

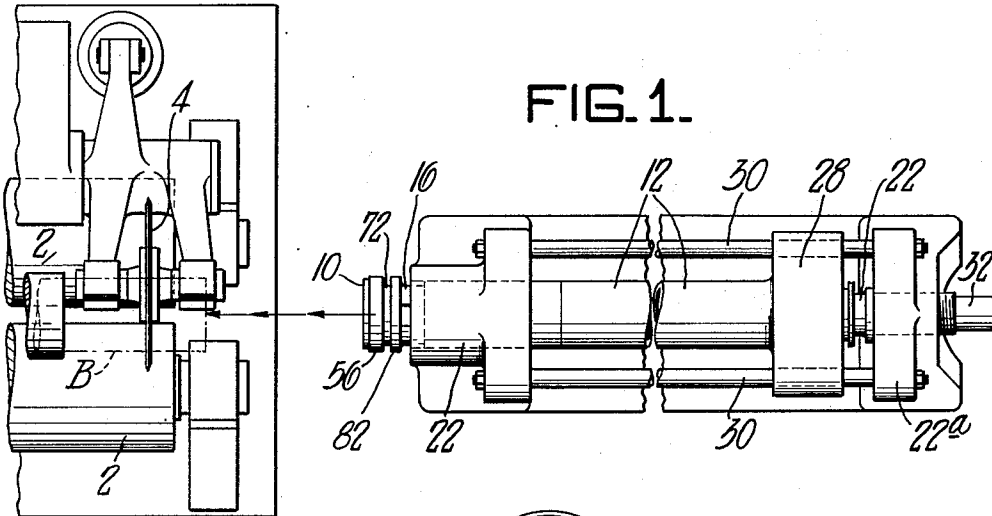
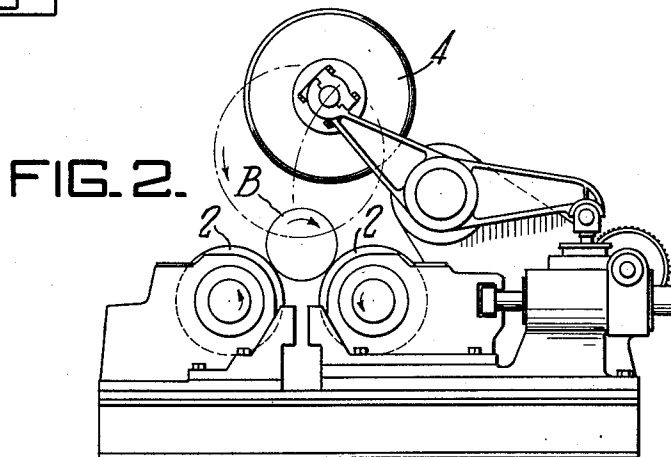
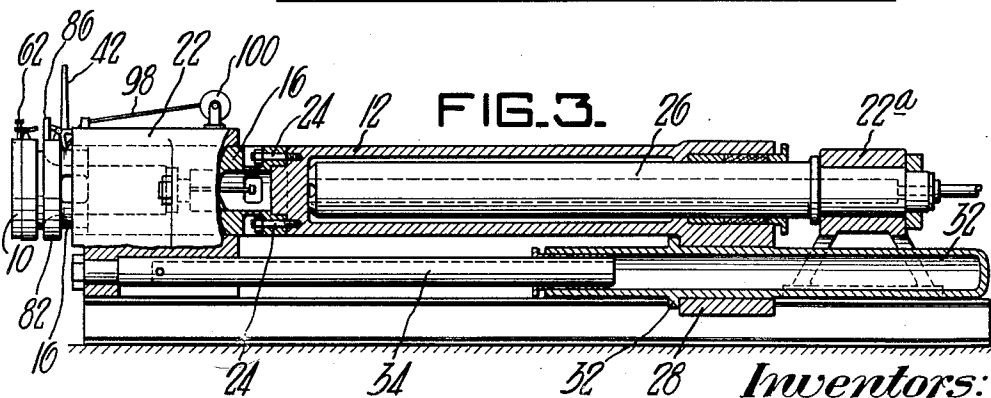
Sept. 5, 1950

