

[54] EXPANSION JOINT COVER

[72] Inventor: Gary E. Armstrong, Oklahoma City, Okla.

[73] Assignee: Metalines, Inc., Oklahoma City, Okla.

[22] Filed: June 7, 1971

[21] Appl. No.: 150,300

[52] U.S. Cl. 52/287, 52/395, 52/466

[51] Int. Cl. E04b 1/68, E04c 1/34

[58] Field of Search.....52/278, 287, 288, 395, 466, 52/502

[56] References Cited

UNITED STATES PATENTS

2,948,994	8/1960	Thom	52/466 X
3,170,268	2/1965	Balzer et al.	52/395 X
3,286,422	11/1966	Pangerl.....	52/287
3,331,171	7/1967	Hallock	52/395 X
3,435,574	4/1969	Hallock	52/395 X
3,448,552	6/1969	Schmitt et al.....	52/395 X

FOREIGN PATENTS OR APPLICATIONS

1,376,369 9/1964 France.....52/287

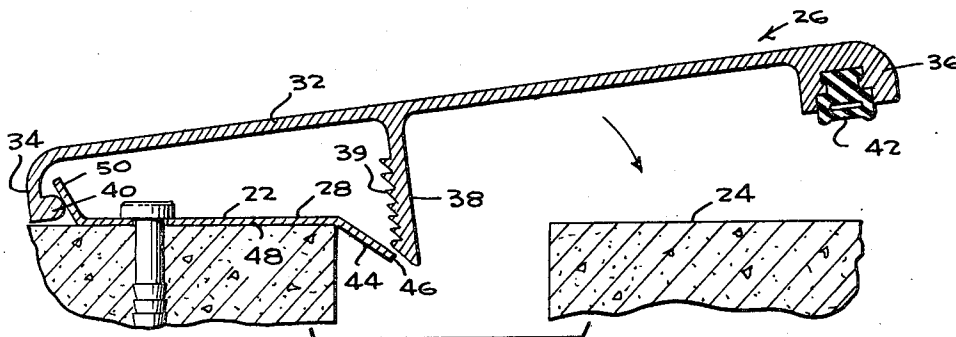
Primary Examiner—Alfred C. Perham

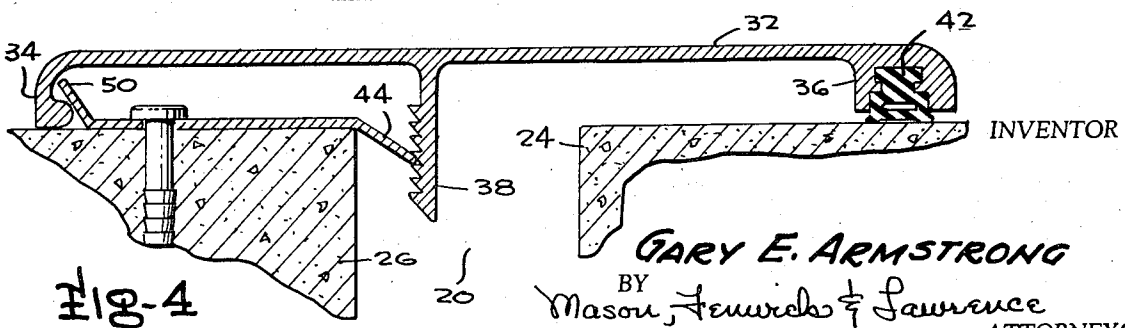
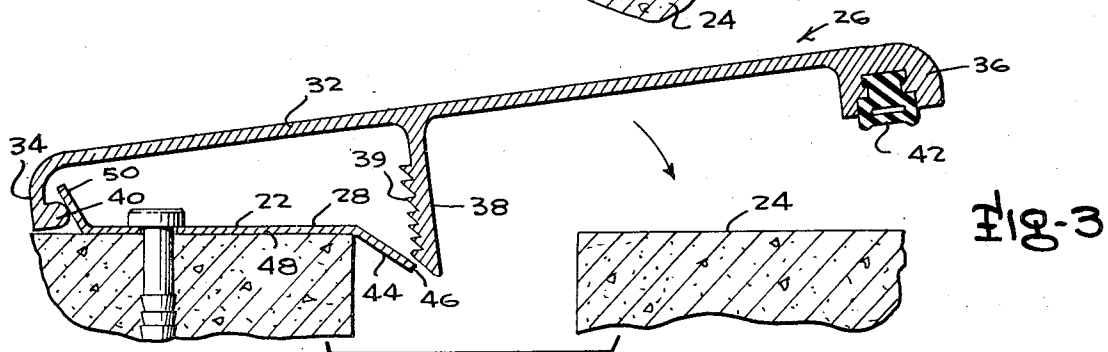
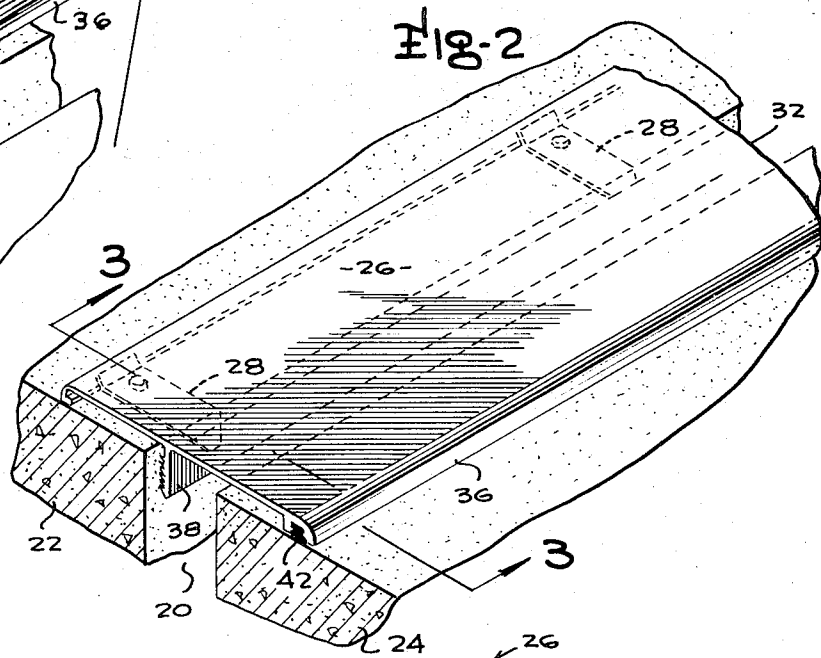
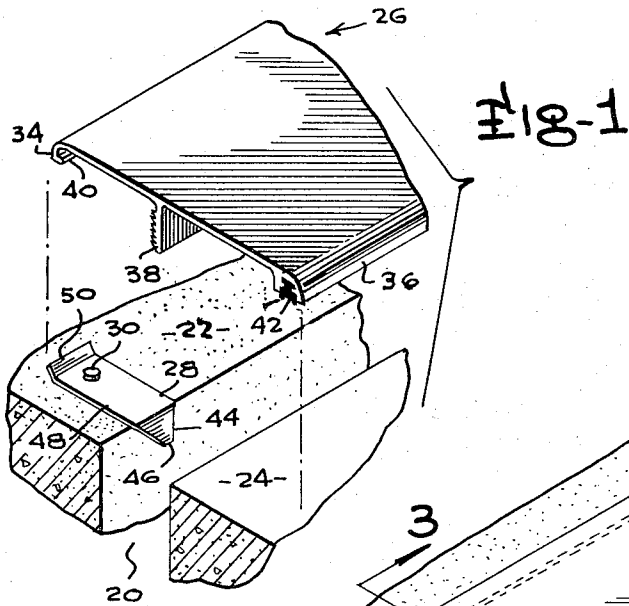
Attorney—Mason, Fenwick & Lawrence

