To all whom it may concern:

Be it known that I, CLYDE D. HELM, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Hydraulic-Pressure and Time Indicators, of which the following is a specification.

My invention relates to indicators, and more particularly to indicators for recording the times when hydraulic cylinders are in operation and to indicate when the pressure in the cylinders goes below the required pressure. The device is particularly useful in cotton seed oil mills to prevent waste of oil. If a press stops working, as when through the carelessness of an employee, oil will waste. The object of this invention is to provide a simple device which will instantly indicate the time when the required pressure ceases and to record the time when the press stops and when it starts.

Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Figure 1 is a perspective view of the indicator. Fig. 2 is an enlarged interior elevation showing the relative parts and the operating parts. Fig. 3 is a plan view of the interior mechanism. Fig. 4 is a detail view of the main operating pulley. Fig. 5 is a detail plan view of the recording dial and the release thereof. Fig. 6 is a side elevation of the recording dial. Fig. 7 is a detail view, showing the recording strip which is fed from the indicator during operation.

Similar characters of reference are used to indicate the same parts throughout the several views.

The indicator herein set forth is a time operated indicator, a clock being inclosed in a casing 1 which is attached to the main casing 2. The clock is provided with a projecting shaft 3 which is connected to the shaft 4 by clutch jaws 5. The operating mechanism is provided with a frame composed of two members. One frame member has arms 6 at the upper side and at the lower side, the frame substantially I-shaped, and this frame is attached to the casing 2 by sleeved bolts 7. The other frame member has arms 8 which are attached to the arms 6 by bolts 9. A pulley 10 is rigid with shaft 4 and is driven by the clock mechanism. The pulley 10 serves as the recording-strip feeder and as a bearing for the dial recording wheel 11. The recording-strip 12 is wound on a drum 13 which is journaled in loose or open bearings 14 which are formed on the lower frame arms 6 and 8. The drum 13 will be held in place by gravity. The frame members are provided with open bearings 15 and a gravity pulley 16 cooperates with the main pulley 10 for feeding the strip 12. When the clock mechanism drives the pulley 10, the pulley 16 clamps the strip 12 thereon by gravity and in this manner the strip 12 is fed forward off the drum 13. The strip 12 is provided with figures indicating the hours and minutes and marks for indicating the seconds and the hours. The recording strip 12 is timed with the clock when the device is started or set to work. The recording strip will be fed regularly forward whether any record is made or not. When there is no record made, this shows that the press is not being operated. A dial wheel punch 11 is provided for making records on the strip 12. The wheel is provided with radial teeth on the periphery thereof which will perforate the strip 12 for the purpose of making records thereon. This wheel will be operated by friction and for indicating the hours on the teeth of the wheel. The wheel 11 is carried in spring controlled bearing arms 17 which are rigid with a shaft 18 which is journaled in upper arms 6 and 8. A spring 19 is coiled about one part of the shaft 18 and is caught on the arm 6 at one side and the other end of the spring bears down on the bearing arms 17. In this manner the wheel 11 is made to perforate the strip 12. Working connection of the wheel 11 and the pressure in the hydraulic cylinders is made as follows: A pipe 20 is to be connected to the hydraulic cylinder and a curved pipe 21 is connected to the pipe 20. The curved pipe 21 is closed at the end 22 and is provided with a projecting arm 23 which carries a gage screw 24. The screw 24 is adapted to engage a release 25 which is adapted to lift the dial wheel 11 out of contact with the strip 12. When the press is not running the arm 23 will press the screw 24 down on.
the release bar 25 and thus lift the wheel 11 out of contact with the strip 12. The release bar is provided with a pivot shaft 26 which is provided with bearings 27 in the arms 6 and 8, the ends of the shaft being pointed to engage the bearings 27. The bar 25 is bifurcated to receive the wheel 11 and is provided with a cross bar 28 for lifting the spring-controlled arms 17. When the screw 24 bears down on the release bar 25, this bar will lift the wheel 11 out of contact with the strip 12 by means of the bar 28. When the pressure is kept up to the required amount in the hydraulic cylinder, the pressure, acting through the pipe 29 and the curved pipe 31 will tend to expand or straighten out and thus lift the screw 24 off the release bar 25. The spring 19 will instantly throw the wheel 11 down on the strip 12 and thus commence perforating the strip to indicate that the hydraulic press is operating with the required pressure. When the hydraulic press is not operating, there will be no pressure in the pipe 21 and this pipe will go back to normal position and press down on the screw 24 and thus cause the bar 25 to release the wheel 11 from the strip 12. The pulley 10 has an annular peripheral groove 29 so that the teeth of wheel 11 will not strip anything except the paper strip 12. The shaft 4 of wheel 10 is provided with ball bearings which are inclosed in the cups 30.

