June 28, 1955 D. INGRAM 2,711,588

PATTERN GRADING DEVICE

Filed April 2, 1954 3 Sheets-Sheet 1

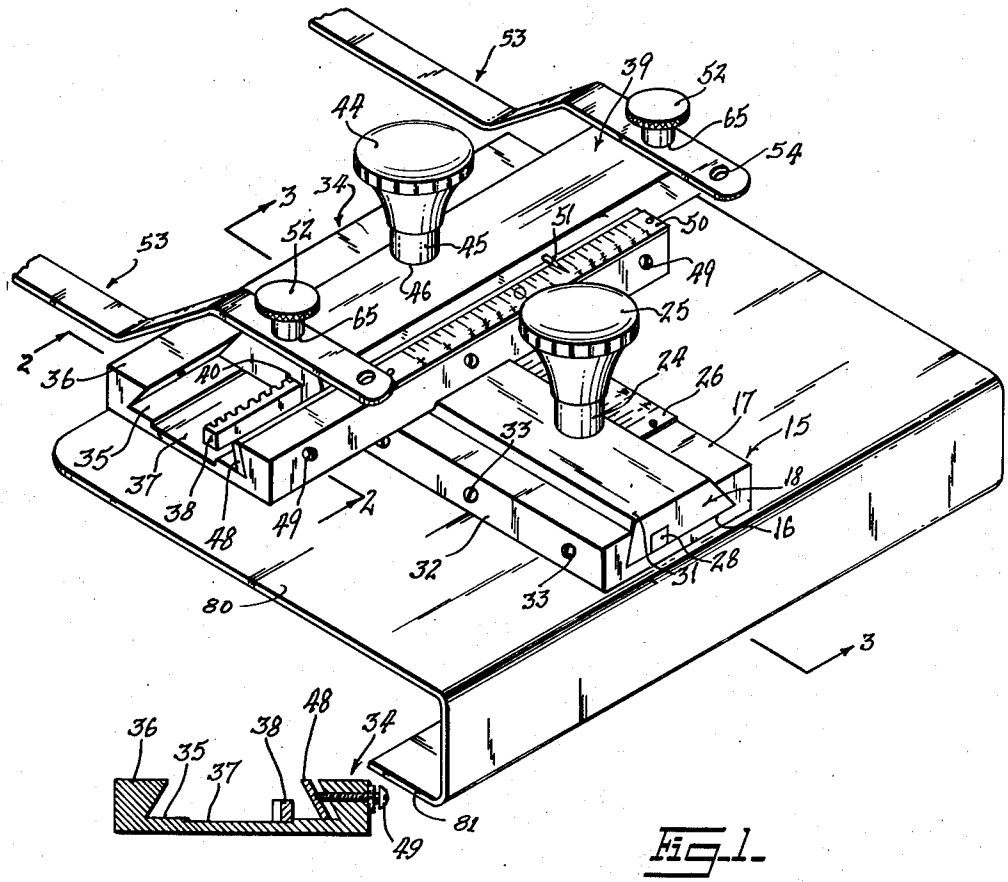


Fig. 1.

Fig. 2.

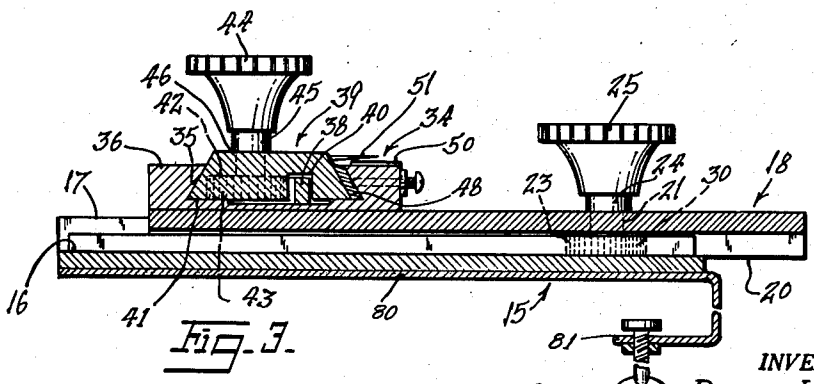


Fig. 3.

