E. J. KEARNEY & T. TRECKER.

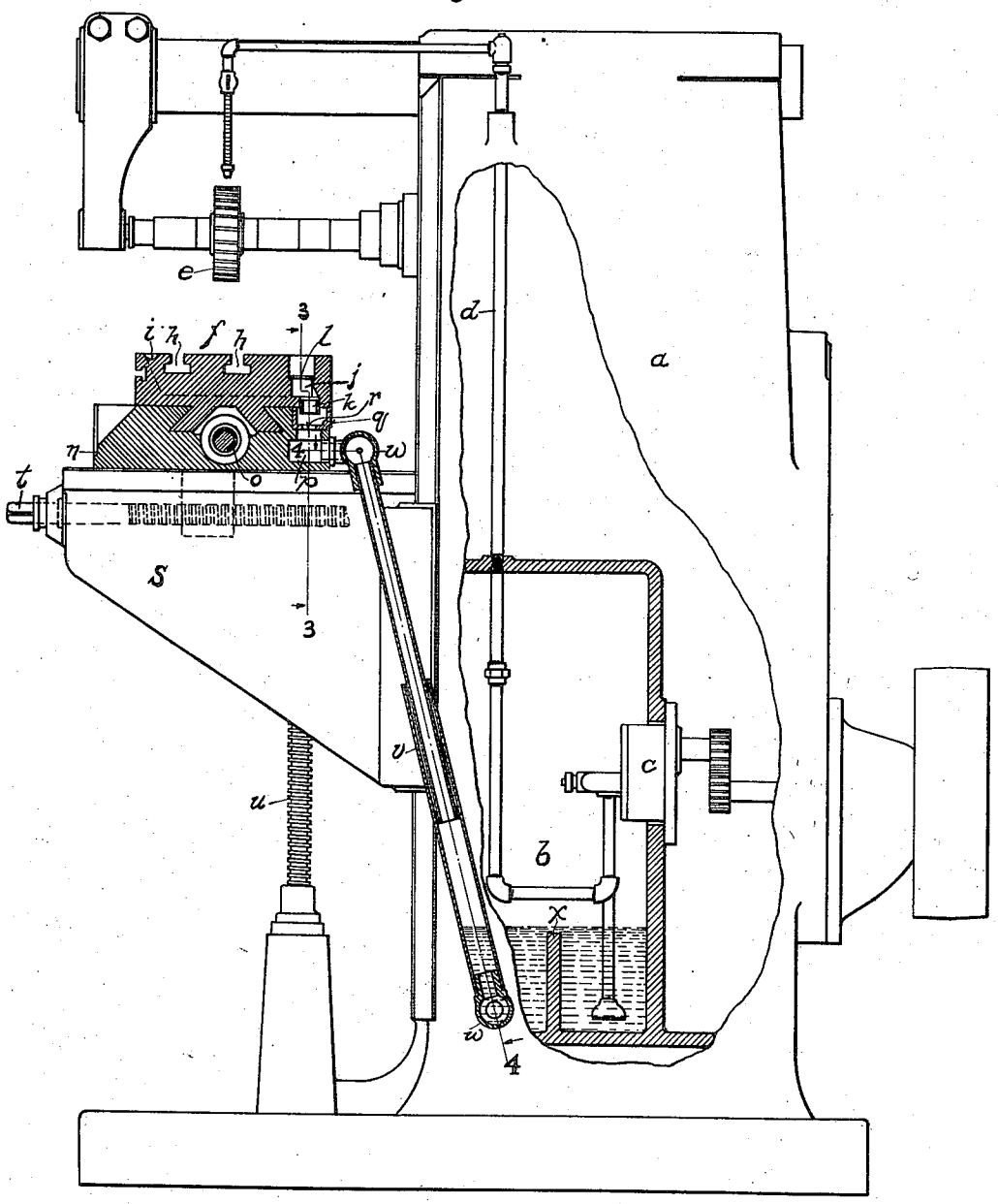
MILLING MACHINE.

APPLICATION FILED FEB. 17, 1906.

