

June 30, 1925.

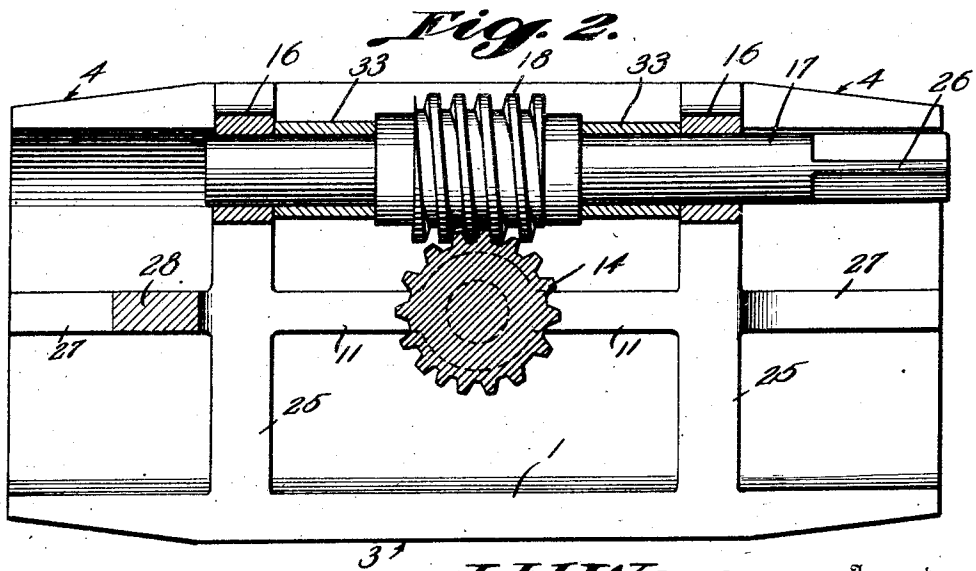
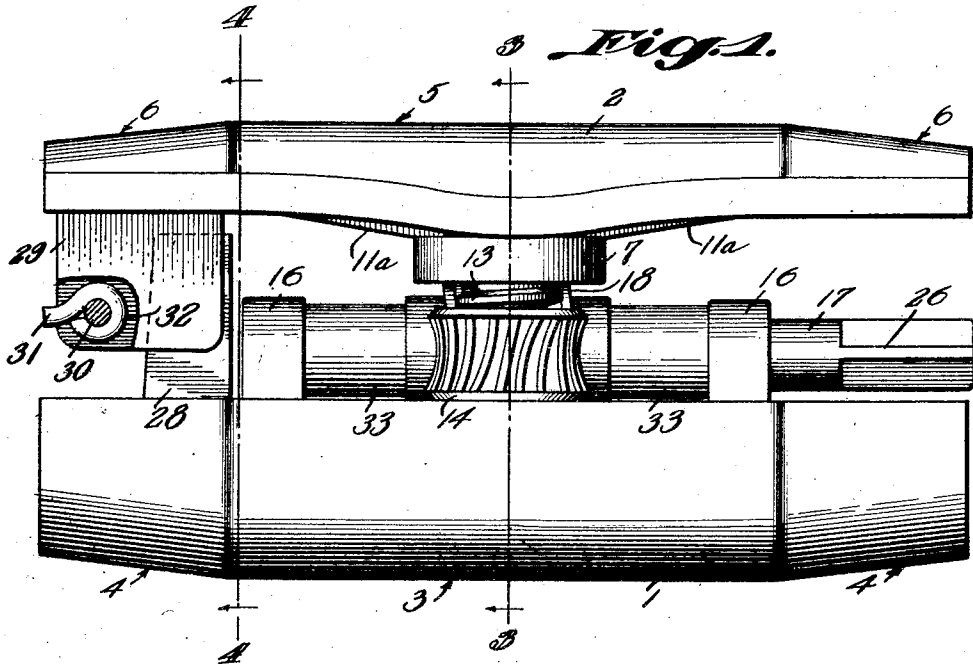
1,544,510

J. H. WARE

SWAGE

Filed Aug. 16, 1923

2 Sheets-Sheet 1



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Fig. 3.

