No. 649,762. Patented May 15, 1900.

E. SALTZKORN & L. NICOLAI.

MECHANISM FOR PUNCHING METAL STRIPS.

(Application filed July 28, 1899.)

(No Model.)

Fig. 2.

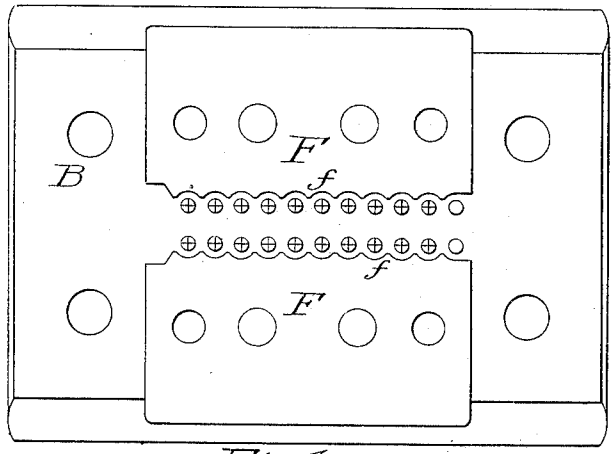


Fig. 6.

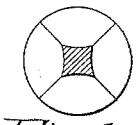


Fig. 4.

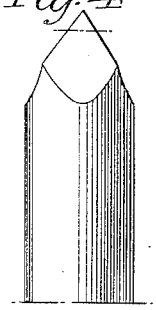


Fig. 7.

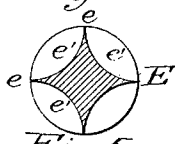


Fig. 5.

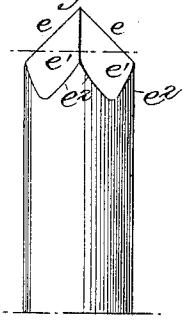


Fig. 1.

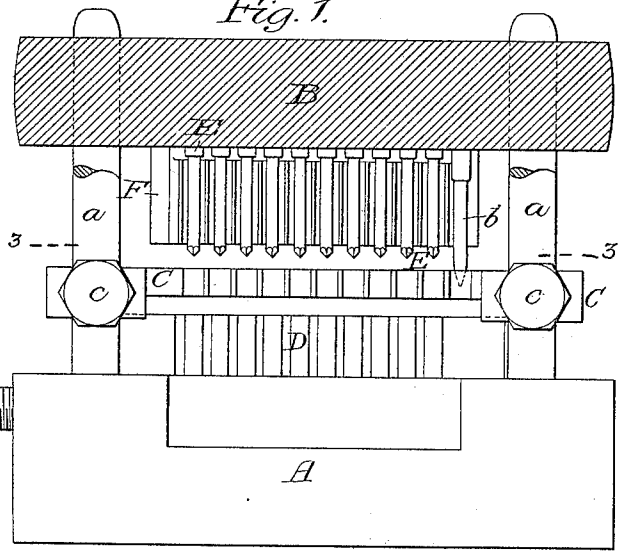


Fig. 8.



Fig. 9.

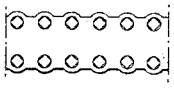


Fig. 10.

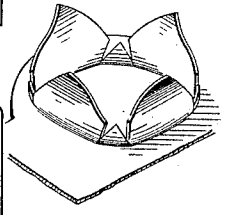
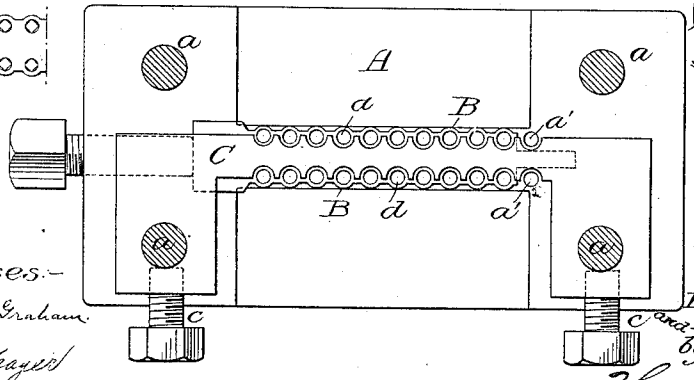


Fig. 3.



Witnesses:-
Frank L. A. Graham.
James C. Krayer.

Inventors:
Emil Saltzkorn
and Ludwig Nicolai,
by their Attorneys.
Howson & Howson

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL SALTZKORN AND LUDWIG NICOLAI, OF DRESDEN, GERMANY, ASSIGNORS TO THE AMERICAN METAL EDGE BOX COMPANY, OF CAMDEN, NEW JERSEY, AND PHILADELPHIA, PENNSYLVANIA.

MECHANISM FOR PUNCHING METAL STRIPS.

SPECIFICATION forming part of Letters Patent No. 649,762, dated May 15, 1900.

Application filed July 28, 1899. Serial No. 725,422. (No model.)

To all whom it may concern:

Be it known that we, EMIL SALTZKORN and LUDWIG NICOLAI, subjects of the Emperor of Germany, and residents of Dresden, Germany, have invented certain Improvements in Mechanism for Punching Metal Strips, of which the following is a specification.

