line 4—4 of Fig. 1.

Figure 5 is a view in section on a plane denoted by the broken line 5—5 of Fig. 1.

Figure 6 is a view on enlarged scale in section on a plane denoted by the broken line 6—6 of Fig. 1.

Figure 7 is a similar view on a plane denoted by the broken line 7—7 of Fig. 1.

Figure 8 is another similar view in section on a plane denoted by the broken line 8—8 of Fig. 1.

Figure 9 is a perspective view illustrating the progressive movements of the blanks during formation by the punches and dies, the latter being omitted.

In the accompanying drawings the numeral 8 denotes the die holder of my improved machine which holder it will be understood is mounted on a bolster or bed in a manner common to machines of this type. A cam shaft 9 is suitably mounted in bearings 10—11 upon the die holder 8 and is driven by means of a gear 12 meshed with a driving gear 13, the latter being driven from any suitable source of power as a connection with the crank shaft in the lower part of the machine.

A guide block 14 is supported upon the die holder 8 and a blanking die 15 is mounted upon the guide block as shown in Fig. 3 of the drawings. A stripper plate 16 is secured atop the die 15 in a manner common to structures of this type. A feed slide 17 is mounted for reciprocating sliding movement upon the guide block as between gibs 18 and a feed finger plate 19 is secured to the feed slide and has feed fingers 20 spaced apart and projecting from the inner edge of said feed finger plate. The feed slide is operated as by 55

means of a feed lever 21 pivotally mounted upon and supported by the die holder 8, one end of the lever being pivotally attached to the feed slide and the opposite end of said lever being engaged with a feed cam 22 secured to the cam shaft, as shown in Fig. 1 of the drawings.

A blank strip 23 is fed in any suitable manner common to machines of this type over the top of the blanking die 15, and a punch 24 operates with 10 the die in a manner common to machines of this type the punch being secured to a punch holder 25 mounted for vertical reciprocating movement in a manner not herein shown but which will be readily understood by those skilled in the art. 15 The punch operates to cut a blank 26 from the strip 23 and in the embodiment shown herein forces it through the die 16 into a guide groove 27 in the guide block 14 and into the path of the feed fingers 20 by means of which the blanks 26 20 are passed along the groove underneath the die 15 to a position to be hereinafter described.

A forming die 28 is mounted upon the die holder 8, this die having a pair of rounded forms 29—30 spaced apart on its top, these forms merging into side forms 31 on the sides of the top of the die. Sliding formers 32 are mounted for sliding movement upon the die holder 8, these formers being spring pressed apart as shown in Fig. 7. They have recesses 33 to engage opposite sides of 30 the blank upon the die 28. A plunger 34 supported on the punch holder 25 has recesses cooperating with the rounded forms 29—30, said plunger and sliding formers cooperating to impart a preliminary form to the blanks, as shown 35 in Fig. 7. The sliding formers 32 and the plunger 34 are so relatively timed in their movements that the recesses 35 in the plunger engage the blank upon the forms 29—30 before the recesses 33 on the sliding formers 32 engage the blank 40 upon the side forms 31. The plunger 34 is yieldingly held by means of springs 36 which act during the preliminary movement of the plunger to press the sides 31 of the blanks downwardly into a position opposite the recesses 33, and in the 45 final movement of the plunger 34 the upper end of the plunger strikes the under side of the punch holder 25 and the blanks are then positively seated upon the forming die 28. The sliding formers 32 are operated by former actuating cams 50 38 upon former actuators 39 secured to and projecting from the under side of the punch holder 25 as shown in Fig. 7, the cams 38 being positioned to impart movement to the formers 32 after the sides 31 of the blanks have been bent 55 downwardly to clear the formers as hereinbefore

cribed. The formers are provided on opposite sides with guide ribs 40 to engage grooves in end of the guide block 14 and in a former die to be hereinafter described. The sliding formers 32 are spring pressed apart as by means of springs 42 located in recesses in the bottoms of formers, as shown in dotted lines in Fig. 7. After the blanks are stamped to shape and forced through the blanking die 15 the feed fingers 20 are moved forward by the operation of lever 21 on to the forming die 28 where preliminary form is given to them in the manner hereinbefore described. Projecting from feed slide 17 underneath the feed fingers 20 is extending through a raised part of the guide block 14 are pusher rods 43 which contact with edges of the partially formed blanks on the forming die 28 and push said blanks from said forming die on to forming fingers 44-45 projecting from a finger supporting slide 46 mounted upon a slide support 47. The forming fingers are arranged in pairs and there are two sets of pairs projecting from the slide 46. The finger 44 is arranged to receive a single knuckle 48 on one side of the link and the finger 45 is arranged to receive double knuckles 49 on the opposite side of the link, it being understood that when these links are assembled to form the cartridges form the pintles extending through the links 48-49.

