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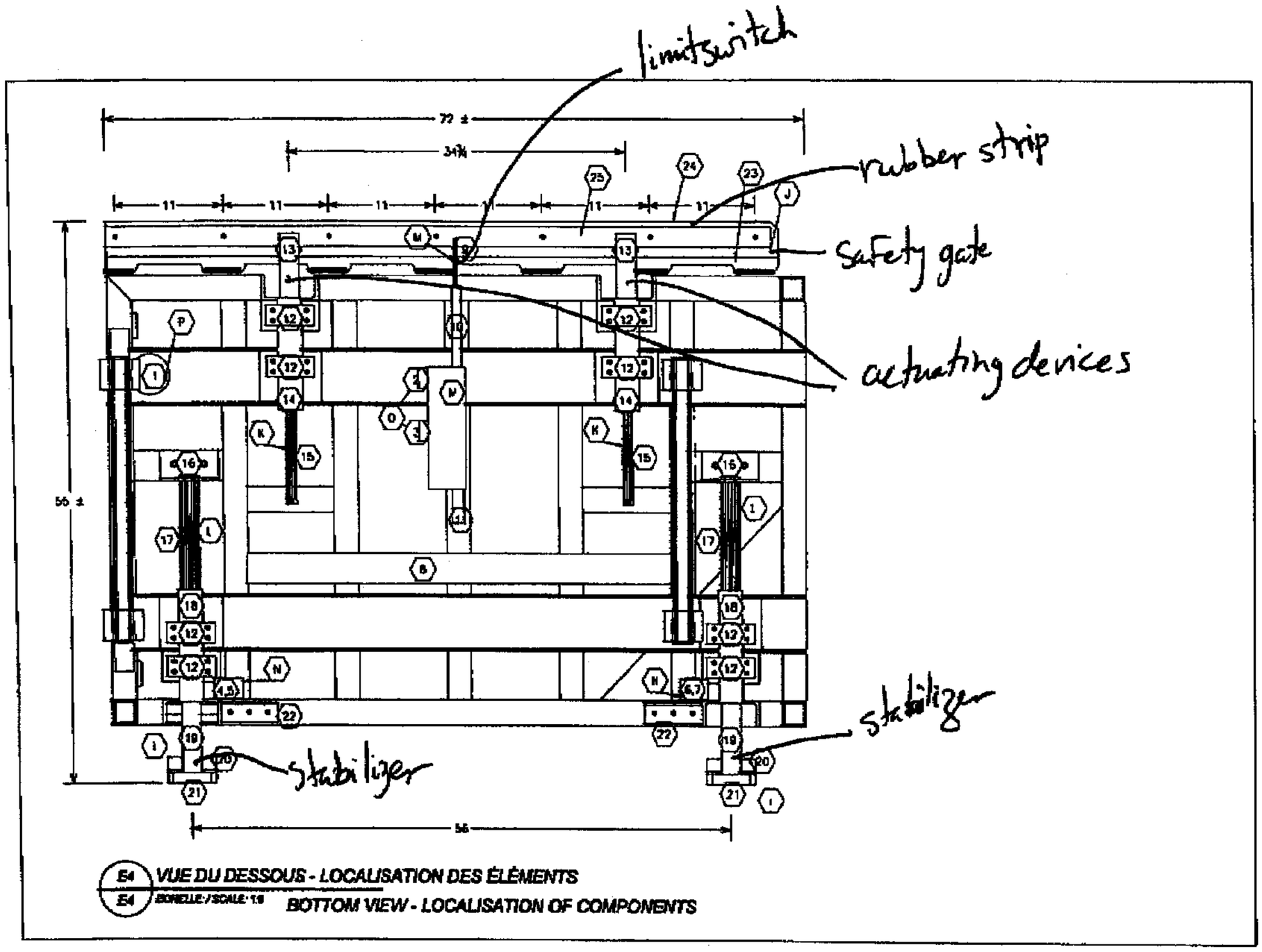
(54) Titre : PLATE-FORME POUR ELEVATEUR A FOURCHE
(54) Title: PLATFORM FOR FORKLIFT



TITLE OF THE INVENTION

PLATFORM FOR FORKLIFT

FIELD OF THE INVENTION

The present invention relates to lifting machines, typically forklifts and, more particularly, to a platform therefor.

BACKGROUND OF THE INVENTION

In locations where there is high shelving, such as storage warehouses, objects to be positioned on shelves, or to be removed therefrom are often handled by forklifts. As well known in the art, forklifts are motorized machines for hoisting heavy objects (e.g. as boxes, bales, or metal bars) by means of a row of horizontal steel fingers that are inserted under the load to be lifted or lowered, and that displaced along vertical guides to the required level via motorized device, usually a hydraulic system. Horizontally-extending platforms for receiving the loads to be carried by the forklifts can be mounted to the steel fingers or can in fact replace these steel fingers, whereby the platforms are moveable vertically to desired positions for loading or unloading boxes (and the like) respectively onto and from shelves. Warehouses typically include a series of parallel rows of shelving, which are spaced by aisles via which the forklifts can access the various shelves.

When a load is desired to be stored on a shelf, or to be removed therefrom, the forklift is operated so as to bring its fingers or platform to the appropriate elevation, i.e. opposite the concerned shelf. The operator then disembarks from his seat in the forklift's cabin and reaches the platform so as to move the load from the platform onto the shelf, or vice versa. Some loads are heavy and difficult to manipulate and this can become dangerous for the operator, as he can slip off the platform, such as jam his leg within the space or gap defined between the platform and the shelf. This can cause serious injuries, and worse as the operator can even fall from the

platform. There is also some danger in the displacement of the operator between the cabin and the platform.

Consequently, a new forklift or new platform therefor is needed to address the above drawbacks of conventional lifting apparatuses intended to carry loads to and from elevated shelves.

The present invention seeks to meet these needs and other needs.

SUMMARY OF THE INVENTION

It is therefore an aim of the present invention to provide a novel lifting apparatus for carrying loads to and from elevated shelves.

It is also an aim of the present invention to provide a novel platform for a lifting apparatus adapted to carry loads to and from elevated shelves.