The object of our invention is to construct dies for forming burs or clenching projections on metallic strips or eyelets used for reinforcing the corners of boxes. This object we attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a frame carrying the upper and lower dies for punching the holes for forming the projections on a metallic strip. Fig. 2 is an inverted plan view of the upper dies. Fig. 3 is a section on the line 3 3, Fig. 1, showing the lower dies. Figs. 4, 5, 6, and 7 are views of a single punch or upper die. Figs. 8 and 9 are rear views of the metallic strip punched by the dies referred to above. Fig. 10 is an enlarged view of a portion of the punched strip.

A is the base-plate, having vertical guide-bars *a*, and adapted to these guide-bars is the carrier B for the upper dies. The device shown in Fig. 1 can be mounted in any suitable press, so that there will be a regular up-and-down movement of the carrier for the upper dies, and the attendant can feed the strip to be punched through this punching-machine so as to punch a certain number of holes in the strip at each movement of the carrier.

On the base-plate A is mounted the lower die D, consisting of a plate having two series of holes *d*, arranged a given distance apart. The edge of the lower die is scalloped, preferably, on a line on the same radius as the holes, so that the upper die will not only punch the holes and project the burs on the plate, but will also scallop the plate, as clearly shown in Fig. 9.

There are two sets of upper dies attached to the carrier B. One set of dies are, in fact, the punches E and the other set are the plates F F, arranged on the outer side of each row of punches. The inner edges *f f* of these plates are scalloped, so as to conform to the scallop on the edges of the lower die and act to cut the plate in a metallic strip, as described above.

The die-punches E are pointed, as clearly shown in the enlarged views, Figs. 4, 5, 6, and 7. Each punch in the present instance is tapered and has four cutting-ribs *e*. The space *e'* between the ribs is concaved, so as to make the cutting edges *e* sharp. This concave is clearly shown in Fig. 7. It will be understood that each of the punches is round, and consequently there are two cutting edges e^2 extending from the cutting edge *e*, so that the punch not only cuts the plate so as to form the four prongs, but these cutting edges e^2 undercut each prong, as shown in Fig. 10, making each prong preferably in the form of an arrow-head, so as to insure the proper bending of the prong and the clenching of the strip to the box or other device to which it is attached. At the end of each row of punches are two guide-pins *b b*, which extend beyond the points of the punches and enter holes *a' a'* in the base-plate A. The purpose of these pins is to engage the strip by passing through the last holes punched in the previous punching, so as to insure the perfect registry of the dies, as in manufacturing a strip of this character the holes throughout the length of the strip must be arranged at equal distances, as the strip is fed to the box-making machine by mechanism which engages the holes, and if these holes are out of register then the strips will be uneven.

C is the stripper, mounted between the upper and lower dies. This stripper preferably conforms to the shape of the strip punched, being scalloped at each side, so as to insure the removal of the strip after being punched from the upper dies or punchers. The stripper in the present instance is adapted to be secured to two of the vertical guides by means of set-screws *c* or other means of fastening.

We claim as our invention—

1. A punch for forming projections or burs on metal strips, the same having a pyramid end by which a series of cutting edges are formed, the punch between the cutting edges being concaved, substantially as described.

2. A punch for forming projections or burs on metal strips, the same being cylindrical in cross-section and having a tapered end forming four cutting edges *e*, the space between the cutting edges being concaved and forming, with the cylindrical portion of the punch, cutting edges e^2, substantially as and for the purpose set forth.

3. The combination in mechanism for forming burs or projections on metallic strips consisting of a base, a lower die scalloped at each edge, a carrier mounted above the lower die, two upper dies secured to the carrier and having scallops on their edges coacting with the lower dies to scallop the edges of the plate, a series of holes in the lower die, and a series of punches mounted on the carrier and adapted to the holes in the lower die, substantially as described.

4. The combination in mechanism for forming burs or projections on metallic strips consisting of a base, a lower die scalloped at each edge, a carrier mounted above the lower die, two upper dies secured to the carrier and having scallops on their edges coacting with the lower dies to scallop the edges of the plate, a series of holes in the lower die, a series of punches mounted on the carrier and adapted to the holes in the lower die, with pins on the carrier extending beyond the ends of the punches and adapted to engage the strip to be punched by passing through the holes previously punched in the strip, substantially as described.

5. The combination of the base, the lower die mounted thereon, said lower die having two sets of holes arranged an equal distance apart, the die also having its edges scalloped on the same radius as the holes, a carrier, two rows of punches mounted on the carrier, the ends of the punches being tapered and having one or more cutting edges, a series of dies having their inner edges scalloped and coacting with the lower die to scallop the plate to be punched, with a stripper mounted between the upper and lower dies and fixed in respect to the lower die, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of subscribing witnesses.

EMIL SALTZKORN.
LUDWIG NICOLAI.

Witnesses to the signature of Emil Saltzkorn:

GEORG HÄNSEL,
GEORG GRET.

Witnesses to the signature of Ludwig Nicolai:

W. M. HARRIS,
T. J. OSMAN.