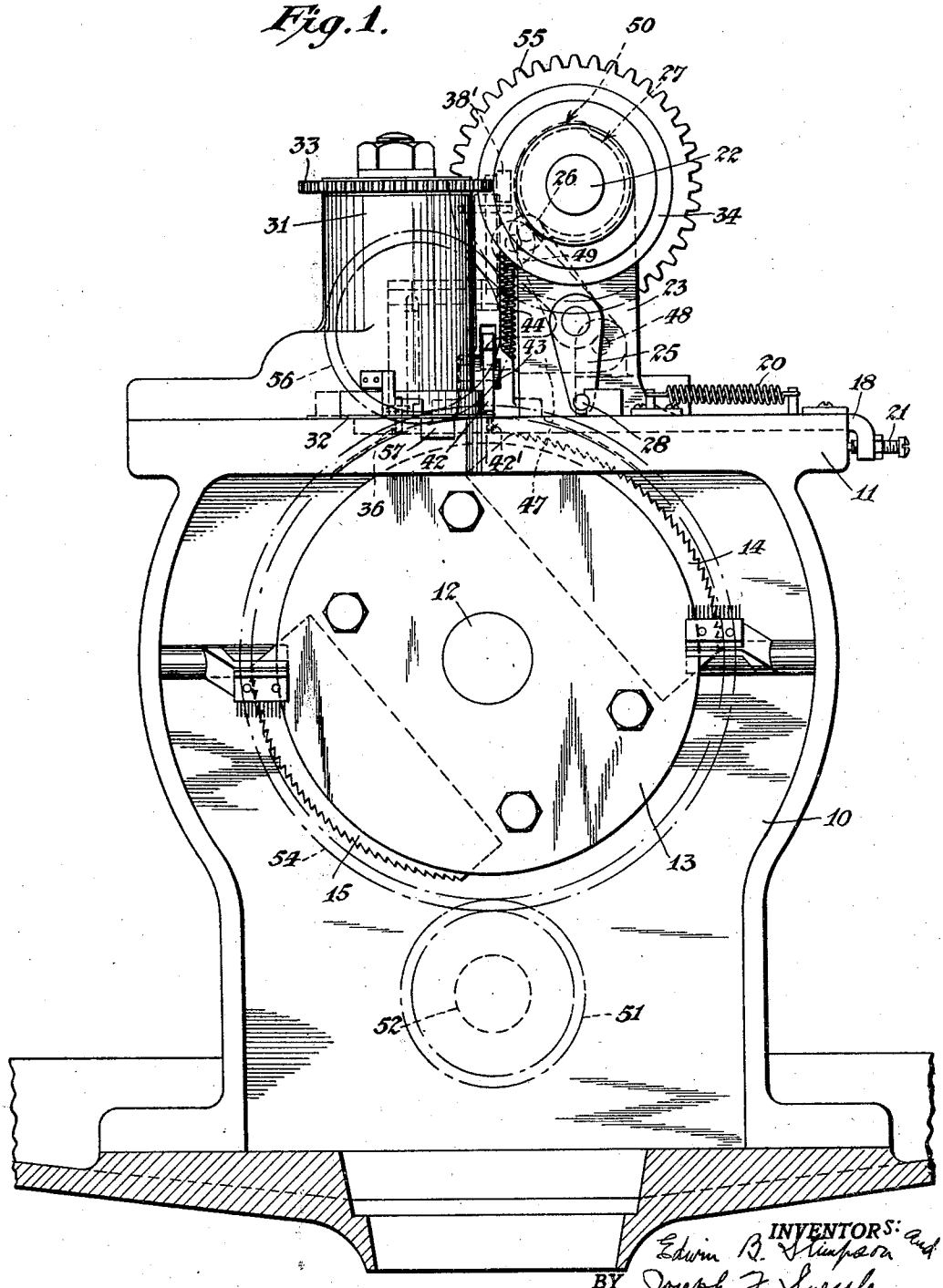
Feb. 24, 1931. E. B. STIMPSON ET AL 1,793,648

RIVET SLITTING MACHINE

Filed April 22, 1927 6 Sheets-Sheet 1

Fig. 1.



