No. 796,906. PATENTED AUG. 8, 1905.

G. GARDNER.

ATTACHMENT FOR METAL CUTTING AND STAMPING APPARATUS.

APPLICATION FILED SEPT. 26, 1904.

2 SHEETS—SHEET 1.

Fig-1-

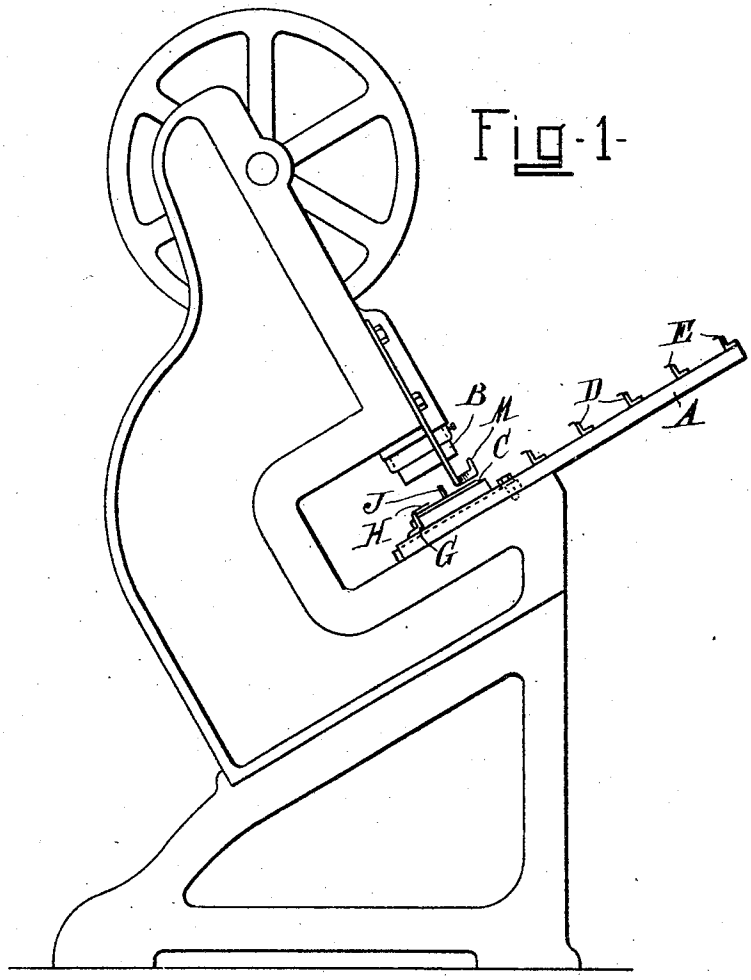
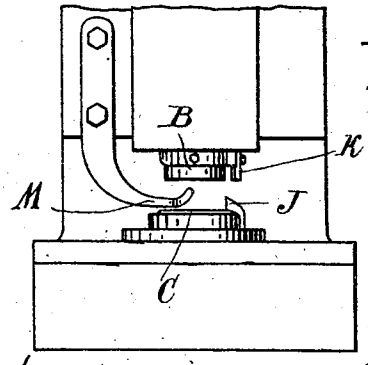


Fig-2-



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2 SHEETS—SHEET 2.

