

TOOLS OF INDUSTRY

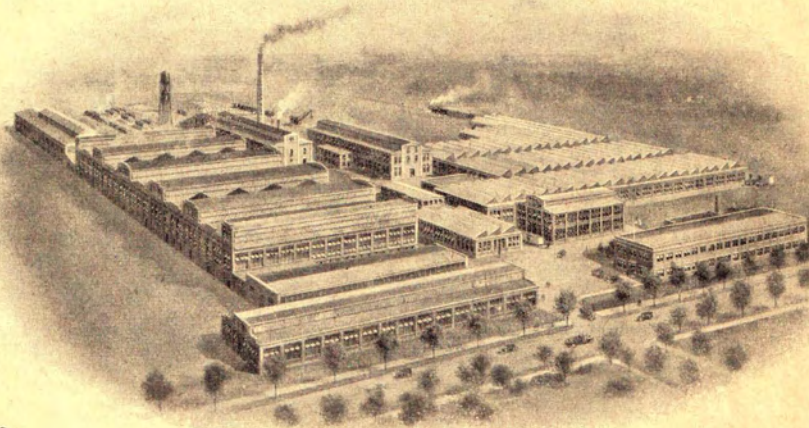
by

WILLIAMS





DROP-FORGINGS AND DROP-FORGED TOOLS



FACTORY AND GENERAL OFFICES — BUFFALO, N. Y.

J. H. WILLIAMS & CO.

ESTABLISHED 1882 — INCORPORATED JULY 1, 1895

DISTRIBUTED BY
SLIGO IRON STORE CO.
1301 NO. SIXTH STREET
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GENERAL OFFICES AND FACTORY

400 VULCAN STREET

BUFFALO 7, NEW YORK

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117 North Jefferson Street, Chicago 6



Industrial Edition

This Industrial Catalog supersedes all previous issues, which are hereby withdrawn. A separate Catalog covering additional Automotive Service tools is available on request. All Prices are subject to change without notice.

Cuts Illustrating Our Goods

Furnished to customers; if desired, we will edit copy for printer and check proof.

Dimensions

Unless otherwise stated, all dimensions are in inches.

Electric Welding

We are prepared to electric-weld rounds up to and including 1 1/8 inch diameter; by this means we can supply several of our stock specialties, such as Rod Ends, with shanks of any reasonable length.

Heat-treating, Annealing, Tempering and Case-hardening Done to Order

We have ample facilities for handling work of this class and solicit inquiries therefor.

Chemical Analyses and Physical Tests

Our laboratories are thoroughly equipped and we offer their services for such analyzing as may be required.

Estimates for Special Forgings

Furnished on receipt of model or drawing and specifications, including quantity.

Dies for Special Forgings

Charges for Dies and Tools include only a portion of their cost. We assume the risk of breakage and the expense of repair and maintenance. Tools are fitted to our equipment and are not subject to surrender. When inactive for three years after date of last order, they may be discarded at our option, without further notice.

Guarantee

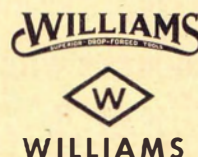
We guarantee all our product, whether Standard Stock goods, as described in this catalog, or Special Forgings made to order, to be free from imperfections of workmanship and material.

Cable Address, "WILLRICH, BUFFALO NY"

Codes: Western Union, Lieber's Standard, Lieber's 5 Letter, "ABC" 5th Edition, Bentley's.

We are the sole makers of the following brands of drop-forged products:

**VULCAN
SUPERRENCH
SUPERSOCKET**



**AGRIPPA
SUPERECTOR
SUPERJUSTABLE**

J. H. Williams & Co., originated the first uniform line of fifteen-degree angle Wrenches, since generally adopted.

LIST PRICES AND WEIGHTS OF WILLIAMS' TOOLS

No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	List Price
PLIERS				CHAIN PIPE TONGS				TOOL HOLDERS				TOOL HOLDERS			
† 5	71	.27	\$.65	14	80	31.	\$22.00	00L	86	.46	\$ 2.70	NS-20	90	.94	\$4.50
† 6	71	.44	.70	15	80	52.	36.00	00R	86	.46	2.70	N-21R	91	1.4	* 3.60
† 8	71	.53	.90	16	80	137.	80.00	00S	86	.43	2.70	NS-21	90	1.31	5.40
† 10	71	.88	1.25					0K	94	.65	6.00	N-22R	91	2.1	* 4.50
† 36	71	.5	.90	30	81	2.	5.00	0L	86	.73	2.85	NS-22	90	2.17	6.75
† 46	71	.34	1.25	31	81	5.75	7.00	0R	86	.73	2.85	N-23R	91	3.4	* 6.00
† 57	71	.47	2.30	32	81	10.	10.00	0S	86	.69	2.85	NS-23	90	3.94	9.00
† 76	71	.25	2.40	33	81	17.	14.00	1K	94	1.6	6.75	N-24R	91	4.4	* 7.50
† 77	71	.30	2.70	33 1/2	81	24.	18.00	1L	86	1.3	3.25	N-25R	91	4.6	* 8.60
1519	71	.08	1.85	34	81	31.	22.00	† FT-1L	..	1.22	4.40	N-030L	91	.46	* 2.85
1520	71	.57	2.20	35	81	52.	36.00	T-0L	84	.5	3.20	N-030R	91	.46	* 2.85
1521	71	1.6	4.45					T-1L	84	1.22	3.60	N-30L	91	.75	* 3.00
SCREW DRIVERS				CHAIN PIPE VISES				1R	86	1.3	3.25	N-30R	91	.75	* 3.00
WP-1	72	.06	\$.60	1	77	4.	\$ 7.00	† FT-1R	..	1.22	4.40	NS-30R	90	.90	4.50
WP-2	72	.19	.65	V-1	75	35.	31.00	T-0R	84	.5	3.20	NS-30RA	90	.85	4.50
WP-3	72	.31	.75	2	77	10.	15.00	T-1R	84	1.22	3.60	N-31L	91	1.4	* 3.60
4	72	.19	1.05	3	77	18.	27.00	1S	86	1.1	3.25	N-31R	91	1.4	* 3.60
WP-4	72	.53	.95	4	77	30.	36.00	† FT-1S	..	1.19	4.40	NS-31R	90	1.47	5.40
6	72	.38	1.40					T-0S	84	.5	3.20	N-32L	91	2.3	* 4.50
6B	72	.5	1.55	11	76	7.	10.00	T-1S	84	1.19	3.60	N-32R	91	2.3	* 4.50
8	72	.59	1.75	12	76	15.	19.00	2	88	14.7	\$ 27.00	NS-32R	90	2.38	6.75
12	72	.75	2.10	21	74	5.75	9.60	2K	94	2.25	8.00	N-33L	91	3.7	* 6.00
24	72	.19	.95					2L	86	2.5	4.00	N-33R	91	3.7	* 6.00
26	72	.33	1.30	TOOL POSTS				† FT-2L	..	2.06	5.40	NS-33R	90	3.81	9.00
28	72	.53	1.60	5	97	.44	\$.82	T-2L	84	2.06	4.50	N-34L	91	4.9	* 7.50
32	72	.66	1.95	10	97	.81	1.05	2R	86	2.5	4.00	N-34R	91	4.9	* 7.50
43	72	.09	.75	20	97	2.1	1.40	† FT-2R	..	2.06	5.40	N-35L	91	5.	* 8.60
46	72	.14	.95	23	97	1.6	1.65	T-2R	84	2.06	4.50	N-35R	91	5.	* 8.60
50	72	.17	1.10	28	97	2.1	1.90	2S	86	2.1	4.00	C-050	92	.5	4.15
52	72	.03	.32	30	97	3.	2.10	† FT-2S	..	2.	5.40	C-50	92	.6	4.15
62	72	.14	.65	40	97	4.7	3.05	T-2S	84	2.	4.50	S-50	92	1.	4.15
WP-62	72	.09	.55	50	97	6.6	3.95	3	88	23.8	\$ 37.50	C-51	92	1.1	5.00
PUNCHES				60	97	13.6	7.95	3L	86	3.4	5.40	C-52	92	2.2	6.40
P-4	73	.16	\$.54	TOOL POST WEDGES				† FT-3L	..	3.22	7.20	S-51	92	1.6	5.00
P-6	73	.25	.62	5	97	.06	\$.27	T-3L	84	3.22	6.00	S-52	92	2.7	6.40
P-8	73	.53	.77	10	97	.13	.30	3R	86	3.4	5.40	080	89	1.3	\$ 4.90
P-13	73	.28	.62	11	97	.09	.30	† FT-3R	..	3.22	7.20	80	89	2.2	\$ 4.90
P-14	73	.41	.77	15	97	.16	.33	T-3R	84	3.22	6.00	81	89	3.1	\$ 5.80
P-25	73	.22	.75	18	97	.18	.34	3S	86	3.3	5.40	82	89	6.7	\$ 7.65
P-26	73	.41	.85	20	97	.22	.35	† FT-3S	..	3.06	7.20	83	89	10.3	\$10.85
P-30	73	.13	.45	30	97	.25	.40	T-3S	84	3.06	6.00	91	93	2.1	4.65
P-40	73	.16	.45	40	97	.44	.47	4	88	39.	\$ 60.00	92	93	3.4	6.00
CHISELS				60	97	.63	.56	4L	86	4.9	6.90	93	93	6.	7.85
C-8	73	.06	\$.54	65	97	.75	.61	† FT-4L	..	4.5	9.20	94	93	12.	12.40
C-12	73	.16	.62	TOOL POST RINGS				T-4L	84	4.5	7.60	95	93	20.6	21.75
C-16	73	.31	.73	5	97	.25	\$.33	4R	86	4.9	6.90	96	93	35.	39.00
C-20	73	.5	.85	10	97	.5	.47	† FT-4R	..	4.5	9.20	97	93	57.	57.00
C-24	73	.78	1.05	11	97	.5	.52	T-4R	84	4.5	7.60	0200L	87	.59	2.70
C-36	73	1.63	1.65	14	97	.75	.75	4S	86	4.7	6.90	0200R	87	.59	2.70
C-422	73	1.44	1.65	18	97	1.3	.94	† FT-4S	..	4.38	9.20	0200S	87	.57	2.70
WHEEL PULLER				20	97	.94	.82	T-4S	84	4.38	7.60	200L	87	1.1	2.85
5	73	1.69	\$12.25	30	97	1.3	1.00	5	88	69.	\$ 90.00	200R	87	1.1	2.85
CHAIN PIPE TONGS				40	97	1.8	1.15	5L	86	7.8	9.75	200S	87	1.6	2.85
0	79	2.	\$ 5.00	60	97	2.2	1.50	† FT-5L	..	7.55	12.90	201L	87	2.	3.25
1	79	5.5	7.00	TOOL HOLDERS				T-5L	84	7.55	10.80	201R	87	2.	3.25
2	79	10.	10.00	000L	86	.25	\$2.70	5R	86	7.8	9.75	201S	87	2.	3.25
3	79	17.	14.00	000R	86	.25	2.70	† FT-5R	..	7.55	12.90	202L	87	3.2	4.00
3 1/2	79	26.	18.00	000S	86	.25	2.70	T-5R	84	7.55	10.80	202R	87	3.2	4.00
4	79	34.	22.00	00K	94	.55	5.65	5S	86	7.2	9.75	202S	87	3.2	4.00
5	79	54.	36.00	TOOL HOLDERS				† FT-5S	..	7.44	12.90	204L	87	3.2	6.90
10	80	2.	5.00	000L	86	.25	\$2.70	T-5S	84	7.44	10.80	204R	87	3.2	6.90
11	80	5.75	7.00	000R	86	.25	2.70	6L	86	12.	13.50	204S	87	3.2	6.90
12	80	10.	10.00	000S	86	.25	2.70	6R	86	12.	13.50	TOOL HOLDER SETS			
13	80	17.	14.00	00K	94	.55	5.65	6S	86	12.	13.50	00A to 4	96	.....	.....
13 1/2	80	24.	18.00	TOOL HOLDERS				11K	94	1.9	9.00	LATHE DOGS			
				000L	86	.25	\$2.70	12K	94	2.25	10.50	1	100	.32	\$ 1.00
				000R	86	.25	2.70	15	88	.63	4.15	2	100	.56	1.10
				000S	86	.25	2.70	16	88	1.2	5.25	3	100	1.	1.20
				00K	94	.55	5.65	17	88	2.6	6.75	4	100	1.5	1.40
								N-020R	93	.42	* 2.85	5	100	1.9	1.70
								N-20R	91	.74	* 3.00	6	100	2.6	2.00

