July 17, 1951 E. J. ENS 2,560,937

ADJUSTABLE CROPPING ANGLE DEVICE

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Fig. 1.

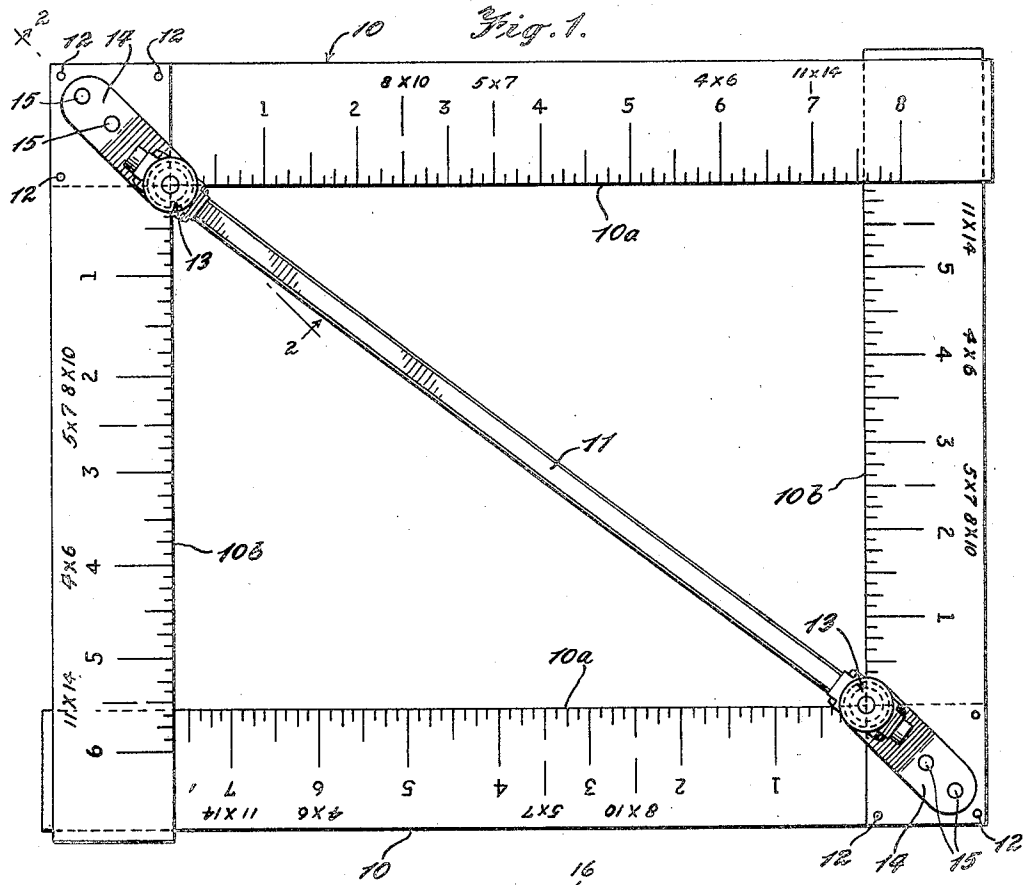


Fig. 2.

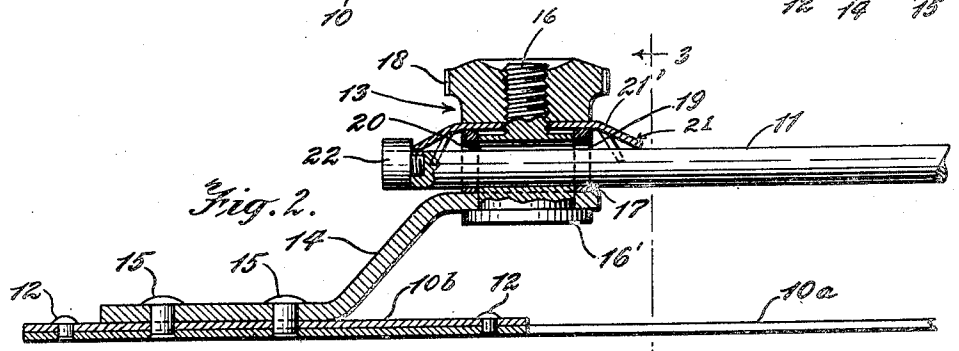
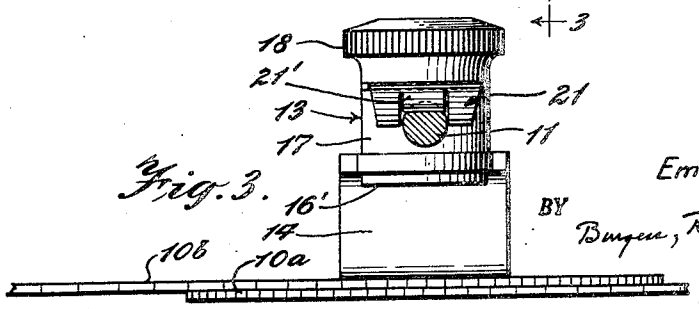