Other aims, objects, advantages and features of the present invention will become more apparent upon reading of the following non-restrictive description of specific embodiments thereof, given by way of example only with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus generally described the nature of the invention, reference will now be made to the accompanying drawings, showing by way of illustration a preferred embodiment thereof, and in which:

Fig. 1 is an angled elevation view of a forklift and a platform thereof in accordance with the present invention, in a lowered position thereof;

Fig. 2 is a side elevation view of the forklift of Fig. 1, in the lowered position thereof;

Fig. 3 is an angled elevation view of a control station or cabin of the forklift of Fig. 1, which receives the forklift truck driver;

Fig. 4 is an angled bottom view of the platform in an elevated position thereof;

Fig. 5 is a bottom view showing a compressor located underneath the operator's footbridge;

Figs. 6 and 7 are front and side views, taken slightly from below, of a moveable step provided at the control station and herein shown in a lowered position thereof;

Fig. 8 is a view similar to Fig. 6 but showing the step in a raised position thereof; and further showing, on a right-hand side of the Figure, part of a safety paddle or gate herein shown in a lowered retracted position thereof;

Fig. 9 is a side view, taken slightly from below, of the safety gate shown in its lowered retracted position and of an actuating device therefor;

Fig. 10 is a bottom perspective view of the safety gate shown in a raised extended position thereof;

Fig. 11 is a side view, taken slightly from below, of the safety gate shown in its lowered retracted position and of a limit switch therefor;

Fig. 12 is an angled view, taken slightly from below, of a stabilizer of the platform, herein shown in an extended position thereof;

Fig. 13 is a side view of the forklift and its platform;

Fig. 14 is a bottom plan view of the forklift without its platform;

Fig. 14A is a perspective view of the step in its lowered position, with the step being shown in its raised position in phantom lines;

Figs. 14B, 14C and 14D are respectively top plan, longitudinal cross-section and end elevation views of the step;

Fig. 15 is a perspective view of the platform, with components removed for illustration purposes;

Fig. 16 is another perspective view of the platform, with components removed for illustration purposes;

Fig. 17 is a bottom plan view of the platform, showing various components thereof;

Fig. 18 is a bottom plan view of the platform, showing a structure thereof;

Fig. 19 is a side elevation view of the platform; and

Fig. 20 is a parts' list for Figs. 15 to 18.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the Figures, there is shown a forklift in accordance with the present invention, which is provided with a platform. The forklift and its platform allow for the safe handling of objects that must be displaced from the platform to shelves, and vice versa, which are located at various elevations.

The platform preferably, as herein illustrated, can be removed fro the forklift so that the latter can be used as such. When desired, the platform is secured to the conventional forklift. With or without the platform, the present forklift is capable of carrying out all of its normal functions.

The present invention provides various safety features to prevent the truck driver from falling off the forklift and injuring himself, for instance while he is handling loads that must be moved from the platform to the shelving, or vice versa. The present invention combines safety for human operations performed at high elevations, typical forklift operations,

displacements of the forklift in the aisles between adjacent rows of shelving, as well as the manual handling of objects (loads).

The general principle of the present invention is to stabilize the platform in all of its configurations while being proactive. Indeed, the forklift and its platform cannot be used unless the safety systems and mechanisms are engaged.

Some modifications are apparent on the forklift relative to a conventional forklift. For instance, the electrical system is modified so as to supply an added air compressor that is required for the operation of the safety systems.

An alarm system is provided to permit all of the safety systems to operation in harmony or in sync. The alarm system has two functions, namely to warn the driver with an audible alarm, and to interrupt all manoeuvres.

The forklift's battery(ies) is replaced with higher capacity ones, so as to meet the needs of all of the systems and to provide sufficient autonomy thereto.

A pneumatic system is also added to the forklift for the operation of the safety systems.

The standard forks of the forklift are replaced typically with modified ones that are designed to adapt the platform to the forklift.

The conventional safety systems of the forklift are modified so as to adapt them to the new requirements.

A retractable step (see Figs. 6 to 8,13 and 14) is pivotally mounted to the control station of the operator (truck driver) to fill the gap between the control station's footbridge and the flooring of the shelving. This step assumes its lowered, gap-filling, position by displacing the cabin's operator guardrail (see Figs. 3 and 13).

Application number/numéro de demande: 2514362

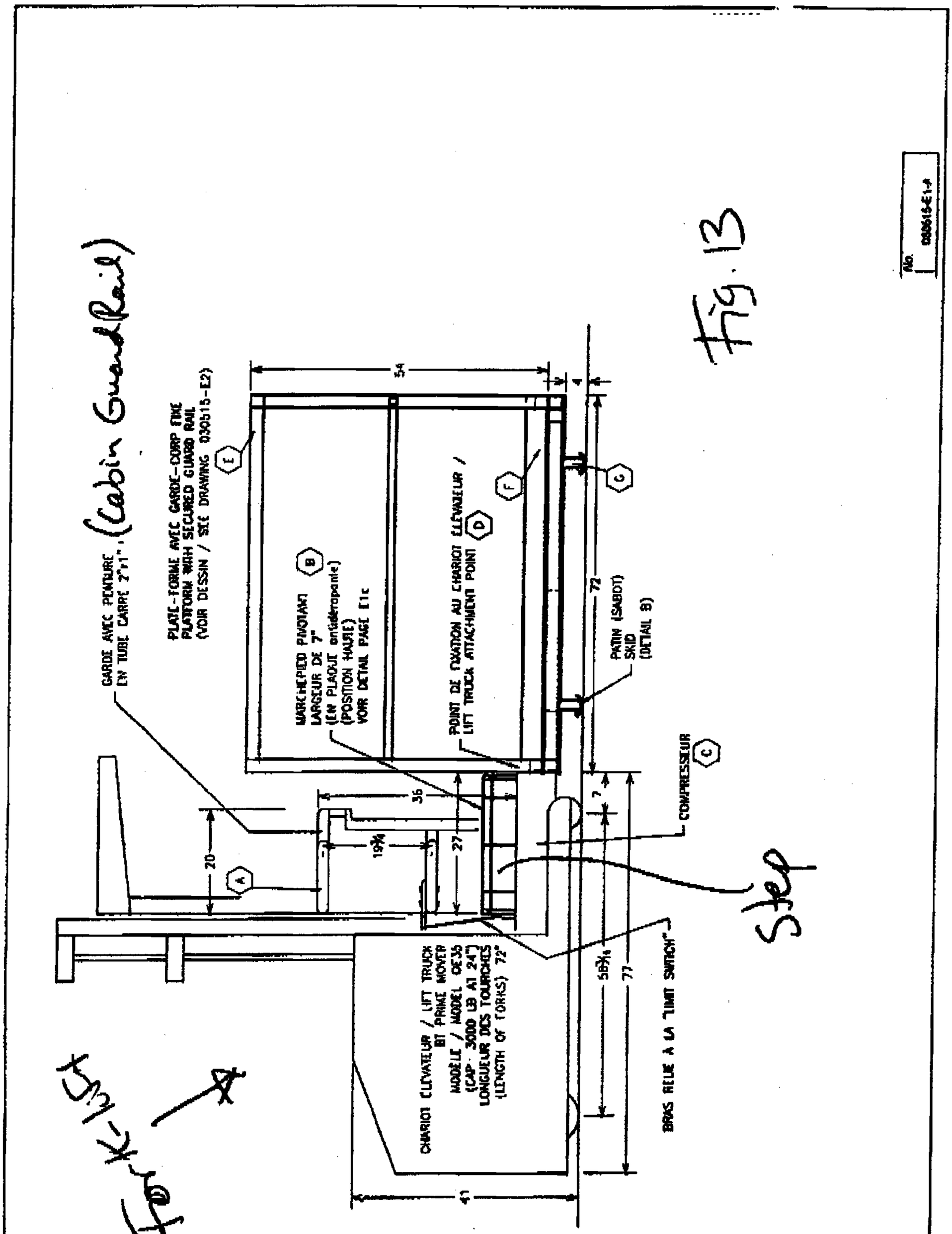
Figures: (22 pages)

