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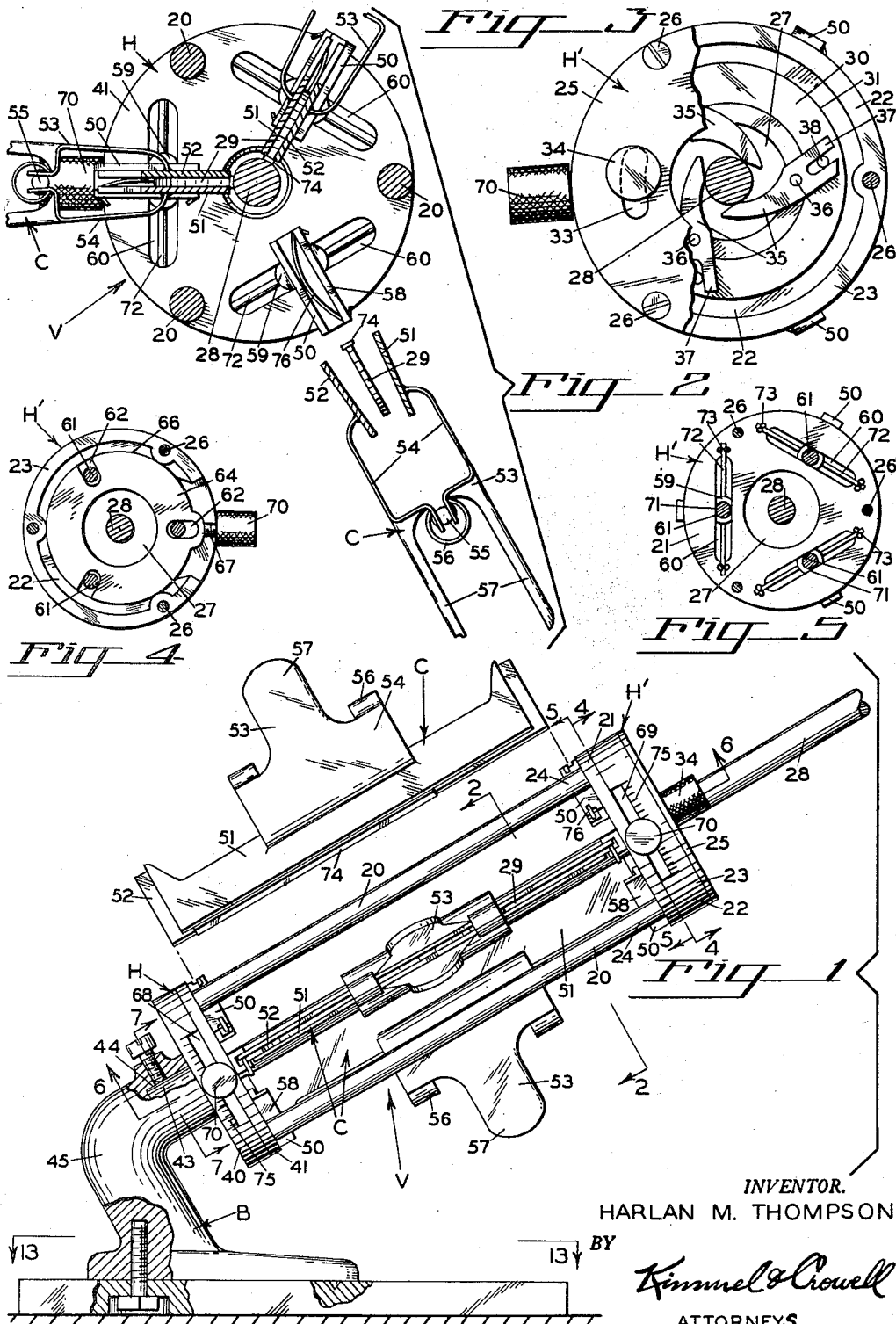
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FLETCHING JIGS

