G. J. WAGNER & M. H. HOPKINS.

OIL PRESS.

APPLICATION FILED JAN. 10, 1914.

1,110,087.

Patented Sept. 8, 1914.

3 SHEETS—SHEET 1.

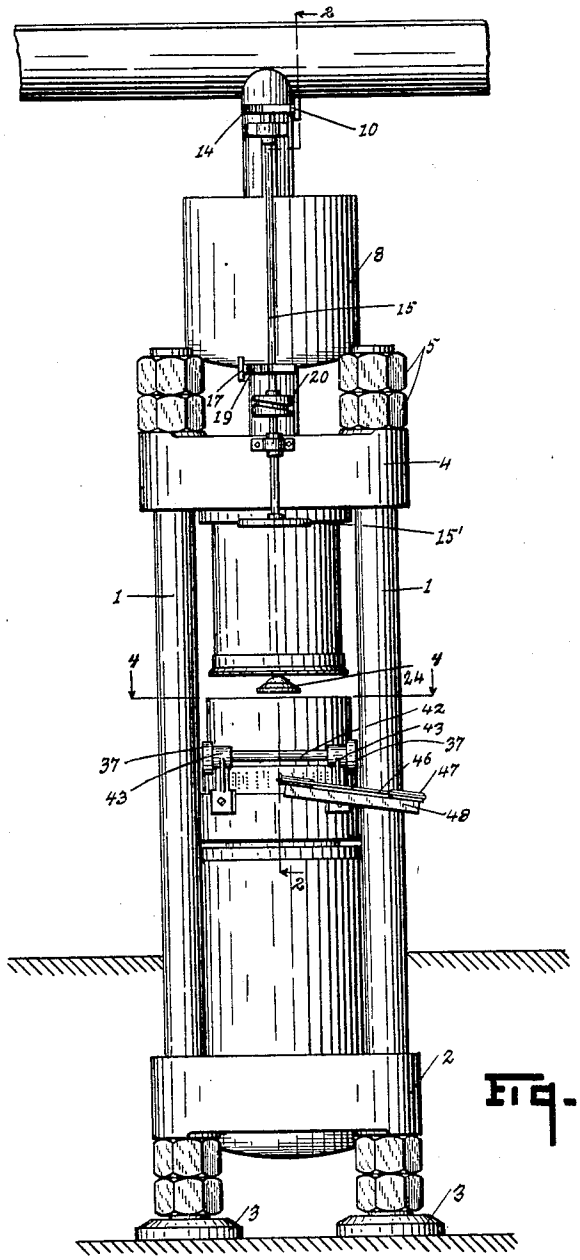


Fig. 1.

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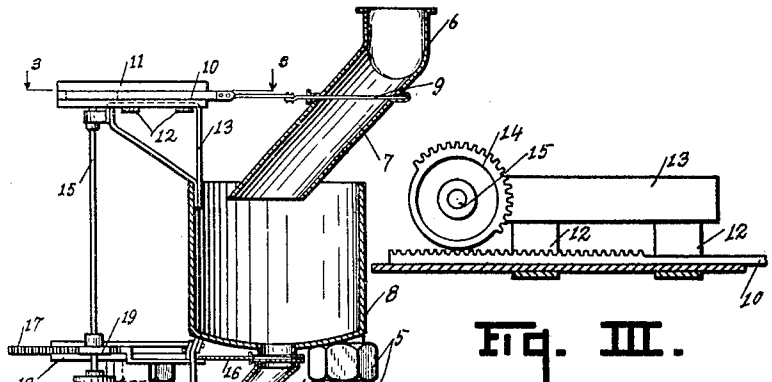


Fig. III.

Fig. II.

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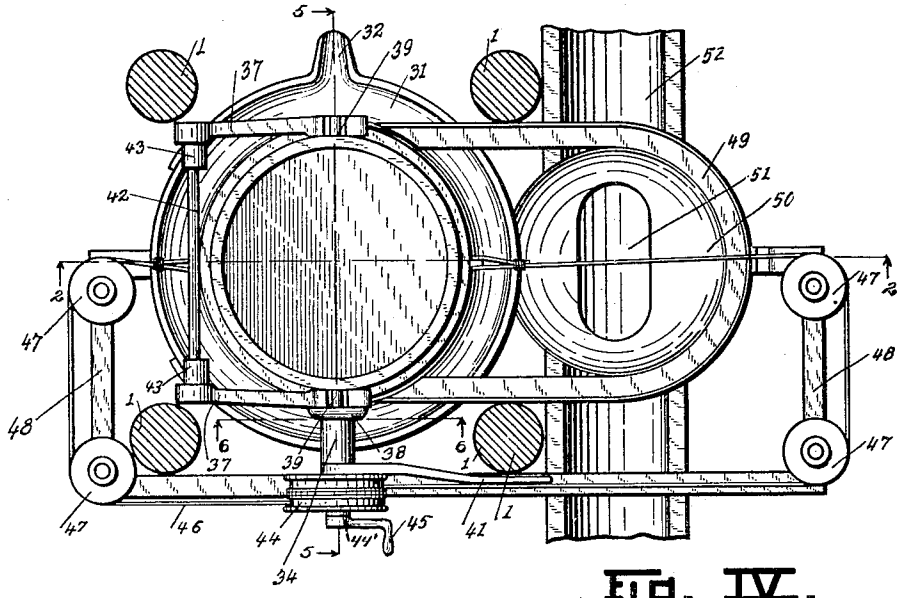