[57] ABSTRACT

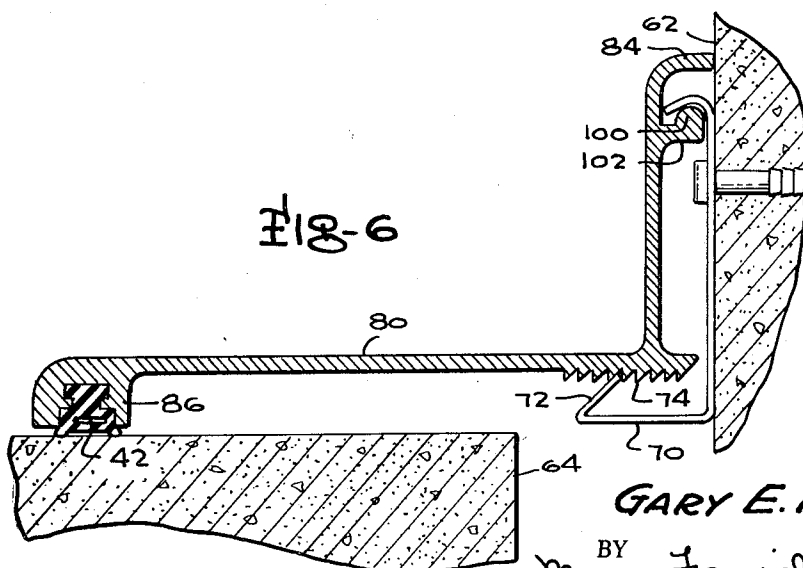
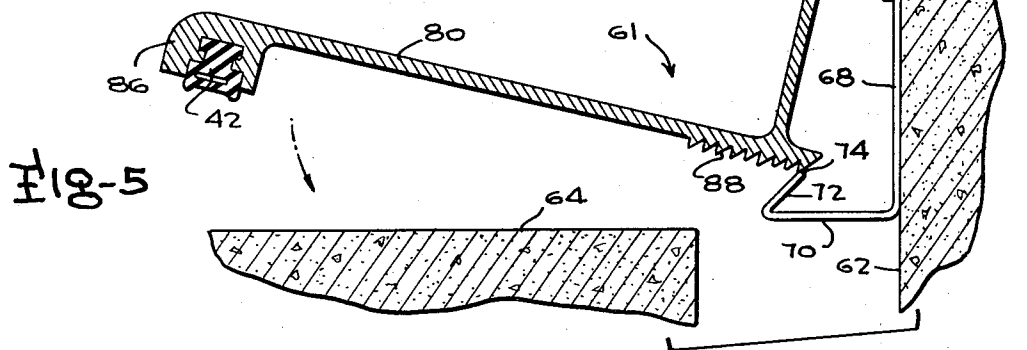
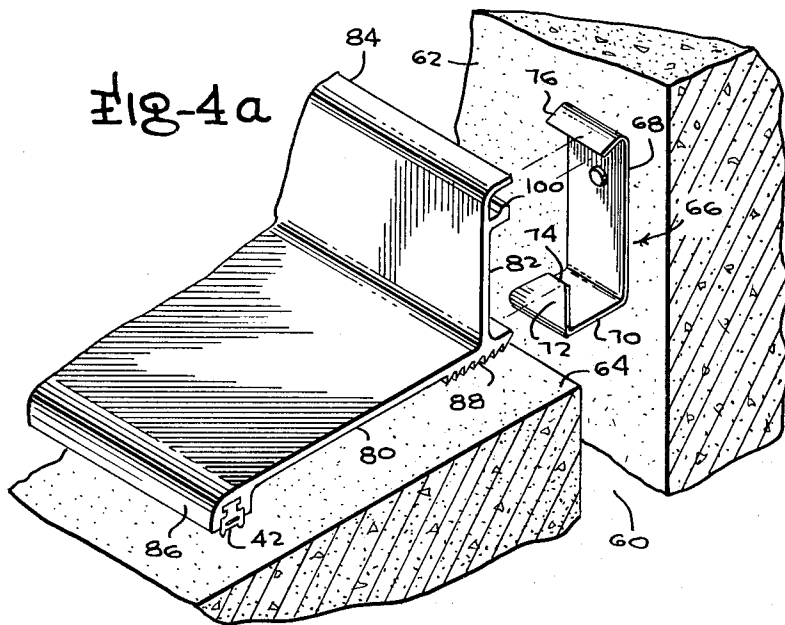
An expansion joint cover is disclosed in the form of an extruded elongated cover plate having an integral centrally oriented ratchet which extends into an expansion joint opening for engagement with a spring plate fastened to the structure so that one end of the plate is engaged with the ratchet and another end is engaged with the cover for urging the cover into holding relationship with the ratchet. In one embodiment, the cover is a planar member for spanning a joint formed between co-planar wall sections, while, in another embodiment, the cover is an L-shaped member for spanning a joint oriented between perpendicular wall sections; in each case, the connective theory is substantially identical.

