No. 792,758. PATENTED JUNE 20, 1905.

A. M. COLT.

QUICK ACTING CLAMP.

APPLICATION FILED JAN. 7, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

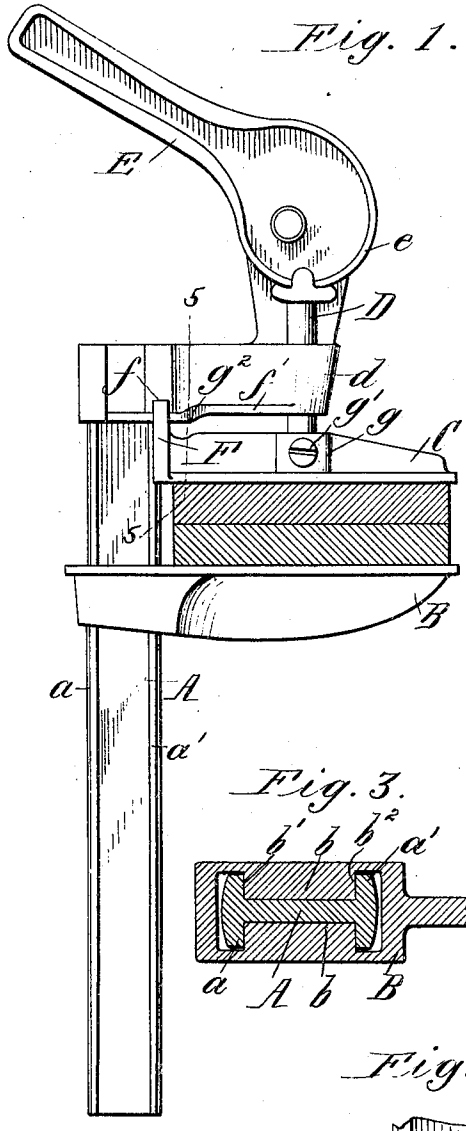


Fig. 2.

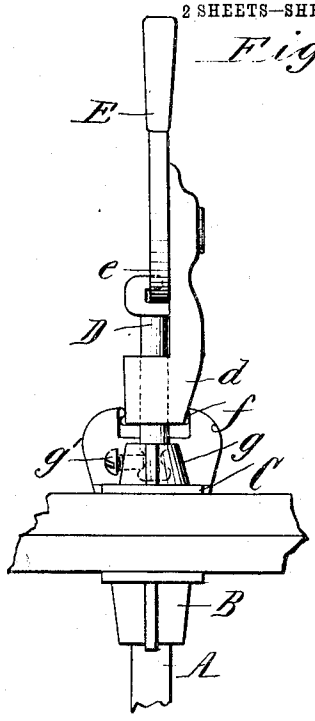


Fig. 3.

Fig. 5.

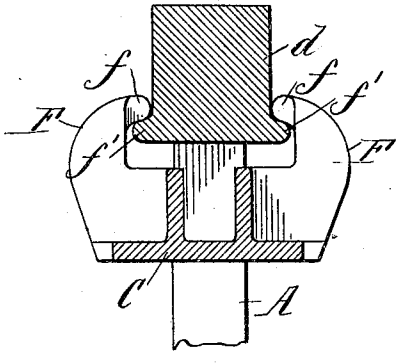
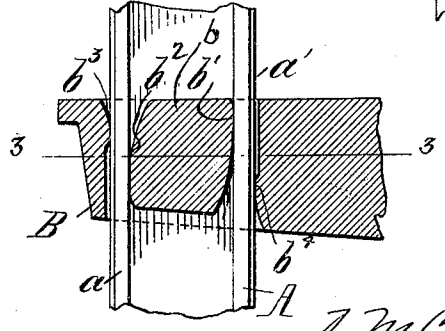


Fig. 4.



Witnesses:-

P. W. Prosser

J. N. Snyder Jr.

A. M. Colt, Inventor.

by Wilkes Parker & Hord, Attorneys.

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2 SHEETS—SHEET 2.

Fig. 6.