R. C. BRITTON ET AL
MACHINE FOR STAMPING METAL BLANKS

2,521,628

Filed April 8, 1948

5 Sheets-Sheet 1



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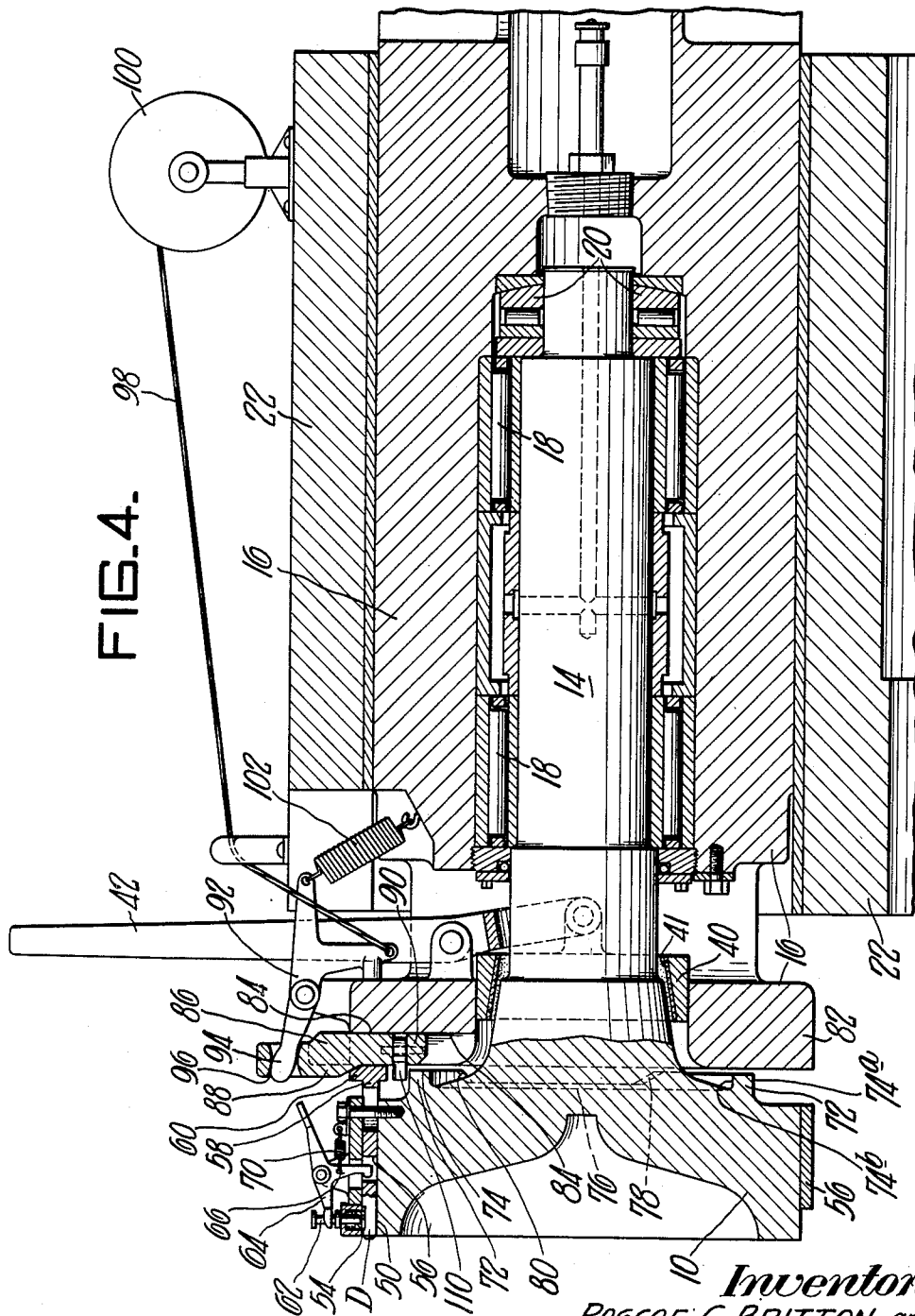
