

(No Model.)

J. J. SULLIVAN.
PUNCHING MACHINE.

No. 603,664.

Patented May 10, 1898.

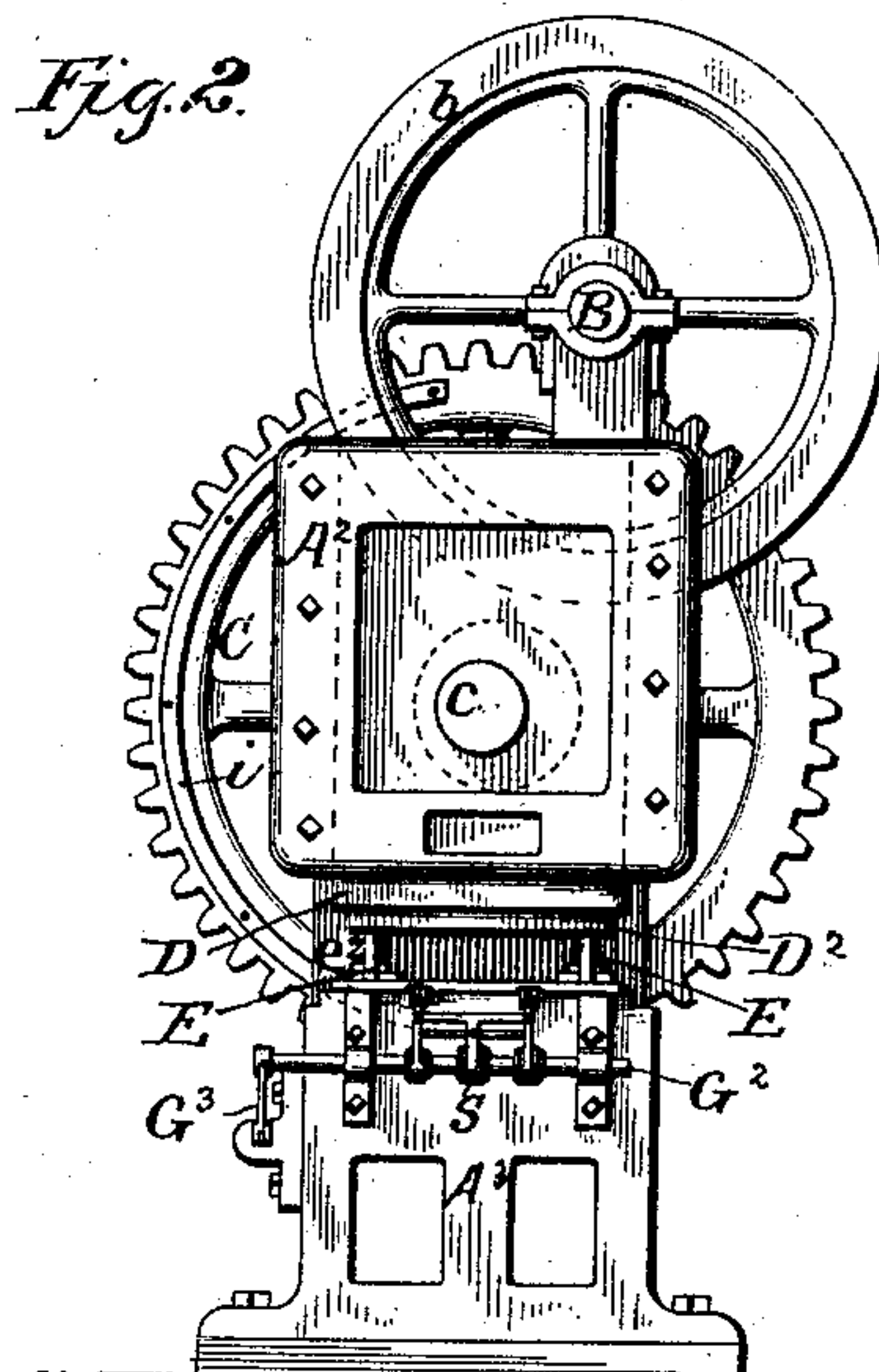
