

No. 750,918.

PATENTED FEB. 2, 1904.

H. G. VOIGHT.  
SAND PRESS.

APPLICATION FILED JULY 23, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

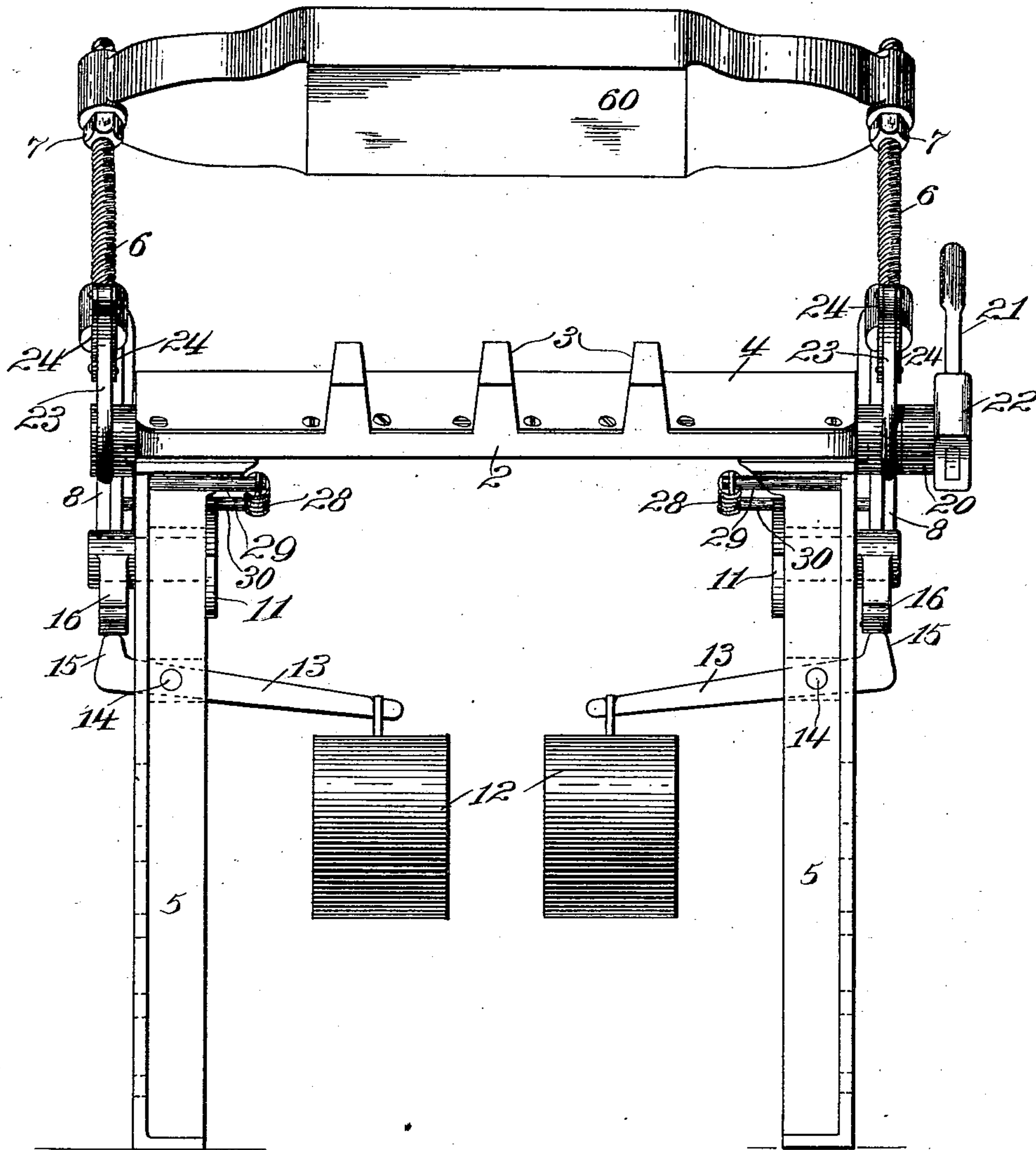


Fig. 1.

Witnesses:

G. G. Fuss.

Robert A. Alt

Inventor:

Henry G. Voight.