†Discontinued

*Complete with Cut-Off Blade; with Side Blade, extra.

‡Complete with Sleeve Bar; with Plain Bar, less.

LIST PRICES AND WEIGHTS OF WILLIAMS' TOOLS

No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	List Price	No.	Page	Weight Each, Lbs.	Price List
LATHE DOGS				CLAMPS				HOIST HOOKS				ROD ENDS			
7	100	3.3	\$ 2.40	106	107	5.5	\$ 5.50	2	118	.59	\$.32	OB to 4B	123	.....	.....
8	100	4.1	2.80	108	107	7.	6.50	3	118	.78	.37	5A to 17A	123	.....	.....
9	100	5.4	3.60	110	107	7.5	7.50	4	118	1.	.44	THUMB NUTS AND SCREWS			
10	100	7.	4.60	112	107	9.5	8.50	5	118	1.6	.58	Thumb Nut Blanks "A"			
11	100	10.	6.00	115	107	13.5	11.00	6	118	2.1	.85	Page 116			
12	100	12.	9.00	118	107	17.	14.00	7	118	3.	1.25	For Bolt;	Size	Weight, Lbs.	
13	100	20.	16.00	Plain Screw				8	118	4.4	1.80		Per 100		
21	102	.19	1.00	201	110	.25	1.00	9	118	6.2	2.45	1/8		.62	
22	102	.34	1.10	202	110	.33	1.30	10	118	8.	3.20	3/16		1.3	
23	102	.66	1.20	203	110	.56	1.70	11	118	10.	4.10	1/4		2.3	
24	102	1.06	1.40	204	110	.9	2.50	12	118	13.3	5.60	5/16		4.	
25	102	1.5	1.70	Swivel Screw				13	118	17.8	7.80	3/8		6.2	
26	102	2.	2.00	201	110	.25	1.50	14	118	26.7	12.00	7/16		9.1	
27	102	2.7	2.40	202	110	.33	1.80	15	118	44.	23.00	1/2		12.7	
28	102	3.5	2.80	203	110	.56	2.30	16	118	75.	39.00	9/16		16.2	
29	102	4.6	3.60	204	110	.9	3.20	15A	118	46.	39.00	5/8		22.5	
30	102	6.	4.60	Standard Finish				16A	118	76.	70.00	3/4		37.	
31	102	9.	6.00	301	111	.6	3.00	22	119	.53	.36	Thumb Nut Blanks "B"			
32	102	11.	9.00	302	111	1.4	4.00	23	119	.75	.43	Page 116			
33	102	19.5	16.00	303	111	1.9	5.00	24	119	1.1	.53	1/8		.94	
61	105	.53	3.00	304	111	3.1	6.00	25	119	1.5	.73	3/16		1.6	
62	105	.98	4.00	Spatter-Resisting				26	119	2.2	1.05	1/4		2.8	
63	105	1.8	5.00	402	108	1.13	1.50	27	119	3.	1.50	5/16		4.2	
64	105	3.	7.00	403	108	1.5	1.80	28	119	4.4	2.10	3/8		6.8	
112	101	15.	16.00	404	108	2.25	2.20	29	119	6.	2.85	7/16		9.5	
113	101	21.5	24.00	406	108	3.75	3.00	30	119	8.	3.70	1/2		13.7	
114	101	30.7	34.00	408	108	5.5	4.00	31	119	10.3	4.70	9/16		15.3	
132	103	13.	16.00	410	108	8.25	5.00	32	119	14.	6.40	5/8		21.8	
133	103	20.5	24.00	412	108	12.5	6.50	33	119	20.	9.40	3/4		38.	
134	103	28.	34.00	BALANCE HANDLES				34	119	31.5	18.50	Thumb Screw Blanks "C"			
MILLING MACHINE DOGS				402-S	109	1.13	1.80	35	119	51.7	35.00	Pages 116 and 117			
42	104	.75	\$ 1.10	403-S	109	1.5	2.25	36	119	86.	86.00	1/8 x 1		.94	
43	104	.93	1.20	404-S	109	2.25	2.90	36A	119	88.	100.00	1/8 x 2		1.3	
44	104	1.2	1.40	406-S	109	3.75	3.75	3	120	.17	\$.16	1/8 x 3		1.6	
45	104	1.3	1.70	408-S	109	5.5	4.75	4	120	.23	.18	1/8 x 4		2.1	
46	104	1.6	2.00	410-S	109	8.25	6.00	5	120	.33	.21	3/16 x 1		2.1	
47	104	1.8	2.40	412-S	109	12.5	7.50	6	120	.5	.25	3/16 x 2		3.4	
48	104	2.1	2.80	CRANK HANDLES				7	120	.68	.32	3/16 x 3		4.3	
CLAMPS				434	114	1.3	\$ 4.90	8	120	1.1	.42	3/16 x 4		5.6	
0	106	.25	\$ 1.00	439	114	2.8	5.90	9	120	1.5	.55	1/4 x 1		4.	
1	106	.75	1.50	512	114	.25	2.30	10	120	2.1	.74	1/4 x 2		5.3	
1 1/2	106	1.6	2.50	516	114	.56	2.45	11	120	3.	1.04	1/4 x 3		7.8	
2	106	3.1	3.50	520	114	.75	2.65	12	120	4.2	1.45	1/4 x 4		8.7	
3	106	6.5	5.00	522	114	1.1	2.90	14	120	6.8	2.50	5/16 x 1		6.2	
4	106	9.7	6.50	525	114	1.3	3.30	15	120	10.9	3.75	5/16 x 2		7.8	
5	106	12.3	8.00	529	114	1.6	3.85	16	120	15.1	5.30	5/16 x 3		10.6	
6	106	16.5	10.00	MACHINE HANDLES				17	120	31.	8.80	5/16 x 4		13.7	
8	106	24.	14.00	00	115	.38	\$ 1.85	21	121	.05	.14	3/8 x 1		10.	
10	106	28.	19.00	0	115	.43	2.00	22	121	.1	.15	3/8 x 2		12.5	
12	106	40.	25.00	1	115	.78	2.30	23	121	.2	.16	3/8 x 3		16.	
30	112	.37	.40	2	115	.75	2.30	24	121	.26	.18	3/8 x 4		19.3	
35	112	.62	.50	4	115	1.	2.65	25	121	.4	.21	7/16 x 1		13.7	
40	112	.87	.70	6	115	1.1	3.15	26	121	.54	.25	7/16 x 2		16.5	
44	113	.83	.60	8	115	1.2	3.85	27	121	.72	.32	7/16 x 3		21.2	
46	113	1.6	1.00	10	115	1.6	4.75	28	121	1.1	.42	7/16 x 4		26.2	
48	113	3.3	1.70	12	115	2.4	5.80	29	121	1.8	.55	1/2 x 1		16.2	
54	112	1.	.60	14	115	2.5	6.50	30	121	2.4	.74	1/2 x 2		21.2	
56	112	1.8	1.00	16	115	3.2	8.15	31	121	3.5	1.04	1/2 x 3		27.	
58	112	3.8	1.70	BALANCE HANDLES				32	121	4.6	1.45	1/2 x 4		32.5	
59	112	6.6	2.80	434	114	1.3	\$ 4.90	34	121	7.5	2.50	9/16 x 1		21.	
54A	112	1.1	1.10	439	114	2.8	5.90	35	121	12.5	3.75	9/16 x 2		27.5	
56A	112	2.	1.70	512	114	.25	2.30	36	121	18.	5.30	9/16 x 3		35.3	
58A	112	3.9	2.60	516	114	.56	2.45	28	121	1.1	.42	9/16 x 4		42.8	
59A	112	7.1	4.00	520	114	.75	2.65	29	121	1.8	.55	5/8 x 1		26.8	
64	113	1.	.60	522	114	1.1	2.90	30	121	2.4	.74	5/8 x 2		34.3	
66	113	2.	1.00	525	114	1.3	3.30	31	121	3.5	1.04	5/8 x 3		46.5	
68	113	4.	1.70	529	114	1.6	3.85	32	121	4.6	1.45	5/8 x 4		54.6	
74	112	1.	.60	CRANK HANDLES				33	121	7.5	2.50	3/4 x 1		38.7	
76	112	2.	1.00	00	115	.38	\$ 1.85	34	121	12.5	3.75	3/4 x 2		53.	
78	112	4.2	1.70	0	115	.43	2.00	35	121	18.	5.30	3/4 x 3		66.	
103	107	2.63	4.00	1	115	.78	2.30	36	121	18.	5.30	3/4 x 4		78.7	
104	107	4.25	4.50	2	115	.75	2.30								
				4	115	1.	2.65								
				6	115	1.1	3.15								
				8	115	1.2	3.85								
				10	115	1.6	4.75								
				12	115	2.4	5.80								
				14	115	2.5	6.50								
				16	115	3.2	8.15								

†Discontinued

*Threaded Eye Bolt prices; Blanks less.

WILLIAMS'
DROP-FORGED TOOL-HOLDERS

"THE HOLDERS THAT HOLD"

The Williams' Tool Holder System provides tool holders for convenient, efficient and economical operations in all lathe work.

