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[54] **DISPOSABLE MEDICAL SPECTRUM**
2 Claims, 9 Drawing Figs.

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A61m 29/00

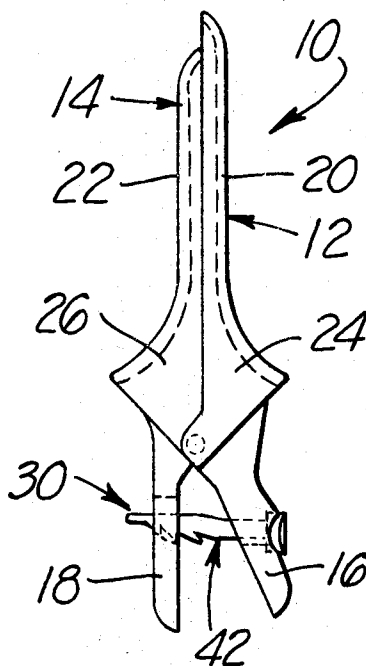
[50] Field of Search **128/3,**
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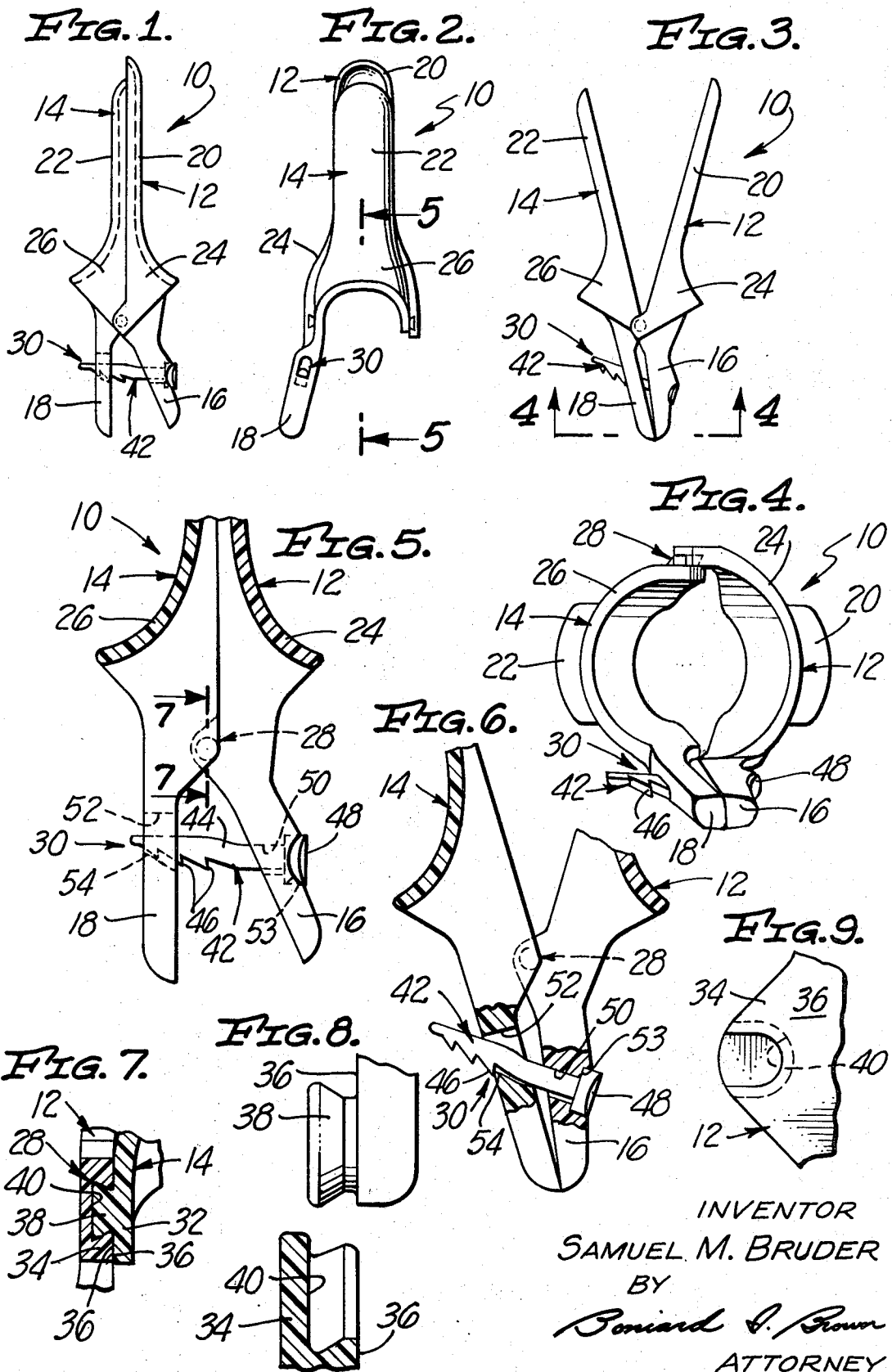
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ABSTRACT: A disposable medical spectrum consisting of two molded plastic body members pivotally joined by separable pivot means and a separate molded plastic ratchet member inserted axially through openings in handle forming ends of the body members for releasably locking their opposite jaw forming ends in adjustable spread positions, the body members and ratchet member being adapted for rapid assembly by the examining physician to form a completed spectrum.





