March 27, 1956 E. C. ELSNER 2,739,361

PIVOTED DOG CONSTRUCTION

Filed July 12, 1954

Fig. 1.

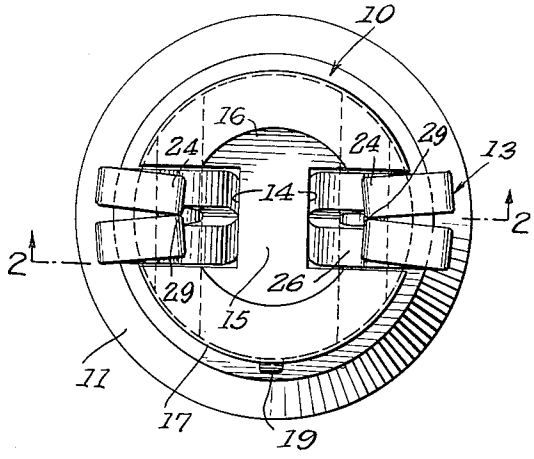



Fig. 3.

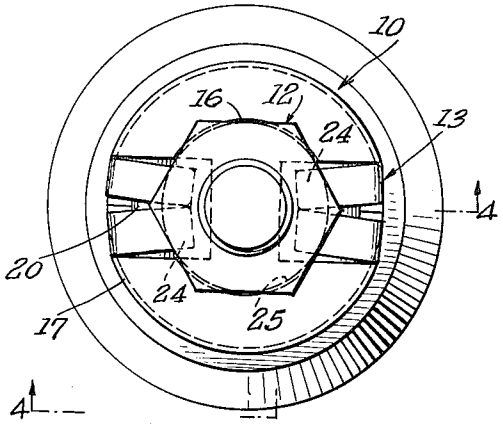



Fig. 2.

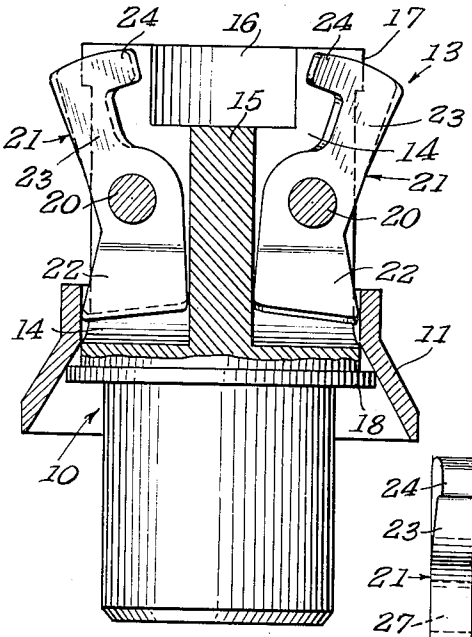



Fig. 4.

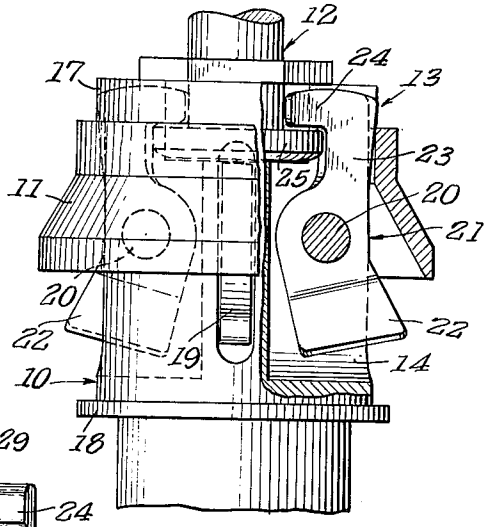
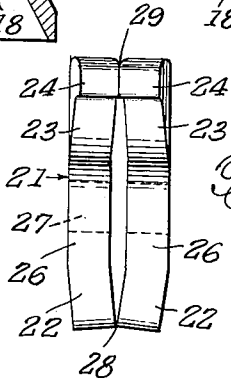



Fig. 5.




