No. 641,333. Patented Jan. 16, 1900.

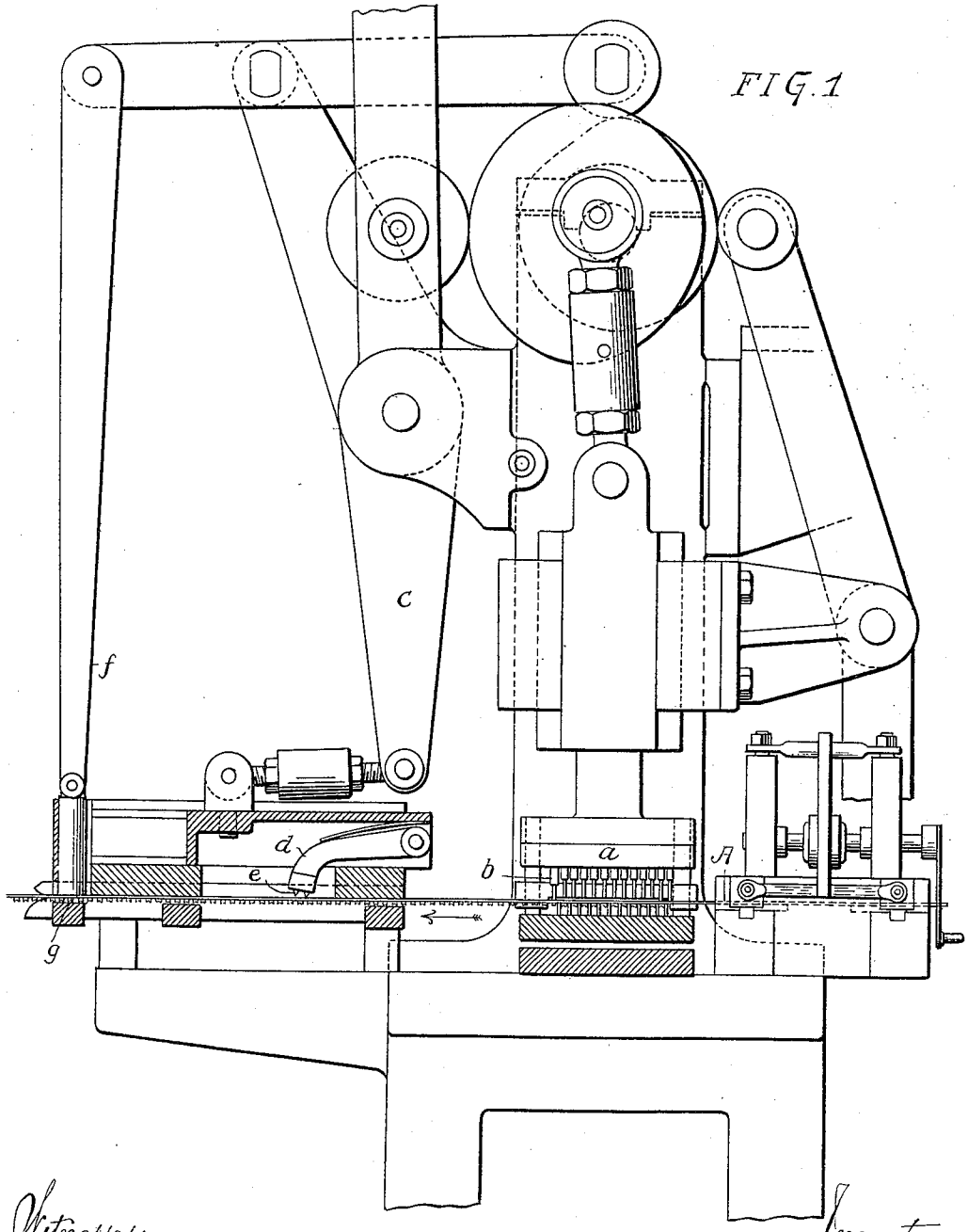
E. SALTZKORN & L. NICOLAI.

