

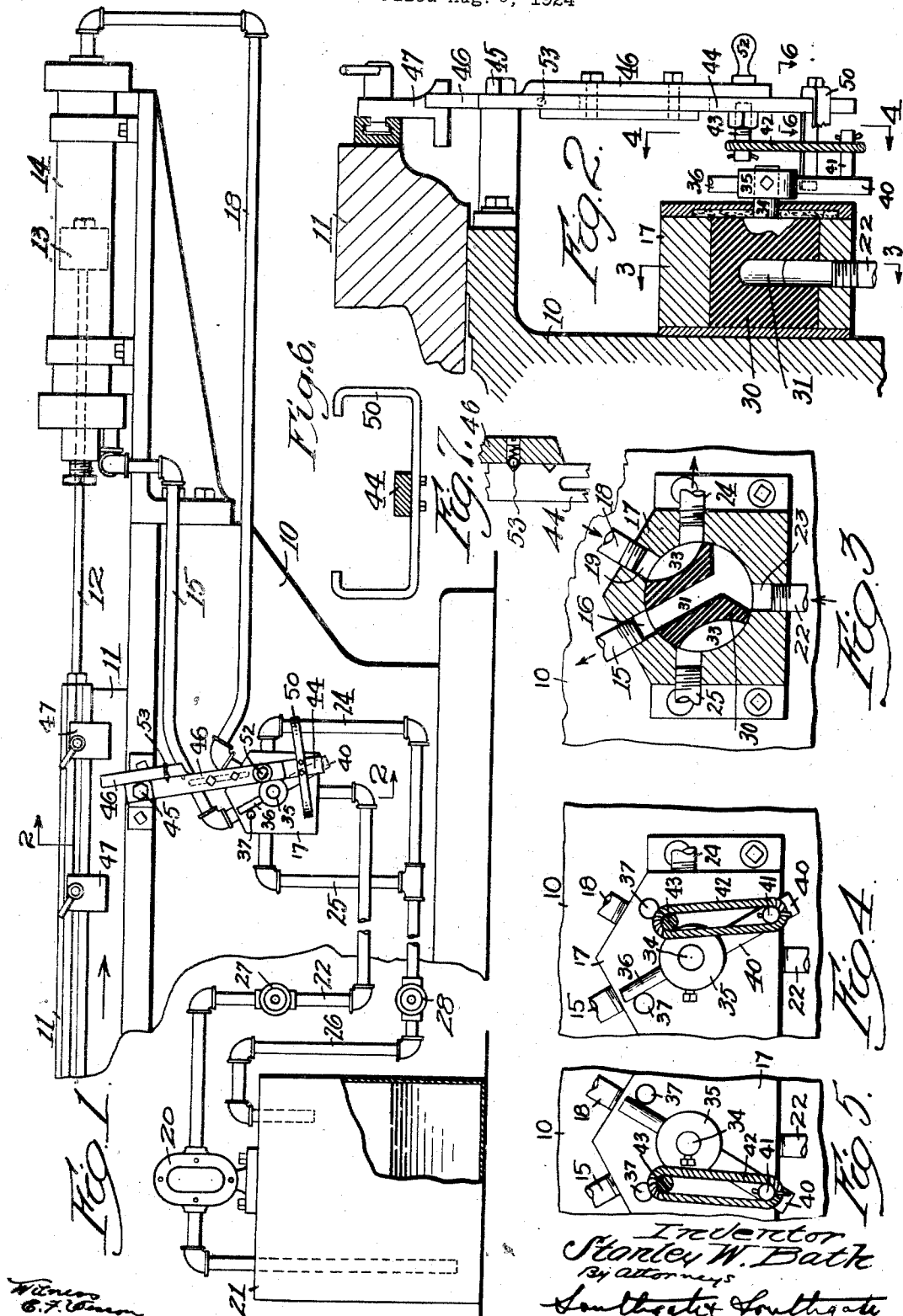
April 30, 1929.

S. W. BATH

1,711,079

TABLE DRIVING MECHANISM

Filed Aug. 5, 1924



UNITED STATES PATENT OFFICE.

STANLEY W. BATH, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO JOHN BATH & COMPANY, INC., OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

TABLE-DRIVING MECHANISM.

Application filed August 5, 1924. Serial No. 730,326.

This invention relates to driving mechanism for reciprocating a work table or for other similar purposes. The invention contemplates the use of oil or other liquid under pressure as the moving agent and relates more particularly to improved devices for mechanically and automatically reversing the valve which determines the direction of table travel.

The details of the valve mechanism form no part of my present invention and are more fully disclosed and described in my copending application, Serial No. 730,327, filed August 5, 1924.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a front elevation of parts of a grinding machine embodying my improved driving mechanism;

Fig. 2 is a partial sectional end elevation, taken along the line 2—2 in Fig. 1;

Fig. 3 is a detail sectional view, taken along the line 3—3 of Fig. 2;

Figs. 4 and 5 are detail sectional front elevations, taken along the line 4—4 in Fig. 2 and showing different positions; and

Fig. 6 is a detail sectional plan view, taken along the line 6—6 in Fig. 2.

Fig. 7 is a detail sectional view showing the detent for holding the automatic valve reversing mechanism in operative or inoperative position.

Referring to the drawings, I have shown my improved driving mechanism as mounted upon a base or bed 10 which slidably supports a work table or other reciprocating structure 11. A rod 12 is connected at one end to the table 11 and at the opposite end to a piston 13 which is reciprocated in a pressure cylinder 14. One end of the cylinder 14 is connected by a pipe 15 to an inlet 16 in a valve casing 17 and the other end of the cylinder is similarly connected by a pipe 18 to an inlet opening 19 in said valve casing.

