

Aug. 14, 1928.

1,680,729

E. DAVIS

MECHANICAL MOVEMENT FOR PRESSING MACHINES

Filed Oct. 16, 1925

2 Sheets-Sheet 1

Fig. 2.

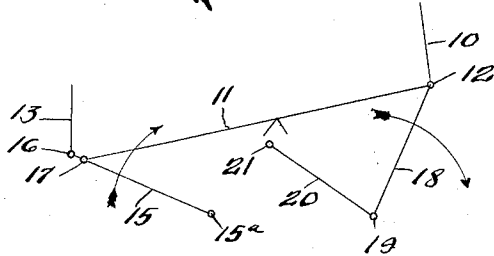
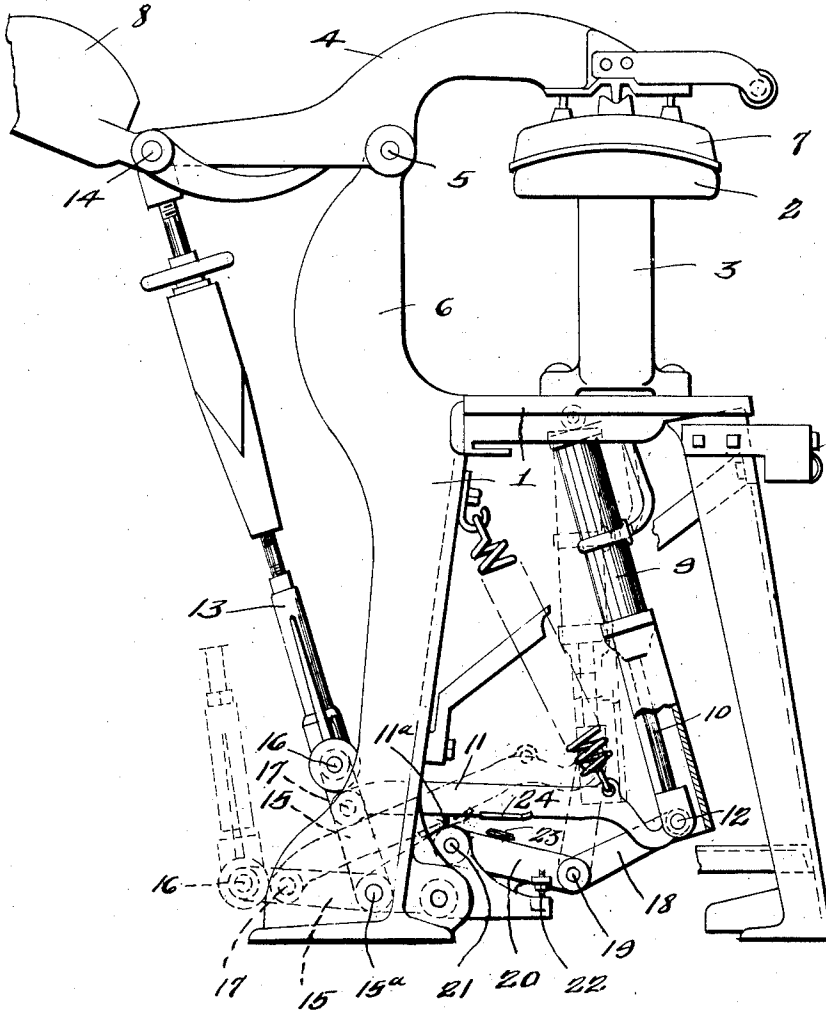


Fig. 1.



INVENTOR.

E. Davis
BY *James A. Rodell*
ATTORNEYS.

Aug. 14, 1928.

