

(No Model.)

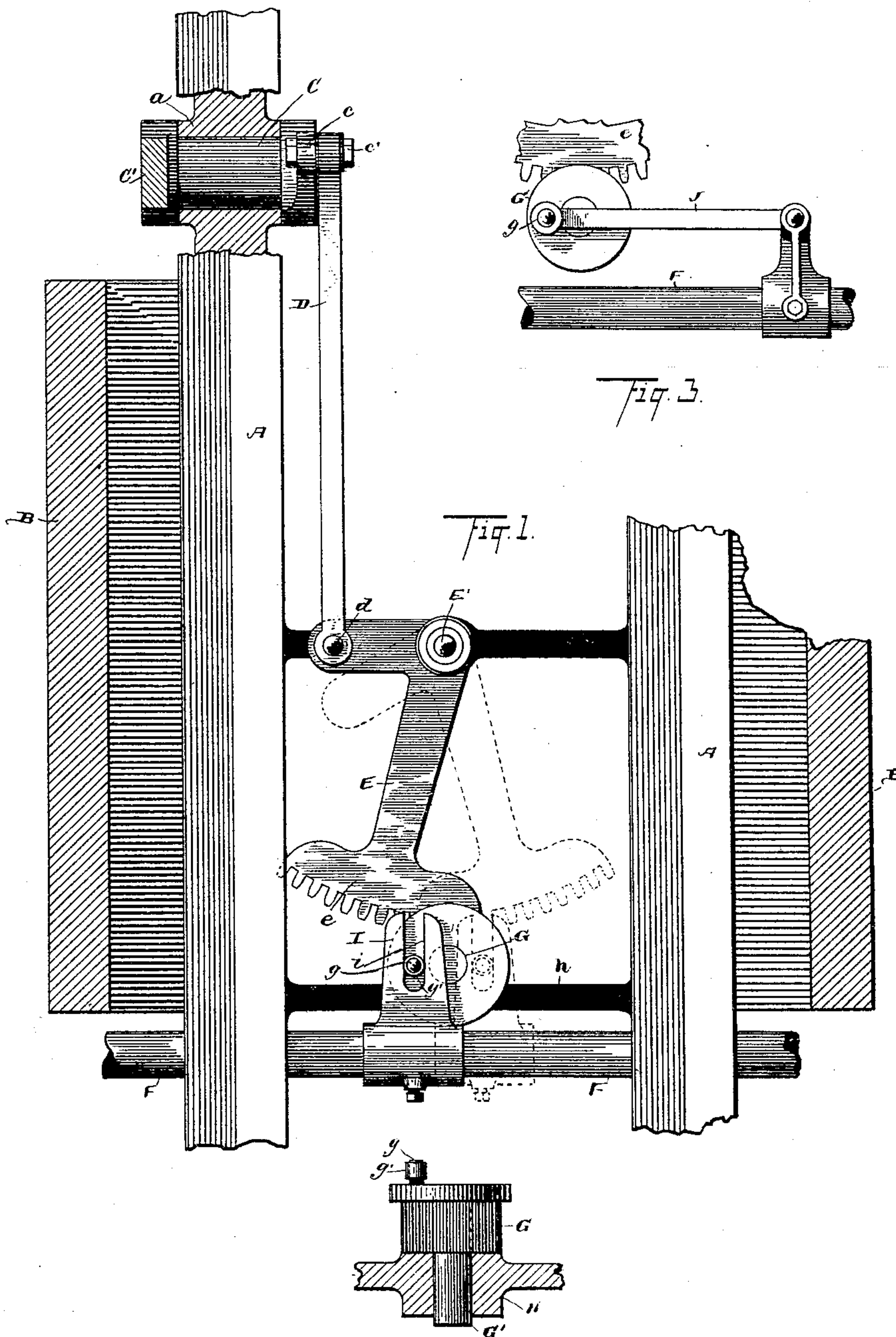
2 Sheets—Sheet 1.

W. H. PRICE, Jr.

BELT SHIFTER.

No. 371,625.

Patented Oct. 18, 1887.