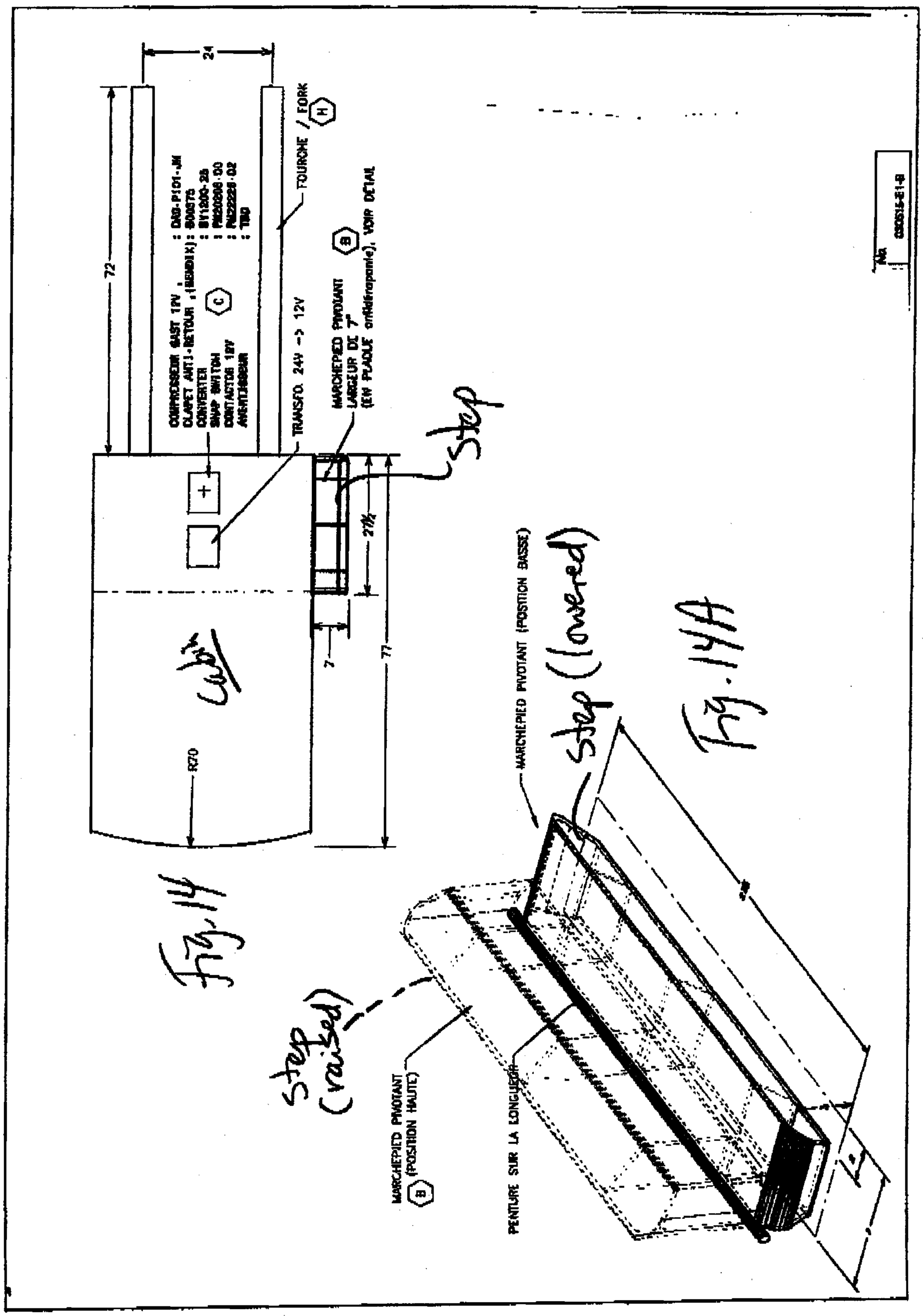
Pages:

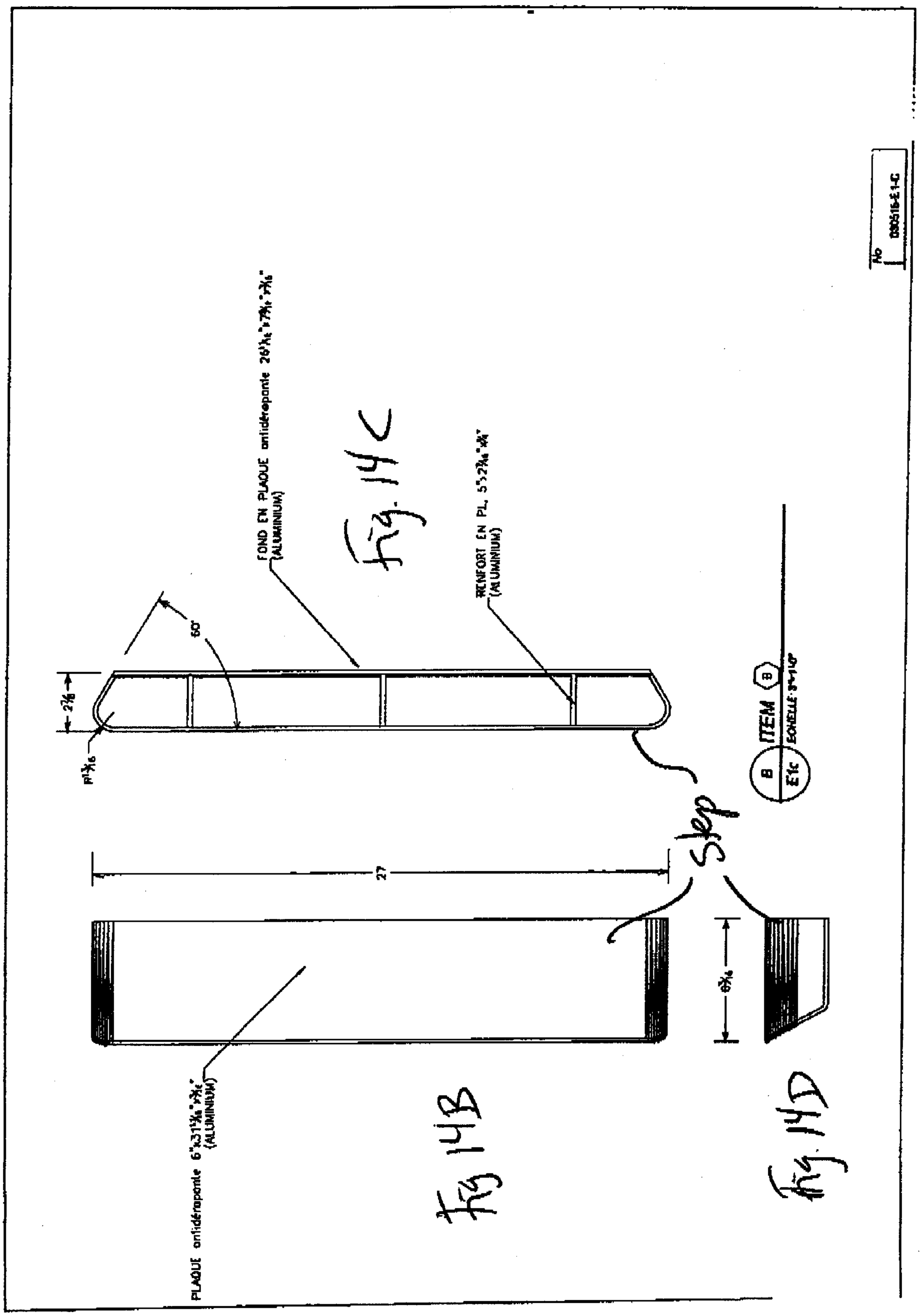
Drawings

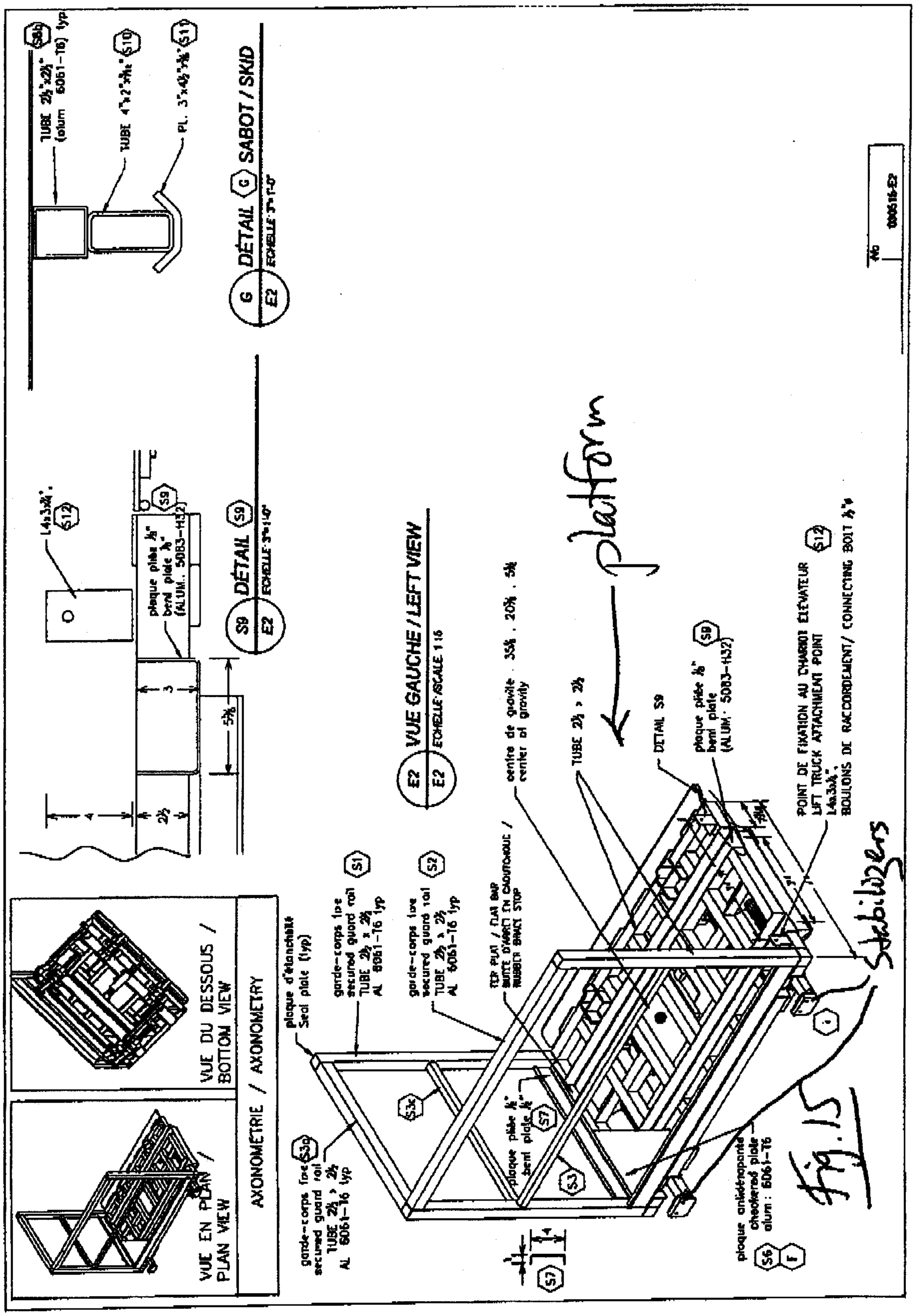
Unscannable items
received with this application
(Request original documents in File Prep. Section on the 10th Floor)

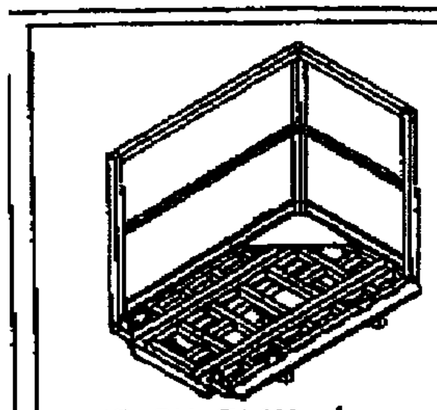
Documents reçus avec cette demande ne pouvant être balayés
(Commander les documents originaux dans la section de préparation des dossiers au 10ième étage)


(Cabin Guard Rail)
GARDE AVEC PEINTURE
EN TUBE CARRÉ 2"x1"
PLATE-FORME AVEC GARDE-CORPS FIXE
PLATFORM WITH SECURED GUARD RAIL
(VOIR DESSIN / SEE DRAWING 030515-E2)
MARCHEPIED PIVOTANT
LARGEUR DE 7"
(EN PLAQUE antidérapante)
(POSITION HAUTE)
VOIR DETAIL PAGE E1c
POINT DE FIXATION AU CHARIOT ELEVATEUR /
LIFT TRUCK ATTACHMENT POINT
PATIN (SABOT)
SKID
(DETAIL B)
COMPRESSEUR
CHARIOT ELEVATEUR / LIFT TRUCK
BT PRIME MOVER
MODÈLE / MODEL OE35
(CAP. 3000 LB AT 24")
LONGUEUR DES FOURCHES
(LENGTH OF FORKS) 72"
BRAS RELIE A LA "LIMIT SWITCH"
54
4
72
36
19¾
27
20
7
58¾
77
Fig. 13
Step
No. 030515-E1-A