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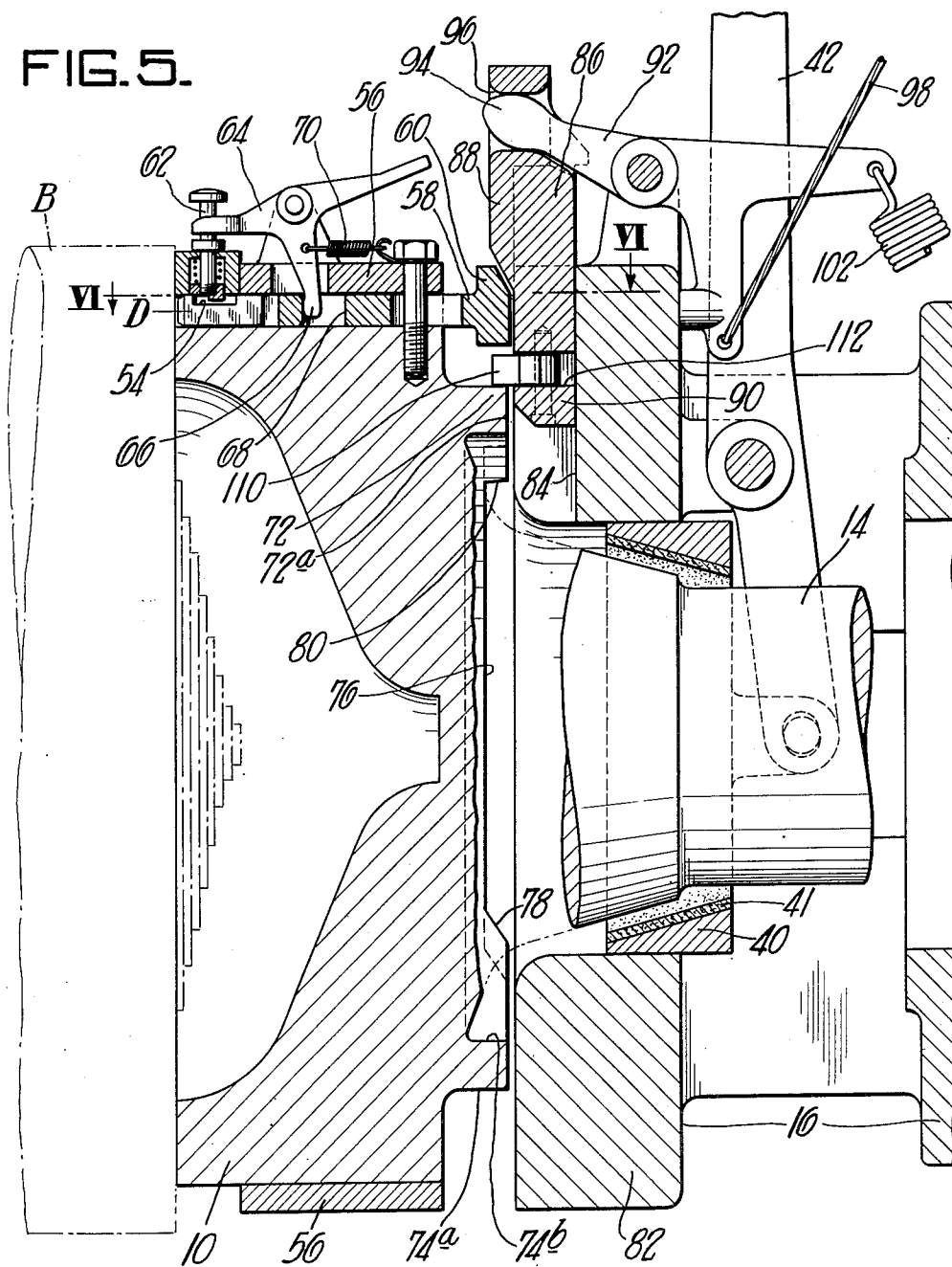
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FIG. 5.