995,256. Patented June 13, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

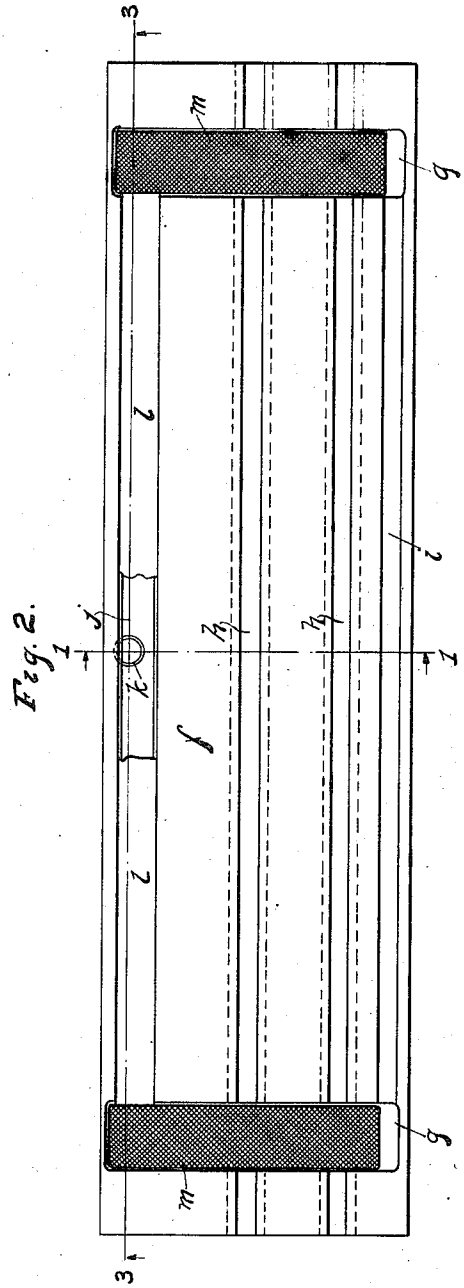

Fig. 2.

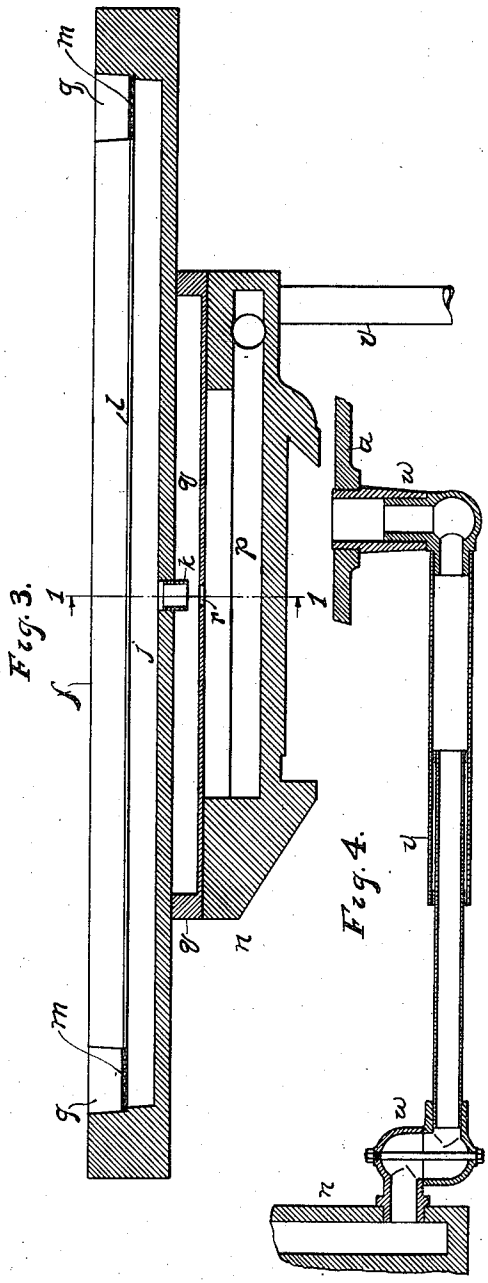

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD J. KEARNEY, OF WAUWATOSA, AND THEODORE TRECKER, OF WEST ALLIS, WISCONSIN, ASSIGNORS TO KEARNEY & TRECKER COMPANY, OF WEST ALLIS, WISCONSIN, A CORPORATION OF WISCONSIN.

MILLING-MACHINE.

995,256. Specification of Letters Patent. Patented June 13, 1911.

Application filed February 17, 1906. Serial No. 301,544.