Filed Oct. 16, 1956

2 Sheets-Sheet 1



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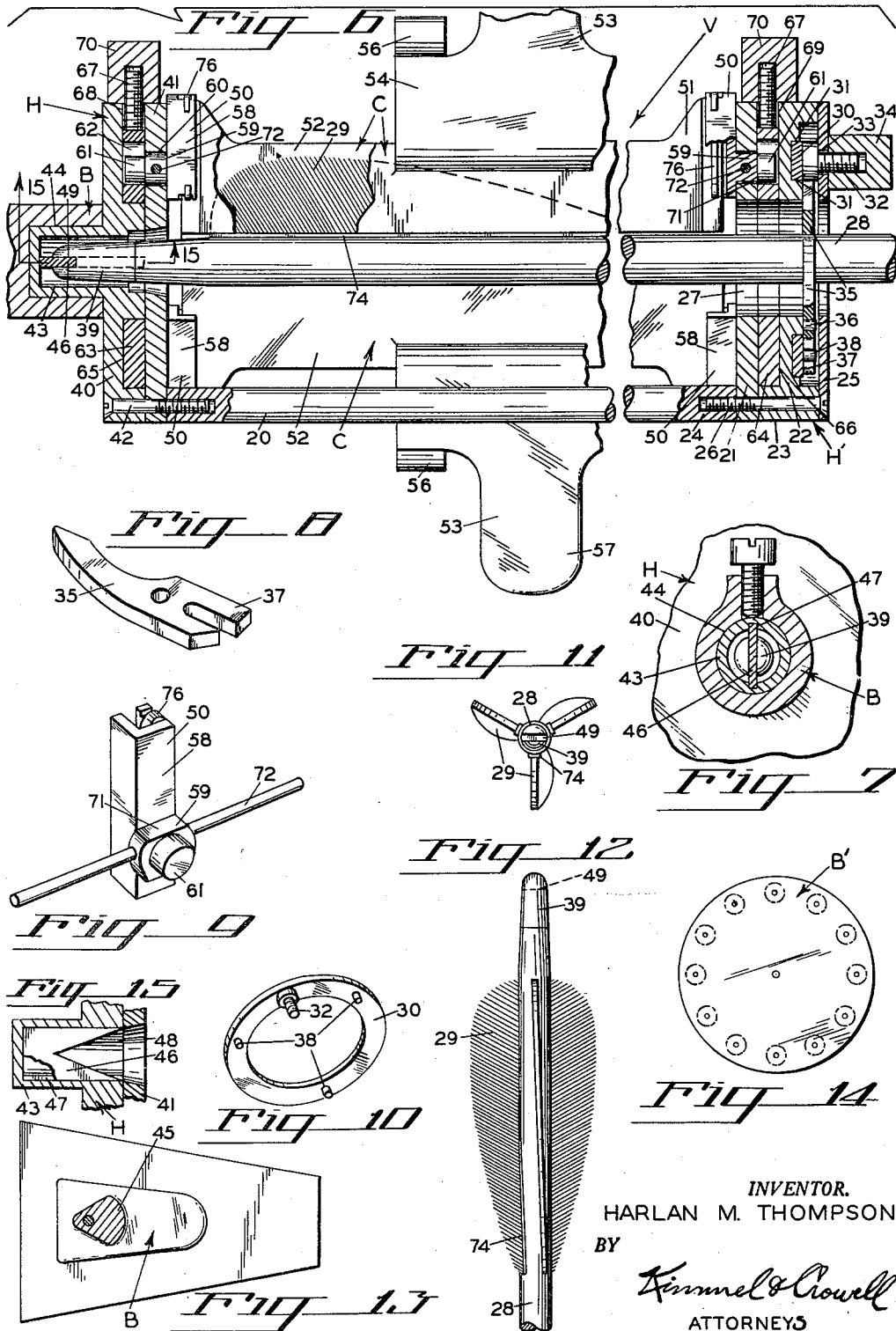
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FLETCHING JIGS

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2 Claims. (Cl. 144—289)

The present invention relates to improvements in fletching jigs, and more particularly to a jig which is adapted for the positioning and gluing of feathers to the shafts of arrows.

The primary object of the invention is to provide a fletching jig for positioning the feathers on the shaft of arrows, either parallel with the shaft, or at an angle to the shaft, holding the feathers to the shaft while the attaching glue sets.