Fig-3-

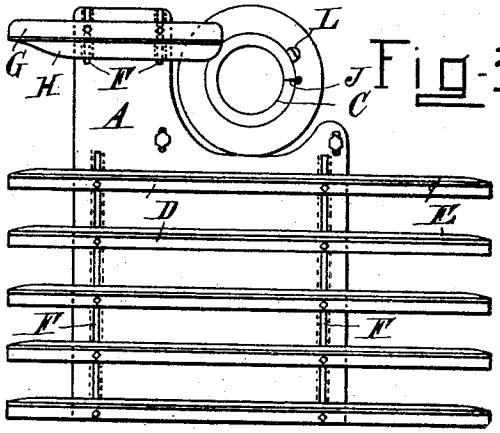


Fig-4-

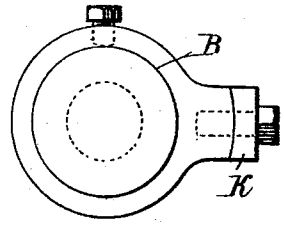


Fig-5-

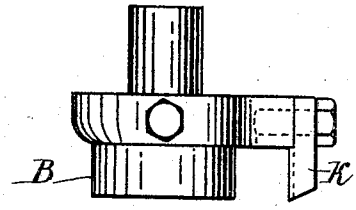


Fig-6-

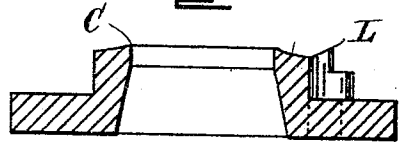


Fig-7-

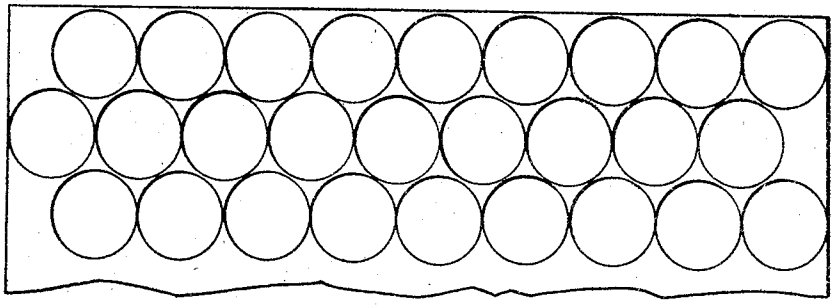
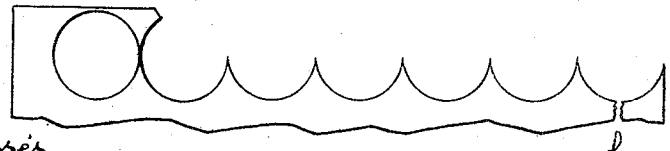


Fig-8-



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UNITED STATES PATENT OFFICE.

GEORGE GARDNER, OF YARRAVILLE, VICTORIA, AUSTRALIA.

ATTACHMENT FOR METAL CUTTING AND STAMPING APPARATUS.

No. 796,906. Specification of Letters Patent. Patented Aug. 8, 1905.

Application filed September 26, 1904. Serial No. 226,075.

To all whom it may concern:

Be it known that I, GEORGE GARDNER, canister-maker, a subject of the King of Great Britain, residing at No. 130 Hyde street, Yarraville, in the State of Victoria, Australia, have invented a certain new and useful Improved Attachment for Metal Cutting and Stamping Apparatus, of which the following is a specification.

This invention relates to metal cutting and stamping apparatus in which the blanks are cut out or stamped out of the sheet of metal without first dividing said sheet into strips, and is more particularly intended for use in the manufacture of tin canisters and other sheet-metal vessels.

The object of the invention is to remedy the many more or less serious defects present in apparatus hitherto employed for this purpose, the principal of which are probably, first, the large amount of waste of metal sheet; second, the difficulty of placing the metal sheet in the correct position; third, the liability of the sheet to slip out of position after having been so placed; fourth, the irregularity or unevenness of the working surface; fifth, the liability of the sheet to lift when the punch is raised after having stamped out a blank; sixth, the liability of the sheet to buckle or otherwise upset the even working of the apparatus, and minor others well known to persons versed in the art to which this invention appertains.

In order to facilitate a ready understanding of my improved attachments, I will refer to the accompanying drawings of the apparatus, of which—

Figure 1 is a side elevation of the complete apparatus; Fig. 2, a partial front elevation showing the punch, die, and attachments; and Fig. 3, a plan of the die and attachments. Fig. 4 is an enlarged plan of the under side of the punch, and Fig. 5 a side elevation thereof. Fig. 6 is an enlarged vertical section of the die, showing the bottom shear of the scrap-cutter. Fig. 7 is a fragmentary plan of a sheet with three rows of blanks stamped out, while Fig. 8 is a similar view showing the effect of the scrap-cutter.

According to this invention I provide an inclined bed-plate A, directed toward the punch B and die C of the press, and upon same I mount a number of transverse spacing guide-bars D, having flanges E projecting toward said die, said guide-bars being either fixed or capable of adjustment in grooves, such as F, to provide for the cutting or stamping of blanks of various diameters. The projecting flanges E of the spacing guide-bars D point from the operator, and their top edges are slightly below the plane of the cutting-surface of the die, so that practically a level working surface is maintained while the upper edge of the sheet metal passes underneath one or other of the flanges and prevents it riding over the guide-bars, and thus getting out of correct alinement. At the rear of the die is a shorter adjustable spacing guide-bar G with a similar flange H, whose top edge is slightly above the cutting-plane of the die projecting toward the operator to guide the strip of sheet metal out of which the last row of blanks are cut. A stop-gage J, against which the edge of the sheet to be cut abuts, is placed flush with the cutting edge of the die C, so that when the blank is cut out the sheet is severed at the place where it abutted against the stop-gage J, thereby enabling the operator to conveniently slide the sheet along for the next cut, thus obviating the necessity of lifting the sheet over the gage, as heretofore. If it is desired to remove the surplus metal, scrap-cutters comprising top and bottom shears K L are fitted to the punch and die, respectively, as illustrated in Figs. 4, 5, and 6.