To all whom it may concern:

Be it known that we, EDWARD J. KEARNEY and THEODORE TRECKER, citizens of the United States, residing, respectively, at Wauwatosa and West Allis, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Milling-Machines, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

The main object of this invention is to collect the oil flowing from the milling cutters on the table and return it into a well or reservoir from which it is supplied to said cutters.

It consists in certain novel features of construction and in the peculiar arrangement of parts as hereinafter particularly described and pointed out in the claims.

In the accompanying drawing like characters designate the same parts in the several figures.

Figure 1 is a partial side elevation and vertical section on the line 1—1, Figs. 2 and 3, of a milling machine embodying the present invention; Fig. 2 is a plan view of the work table; Fig. 3 is a vertical section of the table and saddle on the line 3 3, Figs. 1 and 2; and Fig. 4 is a longitudinal section on the line 4 4, Fig. 1 of the telescopic oil pipe connecting the saddle with the oil reservoir in the frame.

For the purpose of illustration the improvements constituting the present invention are shown as embodied in a plain milling machine, but with slight changes they are equally applicable to universal milling machines.

Referring to the drawing, *a* designates the frame or case, which is of the usual box or closed form. It is provided in the lower part thereof with an oil reservoir *b* from which oil is raised by a pump *c* through a pipe *d* and delivered to the milling cutter *e*.

The work table *f* is formed near the ends with transverse oil intercepting channels *g*, which intersect and extend below the bottoms of the usual T grooves or slots *h*. It is also formed along the front side with an open longitudinal channel *i* running into the transverse channels *g*, and at the back side with a deeper longitudinal channel *j*, also running at the ends into the channels *g*. Midway between its ends a discharge opening is formed through the bottom of the channel *j*, which is provided with a short piece of pipe or a nipple *k* extending a short distance below the bottom face of the table.

To exclude chips, shavings or other refuse from the channel *j* it is covered below the top of the table with a removable plate *l*, and the transverse channels *g* are provided at or below the level of this plate and of the bottoms of the grooves *h* with removable screens *m*.

The saddle or table support *n*, on which the table *f* is mounted and moved by the usual feed screw *o*, is formed with a channel *p* below and parallel with the channel *j* in the table.

A longitudinally channeled and movable slide *q* is fitted into a recess above the channel *p* flush with the top face of the saddle. It is provided midway between its ends with a discharge opening *r* through the bottom into the channel *p*, and into the channel in its upper side the discharge pipe or nipple *k* projects. The saddle is mounted in the usual manner upon the vertically adjustable knee *s*, and is adjusted thereon toward and from the frame by the screw *t*, in the usual manner, the knee being adjusted vertically by the screw *u*.

A telescopic pipe *v* having jointed connections *w* with the saddle *n* and frame *a*, connects the channel *p* in the saddle with the oil reservoir *b* in the frame. The oil reservoir *b* is provided with a partition or baffle plate *x* between the intake of the pump *c* and the connection of the pipe *v*, so that impurities carried with the oil into the reservoir through said pipe will not be taken up by the pump and delivered to the milling cutter.

As to the collection and return of oil from the work table to the reservoir from which it is supplied to the milling cutter, which are the essential functions of the present invention, the machine operates as follows: The oil delivered by the pump *c* to the cutter and flowing therefrom upon the table *f*, is caught and conducted by the grooves *h* and channel *i* and the cover plate *l* of the channel *j*, upon the screens *m* in the transverse channels *g*, from which it flows into and through the channel *j* below said plate, and

is discharged through the central opening and nipple k into the channeled slide q. In case the traverse of the table carries the oil discharge opening therein beyond the limits of the saddle on which it is mounted, the nipple k engaging with the ends of said slide, will carry it along with the table, thus maintaining constant communication between the channel in the slide and the discharge opening in the table without limiting the movement of the table and avoiding the necessity of increasing the width of the saddle in order to provide a channel coextensive in length with the extreme traverse of the table. From the slide the oil is discharged through the central discharge opening r into the channel p in the saddle from which it is conducted by the pipe v back into the reservoir b. The telescopic pipe v and its jointed connections with the saddle and frame permit the usual vertical adjustment of the saddle with the knee and the lateral adjustment of the saddle on the knee and maintain a constant conduit for the return of oil from the saddle to the reservoir.

In the application of the system to a universal milling machine the channeled slide q is mounted in the upper part or section of the saddle or table support, usually called the swivel block, and the channel in the lower part or section of the saddle into which said slide discharges and with which the telescopic pipe v connects, is formed on a curve concentric with the swivel center, so as to permit of the angular adjustment of the table without interrupting or interfering with the continuity of the oil discharge conduit.