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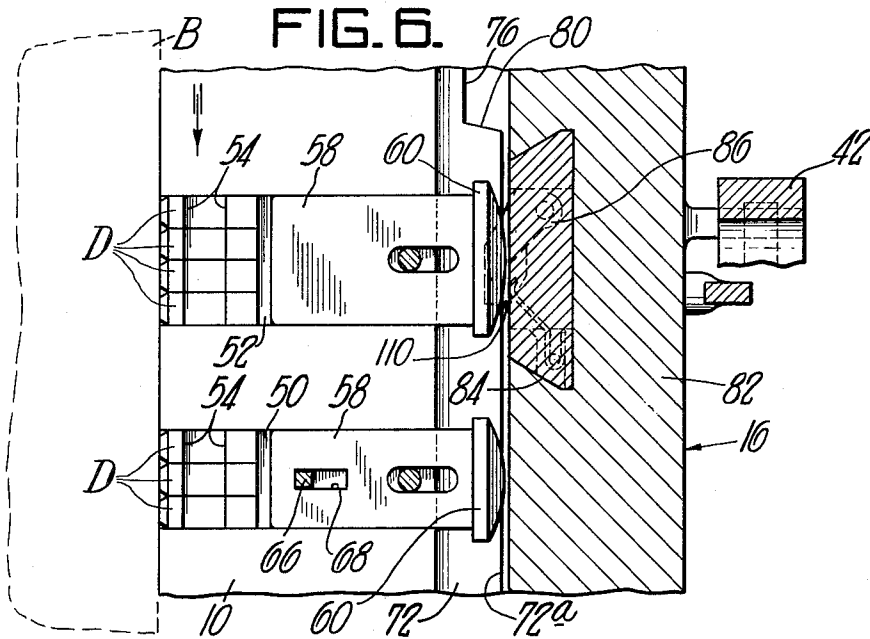
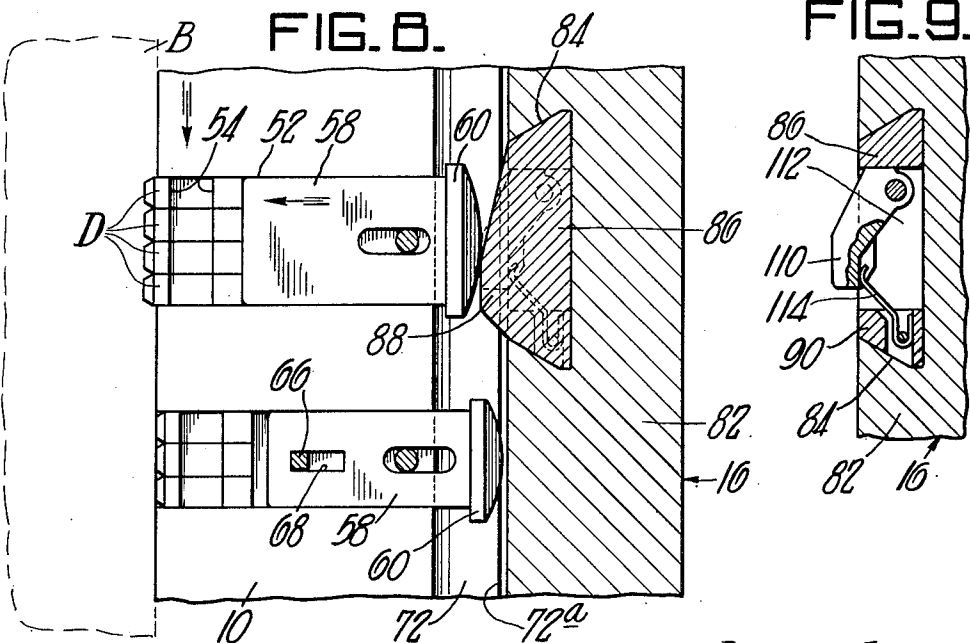
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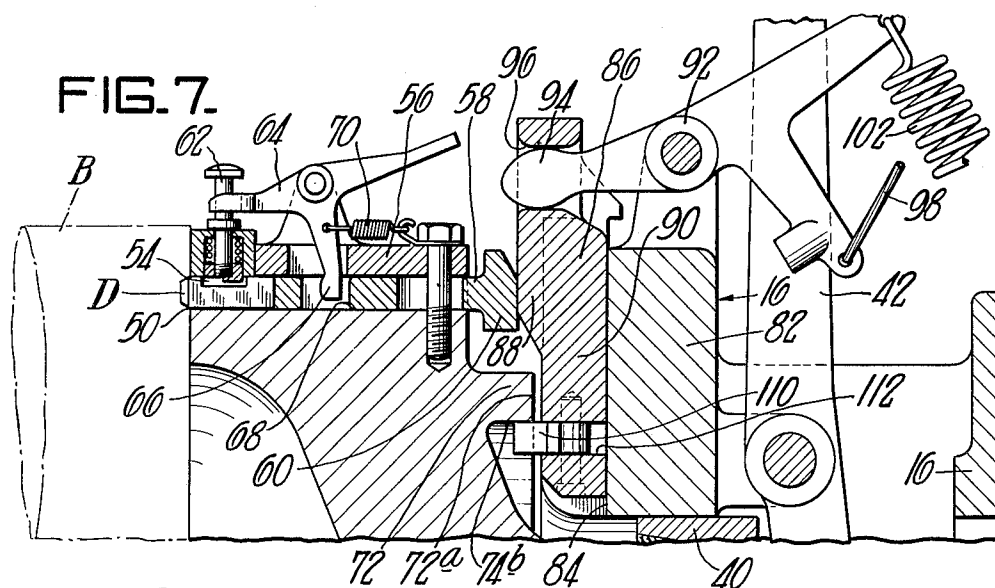
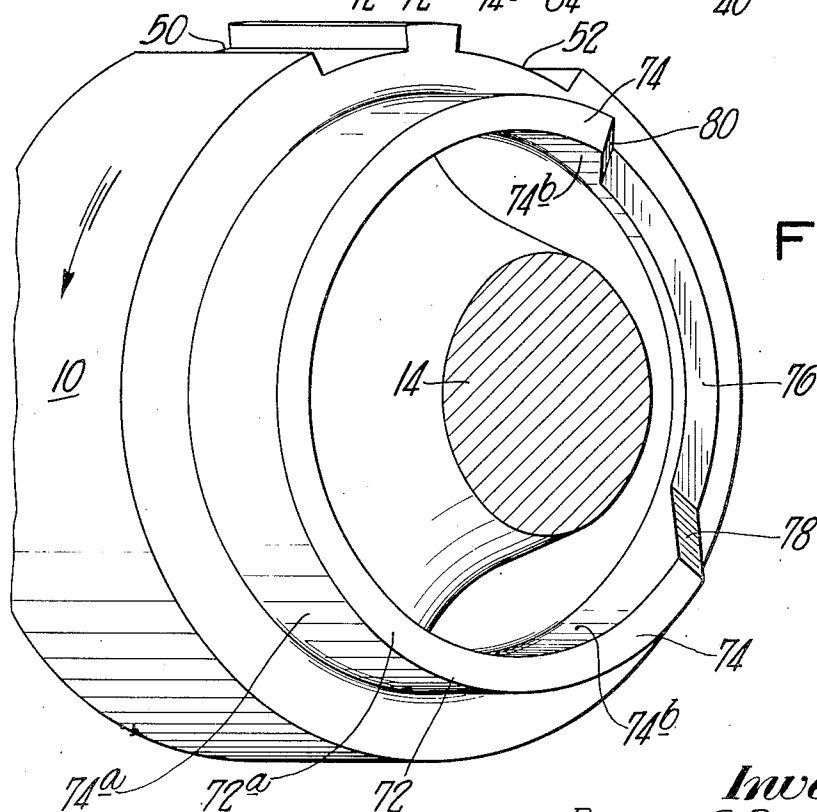
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UNITED STATES PATENT OFFICE

