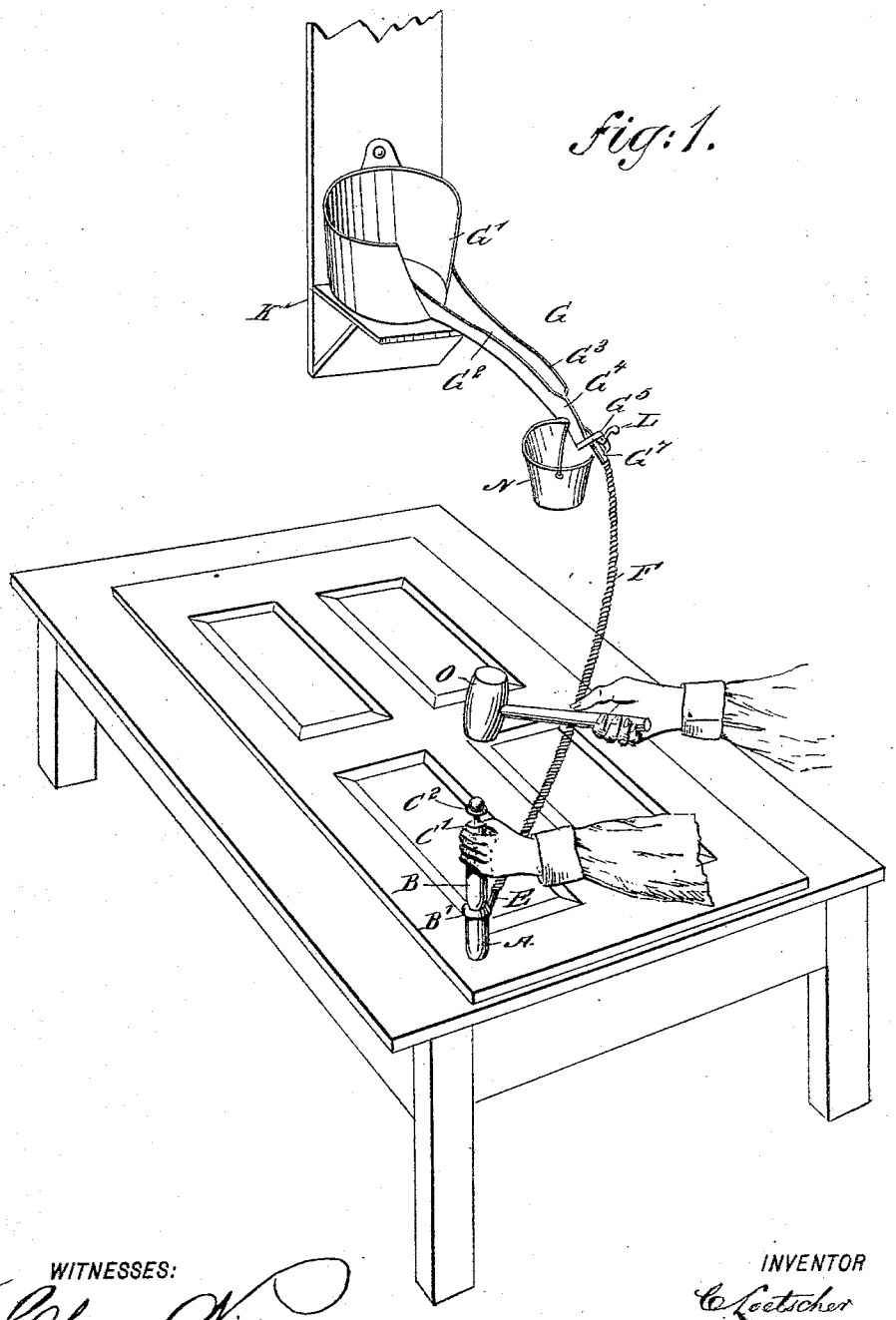
(No Model.) 3 Sheets—Sheet 1.

C. LOETSCHER.

DOWELING MACHINE.

No. 545,298. Patented Aug. 27, 1895.

Fig: 1.



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3 Sheets—Sheet 2.

C. LOETSCHER.

DOWELING MACHINE.

No. 545,298. Patented Aug. 27, 1895.

Fig: 2.

