Interesting OSHA Stats

2010 - OSHA Recordable Violations

#1 in Recorded Violations -**Scaffold Related**
8,371 recordables

#2 in Recorded Violations - **Fall Related**
7,559 recordables

#5 in Recorded Violations - **Ladder Related**

Statistics provided by Alexander Novas
(Novas.Alexander@dol.gov)
and the Lousiana Governor's Safety and Health Conference

TIE OFF 100

You know there is a problem - we have a solution.


TIE OFF
100
100% Ladder Tie Off
The Tie Off 100 meets or exceeds OSHA and ANSI requirements for industrial and commercial applications
Technical Manual

INTRODUCING the TIE OFF I00 Scaffold and Permanent Ladder Tie-off System

In this presentation:

- About the TIE OFF I00 SYSTEM
  - Applications
  - Scaffolding ladders
  - Permanent and custom ladders
- Implementation and Training
  - Installation
  - Training
    - Films
    - Online Films and exams
    - Online test administration
- Testing and results
- Technical, Patent and Legal Information
- References and Testimonial

Meets or exceeds OSHA and ANSI requirements for industrial and commercial applications

About The Tie Off 100

The Tie Off 100 stops falls immediately.

Meets or exceeds OSHA and ANSI requirements for industrial and commercial applications

About the TIE OFF 100 SYSTEM

- Applications
- Scaffolding Ladders
- Permanent and Custom ladders

The Tie Off 100 system is a a track and locking cam assembly that attaches to all commercial and industrial scaffolding or permanent ladders. It is a 100 percent effective tie off method for ascending and descending ladders fast and efficiently.

Each employee has his own TO-Lock attached to the chest D-ring of the safety harness.

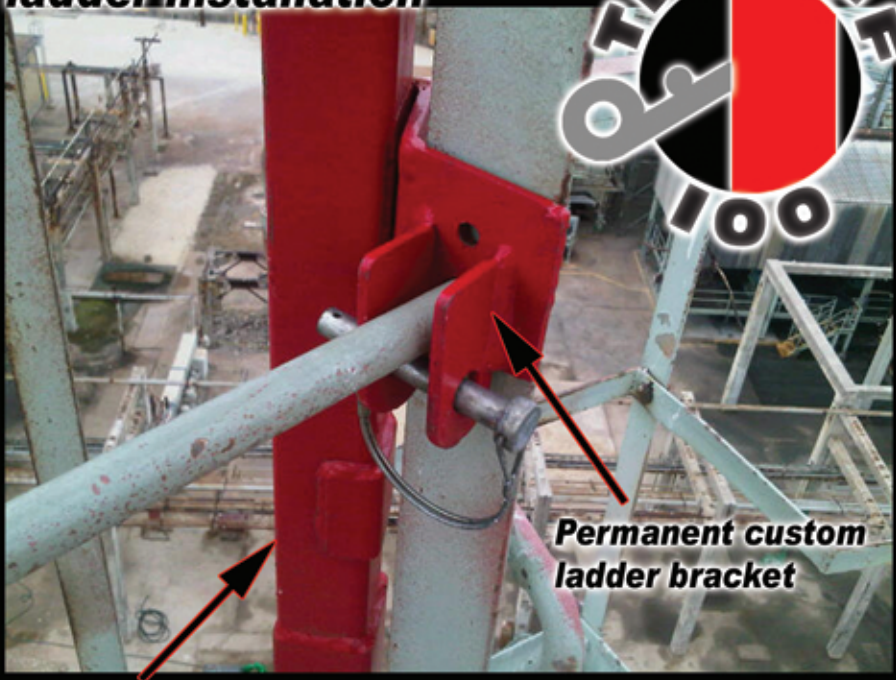
The TO-Lock rides up and down in the track that is fixed rigidly to the ladder.

If the employee slips or falls, the cam on the TO-Lock is held fast by the track, stopping the fall. The instant the downward pressure is released, the TO-Lock again moves smoothly.

View our film at TieOff100.com to see it work.


TIE OFF
100
The Tie Off 100 attaches quickly in sections.
A TOT-24 section is placed at any deck or landing level for employees to exit or enter the track.
The Tie Off 100 forms a rigid system with ladders.
It can be custom built for any ladder on towers, tanks or other structures.

Permanent customized ladder installation



Tie Off 100 Track

About the TIE OFF 100 SYSTEM

- Applications
- Scaffolding Ladders
- Permanent and Custom ladders

The system includes:

-TO-TRACK
-TO-LOCK

-TOT-24
-VTO (Vertical Tie Off)
-TOT-STOP PIN
-TOT-BRACKET PIN

-TOCT-LADDER

View our film at TieOff100.com to see it work.

Implementation and Training for the Tie Off 100

Implementation of the Tie Off I00

The Tie Off I00 Track slides easily onto existing ladders.

The track is lightweight, yet strong.

As soon as the Tie Off I00 is attached, it is ready for use.

The Tie Off I00 Track is then secured with locking pins that are easily inserted, and easily removed.

Track lengths of 7, 6, 5, and 3 feet, and the 24 inch TOT-24 make the Tie Off I00 extremely compatible with existing scaffolding and other ladders.

