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(54) **EXTERIOR MIRROR PLANO-AUXILIARY REFLECTIVE ELEMENT ASSEMBLY**

(75) Inventors: **Niall R. Lynam**, Holland, MI (US); **John O. Lindahl**, Fruitport, MI (US); **Hahns Yoachim Fuchs**, Holland, MI (US)

(73) Assignee: **Donnelly Corporation**, Holland, MI (US)

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Related U.S. Application Data

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(51) Int. Cl.[7] **G02F 1/15**; G02B 5/08; G02B 5/10; G02B 7/182; B60R 1/06

(52) U.S. Cl. **359/265**; 359/267; 359/841; 359/850; 359/864; 359/866; 359/868; 359/872; 359/877; 248/549; 248/900

(58) Field of Search 359/841, 850, 359/851, 854, 855, 864, 865, 866, 868, 872, 877, 265, 267; 248/549, 900

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,338,655 A	*	8/1967	Young	
3,375,053 A		3/1968	Ward	350/293
3,389,952 A	*	6/1968	Tobin, Jr.	
4,268,120 A		5/1981	Jitsumori	350/302
4,449,786 A		5/1984	McCord	350/293
4,678,294 A	*	7/1987	Van Nostrand	
4,917,485 A	*	4/1990	Baldwin, Sr.	
5,239,405 A		8/1993	Varaprasad et al.	359/272
5,412,512 A	*	5/1995	Zebold et al.	
5,550,677 A		8/1996	Schofield et al.	359/604
5,557,467 A	*	9/1996	McColgan et al.	
5,621,577 A	*	4/1997	Lang et al.	
5,668,663 A		9/1997	Varaprasad et al.	359/608
5,724,187 A		3/1998	Varaprasad et al.	359/608
5,751,489 A		5/1998	Caskey et al.	359/603
5,784,211 A	*	7/1998	Mingledorff	
5,793,542 A	*	8/1998	Kondo et al.	
5,805,367 A	*	9/1998	Kanazawa	
5,910,854 A		6/1999	Varaprasad et al.	359/273
6,116,743 A	*	9/2000	Hoek	
6,154,306 A		11/2000	Varaprasad et al.	359/273
6,511,192 B1	*	1/2003	Henion et al.	
6,522,451 B1	*	2/2003	Lynam	

FOREIGN PATENT DOCUMENTS

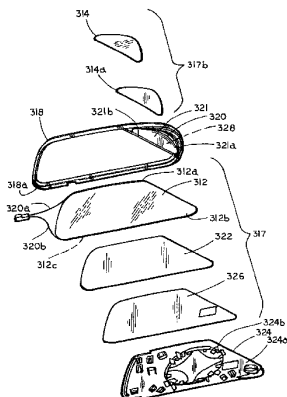|				
DE	2409748		9/1975	.... B60R/1/02
DE	3620228	*	12/1987	
DE	4026578	*	4/1992	
EP	0310261 A1		9/1988	.... B60R/1/08
EP	0729864	*	9/1996	
EP	0917987	*	5/1999	
FR	2628042		9/1929	.... B60R/1/06
GB	2092534	*	8/1982	
JP	1186443		7/1989	.... B60R/1/06

