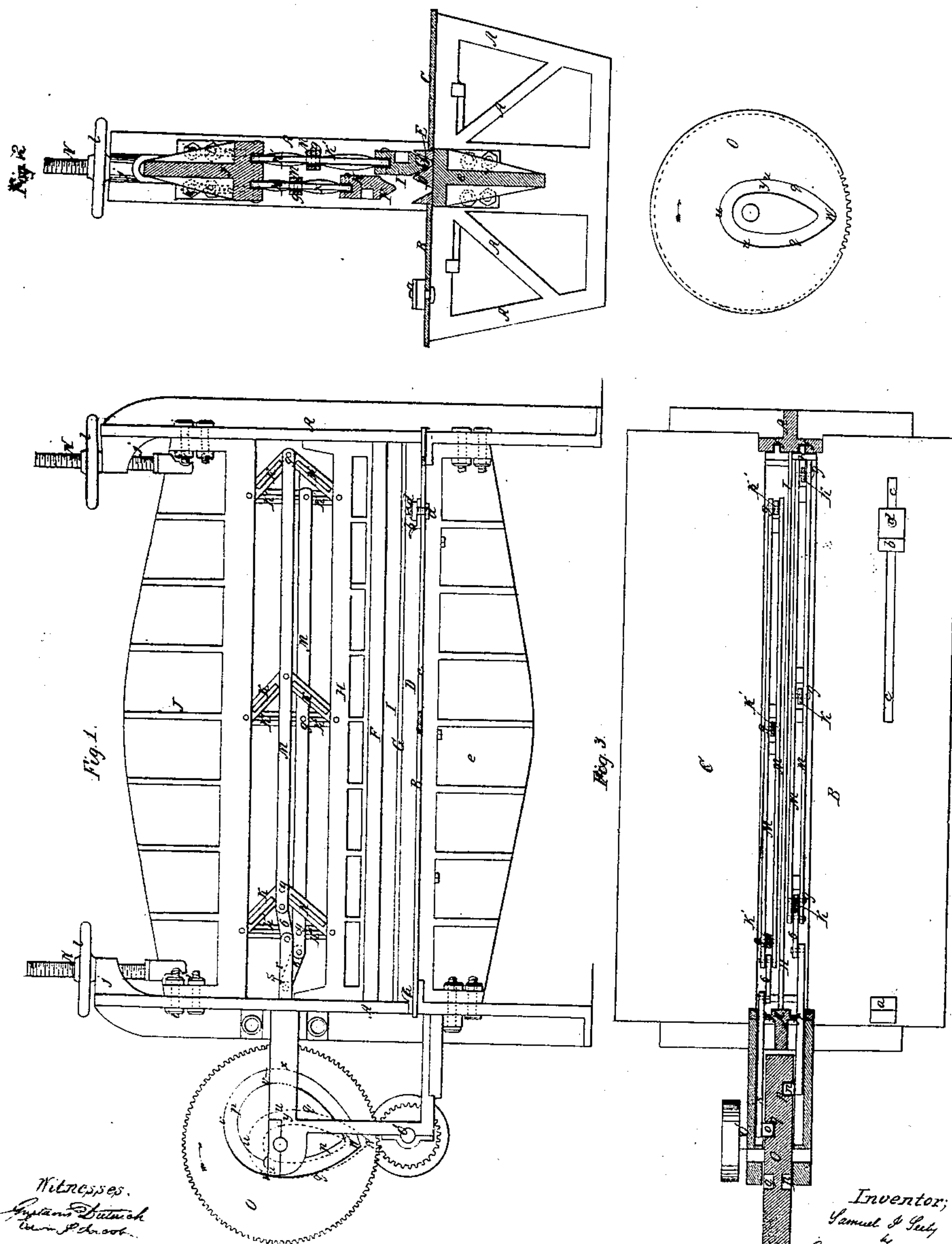


S. J. SEELY.
MACHINE FOR CORRUGATING METALS.
No. 37,593.
Patented Feb. 3, 1863.



Witnesses.
Augustus Dutcher
Wm. Schuch

Inventor,
Samuel J. Seely
by
Mason, Bennett & Hamner
Attys.

UNITED STATES PATENT OFFICE.

SAMUEL J. SEELY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR CORRUGATING METALS.

Specification forming part of Letters Patent No. 37,593, dated February 3, 1863.

To all whom it may concern:

Be it known that I, SAMUEL J. SEELY, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful improvement in machinery, whereby metal sheets can be corrugated very regularly and so as to possess great stiffness and strength; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a front elevation of my machine. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a horizontal section; Fig. 4, view of cam-disk.

Similar letters of reference in the several figures indicate corresponding parts.

A is a strong metal frame with a flat feeding and supporting table, B C, on opposite sides. The part B of the table has two dogs, *a b*, the dog *b* being adjustable by means of a slot, *c*, and set-bolt *d*. These dogs hold down the sheet of metal while it is being corrugated, and any width of sheet is admitted under them by reason of the adjustability of the dog *b*. Between the parts B C of the table, in the center of the frame, two horizontal female dies, D E, are screwed firmly to the lower ribbed cross-beam, *e*, of the frame A. These dies in their transverse section present a groove configuration resembling the letter V, or the letter U, or other shape that it may be desired to corrugate the sheet metal. These dies, by being screwed to the beam *e*, are susceptible of being removed at pleasure and substituted by others of deeper or shallower grooving. Directly over the dies D E two male dies, F G, shaped to match into the female dies, are suspended by means of vertically-sliding gates or sash-beams H I, fitted to grooves *f* on the inner sides of the uprights of the frame A, said sash-beams being connected to an adjustable ribbed cross-head, J, of the frame A by means of toggle-levers K K', as represented. The levers K of the sash-beam H are independent in their movement of the levers K' of the beam I. Each series of levers are connected at their joint *g* to a vibrating bar, M, and therefore the whole series operate simultaneously upon the sash-beams.