Another object of this new fletching jig is to provide simple means for holding the arrow shaft in place while the feathers are brought into contact therewith in the gluing of the same to the arrow shaft. In the use of this new fletching device, all of the feathers are secured to the shaft simultaneously in one gluing operation.

A further object of the invention is to provide means for adjusting the angle of the feather to the shaft by a simple mechanism, controlling the position of all feathers simultaneously, to a predetermined position, indicated to the operator, by graduation marks on the device.

Other objects and advantages will become apparent in the following specification when considered in light of the attached drawings, in which:

Figure 1 is a side elevation of my new and improved arrow fletching jig, partially broken away for convenience of illustration, and with one of the feather holding clamps shown in exploded position.

Figure 2 is an enlarged fragmentary transverse sectional view, taken on the line 2—2 of Figure 1, looking in the direction indicated, with the lower feather holding clamp shown in exploded position for convenience of illustration in the drawing, this clamp also shown in exploded position with relation to the feather to be glued to the shaft of the arrow.

Figure 3 is an enlarged end view, partially broken away for convenience of illustration, of the arrow shaft centering and holding mechanism with the arrow shaft shown in section.

Figure 4 is a transverse sectional view, taken on the line 4—4 of Figure 1 looking in the direction indicated.

Figure 5 is a transverse sectional view, taken on the line 5—5 of Figure 1, looking in the direction indicated.

Figure 6 is a longitudinal sectional view with parts broken away for convenience of illustration, taken on the line 6—6 of Figure 1, looking in the direction indicated.

Figure 7 is an enlarged fragmentary sectional view, taken on the line 7—7 of Figure 1, looking in the direction indicated.

Figure 8 is a perspective view of one of the shaft centering and holding fingers.

Figure 9 is a perspective view of one of the feather clamp holding guideways removed from the fletching device.

Figure 10 is a perspective view of the centering clamping ring adapted to operate the arrow shaft clamping and holding jaws.

Figure 11 is a rear end view of the arrow after the

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feathers have been glued thereto, showing the feathers at an angle to the shaft.

Figure 12 is a side view of the shaft of the arrow illustrating how the feathers are glued thereto at a slight angle to the shaft.

Figure 13 is a horizontal sectional view taken on the line 13—13 of Figure 1, looking in the direction indicated.

Figure 14 is a diagrammatical plan of a base adapted to support a series of fletching devices. This base is adapted to be revolved in front of the operator, bringing each fletching device into position.

Figure 15 is a fragmentary sectional view, taken on the line 15—15 of Figure 6, looking in the direction indicated.

Referring now to the drawings in detail wherein like reference numerals indicate like parts throughout the several figures, the reference character V indicates a vise assembly mounted upon a base B and forming a fletching jig constructed in accordance with the invention.

The vise assembly V consists of a pair of arrow shaft holding heads H and H' spaced apart in axial alignment with each other by a plurality of spacing rods 20.

The structure of the head H' will be first described, referring to Figure 6, particularly. The head H' consists of a stationary disk-like member 21. A second disk-like member 22 having a rim 23 formed thereon is adapted to engage the face of the first member 21. The two members 21 and 22 are held together between ends 24 of the spacers 20 and a retaining plate 25 by threaded screws 26. The members 21 and 22 have an opening 27 passing through their centers, adapted to receive a shaft 28 of the arrow to which feathers 29 are to be applied.

The shaft 28 of the arrow is held centrally of the opening 27 in the following manner, referring particularly to Figures 3 and 6. A ring 30 is adapted to operate within a groove 31 formed in the face of the body member 22. Forming part of the ring 30 is an outwardly extending stud bolt 32, which passes through a slot 33 within the retaining plate 25 of the head assembly H'. A thumb nut 34 is threaded to the stud bolt 32 and is adapted to hold the ring 30 in a fixed circumferentially adjusted position.