16 Claims, 7 Drawing Figures





INVENTOR
GARY E. ARMSTRONG
BY
Mason, Fenwick & Lawrence
ATTORNEYS



INVENTOR

GARY E. ARMSTRONG

BY
Mason, Fenwick & Lawrence
ATTORNEYS

EXPANSION JOINT COVER

This invention is in the field of building components and is specifically directed to the field of expansion joint covers of the type employable for bridging a structural opening such as an expansion joint opening between two structural elements.

Modern buildings are frequently constructed of material having a relatively high co-efficient of expansion so that it is necessary to provide expansion spaces between wall sections, floor sections or other structural components in order to permit the necessary thermal expansion and contraction of the parts of the building without incurring cracking or other damage of the building components. In addition, it is usually frequently necessary that such expansion joint spaces be covered to provide weather protection for the area between the sections. However, it is readily apparent, for obvious reasons, that such cover means must not interfere with the relative movement of the sections separated by the expansion joints.

Numerous expedients have been employed in the past for the purpose of covering such expansion joints. For example, many of the prior known structures have actually been permanently incorporated in the joint itself; however, such constructions limit access to the joint and consequently are undesirable in many instances.

While many designs of expansion joint covers have evolved in recent years, such designs have frequently employed complicated constructions requiring substantial expenditures for fabrication and assembly. Consequently, the construction industry has long sought a relatively simple, inexpensive and easy to install expansion joint assembly which would provide reliable and trouble-free use.

Therefore, it is the primary object of this invention to provide a new and improved expansion joint cover system.

It is another object of this invention to provide a new and improved expansion joint cover which is easily mounted over an expansion joint opening to provide a reliable weatherproof seal over the opening.

Achievement of the foregoing objects of this invention are enabled through the provision of an elongated expansion joint cover plate formed of extruded metal of relatively thin-walled, somewhat flexible, construction which includes a centrally oriented ratchet portion positionable within the expansion joint opening. The ratchet portion is engaged by a spring plate of relatively simple construction extending into the expansion joint opening and having a biasing arm on the other end engageable with the cover plate for biasing and holding the cover plate in engaged and retained position with respect to the opening.

A better understanding of the manner in which the objects of the invention are enabled will be achieved from a reading of the written description in conjunction with the appended claims in which:

FIG. 1 is an exploded perspective view illustrating a first embodiment prior to attachment to parallel wall members defining an expansion joint opening;

FIG. 2 is a perspective view illustrating the embodiment of FIG. 1 following attachment thereof to the wall members;

FIG. 3 is a sectional view taken along lines 3—3 of FIG. 2 during the attachment operation;

FIG. 4 is a sectional view taken along lines 3—3 of FIG. 2 illustrating the parts following attachment of the cover plate to the wall members;

FIG. 4a is a perspective view of a second embodiment of the invention employable for connecting an expansion joint opening defined by perpendicular wall sections and illustrating the component parts in position prior to connection of the cover to the walls;

FIG. 5 is a sectional view taken along lines 5—5 of FIG. 4a illustrating the position of the component parts during the connecting operation; and

FIG. 6 is a sectional view taken along the same lines as FIG. 5, but illustrating the parts in connected assembly.

Attention is initially invited to FIGS. 1—4 which illustrate the first embodiment of the invention which is employed for connecting an expansion joint opening 20 between first and second wall sections 22, 24 of a building or other structure.

A cover plate generally designated 26 is provided to be connected to the first wall section 22 by means of a spring plate means 28 affixed to the first wall section by means of an embedded lug or the like 30.

Cover plate 26 is of generally U-shaped cross-sectional configuration as will be evident from inspection of FIG. 3 and includes a main web 32 from the edges of which first and second edge legs 34, 36 respectively extend. In addition, a ratchet plate 38 extends integrally from a medial portion of the main web 32 intermediate the edge legs 34, 36 and is provided with a plurality of ratchet teeth 39 on one side as shown in FIG. 3.

A camming lug in the form of a rounded lug member 40 extends inwardly from the outer edge of the first edge leg 34 and a flexible rubber sealing means 42 is provided in a slot extending along the length of the second edge leg 36.