* cited by examiner

Primary Examiner—Ricky D. Shafer

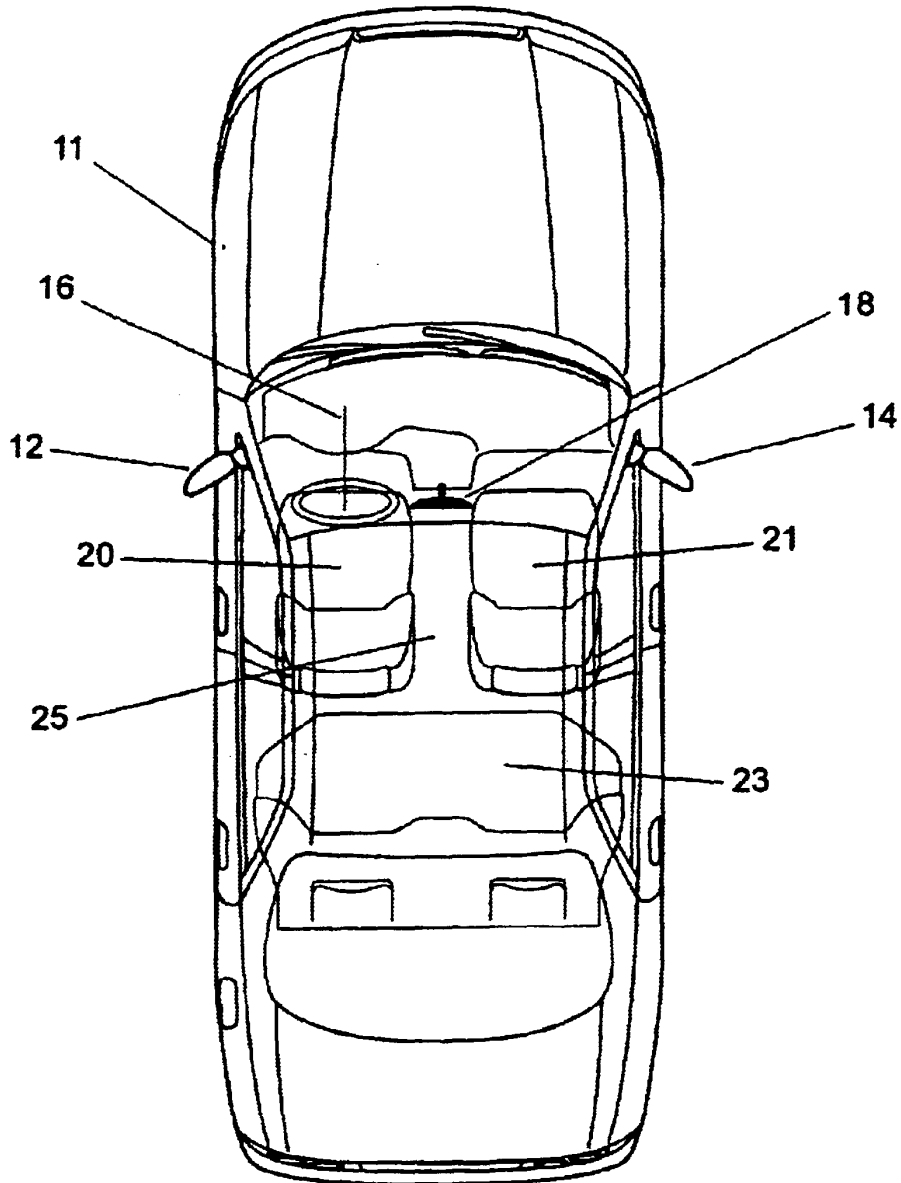(74) *Attorney, Agent, or Firm*—Van Dyke, Gardner, Linn & Burkhart, LLP

(57) **ABSTRACT**

This invention provides a reflective element assembly suitable for use in an exterior sideview mirror assembly mounted to the side body of an automobile. The reflective element assembly includes a first reflective element and a second reflective element. The second reflective element is angled downwardly and forwardly with respect to the first reflective element when the mirror assembly is mounted to a side of an automobile to provide an increased field of view. In one form, both reflective elements are commonly supported on a bezel, which is mounted to the mirror assembly casing. In another form, the reflective elements are separately mounted, with the second reflective element fixedly mounted to the casing and the first reflective element movably supported in the mirror casing, for example, on an actuator.