WITNESSES  
C. S. Amstutz  
Geo. W. Kim,

Fig. 2

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

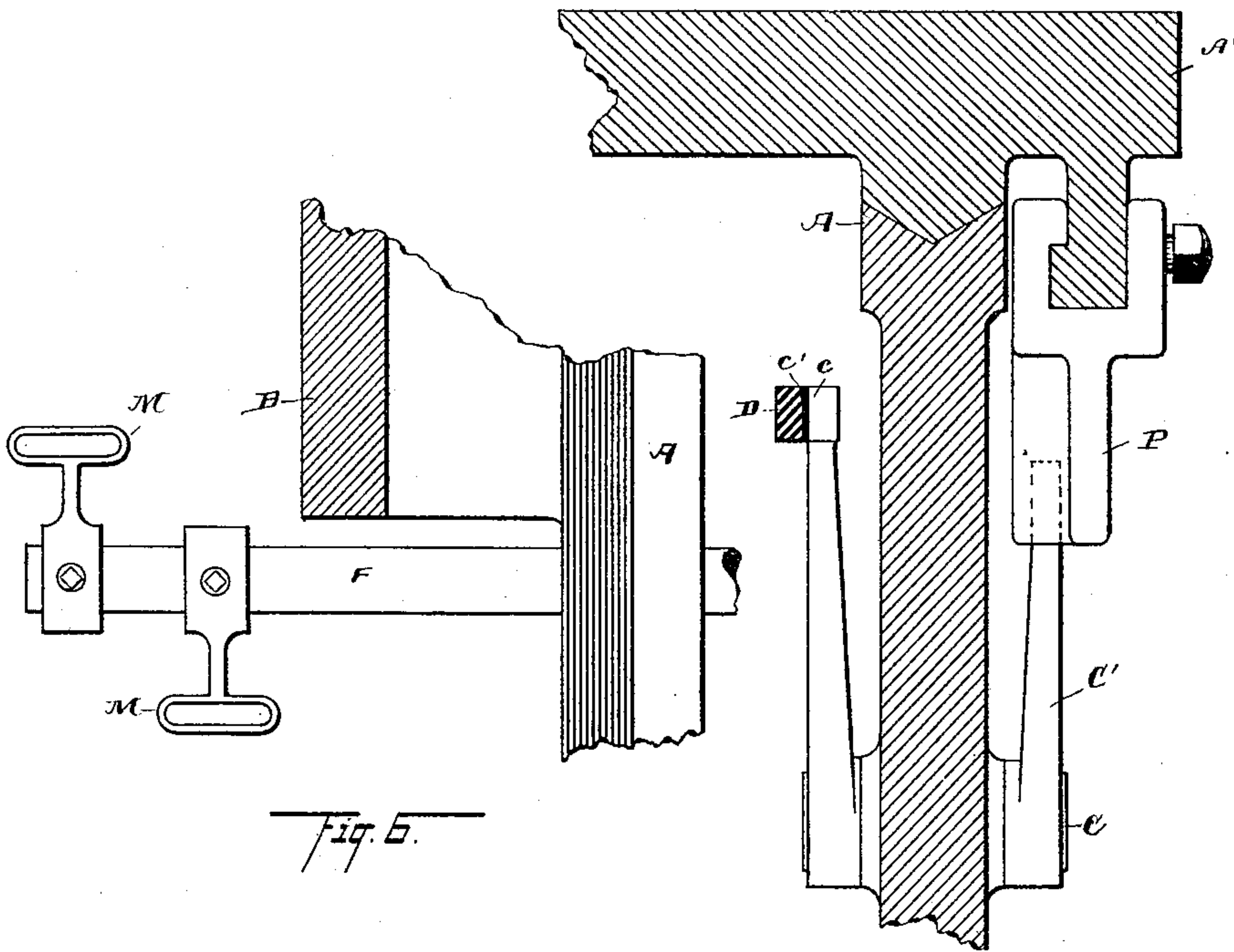


Fig. 5.

