

W. P. SENG.
RIVET SPINNING MACHINE.
APPLICATION FILED FEB. 15, 1909.

939,558.

Patented Nov. 9, 1909.

Fig. 1.

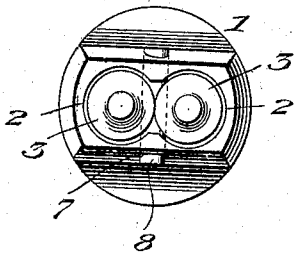


Fig. 3.

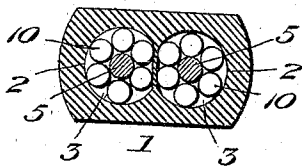


Fig. 2.

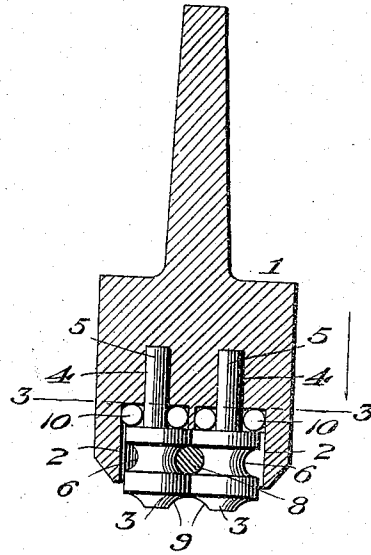
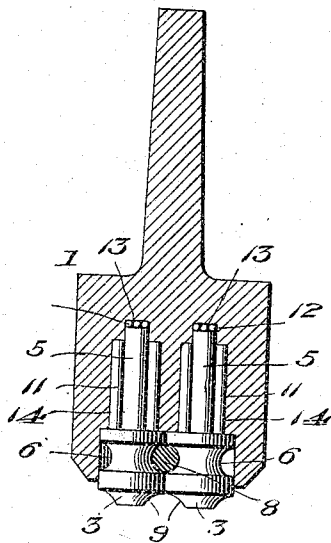


Fig. 4.



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Witnesses

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UNITED STATES PATENT OFFICE.

WENDELIN P. SENG, OF CHICAGO, ILLINOIS.

RIVET-SPINNING MACHINE.

939,558.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed February 15, 1909. Serial No. 478,079.

To all whom it may concern:

Be it known that I, WENDELIN P. SENG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Rivet-Spinning Machines, of which the following is a specification.

This invention is an improvement in that type of riveting machines which are provided with a pair of grooved rollers, carried by a rotary spindle, and operate to swage a head on the end of the rivet as the spindle is moved to press the rollers against said rivet, and the present invention relates more especially to that class of such machines in which the companion swaging rollers are disposed transversely and are provided with gudgeons bearing in the spindle-head. In the operation of the machine these rollers are subjected to considerable strain by pressure against the rivet in upsetting the end of the same, and the excessive friction of the bearing parts in the spindle-head often results in preventing the rollers from turning, thereby causing uneven wear on the working surfaces of the rollers, as well as undue strain on the bearings of the machine, and heating of the rivet. In order to prevent this excessive friction on the bearing surfaces of the swaging rollers and spindle-head I provide a particular construction and arrangement of parts, all as hereinafter fully described and specifically set forth in the appended claims.

In the accompanying drawings, which form a part of this specification:—Figure 1 is an end view of a rotary tool for rivet spinning machines, showing the arrangement of the swaging rollers. Fig. 2 is a vertical sectional view, to show one arrangement for reducing the friction of the parts. Fig. 3 is a transverse sectional view, on the line 3—3 of Fig. 2. Fig. 4 is a vertical sectional view, showing a modification of the invention.

Like numerals of reference indicate like parts in the several views of the drawings.

Referring to the drawings, 1 designates the spindle-head of a rotary tool for riveting machines, said head being provided at its lower end with a pair of circular recesses 2 2, which are adapted to receive the swaging rollers 3, and so that said rollers will be disposed side by side and approximately in contact with each other. At the bottom of each recess 2 there is a central

bore 4 extending into the spindle-head and into which projects a gudgeon 5 formed on the swaging roller.