Cover plate 26 is connected to the wall sections 22, 24 by means of a spring plate means generally designated 28 and such connection is effected by means of a cantilever arm 44 extending from a flat wall abutting main portion 48 of the spring plate and tapering inwardly to a free edge 46. The other end of the spring plate comprises a flexible biasing arm portion 50 which extends from the other end of the main portion 48.

Cover plate 26 is connected across the expansion joint opening 20 by initially positioning the cover plate in the position illustrated in FIG. 3 in which the rounded camming lug 40 is positioned in abutting relationship with the outer face of biasing arm 50 as shown in FIG. 3. The right edge of cover plate 26 is then moved downwardly so that the ratchet plate 38 moves along the edge 46 until the cover plate is in the position illustrated in FIG. 4.

In the FIG. 4 position, the edge 46 and rack 38 engage each other and serve to retain the cover plate in position in an obvious manner. In addition, the flexible nature of the biasing arm 50 also tends to move the cover plate to the left as viewed in FIG. 4 so that the biasing arm 50 also serves to maintain the ratchet plate 38 in connection with the free edge 46 of cantilever arm 44. In addition, the operation of the biasing arm 50 also serves to urge the plate 26 inwardly toward the wall sections particularly along the left edge of the plate.

Moreover, the cover plate is maintained in a tensioned or strained condition by virtue of the fact that the cover plate is made of relatively thin extruded material such as aluminum or the like and is capable of manual deflection inwardly toward the expansion joint opening 20 to provide a biasing force for holding the plate in position. Such a force would obviously be applied to the center of plate 26 in a downward direction as viewed in FIG. 4.

Cover plate 26 can be of any desired length with the individual spring plate members 28 being positioned as required along the length of the expansion joint in an obvious manner as shown in FIG. 2. It should be noted that the cover plate is easily installed and such installation requires a minimum of labor with no skilled labor being required. In addition, the thin, flexible nature of the cover plate 26 permits it to easily adjust to the contour of the wall sections to provide a neat and attractive appearance along with a protective covering of the opening.

Turning now to FIGS. 4a, 5 and 6, it should be noted that these figures are directed to a second embodiment of particular use for spanning an expansion joint opening 60 formed between first and second wall sections 62 and 64 oriented perpendicularly with respect to each other.

A spring plate 66 of generally L-shaped configuration and formed of a main flat portion 68 affixed to the first wall section 62 by lug means 30 or the like has a cantilever arm 70 perpendicularly extending from portion 60. The outer end of cantilever arm 70 terminates in an inwardly tapering bent lip portion 72 tapering inwardly to a ratchet engaging outer edge 74 of substantially less width than arm 70. The other end of the spring plate means comprises a biasing arm in the form of a smoothly curving bent tab member 76.

Cover plate 61 is formed of a unitary metal extrusion of relatively thin proportions and includes a major leg 80 and a minor leg 82 with first and second end edge legs 84, 86 respectively extending from and defining the outer edges of members 82, 80.

In addition, a plurality of ratchet teeth 88 extend inwardly from the inner surface of the major leg 80 adjacent the juncture of the major leg and the minor leg with it being noted that the ratchet teeth 88 extend on both sides of the minor leg 82 as clearly shown in FIGS. 5 and 6.

A rounded camming lug 100 is mounted on the innermost end of a cam lug plate 102 located inwardly on the minor leg 82 adjacent the edge leg 84. A weather seal means 42 is provided in a slot extending along the length of the second edge of the leg 86 as shown.

The cover plate 61 of the second embodiment is connected to the respective wall sections 62, 64 by initially positioning the camming lug 100 beneath the bent portion 76 of spring plate 66 as shown in FIG. 5 and subsequently moving the components into the positions illustrated in FIG. 6. Such movement serves to engage the edge 74 with ratchet teeth 88 so that the cover plate is consequently retained in position. An arm 76 biases the ratchet members downwardly toward the edge 74 and the inherent flexibility of the cover plate can be employed to manually urge the ratchet plate to the right as viewed in FIG. 6 to place the cover plate in a condition of strain for firmly retaining the frame in position as shown.

Many modifications of the invention will occur to those skilled in the art; however, it should be understood that the spirit and scope of the invention should be limited solely in light of the appended claims.