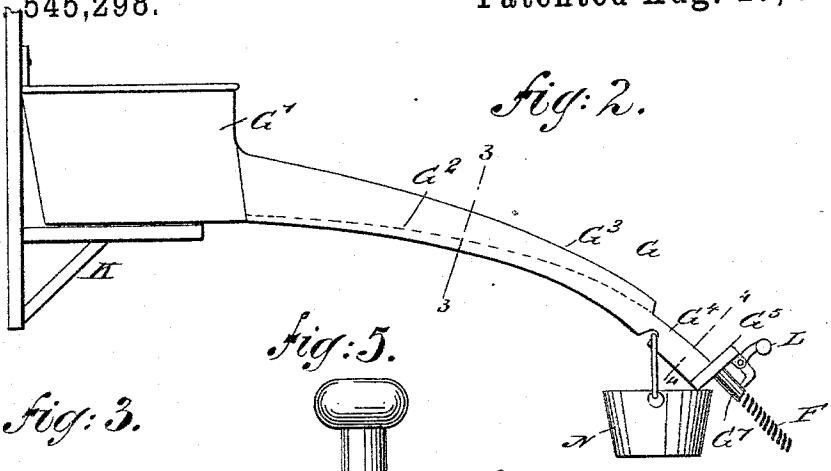


Fig: 5.

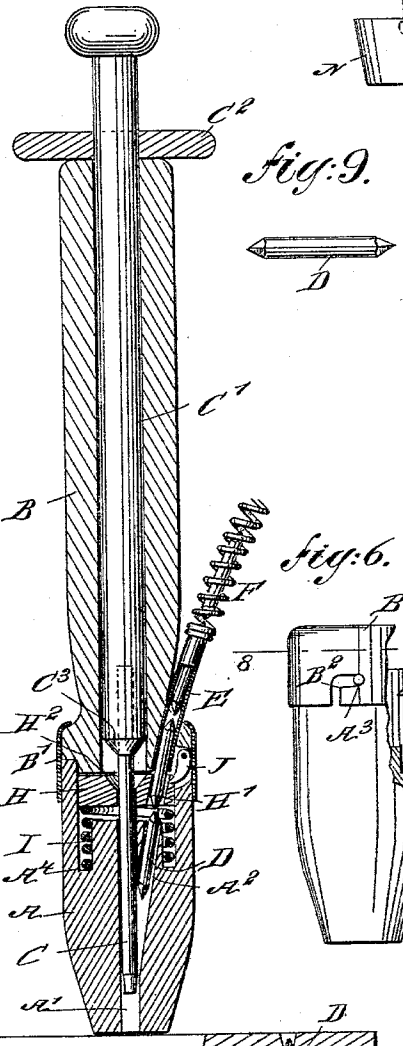


Fig: 3.

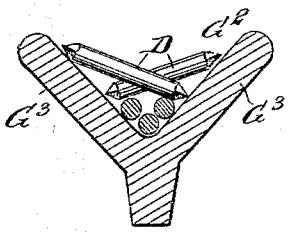


Fig: 9.

Fig: 8.

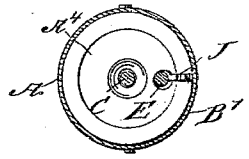


Fig: 4.

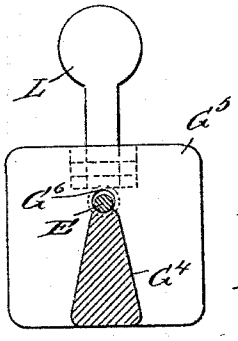
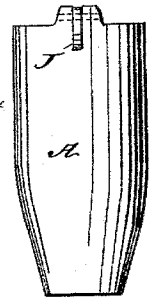


Fig: 6.

Fig: 7.



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C. LOETSCHER.

DOWELING MACHINE.

No. 545,298. Patented Aug. 27, 1895.

Fig: 10.

