Oct. 10, 1944. A. F. KOEHLER 2,359,861

RIVET LOADING TABLE

Filed June 11, 1943 4 Sheets-Sheet 1

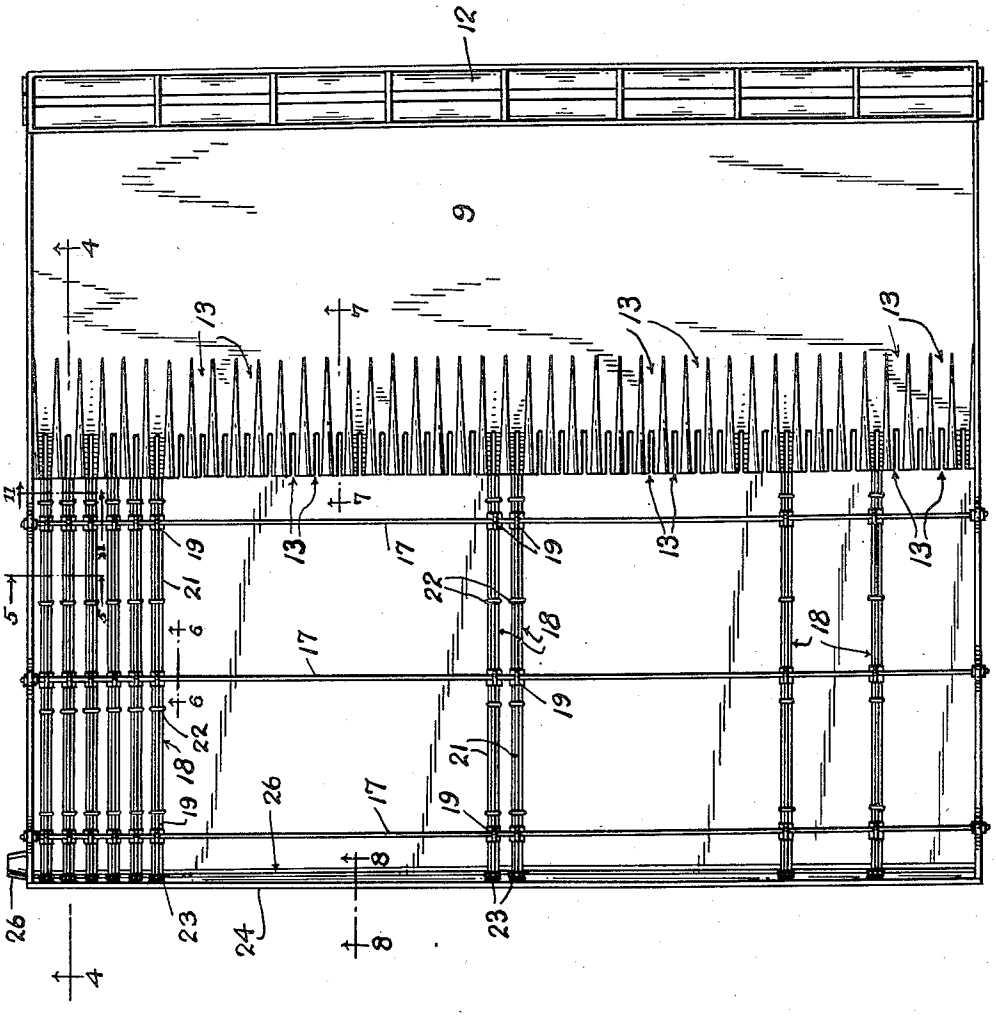



Fig. 1.

Inventor

Arthur F. Koehler

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Oct. 10, 1944. A. F. KOEHLER 2,359,861