By his Attorney,

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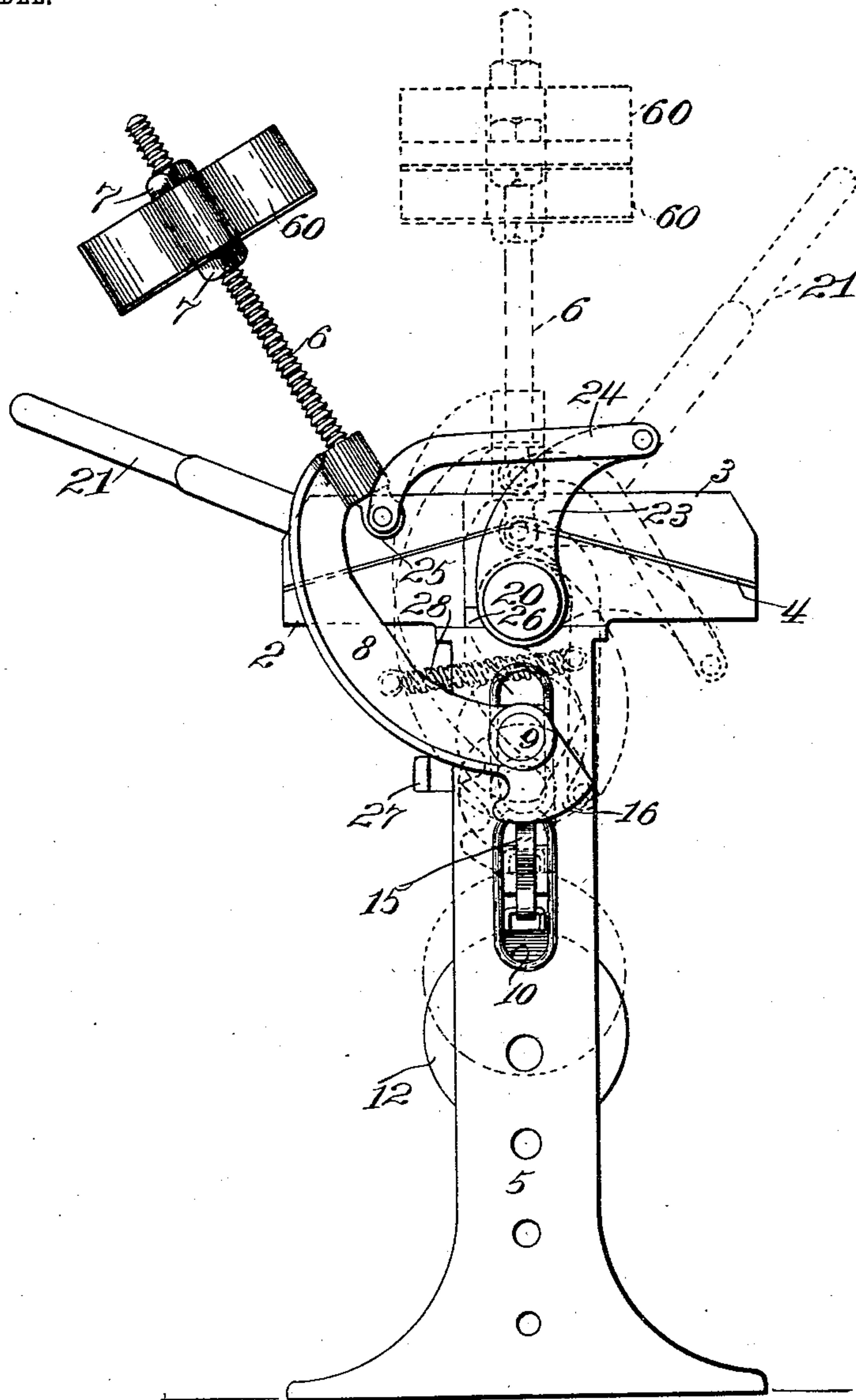


Fig. 2.

Witnesses:

G. C. Fuss.

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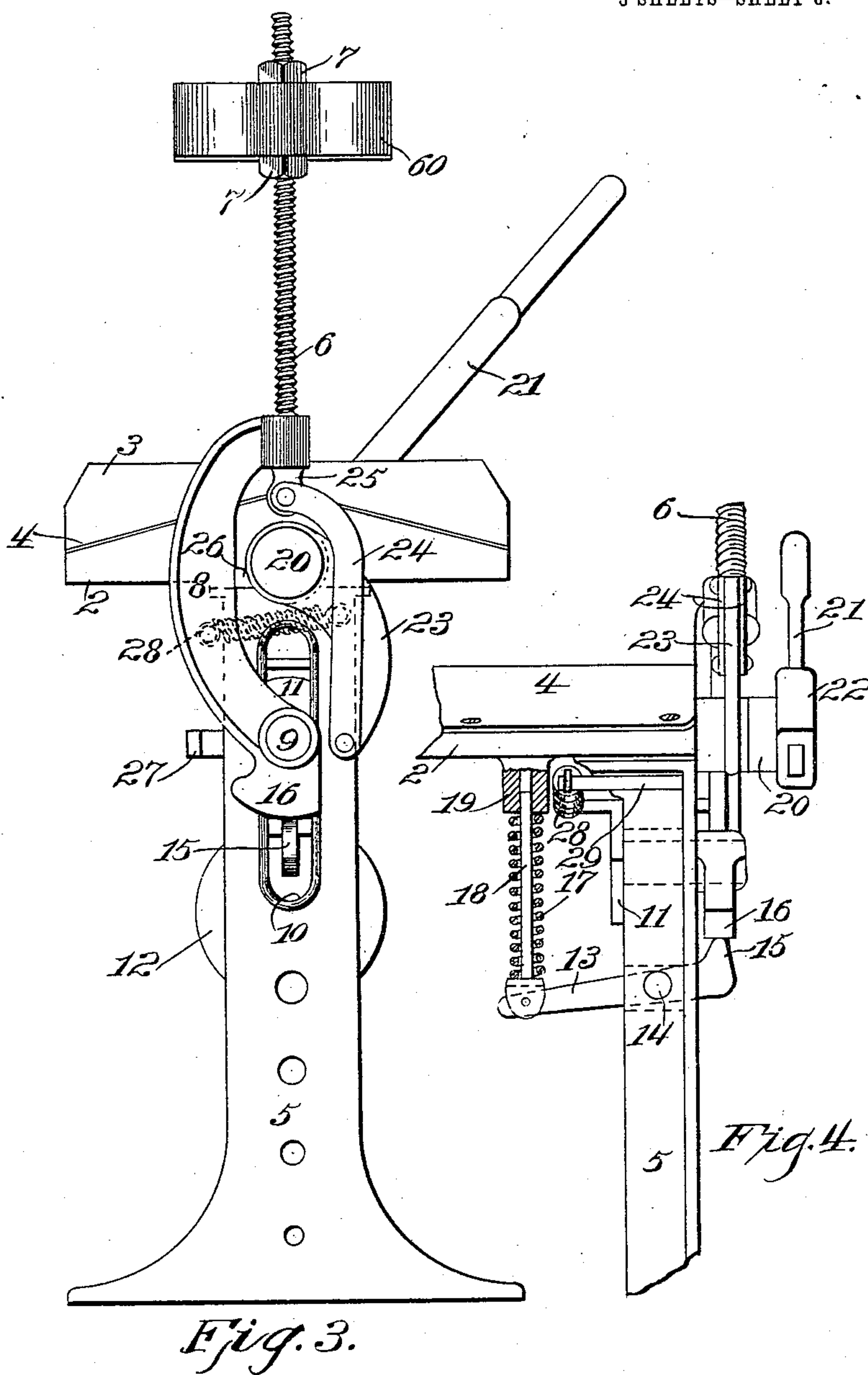
Inventor:  
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NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

HENRY G. VOIGHT, OF NEW BRITAIN, CONNECTICUT.

## SAND-PRESS.

SPECIFICATION forming part of Letters Patent No. 750,918, dated February 2, 1904.

Application filed July 23, 1903. Serial No. 166,677. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing in New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Sand - Presses, of which the following is a specification.

The present invention relates to presser mechanism designed particularly for ramming or pressing sand-filled flasks, either the separate sections thereof or the complete flask.

The present invention provides a mechanism for mechanically pressing sand-filled flasks and is capable of application under various conditions where such mode of pressing or ramming is desired. The mechanism may be used alone or utilized under circumstances in which it is applicable as a constituent part of molding-machines in which the flask or flask-sections is pressed or rammed in this manner.

The present mechanism embodies a presser head or bar shiftable from a position at one side of the supported flask to a position thereabove and thereafter and by a continuous movement forcibly brought down upon the flask or flask-section underneath to effect the pressing of the sand within the latter. A powerful pressing action is exerted through the operation of a toggle mechanism, and in order to minimize the labor involved in repeated pressings or rammings I have provided an organization of counterbalancing devices for the moving parts, such organization constituting an important feature of the present invention.

In the drawings accompanying the present specification, and wherein is set forth an embodiment of the present invention, Figure 1 is a front elevation thereof. Fig. 2 is a side elevation looking from the left in Fig. 1, the dotted lines in this figure indicating the position of the presser-head and the corresponding position of the operating mechanism in two positions corresponding, respectively, with that in which the presser-head has been brought over the flask-supporting table and before the presser-head has been drawn downward to press a supported flask and the position of such head and its associated parts

when the head has been drawn downward to its lowermost position to thereby press the flask. Fig. 3 illustrates in full lines this latter position of the parts—that is, when the head has been drawn downward to its fullest extent. Fig. 4 is mostly an elevational view indicating a modified construction for compensating the weight of the vertically-shiftable presser-head and parts connected thereto.