The Tie Off I00 may be customized to fit any ladder.

Watch our film at TieOffI00.Com to see how easily it is installed and used.

The Tie Off I00 has different track sizes ready to use and custom lengths can be manufactured for any application.

The Tie Off I00 Track

Lengths start at 7 feet.

-TOT-7
-TOT-6
-TOT-5
-TOT-3
-TOT-24
-VTO

The Tie Off I00 Vertical Tie Off is used to give extra stability to the Tie Off track where needed.

TOT-7

TOT-5

TOT-3

TOT-24

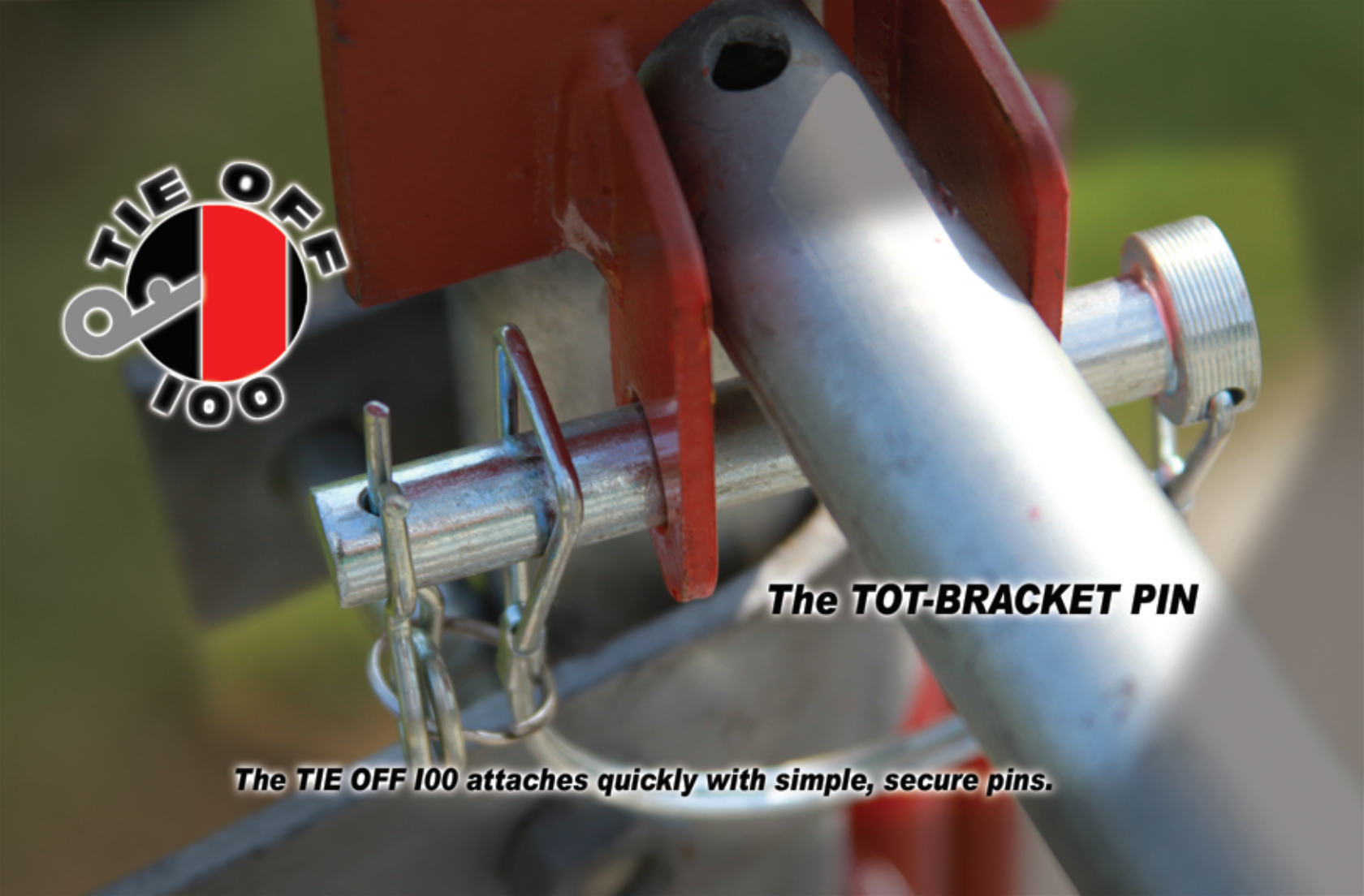
Track may be galvanized or powder coated.


The TOT-STOP PIN prevents improper insertion of the TO-Lock into the top of the Tie Off track.
The TOT-24
The TOT-24 D Ring lets employees tie off with lanyards before disconnecting from the Tie Off I00 track.
A TOT-24 section allows employees to quickly enter or exit the track at any platform or landing.
As many TOT-24's as are needed can be added to the system.
TIE OFF
I00

Vertical Tie Off

A Vertical Tie Off is used to give extra stability to the track where needed.


Safety stops are molded into the Tie Off 100 Track.
SAFETY STOPS
TIE OFF
100


TIE OFF
I00
The TOT-BRACKET PIN
The TIE OFF I00 attaches quickly with simple, secure pins.