Holders, or shanks, all drop-forged from a strong, tough grade of carefully selected Alloy Steel, are specially heat-treated and hardened. These processes develop maximum resistance to all wear and also the sturdy strength necessary to overcome the pushing thrust imposed upon the Cutters. The nose of the Holders is chamfered to permit convenient use in cramped quarters, where space is limited.

Cutter-holding channel is unusually accurate and long. It provides an absolutely true and rigid seat for the Cutter and assures a chatter-proof tool. No breaking of costly high speed steel bits.

Williams' Cutting-Off & Side-Tools provide unequalled convenience and economy—one Holder takes *both* styles of blade.

Each Williams' Boring-Tool holds securely many sizes of Bars, without requiring sleeves, or bushings. This is often a great convenience, since any size bar, within the capacity of the holder, can be inserted instantly without waiting to locate loose parts that have been lost, or mislaid.

Williams' Planing-Tools, because of their unique design, provide 24 different angles of cutter adjustment instead of the usual 5—a real advantage when working in close quarters. Reversal of the Holder in the tool post, so as to bring the cutting point behind the center of the shank, makes a most efficient "goose neck" tool.

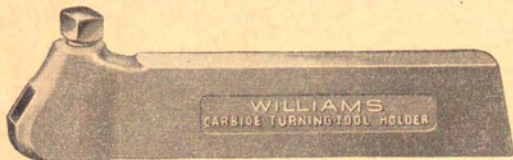
Williams' Cutters are all made from High Speed Steel. Since those for Turning and Planing Tools are cut to the "diamond-point" form or bevel, they care for the most common requirements with a minimum of grinding. All Cutting-Off, Side and Threading Cutters are finished, ready for use.

Hardening Cutters. Only the most modern and efficient equipment is used in hardening Williams' Cutters. Variations in hardness, beyond our standardized close limits, are entirely eliminated and consistent high quality, with durable cutting edges, maintained.

WILLIAMS' CARBIDE TURNING-TOOL HOLDERS

With Straight and Offset Shanks

"THE HOLDERS THAT HOLD"



Straight
Shank



Right Hand
Offset
Shank

Furnished with Wrench,
but *without* Cutter

Left Hand
Offset
Shank



In these Tools, the Cutter is held parallel to the shank. Consequently, Cutters can be so ground as to provide maximum support for the cutting edge. This feature, plus the extremely rigid Holder, is the recognized basis for the best performance of cemented Carbide Cutters.

Holders are broached for either square or flat standard Carbide Cutters, but are supplied **WITHOUT CUTTERS**.

Williams' Carbide-Tipped Cutters, for use with the above holders, are available in two grades and four standard shapes of tips. See opposite page for full description.

Number			Holder, Size	For Cutter		LIST PRICE Holder Without Cutter	Number		
Straight Shank	Offset Shank			Sq., Size	Flat, Size		Straight Shank	Offset Shank	
	Right Hand	Left Hand						Right Hand	Left Hand
FOR SQUARE CUTTERS									
T-0-S	T-0-R	T-0-L	3/8 x 15/16 x 6	1/4	.....	\$ 3.20	T-0-S	T-0-R	T-0-L
T-1-S	T-1-R	T-1-L	1/2 x 1 1/4 x 7	5/16	.....	3.60	T-1-S	T-1-R	T-1-L
T-2-S	T-2-R	T-2-L	5/8 x 1 1/2 x 8	3/8	.....	4.50	T-2-S	T-2-R	T-2-L
T-3-S	T-3-R	T-3-L	3/4 x 1 3/4 x 9	7/16	.....	6.00	T-3-S	T-3-R	T-3-L
T-4-S	T-4-R	T-4-L	7/8 x 1 7/8 x 10	1/2	.....	7.60	T-4-S	T-4-R	T-4-L
T-5-S	T-5-R	T-5-L	1 x 2 1/8 x 12	5/8	.....	10.80	T-5-S	T-5-R	T-5-L
✱ FOR FLAT CUTTERS									
FT-1-S	FT-1-R	FT-1-L	1/2 x 1 1/4 x 7	.....	5/16 x 7/16	\$ 4.40	FT-1-S	FT-1-R	FT-1-L
FT-2-S	FT-2-R	FT-2-L	5/8 x 1 1/2 x 8	.....	3/8 x 1/2	5.40	FT-2-S	FT-2-R	FT-2-L
FT-3-S	FT-3-R	FT-3-L	3/4 x 1 3/4 x 9	.....	7/16 x 9/16	7.20	FT-3-S	FT-3-R	FT-3-L
FT-4-S	FT-4-R	FT-4-L	7/8 x 1 7/8 x 10	.....	1/2 x 3/4	9.20	FT-4-S	FT-4-R	FT-4-L
FT-5-S	FT-5-R	FT-5-L	1 x 2 1/8 x 12	.....	5/8 x 7/8	12.90	FT-5-S	FT-5-R	FT-5-L

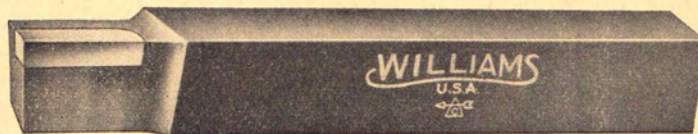
Weights, page L.

1-46

*Holders for Flat Cutters to be Discontinued when stock is exhausted

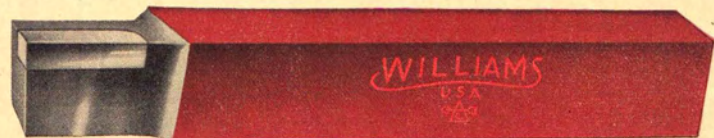
WILLIAMS' CARBOLOY-TIPPED TURNING CUTTER BITS

With Square Shanks



Grade 883
Gray Lacquered

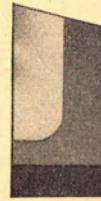
Grade 78B
Orange Lacquered



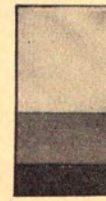
80° Round Nose



Left Hand



Right Hand



Square Nose

Williams' CARBOLOY-TIPPED Turning Cutter Bits are available in four standard cutter shapes and two grades to fit square shank holders. Grade 883 with shanks lacquered Gray are designed for machining cast iron, brass, bronze, aluminum and non-metallics. Grade 78B with shanks lacquered Orange are designed for machining steel. These grades will be found satisfactory for general shop use; Gray for all non-ferrous metals, etc. and Orange for all steels.

These firmly cemented carbide tips are finely ground ready for use and are individually covered with a protective ethyl cellulose sheath. This sheath is easily removed and can be replaced when cutters are not in use.

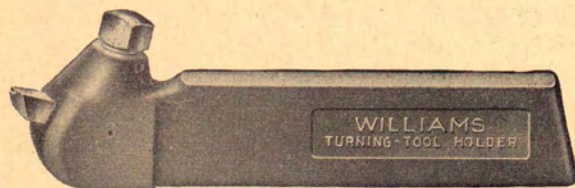
Please specify Grade desired when ordering: Gray for Cast Iron, etc., Orange for Steel.

No.	LIST	SQUARE SHANK TURNING CUTTERS				No.	LIST
Right Hand		Shank Size		Tip Size	Std. Pkg.	Left Hand	
M-41	\$.95	1/4 x 1/4 x 1-1/2		3/32 x 3/16 x 5/16	6	M-71	\$.95
M-42	.95	5/16 x 5/16 x 2-1/4		3/32 x 1/4 x 1/2	6	M-72	.95
M-43	1.00	3/8 x 3/8 x 2-1/2		3/32 x 1/4 x 1/2	6	M-73	1.00
M-44	1.50	7/16 x 7/16 x 3		3/32 x 1/4 x 1/2	4	M-74	1.50
M-45	1.50	1/2 x 1/2 x 3-1/2		1/8 x 5/16 x 5/8	4	M-75	1.50
M-47	2.00	5/8 x 5/8 x 4		5/32 x 3/8 x 3/4	4	M-77	2.00
Square Nose		Shank Size		Tip Size	Std. Pkg.	80° Round Nose	
M-11	\$.95	1/4 x 1/4 x 1-1/2		1/16 x 1/4 x 5/16	6	M-121	\$1.10
M-12	.95	5/16 x 5/16 x 2-1/4		3/32 x 5/16 x 3/8	6	M-122	1.10
M-13	1.00	3/8 x 3/8 x 2-1/2		3/32 x 3/8 x 3/8	6	M-123	1.30
		3/8 x 3/8 x 2-1/2		3/32 x 3/8 x 1/2	6	M-124	1.60
M-14	1.50	7/16 x 7/16 x 3		3/32 x 7/16 x 1/2	4		
M-15	1.50	1/2 x 1/2 x 3-1/2		1/8 x 1/2 x 1/2	4	M-125	1.60
		1/2 x 1/2 x 3-1/2		1/8 x 1/2 x 9/16	4	M-127	2.30
M-17	2.20	5/8 x 5/8 x 4		5/32 x 5/8 x 5/8	4		

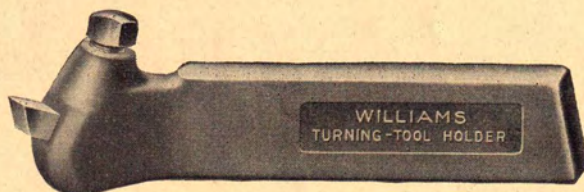
WILLIAMS' TURNING-TOOL HOLDERS

With Straight and Offset Shanks

"THE HOLDERS THAT HOLD"



Straight
Shank



Right Hand
Offset
Shank

Furnished With Cutter
and Wrench

Left Hand
Offset
Shank



For general descriptions see page 85-A.

Holders have nose chamfered and are specially heat-treated and hardened.

The cutter-holding channel is unusually accurate and long. It provides an absolutely true and rigid seat for the cutter and assures a chatter-proof tool. No breaking of high speed steel bits.

The Set Screws, made of a fine grade of Alloy Steel, are accurately machined and carefully heat-treated and hardened. They are unusually tough and strong and provide the maximum efficiency in cutter fastening.

High Speed Cutters are furnished in a "diamond-point" form that requires a minimum of grinding.

Number			Holder, Size	Cutter Size, Square	LIST PRICE	
Straight Shank	Offset Shank				Cutters Only, High Speed Steel	Complete Tool, with High Speed Cutter
	Right Hand	Left Hand				
000-S	000-R	000-L	5/16 x 1/2 x 4	3/16	\$.15	\$ 2.70
00-S	00-R	00-L	5/16 x 3/4 x 4 1/2	3/16	.15	2.70
0-S	0-R	0-L	3/8 x 7/8 x 5	1/4	.20	2.85
1-S	1-R	1-L	1/2 x 1 1/8 x 6	5/16	.35	3.25
2-S	2-R	2-L	5/8 x 1 3/8 x 7	3/8	.55	4.00
3-S	3-R	3-L	3/4 x 1 5/8 x 8	7/16	.90	5.40
4-S	4-R	4-L	7/8 x 1 3/4 x 9	1/2	1.30	6.90
5-S	5-R	5-L	1 x 2 x 11	5/8	2.35	9.75
6-S	6-R	6-L	1 1/4 x 2 1/4 x 13	3/4	3.85	13.50

Weights, page L.

