

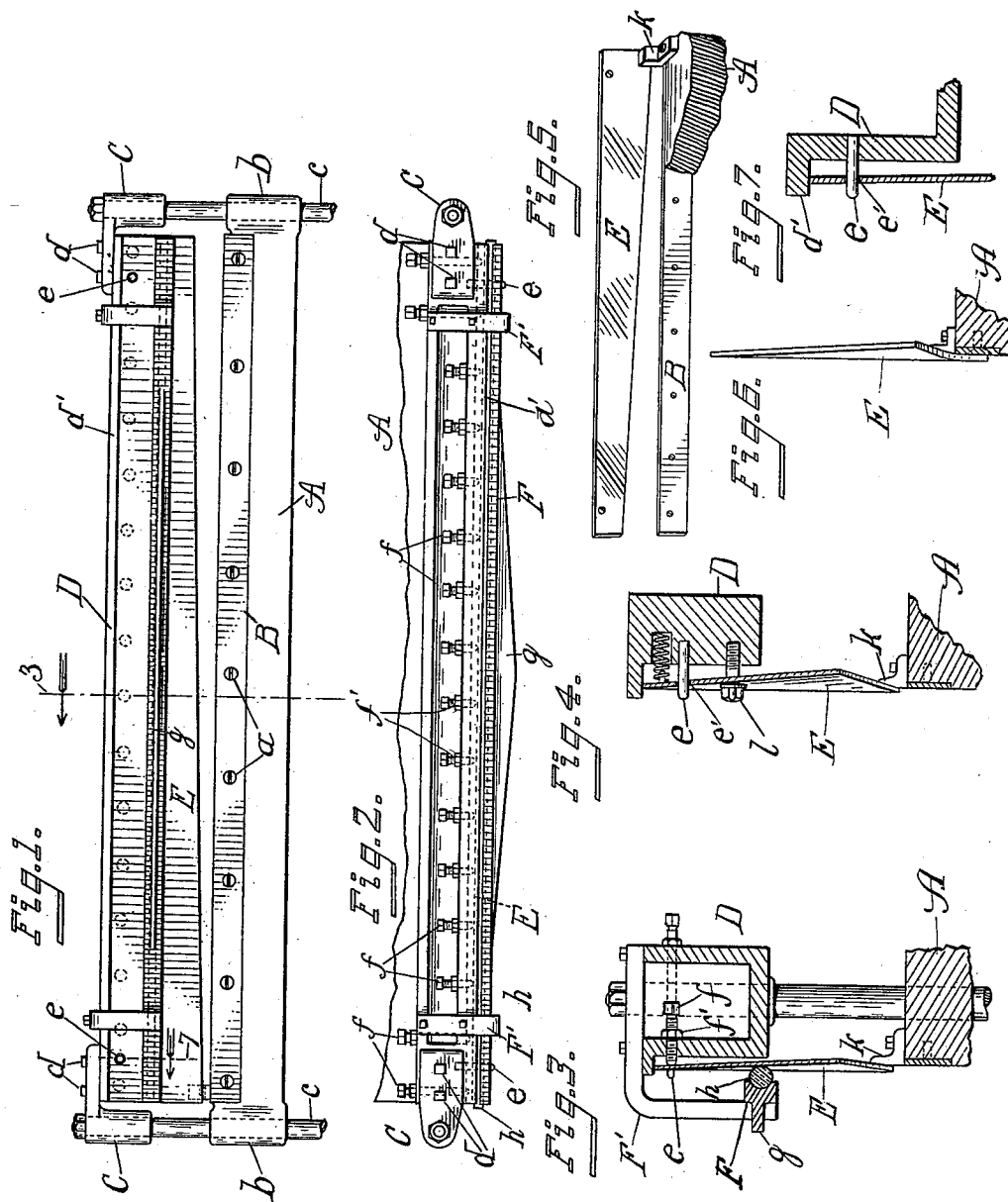
No. 635,457.

J. YANDALL.
SHEARS.

Patented Oct. 24, 1899.

(Application filed Apr. 24, 1899.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

JACOB YANDALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN SHADE CLOTH COMPANY, OF SAME PLACE.

SHEARS.

SPECIFICATION forming part of Letters Patent No. 635,457, dated October 24, 1899.

Application filed April 24, 1899. Serial No. 714,245. (No model.)

To all whom it may concern:

Be it known that I, JACOB YANDALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Shears, of which the following is a specification.

My invention relates particularly to an improvement in shears of a class employing comparatively long blades and used in cutting cloth or similar material of considerable width.

My object is to provide an improved construction of shears whereby close contact of the cutting edges of the blades at the point of shearing is insured throughout the entire cut and wherein any warpage of the blades cannot derange the action of the shears.

I accomplish my purpose preferably by means of a construction wherein one of the blades is given a certain degree of flexibility and is normally held in a position to cross the other blade at quite an acute angle, its cutting edge being also inclined (in the plane of movement) to that of the other, so that as the blades are closed the one is gradually forced out of the plane of the other by means of the force exerted at the changing point of contact at the shearing edges of the blades.

In the accompanying drawings, Figure 1 is a view in front elevation of the preferred form of my improved shears, the vertical rods which operate the upper blade being shown broken; Fig. 2, a plan view of the same; Fig. 3, a transverse section on line 3 of Fig. 1; Fig. 4, a similar section showing a modification of the means for holding the upper shear-blade in a crossed position; Fig. 5, a view in rear perspective of the blades and a portion of the bed to which the lower one is secured and showing also a stop for holding the wide end of the upper blade in proper position to pass the lower blade in the initial downward movement; Fig. 6, a view showing the upper blade partially lowered and illustrating the manner in which the said blade is gradually crowded over to pass the shearing edge of the lower blade, and Fig. 7 an enlarged broken section taken at line 7 of Fig. 1.