INVENTOR.
DIXON INGRAM
BY
ATTORNEY

June 28, 1955 D. INGRAM 2,711,588

PATTERN GRADING DEVICE

Filed April 2, 1954 3 Sheets-Sheet 2

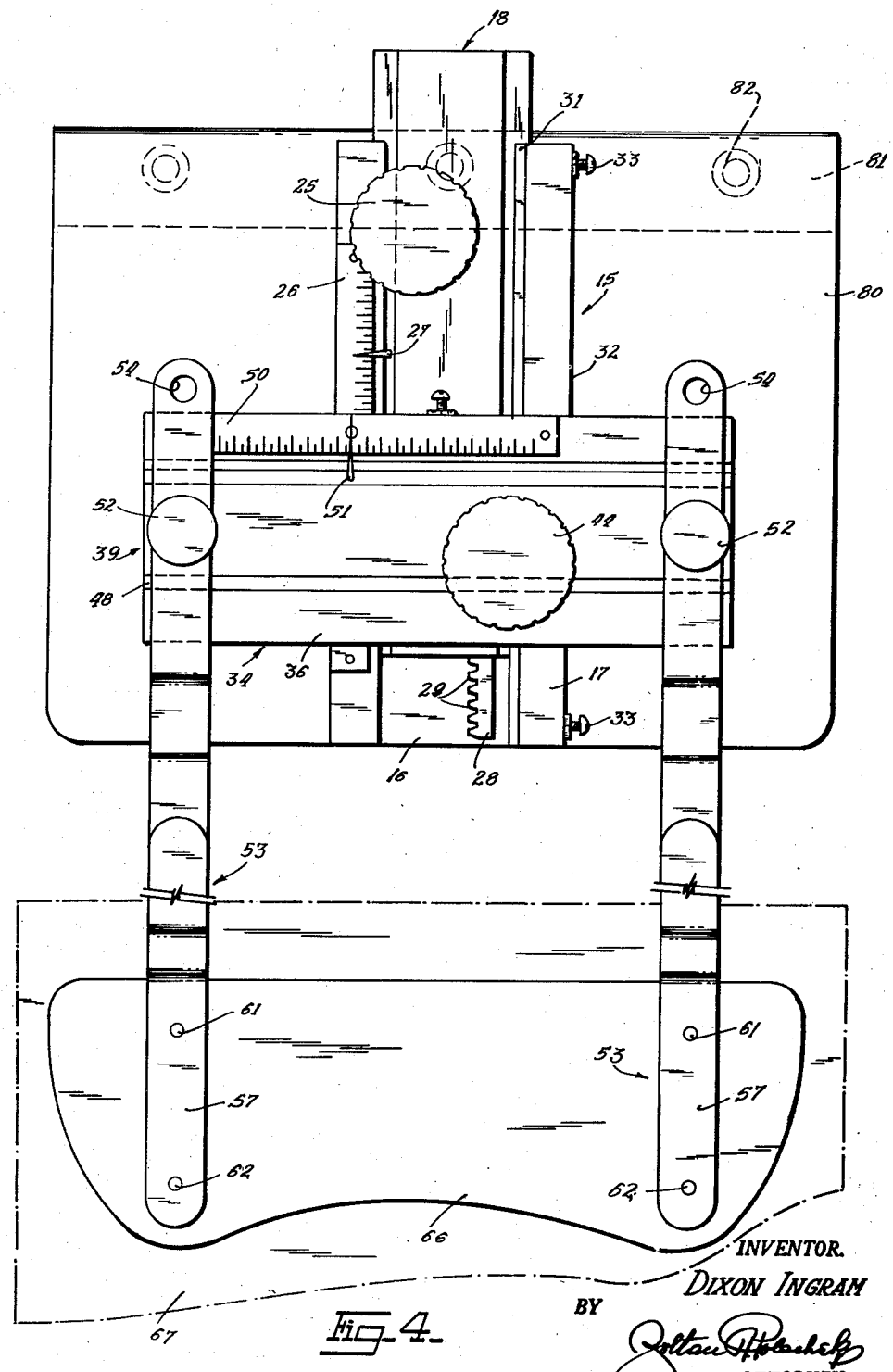


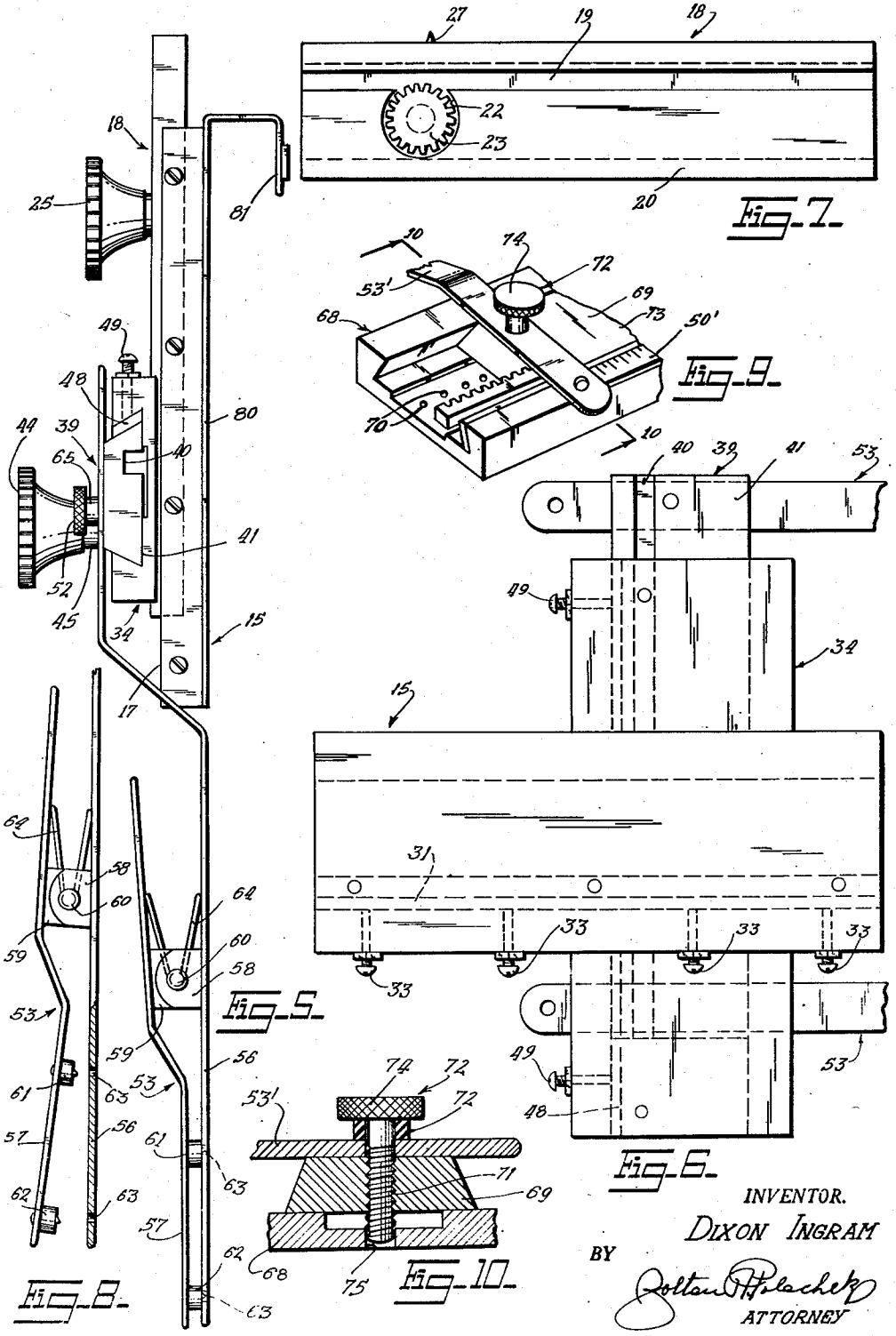
Fig. 4.

INVENTOR.
DIXON INGRAM
BY
ATTORNEY

June 28, 1955 D. INGRAM 2,711,588

PATTERN GRADING DEVICE

Filed April 2, 1954 3 Sheets-Sheet 3



INVENTOR.
DIXON INGRAM
BY
ATTORNEY

United States Patent Office 2,711,588 Patented June 28, 1955

2,711,588

PATTERN GRADING DEVICE

Dixon Ingram, Brooklyn, N. Y.

Application April 2, 1954, Serial No. 420,715

7 Claims. (Cl. 33—12)

This invention relates to new and useful improvements in pattern grading devices.