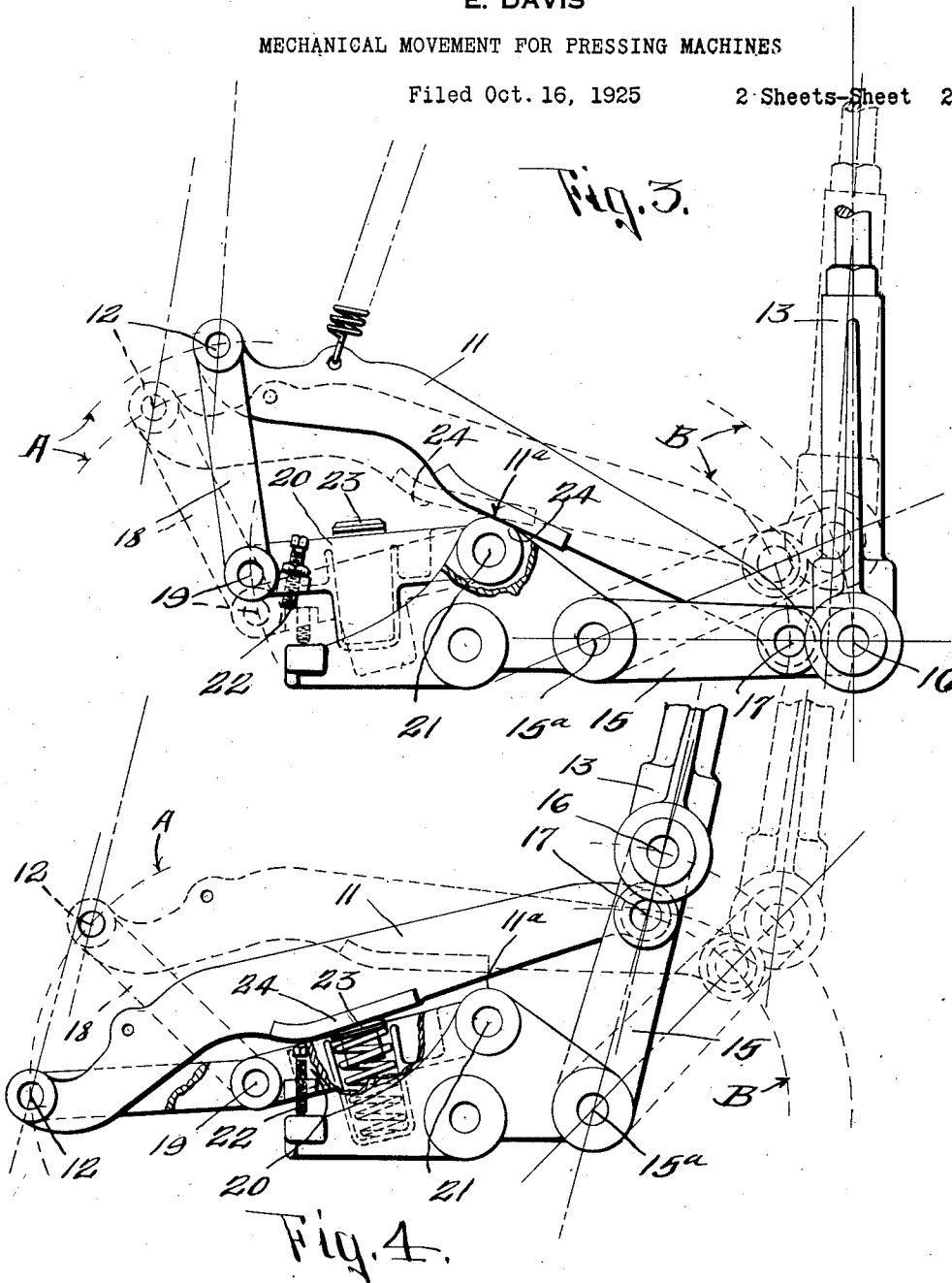
1,680,729

E. DAVIS

MECHANICAL MOVEMENT FOR PRESSING MACHINES

Filed Oct. 16, 1925

2 Sheets-Sheet 2



INVENTOR.

