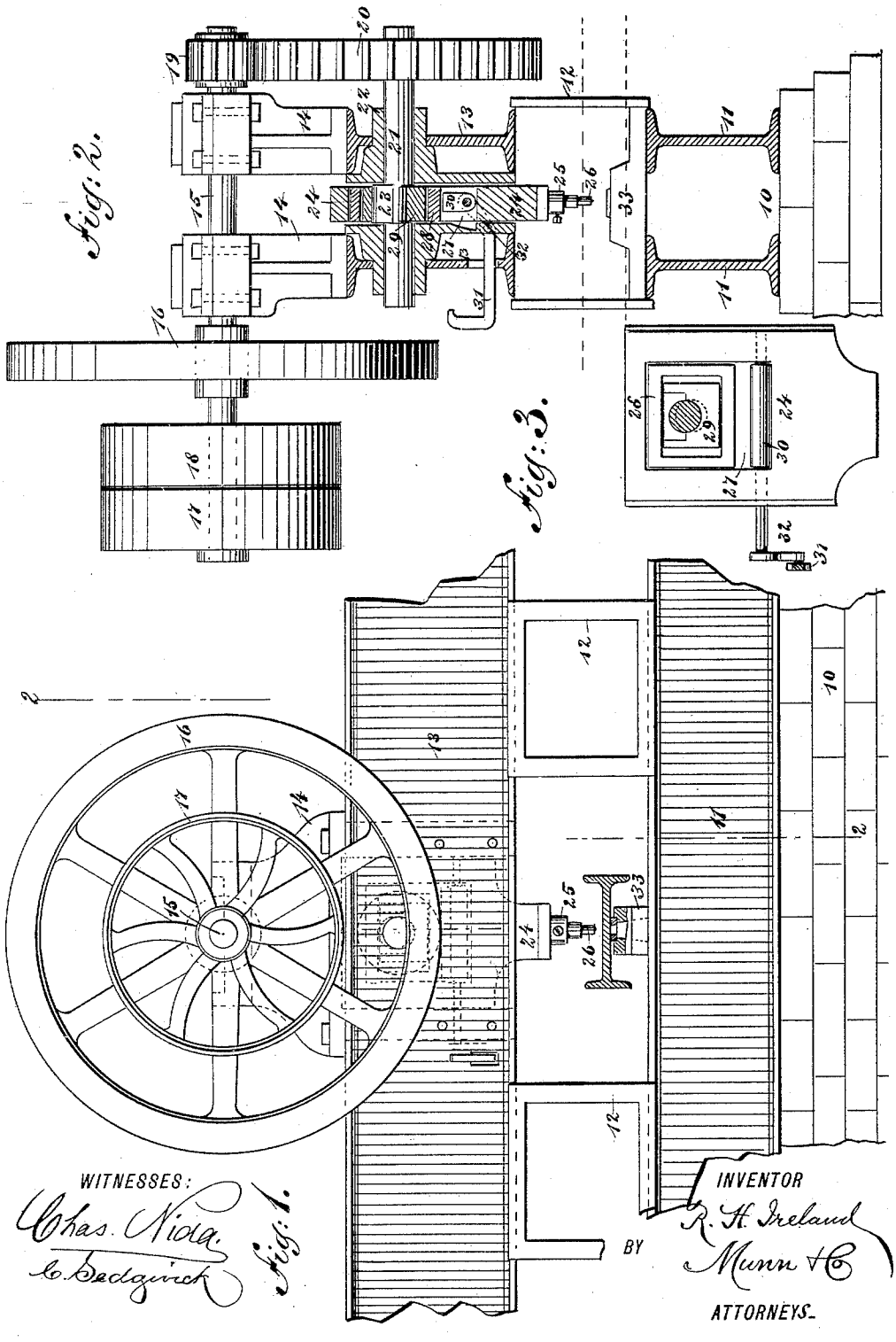
(No Model.)

R. H. IRELAND.

PUNCHING MACHINE.

No. 468,200. Patented Feb. 2, 1892.



WITNESSES:
Chas. Nida.
C. Sedgwick

INVENTOR
R. H. Ireland
BY Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT H. IRELAND, OF NEW YORK, N. Y.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,200, dated February 2, 1892.

Application filed October 8, 1891. Serial No. 408,119. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. IRELAND, of New York city, in the county and State of New York, have invented a new and Improved Punching-Machine, of which the following is a full, clear, and exact description.

My invention relates to machines for punching beams and channels and other structural shapes, being especially adapted for punching plate-iron.

