W. H. TROUT.

BAND SAW MILL.

APPLICATION FILED FEB. 8, 1907.

899,575.

Patented Sept. 29, 1908.

3 SHEETS—SHEET 1.

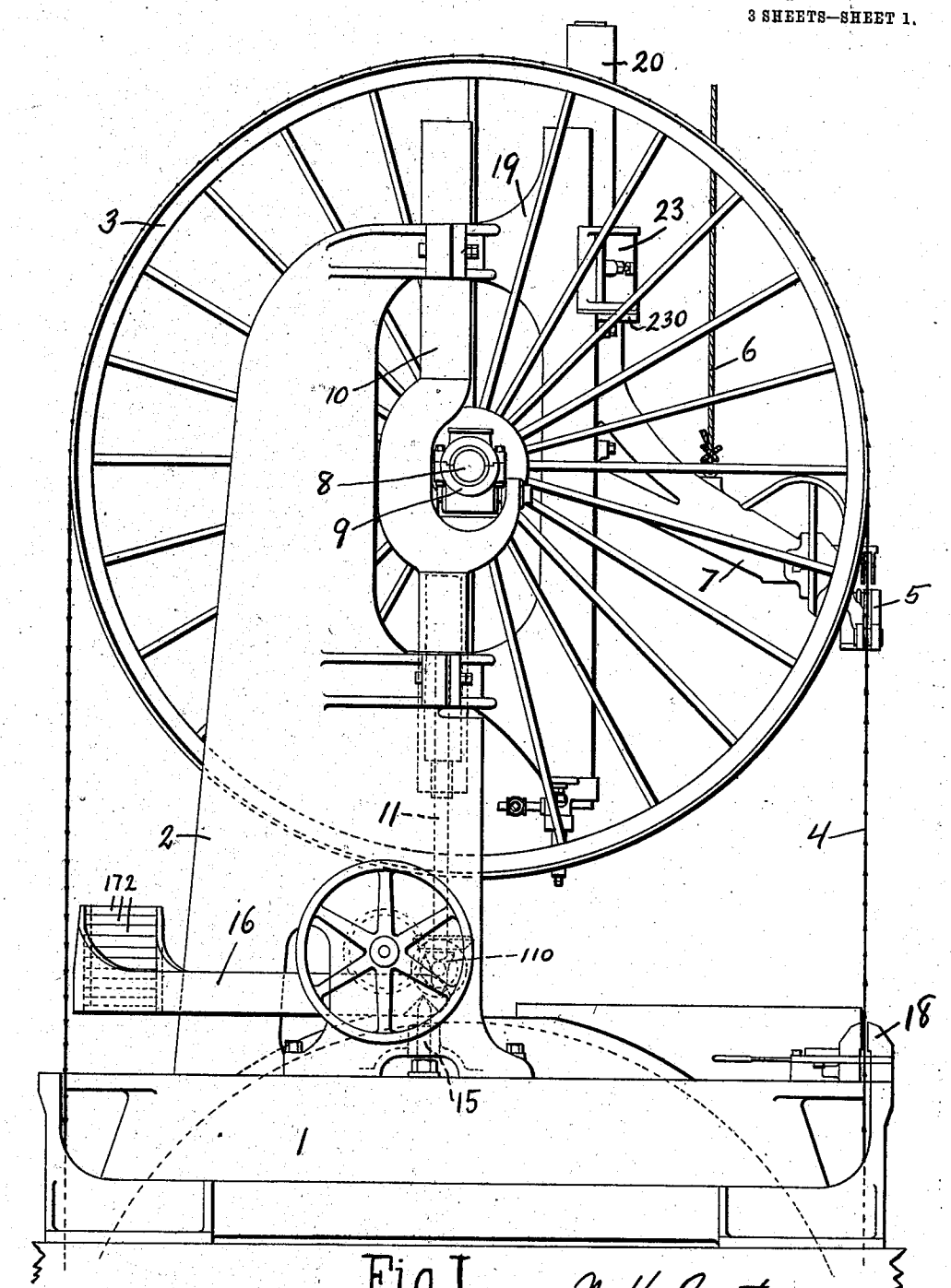


Fig. I.