In order to prevent the sheet metal lifting on raising the punch, a curved stripper-finger M is provided, the formation of which allows the sheets to be readily introduced, while at the same time it prevents any danger of the operator's fingers getting under the punch when feeding the sheet.

With these improvements, which may readily be applied to existing machines, the operation of cutting or stamping blanks out of sheet metal is greatly facilitated, and the waste is very considerably reduced, as there is no need to leave sufficient metal between the spaces from which the blanks have been cut to hold the plate together.

With apparatus having my improved attachments the *modus operandi* is somewhat simplified, while at the same time a greater degree of accuracy is obtained.

In actual practice the following sequence of operations is observed: After having placed the required punch and die in position, together with the stop-gage J, the spacing guide-bars D are adjusted and fixed in any convenient manner. The sheet of metal is of such a length that there is half a diameter of one blank in excess. The upper edge of the metal sheet is then placed under the projecting

flange E of the uppermost guide-bar so that the bottom edge is in correct alinement with the die, and the sheet is pushed along until its front edge abuts against the stop-gage J. The punch is then operated, and the first blank being cut out the sheet is severed at the point where it abutted against the stop-gage, thereby enabling the operator to conveniently slide the sheet forward until the stop-gage J abuts against the rearmost edge of the hole in the sheet occasioned by the stamping out of the first blank. The sheet is now in position for the next blank to be stamped therefrom, and the operation is repeated till the other or rear end of the sheet is reached. The sheet is then reversed end for end, so that what was the front edge now becomes the rear edge, and vice versa, while the upper edge continues to remain as such. The upper edge of the sheet is then placed beneath the projecting flange of the next succeeding guide-bar and the operation repeated until there is only one row to be stamped. The sheet is now reversed, so that what was the upper edge finally becomes the lower edge, and is placed against the shorter spacing guide-bar G and beneath its projecting flange H, so the last row is conveniently stamped out.

When the scrap-cutter K L is used, it cuts off the surplus metal scrap and thus prevents the formation of a long straggling tail, which is liable to become entangled, and thus hamper operations. The position of the cut made by these shears is shown in Fig. 8.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a metal cutting and stamping apparatus, the combination with the die and punch, of a bed-plate and spacing guide-bars thereon having flanges projecting toward the die and under which the edge of the sheet of metal to be cut is guided.

2. In a metal cutting and stamping apparatus, the combination with the die and punch, of a bed-plate and adjustable spacing guide-bars thereon having flanges E directed toward the die and under which the edge of the sheet of metal to be cut is guided, said projecting flanges being in substantially the same plane.

3. In a metal cutting and stamping apparatus, the combination with the die and punch, of adjustable guide-bars having flanges projecting toward the die and under which the edge of the sheet of metal to be cut is guided, and a stop-gage having a cutting edge flush with the cutting edge of the die, whereby the metal will expand against and be severed by the gage, substantially as described.

4. In a metal cutting and stamping apparatus, the combination with the die and punch, of parallel guide-bars having flanges projecting toward the die and adjustable toward and from the die, the edge of the sheet to be cut being guided under a flange, and a stop-gage having a cutting edge flush with the cutting edge of the die, whereby the sheet being cut will be simultaneously expanded against said gage and cut, thereby preventing the lifting of the sheet to carry it over the guide.

5. In a metal cutting and stamping apparatus, the combination with the die and punch, of a number of parallel guide-bars having flanges E projecting toward the die, said bars situated in front of the die and a like short adjustable guide-bar behind the die whose flange projects toward those in front of the die, and a stop-gage having a cutting edge flush with the cutting edge of the die, substantially as described.

6. In a metal cutting and stamping apparatus, the combination with the die and punch, of a number of adjustable guide-bars having flanges projecting toward the die and under which the edge of the strip of metal to be cut is guided, a stop-gage having a cutting edge flush with the cutting edge of the die, and a stationary stripper-finger under which the sheet of metal is movable, said finger being slightly above and in front of the cutting edge of the die, substantially as described.

7. In a metal cutting and stamping apparatus, the combination with the punch and die, of guide-bars having flanges under which the edge of the strip of metal to be cut is guided, a stop-gage positioned to coöperate with the die and punch to cut through the scrap simultaneously with the punching out of the blank, and a scrap-cutter having the stationary part secured to the die and the movable part secured to the punch and coming into action just after the blank has been cut, substantially as described.

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

GEORGE GARDNER.

Witnesses:
EDWARD NEEDHAM WATERS,
WILLIAM HERBERT WATERS.