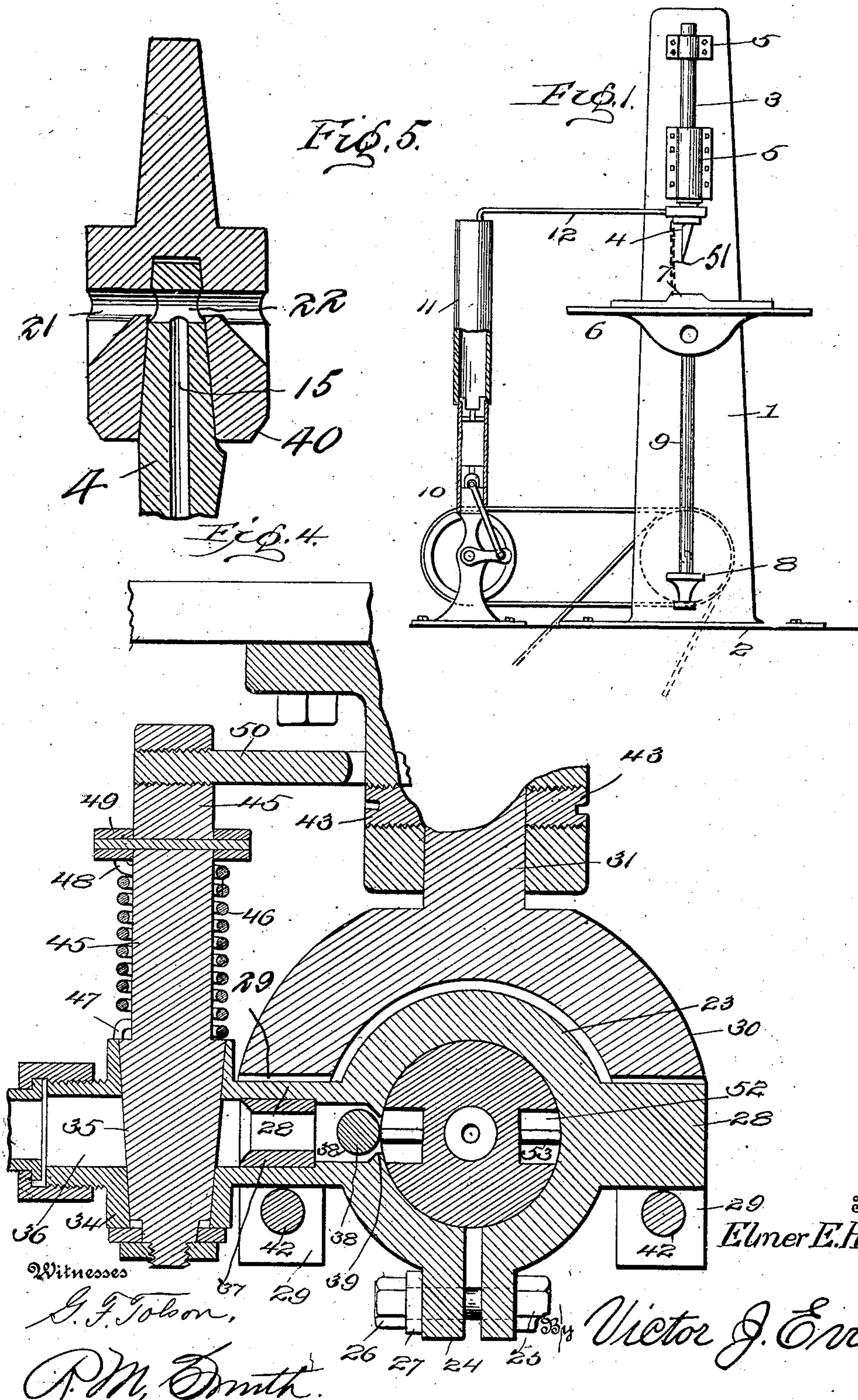


E. E. HOUGHTON.
PNEUMATIC ATTACHMENT FOR MORTISING MACHINES.
APPLICATION FILED JULY 7, 1908.

928,758.

Patented July 20, 1909.