2,521,628

MACHINE FOR STAMPING METAL BLANKS

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10 Claims. (Cl. 101-4)

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This invention relates to a machine for stamping metal blanks and more particularly to a device for stamping metal blanks as they are being severed in a rotary cutting-off machine.

Blanks, such as are forged into steel wheels and the like, are commonly formed by rolling steel into cylindrical blooms and then severing blanks of the desired thickness from the bloom. The blooms while at or near conventional rolling temperatures are rotated by power-driven rolls and a disk type cutter pressed thereagainst at the desired point to sever the blanks. Due to various regulations and requirements, it is necessary to stamp blanks used for manufacturing railroad wheels with various indicia to identify the furnace in which the steel is made, the heat number, the ingot number and the relative position of the blank in the bloom. Up to the present time, such stamping has been done by hand using a sledge-type hammer which is unsatisfactory as it is difficult to hit the blank squarely due to its shape and the highly heated condition thereof.

It is accordingly an object of the present invention to provide a combined gaging and stamping machine for rotary blank cutting machines.

It is a further object to provide a machine for stamping hot metal blanks as they are being severed in a rotary cutting-off machine.

It is another object to provide a blank stamping machine which is simple in design and rugged and durable in operation.

It is still another object to provide an improved manner of stamping wheel blanks and the like.