Fig. 3.



INVENTOR.
Emil J. Ens
BY
Burgess, Ryan & Hicks
ATTORNEYS

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Fig. 4.

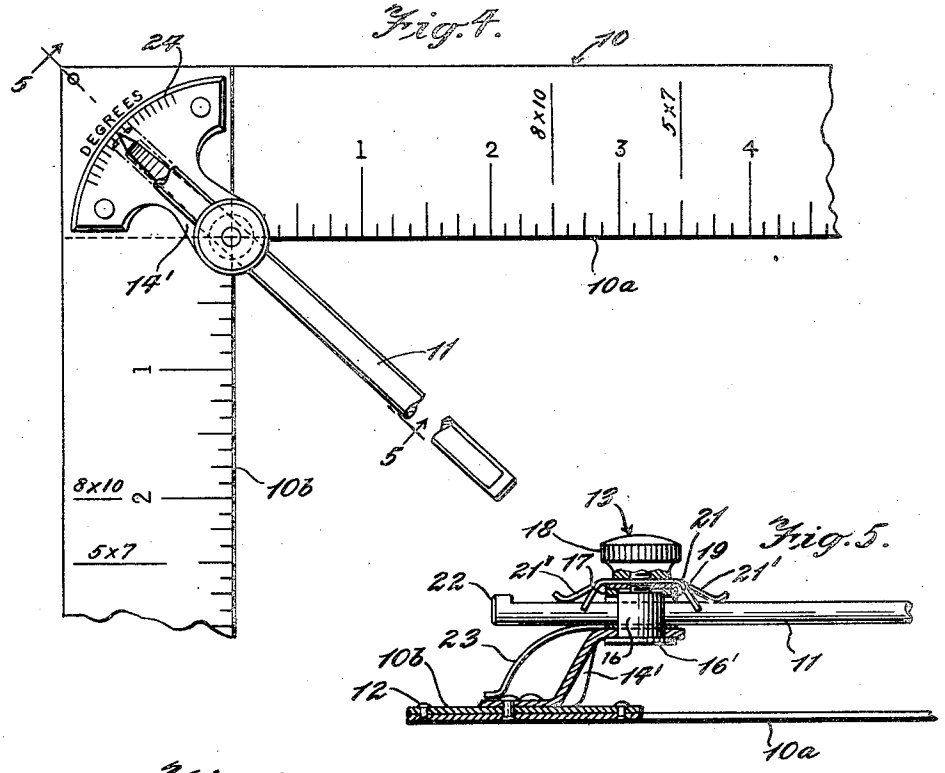


Fig. 5.

Fig. 6.

