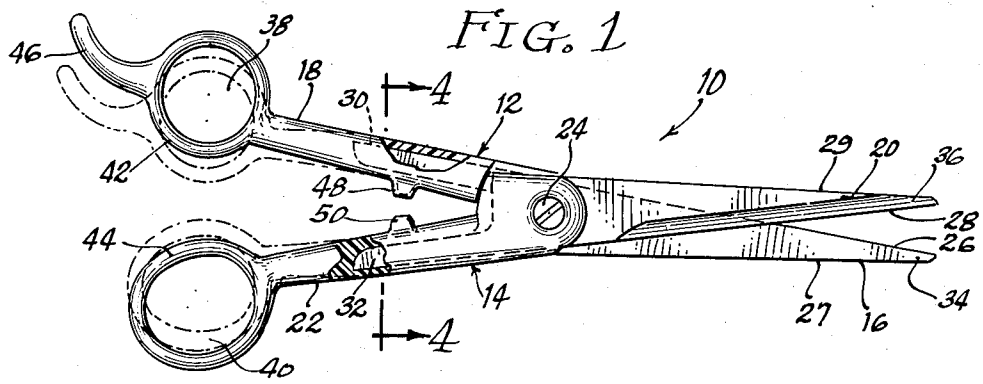
Dec. 27, 1960 J. F. WAHL 2,965,967

SCISSORS

Filed Oct. 24, 1958

FIG. 1



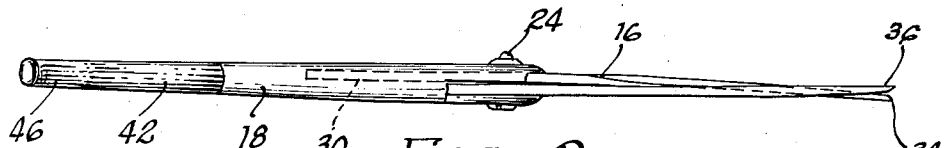


FIG. 2

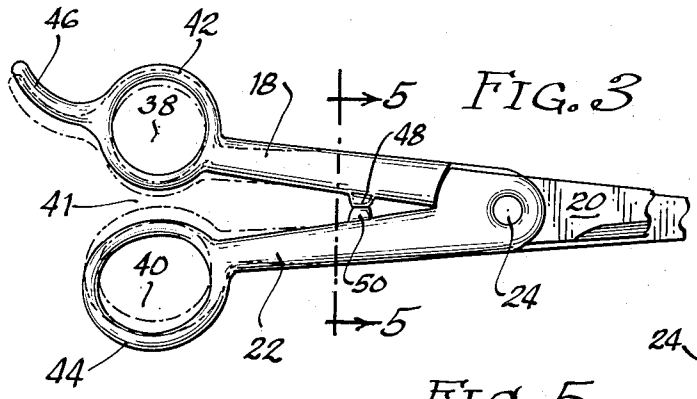


FIG. 3

FIG. 4

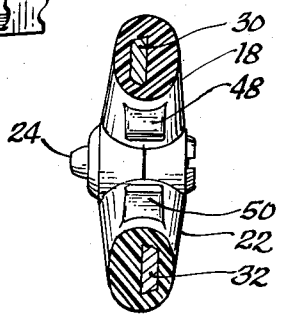
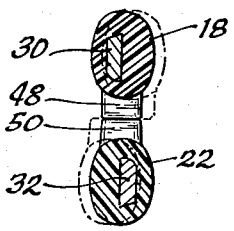


FIG. 5



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SCISSORS

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2 Claims. (Cl. 30—341)

This invention relates to a scissors, and more particularly to a scissors with molded plastic handles.

Scissor blades designed to have a long life or to be used continuously must be made from high quality, relatively hard steel. Expensive forging and often subsequent hardening processes are necessary when both the blades and the handles are integrally formed from this steel, but since the demands on the scissors handles are much less than the demands on the blades, scissors can be made using high quality steel for the blades and inexpensive molded plastic for the handles. If this is done, a substantial reduction in the cost of the scissors without loss of cutting quality is possible since the blades can be stamped out of high quality hardened sheet steel, and then the handles can be molded on, thereby eliminating the costly forging and hardening processes.

These efforts have been generally successful except where the scissors is designed for use as a barber shears. Handles of barber shears are thin, elongated and light so the scissors can operate freely and rapidly, but when molded plastic handles for such shears are used and are conventional in design the flexibility inherent in molded plastic renders the scissors unsatisfactory in some respects.

