

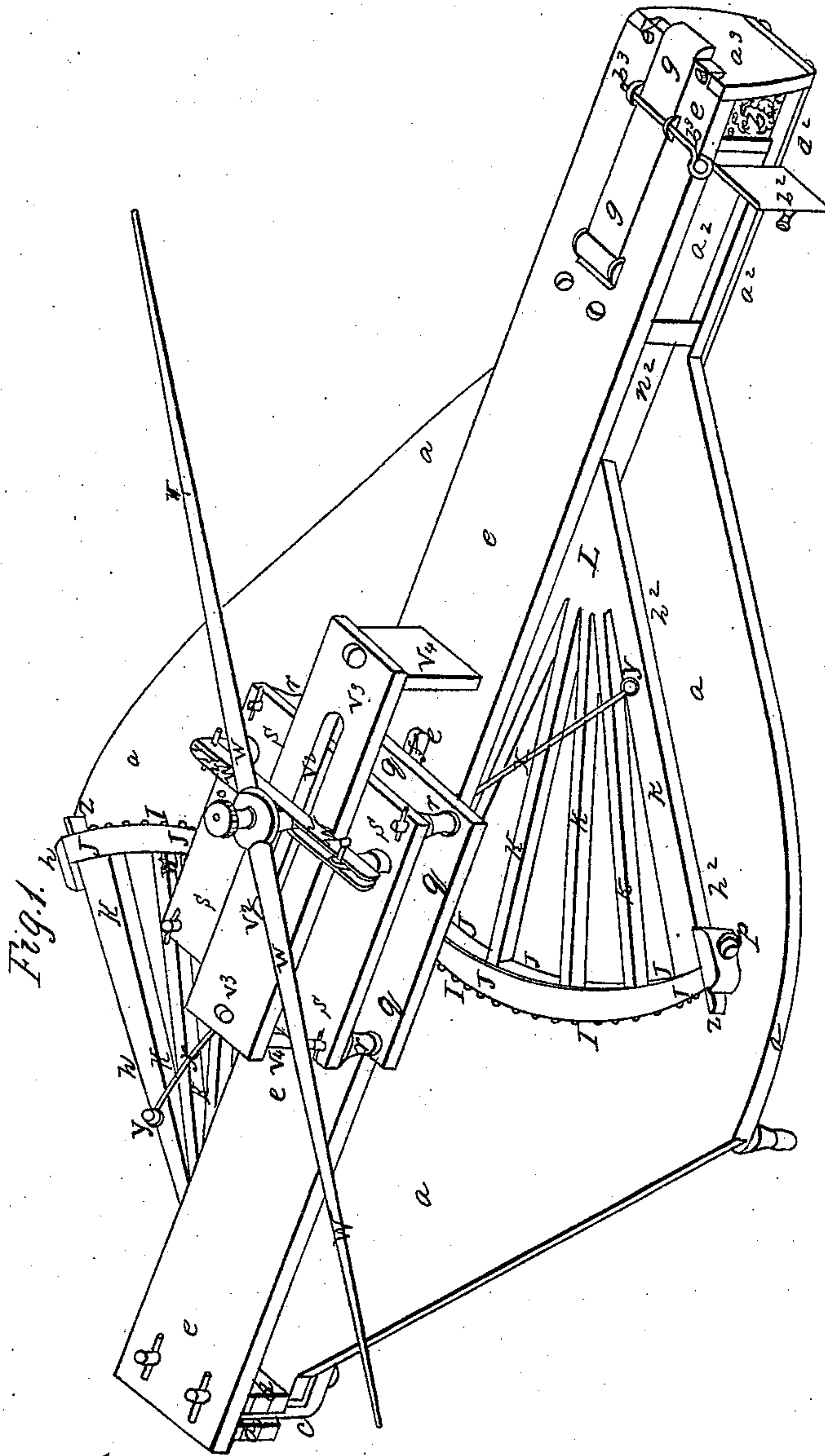
*T. F. De Bruler,*

*2, Sheets, Sheet 1.*

*Cotton Press.*

*N<sup>o</sup> 23,759.*

*Patented Apr. 26, 1859.*



*Witnesses*

*John W. Crooks  
L. J. De Bruler*

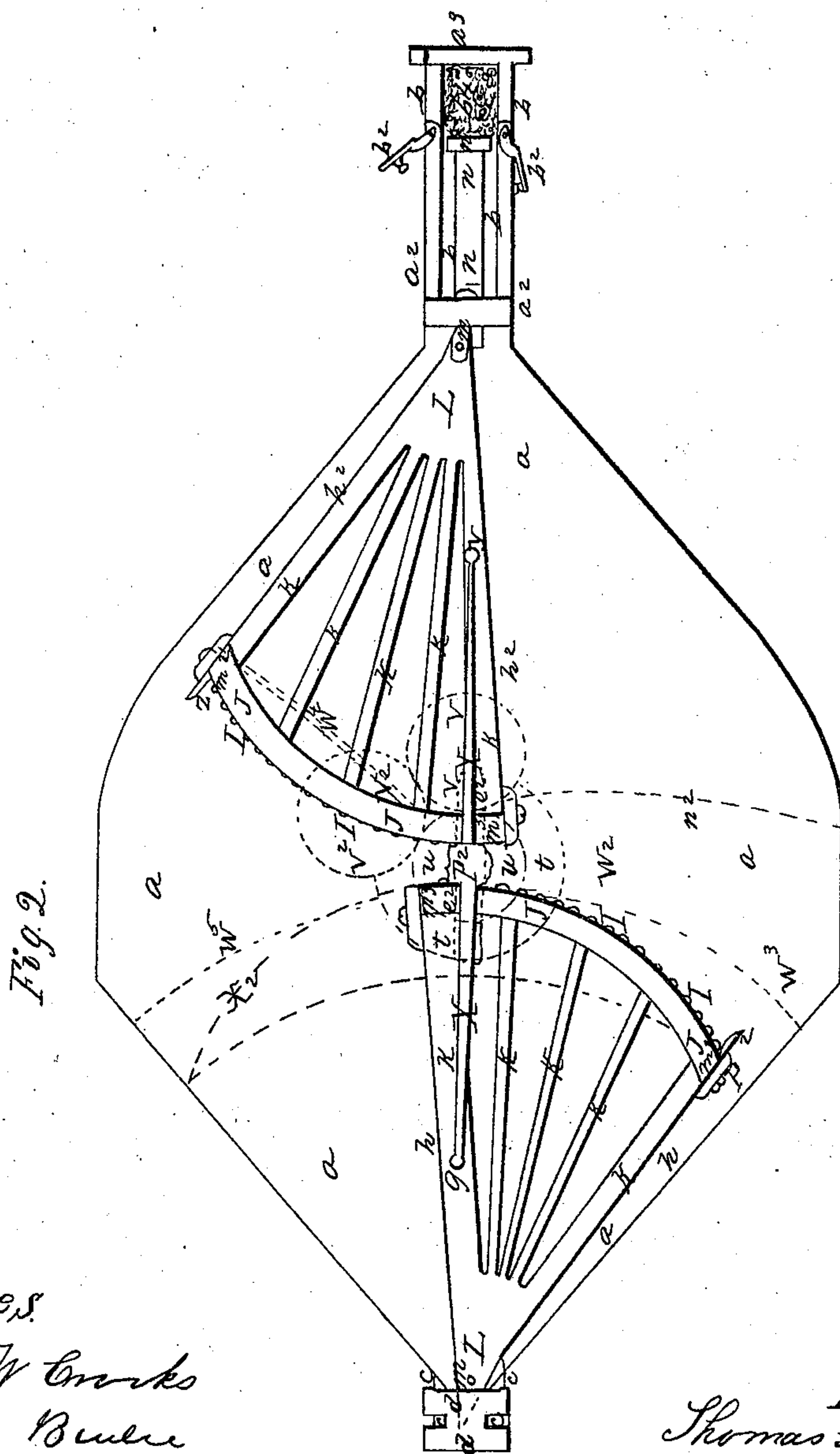
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*T. F. De Bruler,* *2 Sheets, Sheet 2.*

*Cotton Press.*

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# UNITED STATES PATENT OFFICE.

THOMAS F. DE BRULER, OF ROCKPORT, INDIANA.

## IMPROVEMENT IN COTTON-PRESSES.

Specification forming part of Letters Patent No. 23,759, dated April 26, 1859.

*To all whom it may concern:*

Be it known that I, THOMAS F. DE BRULER, of Rockport, in the county of Spencer and State of Indiana, have invented and made certain new and useful Improvements in Machinery for Packing and Pressing Cotton, Hay, Tobacco, and other Substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a machine complete. Fig. 2 is a top view of the machine.

