

APPLICATION FILED NOV. 22, 1920.

Patented Aug. 22, 1922.
6 SHEETS—SHEET 1.



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D. L. BISSET.
CHUCK.
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1,426,541.

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6 SHEETS—SHEET 2.

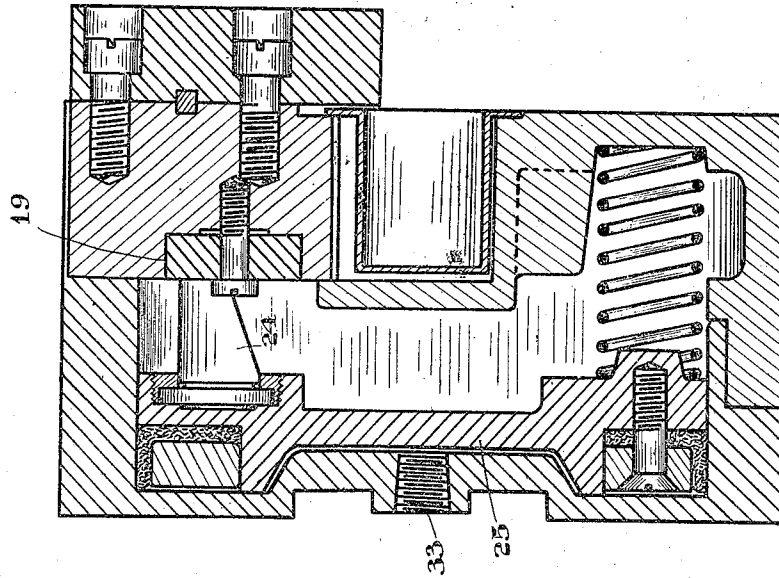


FIG. 4

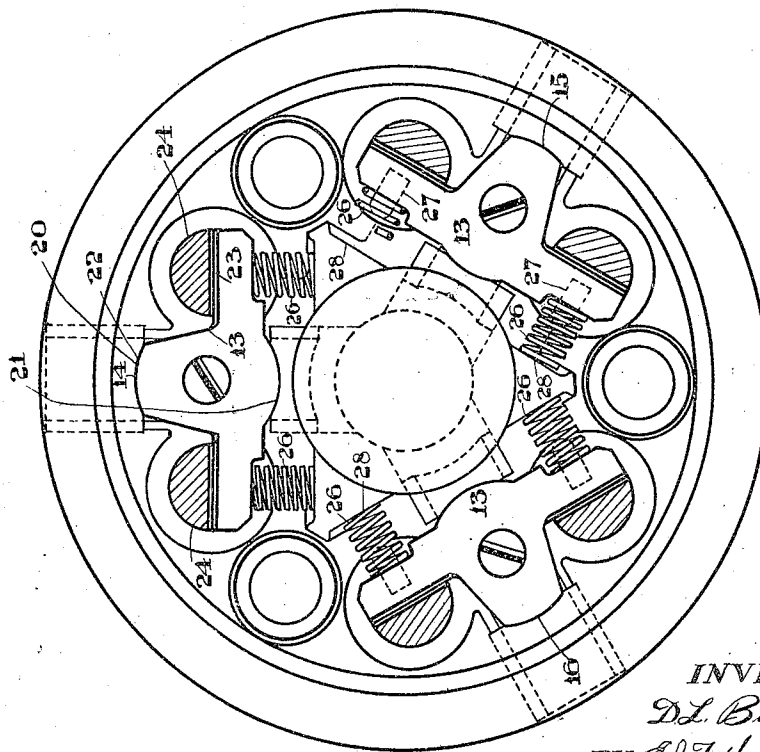


FIG. 3

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6 SHEETS—SHEET 3.