Fig. IV.

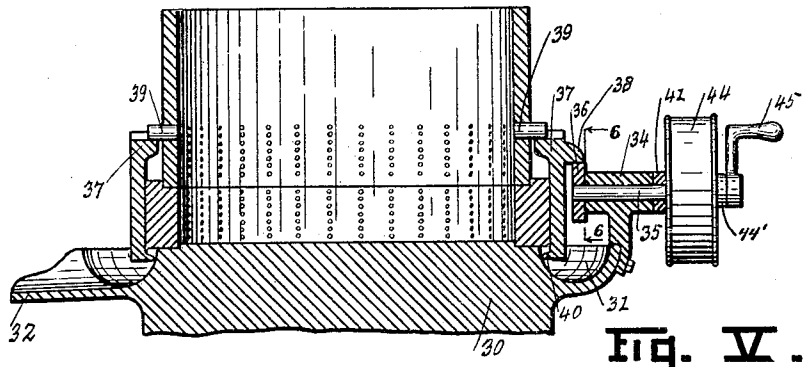


Fig. V.

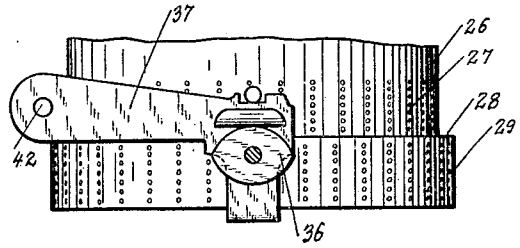


Fig. VI.

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UNITED STATES PATENT OFFICE.

GUS J. WAGNER AND MYRON H. HOPKINS, OF GRAND RAPIDS, MICHIGAN, ASSIGNORS TO THE O. & W. THUM COMPANY, OF GRAND RAPIDS, MICHIGAN.

OIL-PRESS.

1,110,087. Specification of Letters Patent. **Patented Sept. 8, 1914.**

Application filed January 10, 1914. Serial No. 811,427.

To all whom it may concern:

Be it known that we, GUS J. WAGNER and MYRON H. HOPKINS, citizens of the United States, residing at Grand Rapids, Michigan, have invented certain new and useful Improvements in Oil-Presses, of which the following is a specification.

This invention relates to improvements in oil presses.

The objects of this invention are: First, to provide in a device of this type, improved means for filling the press. Second, to provide in a device of this type, improved means for removing the oil cake from the press. Third, to provide an oil press having simple and efficient controlling means.

Further objects, and objects relating to details and economies of construction and operation will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of our invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a view in front elevation of a structure embodying our invention. Fig. II is a longitudinal sectional view on line 2—2 of Fig. I, the cylinder being shown in full lines. Fig. III is a sectional view on line 3—3 of Fig. II, showing in detail the slide controlling mechanism. Fig. IV is a sectional view on the line 4—4 of Figs. I and II, showing in detail the mechanism for removing the oil cake from the press. Fig. V is a sectional view on the line 5—5 of Fig. IV, showing in detail the ring lifting mechanism. Fig. VI is a sectional view on the line 6—6 of Figs. IV and V, showing in further detail the ring lifting mechanism.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Considering the numbered parts of the drawing, 1, 1 are the columns supported on the base plates 3, 3, and carrying the base member 2. These columns carry on their upper end, the top member 4 which is held in place on said columns by means of the nuts 5, 5 screwed onto the threaded upper ends of said columns.

6 is a trough which is provided with the chute 7 for delivering the material into the hopper 8, which is suitably supported on the top member 4 and is adapted to receive the material to be pressed.