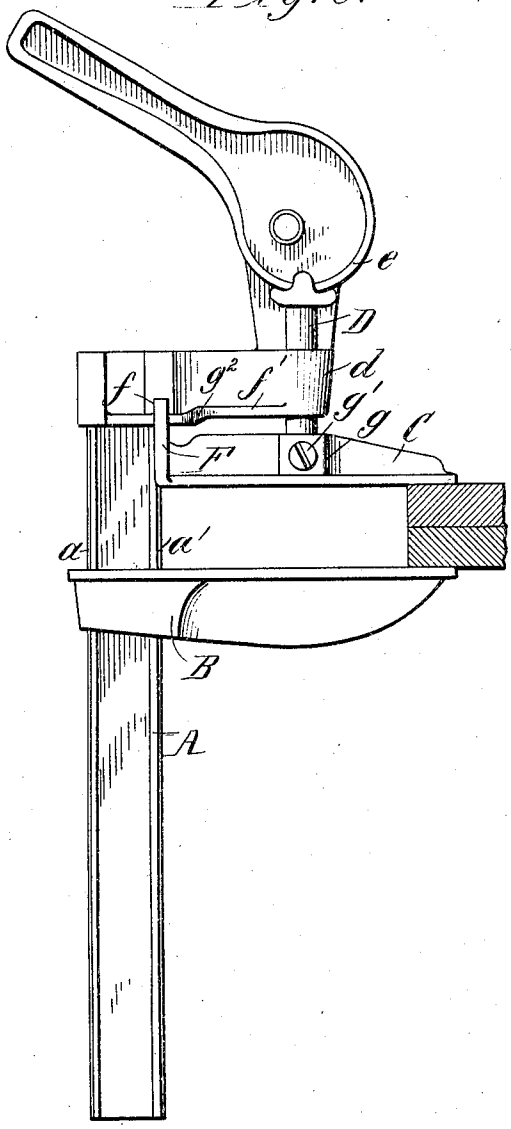
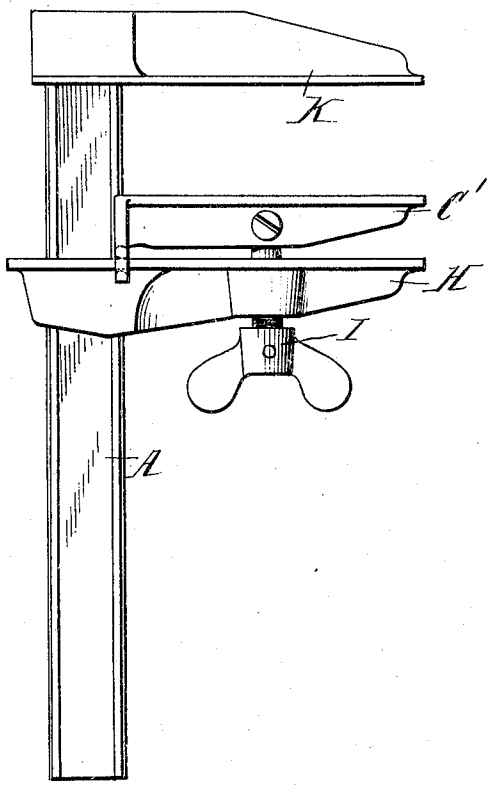


Fig. 7.



Witnesses:—
R. W. Turner.
J. N. Snyder, Jr.

A. M. Colt, Inventor.
by Wilhelm, Parker & Hard, Attorneys.

No. 792,758. Patented June 20, 1905.

UNITED STATES PATENT OFFICE.

ALVA M. COLT, OF BATAVIA, NEW YORK.

QUICK-ACTING CLAMP.

SPECIFICATION forming part of Letters Patent No. 792,758, dated June 20, 1905.

Application filed January 7, 1904. Serial No. 188,094.

To all whom it may concern:

Be it known that I, ALVA M. COLT, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented new and useful Improvements in Quick-Acting Clamps, of which the following is a specification.

This invention relates to quick-acting portable or joiners' clamps of that kind comprising a shank or beam and opposable jaws, one of which is mounted on the shank so that it can be slid along the same toward and from the other jaw by tilting its free end toward said other jaw and which is held rigidly against movement on the shank by the binding action between the shank and jaw when pressure is brought to bear on its free end tending to separate the jaws.

The object of the invention is to produce a clamp of this character which will always be reliable in action and will firmly grip and hold the work regardless of the position of the same between the jaws and whether or not the opposite faces of the work on which the jaws bear are parallel and in which the adjustable jaw is positively held from movement on the shank when the work presses against the same close to the shank.