2 SHEETS—SHEET 1.



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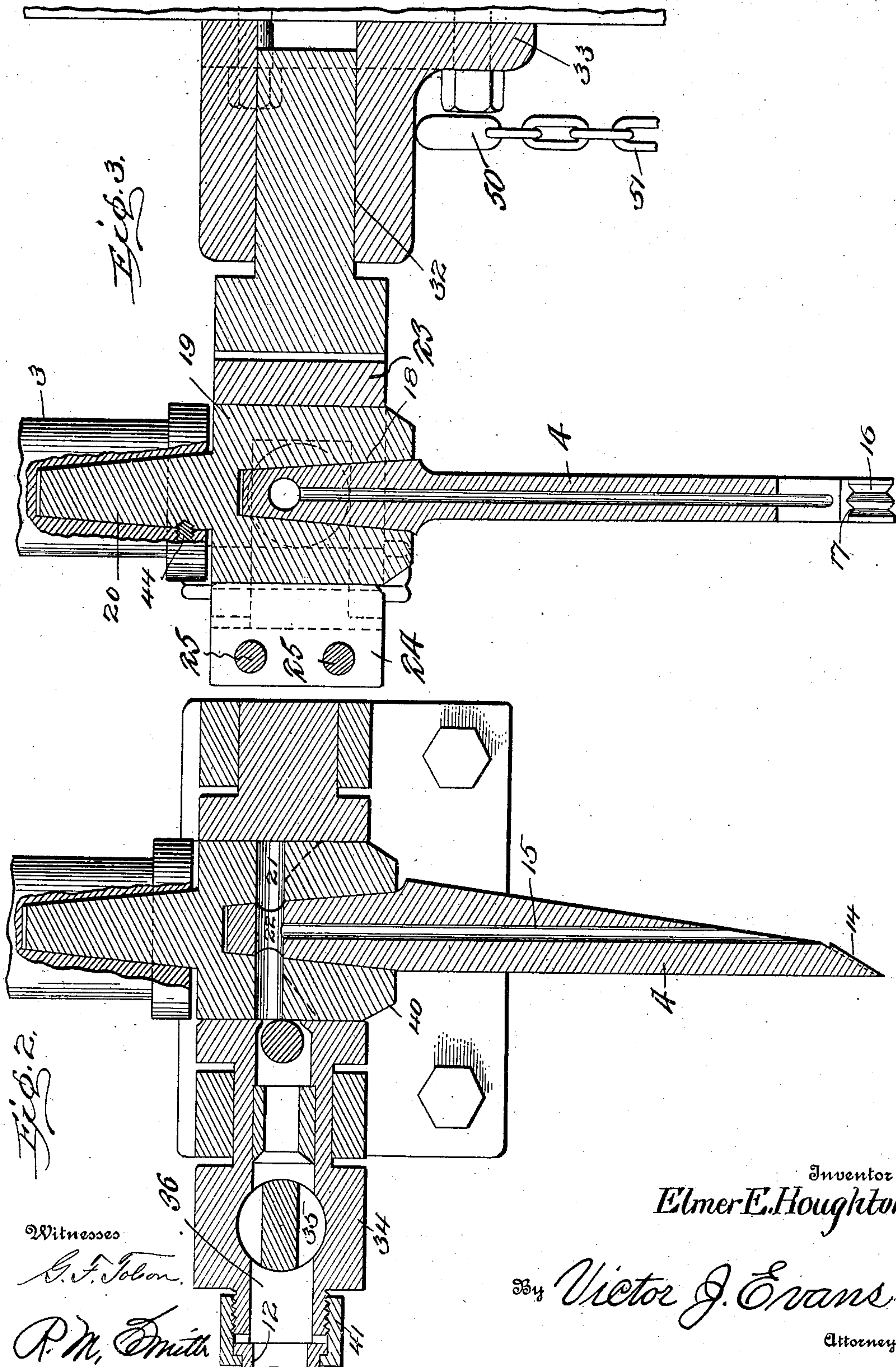


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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PNEUMATIC ATTACHMENT FOR MORTISING-MACHINES.

No. 928,758.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed July 7, 1908. Serial No. 442,294.

To all whom it may concern:

Be it known that I, ELMER E. HOUGHTON, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Pneumatic Attachments for Mortising-Machines, of which the following is a specification.