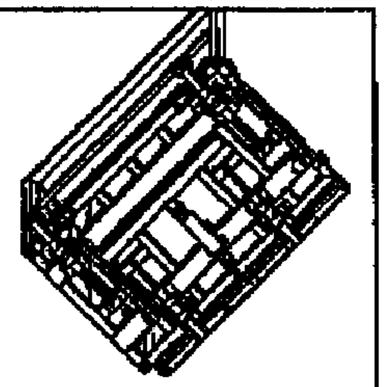

24
72
FOURCHE / FORK
H
DAS-P101-JM
B11200-25
TBD
COMPRESSEUR 6AST 1RV
CLAPET ANTI-RETOUR
CONVERTER
SNAP SWITCH
CONTACTOR 18V
C
TRANSFO. 24V -> 12V
MARCHEPIED PIVOTANT
LARGEUR DE 7"
(EN PLAQUE antidérapante)
B VOIR DETAIL
27½
7
77
R20
Step
Step (lowered)
Fig. 14
Fig. 14A
step
(raised)
MARCHEPIED PIVOTANT (POSITION BASSE)
MARCHEPIED PIVOTANT
(POSITION HAUTE)
B
PEINTURE SUR LA LONGUEUR


FOND EN PLAQUE antidérapante 26"x6"x3/16"
(ALUMINIUM)
RENFORT EN PL. 5"x2"x1/4"
(ALUMINIUM)
60°
2 1/8
PL 3/16
27
6 3/16
PLAQUE antidérapante 6"x31 1/8"x3/16"
(ALUMINIUM)
ITEM B
ECHELLE: 3=1
B
E1c
Fig. 14C
Step
Fig 14B
Fig. 14D


TUBE 2½"x2½" (alum 6061-T6) typ
TUBE 4"x2"x¼" S10
PL. 3"x4½"x⅜" S11
G DÉTAIL G SABOT / SKID
E2 ÉCHELLE 3"=1'-0"
L4x3x¼" S12
plaque plate ⅜" bent plate ⅜" (ALUM.: 5083-H32)
S9 DÉTAIL S9
S9 E2 ÉCHELLE 3"=1'-0"
3
5⅛
4
2½
VUE GAUCHE / LEFT VIEW
ÉCHELLE/SCALE 1:6
centre de gravité . 35% . 20% . 5%
center of gravity
TUBE 2½ x 2½
platform
DÉTAIL S9
plaque plate ⅜" (S9) bent plate (ALUM.: 5083-H32)
POINT DE FIXATION AU CHARIOT ÉLÉVATEUR LIFT TRUCK ATTACHMENT POINT L4x3x¼", BOULONS DE RACCORDEMENT/ CONNECTING BOLT ½"
VUE DU DESSOUS / BOTTOM VIEW
AXONOMETRIE / AXONOMETRY
VUE EN PLAN / PLAN VIEW
plaque d'étanchéité Seal plate (typ)
garde-corps fixe secured guard rail TUBE 2½ x 2½ AL 6061-T6 typ (S1)
garde-corps fixe secured guard rail TUBE 2½ x 2½ AL 6061-T6 typ (S2)
TOP PLAT / FLAT BAR
BUTÉE D'ARRÊT EN CAOUTCHOUC / RUBBER BUMPY STOP
(S3c)
plaque plate ⅜" bent plate ⅜" (S7)
(S3)
garde-corps fixe (S3a) secured guard rail TUBE 2½ x 2½ AL 6061-T6 typ
(S7)
plaque antidérapante checkered plate alum.: 6061-T6 (S6) (1)
Stabilizers
Fig. 15



