

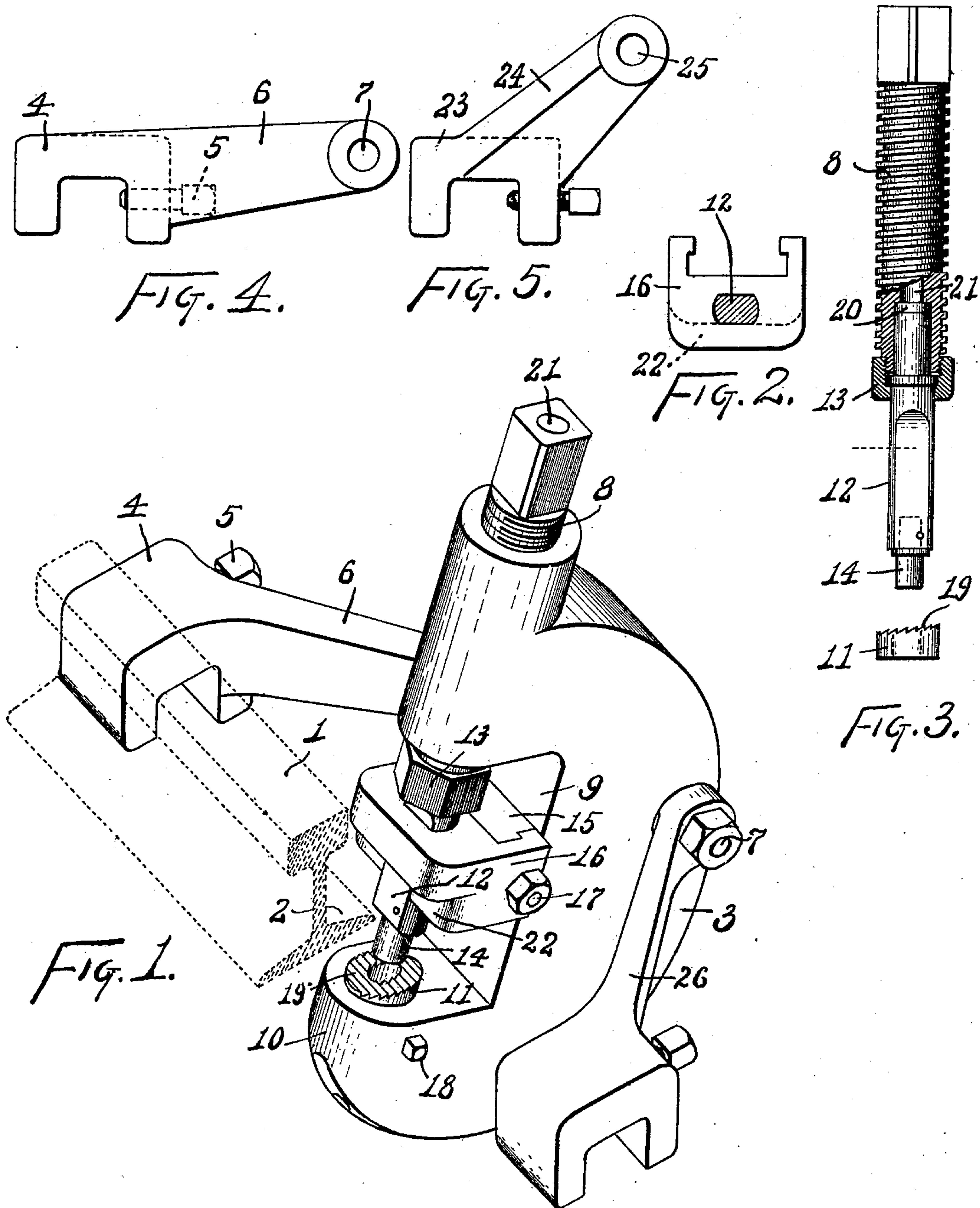
No. 667,258.

Patented Feb. 5, 1901.

F. J. J. SLOAT.
RAIL PIERCING MACHINE.

(Application filed Aug. 3, 1900.)

(No Model.)



Witnesses:
E. Shipley
M. Belden.

Frank J. J. Sloat
Inventor
by James W. See
Attorney

UNITED STATES PATENT OFFICE.

FRANK J. J. SLOAT, OF HAMILTON, OHIO.

RAIL-PIERCING MACHINE.

SPECIFICATION forming part of Letters Patent No. 667,258, dated February 5, 1901.