In the accompanying drawings, Figure 1 is a side elevation of a clamp embodying the invention. Fig. 2 is a fragmentary front elevation thereof. Fig. 3 is a fragmentary transverse section, on an enlarged scale, of the shank and adjustable jaw in line 3 3, Fig. 4. Fig. 4 is a fragmentary longitudinal section of the adjustable jaw, on an enlarged scale, showing the shank in elevation. Fig. 5 is a section, on an enlarged scale, in line 5 5, Fig. 1. Fig. 6 is a side elevation of the clamp, showing the work gripped between the ends of the jaws. Fig. 7 is a side elevation of a modified form of clamp.

Like letters of reference refer to like parts in the several figures.

Referring particularly to Figs. 1 to 6, A represents the shank or beam, B the adjustable clamping-jaw, which is capable of being moved along the shank to different positions and which is rigidly held in adjusted positions, constituting a stationary jaw, and C the opposing movable clamping-jaw, which is arranged opposite to the adjustable jaw and is carried by a stem or slide D, which is movable longitudinally in a guide-hole in a fixed arm d, projecting from the shank, and is operated by a lever E, which is pivoted on a lug rising from the fixed arm and has a cam-shaped flange e entering a notch in the upper end of the slide for the movable jaw. The shank A consists of a rolled bar of I shape in cross-section having oppositely-extending flanges a and a' at its front and rear edges. The inner end of the adjustable clamping-jaw B is provided with a substantially I-shaped slot or hole through which the shank passes, the jaw having at opposite sides of said slot inwardly-projecting lugs b, which extend in between the front and rear flanges of the shank. (See Fig. 3.) The upper portion b' of the front face and the lower portion b^2 of the rear face of each lug constitute gripping-faces, which bear against the inner faces of the front and rear flanges of the shank and coöperate with inwardly-extending gripping projections b^3 b^4 at the front and rear sides of the slot, which bear, respectively, against the front and rear edges of the shank. When the gripping faces and projections of the jaw are caused to bear against the flanges and edges of the shank, as shown in Fig. 3, by pressure on the jaw in a direction away from the opposing jaw they pinch or bind on the shank and hold the adjustable jaw positively from movement on the shank. By tilting the adjustable jaw toward the other jaw it will slide freely on the shank. If the pressure causing the jaw to bind on the shank is applied at the outer end of the jaw, the leverage is greatest, and this leverage decreases as the point of application of the pressure nears the shank, the leverage being so little when the work is clamped very close to the shank that the jaw will slide unless the gripping-faces b' b^2 and coöperating gripping projections b^3 b^4 are relatively near together in a vertical direction. To secure this arrangement of the gripping-faces and at the same time make the inner end of the jaw of sufficient width and strength to withstand the strains to which it is subjected in use, the front and rear gripping projections bear on the

shank some distance from the lower and upper faces of the inner end of the jaw. As the gripping-faces b^3 and b^4 project inwardly from the front and rear walls of the shank-slot, they cannot be worn down enough to interfere with their binding action except by very long and severe usage, thus greatly increasing the life and reliability of the clamp. A serious objection to most clamps of this type is that they will not properly grasp and hold the work unless they have an extended bearing on the work and unless the opposite faces of the work on which the jaws bear are parallel. To remedy this fault, the movable jaw is adapted to fulcrum at its inner end on a fixed part of the clamp and has a rocking connection with its operating-slide, so that it can tilt to accommodate itself to an inclined or uneven face of the work and will securely clamp the same when the work is engaged between the extreme outer ends only of the clamping-jaws, as shown in Fig. 6. In the construction shown the movable jaw is provided at its inner end with upwardly-extending separated fingers F, which straddle the inner end of the fixed arm d of the clamp and have inturned upper ends f, which overhang outwardly-extending flanges or ribs f' on the fixed arm. The fingers F are long enough to allow the inner end of the movable jaw some movement toward and from the fixed arm and are adapted to bear on the flanges when the work is gripped between the outer ends only of the jaws and to be held off of the flanges by the work when the movable jaw bears on the latter at or near its inner end. The jaw is provided centrally or between its ends with a socket g, in which a rounded head on the lower end of the slide or stem D is loosely seated and detachably retained by a screw g', passing into the socket and engaging with the reduced portion or neck of the slide or stem. The jaw can be detached from its slide by loosening the screw g', and its fulcrum-fingers can then be disengaged from the fixed arm by moving the jaw forwardly until its fingers disengage the flanges on the fixed arm, which are contracted for this purpose in front of the shank, as indicated at g^2.

