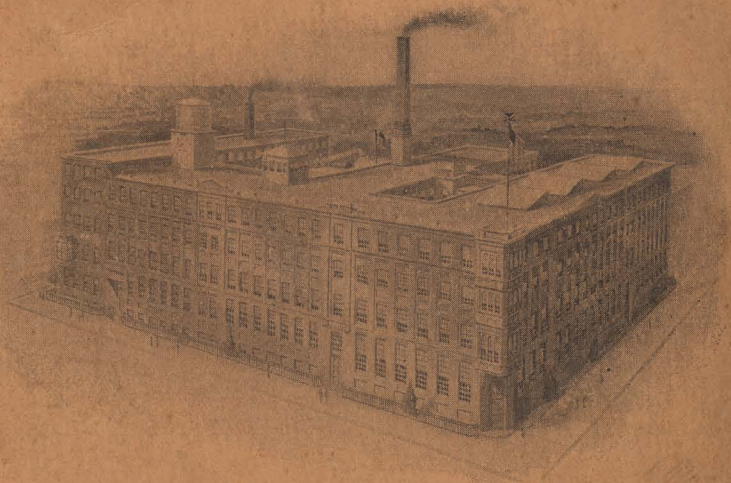


INSTRUMENTS FOR FOREST WORK



FACTORIES: HOBOKEN, N. J.

KEUFFEL & ESSER CO.,

MANUFACTURERS

Branches:
111 Madison St., Chicago,
708 Locust St., St. Louis,
303 Montgomery St.,
San Francisco.

127 FULTON ST.,

NEW YORK.

Second Edition

1905

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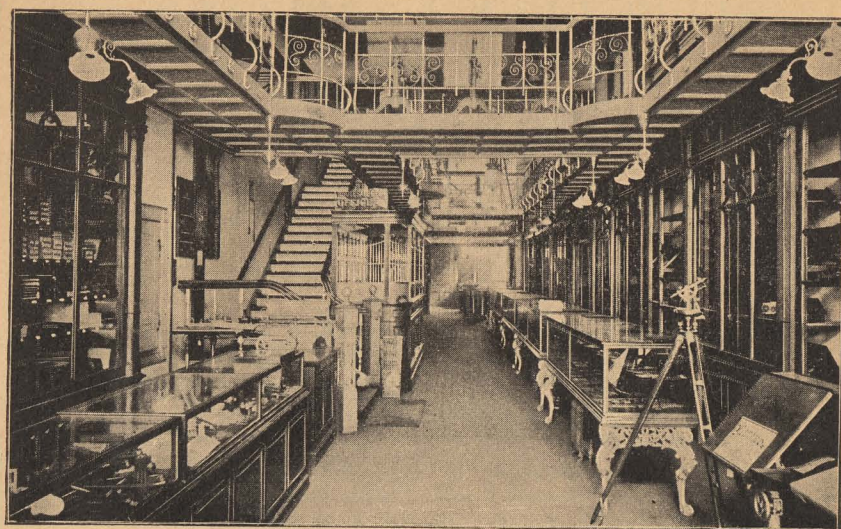
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(RETAIL DEPARTMENT, FULTON STREET.)

NEW YORK, January, 1905.

The steady increase in the demand for instruments and tools for

FOREST WORK

has induced us to devote a separate catalogue to this branch. We have had the privilege of participating in the developing of many instruments used and recommended by the Bureau of Forestry in Washington, and take this occasion to extend our thanks to the several forest experts who have aided us by their advice and suggestions.

It is our aim to gain and maintain for this line the same high reputation which we are enjoying since many years for our

Drawing Materials, Surveying Instruments, Measuring Tapes.

These are described in our General Catalogue (500 pages), which we send free on application.

Some of the articles in our General Catalogue which are commonly used also for forest work, are repeated in this list under the same numbers which they bear in our general catalogue.

We hope that we shall succeed in meriting the patronage of those who are interested in the articles here described.

Very respectfully,

KEUFFEL & ESSER CO

NOTICE.

The prices in this Catalogue are Net Cash in New York, Chicago, St. Louis or San Francisco, and are subject to change without notice.

In ordering by this Catalogue it is necessary to give the number with the price of the article.

Remittances can be made either by bank-draft, payable to our order, by Cash sent through any of the Express Companies, or by Post Office or Express Money Order. If Cash is sent by mail, the letter should be registered.

Remittances are in all cases at the risk of the sender.

New accounts can be opened only with firms rated in the commercial reference books, unless the order is accompanied by other satisfactory references.

We mention this because new industrial enterprises, although very important, are often not listed in the reference books, which causes much delay in obtaining information.

For goods ordered to be sent by express, the bill to be collected on delivery, a remittance to cover packing and expressage both ways is required with the order. Express-Charges for Collection will be added to the amount of the bill.

By sending full remittance with the order, buyers will save the charges for collecting the amount of the bill, and will avoid delay in delivery.

For special goods to be made to order and not listed by us, we invariably require payment when the order is placed.

Small articles can be sent by mail in open package at one cent per ounce, and this postage must be added to the price of the goods so ordered.

We are not responsible for goods lost or injured in transmission by mail.

Registering mail matter lessens the risk of loss.

The "Home Ins. Co." of this city insures the delivery of mail packages in the U. S. and Canada at the rate of 5 cents for each \$5.00 of value. We insure in this way when so ordered or when insuring seems advisable.

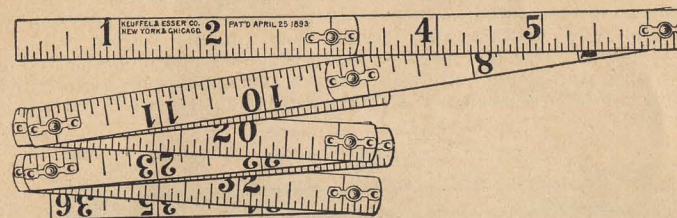
As we use every precaution in packing goods, no allowance can be made if goods are damaged in direct shipment or in enclosure through other houses.

Boxes or crates, which may be required for packing, will be charged at cost.

We must decline to send goods on approval, but we hold ourselves accountable for the correctness of the descriptions of our goods in this catalogue.

Should any of our goods not prove satisfactory, we solicit prompt information; all complaints shall have our careful attention, as we aim to satisfy our patrons in every respect, in order to maintain the reputation we are now enjoying.

K & E FOLDING POCKET RULES. PATENT SPRING JOINT STEEL RULES.



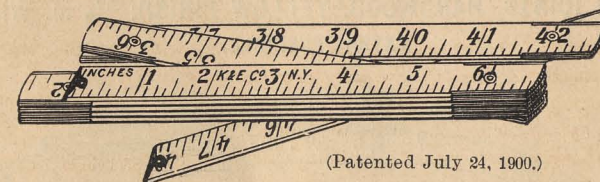
No. 1727.

These Rules are made of carefully tempered spring steel, $\frac{3}{16}$ in. wide and graduated on both sides. They fold up smaller than any other rule, so that the 12 fold three-foot rule is only $\frac{3}{16}$ in. thick x $3\frac{3}{4}$ in. long when folded.

The divisions are sharp and accurate and the numbering is very distinct. It runs in opposite directions on the two sides. The aligning springs at the joints hold the rule in a rigid straight line when it is opened, without in any way interfering with folding it.

1725.	K & E Steel Pocket Rule, 1 foot, 4 fold div.	$\frac{1}{16} \times \frac{1}{16}$ in.	each	\$	25
1726.	do. do. 2 " 8 " "	do. " "	"	"	50
1727.	do. do. 3 " 12 " "	do. " "	"	"	75
1725 D.	do. do. 1 " 4 " "	$\frac{1}{16}$ in. $\times \frac{1}{100}$ ft.	"	"	40
1726 D.	do. do. 2 " 8 " "	do. " "	"	"	70
1727 D.	do. do. 3 " 12 " "	do. " "	"	"	1 00
1728.	do. do. 3 " 12 " "	$\frac{1}{16}$ in $\times$ mm.	"	"	1 00
Leather Sheaths for above rules					05

SPRING JOINTS HARDWOOD, YELLOW FINISH; $\frac{5}{8}$ IN. WIDE.



No.
1730-4.

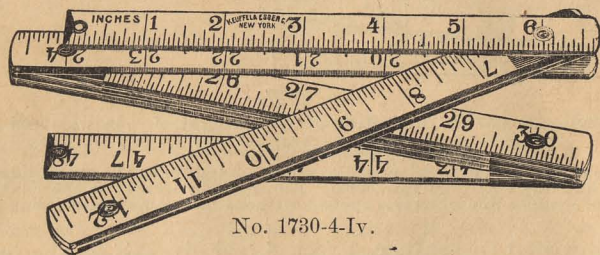
(Patented July 24, 1900.)

1730-2.	K & E Pocket Rule, 2 feet, 4 fold, div.	$\frac{1}{16} \times \frac{1}{16}$ in., metal tips,	\$	25
1730-3.	do. do. 3 " 6 " "	do. " " "	"	35
1730-4.	do. do. 4 " 8 " "	do. " " "	"	50
1730-5.	do. do. 5 " 10 " "	do. " " "	"	60
1730-6.	do. do. 6 " 12 " "	do. " " "	"	75
1730-8.	do. do. 8 " 16 " "	do. " " "	"	1 00
1730-4 F.	K & E Pocket Rule, 4 feet, 8 fold, div.	$\frac{1}{16} \times \frac{1}{16}$ in.		
	numbered feet and inches,	" "	"	50
1730-5 F.	do. do. 5 feet, 10 fold,	do. " "	"	60
1730-6 F.	do. do. 6 " 12 " "	do. " " "	"	75
1730-8 F.	do. do. 8 " 16 " "	do. " " "	"	1 00
1732-4.	K & E Pocket Rule, 4 feet, 8 fold, div.	$\frac{1}{16}$ in. $\times$ mm.	"	50

These rules are provided with spring joints, which hold the rule in a straight line when open, so that vertical or horizontal distances may be easily measured. The ends are provided with metal tips of very practical, patented device. They do not obscure the graduations and are securely fastened in place without rivets, flush with the rule. They preserve the correctness of the rule.