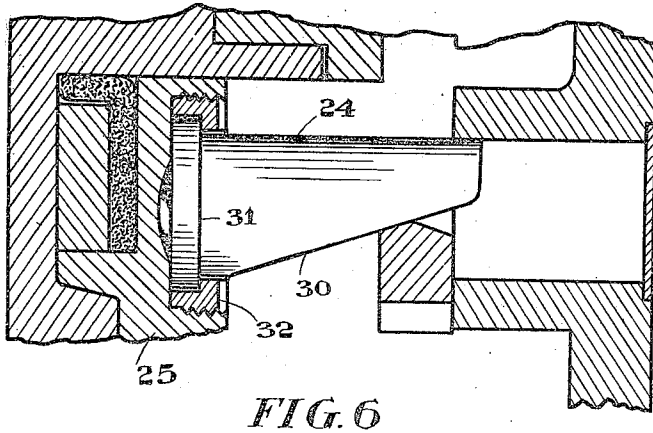


FIG. 6

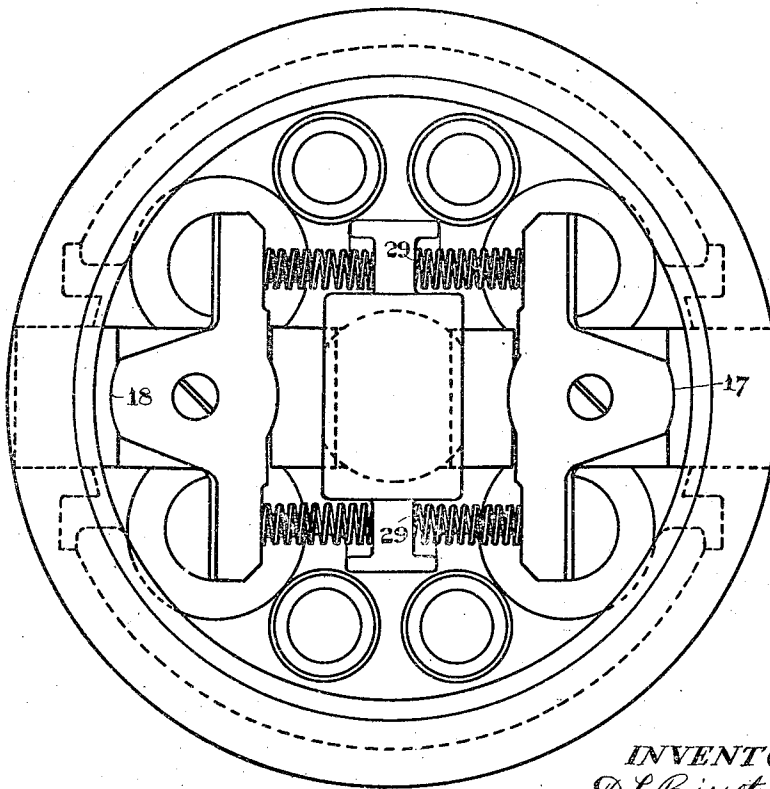


FIG. 5

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6 SHEETS—SHEET 4.