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WILLIAMS' DROP-HEAD TURNING-TOOL HOLDERS

With Straight and Offset Shanks

"THE HOLDERS THAT HOLD"



Straight
Shank



Right Hand
Offset
Shank

Furnished with either
type of Cam, Cutter
and Wrench

Left Hand
Offset
Shank



For general description, see page 83.

Designed for use on lathes with clamp-tool rests and low centers, and excellently adapted to shaper and planer work.

The cutter-holding channel is unusually accurate. It provides an absolutely true and rigid seat for the cutter and assures a chatter-proof tool. No breaking of high speed steel bits.

The Cam-fastening is always rapid and positive—the greater the pressure the tighter the lock. It offers full freedom for operation without removal of Holder from tool post, and imposes no obstruction to cutting facilities. Either Hex Head or Headless Cam is furnished; both types are interchangeable.

The "diamond-point" form in which the High Speed Cutters are furnished requires the minimum of grinding.

Hex Head Cam will be furnished, unless otherwise specified.

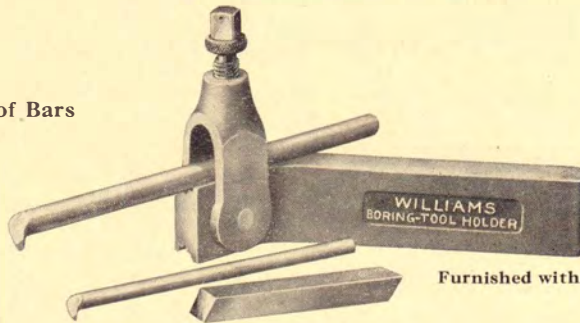
Number			Holder, Size	Cutter Size, Square	Height from Bottom of Shank to Cutter Point	LIST PRICE		
Straight Shank	Offset Shank					Extra Inter- change- able Cams, Each	Cutters Only, High Speed Steel	Complete Tool, with High Speed Cutter
	Right Hand	Left Hand						
0200-S	0200-R	0200-L	7/16 x 9/16 x 6	3/16	9/16	\$.90	\$.15	\$2.70
200-S	200-R	200-L	9/16 x 11/16 x 6 7/8	1/4	11/16	.99	.20	2.85
201-S	201-R	201-L	3/4 x 7/8 x 7 7/8	5/16	13/16	1.10	.35	3.25
202-S	202-R	202-L	7/8 x 1 x 8 7/8	3/8	15/16	1.22	.55	4.00
204-S	204-R	204-L	1 1/8 x 1 1/4 x 11	1/2	1 3/16	1.50	1.30	6.90

Weights, page L.

WILLIAMS' LIGHT BORING-TOOL HOLDERS

FOR SMALL, LIGHT BORING, TURNING, ETC.

For Many Sizes of Bars



Furnished with 2 Finished Bars, 1 Square Cutter and Wrench

This Holder is very handy and economical for tool room use and for all small work—not only in boring small diameters, threading, etc., but also in turning.

Boring. Each tool will hold a number of sizes of Bars; two, varying 1/8" in diameter, are supplied with each Holder. The solid Bars are High Speed Steel, carefully hardened and ground, ready for use.

Turning. The Holder, with offset shank, is reversible for right and left hand work. A hardened, High Speed Steel square Cutter with ends beveled to a "diamond point" for easy grinding to desired form, is supplied with each tool.

No.	Holder, Size Shank	With Each Holder		LIST PRICE		No.
		2 Bars High Speed Steel, Diameter	1 High Speed Square Cutter	Square Cutter Only	Complete Holder, Bars and Cutter	
15	3/8 x 3/4 x 5	1/8 & 1/4	1/4	\$.20	\$4.15	15
16	1/2 x 1 x 5 3/4	3/16 & 5/16	5/16	.35	5.25	16
17	5/8 x 1 1/4 x 6 3/4	1/4 & 3/8	3/8	.55	6.75	17

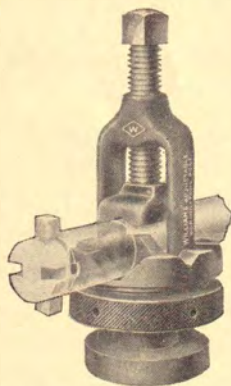
EXTRA BORING BARS

Size.....	1/8 x 4	3/16 x 4 1/2	1/4 x 5	5/16 x 6	3/8 x 7	7/16 x 8
For Holders.....	15 & 16	15 to 17	15 to 17	15 to 17	16 & 17	17
LIST PRICE, Each.....	\$.30	\$.40	\$.50	\$.60	\$.80	\$1.10

ADJUSTABLE BORING-TOOL POSTS

FOR MANY SIZES OF BARS

Furnished with either Sleeve or Plain Bar, 1 each 45° and 90° Cutter and 2 Wrenches

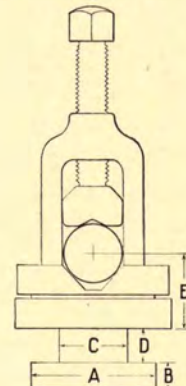


Each Post accommodates a wide range of Bars; commercial sizes of bar steel are adaptable for either Bars or Cutters without machining.

The height of the Bar is easily and quickly adjusted—a turn of the Knurled Ring will raise or lower the base on which the Bar rests; tightening the Set Screw in the head of the Post then locks the whole device instantly, giving an extremely rigid tool.

If Post is desired *without* the Bar, deduct price shown on page 89 for standard size Bar.

Standard size Sleeve Bar will be furnished, unless otherwise specified.



Number	2	3	4	5
Post—Length over all, without Screw.....	6 5/8	7 5/8	9 1/8	11 1/8
† "T" Slot Flange:				
A Diameter.....	3	3 1/2	4 1/4	5
B Thickness.....	5/8	3/4	7/8	1 1/16
† "T" Slot Neck:				
C Diameter.....	1 5/8	1 3/4	2	2 1/4
D Length.....	3/4	13/16	1	1 1/4
E Center Height.....	1 13/16	1 7/8	2 3/8	2 3/4
Post Capacity for Bars—Size.....	1/2 to 1 5/16	1/2 to 1 1/2	5/8 to 1 13/16	3/4 to 2 1/4
Standard Bar—Size.....	1 5/16	1 1/2	1 13/16	2 1/4
LIST PRICE—Complete Post:				
With Sleeve Bar, High Speed Cutters.....	\$27.00	\$37.50	\$60.00	\$90.00
With Plain Bar, High Speed Cutters.....	25.50	35.75	58.00	86.50

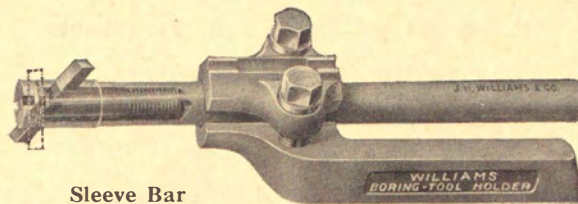
† The "T" Slot Flange and Neck are furnished large to allow for fitting to individual machines. For special finishing to specified dimensions, an extra charge of \$2.00 net, each Post will be made.

Weights, page L.

Bar and Cutter details on page 89.

WILLIAMS' BORING-TOOL HOLDERS

EACH TAKES MANY SIZES OF BARS



Sleeve Bar



Plain Bar

Furnished with either Sleeve or Plain Bar, 1 each 45° and 90° Cutter and 2 Wrenches

With this Holder, encumbering sleeves or bushings are unnecessary for Bars of various sizes; *One* Holder takes *many* Bars. Commercial forms of bar steel are adaptable for either Bars or Cutters without machining.

The Sleeve-bar fastening provides for the rapid adjustment of either straight or angular Cutters without the use of extra parts; it has greater strength than others of the same general design.

The Plain Bar provides for use with either Straight or Angular Cutters in the simplest manner possible and is furnished with Headless Set Screws.

Standard size Sleeve Bar will be furnished, unless otherwise specified.

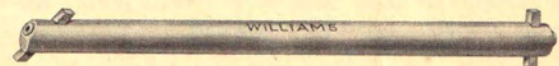
No.	Holder, Size	Holder Capacity for Bars, Size Diameter	Standard Bar, Size Diameter	LIST PRICE Complete Holder		No.
				With Plain Bar, High Speed Cutters	With Sleeve Bar, High Speed Cutters	
080	5/16 x 3/4	3/16 to 1/2	1/2	\$4.30	\$ 4.90	080
80	3/8 x 7/8	1/4 to 5/8	5/8	4.30	4.90	80
81	1/2 x 1 1/8	1/4 to 3/4	3/4	5.00	5.80	81
82	5/8 x 1 3/8	3/8 to 15/16	15/16	6.50	7.65	82
83	3/4 x 1 5/8	1/2 to 1 1/8	1 1/8	9.60	10.85	83

BORING-BARS AND CUTTERS

FOR BORING-TOOL HOLDERS AND ADJUSTABLE BORING-TOOL POSTS



Sleeve Bar



Plain Bar

Furnished with Two Cutters and Wrench

Boring-Bars Approximate Size		For Use With		Cutters		LIST PRICE		
Sleeve	Plain	Holders No.	Posts No.	Size Square and Length	For Use at Angles of	Cutters Only, High Speed	Complete Bar	
							Plain, with High Speed Cutters	Sleeve, with High Speed Cutters
1/2 x 7 5/8	1/2 x 8 1/8	080-83	2-3	{ 3/16 x 1 3/16 x 1 1/2	90° 45°	{ \$.10 .12	\$ 2.40	\$ 3.00
5/8 x 9 1/8	5/8 x 10 1/8	80-83	2-4	{ 3/16 x 1 3/16 x 1 1/2	90° 45°	{ .10 .12	2.40	3.00
3/4 x 11	3/4 x 12 1/8	81-83	2-5	{ 1/4 x 1 1/4 1/4 x 2	90° 45°	{ .15 .19	2.95	3.75
15/16 x 13 1/4	15/16 x 14 1/8	82-83	2-5	{ 5/16 x 1 1/2 5/16 x 2 1/2	90° 45°	{ .24 .32	4.25	5.40
1 1/8 x 16	1 1/8 x 16 3/4	83	2-5	{ 3/8 x 1 7/8 3/8 x 3	90° 45°	{ .35 .50	6.25	7.50
1 5/16 x 19	1 5/16 x 20		2-5	{ 3/8 x 2 1/8 3/8 x 3 1/4	90° 45°	{ .40 .55	9.00	10.50
1 1/2 x 23 1/4	1 1/2 x 23 1/2		3-5	{ 7/16 x 2 1/4 7/16 x 3 3/8	90° 45°	{ .60 .85	11.75	13.50
1 13/16 x 27 1/4	1 13/16 x 28		4-5	{ 1/2 x 2 5/8 1/2 x 4	90° 45°	{ .90 1.30	17.50	19.50
2 1/4 x 33	2 1/4 x 34		5	{ 5/8 x 3 1/8 5/8 x 4 3/4	90° 45°	{ 1.70 2.35	31.00	34.50