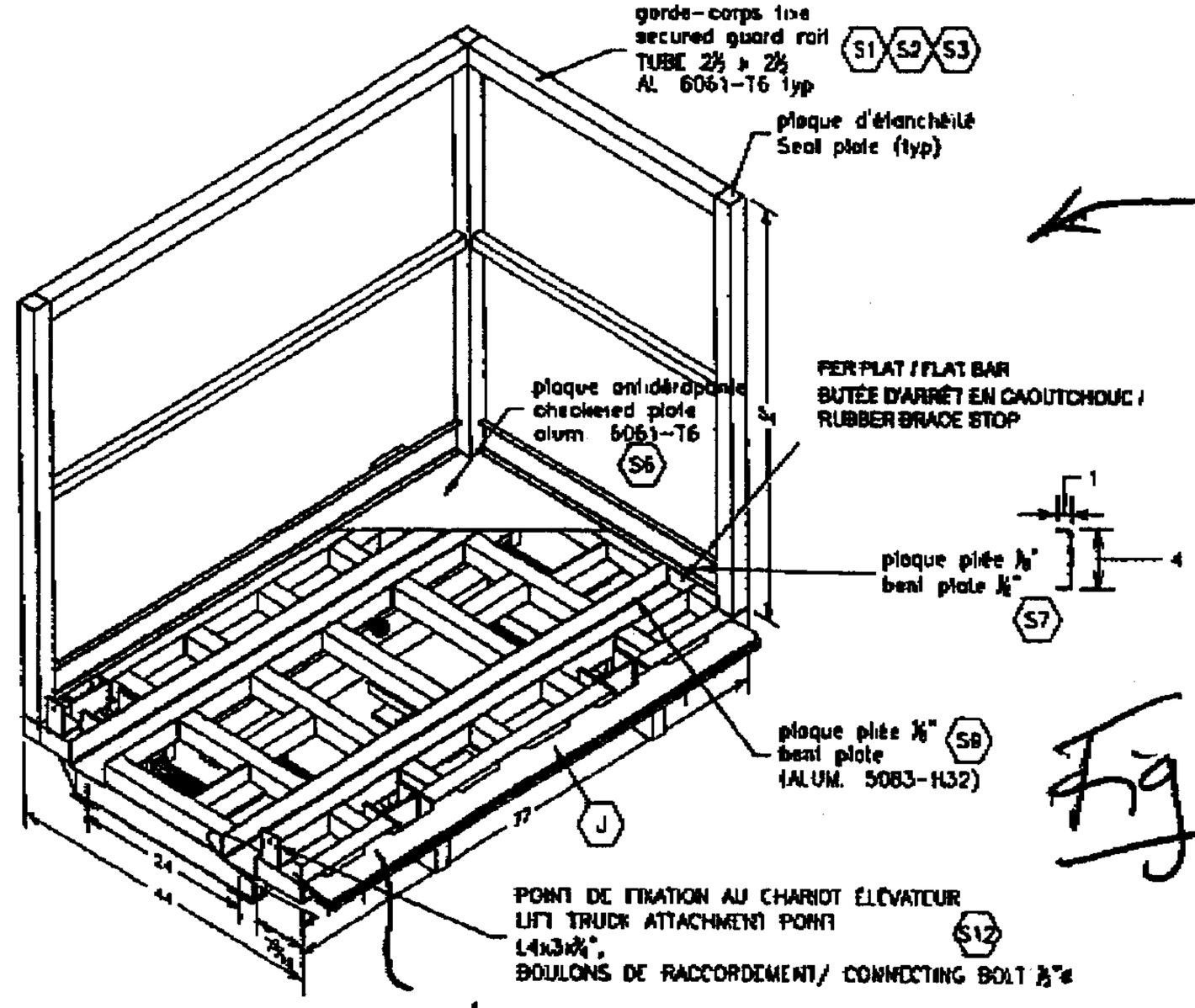
VUE EN PLAN /
PLAN VIEW



VUE DU DESSOUS /
BOTTOM VIEW

AXONOMÉTRIE / AXONOMETRY

E3 / E3 VUE DROITE / RIGHT VIEW
ECHELLE /SCALE: 1:16