Arrow shaft 28 holding jaws 35 are each pivotally mounted to one of a plurality of stub pins 36 which form part of the body member 22. The jaws 35 are opened and closed by the action of their bifurcated ends 37, each of which embrace one of stub pins 38 on the ring 30. On rotating the ring 30 within the groove 31 of the body member 22, the jaws 35 are pivoted about the pins 36 opening or closing them in regards to the arrow shaft 28.

The head H is adapted to hold the butt 39 of the arrow shaft 28 in alignment with the opening 27 of the head H'. The head H consists of a stationary disk-like body member 40. A second disk-like stationary body member 41 is clamped to the face of the body member 40 by the screws 42, which in turn clamp the head H to the spacing rods 20, holding the vise V in assembled position. A cylindrical boss 43 extends axially outwardly from the member 40 and is adapted to enter the socket 44 formed on the upper end of a pedestal 45 of the base B.

Referring now to Figures 6, 7 and 15, a relatively flat member 46 is adapted to enter the socket 44 engaging in grooves 47. Referring particularly to Figure 15, the member 46 is notched out in the form of a V at 48. The V at 48 is adapted to center the butt 39 of the shaft 28 of the arrow. The member 46 is adapted to enter the notch 49 formed in the butt of the arrow, holding the butt 39 of the arrow in a central position relative to the head H.

Feather holding clamps C are adapted to be supported between the heads H and H' within adjustable guide-

ways 50. The clamp C consists of a pair of jaws 51 and 52. The jaws 51 and 52 are held in alignment with one another and towards one another by the hand clip 53, referring particularly to Figures 1 and 2. The clip 53 consists of jaws 54 pivotally connected together at 55 and compressed together by the spring member 56. The clips 53 extend beyond their pivot center 55 into operating levers 57, which are adapted to be compressed by the operator, thereby opening or spreading the jaws 51 and 52 so that the feather 29 can be clamped therebetween.

The guideways 50 consist of elongated channel members 58. The members 58 have bosses 59 forming part thereof and extending therebeyond and adapted to pass through the slots 60 formed in the body member 41 of the head H and the slots 60 of the member 21 of the head H'. The bosses 59 extend into reduced spindle portions 61, which are adapted to pass through the slots or notches 62 formed in the periphery of the ring 63 of the head H and the ring 64 of the head H'.

The ring 63 is adapted to operate within the recess 65 formed within the face of the body member 40 of the head H. The ring 64 is adapted to operate within the recess 66 formed within the disk-like member 22 of the head H'. The rings 63 and 64 have outwardly extending threaded studs 67 forming part thereof and operating through the slot 68 formed within the body 40 and the slot 69 formed within the rim 23 of the body member 22 of the head H'. Thumb nuts 70 are adapted to tighten on the stud 67, preventing the rings 63 and 64 from rotating when tightened down.

The center lines of the guideways 50 are maintained in a radial position relative to the heads H and H' by the flat sides 71 formed on the bosses 59. The flat sides 71 of the bosses 59 operate within the slots 60 formed in the body members 21 and 41 also they are further maintained in alignment by sliding on the guide rods 72, which are fixedly secured to the body members 21 at 73 by any suitable means, as for instance being nested in a slot which is peened over by a tool, maintaining the ends of the rods 72 in fixed position relative to the slots 60. The rods 72 pass through the bosses 59, holding the guideway 50 in position relative to the heads H and H'.

The spindle portions 61 of the bosses 59, as stated above, enter slots 62 formed within the rings 63 and 64. By rotating the rings 63 and 64, after loosening the thumb nuts 70, the guideways 50 can be positioned across the heads H and H' in such a manner as to align the bases 74 of the feathers 29 at an angle to the center line of the shaft 28 of the arrow, either to the right or to the left. The finished position of the feathers 29 being illustrated in Figure 12.

The heads H and H' are each provided with a scale 75 to indicate the relationship of each end of the clamps C to the center line of the fletching jig V. In the drawings I have illustrated the clamps C in alignment with the center line of the jig for convenience of illustration, but as a rule they would be positioned at an angle to the jig.

Springs 76 are nested within the guideways 50 and are adapted to bear against the sides 52 of the clamp C when the clamps C are in place, holding them to the desired fixed and adjusted position within the jig. The springs 76 are best illustrated in Figure 2. In the drawings I have illustrated only one of the jaws 51, 52 extending into the guideways 50, but both of them could extend into the guideways 50.