The object of the invention is to provide a machine of exceedingly simple, durable, and economic construction, and capable of being manipulated in a manner to carry the punch in engagement with the article to be operated upon or to cause the punch to reciprocate above the article without engaging with it, as the operator may desire.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine. Fig. 2 is a section taken practically on the line 2 2 of Fig. 1; and Fig. 3 is a detail view of the actuating mechanism for the punch, located in its head.

Upon a foundation 10 two beams 11 are longitudinally located, upon which beams a suitable number of transversely-located blocks 12 is placed. These blocks, in order to render the structure as light as possible, are preferably made hollow, as shown. Upon the blocks an upper set of beams 13 is located parallel with the lower beams, and these beams carry pillow-blocks 14, in which blocks the drive-shaft 15 is journaled, the said drive-shaft being provided with a fly-wheel 16 and pulleys 17 and 18, one of which is fast to the shaft and the other loosely mounted thereon. The drive-shaft has also attached to one end a pinion 19, which meshes with a gear 20, thereby communicating motion to the punch-shaft 21, to which the gear is secured, the said punch-shaft being journaled in a hub 22, which hub has its bearings in the upper beams 13. The hub is projected downward, ordinarily, in the shape of a casing, and in the central portion of the hub and casing a chamber is formed, open at top and bottom; but the shaft 21 may be otherwise journaled, if found desirable. The punch-shaft is provided with a small crank-arm 23 at or near its center, turning within the chamber of the casing and hub. Around the shaft, within the chamber of the casing and hub, a block 24 is located, capable of vertical movement, which block carries at its lower end a head 25, in which the punches 26 are introduced and secured. The block at that portion through which the shaft passes is provided with quite a large rectangular opening 27, as is best shown in Fig. 3. Within this opening a rectangular frame 28 is held to slide vertically, the said frame being essentially of the same width as the opening, but of much less length, and within this frame 28 a rectangular block 29 is located, which is capable of lateral movement, the said block being journaled upon the crank-arm 23 of the punch-shaft 21. The block is preferably made in two sections to facilitate its adjustment upon the shaft.

Below the frame 28, within the opening 27 of the block 24, a button 30 is pivoted, which button is capable of being carried upward to a vertical position or downward to a horizontal position, as shown in Figs. 2 and 3. This is effected by connecting the shaft upon which the button is secured with a pull-rod or lever 31 by means of a link 32. When the pull-rod or lever is carried outward, the button assumes a vertical position, as shown in Fig. 2; but when the rod is pushed inward the button falls down to the horizontal position shown in Fig. 3.

Upon the lower beams 11 a bed 33 is located, upon which the beam or other article to be punched is placed during the operation of punching.

The frame-work and base of the machine may be differently constructed from that shown and described if in practice it is found desirable, and the frame may be of any desired length, so as to accommodate a series of punches.

In the operation of the punch, as the punch-shaft 21 revolves said shaft imparts to the frame 28 a vertical movement; but the move-

ment of the frame is not sufficient to carry it down to an engagement with the button 30 when the latter is in its horizontal position, and the block 29 is permitted to have lateral movement in the frame 28 to accommodate the rotary movement of the shaft. When the button 30 is in its horizontal position and the machine is in operation, the frame 28 will be reciprocating constantly, and likewise the block 24, carrying the punches; but the block will not be carried down a sufficient distance to cause the punch to engage with any article placed beneath it upon the table 33. When the article has been properly adjusted for punching, the operator draws the lever or pull-rod upward. This action carries the button to the vertical position shown in Fig. 2, and the button is brought in engagement with the frame 28 upon its downward stroke and the punch is driven with the necessary force downward into the material to be operated upon. Thus it will be observed that the operation of punching may be accomplished as rapidly as the pull-rod can be drawn outward, and that the punch may be carried out of engagement with the article beneath it whenever the pull-rod is carried inward.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a punching-machine, the combination, with a frame composed of an upper and a lower set of girders, transverse blocks separating the upper and lower girders, a table carried by the lower girders, and a stationary casing supported between the upper girders, of a drive-shaft, a crank-shaft driven therefrom and journaled in said casing, a block having vertical movement in the casing and provided with an opening through which the crank-arm of the crank-shaft passes, said blocks being adapted to receive a punch, a frame held to slide vertically in the opening of the block, made of less length than the opening, a block held to slide laterally in the frame and having a pivotal connection with the crank-arm of the crank-shaft, a button pivoted in the opening of the block, and an arm connected with the button and adapted to carry it to a contact with the frame or to disengagement therefrom, as and for the purpose specified.

ROBERT H. IRELAND.

Witnesses:
FELIX O'ROURKE,
CHAS. A. HENNESSEY.