The reason for this is that in conventionally designed scissors the finger receiving portions of the handles are designed to abut against each other when the blades are in closed position to prevent the blades from rotating too far. If a scissors with thin plastic handles were constructed in the same way as the conventional all metal barber shears are constructed, then whenever the blades encounter work which offers more than a nominal resistance to cutting, the resilience in the thin handles which is characteristic of most plastic materials will permit the handles of the scissors to flex. If cutting is being attempted near the extreme end of the blades, the handles will flex until the peripheries of the finger receiving portions abut against each other. When this happens no greater pressure on the blades can be exerted by the handles, so that if the pressure on the blades when these peripheries contact each other is not sufficient to cut the work, the scissors fail to complete the cut.

It is apparent that this objectionable resilience in the handle could be overcome by making them wider and consequently more rigid, but this would make the scissors more awkward to use, at least for barbering purposes, so that this approach has little practical value.

Another problem connected with providing a barber shears with molded plastic handles is one of quality control. In the conventional barber shears, the peripheries of the finger receiving portions abut each other when the scissors blades are closed. This causes no problem when each blade and handle are integrally formed from steel because warpage in the steel during processing is insignificant. However, when the handles are formed from molded plastic, unless special precautions are taken, the handles may wrap so much that they cannot abut each other when the blades are closed and consequently they may permit the blades to rotate too far. To avoid this, higher production standards and an inspection system would be necessary along with another alignment correcting operation, but this is expensive and if possible it would be desirable to eliminate this expense.

What is needed therefore and comprises the principal

object of this invention is a shears with thin graceful handles formed from molded plastic which is not affected by resilience in the handles and which is not affected by warping distortions in the hand'e.

These and other objects of this invention will become more apparent when read in the light of the accompanying drawings and specification wherein:

Fig. 1 is a plan view of the barber shears constructed according to the principles of this invention and showing in dotted lines the way the handles bend due to their resilience during heavy cutting scissors operation;

Fig. 2 is a side elevational view of the barber shears constructed according to the principles of this invention;

Fig. 3 is a portion of a plan view of the barber shears showing the position of the handles when the blades are in a closed position.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1 and looking in the direction indicated.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3 and looking in the direction indicated.

Referring now to Figs. 1 and 2 of the drawings, a barber shears constructed according to the principles of this invention and indicated generally by the reference numeral **10** comprises a pair of elements **12** and **14**. Element **12** includes a blade **16** and an elongated handle **18**, while element **14** includes blade **20** and elongated handle **22**. As seen, blades **16** and **20** are pivotally connected together on pivot **24** so their cutting edges **26** and **28** work against each other. The ends **30** and **32** of blades **16** and **20** remote from cutting tips **34** and **36** are elongated. These elongated ends are rigidly mounted inside a substantial portion of the elongated handles **18** and **22** in any suitable manner, as by molding, see Fig. 4. This arrangement stiffens the handles and helps them resist bending forces as described below.

The handles **18** and **22** are formed from a resilient plastic material such as molded nylon and are shaped so they are thin and elongated in a style common to barber shears. The free ends of these handles are provided with the usual finger receiving openings **38** and **40** surrounded by peripheral portions **42** and **44**. In addition, peripheral portion **42** of handle **18** is provided with the usual arcuate finger portion **46**.

Handle portions **18** and **20** are further provided with abutments **48** and **50** which extend toward each other for purposes to be described below. These abutments are integrally molded on the handle, in this particular embodiment, but as will become apparent below, the abutments could be formed on other parts of the scissors, such as on the blades. The abutments in this embodiment are located on the handles at a point nearer to pivot **24** than to the finger-receiving openings **38** and **40** and on the handles where the elongated ends **30** and **32** of the blades **16** and **20** extend inside the handles to stiffen them. As seen in Figs. 3 and 5, these abutments are designed so they engage each other when the blades **16** and **20** of the scissors are in fully closed position. This engagement stops further rotation of the blades in the closing direction and prevents blade rotation to where the blunt edges **27** and **29** of the blades further approach or face each other. In addition, the handles are designed so that when the blades are in fully closed position and abutments **48** and **50** are in contact with each other, the peripheries **42** and **44** of the finger receiving openings **38** and **40** will be in spaced relation to each other.

This clearance **41** between the peripheries **42** and **44** of the finger receiving openings in the handles of the shears when the blades are in closed position has several important advantages. First of all, when the tips of the scissors engage work, see Fig. 1, which offers more than a nominal resistance to cutting, the pressure on the elon-

gated molded nylon handles would cause them to bend slightly despite the stiffening produced by the free ends 30 and 32 of the blades inside them. As seen in dotted lines in Fig. 1, this bending is greatest in the portion of the plastic handle unsupported by the ends 30 and 32 of the blades.