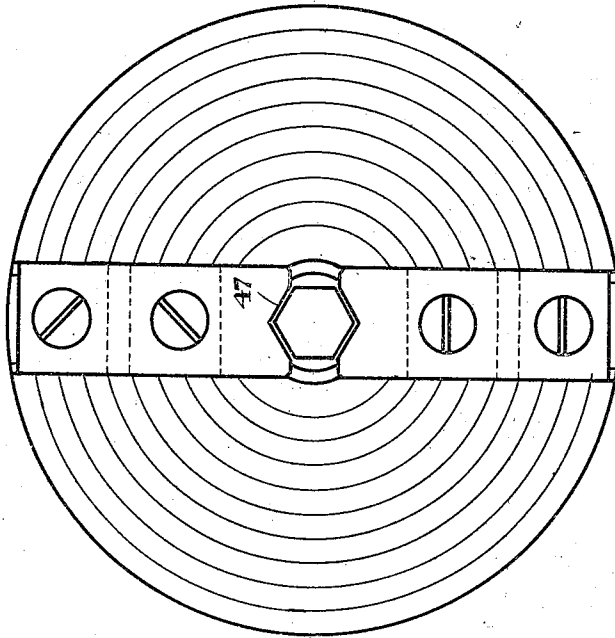


FIG. 8

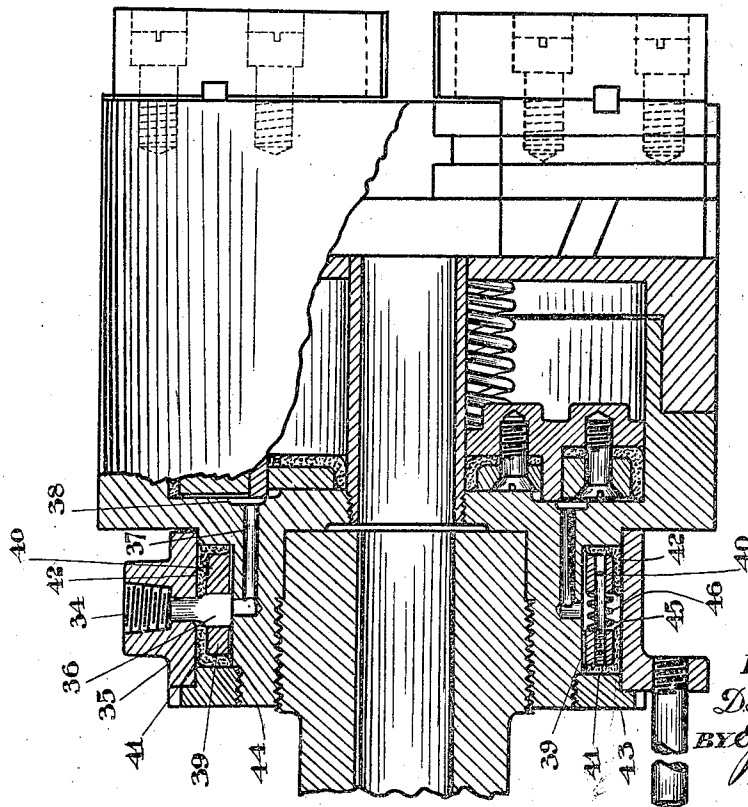


FIG. 7

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6 SHEETS—SHEET 5.

