J. PICKLES.

SETTING DIES.

APPLICATION FILED MAY 23, 1912.

1,218,801. Patented Mar. 13, 1917.

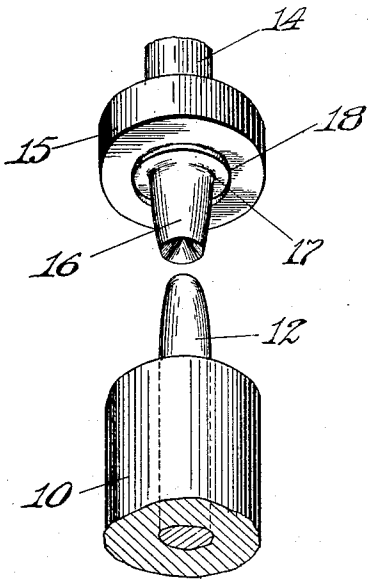


Fig.1.

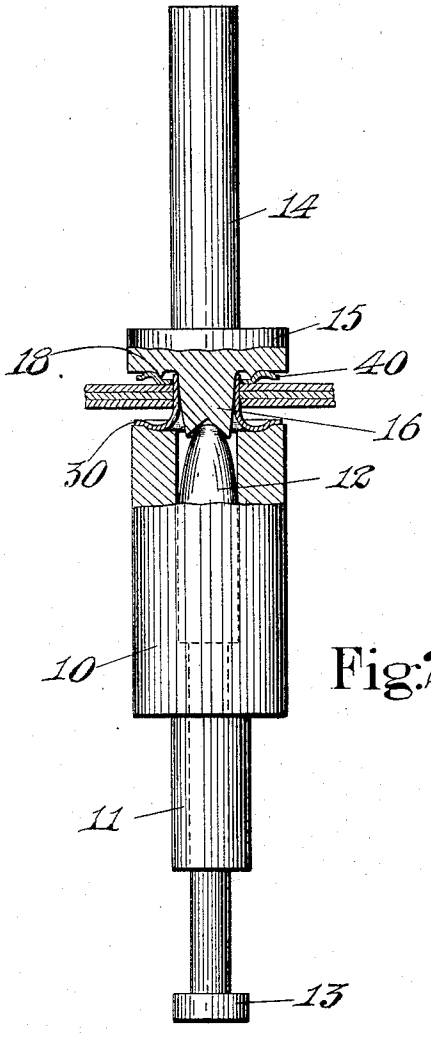


Fig.2.

WITNESSES.

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SETTING-DIES.

1,218,801. Specification of Letters Patent. **Patented Mar. 13, 1917.**

Application filed May 23, 1912. Serial No. 699,299.

To all whom it may concern:

Be it known that I, JAMES PICKLES, a citizen of the United States, residing at Ansonia, in the county of New Haven and State of Connecticut, have invented certain Improvements in Setting-Dies, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to setting dies for use in connection with machines for setting washers and gromets or eyelets in sheet material such as rubber goods, hammocks, awnings and other textile articles.

An important object of the invention is to provide an upsetting die which shall be capable of both positioning the washer and clenching the barrel of the gromet or eyelet in that class of work where it is desired to arrange the gromet or eyelet flange upon one surface of the work and clench the end of its barrel upon a washer disposed on the opposite surface of the work. In setting washers and gromets much difficulty has been encountered in locating the washer centrally with respect to the setting tools on account of the fact that the diameter of the perforation of the washer must necessarily be greater than the diameter of the spindle of the upsetting die in order to permit the end of the gromet barrel to pass between the spindle and the inner edge of the washer. This difficulty is avoided in accordance with the present invention by providing an upsetting die having a washer locating projection upon its surface, constructed and arranged so as to position the washer concentrically with respect to the spindle, with the inner edge of the washer perforation equally distant at all points from the spindle.

As herein shown a perferred form of washer-locating projection consists in a circular rib projecting from the surface of the upsetting die and having a substantially wedge-shaped cross section. Preferably the rib is made continuous, although it will be apparent that a series of separate projections arranged in a circle would have much the same effect in locating a washer.

An important advantage incident to this construction is that the projecting washer-locating device will serve to support above the surface of the upsetting die that portion of the washer surface upon which the end of the gromet barrel is to be clenched so that there is less liability of imperfect setting due to the end of the gromet barrel striking the washer and also less liability of incorrect disposition of the metal rolled over in the clenched end.