Owing to the described construction and arrangement of the movable jaw it will tilt on its slide and bear firmly against the work both when one surface thereof is uneven or inclined and when the opposite bearing-surfaces are parallel. If the work is gripped only between the outer ends of the jaws, the fingers on the movable jaw will fulcrum on the flanges of the fixed arm and permit only a limited tilting movement of the movable jaw, thereby enabling the jaws to firmly grasp and hold the work. The fingers are disconnected from and capable of a limited movement toward and from their bearing-flanges, so that the movable jaw can assume a position parallel with or at an angle to the opposing jaw, and thus always bear flat on the surface of the work.

Fig. 7 shows a clamp of the same general character as that disclosed in Figs. 1 to 6, but in which the movable jaw C′ is carried by an adjustable arm H, which is mounted on the shank in the same manner as the adjustable jaw before described, so that it can be adjusted and held at any desired position on the shank. The movable jaw is connected to and operated by a thumb-screw I, working in a threaded hole in the adjustable arm, and cooperates with an opposing fixed arm or jaw K at the end of the shank. The movable jaw is mounted to rock on its operating-screw and has fulcrum-fingers embracing and bearing on side flanges of the adjustable arm in the manner described in connection with the movable jaw in the other clamp. The clamps operate in the same manner, but on account of the different arrangement of the jaws and operating devices each clamp is better adapted for some work than the other.

I claim as my invention—

1. In a clamp, the combination of a shank, a clamping-jaw which is adjustable on the shank and is stationary when adjusted, an opposing movable clamping-jaw, an operating device for said movable clamping-jaw, a rocking connection between said movable clamping-jaw and said operating device, and a fixed part on said movable clamping-jaw which is disconnected from and is movable toward and from and is adapted to bear on a relatively stationary part of said clamp to act as a fulcrum to limit the rocking movement of said movable clamping-jaw on said operating device toward the opposing jaw, substantially as set forth.

2. In a clamp, the combination of a shank, a clamping-jaw, a coöperating movable clamping-jaw, an operating device therefor, a connection between said movable clamping-jaw and said operating device whereby the former can rock toward and from the opposing jaw, and separated fixed fingers on the inner end of said movable clamping-jaw which are disconnected from and are movable toward and from and are adapted to bear on a relatively fixed part of said clamp to act as a fulcrum to limit the rocking movement of said movable clamping-jaw on said operating device, substantially as set forth.

3. In a clamp, the combination of a shank, a fixed arm projecting from said shank, a clamping-jaw adjustable longitudinally on said shank, a coöperating movable clamping-jaw, an operating device for said movable clamping-jaw, a rocking connection between said movable clamping-jaw and said operating device, and fixed fingers on the inner end of said movable jaw which bear on said fixed arm to limit the rocking movement of said movable clamping-jaw on said operating device, substantially as set forth.

4. In a clamp, the combination of a shank, a fixed arm projecting from said shank, a clamping-jaw adjustable longitudinally on said

shank, a coöperating movable clamping-jaw, an operating device movable on said fixed arm and having a rocking connection with said movable clamping-jaw intermediate of its ends, and separated fixed fingers at the inner end of said movable clamping-jaw which straddle said fixed arm and have inwardly-extending portions which bear on flanges on said fixed arm, substantially as set forth.

5. In a clamp, the combination of a shank, an arm and a clamping-jaw which project from said shank and one of which is adjustable on the shank toward and from the other, a movable clamping-jaw which is carried by one of said projecting parts and coöperates with the other projecting part to hold the work, an operating device for said movable clamping-jaw having a rocking connection therewith whereby the jaw can rock toward and from the opposing jaw, and a fixed part on said movable clamping-jaw which is disconnected from and is movable toward and from and is adapted to bear on the part carrying said movable jaw to act as a fulcrum to limit the rocking movement of said movable clamping-jaw on said operating device toward the opposing jaw, substantially as set forth.

6. In a clamp, the combination of a shank, a fixed arm, a clamping-jaw which is adjustable on the shank toward and from said arm, a movable clamping-jaw, an operating device for said movable clamping-jaw mounted on said fixed arm and having a rocking connection with said movable clamping-jaw whereby the latter can rock toward and from the opposing jaw, and a fixed part on said movable clamping-jaw which is disconnected from and is movable toward and from and is adapted to bear a relatively fixed part of the clamp to act as a fulcrum to limit the rocking movement of the movable clamping-jaw on said operating device, substantially as set forth.

Witness my hand this 4th day of January, 1904.

ALVA M. COLT.

Witnesses:
JOHN THOMAS,
WILLIS D. SANFORD.