INVENTORS: Edwin B. Stimpson and Joseph F. Suessle

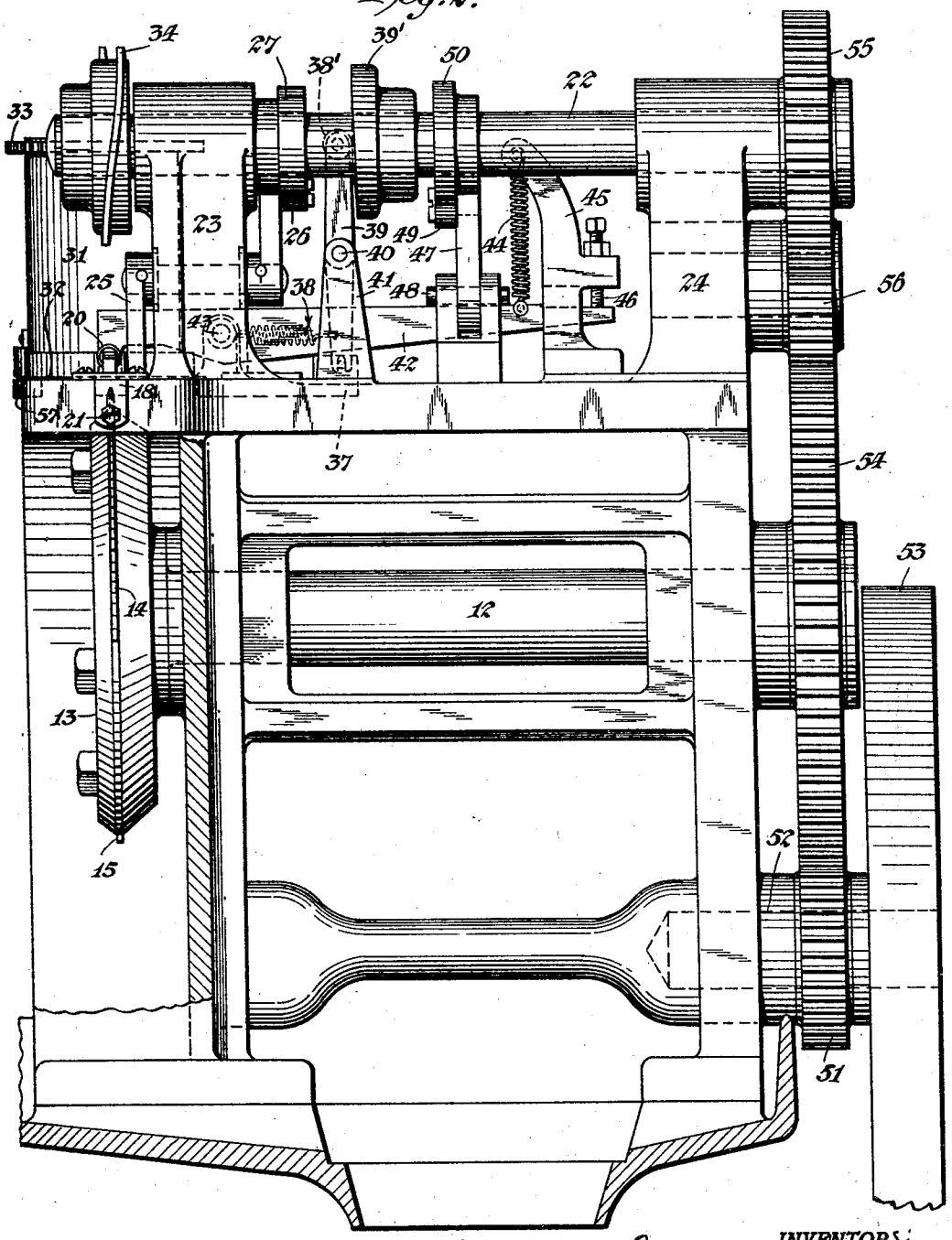
BY Frank Glent ATTORNEY

Feb. 24, 1931. E. B. STIMPSON ET AL 1,793,648

RIVET SLITTING MACHINE

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Fig. 2.



