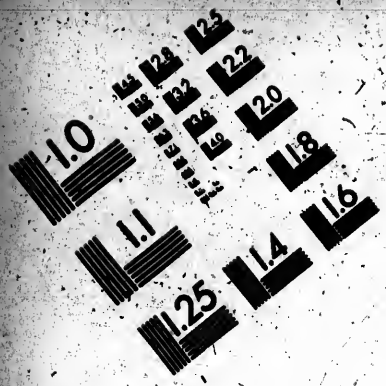

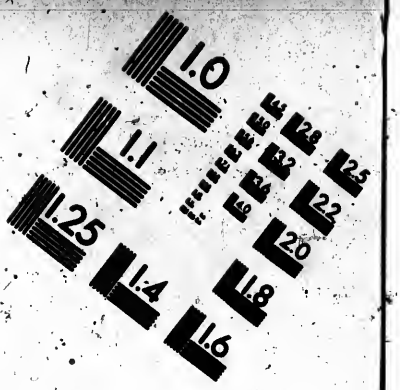

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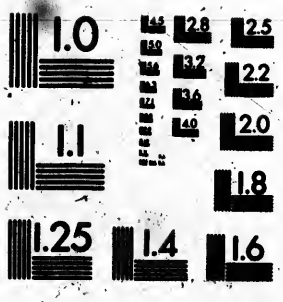

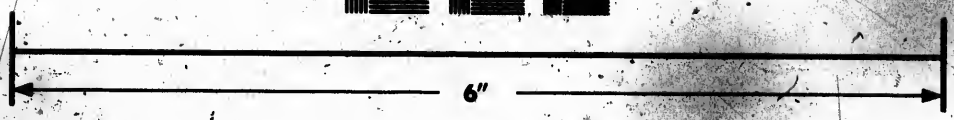

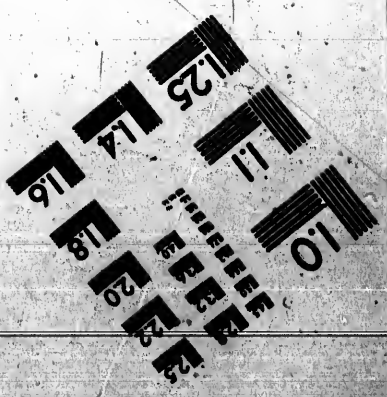

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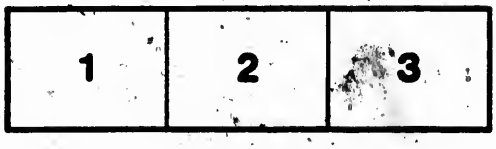

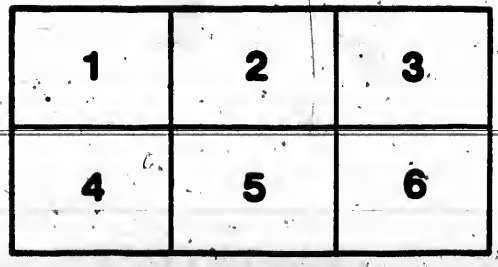

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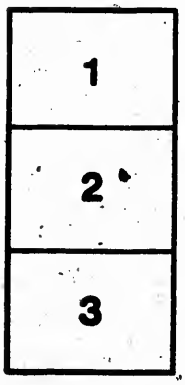

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ALL PREVIOUS LISTS AND DISCOUNTS CANCELLED.

1898 ILLUSTRATED CATALOGUE OF THE

Norton PATENT BALL-BEARING LIFTING JACKS

For all classes of heavy lifting, and

IMPROVED "SURE DROP" TRACK **Jacks**

Norton Ball-Bearing Jack.

10-ton "Sure Drop" Track Jack.

MANUFACTURED BY

A. O. NORTON,

167 Oliver St., BOSTON, MASS., U. S. A.,

and Coaticook, Prov. Quebec, Canada.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

We manufacture **Jacks** for all kinds of heavy lifting

WE MAKE ONE CLAIM ONLY FOR THE

NORTON PATENT BALL-BEARING SCREW JACKS AND SURE DROP TRACK JACK

THEY ARE THE BEST IN THE WORLD

Economy is Wealth.