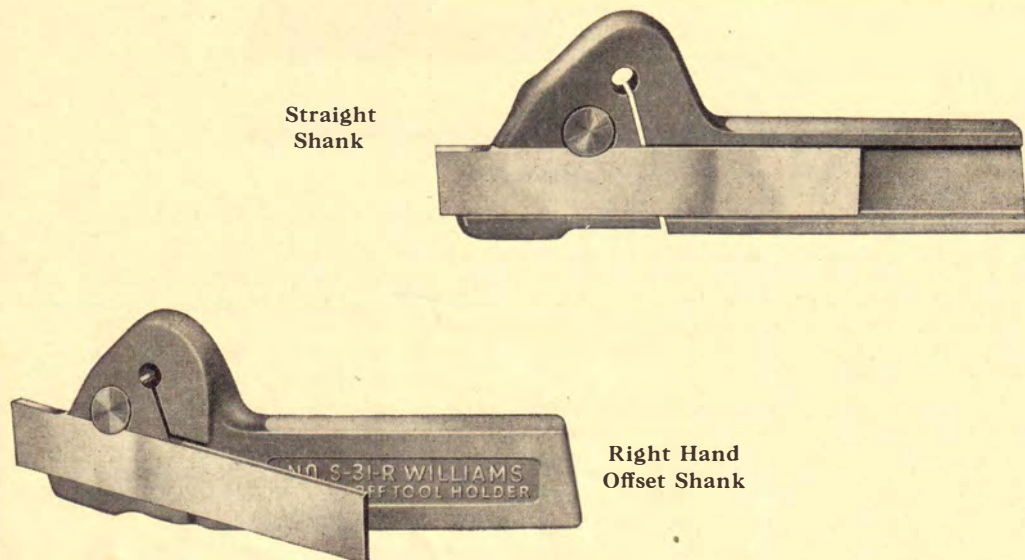
Weights, page L.

Light Boring Bars and Posts on previous page.

WILLIAMS' SPRING CUTTING-OFF TOOL HOLDERS

With Straight and Right Hand Offset Shanks

"THE HOLDERS THAT HOLD"



Furnished with Finished Cutter and Wrench

For General Description, see page 83.

These Spring Tools make comparatively simple all lathe cutting-off work—long thought the hardest of lathe operations. Due to the “goose neck” form of the Holder, the Cutter Blade is relieved of excess pressure; no chattering, no “climbing” of the work on the tool—the real cause of nearly all breakage of cutting-off tools. These Holders are also particularly efficient with automatic feed.

The cam-fastening is always rapid and positive—the greater the pressure the tighter the lock. It offers full freedom for operation without removal of Holder from tool post.

Cutter Blades are High Speed Steel, hardened and ground on both ends ready for use. By reversing the blade end for end it can be used in either Left or Right Hand Offset Shanks. They are interchangeable in Holders of corresponding size on page 91, as explained in following paragraphs.

These Cut-off Blades are interchangeable in other standard Holders.

Always be sure to specify the Holder number when ordering Extra Blades. For instance, No. S-21 for Blade to fit old S-21 Holder; No. NS-21 for Blade to fit NS-21 Holder.

Straight Shank Holders will be furnished, unless otherwise specified.

Number		Holder, Size	Cutter Blades, High Speed Steel, Finished Size	LIST PRICE		Number	
Straight Shank	Offset Shank, Right Hand			Extra Blade, Finished, High Speed Steel	Complete Holder with Blade, High Speed Steel	Straight Shank	Offset Shank, Right Hand
NS-20	NS-30-RA	3/8 x 13/16	3/32 x 5/8	\$.65	\$4.50	NS-20	NS-30-RA
NS-21	NS-30-R	3/8 x 31/32	3/32 x 5/8	.65	4.50	NS-21	NS-30-R
NS-22	NS-31-R	1/2 x 1 3/16	1/8 x 3/4	.90	5.40	NS-22	NS-31-R
NS-23	NS-32-R	5/8 x 1 3/8	1/8 x 7/8	1.30	6.75	NS-23	NS-32-R
	NS-33-R	3/4 x 1 5/8	3/16 x 1	2.15	9.00		NS-33-R

Weights, page L.

12-45

WILLIAMS' CUTTING-OFF AND SIDE-TOOL HOLDERS

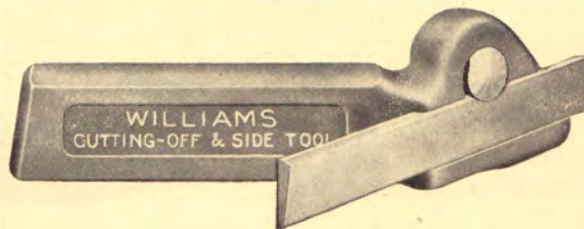
For Interchangeable Blades. Straight and Offset Shanks.

"THE HOLDERS THAT HOLD"

Right Hand
Straight
Shank



Left Hand
Offset
Shank



Furnished with
Finished Cutter and Wrench



Right Hand
Offset
Shank

For General Description, see page 83.

One Holder takes both Cutting-off and Side Blades, providing unique convenience and economy.

The Cam-fastening is always rapid and positive—the greater the pressure the tighter the lock. It offers full freedom for operation without removal of Holder from tool post.

The Cutter Blades are High Speed Steel, hardened and ground on both ends ready for use. By reversing the blade end for end it can be used in either Left or Right Hand Offset Shanks. They are interchangeable in Holders of corresponding size on page 90, as explained in following paragraphs.

These Cut-off Blades (not Side) are interchangeable in other standard Holders.

Always be sure to specify the Holder number when ordering Extra Blades. For instance, No. 20-R for Blade to fit old 20-R Holder; No. N-20-R for Blade to fit N-20-R Holder.

Cutting-off Blade will be furnished, unless otherwise specified.

Number			Holder, Size	Cutter Blades, High Speed Steel, Finished Size		LIST PRICE			
Straight Shank Right Hand	Offset Shank			Cutting-Off Blade	Side Blade	Extra Blade Finished, High Speed Steel		Complete Holder With Blade, High Speed Steel	
	Right Hand	Left Hand				Cut-Off	Side	Cut-Off	Side
N-020-R N-20-R	N-030-R N-30-R	N-030-L N-30-L	5/16 x 13/16 3/8 x 31/32	3/32 x 1/2 3/32 x 5/8	1/8 x 1/2 5/32 x 5/8	\$.60 .65	\$.60 .90	\$2.85 3.00	\$2.85 3.40
N-21-R N-22-R	N-31-R N-32-R	N-31-L N-32-L	1/2 x 1- 3/16 5/8 x 1- 3/8	1/8 x 3/4 1/8 x 7/8	3/16 x 3/4 1/4 x 7/8	.90 1.30	1.40 2.30	3.60 4.50	4.35 6.00
N-23-R N-24-R N-25-R	N-33-R N-34-R N-35-R	N-33-L N-34-L N-35-L	3/4 x 1- 5/8 7/8 x 1- 3/4 7/8 x 1- 3/4	3/16 x 1 3/16 x 1-1/8 1/4 x 1-1/8	5/16 x 1 3/8 x 1-1/8	2.15 2.90 4.00	3.40 5.00	6.00 7.50 8.60	7.85 10.65

Weights, page L.

WILLIAMS' THREADING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"



LOCKABLE-SPRING HEAD
 PATTERN
 Furnished with
 Finished Cutter and Wrench

FORMED-CUTTER
 PATTERN
 Furnished with
 Finished Cutter and Wrench



For General Description, see page 83

LOCKABLE-SPRING PATTERN

A highly perfected tool for fine and coarse threading, or other Lathe work. The Nut for the Lockable-Spring Head provides for the rigid backing required for heavy cuts; when it is loosened, the Holder becomes a spring-tool for finishing work. It is equally efficient as a Turning-tool. The Cam-fastening is always rapid and positive—the greater the pressure, the tighter the lock.

The cutter, made from High Speed steel, is finished. Each end is ground, the "V" point forming either an angle of 60° for U. S., or 55° for Whitworth Std. threads.

FORMED-CUTTER PATTERN

Williams' Threading-Tools with FORMED CUTTER assure threads that fit perfectly, since in re-shaping the Cutter, it is necessary to grind its top edge only. Therefore, the point will always retain proper form and angle as originally supplied.

The High Speed Cutter is ground to an included angle of 60° and is backed off for proper clearance. Its rear, flat edge is eccentrically formed; the hardened stop screw, bearing against it, provides positive and accurate adjustment.

No.	Holder, Size	Cutter, Size Square	LIST PRICE		No
			Extra Finished Cutter, High Speed	Complete with High Speed Cutter	
LOCKABLE-SPRING PATTERN					
S-50	3/8 x 7/8 x 5 1/4	1/4	\$.45	\$4.15	S-50
S-51	1/2 x 1 1/8 x 6	5/16	.55	5.00	S-51
S-52	5/8 x 1 3/8 x 7	3/8	.70	6.40	S-52
FORMED-CUTTER PATTERN					
C-050	5/16 x 3/4 x 5	Formed	\$2.65	\$4.15	C-050
C-50	3/8 x 7/8 x 5	Formed	2.65	4.15	C-50
C-51	1/2 x 1 1/8 x 5 3/4	Formed	3.15	5.00	C-51
C-52	5/8 x 1 3/8 x 7	Formed	4.15	6.40	C-52

Weights, page L.

12-45

WILLIAMS' PLANING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"



The substantial Bolt-fastening and serrated Adjustment Ring

This construction affords most ready release of Cutter for easy adjustment.

The serrations in Holder provide maximum number of cutter adjustments.

Furnished with Cutter and Wrench

For General Description, see page 83.



A rugged, substantial and efficient tool on either Lathe or Planer. Because of its numerous angles of adjustment it also makes an excellent Offset Turning Tool.

The construction assures perfect seat and holding qualities for the Cutters; the convex face of Clamp Nut provides uniform locking pressure for Cutters of either square or rectangular form; the numerous serrations in Holder provide for quick, fine and maximum number of Cutter adjustments unequaled in other designs.

The serrated washer, or Adjustment Ring, which sustains the fastening and working strains, is hardened and tempered. Should it wear in prolonged service, a new Ring *only* is required—not a complete Holder.