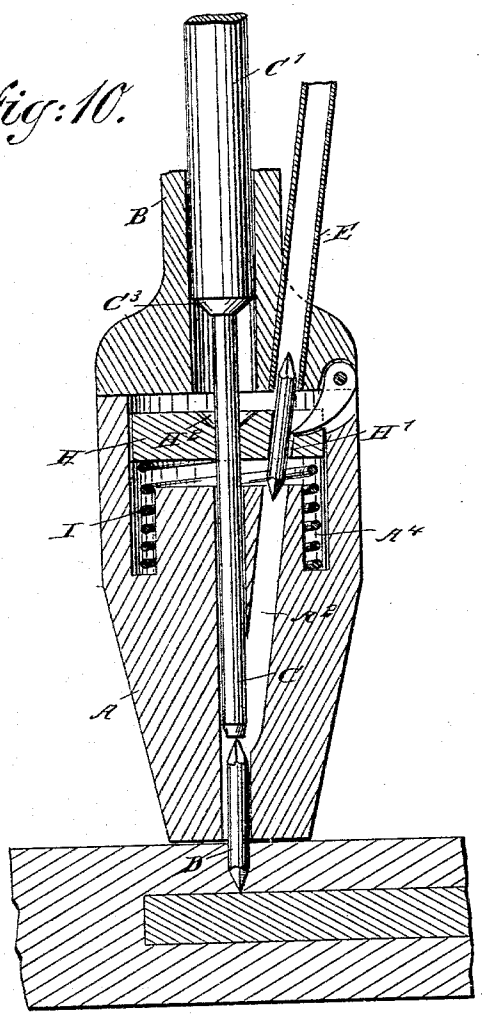
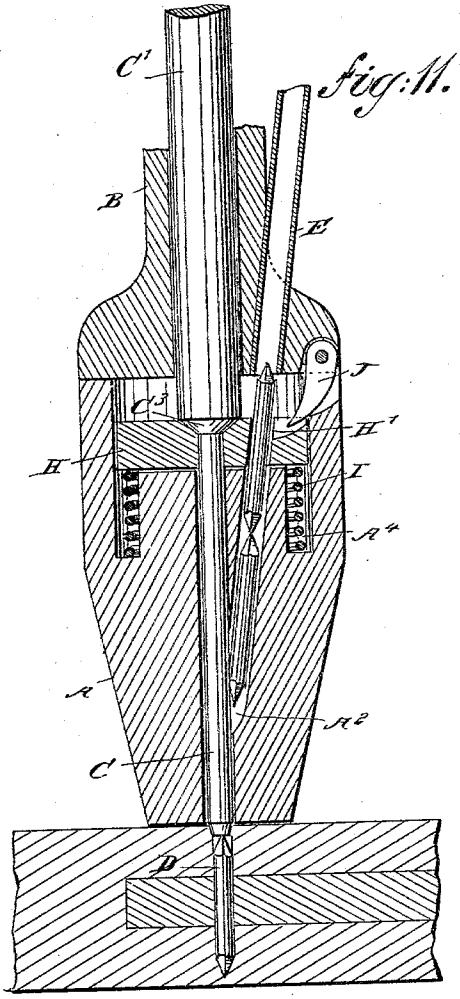


Fig: 11.



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UNITED STATES PATENT OFFICE.

CHRISTIAN LOETSCHER, OF DUBUQUE, IOWA.

DOWELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,298, dated August 27, 1895.

Application filed December 6, 1894. Serial No. 531,030. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN LOETSCHER, of Dubuque, county of Dubuque, and State of Iowa, have invented a new and Improved Doweling-Machine, of which the following is a full, clear, and exact description.

The invention relates to woodworking machinery; and its object is to provide a new and improved doweling-machine which is comparatively simple and durable in construction and more especially designed to drive dowel-pins into mortised joints, such as are found in sashes, doors, and other similar articles.

The invention consists in the novel arrangement and construction of parts hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is an enlarged side elevation of the dowel-feed. Fig. 3 is an enlarged cross-section of part of the same on the line 3 3 of Fig. 2. Fig. 4 is a like view of another part of the same on the line 4 4 of Fig. 2. Fig. 5 is an enlarged sectional side elevation of the head, plunger, and adjacent parts. Fig. 6 is a front elevation of the head with part in section. Fig. 7 is a side elevation of the same. Fig. 8 is a sectional plan view of the same on the line 8 8 of Fig. 6. Fig. 9 is an enlarged side elevation of one of the dowels; and Figs. 10 and 11 are enlarged sectional elevations of the head and the plunger in two different positions, the ferrule B′ being omitted.

The improved doweling-machine is provided with a head A, formed with a central bore A′, and removably connected at its upper end by a pin A^3 with a slot B^2 of a ferrule B′, secured on a handle B, adapted to be taken hold of by one hand of the operator, as indicated in Fig. 1.

In the central bore A′ of the head A reciprocates a plunger C, secured at its upper end on a shank C′, made somewhat larger in diameter and fitted to slide in the central bore formed in the handle B. On the upper end of this shank C′ is held a collar C^2, adapted to be taken hold of by the operator to raise the said shank C′ and the plunger C for permitting a dowel-pin D to pass into the central bore A′, as hereinafter more fully described.

