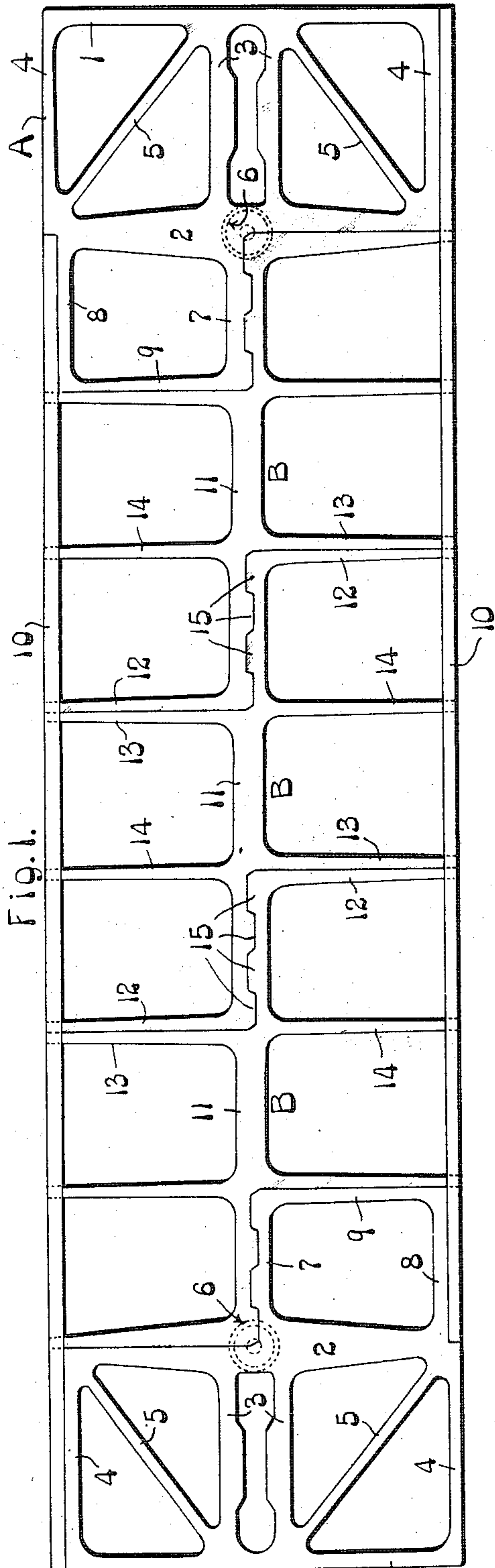


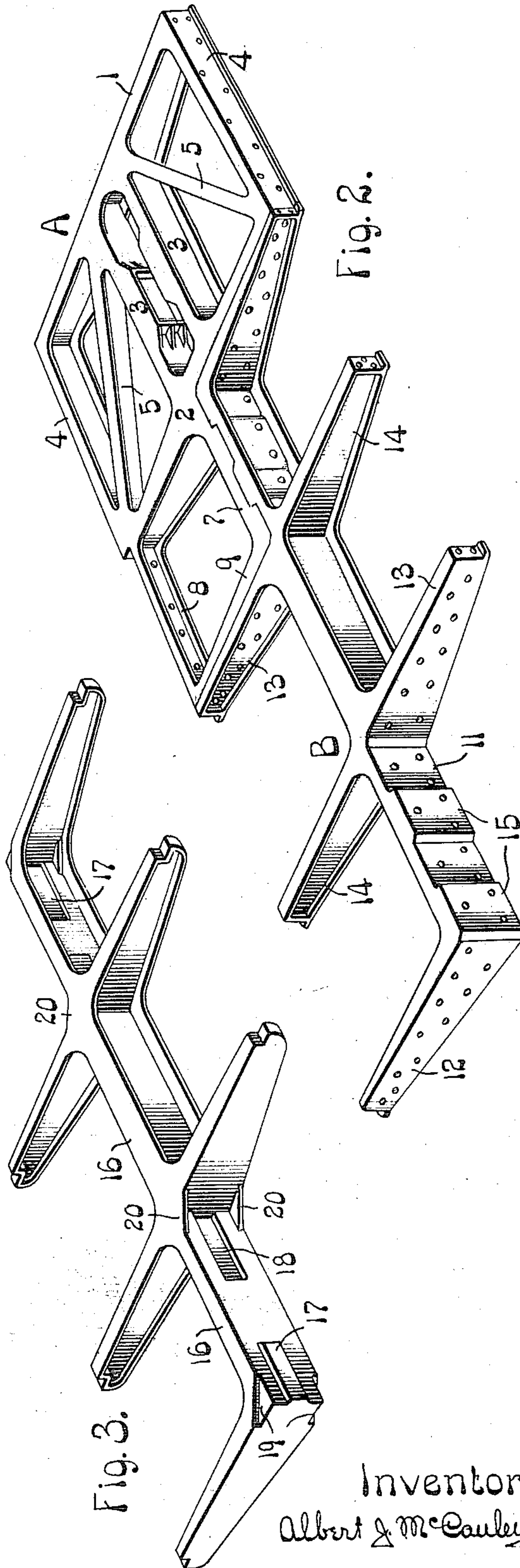
985,361.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 1.