Ernest Davis

BY

Sawyer & Brodell.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ERNEST DAVIS, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE PROSPERITY COMPANY
INC., OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

MECHANICAL MOVEMENT FOR PRESSING MACHINES.

Application filed October 16, 1925. Serial No. 62,921.

This invention has for its object a particularly simple and efficient mechanical movement or power transmitting mechanism particularly adaptable for garment and laundry pressing machines having a movable pressing element as a press head which moves toward and from a second pressing element or buck.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a side elevation, partly in section, of a pressing machine embodying this mechanical movement, the machine being shown with its pressing elements in closed position.

Figure 2 is a diagrammatic view illustrating the position of the parts of the mechanical movement when the pressing machine is open.

Figures 3 and 4 are enlarged detail views of the parts of this mechanical movement and contiguous parts, the parts of the movement being shown in starting and final positions in Figures 3 and 4 respectively and in certain intermediate positions in broken lines.

1 designates the frame of a pressing machine.

2 the buck carried by the standard or goose neck 3 mounted on the frame.

4 designates a yoke or lever pivoted at 5 between its ends to a standard 6 rising from the frame, the yoke 4 carrying the movable press head 7 at its front end being connected to the actuating mechanism at its rear end. The mechanical movement is for transmitting the power from an actuator or motor to the press head 7 or the yoke 4.

The mechanical movement to be presently described acts first with a comparatively powerful lever action to overcome the inertia of the press head 7, yoke 4 and counterweight 8 attached thereto thereafter to act as a crank and connecting rod to move the press head quickly toward closed position and then apply heavy pressure so that the entire closing movement is even and without shock or jar.

The pressing machine and parts heretofore

described may be of any suitable form, size and construction.

The actuator is shown as a piston movable in the cylinder 9 and having its rod 10 connected to part of the mechanical movement. The cylinder is suitably carried by the frame and the motive power may be steam or air or any other medium. The mechanical movement is particularly efficient when used in connection with a reciprocating actuator or piston as at the beginning of the power stroke of the piston, the inertia of the head 7, yoke 4 and other stationary parts is overcome by a direct thrust and during the intermediate part of the stroke the head closes easily and rapidly upon small movement of the piston and during final closing of the press maximum pressure is applied during a comparatively great movement of the piston. Ordinarily, the maximum pressure would be applied during the extreme last short part of the stroke of a piston.

This mechanical movement comprises generally a lever, a fulcrum for the lever between the ends thereof, an actuator connected to one end of the lever, a driven element connected to the other end of the lever and means for guiding and causing the lever to act successively as a lever and as a pull link or connecting rod during the power stroke of the actuator, that is, first the lever tilts on its fulcrum to overcome the inertia of the driven part as the head 7 and yoke 4 and thereafter acts as a pull link actuated by a crank movement.

11 designates the lever and 11^a the fulcrum for the lever between the ends thereof, this fulcrum being provided on the frame, one end of the lever being pivoted at 12 to the piston rod 10 and the other end being connected to the lower end of a driven part as a toggle including a thrust link 13 which is pivoted at 14 at its upper end to the rear arm of the yoke 4 and a link 15.

The means for causing the lever to act successively as a lever and a pull link, guides the power end of the lever so that it has a crank movement for the purpose of straightening a toggle consisting of the thrust link 13 and another link 15. The link 15 forms no part of the mechanical movement and is pivoted at 15^a to the frame and at 16 to the lower end of the link 13, the le-

ver 11 is pivotally connected at 17 to the link 15. This means causes the power end of the lever to move in an arc A and act as a crank, and comprises a link 18 pivoted at one end to the power end of the lever 11, it being here shown as mounted on the pivot 12, and at its other end at 19 to a point fixed from movement with the lever 11; although this pivotal point 19 shifts slightly relatively to the frame.

