

A. S. BEAUCHAMP.
SHEARING MACHINE.
APPLICATION FILED APR. 16, 1910.

980,910.

Patented Jan. 10, 1911.

Fig. 1.

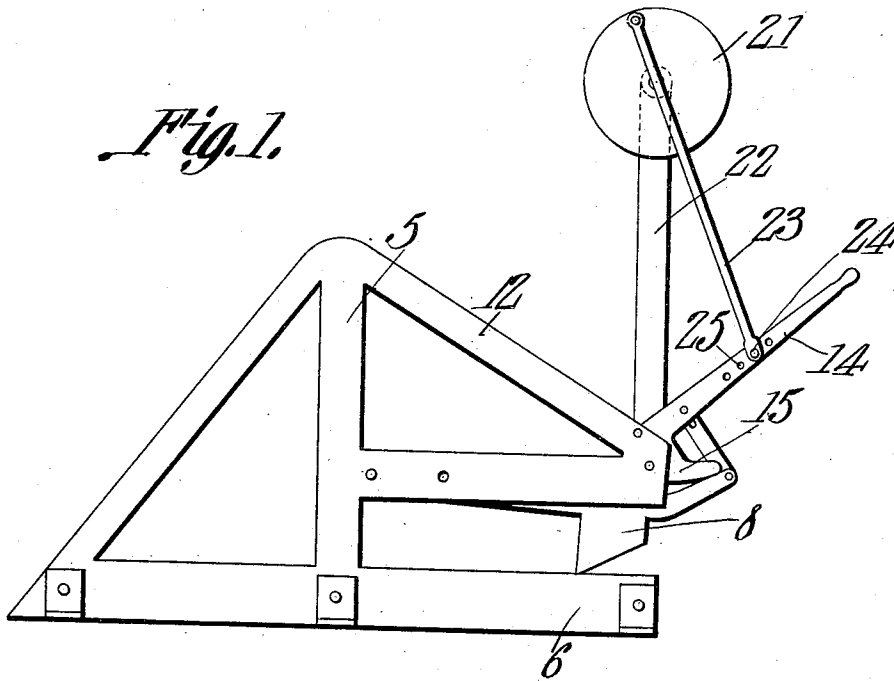


Fig. 2.

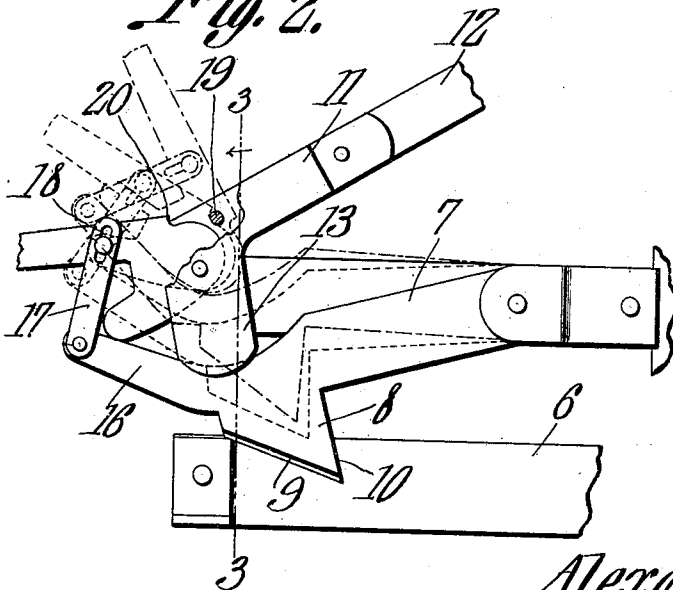
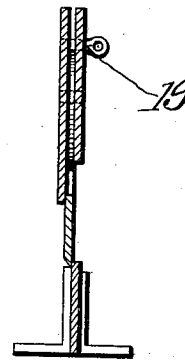


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER S. BEAUCHAMP, OF TEXICO, TERRITORY OF NEW MEXICO, ASSIGNOR OF ONE-HALF TO JOSEPH E. ALSIP, OF TEXICO, TERRITORY OF NEW MEXICO.

SHEARING-MACHINE.

980,910.

Specification of Letters Patent.

Patented Jan. 10, 1911.

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To all whom it may concern:

Be it known that I, ALEXANDER S. BEAUCHAMP, a citizen of the United States, residing at Texico, in the county of Roosevelt and Territory of New Mexico, have invented a new and useful Shearing-Machine, of which the following is a specification.

It is the object of the present invention to provide an improved machine for cutting openings of irregular contour in blanks of sheet material, and while the machine is intended primarily for use by tanners and blacksmiths, it will be readily understood that the principles thereof may be embodied in a machine adapted to cut blanks of card board or any other non-metallic material.

It is one aim of the invention to so construct the machine that pressure may be brought to bear directly upon the cutting blade so that heavy blanks may be cut with the expenditure of but little power.

A further aim of the invention is to so construct and mount the cutting blade that a blank being cut thereby cannot become accidentally displaced with respect to the blade except by the removal of a stop held normally in the path of movement of the blade actuating lever of the machine.

A further novel feature of the invention resides in the peculiar form of blade provided, the said blade having its cutting edge and its adjacent edge extending at an acute angle, the acute toe of the blade being presented downwardly toward the upper edge of a work-supporting bar with which it co-operates.

With the above and other objects in view, the invention consists in the general arrangement and construction of parts shown in the accompanying drawings, in which,

Figure 1 is a side elevation of the machine embodying the present invention. Fig. 2 is a similar view but looking at the opposite side and showing only a portion of the said machine, the blade being shown in lowered position in full lines and in raised position in dotted lines and being also shown in dot and dash lines in a further raised position which it may be caused to assume when the stop pin for the actuating lever is removed. Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 2 looking in the direction indicated by the arrows.