Into the central bore A′ leads a side feed-opening A, for the passage of the dowel-pins D, the latter passing through a feed-pipe E, secured in the lower portion of the handle B and extending at an angle therefrom. The feed-pipe E is connected at its outer end with a feed-channel F, formed by a spirally-wound wire, the central opening of which is somewhat larger than the diameter of the dowels D. The upper end of this flexible feed-channel F is connected with a feeding and assorting device G, as hereinafter more fully described, and is held somewhat elevated above the work, as indicated in Fig. 1.

In the upper hollowed out end of the head A is fitted to slide a collar H, through which passes the plunger C, the top of the said collar being formed with a countersink H^2, adapted to be engaged by the beveled lower end C^3 of the shank C′. A spring I, resting in a seat A^4 on the head A, presses with its upper end the under side of the collar H, to hold the latter normally in an uppermost position—that is, resting against the under side of the handle B. It will be observed that the dowel-feed passage is inclined relatively to the line of motion of the collar H, and thus the vertical motion of the collar will be sufficient to cause a binding action on the dowel.

In the collar H is arranged an opening H′ in alignment with the feed-pipe E and opening A^2, so that the dowel or pin D can pass from the feed-pipe E through the said opening H′ into the opening A^2, and from the latter to the central bore A′ at the time the plunger C is in an uppermost position.

In the upper end of the head A is located a dowel-retaining device, which, as shown, consists of a pivoted gravity-pawl J, adapted to engage with its free end the dowel or pin D, extending in the lower end of the pipe E and the opening H′, as indicated in Fig. 5. The pawl J is adapted to be engaged by the upper edge of the collar H, so that the spring I in forcing the collar H upward causes the latter to press the pawl J in contact with the dowel or pin D when extending with its lower end into the opening H′, as illustrated by Fig. 10. When the collar H, however, is pressed downward by the operator striking the upper end

of the shank C′ with a mallet or other tool, then the pawl J is released from the collar H, and consequently swings outward by its own weight to release the dowel or pin D contained in the pipe E and collar H. (See Fig. 11.)

The feeding device G is provided with a receptacle G′, adapted to contain the dowel-pins D, each one of which is formed at both of its ends with a point, as is plainly indicated in Fig. 9.

The receptacle G′ is supported on a suitable bracket K, suspended above the work in a suitable manner, and the said receptacle G′ is provided at its open front end with a spout G^2, the sides of which are V-shaped, as at G^3 and plainly indicated in Fig. 3. The lower end of this spout G^2 terminates in a ridge G^4, formed on top with a slot or recess made segmental in cross-section for the passage of a dowel or pin, as indicated in Fig. 4. The lower end of this ridge G^4 is provided with a stop-plate G^5 containing a central through aperture G^6 for the passage of a dowel-pin when passing into a short tube G^7, with which the upper end of the elastic feed tube or channel F is connected. Now the distance between the lower end of the spout G^2 and the stop-plate G^5 is about the length of a full-sized dowel or pin D, so that in case one dowel travels down the spout G^2, with another lying crosswise on its top, then this second dowel, after leaving the lower end of the spout G^2, will drop off the same and over the sides of the ridge G^4 into a pail N or other receptacle suspended beneath the ridge, as indicated in Figs. 1 and 2. In case the flexible feed-tube F is dispensed with and a vertical solid tube is employed in its stead, then the spout G^2 is provided with a spring-pressed pawl or hand-lever L to prevent the dowels from passing into the feed-tube after the latter is once filled, it being understood that the filling takes place from time to time as the dowels are used up from the tube.

The operation is as follows: When the several parts are in the position illustrated in Fig. 5, then the operator takes hold with his left hand the handle B and places the head A onto the work, so that the bore A′ is in alignment with the place of the work into which the dowel is to be driven. The operator now raises his left hand sufficiently to engage the collar C^2 to lift the shank C′ of the plunger C until the lower end of the latter is above the lower or entrance end of the opening A^2 into the bore A′. By doing so the dowel D contained in the opening A^2 can now pass by its own gravity into the bore A′ and down the same to rest with its lower pointed end on the desired place of the work. (See Fig. 10.) The operator then again takes firm holdof the handle B, and with his right hand strikes with a mallet O on the upper end of the shank C′ to drive the plunger C downward and to force the dowel D into the material of the work, thus fully driving and embedding the dowel in the wood. The shank C in sliding downward in the bore by the stroke given it by the mallet causes its lower end C^3 to engage and press the collar H until the lower end rests on the top of the recessed upper end of the head A, at the same time compressing the spring I. (See Fig. 11.) The downward motion of the plunger C and its shank C′ is thus limited, and consequently the plunger C drives the dowel D only the desired distance into the wood. The downward movement of the collar H releases the pawl J, as previously described, so that the said pawl swings away from the dowel contained in the lower end of the pipe E, and this dowel can now pass downward through the opening H′ in the collar H into the opening A^2, resting with its lower end against one side of the plunger C. After the blow of the mallet has spent its force on the shank C′ the spring I will return the collar H to its normal uppermost position, so that the pawl J is pressed inward by the collar to move in contact with the next dowel D, which slides down from the upper portion of the tube E to the lower end thereof, as indicated in Figs. 5 and 11.

