

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5873732

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
Name		Execution Date
EARTH TOOL COMPANY, LLC		12/17/2019
RECEIVING PARTY DATA		
Name:	THE CHARLES MACHINE WORKS, INC.	
Street Address:	1959 W. FIR AVENUE	
City:	PERRY	
State/Country:	OKLAHOMA	
Postal Code:	73077-0066	
PROPERTY NUMBERS Total: 61		
Property Type	Number	
Patent Number:	6148935	
Patent Number:	6260634	
Patent Number:	6263983	
Patent Number:	6390087	
Patent Number:	6273201	
Patent Number:	6321858	
Patent Number:	6371223	
Patent Number:	6390207	
Patent Number:	6422782	
Patent Number:	6439319	
Patent Number:	6450269	
Patent Number:	6516899	
Patent Number:	6533052	
Patent Number:	6581680	
Patent Number:	6588515	
Patent Number:	6655874	
Patent Number:	6761507	
Patent Number:	6789635	
Patent Number:	6860514	
Patent Number:	6913091	

PATENT

Property Type	Number
Patent Number:	6923270
Patent Number:	6953095
Patent Number:	7028785
Patent Number:	7048257
Patent Number:	7066279
Patent Number:	7128499
Patent Number:	7140806
Patent Number:	7175367
Patent Number:	7255516
Patent Number:	7490814
Patent Number:	7500651
Patent Number:	7909539
Patent Number:	8157478
Patent Number:	8181714
Patent Number:	8225885
Patent Number:	8844655
Patent Number:	8640793
Patent Number:	8875811
Patent Number:	8887833
Patent Number:	8955586
Patent Number:	8955613
Patent Number:	9169946
Patent Number:	9328760
Patent Number:	9512951
Patent Number:	9566653
Patent Number:	9574696
Patent Number:	9611696
Patent Number:	9915109
Patent Number:	10161201
Patent Number:	D816456
Application Number:	15915269
Application Number:	16126380
Application Number:	16058665
Application Number:	16059637
Application Number:	16178753
Application Number:	16042128
Application Number:	15828725
Application Number:	62694274

Property Type	Number
Application Number:	15158240
Application Number:	62718463
Application Number:	15477161

CORRESPONDENCE DATA

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ATTORNEY DOCKET NUMBER:	414LA
NAME OF SUBMITTER:	LINDA M. BYRNE
SIGNATURE:	/Linda M. Byrne/
DATE SIGNED:	12/18/2019

Total Attachments: 8

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PATENT ASSIGNMENT TO
THE CHARLES MACHINE WORKS, INC.

This agreement is between The Charles Machine Works, Inc., an Oklahoma corporation having an address at 1959 W. Fir Avenue, Perry, Oklahoma 73077-0066 ("CMW" or "Assignee"); and Earth Tool Company, LLC, a Wisconsin limited liability company, located at 1300 Capital Drive, Oconomowoc, Wisconsin 53066 ("CMW-Affiliated Company" or "Assignor").

The Assignor is a wholly-owned subsidiary of CMW. On April 1, 2019, The Charles Machine Works, Inc. merged with The Toro Company.

For good and valuable consideration, the receipt of which is hereby acknowledged, Assignor hereby confirms that it transfers, conveys and assigns to CMW, for itself and its successors, transferees, assignees, the following:

1. All of its right, title, and interest in all inventions and improvements ("Subject Matter") that are disclosed in the Letter Patents ("Assigned Patents"):

SEE ATTACHED EXHIBIT A

and:

2. All of its right, title and interest in and to:

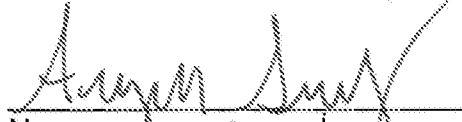
The Assigned Patents, including (a) any right of priority; (b) any provisional, division, continuation, substitute, renewal, reissue, and other applications related to the Subject Matter which have been or may be filed in the United States or elsewhere in the world; (c) any patents which may be granted in the applications set forth in (a) and (b) above; and (d) the right to sue in its own name and to recover for past infringement of any or all of any applications or patents issuing therefrom together with all rights to recover damages for infringement of provisional rights; the same to be held and enjoyed by the Assignee, for its own use and benefit and the use and benefit of its successors, legal representatives and assigns, to the full end of the term or terms for which any Letters Patent may be granted and/or extended, as fully and entirely as the same would have been held and enjoyed by the Assignor, had this sale and assignment not been made.

Prior to assigning its rights to CMW, Assignor represents and warrants that it was the sole and lawful owner of the entire right, title and interest in and to the Assigned Patents and the Subject Matter, and that the same was unencumbered, and that Assignor had good and full right and lawful authority to sell and convey the same.

Assignor agrees to do the following, when requested, and without further consideration, in order to carry out the intent of this Patent Assignment: (1) execute all oaths, assignments, powers of attorney, applications, and other papers necessary or desirable to fully secure to CMW the rights, titles, and interests herein conveyed; (2) communicate to CMW all known facts related to the Subject Matter of the Letters Patent; and (3) generally do all lawful acts that CMW shall consider desirable for the procurement, maintenance, enforcement and defense of the Letters Patent. Assignor further agrees to provide any successor to CMW the rights, titles, interests, benefits and assistance herein conveyed.