The foregoing and further objects will become apparent from the following specification when read in conjunction with the attached drawings, wherein:

Fig. 1 is a plan of a billet severing and gaging machine;

Figure 2 is an end view thereof;

Figure 3 is a side elevation, partly in section, of the combined gage and stamping machine of our invention;

Figure 4 is a sectional elevation of the portion of Figure 3 shown in elevation;

Figure 5 is an enlarged sectional elevation of the marking head;

Figure 6 is an enlarged detail of the die anvils with the crosshead cam in a non-operating position as in Figure 5 and taken on line VI-VI thereof;

Figure 7 is a section of the marking head show-

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ing the crosshead and cam in position to strike the die anvils;

Figure 8 is an enlarged detail of the die anvils with the crosshead cam in operating position as in Figure 7;

Figure 9 is an enlarged section of the crosshead latch; and

Figure 10 is an isometric view of the annular flange member on the head for holding the crosshead in operating position during a partial rotation of the marking head.

Referring more particularly to the drawings, the numeral 2 designates suitable power-driven rolls for rotating a hot steel bloom B disposed thereon while a suitable disk cutter 4 is pressed thereagainst at the desired distance from one end of the bloom to sever the end of the bloom and form a blank for forging wheels and the like. After a blank is so severed, the bloom is moved forwardly by suitable means under the retracted disk so as to position the same for another cutting operation. The thickness of the blank is determined by a gage member against which the bloom is pushed.

The gage comprises a rotatable head 10 which is pushed toward the bloom by an hydraulic cylinder 12. The rotary head 10 has a rearwardly extending shaft 14 rotatably mounted in a housing 16 by suitable roller bearings 18 and thrust bearing 20. The housing 16 is reciprocally mounted in a forward standard 22 through which the hydraulic cylinder may be extended. The hydraulic cylinder 12 is secured to the housing 16 in axial alignment with the shaft 14 by suitable means such as stud bolts 24. Interiorly disposed in the cylinder 12 is a stationary hollow piston 26 mounted in a rearward standard 22a through which fluid under pressure may be admitted to operate the hydraulic cylinder and move the rotary head 10 to the desired gaging position. The cylinder 12 is reciprocally carried on a crosshead 28 and slide bars 30.

Disposed beneath the cylinder 12 is a reciprocable return cylinder 32 and piston 34. The piston 34 is attached to the underside of the standard 22 and the cylinder 32 has a shoulder 38 adapted to engage the crosshead 28 of the upper cylinder. Accordingly, admission of fluid under pressure to the cylinder 32 will move the upper cylinder 12 and rotary head 10 rearwardly away from the metal bloom. Thus after a cutting operation has started, the rotary head 10 may be retracted to permit the severed blank to be removed therefrom at the finish of the cutting operation and then returned to the proper gaging

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position by admitting fluid under pressure to the cylinder 12. A brake ring 40 with suitable lining 41 and operable by a lever 42 is carried by the housing 16 for stopping rotation of the rotary head 10 after it has been retracted from the end of the bloom.

Spaced slots 50 and 52 are provided across the width of the head 10 in which suitable printing dies D are inserted. The dies D have grooves 54 in their upper faces to permit a limited lost motion. A ring 56 is mounted around the head 10 to close the slots 50 and 52. Mounted behind the dies D in the slots are followers 58 provided with anvil or hammer members 60 which likewise provide a limited amount of clearance or lost motion between the dies and the operating members 58. A preferred means of holding the dies in the slots is a spring-biased pin 62. This may conveniently be lifted by a lever 64 to release the die and at the same time, by means of a downwardly extending arm 66 extending into a slot 68 in the follower 58, to partially eject the die from the slot. A spring 70 is provided to normally hold the lever in non-operating position.

On the rearward face of the rotary member 10, there is disposed an annular flange or ring 72, the face 72a of which is recessed for about one-fourth of its periphery to provide a high projecting portion 74 throughout approximately three-fourths of the periphery thereof and a low portion 76 for the balance of its circumference which does not project outwardly so far from the rear face of the head. The high projecting portion 74 has an outer face 74a and an inner face 74b. Sloping portions 78 and 80 are provided to connect the low portion with the high portion.

An annular ring member 82 is disposed on the housing 16 adjacent the head 10 and is provided with a vertical slot 84 on the side facing the rotary head 10. In this slot 84 there is disposed a crosshead 86 having an outwardly projecting knob or cam portion 88 on its upper or outer end and a low portion 90 on its lower or inner end. The crosshead 86 is adapted to be moved inwardly of the slot 84 by means of a lever 92 which has an end 94 projecting into an opening 96 in the crosshead. A suitable cable 98 is secured to the lever to provide for remote operation thereof. The outer end of the cable 98 is suitably held in a tension reel 100. A spring 102 is attached to the end of the lever opposite the end 94 so as to normally hold the crosshead 84 in its upward position.

