

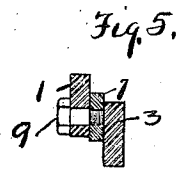
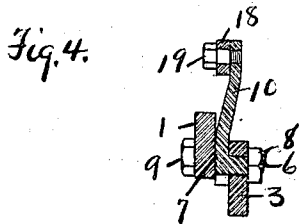
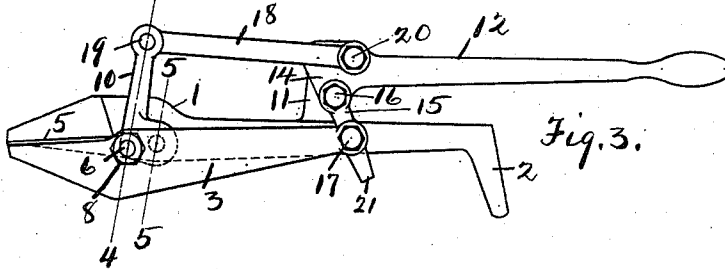
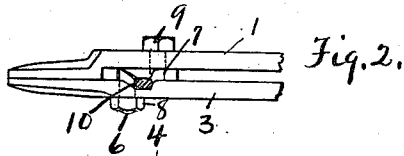
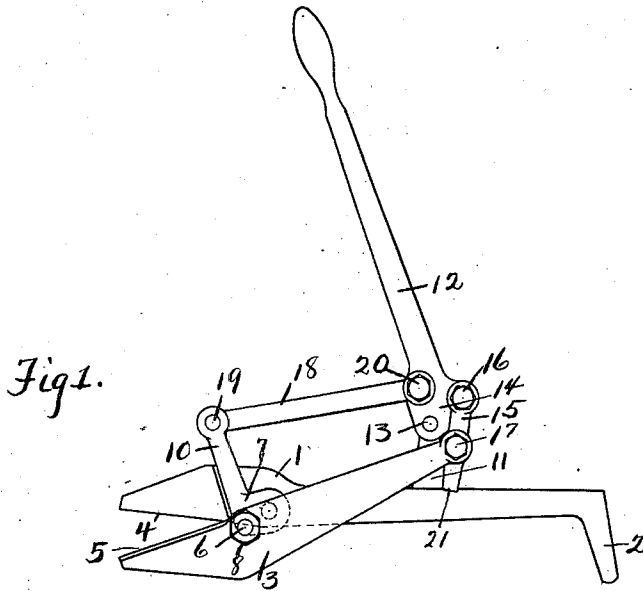
H. M. SWAN.

SHEARS.

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989,824.

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Witnesses

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SHEARS.

989,824.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY M. SWAN, citizen of the United States, and residing at Corry, county of Erie, and State of Pennsylvania, have invented new and useful improvements in Shears, of which the following is a specification.

This invention relates to shears, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly the invention relates to that type of shears ordinarily used by tinners. With this type of shears where the thickness of the metal varies, the thicker plates cannot be inserted between the open blades as far as desirable.

One of the objects of this invention is to obviate this difficulty, and it is accomplished by varying the pivotal mounting of one of the blades relatively to the other blade so as to vary the opening of the shears. In this way, the opening in the shears can be carried back to a position near the pivot and can be of such extent as to permit the ready insertion of any plate within the capacity of the shears.

Figure 1 is a side elevation of the shears, with the blades open; Fig. 2 a top view of the shears partly in section; Fig. 3 is a side elevation of the shears with the blades closed; Fig. 4 a section on the line 4—4 in Fig. 3; Fig. 5 a section on the line 5—5 in Fig. 3.

1 marks the stationary blade, and has the usual projection 2 for securing it to the bench; 3 the movable blade; 4 and 5 the cutting edges of the blades. The movable blade is pivoted on the pin 6 which is carried by a movable mounting 7, the blade being secured by the nut 8. The movable mounting 7 is pivotally secured to the stationary blade 1 by screw 9. A lever arm 10 extends upwardly from the mounting by means of which it can be operated.

It will be observed that by swinging the mounting 7 the opening between the edges of the blades may be materially increased. Thus in Fig. 1 the opening extends back to the rear ends of the cutting edges of the blades. The cutting edge of the stationary blade is shown in Fig. 3 in dotted lines, and in this figure, the movable mounting has been swung from the position shown in Fig.

1 so that the rear ends of the cutting edges overlap as indicated.

A post 11 extends upwardly from the stationary blade and the lever 12 is pivotally mounted by means of a pin 13 on this post. The lever 12 has an arm 14 in the shape of a bell crank which forms one bar of the toggle lever. The other bar 15 of the toggle lever is connected by the screw 16 in the arm 14 and by means of the screw 17 in the blade 3. It will readily be observed that as the lever 12 is swung on the pin 13, the bars of the toggle lever are swung operating the blade 3 and as the point of contact of the cutting edges recedes from the pivot, the toggle lever approaches alinement and consequently increases its power in proportion to the distance from the pivot of the blades to the point of contact of the cutting edges.