Edwin B. Stimpson and Joseph T. Duessle INVENTORS

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RIVET SLITTING MACHINE

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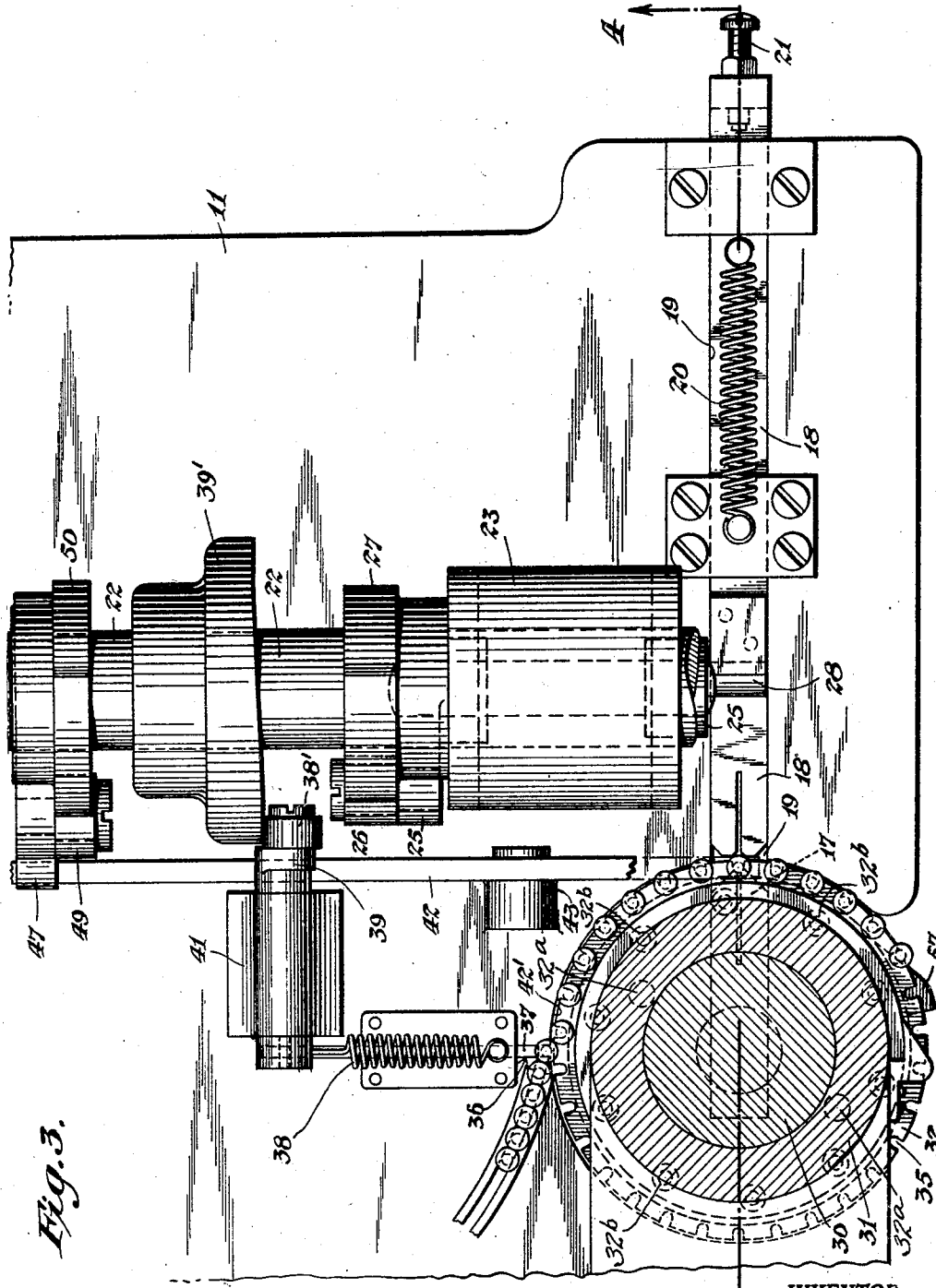


Fig. 3.

INVENTOR

Edwin B. Stimpson and Joseph F. Sweale

BY

Frank J. Merk

ATTORNEY

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RIVET SLITTING MACHINE

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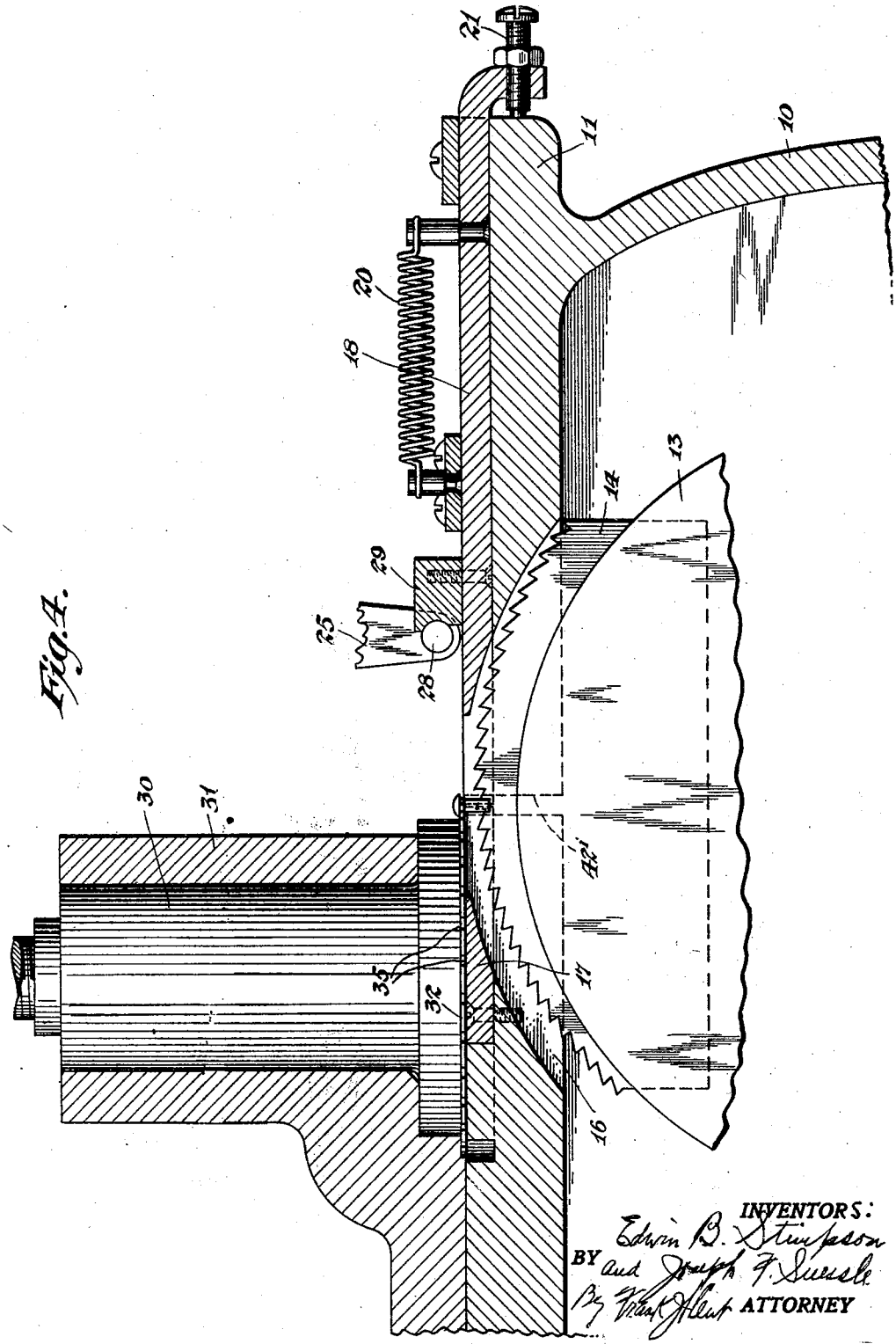


