

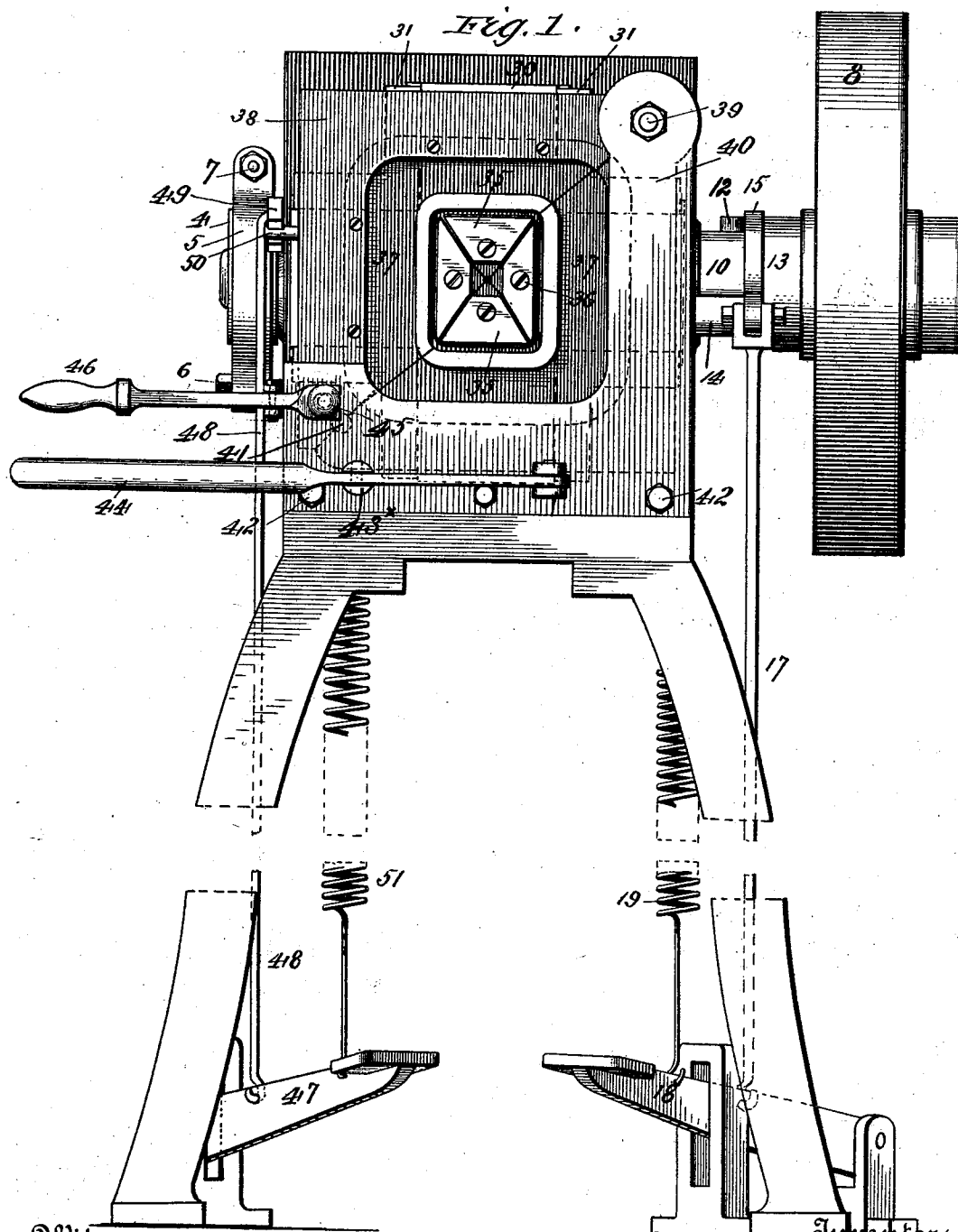
(No Model.)