In the lower end of the crosshead 86 there is disposed a pivotally mounted latch or follower 110 in a slot 112. This latch pivots in a horizontal plane and is urged to its outermost position by a spring 114. In this position, the latch will either be disposed adjacent the inner or the outer surfaces 74b and 74a, respectively, of the high projecting portion 74 of the annular flange 72 on the rotary head 10. The distance the latch projects outwardly is such that it will not contact the face of the low projecting portion 76 of the annular ring so that when the low projection is opposite the latch, the crosshead may be moved downwardly to bring the latch on the inside of the ring. As the head rotates the high projection will be above the latch and the surface 74b will engage the latch to hold the crosshead in its innermost position. In this position, the outwardly projecting cam 86 of the crosshead will be in the path of travel of the anvils 60 so that as the head 10 rotates the anvils will strike the cam and a sharp impact or blow will be

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transmitted to the dies causing them to impress their insignia on the end of the bloom.

In operation the cylinder 12 is actuated to move the head 10 to gaging position. The bloom B is moved thereagainst and rotated with the cutting knife pressed thereagainst to sever the end portion and form a blank. When the bloom and head 10, due to the close contact therebetween, are rotating at the same speed, the operator pulls on the cable 98. This moves the crosshead inwardly when the latch 110 is opposite the low projection 76 of the ring 72. Thereafter the latch rides on the inner surface 74b of the high projecting portion of the ring for about three-fourths of a full rotation of the head 10. If the low projection is opposite the latch when the cable is pulled leaving insufficient time for the latch to clear the face of the ring, the latch will be depressed against the spring 114 until it has cleared the face of the ring. During the time the latch engages the inner face 74b the cam 88 will be struck by the anvils and thereby stamp the end of the blank. As soon as the low projection is reached, the spring 102 moves the crosshead to its outer position. In this position no stamping takes place since the low surface 90 of the crosshead does not contact the anvils. The head 10 can then be retracted by operating the lower return cylinder 32. Rotation of the head can then be stopped by means of the brake 40. As soon as the head has stopped the desired die, changes can quickly be made within the time of finishing the severing operation.

From the foregoing, it is seen that we have provided a machine which combines gaging and stamping of blanks severed from blooms in rotary cutting-off machines. The machine is simple to operate and permits changing dies in the time it takes to finish the cutting-off operation.

While we have shown and described one specific embodiment of our invention, it will be understood that this embodiment is merely for the purpose of illustration and description and that various other forms may be devised within the scope of our invention, as defined in the appended claims.

We claim:

1. A stamping machine comprising a rotatable head and a non-rotatable housing therefor, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, and a reciprocable crosshead on said non-rotatable housing, a cam on said crosshead adapted to be reciprocated into the path of travel of said hammer and be struck thereby as said head is rotated to actuate said dies.

2. A stamping machine comprising a rotatable head and a non-rotatable housing therefor, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, an annular ring on the rearward face of said head adjacent said hammer, and a reciprocable crosshead on said non-rotatable housing, a cam on said crosshead adapted to be reciprocated into the path of travel of said hammer and be struck thereby as said head is rotated to actuate said dies and latch means engageable with said ring

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to hold said crosshead in hammer-striking position.

3. A stamping machine comprising a rotatable head and a non-rotatable housing therefor, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, a ring on the rearward face of said head adjacent said hammer, a short arc of said ring being extended outwardly from said head a shorter distance than the balance thereof to form low and high projecting portions, a radially reciprocable crosshead in said housing, a cam member on said crosshead, a latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the ring to hold said crosshead in its inward position for the balance of the travel of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said crosshead is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly and means normally urging said crosshead to an outer position.

4. A stamping machine comprising a rotatable head and a non-rotatable housing therefor, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, a ring on the rearward face of said head adjacent said hammer, a short arc of said ring being extended outwardly from said head a shorter distance than the balance thereof to form low and high projecting portions, a radially reciprocable crosshead in said housing, a cam member on said crosshead, a pivotally mounted latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the high projecting portion to hold said crosshead in its inward position for the balance of the travel of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said crosshead is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly and means normally urging said crosshead to an outer position.