ACCESSORIES

The Universal D-Ring Attachment converts any standard safety harness into a Tie Off I00 compatible harness.

TIE OFF I00

The TO-Lock is available with your choice of clips.

The velcro tie can be used to shorten the TO-Lock for easier climbing. Left at length, it allows easier descents.


TO-100
TIE OFF
100
TO-LOCK
TRACKING and
INSPECTION
Each TO-LOCK has a
-COMPANY NAME
-SERIAL NUMBER
-DATE OF MANUFACTURE
-ANSI Specification
MFG Date: 11/10
Serial # 23338
Chem
Off Enterpris
lbs ANSI 359.1

www.TieOffTraining.com

The Tie Off 100 System is supported by fully customizable online training. The sample training film illustrates basic safety procedures, implementation and use of the Tie Off 100. A sample training film is online now.

TO-100 TRAINING INSTITUTE

FOR ALL APPLICATIONS OF THE TO-100

TO-100 Account Log-on

(225) 614-0338

This site is dedicated to top quality training for the TO-100 100% tie-off system.

From this site you may access your account, download the training booklet and on-line films, and have your personnel take proficiency exams relating to use of the TO-100 at your site.

- What is the TO-100?
- TO-100 Training Film
- TO-100 Training Book
- TO-100 Training EXAM

Each employee using the TO-100 system must be trained on its proper use, maintenance and operation before installation. Customized training materials are available for your operation, ranging from minor site-specific additions to our high quality film to full custom design of safety training modules.

Custom TO-100 Training

Training Contacts

(225) 614-0338

TO-100 Sales Film

www.TieOffTraining.com

The Tie Off I00 System online exam is fully customizable for the employer. Exam results are recorded and e-mailed automatically for each employee. Samples are online now.

TO-100 Training EXAM

TO-100 TRAINING INSTITUTE

TO-100 Account Log-on

(225) 614-0338

SAMPLE EXAM

Click this picture to try a sample exam.

Return to this page when finished, as results can be seen when exam is completed and you log in.

EXAM RESULTS LOG-IN

To see results that are typically returned to exam administrator, click this sentence and enter login and password as shown below.

Login ID: admin Password: 123456

The exam generator provides a wide variety of customizable exam formats and question types. Our sample is designed to show how it works, and is not meant to be a representation of the exact exam questions needed for any one individual plant or construction site.

The exam generator we have chosen will make randomized exams, shuffling not only the questions on the exam from a larger set of questions, but it will also randomize the exam questions and randomize the answers as well. It will be impossible for a set of exam answers to be memorized, let alone a particular exam. All of this is customizable for every situation.

From this page you may access your account, browse to the training booklet and on-line films, and have your personnel take proficiency exams relating to use of the TO-100 at your construction site or operation.

Each company using the TO-100 system must be checked out on its proper use, maintenance and operation before installation. Custom training is available for plants, ranging from additions to our high quality film to full custom design of safety training modules for your site.

What is the TO-100? | TO-100 Training Film | TO-100 Training Book | TO-100 Sales Film | Custom TO-100 Training | Menu Page

Patent and Legal Information for the Tie Off 100

GARVEY, SMITH, NEHRBASS & NORTH, L.L.C.

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832 East Boston Street
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September 21, 2007

Via e-mail and Post
Mr. Pat Anderson
18765 Perkins Road
Prairieville, LA 70769
ScafMan92@aol.com, anderson2@unete.com.ve

RE: US Patent Application 11/675,897, filed: 16 February 2007
For "Ladder Safety Apparatus", published as
Publication No. **US2007/0193824A1** on ***August 23, 2007***
Our Ref. No.: 99096.1 (A05444US)

Dear Pat:

Attached is a copy of the above-referenced patent publication.

You should begin marking the publication number on your product or advertising, as follows:

"Patent Pending. Covered by U.S. Patent Publication No. **US2007/0193824A1**."

Please let me know if you believe anyone is infringing any of the claims of this published application. If they are, we can send them a copy of the published application and inform them of our belief that they are infringing. If a patent ultimately issues with a claim substantially identical to the infringed claim of the enclosed published patent application, this competitor will be required to pay a reasonable royalty from the date he received our letter.

Please contact me if you would like to discuss this.

Very truly yours,

Jacqueline M. Daspit

JMD/aeb
Enclosures
P:\ClientFiles\99\990\99096.1\Anderson-NOP-ltr.wpd

US 20070193824A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0193824 A1**

Anderson (43) **Pub. Date: Aug. 23, 2007**

(54) **LADDER SAFETY APPARATUS**

(76) Inventor: **Patrick K. Anderson**, Prairieville, LA (US)

Correspondence Address:
GARVEY SMITH NEHRBASS & NORTH, LLC
LAKEWAY 3, SUITE 3290
3838 NORTH CAUSEWAY BLVD.
METAIRIE, LA 70002 (US)

(21) Appl. No.: **11/675,897**

(22) Filed: **Feb. 16, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/774,294, filed on Feb. 16, 2006.