3 Sheets—Sheet 1.

T. S. EDGAR & C. E. WILLIAMS.
MACHINE FOR EXPANDING TIN BOXES.

No. 517,738.

Patented Apr. 3, 1894.



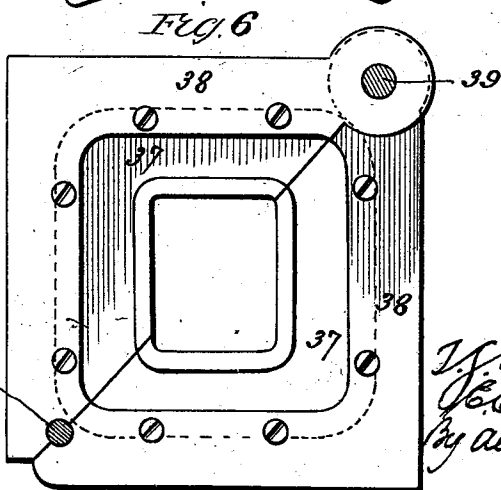
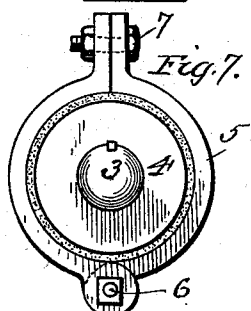
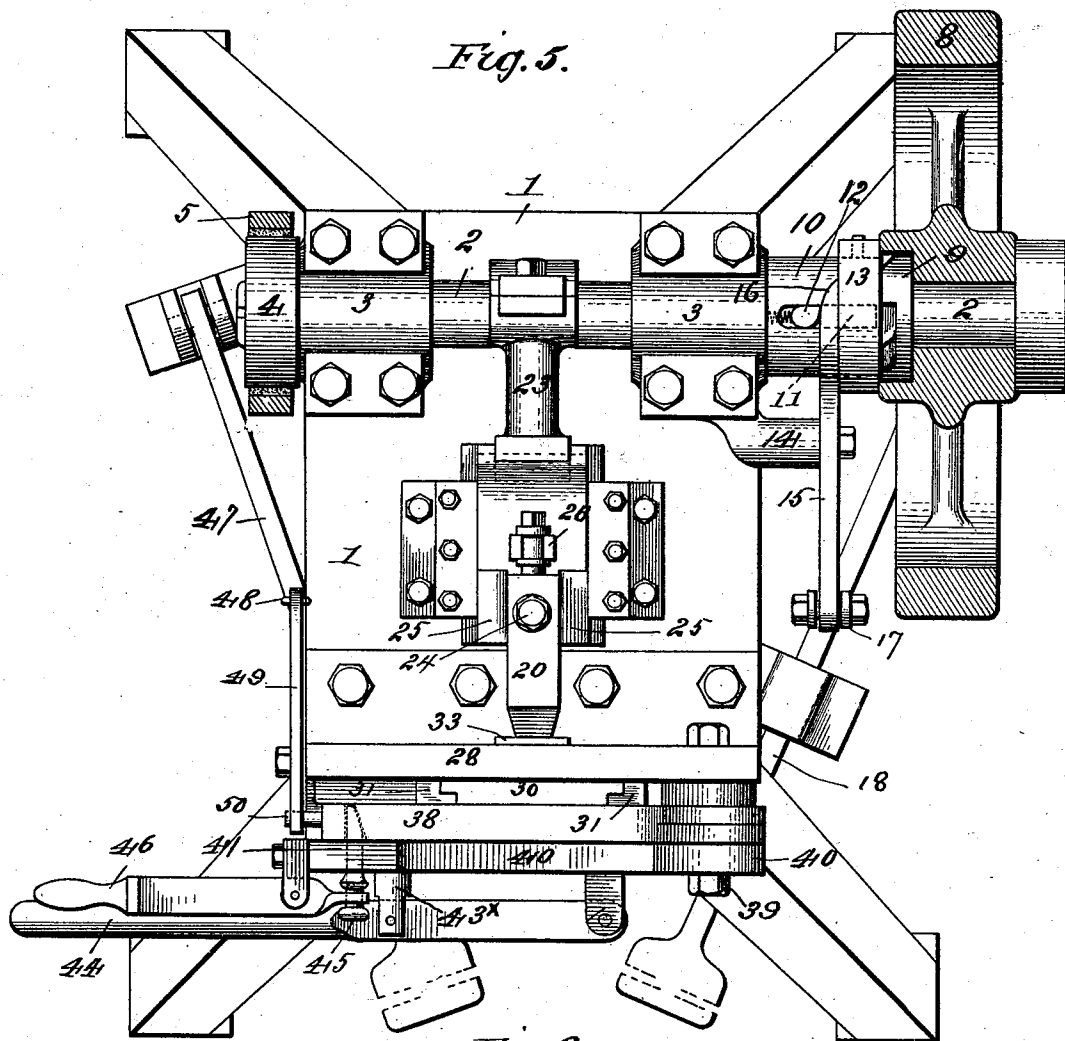
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UNITED STATES PATENT OFFICE.