DISPOSABLE MEDICAL SPECTRUM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to medical instruments and more particularly to a novel low cost disposable medical spectrum.

2. Prior Art

Medical instruments of the general class to which this invention pertains are well known in the art and are utilized to examine a body orifice, such as the female internal organs. A typical medical spectrum for this purpose has a pair of elongate body members disposed side by side and having confronting handles at one end and confronting jaws at the other end. Between the handles and jaws are pivot means which join the members in such a way that swinging of the handles toward one another spreads the jaws. The handles are connected by a pivot screw, or the like, which may be set to lock the spectrum jaws in their spread positions. In these spread positions, an opening exists centrally through the spectrum through which the examining physician may view the interior of the body orifice being examined.

While the existing medical spectrums of this kind are satisfactory to some extent, they do possess certain deficiencies which this invention seeks to overcome. The existing instruments, for example, are constructed of metal and thus tend to be cold to the touch and therefore uncomfortable to the patient being examined. Moreover, because of the metal and otherwise costly construction, the existing medical spectrums are relatively high cost instruments. As a consequence, these instruments are not disposable but rather must be reused and thus carefully sterilized after each use. Sterilization of such instruments, of course, is bothersome, costly and necessitates maintaining on hand, for immediate use, a number of such instruments.

SUMMARY OF THE INVENTION

This invention provides a novel medical spectrum which avoids the above-noted drawbacks of the existing instruments of this class. To this end, the present medical spectrum consists of three simple parts which may be economically fabricated from plastic by an injection molding process. These parts are designed for rapid assembly from kit form by the examining physician. As will appear from the ensuing description, these features cooperate to provide a medical spectrum which may be manufactured and sold at sufficiently low cost to render the instrument disposable after use. Moreover, being constructed of plastic, the instrument is not cold to the touch as are the existing metal spectrums. As a consequence, the present spectrum contributes substantially to the comfort to the patient being examined.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of a medical spectrum according to the invention illustrating the spectrum jaws in their closed positions;

FIG. 2 is an edge view of the spectrum in FIG. 1;

FIG. 3 is a view similar to FIG. 1 showing the spectrum jaws in their spread positions;

FIG. 4 is an enlarged section taken on line 4—4 in FIG. 3;

FIG. 5 is an enlarged section taken on line 5—5 in FIG. 2;

FIG. 6 is an enlarged fragmentary detail, partly in section, illustrating the ratchet means for locking the spectrum jaws in their spread position;