← platform

Fig. 16

Safety gate

N/A
030515-E3

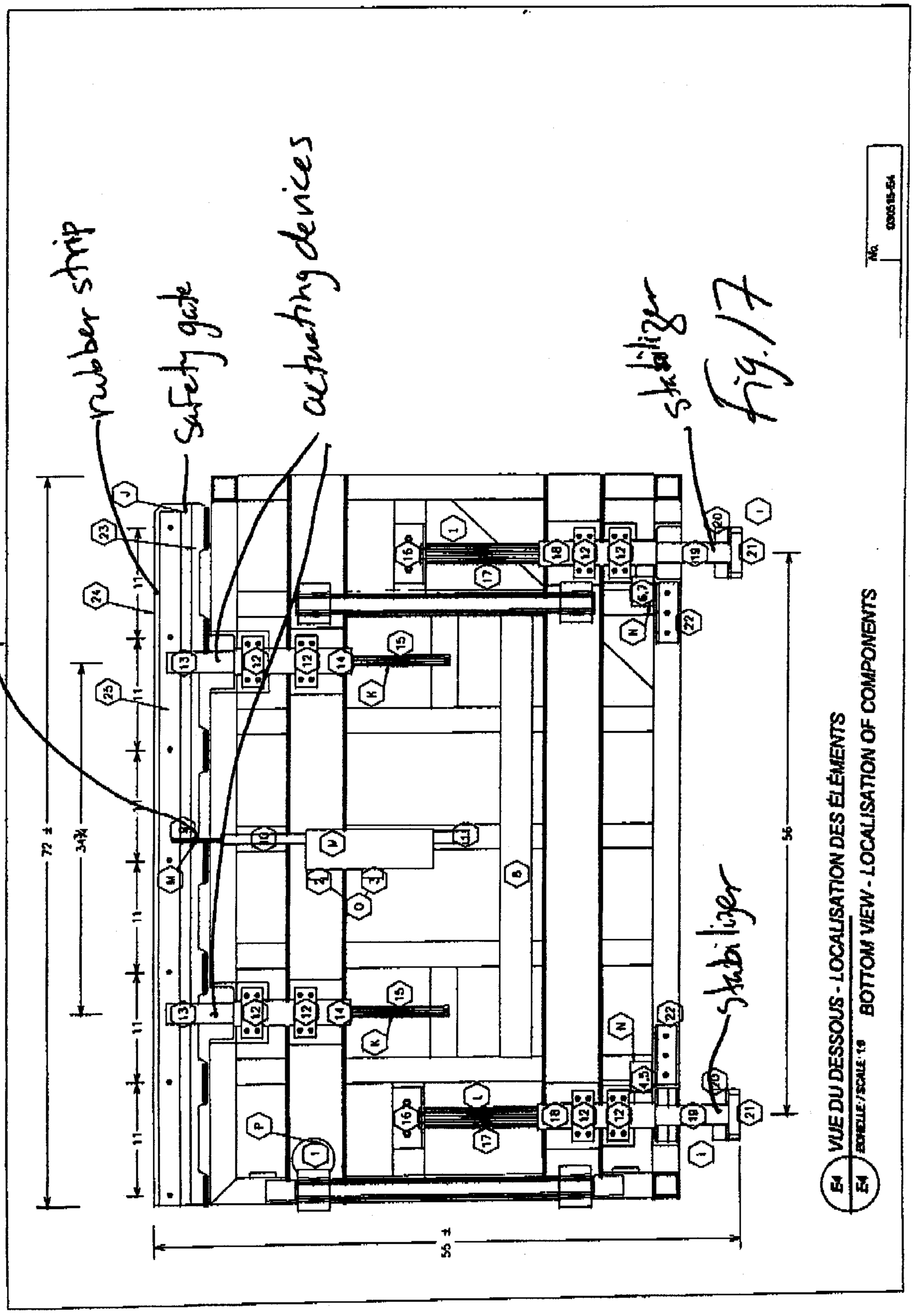
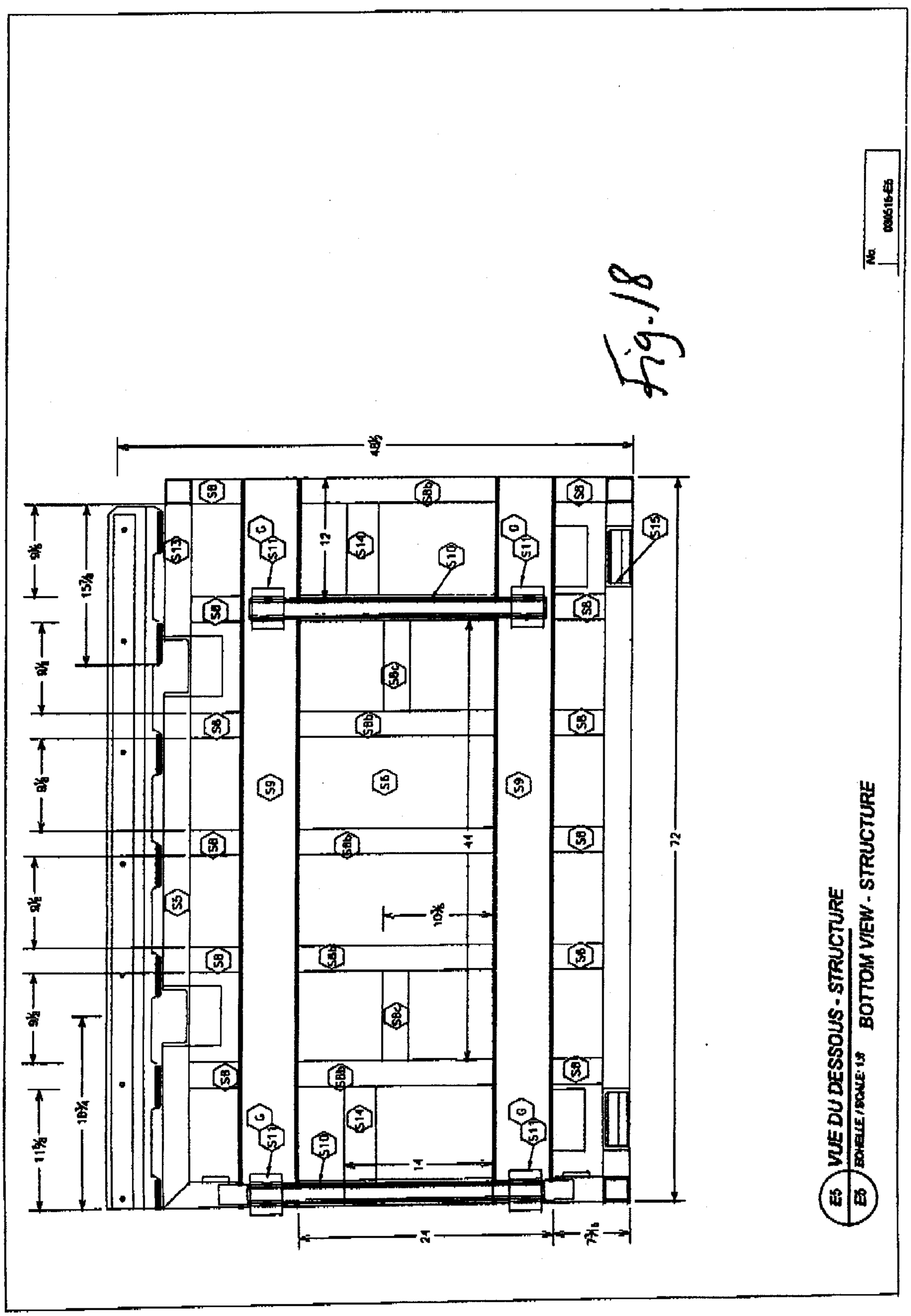
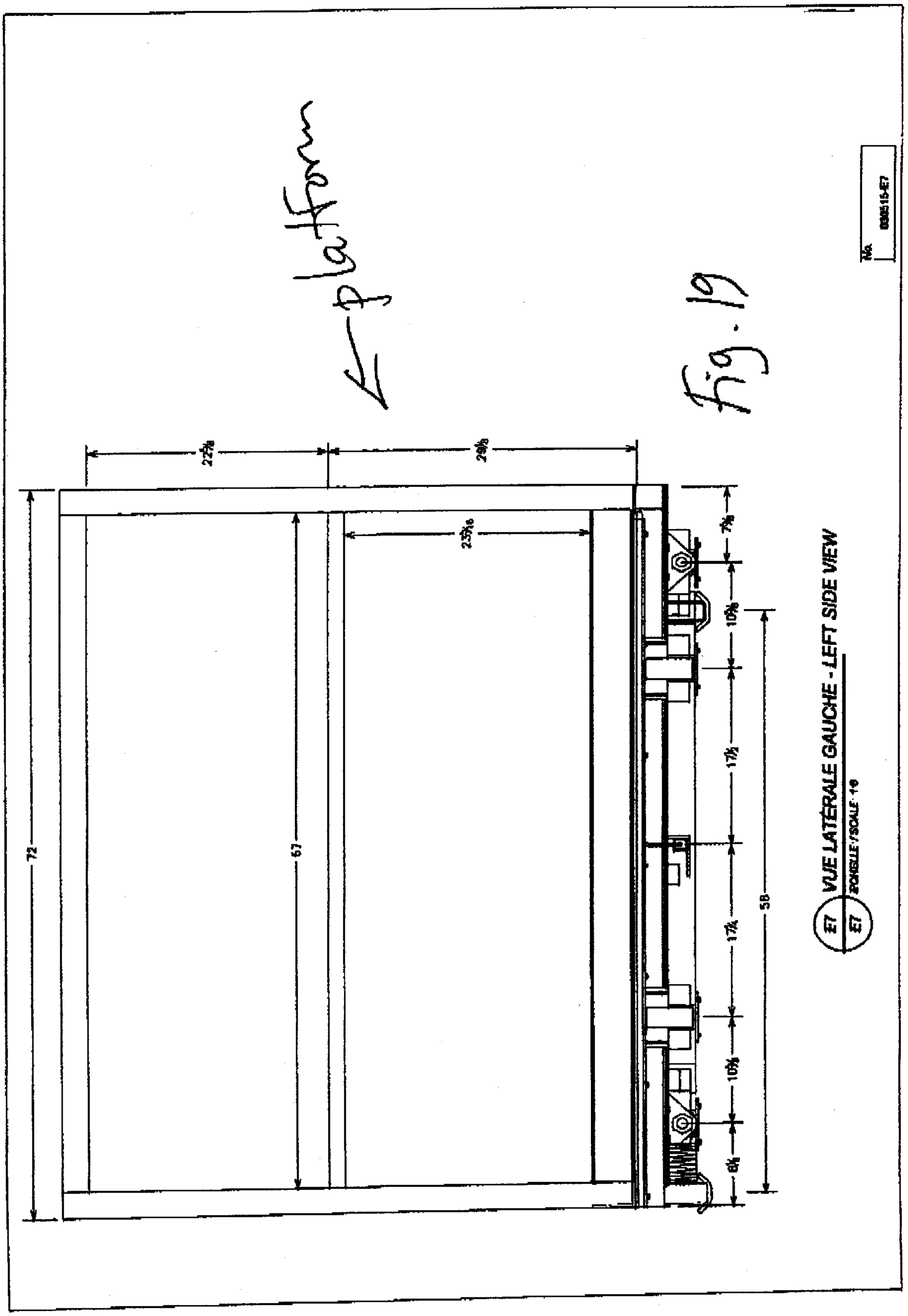