THOMAS S. EDGAR AND CHARLES E. WILLIAMS, OF RICHMOND, VIRGINIA,
ASSIGNORS TO THE HASKER & MARCUSE MANUFACTURING COMPANY,
OF SAME PLACE.

MACHINE FOR EXPANDING TIN BOXES.

SPECIFICATION forming part of Letters Patent No. 517,738, dated April 3, 1894.

Application filed January 13, 1894. Serial No. 496,798. (No model.)

To all whom it may concern:

Be it known that we, THOMAS S. EDGAR and CHARLES E. WILLIAMS, citizens of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Machines for Expanding Tin Boxes, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a front view of our machine complete; Fig. 2 a vertical sectional view thereof; Figs. 3 and 4, respectively, views of the front and rear sides of the supporting plate carrying the male dies; Fig. 5 a plan view, the driving fly-wheel being shown in horizontal section, and Fig. 6 a detail view of the hinged sections of the vise and the female formers or die-plates carried thereby; Fig. 7 a detail view showing the construction of the friction brake.

This invention relates to machines for expanding and truing and beading the rims of tin boxes, cans, &c., to adapt them for the reception of their covers, as more fully hereinafter appears.

The invention has for its objects to provide a very durable and simple machine whose parts shall not be liable to easily become injured or disarranged and whose dies or formers are readily removable in order that they may be interchanged with dies having different shapes or sizes and thereby obviate the necessity of having a separate machine for each shape or size desired, as hereinafter fully appears.

We will now describe the form of machine we prefer for carrying out our invention, but we desire it understood that we do not confine ourselves to the exact construction shown and described, as the detail construction shown may be departed from without departing from the invention.

In the drawings, the numeral 1 designates the table or bed-plate of the machine, suitably supported; 2 a shaft journaled in bearings 3 mounted upon the rear end of the table; 4 a friction-wheel secured on one end of the shaft and embraced by a pair of brake arms 5, said arms being pivoted on a bolt 6

supported on one of the bearings 3 below the friction wheel 4, and having their upper ends adjustably connected together above the friction wheel by means of a bolt 7. By means of the screw-bolt 7 the arms 5 may be made to grasp the wheel 4 with more or less pressure, thereby enabling the speed of the shaft to be regulated. On the other end of the shaft is loosely journaled the fly-wheel 8, which also serves as a driving wheel, and which carries, in a recess in the inner end of its hub, a suitable notched ring or clutch 9.

Secured rigidly on the shaft between the fly-wheel and the adjacent bearing 3 is a sleeve 10 provided with a longitudinal groove for the reception of a spring-pressed pin 11, which is provided with a radial head 12 beveled on its outer side and which is adapted to automatically engage the clutch ring when released. Secured on sleeve 10 adjacent to the ring 9 is a collar 13 which is adapted to rotate with the sleeve and shaft.