Fig. 4.

INVENTORS:
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BY Frank J. Lewis ATTORNEY

Feb. 24, 1931. E. B. STIMPSON ET AL 1,793,648

RIVET SLITTING MACHINE

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Fig. 5.

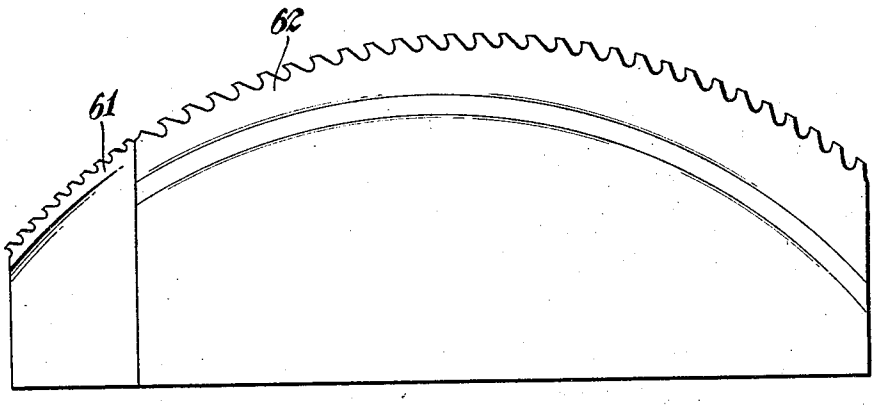


Fig. 6.

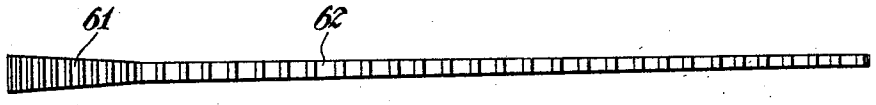


Fig. 7.

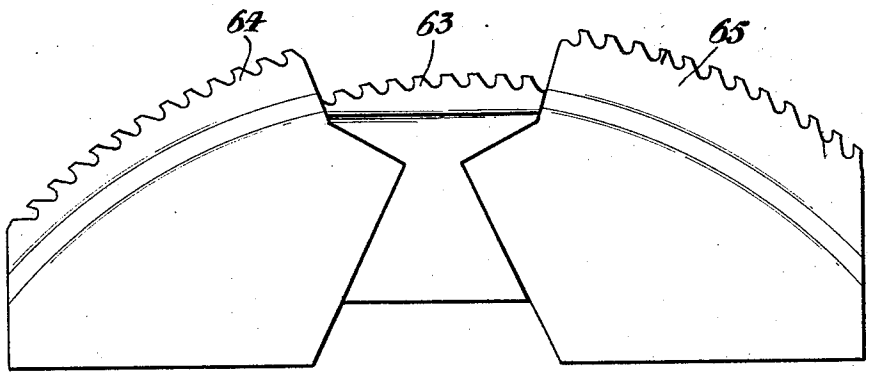


Fig. 8.

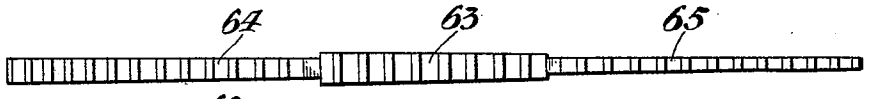


Fig. 9.



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Feb. 24, 1931. E. B. STIMPSON ET AL 1,793,648

RIVET SLITTING MACHINE

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Fig. 10.

