No. 750,125. PATENTED JAN. 19, 1904.

H. B. ROSS.

PLANING MACHINE.

APPLICATION FILED DEC. 18, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

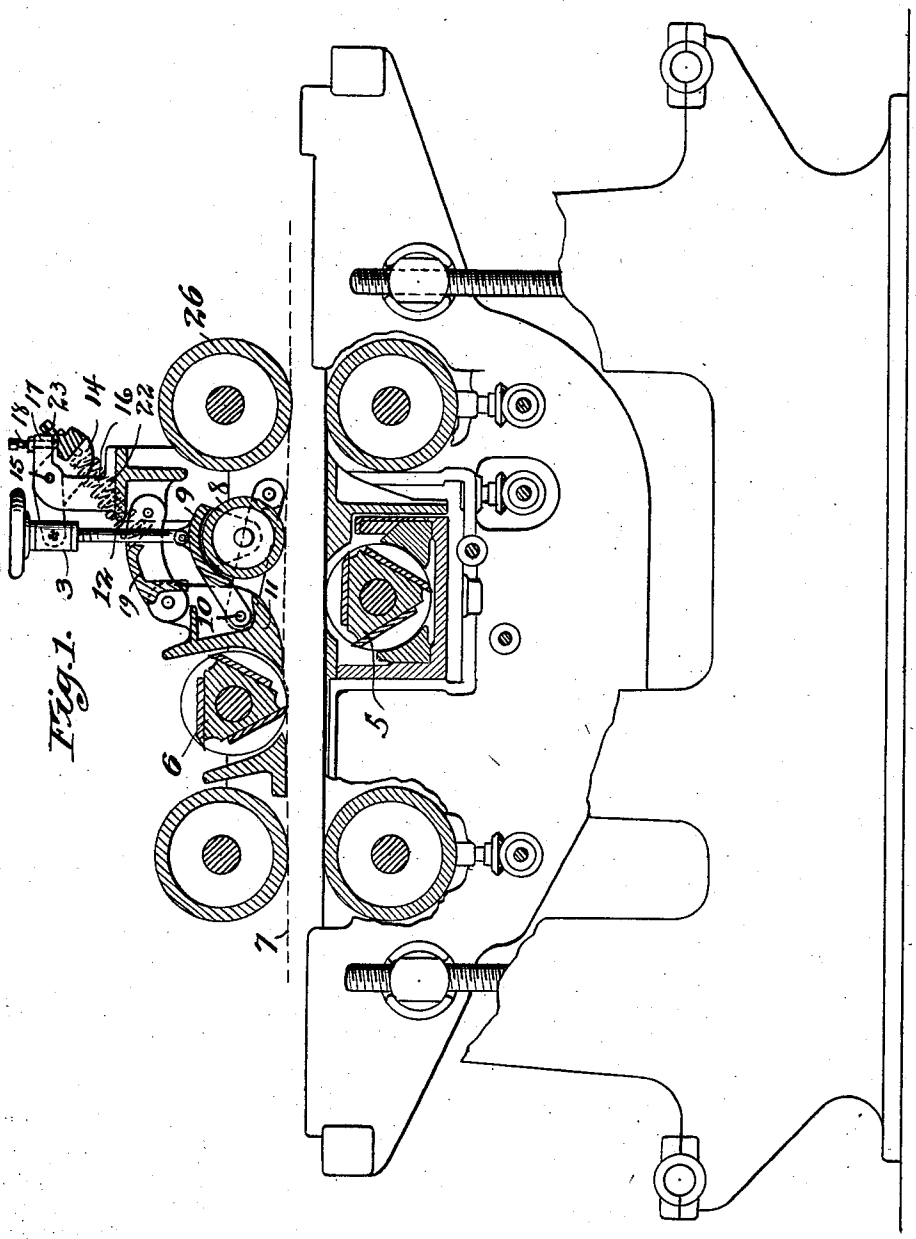