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# PIVOTED DOG CONSTRUCTION

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7 Claims. (Cl. 24—211)

This invention relates to a pivoted dog construction adapted for use in separable fastener devices in which such dogs constitute elements that are moved into and out of fastening engagement, as with a stud member.

In fasteners of the type referred to, two diametrically opposed dogs are mounted on pivots provided in one member and are separably engageable with another member, said dogs being movable on their pivots between released and operative positions. Three or more such dogs may be provided where the need for a larger number is indicated. Since these dogs are subject to a pulling force between the members and such force is frequently quite great, the need for great strength is evident.

Conventional forms of stud member engaging dogs are usually made to be relatively thick as a means for obtaining desired strength. For this reason, inexpensive manufacture as, for instance, by die cutting and forming, is rendered difficult and, therefore, unfeasible. Consequently, such one-piece conventional dogs, must necessarily be produced in other and more expensive ways.

An object of the present invention is to provide a pivoted dog construction that is characterized by low cost of manufacture, coupled with strength at least equal to the strength of the more expensive one-piece dogs and frequently substantially stronger.

Another object of the invention is to provide a dog construction in which two dogs are so interrelated as to act as a single or one-piece device, thereby enabling inexpensive manufacture, as by stamping and like low-cost methods, and yet having strength frequently greater and, at least, equal to the strength of one-piece devices.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawing merely shows and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

Fig. 1 is an end view of an attachment or fastener provided with a pivoted dog construction according to the present invention, said dogs being shown in released position.

Fig. 2 is a longitudinal sectional view as taken on line 2—2 of Fig. 1.

Fig. 3 is an end view of said attachment and showing the dogs in operative position engaged with a stud member.

Fig. 4 is a partial elevational and partial sectional view as taken on line 4—4 of Fig. 3.

Fig. 5 is an elevational view of one of the dogs as in



the position of Figs. 3 and 4 and viewed from the inside of the attachment.

The attachment or fastener body 10, together with the dog-operating ring 11, are generally conventional, as is the stud 12 that is separably connected to said fastener by the pivoted dog means 13 of the present invention.

The body 10 is shown with oppositely disposed longitudinal seats or slots 14 that are open at their ends and sides and are separated by a wall 15 that terminates short of the end of the body in which end is provided a cylindrical seat 16. The dog means 13 are disposed in longitudinal slots 14 and stud 12 is adapted to be entered into seat 16.

Said body is preferably cylindrical as shown, and is provided with an annular shoulder flange 17 at the end that has seat 16 and with an annular shoulder flange 18 at the opposite end. The ring 11 is engaged over said body and its end positions are limited by flanges 17 and 18. A snap detent 19 of usual design releasably holds said ring against one or the other flange, as shown in Figs. 2 and 4. The present pivoted dog means 13 are mounted in the slots 14 of said body 10 on pivot pins 20 that extend transversely across said slots 14 and are disposed approximately half way between the open ends of slots 14 and the opposite ends adjacent flange 18.

The foregoing is generally conventional and it will be noted that slots 14 are of substantial width to accommodate the wide or thick one-piece dogs mentioned in the preamble to this specification.

Each present dog means 13 comprises similar but oppositely formed dogs 21 arranged in slots 14 in pairs. Each dog is preferably made of steel or similar strong metal and, according to the invention, has a thickness substantially less than the width of slot 14. Thus, each dog 21, being less than half the thickness of a one-piece dog usually fitted in slot 14, may conveniently be stamped from sheet steel stock in an inexpensive and expeditious manner.

Each said dog 21 is formed to have a tail 22 that resides in the closed end of slot 14 and on one side of pivot pin 20, and a neck 23 on the end of which is provided an inwardly directed finger or hook 24, said neck and hook being disposed on the opposite side of pin 20 and in the end of the slot that is open.