Witnesses
Geo. Hays
W. R. Harmon



Inventor:
 Albert J. McCauley.

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 UNDERFRAME FOR CARS.
 APPLICATION FILED SEPT. 3, 1909.

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3 SHEETS—SHEET 2.

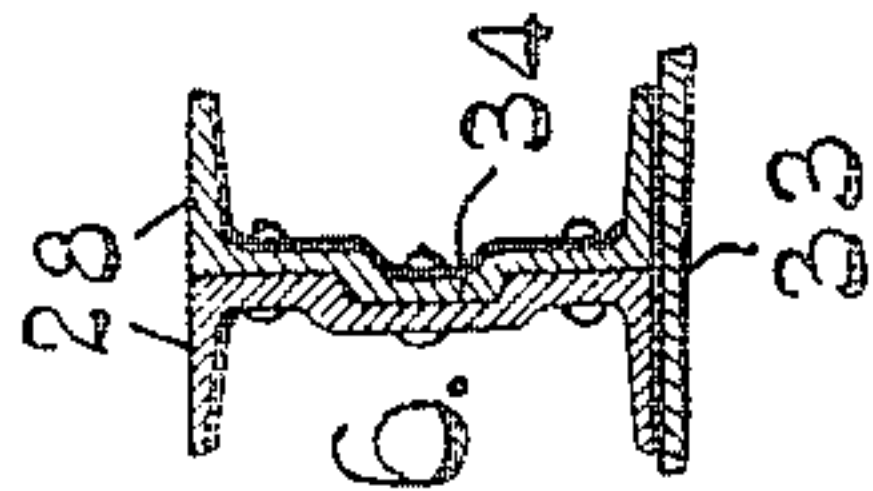
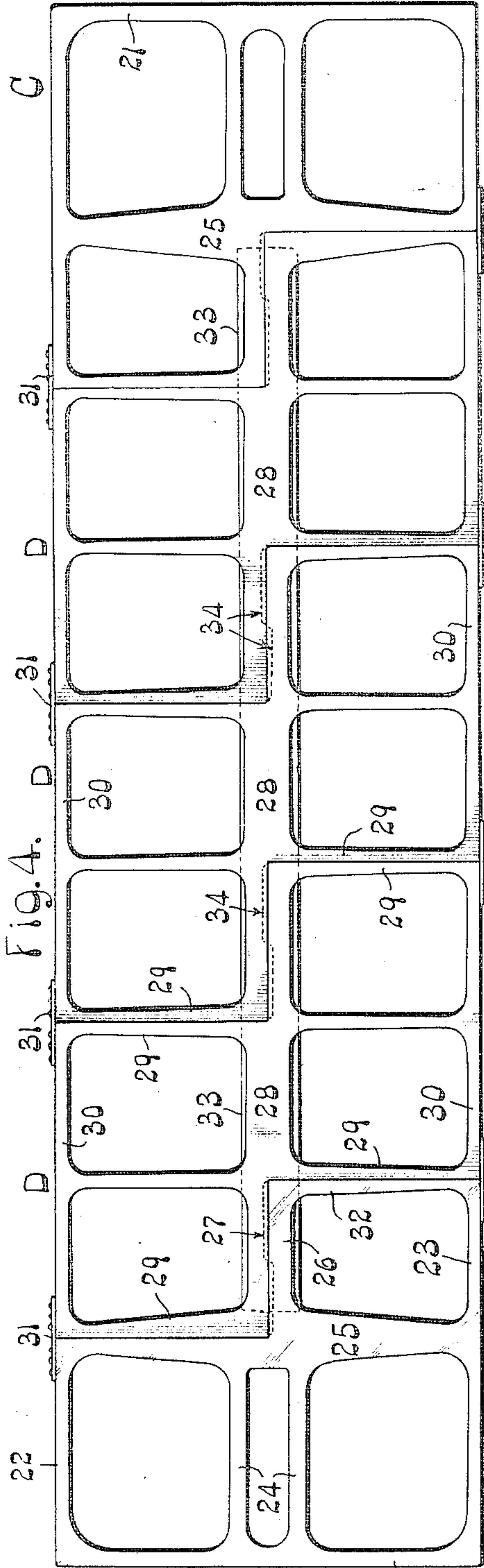


Fig. 5.