FIG. 7 is an enlarged section taken on line 7—7 in FIG. 5 illustrating a pivot structure embodied in the spectrum;

FIG. 8 is an enlarged fragmentary detail, partially in section, illustrating a pivot and a socket positioned prior to snap fitted assembly; and

FIG. 9 is an enlarged fragmentary detail, illustrating the socket portion of the pivot structure according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to these drawings, there is illustrated a medical spectrum 10 according to the invention. This instrument has a pair of similar elongate body members 12 and 14 disposed side by side. At one end of the body members are confronting handles 16 and 18. The opposite ends of the members form jaws 20 and 22. As is conventional in medical instruments of this kind, the jaws 20, 22 are quite long and are enlarged and outwardly flared at the mid-sections of the body members where the jaws join the handles 16, 18, as indicated at 24 and 26 in the drawings. The confronting mid-sections of the two body members are joined by pivot means 28 in such a way that swinging of the handles 16, 18 toward one another spreads the jaws 20, 22. The handles are releasably joined by ratchet means 30 which may be set to lock the jaws in their spread positions of FIG. 3.

According to one important feature of the invention, the body members 12, 14 are fabricated from plastic by an injection molding process. In this regard, it will be observed that the body members have shapes which may be conveniently injection molded. Thus, the front jaw ends of the body members have arcuate relatively thin walled shapes in transverse cross-section, while the rear handle ends of the members are generally flat and solid in cross-section. The body members 12, 14 are arranged side by side with the concave sides of the jaws 20, 22 in confronting relation. The body members may be constructed from any suitable plastic material, such as styrene.

Another important feature of the invention is concerned with the construction of the pivot means 28 for pivotally joining the body members 12, 14. According to this feature, the confronting mid-sections of the body members are disposed in interfitting relation in such a way that wall portions 32 of one member overlap or straddle wall portions 34 of the other member. These overlapping or straddling wall portions of the body members have confronting surfaces 36 disposed in mutual sliding contact. The pivot means 28 comprise pivots 38 and sockets 40 which receive the pivots with a snap fit. In the particular embodiment of the invention which has been selected for illustration in the drawings, the pivots 38 are formed integrally with and project beyond the surfaces 36 of the wall portions 32 on the body member 14. The sockets 40 enter the surfaces 36 of the wall portions 34 on the body member 12 and open laterally through the inner edges of the latter member. The pivots 38 may be inserted laterally into their respective sockets by lateral movement of the body members 12, 14 toward one another to their final positions of assembly illustrated in the drawings. As illustrated, the pivots and sockets are undercut to prevent axial separation of the engaged sockets and pivots. Also, the sockets and pivots are so shaped that they engage with a snap fit which resists accidental separation of the pivot means.

The ratchet means 30 constitutes another important feature of the invention. According to this feature, the ratchet means embodies a ratchet member 42 which, like the body members 12, 14, may be injected molded from plastic. The ratchet member has a flexible shank 44 serrated along one edge to form ratchet teeth 46 and an enlarged shoulder or button 48 on one end of the shank. When assembling the spectrum, the shank 44 of the ratchet member 42 is inserted endwise through registering openings 50, 52 in the instrument handles 16, 18 to a position wherein the ratchet head or button 48 seats within and engages a bottom shoulder defined by a recess 53 in the handle 16. The wall of the opening 52 in the handle 18 of the other body member is beveled to allow the ratchet member to rotate to various angular positions in the opening, such as those shown in FIGS. 5 and 6. The beveled wall opening also intersects the outer edge of the handle 18 to form a sharp ratchet edge 54 for selective engagement by the ratchet teeth 46.