RIVET LOADING TABLE

Filed June 11, 1943 4 Sheets-Sheet 2

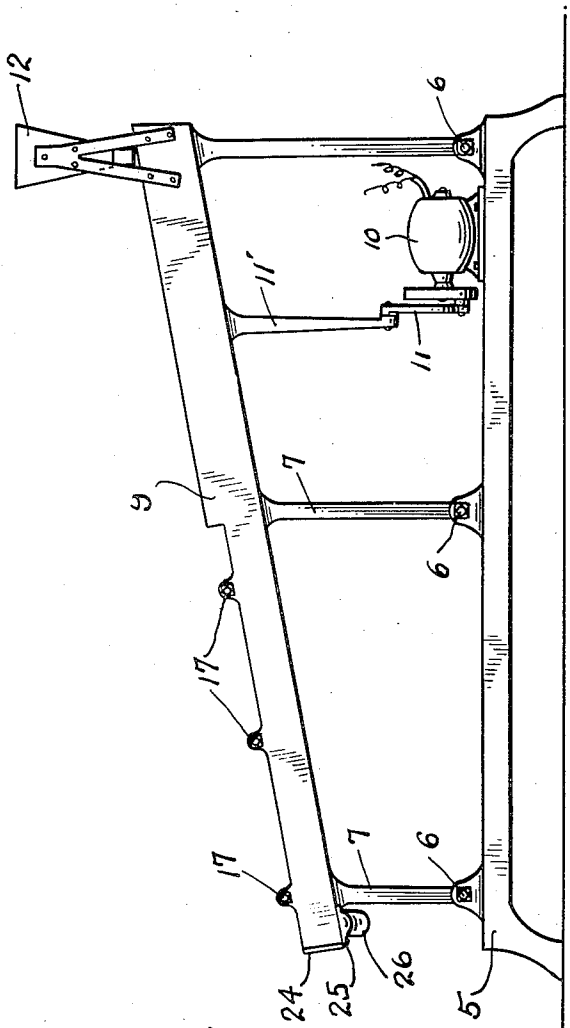



Fig. 2.

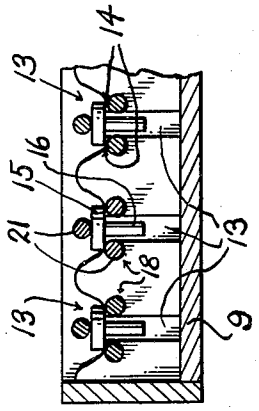



Fig. 11.

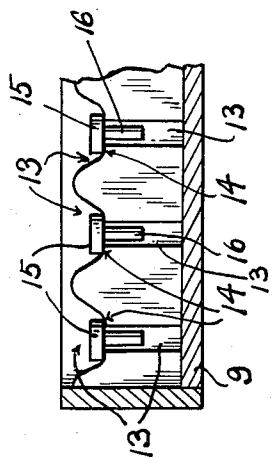



Fig. 10.

Inventor

Arthur F. Koehler

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Oct. 10, 1944. A. F. KOEHLER 2,359,861