As here illustrated, the link 18 is pivoted at one end to a second link 20 which is pivoted at its other end at 21 to the frame. The pivot 21 also supports the fulcrum 11^a which is a roller on said pin 21. An adjustable stop 22 carried by the link 20 limits the downward movement of the link 20 and hence the slight shifting movement of the pivot 19, this stop coacting with a shoulder on the frame. A suitable spring pressed buffer 23 is carried by the link 20 for coacting with the lever 11 at 24 when the press is closed, this buffer 23 serving to press the link 20 to carry the stop 22 toward the shoulder on the frame as the press is being closed. This spring pressed buffer also serves to start or give a starting impulse to the lever 11 when the flow of motive fluid or air to the cylinder is discontinued or exhausted.

The pivotal points 19 and 15^a are located between vertical planes passing through the ends of the lever 11 and are located below the lever and on the opposite side of the fulcrum point. The arc A of the link 18 and the arc B of the link 15 thus have different centers and the pivot points 12 and 17 have radii of different lengths.

When the press is open the link 15 is normally arranged in horizontal position so that the toggle formed by the link 13, 15 is folded, and the link 18 normally stands upright at a right angle or at an acute angle to the lever 11 and during the power stroke moves into an angle with the lever 11 less than said acute angle and into a position approaching a straight line with the link 20.

Assuming that the press is open, during the initial part of the power stroke of the piston rod 10, the lever 11 rocks on its fulcrum 11^a and thus transfers a straight thrust to the link 13 causing the inertia of the head 7, yoke 4 and parts thereto to be instantly overcome, then the head moves quickly to nearly closed position while the link 13 is traveling from the dotted line position shown in Figure 3 to the dotted line position shown in Figure 4. During such closing movement the link 11 moves from the position shown in full lines Figure 3 toward that shown in Figure 4 in dotted lines. During the first impulse or thrust of the piston rod 10 and while the lever 11 is initially rocking on its fulcrum 11^a, the front end of the lever or the pivot point 12 moves down-

wardly in an almost vertical line. Also, the link 18 moves rectilinearly downwardly and while it is so doing, the link 20 swings on its pivot 21 until the adjustable stop 22 engages the shoulder on the frame and limits the downward movement of the link 20 and the link 18. During such straight downward thrust, the inertia of the head and other parts is overcome. After the stop 22 bottoms on the shoulder on the frame, the swinging or crank movement of the link 18 begins. The links 20 and 18 constitute one form of means for guiding and causing the lever to act successively as a lever and as a pull link.

During such closing movement, the lever moves relatively to its fulcrum 12 and lifts off of such fulcrum and acts as a pull link or connecting rod to close the toggle consisting of links 13, 15, and the toggle is completely closed during the final movement of the lever 11 as a pull link, when the link 18 is moving from its position shown in dotted lines Figure 4, to that shown in full lines. This link 18 effects a crank action by which the power is being applied while the piston is in most effective position in the cylinder and while the link 18 is traveling in a long arc.

One end of the lever 11 moves downwardly in the arc A and the other end of the lever moves upwardly in the arc B, these arcs having different centers and different radii and owing to their arrangement the final pressure is applied through a crank and pull link movement.

What I claim is:

1. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, an actuator pivoted to one end of the lever, a driven element connected to the other end of the lever and means for guiding the power end of the lever downwardly in an arc and the other end of the lever upwardly and lifting the same off its fulcrum whereby the lever acts as a pull link.

2. A mechanical movement comprising a combined power lever and pull link and a fulcrum for said lever and pull link, an actuator connected at one end of the lever and the pull link and a driven element connected to the other end of the lever and pull link and means for guiding the power end of the lever downwardly in an arc and the driven end of the lever upwardly in an arc having a different center from the former arc whereby the lever shifts relatively to its fulcrum and acts as a pull link.

3. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, and an actuator connected to one end of the lever, a driven element connected to the other end of the lever and means for guiding the

power end of the lever downwardly in an arc and the driven lever upwardly in an arc, the arcs being of different radius and having different centers whereby the lever initially
 5 rocks on its fulcrum to transmit power and thereafter lifts off the fulcrum and acts as a pull link.

4. A mechanical movement for transmitting power comprising a lever, a fulcrum for
 10 the lever between the ends thereof, an actuator acting on one end of the lever and a driven element pivotally connected to the other end of the lever and means for guiding and causing the lever to act successively as
 15 a lever and a pull link during the power stroke of the lever.

5. A mechanical movement comprising a frame, a lever fulcrumed on the frame, an actuator connected to one end of the lever,
 20 motion transmitting mechanism comprising a link pivoted to the frame and to the other end of the lever and means for causing the power end of the lever to have a crank like movement and cause the lever to serve as a
 25 pull link.

6. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, an actuator acting on one end of the lever and a
 30 driven element pivotally connected to the other end of the lever and means for guiding and causing the lever to act successively as a lever and a pull link during the power stroke of the lever, said means comprising a
 35 link pivotally connected to the power end of the lever at one end and pivotally connected at its other end to a point fixed from movement with the lever.

7. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, an actuator acting on one end of the lever and a driven element pivotally connected to the
 40 other end of the lever, a link pivoted at one end to the lever and at its other end at a point held from movement with the lever and the link normally extending at an acute angle relatively to the lever.

8. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, an actuator acting on one end of the lever and a driven element pivotally connected to the
 50 other end of the lever, a link pivoted at one end to the lever and a second link pivoted to the other end of the former link and to a fixed point and a stop for limiting the movement of the second link, the first link normally extending at an acute angle to the
 55 lever and being movable during the power stroke into a position approaching a straight line with the second link.

9. A mechanical movement for transmitting power comprising a lever, a fulcrum for
 65 the lever between the ends thereof, an actuator acting on one end of the lever and a driven element pivotally connected to the other end of the lever, a link pivoted at one end to the lever and at its other end at a point held from movement with the lever, the link normally extending at an acute angle relatively to the lever and the third lever pivoted at one end to a fixed point and near its other end to the driven end of the lever, the pivotal points of the links being
 75 located between vertical planes passing through the ends of the lever.

10. A mechanical movement for transmitting power comprising a lever, a fulcrum for the lever between the ends thereof, an actuator acting on one end of the lever and a driven element pivotally connected to the other end of the lever, a link pivoted at one end to the lever and a second link pivoted to the other end of the former link and to a
 80 fixed point and a stop for limiting the movement of the second link, the first link normally extending at an acute angle to the lever and being movable during the power stroke into a position approaching a
 85 straight line with the second link and the third lever pivoted at one end to a fixed point and near its other end to the driven end of the lever, the pivotal points of the links being
 90 located between vertical planes passing through the ends of the lever.

11. A mechanical movement for transmitting power comprising a frame having a fulcrum, a lever for engaging the fulcrum, an actuator pivoted to one end of the lever, a
 100 link pivoted at one end to such end of the lever and at its other end to the frame under the lever and between the fulcrum point of the lever and the power end of the lever, a second link pivoted to the frame under
 105 the lever between the fulcrum point and the driven end of the lever, a driven element pivoted to the other end of the second link, the lever being also pivoted to the second
 110 link.

12. A mechanical movement for transmitting power comprising a frame having a fulcrum, a lever engaging the fulcrum, an actuator connected to one end of the lever, a
 115 link pivoted at one end to such lever, a second link pivoted to the frame below the lever and extending in the general direction of the lever, the second link being normally arranged at an angle to the first link and being pivoted thereto, means for limiting
 120 the downward swinging movement of the second link, all whereby the lever is first actuated on its fulcrum until the movement of the second link is limited and thereafter the
 125 first link acts as a crank.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and in the State of New York, this 14th day of October, 1925.

ERNEST DAVIS.