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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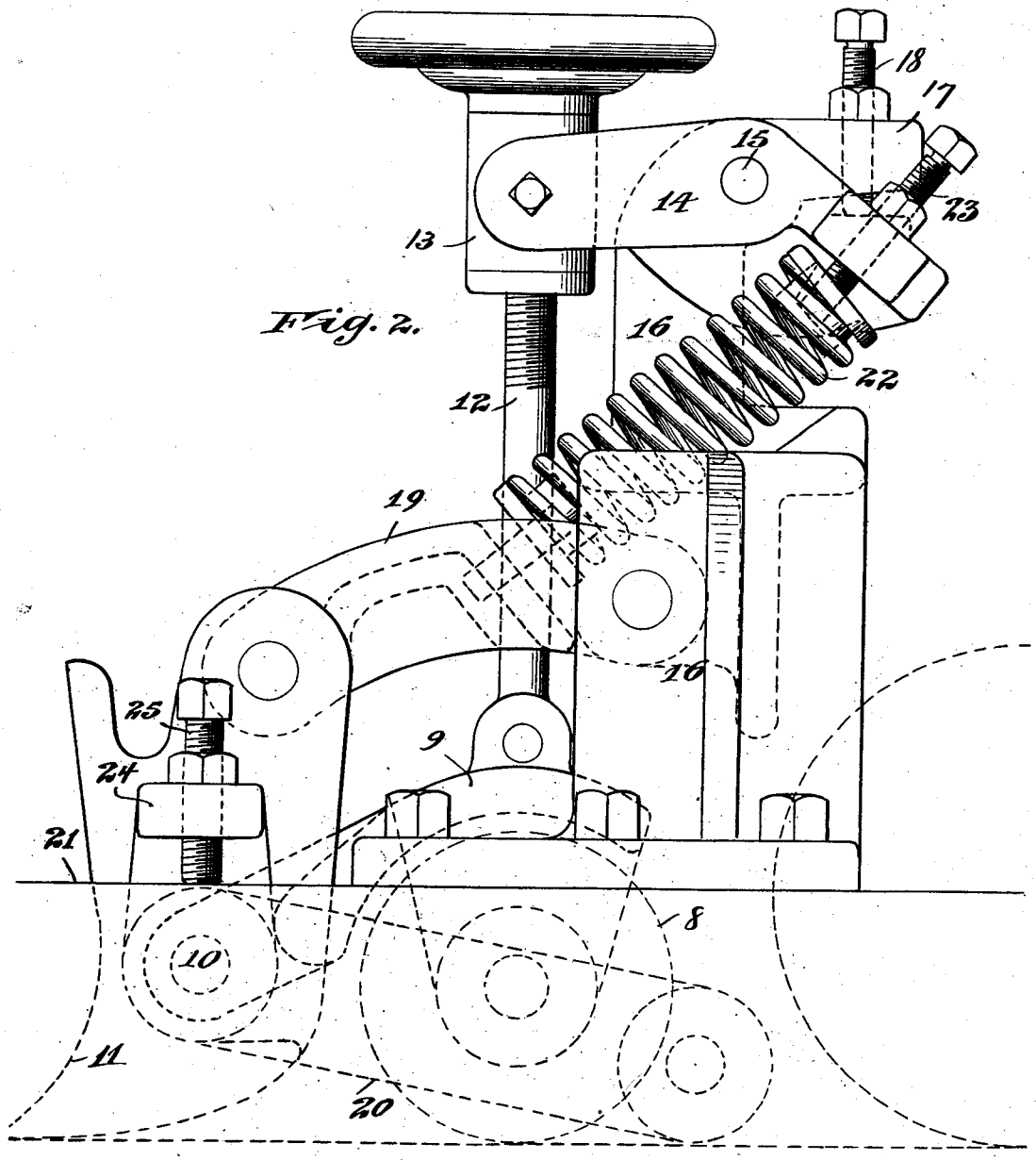
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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