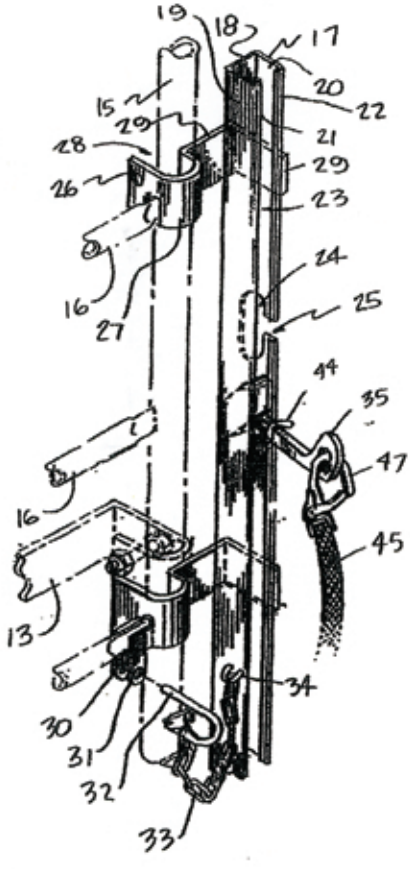
Publication Classification

(51) **Int. Cl.**
E06C 7/18 (2006.01)

(52) **U.S. Cl.** **182/8**

(57) **ABSTRACT**

A safety ladder that protects a climber from a fall is disclosed. The device provides a ladder having a plurality of rungs, an elongated channel having multiple flanges surrounding a passageway, a pair of the flanges defining there between a gap. A locking member is configured to travel upwardly in the passageway, the locking member having a beam, a cam section at one end portion of the beam and an eyelet that is positioned outside of the passageway. A cable connects a climber to the connector section. The cam section is configured to form an anchor with the channel in a locking position when a climber pulls down on the cable and locking member.



DESIGN VALIDATION OF
FALL PROTECTION DEVICE

Eng: B. Elliott
Date: 3/06

INPUT:

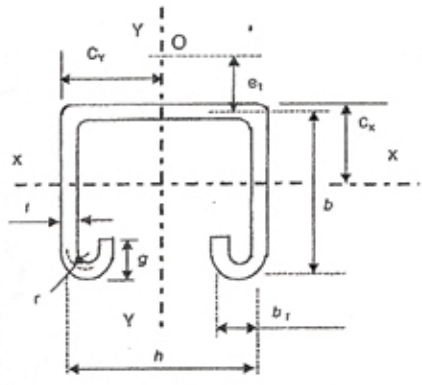
Design Load	P =	250 lbs
Distance to load	e =	3.14 in
Side Thrust Angle		15 deg
Impact Factor	I =	2
Distance between sup'ts	L =	19.5 in
Torque at L/2	T_o =	420.7 in-lbs
Material		ASTM A1011 Gr 33
Yield Stress	S_{yt} =	33000 psi
Elastic Modulus	E =	29 10^6 psi
Shear Modulus	G =	11.5 10^6 psi

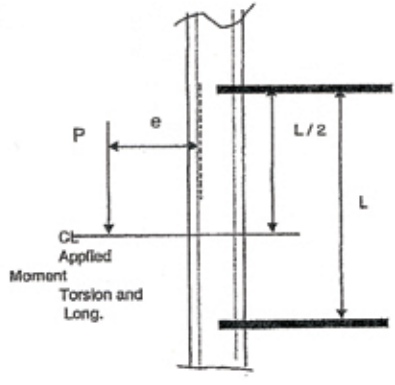
Section Dimensions:

Uniform thickness	t =	0.105 in
Side center line length	b =	1.52 in
Front center line length	h =	1.52 in
Front lip length	g =	0.28 in
Front lip center line width	b_1 =	0.27 in
Front lip center line radius	r =	0.135 in

Section Properties:

	A =	0.559 in2
	C_{x-x} =	0.693 in2
	I_{x-x} =	0.189 in4
	Z_{x-x} =	0.203 in3
	r_{x-x} =	0.582 in
	C_{Y-Y} =	0.813 in
	I_{Y-Y} =	0.239 in4
	Z_{Y-Y} =	0.294 in3
	r_{Y-Y} =	0.654 in





Torsional Properties

e_1 =	0.7905 in	O' =	0.00334 rads
K=	0.002	O" =	0.00069 rads
C_w=	0.0993		
beta=	0.0314		