The total cost for repairs on over 4,000 Ball-Bearing Jacks, from 10 to 70 tons Capacity (some of them in service since 1891) in Railway and other heavy service from January 1897 to January 1898, average 29 CENTS PER JACK FOR THE YEAR. Compare this with the cost of alcohol and repairs on hydraulic jacks in the same service, and NOTE THE DIFFERENCE.

Manufactured by **A. O. Norton,** 167 OLIVER STREET, BOSTON, MASS., U. S. A. and COATICOOK, PROV. QUEBEC, CANADA.

Prices subject to change without notice.

February 1, 1898. Cancel all previous Lists.

THE NORTON BALL-BEARING RATCHET AND SCREW JACKS.

THE NORTON BALL-BEARING RATCHET SCREW JACKS are constructed on an entirely different principle from any other jacks in the world; as will be seen by the cuts, they have a stationary standard and sliding sleeve fitting over the same. The standard has a removable nut (usually Phosphor Bronze) fitted within it and resting on a shoulder, in which the screw turns, (the standards are *hollow*, and can be *filled* with *oil*, thus keeping the screw constantly lubricated.) To the upper end of the screw is fastened a steel gear; a hardened tool steel plate encircles the *hub*, and rests on the body of said gear, on which are placed circular trains of hardened steel balls, held in place by rings between the rows (as shown in cut.) In the top or head of the sliding sleeve (which is bored to fit standard) is placed another hardened tool steel plate with a hole in the centre through which the end of the screw projects. . . . .

WHEN the Jack is assembled the sleeve slides down over the screw and standard, the bearing plate in the head resting on the balls on the plate on the gear, so that the whole weight is carried by the balls (between the steel plates,) which act as a thrust-bearing between the screw and head of sleeve, reducing the friction and increasing the lifting power of the Jack.

The sleeve which revolves on the standard, allowing the lever to be used from either side, carries the load, and is raised or lowered by the screw, which is turned by means of a gear on the ratchet shaft engaging with the gear on the screw, and operated by a reversible ratchet and lever having the *up* and *down*, or "*pump-handle*" *motion*. This is the only screw Jack made having this motion of the lever. The sleeve at the lower end is provided with a "*stop-dog*" or pawl, which prevents the screw from being run out of the nut.

The advantage of this sliding sleeve cannot be *over* estimated. It takes all the *side strain* off the screw, preventing it from *bending*, and also protecting all the working parts from *sand*, *coal-dirt* and *water*, making it the *only Jack suitable* to carry on *locomotives*.

All the Norton Railroad Jacks are steel and malleable iron throughout.

Why we claim the Norton Jacks are Superior to all others, especially for Railway service.

Because of their **simplicity, durability** and **cheapness.**

They are the **lightest** Ratchet Jacks in the world of same capacity.

Cost **less** for maintenance, are **always safe** and **reliable,** even in the hands of careless and unskilled workmen, as the screw holds the load without blocking, and cannot **drop** or **run down.** This is a very important feature in a Railway Jack and should not be overlooked.

The screws are **self-lubricating.** Ball-bearings **never wear,** and seldom need oiling or attention.

They can be operated by ordinary workmen without previous instructions.

They can be left standing in **tool car** or **shop,** or carried on **locomotives** for **months** at a time **without any attention whatever,** and be found **ready** for **service** when needed, as there is no **alcohol, packing** or **valves** to **keep** in **order.**

All parts are **interchangeable,** and can be replaced in a few minutes by ordinary workmen at trifling cost without returning to factory.

NORTON BALL-BEARING RATCHET SCREW-JACKS.

This cut shows the construction of the Norton Ball-Bearing Ratchet Screw Jack.

REPORT OF GOVERNMENT TESTS OF NORTON BALL-BEARING JACKS.

Report of Tests of 20-ton, Style A, Ball-Bearing Jack.

(COPY.) ORDNANCE DEPARTMENT, U. S. A.

Report of Mechanical Tests made with the U. S. Testing Machine, capacity 800,000 pounds, at Watertown Arsenal, Mass., April 30, 1891, for A. O. Norton, Boston, Mass.