PUNCHING MACHINE FOR METAL STRIPS.

(Application filed Dec. 8, 1897.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1



Witnesses:
J. M. C. Parker.
Killian

Inventors:
Emil Saltzkorn and Ludwig Nicolai,
By their Attorney,
Howard Cates

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

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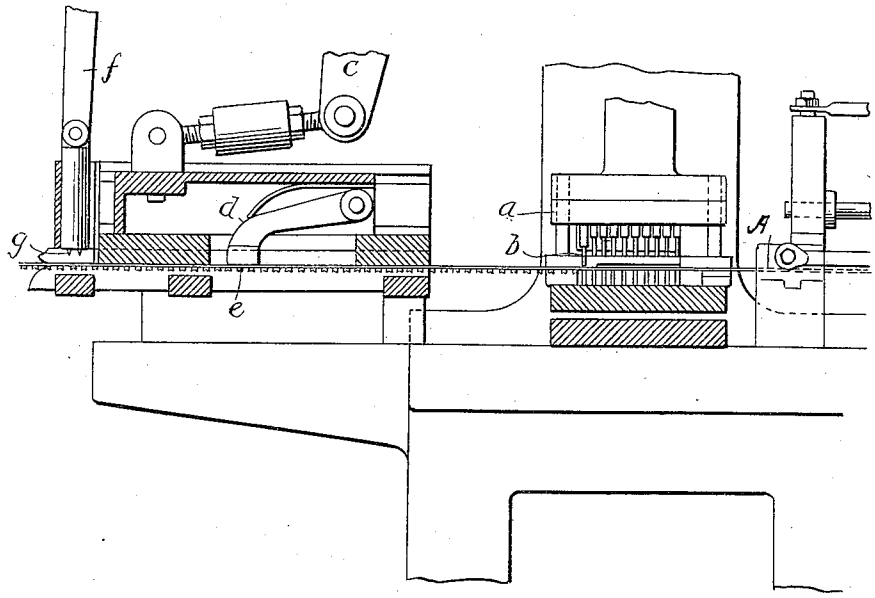
E. SALTZKORN & L. NICOLAI.

PUNCHING MACHINE FOR METAL STRIPS.

(Application filed Dec. 8, 1897.)

(No Model.) 2 Sheets—Sheet 2.

FIG. 2



Witnesses:
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UNITED STATES PATENT OFFICE.

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

PUNCHING-MACHINE FOR METAL STRIPS.

SPECIFICATION forming part of Letters Patent No. 641,333, dated January 16, 1900.

Application filed December 8, 1897. Serial No. 661,198. (No model.)

To all whom it may concern:

Be it known that we, EMIL SALTZKORN and LUDWIG NICOLAI, subjects of the Emperor of Germany, residing at Dresden, Germany, have invented certain new and useful Improvements in or Relating to Punching-Machines for Manufacturing Toothed or Perforated Metal Strips, of which the following is a specification.

This invention relates to a device for punching-machines for manufacturing toothed or perforated metal strips of unlimited length as used for forming the edges of cardboard boxes and the like, and has for its special object to insure the teeth or holes in the metal strips being formed at exactly equal intervals in spite of the expansion or bending of the metal strip during the work by holding the strip in front of and behind the punch in position and properly stretched during the feeding movement and during the punching by means of alternately-engaging pins or the like.

Figure 1 is a side elevation of a punching-machine embodying my improvements, the feeding mechanism being shown partly in section and the parts in the position they assume during the punching operation. Fig. 2 is a detail sectional elevation of the feeding and punching mechanism, the parts being in the position they assume during the feeding of the strip prior to the punching operation.