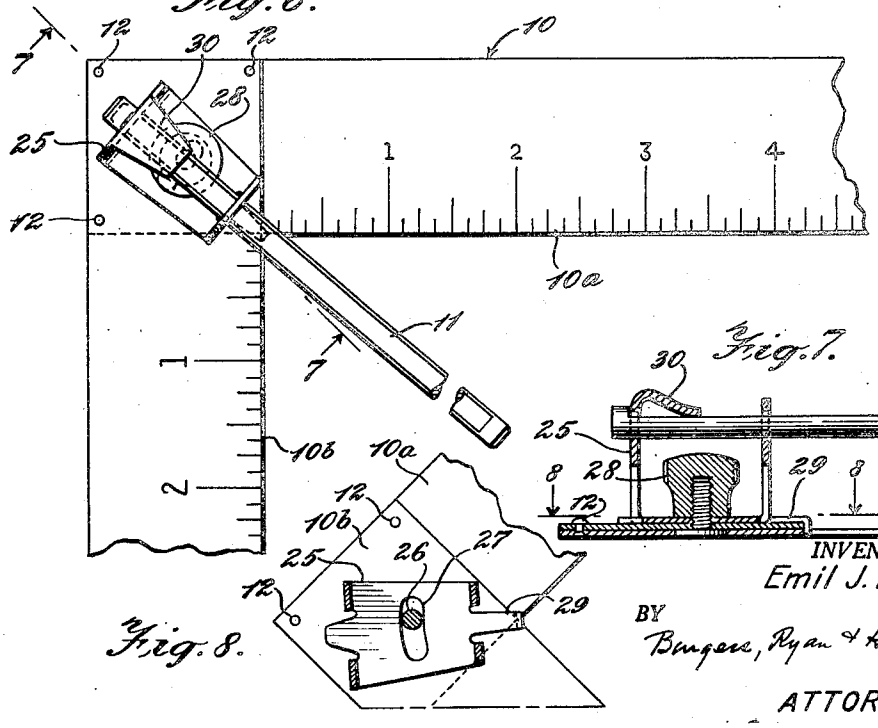


Fig. 7.

Fig. 8.

INVENTOR.
Emil J. Ens

BY
Burgess, Ryan & Hicks

ATTORNEYS

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ADJUSTABLE CROPPING ANGLE DEVICE

Emil J. Ens, Newark, N. J., assignor to Magnus Research, Inc., Newark, N. J., a corporation of New Jersey

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5 Claims. (Cl. 33—98)

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This invention relates to improvements in photographic accessories and more particularly to adjustable cropping angles for determining a rectangular area of a photograph having dimensions of proper proportions for enlargement to a predetermined size.

The various objects and advantages of the invention will be apparent and best understood from the following description and the accompanying drawings in which:

Fig. 1 is a plan view of a set of adjustable cropping angles embodying the invention;

Fig. 2 is a section view taken along the line 2—2 of Fig. 1, but on a somewhat enlarged scale;

Fig. 3 is a section view taken along the line 3—3 of Fig. 2;

Fig. 4 is a plan view of a portion of a modified form of a set of adjustable cropping angles embodying the invention;

Fig. 5 is a section view taken along the line 5—5 of Fig. 4;

Fig. 6 is a plan view of a portion of another modified form of a set of adjustable cropping angles embodying the invention;

Fig. 7 is a section view taken along the line 7—7 of Fig. 6; and

Fig. 8 is a section view taken along the line 8—8 of Fig. 7.

The adjustable cropping angles embodying the present invention permit the user to select a rectangular area in a photograph that has dimensions of the same proportions as the dimensions of a rectangle of a given size to which the selected area is to be enlarged. The use of such adjustable cropping angles enables the user to readily select any desired area or part of the photograph having dimensions that are of the proper proportions without the necessity of computing the proportions for the dimensions of the selected area or part of the photograph, thus saving time and also permitting the selection of the most appropriate portion of the photograph for the enlargement desired.

As shown in Fig. 1, there is a pair of angle members 10 formerly right angles that are placed in opposed relation to each other so as to define or frame a rectangle with a member or strut 11 extending diagonally across said rectangle. The angle members 10 may be made in an inexpensive manner by placing strips 10a and 10b of appropriate lengths of a suitable sheet material with the ends of the strips overlapping so that the intersection of the inner edges of the strips 10a and 10b defines a right angle. Strips 10a and 10b are then secured in this position by

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suitable fastening means such as rivets or pins 12.

The diagonal member 11 is slidably mounted in pivoted members 13. The pivoted members 13 are pivotally mounted on brackets 14 that are secured to the right angle members 10 by rivets 15. Thus, the angle members 10 may be moved toward or away from each other along the diagonal member 11 to define rectangular areas of various sizes. The brackets 14 are positioned so that the pivot point of the pivoted members 13 is located directly above the intersection of the edges of the strips 10a and 10b defining the respective right angles or in other words at the corner of the right angles.