No.	Holder, Size	Cutter Size	LIST PRICE			No.
			Extra Adjustment Ring	Cutter Only, High Speed Steel	Complete Holder, High Speed Cutter	
91	1/2 x 1 x 7	1/4 x 3/8	\$.60	\$.35	\$ 4.65	91
92	5/8 x 1 1/4 x 8 1/2	5/16 x 7/16	.68	.55	6.00	92
93	3/4 x 1 1/2 x 10 1/4	3/8 x 1/2	.83	.80	7.85	93
94	1 x 1 3/4 x 13 1/4	1/2 x 3/4	1.05	1.95	12.40	94
95	1 3/8 x 2 x 16 1/2	5/8 x 7/8	1.50	3.35	21.75	95
96	1 3/4 x 2 3/8 x 19	3/4 x 1	2.25	5.00	39.00	96
97	2 1/8 x 2 3/4 x 22	7/8 x 1 1/8	3.38	8.20	57.00	97

Weights, page L.

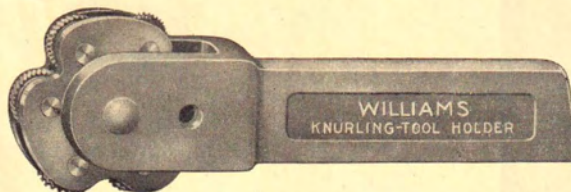
WILLIAMS' KNURLING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"



Nos. 00-K to 2-K
with Self-center-
ing Head and One
Pair of Knurls.

Nos. 11-K, 12-K
with Revolving
Head and Three
Pairs of Knurls.



For General Description, see page 83

Williams' Knurling Tools are furnished in two designs:—

Nos. 00-K to 2-K, with sturdy, self-centering heads, are each fitted with ONE pair of Knurls for fine, medium, or coarse work—see illustration on opposite page. Unless otherwise specified, "Diamond" Pattern, Medium Knurls will be supplied.

Nos. 11-K and 12-K carry THREE pairs of Knurls for fine, medium and coarse work—see illustration on following page. These are fitted in a revolving head and can be used as desired, without loss of time in changing from one grade of knurling to another.

The Pins are of Tool Steel, carefully tempered.

The Knurls are fully described on next page.

No.	Holder, Size	Knurls, Size			Weight Each, Lbs.	LIST PRICE		No.
		Diam.	Face	Hole		Extra Knurls, Pair	Complete Tool	
SELF-CENTERING HEAD—ONE PAIR OF KNURLS								
00-K	5/16 x 3/4 x 5	5/8	3/16	*7/32	\$.55	\$1.00	\$5.65	00-K
0-K	3/8 x 7/8 x 5 1/2	5/8	3/16	*7/32	.65	1.00	6.00	0-K
1-K	1/2 x 1 1/8 x 6 5/8	3/4	1/4	1/4	1.90	1.15	6.75	1-K
2-K	5/8 x 1 3/8 x 7 1/2	3/4	1/4	1/4	2.25	1.15	8.00	2-K
REVOLVING HEAD—THREE PAIRS OF KNURLS								
11-K	1/2 x 1 1/8 x 6 5/8	3/4	1/4	1/4	1.90	1.15	9.00	11-K
12-K	5/8 x 1 3/8 x 6 5/8	3/4	1/4	1/4	2.25	1.15	10.50	12-K

* Hole, old diameter 1/4 inch.

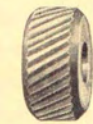
11-45

KNURLS FOR WILLIAMS' KNURLING-TOOL HOLDERS

"THE HOLDERS THAT HOLD"

DIAMOND PATTERN

STRAIGHT-LINE PATTERN



Coarse
14 Pitch



Medium
21 Pitch



Fine
33 Pitch



Coarse
14 Pitch



Medium
21 Pitch



Fine
33 Pitch

Note: "Pitch" means number of teeth per linear inch.



Illustrations above show actual size of Knurling

Williams' Knurls are made to close limits in all respects and, being accurately cut, they assure sharp and perfect teeth in the knurled product. The hole is concentric with and parallel to the cutting face, insuring uniform, clean cut results. All Knurls are made from high grade tool steel and are specially hardened and tempered.

Furnished in pairs to fit standard makes of Knurling Tools and supplied in two Patterns—"Diamond" and "Straight-Line." Three different pitches in each Pattern—Coarse, 14 pitch; Medium, 21 pitch; Fine, 33 pitch; all as illustrated above. When ordering, always specify Pattern and pitch desired.

"Diamond" Pattern, Medium (21 pitch) will be furnished, unless otherwise specified.

For Knurling Tool No.	Knurls, Size				LIST PRICE Per Pair	For Knurling Tool No.
	Diameter	Thickness	Face	Hole		
00-K	5/8	5/16	3/16	*7/32	\$1.00	00-K
0-K	5/8	5/16	3/16	*7/32	1.00	0-K
1-K	3/4	3/8	1/4	1/4	1.15	1-K
2-K	3/4	3/8	1/4	1/4	1.15	2-K
11-K	3/4	3/8	1/4	1/4	1.15	11-K
12-K	3/4	3/8	1/4	1/4	1.15	12-K

* Hole, old diameter 1/4 inch.

WILLIAMS' LATHE TOOL SETS

"THE HOLDERS THAT HOLD"

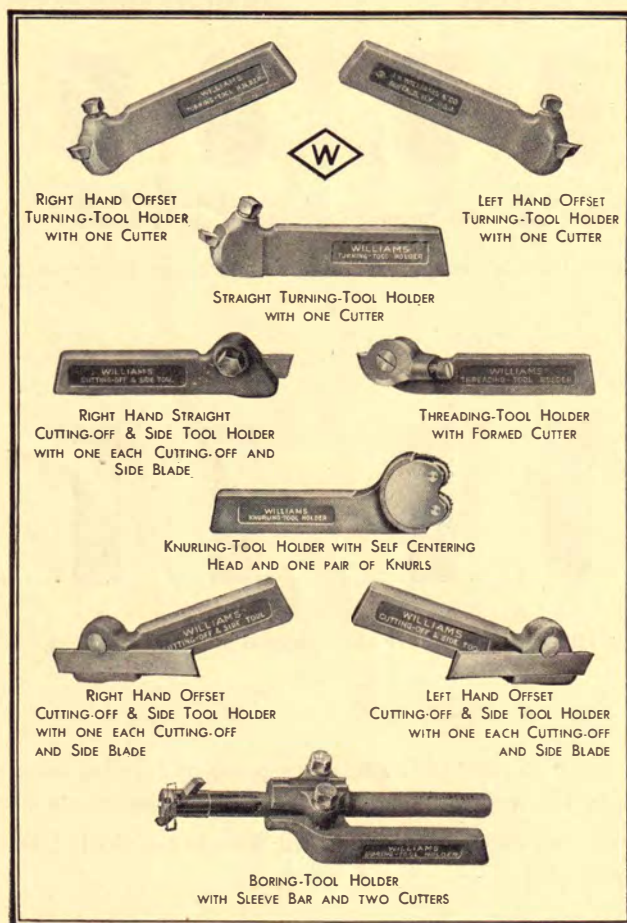
Convenient—Efficient—Economical

The Six "always ready" Sets illustrated below, provide for complete Lathe service — Turning, Boring, Knurling, Threading, Cutting-Off and Side work — in a minimum number of tools, unequalled elsewhere — High Speed Cutters and Finished Wrenches are provided throughout.

Williams' Knurling Tools Nos. OO-K to 2-K have self-centering heads, each fitted with ONE pair of Knurls for fine, medium, or coarse work. Unless otherwise specified, "Diamond" Pattern, Medium Knurls will be supplied.

ONE Williams' Holder takes BOTH cutting-off and side blades. A tool that performs both classes of work by the mere substitution of suitable cutters, tells its own story of economy.

Each Williams' Boring Tool takes SIX or more sizes of Bars WITHOUT using bushings. ONE tool holds MANY Bars. Two styles of Bars—"Sleeve" as illustrated and "Plain" at lower price.



Williams' Turning Tools have Large Alloy Steel Screw—heat-treated, unbreakable. Their accurately broached hole provides rigid seat for cutter—no chatter, no breakage.

Williams' Threading Tools Nos. CO-50 to C-52 with Formed Cutter assure threads that fit perfectly, since in resharpener the Cutter, it is necessary to grind its top edge only. The point will always retain the proper form and angle.

Williams' Sleeve Boring-Bar fastener provides for the rapid adjustment of either straight or angular cutters without use of extra parts. It is stronger than others of same general design.

"Always ready" sets of Williams' Tool Holders, with a minimum number of tools, provide for greatest economy and service in lathe work.

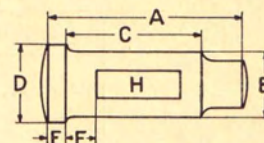
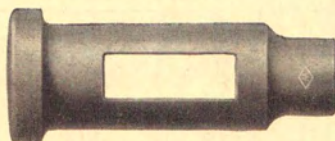
Set No.	For Lathes of Approx. * Swing Inches	WILLIAMS' TOOL HOLDERS IN SETS										Quantity of Tools in Set	LIST PRICE Complete Sets
		Size of Holder Shank	Turning Tools			Cutting-off and Side Tools			Threading Tool No.	Boring Tool No.	Knurling Tool No.		
			Straight Shank No.	Offset Shank		Straight Shank No.	Offset Shank						
				R. H. No.	L. H. No.		R. H. No.	L. H. No.					
00A	7 to 10	5/16 x 3/4	00-S	00-R	00-L	N-020-R	N-030-R	N-030-L	CO-50	080	00-K	9	\$33.15
0A	10 to 12	3/8 x 7/8	0-S	0-R	0-L	N-20-R	N-30-R	N-30-L	C-50	80	0-K	9	35.30
1A	14 to 16	1/2 x 1-1/8	1-S	1-R	1-L	N-21-R	N-31-R	N-31-L	C-51	81	1-K	9	42.30
2A	16 to 18	5/8 x 1-3/8	2-S	2-R	2-L	N-22-R	N-32-R	N-32-L	C-52	82	2-K	9	54.45
3	18 to 20	3/4 x 1-5/8	3-S	3-R	3-L	N-23-R	N-33-R	N-33-L	....	83	....	7	55.25
4	24 to 36	7/8 x 1-3/4	4-S	4-R	4-L	N-24-R	N-34-R	N-34-L	....	....	....	6	58.20

* Be careful to measure the opening in tool-post before ordering Sets. Due to a considerable variation in the proportions of lathes as furnished by different manufacturers, it is impossible to state definitely the "swing" of lathe best adapted to a given size Tool Holder.