While in the drawings a specific form of frame is illustrated, it will be readily under-

stood that any other suitable form may be employed and that necessarily the form of frame must vary with the character of material to be cut. In the drawings, this frame is indicated in general by the reference numeral 5 and includes in its structure a work-supporting bar 6 with which the blade of the machine is to have shearing coöperation, the said bar being arranged in a vertical plane.

Pivoted at its forward end to the frame 5 is an arm 7 carrying a blade, indicated by the numeral 8. This blade 8 has its cutting edge 9 and its adjacent edge 10 extended at an acute angle, the apex of which angle is presented downwardly forwardly and constitutes the toe of the blade. The blade, as illustrated, is located in a vertical plane directly beside the vertical plane occupied by the bar 6, the cutting edge being adapted to have shearing coöperation with the upper edge of this said bar, as will be readily understood. The arm 7 is to swing or oscillate in the vertical plane of the blade so as to cause such coöperation of the blade with the work-supporting arm and in order that this oscillation of the arm may be accomplished readily, either by power or by hand, there is provided means which will now be described. A plate 11 is secured to another member of the frame 5, indicated specifically by the numeral 12, and this plate has a depending cheek portion 13 which serves a purpose to be presently explained. A lever 14 is pivoted between the part 12 of the frame and the cheek plate 13 and the cam head of this lever is indicated by the numeral 15.

The upper edge of the blade 8 is curved and projecting rearwardly from the blade is an arm, which is indicated by the numeral 16 and has its upper edge a continuation of the curved upper edge of the blade 8 so that in effect a concave cam edge is afforded. The cam head 15 of the operating lever 14 is designed to ride over this cam edge of the blade and arm when the lever is depressed so that such movement of the lever will result in a corresponding movement of the arm 7 upon its pivot.

Before proceeding to a description of the means provided for oscillating the lever, it will be well to state at this point that by transmitting power from the lever to the blade carrying arm 7 by a cam head upon

the lever, direct downward force is exerted upon the blade, and as a consequence, heavy sheets of metal may be cut with the expenditure of less power than would be required if the lever 14 constituted a part of the blade carrying arm. It may be further remarked at this point, that not only does the upper part of the blade 8 work between the frame and the cheek plate 13, but also, the cam head 15 of the lever works between these two parts so that the said cam head of the lever is at all times held firmly in the vertical plane of the blade and as a result, lateral displacement of these elements is prevented.

In order that the blade-carrying arm 7 may be swung up upon corresponding movement of the lever 14, a link 17 is pivoted at its lower end to the extremity of the arm 16 and at its upper end has pin and slot connection, as at 18, with the lever 14 adjacent the cam head 15 thereof, it being understood that the pin and slot connection between the link and lever permits of the lever exerting its full depressing effect upon the arm 7 although the arm 7 will be raised when the lever 14 is swung up after each down stroke thereof. It is preferable that means be provided for limiting the upward swinging movement of the lever 14 so that under ordinary circumstances the toe of the blade 8 will not be brought to position above the upper edge of the bar 6 to such degree as to permit of the slipping from between the toe of the blade and the said edge of the said bar, of the sheet being cut and this means is embodied, preferably, in a pin which is indicated by the numeral 19 and is removably inserted through alined openings in the frame and cheek plate and is engaged by a shoulder 20 which is formed at the upper edge of the cam head of the lever 14. However, when the work to be cut is to be inserted between the upper edge of the bar 6 and the toe of the blade 8, it is necessary that the blade be so elevated that this toe will assume a position above the horizontal plane of the upper edge of the bar 6, a distance equal at least to the thickness of the sheet to be cut, and in order that this may be accomplished, it is only necessary to remove the pin 19 from the openings in which it is inserted. At this point it may be stated that when it is desired to cut an opening in a sheet blank, the pin 19 is removed and the lever 14 is swung to dot and dash position, shown in Fig. 2 of the drawings, whereupon the sheet is inserted between the bar and the toe of the blade 8,

after which the lever is swung down to dotted line position, the pin 19 is reinserted in the openings in the frame and plate 11, and the lever 14 is then repeatedly oscillated so as to cause the blade to successively pierce the sheet, toe first. This oscillation of the lever, where the sheets to be cut are comparatively thin and are light material, may be accomplished manually, but where the sheets are thick or of heavy material, the oscillation of the lever is to be accomplished mechanically, there being provided in such instances, a crank disk 21 which is mounted to rotate at the upper end of a standard 22 constituting a part of the frame of the machine and a pitman 23 connected to the crank disk and at its lower end to a pin 24 which is inserted interchangeably in openings 25 of which there are a number formed in the lever 14.

It will be readily understood that where it is desired to cut an opening of comparatively small diameter, it is expedient that the amplitude of stroke of the blade be short although where a comparatively straight cut is to be made in the sheet of metal, the amplitude of movement is much greater and consequently by adjusting the pin 24 in the openings 25, the amplitude of movement of the operating lever 14 and consequently of the plate 8 may be varied, as desired.

What is claimed is:

In a machine of the class described, a frame, a work supporting bar mounted in the frame, a blade pivoted in the frame and arranged to have shearing cooperation with the said work supporting bar, the blade having an entering toe, a hand lever operable to depress the blade, means connecting the lever and blade for elevating the blade when the lever is swung in one direction, elevation of the blade serving to move it away from the work supporting bar, and a stop removably mounted in the frame and arranged, when in position, to limit the upward movement of the hand lever to such degree as to prevent the blade being so raised as to bring its entering toe above the top of the work supporting bar, the lever being free to swing beyond this point when the stop is removed.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALEXANDER S. BEAUCHAMP.

Witnesses:

OLIVER BOSS,
JOHN BOSS, Jr.