The former die 41 has a pair of preliminary forming cavities 50-51 preferably arranged immediately the ends of the die and on opposite sides equally spaced therefrom a pair of final forming cavities comprising recesses 52-53. The pairs of cavities last mentioned are of the same general shape and perform the same functions. A guide 54 is formed on opposite sides of the pair of cavities 50-51 constituting the forming section for the purpose of guiding the blanks down into said cavities and imparting a curved form thereto to curl them around the fingers 44-45. This gives a second preliminary shape to each of the blanks by the action of a preliminary forming section 55 on a punch 56 supported and actuated by the same punch holder 25 as is the punch or plunger 34. The shape of each of the blanks is now nearly completed and requires only a final setting to complete the form. This is effected by finishing sections 57 on the punch 56, said finishing sections being located on opposite sides of the forming section 55 and operating alternately on blanks supported by the two sets of forming fingers 44-45, the finished forming being effected by one section 57 of the punch on one of the sets 44-45 of the forming fingers while the next preceding form is being given on the other side on said forming fingers. That is, in a single downward movement of the punch holder 25 a blank 26 cut by the punch 24 from the strip 23, a blank partially formed to shape by the punch 34 in the forming die 28, another preliminary shape effected by action of the forming section 55 on the punch 56 on one of the pairs of fingers 44 and 45 and a final and setting form producing the finished blank 83 (see Fig. 4) is given by one of the finishing sections 57 of the punch 56 on the other pair of said forming fingers 44-45, it being noted that when this finishing operation is performed on one of the sets of forming fingers 44-45 the next preceding step is taking place on the other of said sets. The former die 41 has a preliminary forming section 55 cooperating with the forming section 55 of

the punch 56 and two finishing die sections 59 comprising the recesses 52-53 located on opposite sides of the section 58 and to cooperate with the sections 57 of the punch 56.

To effect this alternate operation upon the blanks upon the two sets of forming fingers 44-45 the latter are supported upon and project from a supporting slide 46 mounted upon a resiliently supported slide base 47 seated on springs 62 mounted on guide pins 63 for guiding the movements of the base 47, as shown in Fig. 6 of the drawings, said pins projecting upwardly from the die holder 8. Reciprocating sliding movement is imparted to the slide 46 by means of a stud 64 projecting from the side of the slide with a slide reciprocating rod 65 pivotally attached to said stud at one end and its opposite end bearing a roller located in a cam groove in a slide reciprocating cam 66, the rod having a slot through which a pin 67 from the cam 66 projects in a manner common to connections of this type. The cam 66 is secured to a shaft 68 mounted in a bearing 69 projecting upwardly from the die holder 8 and having a gear 70 meshing with a pinion 71 secured to the cam shaft 68, as shown in Fig. 1 of the drawings, the gears and pinions being timed to impart proper reciprocating movement to the slide, that is, to locate the forming fingers in their extreme positions for operation of the punches upon the blanks on the fingers when such punches descend for such operation.

The forming fingers with the blanks partially formed thereon are finally located in the depressions in the die 41 by means of plungers 72 extending from within sockets 73 projecting downwardly from the punch holder 25, as shown in Figs. 4 and 5 of the drawings. These plungers are spring seated within the sockets and as the punch holder moves down the ends of the plungers strike the upper surface of the slide supporting base 46 and push it downward against the upper side of the die holder 8 and against the tension of the springs 62, there being four of the plungers, two located in each end of the slide supporting base 46, the four springs against which the plungers are seated being strong enough to resist the tension of the two springs 62 and therefore sufficient to compress the latter. This permits continuation of downward movement of the punch 56 to finish its operation after the fingers with the blanks thereon are seated in the recesses in the die 41.