For convenience in attending to the interior parts, a door 31 is hinged to the casing at 32 and provided with a knob 32.

What I claim, is—

1. A pressure indicator and recorder comprising a recording strip, a time-actuated mechanism for feeding said strip forward continuously, a recording dial for perforating said strip standing normally out of engagement with said strip, and operative connections of said dial with the cylinder whose pressure is to be indicated and recorded including a bent pipe connected to said cylinder and controlling devices for causing said dial to engage and perforate said strip when the required pressure is in said cylinder and for disengaging said dial from said strip when the pressure in said cylinder is insufficient or ceased.

2. A pressure indicator and recorder comprising a record strip, a time-actuated mechanism for feeding said strip forward continuously, a recording dial for perforating said strip standing normally out of engagement of said strip, and operative connection of said dial with the cylinder whose pressure is to be indicated and recorded for causing said dial to engage and perforate said strip when the required pressure is in the cylinder and for disengaging said dial from said strip when the pressure in said cylinder is insufficient or has ceased.

3. A pressure indicator and recorder comprising a record strip, a time-actuated mechanism and gearing for feeding said strip forward continually, a recording dial for perforating said strip standing normally out of engagement with said strip, and operative connections of said dial with the cylinder whose pressure is to be indicated and recorded including a bent pipe connected to said cylinder and controlling devices for causing said dial to engage and perforate said strip when the required pressure is in said cylinder and for disengaging said dial from said strip when the pressure in said cylinder is insufficient or ceased.

4. A pressure indicator and recorder comprising a strip containing marks indicating hours and minutes, a time-actuated mechanism for feeding said strip forward continuously, a recording dial standing normally out of engagement with said strip, and operative connections of said dial with the cylinder whose pressure is to be indicated and recorded including a bent pipe having communication with the interior of said cylinder and a regulating screw carried by said pipe and a controlling device to be engaged by said screw for causing said dial to engage said strip and perforate the same when the required pressure is in said cylinder and to disengage said dial from said strip when the pressure in said cylinder is insufficient or ceased.

5. A pressure indicator and recorder comprising a record strip, a time-actuated mechanism for feeding said strip forward continually, a recording dial standing normally out of engagement with said strip, a spring for causing positive action of said dial, and operative connections of said dial with the interior of the cylinder whose pressure is to be indicated and recorded including a bent pipe and controlling devices causing said dial to engage said strip when the required pressure is in said cylinder and for disengaging said strip when the pressure in said cylinder is insufficient or ceased.

6. A pressure indicator and recorder comprising a record strip, a time-actuated mechanism for feeding said strip forward continually, including a bearing wheel having an annular groove therein and supporting said strip and a gravity-actuated wheel bearing on said strip, a recording dial standing normally out of engagement with said strip, operative connection of said dial with the cylinder whose pressure is to be indicated and recorded including a bent pipe communicating with the interior of said cylinder, a spring for causing positive action of said dial, and means controlled by said bent pipe for causing said dial to engage said strip when the required pressure is in said cylinder and for disengaging said dial from said strip when the required pressure in said cylinder ceases.

7. A pressure indicator and recorder comprising a record strip, a time-actuated mechanism and gearing for feeding said strip forward continually, a recording dial for perforating said strip standing normally out of engagement with said strip, and operative connections of said dial with the cylinder whose pressure is to be indicated and recorded including a bent pipe connected to said cylinder and controlling devices for causing said dial to engage and perforate said strip when the required pressure is in said cylinder and for disengaging said dial from said strip when the pressure in said cylinder is insufficient or ceased.
prising a record strip, a time-actuated mechanism for feeding said strip continually forward, including a pulley having an annular peripheral groove supporting said strip and a gravity actuated idler cooperating therewith, a toothed dial adapted to make perforations in said strip by striking therethrough into said grooves, and means operatively connected with said dial and with the interior of the cylinder whose pressure is to be recorded and indicated for causing said dial to engage said strip when the required pressure is in said cylinder and to disengage said dial from said strip when the required pressure ceases and when there is no pressure in said cylinder.

In testimony whereof, I set my hand, this 31st day of January, 1918.

CLYDE D. HELM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."