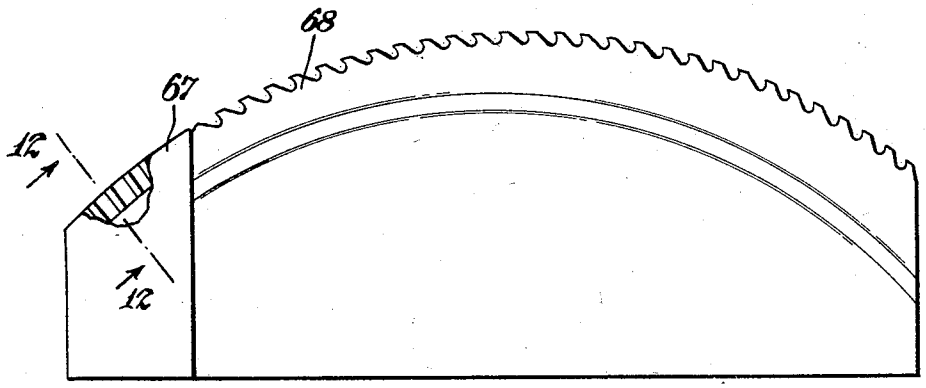


Fig. 11.

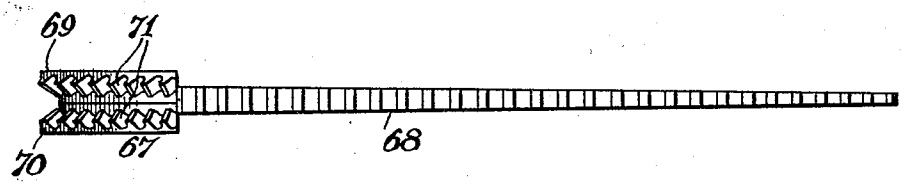


Fig. 12.

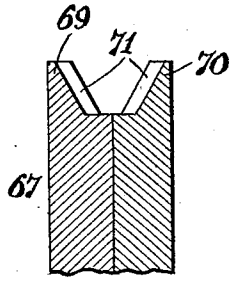
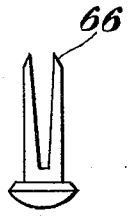


Fig. 13.



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Joseph F. Suessle INVENTORS:

BY
Frank Mecklenburg
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Patented Feb. 24, 1931

1,793,648

UNITED STATES PATENT OFFICE

EDWIN B. STIMPSON AND JOSEPH F. SUESSLE, OF BROOKLYN, NEW YORK, ASSIGNORS TO EDWIN B. STIMPSON COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK

RIVET-SLITTING MACHINE

Application filed April 22, 1927. Serial No. 185,721.

This invention relates to a slotting machine for use in the manufacture of forked rivets.

An object of the invention is to provide a high-speed machine capable of producing the rivets accurately and rapidly. To this end the machine embodies a cutting disc having a plurality of cutting saws mounted thereon, and includes improved means for feeding the rivets to the cutting disc and for holding them during the cutting operation.

The invention also includes new and improved forms of saw blades for use on slotting machines.

The machine is in general similar to that disclosed in copending application Serial No. 179,234 filed March 29, 1927 and provides more compact and direct mechanism for operating the moving parts.

In the drawings:

Fig. 1 is a front elevation of a machine embodying the invention;

Fig. 2 is a side elevation of the machine;

Fig. 3 is a plan view partly in section of a portion of the machine;

Fig. 4 is a section on line 4—4 of Fig. 3;

Fig. 5 is an elevation of an improved saw blade;

Fig. 6 is a plan of the blade of Fig. 5;

Fig. 7 is an elevation of a different form of blade;

Fig. 8 is a plan of the blade of Fig. 7;

Fig. 9 is an elevation of a rivet showing the work performed by the saws of Figs. 5–8;

Fig. 10 is an elevation partly in section of a further modification of saw structure;

Fig. 11 is a plan of the blade of Fig. 10;

Fig. 12 is a section on line 12—12 of Fig. 10;

Fig. 13 is an elevation of a rivet showing the work performed by the blade of Figs. 10–12;

Referring to the drawings more specifically, the numeral 10 indicates the framework which supports the table 11. A shaft 12 mounted in the framework carries a cutter head comprising a disc 13 upon which are mounted two oppositely located saws 14 and 15 which extend excentrically beyond the periphery of the disc 13. The disc is so mounted that the saws project into a slot 16 formed in the table 11. A stationary anvil 17 having a notched and slotted nose is removably secured to the table directly over the slot 16, and a holder 18 having a similarly formed nose is slidably mounted in antipodal relation to the anvil 17 and is confined in a groove 19 formed in the table. A spring 20 has one end anchored to the holder and its opposite end attached to the table and tends to press the holder toward the anvil. The rear end of holder 18 is bent downwardly and carries an adjustable stop screw 21 for limiting the movement of the holder toward the anvil to thereby prevent contact of the holder with the anvil should the machine fail to feed a rivet to holding position.