More particularly, the present invention proposes the construction of an improved pattern grading device which can be used accurately and easily to grade or change a pattern from one size to any desired size.

Still further, the present invention proposes forming a simple pattern grading device which can be used by the unskilled and skilled alike, particularly in tailoring and garment and dress making, to hold a pattern of one size and move it over an underlying piece of material the correct requisite distances in any direction to enlarge or reduce the pattern to another standard size, such as from a size 38 to a size 40.

Another object of the invention proposes constructing the grading device with a carriage movable accurate distances along a base plate and having a cross plate secured to it which contains a cross slide similarly movable along it with means to adjust the freedom of the movement of each.

As another object, the present invention proposes providng two spaced pattern holding arm members removably and adjustably secured to the cross slide and adapted conveniently to hold or release a pattern piece at any desired position with relation to the cross slide.

A further object of the present invention proposes forming the cross slide with adjustment knobs which not only will properly hold the pattern holding arm members but can also be used to lock the slide in any desired position when this is necessary or desirable.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

On the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view, with parts broken away, of the pattern grading device of the present invention.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a top plan view of the structure holding a pattern piece over a sheet of material.

Fig. 5 is a side elevational view of the structure of the invention alone.

Fig. 6 is a bottom plan view of the structure with part of the pattern holding arm members broken off.

Fig. 7 is a bottom plan view of the carriage shown in the several figures.

Fig. 8 is a fragmentary sectional view of one of the pattern holding arm members.

Fig. 9 is a fragmentary perspective view similar to Fig. 1 but illustrating a modification of the present invention.

Fig. 10 is a sectional view taken on line 10—10 of Fig. 9.

The pattern grading device, in accordance with the first form of the invention illustrated in Figs. 1 to 8, inclusive, has a base plate 15, preferably made of metal, such as

cast aluminum or chrome plated steel, but which may be of plastic, wood or other material.

Base plate 15 is rectangular with a dove-tail groove 16 in its upper face 17, extending the full length of the base plate.

Slidably mounted in the dove-tail groove 16 of base plate 15 is a wedge shaped carriage 18 having a rack channel or groove 19 (see Fig. 7) in its bottom face 20 and a pinion chamber or recess 21 adjacent the groove 19 in the bottom face 20. The rack channel or groove 19 extends the full length of carriage 18.

Carriage 18 also contains a knob shaft opening 21, extending from its upper face to the center of the pinion chamber or recess 22. A pinion 23 is rotatably mounted in the pinion chamber 22 being fixed to the shaft 24 of a turning knob 25 extending above the upper face of the carriage 18.

A calibrated scale 26 is secured to base plate 15 adjacent carriage groove 16 and the carriage 18. Pointer 27 is fixed to the carriage and overlies the scale 26 for movement along the scale. A rack bar 28 is fixed to base plate 15 in groove 16. The rack bar 28 is disposed on the base plate as to fit within the rack channel or groove 19 of the carriage 18 when the carriage is slidably mounted in the carriage groove 16 of base plate 15. Rack bar 28 has teeth 29 adapted to mesh with teeth 30 of pinion 23 so that movement of the pinion by knob 25 will move the carriage along the rack bar.

Also mounted in the carriage groove 16 of base plate 15 is a carriage shim adjustment plate 31 which rests against one side 32 of the carriage. Set screws 33, extending through the base plate 15, provide means to bias the plate 31 against the carriage to thereby adjust the sliding freedom of carriage 18. Enough pressure should be provided on the carriage by plate 31 so that the carriage will stay in any desired position and the pointer will remain on any selected calibration on the scale.

Fixed to one end of the carriage 18 and to the upper surface or face of the carriage is a cross plate 34. Cross plate 34 has a dove-tail groove 35 in its upper face 36 extending the full length of the cross plate. Preferably the cross plate is constructed in a manner similar to the base plate and is of the same material. The cross plate, however, has an additonal recess 37, in which is secured a rack bar 38.

A cross slide 39, wedge shaped in cross section, is slidably mounted in the cross slide groove 35 of cross plate 34. The cross slide 39 is of similar construction to carriage 18 and preferably is of the same material. Cross slide 39 has a rack bar groove 40 in its bottom face 41 and a pinion recess 42 at one side of the rack bar groove 40. A pinion 43 is rotatably mounted in the pinion recess or chamber 42. A pinion turning knob 44 is mounted on the cross slide. Knob 44 includes a shaft 45, which extends through an opening 46 in the upper face of the cross slide 39, and to which the pinion 43 is secured.