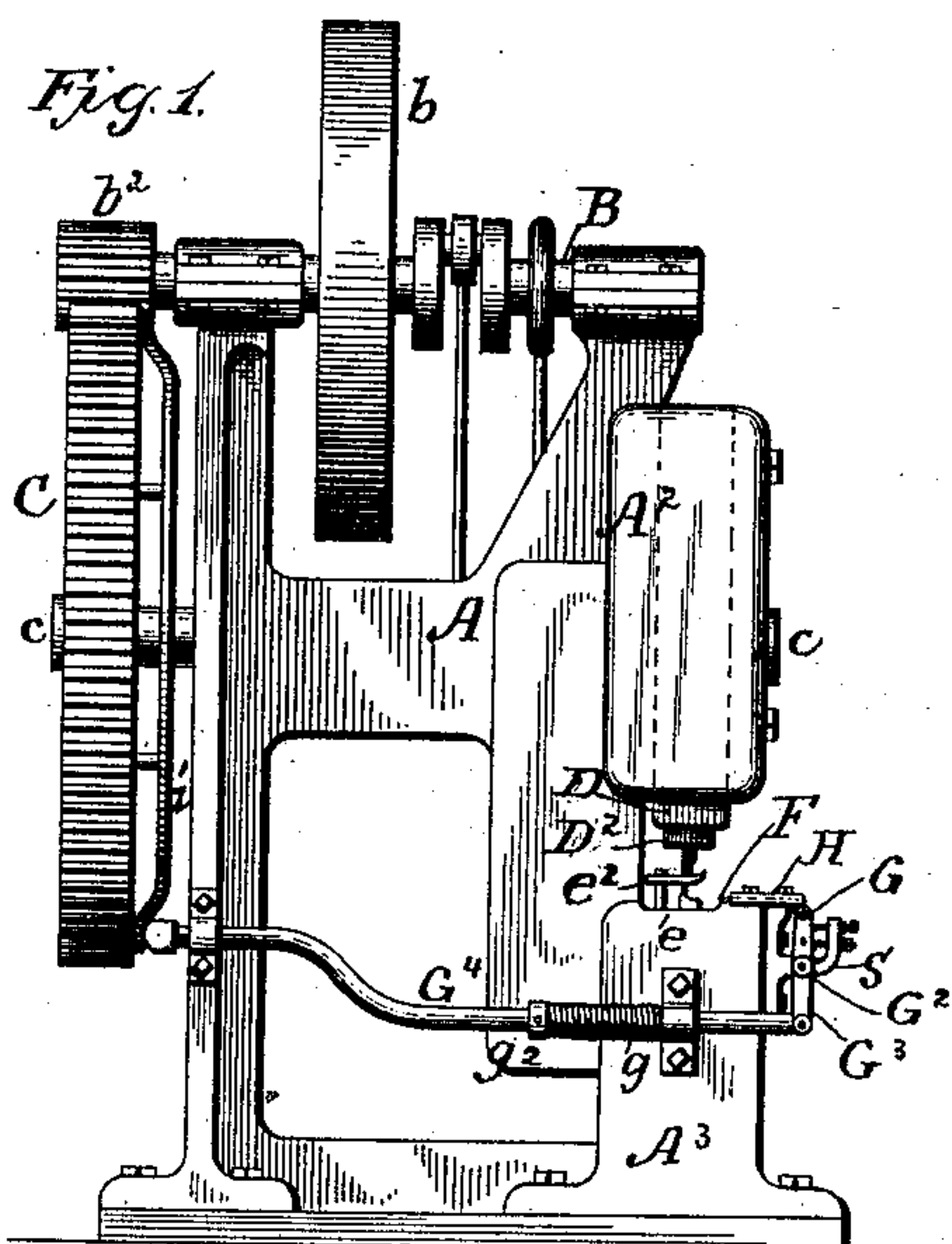
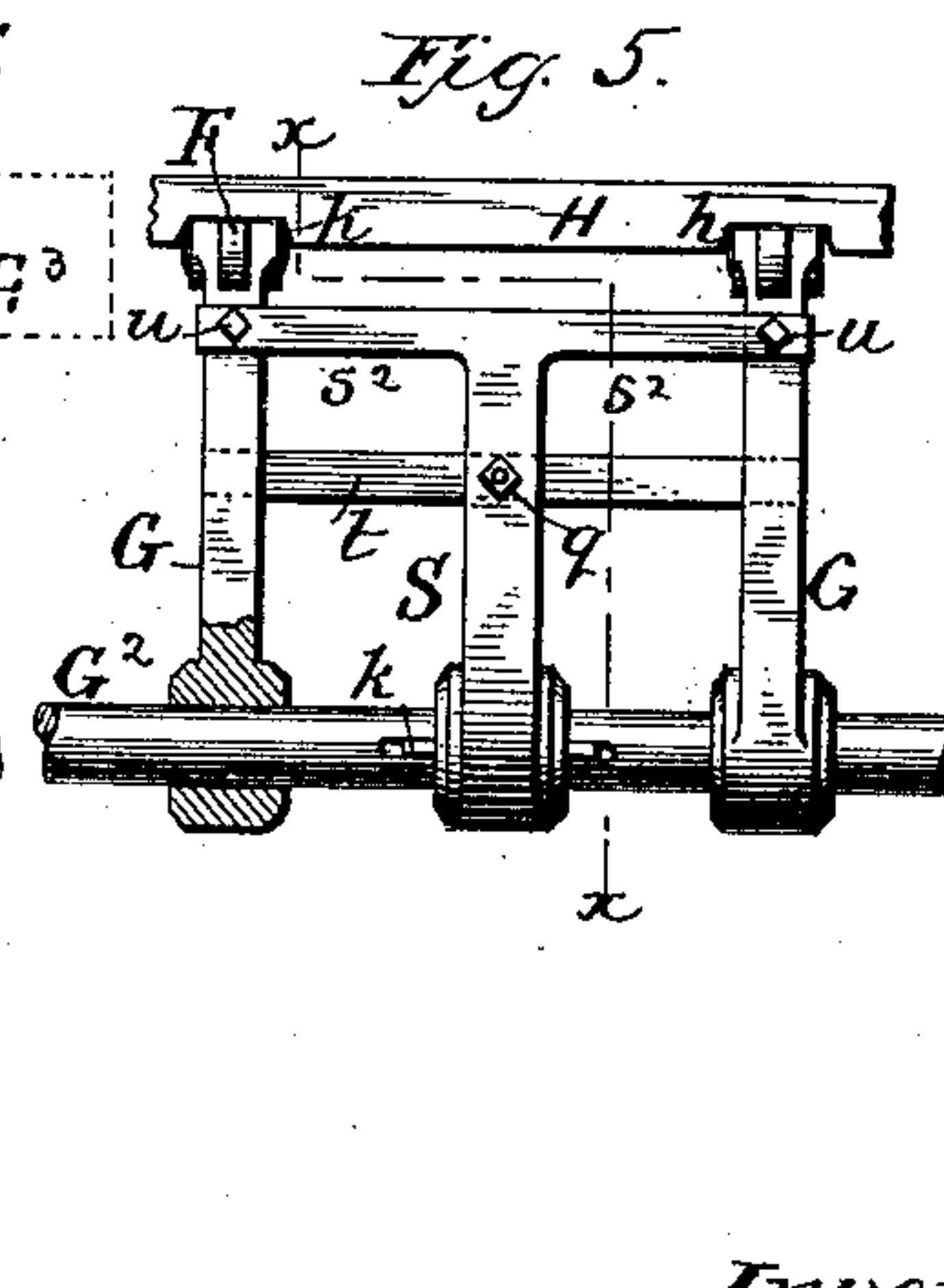
