

(No Model.)

F. M. LEAVITT.
ADJUSTABLE POWER PRESS.

No. 518,847.

Patented Apr. 24, 1894.

FIG. 2.

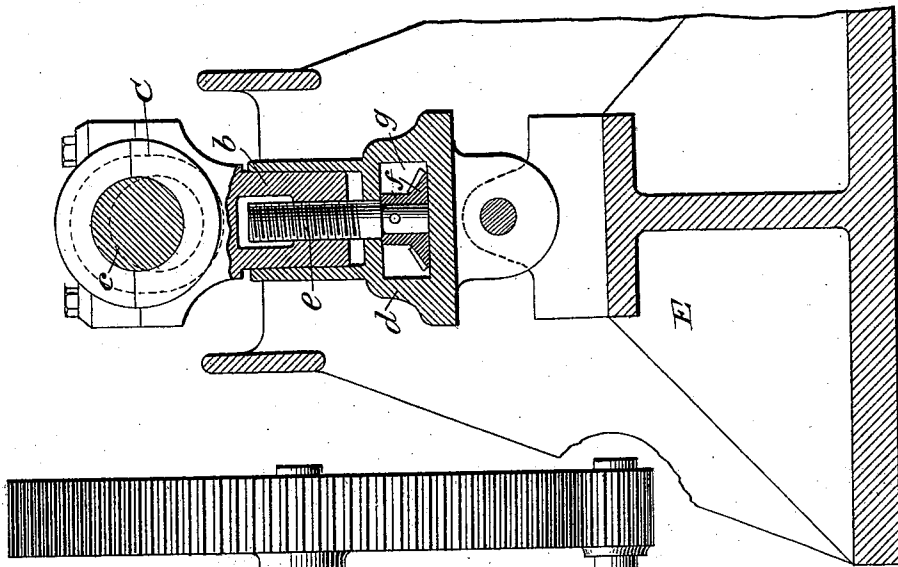
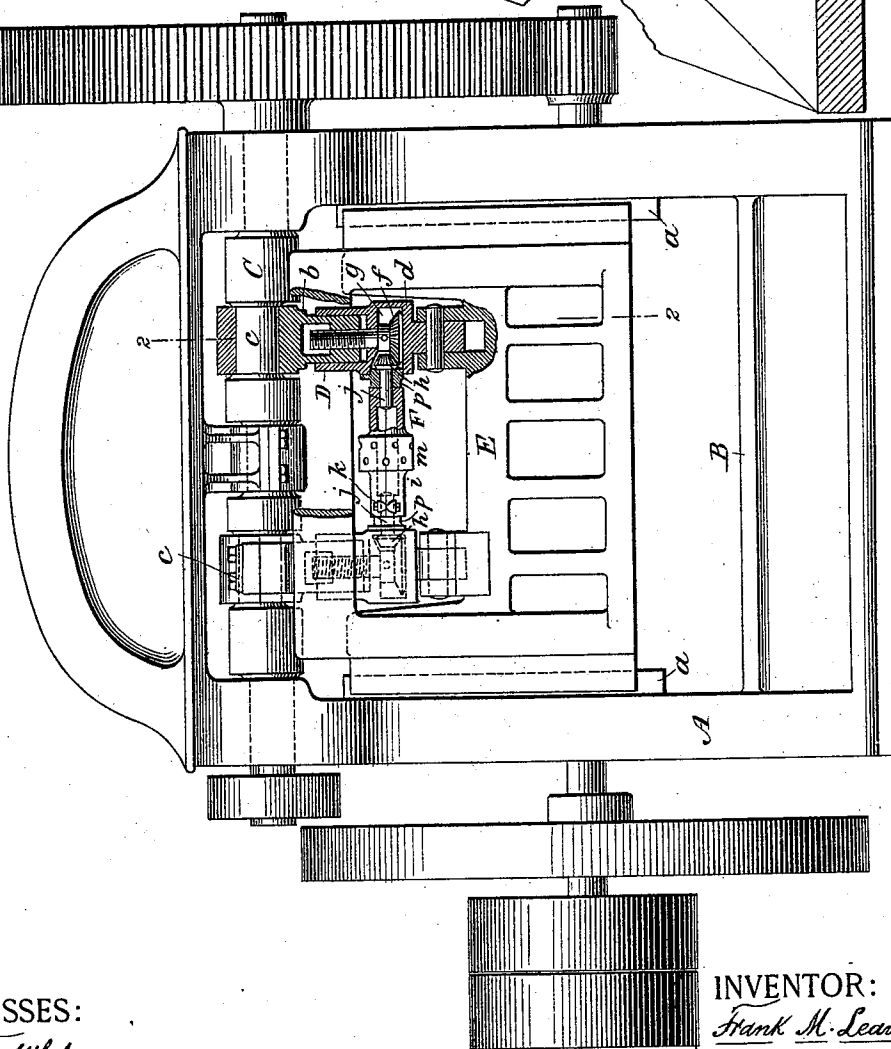


FIG. 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK M. LEAVITT, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE E. W. BLISS COMPANY, OF SAME PLACE.