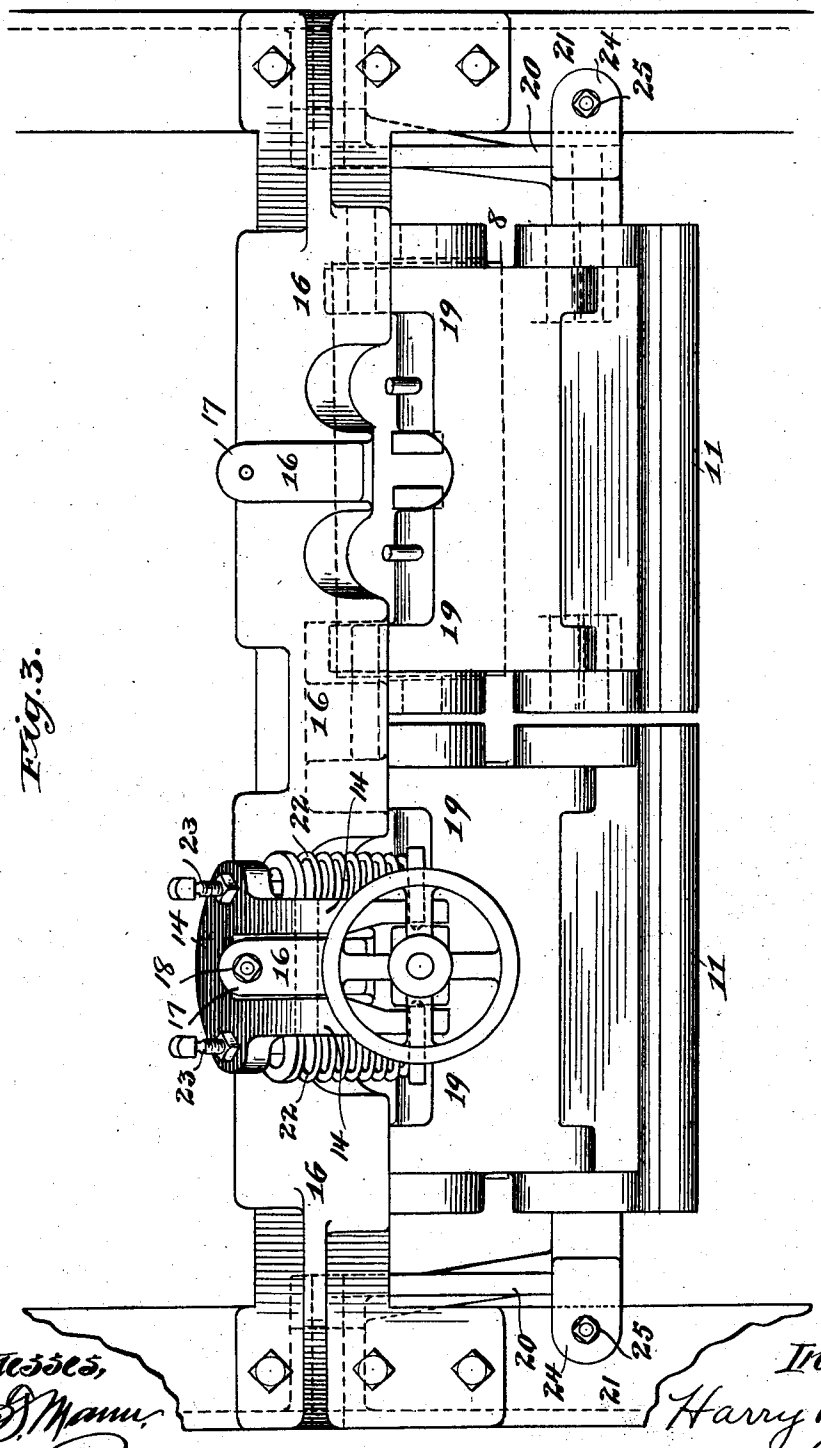


Fig. 3.

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No. 750,125. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

HARRY B. ROSS, OF BELOIT, WISCONSIN, ASSIGNOR TO THE BERLIN MACHINE WORKS, OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 750,125, dated January 19, 1904.

Application filed December 18, 1902. Serial No. 135,812. (No model.)

To all whom it may concern:

Be it known that I, HARRY B. ROSS, of Beloit, Wisconsin, have invented certain new and useful Improvements in Planing-Machines, of which the following is a specification.

This invention relates to a combined chip-breaker and pressure device for use on planing-machines in which the lower cylinder makes the first cut. In machines of this class the stock comes to the machine in varying thickness and must be held down on the bed on each side of the lower cylinder. Necessarily by reason of this variation of the stock the pressure device must be yielding. In machines of this character a chip-breaker is employed arranged in front of the upper head or cylinder, the chip-breaker serving to prevent the splintering of the material under the action of the knife, and sometimes a duplex-pressure device is employed in addition to the chip-breaker, this pressure device bearing upon the upper side of the stock and on opposite sides of the axis of the lower cutting-cylinder.