5. A stamping machine comprising a rotatable head and a non-rotatable housing therefor, a slot in the periphery of said head, dies disposed in said slot with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said slot for moving said dies forwardly of said face, said hammer member extending rearwardly of said head, a ring on the rearward face of said head inwardly of said hammer, a short arc of said ring being extended outwardly from said head a shorter distance than the balance thereof to form high and low projecting portions, a radially reciprocable crosshead in said housing, a cam on the upper end of said crosshead, a pivotally mounted latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the high projecting portion to hold said crosshead in its inward position while during the high projecting portion of the cycle of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said cross-

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head is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly and means normally urging said crosshead outwardly.

6. A stamping machine comprising a rotatable head and a reciprocable non-rotatable housing therefor, said head having a forward face adapted to engage a workpiece and be rotated thereby, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, a reciprocable cross-head on said non-rotatable housing, a cam on said crosshead adapted to be reciprocated into the path of travel of said hammer and be struck thereby as said head is rotated to actuate said dies, and means to move said head and housing forwardly into workpiece engaging position and retract them therefrom.

7. A stamping machine comprising a rotatable head and a reciprocable non-rotatable housing therefor, said head having a forward face adapted to engage a workpiece and be rotated thereby, dies disposed in said head with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, an annular ring on the rearward face of said head adjacent said hammer, a reciprocable crosshead on said housing, a cam on said crosshead adapted to be reciprocated into the path of travel of said hammer and latch means on said crosshead engageable with said ring to hold said crosshead in position to be struck by said hammer as said head is rotated and thereby actuate said dies, and means to move said head and housing forwardly into workpiece engaging position and retract them therefrom.

8. A stamping machine comprising a rotatable head and a reciprocable non-rotatable housing therefor, said head having a forward face adapted to engage a workpiece and be rotated thereby, dies mounted in said head with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, a ring on the rearward face of said head adjacent said hammer, a short arc of said ring being extended outwardly from said head a shorter distance than the balance thereof to form low and high projecting portions, a radially reciprocable crosshead in said housing, a cam member on said crosshead, a latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the ring to hold said crosshead in its inward position for the balance of the travel of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said crosshead is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly, means normally urging said crosshead to an outer position, and means to move said head and housing forwardly into workpiece engaging position and retract them therefrom.

9. A stamping machine comprising a rotatable head and a reciprocable non-rotatable housing therefor, said head having a forward face adapted to engage a workpiece and be rotated thereby, dies mounted in said head with a lost motion mounting and adapted to be extended beyond the for-

ward face of said head, a hammer member in said head for striking said dies, said hammer member extending rearwardly of said head, a ring on the rearward face of said head adjacent said hammer, a short arc of said ring being extended outwardly from said head a shorter distance than the balance thereof to form low and high projecting portions, a radially reciprocable crosshead in said housing, a cam-member on said crosshead, a pivotally mounted latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the high projecting portion to hold said crosshead in its inward position for the balance of the travel of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said crosshead is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly, means normally urging said crosshead to an outer position, and means to move said head and housing forwardly into workpiece engaging position and retract them therefrom.

10. A stamping machine comprising a rotatable head and a reciprocable non-rotatable housing therefor, said head having a forward face adapted to engage a workpiece and be rotated thereby, a slot in the periphery of said head, dies disposed in said slot with a lost motion mounting and adapted to be extended beyond the forward face of said head, a hammer member in said slot for moving said dies forwardly of said face, said hammer member extending rearwardly of said head, a ring on the rearward face of said head inwardly of said hammer, a short arc of said ring being extended outwardly from said

head a shorter distance than the balance thereof to form high and low projecting portions, a radially reciprocable crosshead in said housing, a cam on the upper end of said crosshead, a pivotally mounted latch on said crosshead adapted to pass the low projecting portion on said ring when said crosshead is moved inwardly and then engage the high projecting portion to hold said crosshead in its inward position while during the high projecting portion of the cycle of said ring, the cam on said crosshead being disposed in the path of travel of said hammer when said crosshead is held in its inner position by said latch and ring to thereby actuate said dies, means for moving said crosshead inwardly, means normally urging said crosshead outwardly, and means to move said head and housing forwardly into workpiece engaging position and retract them therefrom.

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