SPRING JOINTS, HARDWOOD, IVORINE FINISH; $\frac{5}{8}$ IN. WIDE.

K & E Ivorine Pocket Rules are similar to the other K & E Folding Pocket Rules, but have a patented white coating on which the black graduations and figures are more distinct and legible than on the yellow rules. This coating is very durable and permanent, resists heat and moisture and can be cleaned with water, alcohol or oil, so that the nice appearance and distinctness of the rule can be preserved. They have the same patented metal tips as the other K & E rules.

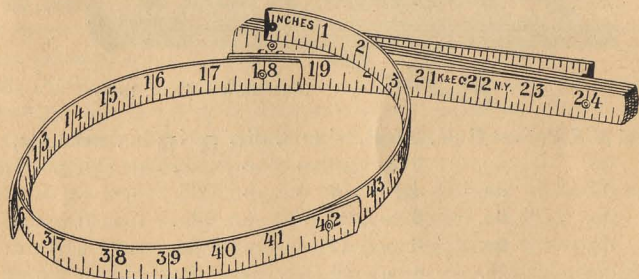


No. 1730-4-Iv.

	with patent metal tips.	each.
1730-4-Iv. K & E. Ivorine Pocket Rule, 4 ft., 8 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in.,		\$ 60
1730-5-Iv. do. do. do. 5 " 10 " " do. "		75
1730-6-Iv. do. do. do. 6 " 12 " " do. "		90
1730-8-Iv. do. do. do. 8 " 16 " " do. "		1 20
1730-100-Iv. do. do. do. 4 " 8 " " $\frac{1}{16}$ in. $\times$ $\frac{1}{100}$ ft.		75
1730-4-M.Iv. do. do. do. 4 " 8 " " $\frac{1}{16}$ in. $\times$ mm.		60

PLAIN JOINTS, HARDWOOD, YELLOW FINISH; $\frac{5}{8}$ in. WIDE.

EXTRA FLEXIBLE.



No. 1733-4.

	with patent metal tips.	each.
1733-2. K. & E. Pocket Rule, 2 feet, 4 fold, div. $\frac{1}{16} \times \frac{1}{16}$ in., extra flexible,		\$ 20
1733-3. do. do. 3 " 6 " " do. " " "		30
1733-4. do. do. 4 " 8 " " do. " " "		40

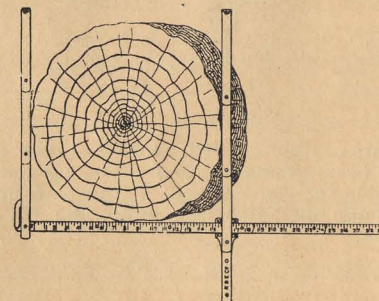
Rules No. 1733 are very thin and flexible, so that curves and circumferences as small as 5 in. diameter, may be easily measured with them. They have no springs.

For other Pocket Rules see our General Catalogue.

TREE CALIPERS.

FOLDING POCKET CALIPERS.

Patented Feb. 18, 1902.



No. 4300.

The Folding Pocket Calipers are of the style of the K & E Ivorine Pocket Rules, described under Nos. 1730-4 Ivorine, etc., on preceding page. They are $\frac{3}{4}$ in. wide by about $\frac{1}{8}$ in. thick with stout steel springs to hold the folds in alignment, and have the patent metal tips. This caliper is also a handy and correct 48 in. pocket rule.

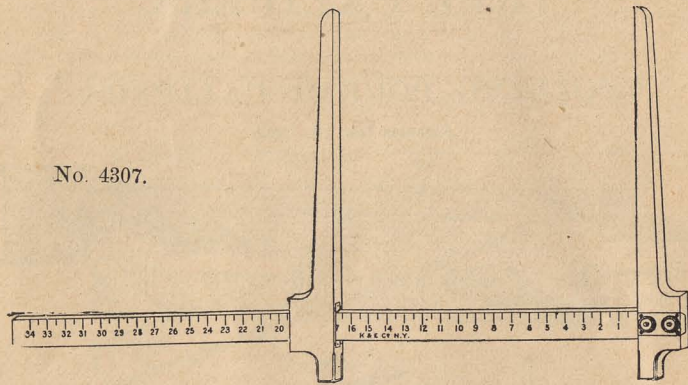
One side of the 8 fold rule is blank for the first 3 folds, and the other 5 folds, the beam of the caliper, are divided to inches and sixteenths. The 3 blank folds are set at right angle to the 5 folds which form the beam and are there held by a pivoted nickelplated brace, as shown in cut, thus forming the fixed arm. The sliding arm is provided with a nickelplated spring plate, which, holds the arm vertical to the beam. It readily passes over the joints of the beam on releasing the pressure on the springplate.

The other side of the caliper is divided over the entire 48 inches into 16ths, to serve as a measuring rule.

4300. Folding Pocket Caliper and Rule, 48 in. Ivorine finish, clamp and spring plate nickelplated, in cloth covered box, $9\frac{3}{4} \times 2 \times 1\frac{1}{2}$ inches each \$ 4 00

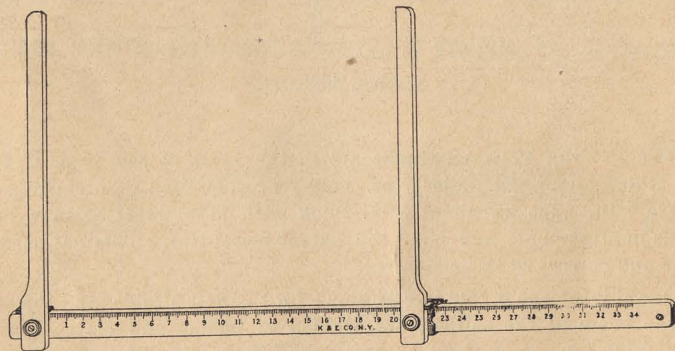
SOLID BEAM CALIPERS.

No. 4307.



- | | | |
|-------|--|---------|
| 4305. | Tree Caliper, fine quality, hardwood, 18 inch, 1 clamp nut, each | \$ 3 15 |
| 4307. | " " " " " 34 " 2 " " " | 4 50 |
| 4309. | " " " " " 50 " 2 " " " | 5 50 |

These calipers are of light-colored hardwood, best workmanship, finely finished, both sides of beam graduated to 10ths inches and plainly numbered. The arms are detachable for convenience in transportation. The stationary arm is held by brass clamp nuts with lock nut. The eye of the sliding arm is brass-lined all around.



No. 4320.

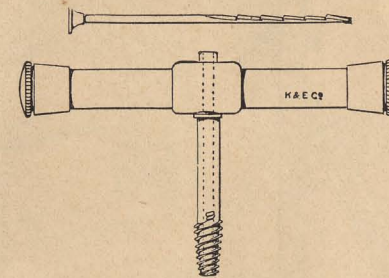


No. 4320 folded.

- | | | |
|-------|---|--------------|
| 4320. | Tree Caliper with folding Arms, 34 inch | each \$ 5 50 |
| 4322. | " " " " " 50 " | " 6 50 |

These calipers are of light-colored hardwood, best workmanship, finely finished, both sides of beam graduated to 10ths inches and plainly numbered. The arms are attached to solid brass mountings. They are held in position by clamp nuts and the sliding arm has a second clamp on the opposite side for clamping it on the beam.

INCREMENT BORER.



No. 4345.

4345. Increment Borer, tubular metal handle 7 in. nickelplated . each \$ 6 00

The 3 in. hollow auger with square shank is of steel and with the steel extractor is stored in the hollow handle, which has two screw caps. The Increment Borer (called "Zuwachsbohrer" by German foresters) serves to extract a plug of wood from the standing tree to determine its rate of growth.

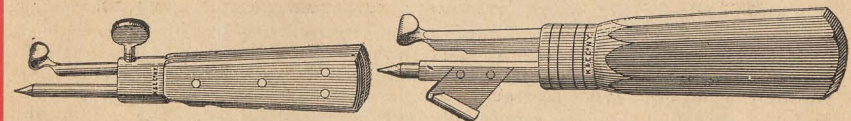
STEM ANALYSIS RULES.



No. 4348.

- | | | |
|-------|---|--------------|
| 4347. | Stem Analysis Rules, 12 in., brass, nickelplated, engine divided, one edge to 10ths of inches, the other to millimeters | each \$ 2 50 |
| 4348. | Stem Analysis Rules, 12 in., like No. 4347 but with centering pin on the 10ths inches edge | " 3 50 |

TIMBER SCRIBES.