RIVET LOADING TABLE

Filed June 11, 1943 4 Sheets-Sheet 3

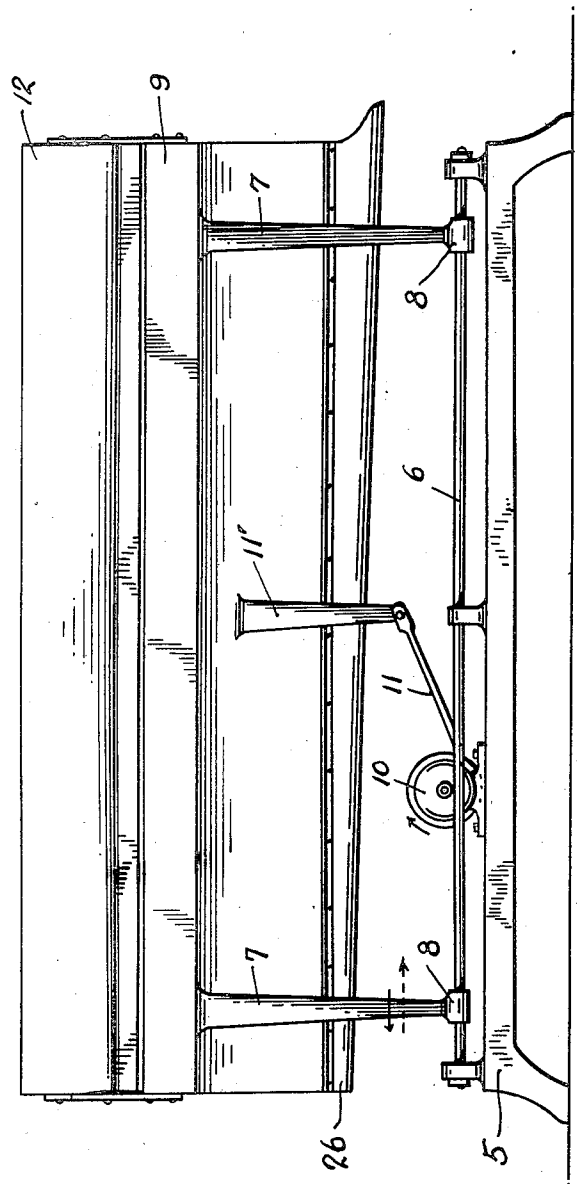



Fig. 3.

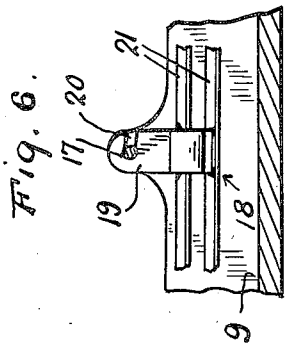



Fig. 6.

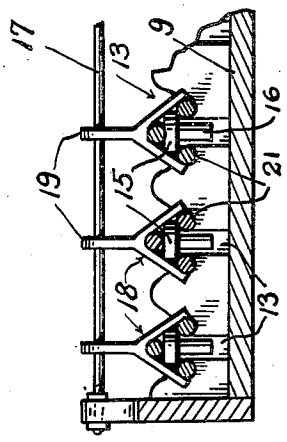



Fig. 5.

Inventor

Arthur F. Koehler

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Oct. 10, 1944. A. F. KOEHLER 2,359,861

RIVET LOADING TABLE

Filed June 11, 1943 4 Sheets-Sheet 4

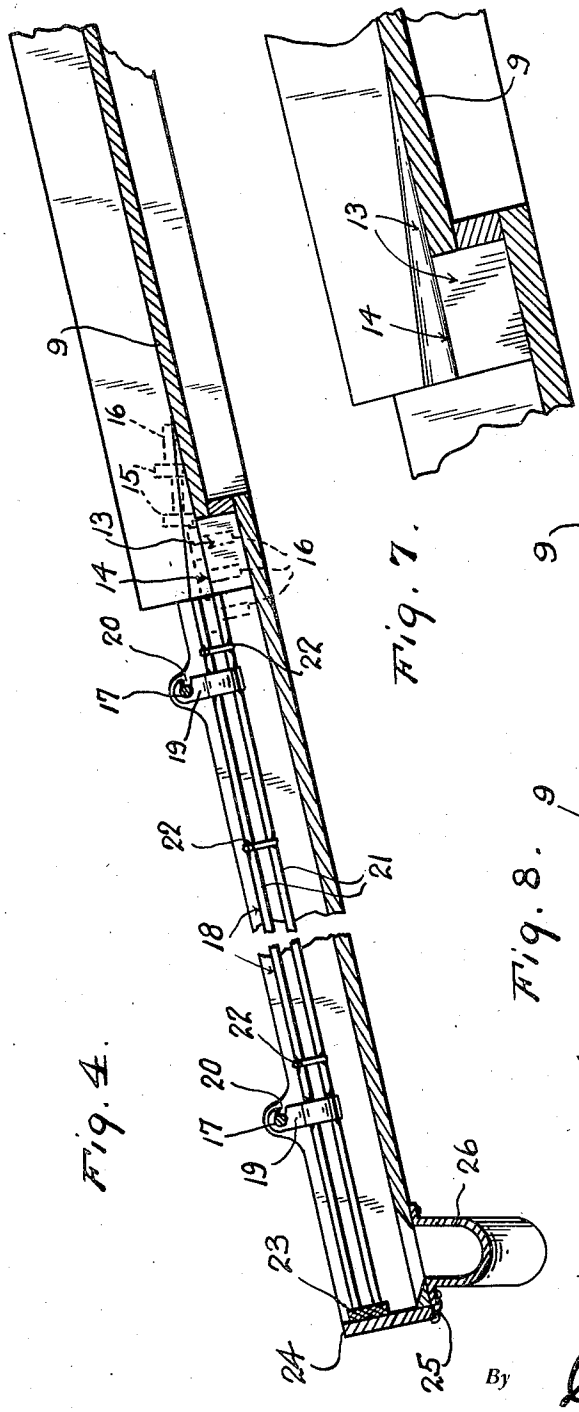



Fig. 4.