In conventional scissors, the peripheries of the finger receiving openings in the handle abut against each other when the scissors is closed to prevent the blades of the scissors from reversing, so that when the tip of these conventional scissors is engaged in cutting work, the peripheries of the finger receiving openings in their handles would be closely adjacent to each other. In such a case, if the work offered more than a nominal resistance, any bending in the handles would cause these peripheries to engage each other, and after such an engagement, no further pressure exerted on the handles could be transmitted to the blades. This would certainly be true if molded plastic handles simply were substituted for the steel handles in conventional scissors. The consequence of this would be that if the conventional scissors did not cut the work by the time the peripheries of the finger receiving openings in the handle engaged each other, no further pressure on the handles would be effective and this would render the scissors unsuitable for some purposes.

In this improved scissors, because the handles are substantially more resilient than the all steel handles in conventional scissors, they are shaped so engagement of the peripheries of the finger receiving openings cannot occur. The consequence of this is that the operation of this improved scissors is unaffected by resilience or warpage in the finger receiving portions of the handles.

Abutments 48 and 50 do contact each other when the blades of the scissors are closed, but since these abutments are substantially closer to pivot 24 than to the finger receiving portions of the handles, any bending in the handles is less pronounced at the abutments than at the finger receiving openings. In addition to this characteristic, the handles in this embodiment are substantially stiffer and more resistant to bending at the abutments than they are at the finger receiving openings due to the presence of the blade extensions 30 and 32 inside the handles, see Figs. 1, 4 and 5.

With this arrangement, when the tip of the scissors constructed according to the principles of this invention encounters work, the portions of the handles between pivot 24 and the abutments will bend very slightly if at all, see the dotted lines in Fig. 1, so that these abutments will not move into engagement with each other when the tips of the scissors are applied to work which resists cutting unless pressure is exerted on the handles far in excess of that encountered during normal cutting operations.

In addition, warpage during molding operations can easily happen when dealing with plastic materials, but such distortions cannot affect this improved scissors. In conventionally designed scissors, the periphery of the finger receiving openings have the important function of moving into engagement with each other when the blades are in a closed position to prevent blade reversal. This requires that at least some portions of the peripheries of the finger receiving openings in each handle be in the same plane, at least when the scissors blades are in closed position. This requirement causes no difficulty when the entire scissors is formed from steel, but attempts to directly substituted plastic for steel handles on conventionally designed scissors have lead to difficulties because of this tendency of the plastic to warp. The reason for these difficulties is that when the warpage is pronounced peripheral portions of the finger receiving openings may move into such widely separated planes that they never can engage each other. To prevent this from happening, expensive production processes would be necessary.

In contrast to this, the periphery of the finger receiving openings in the improved scissors do not have the function of serving as abutments so that the operation of the scissors would be entirely unaffected by very extreme warpage in the handles. This is shown by the dotted line distortion outline of the handles 18 and 22 shown in Fig. 5. However, distortions even as extreme as that shown in the drawing are unlikely because these portions of the handles are stiffened by blade extensions 30 and 32 and also because abutments 48 and 50 are closer to the pivot 24. The result is that the scissors constructed according to the principles of this invention permit a substantial reduction in production standards and inspection control resulting in an important decrease in cost while actually improving the operation of the scissors.

The invention may be embodied in other forms without departing from the spirit or essential characteristics thereof as set forth in the claims, and the present embodiment is therefore to be considered as illustrative and not restrictive, and it is intended to include all changes which come within the scope and range of the claims.

I claim:

1. A scissors comprising a pair of elements, each element including a metallic blade and a handle formed from a resilient plastic material, each blade including a cutting portion and a reduced end portion, said blades pivotally connected together so their cutting edges work against each other, each of said handles comprising a thin elongated and tapering resilient shank portion and an integrally attached finger receiving portion, at least a part of said shank portions of the handles molded over the reduced end portions of the blades, said shank portions intersecting the periphery of the finger receiving portions, and abutment means integrally formed on the shank portion of at least one handle and located between the pivot and the end of the reduced blade end portion, said abutment means designed so it engages a portion of the shank of the other handle when said blades are in closed position and while the adjacent portions of the peripheries of the finger receiving portions in said handles are in spaced relation to each other.

2. A scissors comprising a pair of elements, each element including a metallic blade and a resilient plastic handle, each blade including a cutting portion and a reduced end portion, said blades pivotally connected together so their cutting edges work against each other, each of said handles comprising a thin elongated and tapering portion and an integrally attached finger receiving portion, only a part of the shank portions of the handles molded over the reduced end portions of the blades, said shank portions intersecting the periphery of the finger receiving portions, and an abutment integrally molded on the shank of each handle and positioned so they extend toward each other, said abutments located at points on the shanks of said handles nearer to the pivotal connection of the blades than to the finger receiving openings and where the reduced end portions of the blades extend inside the handles, said abutments shaped to engage each other when the blades are in closed position to prevent the blades from reversing, said handles shaped so that when said blades are in closed position the peripheries of the finger receiving openings in said handle are in spaced relation to each other.

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