After the blanks are finally formed upon the fingers as hereinbefore described they are ejected from said fingers by means of ejectors 74 slidably mounted in the supporting slide 46 and operating against the blanks intermediate their ends to push them off from the pins and into chutes 75 along which they are moved by contact with the succeeding blanks to a point of discharge downwardly through the die holder 8, when this manner of discharge is employed as shown in Fig. 4 of the drawings. A forked finger 76 projects upwardly from each slide in position to receive between the branches ejector actuating pins 77 extending toward each other from the ends of ejector actuating arms 78 secured to and projecting downwardly from an ejector actuating shaft 79 mounted in bearings on the upper ends of standards 80 projecting upwardly from the die holder 8 at opposite ends of the slide base 47, as shown in Fig. 5 of the drawings. A rocking motion is imparted to the shaft by means of a shaft actuating arm 81 extending downwardly

from the shaft and having a roller at its free end engaged in a groove in an ejector operating cam 82 supported on the main shaft 9, as shown in Fig. 3 of the drawings, the cam being shaped to impart an ejecting movement to the ejectors immediately following the completion of the formation of the blanks. As shown in Fig. 5 the forked fingers 16 on the two ejectors are alternately engaged with an actuator pin 17 as the supporting slide 46 is moved from side to side.

From the foregoing description embodying a progressive explanation of the operation it will be seen on referring to Fig. 9 that the blanks 26 successively cut from the blank strip 23 are moved from the position *a* by operation of the feeding fingers 20 into the position *b* where they are given a preliminary form by means of the punch 34 acting in connection with the forming die 28. From the position *b* the partially formed blanks are moved by the pusher rods 43 into position *c* and on to a pair of forming fingers 44-45. In this position the forming punch 56 acting in connection with the die 41 imparts a further form to the blanks approximating the finished form. From position *c* the pins with the blanks thereon are moved to one of the positions *d* at one side of the position *c* where the final formation of the blanks takes place and from which they are ejected as hereinbefore described, it being noted that the operations at the two positions *d* take place alternately, that is, the succeeding blanks are moved alternately first from the position *c* to one position *d* and then to the other position *d*.

It will be noted that as shown in Figs. 4, 5 and 8 the plungers 72 in their raised positions are spaced from the slide support 47 so that downward movement of the punch 56 will encounter the blanks on the fingers 45 before downward movement of the slide support 47 begins. This will cause the opposite edges of the blank to contact the guides 54 and be certainly curled under the forming fingers before downward movement of such fingers begins.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. A link making dieing machine including dieing means for separating a blank from a strip of material and forcing the blank through the die, a feed member movable underneath the die to move blanks therefrom, a preliminary forming die onto which the blanks are moved by the feed members, means for partially forming the blank on said preliminary forming die, feeding means movably mounted underneath said feed members for removing the partially formed blank from said forming die, and means for completing the formation of said blank.

2. A link making dieing machine including dieing means for separating a blank from a strip of material passed in one direction across said die and forcing the blank through the die, feed fingers movable in a transverse direction underneath the die to move the blank in said transverse direction and laterally of the blank from underneath the die, a preliminary forming die onto which the blank is moved by said fingers,

means for partially forming the blank on said preliminary forming die, feeding means movably mounted underneath said feed fingers for removing the partially formed blank from said forming die, and means for completing the formation of the blank.

3. A link making dieing machine including dieing means to shape a link blank with a pair of separated knuckle portions at one end and a single knuckle portion at the opposite end and of a width substantially that of the space between the double knuckle portions and to force the blank through the die, feed fingers movable underneath the die to move the blank therefrom, a preliminary forming die onto which the blank is moved by said fingers, means for partially forming the blank on said preliminary forming die, means for removing the partially formed blank from said forming die, and means for completing the formation of the blank.

4. A link making dieing machine including dieing means for separating a blank from a strip of material passed across said die and forcing the blank through the die, feed fingers movable underneath the die to move the blank therefrom, a preliminary forming die having curved forming surfaces on its top and curved forming surfaces on its side, means for forming the blank around said curved forming surfaces, means for removing the partially formed blank from said forming die, and means for completing the formation of the blank.