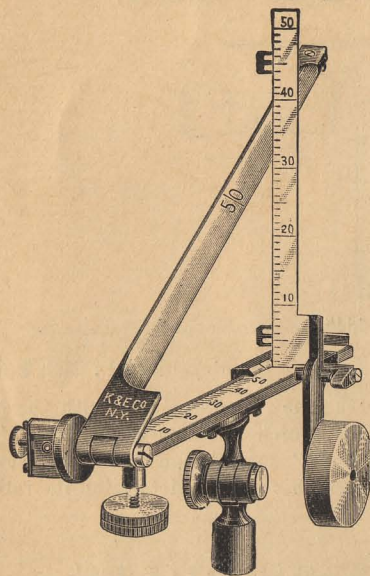


No. 4350.

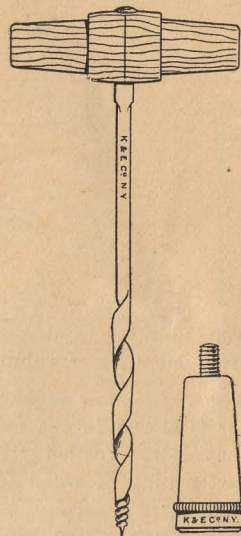
4352.

- | | | |
|-------|--|------------|
| 4350. | Timber Scribe, wooden handle, small, (5 in.) | each \$ 75 |
| 4352. | " " " " " large, (6½ ") | " 1 00 |

HYPSONOMETERS.



No. 4400.



No. 4402. 4404.

4400. Hypsonometer (after Klausner). Brass, graduated surfaces silvered, in wooden box $8 \times 2\frac{3}{4} \times 2\frac{3}{8}$ inches . . . each \$26 00

This Hypsonometer offers the advantage over most others that the total height of the tree or other object can be read direct from one scale and that it does not require the adding of the readings above and below the observer's level. The weighted altitude-scale is much steadier in the wind than a plumbbob.

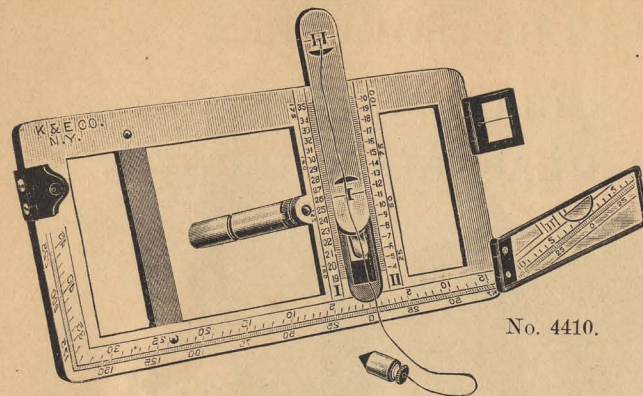
It is particularly adapted in cases where necessity of haste or the roughness of country make the use of a tripod impracticable. The results obtained are more accurate when using a tripod than without one.

This Hypsonometer consists of a base rule (6 in. long), a hinged sighting rule and an altitude-scale held vertical by a weight. The base rule is graduated up to 60 equal parts, each part divided to halves, forming the distance scale. It carries a slide with index line, to which the weighted altitude scale is attached. The altitude-scale is graduated to 50 equal parts, each part divided to halves. The graduations may be read as yards, meters, feet or in any other unit, depending on the unit adopted in measuring the base line (from object to observer). The slide of the altitude-scale is set on the distance scale to correspond to the measured base line. The sighting rule is hinged to the near end of the base rule, and like the base rule, has a hair-line sight at its further end. At the joint of these two rules is a revoluble peep-sight, which can be directed to either of the two hairlines by turning a milled disk. After sighting the base of the object along the base rule, the sighting rule is raised by means of a high pitch thumbscrew, until its hairline cuts the top of the object. The instrument has a jointed ferrule with clamp screw which is threaded to fit the regular photographer's tripod screw.

4402. Gimlet Support, for attaching to a tree or post, hard wood cross piece (handle) . . . each \$ 1 00

4404. Brass Ferrule, to fit Gimlet Support, or staffhead . . . " 1 00

For Jacob staff and Tripods see page 10.



No. 4410.



No. 4411.

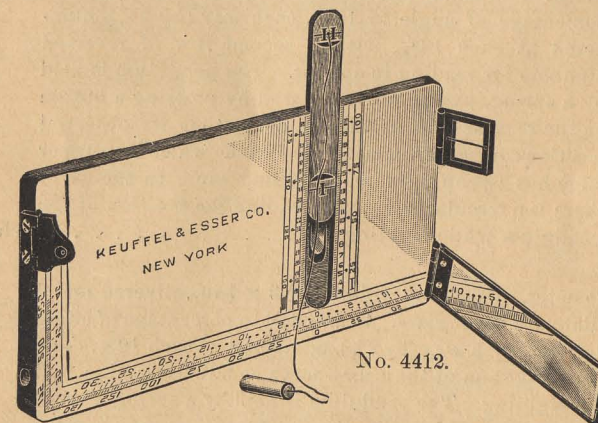
4410. Hypsonometer (after Faustmann), brass, graduated surface silvered, hinged mirror mounted in aluminum, folding sights, folding swiveling handle. In cloth covered pouch with cover flap, $3\frac{1}{2} \times 7\frac{1}{2} \times \frac{5}{8}$ in. With Directions . . . each \$19 50

Sole Leather Pouch for No. 4410, extra . . . " 2 00

This mirror-reading Hypsonometer is $3\frac{1}{4} \times 7$ in. It is provided with two scales: the scale of heights on the lower edge of the instrument and the scale of distances on the two edges of the groove in which the slide moves. The slide carries the plumbbob thread and has two reading lines marked I and II, corresponding to the two scales of distances, also marked I and II. It is held in place by a spring. The plumbbob is stored in a small tube at the back of the frame. The peep-hole and hairline sights are hinged to fold down. The hinged mirror is $5\frac{3}{4} \times \frac{3}{4}$ in. The cylindrical nickel-plated metal handle on the reverse side of the instrument folds down.

4411. Brass Ferrule, to fit Gimlet Support, (No. 4402, p. 6) or staffhead . . . each \$ 1 00

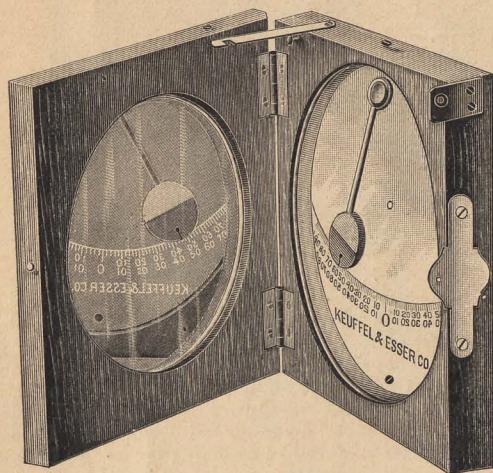
For Jacob staff and Tripods see page 10.



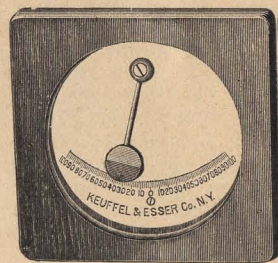
No. 4412.

4412. Hypsonometer (after Faustmann), like No. 4410, but of polished hardwood, graduations on white facing with protective coating, hinged mirror mounted in aluminum, folding sights. In cloth covered pouch with cover flap, $3\frac{1}{2} \times 7\frac{1}{2} \times \frac{5}{8}$ in. With Directions, . . . each \$ 6 50

CLINOMETERS FOR MEASURING HEIGHTS.



4440.

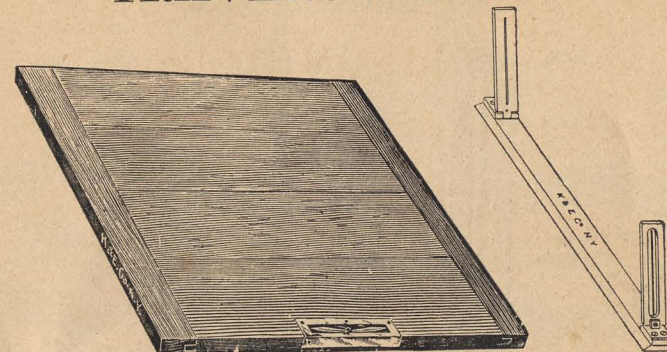


4442.

4440. Clinometer, mahogany frame with hinged cover, $4\frac{1}{2} \times 4\frac{1}{2} \times 1$ in., silvered metal dial with cover glass. Graduated to percentage of angle to 100% each way (by 2%), numbered at each 10%, with a second row of reversed numbers for reading in mirror. The pendulum is held by a spring, except when released by pressing a button on the reverse side of the frame, so that its observed position can be conveniently read on the scale. The upper edge has a peep sight and sighting pin. In the cover there is a circular mirror for reading the position of the pendulum while sighting each \$ 8 00

4442. Clinometer, mahogany frame $3 \times 3 \times \frac{1}{2}$ in., silvered metal dial with cover glass. Graduated to percentage of angle to 100% each way (by 2%), numbered at each 10%. The top or bottom of the frame serve as fiduciary edge and for sighting. The pendulum is held by a spring, except when released by pressing a button on the reverse side of the frame, so that its observed position can be conveniently read. " 4 00

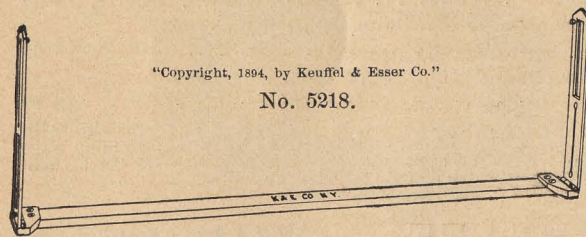
TRAVERSE TABLE.