As when engaged with conventional dogs, the ring 11, in the position of Fig. 2, engages the tails 22 to urge them inwardly toward each other and, thereby, move the necks and hooks to release position at opposite angles from each other. In the position of Fig. 4, said ring engages the outer edges of said necks 23 to urge them inwardly and, thereby, move hooks 24 toward each other into overstanding engagement with the head 25 of stud 12.

As seen best in Fig. 5, each dog 21 has an intermediate part 26 in which the hole 27 for pivot pins 20 is provided. The parts 26 of each pair of dogs are maintained in spaced parallelism so as to properly turn on the pivot pin. This is accomplished by bending the tails 22 of said dogs on transverse lines in angular planes toward each other to touch along edges 28. The spacing of the dog parts 26 results also from the provision of a twist of some 10° to 15° imparted to the neck and hook of each dog, the same being directed toward each other and touching at edges 29. Figs. 1 and 2 best show how such twist causes the hooks 24 to assume a position in a plane that is more radial with respect to the center of stud 12 than if the hook had not been twisted. Thus, each dog has portions in three different planes, the plane of part 26, the plane of tail 22 at an angle to the plane of part 26, and the plane of hook 24, also at an angle to the plane of part 26 but also at an angle oblique to the plane of the angle of the tail.

As mentioned, the dogs are oppositely formed so that

the contacting edges 29 of the hooks 24 cooperate with the contacting edges 28 of the tails 22 to so space the dog parts 26 as to cause the same to substantially fill and, therefore, pivotally fit in slot 14. Formed in this manner, the pair of dogs is so related as to act as a single unit, pivotally moving in unison under urging by ring 11.

The dual-dog construction provided realizes the objects of this invention because of the inexpensive manner in which the same may be produced, simple blanking and forming dies being all that are necessary to produce the dogs herein disclosed.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. It is, therefore, not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. A pivoted dog construction comprising two dogs mounted on a common pivot and disposed in a longitudinal seat across which said pivot extends, each dog being provided with a tail on one side of the pivot and bent to be in a plane at an angle to the general plane of the part through which the pivot extends, and provided with a hook on the opposite side of said pivot, said hook being bent to be disposed in a plane at an angle to said general plane, the plane of the tail and that of the hook intersecting obliquely, the bends of the two dogs being opposite.

2. A pivoted dog construction comprising two dogs mounted on a common pivot and disposed in a longitudinal seat across which said pivot extends, each dog being provided with a tail on one side of the pivot and bent to be in a plane at an angle to the general plane of the part through which the pivot extends, and provided with a hook on the opposite side of said pivot, said hook being bent to be disposed in a plane at an angle to said general plane, the plane of the tail and that of the hook intersecting obliquely, the bends of the two dogs being



in opposite directions to bring the adjacent edges of the two tails into engagement and the adjacent end edges of the hooks into engagement, the portions of the two dogs that are in the mentioned general planes being held spaced by said engagement of the tails and hooks.

3. A pivoted dog construction according to claim 2: said two dogs cooperating to pivotally move in unison into hooking engagement with a generally circular stud member, the hooks being at an angle to each other and substantially radially directed with respect to the center of said stud member.

4. A pair of dog elements on a common pivot and cooperating to constitute a unitary acting dog, each said element being bent into three plane portions of which the intermediate plane portions of the two elements are in spaced parallelism and the pivot of said elements extending through said spaced portions, one end plane portion of each dog being bent at an angle and the angled end plane portions of the two dogs being directed toward each other and touching along end edges of said end plane portions, and the other end plane portion of each dog being provided with a hook formed and bent at an angle oblique to the angle of bend of the first end portions to bring the ends of the hooks into touching engagement.

5. A pair of dog elements according to claim 4: the hooks, from their touching ends, extending divergingly from each other.

6. A pivoted dog construction according to claim 1: the tails and the hooks of the two dogs being bent toward each other and in touching engagement to space apart the parts of the two dogs through which the pivot extends.

7. A pivoted dog construction according to claim 1: the tails and the hooks of the two dogs being bent toward each other and in touching engagement to space apart the parts of the two dogs through which the pivot extends, and the two dogs being separately pivotally mounted on the pivot.

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