Lifting Jacks manufactured by A. O. Norton. No. 7283 Ball-Bearing Railroad 26in. Jack, **Style A,** 50,400 pounds were raised by operating the lever. The Jack was then removed from the testing machine, examined and found in good working condition. Returned to the testing machine and loaded, increasing the pressure with the machine to 240,000 pounds total. Nut disabled. Ball-bearing in good working condition.

(Signed) A. L. VARNEY,
Capt. Ordnance Dept. U. S. A., Commanding.

Correct. (Signed) J. E. HOWARD.

Report of Test of Cone-Bearing 15-ton Jack, Style G.

Lifting Jacks manufactured by A. O. Norton. No. 7286, Carpenters' and Builders' Jack, **Style G,** 31,800 pounds raised with the lever; 50,000 pounds load applied with the testing machine. Jack in good working condition after test.

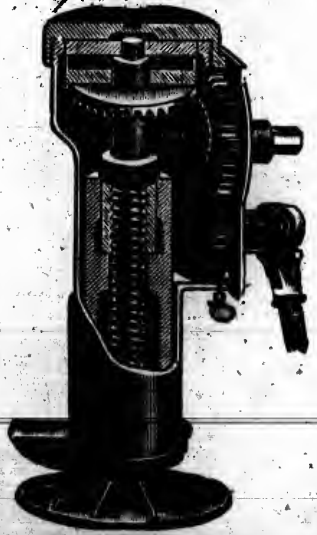
(Signed) A. L. VARNEY,
Capt. Ordnance Dept., U. S. A., Commanding.

Correct. (Signed) J. E. HOWARD.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

BALL-BEARING COMPOUND BRIDGE JACKS. 15 to 70 Tons.

Special Jacks any style or Capacity made to order at short notice.



70-ton Bridge Jack.

25-ton Bridge Jack.

15-ton Bridge Jack.

40-ton Bridge Jack.

BALL BEARING BRIDGE JACKS.

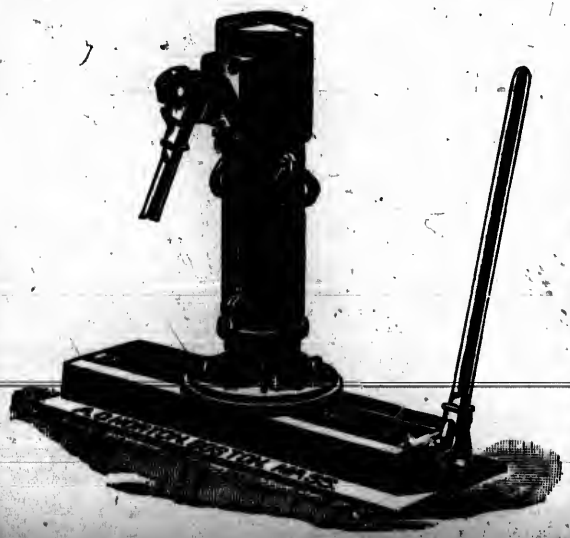
15 TO 70 TONS CAPACITY.

Capacity	Height	Rise	Diameter of Base	Diameter of Head	Weight	List Price	Discount
15 tons.	22 in.	12 in.	8x9 in.	5½ in.	90 lbs.	60.00	
20 "	22 "	12 "	8x9 "	5½ "	90 "	75.00	
25 "	26 "	14 "	8x9 "	5½ "	110 "	96.00	
40 "	21½ "	10 "	8x9 "	8 "	180 "	140.00	
50 "	26 "	12 "	14 "	10½ "	250 "	150.00	
60 "	26 "	12 "	14 "	10½ "	300 "	175.00	
70 "	26 "	12 "	14 "	10½ "	300 "	200.00	

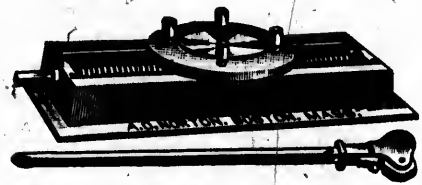
These Jacks are designed for extra heavy bridge and other work, and are made with great care from the best material, and the capacity is fully guaranteed.

When raising light load (30 to 40 tons) use ratchet on *upper* shaft, which gives *more speed.*

When full power of Jack is required, use ratchet on *lower* shaft.