No. 5214.

5214. Traverse Table, simple construction, best quality, pinewood drawing board, 15×15 in., with metal socket for tripod. Fine compass set flush with board, needle about 3 in., agate centre, and stop. With hardwood tripod, stout swiveling bronze disks. **Graduated** * brass alidade $10\frac{1}{4}$ in., folding sights (alidade in sewed leather sheath) . . . each \$ 25 00

5214 A. Traverse Table with Compass and graduated Alidade, like No. 5214, but with patent extension tripod " 31 00

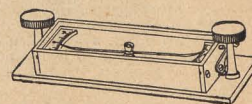


"Copyright, 1894, by Keuffel & Esser Co."

No. 5218.

"Copyright, 1894, by Keuffel & Esser Co."

No. 5219.



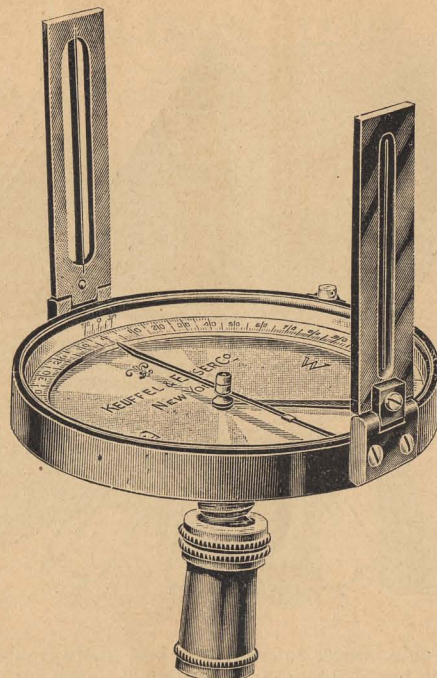
5218. Alidade for Traverse Table, brass, $12 \times 1\frac{1}{2}$ in., **graduated*** beveled edge in line of sight, folding sights 3 in. high, each \$ 15 00

5219. Compass for Plane Table (trough compass), with milled head screws to fasten to board, improved needle about $3\frac{1}{2}$ in., divisions on raised limb covering 10 degrees each way " 7 00

*Unless another graduation is ordered, we divide these alidades 40 parts to the inch.

KEUFFEL & ESSER CO. NEW YORK.

COMPASSES.



No. 5321.

5320. Surveying Compass, with folding sights, graduated to degrees on raised ring, variation plate, two level bubbles, ball joint and socket for staff mounting, needle about $3\frac{1}{2}$ in., agate centre, in polished mahogany Case. each \$ 16 00
5321. do. do. needle about 4 in., in polished mahogany Case. " 18 00
5322. do. do. needle about $4\frac{1}{2}$ in., in polished mahogany Case. " 20 00

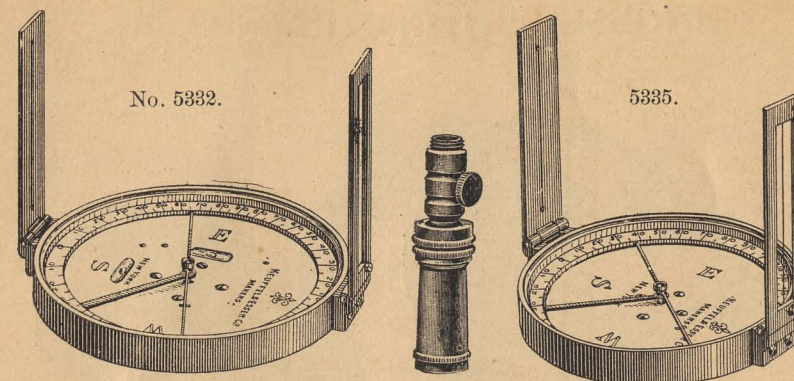
Compasses No. 5320 to 5322 are of most practical construction and very carefully and substantially made. The variation of the needle is set off by means of a pinion with capstan head, which admits of very precise setting. With these compasses we furnish adjusting pins of phosphor bronze, which do not disturb the needle.

JACOB STAFF. TRIPODS.

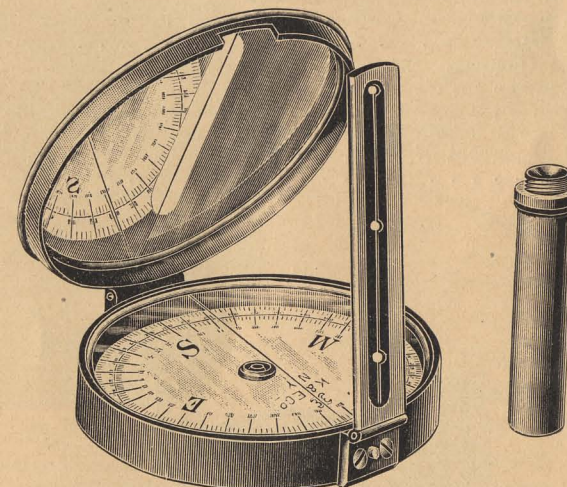
5350. Jacob Staff, 54 in., hardwood, iron shoe each \$ 1 00
5351. Tripod, hardwood, with Jacob Staff head, light, for compasses, No. 5320—5338 " 3 00
5356. Tripod, hardwood with staff head, brass top, for compasses, No. 5320—5465 " 5 00

For other Compasses see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.



5332. Surveying Compass, with folding sights, graduated to degrees, two level bubbles, ball joint and socket for staff mounting, agate centre, needle about 3 in., in mahogany Case, each \$10 50
5333. do. do. " " $3\frac{1}{2}$ " " " " " 11 50
5334. do. do. " " 4 " " " " " 13 00
5335. Surveying Compass, like No. 5332, but without level bubbles, needle about $2\frac{1}{2}$ in., in mahogany Case each \$ 8 00
5336. do. do. " " 3 " " " " " 9 00
5337. do. do. " " $3\frac{1}{2}$ " " " " " 11 00
5338. do. do. " " 4 " " " " " 11 50



No. 5465.

5465. Compass with Mirror sight, floating card dial $3\frac{7}{8}$ in., agate centre, automatic stop, graduated to 2 degrees, numbered to 360. A second (inner) row of reversed figures, in quadrants, for reading in the mirror in the cover of the compass. One folding peep sight. The hairline on the cover glass of the compass is continued across an unsilvered strip of the mirror, where it forms the sighting vane. Socket for staff head. each \$22.00

For other Compasses see our General Catalogue.

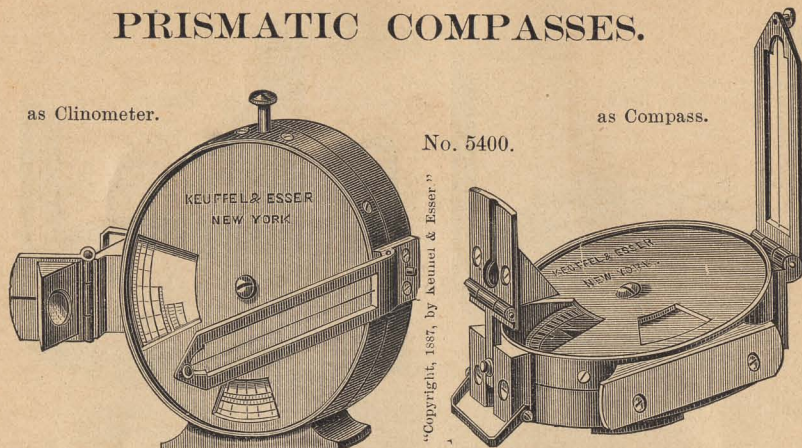
KEUFFEL & ESSER CO. NEW YORK.

PRISMATIC COMPASSES.

as Clinometer.

No. 5400.

as Compass.

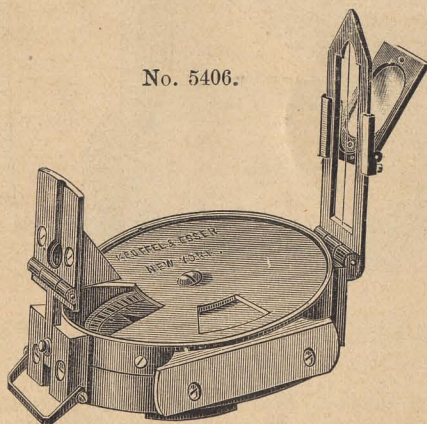


"Copyright, 1887, by Keuffel & Esser."

5400. Prismatic Compass, Clinometer and Altimeter, bronzed, pocket size. Compass dial $2\frac{3}{4}$ in. diameter, graduated to $\frac{1}{2}$ degrees, agate centre, automatic stop and spring check. Hinged sight-vane with vertical wire, fiduciary edge for clinometer. Gravity Clinometer and Altimeter $2\frac{3}{4}$ in. diameter, with stop and spring check, giving slopes in inches per yard and in degrees, and angles of elevation or depression in half-degrees. The inclination is read under the hair line on the cover glass. The compass is read by the lens-front prism, which is adjustable for focus. Threaded for mounting on staffhead, in sewed leather sling Case, complete, with Directions, ... each \$ 27 00

5405. Prismatic Compass, Clinometer and Altimeter, like No. 5400. The openings in the cover are much larger than in No. 5400 and the (lower) compass card is white to make the divisions better legible in dim light, as in the forest. The Clinometer is graduated centimeters per meter and in percent of angle. In sewed leather sling Case, with Directions each 27 00

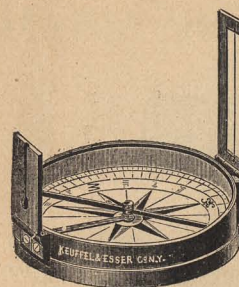
No. 5406.