WILLIAMS' ♦ "VULCAN"
 TOOL POST FITTINGS

UNFINISHED

TOOL POSTS
 Openings
 Punched Out



Number	5	10	20	23	28	30	40	50	60
Length, A.....	2 15/16	4 1/16	4 9/16	5	5 3/16	5 1/4	6 5/16	7 3/8	8 3/4
Body									
Diameter, B.....	1 1/32	1 1/4	1 5/8	1 7/16	1 9/16	1 13/16	2 1/16	2 1/4	2 31/32
Length, C.....	2	2 7/8	3 1/4	3 1/2	3 11/16	3 3/4	4 3/8	5	6
Base									
Diameter, D.....	1 7/32	1 5/8	2 1/8	1 7/8	2 1/16	2 5/16	2 5/8	2 15/16	3 5/8
Thickness, E.....	5/16	1/4	7/16	5/16	5/16	1/2	9/16	5/8	3/4
Base to									
Opening, F.....	7/16	1/2	13/16	5/8	5/8	15/16	1 3/16	1 3/8	1 1/2
Opening	{ 1 5/16	{ 1 15/16	{ 1 7/8	{ 2 1/2	{ 2 11/16	{ 2 1/8	{ 2 1/2	{ 2 7/8	{ 3 9/16
Size, H.....									
For use with	x 7/16	x 19/32	x 11/16	x 21/32	x 11/16	x 3/4	x 7/8	x 15/16	x 1
Wedge.....	5	10	15 & 18	15	15 & 18	18 & 20	30 & 40	60	
For use with									
Ring.....	5	10	11	14	18	20	30 & 40	60	
LIST PRICE.....	\$.82	\$1.05	\$1.40	\$1.65	\$1.90	\$2.10	\$3.05	\$3.95	\$7.95

TOOL POST
 WEDGES



For Changing
 Angles of
 Lathe Tools

Number	5	10	11	15	18	20	30	40	60	65
Length.....	2 13/32	3	3 3/8	3 3/8	3 7/8	3 7/8	4 3/8	4 7/8	5 1/4	5 5/16
Width—Top.....	13/32	9/16	1/2	5/8	11/16	11/16	3/4	13/16	15/16	7/8
Width—Extreme...	1/2	21/32	19/32	23/32	3/4	13/16	7/8	15/16	1 3/32	1 1/32
Extreme Thickness...	11/32	31/64	25/64	7/16	15/32	17/32	1/2	21/32	3/4	29/32
Radius.....	3	2 7/8	4 5/8	4 5/8	4 1/2	4 3/4	5 1/2	5 3/4	6	5
For Use with Post...	5	10	20	20	30	30	40	40	50	
For Use with Ring...	5	10	11	11	11 & 20	20	30	40	60	
LIST PRICE.....	\$.27	\$.30	\$.30	\$.33	\$.34	\$.35	\$.40	\$.47	\$.56	\$.61

TOOL POST
 RINGS



For Changing
 Angles of
 Lathe Tools

Number	5	10	11	14	18	20	30	40	60
Diameter, Outside...	2 1/4	2 15/16	3	3 3/16	3 7/16	3 1/2	3 1/2	4	4 1/2
Diameter, Hole...	1 1/16	1 5/16	1 5/8	1 7/16	1 9/16	1 3/4	2	2	2 3/16
Thickness, Edge...	3/8	7/16	7/16	5/8	11/16	9/16	3/4	3/4	3/4
Radius of Concave...	3	2 7/8	4 5/8	4 5/8	4 1/2	4 3/4	5 1/2	5 3/4	6
For Use with Post...	5	10	20	23	28	30	40	40	50
For Use with Wedge...	5	10	11 & 15	18 & 20	18	18 & 20	30	40	60
LIST PRICE.....	\$.33	\$.47	\$.52	\$.75	\$.94	\$.82	\$1.00	\$1.15	\$1.50



Weights, page F.



♦ REGISTERED TRADE MARK


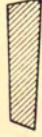
WILLIAMS' HIGH SPEED STEEL CUTTERS

FOR WILLIAMS' TOOL HOLDERS

Require minimum of grinding only for use in Holders. All Cutters are hardened.

 For Turning-Tool Holders				 For Williams' Boring Bars				
No.	CUTTER, SIZE		LIST Each, High Speed	Bar Diam.	For Use at Angle of	CUTTER, SIZE		LIST Each, High Speed
	Square	Length				Square	Length	
000	3/16	1 3/4	\$.15	1/2	90°	3/16	1	\$.10
00 & 0200	3/16	1 7/8	.15		45°	3/16	1 1/2	.12
0 & 200	†1/4	2 3/8	.20	5/8	90°	3/16	1	.10
1 & 201	†5/16	2 7/8	.35		45°	3/16	1 1/2	.12
2 & 202	†3/8	3 3/8	.55	3/4	90°	1/4	1 1/4	.15
3	7/16	3 3/4	.90		45°	1/4	2	.19
4 & 204	1/2	4 1/8	1.30	15/16	90°	5/16	1 1/2	.24
5	5/8	4 3/4	2.35		45°	5/16	2 1/2	.32
6	3/4	5 1/2	3.85	1 1/8	90°	3/8	1 7/8	.35
† Cutters of these sizes are also suitable for turning when used in Threading-Tool, Nos. S-50 to S-52.					45°	3/8	3	.50
				1 5/16	90°	3/8	2 1/8	.40
					45°	3/8	3 1/4	.55
				1 1/2	90°	7/16	2 1/4	.60
					45°	7/16	3 3/8	.85
				1 13/16	90°	1/2	2 5/8	.90
					45°	1/2	4	1.30
				2 1/4	90°	5/8	3 1/8	1.70
					45°	5/8	4 3/4	2.35





 For Threading-Tool Holders				 For Planing-Tool Holders			
No.	CUTTER, SIZE		LIST Each, High Speed Finished Cutter	No.	CUTTER, SIZE		LIST Each, High Speed
	Square	Length			Flat	Length	
S-50	1/4	2 3/8	\$.45	91	1/4 x 3/8	2 1/2	\$.35
S-51	5/16	2 7/8	.55	92	5/16 x 7/16	3	.55
S-52	3/8	3 3/8	.70	93	3/8 x 1/2	3 1/2	.80
Turning-Tool Cutters marked † are suitable for turning work in Threading-Tool Holders. See table above.				94	1/2 x 3/4	4 1/4	1.95
				95	5/8 x 7/8	5	3.35
				96	3/4 x 1	6	5.00
				97	7/8 x 1 1/8	7	8.20

 Bevel For Cutting-Off Tool Holders			 Heavy Bevel For Side-Tool Holders		
Number	Size	LIST Each, High Speed	Number	Size	LIST Each, High Speed
N-020-N-030	3/32 x 1/2	\$.60	N-020-N-030	1/8 x 1/2	\$.60
N-20- N-30	3/32 x 5/8	.65	N-20- N-30	5/32 x 5/8	.90
N-21- N-31	1/8 x 3/4	.90	N-21- N-31	3/16 x 3/4	1.40
N-22- N-32	1/8 x 7/8	1.30	N-22- N-32	1/4 x 7/8	2.30
N-23- N-33	3/16 x 1	2.15	N-23- N-33	5/16 x 1	3.40
N-24- N-34	3/16 x 1-1/8	2.90	N-24- N-34	3/8 x 1-1/8	5.00
N-25- N-35	1/4 x 1-1/8	4.00			

WILLIAMS' HIGH SPEED STEEL

IN 3 FEET LENGTHS

Heat treatment instructions for Williams' High Speed Tool Holder Steel, listed below, will be furnished with each shipment of these bars.

Squares, for Use with		LIST PRICE 3 Feet Lengths Annealed High Speed
Size, Square		
 Williams' Turning, Boring and Threading-Tool Holders	3/16	\$ 1.40
	1/4	2.25
	5/16	3.40
	3/8	4.80
	7/16	6.30
	1/2	8.00
	5/8	12.50
	3/4	17.80
Flats, for Use with		LIST PRICE 3 Feet Lengths Annealed High Speed
Size, Flat Section		
 Williams' Planing-Tool Holders	1/4 x 3/8	\$ 3.50
	5/16 x 7/16	4.80
	3/8 x 1/2	6.60
	1/2 x 3/4	12.50
	5/8 x 7/8	17.50
	3/4 x 1	23.25
	7/8 x 1 1/8	30.70
Bevels, (Cutting-off) for Use with		LIST PRICE 3 Feet Lengths Annealed High Speed
†Size Section for Cutting-off Blade		
 Williams' Cutting-off and Side-Tool Holders	3/32 x 1/2	\$ 2.60
	3/32 x 5/8	2.70
	1/8 x 3/4	4.00
	1/8 x 7/8	4.35
	3/16 x 1	6.75
	3/16 x 1 1/8	7.50
	1/4 x 1 1/8	10.40
Heavy (Side Tool) Bevels, for Use with		LIST PRICE 3 Feet Lengths Annealed High Speed
†Size Section for Side Blade		
 Williams' Cutting-off and Side-Tool Holders	1/8 x 1/2	\$ 2.80
	5/32 x 5/8	3.70
	3/16 x 3/4	4.70
	1/4 x 7/8	7.00
	5/16 x 1	9.10
	3/8 x 1 1/8	12.45

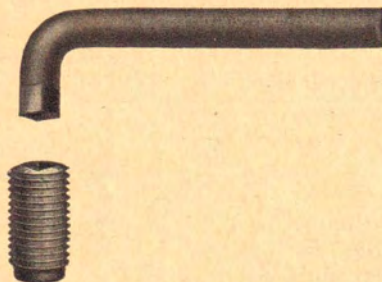
† Bevel Steel for Cutting-off and Side Blades requires grinding on edges to fit Williams' Holders exactly. Finished sizes are given.

WILLIAMS' "VULCAN"
DROP-FORGED LATHE DOGS

WITH BENT TAIL AND ONE SCREW



Safety Dog
and Screw



Safety Screw
and Wrench



Non-Safety Dog
with
Square Hd. Screw

Furnished with
Interchangeable Screws,
either Safety or Non-Safety

Full description on opposite page.

Dogs with Safety Screws will be supplied, unless otherwise specified.