5. A link making dieing machine including dieing means for separating a blank from a strip of material and forcing the blank through the die, feed fingers movable underneath the die to move the blank therefrom, a preliminary forming die onto which the blank is moved by said fingers, said die having curved forming surfaces on its upper end and side forming surfaces on opposite sides thereof, means for forming the blank around the surfaces on the upper end of the die, means for forming the blank around the side curved surfaces, means for removing the partially formed blank from said forming die, and means for completing the formation of said blank.

6. A link making dieing machine including dieing means for separating a blank from a strip of material and forcing the blank through the die, feed fingers movable underneath the die to move the blank therefrom, a preliminary forming die onto which the blank is moved by said fingers, said forming die having curved forming surfaces on opposite sides near the upper end thereof and recesses underneath said curved forming surfaces to receive opposite edges of the blank, means for forcing a blank down onto said die, means for forming the blank around said curved forming surfaces and for crowding its edges into said recesses, means for removing the partially formed blank from said die, and means for completing the formation of the blank.

7. A link making dieing machine including dieing means for separating a blank from a strip of material and forcing the blank through the die, feed fingers movable underneath the die to move the blank therefrom, a preliminary forming die onto which the blank is moved by said fingers, said die having curved forming surfaces on its upper end and curved forming surfaces on opposite sides adjacent the end forming surfaces, guide recesses underneath the side forming surfaces, a punch to force the blank down into said recesses and shape the blank on said end form-

ing surfaces, sliding formers movable into contact with the blank on said side forming surfaces, means for removing the blank from said die, and means for completing the formation of the blank.

8. A link making dieing machine including a forming die having curved forming surfaces on its upper end and side forming surfaces on opposite sides adjacent the end forming surfaces, said die having recesses adjacent the side forming surfaces, a punch to force the blank onto the die and impart form thereto on said end forming surfaces and to force opposite edges of the blank into said recesses to partially curve the same around the side forming surfaces, and sliding formers movable into engagement with opposite sides of the blank on said side forming surfaces.

9. A link making dieing machine including a forming die having end forming surfaces on its upper end and side forming surfaces adjacent the end forming surfaces and on opposite sides of the die, a punch holder, a punch secured to said holder and movable into contact with said end forming surfaces to shape a blank thereon, sliding formers to engage the blank and form it on said side forming surfaces, and former actuating cams supported on said punch holder and engageable with said sliding formers to move the latter into engagement with the blank on said side forming surfaces.

10. A link making dieing machine including dieing means for separating a flat blank from a strip of material moved across the die and forcing the blank through the die, a reciprocatingly mounted feed slide, a feed finger extending from said slide underneath said die to engage the edge of the flat blank and remove it from underneath said die, a preliminary forming die onto which the blank is moved by said fingers, means for partially forming a blank on said die, and a pusher rod projecting from said feed slide underneath said finger and beyond the end thereof to engage a partially formed blank at a formed portion thereof and remove it from said preliminary forming die.

11. A link making dieing machine including dieing means for separating a blank from a strip of material moved across said die and forcing the blank through the die, means for moving said blank from underneath said die, a preliminary forming die onto which said blank is moved, said die having formers on its upper end and recesses below said formers, a punch holder movable to and from said die, and a punch spring seated on said punch holder and movable to engage a blank and force its opposite edges into said recesses by spring resistance and then to form the blank on said formers by contact with said punch holder.

12. A link making dieing machine including a pair of forming fingers to receive the knuckle portions of a blank, a die having a pair of recesses to cooperate with said fingers in the formation of the blank, a finger supporting member from which said fingers project, springs upon which said member is seated, a fixed member to receive said finger supporting member after compression of said springs, and a punch to engage a blank on said fingers to force the blank and fingers toward said recesses against the tension of said springs and into engagement with said fixed member to form the blank around said fingers in said recesses.

13. A link making dieing machine including a pair of forming fingers to receive the knuckle portions of a blank, a die having a plurality of

pairs of recesses to cooperate with said fingers in the formation of a blank, a finger supporting member from which said fingers project, said member being slidably mounted to locate said fingers over different pairs of said recesses, a slide base upon which said finger supporting member is mounted, a spring to support said base, means for imparting sliding movement to said finger supporting member, and a punch to engage a blank on said fingers to force the blank and fingers toward said recesses against the tension of said spring and into engagement with a fixed member to form the blank around the fingers in said recesses.