A cam shaft 22 is journaled over the central part of the table on supports 23 and 24. A lever 25 is pivotally attached to the support 23 and carries at its upper end a roller 26 engaging a cam 27 keyed to shaft 22. The lower end of lever 25 carries a pin 28 engaging a block 29 secured to the holder 18.

A rotatable post 30 fits in a sleeve 31 mounted on the table, the lower end of the post carrying the feed disc 32 located on the bottom of the post by dowels 32^a and secured thereto by screws 32^b, while to its upper end is attached the gear 33, which is operated by a segmental thread 34 on the shaft 22.

The feed disc 32 has a plurality of notches 35 formed in its periphery, the rivets being fed to the notches in the following manner. A chute of any conventional design delivers the rivets one after another to a groove 36 formed in the table 11 normal to the periphery of the feed disc. A slide 37 moves in the groove 36 and is pressed toward the disc by spring 38. A lever 39 is pivoted at 40 to an upright 41 and has its lower end engaged with the slide 37 while its upper end carries a roller 38′ engaging the lateral face of a cam 39′ rotated by shaft 22. The cam operates through lever 39 to pull the slide 37 backward, and at the appropriate moment, when a notch 35 is in registry with the groove 36, the cam permits spring 38 to move the slide forward to push the rivet into notch 35 of the

feed disc, which carries the rivet along the wall 42′ formed on table 11 until it arrives in front of anvil 17.

When the rivet arrives in this position the cam 27 permits spring 20 to move the holder forward to press the shank of the rivet against the anvil. At the same time the thrust arm 42 descends to engage the head of the rivet.

The thrust arm is pivoted at 43, and its operating end is resiliently pressed against the head of the rivet by springs 44 attached to the rear end of the thrust arm and suspended from a pedestal 45 rising from the table. An adjustable stop screw 46 is also carried by the pedestal and engages the rear end of the thrust arm to limit the downward movement of its forward end, the stop operating to keep the thrust arm from engaging with the feed disc if the machine should fail to deliver a rivet to the holding position. The rear end of the thrust arm is pressed downward to disengage its operating end from the rivet by means of a bell crank lever 47. The lever 47 is pivoted at 48 and its upper branch carries a roller 49 cooperating with a cam 50 on shaft 22.

The machine is driven through a gear 51 mounted on shaft 52 and rotated by pulley 53. A gear 54 keyed to shaft 12 meshes with gear 51 and drives gear 55 on shaft 22 through an idler gear 56. The gearing is so designed that the cam shaft 22 makes two revolutions for each single revolution of shaft 12, and in this way the feed mechanism and holding devices are operated in a manner to present a fresh rivet to each of the saws 14 and 15 as they approach the cutting position.

The machine operates in the following manner:—

After saw 14 has passed the cutting position the feed disc 32 is rotated to bring a rivet into position in front of the anvil 17. Cam 27 then permits the spring 20 to press the holder 18 forward to resiliently grip the shank of the rivet between the holder and the anvil. The cam 50 now permits the springs 44 to press the thrust arm 42 down upon the head of the rivet. In this manner the rivet is firmly but resiliently held both laterally and vertically, and the saw 15 now passes into the slots of the holder and anvil to engage and cut the shank of the rivet.

After saw 15 passes the feed disc is again rotated to bring a fresh rivet to cutting position. For each movement of the feed disc the slide 37 operates to place a rivet into a slot 35 and the cam 57 engages one of the finished rivets to discharge it from the machine.

In this machine the stationary anvil 17 and the holder 18 are both readily replaceable and are relatively inexpensive parts. By placing the cam shaft 22 directly over the holder and near the cutting position the various moving parts can be operated through direct and compact mechanism.

It will be seen that the feed disc 32 is a conveyor which engages the head ends of the rivets and leaves the major portion of the rivet shanks free. Accordingly, when a rivet has been advanced to cutting position, the shank of the rivet is free to be clamped by the clamping means 17 and 18 without disturbing the relationship between the rivet and the conveyor disc 32. Then after the rivet has been slotted and released by the clamping means, the conveyor disc still has control of the rivet and conveys it away from the cutting position.

In the particular form of the invention shown the cutter head carries two cutters 14 and 15 which project from the periphery of the cutter head but together occupy a portion only of such periphery. Accordingly, in each rotation the cutter head has two active periods (viz. the periods when the cutters are passing the slotting station) and two idle periods (viz. the periods when the cutters are out of the way). During each idle period of the cutter head a rivet is advanced laterally into cutting position and clamped for slotting. Then during the next succeeding active period of the cutter head, the clamped rivet blank is slotted.

In the machine heretofore described the saws 14 and 15 are of a usual type designed to cut a tapered slot through the shank of a rivet. But the machine can also be equipped with the modified types of saw blades illustrated in Figs. 5–13.