No.	Capacity	SCREWS						LIST PRICE		No.
		Square Head			Safety			Safety Dog Wrench, Extra	Dog with Either Screw	
		Size		List Price, Each	Size		List Price, Each			
		Diam.	Length Under Head		Diam.	Extreme Length				
1	3/8	7/16	1	\$.25	7/16	5/8	\$.20	\$.12	† \$ 1.00	1
2	1/2	9/16	1 1/4	.30	9/16	13/16	.24	.14	† 1.10	2
3	3/4	5/8	1 5/8	.37	5/8	1 1/16	.30	.16	† 1.20	3
4	1	5/8	2	.40	5/8	1 1/4	.36	.16	† 1.40	4
5	1 1/4	3/4	2 1/4	.55	3/4	1 3/8	.42	.20	† 1.70	5
6	1 1/2	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	† 2.00	6
7	1 3/4	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	† 2.40	7
8	2	1	2 3/4	.95	1	1 7/8	.72	.30	† 2.80	8
9	2 1/2	1 1/8	3	1.15	1 1/8	2	.86	.38	† 3.60	9
10	3	1 1/4	3 1/4	1.35	1 1/4	2 1/8	1.04	.48	† 4.60	10
11	3 1/2	1 3/8	3 1/2	1.60	1 3/8	2 1/2	1.26	.60	† 6.00	11
12	4	1 1/2	3 3/4	1.90	1 1/2	2 5/8	1.50	.74	† 9.00	12
13	5	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 16.00	13

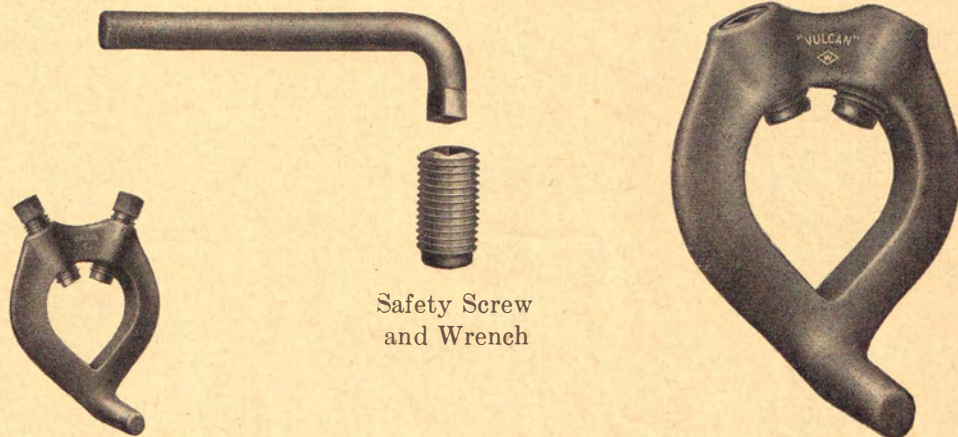
† Unless otherwise specified, a Wrench will be supplied with Safety Dogs at extra price stated in table.

♦ REGISTERED TRADE MARK

Weights, pages L and M.

1-46

WILLIAMS' ♦"VULCAN"
 DROP-FORGED HEAVY SERVICE LATHE DOGS
 WITH BENT TAIL AND TWO SCREWS



Non-Safety Dog
 with
 Square Hd. Screws

Furnished with
 Interchangeable Screws,
 either Safety or Non-Safety

Safety Dog
 and Screws

Safety-for-the-operator and better balance when on the lathe are material improvements which have been attained in this design.

The Screws are of special steel, hardened and tempered, and are threaded U. S. Standard, except that those above 1 inch diameter have eight threads per inch. They are supplied in two types, Safety and Non-Safety, which are interchangeable in corresponding Dogs.

When ordering extra Screws, please state whether Safety or Non-Safety type is wanted; if latter, specify also diameter of screw.

Dogs with Safety Screws will be supplied, unless otherwise specified.

No.	Capacity	SCREWS						LIST PRICE		No.
		Square Head			Safety			Safety Dog, Wrench, Extra	Dog with Either Screw	
		Size		List Price, Each	Size		List Price, Each			
		Diam.	Length Under Head		Diam.	Extreme Length				
112	4	1 1/2	3 3/4	\$1.90	1 1/2	2 5/8	\$1.50	\$.74	†\$16.00	112
113	5	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 24.00	113
114	6	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 34.00	114

† Unless otherwise specified, a Wrench will be supplied with Safety Dogs at extra price stated in table.

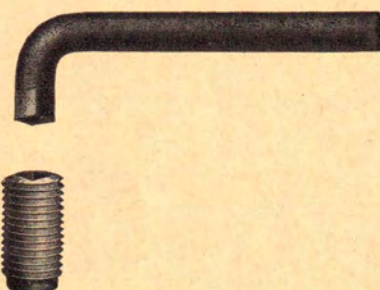
♦REGISTERED TRADE MARK

Weights, page M.

WILLIAMS' ♦“VULCAN”
DROP-FORGED LATHE DOGS
WITH STRAIGHT TAIL AND ONE SCREW



Safety Dog
and Screw



Safety Screw
and Wrench



Non-Safety Dog
with
Square Hd. Screws

Furnished with
Interchangeable Screws
either Safety or Non-Safety

Full description on opposite page.

Dogs with Safety Screws will be supplied, unless otherwise specified.

No.	Capacity	SCREWS						LIST PRICE		No.
		Square Head			Safety			Safety Dog Wrench, Extra	Dog with Either Screw	
		Size		List Price, Each	Size		List Price, Each			
		Diam.	Length Under Head		Diam.	Extreme Length				
21	3/8	7/16	1	\$.25	7/16	5/8	\$.20	\$.12	†\$ 1.00	21
22	1/2	9/16	1 1/4	.30	9/16	13/16	.24	.14	† 1.10	22
23	3/4	5/8	1 5/8	.37	5/8	1 1/16	.30	.16	† 1.20	23
24	1	5/8	2	.40	5/8	1 1/4	.36	.16	† 1.40	24
25	1 1/4	3/4	2 1/4	.55	3/4	1 3/8	.42	.20	† 1.70	25
26	1 1/2	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	† 2.00	26
27	1 3/4	7/8	2 7/16	.75	7/8	1 11/16	.60	.24	† 2.40	27
28	2	1	2 3/4	.95	1	1 7/8	.72	.30	† 2.80	28
29	2 1/2	1 1/8	3	1.15	1 1/8	2	.86	.38	† 3.60	29
30	3	1 1/4	3 1/4	1.35	1 1/4	2 1/8	1.04	.48	† 4.60	30
31	3 1/2	1 3/8	3 1/2	1.60	1 3/8	2 1/2	1.26	.60	† 6.00	31
32	4	1 1/2	3 3/4	1.90	1 1/2	2 5/8	1.50	.74	† 9.00	32
33	5	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 16.00	33

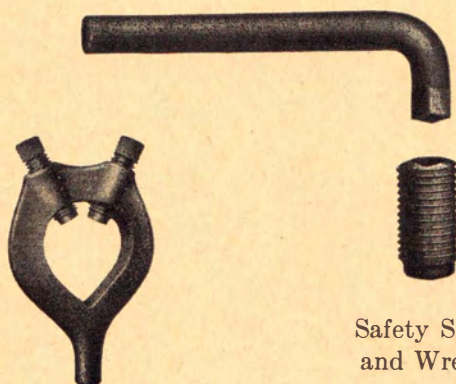
† Unless otherwise specified, a Wrench will be supplied with Safety Dogs at extra price stated in table.

♦REGISTERED TRADE MARK

Weights, page M.

1-46

WILLIAMS' ♦"VULCAN"
 DROP-FORGED HEAVY SERVICE LATHE DOGS
 WITH STRAIGHT TAIL AND TWO SCREWS



Non-Safety Dog
 with
 Square Hd. Screw

Furnished with
 Interchangeable Screws,
 either Safety or Non-Safety



Safety Dog and Screws

Safety-for-the-operator and better balance when on the lathe are material improvements which have been attained in this design.

The Screws are of special steel, hardened and tempered, and are threaded U. S. Standard, except that those above 1 inch diameter have eight threads per inch. They are supplied in two types, Safety and Non-Safety, which are interchangeable in corresponding Dogs.

When ordering extra Screws, please state whether Safety or Non-Safety type is wanted; if latter, specify also diameter of screw.

Dogs with Safety Screws will be supplied, unless otherwise specified.

No.	Capacity	SCREWS						LIST PRICE		No.
		Square Head			Safety			Safety Dog Wrench, Extra	Dog with Either Screw	
		Size		List Price, Each	Size		List Price, Each			
		Diam.	Length Under Head		Diam.	Extreme Length				
132	4	1 1/2	3 3/4	\$1.90	1 1/2	2 5/8	\$1.50	\$.74	†\$16.00	132
133	5	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 24.00	133
134	6	1 5/8	4 1/2	2.25	1 5/8	3 3/8	1.80	.90	† 34.00	134

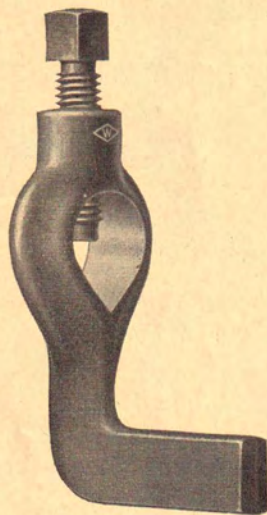
† Unless otherwise specified, a Wrench will be supplied with Safety Dogs at extra price stated in table.

♦REGISTERED TRADE MARK

Weights, page M.

WILLIAMS' ♦"VULCAN"
 DROP-FORGED MILLING MACHINE DOGS

With Flat, Bent Tail



These are designed for taper work carried between centers on milling machines, the flat tail works in the head-slot without the back-lash unavoidable in Dogs with taper tail. They serve also as a heavy pattern Lathe Dog.

The heads are made of sufficient size to permit re-tapping for one or two larger sizes of screws as the threads wear.

The Screws, threaded U. S. Standard, are made of a special grade of steel and are hardened and tempered.

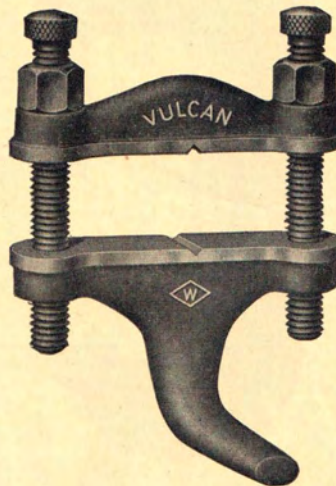
Number	Capacity	Screw		LIST PRICE		Number
		Diameter	Length Under Head	Extra Screws, Each	Dog Complete	
42	1/2	3/8	1 1/4	\$.20	\$1.10	42
43	3/4	7/16	1 5/8	.24	1.20	43
44	1	1/2	2	.30	1.40	44
45	1 1/4	1/2	2 1/4	.32	1.70	45
46	1 1/2	9/16	2 3/8	.36	2.00	46
47	1 3/4	5/8	2 1/2	.40	2.40	47
48	2	5/8	2 7/8	.40	2.80	48

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♦REGISTERED TRADE MARK

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WILLIAMS' ♦ "VULCAN"
 DROP-FORGED CLAMP LATHE DOGS



These are drop-forged from a strong, tough grade of carefully selected steel and are heat-treated after forging to increase further their strength and reduce the liability of springing.

The Screws, threaded U. S. Standard, are made of a special grade of steel, and are hardened and tempered. The Nuts are case-hardened. Extra Screws and Nuts carried in Stock.

The Nuts furnish ready means of arrangement for the minimum projection of Screws beyond the body of Dog and thus lessen the danger to the operator when tool is in use.

Number	Capacity		Screws		LIST PRICE, Dog Complete	Number
	Maximum Opening	Distance Between Screws	Diameter	Length Under Head		
61	1 5/8	1 3/4	5/16	2 3/4	\$3.00	61
62	1 7/8	2 1/4	3/8	3 5/16	4.00	62
63	2 1/2	2 3/4	7/16	4 1/4	5.00	63
64	3 1/4	3 1/2	1/2	5 3/8	7.00	64

Weights, page M.

♦ REGISTERED TRADE MARK