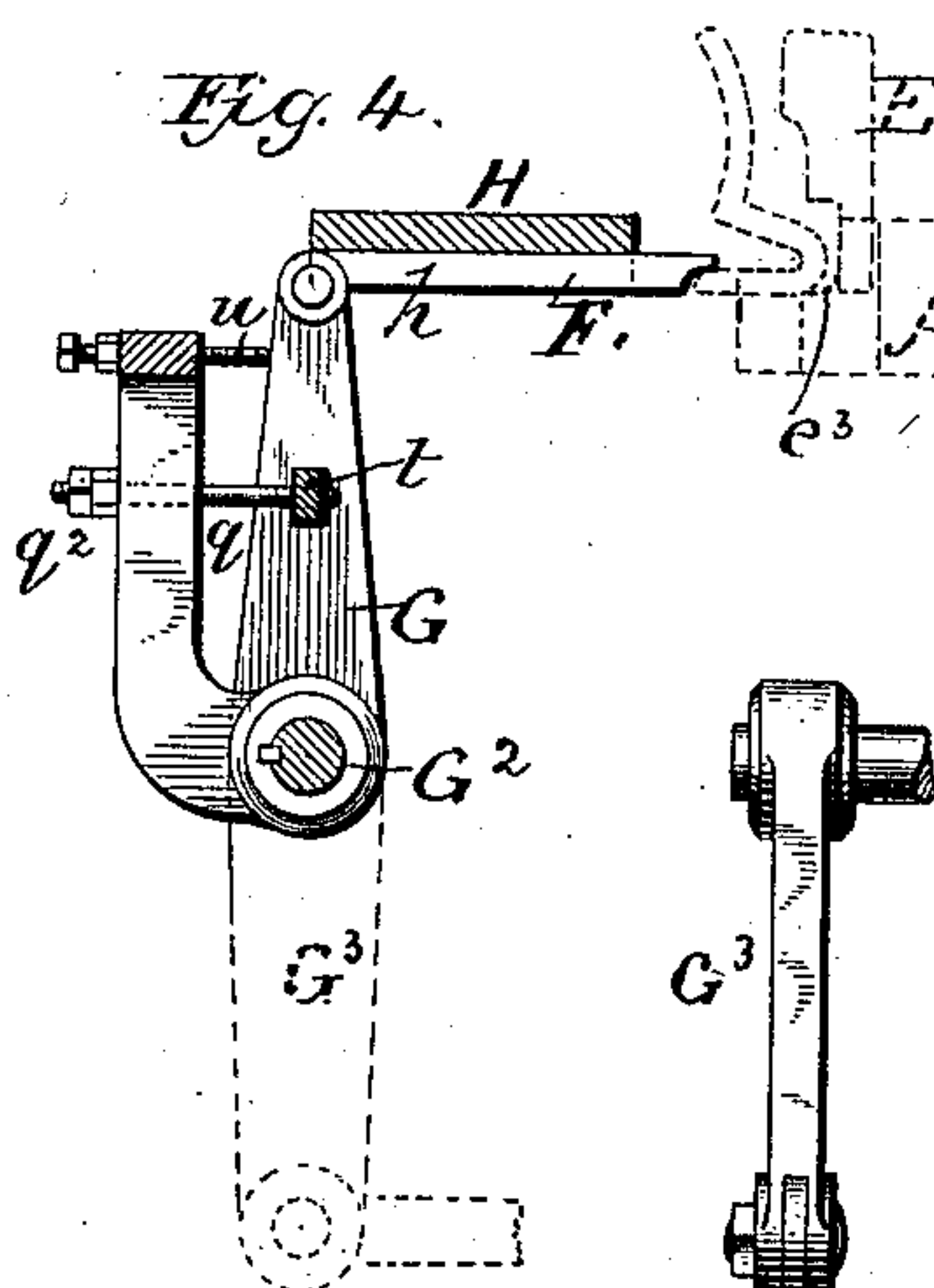
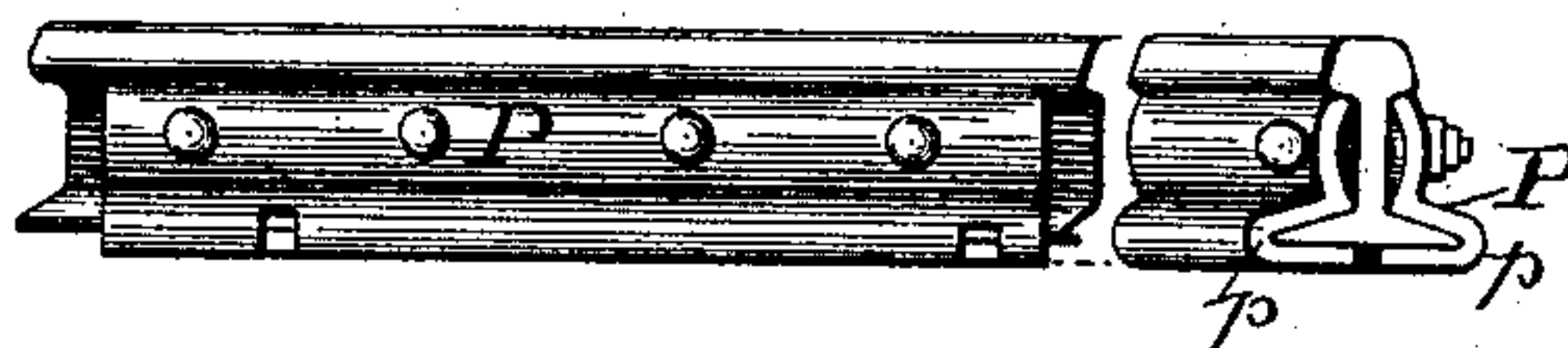