A pump 20 is adapted to pump oil or other liquid under pressure from a tank 21 and to force the oil through a pipe 22 to an inlet opening 23 in said casing 17. Branch return pipes 24 and 25 are connected to discharge into the tank 21 through a return pipe 26. Valves 27 and 28 regulate the flow of oil through the pipes 22 and 26.

A valve member 30 is rotatably mounted in the casing 17 and is provided with a diam-

etral passage 31 and with two segmental return ports or passages 33. The valve member 30 has a shaft or gudgeon 34 extending through the casing 17 and is provided with a collar 35 on which is mounted a stud 36 which engages one or the other of two stop pins 37, stopping the valve 30 in one or the other of its operative positions. All of the structure thus far described is substantially the same as that shown in my copending application.

My present invention relates particularly to an improved device for reversing the valve 30. For this purpose I provide an arm 40 depending from the hub 35 and provided with a stud 41 which is connected by a spring loop or resilient link 42 with a stud 43 in the lower end of a lever 44. The lever 44 is mounted on a fixed pivot 45 and has an upwardly projecting portion 46 slidably secured thereto and positioned for engagement by dogs 47 adjustably secured to the edge of the table 11.

The positions of the studs 41 and 43 and the pivot 45 are so selected that the line of tension of the link or spring 42 will be shifted alternately from one side to the other of the axis of the valve 30 and shaft 34. When the lever 44 is reversed by one of the dogs 47 and the line of tension falls on the opposite side of the valve axis, the valve snaps abruptly to its reversed position and the oil pressure is applied to the opposite side of the piston 13.

The lever 44 is also provided at its lower end with a yoke 50, the ends of which are adapted to engage the depending arm 40 and positively move the valve 30 if for any reason the valve should stick and fail to be reversed by the yielding connection 42. The lever portion 44 is also provided with a handle 52 by which the lever may be moved manually to reverse the table travel or to bring the table to rest by placing the valve in mid-position. The portion 46 is slidable on the lever 44 and is held yieldingly in raised or lowered position by a spring pin or plunger 53, which functions thus as a yielding stop effective to hold the portion 46 in operative or inoperative relation to the dogs 47. The portion 46 may be depressed to clear the dogs 47 when it is desired to free the machine from the automatic control and operate the machine manually.

Having thus described my invention, it will be evident that I have provided an exceedingly simple and reliable mechanism for

automatically and mechanically reversing the travel of a reciprocating work table or other similar structure.

It will also be evident that changes and modifications can be made in my invention without departing from the spirit and scope thereof as set forth in the claims and I do not wish to be otherwise limited to the details herein disclosed, but what I claim is:—

1. Table driving mechanism comprising a closed cylinder, a piston connected to the table and mounted to be reciprocated in said cylinder, means to supply fluid under pressure to either end of said cylinder, and means to reverse the flow of said fluid, said means including a valve mounted for angular reversing movement, a lever mounted for reversal by said table and yieldingly connected direct to said valve to reverse same, and means on said lever directly engaging said valve to positively reverse the same if the valve fails to move under yielding tension.

2. Table driving mechanism comprising a closed cylinder, a piston connected to the table and mounted to be reciprocated in said cylinder, means to supply fluid under pressure to either end of said cylinder, and means to reverse the flow of said fluid, said means including a valve mounted for angular reversing movement, a table-controlled device to yieldingly reverse said valve, and additional means movable by said table controlled device to positively reverse said valve, upon failure of the yielding reversing device.

3. Table driving mechanism comprising a closed cylinder, a piston connected to the table and mounted to be reciprocated in said cylinder, means to supply fluid under pressure to either end of said cylinder, means to reverse the flow of said fluid, said means including a valve mounted for angular reversing movement, a lever mounted on a fixed pivot and having a short upwardly extending arm and a long lower arm, dogs adjustably secured to said table and engaging said upper arm, a stud on said lower arm, a depending projection on said valve, and a resilient connection

between said stud and said projection, said connection exerting tension on said valve on opposite sides of the axis of said valve and abruptly reversing the angular position thereof, and additional means on said lever to positively reverse the valve.

4. Table driving mechanism comprising a reversing valve, a lever to reverse said valve, an upward extension for said lever slidably secured thereto, table dogs to actuate said lever, and a yielding stop effective to hold said lever extension in operative or inoperative relation to said dogs.

5. Table driving mechanism comprising a closed cylinder, a piston connected to the table and mounted to be reciprocated in said cylinder, means to supply fluid under pressure to said cylinder at either side of the piston alternately and means to reverse the flow of said fluid, said means including a valve mounted for angular reversing movement, a lever mounted for reversal by said table, a direct yielding connection from said lever to said valve, said connection exerting tension alternately on opposite sides of the axis of said valve to abruptly reverse the position thereof, an upward extension for said lever slidably secured thereto and a yielding stop effective to hold said lever extension in operative or inoperative relation to said table.

6. Table driving mechanism comprising a closed cylinder, a piston connected to the table and mounted to be reciprocated in said cylinder, means to supply fluid under pressure to either end of said cylinder, and means to reverse the flow of said fluid, said means including a valve mounted for angular reversing movement, a table control device to yieldingly reverse said valve, additional automatic means movable by said table controlled device to positively reverse said valve upon failure of the yielding reversing device, and means to reverse said valve manually.

In testimony whereof I have hereunto affixed my signature.

STANLEY W. BATH.