The nature of my improvements consists of a machine for compressing substances wherein I employ two separate segments of circular rack-gearing arranged eccentrically on pivots or axis-points relative to each other, so that as the ends of the segment of one gear-rack moving on a local pivot-point, describe the arcs of parallel but different-size circles the ends of the other gear-rack, moving on a sliding pivot-point, describe slightly-curved lines which cut or cross each other in opposite directions.

The better, however, to enable others to construct and use my improvements, the following is a description thereof:

In Fig. 1,  $a a a a a$  is a superstructure or flooring, with a compressing-chamber or packing-box,  $a^2 a^2$ , having a stout substantial head-board,  $a^3$ . This packing-box is provided with side openings,  $b b$ , and corresponding doors  $b^2$ . To the other extremity or back end of the flooring  $a a$  is a bracket-like attachment,  $c c c$ , clamped and braced by head blocks  $d d d$ . Extending from end to end of the flooring, and at a suitable height above, is a longitudinal platform or bridge,  $e e e e e$ , of required width, one end resting on the blocks  $d d$ , and the other end upon the top of the packing-box  $a a$ . This platform is bolted or screwed down securely in place, and has formed in it a longitudinal slot,  $f$ , of suitable length and width, and at  $g$  is a hinged flap or trap opening. Between the flooring  $a^2$  and the longitudinal platform or bridge  $e e e e e$  are arranged the eccentrically-operated gear-racks  $h h h h^2 h^2 h^2$ . These gear-racks are each composed of cogs or teeth  $i i i i i i$ , of required size and strength, and are inclosed or cased above and below by flange rims or bands  $J J J J J J$ , the racks be-

ing attached to or formed with radial arms or spokes  $K K K K K K$ , centering together and terminating in a point,  $L L$ , Figs. 1 and 2. These points or ends are formed with holes, whereby they are attached to pivots or bolts  $m m$ .

The gear-rack  $h h h$  is attached by its pivot to the blocks  $d d d$ , while the gear-rack  $h^2 h^2 h^2$  is connected by its pivot to the end of a plunger or packing follower,  $n n n$ , formed with a head part,  $n^2$ , Fig. 2. This packing follower or plunger fits in the packing-box  $a^2$ , and slides in a slot or way,  $o$ , formed in the flooring  $a a a$ . The gear-racks  $h h h$  and  $h^2 h^2 h^2$  approach each other sufficiently to admit of receiving into their cogs or teeth a small pinion-wheel,  $P^2$ , Fig. 2, the lower end having a short spindle or journal, which works in a longitudinal slot formed in the flooring  $a a$ . (See dots  $e^2 e^2$ , Fig. 2.) The upper part of axle of the pinion-wheel  $P^2$  extends upward vertically through a slot,  $f$ , in the bridge or platform  $e e e e$ , and is affixed to a base-plate,  $q q q$ , forming the bottom part of a sliding carriage composed of the short pillars or uprights  $r r r$  and the top plate,  $s s s$ .

To the upper end of the axle of the pinion-wheel  $P^2$  gear-wheels  $t t u u$  are attached, and working into said gearing is a driving-wheel,  $v v$ , all of which see dotted in Fig. 2. The axle of the driving-wheel  $v v$  is sufficiently long to extend through a longitudinal slot,  $v^2 v^2$ , formed in a yoke or connecting-piece,  $v^3 v^3$ , supported at each end by uprights  $v^4 v^4$ , attached below to the platform  $e e e e$ , Fig. 1. The axle of said wheel connects with the center of a driving-lever or arms  $w w w w$ , Fig. 1. The axle of the driving-wheel  $v v$  is braced or supported by a slotted or forked bar  $w^2 w^2$ , Fig. 1.

The gear-racks  $h h$  and  $h^2 h^2$  are linked or coupled together by a connecting rod or yoke,  $x x$ , the center of which passes over the axle of the pinion-wheel  $u u$ , fitting nicely around the axle and having washers above and below. The ends of this connecting-rod are formed with eyes or perforations to receive pivot pins or bolts  $y y$ , so as to act as a pivot point or axis, and to allow the gear-racks  $h h^2$  to retain the same relative distance apart and to prevent ungearing of the racks.

To the ends of the driving levers or arms  $w$



*w w w* can be attached single-trees, if desired, and horse-power thereby applied to work the machine.