For use with the improved upsetting die of this invention I have designed a novel form of washer which is disclosed in United States Letters Patent No. 1,031,024, granted July 2, 1912, on an application of James Pickles, although it is not intended that the use of the setting die herein disclosed should be limited to a washer of this form or of any other particular form. Washers of the type disclosed in said application, however, are particularly well adapted for use with the setting dies herein shown as they are provided with a short tapering barrel which cooperates with the washer-locating projection of the upsetting die in determining the position of the washer.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawings, in which,—

Figure 1 is a view in perspective of a pair of setting dies; and

Fig. 2 is a view of the dies in side elevation, partly in section, showing a gromet and washer in the position which they occupy before the clenching operation begins.

The setting dies herein shown are intended for use in any machine adapted to set gromets and washers, such for example as that shown in application Serial No. 514,180 of John F. Davey. In such machines there is provided means for feeding a gromet to the setting die, for feeding a washer to the upsetting die and for forcing the setting dies together to clench the end of the gromet barrel upon the upper surface of the washer.

The lower setting die may be of any preferred construction and, as herein shown, comprises a thick cylindrical sleeve 10 having its upper end shaped to fit the flange of a gromet 30 and its lower end reduced forming a shank 11 by which it is held in the machine. This setting die is provided with a central longitudinal bore for the reception of a movable pin 12 provided with an abutment 13 at its lower end which fur-

nishes a bearing for a spring, not shown, normally holding the pin in the position shown in Fig. 1. In delivering the gromet to the setting die the gromet is threaded over the projecting end of the pin 12 and during the clenching operation the pin is forced downwardly into the position shown in Fig. 2 by the action of the upsetting die.

The upsetting die, which constitutes the subject-matter of the present invention, has a cylindrical shank 14 by which the die is held in the machine. The clenching surface of the upsetting die is formed in part by the lower face of a heavy flange 15 which projects outwardly from the shank 14. From the center of this surface projects a tapering spindle 16 which is concaved at its end to receive the reduced end of the lower pin 12 when the setting dies are forced together. At the base of the spindle 16 the surface of the upsetting die curves outwardly in such a manner as to cause the end of the gromet barrel to roll outwardly when forced against it. This curved clenching surface is indicated in the drawing by reference character 17. Arranged concentrically with the spindle 16 and projecting from the lower surface of the flange 15 is a rib 18 which constitutes the washer-locating device. As shown in Fig. 2, the rib 18 is substantially wedge-shaped in cross-section. In practice the outer sloping surface of the rib 18 will coöperate with the tapering inner surface of the short barrel of the washer 40 in such a manner as to cause the washer to assume a position concentric with respect to the spindle 16 and with the inner edge of the washer spaced from the spindle. The inner face of the rib 18 merges into the surface of the upsetting die and serves to roll the end of the gromet barrel inwardly in the clenching operation thereby producing a neat and well finished rolled clenched end in that part of the gromet barrel which passes over the washer.

The characteristic shape of the washer best adapted for use with the upsetting die herein shown, and the manner in which the washer is handled by the die, will be apparent from Fig. 2 from which it will be seen that the washer has an outer flange merging into a short barrel, and that there is provided within the end of this barrel an inner annular flange with which it is intended that the clenched end of the gromet barrel should engage. The flat outer portion of the surface of the upsetting die, therefore, acts to support the outer flange of the washer while the rib 18 engages the inner surface of its barrel and also supports the inner flange against the setting pressure. As herein shown the inner portion of the clenching surface 17 is located in the same plane as the flat washer supporting face of the upsetting die. This insures that the clenched end of the gromet barrel will lie in the same plane as the washer flange, thus producing a smooth piece of work.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

A gromet upsetting die for use in washer and gromet setting machines, having a plane washer supporting face, an annular rib of V-shaped cross-section limiting said face at one edge, and a curved clenching surface within the rib merging into a centrally disposed spindle shaped to guide the end of the gromet barrel through the opening of a washer centered by said rib, the inner portion of the clenching surface being constructed and arranged to lie in the same plane as the washer supporting face and to clench and position the end of a gromet barrel in the same plane as the washer flange.

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

JAMES PICKLES.

Witnesses:
ELWOOD W. WEBB,
AGNES L. PIDGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."