A cross slide shim adjustment plate 48 is mounted in the groove 35 of cross plate 34 adjacent the cross slide. Set screws 49 extend through the cross plate 48 to provide means for bringing plate 48 against cross slide 39.

A second calibrated scale 50 is secured to the upper face 36 of the cross plate 34 adjacent the cross slide groove 35 and cross slide 39. A second pointer 51 is fixed to cross slide and extends over the scale 39 for movement along the scale.

Adjustably and removably secured to the cross slide 39 by knurled headed screws 52 are a pair of spaced pattern holding arm members 53. Pattern holding arm members 53 are identically constructed, each having a plurality of spaced securing openings 54 at one end for extending or shortening purposes, and a clip type clamp 55 at the other end.

Clamps 55 each have a lower arm 56 and an upper arm 57 which arms are pivotally connected by hinge brackets 58 and 59 and hinge pin 60 intermediate their ends. A pair of spaced pattern holding pins 61 and 62 are secured to the lower face of each upper arm 57 and a pair of like spaced pin openings 63 are provided in each lower arm 56 to receive only the tips of the pins 61 and 62. A coil spring 64 around the hinge pin 60 and between the upper and lower arms 56 and 57 biases the free ends of the arms together with the tips of the pattern holding pins 61 and 62 seated in the pin openings 63.

The knurled headed screws 52 have shoulder portions 65 which bear against the lower arms 56 adjacent the securing openings 54 to hold the members 53 in any desired position.

The pattern grading device is shown to be secured to a metal base plate 80 formed with U-flange 81. A plurality of clamping screws 82 are provided along U-flange 81 for clamping the device to a table or other support.

The operation of the grading device is as follows. A pattern piece 66, for grading a material 67, (see Fig. 4) is placed in the jaws of members 53 and is gripped by teeth 62. The pattern thus rests on the material being graded. The garment size is then obtained by tracing around the edges of pattern 66. When different, and larger, size patterns are desired, arms 53 are moved longitudinally by actuation of cross-slide 39 until the required size is determined off by indicia 50. The outline of pattern 66 along the sides thereof is traced. Base plate 15 is then moved at right angles thereto, as determined by scale 26, and the pattern size is marked off. This composite will give the desired larger graded pattern. In this manner, any size pattern is obtained by a single instrument.

The modification of the present invention illustrated in Figs. 9 and 10 is characterized by the provision of a cross slide 68 and cross plate 69 similar to cross slide 39 and cross plate 34 described above and with like parts given the same reference numbers but primed to distinguish the figures. Cross plate 69 however, has a plurality of screw end receiving openings 70 spaced in accordance with the calibrations on scale 50 and cross slide 68 has threaded screw openings 71 (only one shown) to receive a knurl headed screw 72 to hold pattern holding arm members 53' to the cross slide. A resilient ring 73 fits around screw 72 under its head 74 normally to hold tip end 75 of the screw out of engagement with cross plate openings 70 so that cross slide can move along the cross plate. Tightening the screw 72 however compresses the ring 73 and permits the tip end 75 of the screw to engage any selected one of the openings 70. The operation of Figs. 9 and 10 is similar to that of Figs. 1 to 8, in all other respects.

While specific arrangements of parts and details of construction have been shown, these are for purposes of illustration only, and modifications may be made by persons skilled in the art without departing from the spirit of the invention, as determined by the scope of the claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. A pattern grading device comprising a base plate a carriage slidably mounted on the base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the base plate scale being a rack fixed to the base plate and a pinion rotatably mounted on the carriage, said base plate having a groove to seat the rack and for the pinion to travel in along the rack.

2. A pattern grading device comprising a base plate, a carriage slidably mounted on the base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the base plate scale being a rack fixed to the base plate and a pinion rotatably mounted on the carriage, said base plate having a groove to seat the rack and for the pinion to travel in along the rack, said means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale being a rack fixed to the cross plate and a pinion rotatably mounted on the cross slide, said cross plate having a groove to seat said rack and for said pinion to travel in along the rack.