5406. Hand Transit. Prismatic Compass, Clinometer and Altimeter, like No. 5400, but with reversible, sliding, hinged mirror for determining the bearing in the horizontal plane, of objects above or below it. With Directions, ... each 30 00

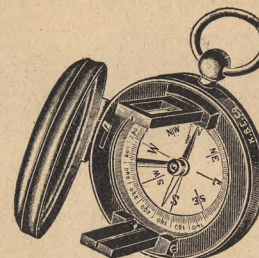
For other Prismatic Compasses see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.

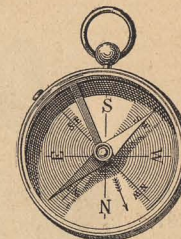


No. 5440.

"Copyright, 1894, by Keuffel & Esser Co."



5450.



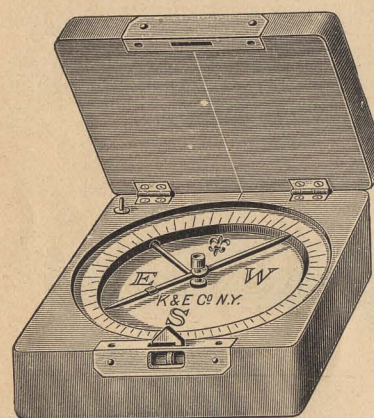
5556.

5440. Bronzed Pocket Compass, $2\frac{1}{2}$ in., with cover, folding sights, edge bar needle with agate centre, stop, each \$ 5 25

5441. do. do. do. do. 3 in. " 6 25

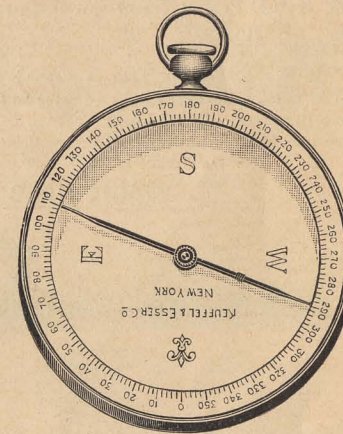
5450. Pocket Compass, watch pattern, with folding sights, agate centre, stop to needle, $1\frac{3}{4}$ in. $2\frac{3}{4}$ in.
each \$ 4 00 4 60 5 10

5556. Pocket Compass, brass, watch pattern, metal dial, stop to needle, $1\frac{3}{4}$ in. $1\frac{3}{4}$ in.
each \$ 55 65



No. 5602.

"Copyright, 1894, by Keuffel & Esser Co."



5603.

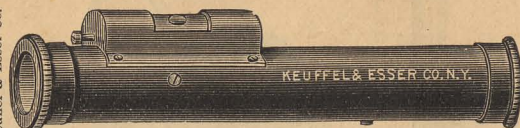
5602. Military Compass, 3×3 in., needle 2 in. with agate centre and automatic stop, divisions on raised metal ring, to degrees. Polished mahogany frame, with sighting line on lid. The sides of the box serve as fiduciary edge . . each \$ 3 50

5602L. Military Compass, like 5602, but $3\frac{3}{4} \times 3\frac{3}{4}$ in., needle $2\frac{1}{2}$ in., " 4 50

5603. Forester's Compass, 3 in., nickel-plated, graduated on raised ring to 2 degrees, fine needle about $2\frac{3}{4}$ in., agate centre, stop to needle " 4 50

For other Compasses see our General Catalogue.

HAND LEVELS.

Copyright, 1890, by
Keuffel & Esser Co.

No. 5700.

5700. Locke's Hand Level, German silver, 5 in., in Case each \$ 8 00
 5701. do. Bronzed, 5 " " " " " " 7 00
 5702. do. Brass, plain, 5 " " " " " " 5 00

The Hand Level is a great help in chaining accurately and quickly.
 Nos. 5700 and 5701 have telescoping eye-piece and magnifying lens for the bubble.

Copyright, 1894, by Keuffel & Esser Co.



Patented April 24, 1894.

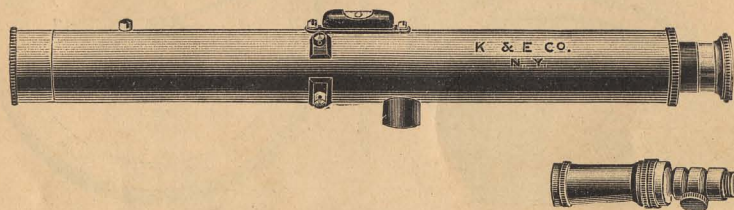
No. 5703.

Diagram, showing
appearance of field

5703. K & E Patent Hand Level, square tube, bronzed, 5 in., in Case, each \$ 4 50
 5704. do. do. " " nickel-plated, " " 4 50

In Nos. 5703 and 5704 the reflector is a narrow prismoid, crossing the middle of the field of view, so that the field appears on both sides of the reflected bubble, as shown in above diagram. As the lower surface of the tube is flat and parallel with the bubble, these hand levels can be used also as contact level.

STADIA HAND LEVEL (Telescopic).



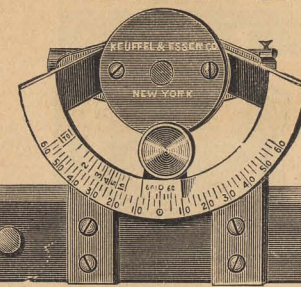
The Stadia Hand Level has an erecting 10 inch telescope with 1-inch objective. The objective is drawn out for focusing and the eyepiece is adjustable for defining the stadia hairs, which read 1:100. This instrument will be found very useful for preliminary surveys, cross sectioning, railroad construction work, exploration of streams for water power, etc. When set on a staff or tripod, a fairly accurate line of levels can be run. It is easily carried, as it weighs scant 1½ pounds. In connection with a flexible leveling rod* it constitutes an ideal outfit for preliminary work, on account of its light weight and easy manipulation.

5706. Stadia Hand Level, telescope 10 in., stadia hairs, objective 1 in., with ball joint and socket, in sewed leather sling case each \$18 00

*For Flexible Leveling Rods, see our General Catalogue.

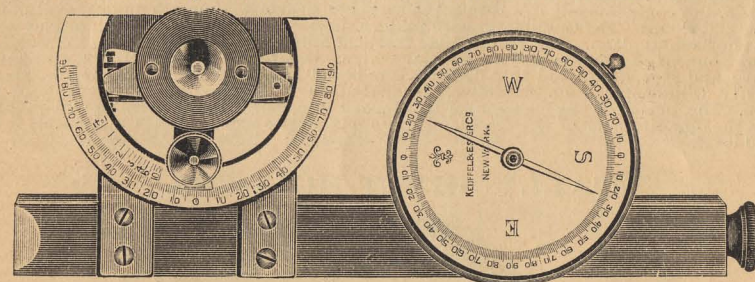
HAND LEVELS AND CLINOMETERS.

Copyright, 1890, by Keuffel & Esser Co.



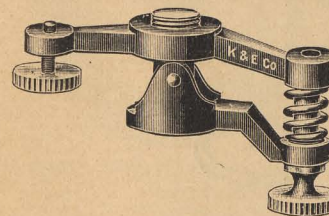
No. 5710.

5710. Abney's Reflecting Level or Pocket Altimeter, 5 in., improved, with arc divided to degrees for 60° in both directions, vernier reading to 5 minutes, gradients 1:1 to 1:10, in sewed leather Case. . . . each \$ 13 50
 Shoulder strap extra " .35

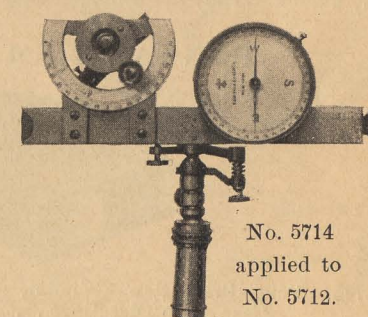


5712. K & E Abney Level, 6 in., arc graduated to degrees for 90° in both directions, vernier to 5 minutes, Gradients from 1:1 to 1:10. Base of tube is finished, so that the instrument can be used also as a contact level. Compass 2 in., silvered dial divided to degrees, needle about 1½ in., agate centre, and stop. Two screw sockets, to mount level on the ball joint socket either with the arc vertical or with the compass horizontal.

Instrument complete, with ball joint and socket, in stout sewed, velvet lined leather sling Case each \$20 00



No. 5714. (Full size).

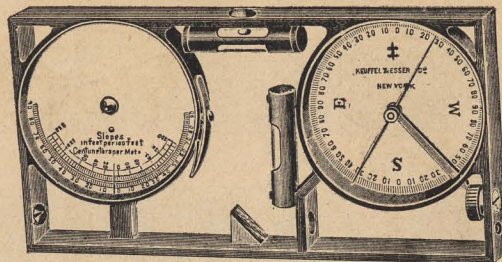
No. 5714
applied to
No. 5712.

5714. Leveling Attachment (for Abney Levels etc.) bronzed brass; it adds to the accuracy of the instrument each \$ 2 00

For other Hand Levels see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.

K & E POCKET OMNIMETER.