BALL-BEARING TRAVERSING JACK "C"
35 TONS, 20 In. TRAVERSE.



15-In. Traversing Base. Height 4 In.

LIST PRICE OF STEEL TRAVERSING BASE.

Traverse	Weight	List Price	Discount
20 inches.	124 pounds.	$40.00	
15 "	60 "	35.00	

BALL-BEARING TRAVERSING JACKS, COMPLETE.

Style of Jack	Capacity	Height over all	Rise	Traverse	List Price	Discount
A	15 tons.	30 inches.	14 inches.	15 inches.	$ 95.00	
F	15 "	28 "	10 "	20 "	100.00	
A	20 "	30 "	14 "	20 "	120.00	
N. A.	25 "	30 "	14 "	20 "	130.00	
C, 26 in.	35 "	30 "	14 "	20 "	165.00	
B. J.	60 "	30 "	12 "	20 "	215.00	
R	20 "	24 "	9 "	20 "	110.00	

CONE-BEARING TRAVERSING JACKS, COMPLETE.

Style of Jack	Capacity	Height over all	Traverse	List Price	Discount
N. J.	10 tons.	24 inches.	15 inches.	$50.00	
G	15 "	26 "	15 "	60.00	
D	10 "	26 "	15 "	55.00	

These Jacks can be taken off the bases and used *separately if desired*. It is the most Complete Tool Car Outfit in the market. Jacks are *Self-Lubricating* and *require no attention* whatever when left in car or shop for months at a time, winter or summer.

Any Size, Height or Capacity Jack fitted to either base.

35-TON BALL-BEARING JACK.

Style C, 31-inch.

STYLE C, BALL-BEARING JACKS, 35 TONS.

Style	Height Closed	Rise	Diam. of Base	Weight	Capacity	List Price	Hook Extra
C	26 in.	14 in.	12 in.	165 lbs.	35 tons	$125.00	$8.00
C	31 "	18 "	12 "	190 "	35 "	135.00	8.00

Discount_____

This Jack is designed for heavy locomotive and wrecking car service, pulling well pipes and all other heavy work.

Style C, 26-inch.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

BALL-BEARING JACK, STYLE N. A., 25 TONS.

WITH HOOK FOR GROUND LIFT.

This Jack with square base at same price.

Style N. A. Ball-Bearing Jack, 25 tons

Style	Height	Rise	Diameter of Base	Weight	Capacity	List Price	Hook Extra	Discount
N. A.	26 in.	14 in.	10 in.	105 lbs.	25 tons.	$90.00	$6.00	

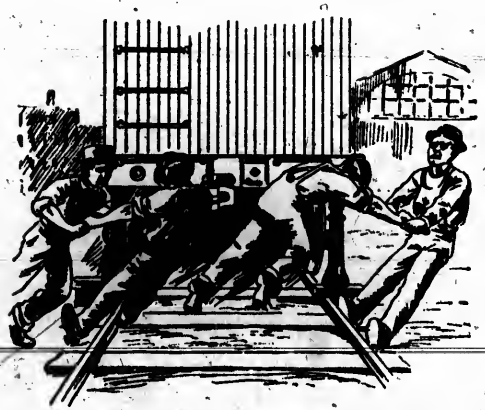
If you carry a Jack on a locomotive, why not carry one that will **keep in order,** and do the work *whenever required?*

The construction of the Norton Jack is such that it can be carried on locomotives for months at a time, exposed to the coal-dirt and action of the weather, and be found ready for service when needed.

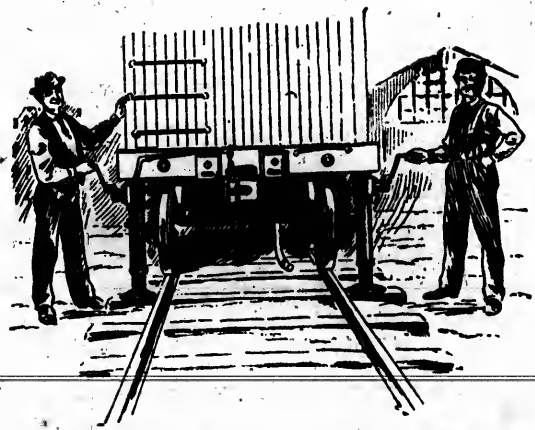
WE MAKE A SPECIALTY OF EQUIPPING LOCOMOTIVES

With any special height or capacity required, at short notice.