3. A pattern grading device comprising a base plate a carriage slidably mounted on a base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the base plate scale being a rack fixed to the base plate and a pinion rotatably mounted on the carriage, said base plate having a groove to seat the rack and for the pinion to travel in along the rack, a carriage shim adjustment plate adjacent the carriage in the groove of the base plate and adjustment screws through the base plate bearing against the carriage shim adjustment plate to bias said plate against the carriage.

4. A pattern grading device comprising a base plate, a carriage slidably mounted on the base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the base plate scale being a rack fixed to the base plate and a pinion rotatably mounted on the carriage, said base plate hav-

ing a groove to seat the rack and for the pinion to travel in along the rack, said means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale being a rack fixed to the cross plate and a pinion rotatably mounted on the cross slide, said cross plate having a groove to seat said rack and for said pinion to travel in along the rack, a cross slide shim adjustment plate adjacent the cross slide in the groove of the cross plate and adjustment screws through the cross plate bearing against the cross slide adjustment plate to bias said plate against the cross slide.

5. A pattern grading device comprising a base plate a carriage slidably mounted on the base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said pattern holding arm members each having a plurality of securing openings at one end and a clip type clamp at the other end, said clip type clamps each having a lower arm and an upper arm, said upper arm having two ends and being pivotally connected intermediate said ends with the lower arm, a pair of spaced pattern holding pins on the upper arm, said lower arm having a pair of spaced pin openings adapted to receive only the tips of said pins, and a spring between the upper and lower arms, biasing them together at their free ends.

6. A pattern grading device comprising a base plate, a carriage slidably mounted on the base plate, a scale on the base plate and a pointer on the carriage for movement along the scale, means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the scale, a cross plate fixed to the carriage, a cross slide slidably mounted on the cross plate, a second scale on the cross plate and a second pointer on the cross slide for movement along the second scale, means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale, and a pair of spaced pattern holding arm members removably secured to the cross slide, said means to slide the carriage on the base plate and to hold the carriage with the pointer selectively pointed to any part of the base plate scale being a rack fixed to the base plate and a pinion rotatably mounted on the carriage, said base plate having a groove to seat the rack and for the pinion to travel in

along the rack, said means to slide the cross slide on the cross plate and to hold the cross slide with the second pointer selectively pointed to any part of the second scale being a rack fixed to the cross plate and a pinion rotatably mounted on the cross slide, said cross plate having a groove to seat said rack and for said pinion to travel in along the rack, said pattern holding arm members each having a plurality of securing openings at one end and a clip type clamp at the other end, said clip type clamps each having a lower arm and an upper arm, said upper arm having two ends and being pivotally connected intermediate said ends with the lower arm, a pair of spaced pattern holding pins on the upper arm, said lower arm having a pair of spaced pin openings adapted to receive only the tips of said pins, and a spring between the upper and lower arms biasing them together at their free ends.

7. A pattern grading device comprising a base plate with a dove-tail groove, a carriage slidably mounted in said groove on the base plate, a scale on the base plate adjacent the groove and carriage and a pointer fixed to the carriage for movement along the scale, a rack in the groove fixed to the base plate, a pinion rotatably mounted on the carriage and a knob connected to the pinion for rotation of the pinion to move the carriage along the base plate and the pointer along the scale, a cross plate fixed to the carriage and having a dove-tail groove, a cross slide suitably mounted in the cross plate groove, a scale on the cross plate adjacent the cross slide and a pointer fixed to the cross slide for movement along said scale, a rack in the cross plate groove fixed to the cross plate, a pinion rotatably mounted on the cross slide and a knob connected to said pinion for rotation thereof to move the cross slide along the cross plate and the pointer on the cross slide along the scale on the cross plate, a pair of spaced pattern holding members each having a plurality of fastening openings at one end, spaced threaded openings in the cross slide and a pair of screws for said openings removably and adjustably, to secure each of said arms at one end to the cross slide, said threaded openings extending through the cross slide, a plurality of screw end receiving openings in the cross plate spaced in accordance with the calibrations on the cross plate scale and disposed for selective alignment with said screws, and a pair of resilient rings for said screws adapted normally to hold the screw out of engagement with said openings in the cross plate for movement of the cross slide along the cross plate.

References Cited in the file of this patent

UNITED STATES PATENTS

310,666	Gates	Jan. 13, 1885
628,296	Atwell	July 4, 1899
1,272,729	Towsley	July 16, 1918
2,429,015	Contrastano	Oct. 14, 1947