limit switch
rubber strip
safety gate
actuating device
stabilizer
Fig. 17
72 1/4
34 3/4
11
11
11
11
56
53 1/4
VUE DU DESSOUS - LOCALISATION DES ÉLÉMENTS
ECHELLE / SCALE 1:8
BOTTOM VIEW - LOCALISATION OF COMPONENTS
No.
03/05/15-E4
E4
E4

Fig. 18

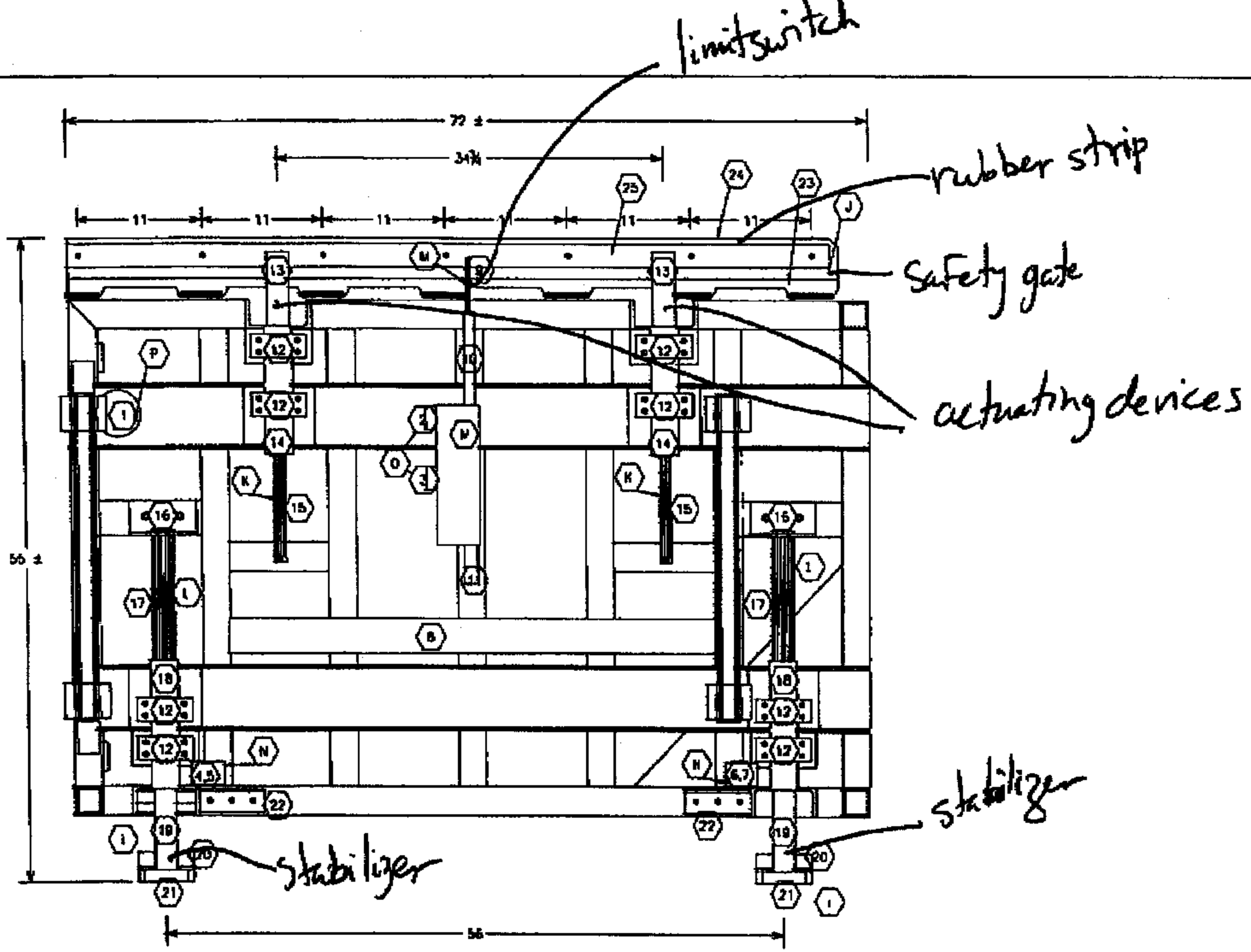

No. 030516-E5
48⅝
9⅛
15⅜
9⅛
12
9⅛
9⅛
9⅛
9⅛
11⅝
18¾
14
10⅜
41
72
24
7¾
E5 VUE DU DESSOUS - STRUCTURE
E5 ECHELLE / SCALE 1/8 BOTTOM VIEW - STRUCTURE


platform
fig. 11
No. 030515-E7
22⅞
29⅛
23⅝
72
67
7⅛
10⅛
17½
17¾
10⅝
6¼
58
E7
E7
VUE LATÉRALE GAUCHE - LEFT SIDE VIEW
ÉCHELLE / SCALE 1:8

ITEM	QTÉ	DESCRIPTION
1	1	AVERTISSEUR DE MARCH ARRIÈRE BACK-UP ALARM
2 à 7	6	TÉLÉMÉCANIQUE LIMITEUR DE FIN DE COURSE
8	1	RÉSERVOIR À AIR (TUBE 5"x5"x44") Air Reservoir
9	1	BRAS POUR LIMITEUR DE FIN DE COURSE 2 ET 3 Limit Switch
10	1	TIGE CARRÉ 1"x1" Square Rod
11	1	TUBE CARRÉ 1.5"x1.5"x0.25" Square Tube
12	6	PLAQUES DE SUPPORTS 5"x2"x0.25" Support Plates
12b	32	BOULONS S/S 304 Bolts
13	2	BLOC 2.125"x1.25"x12.75" Block
14	2	TUBE CARRÉ 2.5"x2.5"x0.25" Square Tube
15	2	CYLINDRE UDR-14-5 CLIPPARD Cylinder
16	2	SUPPORT DU CYLINDRE L3x3x0.25", 6" LONG. Cylinder Support
16b	4	BOULONS 3/8", S/S 304 Bolts
17	2	CYLINDRE UDR-32-4 CLIPPARD Cylinder
18	2	TUBE CARRÉ 2.5"x2.5"x0.25" Square Tube
19	2	BLOC 2.125"x2.125"x12.375" Block
20	2	SUPPORT D'AMORTISSEUR Shock Absorber Support
21	2	PARE-CHOCS EN CAOUTCHOUC Rubber Bumper
22	2	CORNIÈRE DE PROTECTION L3x2x0.25" Protection Corner
22B	6	BOULONS S/S 304 Bolts
23	1	PLAQUE STRIÉE 4.5"x69.375"x0.25" Checkered Plate
24	1	BANDE CAOUTCHOUC 4.125"x70.75"x0.5" Rubber Strip
25	1	PLAQUE 2"x66.5"x0.25" Plate
25b	7	BOULONS S/S 304 Bolts

ITEM	QTÉ	DESCRIPTION	
S1	3	TUBE CARRÉ 2.5x2.5X0.25" X 58.5"	Square Tubes
S2	1	TUBE CARRÉ 2.5x2.5X0.25" X 72"	
S3	1	TUBE CARRÉ 2.5x2.5X0.25" X 67"	
S3a	1	TUBE CARRÉ 2.5x2.5X0.25" X 41.5"	
S3c	1	TUBE CARRÉ 2.5x2.5X0.25" X 39"	
S4	1	PLAQUE 5.5"x4"x0.125" Plate	
S5	1	TUBE CARRÉ 2.5x2.5X0.25" X 28.5"	Square Tubes
S5b	1	TUBE CARRÉ 2.5x2.5X0.25" X 50.25"	
S5c	1	TUBE CARRÉ 2.5x2.5X0.25" X 2.75"	
S5d	1	TUBE CARRÉ 2.5x2.5X0.25" X 2"	
S6	1	PLAQUE STRIÉE 72"x44"x0.125" Checkered Plate	
S7	1	PLAQUE 0.125"x38"	Plates
S7a	1	PLAQUE 0.125"x67"	
S8	14	TUBE CARRÉ 2.5x2.5X0.25" X 4.75"	Square Tubes
S8b	7	TUBE CARRÉ 2.5x2.5X0.25" X 18.5"	
S8c	2	TUBE CARRÉ 2.5x2.5X0.25" X 28"	
S9	2	PLAQUE 0.125"x72" — Plate	
S10	2	TUBE RECTAN. 3.5"x2"x0.125"x28" Rectangular Tube	
S11	4	PL. PLIÉE 0.25" Bent Plate	
S12	2	L 4"x3"x0.25"x 2.5" long. L - bracket	
S13	2	TUBE CARRÉ 2.5x2.5X0.25" X 13.25" Square Tube	
S14	2	L 2.5"x3"x0.25" x 8" long. L - bracket	
S15	4	C 6"x2.5", 2.875" LONG. C - channel	

Fig. 20



E4 E4 *VUE DU DESSOUS - LOCALISATION DES ÉLÉMENTS*

ECHELLE / SCALE: 1:8 *BOTTOM VIEW - LOCALISATION OF COMPONENTS*