In the operation of my improvements, the hinged trap *g g* is lifted and the substance to be packed, is deposited within the packing box or chamber *b b b*, Fig. 2, the plunger or follower *n n n* being previously withdrawn, as at *n<sup>2</sup>*, Fig. 1. The flap or trap is turned down and fastened by the bolt *b<sup>3</sup> b<sup>3</sup>*, and the side doors, *b<sup>2</sup> b<sup>2</sup>*, are also closed securely. The chamber *b b b* being filled, as required, the power is applied to the driving levers or arms *w w w w*, which, being moved, communicate motion to the gear *u u*, which, being connected to the pinion-wheel *P<sup>2</sup>*, Fig. 2, causes the gear-rack *h h h* to move along from left to right across the flooring, and to stop in position, as indicated in Fig. 2, while the gear-rack *h<sup>2</sup> h<sup>2</sup>* moves from right to left, or in an opposite direction, as in Fig. 2, thus causing the plunger or follower *n n* to move forward within the packing-box *a<sup>2</sup> a<sup>2</sup> b b* and closely compressing the substance therein. The operation of packing is continued until the required amount of substance is compressed. When the plunger or follower is withdrawn, the gearing-racks are in a reverse position, as represented in Fig. 1, and the driving lever or arm *w w w w* performs two and a half circuits or sweeps to one complete motion or stroke of the plunger, and at every stroke thereof the driving-lever *w w w w* has to be reversed in order to withdraw the plunger *n n*, the length or stroke thereof being about one-half the distance of the sweep or play of the gear-racks *h* and *h<sup>2</sup>*. As the plunger enters or advances, the power or lever pressure increases in proportion as the distance from *m<sup>2</sup>* is increased over the distance from *m* to *m<sup>3</sup>*, Fig. 2. This variation of radii gives the eccentricity of motion, acting in reality on the principle of two wedges approaching each other, similar to the shapes indicated by the dotted lines *w<sup>2</sup> w<sup>3</sup>* and *w<sup>4</sup> w<sup>5</sup>*, Fig. 2. If the axis or pivot point *m m*, on which the gear-rack moves, was transferred or changed to the point *y y* of the connecting-yoke or coupling-rod *x x*, then the gear-racks would move in concentric circles or directions, and consequently no pressure or leverage power would ensue therefrom, the concentric circuit being indicated by the dotted arc *x<sup>2</sup>*, Fig. 2. With an increase of length of segment gear-rack the plunger or follower *n n* obtains an increased length of stroke or play with a more continued power. The small pinion-wheel *P<sup>2</sup>*, Fig.

2, in its revolutions back and forth, is checked by the little projection or flanges *z z z z*, so that when reaching said point the extent of power is attained. The pinion *P<sup>2</sup>* must then be reversed, and the gear-racks run back, to release the pressure of the plunger. As the gear-racks move eccentrically from right to left over the flooring *a a a*, the pinion-wheel *P<sup>2</sup>* should operate both racks simultaneously, and as the gear-rack *h* moves on a stationary pivot or axis the gear-rack *h<sup>2</sup>* moves forward with its axis. Consequently, it is necessary that the traversing pinion *P<sup>2</sup>* be made to traverse back and forth in the slot of the flooring *a a a a* through the intervention of the sliding carriage *q q r r s s*, Fig. 1, which moves to and fro in a rectilinear direction over the platform *e e e e*, thus compensating the wedge-pressure and causing the gear-racks to move parallel to each other, the connecting-rod or yoke-bar *x x* keeping the racks parallel in their movements. The power applied to the driving-lever is transmitted from the gear *v v* to the second gear *v<sup>2</sup> v<sup>2</sup>*, and thence to the gear *u u*, which is attached to the axle of the traversing pinion *P<sup>2</sup>*. When the substance to be packed has received the desired amount of compression, the side flaps or doors, *b<sup>2</sup> b<sup>2</sup>*, are opened and the compressed mass withdrawn.

The machine or press can be constructed of any substantial shape, suitable size and power, and operated either by manual agency or horse-power, which can be so applied as to be readily reversed in changing the movement in and out of the follower or plunger, and the turning of the driving-lever *w w w w*.

Having described the nature, construction, and operation of my improvements, and desiring to have the same secured by Letters Patent of the United States, what I claim is—

1. The construction and arrangement of the eccentrically-operated gear-racks *h h h h<sup>2</sup> h<sup>2</sup> h<sup>2</sup>* with the connecting rod or yoke *x x y y*, Figs. 1 and 2, as described.

2. The combination of the said devices with the plunger or follower *n n n*, substantially as set forth and described.

3. The construction and arrangement and combination of the traversing pinion *P<sup>2</sup>* with the sliding carriage *q q r r s s*, and driving lever or arms *w w w w*, substantially as set forth and described.

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Witnesses:

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