Various changes in the details of construction and arrangement of parts may be made without departing from the principle and intended scope of the invention.

We claim:

1. In a milling machine, the combination with a work table adjustable in directions substantially at right angles to each other, of an oil reservoir located below it, and a telescopic pipe having pivotally jointed connections with said table and oil reservoir and connecting the surface of the table with said reservoir, substantially as described.

2. In a milling machine the combination of the work table having an oil intercepting channel and a discharge opening out of said channel, the saddle having an oil channel parallel with the feed movement of the table, a channeled slide carried by the saddle in communication with the discharge opening of the table and having a discharge opening between its ends into the channel in the saddle, an oil reservoir below the saddle, and a connection for conducting oil from the channel in the saddle into said reservoir, substantially as described.

3. In a milling machine the combination of the work table having transverse oil channels near the ends, a covered longitudinal channel communicating at the ends with said transverse channels and having a discharge opening between them, the saddle having a channel below and parallel with the longitudinal channel in the table, a longitudinally channeled and movable slide carried by the saddle below and in communication with the discharge opening in the table and having a discharge opening between its ends into the channel in the saddle, an oil reservoir below the saddle and an adjustable pipe connection between the saddle and said oil reservoir, substantially as described.

4. In a milling machine the combination of the work table having longitudinal T grooves or slots, transverse oil channels intersecting said grooves near the ends and extending below them, and a longitudinal groove communicating at the ends with said channels and having a discharge opening between them, a removable cover for said longitudinal channel, screens in the transverse channels below said T grooves, the saddle having a channel below and parallel with the longitudinal channel in the table, a longitudinally channeled and movable slide carried by the saddle in communication with the discharge opening of said table and having a discharge opening between its ends into the channel in the saddle, an oil reservoir below the saddle and an adjustable pipe connection between the saddle and said oil reservoir, substantially as described.

5. In a milling machine the combination with the frame having an oil well or reservoir in the lower part thereof, of a vertically adjustable knee, the saddle adjustable on said knee toward and from the frame and having an oil channel, the work table movably mounted on said saddle and having a longitudinal oil channel parallel with the channel in the saddle and a discharge opening between its ends, a longitudinally channeled and movable slide carried by the saddle in communication with the discharge opening of the table and having a discharge opening between its ends into the channel in the saddle, and a telescopic pipe having jointed connections with the saddle and frame and connecting the channel in the saddle with the oil reservoir, substantially as described.

6. In a milling machine the combination with the frame having an oil reservoir in the lower part thereof and a pump for lifting oil therefrom to the milling cutter, of the work table having oil intercepting channels and a discharge opening in communication with said channels, the saddle on which said table is movable mounted having a channel parallel with the feed movement of the table, a longitudinally movable and channeled slide carried by the saddle in communication with

the discharge opening of the table and having a discharge opening into the channel in the saddle, and a telescopic pipe having jointed connections with the saddle and frame and connecting the channel in the saddle with the oil reservoir, substantially as described.

7. In a milling machine the combination of the work table having transverse channels intersecting the T grooves or slots near the ends, an open longitudinal channel on the front side, a deeper longitudinal channel on the back side having a discharge opening between its ends and a removable cover below the top of the table, screens in the transverse channels below said cover and the bottoms of the T grooves, the saddle having a channel below and parallel with the back channel in the table and communicating with the discharge opening therein, and an adjustable pipe connecting the channel in the saddle with the oil reservoir in the frame, substantially as described.

8. In a milling machine the combination of an oil reservoir, a vertically and horizontally adjustable support having an oil channel, a work table movably mounted on said support and having an oil collecting channel, a channeled slide movable between said table and its support in the direction of the table movement and arranged to receive oil from the channel in said table and to discharge the same into the channel in said support, and a connection for conducting oil from the channel in said support into said reservoir, substantially as described.

9. In a milling machine the combination with a table support having an oil channel, a channeled slide movably mounted on said support and having a discharge opening into said channel, and a work table movable on said support in the direction of the slide movement and having an oil collecting channel communicating with the channel in said slide, substantially as described.

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

EDWARD J. KEARNEY.
THEODORE TRECKER.

Witnesses:
G. A. WEBER,
F. L. TENNEY.