The present invention contemplates sale of the present medical spectrum 10 essentially in kit form. That is to say, the three parts of the spectrum, *i.e.*, the two body members 12, 14 and the ratchet member 42, will be sterilized and packaged without assembly in a sealed plastic envelope, or the like. Just prior to use, the examining physician will remove the spectrum parts from the envelope and assemble the parts to form the finished medical spectrum. It will be understood that the instrument is assembled by first snapping the pivots 38 on the body member 14 into the pivot sockets 40 in the body member 12. The ratchet member 42 is then inserted endwise through the openings 50, 52 in the instrument handles 16, 18. This assembly procedure, obviously, may be accomplished in just a few seconds by the examining physician.

The instrument is used in much the same way as a conventional spectrum. Accordingly, a detailed explanation of its use is unnecessary. Suffice it to say that the jaws 20, 22 of the spectrum are first closed and then inserted endwise into the body cavity to be examined. After insertion, the instrument handles 16, 18 are closed to spread the jaws. The jaws are then locked in their spread positions by engagement of a ratchet tooth 46 on the ratchet member 42 with the ratchet edge 54 on the handle 18. In this condition of use, the confronting concave sides of the body members 12, 14 define a bore or opening extending longitudinally through the instrument through which the examining physician may observe the interior of the body cavity being examined.

After the examination has been completed, the flexible shank 44 of the ratchet member 42 is bent away from the ratchet edge 54 to disengage its ratchet teeth 46 from the edge. Finger pressure is then exerted on the ratchet head or button 48 to retain the ratchet member in its released position. The jaws 12, 14 of the instrument are now reclosed by spreading the instrument handles 16, 18, thus to free the instrument for removal from the body cavity. After use, the instrument is simply disposed of. It is evident, of course, that while the present medical spectrum is intended to be packaged in kit form for assembly by the examining physician, it may be sold in assembled condition. Also, while the spectrum is preferably disposed of after each use, it is possible, within the scope of the invention, to sterilize and reuse the instrument.

While the invention has been disclosed in connection with certain physical embodiments thereof, it will be recognized by those versed in the art that various modifications of the invention are possible within the spirit and scope of the following claims.

I claim:

1. A disposable medical spectrum comprising:
a pair of elongate unitary molded plastic body members disposed side by side and having confronting handles at

one end, confronting jaws at the other end, and intervening confronting mid-sections;

said jaws and mid-sections having relatively thin walled arcuate shapes in transverse cross-section and confronting concave sides;

said mid-sections being disposed in interfitting relation with wall portions of one body member disposed between and in overlapping relation with wall portions of the other body member, and said overlapping wall portions having confronting surfaces;

pivot means joining said overlapping wall portions for spreading of said jaws by pivotal movement of said handles toward one another, said pivot means comprising pivots integral with and projecting beyond said surfaces of said wall portions of one body member and blind sockets entering said surfaces of said wall portions of the other body member, said pivots having outer radially enlarged circumferential shoulders with axially inner conically tapered surfaces, said sockets opening through the edges of their respective wall portions and being undercut to define along their edges overhanging shoulders with inner tapered surfaces, and said sockets being sized to receive said pivot shoulders with a snug fit by lateral insertion of said pivot shoulders into said sockets through their open ends to positions adjacent the opposite ends of the sockets wherein said pivot shoulders are confined between said socket shoulders and the bottom walls of said sockets;

a molded plastic ratchet member having a shank with ratchet teeth along one edge, and an enlarged head at one end of said shank;

said handles having registering openings removably receiving said ratchet shank in a position wherein said ratchet head seats against one handle about its receiving opening and said ratchet teeth engage the edge of the receiving opening in the other handle to releasably lock said jaws in adjustable spread positions; and

said members being adapted for rapid assembly from kit form by the examining physician and to be disposable after use.

2. A disposable medical spectrum according to claim 1 wherein:

said ratchet member is laterally flexible to permit bending of the latter member to disengage its ratchet teeth from said opening edge; and

said ratchet head is exposed at the outer side of its adjacent handle to provide a button against which finger pressure may be exerted to disengage said ratchet member from said opening edge.

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