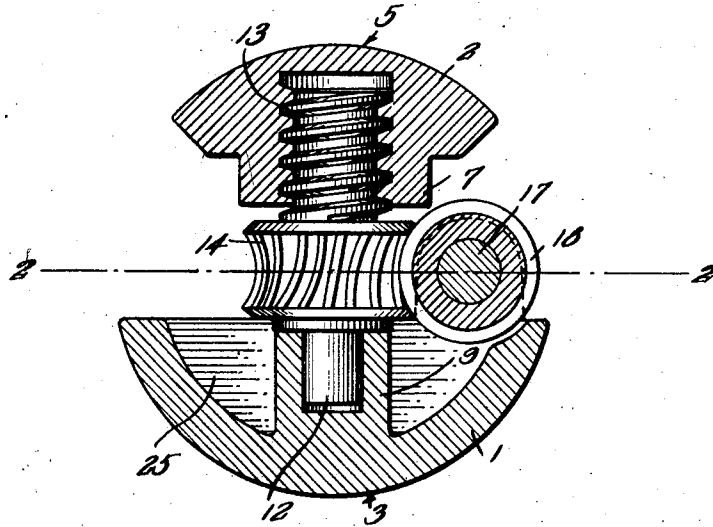


Fig. 4.

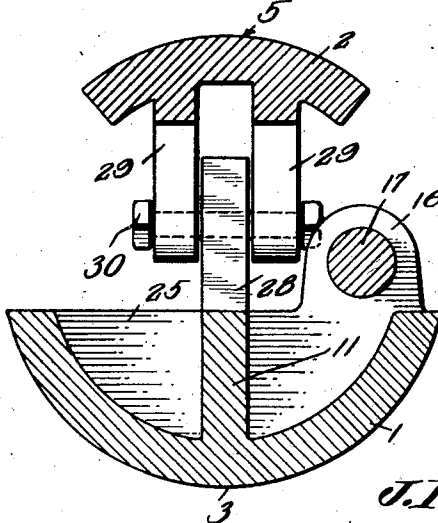
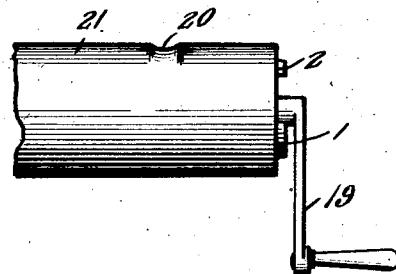


Fig. 5.



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Patented June 30, 1925.

UNITED STATES PATENT OFFICE.

JOHN H. WARE, OF LOS ANGELES, CALIFORNIA.

SWAGE.

Application filed August 16, 1923. Serial No. 657,753.

To all whom it may concern:

Be it known that I, JOHN H. WARE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Swage, of which the following is a specification.

The device forming the subject matter of this application is a casing swage, of that general form shown in Patent No. 980,079 granted on December 27, 1910 to Ryland W. James.

Sundry improvements are proposed in the structure shown in the patents above identified, one of these improvements being a means for preventing the base and the anvil of the swage from swinging with respect to each other, during the operation of the swage, and during the insertion of the device into the article which is to be swaged, as well as during the removal of the device therefrom.

Another object of the invention is so to construct the device that a convenient and strong place of attachment may be provided for the operating member whereby the swage is introduced into the tube which is to be swaged.

Another object of the invention is to strengthen the construction of the base portion of the swage.

The foregoing objects, having been stated generally above, will be understood better when the following description is read in connection with the drawing.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in side elevation, a casing swage constructed in accordance with the invention, parts being broken away; Fig. 2 is a longitudinal section; Fig. 3 is a transverse section on the line 3—3 of Fig. 1, the line 2—2 in Fig. 3 indicating the cutting

plane on which Fig. 2 is taken; Fig. 4 is a transverse section on the line 4—4 of Fig. 1; Fig. 5 is an elevation illustrating the operation of the swage with respect to a casing.

Since the device forming the subject matter of this application is an improvement on the casing swage shown in Patent No. 980,079, the description will open with an enumeration of the parts common to the two devices, reference numerals being taken, so far as possible, from Patent No. 980,079, and notice being given when the description no longer alludes to that which is old, but refers to that which is new and characteristic of the present application.

The device forming the subject matter of this application comprising cooperating members, one of which is in the form of a trough-shaped base 1 having a cylindrical intermediate bearing surface 3, and inclined end surfaces 4. The base 1 is supplied with an internal radial projection 9, reinforced by longitudinal webs 11 which are joined to the base 1. The base 1 has cross walls 25 equipped with projecting ears 16 wherein a first shaft 17 is journaled, the shaft carrying a worm 18. The shaft 17 is adapted, as indicated at 26, to receive a crank 19 or other means whereby rotation may be imparted to the shaft. A second shaft 12 is provided, and is disposed at right angles to the first shaft 17, the shaft 12 being rotatably mounted in the projection 9 of the base 1, and carrying a worm wheel 14 resting on the projection 9, the worm wheel meshing with the worm 18 on the shaft 17.

