

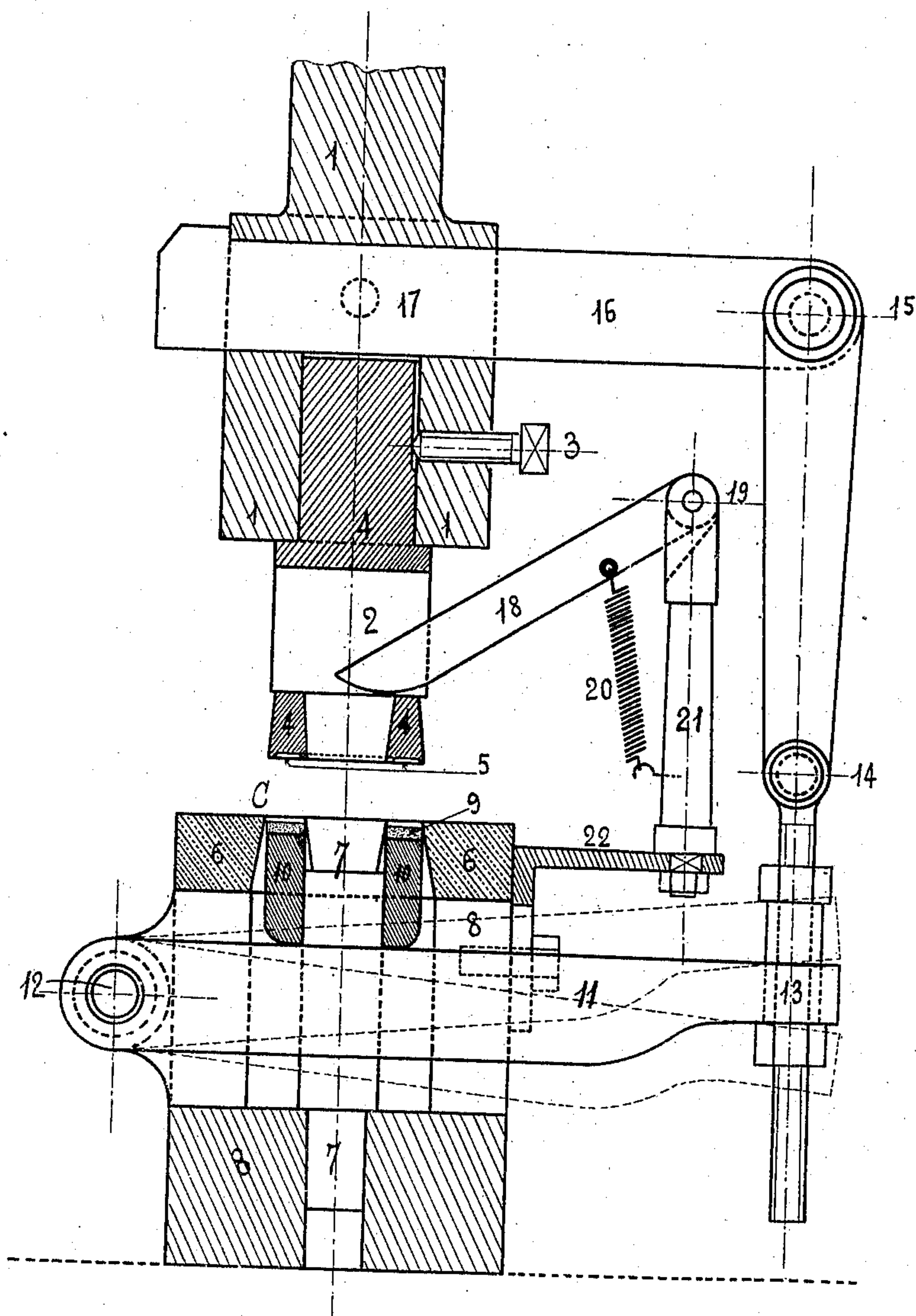
S. BIGAZZI & V. SCOPETANI.

PUNCHING MACHINE.

APPLICATION FILED JUNE 14, 1910.

980,478.

Patented Jan. 3, 1911.



WITNESSES

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UNITED STATES PATENT OFFICE.

SILVIS BIGAZZI AND VINCENZO SCOPETANI, OF FLORENCE, ITALY.

PUNCHING-MACHINE.

980,478.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed June 14, 1910. Serial No. 566,859.

To all whom it may concern:

Be it known that we, SILVIS BIGAZZI, engineer, and VINCENZO SCOPETANI, subjects of the King of Italy, residing at Florence, Italy, have invented new and useful Improvements in Punching-Machines, of which the following is a specification.

The appliance herewith described as an automatic compound multiplex punching machine, and of which a sectional side view is given in annexed drawing, can be adapted, between the sliding tool carrier and corresponding table, to any punch press.