Estimates furnished and contracts taken for equipping entire lines.



The old way.



The way the Norton Jack does it.

s it.

Style H, 20 and 25 tons, and Style Z, 15 tons.

BALL-BEARING CAR JACKS, Styles H and Z

STYLE H, 20 and 25 TONS.

Style	Height	Rise	Diam. of Base	Weight	Capacity	List Price	Hook Extra	Discount
H	33 in.	20 in.	12 in.	135 lbs.	20 tons	$90.00	$6.00	
H	33 "	20 "	12 "	135 "	25 "	95.00	6.00	

STYLE Z, 15 TONS.

Z	33 in.	20 in.	12 in.	135 lbs.	15 tons	$75.00	$6.00	

Style **Z** is the same pattern as **H**, except it has large gear on ratchet shaft, giving it **double speed.**

These Jacks are intended for **car** work, where long lift is needed, and can be used with **crank** on **empty cars** or light load, which is much quicker than pumping up with lever. Another saving of time is, the car can be raised and **left standing** on the **Jacks without blocking,** while trucks are changed.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

BALL-BEARING JACKS,

15 AND 20 TON.

Style R
15 and 20 tons

Style B
15 and 20 tons
Square Base. 4 Feet-lift

Style B
15 and 20 tons
Plain Round Base

Style A
15 and 20 tons
Round Base

Style M
15 and 20 tons
Square Base

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

15 and 20 TON BALL-BEARING JACKS.

In ordering, specify style letter, capacity and style base required.

All Jacks furnished with *square* or *round* base at same price.

Style	Capacity	Height	Rise	Diameter of Base	Weight	List Price	Hook Extra	Discount
A	15 ton	26 in.	14 in.	10 in.	90 lbs.	$70.00	$6.00	
A	20 "	26 "	14 "	10 "	90 "	80.00	6.00	
M	15 "	26 "	14 "	10 "	90 "	70.00	6.00	
M	20 "	26 "	14 "	10 "	90 "	80.00	6.00	
B	15 "	22 "	12 "	10 "	80 "	60.00	6.00	
B	20 "	22 "	12 "	10 "	80 "	70.00	6.00	
B	15 "	22 "	12 "	10 "	85 "	65.00	Foot cast on	
B	20 "	22 "	12 "	10 "	85 "	75.00	" "	
R	15 "	20 "	9 "	12 "	80 "	60.00	$5.00	
R	20 "	20 "	9 "	12 "	80 "	70.00	5.00	

DOUBLE-SPEED BALL-BEARING JACK.

Style F
15 tons, with
Ground Lift

STYLE F, BALL-BEARING JACK.

Style	Height	Rise	Diameter of Base	Weight	Capacity	List Price	Discount
F	24 in.	10 in.	10 in.	115 lbs.	15 tons	$60.00	

This Jack has large gear on ratchet shaft, giving it *double speed.* It is malleable iron and steel throughout, *extra strong,* and is especially adapted to *Electric Plants,* power houses on Electric Railways, and for handling heavy machinery, stone, etc.

RATCHET SCREW JACKS

WITH CONE BEARING

are made on the same principle as the Ball-Bearing, except the load is raised by the end of the screw, which rests on a hardened steel *step*, or bushing, in the head of the sliding sleeve. Up to fifteen tons they are as good as the Ball-Bearing, except they need a little more attention in *oiling*. *All are fully guaranteed.*

This cut shows construction of Cone-Bearing Ratchet Jacks.

Directions for Cone-Bearing Jacks.

Keep working parts well oiled. Take *particular pains* with the *top hole* as all the *weight* is borne on the *end* of the *screw*. In oiling the top hole, first fill the hole with oil, then *raise* the *shell* a little to allow the oil to settle well on end of screw. *Do not neglect this and use plenty of oil.* Also see that the *screw* is kept well oiled. *Keep gears well in mesh.* **To adjust gears**—Loosen four nuts on cap bolts and check nut on set screw at bottom of cap. Turn set screws till gears are as close in meshes as they will run freely. Then tighten check nut on set screw to hold gears in place, and tighten the nuts on cap-bolts. To take the Jack apart, take the nuts off holding cap, remove the ratchet and gear, then lift the shell up, pressing bottom dog to let it pass groove in top of standard.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

10-TON CONE-BEARING RATCHET JACKS.