ADJUSTABLE POWER-PRESS.

SPECIFICATION forming part of Letters Patent No. 518,847, dated April 24, 1894.

Application filed July 8, 1893. Serial No. 479,916. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. LEAVITT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Adjustable Power-Presses, of which the following is a specification.

This invention relates to power presses wherein a reciprocating sliding head or platen is actuated from a crank shaft through a pitman or connecting rod which is adjustable in length in order to bring the stroke of the head closer to or farther from the bed of the press. In such presses for especially heavy work, or where a long head is required, it is common to construct them with double cranks and pitmen, the two pitmen engaging the head near its opposite ends. In the operation of such presses, difficulty has been found in effecting an equal and simultaneous adjustment in length of both the pitmen, notwithstanding that various ratchet devices have been proposed and used for communicating the adjustment from the adjusting screw of one pitman to that of the other. In such devices there is no positive connection between the means for communicating adjustment and the respective screws, so that it often happens that one screw will be driven a part of a revolution in advance of the other, thereby giving the two pitmen unequal length and canting the head in its slideways.

My invention is designed to provide a simple and positive connection between the two pitmen in order that their adjustment shall necessarily be effected simultaneously, and so as to prevent the occurrence of any inequality in length of the pitmen. To this end the pitmen are constructed with two opposite parts or sections reciprocally sliding on each other telescopically or otherwise, and adjusted relatively to each other by an adjusting screw, and the screws of the two pitmen are provided with bevel-gears fixed to them and geared together through the medium of a transverse shaft extending between the pitmen, and having bevel-gears or pinions on its opposite ends meshing with those on the screws, so that in order to adjust the length of the pitmen it is only necessary to rotate this intermediate shaft in one direc-

tion or the other, whereby both pitmen are elongated or shortened in positive manner and necessarily to like extent.

Figure 1 of the accompanying drawings is a front elevation of a double-crank power press in which my invention is embodied, the view being partly broken away in vertical mid-section; and Fig. 2 is a view on a larger scale showing one of the pitmen in section on the line 2—2 in Fig. 1.

Let A designate the frame of the press, constructed with a bed B, and with bearings for a crank shaft C, which is suitably driven and which has two cranks *c c* connected by pitmen D D to the reciprocating head or platen E of the press, which slides on guides or slideways *a a* carried by the uprights of the frame. Generally speaking this is the usual construction of a double-crank power press.

Each pitman D consists of two relatively adjustable sections *b* and *d*, the former adapted at its upper end for engagement with the crank or eccentric *c*, while the latter at its lower end has pivotal connection with the head E. The two parts or sections *b d* are constructed to slide longitudinally relatively to one another, in order thereby to vary the length of a pitman as a whole. The preferable construction is that wherein one of the parts *b* enters and slides telescopically in the other *d*. For effecting their adjustment, a screw *e* is introduced which has relative engagement with the two parts of the pitman, preferably by being constructed with a rotative or swivel connection with one part, and with a screw threaded connection with the other part. As shown, one end of this screw has fixed on it a bevel-gear *f* which is confined in a socket or chamber *g* formed in the part *d*, while the threaded portion of the screw enters the part *b*, which is made tubular and which is formed with internal screw threads engaging the threads on the screw, so that by turning the screw the section *d* is slid up or down over the section *b* to shorten or lengthen the pitman. The gear *f* by being confined within the recess *g* and by being fixedly attached to the screw, will prevent any longitudinal movement of the screw relative to the section *d*. The gear *f* is keyed or otherwise so connected to the screw as to be compelled

to turn with it. This description of one pitman D will serve for both, since they are preferably identical in construction. For insuring a simultaneous adjustment I connect them together through the medium of a transverse shaft F extending from one pitman to the other, on the ends of which are fixed bevel pinions *h h* which mesh with the respective bevel gears *f f*. In the construction shown where both bevel gears *f f* engage with the lower sides of the pinions *h h*, the screws *e e* are necessarily threaded with right and left threads respectively. By inverting one of the gears *f*, however, the two screws might be both threaded in the same direction.