In some cases it is desirable to put a bevelled edge on the inside of the prongs of the rivet as shown at 60 in Fig. 9. In order to cut this bevel the saw blade is provided with a separate section having its sides converging at a steeper angle than those of the main blade. In Fig. 5 this separate section for cutting the bevel is indicated at 61 and is adapted to be placed at the leading edge of the main blade 62 and to be clamped in place on the rotating wheel in any suitable manner. Due to the difference in taper of the section 61 and the main blade 62 it would be impossible to grind the sides of a blade in which the parts 61 and 62 were formed integral. By forming the part 61 in a separate piece it is also possible to renew this section when it becomes worn or broken without requiring a whole new blade. In the species of Figs. 7 and 8 the same results are obtained by using a three-piece construction, the bevel-cutting section 63 being placed between the sections 64 and 65 of the slitting blade.

For other purposes the rivets should be bevelled on their outer edges as at 66 in Fig. 13. For this purpose the bevelling section 67 is attached to the slitting blade 68, the bevelling section being composed of two

pieces 69 and 70 cooperating to form a V-shaped groove with teeth 71 projecting inwardly from the sides of the groove. The separate pieces forming the cutting blade of Figs. 10–12 are rigidly clamped to the rotating wheel in such a manner as to form a substantially unitary structure.

We claim:

1. A rivet slotting machine including a stationary anvil adapted to engage one side of the shank of a rivet, a movable holder adapted to engage the opposite side of the rivet shank, a feed disc having a notch to engage under the head of a rivet, the disc being mounted to carry the rivet into position with its shank between the anvil and the holder, and means for resiliently pressing against the head of said rivet held between said anvil and holder.

2. A rivet slotting machine including a stationary anvil adapted to engage one side of the shank of a rivet, a movable holder adapted to engage the opposite side of the rivet shank, and a feed disc mounted to rotate above the anvil, the disc having a plurality of notches to engage under the heads of the rivets, and means to rotate the disc to carry a rivet into position with its shank between the anvil and the holder.

3. A rivet slotting machine including an anvil member, a sliding holder, a spring normally pressing the holder toward the anvil, a projection on the holder, a cam shaft located above the holder, a lever cooperating with a cam on the cam shaft and engaging the projection on the holder to move the holder away from the anvil, and means comprising a thrust arm resiliently pressing against the head of said rivet.

4. A rivet slotting machine comprising a table, a cutting disc carrying saws adapted to project through a slot formed in the table, means for feeding a rivet to the cutting disc, a movable holder adapted for engagement with the shank of the rivet, a lever for operating the holder, a thrust arm adapted to engage the head of the rivet, a lever for operating the thrust arm, and a cam shaft journaled above the table and projecting over the holder, said shaft carrying cams cooperating with the levers.

5. A machine for operating on the shanks of rivets including means to clamp the shank of a rivet at an operating station; means to convey rivets successively to the operating station, said conveyor means comprising a thin member having spaces to receive short lengths of individual rivet shanks adjacent the heads of the rivets; means to insert rivets in said spaces with the heads of the rivets adjacent one surface of said thin member and with the shanks of the rivets projecting from the other surface of the thin members; means to clamp the head of a rivet against said thin member when the rivet is at the operating station; and means to actuate said head clamping means in timed relation to said conveyor means whereby said head clamping means is moved into clamping position after a rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station.

6. A machine for operating on the shanks of rivets including means to clamp the shank of a rivet at an operating station; means to convey rivets successively to the operating station, said conveyor means comprising a circular member having its periphery notched to receive short lengths of individual rivet shanks adjacent the heads of the rivets; means to insert rivets in the notches with the heads of the rivets adjacent one surface of said member and with the shanks of the rivets projecting from the other surface of said member; spring pressed means to clamp the head of a rivet against said member when the rivet is at the operating station; and means to actuate said head clamping means in timed relation to said conveyor means whereby said head clamping means is moved into clamping position after a rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station.

7. A machine for operating on the shanks of rivets including a plurality of cooperating clamping means operable to clamp the shank of a rivet at an operating station; means to convey rivets successively to the operating station, said conveyor means comprising a thin member having spaces to receive short lengths of individual rivet shanks adjacent the heads of the rivets; means to insert rivets in said spaces with the heads of the rivets adjacent one surface of said thin member and with the shanks of the rivets projecting from the other surface of the thin member; means to operate at least one of said cooperating clamping means in timed relation to said conveyor means whereby such clamping means is moved into clamping position after the rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station; means to clamp the head of a rivet against said thin member when the rivet is at the operating station; and means to actuate said head clamping means in timed relation to said conveyor means whereby said head clamping means is moved into clamping position after a rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station.

8. A machine for operating on the shanks of rivets including a plurality of cooperating clamping means operable to clamp the shank of a rivet under spring pressure at an operating station; means to convey rivets succes-

sively to the operating station, said conveyor means comprising a thin member having spaces to receive short lengths of individual rivet shanks adjacent the heads of the rivets; means to insert rivets in said spaces with the heads of the rivets adjacent one surface of said thin member and with the shanks of the rivets projecting from the other surface of the thin member; means to operate at least one of said cooperating clamping means in timed relation to said conveyor means whereby such clamping means is moved into clamping position after the rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station; spring pressed means to clamp the head of a rivet against said thin member when the rivet is at the operating station; and means to actuate said head clamping means in timed relation to said conveyor means whereby said head clamping means is moved into clamping position after a rivet has arrived at the operating station and is restored to non-clamping position before the rivet starts to leave the operating station.