Pull out stress at lip
S = P/A = 926 psi

Eccentric axial bending stress

STATE OF LOUISIANA
DILIP S. GANDHIR
REG. No. 29213
REGISTERED PROFESSIONAL ENGINEER IN MECHANICAL ENGINEERING

Dilip S. Gandhir 5/16/06

.134 Wall Thickness
10 Gauge Steel

$Sb = (Plec)/I_{x-x}$ = 7726 psi

Roark 7th Edition Table 10.3 case 1e

Torsional bending stress

$Sb_1 = (h/2(b-e_1)+b_1(b+e_1))EO''$ = 23609 psi

Torsional shear stress

$T = tGO'$ = 4035.7 psi

Combined stress

$Smax = .5((Sb-Sb_1)^2+(2T)^2)^{.5}$ = 8908 psi

Safety factor $FS = S_{yt}/S_{max}$ = 3.7

Side plate deflection

I of side plate = 0.00015 in^4

$Def = P_xL^3/3EI$ = 0.037 in

STATE OF LOUISIANA

DILIP S. GANDBHIR
REG. No. 29213
REGISTERED
PROFESSIONAL
ENGINEER
IN
MECHANICAL ENGINEERING

Dilip S. Gandbhir

5/16/06

INPUT

Material		ASTM A36
Yield Stress	S_{yt} =	36000 psi
Bar thickness	t =	0.5 in
Bar width	w=	0.625 in
Hole diameter	d=	0.75 in
Length	e =	2.86 in
Hole clearance	c=	0.375 in
Vertical load	P_Y=	250 lbs- f
Side load	P_x =	67.0 lbs-f
Impact factor	I =	2

Section properties:

Area A =	0.313 in^2
Z_{x-x} =	0.033 in^3
Z_{Y-Y} =	0.026 in^3

$M_x = P_Y*I*e$ =	1430 in-lbs
$M_Y = P_x*I*e$ =	383 in-lbs

Bending Stress

$Sb_Y = M_Y/Z_{Y-Y}$ =	14714 psi
$Sb_X = M_X/Z_{X-X}$ =	43930 psi

Shear stress = P*I/A

S =	1600 psi

Combined stress

$S_{max} = .5((Sbx - Sby)^2+(2S)^2)^{.5}$

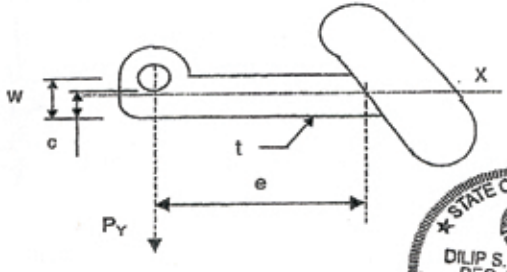
S_{max} =	14695 psi

Safety Factor

$FS = S_{yt}/S_{max}$ =	2.4

Shear at hole:

$S_h = PI/A$ =	2667 psi



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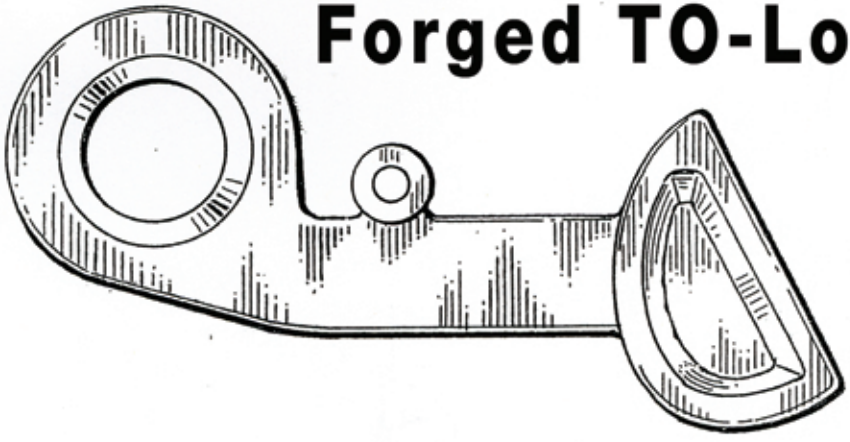
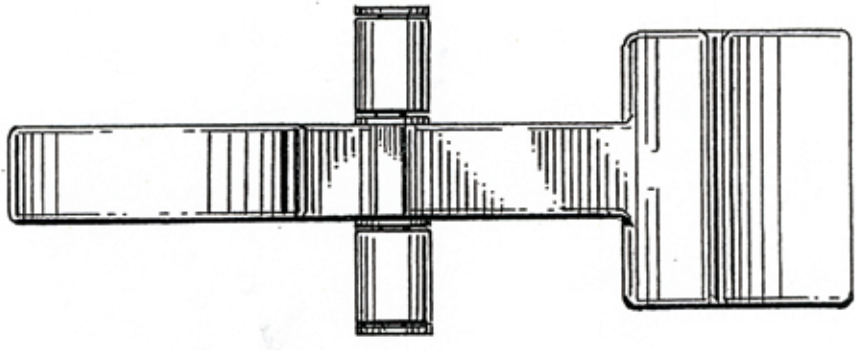
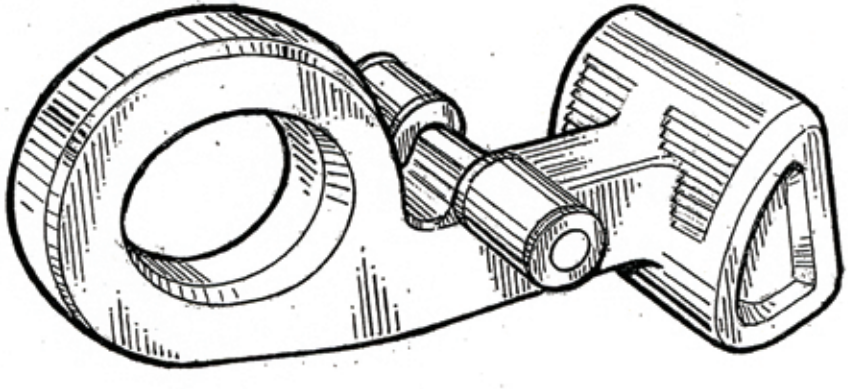
Dilip S. Gandhi
5/16/06