It is the primary purpose of this invention to so construct and combine a single pressure device with the chip-breaker that the latter is made to perform the double function or office of a chip-breaker and a pressure device after the cut of the lower cylinder. Furthermore, the chip-breaker and a pressure device, preferably a roller, are mounted in the same frame and are yieldingly held in contact with the stock by the same spring-pressure, the parts being so connected that either may yield independently of the other.

By means of the construction and arrangement of the parts above indicated the pressure devices are made more compact, and the machine can be materially shortened. Further, by the construction and arrangement hereinafter shown and described the pressure devices are rendered efficient, capable of considerable and ready adjustment, and therefore adapted to produce accurate results upon stock widely varying in thickness.

The invention consists in the devices and combinations of devices hereinafter described, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of a planing-machine of the type known as a "double" surfacer, with parts broken away and parts omitted. Fig. 2 is a side elevation of the combined pressure device and chip-breaker with its frame. Fig. 3 is aplan view intended to illustrate the manner of constructing the chip-breaker and pressure device in sections.

In the accompanying drawings, 5 represents the lower cylinder and 6 the upper cylinder. In order to hold the stock (indicated at 7) on opposite sides of a plane passing through the axis of the lower cylinder 5, I employ a yielding pressure device before the cut, which device may be in the form of a roll 8 or it may take the form of a shoe or bar. This roll 8 is shown as mounted in a housing or yoke 9. Pivotally connected to the housing is the threaded bolt 12, working at its upper end in a nut 13, carried by the rocker-frame 14, which is pivoted at 15 to the supplemental frame 16. This frame has an extension 17, through which is turned an adjusting-screw 18, bearing on the rocker-frame 14 in the rear of its pivot and acting as a stop to limit the descent of the roll 8. The chip-breaker 11 is pivotally connected by the yoke 19 to the auxiliary frame 16, and thereby the chip-breaker is permitted a vertical vibratory movement. The lower end of the chip-breaker is also connected by side pivoted links 20 to the main frame 21 of the machine.

Interposed between the rocker-frame 14 and the yoke 19 are the thrust-springs 22, the tension of which is regulated by the threaded bolts 23. The links 20 have an extension 24, to which the adjusting-bolts 25 are applied, these adjusting-bolts having a bearing on the main frame 21, so that the bearing-surface of the chip-breaker may be adjusted to the desired height with reference to the cutting-cylinder.

From the foregoing description it will be seen that the chip-breaker and the pressure-roller 8 are carried by the same frame, that

they are adapted to bear, respectively, on opposite sides of the plane passing through the lower cutting-cylinder or, in other words, before and after the lower cut, that the chip-breaker is made to perform the dual function of a pressure device for the stock after the lower cut and as chip-breaker in front of the cut of the upper cylinder, and that these devices are yieldingly held in working position by the same springs.

The operation of these parts is as follows: Assuming that the threaded bolt 12 and the set-screws 18 23 25 are properly adjusted, so that the pressure-roll 8 and the chip-breaker 11 are in proper position for the average thickness of the stock to be operated upon, the stock (indicated at 7) being fed between the cutting-cylinders by the feed-rolls 26, the roll 8 bears upon the upper surface of the stock in advance of the knife of the lower cutting-cylinder 5. At the same time the chip-breaker is yieldingly held and by the same pressure upon the upper surface of the stock beyond the cut, and at the same time this chip-breaker acts upon the stock in advance of the cut of the upper cylinder. Now assuming any unevenness in the stock which would cause a lifting of the pressure-roll 8 this is readily permitted, since said roll and its housing are pivotally connected to the chip-breaker 11 and the adjusting-bolt 12 is pivotally connected to the rocker-frame 14, and the latter may rock upon its pivot 15, and in consequence exert a further compression upon the springs 22. Assuming now an irregularity in the stock that would affect the chip-breaker, the latter will be lifted bodily, swinging on yoke 19 and links 20 and exerting a direct end thrust or compression on the springs 22, which react again through the rocker-frame 14 and bolt 12 upon the housing carrying the pressure-roll 8. It will therefore be seen that the pressure-roll before the cut and the chip-breaker after the cut of the lower cylinder are capable of yielding independently, and they bear upon the upper surface of the stock upon opposite sides of the cut of the lower cylinder, thereby and at all times firmly holding it against the knife, and that any irregularity which causes either of said devices to yield will exert a correspondingly-increased pressure upon the other of said devices, thereby the more firmly holding the stock against the knife. It is important to note also that the dual function performed by the chip-breaker enables the cutting-cylinders to be set very much closer together, thus not only shortening the machine, but by bringing the knives closer together less variation in their action upon the stock is permissible, while the stock is firmly held in its relation to each of the cylinders by the pressure devices.