The swage embodies an anvil 2 having a cylindrical intermediate bearing surface 5 and inclined end surfaces 6. The anvil 2 has an internal radial projection 7 reinforced by webs 11^a. One end of the second shaft 12 is threaded at 13 into the projection 7 of the anvil 2.

The description of the operation of the device may be dismissed briefly, the numeral 21 denoting in Fig. 5, a casing or tube which has a dent 20. It is obvious that if the swage is introduced into the tube 21, and that if relative movement between the base 1 and the anvil 2 is brought about, through the instrumentality of the shaft 17, the worm 18, the worm wheel 14 and the screw shaft 12, the dent 20 will be pressed outwardly.

Having thus set out with sufficient exactness, those parts which are old, it remains to discuss the features which characterize the

structure forming the subject matter of this application.

Thus, it is proposed to strengthen the trough-shaped base 1, and, with this end in view, the webs 11 are joined to the cross walls 25. The base 1, further is strengthened by the provision of longitudinal buttresses 27, extended outwardly from the walls 25 and joined to the walls and to the base 1.

Passing to a more important improvement, it may be stated that in the operation of the casing swage as shown in Patent No. 980,079, considerable difficulty has been experienced, by reason of the fact that the base 1 and the anvil 2 do not always stand in parallel relation. Having this objection in mind, the trough-shaped base 1 is provided with an internal projecting arm 28, carried by one of the buttresses 27, the arm being received between inwardly projecting flanges 29 on the anvil 2. It will be obvious that the interengaging elements represented by the parts 28 and 29 prevent the base 1 and the anvil 2 from swinging out of parallel relation, without, however, interfering with the relative transverse movement between the members 1 and 2, when the dent 20 is removed from the casing 21 in the manner hereinbefore set forth. The flanges 29 have an additional function, in that they form a place of attachment for the means whereby the swage is moved longitudinally within the casing 21. Thus, a securing element 30, such as a bolt, is mounted in the flanges 29, an operating member 31, sometimes in the form of a rod, extending between the flanges 29 and being mounted pivotally, as at 32, upon the securing element. By means of the operating member 31, the swage may be moved lengthwise in the casing 21, in order to place the swage properly with respect to the dent 20 and to provide for a removal of the swage.

The arm 28 on the base 1 must operate with the flanges 29, the flanges 29 carry the operating member 31, the operating member must be located closely adjacent to one end of the swage, the arm 28 is carried by one of the buttresses 27, and the said buttress is connected, for reinforcement, to the adjoining cross wall 25. In view of all of the foregoing, it is obvious that the cross walls 25 must be spaced apart more widely than are the corresponding cross walls in the patent mentioned. Since the cross walls 25, and consequently the ears 16, are spaced more widely apart than are the corresponding elements in patent No. 980,079, the ends of the worm 18 do not engage directly with the walls 25, to hold the shaft

17 against longitudinal movement, sleeves 33 being journaled on the shaft 17 and being located between the ends of the worm 18 and the ears or bearings 16, to hold the shaft 17 against longitudinal movement, and in the position shown in Fig. 2 of the drawings.

What is claimed is:—

1. A device of the class described comprising cooperating members; means for moving said members apart; interengaging elements on said members coacting to prevent said members from swinging on said means, and to hold said members in parallelism; and means for moving the device bodily, said means being connected to one of the aforesaid interengaging elements.

2. In a device of the class described a trough-shaped base provided with an internal projection and having cross walls, the base being equipped with longitudinal webs connecting the projection with the walls, and being supplied with a buttress extended outwardly from one wall, the buttress having an arm; an anvil cooperating with the base; means for moving the anvil and the base apart, said means comprising a part mounted in the projection; and an element on the anvil wherewith the arm cooperates to prevent relative swinging movement of the base and the anvil on said part.

3. A device of the class described, constructed as set forth in claim 2 and further characterized by the provision of a member for moving the device, said member being connected to said element on the anvil.

4. A device for swaging dents out of tubes, comprising cooperating members which are transversely curved on their outer surfaces to conform to the internal cross section of the tube to be swaged, the length of said members being appreciably greater than their width; mechanism located between said members for forcing them apart, said mechanism comprising a screw shaft rotatable in both of said members and disposed approximately at right angles to the length of said members, said members being provided with inwardly projecting parts which cooperate to prevent said members from swinging with respect to each other on the screw shaft and getting out of alignment with each other.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN H. WARE.

Witnesses:

W. H. DILLON,
J. DILLON.