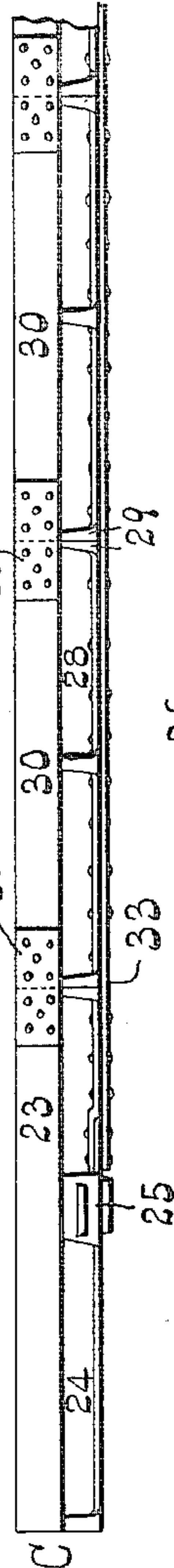
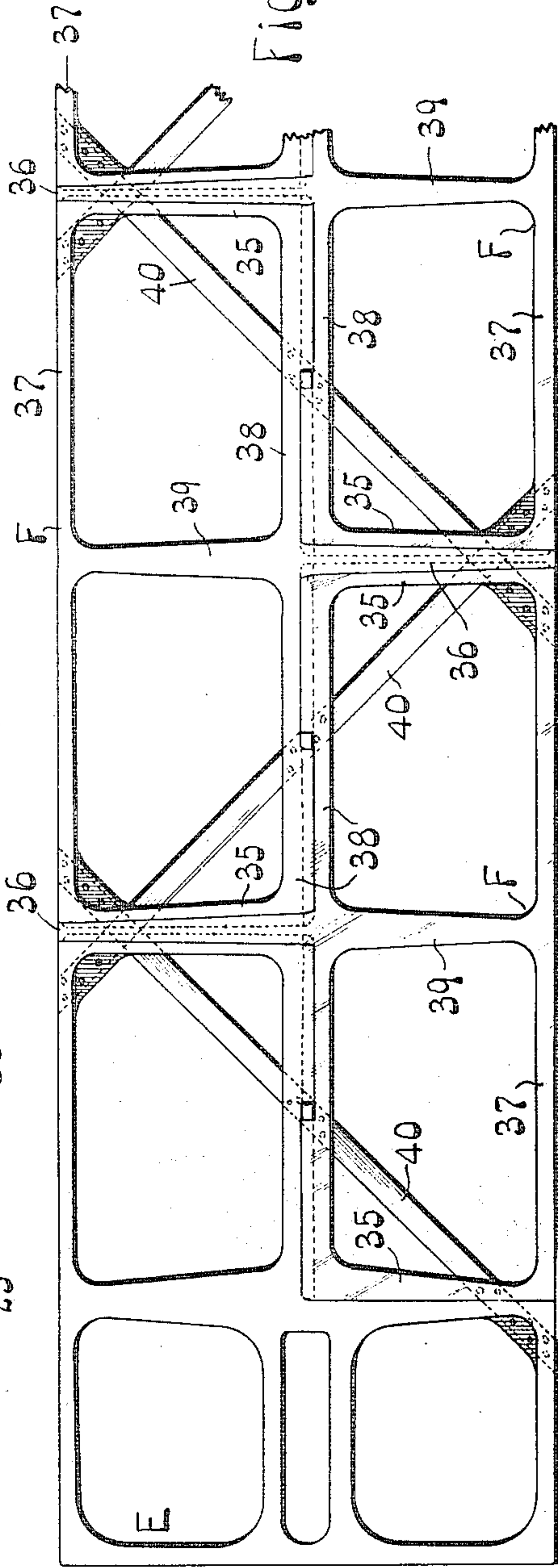


Fig. 7.



