

(No Model.)

G. WINCQZ & H. MACHEPY.
STONE SAWING MACHINE.

No. 581,800.

Patented May 4, 1897.

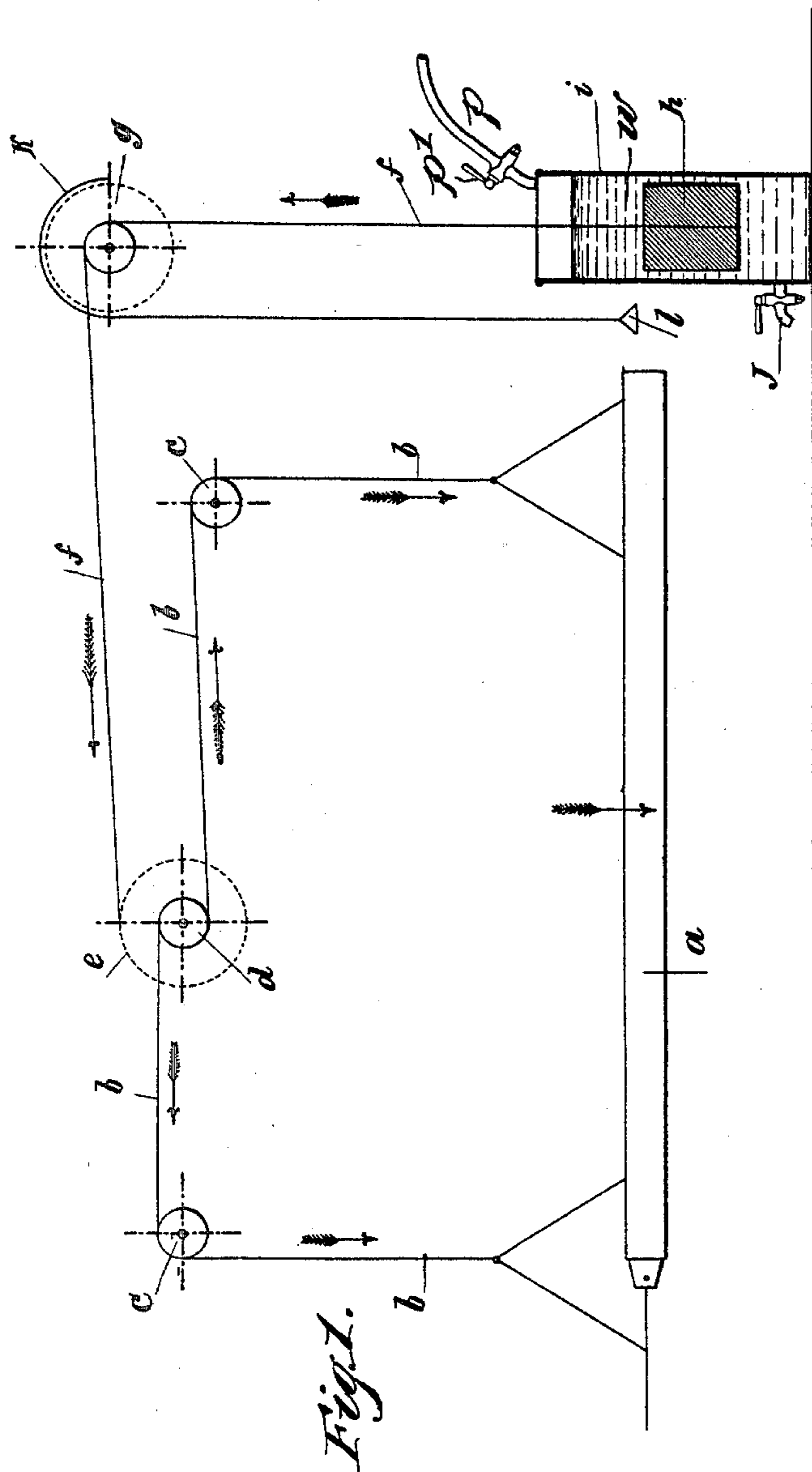


Fig. 3.