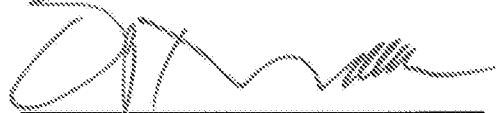
IN WITNESS WHEREOF, the Assignor has executed this Patent Assignment Agreement as of this 17th day of December, 2019.

EARTH TOOL COMPANY, LLC



Name: Angie Shavely
Title: Asst. Secretary

THE CHARLES MACHINE WORKS, INC.



Name: Timothy P. Dorell
Title: Vice President

Attached: Exhibit A

EARTH TOOL COMPANY, LLC**ASSIGNED PATENTS****EXHIBIT A****Issued Patents**

Country	Title	Issue Date	Patent Number
United States	JOINT FOR USE IN A DIRECTIONAL BORING APPARATUS	11/21/2000	6,148,935
United States	SONDE HOUSING FOR DIRECTIONAL DRILLING	07/17/2001	6,260,634
United States	APPARATUS FOR DIRECTIONAL DRILLING	07/24/2001	6,263,983
United States	DRILL BIT FOR DIRECTIONAL DRILLING	05/21/2002	6,390,087
United States	PNEUMATIC GROUND PIERCING TOOL WITH MOVABLE CHISEL HEAD	08/14/2001	6,273,201
United States	BIT FOR DIRECTIONAL DRILLING	11/27/2001	6,321,858
United States	DRILL HEAD FOR DIRECTIONAL BORING	04/16/2002	6,371,223
United States	METHOD AND APPARATUS FOR DIRECTIONAL BORING UNDER MIXED CONDITIONS (shared expense)	05/21/2002	6,390,207
United States	APPARATUS FOR MOUNTING AN ELECTRONIC DEVICE FOR USE IN DIRECTIONAL DRILLING	07/23/2002	6,422,782
United States	METHOD AND APPARATUS FOR DIRECTIONAL BROING UNDER MIXED CONDITIONS	08/27/2002	6,439,319
United States	METHOD AND BIT FOR DIRECTIONAL HORIZONTAL BORING	09/17/2002	6,450,269

United States	METHOD AND APPARATUS FOR DIRECTIONAL BORING UNDER MIXED CONDITIONS (shared expense)	02/11/2003	6,516,899
United States	DRILL BIT FOR IMPACT-ASSISTED DIRECTIONAL BORING	03/18/2003	6,533,052
United States	APPARATUS FOR MOUNTING AN ELECTRONIC DEVICE FOR USE IN DIRECTIONAL DRILLING	06/24/2003	6,581,680
United States	DRILL BIT FOR DIRECTIONAL DRILLING	07/08/2003	6,588,515
United States	METHOD AND APPARATUS FOR SLITTING FLEXIBLE PIPE IN AN UNDERGROUND BORE	12/02/2003	6,655,874
United States	METHOD AND APPARATUS FOR REPLACEMENT OF UNDERGROUND PIPE	07/13/2004	6,761,507
United States	DRILL BIT FOR DIRECTIONAL DRILLING IN COBBLE FORMATIONS (TriHawk X)	09/14/2004	6,789,635
United States	DRILL STRING JOINT	03/01/2005	6,860,514
United States	METHOD AND APPARATUS FOR REPLACEMENT OF UNDERGROUND PIPE (Related to '246)	07/05/2005	6,913,091
United States	PNEUMATIC IMPACT PIERCING TOOL (TAIL BOLT)	08/02/2005	6,923,270
United States	METHOD AND SYSTEM FOR OPERATING A REVERSIBLE PNEUMATIC GROUND PIERCING TOOL	10/11/2005	6,953,095
United States	PNEUMATIC IMPACT PIERCING TOOL (TAIL BOLT)	04/18/2006	7,028,785
United States	WINCH WITH TELESCOPING MAST	05/23/2006	7,048,257
United States	PNEUMATIC GROUND PIERCING TOOL (AIR SPRING)	06/27/2006	7,066,279