Forged TO-Lock







TOT-24

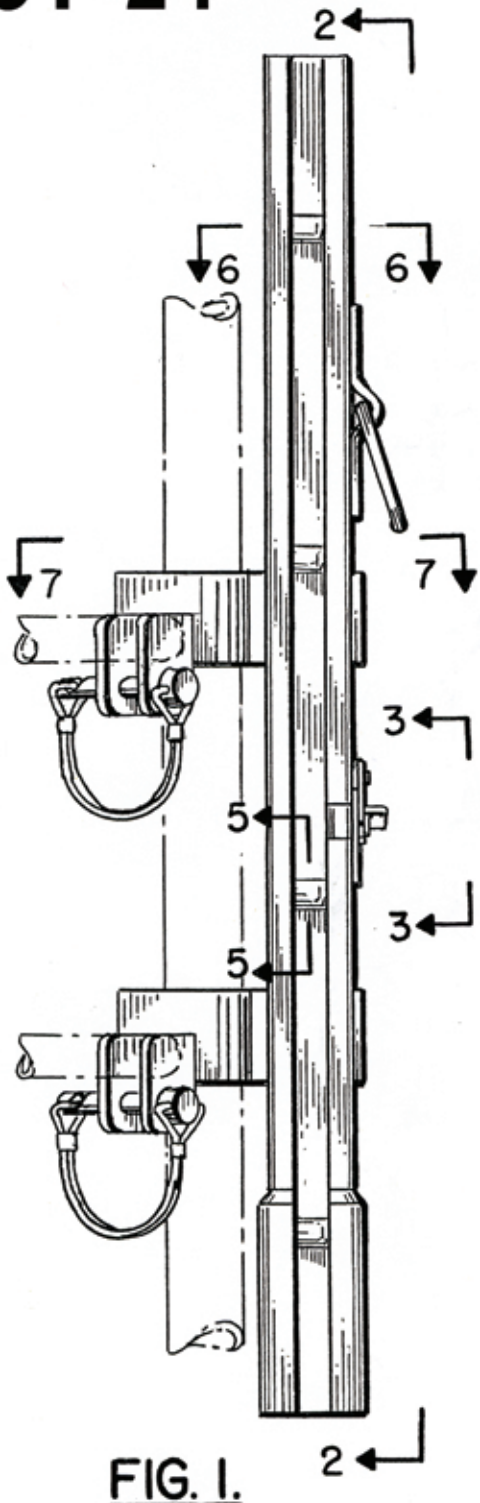


FIG. 1.

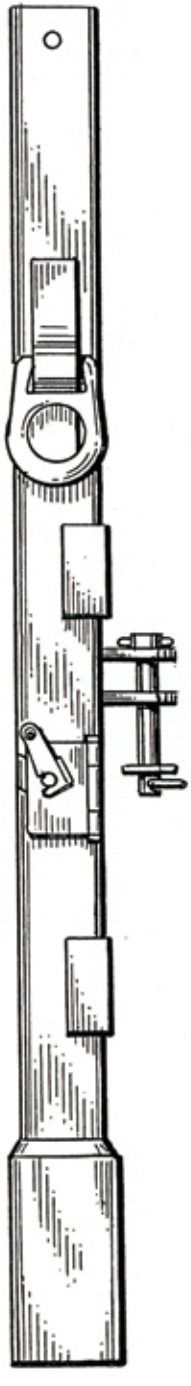


FIG. 2.

TOT-Sleave

TO-Track

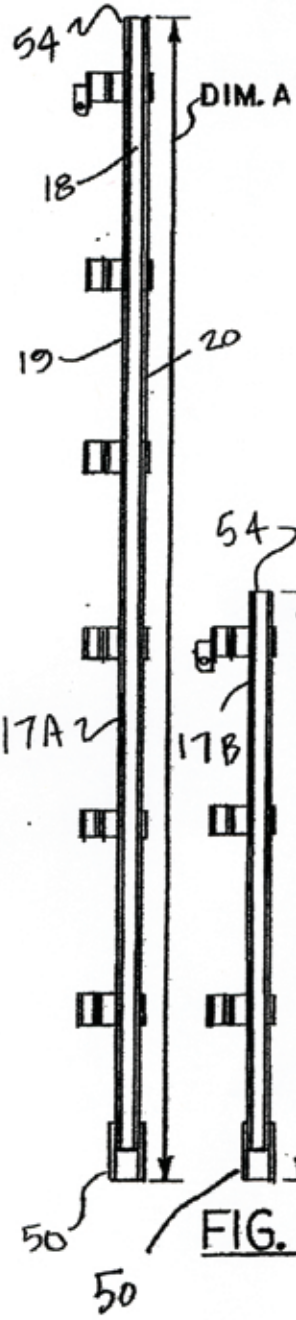


FIG. 13.