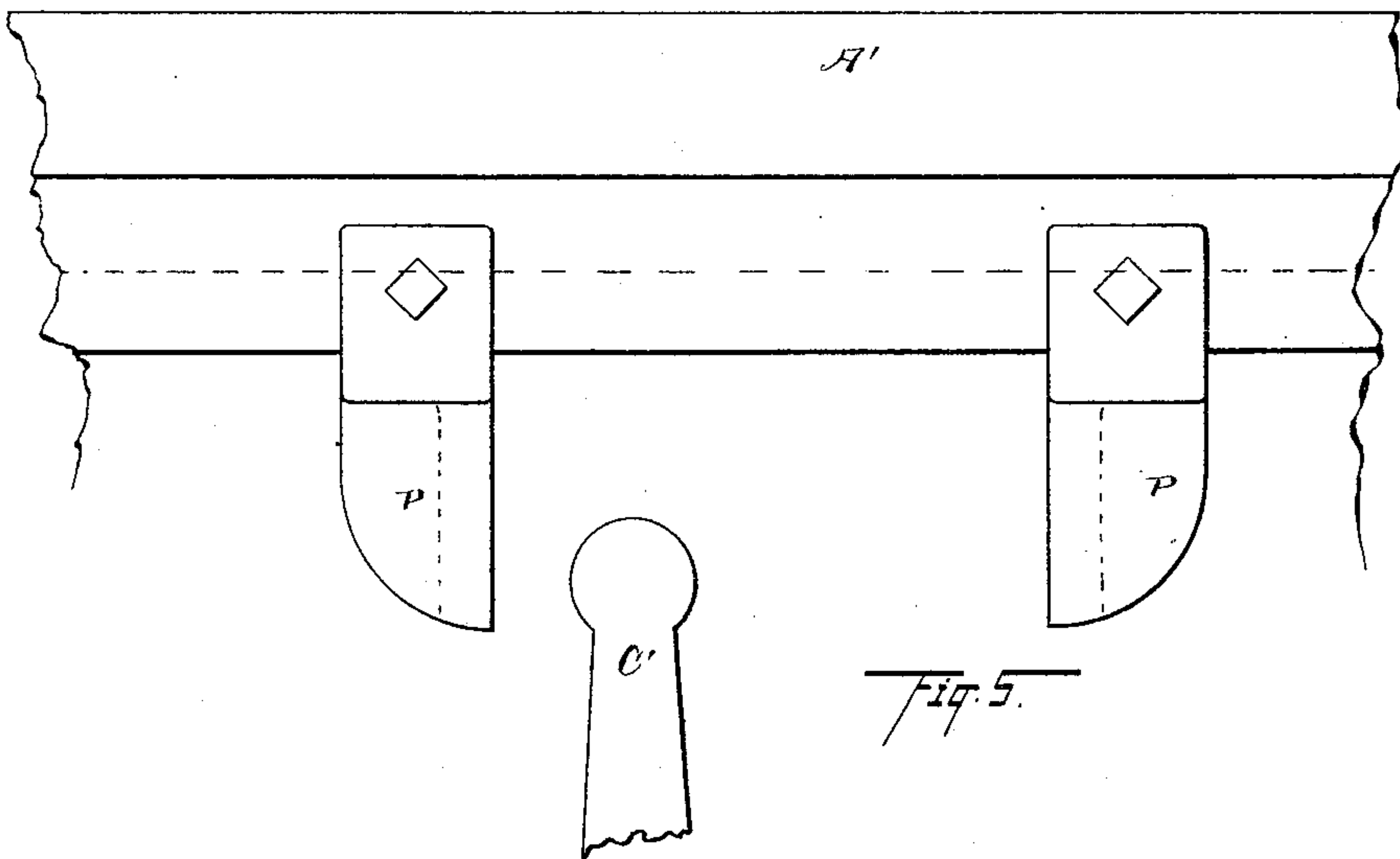


Fig. 5.

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By Siggatt Siggatt Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM H. PRICE, JR., OF CLEVELAND, OHIO.

## BELT-SHIFTER.

SPECIFICATION forming part of Letters Patent No. 371,625, dated October 18, 1887.

Application filed April 19, 1887. Serial No. 235,385. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. PRICE, Jr., of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Belt-Shifting Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in shifting mechanism designed more especially for metal-working planers, although equally well adapted to other purposes; and it consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings my improved shifting mechanism is shown in connection with a metal-working planer. Figure 1 is a plan, partly in section, of shifting mechanism embodying my invention, only so much of the other portions of the planer being shown as is necessary in illustrating the invention. Fig. 2 is an elevation, partly in section, in detail, hereinafter more fully described. Fig. 3 is a plan view showing a modification, hereinafter described. Fig. 4 is an end elevation, partly in section. Fig. 5 is a side elevation in detail. Fig. 6 is a plan in detail, partly in section.

A represents the ways of the planer-bed, on which the table A' slides.

B are the uprights (shown in section) that support the work and tool holders, &c. (Not shown.)

A rock-shaft, C, has upright rock-arms C' and c, attached, respectively, to the outer and inner ends of the rock-shaft. The shaft is journaled in a suitable box, a, connected with the bed, and the arm C' is engaged by adjustable dogs P, connected with the bed for operating the shifting device. The arm c has a laterally-projecting wrist, c', to which is attached the one end of the connecting-rod D, the other end of the rod being pivoted at d to a lateral arm of the bell-crank lever E. The latter at the elbow thereof is pivoted on a stud, E', the stud being fastened below to a member of the bed.

F is the shifting-bar that passes through suitable holes made in the sides of the bed, and has attached, usually outside the bed, the

necessary devices for shifting belts, operating-clutches, or other devices, according to the construction of the planer.