Application filed August 3, 1900. Serial No. 25,744. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. J. SLOAT, a citizen of the United States, residing at Hamilton, Butler county, Ohio, (post-office address, No. 122 Buckeye street, Hamilton, Ohio,) have invented certain new and useful Improvements in Rail-Piercing Machines, of which the following is a specification.

In applying new bonds to old tracks it becomes necessary, by punching or drilling, to pierce the webs or foot-flanges, and it is highly desirable that the work be done without interfering with traffic or necessitating the lifting of the rails. This work has heretofore involved serious expense, especially if the piercing be desired at the foot-flanges of the rails.

This invention pertains to a machine for the above-mentioned purposes, and the improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of my improved machine in condition for use in punching the foot-flange of a rail; Fig. 2, a plan of the guide of the coupling-bar; Fig. 3, an elevation of the screw, coupling-bar, and die illustrated in Fig. 1, the coupling-nut and a portion of the screw appearing in vertical section; Fig. 4, a side elevation of the bracket-arm illustrated in Fig. 1, and Fig. 5 a side elevation of a bracket-arm for use when the web instead of the foot-flange of the rail is to be pierced.

In the drawings, 1 indicates a rail to be pierced, the same being of usual T-section; 2, one of the foot-flanges of the rail, beveled, as usual, upon its upper surface; 3, the body of the machine, the same having the general form usual in connection with portable screw-punches; 4, a clamp engaging down over the head of the rail; 5, a set-screw for fixing the clamp to the rail; 6, an arm projecting outwardly from the clamp alongside the body of the machine; 7, a pin projecting from the outer end of arm 6 through a hole across the body of the machine, the clamp and arm and pin together forming a bracket-arm attachable to the rail and serving to support the body of the machine in such relation to the rail that the axis of the punch will pass

through the foot-flange of the rail and be substantially perpendicular to the beveled upper surface of the foot-flange; 8, a screw threaded into the body and having at its upper end a squared head to receive a wrench, all after the manner usual in connection with portable screw-punches; 9, the gap in the body similar to the gap in the body of an ordinary screw-punch, except that it has very much greater height than usual, the height in the present case being considerably greater than that of the rail to be dealt with; 10, the lower jaw of the body, the same coming under the foot-flange of the rail; 11, the die, the same being a perforated disk firmly but removably secured in a recess in the upper surface of the lower jaw of the machine, the upper surface of this die being beveled, as seen in Fig. 3, so as to bear fairly against the lower surface of the foot-flange of the rail when the axis of the die is perpendicular to the beveled upper surface of the foot-flange; 12, a coupling-bar forming a downward prolongation of the screw 8, the upper end of the coupling-bar fitting into a recess in the lower end of the screw, the coupling-bar being of non-circular cross-section, the preferred form being produced by first making the bar cylindrical and then flattening off two of its sides; 13, a coupling-nut screwing onto the lower end of screw 8 and engaging under a collar on the coupling-bar and serving to unite the coupling-bar to the screw without interfering with the rotative independence of the coupling-bar and screw—that is to say, the screw may turn without turning the coupling-bar; 14, the punch, separably inserted in the lower end of the coupling-bar, this punch having a flat face adapted for fair presentation to the beveled upper surface of the foot-flange; 15, a projection inwardly from the rear wall of the gap 9 of the body of the machine; 16, a guide firmly secured to projection 15 by tongue-and-groove and bolted connection, this guide having an aperture neatly fitting the non-circular portion of the coupling-bar 12; 17, a bolt passing through the guide and the projection 15 and serving to rigidly unite the guide to the body of the machine; 18, the usual set-screw for firmly securing the die in the lower jaw of the machine; 19, teeth or corrugations formed in

the beveled upper surface of die 11; 20, a disk in screw 8 at the upper end of the coupling-bar to serve as a thrust-bearing; 21, an axial hole through screw 8; 22, a rabbet formed in the lower outer portion of guide 16, the roof-wall of this rabbet being at sufficient distance from die 11 to come above the head of the rail when the die engages under the rail, and the rear or vertical wall of the rabbet being even with the outer flat face of the coupling-bar, the coupling-bar being thus completely encircled by the upper portion of the guide and engaged upon three sides by the lower portion of the guide; 23, a clamp adapted to engage the head of the rail, being like clamp 4; 24, an arm projecting outwardly and upwardly from clamp 23; 25, a pin similar to pin 7, projecting from the extremity of arm 24 in such position relative to the clamp that when the clamp is secured to the rail the pin when engaging the body of the machine may serve in supporting the body in such position that the axis of the punch will be horizontal or perpendicular to the web of the rail, and 26, a second bracket-arm similar to the one seen engaging the rail in Fig. 1, but disposed upon the opposite side of the body of the machine, which body may therefore be supported by a pair of bracket-arms engaging the rail at either side of the machine.