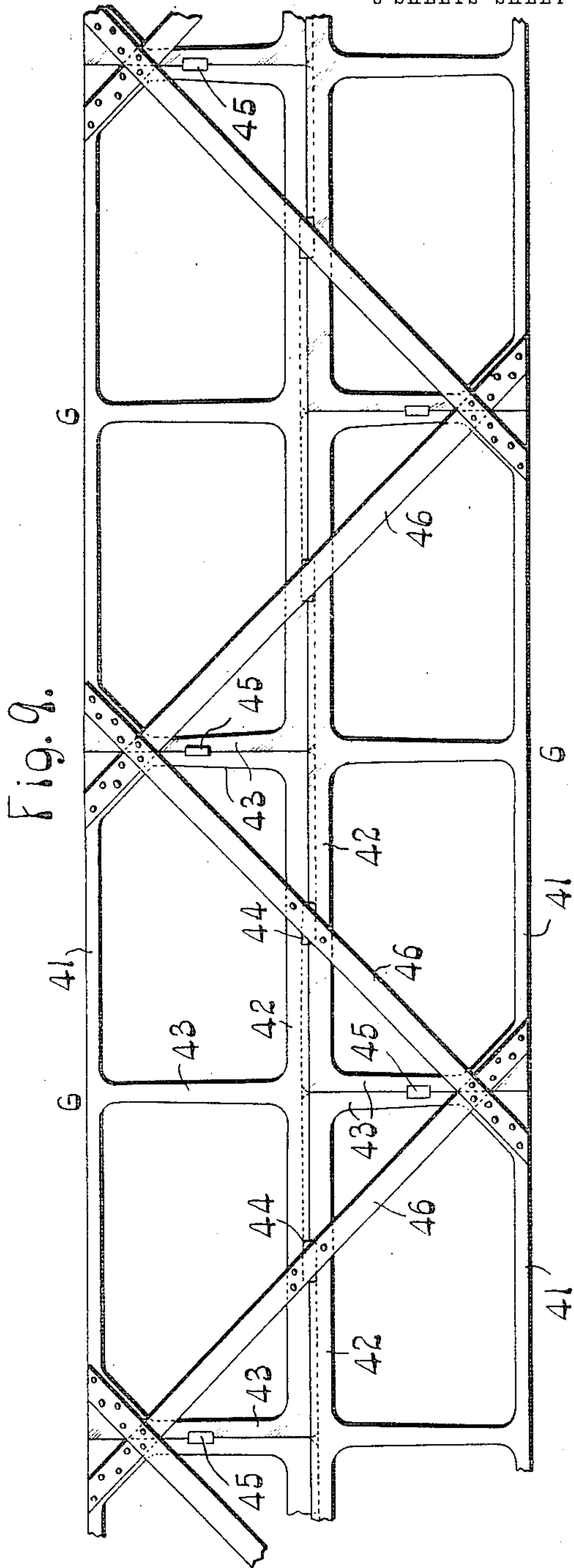
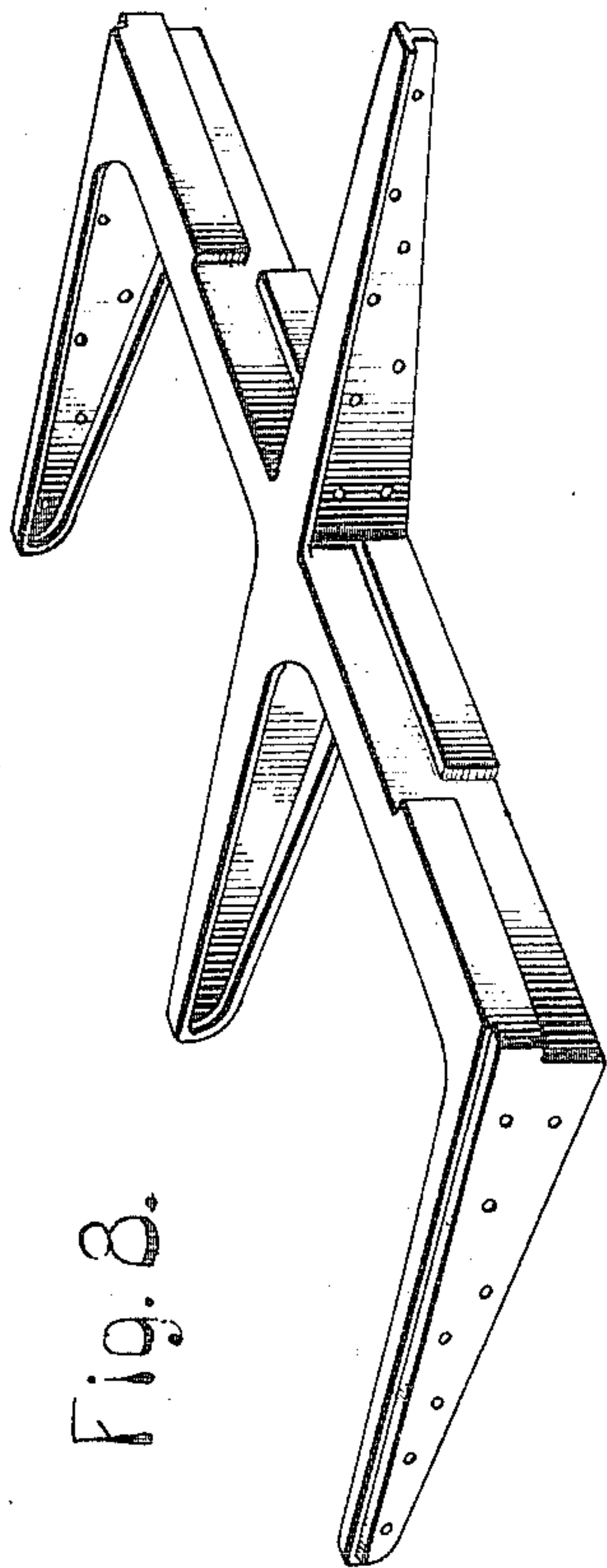
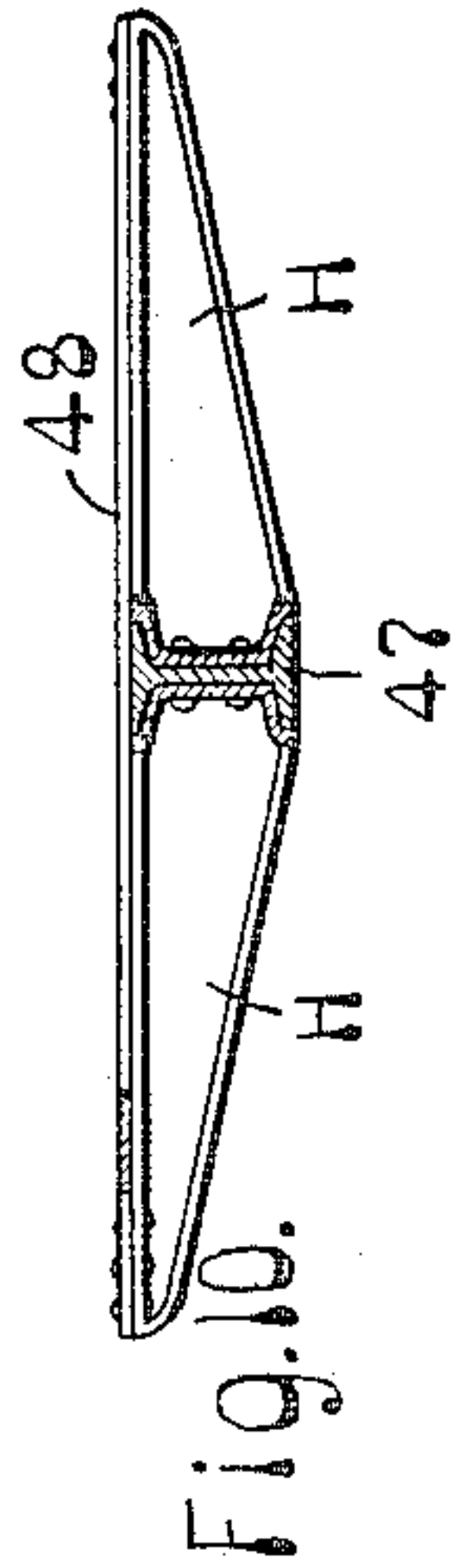
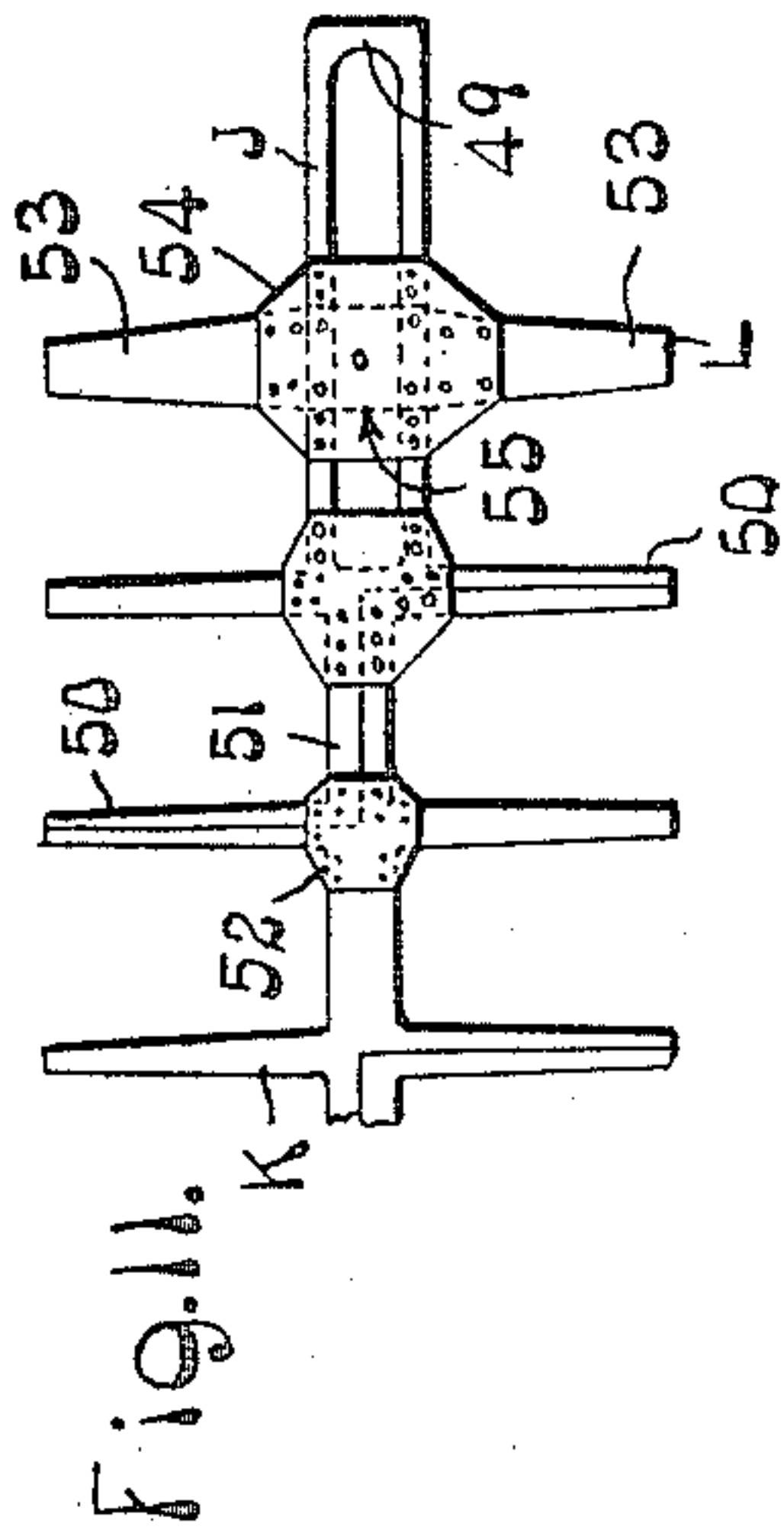
Witnesses
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985,361.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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UNDERFRAME FOR CARS.