Pivoted on a bracket 14 is a curved lever 15 whose rear curved end normally bears against or lies adjacent to the inner edge of collar 13. The extreme rear end of the lever 15 is beveled at 16, said beveled part being adapted to strike against the beveled head 12 when the sleeve is rotated and withdraw the pin from the clutch ring and permit the driving wheel to revolve loosely on the shaft. The forward end of the lever 15 is connected to a vertical rod 17 whose lower end is pivotally connected to a foot lever 18 supported on the floor under the machine, said foot lever being normally held or drawn up by means of a coil spring 19. It will be observed that spring 19, through the medium of the foot-lever and connecting rod, normally holds the rear curved end of the lever 15 in contact with sleeve 10 and collar 13 and that said lever 15 normally holds the pin 11 out of engagement with ring 9. When it is desired to rotate the shaft the operator simply presses the foot-lever down, which raises the rear end of lever 15 away from sleeve 10 and permits the clutch pin to engage the clutch ring, whereupon the shaft will rotate with the fly wheel. When the foot-lever is released the lever 15 springs back to its normal position

against the sleeve and collar, and as the sleeve rotates the beveled head 12 of the clutch pin comes in contact with the bevel 16 and the clutch pin is thereby automatically withdrawn.

The tapering expander 20 is carried on the forward end of a cross-head or slide 21, which is mounted in suitable ways carried by a support 22 and which is reciprocated by a pitman 23 connecting its rear end to a suitable eccentric on the shaft between the bearings 3—3. The expander is adjustably secured on the slide by a bolt 24 which passes through a slot in the expander, and it is held true and steady by means of flanges 25 on the slide. The expander is adjusted by means of a screw 26 tapped in its rear end and supported in the slotted head of a bolt 27 tapped in the slide. The forward tapering end of the expander projects through a central opening in a vertical plate 28 extending across the front of the table and rigidly bolted thereto, said radial plate being provided with four slots 29 extending radially from the central opening. Upon the face of plate 28 are secured four radially slidable plates 30, whose side edges are flanged and adapted to work between ways 31 secured on the face of plate 28. The inner ends of plates 30 are beveled to fit the taper of the expander and they are kept normally pressed against the expander by means of coil springs 32, these coil-springs being inserted in slots 29 and having their inner ends bearing upon lugs 33 formed on said plates 30 at their inner ends. On the inner end of each plate 30 is formed a forwardly-projecting lug 34 and abutting against each of these lugs is a section 35 of the male former or die, said sections being secured to plates 30 rigidly but removably by means of screws 36. These sections 35 when expanded or radially spread conform to the inner contour of the box or can.

Surrounding the male former is the female former or die, which consists of two separable sections 37, each of said sections being carried by an angular plate 38 of a two-part vise, the sections 37 having their outer edges fitting in a rabbet formed in the inner side or face of the clamp or vise so that the sections of the vise and female former may work closely against the faces of the slides 30 and ways 31. The sections of the female former are secured to the sections of the clamp by means of counter-sunk screws, so as to be removable therefrom at will. The upper ends of the angular sections of the vise are pivoted on a bolt 39 which is supported by the plate 28 and the vertical arm or a bracket 40, said bolt extending through plate 28 and bracket 40 and the intermediate sections of the vise. The ends of the vise sections diagonally opposite the pivotal point are beveled and adapted to abut against each other and against an intermediate pin 41 carried by plate 28, whereby the sections of the female former are always brought into true relation with re-