The link 18 is connected by a screw 19 with the lever 10, and by screw 20 with the lever 12. It will be observed, therefore, that as the lever 12 is swung to close the blades, the lever 10 and movable mounting 7 are also moved. As the point of contact between the cutting edges recedes from the pivot, the screw 20 forming a pivot pin between the link 18 and lever 12 swings around the pivot pin 13 with the lever 12 so as to approach alinement with the pivot 19, thus increasing the power of the lever 12 in its action upon the lever 10. In Fig. 3, it will be observed that the pivot 20 is brought approximately to alinement with the pivots 13 and 19. From this it will be seen that not only is the leverage through the toggle lever proportioned to the distance between the point of contact between the cutting edges and the pivots of the blades, but the mechanism for actuating the movable mounting also shifts its leverage to vary as the distance between the point of contact between the cutting edges of the blades and their pivots varies. In this way, with a uniform force on the lever 12 an approximately uniform cutting action along the entire length of the cutting edges of the blades is effected.

The link 15 has the extension 21. This extension engages the shank of the blade 1 as the shank of the blade 3 is forced down, and being thus interposed between these shanks prevents the spreading of the cutting edges of the blades.

It will be noted that the cutting edges are

given a slight longitudinal movement relatively to each other due to the arc of movement of the movable mounting.

It will be noted that the link 15 has the extension 21 which, operating against the handle end of the blade 1, tends to hold the cutting edges 4 and 5 in engagement.

What I claim as new is:

1. In a shear the combination with the shear blades; of a pivotal mounting for one of the blades; means for automatically shifting the mounting relatively to the other blade as the blades are operated.

2. In a shear the combination with the shear blades; of a swinging mounting pivotally connected to each of the blades; and means for automatically swinging the mounting as the blades are operated to change the pivotal relation of the blades.

3. In a shear, the combination with the shear blades; of a swinging mounting pivotally connected to each of the blades; a lever extending from the mounting; and means acting on the lever for swinging the mounting to vary the relation between the blades.

4. In a shear, the combination with the shear blades; of a pivotal mounting for one of the blades; and means for automatically shifting the mounting relatively to the other blade to move the cutting edge of the one blade relatively to the cutting edge of the other blade.

5. In a shear the combination with the shear blades; of a pivotal mounting for one of the blades; means for automatically shifting the mounting relatively to the other blade as the blades are operated to move the blades transversely relatively to each other.

6. In a shear, the combination with the shear blades; of an actuating lever mounted on one of said blades; means for communicating a movement of the lever to the other of said blades; a pivotal mounting for one of the blades; a movable support on the other of said blades; and a connection between said actuating lever and said mounting for automatically shifting the mounting as the blades are operated.

7. In a shear the combination with the blades; of an actuating lever mounted on one of said blades; means for communicating the movement of the lever to the other of said blades with an increasing leverage as the blades close; a pivotal mounting for one of the blades; a movable support on the other of said blades; and a connection between the said actuating lever and mounting for automatically shifting the mounting as the blades are operated.

8. In a shear the combination with the blades; of an actuating lever mounted on one

of said blades; means for communicating the movement of the lever to the other of said blades; a pivotal mounting for one of said blades; a movable support on the other of said blades; and a connection between the said blades and mounting to automatically shift the mounting transversely as the blades are operated with an increasing leverage as the blades are closed.

9. In a shear the combination with the blades; of an actuating lever mounted on one of said blades; a bar connecting said lever and the other of said blades forming a toggle joint; a swinging mounting pivotally connected to the pivot of said blades; a mounting lever extending from said mounting; a link between said mounting lever and actuating lever, the mounting being arranged relatively to the pivots to move the blades transversely toward each other as the actuating lever actuates the blades through the toggle lever to close the blades.

10. In a shear the combination with the blades; of an actuating lever mounted on one of said blades; means for communicating the movement of the lever to the other of said blades, comprising an extension 20 for engaging the first blade, and holding the ends of the blades against lateral displacement.

11. In a shear the combination with the blades; of an actuating lever mounted on one of said blades; a bar connection between said lever and the other of said blades, forming a toggle joint; and an extension on said bar engaging the first of said blades preventing a lateral displacement of the cutting edges of said blades relatively to each other.

12. In a shear the combination with the blades; of an actuating lever mounted on one of said blades; a bar connecting said lever and the other of said blades forming a toggle joint; a swinging mounting pivotally connected to each of said blades; a mounting lever extending from said mounting; a link between said mounting lever and actuating lever, the mounting being arranged relatively to the pivots to move the blades transversely toward each other as the actuating lever actuates the blades through the toggle lever to close the blades; and an extension on said bar acting in connection with the first blade for guiding the second blade, and preventing a lateral movement of one blade relatively to the other.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HARRY M. SWAN.

Witnesses:

J. C. THOMS,

ROBT. J. OSBORNE.