985,361.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed September 3, 1909. Serial No. 516,104.

To all whom it may concern:

Be it known that I, ALBERT J. McCAULEY, a citizen of the United States, residing at Chicago, Illinois, have invented a certain
5 new and useful Improvement in Underframes for Cars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying
10 drawings, in which—

Figure 1 is a plan view of an underframe constructed in accordance with this invention; Fig. 2 is a perspective view of a portion of the underframe shown in Fig. 1;
15 Fig. 3 is a detail view showing a slightly modified form of underframe section; Fig. 4 is a plan view showing underframe sections having short side sills; Fig. 5 is a side elevation of the underframe shown in Fig. 4; Fig. 6 is a vertical sectional view of the center sill shown in Fig. 4; Fig. 7 is a plan view of a modified form of underframe;
20 Fig. 8 is a detail view of a modified form of underframe section; Fig. 9 is a plan view showing a further modification; Fig. 10 illustrates a form wherein the sections are arranged on opposite sides of a center sill; and Fig. 11 is a plan view showing another
30 modified form.

My invention relates to improvements in underframes for cars.

Owing to the fact that various underframe parts may be integrally connected
35 together when composed of cast metal, an underframe so constructed has many very desirable features not found in the usual type of "built up" underframes. However, prior to this invention, very few cast
40 metal underframes have been placed in service on account of the difficulty of making large castings and because the service shocks tend to separate small castings at the points where they are connected together.

One of the objects of my invention is to provide an underframe composed of cast metal sections which are so constructed that they have the required strength to resist the stresses which an underframe receives in
50 service.

The cast metal sections of this underframe are simple, they can be assembled easily, and when secured together provide a very strong underframe having a much smaller
55 number of parts than the usual built up underframes.

The invention includes details of construction which will be hereinafter pointed out.

Referring to Fig. 1 and Fig. 2 of the
60 drawings, A indicates castings which form the ends of the underframe, each of said castings comprising an end sill 1, a bolster 2, draft sills 3, short side sills 4, and diagonal braces 5. Each bolster is provided with
65 a center bearing 6. 7 and 8 respectively indicate short center and side sill sections which project laterally from the bolster, a cross bearer section 9 being formed integral with said sill sections. Side sills 10 which
70 connect the end castings A, are preferably secured to sections B arranged between said castings. Each section B is a single casting comprising a center sill section 11 having end and intermediate extensions 12 and
75 13 which constitute staggered cross bearer sections. One-half of a cross bearer is formed by sections 12 and 13, which are preferably riveted or otherwise suitably secured together, the opposite half thereof being
80 formed by an extension 14 which projects laterally from a center sill section. The end portions of each section B overlap adjacent sections and are preferably provided with lugs 15 which interlock there-
85 with. If desired the different sections may be secured together by rivets or other fastening devices.

Fig. 3 illustrates an underframe section consisting of a center sill section 16 having
90 lateral extensions which constitute cross bearer sections. The center sill section 16 is provided with lugs 17 and recesses 18 which are so arranged that the lugs will extend into the recesses of a similar section.
95 The corners of this section are cut away as indicated at 19 so as to fit between webs 20 on a similar section, when the parts are assembled.

Figs. 4, 5 and 6 illustrate an underframe
100 having end sections C each consisting of an end sill 21, short side sills 22 and 23, draft sills 24, a bolster section 25, a cross bearer section 32, and a short center sill section 26, the latter being provided with an integral pro-
105 jection 27 which extends into a recess in an adjoining section. The sections D arranged between the bolsters, like the sections shown in Fig. 1, have substantially Z shaped faces which extend across the car and overlap ad-
110 joining sections. Each section D is a substantially Z shaped casting and comprises,

a center sill section 28 having end and intermediate lateral extensions 29 which form cross bearer sections, and short side sill sections 30. The adjacent ends of the side sill sections are preferably connected together by plates 31. The main bolster section 25 may be secured to the adjoining section 29 in any suitable manner. The bolsters are connected together by a tension member 33 which is shown in the form of a plate riveted to the under side of the sections D, although if desired, commercial shapes, rods or other connecting members may be used in lieu thereof. At least three sections are preferably secured together by a member which extends under an intermediate section because this forms a structure wherein tension stresses which tend to separate the sections are borne by the connecting member. Each center sill section 28 is preferably provided with a lug 34 which overlaps and extends into a recess in an adjoining section.