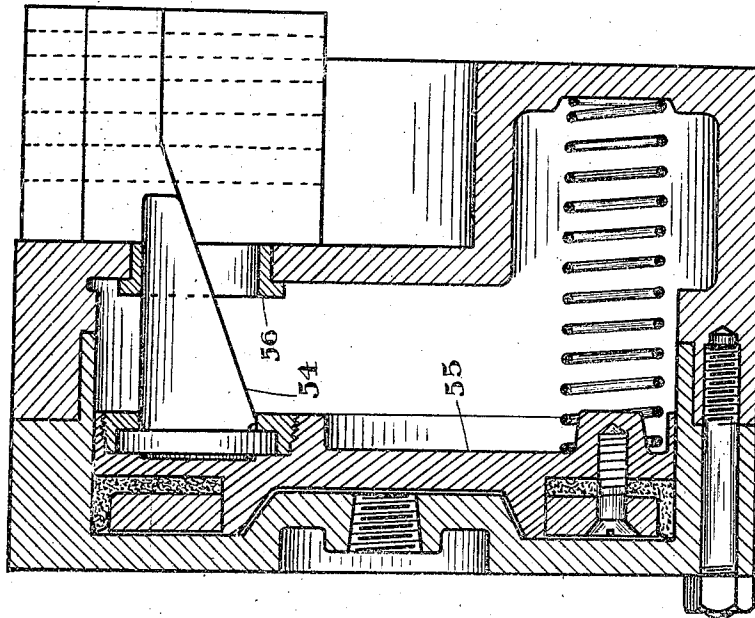


FIG. 10

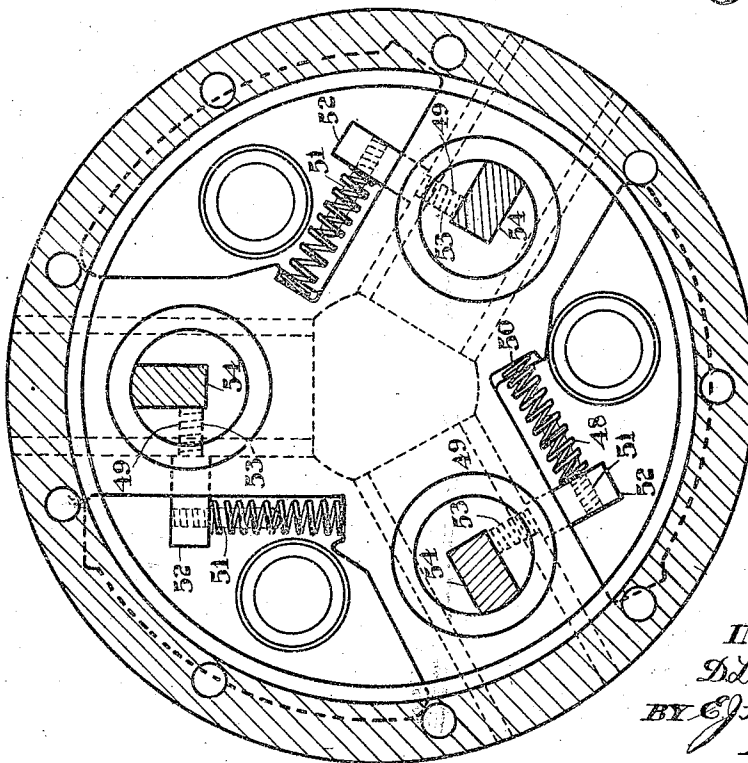


FIG. 9

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6 SHEETS—SHEET 6.