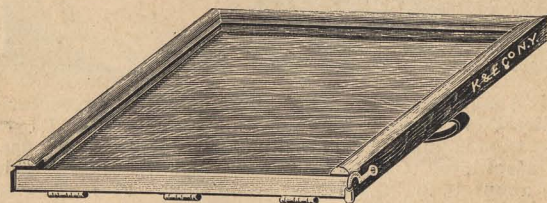


No. 5718

- 5718 K & E Pocket Omnimeter, in sewed leather Case each \$15 00
 5719 " " like No. 5718, but with sights
 along one side of the frame, which fold into the
 frame, in sewed leather Case " 18 00

The K & E Pocket Omnimeter combines compass, clinometer, hand level, plumb, alidade, and contact level; it will indicate magnetic bearings, azimuth angles, altitudes, levels and slopes. The Omnimeter with folding sights indicates also azimuth angles not in its horizontal plane. The rectangular frame of aluminum alloy, $5\frac{1}{4} \times 2\frac{3}{4} \times \frac{1}{2}$ in., weighs about 5 ounces and serves also as fiduciary edge. Compass 2 in. diameter, with agate centre and stop, graduated to 2 degrees, numbered in quadrants at every ten degrees. Gravity Clinometer 2 in. diameter, graduated to 2 degrees and to percentage of slope. The prism of the hand level is attached to one of the long sides and its bubble is on the opposite side of the frame. The bubbles are as sensitive as is admissible in a hand level.

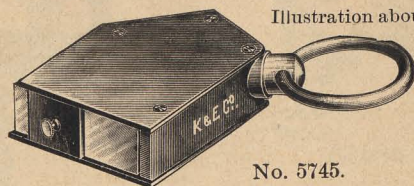
TALLY SHEET HOLDERS.



No. 5724

5723. Tally Sheet Holder, for tally sheets 7x10 in. each \$ 2 50
 5724. do do " " 10x12 " " 4 00
 These holders are of hardwood. The hinged side is of brass and is held by a hook. They are provided with strap handle.

PENTA-PRISM RANGE FINDER.



No. 5745.

5745. Penta-Prism Range Finder, mounted in metal, in leather Case, with Directions each \$ 16 00

This is a pentagonal prism, the ocular side of which has two faces, of different angle. Distances up to over two miles can be determined from the point of observation with sufficient accuracy for many of the requirements of the surveyor or military officer. The mode of using it is extremely simple and complete directions are furnished with each instrument. No tables are required. It is also an excellent right angle prism.

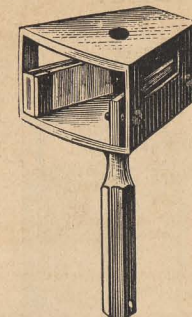
For Cross-Section Papers, for Tally Sheets, see our General Catalogue

KEUFFEL & ESSER CO. NEW YORK.

ANGLE MIRRORS.



No. 5750.

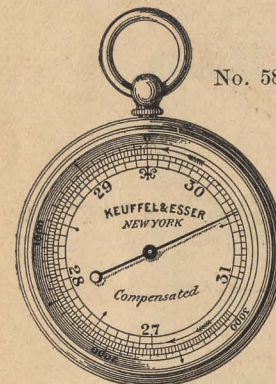


5751.

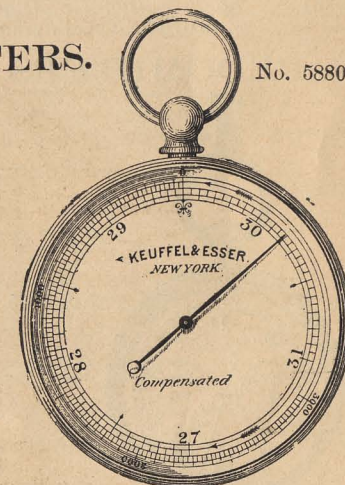
5750. Angle Mirror, for angles of 90 degrees, with small plumbbob. The handle can be unscrewed and stowed in frame of instrument. Size of instrument $2\frac{1}{4} \times 2 \times 1\frac{1}{2}$ in., in morocco Case each \$ 7 50
 5751. Angle Mirror, plain, for angles of 90 degrees, in morocco Case, " 5 00

ANEROID BAROMETERS.

No. 5880.



No. 5855.



5855. Watch pattern, gilt case, $1\frac{3}{4}$ in. diameter, silvered dial, revolving scale 3000 feet, compensated for temperature, in morocco Case each \$ 20 00
 5856. Like No. 5855, but altitude scale 6000 feet " 18 80
 5857. " " 5855, " " " 12000 " " 20 00
 5858. " " 5855, " " " 18000 " " 21 50
 5880. Pocket pattern, brass case, $2\frac{1}{2}$ in. diameter, silvered dial, revolving altitude scale 3000 feet, compensated for temperature, in morocco Case " 21 00
 5881. Like No. 5880, but altitude scale 6000 feet " 20 00
 5882. " " 5880, " " " 12000 " " 21 00
 5883. " " 5880, " " " 18000 " " 22 00

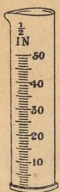
For other Angle Mirrors and Aneroids see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.

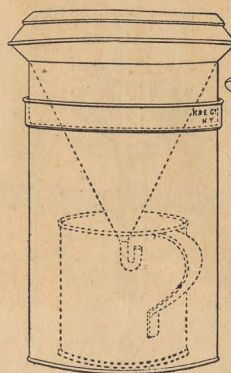
RAIN

GAUGES.

5980.



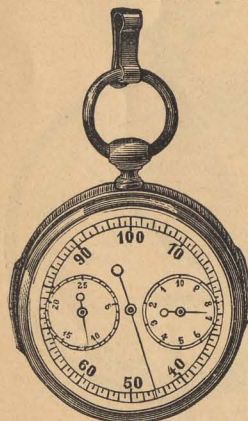
5982.



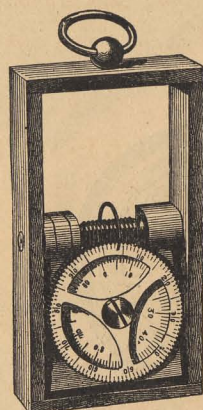
5984.

5980. Rain Gauge, Howard's model, simple construction, with graduate reading to $\frac{1}{100}$ in., ... each \$ 4 00
5982. do. do. Symon's model, with prongs to prevent tipping, with graduate reading to $\frac{1}{100}$ in., " 6 00
5984. do. do. Glaisher's model, a very reliable instrument, with graduate reading to $\frac{1}{100}$ in., . . . " 8 50

PEDOMETERS AND ODOMETERS.



No. 6905.



No. 6910.

6900. Pedometer, watch pattern, nickel case, $1\frac{3}{4}$ in., registering 12 miles by $\frac{1}{4}$ miles each \$ 4 50
6901. do. do. registering 50 miles by 80 yards " 5 25
6905. Passometer, watch pattern, nickel case, $1\frac{3}{4}$ in., registering to 100,000 steps " 6 50

Pedometers No. 6900 and 6901 register the distance walked. The hand advances in proportion to the length of stride, as the instrument is adjustable by an easily accessible screw. Passometer No. 6905 registers the number of steps and is not adjustable to length of stride. The distance walked can be computed from the number of steps registered.

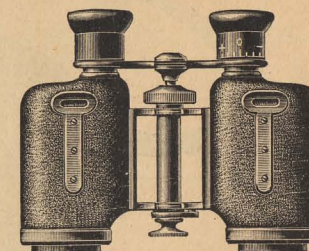
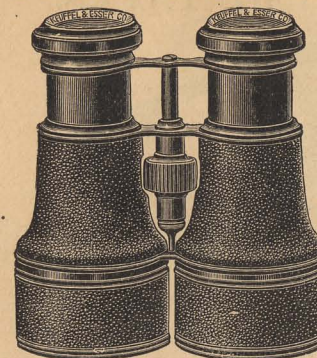
6910. Odometer of Brass, with silvered dials, in dust proof leather Case with straps each \$ 15 00

KEUFFEL & ESSER CO. NEW YORK.

FIELD GLASSES (BINOCULARS.)

No.

6935 $\frac{1}{2}$.



No. 6937.

6927. Field and Marine Glass, jappanned and covered with morocco, object glass 24 lines, 8 lenses, magnifying power about $3\frac{3}{4}$ times. The telescoping bar is independent of the focusing screw. In soft leather Case, with handle each \$ 15 75

The glass No. 6927 represents a happy compromise between the magnifying power and the size of the field, as neither of these factors has been reduced at the expense of the other. This makes it particularly well adapted for a search glass and for general use. The focusing screw is independent of the telescoping arrangement; closing the glass and drawing the tubes out will not disturb the focus to which the glass has been adjusted by the focusing screw.

6935. Field and Marine Glass, jappanned and covered with morocco, with sun shades, object glass 21 lines, 6 lenses, magnifying power about 3 times. Glass in sole leather Case with handle and shoulder strap. . each \$ 12 75

- 6935 $\frac{1}{2}$. Field and Marine Glass, like No. 6935, but object glass 24 lines. " 14 20

PRISM BINOCULARS.

Prism Binoculars, on account of their many advantages and their superiority over glasses of older construction, have fast come into general favor. In the Prism Binoculars here listed, the two prisms (in each tube) are replaced by one penta-prism, a great improvement in the optical features and the mechanical construction of the glasses.

Some of the advantages of one penta-prism over two rectangular prisms are:

A larger objective can be used, giving better illumination.