Fig. 7 illustrates an underframe having an end section E of substantially the same construction as previously described. The sections F, arranged between the bolsters, each have end and intermediate extensions 35 and 36 which constitute cross bearer sections, side and center sill members 37 and 38 being integrally connected to the cross bearer sections. When sections F are assembled one-half of each cross bearer is composed of three separate parts and the opposite half of said cross bearer is formed by a member 39 integrally connected to a side and center sill section. 40 indicates diagonal connecting members arranged under the sections, each of said members connecting four different sections.

Fig. 8 illustrates a section without side sill members, otherwise it is of the same design as those shown in Fig. 7.

The sections G, shown in Fig. 9, each consist of a side sill member 41, a center sill member 42 and cross bearer members 43 integrally connected to said sill members. Keys 44 and 45 lock the adjacent sections together. 46 indicates diagonal connecting members arranged above the sections and constituting tension members which tend to keep the overlapping center sill members in engagement.

In the modified form shown in Fig. 10, sections H are arranged on opposite sides of a center sill 47. This center sill is preferably a single member which connects the bolsters. The sections H are similar to the sections G, shown in Fig. 9, but they are not provided with side sill members. Sections H are preferably connected to each other by tie bars 48 arranged above the center sill. These tie bars 48 are simply diagonal bars arranged like the connecting members 46 shown in Fig. 9.

In Fig. 11 I have shown the underframe

provided with an end section J which comprises draft sills integrally connected at their outer ends by a buffer block 49. Cross bearer sections 50 and a center sill section 51 are integrally connected to the draft sills. The end section J is preferably secured to an intermediate section K by means of a plate 52. A bolster L comprises side members 53 which are not integral with the draft sills, said bolster members being connected to the draft sills by a plate 54. A filler block 55 is arranged between the draft sills at the middle of the bolster.

While I have herein shown end members in the form of castings which constitute a bolster and side sills, it will be understood that this invention is not limited to such a construction. The end portions of the underframe could, if desired, be built up of rolled or pressed metal beams.

Various other modified forms of the cast metal sections herein shown and various methods of securing the sections together will suggest themselves to those skilled in the art, and it is therefore understood that this invention is not limited to the exact construction herein shown.

Modifications of the cast metal sections shown can be designed for various types of passenger and freight cars, including hopper and tank cars. For example, on tank cars the bolsters and cross bearers may be curved to fit the tank, or if desired the cross bearers may be omitted.

What I claim and desire to secure by Letters Patent is:

1. An underframe section composed of a single casting adapted to extend across a railway car and comprising a sill section having a lateral extension adapted to constitute a portion of a sectional cross bearer.

2. An underframe section composed of a single casting adapted to extend across a railway car and comprising a sill section having lateral extensions adapted to constitute cross bearer sections.

3. An underframe comprising overlapping cast metal center sill sections, each of said sections being provided with an integral extension adapted to form part of a cross bearer.

4. A car underframe comprising cast metal sections connected together so that their marginal portions constitute a center sill and cross bearers.

5. A cast metal underframe section having an extension which is adapted to extend from the center to the side of a railway car and constitute a portion of a cross bearer.

6. A cast metal underframe section comprising staggered cross bearer sections integrally connected together.

7. An underframe section composed of a single casting comprising a sill section having end and intermediate extensions adapted

to engage corresponding extensions on a similar section.

8. An underframe for cars comprising cast metal sections, each of said sections having
5 a short center sill and short side sills, the side sills being formed integral with projections which extend laterally from the center sill.

9. A car part comprising a short center
10 sill section, a short side sill section, and cross bearer sections, all of said sections being integrally connected together.

10. A car part composed of a single casting comprising a center sill section, a side
15 sill section, and a cross bearer section, the center sill section being longer than the side sill section.

11. An underframe for cars comprising a center sill, cross bearers, and side sills, said
20 parts being composed of overlapping cast metal sections the adjacent faces of which extend across the car.

12. A car underframe having a center sill, side sills and cross bearers composed of over-
25 lapping cast metal sections which extend across the car, and means for connecting said sections together.

13. A sectional underframe part comprising a center sill section having an integral
30 projection which is adapted to overlap a similar section and constitute a portion of a cross-bearer.

14. A sectional underframe part comprising a center sill section having lateral pro-
35 jections which are adapted to overlap similar sections, and side sills connected to said projections.

15. A sectional underframe part comprising a center sill section having integral end
40 and intermediate lateral projections which are adapted to engage a similar section.

16. A car part composed of a casting having end and intermediate portions integrally
45 connected together and adapted to constitute cross bearer sections.

17. A car part composed of a single casting and comprising a center sill section hav-
ing end and intermediate projections adapted to constitute cross bearer sections.

50 18. A car part comprising a center sill section having end projections adapted to constitute cross bearer sections.

19. A car part in the form of a casting having marginal portions adapted to consti-
55 tute a center sill section and a cross bearer section.

20. A car part adapted to extend across a car and comprising a center sill section hav-
ing an integral lateral projection adapted to
60 constitute a cross bearer section.