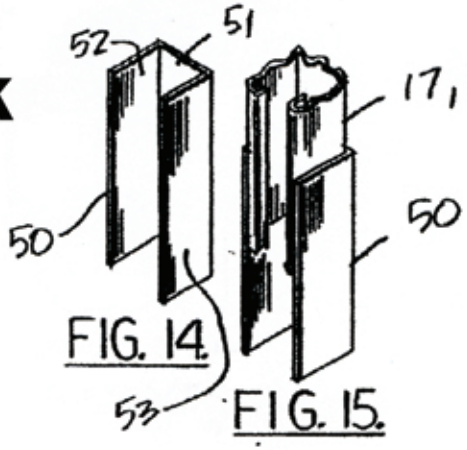


FIG. 14.

FIG. 15.

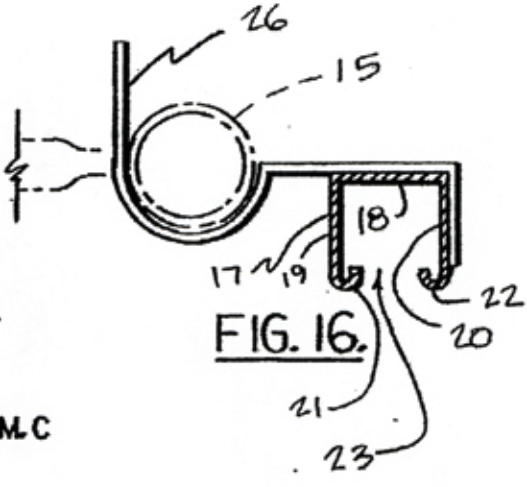


FIG. 16.

TOT-Rung Bracket

Testing and Results for the Tie Off 100

Safety Connection

Fall Protection and Rescue Specialists

Test Performed on T.O. Ladder Fall Protection System

Date Test Performed: March 11, 2010

Test Performed: Dropping a 220lb solid weight

Total Distanced Dropped: 18 inches

System Performance: Excellent, no deformation to system or ladder

Stopping distance: Under 2 feet

Notes: Test was documented with video and witnesses.

Clint Honeycutt

President, Safety Connection Inc.

Safety Connection, Inc. • 6032 Fieldstone Ave, Suite H • Baton Rouge • LA • 70809
www.safetyconnection.com • Phone • 225-752-6605 • Fax 225-752-6607

无锡新中润国际集团中润有限公司

EAST GRACE CORPORATION

CERTIFICATE

WE HAVE DEVELOPED & TESTED THE TO-100 AS PER REQUIREMENTS OF DESIGN SINCE 2006.

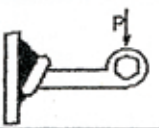
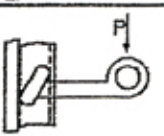
THEREBY WE CERTIFY THAT THE TO-100 IS A FALL SAFE PRODUCT THAT MEETS & EXCEEDS OSHA & ANSI REQUIREMENTS FOR A DEVICE USED IN PERSONAL FALL PROTECTION.

EAST GRACE CORPORATION
JIMMY HUANG
DATED: 2010-05-10

地址：中国江苏省无锡市中山路 395 号 电话(Tel)：+86-510-82709712 传真(Fax)：+86-510-82703347 邮编(P.C)：214001
ADD：NO.395 ZhongShan Road. Wuxi JiangSu China 电邮(E-mail)：jxhuang@eastgrace.com.cn 网站(web)：www.4cscaffold.com

TESTING REPORT OF JCK SAFTY DEVICE TO-100

Date: 2006-7-15
Place: In EAST GRACE CORPORATION-DH FACTORY

No.	Testing item	Requirement	Result
1	Strength of lock 	To record loading data when deformed.	3000kg, it deforms
2	Strength of channel and lock 	To record loading data when channel deformed.	500kg, Channel deforms.
3	Connection of Channel to channel; Connection of Channel to Ladder and Ladder Bracket	Connection should be Smooth.	OK
4	Move performance (Lock move in the 3', 5', 10' Channel). (Real person climb)	Lock should move Smoothly	OK
5	Drop-prevent testing (Dummy 46kg)	Device should be locked and prevent dropping	OK
6	Drop-prevent testing (Dummy 106kg)	Device should be locked and prevent dropping	OK
7	Other testings required by customers	As per requirement	OK
8	Fixing of inclined ladder using LEB25	Can be fixed effectively	OK

FALLING TESTING RECORD OF 50 TIMES FOR TOT-5

Testing conditions before falling
1. Falling object self weight: 150KG
2.The distence between the center line of falling object and track is about at 250m
3.There is about 1 meter space from ground to the end of track.
4.The distence between the height of stop in track and TO-lock is about 2mm.
5. The distence between stops is at 8"(200mm) in track.