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN J. SULLIVAN, OF TROY, NEW YORK.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,664, dated May 10, 1898.

Application filed February 10, 1898. Serial No. 669,851. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. SULLIVAN, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Punching-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to punching-machines mainly intended for use in punching two slot-holes at the same time in the rounded edge of fish-plates and in which said fish-plate is so retained as to prevent it from tipping up while being punched and thereby preventing breaking the punches or damaging the fish-plate, as shown in the United States patent granted to me May 21, 1895, No. 539,493; and the objects of the present improvement are to provide reliable adjusting means for controlling the pressure of the slides that retain the fish-plate while it is punched. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the punching-machine, having the pressure-adjusting means constructed in accordance with my invention. Fig. 2 is a front view of the same. Fig. 3 represents in side view and also in perspective railroad-rails having fish-plates attached thereto, the rounded edge of which is punched with a machine constructed in accordance with my invention. Fig. 4 represents on a larger scale a longitudinal vertical section through the pressure-adjusting means of the machine on line *x x* of Fig. 5. Fig. 5 is a front view of the same.

In said drawings, A represents the frame of the punching-machine, having a head A² and the work-supporting anvil A³. The upper portion of the frame A has two pillars formed thereon to carry the bearings for the driving-shaft B. Said shaft carries about the middle of its length the driving-pulley *b* and upon its rear end the pinion *b*², that meshes with a gear-wheel C, mounted upon the punch-operating shaft *c*, the latter carrying on its front end an eccentric or other suitable well-known means to vertically reciprocate in the head A² the slide-box D, to which the punch-holder D² is suitably secured. Said

holder D² carries at a predetermined distance apart two slotting-punches E, having, preferably, the form shown in dotted lines in Fig. 4. On top of the anvil A³ are secured the punch-dies *e* and the punch stripper-plates *e*². The upper portion of each punch-die is shaped to not only support the bottom of the fish-plate P, but to present on its front side a bearing-shoulder *e*³ for the folded round edge *p* of said fish-plate to rest against.

The means employed to retain the fish-plate against the shoulder *e*³ of each punch-die, and particularly the adjustability of some of these means to make up for wear of the parts, constitute the main features of my invention. Said means consist in part of two horizontal clamping-plates F, adapted to slide upon the top of the anvil A³, being guided in grooves *h*, formed in the under side of the plate H, that is secured on top of said anvil.

The front end of the clamping-plates F is undercut to rest upon the bottom web of the fish-plate and at the same time force it toward the shoulder *e*³ of the punch-die. The rear end of each clamping-plate is pivoted to the upper end of an arm G, that has its lower end loosely mounted or pivoted upon a horizontal rocking shaft G², that is mounted in bearings secured to the front of the anvil. One end of said shaft has a pendent arm G³, that has pivoted to its lower end one end of a substantially horizontal rod G⁴, that is guided in bearings secured to the side of the anvil. The rear end or head of the rod G⁴ extends in the path of a semi-annular cam *i*, that is secured to and projects from the inner face of the gear-wheel C to force the clamp-plates against the fish-plate and retains it in position while being slotted, after which the cam *i* leaves the head of the rod G⁴, and the coiled spring *g* upon said rod forces it back toward the wheel C and releases the clamp-plates F from engagement with the fish-plate. For this purpose one end of the coil-spring *g* rests against one of the bearings of the rod G⁴, while the other end presses against a collar *g*², secured upon said rod.

To provide for a uniform pressure of each clamping-plate F against the fish-plate and to permit adjustment to make up for wear of the front end of said plates, each operating-

arm G, as above stated, is pivoted upon the horizontal shaft G^2 , and centrally between them there is a T-shaped arm S, the lower end of which is firmly attached to said shaft G^2 , preferably by means of a key k . The central portion of the arm S is somewhat bell-crank shaped, its lower portion being horizontal, and thence standing vertically, its upper end terminating in two horizontal branches S^2 . Its vertical portion is rigidly connected to the two arms G, but indirectly, by means of a bolt q , preferably screw-threaded at both ends, that passes through said arm and has one end in engagement with a horizontal bar t , that unites the two arms G about the middle of their length. On the outer end of the bolt q are mounted a nut and jam-nut q^2 . Through each branch S^2 of the arm S set-screws u are made to pass to bear against the upper portion of each arm G to minutely adjust the advance of the clamping-plates F of the machine.

Having now fully described my invention, I claim—

In combination with the frame of a punching-machine, its punches, and the dies thereof having a shoulder e^3 , a guide-plate secured to said frame, clamp-plates F passing under said guide-plate, arms G having their upper ends pivoted to said clamp-plates and their lower ends pivoted to the rocking shaft G^2 , the arms-connecting bar, the branched arm S rigidly secured to the rocking shaft, a bolt adjustably uniting the arms connection with the arm S, and adjusting-screws passing through the branching arms and bearing against the arms G of the clamp-plates substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN J. SULLIVAN.

Witnesses:

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