The shaft F might be variously constructed, but for convenience of construction or assembling of the parts and ease of operation, I prefer to construct it as shown of a divided hollow sleeve *i*, and two short shafts *j j*, the latter being constructed integrally with or securely fastened to the pinions *h h*. The sleeve *i* is divided diametrically in order that its halves may be closed together upon the ends of the short shafts *j*, and be clamped or drawn together by means of bolts *k* to secure the sleeve firmly on said shafts, so that the three parts *j i j* shall be so securely fastened together as to turn as one part. On the middle of the sleeve *i* is formed an enlargement or drum *m* which is pierced with holes at intervals to constitute a sort of capstan, so that by inserting a bar in any of these holes the shaft F may be easily turned for adjusting the length of the pitmen. Inasmuch as the pinions *h* must enter the chambers or recesses *g* in the pitmen, and in order that they can be inserted therein or removed therefrom after the pitmen are in place, I form the recesses with openings on their sides toward each other sufficiently large to admit the insertion or removal of the pinions *h* and gears *f*, and for closing these openings and providing bearings for the shafts *j*, I provide separate pieces or bushings *p p* which, after the pinions *h* and their shafts *j* are in place, are slipped over the shafts and bolted or screwed to the side of the sections *d* of the respective pitmen so as to close the openings into the recesses *g*. The construction is then completed by applying the opposite halves of the sleeves *i* on the protruding ends of the shafts *j* and bolting them firmly together so as to tightly embrace the shafts. The particular construction described has the advantages of completely closing and concealing the adjusting screws and gears so that they are protected from injury, and of providing a simple and easily applied construction for the intervening shaft F.

In the practical application of my invention, the details of construction herein specifically described may be considerably varied without departing from its essential features. It will therefore be understood that I do not limit myself in all respects to the specific de-

tails of construction herein shown and described.

Those features which I believe to be essential to my invention are hereinafter defined in the claims.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. In a double-crank power press, the combination with the crank shaft and sliding head, and two pitmen connecting the cranks with the head, each pitman constructed in two sections so as to be adjustable in length, with a longitudinal adjusting screw for relatively adjusting them, of the means for effecting the simultaneous adjustment of the two pitmen, consisting of a transverse shaft extending between them, and supported by them, so as to participate in their movements and gears on said shaft and on the respective screws whereby the turning of said transverse shaft turns both screws to like extent.
2. In a double-crank power press, the combination with the crank shaft and sliding head, and two pitmen connecting the cranks with the head, each pitman constructed in two sections so as to be adjustable in length, with an adjusting screw for relatively adjusting them, the two screws having respectively right and left threads, of the means for effecting the simultaneous adjustment of the two pitmen, consisting of a transverse shaft extending between them, and bevel gears on the opposite ends of said shaft, and similarly-arranged bevel-gears meshing therewith fixed on the respective screws to rotate the two screws in opposite directions.
3. In a double-crank power press, the combination with the crank shaft and sliding head, and two pitmen connecting the cranks with the head, each pitman constructed in two sections the one sliding telescopically into the other and the one formed with internal screwthreads, and a screw having threads engaging said internal threads and itself swiveled to the opposite section so as to be adapted to rotate therein, but incapable of longitudinal motion independent thereof, and means for effecting the simultaneous adjustment of the two pitmen consisting of a transverse shaft extending between them, and gears on said shaft and on the respective screws.
4. In a double-crank power press, the combination with the crank shaft and sliding head, and two pitmen connecting the cranks with the head, each constructed in two sections so as to be adjustable in length, with an adjusting screw for relatively adjusting them, and bevel gears fixed on the respective screws, of a transverse shaft extending between the pitmen consisting of end shaft sections having bevel gears meshing with those on the screws, and an intermediate section detachably connected to said end sections.

5. In a double-crank power press, the combination with the crank shaft and sliding head, of two pitmen each constructed in two sections, with an adjusting screw for relatively adjusting them, and bevel gears fixed on the respective screws, and a transverse shaft F extending between the pitmen consisting of end shaft sections *j j* carrying bevel pinions *h h* meshing with said bevel gears, and an intermediate sleeve *i* constructed to be detachably connected to the shaft sections *j j*.

6. In a double-crank power press, the combination with the crank shaft and sliding head, of two pitmen D D each constructed in two sections *b d*, the latter formed with a

recess *g* open at one side, an adjusting screw *e* for relatively adjusting said sections, and a bevel gear *f* fixed on said screw within said recess, and a transverse shaft extending between the pitmen comprising end shaft sections *j* and bevel pinions *h*, and a bushing *p* applied to each pitman to close said recess and form a bearing for one of said shaft sections.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

FRANK M. LEAVITT.

Witnesses:

DENNIS JUDGE,
HOWARD C. SEAMAN.