W. M. TAYLOR.

RIVET HEAD CUTTING MACHINE.

APPLICATION FILED FEB. 20, 1914.

1,115,348.

Patented Oct. 27, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

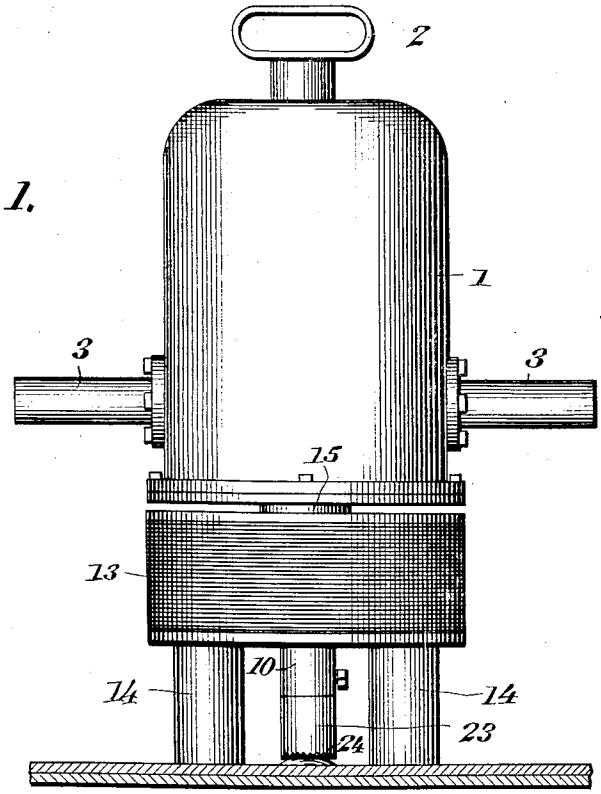


Fig. 4.

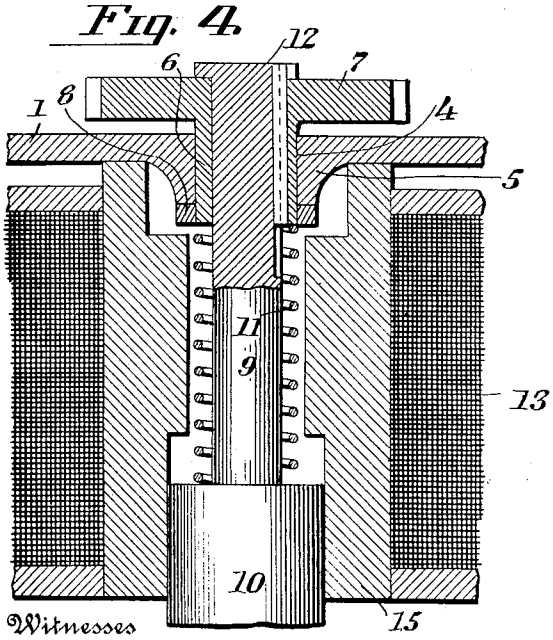
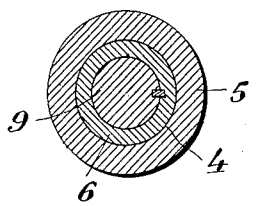


Fig. 3.