The bracket-arms (seen in Fig. 1) will remain normally coupled to the body of the machine. The clamps 4 having been fixed to the rail, the body hanging upon pin 7 is capable of swinging and projecting the lower jaw and die under the foot-flange of the rail, the punch coming over the foot-flange and under the side projection of the head of the rail, the rabbet of the guide and the flattening of the outer face of the coupling-bar permitting this position for the punch. The punching is done in the usual manner by turning screw 8, the coupling-bar and punch being non-rotary. During the punching operation the foot-flange becomes preliminarily clamped between the flat lower face of the punch and the toothed and beveled surface of the die, thus avoiding side strains on the punch and avoiding the tendency of the punch and die to move outwardly farther away from the web of the rail. The diameter of the screw and of the coupling-nut and the frontal projection of the upper portion of guide 16 are such as to project beyond the plane of the side of the head of the rail; but as these parts are above the head of the rail they do not interfere with the proper positioning of the machine upon the rail, there being no interference till the outer flat face of the coupling-bar strikes the side of the rail-head.

The punch is a small and inexpensive structure separably secured in the lower end of the coupling-bar and easily renewable. Guide 15, being removable from the body of the machine, permits the ready uncoupling and removal of the coupling-bar. Guide 16 divides

the gap in the body into two gaps, the lower one constituting the punching-gap and the upper one making room for coupling-nut 13, the coupling-bar extending into the lower gap and in conjunction with the guide serving to give the punch a steadying support close to the work.

When the web instead of the foot-flange of the rail is to be pierced, then bracket-arms of the form illustrated in Fig. 5 are to be employed instead of the form illustrated in Figs. 1 and 4, the result being that the machine becomes supported with the axis of its punch perpendicular to the web of the rail. In web-punching the beveled and toothed die 11 is to be removed and an ordinary plain die substituted. Axial hole 21 in the screw permits of the employment of a drill-spindle in place of the coupling-bar and punch, screw 8 in such case becoming a mere feed-screw for the drill.

In cases where a rail is to be pierced at some point distant from a rail-joint, so that the rail is well supported on the ties, the machine may find satisfactory support when using but a single bracket-arm; but in most cases the piercing for the bonds is to be done near the rail-joint, and in many cases one or both of the splice-bars at the rail-joint are removed preparatory to the piercing of the rail for the bond. In such case, if the machine be supported by one bracket-arm only, the heavy strains of working the wrench to do the punching will be quite apt to spring the rail end out of alinement with its fellow rail end. By employing the two bracket-arms, one clamped to one rail end and the other to the other rail end, the bracket-arm structure bridges the joint and ties the rail ends together and furnishes a firm support for the machine while in use. The bracket-arm structure thus acts as a firm splice for the rail ends while the punching is being done.

I claim as my invention—

1. In a rail-piercing machine, the combination, substantially as set forth, of a clamp adapted to be fixed to the head of the rail, an arm projecting from the clamp, a pin projecting from the extremity of the arm parallel with the rail, a gapped body independent of said clamp and swiveled upon said pin, and a piercing-tool mounted in said body.

2. In a rail-piercing machine, the combination, substantially as set forth, of a machine-body provided with piercing mechanism, a clamp adapted for rigid attachment to a railway-rail independent of said machine-body and having an arm projecting outwardly from the rail, and a pivot uniting said machine-body and arm and having its axis disposed parallel with the line of the rail.

3. In a rail-piercing machine, the combination, substantially as set forth, of a gapped body, a die in one jaw thereof, a screw mounted in the opposite jaw thereof, a coupling-bar engaging the lower end of the screw, a coupling-nut engaging the coupling-bar

and screw, a punch in the free end of the coupling-bar, and a guide engaging the coupling-bar between the punch and coupling-nut.

5 4. In a rail-piercing machine, the combination, substantially as set forth, of a forked bracket-arm structure adapted to bridge a rail-joint and having at each of its extremities a clamp adapted to engage the rail, a pin carried by said bracket-arm structure parallel

with the rail, a machine-body mounted upon 10 and adapted to swing upon said pin, and a piercing-tool carried by said machine-body and adapted to attack the rail at a point between said clamps.

FRANK J. J. SLOAT.

Witnesses:

J. W. SEE,

E. R. SHIPLEY.