T. BELL.

AUTOMATIC TIME CHECK FOR OIL PRESSES AND OTHER MACHINES.

APPLICATION FILED AUG. 9, 1913.

1,139,251. Patented May 11, 1915.

Fig. 1.

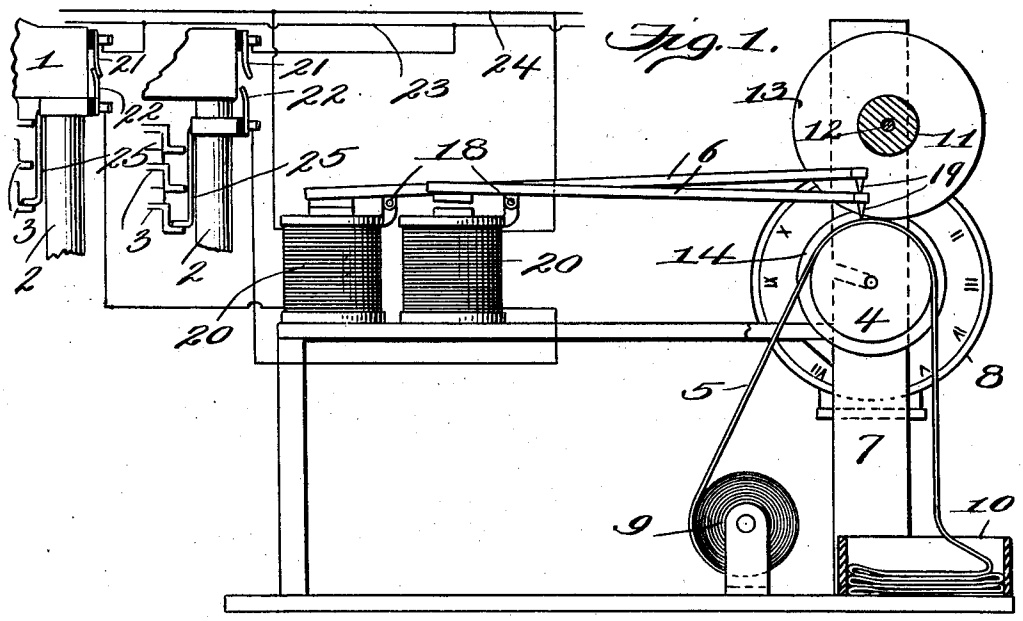
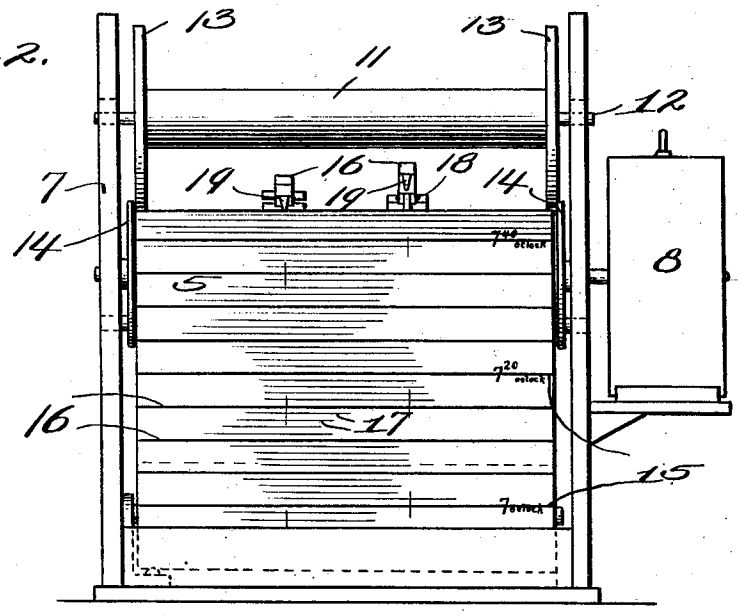


Fig. 2.