Witnesses

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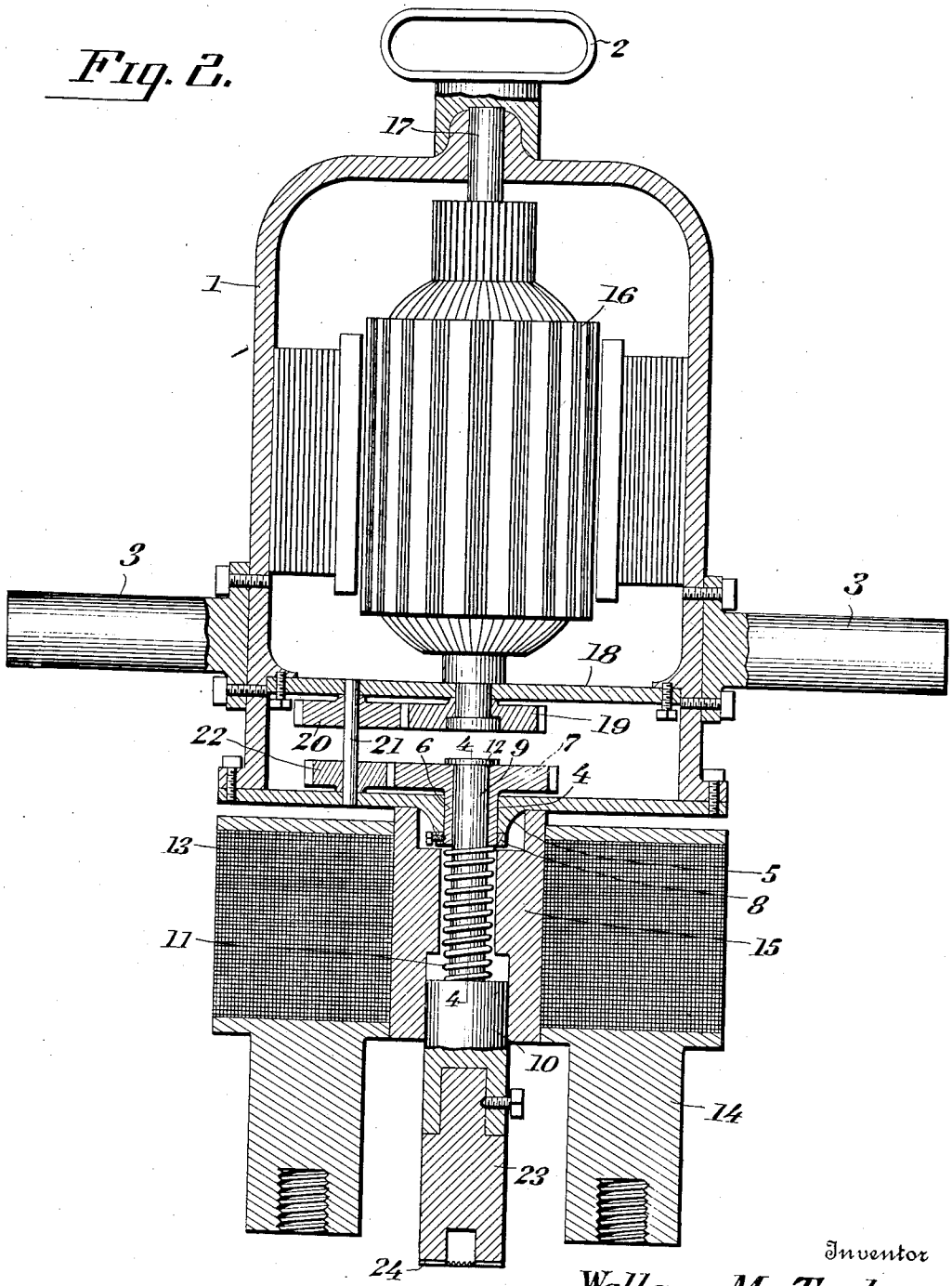
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WALLACE M. TAYLOR, OF CLEVELAND, OHIO, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO JOSEPH HLATKY, OF CLEVELAND, OHIO.

RIVET-HEAD-CUTTING MACHINE.

1,115,348. Specification of Letters Patent. Patented Oct. 27, 1914.

Application filed February 20, 1914. Serial No. 820,005.

To all whom it may concern:

Be it known that I, WALLACE M. TAYLOR, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Rivet-Head-Cutting Machines, of which the following is a specification.

This invention relates to improvements in rivet head cutting machines and has particular application to an electrically operated machine of this character.

In carrying out the present invention, it is my purpose to provide a machine of the class described which will embody among other features a motor driven tool and a magnet disposed adjacent to the tool and adapted, when energized, to hold the machine to the work.

It is also my purpose to provide a rivet head cutting machine which will embrace the desired features of simplicity, efficiency and durability, which may be handled with ease and convenience and which will operate effectively under all conditions.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the claims.

In the accompanying drawings; Figure 1 is a view in side elevation of a machine constructed in accordance with the present invention, the same being shown as applied to the work. Fig. 2 is a central vertical sectional view through the machine. Fig. 3 is a transverse sectional view therethrough. Fig. 4 is an enlarged fragmentary vertical sectional view on the line 4—4 of Fig. 2.

Referring now to the accompanying drawings in detail, 1 designates a metallic casing preferably cylindrical in cross section and equipped at one end with a handle 2 and having handle bars 3, 3 extending outwardly from the side wall thereof at diametrically opposite points. Formed in the end wall of the casing 1 opposite from that equipped with the handle 2 is an opening 4 and secured to the lower side of such end wall concentrically of the opening therein is a bearing 5 within which is rotatably mounted a hub sleeve 6 depending from a gear wheel 7 and working within the opening 4. To the lower end of the hub sleeve 6 is fastened a collar 8 serving to prevent upward movement of the hub sleeve within the bearing. Passed through the hub sleeve 6 and the hub of the gear wheel 7 is a spindle 9 splined to the sleeve so that such spindle may rotate therewith and slide therein. The lower end of the spindle 9 is equipped with a tool receiving socket 10, while encircling such spindle between the upper end of the tool receiving socket 10 and the lower end of the hub sleeve 6 is a coiled expansion spring 11 having one end abutting the lower extremity of the hub sleeve and the opposite end in engagement with the upper extremity of the tool socket 10, such spring acting to hold the spindle 9 and socket 10 normally at the limit of outward movement. The inner end of the spindle 9, that is the end of the spindle within the casing 1, is equipped with a stop collar 12 by means of which outward movement of the spindle under the action of the spring is limited so that disengagement of the spindle from the gear wheel is avoided. Fastened to the end wall of the casing 1 with the bearing 5 and concentrically of the latter is a circular electromagnet 13 having the outer end thereof equipped with an annular pole 14 and lining the interior of the coil of the magnet is a bushing 15 constructed of brass or other non-magnetic material and encircling the spindle 9 and socket 10. Mounted within the casing 1 is an electric driving motor 16 having the armature shaft 17 thereof arranged longitudinally of the casing and coaxial therewith. The upper end of the armature shaft 17 is journaled in a suitable bearing carried by the upper end wall of the casing, while the lower end thereof is journaled in a bearing carried by a plate 18 suitably fastened to the side wall of the casing 1 and coöperating with the adjacent end wall of the casing to provide a gear chamber. Keyed upon the lower extremity of the armature shaft 17 is a gear 19 meshing with a gear wheel 20 fast upon a countershaft 21 journaled in alining bearings carried by the plate 18 and the confronting end wall of the casing respectively. Also fast upon the countershaft is a pinion 22 meshing with the gear wheel 7 on the inner end of the spindle 9.