STYLE N. J.

These Jacks are made with square or round base at same price.

Style N. J.
10 ton. 20 in.

Style N. J
10 ton. 14 in.
20

Style N. J. Bridge Base.
10 ton.

A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

NORTON 10 TON CONE BEARING STREET RAILWAY JACK.

ALWAYS SAFE, READY AND EFFECTIVE.

Style	Height Over All	Height of Foot from Ground.	Rise	Size of Base	Weight	Capacity	List Price	Discount
N. J.	20 in.	3 in.	10 in.	8 in.	60 lbs.	10 tons	$24.00	
N. J. Sq. Front Base	20 "	3 "	10 "	6 x 8 in.	60 "	10 "	24.00	
N. J.	14 "	3 "	7 "	6 x 10 in.	40 "	10 "	22.00	

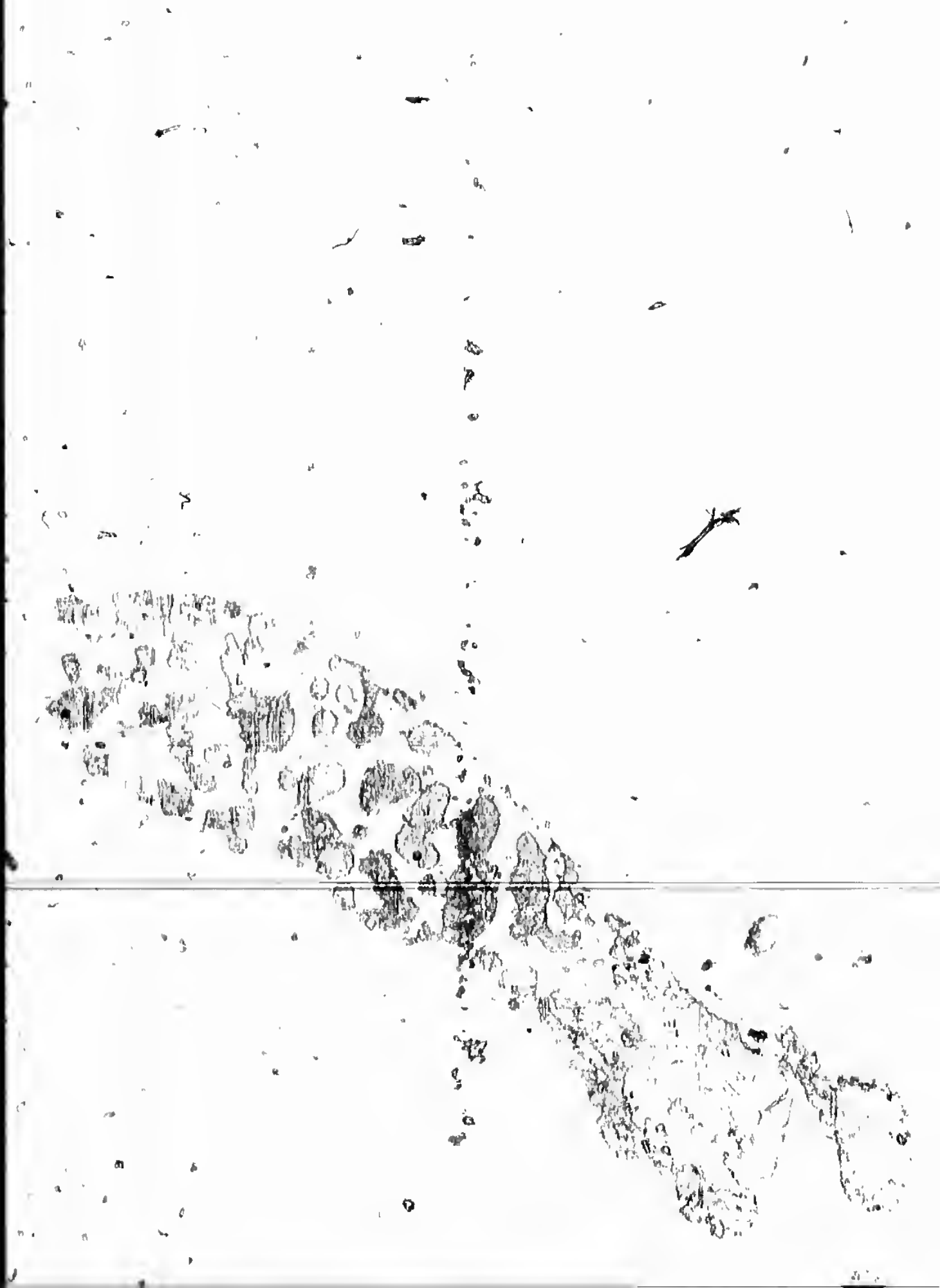
This Jack is designed for Electric and Street Railway service, and has been adopted by the West End Street Railway Co., of Boston, for use on their lines.