spect to each other and to the male former. The lower arm of the bracket or plate 40 extends across the front lower part of the clamp or vise and is secured rigidly by bolts 42 to a flange 43 projecting forwardly from the lower edge of plate 28, said plate 40 serving to guide the sections of the vise in their movements and also to carry the locking devices of the vise. The lower section of the vise is pressed against the beveled end of the upper section and the pin 41 by means of a sliding wedge 43^x working through an opening in plate 40 and under the lower edge of said section, as shown most clearly in Fig. 2, said wedge being moved in and out by means of a hand lever 44 pivoted on the plate 40; and the upper section is kept pressed against said stop pin 41 by means of a similar wedge 45 operated by a hand lever 46, said wedge extending through an opening in plate 40 and through the beveled opening in the vise section as shown in dotted lines in Fig. 5. When wedge 43^x is withdrawn the lower vise section falls by gravity, and when the wedge 45 is withdrawn the upper section may be raised by bearing down upon a foot lever 47 supported on the floor under the machine, said foot lever being connected by a rod 48 to the rear end of the pivoted lever 49 whose forward end engages a pin 50 carried by said vise section, the foot lever being normally drawn up and the vise section normally held down by means of a retracting coil-spring 51.

Operation: The female former is first opened by depressing foot lever 47 and withdrawing the locking wedges, and the box or other work is then placed over the male former; the operator then releases lever 47 and firmly clamps the female former around the work by forcing in the wedges and then depresses treadle 18, which releases the clutch pin and causes the shaft to revolve with the driving wheel, whereupon the expander is forced in between the sections of the male former and said sections are forced outwardly against the interior of the box and serve to expand and bead the same. As the shaft rotates the expander is withdrawn and the sections of the male former move inwardly away from the work, and when the expander is fully withdrawn the operator releases lever 18 and stops the rotation of the shaft by withdrawing the clutch pin, as fully hereinbefore described. To remove the work the wedges are withdrawn and the sections of the female former separated in the manner described.

It will be observed that this machine is simply and durably constructed and employs no delicate parts to become injured and out of order. Another advantage is that the sections of the formers or dies may be readily removed and replaced by others having a different shape and size, whereby a single machine may be employed for boxes and cans of various sizes and shape. With each machine will go several sets of formers for the various styles of work. After the patterns

are made the formers may be made at small cost.

Having thus fully described our invention, what we claim is—

5 1. The combination of a frame, an expander and means for reciprocating the same, a supporting plate, radially movable plates mounted on said plate and having their inner ends beveled to conform to the expander, the male former consisting of a series of independent sections, means for removably securing each section to the inner end of one of said sliding plates, and a sectional female former embracing the male former, and means for carrying said female sections and removably locking them around the male former, substantially as described.

2. The combination of a frame, a tapering expander and means for reciprocating the same, a supporting plate, a series of radially slidable plates mounted on said plate, a sectional male former carried by said radially slidable plates, a sectional vise surrounding said male former and carrying a sectional female former, and means for opening and closing and locking said vise, substantially as described.

3. The combination of a frame, a reciprocating expander, a supporting plate, radially slidable plates mounted on said supporting plate and having their inner ends beveled to fit against the expander, springs normally pressing said plates against the expander, a male former consisting of sections secured to the inner ends of said slidable plates, a sectional female former embracing the male former, substantially as described.

4. The combination of a supporting frame,

a tapering reciprocating expander, radially movable sections constituting the male former, a female former surrounding the male former and constructed of separable sections, a vise or clamp constructed of movable sections, and means substantially as described for locking and separating said sections, substantially as described.

5. The combination of a frame, a male former composed of sections, means for expanding the same, a female former constructed of separable sections, a vise consisting of two hinged sections carrying said female former, wedges for locking and pressing the sections of the vise together, levers for operating said wedges, and means for separating the sections, substantially as described.

6. The combination of a frame, a reciprocating expander, a supporting plate, a series of radial plates 30 working in ways 31 on said supporting plate, the inner ends of said plates 30 being beveled and provided with rearwardly and forwardly extending lugs, springs bearing against the rearwardly extending lugs, former-sections 35 removably secured on the front side of said plates 30 and abutting against the forwardly extending lugs, a sectional female former embracing the male former, and means for locking the same, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS S. EDGAR.
CHAS. E. WILLIAMS.

Witnesses:

ELLIS B. FRENCH,
A. J. GARY.