Fig. 7.

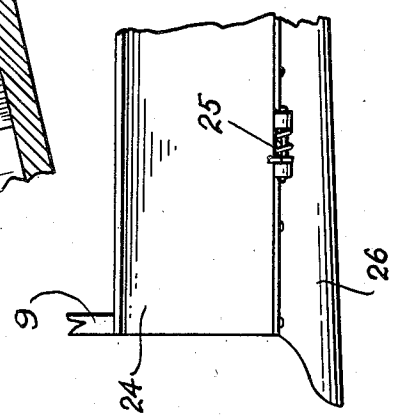



Fig. 9.

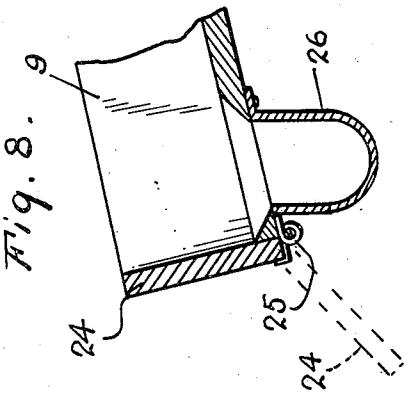



Fig. 8.

Inventor

Arthur F. Koehler

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Oct. 10, 1944

2,359,861

# UNITED STATES PATENT OFFICE

2,359,861

## RIVET LOADING TABLE

Arthur F. Koehler, Yuma, Ariz.

Application June 11, 1943, Serial No. 490,541

7 Claims. (Cl. 10—163)

The present invention relates to new and useful improvements in rivet loading devices designed primarily for loading airplane rivets in specially designed holders for use in magazine riveting machines.

An important object of the invention is to provide a rivet loading table having means for vibrating the table and guiding the rivets into a uniform position for feeding into the holder, and in which any desired number of the holders may be loaded simultaneously and selectively removed and placed in the riveting machine.

A further object is to provide a loading device of this character of simple and practical construction which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which—

Figure 1 is a top plan view,

Figure 2 is a side elevational view,

Figure 3 is a rear end elevational view,

Figures 4, 5, 6, 7 and 8 are sectional views taken on lines 4—4, 5—5, 6—6, 7—7 and 8—8, respectively of Figure 1.

Figure 9 is a fragmentary elevational view of the end gate,

Figure 10 is a fragmentary sectional view of the table showing the end of the rivet channels, and

Figure 11 is a fragmentary sectional view taken on a line 11—11 of Figure 1.

Referring now to the drawings in detail, the numeral 5 designates a base frame having a plurality of spaced parallel horizontal rods 6 on which legs 7 are slidably mounted by means of collars 8. The upper ends of the legs support a table 9 which is reciprocably vibrated on the rods 6 by means of an electric motor 10 and pitman 11 suitably connected to the motor and to a depending leg 11' to accomplish the desired reciprocating movement of the table as shown by the arrows at the left of Figure 3.

The table 9 is inclined in a direction transverse to its movement and along the upper edge of the table is supported a trough-shaped hopper 12 adapted to receive the rivets and discharge the same on the surface of the table from side to side thereof.

The surface of the table at its intermediate portion is formed with spaced tapering channels 13, the sides of which are shaped to provide shoulders 14 adapted to support the heads 15 of the rivets and with the shanks 16 thereof suspended in the channels. The lower end of the table is offset below the surface of the upper end and extending transversely of the lower portion is a plurality of rods 17 adapted to support a plurality of rivet holders 18 by means of hangers 19 having vertically inclined notches 20 in one edge to engage the rods 17.

The holders 18 are formed of a plurality of spaced parallel rods 21 arranged in the form of an inverted V in cross section, the rods being rigidly connected to each other by the hangers 19 as well as by spacing members 22 as shown in Figure 4, the hangers and spacing members 22 being properly positioned so as not to interfere with the passage of the rivets along the rods forming the holders or magazines.