It is equally well adapted for Carpenters and Builders, Boiler Makers, Truckmen, or for any other work that can be done with Jacks.

These Jacks are made of malleable iron and steel, and have hardened tool steel bearing for end of screw.

CAPACITY, MATERIAL AND WORKMANSHIP GUARANTEED.

Any Jack that may become broken (with fair usage) within one year, will be repaired free of charge, or duplicate part furnished if too far away to return Jack.



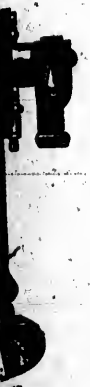
15-TON CONE-BEARING JACKS.

STYLE G.

15-ton Style G.
Without Hook.

15-ton Style G.
Foot-Lift Jack.

15-ton Style G
With Hook.



A. O. Norton, Boston, Mass., U. S. A., and Coaticook, P. Q., Canada.

15-TON CARPENTERS' AND BUILDERS' CONE-BEARING JACKS

Made from best quality Malleable Iron and Steel throughout.

The cheapest and most effective Ratchet Jack in the world.

CAPACITY GUARANTEED.

Price List of Carpenters' and Builders' Jacks.

In ordering, specify what style base is wanted and whether with or without hook.

Style	Height	Rise	Base	Weight	Capacity	List Price	Hook Extra	Discount
G	22 in.	12 in.	10 in.	80 lbs.	15 tons	$25.00	$5.00	
G	22 "	12 "	10 "	85 "	15 "	28.00	Foot cast on Shell	

CONE-BEARING CAR INSPECTOR'S OR JOURNAL JACKS.

These Jacks will save time enough in a month to pay for themselves. No railway can afford to be without them. THE MOST POWERFUL SHORT LIFT JACKS ON THE MARKET.

Style D, 10 Tons.

Style P, 8 Tons.

Style Q, 8 Tons.

Style	Height	Rise	Weight	Capacity	List Price	Discount
D	11 in.	6 in.	40 lbs.	10 tons	$20.00	
P	10 "	5 "	21 "	8 "	18.00	
Q	7 "	3 "	17 "	8 "	18.00	

CKS.

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10-ton Track Jack, No. 5.

Capacity . . .	10 Tons.
Height . . .	24 Inches.
Rise of Bar . .	15 Inches.
Size of Bar .	1¾ x 1⅜ In.
Weight	60 Lbs.
Price	$14.25
Discount.....	

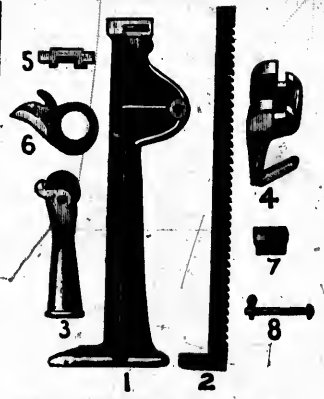
Norton's "Sure Drop" Track Jack No. 5

10 Tons Capacity.

The body of the jack is Malleable Iron, with extra strong base. Lifting Bar is made from best quality of **Forged Steel,** and the teeth are accurately milled. Pawls of Steel. **No Springs** to wear or break, and no loose pins. Our lifting device is the easiest, quickest working, and most perfect ever applied to any Track Jack. The tripping device is perfect, and **the only one with a positive trip under all conditions.** It is not necessary to lift the load before it can be dropped, as with other Jacks.