Similar characters of reference designate corresponding parts in all figures.

A sand-press embodying the present improvements ordinarily includes a table or platen for supporting the flask or flask-section, and while I have illustrated a flask-supporting platen 2, having cross-ribs 3, (designed to directly support the flask,) and an inverted-V-shaped sand-shedding upper face 4 it is to be understood, of course, that such platen may have other forms and construction than those indicated. Such remarks apply likewise to the supporting-legs 5.

The presser head or bar is designated by 60, and the same is capable of being swung from a position at the rear (see Fig. 2, full lines) to a position directly over the flask-supporting platen (see Fig. 3) and back again. In this movement as well as during its depression and elevation the head is steadied and in part guided in the present construction by guide-surfaces on the legs 5. The specific construction illustrated comprises a supporting-rod 6 at each end of the head, these rods being preferably threaded and provided with lock-nuts 7 for adjusting and locking when so adjusted the position of the head with reference to the platen to provide for different thicknesses of flask or flask-section.

The lower end of the rods 6 are rigidly connected to arms 8, (curved in this instance to avoid interference with other parts presently referred to,) these arms at their lower ends being each provided with a laterally-extending stud or pin 9, passing through a vertically-elongated opening 10 in the corresponding leg 5. The vertical walls of these openings serve to guide the lower ends of the rigid frame embodying the presser-head. Each stud 9 is indicated as provided with a retaining washer or collar 11 on the inside of the leg.



The weight of the presser-head and parts connected thereto is compensated for by counterbalances, with the object of minimizing the labor involved in raising the head, &c., off of the pressed flask. Suitable counterbalancing-weights 12 12 may be employed according to the present organization, one at each side and there hung from the inner end of a lever 13, pivoted by a pin 14 intermediate its ends to the leg at that side. The outer end of each lever is formed with a contact portion 15, which bears against a downwardly-projecting extension 16 of the arm 8, with which the lever is associated. It will be noted that the lower periphery of each extension 16 is curved, and preferably such curvature is substantially to the arc of the circle struck from the point of intersection of the axis of the stud 9 with the vertical plane of the extension 16 in order that no substantial rise or fall of the weight shall occur during the swinging movement of the platen from the position in Fig. 2 to the position in Fig. 3 and back again.

It is to be here remarked that I prefer to make the movement of the two counterweights substantially the same to thereby equalize the raising tendency they exert on the head at the two sides of the platen, while the sum of such movements is preferably sufficient to raise the platen to its elevated position above the platen when free so to do and there hold it.

Instead of employing a gravity-counterbalance spring tension may obviously be used with the same effect. Such a construction is indicated in Fig. 4, in which the construction at one side of the platen only is shown, the same comprising a pivoted lever 13, as before, between the inner end of which and the platen there is inserted a compression-spring 17. A guide-rod 18, running through the coils of the spring, is pivoted at one end to the lever and at the other end works in a recess in a depending extension 19 of the platen 2.

The platen is swung to its different positions by means of an operating-shaft 20, which is journaled in suitable bearings located directly beneath the platen. It is provided with an operating-handle 21, which may, as indicated, be adjustably connected with the shaft. (See the handle-receiving socket 22.)

The operating-shaft is connected with the frame in which is comprised the presser-head by mechanism which permits a toggle action to be exerted upon the presser-head when in the act of compressing the sand in the flask. A simple construction for the attainment of such result comprises an arm 23, connected by a link with such frame. Preferably such construction is duplicated at the opposite sides of the platen, and in the particular relation and construction shown each arm 23 has jointed to its end on opposite sides of the arm link 24, whose other ends are jointed to an eye 25, extending from the corresponding arm 8, each

arm 23 and the pair of links connected to it being properly curved to permit the parts to assume somewhat the position indicated in Fig. 3.

The relation between the parts when the presser-head is in the position indicated in full lines in Fig. 2 is such that upon first drawing the operating-handle 21 forward a substantial horizontal pull is exerted upon the frame comprising said presser-head, the latter being thus drawn forward until it takes a position directly over the platen. Upon assuming such position the inner face of each arm 8 contacts with a corresponding stop 26, and further forward and downward movement of the operating-lever draws the presser-head vertically downward, the arms 8 8 sliding against the stop 26 26. Each arm 23 and its connecting-links 24 24 ultimately assume the relative position of a closing-toggle, and a powerful pressure may in consequence be exerted upon the sand within the flask, the counterweights 12 12 simultaneously rising with such downward movement.