Witnesses:

E. F. Kelen

M. E. McNade

Inventor

Thomas Bell

By James L. Norris

Attorney

UNITED STATES PATENT OFFICE.

THOMAS BELL, OF TYLER, TEXAS.

AUTOMATIC TIME-CHECK FOR OIL-PRESSES AND OTHER MACHINES.

1,139,251. Specification of Letters Patent. Patented May 11, 1915.

Application filed August 9, 1913. Serial No. 783,997.

To all whom it may concern:

Be it known that I, THOMAS BELL, a citizen of the United States, residing at Tyler, in the county of Smith and State of Texas, have invented new and useful Improvements in Automatic Time-Checks for Oil-Presses and other Machines, of which the following is a specification.

This invention has for its object to provide a device for indicating or recording the times during which machines of different kinds are working or in operation and when they are idle, thereby affording a check upon the efficiency of the workmen or attendants and also affording means for ascertaining whether the machinery or apparatus in a plant is working to its full capacity.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing:—Figure 1 is a diagrammatic view showing one embodiment of the invention; Fig. 2 is a view of the recording part of the device.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to machines or apparatus of various kinds, and it will be understood that the invention is not limited in this respect. In the present instance, the invention is shown applied to oil presses for the purpose of recording the length of time the presses are not in operation and the length of time each press is in operation. In the construction shown, the upper portions of two presses are illustrated diagrammatically, 1 designating the heads of the presses which are held by the posts 2, and 3 designates the press boxes which may be of the usual construction and are lifted as the ram or plunger rises to compress the oil cakes between the press boxes. When the presses are idle for filling, the press boxes are lowered, and the slack between the boxes is taken up when the ram or plunger rises. The recording apparatus as shown in the present instance embodies a roller 4, a tape 5 which passes over the roller, and a suitable number of markers 6 which correspond in number to the number of machines to which the recording device is connected and which are arranged to move into and out of contact with the tape as it passes over the roller 4. The roller 4 is mounted in a suitable frame 7 and it is revolved at a predetermined and constant speed by a clock motor 8 or equivalent means. The tape 5 may be fed from a roll 9 to the roller 4 and from the roller 4 into a receptacle 10. Suitable means is preferably provided for insuring movement of the tape at the same constant speed as the roller 4. In the present instance, a roller 11 is provided which has its shaft ends 12 guided to move vertically in the frame 7, and this roller is provided with end flanges 13 which bear on the tape 5 adjacent to its marginal edges. The tape-operating roller 4 is also preferably provided with end flanges 14 which serve to guide the tape. The tape is printed or marked with graduations corresponding to or representing periods of time. As shown, the tape is provided with transverse graduations 15 at regular intervals, each representing, for example, twenty minutes, the space between each pair of graduations 15 is sub-divided into graduations 16, each of which represents, for example, five minutes, and the space between each pair of graduations 16 is further divided into graduations 17, each of which represents one minute. The roller 4 is driven by the clock at such a speed that one of the graduations 17 will pass a given point every minute, one of the graduations 16 will pass a given point every five minutes, and one of the graduations 15 will pass a given point every twenty minutes. The markers 6 are mounted on pivots 18 and gravity causes the marking points 19 thereon to normally rest upon the traveling tape 5 and thereby produce lines longitudinally on the tape. Preferably, the markers rest upon the tape while the machines to which they are connected are idle, and when such machines are in operation, the points of the markers are lifted from the tape, thereby interrupting the lines. In the construction shown, each marker is provided with a magnet 20 which, when energized, will lift the point of the respective marker from the tape. The recording device as described may be located in an office or at any desired distance from the machines and connected to the latter electrically. As shown, a pair of switch points 21 and 22 are provided on

the machine, the switch points 21 in the present instance being attached to the stationary part or head of the machine or press and are electrically connected to a conductor 23 leading from any suitable source of electric current supply, and the switch points 22 are connected to the moving parts of the machine and are electrically connected to the magnet for the respective markers, these magnets being electrically connected to the return conductor 24. The switch members or points can be connected in various ways to the machines from which the records are to be made. In the example shown, the movable switch members 22 are guided to slide vertically on the press posts 2 and have arms 25 adapted to be engaged and lifted by one of the press boxes when the press boxes are lifted by the lifting or working stroke of the ram, the movable member of the switch being thereby engaged with the other stationary switch member, thus closing a circuit through the corresponding magnet which energizes it and lifts the corresponding marker from the traveling tape.