United States	METHOD FOR EXTRACTING UNDERGROUND PIPE	10/31/2006	7,128,499
United States	ROD PULLING AND PUSHING MACHINE FOR PIPE BURSTER	11/28/2006	7,140,806
United States	CABLE PULLING MACHINE	02/13/2007	7,175,367
United States	METHOD AND APPARATUS FOR REPLACEMENT OF UNDERGROUND PIPE	08/14/2007	7,255,516
United States	CABLE PULLING SYSTEM (PB30)	02/17/2009	7,490,814
United States	PORTABLE WINCH	03/10/2009	7,500,651
United States	ROD PULLING AND PUSHING MACHINE FOR PIPE BURSTING	03/22/2011	7,909,539
United States	ROD PUSHING AND PULLING MACHINE	04/17/2012	8,157,478
United States	PNEUMATIC IMPACT PIERCING TOOL	05/22/2012	8,181,714
United States	JOINT FOR USE IN BACK REAMING	07/24/2012	8,225,885
United States	IMPROVED DRILL STRING TOOLING JOINT	09/30/2014	8,844,655
United States	DYNAMIC STEERING TOOL	02/04/2014	8,640,793
United States	JOINT WITH CHECK VALVE FOR A BORING APPARATUS	11/04/2014	8,875,811
United States	REAMER ASSEMBLY	11/18/2014	8,887,833
United States	BEACON ASSEMBLY	02/17/2015	8,955,586
United States	PNEUMATIC IMPACT TOOL	02/17/2015	8,955,613
United States	DIRECTIONAL DRILL HAMMER PULLBACK DEVICE	10/27/2015	9,169,946
United States	QUICK CONNECT RODS	05/03/2016	9,328,760
United States	PIPE SLITTING APPARATUS	12/06/2016	9,512,951
United States	PIPE SLITTER	02/14/2017	9,566,653
United States	STEPPED LOAD PULL BACK USING RAMS	02/21/2017	9,574,696

United States	DIRECTIONAL DRILL HAMMER PULLBACK DEVICE	04/04/2017	9,611,696
United States	SLIP STYLE ROD SPINNER FOR PIPE BURSTING MACHINE	03/13/2018	9,915,109
United States	POWERED SLIP ACTUATION	12/25/2018	10,161,201
United States	GUT HOOK BLADED PIPE SLITTER	05/01/2018	D816,456
United Kingdom	PNEUMATIC GROUND PIERCING TOOL WITH MOVABLE CHISEL HEAD	10/24/2001	GB2361492
United Kingdom	PNEUMATIC IMPACT TOOL	04/24/2012	GB2459578
Germany	DE 295 – WINCH WITH TELESCOPING MAST	06/14/2007	10 2004 045 898-7
Germany	DE 187 – PNEUMATIC GROUND PIERCING TOOL WITH MOVABLE CHISEL HEAD	03/23/2006	101 06 942
Canada	APPARATUS FOR DIRECTIONAL DRILLING (splinelok claims)	11/15/2005	2,305,235
Canada	PNEUMATIC GROUND PIERCING TOOL WITH MOVABLE CHISEL HEAD	08/15/2006	2,331,700
Canada	CABLE PULLING MACHINE	01/15/2008	2,456,238
Canada	PNEUMATIC GROUND PIERCING TOOL	01/22/2013	2,525,331
Canada	PNEUMATIC IMPACT PIERCING TOOL	05/20/2014	2,660,101
Canada	PNEUMATIC IMPACT TOOL	03/01/2016	2,665,298
Australia	PNEUMATIC GROUND PIERCING TOOL	04/07/2011	2,005,229, 772

Pending Patent Applications

Country	Title	Filing Date	Application Number
United States	SLIP STYLE ROD SPINNER FOR PIPE BURSTING MACHINE	03/08/2018 Publ. date: 08/09/2018	15/915,269 Continuation of USSN 14/512,717 filed 10/13/2014 and claims benefit of USSN 61/949,454 filed 03/07/2014 and USSN 61/949,112 filed 03/06/2014 Publ.No. US-2018-0223608-A1
United States	LEAD PIPE SPUDDING PRIOR TO EXTRACTION OR REMEDIATION	09/10/2018 09/08/2017	16/126,380 62/555,880
United States	SPLIT RING ADAPTER WITH CAM ADJUSTMENT	08/08/2018 08/11/2017	16/058,665 62/544,217
United States	EXTRACTION OF DUCTILE PIPE	08/09/2018 08/11/2017	16/059,637 Claims the benefit of USSN 62/544,111 filed 08/11/2017 and claims the benefit of USSN 62/620,642 filed 01/23/2018
United States	REVERSIBLE PNEUMATIC PIPE RAMMING TOOL	11/02/2018 11/02/2017	16/178,753 62/580,967
United States	LATCH ASSEMBLY FOR USE WITH AN INVERSION DRUM	07/23/2018 08/23/2017	16/042,128 62/549,299
United States	STEERABLE DOWNHOLE HAMMER BIT	12/02/2017 12/02/2016 Publ. date: 06/07/2018	15/828,725 62/429,166 Publ no. US-2018-0155985-A1
United States	SWAGED SEAL OF LATERAL CONNECTION IN LINED PRESSURE PIPE	07/05/2018	62/694,274

United States	ECCENTRIC CONES FOR ROCK CUTTING	05/18/2016 05/18/2015 Publ. date: 11/24/2016	15/158,240 62/163,167 Publ no. US-2016-0340981- A1
United States	PIPE EXTRACTOR	08/14/2018	62/718,463
United States	MOBILE IMPREGNATION UNIT AND METHODS OF USING	04/03/2017 04/01/2016	15/477,161 62/317,237
Germany	PNEUMATIC GROUND PIERCING TOOL	10/27/2005	10 2005 051 585.1 Corresponds with USSN 10/984,579 filed 11/08/2004