The rearward or tilted-over position of the presser-head is defined by stops 27, and in order to counterbalance or offset the weight of the presser-head, which must be overcome in shifting it from its position at the rear to its forward position, (neither the counterweights 12 12 nor the springs 17 17 operating to offset the weight during such forward or swinging movement,) I may employ an additional balancing device, which in the form thereof illustrated comprises springs 28, secured, respectively, to pins 29, extending from the arms 8 8, and to parts 30 30, rigid with legs 5 5. These springs serve to counterbalance the presser-head and its supporting mechanism with a force increasing with the extent to which the head is tilted back—that is to say, the pull which the springs exert upon the head, &c., to urge the latter forward when thrown back increases in proportion as the head is moved back from its position directly above the platen, and consequently in proportion as the effort which would be required (without the use of the springs) to raise the head increases.

Having described my invention, I claim—

1. The combination with a presser-head having a swinging movement toward and away from a point directly above the supported flask and a movement directly toward and away from the latter, of an operating-shaft, pivoted presser-head-supporting arms provided with arc-shaped contacting faces, said arms being depressible, and counterbalancing-levers bearing against said contacting faces.
2. The combination with a presser-head having a swinging movement toward and away from a point directly above the supported flask and a movement directly toward and away from the latter, of an operating-shaft, toggle mechanism connecting said shaft with the presser-head, presser-head-supporting



arms whose outer ends are pivotally mounted for movement toward and away from the supported flask, and which arms are provided with arc-shaped contacting faces, and counterbalancing-levers bearing against said contacting faces.

3. The combination with a presser-head having a swinging movement toward and away from a point directly above the supported flask and a movement directly toward and away from the latter, of an operating-shaft, toggle mechanism connecting said shaft with the presser-head, presser-head-supporting arms whose outer ends are pivotally mounted for movement toward and away from the supported flask and which arms are provided with arc-shaped contacting faces, counterbalancing-springs connected to said arms, and counterbalancing-levers bearing against said contacting faces.

4. The combination with a presser-head having a swinging movement toward and away from a point directly above the supported flask and a movement directly toward and away from the latter, of means for exerting a forward pull on said presser-head increasing as the lateral displacement of the head from its position directly above the flask increases; tiltable counterbalancing-levers compensating the weight of said presser-head when directly above and during its direct movement toward and away from said flask; and a connection interposed between said head and said levers for confining the direction of pressure of the levers to a plane passing through the pivotal axis of the head, whereby the levers exert no opposing movement to the swinging movement of the head.

5. The combination with a platen; and supporting-legs therefor, of a presser-head having side arms; presser-head-operating mechanism for tilting the presser-head toward and away from position directly above the platen and for raising and lowering the head from and toward the platen; a counterbalance device for exerting a forward pull on said presser-head when the latter is away from its position directly above the platen; a counterbalancing-lever pivoted to each leg; and a connection interposed between said head and said lever adapted to maintain the lever stationary during the said swinging movement

of the head, whereby such swinging movement causes no tilting movement of the lever.

6. The combination with a platen; and supporting-legs therefor; of a presser-head having side arms; presser-head-operating mechanism; a counterbalancing-spring secured to each side arm and to the corresponding supporting-leg; a counterbalancing-lever pivoted to each leg; and a connection interposed between said head and said lever adapted to maintain the lever stationary during the said swinging movement of the head, whereby such swinging movement causes no tilting of the lever.

7. The combination with a platen; and slotted supporting-legs; of a presser-head; toggle mechanism comprising side arms extending from the presser-head; studs extending through the slots in said legs and movable longitudinally of said slots; an operating-handle for operating the toggle mechanism; a spring secured to each said side arm and the corresponding leg; a counterbalancing-lever pivoted to each leg; and a connection interposed between said head and said levers adapted to maintain the levers stationary during the said swinging movement of the head, whereby such swinging movement causes no tilting of the levers.

8. The combination with a platen; and slotted supporting-legs; of a presser-head; rods at the ends of said presser-head to which the latter is adjustably secured; arms extending from said rods; a stud extending laterally from each arm through the slot in the leg adjacent to the arm; an operating-shaft provided with arms having a linked connection with the presser-head; a spring secured to each said arm and the corresponding leg; stops for limiting the forward and backward movement of the arms; an operating-handle secured to said operating-shaft; and a counterbalancing-lever pivoted to each leg, extending inwardly thereof and bearing at its outer end against a curved portion rigid with the corresponding arm.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 14th day of July, 1903.

HENRY G. VOIGHT.

Witnesses:

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JOHN O. SEIFERT.