It will be seen that by the operation described it is impossible for more than one pin at a time to get down into the opening A^2, and also to get into the bore A′. The above-described operation is then repeated—that is, the head A is moved over to the next place in the work, the shank C′ is lifted for a dowel-pin to pass into the bore A′, after which the mallet is used to drive the plunger downward and to force the dowel into the work.

The dowels follow one another down the tube F from the receptacle G′ by first passing from the latter through the spout G^2 by their own weight over the ridge G^4, on which the dowels not in proper position in the recess of the ridge will drop off and pass into the suspended receptacle N. By this arrangement the dowels can pass in proper position to the tube F and down the same, as previously explained. The particular construction of the feed-tube F, which consists of coiled wire, is of material advantage since the said tube not only is readily flexible, but will automatically shorten or lengthen itself when the distance between the head A and the feeding device G is altered, thus avoiding the formation of a slack or loop in the feed-tube, which would interfere with the sliding of the pins or dowels.

By providing each dowel-pin with two points it does not make any difference which end comes down first in the spout G^2. The spout G^2 starts on a level and is then curved downward to cause an increase in the velocity of the pins as the latter move downward in the spout, so that a natural tendency exists to separate the pins one from the other and to cause the same to travel in single file by their own weight. As this accelerated speed is gradual, the lowermost pin in the spout G^2 travels faster than the next upper one to it, so that the pins are slightly separated from

each other, and consequently pass in proper shape into the tube F.

The pins D are preferably made of a harder wood than the work into which the pins are driven, and the openings in the work caused by the lower end of the plunger C are puttied up in the usual manner after the pins are driven.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A doweling machine, comprising a hollow head, a movable plunger in the head, and a collar movable relatively to the head and controlled by the plunger, the head and the collar being provided with a dowel feed passage arranged at an angle to the line of motion of the collar, substantially as described.

2. A doweling machine comprising a head formed with a longitudinal bore, and a side feed opening for delivering the pins or dowels to the said bore, a plunger in the bore, a collar movable longitudinally of the head and controlled by the plunger, said collar having an opening adapted to register with the side feed opening of the head, and inclined relatively to the line of motion of the collar and a spring for returning the collar to its normal position after it has been engaged by the plunger, substantially as described.

3. A doweling machine, comprising a head formed with a longitudinal bore, a side feed opening for delivering the pins or dowels to the said bore, a plunger operating in the bore, a spring-pressed collar held above the upper end of the head and adapted to be engaged by the plunger shank, and a pawl held in the said head and adapted to be engaged by the said spring-pressed collar to move the pawl in contact with the dowel and hold the same temporarily in place, substantially as shown and described.

4. A doweling machine, comprising a head formed with a longitudinal bore, and a side feed opening for delivering the pins or dowels to the said bore, a plunger in the bore, a movable collar controlled by the plunger, and a dowel-retaining device controlled by the movement of the collar, substantially as described.

5. The combination of the hollow head, the plunger movable longitudinally therein, and the collar surrounding the plunger within the head and movable longitudinally thereof, the collar being controlled by the plunger, and the head and collar being provided with a dowel feed passage inclined relatively to the line of motion of the collar, substantially as described.

6. The combination of the head, the plunger therein, the movable collar controlled by the plunger, the head and the collar being provided with a dowel feed passage, and the pawl arranged to project into said passage and controlled by the said collar, substantially as described.

7. In a doweling or like machine, a feed device consisting of an inclined spout having a longitudinal groove in its upper surface to permit of a dowel sliding lengthwise thereon and a stop plate at the lower end of the spout and provided with a substantially circular through aperture registering with the groove of the spout, substantially as described.

8. In a doweling or like machine, a feed device consisting of an inclined spout having a longitudinal groove in its upper surface to permit of a dowel sliding lengthwise thereon, a stop plate located at the lower end of the spout and provided with a substantially circular through aperture registering with the groove of the spout, and a feed tube connected to the said plate and extending substantially in alignment with the lower end of the groove, substantially as described.

CHRISTIAN LOETSCHER.

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P. A. AEPLI.