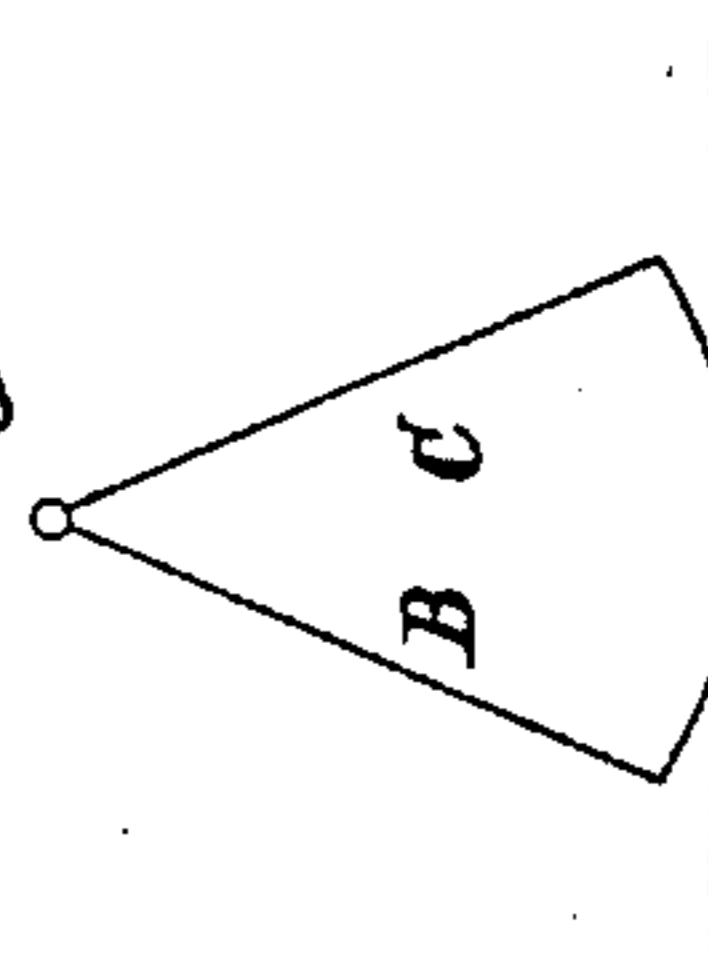
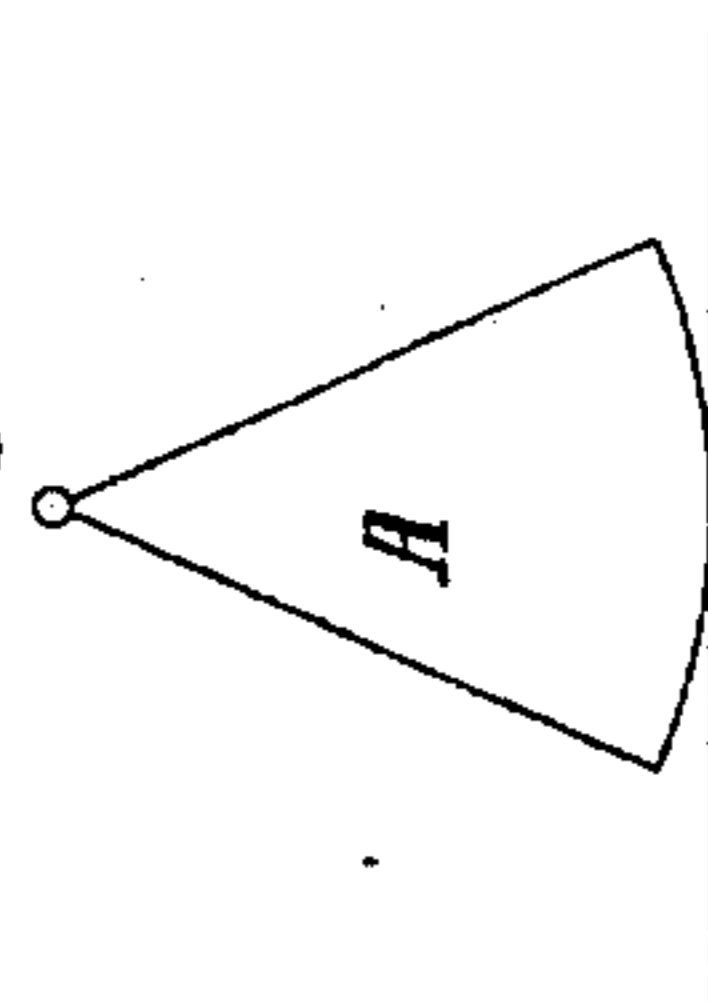


Fig. 2.



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UNITED STATES PATENT OFFICE.

GRÉGOIRE WINCQZ AND HUBERT MACHEPY, OF SOIGNIES, BELGIUM.

STONE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,800, dated May 4, 1897.

Application filed January 13, 1897. Serial No. 619,070. (No model.) Patented in Belgium August 19, 1896, No. 123,080.

To all whom it may concern:

Be it known that we, GRÉGOIRE WINCQZ, a citizen of Belgium, and HUBERT MACHEPY, a citizen of France, residing at Soignies, Belgium, have invented certain new and useful Improvements in Stone-Sawing Machines, (for which Letters Patent have been obtained in Belgium, No. 123,080, dated August 19, 1896;) and we 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Machines for sawing stone and marble, to which this invention has relation, comprise as essential features a rectangular saw-frame suitably suspended, means for imparting to such frame a reciprocating or oscillating motion in a horizontal plane, and means for adjusting the frame in a vertical plane, said frame being usually arranged to move between and being guided by four uprights.