WITNESSES:

John C. Rennie

Frank E. Dennett

W. H. Trout INVENTOR

BY

G. J. DeWein ATTORNEY.

W. H. TROUT.

BAND SAW MILL.

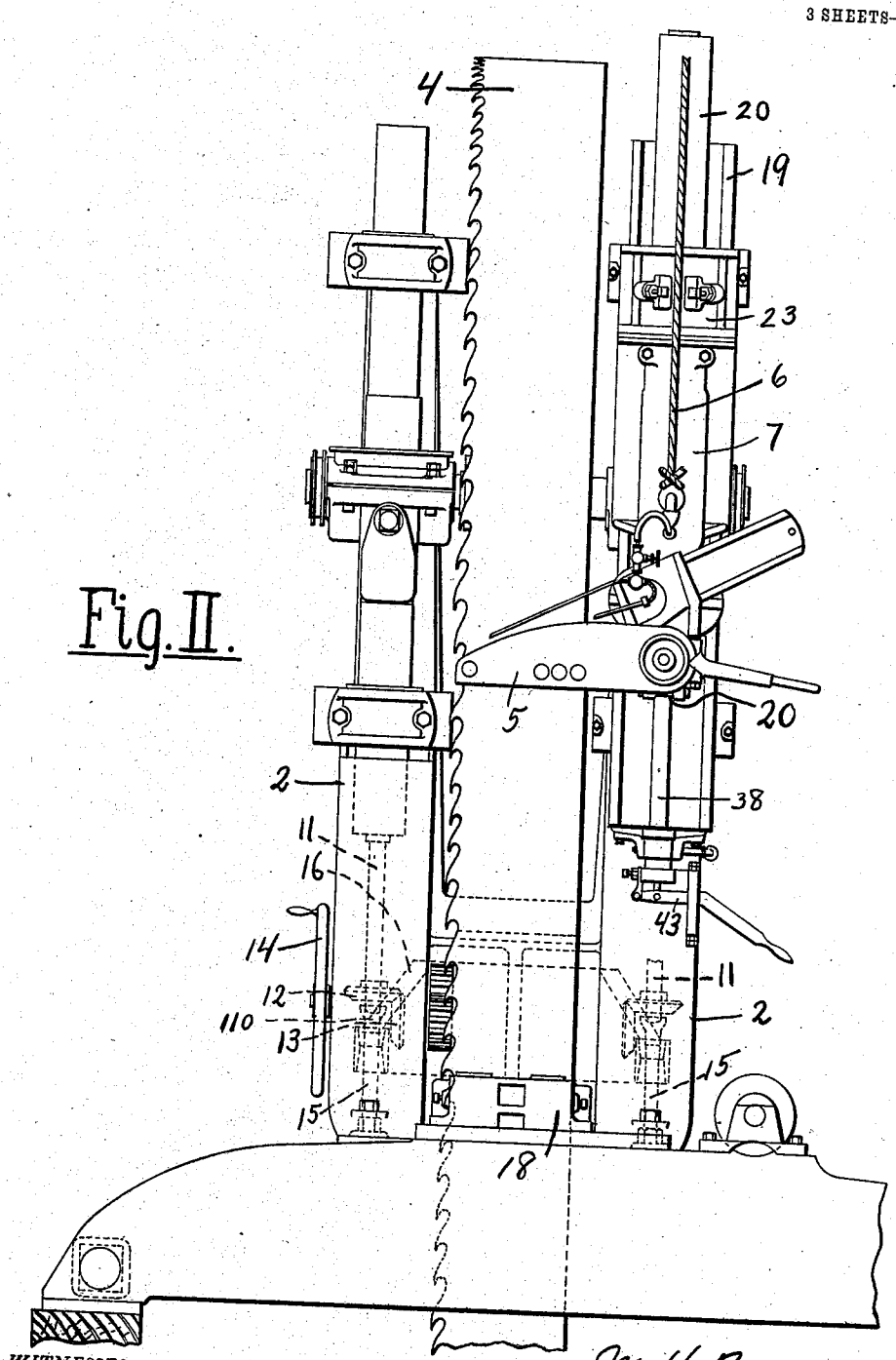
APPLICATION FILED FEB. 8, 1907.