14. A link making dieing machine including a plurality of pairs of forming fingers each to receive the knuckle portions of blanks successively deposited thereon, a die having a pair of preliminary forming cavities and pairs of finishing forming recesses located on opposite sides of said cavities to cooperate with said fingers in the formation of said blanks thereon, a finger supporting slide from which said fingers project, means for imparting reciprocating sliding movement to said slide to locate said pairs of fingers each alternately over said preliminary forming cavities and then over a pair of finishing forming recesses, and means for imparting vertical movement to said slide to press the fingers and blanks thereon into said cavities and recesses.

15. A link making dieing machine including a pair of forming fingers to receive the knuckle portions of a blank deposited thereon, a die having a pair of recesses to cooperate with said fingers in the formation of a blank, a finger supporting member from which said fingers project, a spring comprising a support for said finger supporting member, a punch to engage a blank on said fingers and force it down into said recess against the tension of said spring, an ejector slidably mounted on said supporting member to engage the edge of a blank between said fingers, and means for operating said ejector.

16. A link making dieing machine including a preliminary forming die, means for preliminarily forming a blank on said die, a pair of forming fingers located opposite said preliminary forming die, means for moving the partially formed blank from said preliminary forming die onto said fingers, a finger support from which said fingers project, means for resiliently seating said finger support, a die having recesses to receive said fingers and a blank thereon, and a punch to engage said fingers and blank to force them into said recesses to form said blank, and means for operating said punch.

17. A link making dieing machine including a preliminary forming die, means for preliminarily forming a blank on said die, a plurality of pairs of forming fingers located opposite said preliminary forming die, means for moving a partially formed blank from said preliminary forming die onto said fingers, a slidably mounted finger support from which said pairs of fingers project, means for sliding said support to locate each pair of fingers alternately opposite said preliminary forming die, a die having a set of preliminary forming cavities and a pair of finishing recesses located on opposite sides of said forming cavities, said pairs of forming fingers being each located alternately over said preliminary forming cavities and then over said finishing recesses by the sliding movement of said finger support, a resiliently mounted base upon which said sliding support is located, and a punch vertically mov-

able to engage each pair of fingers to force them with blanks thereon into said cavities and recesses.

18. A link making dieing machine including a blanking die across which a strip of material is moved, means for cutting and forcing a blank from said strip through said die, a feed slide, a feed finger projecting from said slide underneath said die to force a blank therefrom, a preliminary forming die upon which said blank is moved by said finger, a punch to cooperate with and partially form a blank on said forming die, a plurality of pairs of forming fingers, a pusher rod secured to said feed slide and extending to engage a blank on said forming die and push it onto said forming fingers, a die having a set of preliminary forming cavities and a pair of finishing recesses located one pair on each side of said forming cavities, a slide from which said pairs of forming fingers extend to locate said pairs each alternately over said forming cavities and finishing recesses, means for operating said slide, a support upon which said slide is mounted, resilient means upon which said support is seated, and a punch having recesses to engage said fingers and blanks thereon to cooperate with said fingers and said die in the formation of the blanks thereon and therein.

19. A link making dieing machine including dieing means to shape a link blank with a pair of separated knuckle portions at one end, a single knuckle portion at the opposite end and a recess between said knuckle portions at opposite ends of the blank, movably mounted feed fingers for removing the blank from said dieing means, a preliminary forming die on to which said blank is moved by said fingers, said die having curved forming surfaces on its top, curved forming surfaces on its side and a recess between said top curved surfaces, a punch having a projection to form said recess in the blank, means for forming the blank around said curved forming surfaces, means for removing the partially formed blank from said die, and means for completing the formation of the blank.

20. A link making dieing machine including a dieing means for separating a blank from a strip of material moved across said die, means for removing said blank from said die, a preliminary forming die on to which said blank is moved, said die having formers on its upper end and recesses below said formers, a punch holder movable to and from said die, and a punch spring seated on said punch holder and movable to engage a blank and force its opposite edges into said recesses by spring resistance and then to form the blank on said formers by contact with said punch holder.