A short-focus objective can be used, which requires but little change of focus adjustment for objects at different range.

Prism and objective can be separately removed for cleaning, without endangering their adjustment.

The glasses with penta prisms are lighter and of handier shape than those with rectangular prisms.

Binoculars with Penta-Prisms, in stout leather sling Case with shoulder strap:

- | | | | | | | | | | | |
|-------|-----------|--------------------|-------|--------------------|-------|-------|---------|-----------|------|----------|
| 6936. | Objective | $\frac{7}{8}$ in., | about | $4\frac{1}{2}$ in. | high, | power | 5 times | | each | \$ 47 50 |
| 6937. | " | " | " | $4\frac{1}{2}$ " | " | " | 7 " | | " | 50 00 |
| 6938. | " | 1 " | " | 5 " | " | " | 6 " | | " | 54 00 |
| 6939. | " | 1 " | " | $4\frac{3}{4}$ " | " | " | 7 " | | " | 55 00 |
| 6940. | " | 1 " | " | $4\frac{3}{4}$ " | " | " | 9 " | | " | 59 00 |
| 6941. | " | 1 " | " | $4\frac{3}{4}$ " | " | " | 12 " | | " | 68 50 |
| 6945. | " | 2 " | " | 8 " | " | " | 12 " | | " | 114 00 |

In the glass No. 6945 the objectives are extra large and it therefore combines high power (12 times) with the brilliant illumination of a low power glass, a feature not found to that extent in any other glass.

For other Field Glasses see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.

K & E MEASURING TAPES.



No. 7262 D. P.

Cornell K & E Steel Tree Tape, $\frac{3}{8}$ in. wide, stout bent leather case, patent centre, long swiveling flush folding handle, opened by pushing handle pin from opposite side of case. Nickel plated mountings. Jointed anchor peg for attaching to tree. Graduations begin at end of line.

7262 D.P. Cornell K & E Steel Tree Tape, finest quality, 50 ft., one side divided 10ths and 100ths feet, other side divided in the proportion of circumference to diameter, to feet, 10ths and 100ths, jointed steel peg for fastening end of line to the tree each \$ 9 65

As the two sides of this tape are graduated in the ratio of diameter to circumference (1 : 3.1416), either dimension can be read off opposite the other.

Cornell K & E Steel Tape, $\frac{3}{8}$ in. wide, stout bent leather case, patent centre, long swiveling flush folding handle, opened by pushing handle pin from opposite side of case. Nickel-plated mountings. Graduations begin at outside end of ring,

Please order by number.

Length in feet,	25	33	50	66	75	100
10ths of feet	No. 7250 D	7251 D	7252 D	7253 D	7254 D	7255 D
12ths " "	7250 T	7251 T	7252 T	7253 T	7254 T	7255 T
each	\$ 4 15	4 75	6 65	8 45	9 60	11 85
10ths of feet and Links	No. 7250 DL	7251 DL	7252 DL	7253 DL	7254 DL	7255 DL
12ths " " " "	7250 TL	7251 TL	7252 TL	7253 TL	7254 TL	7255 TL
each	\$ 4 30	4 95	6 85	8 75	9 90	12 15

For other Tapes see our General Catalogue.

KEUFFEL & ESSER CO. NEW YORK.



Please order by number.

Liliput K & E Steel Tape, $\frac{1}{4}$ in. wide, stout bent leather case, patent centre, long swiveling flush folding handle, opened by pushing handle pin from opposite side of case. Nickel-plated mountings. Graduations begin at outside end of ring.

Length in feet,	25	50
Dimensions,	$2\frac{1}{4} \times \frac{1}{2}$ in.	$2\frac{3}{4} \times \frac{1}{2}$ in.
Weight,	$3\frac{1}{2}$ oz.	5 oz.
10ths of feet	No. 7270 D	7272 D
12ths (inches in sixteenths)	7270 T	7272 T
each	\$ 3 65	4 45

The Liliput Steel Tape is warranted to be of the same grade, workmanship and accuracy as the other K & E Steel Tapes. It is made very compact and light and is therefore suitable and convenient for the pocket. It is a durable tape and will wear well.



Please order by number.

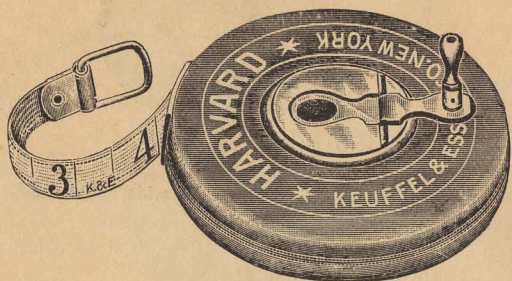
Home K & E Steel Tape, $\frac{3}{8}$ in. wide, stout bent leather case, large centre, long folding handle. Nickel-plated mountings. Graduations begin at outside end of ring.

Length in feet,	25	50	75	100
10ths of feet	No. 7350 D	7352 D	7354 D	7355 D
12ths " "	7350 T	7352 T	7354 T	7355 T
each	\$ 3 20	3 90	5 10	6 60

For other Tapes see our General Catalogue.

The Home K & E Steel Tapes are intended to supersede the woven tapes which on account of their low price are often used where a more reliable tape ought to be employed. They are of best quality steel and accurately divided. The graduations and figures are bright while the ground surface is nearly black, so that the measurements are easily read. The neat sewed leather case is convenient to use and to carry in the pocket.

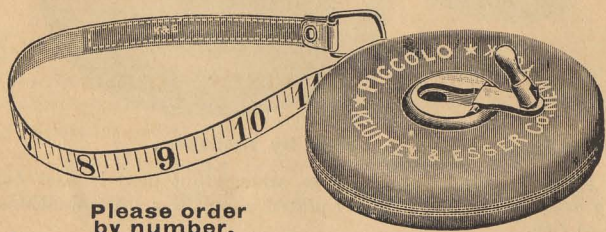
K & E METALLIC TAPES.



Savard **K & E** Metallic Tape, $\frac{5}{8}$ in. wide, stout bent leather case, patent centre, long flush folding handle, opened by pushing handle pin from opposite side of case, all mountings nickel-plated; line interwoven with metal, leather re-enforced end. Graduations begin at outside end of ring.

Please order by number.

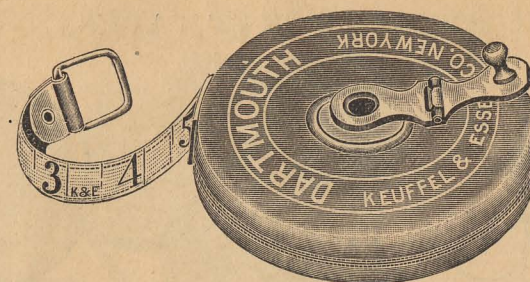
Length in feet,	25	33	50	66	75	100
10ths of feet	No. 7420 <i>D</i>	7421 <i>D</i>	7422 <i>D</i>	7423 <i>D</i>	7424 <i>D</i>	7425 <i>D</i>
12ths " "	7420 <i>T</i>	7421 <i>T</i>	7422 <i>T</i>	7423 <i>T</i>	7424 <i>T</i>	7425 <i>T</i>
each	\$ 1 95	2 25	2 75	3 05	3 35	4 10
10ths of feet and Links, No.	7420 <i>DL</i>	7421 <i>DL</i>	7422 <i>D</i>	7423 <i>DL</i>	7424 <i>DL</i>	7425 <i>DL</i>
12ths " " " "	7420 <i>TL</i>	7421 <i>TL</i>	7422 <i>TL</i>	7423 <i>TL</i>	7424 <i>TL</i>	7425 <i>TL</i>
each	\$ 2 05	2 35	2 85	3 25	3 50	4 40



Piccolo K & E Metallic Tape, $\frac{3}{8}$ in. wide, stout bent leather case, patent improved centre with flush folding handle, all mountings nickel plated, line interwoven with metal, end re-enforced with leather.

	Length in feet, Size, Weight,	25 $2\frac{3}{4} \times \frac{1}{8}$ in. $4\frac{1}{2}$ oz.	50 $3\frac{5}{8} \times \frac{1}{8}$ in. $8\frac{1}{2}$ oz.
10ths of feet		No. 7480D	7482D
12ths " "		7480T	7482T
	each	\$ 1 75	2 20

For other Tapes see our General Catalogue.



Dartmouth **K & E** Metallic Tape, 5/8 in. wide, stout bent leather case, long folding handle, all mountings nickel-plated, line interwoven with metal, leather re-enforced end. Graduations begin at outside end of ring.

Please order by number.

Length in feet.	25	33	50	66	75	100
10ths of feet	No. 7440 <i>D</i>	7441 <i>D</i>	7442 <i>D</i>	7443 <i>D</i>	7444 <i>D</i>	7445 <i>D</i>
12ths " "	7440 <i>T</i>	7441 <i>T</i>	7442 <i>T</i>	7443 <i>T</i>	7444 <i>T</i>	7445 <i>T</i>
each	\$ 1 65	1 95	2 45	2 75	3 05	3 80
10ths of feet and Links, No.	7440 <i>DL</i>	7441 <i>DL</i>	7442 <i>DL</i>	7443 <i>DL</i>	7444 <i>DL</i>	7445 <i>DL</i>
12ths " " " "	7440 <i>TL</i>	7441 <i>TL</i>	7442 <i>TL</i>	7443 <i>TL</i>	7444 <i>TL</i>	7445 <i>TL</i>
each	\$ 1 75	2 05	2 55	2 95	3 25	4 10
Length in Meters.	10	15	20	25	30	
Metric (one side only)	No. 7441 <i>M</i>	7442 <i>M</i>	7443 <i>M</i>	7444 <i>M</i>	7445 <i>M</i>	
each	\$ 1 95	2 45	2 75	3 35	3 80	
12ths of feet and Metric, ...	No. 7441 <i>TM</i>	7442 <i>TM</i>	7443 <i>TM</i>	7444 <i>TM</i>	7445 <i>TM</i>	
each	\$ 2 05	2 55	2 95	3 55	4 10	

K & E METALLIC LINES. (RE-FILLS.)