In Fig. 6 loops M, suitable for shifting the belts of a planer, are shown mounted on bar F.

The mechanism thus far described is in common use on a great variety of planers, and therefore it is not considered necessary to give further details of these parts. Heretofore the long arm of the bell-crank lever has usually been connected directly with the shifting-bar, either by means of a link, cord, or bar mounted on the shifting-bar and made to embrace the lever, or other similar devices whereby the shifting bar and the attached end of the bell-crank lever were made to move laterally in unison. With such construction the starting and stopping of the shifting-bar was done quickly, almost instantaneously, by reason of which the parts were subjected to great strain, and more or less jarring was produced that would sometimes shake the entire machine, and frequently a rebound of the shifting-bar was had, all of which was objectionable; also, in shifting belts the shifting-bar usually reached the end of its movement before the belt was fairly seated upon the pulley, causing the belt to draw back on the shifting-bar, so that sometimes with a heavy load the belt would return to the other pulley, carrying back the shifting-bar. In view of these difficulties I have devised and put into practice the improvements hereinafter described.

The bell-crank lever E is provided with a toothed sector, e, that engages a pinion, G, the arrangement of parts being such that the pinion is given a half-revolution with each throw of the sector, such half-revolution of the pinion being of course alternately in opposite directions. A trunnion, G', of the pinion is journaled in a box, H, the latter being connected with a cross-bar, h, of the bed.

Instead of the trunnion G', a stud might be fastened to the cross-bar h, with the pinion mounted on such stud, if such construction were preferred.

A stud or wrist-pin, g, is set in the upper end of the pinion at such distance from the axis of the pinion as will give the required throw to the shifting-bar. An arm, I, is mounted on the bar F, this arm having a slot, i, made substantially at right angles to the bar,



in which slot operate the wrist *g* and roller *g'*. The wrist is of course on its "dead-center" at the extreme of its throw, and consequently locks the shifting-bar at either end of its stroke.

5 By reason of the differential motion imparted to the shifting-bar by the crank as the latter leaves or approaches its respective dead-center the shifting is done easily and without jarring or excessive strain of the parts. The  
10 throw of the sector *e* is likely to vary somewhat, being more or less, according, for instance, to the load on the table, or according as the ways are well lubricated or otherwise. Now, with the lever *E* connected directly with  
15 the bar *F*, as has heretofore commonly been the custom, a variation in the throw of the lever would result in a corresponding variation in the throw of the shifting-bar.

With my improved attachment a variation  
20 of the sector from its normal movement would cause the wrist *g* either to stop a trifle before it reached the dead-center or to move a trifle beyond the dead-center, either of which variations of the crank-plate would not produce any  
25 perceptible variation on the shifting-bar, it being well known that the throw of a crank near the dead-center is merely nominal; also, if the wrist were moved a trifle from the dead-center it would still lock the shifting-bar as  
30 against any pressure endwise that would be likely to be brought on the bar.

Having with entire success applied my improvement to a metal-working planer that previously was defective in its shifting mechanism, I have naturally in this specification and  
35 in the accompanying drawings shown and described my improved device as applied to such planer, although it is equally well adapted to various other purposes, and I wish it understood that I claim the invention for all  
40 purposes to which it is adapted.

In Fig. 3 a modification is shown in which a connecting-rod, *J*, is used for connecting the wrist *g* with the shifting-bar *F*. This I consider a preferable construction wherever there  
45 is room enough to use it; but on planers, except those of the broader kind, there would hardly be room enough to use the connecting-rod and bring the parts between the sides of the planer-bed.  
50

Where my improved device is used for other purposes than planers it would doubtless be used to advantage in many places.

What I claim is—

1. The combination, with a shifting-bar having an arm, of a vibrating pinion having an attached wrist or crank for actuating such  
55 shifting-bar, the arrangement of parts being substantially as described, whereby the crank or wrist, by reason of its being on the dead-center at the extremes of the throw of the  
60 shifting-bar, locks such shifting-bar, substantially as set forth.

2. The combination, with a shifting-bar having suitable connection for reciprocating it  
65 and a pinion having an attached wrist or crank, of a bell crank lever having a toothed sector for engaging and vibrating such pinion, the parts being arranged substantially as described, whereby the crank is made to vibrate  
70 from one dead center to the other in actuating the shifting-bar, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 7th day of April, 1887.

WILLIAM H. PRICE, JR.

Witnesses:

CHAS. H. DORER,  
ALBERT E. LYNCH.