The swaging rollers are each provided with a peripheral groove 6, and said grooves register with a transverse opening 7 through the spindle-head adapted to receive a drift-pin 8 for holding the rotatable rollers in the spindle-head. The outer ends of the rollers are provided with grooves 9, which cooperate to swage a head on the end of the rivet of the desired shape.

In order to reduce the friction of the swaging rollers in the spindle-head I provide each roller with anti-friction bearings, and herein disclose two forms of such devices. The form shown in Figs. 2 and 3 comprises anti-friction balls 10, which surround the gudgeon 5 and are interposed between the inner side of the roller and bottom of the recess 2 in the spindle-head. These anti-friction balls are of such size that they not only provide the bearing between the inner side of the roller and bottom of the recess, thereby forming an anti-friction end-thrust bearing, but also provide an anti-friction bearing between the gudgeon and side wall of said recess to reduce the friction due to lateral strain on the swaging rollers in operation.

In the modification shown in Fig. 4 the friction due to the lateral strain on the rollers is relieved by means of anti-friction rollers 11 surrounding the gudgeon 5 of each swaging-roller 3, and an anti-friction end-thrust bearing is provided for by means of anti-friction balls 12 interposed between the inner end of the gudgeon and bottom of the bore, as 13, in the spindle-head. In this modification of the invention the bore 13 in the spindle-head is enlarged for a portion of its length, as at 14, to receive the anti-friction-rollers which surround the gudgeon.

In each instance, as will be seen, the friction due to the longitudinal and lateral strain on the swaging-rollers in operation is reduced to a minimum, so that the swaging-rollers may rotate freely in forming a head on the end of the rivet.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:—

1. A rotary tool for riveting machines, comprising a rotary spindle, a pair of rollers mounted in the end of the spindle, gudgeons projecting from the center of the rollers into

said spindle, and anti-friction bearings between the gudgeons and spindles for relieving the end-thrust and lateral strain on the rollers, substantially as shown and described.

- 5 2. A rotary tool for riveting machines, comprising a rotary spindle having a pair of circular recesses in its end and bores extending into the spindle at the center of said recesses, grooved swaging rollers
10 mounted in the recesses, gudgeons projecting from the center of the rollers into the bores, and anti-friction devices surrounding each gudgeon and interposed between the inner side of the roller and bottom of the recess,
15 substantially as shown and described.

3. A rotary tool for riveting machines, comprising a rotary spindle having recesses at its outer end, each recess communicating with a bore extending into the spindle,
20 swaging rollers mounted in the recesses side by side and having registering peripheral grooves, a pin extending transversely through the spindle and engaging in the aforesaid grooves, gudgeons extending from
25 the center of the swaging-rollers into the bores, and anti-friction balls surrounding the gudgeons and interposed between the inner ends of the swaging-rollers and bottoms of the recesses.

- 30 4. A rotary tool for riveting machines, comprising a rotary spindle having recesses in its outer end, said recesses being separated at their inner ends by a dividing wall, swaging-rollers mounted side by side in the

outer portions of the recesses and having 35 gudgeons projecting into the inner portions of said recesses, and anti-friction balls surrounding the gudgeons and interposed between the inner ends of the rollers and bottoms of the recesses; together with means 40 for holding the rollers rotatably in the spindle, substantially as shown and described.

5. A rotary tool for riveting machines, comprising a rotary spindle having recesses in its outer end, said recesses being separated 45 at their inner ends by a dividing wall, swaging-rollers mounted side by side in the outer portions of the recesses and having registering peripheral grooves, a locking-pin 50 extending transversely through the spindle and engaging in the grooves, gudgeons extending from the center of the swaging-rollers into the spindle at the bottom of the recesses, and anti-friction balls in the inner 55 portions of the recesses around the gudgeons and interposed between the inner ends of the rollers and bottoms of the recesses, the anti-friction balls for one roller being separated from those for the other roller by the aforesaid dividing wall, substantially as shown. 60

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WENDELIN P. SENG.

Witnesses:

FRANK J. SENG,
EDW. J. SCHAGER.