Length in feet,		25	33	50	66	75	100
10ths of feet	No. 7460	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>
12ths " "	7460	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>	<i>T</i>
each	\$ 80	1 00	1 35	1 55	1 75	2 55	
10ths of feet and Links, No.	7460	<i>DL</i>	<i>DL</i>	<i>DL</i>	<i>DL</i>	<i>DL</i>	<i>DL</i>
12ths " " " "	7460	<i>TL</i>	<i>TL</i>	<i>TL</i>	<i>TL</i>	<i>TL</i>	<i>TL</i>
each	\$ 90	1 10	1 50	1 75	1 95	2 85	
Length in Meters,		10	15	20	25	30	
Metric (one side only)	No. 7461	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
each	\$ 1 00	1 35	1 55	1 95	2 55		
12ths of feet and Metric, ...	No. 7461	<i>TM</i>	<i>TM</i>	<i>TM</i>	<i>TM</i>	<i>TM</i>	<i>TM</i>
each	\$ 1 05	1 45	1 75	2 15	2 85		

For other Tapes see our General Catalogue.

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STEEL POCKET TAPES.

Patented June 26, 1894.



No. 7692

7707

7713

EXCELSIOR TAPES. (German silver Case.)

Excelsior Steel Pocket Tapes, 1/4 in. wide, patent German silver case, with spring and stop.

Length in feet.		3	5	6	9	12
Inches to 16ths	No. 7690T	7691T	7692T	7693T	7694T	
	each	\$ 1 00	1 25	1 40	1 90	2 50
Feet to 100ths	No. 7690D	7691D	7692D	7693D	7694D	
	each	\$ 1 00	1 25	1 40	1 90	2 50
Inches to 16ths and metric	No. 7690TM	7691TM	7692TM	7693TM	7694TM	
	each	\$ 1 10	1 40	1 60	2 20	2 80

Excelsior Miniature Steel Pocket Tapes, 5/32 in. wide, patent German silver case.

7707. 1 in. diameter, with spring and stop, 36 in. each \$ 1 00

TIP TOP TAPES. (Brass case, nickeled.)

TIP TOP Steel Pocket Tapes, 1/4 in. wide, nickel-plated brass case, spring winding, with centre push-pin and stop.

Length in inches.		36	60	72	96
Inches to 16ths (one side)	No. 7710T	7711T	7712T	7713T	
	each	\$ 55	70	80	1 10
Length in feet.		3	5	6	8
Feet to 100ths (one side)	No. 7710D	7711D	7712D	7713D	
	each	\$ 55	70	80	1 10
Length in Metres.		1	1½	2	2½
Inches to 16ths and Metric (both sides)	No. 7710TM	7711TM	7712TM	7713TM	
	each	\$ 65	80	1 00	1 30

K & E CIRCUMFERENCE STEEL TAPES.

7679. K & E Steel Pocket Tape, 1/4 in. wide, patent German silver case, with Spring and Stop, 12 feet each \$ 3 25

This tape is graduated on one side in inches and sixteenths of inches; on the other side spaces equal to 3.1416 inches are marked off and numbered 0, 1, 2, etc., the unit before zero being subdivided into 64 equal parts. If the tape is passed around a circular object, say a column, the "circumference" side will read the correct number of inches and the fraction (to 64ths in.) of the diameter. There are many cases in which such a tape would be useful and certainly handier than large calipers.

BRASS PLUMB BOBS.

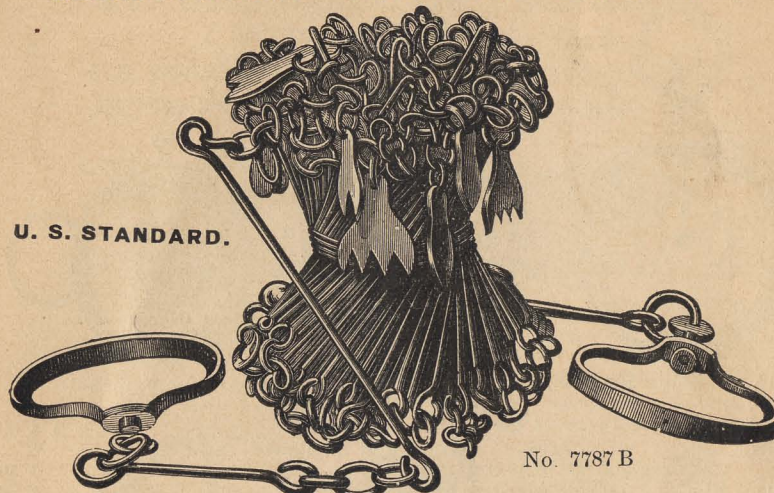
PLAIN, STEEL POINTS.

6489. About 8 oz.	ea.	\$ 75
6490. " 12 "	"	1 20



KEUFFEL & ESSER CO. NEW YORK.

MEASURING CHAINS. ARROWS.



7780A. Steel, W. G. 12, Brass Handles, oval rings, 50 feet	each	\$ 4 50
7780B. do. " " 12, " " " " 100 "	"	8 00
7780C. do. " " 12, " " " " 33 "	"	3 50
7780D. do. " " 12, " " " " 66 "	"	6 50
7781A. do. " " 12, " " " " 66 "	"	6 00
7781B. do. " " 12, " " " " 100 "	"	11 00
7781C. do. " " 12, " " " " 33 "	"	5 50
7781D. do. " " 12, " " " " 66 "	"	10 00

Chain 7781 B has a spring-hook (snap) at 50 feet, so that it can be separated there and the handle attached for using it as a 50 foot chain.

7786A. Iron, W. G. 8, Brass Handles, 2 round rings, 50 feet	each	\$ 2 50
7786B. do. " " 8, " " " " 2 " " 100 "	"	3 50
7786C. do. " " 8, " " " " 2 " " 33 "	"	2 00
7786D. do. " " 8, " " " " 2 " " 66 "	"	3 20
7787A. do. " " 8, " " " " 3 sawed oval " 50 "	"	3 50
7787B. do. " " 8, " " " " 3 " " 100 "	"	5 50
7787C. do. " " 8, " " " " 3 " " 33 "	"	2 70
7787D. do. " " 8, " " " " 3 " " 66 "	"	4 25



7810. Steel Arrows, W. G. 6, nickelplated 14 in., set of 11	set	\$ 1 50
7811. do. do. " " 9, " " 14 " " " 11. "	"	1 00
7812. do. do. " " 9, red, enameled, 12 " " " 11. "	"	1 20
7813. do. do. " " 11, nickelplated 12 " " " 11. "	"	90
7814. Brass do. " " 6, " " 12 " " " 11. "	"	2 00
7815. Iron do. " " 9, " " 14 " " " 11. "	"	60
7816. Steel do. Weighted W. G. 9, red, enamel. 14 " " " 11. "	"	3 00
7818. Steel Arrows, W. G. 6, bright, 14 in., with white enameled disc 2½" diam. with red figures 1 to 11, set of 11	"	5 00
7819. Canvas Carrying Case for No. 7818, with shoulder strap	each	2 50
Leather Pouch for arrows, 12 or 14 in. (except weighted)	"	1 00

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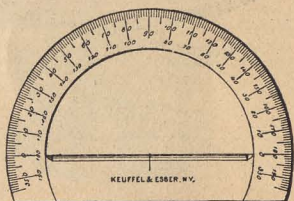
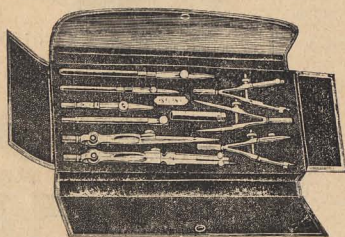
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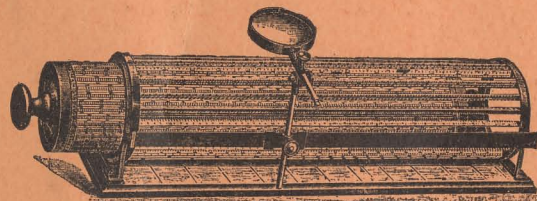
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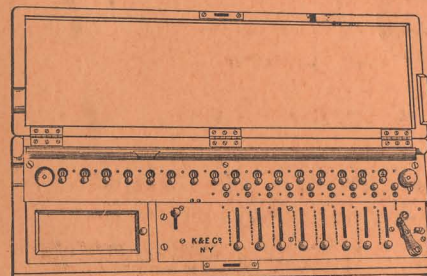


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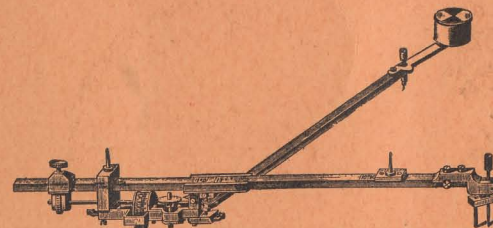
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