A represents a portion of a stationary bed-plate, which may be supported in any suit-

able manner. To an edge-face of the plate A is firmly attached, as by screws *a*, the lower shear-blade B, shown as set into a rectangular recess in the upper portion of the said face. The plate A is provided with guides *b* for vertically-movable rods *c*, by which the upper blade is supported and moved by any desired mechanism, as by suitable treadle mechanism. (Not shown.)

Rigidly secured to the upper ends of the rods *c* are clips or brackets C, to which is attached, by bolts *d*, a cross-bar D, which supports the upper blade E. The bar D is preferably of channel-bar form, placed wings upward and having solid end portions for the attachment of the brackets C. The front wing is provided at its upper margin with a forward-projecting flange *d'*. The blade E is supported upon pins *e*, which project forwardly from the front wing of the channel-bar and pass through perforations *e'* in the upper margin of the shear-blade. Set-screws *f*, arranged at close intervals, provided with lock-nuts *f'* and the front ends of which project from the front face of the channel, serve as means for forcing the upper portion of the blade evenly forward, thus tending to rock the lower edge of the blade rearwardly about a fulcrum F, supported on brackets F', attached rigidly to the channel D. The part F is preferably a bar supported at its ends by said brackets and provided with a strengthening-rib *g*. The face adjacent to the blade is preferably provided with a gasket *h*, of rubber or other springy material, permitting some "give" to the blade. The upper blade is wider at one end than at the other, the lower or cutting edge being inclined, as shown. Preferably the upper blade when at the extreme upper end of its stroke is raised completely above the lower blade. Normally sufficient tension is exerted at the set-screws *f* to throw the lower edge of the upper blade directly above or even back of the cutting edge of the lower blade. When the upper limit of the stroke is such as to permit the upper blade to be raised clear from engagement with the lower blade, a stop *k* on the bed-plate, projecting flush with the cutting edge of the lower blade, is supplied, which engages the wide end of the upper blade at

its lower margin and causes it to slip past said cutting edge in the initial downward movement of the upper blade. During the further downward movement the shearing-point shifts from the wide end of the blade to the narrow end, and a constant force is exerted at the shearing-point as the lower blade gradually forces the upper one from its crossed position. In this movement the elastic fulcrum *h* is gradually distorted throughout its length, permitting the blade to swing forward slightly. It is believed, however, that it would be possible to fix the blade unyieldingly and depend upon the springiness of the metal to accomplish the desired end so long as the feature of crossing the shearing edges is retained.

Fig. 4 represents a change of structure wherein the blade is yieldingly held by springs confined at intervals between its upper margin and the bar D, headed set-screws *l* serving as a fulcrum near the longitudinal center line of the blade, about which the blade rocks under pressure at the point of shearing.

Fig. 6 shows the upper blade partially lowered and illustrates clearly the crossing of the cutting edges and the manner in which the upper blade is gradually forced out of the plane of the lower one.

The principle of operation may be applied with good results to shears having pivotally-connected blades, the means for insuring a crossing of the cutting edges being suitably modified. I desire to be understood as not intending by the particular description given above to limit myself to the precise details of construction shown.

In the appended claims by the expression "shearing-line" is meant the line upon which shearing actually would occur, being made up of all the "points of shearing" above mentioned. In the construction shown this "line of shearing" is the upper front corner line or "shearing edge" of the lower blade.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a shears, the combination of a fixed blade having a horizontal shearing edge, a vertically-movable flexible blade having a shearing edge inclined to a horizontal, means

for engaging the inner lower margin of the wide end of the upper blade when in its highest position, and means for yieldingly holding the upper blade flexed with its cutting edge crossing that of the lower one crosswise of the direction of movement, whereby force is constantly exerted between the blades at the shearing-point during the downward stroke, substantially as and for the purpose set forth.

2. In a shears, the combination of a fixed blade having a horizontal shearing edge, a vertically-movable bar connected therewith, an upper blade loosely connected with said bar, a stop or the like for engaging the inner lower margin of the wide end of the upper blade, and means for yieldingly holding the cutting edge of the upper blade in a position crossing that of the lower blade crosswise of the direction of movement, substantially as and for the purpose set forth.

3. In a shears, the combination of a stationary blade, a vertically-movable cross-bar, a shear-blade suspended from said cross-bar attached at its upper margin, means supported by said cross-bar affording a fulcrum at the outer side of said upper blade near its longitudinal center line, and means coacting with said fulcrum for producing a flexure in the upper blade and causing its cutting edge to contact closely with that of the lower blade at the point of shearing during the downward stroke, substantially as and for the purpose set forth.

4. In a shears, the combination of a bed-plate equipped with guides and with a fixed lower shear-blade, vertically-movable rods in said guides, a cross-bar supported at the upper ends of said rods, a fixed bar F provided with a yielding gasket *h* contacting with the outer surface of the upper blade along its longitudinal center line, and set-screws in the cross-bar bearing against the inner upper margin of the upper shear-blade and serving to produce a flexure, substantially as and for the purpose set forth.

JACOB YANDALL.

In presence of—

R. T. SPENCER,
D. W. LEE.