The levers are all connected to the sash-beam and to the cross-head J in such a man-

ner that they may be removed and substituted by longer or shorter levers. So, also, is the connection of the male dies to the sash-beams made in such manner that the dies may be removed and substituted by dies which are made with a deeper corrugating edge or a shallower one, as desired. To accommodate these changes the cross-head J is fitted to the uprights of the frame A by means of grooves or slots *h h* in the uprights and by bolts *i i* of the cross-head, the bolts passing through the slots and end flanges of the cross-head and holding the cross-head in position by means of their heads binding against the uprights through the action of nuts on their ends; and, as a further support for the cross-head and a means for adjusting it to suit the changes made in the levers and dies, two hand-screws, N N, are provided, as shown. These screws attach to the top of the cross-head near each end and extend up through bracket-nuts *j j* of the uprights of the frame A. By turning the hand-wheel nuts *l l* of the screws the adjustment up or down may be effected.

The machine thus constructed is operated by means of a cam-wheel, O, which has cam-grooves of the configuration shown at *p q* in its opposite faces. Both of these grooves are of heart form and of the relative size and arrangement shown in the drawings. In the grooves pintles *n o* of slide-rods *r s* fit loosely, said rods being connected to the bars M of the toggle-levers by links G G, as shown. The disk in which the cam-grooves are cut may have an eccentric-pin and be worked by a pitman, or it may have cog-teeth on its circumference and gear with a pinion of a belt-shaft, O', as represented.

Eccentrics might be used in place of the toggle-levers for operating the dies, in which case the cams would be dispensed with and the motions of the eccentrics timed to produce the desired effect.

It is evident from the drawings that the cam *p*, when in the position shown by *x*, causes the toggles to hold the corrugating or main acting die F out of its fellow female die D; also, that at the same time the cam *q*, when in the position indicated at *y*, causes the toggle-levers K' to hold the retaining-die G down in its fellow female die E. It will also be evident that if the cam-disk O is turned in the direction of the arrow, the concentric portion *u* of the cam

q will not operate upon the pintle *o* of the side-rod *s*, but that the eccentric portion *v* of the cam *p* will operate upon the pintle *n* of the slide *r*, and thereby cause the toggle-levers to assume a straight vertical position and force the die *F*, which corrugates the metal, down into its fellow female die *D*. It also will be evident that the two cams *p* and *q* operate between the points *w w'* and *x u* upon the two pintles *o n* simultaneously and in the same manner, and thus cause the slides *r s* to "break" the joints *g* of the levers and the levers to elevate both dies *F G* out of their fellow female dies *D E*.

From the above operation of the cams it is evident that if the sheet of metal had been introduced under the corrugating-die before that die was allowed to descend, a corrugation would have been formed in it, and now, by putting the sheet of metal farther through the machine, so as to bring the corrugation thus formed directly under the retaining die and into the fellow female die thereof, as shown in Fig. 2 by red lines, and continuing to turn the disk *O*, that portion of the cam *q* between *w* and *u* will cause the retaining-die *G* to descend into the corrugation of the metal sheet and hold the same firmly. While this is proceeding the concentric portion of the cam *p* between *w'* and *x* does not act upon the connections of the corrugating-die *F*, but as soon as the retaining-die *G* is down in the corrugation of the sheet of metal the eccentric portion of the cam *p* between the points *v* and *v'* causes the corrugating-die to descend upon the plain portion of the metal sheet and to form a corrugation in it. The corrugation descends into the female die as the corrugating-die depresses the metal of the sheet. While this is proceeding the retaining-die *G*

remains still and firmly holds the metal in form and position for the proper action of the corrugating-die. Thus the operation continues until the sheet is finished.

In the drawings, I have represented the bed or table *B C* as below the level of the top of the female dies *D E*, but in practice the part *B* of the table should be on a level with the top of said dies. The part *C* is set below to accommodate the corrugations as formed on the steel.

By setting up one end of the cross-beam any desired twist at one end of the sheets may be imparted.

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

1. So operating, retaining, and corrugating dies together in a machine for corrugating sheet metal that the retaining-die forms the first corrugation and takes into the corrugations formed successively by the corrugating-die, substantially as and for the purpose set forth.

2. The organization of means, substantially as herein described, for the purpose of corrugating sheet metal, the said organization consisting of the frame *A*, bed *B C*, with dogs, the female dies, the male dies with sash-beams, the toggle-levers or equivalents, adjustable cross-head, and the gearing or its equivalent, constructed and arranged as set forth.

3. In a machine for corrugating metal, operating substantially as described, the adjustable cross-head, with its hand-screws and guide-screws, for the purpose set forth.

SAML. J. SEELY.

Witnesses:

EDWIN S. JACOB,
GUSTAVUS DIETERICH.