This invention relates to pneumatic attachments for mortising machines, the object of the invention being to provide an attachment for mortising machines in the nature of an automatic blower for removing the cuttings of the chisel from the mortise by directing a blast of air at the point of the work, which blast is automatically controlled so as to conserve the air supplied and direct the same to the cutting point only as needed.

The attachment is applicable to any ordinary mortising machine now in use without necessitating any change whatever either in the construction or operation of such machine.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a front elevation of a mortising machine showing the improved attachment applied thereto. Fig. 2 is a vertical section through the attachment and chisel on an enlarged scale taken in the plane parallel to the front of the machine. Fig. 3 is also a vertical section taken at right angles to Fig. 2. Fig. 4 is a horizontal section taken in line with the throttle valve. Fig. 5 is a vertical section taken on a line to show the arrangement of air passages in the chisel carrier.

In Fig. 1 I have shown the ordinary mortising machine in which 1 represents a stand mounted upon a suitable base 2, 3 the chisel carrier, 4 the chisel carried thereby, 5 the guides for the carrier 3, 6 the bed or table upon which the work done at 7 is supported, 8 the treadle and 9 the operating connection between the treadle 8 and bed 6.

In carrying out the present invention, I mount an air compressor 10 of any desired construction adjacent to the mortising machine as shown in Fig. 1, said compressor being preferably equipped with a compressed air storage pipe 11 from which an air feed

pipe 12 leads to the main body of the attachment of this invention.

Referring particularly to Figs. 2, 3 and 4, the chisel 4 is provided with the usual bevel edge 14 and provided for the purpose of this invention with a longitudinal bore or air channel 15 the lower end of which opens out near the bevel of the chisel. The bevel face 14 of the chisel is corrugated, channeled or grooved as shown at 16 to break up the shavings or tips and is also formed with intermediate ribs or barbs 17 which loosen the chips or shavings as the chisel is withdrawn from the work thereby giving the compressed air blast a chance to remove the shavings or chips from the mortise. The chisel at its upper end is provided with a tapered shank 18 which fits into a corresponding recess in a socket head 19, the latter being in turn provided with a tapered shank 20 which fits into a correspondingly shaped recess in the chisel carrier 3, above referred to and as clearly shown in Figs. 2 and 3.

The socket head 19 is provided with a horizontal transverse air passage 21 while the shank of the chisel is provided with a corresponding passage 22 which registers with the passage 21 as clearly shown in Fig. 2. The socket head fits within a sleeve 23 which is divided at one side and provided with oppositely extending flanges 24 which receive clamping bolts 25 secured by nuts 26 and spring washers 27 so that the size of the opening in the sleeve may be adjusted to form an accurate sliding fit for the socket head 19. The sleeve 23 is further provided with oppositely projecting trunnions 28 which are received in recesses 29 in the arms of a fork 30, the latter being provided with a journal or shank 31 which is received in a correspondingly shaped opening 32 in a bracket 33 secured to the stand 1 of the mortising machine as indicated in Figs. 3 and 4. One of the trunnions 28 is extended to form a throttle valve casing 34 in which is arranged a throttle valve 35 which is illustrated in Figs. 2 and 4. This valve is adapted to open and close an air inlet passage 36 extending lengthwise through a valve casing and hollow trunnion 28 while mounted in the inner portion of the hollow trunnion 28 is a bushing 37 which forms an outer abutment or stop for a check valve 38 preferably in the form of a ball which coöperates with a valve seat 39 immediately adjacent to the space in which

the socket head 19 moves as shown in Figs. 2 and 4. The size of the opening in the valve seat 39 is such as to allow a ball valve 38 to project a short way into the space which is occupied at times by the socket head 19, said socket head 19 having its lower end beveled or chamfered as shown at 40 so that in the downward movement of the socket head, said bevel face 40 acts to thrust the ball valve away from its seat and allow air to pass into the passage 21 and thence enter and pass through the air channel 15 to the working point of the chisel. The air feed pipe 12 is flexible and is connected to the valve casing 34 by means of an internally threaded union 41 as shown in Figs. 2 and 4. The trunnions 28 are held securely in the recesses 29 of the arms 30 by means of the vertical bolts 42. The shank 31 is held in a recess 32 in the bracket 33 by means of diametrically opposite set screw 43.