9. A rivet slotting machine comprising a thin circular feed member positioned in a substantially horizontal plane and having its periphery notched to receive rivet shanks, means to insert rivets heads up in the notches whereby the rivets are suspended by their heads with their shanks projecting below said feed member; means to rotate said feed member step by step to advance the suspended rivets successively to a slotting station; means to clamp the heads of the rivets at the slotting station; and means to clamp the shanks of the rivets at the slotting station, said shank clamping means comprising clamping members arranged to provide slots for the passage of a cutter blade to the shank of a rivet clamped thereby.

10. A rivet slotting machine comprising a rotary cutter head; cutter means projecting from a portion only of the periphery of said cutter head whereby in each revolution of the cutter head at least one portion thereof is active and at least one portion thereof is idle; rivet conveyor means operable to engage the head ends of rivets and convey them laterally to and from cutting position with the rivet shanks in the path of said cutter means; means to actuate said conveyor means in timed relation to said cutter head to advance a rivet to cutting position during an idle period of said cutter head and leave said rivet at rest during the succeeding active period of the cutter head; and clamping means located between said conveyor means and said cutter head to clamp the shank of said rivet for slotting by said cutter means.

11. A rivet slotting machine comprising a rotary cutter head, cutter means projecting from a portion only of the periphery of said cutter head whereby in each revolution of the cutter head at least one portion thereof is active and at least one portion thereof is idle, rivet conveyor means operable in a horizontal plane to receive rivets and convey them suspended by their heads to and from cutting position with the rivet shanks in the path of said cutter means, means to actuate said conveyor means in timed relation to said cutter head to advance a rivet to cutting position during an idle period of said cutter head and leave said rivet at rest during the succeeding active period of the cutter head; and clamping means located between said conveyor means and said cutter head to clamp the shank of said rivet for slotting by said cutter means.

12. A rivet slotting machine comprising a rotary cutter head; cutter means projecting from a portion only of the periphery of said cutter head whereby in each revolution of the cutter head at least one portion thereof is active and at least one portion thereof is idle; rivet conveyor means operable to engage the head ends of rivets and convey them laterally to and from cutting position with the rivet shanks in the path of said cutter means; means to actuate said conveyor means in timed relation to said cutter head to advance a rivet to cutting position during an idle period of said cutter head and leave said rivet at rest during the succeeding active period of the cutter head; and clamping means located between said conveyor means and said cutter head to clamp the shank of said rivet for slotting by said cutter means, said clamping means comprising a stationary die member and a movable die member, the members being slotted to permit passage of the cutter means to the shank of a rivet clamped thereby.

13. A rivet slotting machine comprising a rotary cutter head; cutter means projecting from a portion only of the periphery of said cutter head whereby in each revolution of the cutter head at least one portion thereof is active and at least one portion thereof is idle; rivet conveyor means operable to engage the head ends of rivet blanks and convey them laterally to and from cutting position with the rivet shanks in the path of said cutter means; means to actuate said conveyor means in timed relation to said cutter head to advance a rivet to cutting position during an idle period of said cutter head and leave said rivet at rest during the succeeding active period of the cutter head; and clamping means located between said conveyor means and said cutter head to clamp the shank of said rivet for slotting by said cutter means, said clamping means comprising a pair of die members one of which is rigidly held in clamping position and the other of which is spring pressed to clamping position.

14. A rivet slotting machine comprising

a cutter head rotatable in a substantially vertical plane, cutter means projecting from a portion only of the periphery of said cutter head whereby in each rotation of the cutter head at least one portion thereof is active and at least one portion thereof is idle; means to suspend a series of rivets by their heads and convey them horizontally to cutting position with the rivet shanks depending in the path of said cutter means; means to actuate said conveyor means in timed relation to said cutter head to advance at least one rivet to cutting position during an idle period of said cutter head and leave said rivet at rest during the succeeding active period of the cutter head; and clamping means located between said conveyor means and said cutter head to clamp the shank of said rivet for slotting by said cutter means, said clamping means comprising die members providing a slot to permit passage of the cutter means to the shank of the rivet clamped thereby.

15. A rivet slotting machine comprising a stationary anvil adapted to engage one side of the shank of a rivet, a movable holder adapted to engage the opposite side of the rivet shank to clamp the shank against said anvil, means to feed a rivet into position with its shank between the anvil and the holder, said means comprising a feed disc rotatable above said anvil and operable to sustain a rivet with its shank between said anvil and said holder, and means to slot the shank of the rivet while it is held between said anvil and said holder.

In testimony whereof we affix our signatures.

EDWIN B. STIMPSON.
JOSEPH F. SUESSLE.