I claim:

1. An expansion joint cover assembly for covering an elongated opening extending between first and second spaced wall sections, said assembly comprising an elongated cover plate adapted to cover said elongated opening, ratchet means integrally formed in said cover plate positioned in said elongated opening when said cover plate is in position to cover said elongated opening, spring plate means fastened to one of said wall sections having a cantilever arm with a free end edge extending into said elongated opening for engagement with said ratchet means for holding said elongated cover plate in position over said elongated opening, a flexible biasing arm portion extending from the other end of said spring plate engageable with a camming lug on said cover plate for urging said cover plate and ratchet means against said cantilever free end edge while simultaneously urging one edge of said cover plate against said first wall section to maintain said ratchet means in engagement with said spring plate while simultaneously urging said cover plate into covering relationship with respect to said elongated opening.

2. The invention of claim 1 wherein said wall sections are substantially parallel to each other and said spring plate comprises a flat wall abutting main portion connected to said first wall section with said cantilever arm free end and said flexible biasing arm portion extending outwardly in opposite directions from opposite sides of each end of said flat wall abutting main portion and inclined with respect to said wall abutting main portion to provide an overall generally S-shaped configuration for said spring plate means.

3. The invention of claim 2 additionally including flexible sealing means along one edge of said cover plate to provide a weatherproof connection between said one edge and said second wall section and said cover plate.

4. The invention of claim 2 wherein said cover plate comprises a generally U-shaped extrusion in the form of a main web and first and second edge legs extending perpendicularly therefrom along opposite edges thereof with the outer ends of said edge legs abutting against said first and second wall sections and wherein said ratchet means comprises a unitary ratchet plate extending medially from said main web perpendicularly to said main base plate and having a plurality of ratchet teeth.

5. The invention of claim 4 wherein said camming lug comprises an inwardly extending rounded lug member extending inwardly from adjacent the outer edge of said first edge leg with said ratchet teeth on said ratchet plate facing said inwardly extending rounded lug.

6. The invention of claim 5 wherein said main web is of relatively thin construction permitting inward manual deflection of said main base and said integral ratchet plate toward said elongated opening whereby engagement of said ratchet plate with said flexible biasing arm maintains and holds said elongated cover plate in stressed condition against said elongated opening.

7. The invention of claim 4 additionally including flexible sealing means mounted in the edge of said second edge leg for engagement with said second wall section.

8. The invention of claim 7 wherein said camming lug comprises an inwardly extending rounded lug member extending inwardly from adjacent the outer edge of said first edge leg with said ratchet teeth on said ratchet plate facing said inwardly extending rounded lug.

9. The invention of claim 8 wherein said main web is of relatively thin construction permitting inward manual deflection of said main web and said integral ratchet plate towards said elongated opening whereby engagement of said ratchet plate with said flexible biasing arm maintains and holds said elongated cover plate in stressed condition against said elongated opening.

10. The invention of claim 2 wherein said cantilever arm tapers inwardly from said main flat wall abutting main portion to said free end edge which is of substantially less width than said flat wall abutting main portion.

11. The invention of claim 1 wherein said wall sections are substantially perpendicular to each other and said cover plate is of generally L-shaped configuration formed of a main leg and a minor leg extending from a juncture edge mutually perpendicular to each other.

12. The invention of claim 11 wherein said spring plate comprises a main base plate portion abuttingly

connected to said first wall section with said cantilever arm extending outwardly perpendicularly from one edge of said main base plate portion and terminating in a bent lip portion extending inwardly toward said main base plate and defining said free end edge, wherein said flexible biasing arm extends unitarily from the end of said main base plate opposite said cantilever arm and is in the form of a bent tab oriented at an acute angle with respect to said main base plate and inwardly facing toward said cantilever arm.

13. The invention of claim 12 wherein said ratchet means comprises a series of ratchet teeth extending outwardly perpendicularly from an inner surface of said major leg of said L-shaped cover plate along said juncture edge of the major and minor legs of the cover plate.

14. The invention of claim 13 wherein said ratchet means extends from said major leg on both sides of said minor leg.

15. The invention of claim 12 wherein said camming lug comprises an inwardly extending lug plate extending from said minor leg and mounted inwardly of the outer edge of said minor leg and terminating in a rounded lug portion extending perpendicularly from the edge of said lug plate toward the outer end of said minor leg.

16. The invention of claim 15 additionally including relatively soft weatherproof seal means mounted adjacent the outer edge of said major leg.

* * * * *

35

40

45

50

55

60

65