899,575.

Patented Sept. 29, 1908.

3 SHEETS—SHEET 2.

Fig. II.



WITNESSES:

John C. Pennie.

Frank E. Dennett

W. H. Trout INVENTOR

BY

G. F. DeWein ATTORNEY.

W. H. TROUT.
BAND SAW MILL.
APPLICATION FILED FEB. 8, 1907.

899,575.

Patented Sept. 29, 1908.

3 SHEETS—SHEET 3.

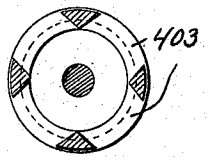


Fig. V.

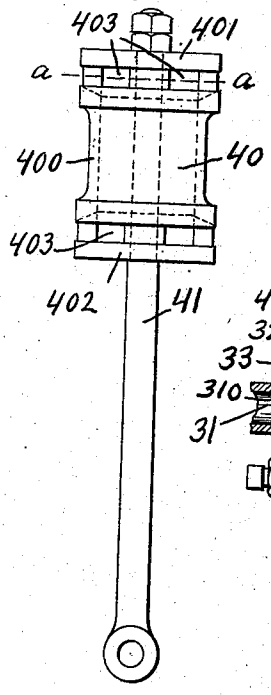


Fig. IV.

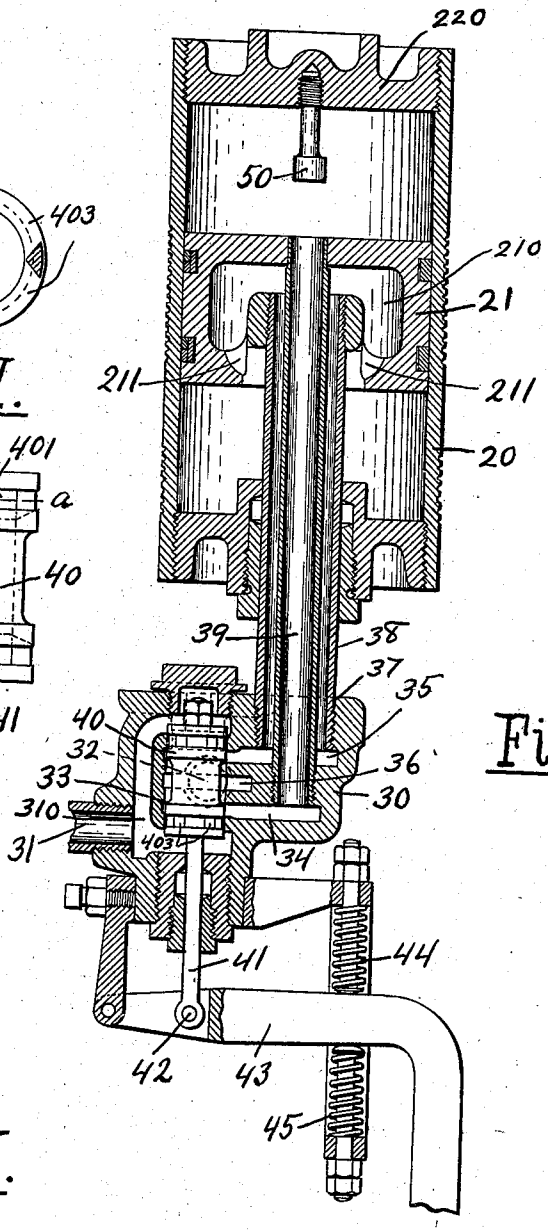


Fig. III.

WITNESSES:
John C. Rennie.
Frank E. Dennett

W. H. Trout INVENTOR

BY
G. F. DeWein ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM H. TROUT, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

BAND-SAW MILL.