The pivoted members 13 consist of a stud 16 that extends through an opening in the bracket 14 with a headed portion 16' of the stud 16 bearing against the underside of the bracket 14. A sleeve 17 surrounds a portion of the stud 16 that extends above the bracket 14 and the sleeve 17 rests on the upper surface of the bracket 14 in opposed relation to the headed portion 16' of the stud 16. A clamping nut 18 threadably engages with a portion of the stud 16 extending above the sleeve 17 and the nut 18 bears against the sleeve 17 when tightened. Thus, when the nut 18 is tightened, it clamps the bracket 14 between headed portion 16' of the stand 16 and the sleeve 17 thereby holding the pivoted member 13 against angular movement relative to the bracket 14.

As shown best in Fig. 2, the stud 16 and the sleeve 17 have transverse openings 19 and 20, respectively, that are aligned to receive the diagonal member 11 with a sliding fit. The openings 19 in the sleeve 17 may be slightly larger than the opening 20 in the stud 16 to prevent binding as a result of movement of the sleeve 17 relative to the stud 16 as the nut 18 is tightened. A spring member 21 with spring fingers 21' that bear a flattened surface on the upper side of the diagonal member 11 is secured beneath the clamping nut 18. The frictional engagement of the spring fingers 21' with the diagonal member 11 serves to hold the angle members 10 at the position to which they have been set on the diagonal member 11. Headed portions 22 may be provided at the ends of diagonal member 11. The headed portions 22 are engaged by the spring fingers 21' to prevent the diagonal member 11 from being drawn out of the pivoted members 13.

When the clamping nuts 18 are loosened, the opposed angle members 10 may be moved rela-

tive to each other to a position where they define a rectangle having the desired dimensions or dimensions proportional thereto. In order to position the angle members 10 at a desired size, the strips 10a and 10b may have scales printed on their faces or appropriate settings for frequently used dimensions may be indicated thereon or both scales and frequently used dimensions may be indicated.

To set the angle members 10 for a rectangle of a given size, the clamping nuts 18 are loosened and the angle members 10 are moved along the diagonal member 11 and are also moved angularly until the appropriate markings on the strips 10a are brought into coincidence with the appropriate markings on the strips 10b. For example, in setting the angle members 10 for a 4 x 6 rectangle, the members 10 are moved to a position where the 6 inch markings on the strips 10a coincide with the 4 inch markings on the strips 10b. During such setting of the angle members 10 the pivoted members 13 permit such angular movement of the diagonal member 11 as required and the diagonal member 11 automatically assumes the proper angular position between the diagonally opposed corners of the rectangle for which the angle members 10 are set.

After angle members 10 have been positioned in the manner just described, the clamping nuts 18 are tightened to hold the diagonal member 11 and angle members 10 against angular movement relative to each other. Thereafter, the angle members 10 may be moved toward or away from each other as desired and the dimensions of the rectangle they define will have the same proportion as the dimensions of the rectangle for which the angle members 10 have been set. This permits the angle members 10 to be moved so as to frame any desired portion of a photograph or negative with the assurance that the portion so framed may be enlarged to the exact size of the desired enlargement.

In the forms of the invention illustrated in Figs. 4–8, the parts that are similar to those previously described have been identified by like reference characters and such parts need not be described in detail here. In the embodiment of the invention illustrated in Figs. 4 and 5, a pointer 23 is secured to the diagonal member 11 by means of the pivoted member 13 and so that the pointer 23 moves with the diagonal member 11 to indicate its angular position with reference to the rectangle. The pointer 23 registers with a series of markings on a rearwardly extending portion 24 of a bracket 14'. The rearwardly extending portion 24 of the bracket 14' is provided with markings in degrees or other suitable identification numerals so that by appropriate calibration of such markings, the pointer 23 may be set so that the diagonal member 11 will be at the proper angular position in respect to the angle members 10 for the desired proportions of the sides of the rectangle defined by the angle members 10.