23 designates an appropriate form of cutter having one end thereof disposed within the socket 10 and suitably secured therein and the opposite end formed with an annular row of cutting teeth 24. Under normal

conditions, the cutting edge of the tool 23 is projected outwardly of the pole 14 of the magnet 13 under the action of the spring 11 so that when the machine is applied to the work, as previously described, the cutting tool will be forced inwardly against the tension of the spring 11 thereby permitting the latter to react to feed the tool during the cutting operation.

In practice, the electric motor 16 is energized and the armature shaft 17 thereof revolves. In the rotation of the armature shaft motion is transmitted through the gears 19, 20, 22 and 7 and the hub sleeve 6 to the spindle 9 thereby rotating the spindle and the tool 23. The cutting edge 24 of the tool is now engaged with the head of the rivet to be cut and the machine as a whole forced toward the work, the pole 14 engaging the metal surrounding the rivet being acted upon. The coil of the magnet 13 is now energized and the pole 14 is held to the metal in the vicinity of the rivet through magnetic attraction. In the movement of the machine toward the work so that the magnet 13, succeeding the energization thereof, will hold the machine to the work, the spring 11 surrounding the spindle 9 is compressed and reacts, in the cutting of the rivet head, to feed the cutter to the work and hold the cutting edge in engagement with the work under pressure.

From the foregoing description taken in connection with the accompanying drawings, the construction, mode of operation and manner of employing my invention will be readily apparent. It will be seen that I have provided a rivet head cutting machine wherein the cutting tool is automatically fed to the work during the cutting operation and wherein the machine as an entirety is held to the work without manual aid.

While I have herein shown and described one preferred form of my invention by way of illustration, I wish it to be understood that I do not limit or confine myself to the precise details of construction herein described and delineated, as modification and variation may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. In a rivet cutting machine, a casing, a motor within said casing, a bearing connected to one end of said casing coaxial with the shaft of said motor, a hub sleeve rotatably mounted within said bearing, a gear wheel fixed upon the inner end of said sleeve, gear connections between said first gear and motor, a spindle splined within said sleeve, a tool socket on the outer end of said spindle, an expansion spring surrounding said spindle and having one end abutting said tool socket and the opposite end in engagement with the adjacent extremity of said hub and acting to hold the tool socket projected toward the work, and means for holding said machine to the work.

2. In a rivet cutting machine, a casing, a motor within said casing, a bearing connected to one end of said casing coaxial with the shaft of said motor, a hub sleeve rotatably mounted within said bearing, a gear wheel fixed upon the inner end of said sleeve, gear connections between said first gear and motor, a spindle splined within said sleeve, a tool socket on the outer end of said spindle, an expansion spring surrounding said spindle and having one end abutting said tool socket and the opposite end in engagement with the adjacent extremity of said hub and acting to hold the tool socket projected toward the work, means for holding said machine to the work, and means holding said hub sleeve against sliding movement within the bearing.

3. In a rivet cutting machine, a casing, a motor within said casing, a bearing connected to one end of said casing coaxial with the shaft of said motor, a hub sleeve rotatably mounted within said bearing, a gear wheel fixed upon the inner end of said sleeve, gear connections between said first gear and motor, a spindle splined within said sleeve, a tool socket on the outer end of said spindle, an expansion spring surrounding said spindle and having one end abutting said tool socket and the opposite end in engagement with the adjacent extremity of said hub and acting to hold the tool socket projected toward the work, means for holding said machine to the work, and a collar fixed to the outer end of said hub sleeve and engaging the adjacent extremity of said bearing to prevent sliding movement of the sleeve.

In testimony whereof I affix my signature in presence of two witnesses.

WALLACE M. TAYLOR.

Witnesses:
PHILIP SAMPLINER,
GEORGE LUDAINS.