The mode of operation of this new and improved fletching jig is as follows. The thumb nut 34 is loosened from against the plate 25, permitting the rotation of the ring 30 in a direction to open the jaws 35 sufficient to permit the inserting of the shaft 28 of the arrow there-through. The butt 39 of the arrow is inserted within the socket 44 of the head H, the notch 49 of the butt of the

arrow straddling the flat member 46 within the socket 44 and into the V 48 of this member 44 centering the butt of the arrow within the head H. When this is accomplished the ring 30 is rotated in a direction to close the jaws 35 against the shaft 28 of the arrow, holding the same solidly in position for applying the feathers 29 thereto.

The clamps C are removed from the guideways 50 and the feathers 29 are clamped therebetween. The base 74 of the feathers having had glue or other adherent material applied thereto. The clamps C are then inserted within the guideways 50 and forced towards the shaft 28 of the arrow bringing the bases 74 of the feathers 29 tightly against the shaft 28. The guideways 50 having been previously set by adjusting them relative to the center line of the jig.

In order to accomplish this, the thumb nuts 70 are loosened, permitting the rings 63 and 64 to be revolved within the heads H and H' of the jig, positioning the guideways 50 within the slots 60 of the heads H and H', bringing the clamp C to the desired angle to the shaft 28, thereby aligning the feathers 29 to the angle while the same are glued to the shaft 28.

As stated above the angle of mounting the feathers 29 to the shaft 28 can be predetermined by observing the scale 75 when adjusting the rings 63 and 64 by way of the thumb nuts 70. As described above, when the rings 63 and 64 are revolved within the heads H and H' they move the bosses 59 along the slots 60 formed in the heads H and H' by way of the spindle portions 61 co-operating with the slots 62 formed in the rings 63 and 64. Any adjustment can be had in regards to the angle of the feathers 29 to the shaft 28 by the positioning of the guideways 50, either a right or left setting can be made of the feathers 29.

Referring to Figure 14, a series of fletching jigs can be mounted to the base B', which in turn may be rotated in front of the operator as the feathers 29 are applied to the arrow shafts 28 to permit a multiple production line operation wherein the drying time for the glue can be utilized in applying additional feathers 29.

Having thus described the preferred embodiment of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A fletching jig for supporting an arrow shaft and feathers being applied thereto comprising a base, a first disk assembly rigidly secured to said base, a second disk assembly arranged in spaced apart parallel relation to said first disk assembly, said disk assemblies having their axes aligned, each disk assembly comprising a first stationary disk and a second stationary disk secured thereto and forming a recess between said disks, a ring member rotatably mounted in said recess, said ring having slots therein, guides extending through said slots for movements with said ring and extending interiorly of said second disk in confronting relation to the guides of the opposite disk assembly, a plurality of circumferentially spaced rods extending between and rigidly secured to said disk assemblies whereby said second disk assembly is rigidly mounted with respect to said first disk assembly, means on said first disk assembly including a tapered boss on said first stationary disk and a flat plate in said boss, for supporting one end of an arrow shaft centrally of said first disk assembly, said second disk assembly having an axial arrow shaft receiving bore extending therethrough, a plurality of simultaneous and radially adjustable arrow shaft clamping jaws mounted on said second disk of said second disk assembly for axially aligning and rigidly supporting an arrow shaft extending through said second disk assembly, a plurality of longitudinally extending feather clamps arranged in circumferentially spaced relation between said disk assemblies, and means

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comprising said guides on said disk assemblies supporting the opposite ends of said feather clamps, said guides being circumferentially adjustable with respect to said disk assemblies by means of said rings whereby said feather clamps are angularly adjustable in relation to the axis of the arrow shafts so that the feathers may be applied to the arrow shaft at an angle to the axis thereof.

2. A device as claimed in claim 1 wherein set screw means are provided on each of said disk assemblies for rigidly securing said rings and hence said feather clamp supporting guides in adjusted position with respect to said disk assemblies.

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