One end of the holders 18 is supported in alignment with the channels 13 to receive the rivets from the channels so that one rod will lie on the head of the rivets while the other two rods will support the under side of the head of the rivets and with the shank of the rivets suspended between the rods, as shown to advantage in Figure 5.

The holders are supported in an inclined position, as shown in Figure 4, so that the rivets will slide toward the lower end of the holders and are held thereon by a cap 23 threaded or otherwise removably secured to the lower ends of the rods 21.

A hinged end gate 24 is secured to the lower end of the table to facilitate removal of the holders from the rods 17, the gate being yieldably held in an upright or closed position by springs 25.

A rivet collecting trough 26 is attached to the underside of the table at its lower end to retrieve any of the rivets dropped from the holders, or which accidentally drop from the channels 13.

After the loaded holders are removed from the table, they are placed in a riveting machine of a type disclosed in my co-pending application filed of even date herewith.

The rods 21 forming the rivet holders are preferably round in cross section to reduce friction at the point of contact thereof with the rivets, although it will be understood the rods may be of any desired shape.

It is believed the details of construction, operation and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

Having thus described my invention, what is claimed as new is:

1. A rivet loading apparatus comprising a loading table adapted to receive a quantity of loose rivets, guide means in the surface of the table adapted for positioning the rivets upright, a rivet magazine having one end open, means carried by the table for closing the upper end of the magazine, and hangers carried by the magazine adapted for engagement with a part of the table for detachably supporting the magazine in an elevated position with its open end abutting one edge of the table in alignment with the guide means to receive rivets from the latter.

2. A rivet loading apparatus comprising a loading table adapted to receive a quantity of loose rivets, a guide channel in the surface of the table having shoulders at each edge adapted to support the heads of the rivets with the shanks thereof suspended in the channel, a rivet magazine having one end open, means carried by the table for closing the upper end of the magazine, and hangers carried by the magazine adapted for engagement with a part of the table for detachably supporting the magazine in an elevated position with its open end abutting one edge of the table a rivet magazine, and hangers carried by the magazine adapted for engagement with a part of the table for detachably supporting the magazine in an elevated position with one end of the magazine in alignment with the channel to receive rivets from the latter.

3. A rivet loading apparatus comprising a loading table adapted to receive a quantity of loose rivets, guide means in the surface of the table adapted for positioning the rivets upright, a rivet magazine, and hangers carried by the magazine adapted for engagement with a part of the table for detachably supporting the magazine in an elevated position with one end of the magazine in alignment with the guide means to receive rivets from the latter, said magazine comprising spaced parallel rods rigidly secured to each other.

4. A rivet loading apparatus comprising a loading table adapted to receive a quantity of loose rivets, a guide channel in the surface of the table having shoulders at each edge adapted to support the heads of the rivets with the shanks thereof suspended in the channel, a rivet magazine comprising a plurality of spaced parallel rods rigidly secured to each other, and means for supporting the magazine in an elevated position with one end of the magazine in alignment with the channel.

5. A rivet loading apparatus comprising a table, means for supporting the table in an inclined position, means for vibrating the table, a guide channel in the surface of the table adapted to receive and support rivets by their heads in an upright position, a rivet magazine, hanger rods carried by the table, and hangers carried by the magazine for detachable engagement with said rods for removably supporting the magazine in an elevated position with one end of the magazine in alignment with the channel to receive rivets therefrom.

6. A rivet loading apparatus comprising a table, means for supporting the table in an inclined position, means for vibrating the table, a guide channel in the surface of the table adapted to receive and support rivets by their heads in an upright position, a plurality of rods extending transversely of the table, a rivet magazine, and hangers carried by the magazine for removably supporting the magazine on the rods in an elevated position with one end in alignment with said channel.

7. In combination, a rivet loading table, and a rivet magazine comprising a plurality of spaced parallel rods in triangular cross sectional arrangement and adapted to engage the top and bottom surfaces of the head of a rivet, supporting means carried by the table, and suspension means carried by the rods for detachably supporting the magazine on the table in an elevated position to feed rivets in an upright position from the table to the magazine.

ARTHUR F. KOEHLER.