No. 899,575. Specification of Letters Patent. Patented Sept. 29, 1908.

Application filed February 8, 1907. Serial No. 356,446.

To all whom it may concern:

Be it known that I, WILLIAM H. TROUT, a subject of the King of Great Britain, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Band-Saw Mills, of which the following is a specification.

This invention relates to band saw mills and more particularly to certain improvements in mechanisms usually associated with this type of mills, as will be more specifically pointed out hereafter in the specification and the claims.

On the drawings which accompany this specification and form a part thereof and on which the same reference characters are used to designate the same elements wherever they may appear in each of the several views,—Figure 1 represents a side elevation of a part of a band saw mill with the improvements constituting this invention applied thereto. Fig. 2 is a view of the mill taken at right angles to the view shown by Fig. 1 and looking towards the mill from the carriage side of the saw. Fig. 3 is a vertical section through the saw guide adjusting cylinder and associated parts. Fig. 4 is an elevation of the steam valve shown by Fig. 3; and Fig. 5 is a section of the same taken on the line *a*—*a* of Fig. 4.

Referring to the drawings, the numeral 1 designates the base of a band saw mill; 2 the uprights supported thereon which carry the upper wheel; 3 said upper wheel; 4 the saw; 5 the upper saw guide; 6 the flexible connection to which a counterbalance weight, not shown, is customarily connected to counterbalance the weight of the saw guide and the arm 7 to which the guide is secured. The numeral 8 designates the shaft of the upper wheel supported by the journal box 9 upon the adjustable bearing bar 10. The lower wheel is partly indicated by dotted lines on Fig. 1. All of these parts may be of any ordinary or preferred construction.

The lower end of the adjustable bar 10 is apertured and provided with a screw threaded portion for the reception of the ordinary adjusting screw 11, which screw is adapted to be rotated by means of the gears 12 and 13 and the hand wheel or equivalent device 14.

Secured to a part of the base 1 are knife-edges 15 upon which is adapted to rest the counter balancing lever 16, said counterbalancing lever 16 being also engaged with the lower ends of screws 11 by means of knife-edged bearing blocks 110, whereby the proper tension of the saw 4 may be maintained. This lever 16 is so constructed and arranged that it can easily be formed as a single casting.

The numeral 172 designates weights which are supported upon the lever 16.

As before stated, the numeral 5 designates the upper saw guide. The numeral 18 designates the lower saw guide. The upper saw guide is supported by the arm 7, which in turn is supported by the bracket 19 which is secured for convenience to one of the uprights 2. Said bracket 19 supports a cylinder 20, which, in the mechanism shown by the drawings, is movable with respect to a fixed piston 21 and is rigidly secured to the arm 7, said arm being slidably engaged with the bracket 19 and retained in engagement therewith in any suitable way, the vertically adjustable box 23 serving this purpose and also serving as an adjustable stop for the upper end 230 of arm 7.

The purpose of the arrangement of parts just referred to is to enable the operator to quickly and easily raise or lower the upper saw guide 5 according to the thickness of the material upon which the saw may be required to operate, and this result is effected by the following mechanism: The numeral 30 designates a casing provided with an inlet 31 for a fluid under pressure and an exhaust port 32, said casing being provided with a valve bore 33, which is preferably, though not necessarily, arranged vertically, and projecting laterally therefrom but adapted to be placed in communication therewith, are the passages 34, 35 and 36. This casing is apertured and screw-threaded at 37, and secured to the casing within said aperture is the pipe 38 which is screw-threaded and rigidly attached to the casing at one end while its other end is screw-threaded and rigidly attached to the piston 21. Said piston 21 is provided with an interior cavity 210, said cavity being in communication with the interior of the cylinder below the piston by means of thoroughfares 211. Extended within said pipe 38 is the pipe 39, which is secured at its upper end to the upper face of the piston 21 within an aperture with which it is in screw-threaded engagement; and said pipe is rigidly secured by screw-threaded

engagement with the casing 30 and is in communication with the passage 34.