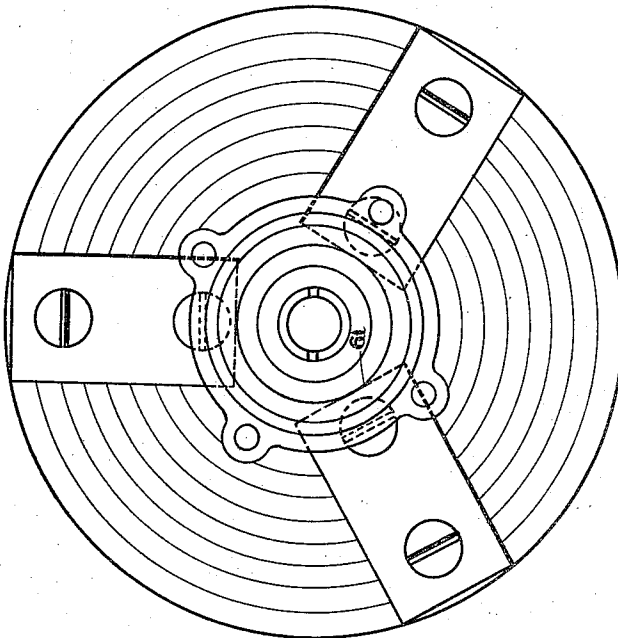


FIG. 12

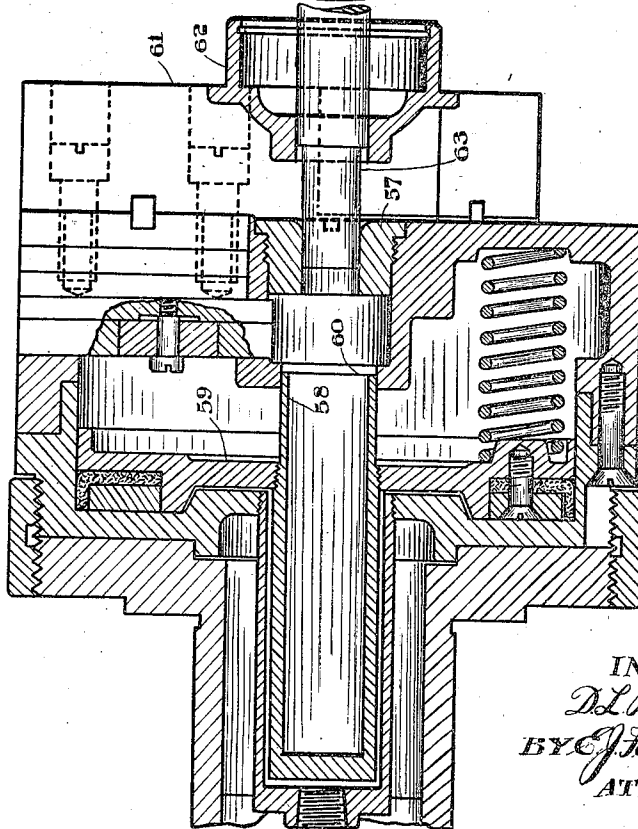


FIG. 11

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UNITED STATES PATENT OFFICE.

DAVID LOGAN BISSET, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO P. LYALL & SONS CONSTRUCTION COMPANY, LIMITED, OF MONTREAL, QUEBEC, CANADA.

CHUCK.

1,426,541.

Specification of Letters Patent. Patented Aug. 22, 1922.

Application filed November 22, 1920. Serial No. 425,891.

To all whom it may concern:

Be it known that I, DAVID LOGAN BISSET, and residing at 75 Columbia Avenue, in the city and district of Montreal, in the Province of Quebec, in the Dominion of Canada, have invented a new and useful Chuck, of which the following is the specification.

The invention relates to chucks as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially of the novel means employed for insuring the application of the wedge members by means of a reciprocating member in closing the jaws to the work.

The objects of the invention are to facilitate the operation of pneumatic chucks; to eliminate the detrimental effects of vibration on the machine; to insure a firm and true grip of the work; to furnish to factories and machine shops a chuck that will save time and labor and at the same time materially increase efficiency in regard to the production; and generally to provide a durable and serviceable chuck.

In the drawings, Figure 1 is a rear of chuck showing the face plate broken and a section on the line A—A in Figure 2.

Figure 2 is a vertical sectional view of the chuck on the line B—B in Figure 1.

Figure 3 is a rear view having the face plate and piston removed and showing a modification of the wedge lever construction in a three-jaw chuck.

Figure 4 is a vertical sectional view of the form of the invention illustrated in Figure 3.

Figure 5 is a rear view with the face plate and piston removed and showing the modification of the wedge lever applied to a two-jaw chuck.

Figure 6 is a fragmentary sectional view of the body and piston, showing an enlarged detail of the wedge pin.

Figure 7 is a vertical sectional view showing the casing broken away and disclosing a modification of the air inlet and expansion chamber.

Figure 8 is an end elevation of a two-jaw chuck of a special type.

Figure 9 is a rear view with face plate and piston removed, showing a modification of the application of the means for holding the wedges to their place.

Figure 10 is a vertical section of the form of the invention illustrated in Figure 9.

Figure 11 is a vertical sectional view showing novel features for applying this type of chuck to special work.

Figure 12 is an end elevation of the chuck illustrated in Figure 11 and showing the work in place.

Like numerals of reference indicate like parts in the various groups showing the different forms of the invention.

Referring to the drawings, and particularly Figures 1 and 2, the chuck body 1 is recessed to receive the cylinder in which the piston 2 operates and drives the wedge pins 3 on to the wedge levers 4. The wedge levers 4 are pivoted in recesses in the sliding jaws 5 and are in the form of rocker arms, one end 6 extending into the body slots 7 from the walls of which said levers are fluted and the other end 8 having flattened faces 9 engaged by the wedge pins 3.

The pins 10 are screw-threaded into the back of the ends 8, and the spiral springs 11 encircle said pins and exert pressure on said ends 8 from the central boss 12 of the body 1 in an oblique direction in respect to a diametrical line through the chuck body.