In checking the operation of a hydraulic press by the aid of a device such as that just described, it will be understood that each press is filled, the press boxes are raised to the proper height to express the oil, and the press boxes are then lowered and emptied every twenty minutes, and it is desirable to keep a record of what part of the twenty minutes is consumed while the press is down for filling and the pressure is off, and what part of the time the press is up under pressure and working, for the reason that the greatest efficiency is obtained when the press is up and working under pressure during the maximum part of the time, thus avoiding loss or waste of time in filling. The device provided by the present invention insures an accurate record of the times during which the press or machine is working or in operation and when the machine is idle, as the graduated tape enables one to determine instantly the duration of the periods when the press or machine is idle by noting the lengths of the lines made thereon by the markers, the graduations on the tape enabling these readings to be made directly or without computation. The distance between the ends of any two adjacent lines marked on the tape by the markers will show the period during which the press is working or in operation.

I claim as my invention:—

1. The combination of an oil press having a relatively fixed head and movable press boxes, a record member having graduations representing periods of time, means for moving the record member at a constant speed, a marking device coöperative with the record member, and electrical means embodying contacts connected to the head and one of the press boxes of the press and governed according to the operation of the latter for automatically controlling the engagement and disengagement of the marking device relatively to the record member.

2. The combination of an oil press having a relatively fixed head and a movable press box, a tape, means for moving the tape, a marking device movable to and from operative relation with the tape, and electrical means embodying contacts connected to the head and one of the press boxes of the press and governed according to the operation of the latter for automatically controlling such movements of the marking device.

3. The combination of an oil press having a relatively fixed head and movable press boxes, a tape, means for moving the tape at a constant speed, a device adapted to produce a mark on the tape while said device is in engagement therewith, said device being movable to and from engagement relatively to the tape, and electrical means embodying contacts connected to the head and one of the press boxes of the press and governed according to the operation of the latter for automatically controlling such movements of said marking device.

4. The combination of a machine having parts movable into and out of engagement when the same is in operation and idle respectively, a recording member having means for moving it at a constant speed, a marking device normally engaging the recording member, and means embodying electrical contacts controlled by the engagement and disengagement of said parts and operative automatically during the whole of the working operation of the machine for disengaging the marking device relatively to the recording member.

5. The combination of a machine embodying parts movable relatively to one another when the machine is in operation or idle, a recording member having means for moving it at a constant speed, a marking device, and means embodying electrical contacts, the engagement and disengagement of which is controlled by the relative positions of said parts for causing the marking device to engage and operate upon the recording member while the machine is idle and to disengage therefrom while the machine is in operation.

6. The combination of an oil press having a relatively fixed head and movable press boxes, a recording member having means for moving it, a marking device movable to and from engagement with said recording member, an electro-magnet, contacts connected in circuit with said magnet and attached to the fixed head and one of the press boxes of the press and controlled

by the latter to disengage the marking device relatively to the recording member during the whole of the period of operation of the press.

7. The combination of an oil press having a relatively fixed head and movable press boxes, a recording member having means for moving it, a marking device movable to and from engagement with said recording member, and electro-magnetic means embodying contacts connected to the fixed head of one of the press boxes and operative automatically by the press to control the engagement and disengagement of the marking device relatively to the recording member according to the periods of idleness and operation respectively of the press.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS BELL.

Witnesses:
CHAS. W. MCCLENDON,
J. C. LINDSAY.