The numeral 40 designates the fluid controlling valve which is secured to the valve stem 41, said valve stem being secured, as for example, by the pivot 42, with an operating lever 43, said operating lever 43 being preferably provided with means for retaining it in a predetermined position and for returning it to said predetermined position after it has been moved therefrom, as for example, by means of the opposed bolt-supported springs 44 and 45.

The valve 40 is in general outline of a hollow cylindrical form, the outer portion 400 being reduced for a purpose to be presently explained, and the top and bottom of the cylinder being closed by the heads 401, 402, which afford convenient means for attaching the valve stem 41, but the portions of the cylinder adjacent said heads are perforated or provided with apertures 403.

The construction of valve just described is designed to provide a cheap but very efficient balanced valve, as the top and bottom of the cylinder may be made separate from the body of the same and the several parts may be produced at the minimum of expense.

The numeral 50 indicates a bolt secured to the upper head 220 of the cylinder 20, its head being approximately the same size as the bore of pipe 39.

The function and operation of the saw guide raising and lowering device, it is believed, is clearly shown by Fig. 3 of the drawings. Steam, for example, being admitted through the inlet pipe 31, passes to the passageway 310 from which it may be admitted into the interior of the valve 40, either at the top or bottom of said valve. Suppose, for example, that the parts are in the position as shown by Fig. 3 of the drawings, with the valve occupying the central position of its stroke, and suppose now that the operating lever 43 were so moved that the valve would move downwardly, then the steam could enter from the passageway 310 through the apertures 403 at the lower part of the valve, up through the valve and out through the passageways 403 at the top of the valve into passageway 35, up through pipe 38 into the cavity 210 of piston 21, thence through thoroughfares 211 into the cylinder below the piston, and the cylinder 20 would then be forced downwardly carrying the upper saw guide 5 down with it. While the cylinder 20 is thus moving down, the steam that may be in the upper part of the cylinder above the piston 21 is permitted to escape through the pipe 39, passageway 34, around the reduced part 400 of the valve 40, and through exhaust pipe 32. As the saw guide 5 and the parts associated therewith, viz., arm 7, slidable arm 22, and cylinder 20, for large saws are heavy, when the cylinder above the piston is opened to the exhaust there might be danger that the moving energy developed by the parts in falling would endanger the apparatus. The purpose of the bolt 50 or its equivalent is to enter the pipe 39 before the head of the cylinder reaches the piston 21, and by contracting the passageway for the escape of steam through pipe 39 to retain a volume of steam within the cylinder to act as a steam cushion to take up the shock of bringing these moving parts to rest.

What I claim is,—

1. The combination with the upper saw guide of a band saw mill of an arm to which it is secured, a support, a cylinder slidable with respect to said support, said cylinder and arm being secured together, a piston within said cylinder, said piston being immovably fixed with respect to said support and means for admitting a fluid under pressure to and exhausting it from either end of the cylinder on opposite sides of the piston through the piston rod.

2. The combination with the upper saw guide of a band saw mill of an arm to which it is secured, a support, a cylinder slidable with respect to said support, said cylinder and arm being secured together, a piston within said cylinder, said piston being immovably fixed with respect to said support, means for admitting a fluid under pressure to and exhausting it from either end of the cylinder on opposite sides of the piston through the piston rod, and means for forming a fluid cushion between said piston and one end of said cylinder.

3. The combination with the upper saw guide of a band saw mill of a support, a cylinder provided with heads slidably engaged with said support and supporting said guide, a piston within said cylinder immovably fixed with respect to said support, two pipes connected with said piston, each of said pipes affording communication with the interior of said cylinder on only one side of said piston, means for supplying a fluid under pressure to either of said pipes or to permit it to exhaust therefrom, one of said pipes opening through a face of the piston, and a bolt secured to the adjacent head of the cylinder and adapted to restrict the aperture through said pipe.

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

WILLIAM H. TROUT.

Witnesses:

H. C. CASE,

FRANK E. DENNETT.