There are less parts to wear, and all parts are interchangeable.

A. O. NORTON, Boston, Mass., U. S. A. and Coaticook, P. Q., Canada.



Net Price List of Track Jack Parts.

No. 1.	Frame, ...	$4.00
" 2.	Steel Bar, ...	5.00
" 3.	Lever Socket, . .	2.00
" 4.	Jaw	1.00
" 5.	Holding Pawl, . .	.75
" 6.	Lifting Pawl, . . .	1.00
" 7.	Top of Bar, . . .	.50
" 8.	Bolt, ...	.25

NORTON'S AUTOMATIC LOWERING JACK No. 1.

15-ton Automatic Lowering Jack

CAPACITY 15 TONS.

This Car Repairer's and General purpose Jack is light, portable, easily and quickly operated. Lifts and lowers with absolute safety, and the direction can be instantly reversed at will of operator. It works equally well on head or ground lift. The frame is malleable iron with extra strong base. Raising Bar is of best quality of forged steel, with accurately milled teeth. Pawls are steel, and all parts are interchangeable.

Style	Capacity	Height with Bar Down	Size of Bar	Raise of Bar	Weight	Price	Discount
No. 1	15 tons	30 in.	2 x 1¼ in.	20 in.	95 lbs.	$28.00	

Repairs for Norton Ratchet Screw Jacks.

No 1. Shell. No. 1 B. Bottom Part of Shell.
No. 2. Standard. No. 1 T. Top " " "

1 B

1 T

No. 2.

No. 1.

LIST NUMBERS FOR PARTS FOR REPAIRS.

The above Cuts refer to all Patterns of Ratchet Screw Jacks. In ordering Repairs, give the *Style Letter* of Jack, and *Capacity* of the Jack with the *Number* and *Name* of part required. Prices of Repairs vary according to size of the Jack, and may be had upon application.

Repairs for Norton Ratchet-Screw Jacks.

No. 3. Nut
" 4. Cap
" 5. Lever Socket
" 15. Pawl Bolt
" 16. Cap Stud and Nut
" 21. Inside Ring
" 27. Stop Dog
" 28. Stop Dog Bolt
" 32. Steel Bushings used in **Cone-Bearing Jacks**
" 6. Gear with Hub
" 7. Gear with Shaft

No. 9. Ratchet
" 10. Pawl
" 11. Cotter
" 12. Handle
" 13. Reversing Pin
" 14. Spring
" 18. Bottom Bearing Plate
" 19. Top Bearing Plate
" 30. Adjusting Screw
" 24. Steel Ball

The above cuts refer to **all patterns** of Ratchet-Screw Jacks. In ordering repairs give the **Style Letter**, and Capacity of Jack, with the **Number** and **Name** of part required. Prices of parts vary according to the size of Jack, and may be had upon application.

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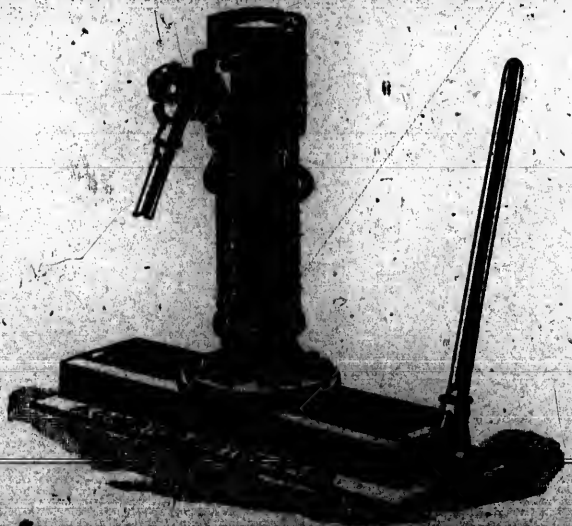
THE MOST COMPLETE LINE OF **JACKS** MANUFACTURED IN THE UNITED STATES.

15-ton Automatic Lowering Jack.



Traversing Jacks, 15 to 70 tons Capacity.

25-ton Foot-Lift Bridge Jack.