This pressure brings the faces 9 in proximity to the pins 3, in fact, into constant close engagement, no matter what the position of the pins may be, therefore, on the operation of the piston, the effect on the wedges is immediate, which much facilitates the progress of the work and eliminates all slackness in the jaws.

In Figures 3, 4, 5, and 6 another form of wedge lever is shown and in which the lever 13 is pivoted centrally in each of the jaws 14, 15, and 16, or 17 and 18, as the case may be. The recesses 19 in said jaws are formed with the outer wall 20 and inner wall 21 shaped to receive the rocking bodies 22 of the levers 13 from which the flattened ends 23 extend to be engaged by the wedge pins 24 in pairs, one pair for each jaw, said pins 24 being operated from the piston 25.

The lever ends 23 are held in constant engagement with the pins 24 by the spiral springs 26 encircling the pins 27 screw-threaded into the backs of the ends 23, said springs exerting pressure from the solid lugs 28 in Figures 3 and 4 and solid lugs 29 in Figures 5 and 6.

The piston in this form is preferably

driven by air as in the first form described and the wedge pins immediately begin their wedging operations to bring the jaws to their work.

5 It may be mentioned that the detail in Figure 6 is generally applicable in this invention no matter what form it may take, though numeralled to fit in with Figures 3 and 4.

10 By further reference to this figure it will be seen that the pins 24 are of course in wedge shape and have the inclined flat surface 30 extending from the circular flanged end 31. The flanged ends 31 are held to
15 the piston by the keeper rings 32 screw-threaded into the face of the piston 25.

In Figures 1 to 5 the inlet to the expansion chamber is shown through the lathe spindle 33, but in Figure 7 the inlet 34 is
20 shown in the chuck casing 35, and this inlet registers with the annular passage or manifold 36, which is connected by the passages 37 to the annular expansion groove 38. The packing rings 39 and 40 keep the
25 leathers 41 and 42 in place and the keeper ring 43 is screw-threaded on to the chuck adapter 44 and closes in the rings 39 and 40 and bears on the casing 35.

The pins 45 and springs 46 at intervals
30 circumferentially keep the rings 39 and 40 apart and the leathers 41 and 42 tightly to their place.

In Figure 8 a two-jaw chuck is illustrated, the particular gripping feature being the angularly
35 recessed gripping jaws 47. This form is preferably operated by the wedge lever construction described in referring to Figures 3, 4, and 5.

In Figures 9 and 10 the resilient members here shown as spiral springs 48 are
40 shown as exerting pressure on the jaws 49 against the body walls 50. The springs 48 encircle the pins 51, which are screw-threaded into the lugs 52. These lugs 52 have
45 pin extensions 53, that are screw-threaded

into the jaws 49 holding said jaws in constant engagement with the wedge pins 54 driven by the piston 55.

The pins 54 are guided by the bushings 56 inserted in wedge-pin-orifices in the body 50 and close in the jaws against said bushings.

In Figures 11 and 12 the chief feature is the central aligning plug 57 screw-threaded into the body opposite the inside sections of the jaws and centrally in relation
55 to the inner cup 58 screw-threaded into the piston 59 and projecting forwardly to the pierced body boss 60 receiving said aligning plug 57 and guided by the inner wall of said boss.

The jaws 61 are here shown as formed to receive the work 62 and in this class of work a pilot bar 63 extends through the aligning plug from the cutter bar to the
65 cup 58.

It will be thus seen that the several features herein described all tend towards efficiency in production and economy in time and labor, and this in particularly emphasized in the several applications of the
70 resilient means of keeping the wedging members to their work.

Some changes may be made from time to time in the construction without departing from the spirit of the invention, but the
75 essential elements are set forth in the claim for novelty following:

What I claim is:

In a chuck, a body, a reciprocating member in said body, wedge pins extending forwardly and having flanged inner ends recessed in the face of said reciprocating member, a keeper ring screw-threaded into said recesses and holding said pins and sliding jaws operatively connected with said
85 pins.

Signed at Montreal, Quebec, Canada, this second day of November, 1920.

DAVID LOGAN BISSET.