The valve 35 is provided with a stem 45 around which is disposed a coil spring 46 one end of which is bent as shown at 47 and inserted in a hole or socket in the valve casing 34 while the opposite end of the spring is bent as shown at 48 and inserted in a hole or socket in a collar 49 fast on the stem 45; the tension of said spring being exerted to open the valve 35. Connected to the stem 45 is an operating arm 50 to the free end of which is attached an operating chain or connection 51 which extends downward and is attached to the bed or table 6 or connected to move with the table so as to be controlled in its movements by the rising and falling movements of the treadle 8 with the result that when the bed or table 6 is raised to present the work to the action of the chisel 4, the throttle valve 35 will be opened by the spring 46 to allow air to pass to the chamber controlled by the ball valve 38. Then as the chisel descends, the chamfered lower portion 40 thereof displaces the check or valve 38 and allows air to enter the spaces 52 in opposite sides of the socket head, which spaces communicate with the air passage 21 for the purpose of leading air to the bore of the chisel. The spaces 52 are preferably divided by a central web 53 which acts on the valve 38 to hold the same unseated while the chisel is performing its work at the lower limit of its movement. By reference to Fig. 4, it will be observed that the air inlet spaces 52 are located at diametrically opposite points thereon as to admit of the reversal of the chisel or the turning of the shank thereof through an arc of 180° without interfering with the transmission of the compressed air through the chisel and the working point thereof.

From the foregoing description it will be apparent that the attachment hereinabove described is adapted to be applied to the ordinary chisel mortising machine now in

common use and that it will operate to deliver compressed air in the form of a blast at the point of operation of the chisel. Any suitable air compressor may be used in connection with the mortising machine and may, as shown in Fig. 1, be driven from a countershaft which is bolted to the main driven shaft of the mortising machine. It will be observed that the air blast is cut off in the upward movement of the chisel and it will also be seen that when the chisel is in its upper position it is free to be turned, the attachment not interfering in any way with the original construction or the operation of the mortising machine. It will also be seen that the sleeve 23 is reversely or in other words adapted to be turned end for end so as to receive the flexible feed pipe 12 from either side.

The device as a whole is a great time and labor saver, enabling the work to be performed in approximately one-third of the time now required it being understood that more time is required to remove the shavings from the mortises than is required to perform the mortising operation.

I claim:—

1. The combination in a mortising machine, of an air compressor, a chisel-carrying head having an air passage therein adapted to communicate with the air compressor and also with an air passage in the body of a chisel carried by said head, and means controlled by the movement of the work supporting table operating automatically to cut on and off the air from the air compressor.
2. A pneumatic attachment for mortising machines comprising an air compressor, a mortising chisel having an air passage leading therethrough, a socket head by which said chisel is carried having an air passage communicating with an air passage of the chisel, a sleeve through which said socket head moves embodying a valve chamber, a valve controlling said chamber and arranged to be operated by the socket head, and an air conduit leading from the air compressor to said valve chamber.
3. A pneumatic attachment for mortising machines comprising an air compressor, a mortising chisel having an air passage leading therethrough, a socket head carrying said chisel and provided with an air passage communicating with the air passage of the chisel, a sleeve through which said socket head moves provided with a valve chamber, a valve controlling said chamber and arranged to be unseated by the socket head, a flexible conduit leading from the air compressor and said valve chamber, and a fork by which said sleeve is supported.
4. A pneumatic attachment for mortising machines comprising an air compressor, a mortising chisel having an air passage leading therethrough, a socket head by which

the chisel is carried, a sleeve having an opening through which the socket head moves, supporting means for said sleeve, a valve chamber in said sleeve a valve controlling
5 said chamber and adapted to be unseated by the socket head, a throttle valve controlling the air passage leading to the valve chamber, an air conduit extending from the air compressor to the throttle valve casing, and
10 treadle-controlled means for operating said

throttle valve in the rising and falling movement of the work supporting bed of the mortising machine.

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

ELMER E. HOUGHTON.

Witnesses:

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