In a narrow machine it is feasible to use a single chip-breaker having width corresponding to the length of the knife; but in the wider machines it is desirable to construct the pressure devices in sections. Such a construction is indicated by Fig. 3 of the drawings, the parts shown in Fig. 2 being indicated in plan view at the left-hand side of said figure and the frame parts, chip-breaker, and roller, with the cutting devices omitted, being shown at the right-hand side of said figure. In this construction it will be seen that the links 20 are used only on the outer ends of the chip-breakers and are omitted at their inner adjacent ends, the devices being practically suspended upon the yoke 19 and guided by said links 20. Two sections may thus be conveniently employed, and by reason of the form of the construction of the connecting link or yoke 19 the chip-breaker is sufficiently supported and the links 20 serve only the purpose of guiding it in its vertical vibratory movement.

While I have described and shown the intimate connection and relation between the chip-breaker and the pressure device and have arranged the springs 22 to yieldingly control both of said devices, it is obvious that changes might be made in the details of construction and arrangement of parts. For example, there is no absolutely necessary relation between the movements of the chip-breaker and those of the pressure-roll 8, and while they are both pivotally connected to and vibratable upon the same auxiliary frame they might be yieldingly held to their work by different springs, so that the rise of one would not necessarily increase the spring-pressure upon the other.

The chief novel feature of construction is the utilization of the chip-breaker as a pressure device after the cut of the lower cylinder, and therefore my invention may be employed in other structural forms or in a modified arrangement of the connections.

I claim—

1. In a planing-machine, the combination with the upper and lower cutting-cylinders, of a yielding pressure device for the lower cylinder comprising two members designed to bear on the upper surface of the stock on opposite sides and immediately adjacent to the cut of the lower cylinder, the member beyond the cut serving also as a chip-breaker for the upper cylinder, substantially as described.

2. In a planing-machine, the combination with the upper and lower cutting-cylinders, of a yielding pressure device for the lower cylinder comprising two members designed to bear on the upper surface of the stock on opposite sides and immediately adjacent to the cut of the lower cylinder, the member beyond the cut serving also as a chip-breaker for the upper cylinder, said pressure devices being independently yieldable, substantially as described.

3. In a planing-machine, the combination with the upper and lower cutting-cylinders, of

a yielding pressure device for the lower cylinder comprising two members designed to bear on the upper surface of the stock on opposite sides and immediately adjacent to the cut of the lower cylinder, the member beyond the cut serving also as a chip-breaker for the upper cylinder, said pressure devices being yieldably mounted, and means for guiding them in their vertical vibrations, substantially as described.

4. The combination in a planing-machine with the upper and lower cutting-cylinders, of a yielding pressure device adapted to bear on the upper surface of the stock in advance of the cut of the lower cylinder, an adjustable frame or housing carrying said pressure device, a second pressure device yieldably mounted and arranged parallel to the first-mentioned pressure device and immediately adjacent to the line of cut of the lower cylinder and adapted to serve as a chip-breaker for the upper cylinder, and a yielding connection between said pressure devices, substantially as described.

5. The combination in a planing-machine with the upper and lower cutting-cylinders thereof, of a pressure device adapted to bear on the upper surface of the stock in advance of the cut of the lower cylinder, a second pressure device adapted to bear on the upper surface of the stock immediately adjacent to the cut of the lower cylinder, and in advance of the cut of the upper cylinder whereby it serves as a chip-breaker for the latter, said pressure devices being pivotally mounted and having a yielding connection between them, substantially as described.

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