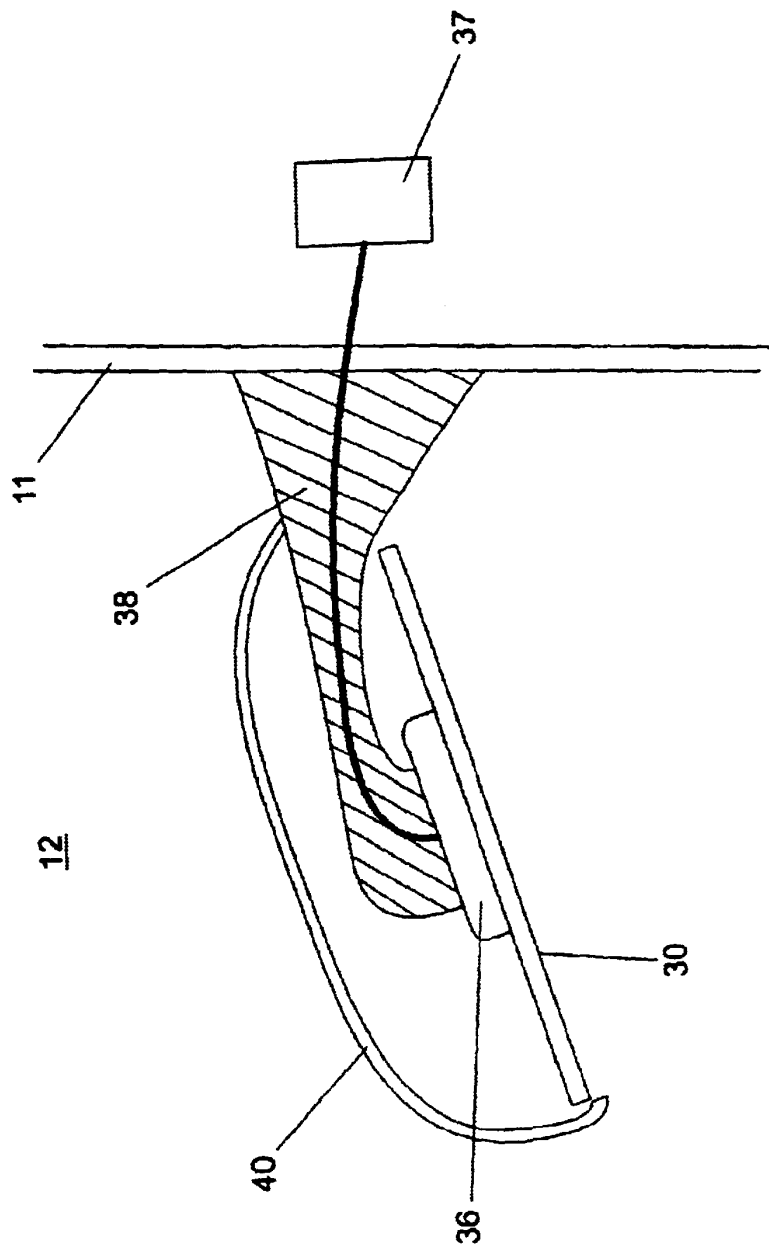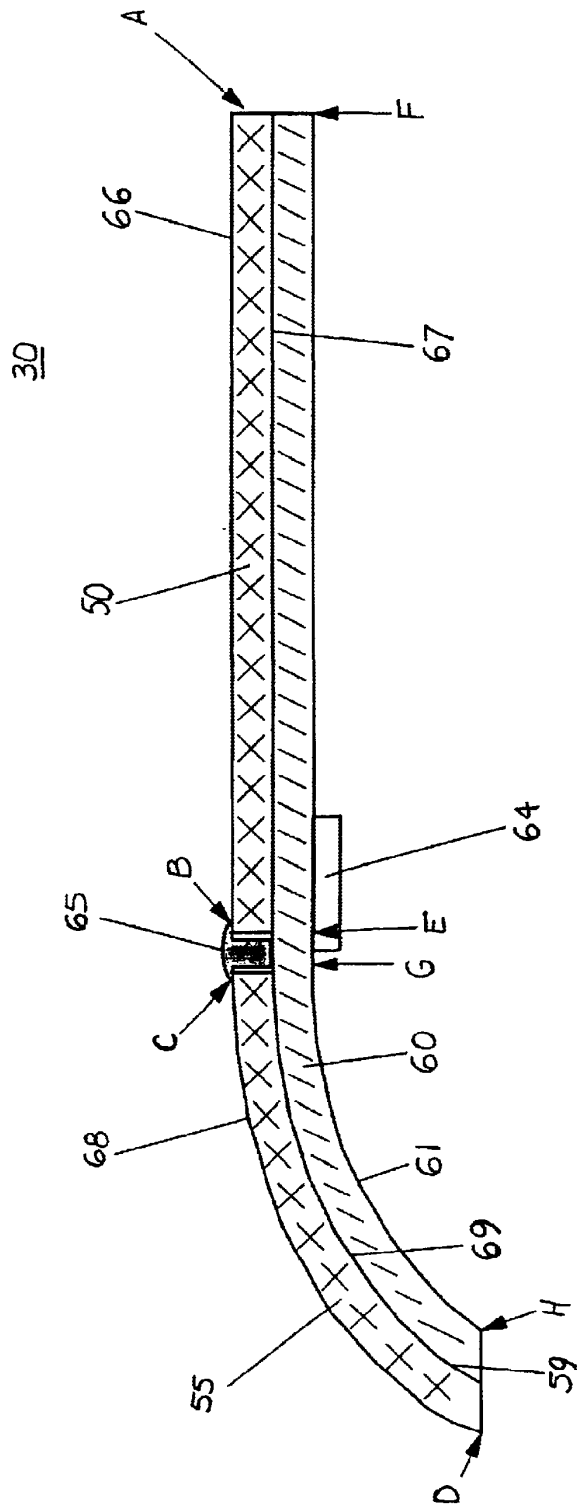**54 Claims, 13 Drawing Sheets**
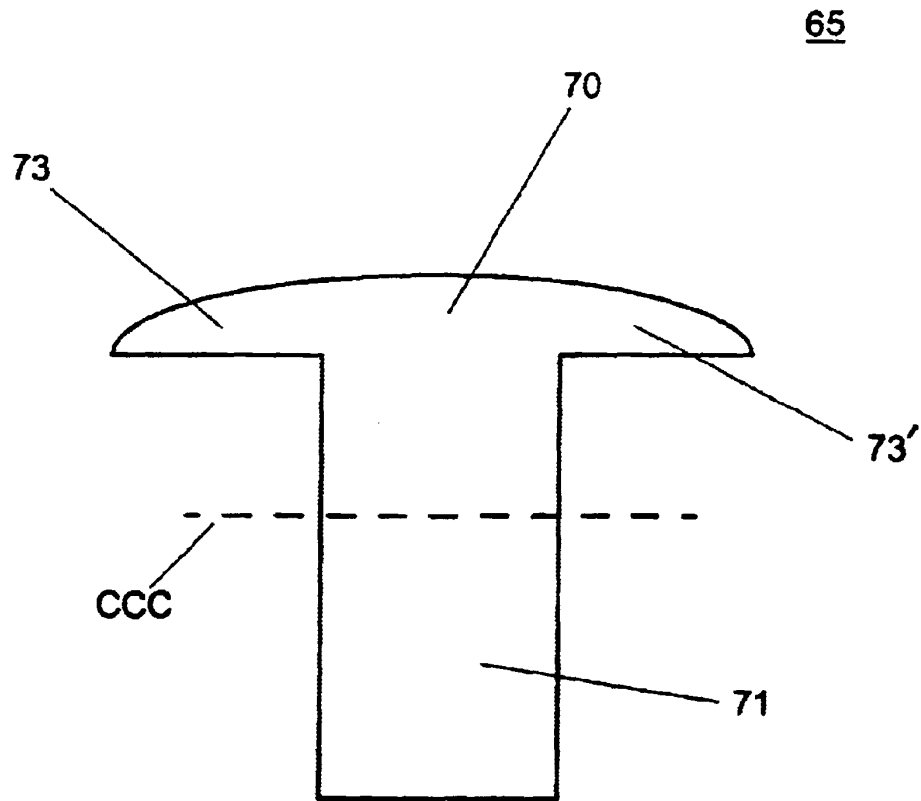
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Figure 1

Figure 2

Figure 3

Figure 4

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