As may be seen from the accompanying drawings, the blank metal strip from, say, a reel is fed through a rectilinear guide A to the punch *a*, which is provided with two or more pins *b*, moving in advance of the punching-tools. The pins engage with the teeth intervals or holes produced in the strip in the preceding operation. The finished part of the strip passes through a guide on which is caused to reciprocate a carriage operated by a lever *c* and provided with a pawl or bar *d*, which has on its lower surface points or pins *e*. At the end of this guide there is arranged a piston or plunger working in a cylinder by means of a lever *f* and provided at the bottom with pins *g*. The pins *e* and *g* alternately engage with the strip. During the time that the strip is fed forward it is gripped or engaged only by the pawl *d* with its pins *e*, the pins *b* and *g* being held in their raised position out of engagement with the strip. The blank smooth part of the strip is pulled through the punch and the guide A, considerable force being used, whereby the strip is held in a state of tension, so as to prevent it from bending or twisting. As the feeding operation ceases the pins *b* in advance of the punch begin to engage in order to maintain the strip in its position and tension for the punching operation. Nearly simultaneously the pins *g* on the plunger also engage with the strip, so that the portion of the strip is held fast between them and the pins *b* while the carriage returns and releases the points of the pawl *d* from the strip, said points sliding on the latter. During the punching operation and simultaneously with the return of the carriage is also effected the winding up of the finished portion situated beyond the guide and in front of the pins *g*, which prevent undesirable bending of the strip during the winding up operation.

We claim—

1. In a machine for punching metal strips, the combination with the punching mechanism, of means for holding the metal strip on each side of the punch during the punching operation, and means for keeping taut the punched portion of the strip prior to its passing to the winding-reel, substantially as set forth.

2. In a machine for punching metal strips, the combination with the punching mechanism, of means for holding the metal strip on each side of the punch during the punching operation, mechanism for stretching and keeping taut the punched portion of the strip prior to its passing to the winding-reel, and mechanism for engaging with and feeding the strip forward after each punching operation, substantially as set forth.

3. In a machine for punching metal strips for use in the manufacture of cardboard boxes a feeding-guide before the punch, means for holding the strip in advance of the punch while the material is being punched and means for holding that part of the strip

already operated upon by the punch prior to its passing to the winding-reel in combination with a reciprocating carriage provided with a spring-controlled pawl adapted to engage with and feed the strip forward after each punching operation as set forth.

4. In a machine for punching metal strips for use in the manufacture of cardboard boxes a feeding-guide before the punch, pins adapted to engage with the strip in advance of the punches just before the punching upon the strip and pins on a reciprocating plunger adapted to hold that part of the strip already operated upon by the punch prior to its passing to the winding-reel as set forth.

5. In a machine for punching metal strips, the combination with the punching mechanism, of a feeding-guide located in front of the punch pins carried by the punch-support adapted to engage with the strip in advance of the punch and hold the strip taut during the punching operation, and a reciprocating carriage provided with a pawl adapted to engage with and feed the strip forward after each punching operation, substantially as set forth.

6. In a machine for punching metal strips, the combination with the punching mechanism, a feeding-guide located in front of the punch, pins carried by the punch-support adapted to engage with the strip in advance of the punch and hold the strip taut during the punching operation, a reciprocating carriage provided with a pawl adapted to engage with and feed the strip at certain intervals and a reciprocating plunger having pin adapted to hold the strip during the return of the feeding-carriage, substantially as set forth.

7. In a machine for punching metal strips, the combination with the punching mechanism, of a guide, A, adapted to bear firmly against the strip, pins, *b*, carried by the punch-support on the side opposite the guide, A, adapted to engage and hold the strip during the punching operation, a reciprocating carriage provided with a pawl, *d*, having prongs, *e*, adapted to engage and feed the strip after the punching operation and a reciprocating plunger provided with prongs, *g*, adapted to engage and hold the strip during the return of the feeding-carriage, substantially as set forth.

In witness whereof we have hereto set our hands in the presence of the two subscribing witnesses.

EMIL SALTZKORN.
LUDWIG NICOLAI.

Witnesses:
CHAS. L. COLE,
HERNANDO DE SOTO.