All people for testing	
Tester	Mr.Chen, Mr.Mao, Mr.Guo
Recorder	Mr.Gu
Measure	Mr.Gu
Video	Mr.Lu
Chief	Mr.Jimmy

Test dated	2010-3-4, 2010-3-5, 2010-3-6

Statement of Chinese w.English	
环境状态:(中文:水)	水/W
ENV.STATE: (英文:WET)	
环境状态:(中文:油)	油/O
ENV.STATE: (英文:Oil)	
滑锁姿态:(中文:上)	上/U
LOCK STATE:(英文:UP)	
滑锁姿态E:(中文:下)	下/D
LOCK STATE:(英文:DOWN)	
滑锁姿态:(中文:平)	平/L
LOCK STATE:(英文:LEVEL)	
滑锁姿态:(中文:向上移动)	上移/M U
LOCK STATE:(英文:MOVE UP)	
滑锁姿态:(中文:向下移动)	下移/M D
LOCK STATE:(英文:MOVE DOWN)	

实验编号 (XX)	环境状态	滑锁姿态	自锁结果	滑锁移动距离(mm)	导轨损坏长度(mm)	滑锁损坏	备注
TEST NO. (XX)	ENV.STATE	LOCK STATE	result of locked	Lock move Distance	Damage length of track	Lock damage	Remark
01	W	U	OK	30	0		track tested 100%
02	W	U	OK	30	0		
03	W	U	OK	30	0	wheel shaft damaged	
04	W	U	OK	20	0		
05	W	U	OK	10	0		
06	W	L	OK	10	0		
07	W	L	OK	15	0		
08	W	L	OK	15	10		
09	W	L	OK	15	10		
10	W	L	OK	12	10		
11	W	D	OK	12	10		
12	W	D	OK	25	20		
13	W	D	OK	10	0		
14	W	D	OK	20	15		
15	W	D	OK	10	0		
16	W	MU	OK	5	0		
17	W	MU	OK	10	0		
18	W	MU	OK	15	10		
19	W	MU	OK	28	20		
20	W	MU	OK	20	15		
21	W	MD	OK	15	10		
22	W	MD	OK	22	20		
23	W	MD	OK	15	10	wheel shaft damaged	
24	W	MD	OK	18	15		
25	W	MD	OK	10	0		

26	O	U	OK	15	10		
27	O	U	OK	12	10		
28	O	U	OK	0	0		
29	O	U	OK	18	15	wheel shaft damaged a little	
30	O	U	OK	15	10		
31	O	L	OK	13	10		
32	O	L	OK	15	10		
33	O	L	OK	18	15		
34	O	L	OK	0	0		
35	O	L	OK	0	0		
36	O	D	OK	10	10		
37	O	D	OK	25	20		
38	O	D	OK	17	15		
39	O	D	OK	15	10		
40	O	D	OK	15	10		
41	O	MU	OK	17	10		
42	O	MU	OK	16	15		
43	O	MU	OK	0	0		
44	O	MU	OK	0	0		
45	O	MU	OK	0	0		
46	O	MD	OK	12	10		
47	O	MD	OK	17	15		
48	O	MD	OK	0	0		
49	O	MD	OK	0	0		
50	O	MD	OK	0	0		
51	O	MD	OK	0	0		

A. Drop Test Photos

Cam in "Engaged" position in Track

Front View of Engaged Cam

Test Weight initial reading

Reading after Drop 1

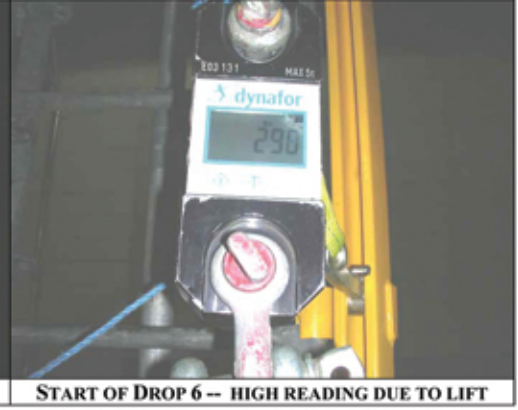
Dunn-Wright Engineering Inc. • 9 Green Briar Road • Alliston, Ontario L9R 1R5
Phone: 705.435.1890 • Fax: 705.435.4275

A. Drop Test Photos

Test 3 on Ladder 2

Force Reading after Drop 3

Force Reading after Drop 4



Start of Drop 6 -- high reading due to lift

Dunn-Wright Engineering Inc. • 9 Green Briar Road • Alliston, Ontario L9R 1R5
Phone: 705.435.1890 • Fax: 705.435.4275

References and Testimonial for the Tie Off 100

PCS Nitrogen AUGUSTA
P.O. BOX 1483, AUGUSTA, GA 30903 USA TELEPHONE: (706) 849-6100 FAX: (706) 649-6111

MEMORANDUM

TO: Pat Anderson
FROM: John Home
DATE: January 26, 2011
SUBJECT: TO-100

Mr. Anderson,

I would like to say thank you for all your help with the TO-100 implementation at our site. Your Product provides a pro-active approach for addressing the hazards related to scaffold ladders. Falls continue to remain a leading cause of high severity work place injuries and a subject that demands continued focus. The TO-100 system provides an effective tool to reduce this risk. Your diligence in addressing our concerns is much appreciated.

Regards,

John Horne
Manager Safety, PSM, and Security

CONTACT

Pat Anderson

(225) 614-0338

Scafman92@aol.com

Notes_____

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View the Films at www.TieOffI00.com

Tie Off I00 Patent Pending US2007/0193824A1