In stone-sawing machines it has heretofore been the practice to counterbalance the saw-frame in order to admit of the feeding of such frame in proportion to the abrasion of the material—i. e., the work of the saw or saws; yet in these constructions injury to the saws, especially when reciprocated very rapidly, whereby the frame is liable to be thrown up or made to jump at each extreme of the stroke of the pitman, is not always avoidable, nor is the automatic feed of the saw or saws to their work at all times as regular as may be desired. These conditions we improve very materially by providing a cushioning device for the counterpoise in that we use a hydrostatic balance—that is to say, a counterpoise—freely suspended in a body of water contained in a vessel the diameter of which relatively to the weight is such as to leave a narrow passage between the two, and whereby means are also provided for lifting the saw or saws off and for lowering them again to the work, whether the saws are at rest or in motion, by simply varying the volume of water in the vessel or tank, whereby the weight of the frame when varied by addition or removal of a saw or saws can also be compensated. This

also is a great advantage and obviates the difficulty in moving a saw or a gang of such, while at rest, out of their respective kerfs or cuts before the material is cut through, should this become necessary, a difficulty which is due to the settling about the saw-blades of the abrading material used, as is well known. But that our invention may be fully understood we will describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a more or less schematic side elevation of so much of a stone-sawing machine as will be necessary to a full understanding of our invention, and Figs. 2 and 3 are explanatory geometrical views.

Referring to Fig. 1, *a* indicates the saw-frame, which may, as usual, carry a gang of saw-blades. *b b* indicate the suspension devices, as cables or the like, that run over guide sheaves or pulleys *c* and are wound upon a sheave or pulley *d*, to the shaft of which is secured a drum *e*. On this drum *e* is wound a cable *f*, that passes over a guide-pulley *g* and has attached to its free end a counterpoise *h*, immersed in a body of water *w*, contained in a tank *i*, open at its upper end and provided with a waste-cock *J* near its lower end. Any suitable means may be provided for supplying water to the tank *i*—as, for instance, a pipe *p*, connected with a suitable water-supply and provided with a stop-cock *p'*.

In practice the difference in the weight of the saw-frame and its saw blade or blades and the weight of the counterpoise *h* is so chosen that the former will preponderate sufficiently to hold the saws to their work with the required or desired pressure and feed down automatically in proportion to the abrasion of the material operated upon.

The diameter of the vessel or tank *i* relatively to the diameter of the counterpoise *h* is so chosen as to leave a restricted space between the two, thereby restricting the flow of water from one side of the counterpoise to the other, whereby said weight is cushioned in whatever direction it is moving by the body of water above and below the same.

Inasmuch as the counterpoise is suspended freely in the body of water *w* in tank *i*, it will respond freely to all the movements of the

saw-frame in a vertical direction and permit the latter to feed down the required distance at each oscillation or in proportion to the abrasion or depth of cut. It will also be readily seen that owing to the mobility of the counterpoise it is susceptible of compensating the irregular movements of the saw-frame due to the action thereon of the pitman that imparts to such frame its oscillating or to-and-fro movements, so that the injurious jumping or rising-up movements of the saw-frame are effectually avoided, the water acting as a yielding or elastic cushion upon the counterpoise *h*, which is, so to speak, held between two currents of water flowing in opposite directions. This will be readily understood when the fact is considered that the water above the counterpoise tends constantly to move in a downward direction, thereby producing a reflux in the body of water below said counterpoise in an upward direction. On the other hand by keeping the saws to their work their contact with the material sawed during each oscillation of the saw-frame, instead of being limited, as has been the case heretofore, to the mere contact of the tangent *A*, Fig. 2, is materially increased by the prolongation of the contact-tangent, as shown at *B C*, Fig. 3.

If desired, the pulley *g* may be provided with a friction-brake *k*, operated by a counterpoise *l*, or any other suitable form of brake.

When the stone has been sawed, the waste-cock *J* is opened and the water in tank *I* is allowed to flow out to shift the preponderance of weight from the frame *a* to the counterpoise *h*, which will descend, and thereby lift the said frame above the stone, as will be readily understood.

We have deemed it unnecessary to show either a motor and connections with the saw-frame or the guide-standards for said frame or the main framing, as they may be of any usual or preferred construction and form no part of our invention.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. The combination with a gang-saw frame, of a hydrostatic balance therefor consisting of a water-tank, a counterpoise connected with said frame and suspended freely in said body of water, the diameter of the tank relatively to the diameter of the counterpoise being such as to leave a restricted space between them, and means for varying the volume of water in the tank, substantially as and for the purpose set forth.

2. The combination with a gang-saw frame, its suspension-cables, suitable guide-pulleys, a pulley *d* on which said cables are wound, and a pulley *c* fast on the shaft of pulley *d*, of a hydrostatic balance consisting of a water-tank, a counterpoise freely suspended therein, the diameter of said tank and counterpoise being such as to leave a restricted space between the two, a cable connected with the counterpoise and wound on pulley *c*, and means for varying the volume of water in the tank, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GRÉGOIRE WINCQZ.
HUBERT MACHEPY.

Witnesses:

ADOLPHE DECASTIENNE,
ARILLE DELVIENNE.