A special punch carrier or holder 1, to be fixed by means of the shaft at its upper end, to the sliding tool carrier of a punching machine, carries with it fastened to it below by means of the set screw 3, the hollow punch 4 traversed from side to side by the slot 2, and the cutting edge of which 5 is fashioned in conformity with the object which it is desired to cut out of a flat strip or sheet of iron or other metal with a single stroke. In the case of the annexed design said punch is in the shape of a circular crown, corresponding to that of a washer for bolts. Below, and corresponding to said punch 4, a compound matrix is fixed, consisting of the collar 6 and of the concentric punch 7, both secured to the base 8 of the appliance, which is firmly fixed to the table of the punch press.

The punch 7 and the collar 6 leave between them a space having the exact form of the cutting face 5 of the punch 4, which in the case of the figure is a circular crown as has been said above.

When a flat strip or sheet of iron is placed on the surface C of the matrix 6 and 7, and the punch 4 is lowered, this cuts out with a single stroke a flat washer 9, which will be driven by the descending tool into the annular space of the matrix on the movable piece 10, fashioned like a ring or collar and sliding on the shaft of the punch 7. Said ring 10 is intended to eject the washer in the following manner: It rests on its lower end, which is suitably curved, on the arm of the horizontal lever 11, the fulcrum of which is the pivot 12 fixed to the base 8 of the appliance; while said lever 11 by means of the power applied at 13 by the connecting rod jointed at 14 and attached at 15, is raised and lowered by the arm 16, fastened by the screw 17 to the punch carrier or holder 1.

When the tool 4 is lowered it cuts out the piece and forces it to pass downward be-

tween the punch 7 and the collar 6 and into engagement with the sliding collar 10. During the return movement of the punch, the lever 11 which is operatively connected thereto by the arm 16 is raised, thus raising the sliding collar 10 and causing the latter to eject above the surface C the piece which has been cut out.

The lower end of the jointed connecting rod is threaded at 13, which, by means of two nuts that lock between them a piece of tube intended to play through the eye-hole of the lever 11, serves to regulate the oscillatory motion of said lever, and consequently the throw of the sliding ejector 10.

The central disk punched out of washers, and in general the pieces cut out by the fixed punch 7, for which the movable punch 4 serves as a matrix, are automatically ejected rising through the interior of said matrix or die till they reach the slot 2, from which they are pushed out by the ejecting lever 18, which is pivoted at 19 to the fixed upright 21 sustained by the rectangular arm 22 which is fastened to the base or table 8. An antagonistic spring 20 constantly holds this ejecting lever down on the lower surface of the slot 2 insuring its proper action.

The appliance here described being entirely free from obstacles in front and at the sides, allows of the introduction of any sheet or plate under the tool or punch; and this disposition is of special importance in making pieces for sheet metal cornices, friezes, etc. It is then obvious that the length of the arms 16 and 11, 18 and 22 in order to have the greatest possible sweep under the punch, will be as great as possible compatibly with the projection of the slide of punching machine employed.

We claim.

1. In a punching machine, in combination, a reciprocable hollow punch, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position and means for disengaging the punched-out article from said stationary punch.

2. In a punching machine, in combination, a reciprocable hollow punch, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position, a movable member operatively associated with said stationary punch and adapted to receive upon its surface the punched-out article and means for raising

said member to disengage the article from said stationary punch.

3. In a punching machine, in combination, a reciprocable hollow punch, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position, a movable member surrounding said stationary punch and adapted to receive upon its surface the punched-out article and means for raising said member to disengage the article from said stationary punch.

4. In a punching machine, in combination, a reciprocable hollow punch, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position, a movable member operatively associated with said stationary punch and adapted to receive upon its surface the punched-out article and means actuated by the return movement of said movable punch for raising said member to disengage the article from said stationary punch.

5. In a punching machine, in combination, a reciprocable holder, a hollow punch carried thereby and movable therewith, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position, a movable member operatively associated with said stationary punch and adapted to receive upon its surface the punched-out article and means operatively connected to said holder for raising said member to disengage the article from the stationary die as the holder returns to its operative position.

6. In a punching machine, in combination, a reciprocable hollow punch and a matrix comprising an outer member and an inner member having their surfaces flush with one another, said outer member having an opening corresponding in size and conformation with the outer surface of said hollow punch and said inner member being

formed to correspond in size and conformation with the opening in said hollow punch and being positioned to extend within said hollow punch when the latter is in its operative position.

7. In a punching machine, in combination, a hollow punch, a punch adapted to extend within said hollow punch, means for reciprocating one of said punches to punch articles from the material to be operated upon, and means for removing from said hollow punch the portion of the material punched out by said second-mentioned punch.

8. In a punching machine, in combination, a reciprocating hollow punch provided with an opening extending transversely therethrough, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position and means extending within said transverse opening to eject therefrom the portions of the material punched out by said stationary punch.

9. In a punching machine, in combination, a reciprocable hollow punch provided with an opening extending transversely therethrough, a stationary punch adapted to extend within said hollow punch when the latter is in its operative position and an ejecting arm pivotally supported upon the frame of the machine and having its free end extending within said transverse opening to eject therefrom the portions of the material punched out by said stationary punch.

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

SILVIS BIGAZZI. [L. s.]

VINCENZO SCOPETANI. [L. s.]

Witnesses:

BRUNO MARINNI,
C. FAMI.