In the embodiment of the invention illustrated in Figs. 6, 7, the diagonal member 11 is slidably supported in a U-shaped bracket 25. The base of the U-shaped bracket 25 is supported on the angle member 10 and is secured thereto by a stud 26 that extends through the angle member 10 and an arcuate slot 27 in the base of the bracket 25. A clamping nut 28 threadably engages the stud 26 to hold the bracket 25 in the position to which it is set. A finger 29 extends from the base of the bracket 25 to the intersection of the strips 10a and 10b forming the right angle. The end of the finger 29 is bent downwardly to engage with the intersection of the sides of the strips 10a and 10b and serves as the pivot point about which the bracket 25 may be moved angularly with respect to the angle member 10.

The diagonal member 11 extends through openings in the upstanding legs of the U-shaped bracket 25 and a portion 30 of one of the legs is bent over into frictional engagement with the top of the diagonal member 11 so as to prevent unintentional movement of the angle members 10 along the diagonal member 11. The diagonal member 11 is positioned above the pivoting finger 29 at the corner of the right angle formed by the intersection of the strips 10a and 10b so that the diagonal member bisects the right angle.

It will be understood that various changes and modifications in the illustrated embodiments of the invention may be made by those skilled in the art without departing from the scope of the invention as defined by the appended claims.

I claim:

1. In a set of adjustable cropping angles for determining rectangular areas having dimensions of the same proportions as the dimensions of a rectangle of a given size, the combination including a pair of angle members with each of said members forming a right angle, said angle members being positioned in opposed relation to each other to define a rectangle, brackets carried by each of said angle members, pivoted members carried by said bracket, said pivoted members being pivoted at diagonally opposed corners of the rectangle formed by the angle members and including a stud extending through the bracket, said stud having a headed portion engaging with the bracket, a sleeve surrounding a portion of said stud and engaging with the bracket in opposed relation to said headed portion and a clamping nut threadably engaging with said stud and bearing against said sleeve, said sleeve and said stud having alignable transverse openings and a strut extending through said openings and diagonally across the rectangle formed by the angle members, said strut being slidable relative to the pivoted members.

2. In a set of adjustable cropping angles, the combination as defined in claim 1 which includes a resilient member secured beneath the clamping nut and bearing against the strut, said resilient member frictionally holding the strut against movement relative to the stud.

3. A set of adjustable cropping angles for defining rectangular areas having dimensions in the same proportion as the dimensions of a given rectangular area comprising a pair of angle members, each of said angle members being formed from flat strips of sheet material and defining right angles, said angle members being positioned in opposing relation to each other and defining a rectangle with the right angles formed by the respective angle members being located at diagonally opposed corners of said rectangle, a strut extending diagonally across the corners of the rectangle formed by the right angles of the opposing angle members, and means for pivotally securing said strut to said angle members, said means including a bracket secured to one of the angle members, a stud carried by said bracket, said stud being pivoted directly over the inner vertex of the right angle formed by the said angle member and having a transverse opening therein for slidably receiving the strut and clamping means engaging with the

bracket and the stud and securing the stud against pivotal movement relative to the bracket and the said angle member.

4. A set of adjustable cropping angles as defined in claim 3 which includes a scale having angular divisions secured to the bracket and an indicator registering with said scale secured to said pivoted stud and movable therewith.

5. A set of adjustable cropping angles for defining rectangular areas having dimensions in the same proportion as the dimensions of a given rectangular area comprising a pair of angle members, each of said angle members being formed from flat strips of sheet material defining right angles, said angle members being positioned in opposing relation to each other and defining a rectangle with the right angles formed by the respective angle members being located at a diagonally opposed corners of said rectangle, a strut extending diagonally across the rectangle between the right angles formed by the opposing angle members, a bracket secured to at least one of the angle members, a stud pivotally carried by said bracket, said stud having a portion extending through said bracket

and being pivoted directly above the inner vertex of the right angle formed by said angle member, a sleeve surrounding a portion of the stud extending through the bracket, said sleeve and the stud having alignable openings therein through which the diagonal strut extends with slidable fit and means for clamping the sleeve and the stud in a fixed position on the bracket.

EMIL J. ENS.

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