21. A car underframe comprising cast metal center sill and cross bearer sections
which extend entirely across the car and are secured together so as to constitute a center
65 sill and cross bearers, the cross bearer sec-

tions being formed by integral projections which extend laterally from the center sill sections.

22. A car part comprising a bolster section, a sill section and a cross bearer section,
70 all of said parts being integrally connected together.

23. A car part comprising a bolster section, a center sill section, and a cross bearer
section, all of said parts being integrally
75 connected together.

24. A car part comprising a bolster section and a cross bearer section integrally
connected together.

25. An underframe for cars comprising
80 cast metal sections, one of said sections being provided with a face which extends substantially from the center to the side of the car and overlaps another section.

26. An underframe for cars having bol-
85 sters, cast metal sections arranged between the bolsters, each of said sections being provided with a lateral extension which overlaps another section, and side sills connected
90 to said extensions.

27. An underframe for cars having a center sill, bolsters, cast metal sections arranged
between said bolsters, one of said sections being provided with a projection which ex-
tends laterally from the center sill and over-
95 laps another section, and a side sill connected to said projection.

28. An underframe for cars having a center sill, bolsters, cast metal sections connect-
ing said bolsters, each of said sections being
100 provided with a projection which extends laterally from the center sill and engages another section, and side sills connected to said projections.

29. An underframe for cars comprising
105 overlapping cast metal sections the adjacent faces of which extend across the car.

30. An underframe for cars comprising overlapping cast metal sections the adjacent
faces of which extend substantially from
110 the center to the side of the car.

31. An underframe for cars comprising bolsters, and cast metal sections interposed
between said bolsters, one of said sections being provided with a face which extends
115 across the car and overlaps another section.

32. A car underframe comprising bolsters, and cast metal underframe sections which
extend across the car arranged between the bolsters, said bolsters being connected by a
120 member arranged under said sections.

33. A car underframe comprising bolsters, overlapping cast metal underframe sections
which extend across the car arranged be-
tween the bolsters, and a member connecting
125 said bolsters, said connecting member being independent of said underframe sections.

34. A car underframe comprising a sill, cross bearers, said parts being composed of
cast metal sections, and a connecting mem-
130

ber arranged under one of said sections, said connecting member being secured to the underframe at points beyond the last mentioned section.

5 35. A car underframe comprising a sill, and cross bearers, said parts being composed of sections which extend across the car, three of said sections being connected together by a member arranged below the
10 same.

36. A car underframe composed of abutting cast metal sections which extend across the car, three of said sections being connected by a member arranged below the same.

15 37. An underframe comprising bolsters, a sill, cross bearers, said sill and cross bearers being composed of cast metal sections which extend across the car and are arranged between the bolsters, and means for connecting
20 said sections, three of said sections being secured together by the same connecting member.

38. A car underframe comprising a center sill, cross bearers, said parts being composed
25 of cast metal sections which extend across the car, and a connecting member which extends across one of said sections secured to sections on opposite sides thereof.

39. An underframe for cars comprising a
30 sill composed of overlapping cast metal sections which extend across the car, and a connecting member which extends across one of said sections secured to sections adjacent thereto.

35 40. A car underframe section composed of a single casting having intermediate projections adapted to interlock with a similar section.

41. A car underframe section composed
40 of a casting having an intermediate projection adapted to fit in a recess in a similar section.

42. A center sill section having integral intermediate projections adapted to inter-
45 lock with a similar section.

43. A center sill section having a lateral intermediate projection adapted to interlock with a similar section.

44. A car underframe comprising overlap-
50 ping sections, each of said sections being in-

terlocked with and riveted to the intermediate portion of an adjacent section.

45. A car underframe comprising bolsters, sill sections connecting said bolsters, each of said sill sections being provided with the in- 55
intermediate portion of lateral projections which interlock with a similar section.

46. A car underframe comprising bolsters, and a center sill member composed of a plurality of overlapping cast metal sections 60
which connect said bolsters, an end portion of each of said sections being secured to the intermediate portion of an adjacent section.

47. A car underframe comprising bolsters, and a sill member composed of cast metal 65
sections which connect said bolsters, each of said sections being interlocked with the intermediate portion of an adjacent section.

48. A car underframe comprising substantially Z shaped cast metal sections, each of 70
said sections constituting a portion of a center sill and a portion of a cross bearer.

49. An underframe section in the form of a substantially Z shaped casting, said section being adapted to extend across a car 75
and constitute a portion of a center sill.

50. A substantially Z shaped casting adapted to extend across a railway car and constitute a portion of a center sill.

51. A substantially Z shaped casting 80
adapted to extend across a railway car and constitute a portion of a longitudinal sill.

52. A car underframe section composed of a casting having a substantially Z shaped face which is adapted to extend across the 85
car and overlap a similar section.

53. A car underframe section composed of a casting having substantially Z shaped faces which are adapted to extend across 90
the car and engage a similar section.

54. A car underframe including substantially Z shaped castings, the meeting edges of which overlap.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, 95
this 31st day of August, 1909.

ALBERT J. McCAULEY.

Witnesses:

JEAN A. MACDONEL,
FRANCES B. HARTY.