21. A link making dieing machine including a pair of forming fingers to receive the knuckle portions of a blank, a die having a pair of recesses to cooperate with said fingers in the formation of the blank, a movably mounted finger supporting member from which said fingers project, and a punch to engage a blank on said fingers to force the blank and fingers into said recesses to curl the ends of the blank around said forming fingers.

22. A link making dieing machine including a pair of forming fingers to receive opposite ends of a blank, a die having a plurality of pairs of recesses to cooperate with said fingers in the formation of the blank, a finger supporting member from which said fingers project, means for effecting relative movement between said die and finger supporting member to locate said fingers over

different pairs of recesses, and a punch to engage a blank on said fingers to force the blank and fingers toward and into said recesses to form the blank around the fingers in said recesses.

5 23. A link making dieing machine including a pair of forming fingers to receive the opposite ends of a blank, a die having a plurality of pairs of recesses to cooperate with said fingers in the formation of a blank, a finger supporting member from which said fingers project, a base upon which said finger supporting member is mounted, a spring to support said base, means for effecting relative movement between said die and said finger supporting member to locate said fingers over 10 different pairs of recesses, and a punch to engage a blank on the fingers to force the blank and fingers toward said recesses against the tension of said spring and into engagement with a fixed member to form the blank around the fingers in 15 said recesses.

20 24. A link making dieing machine including a plurality of pairs of forming fingers each to receive the end portions of blanks successively deposited thereon, a die having a pair of forming cavities to co-operate with said fingers in the formation of a blank thereon, a laterally and vertically movable finger supporting member from which said fingers project, means for imparting lateral movement to said member to alternately 25 locate each pair of fingers over said cavities, and a punch vertically movable to engage blanks upon said fingers and force them into said cavities to form the blank around the fingers in said cavities.

20 25. A link making dieing machine including a plurality of pairs of forming fingers each to receive opposite end portions of blanks successively deposited thereon, a die having a pair of preliminary forming cavities and a pair of finishing forming recesses located at one side of said cavities to co-operate with said fingers in the formation of blanks thereon, a finger supporting slide from which said fingers project, means for imparting reciprocating sliding movement to said slide to locate said pairs of fingers each alternately over said preliminary forming cavities and then over said finishing forming recesses, and means for imparting vertical movement to said slide to press the fingers and blanks thereon into said cavities and recesses.

50 26. A link making dieing machine including a preliminary forming die, means for preliminarily forming a blank on said die, a pair of forming fingers located opposite said preliminary forming die, means for moving the partially formed blank from said preliminary forming die on to said fingers, a finger support from which said fingers project, means for resiliently seating said finger support, a die having recesses to receive said fingers and blanks thereon, a punch to engage said fingers and blanks to force them into said recesses to form said blanks, means for operating said punch, and a fixed member to receive said finger support and fixedly seat it to finally form the blanks around said fingers.

60 27. A link making dieing machine including a preliminary forming die, means for preliminarily forming a blank on said die, a plurality of pairs of forming fingers located opposite said preliminary forming die, means for moving a partially formed blank from said preliminary forming die on to said fingers, a slidably mounted finger support from which said pairs of fingers project, means for sliding said support to locate each pair of fingers alternately opposite said preliminary forming die, a die having a set of forming cavities over

which said pairs of fingers are alternately placed, a base upon which said sliding support is located, and a punch vertically movable to engage each pair of fingers to force them with blanks thereon into said cavities.

28. A link making dieing machine including a preliminary forming die, means for preliminarily forming a blank on said die, a plurality of pairs of forming fingers located opposite said preliminary forming die, means for moving a partially formed blank from said preliminary forming die on to said fingers, a slidably mounted finger support from which said pairs of fingers project,

means for sliding said support to locate each pair of fingers alternately opposite said preliminary forming die, a die having a set of forming cavities, said pairs of forming fingers being each located alternately over said forming cavities, a resiliently mounted base upon which said sliding support is located, and a punch vertically movable to engage each pair of fingers to force them with blanks thereon into said cavities and then against a fixed support to finish the formation of said blank.

CORTIS F. SHERMAN.