A slide 9 is provided in the chute 7 for regulating the flow of material into the hopper 8. Slide 9 is connected at its outer end to the rack 10 which moves in a guideway 11, suitably supported on brackets 12, carried by the brace 13, which is secured to the top of the hopper. Shaft 15 is suitably journaled in a bracket projecting from the side of the brace 13 and a bracket on the top member, and said shaft carries on its upper end the gear 14 in mesh with the rack 12. A part of said gear is stripped, leaving a smooth surface so that the rack 12 is reciprocated during a portion of the revolution of gear 14. The lower end of said shaft is provided with a hand-wheel 15′ for operating the same. From the bottom of the hopper 8 leads the chute 8′ delivering into a passage 8″ through the top member 4. The chute 8′ is provided with a slide 16 for controlling the flow of material therethrough, and this slide is operated by a rack 17 reciprocating in a suitable guideway 18, and in mesh with a gear 19 secured on the shaft 15. This gear and rack arrangement is identical with that described for operating the slide 9.

The top member 4 carries the cylindrical head block 4′. The passage 8″ continues through the top member 4 and the cylindrical head block 4′. The lower end of passage 8″ is closed by means of the bell-shaped plug 24 which seats on the shoulder 25 at the lower end of said passage. To said plug 24 is secured the rod 23 which extends upwardly through said passage. Upon the shaft 15 is a drum provided with a cam slot 20. A lever 21 is pivoted at 22 and its outer end engages in the cam slot 20. The inner end of said lever arm is connected to the upper end of the rod 23.

26 is the upper pressing ring, provided near the bottom with a plurality of perforations 27. The bottom edge of said ring rests on a suitable shoulder on the upper edge of the lower ring 28. This lower ring is also pro-

vided with a plurality of perforations 29. The lower ring is seated on a suitable shoulder on the bottom member 30 which is carried by the ram. An annular trough is formed in said body member to receive the oil pressed out through the perforations in said rings and said trough is provided with a spout 32 through which the oil flows out into suitable receptacles. 33 is the cylinder in which the piston or ram works.

34 is a bracket, secured to the edge of the bottom member, in which shaft 35 is journaled. On the inner end of said shaft is provided the cam 36.

37, 37, are arms, provided at their inner ends with notched projections engaging the pins 39, 39 on the upper ring. Said arms are secured on the rock shaft 42 which is suitably journaled in brackets 43 carried by the bottom member 30. One of said arms 37 carries a projection 38 which is engaged by the cam 36. On the lower ends of said arms are the projections 40 which engage beneath the lower ring to lift it out of its seat in the body member. Operating lever 41 is fixed on shaft 35 to rotate the same for actuating cam 36. On shaft 35 is loosely mounted the sleeve 44′ to which the sheave 44 is secured and the crank 45, by means of which said sheave is rotated, is secured to said sleeve.

46 is a cable which is secured to diametrically opposite sides of the lower ring 28 and which runs over the pulleys 47 secured at the corners of the frame 48 which is suitably secured to the body member 30. The cable 46 passes around sheave 44.

49 is a track carried by said body member and on which said ring slides to bring it to position for removing the oil cake therefrom. Directly beneath the outer end of said track is provided the funnel 50 having the telescopic chute 51 delivering into the conveyer 52 for carrying off the oil cake.

From the description of the parts given above, the operation of the structure should be very readily understood. The beans or other material from which the oil is to be pressed out, are delivered by the trough 6 and the chute 7 into the hopper 8. The flow of the material into the hopper 8 is controlled by means of the shaft 15, gear 14 and rack 12, controlling the slide 9. The same operation which opens the slide 9 closes the slide 16 so as to prevent the flow of material from the hopper 8 and lifts the rod 23 so as to close the passage 8″ by means of the plug 24. When the hopper 8 has been filled, the slide 9 is closed by means of the shaft 15 and the rack 12, as we have described above, and the operation of closing said slide opens the slide 16 and lowers plug 24, permitting the material to flow from the hopper 8 into the rings 26 and 29 Oil is then admitted to the cylinder 33 and this causes the body member 30, carried by the ram, to rise on the columns 1. The cylindrical head block 4′ is slightly less in diameter than said rings so that the rings will fit snugly around said head block. As the body member 30 is carried upward the material in said ring is pressed beneath the head block and the body member 30 and the oil flows out through the perforations 27 and 29 into the trough 31 surrounding said body member and is drawn out through the spout 32. When the upward movement of the body member 30 is completed and the oil is completely pressed out of the material, the residue is left in the form of an oil cake in the lower ring 28. In order to remove said cake, shaft 35 is rotated by means of the lever 41 actuating the cam 36 which engages the projection 38 on the arm 37 and lifts said arms. The projections on said arms engage the pins 39 and lift the ring 26 out of engagement with the shoulder on the lower ring 28. At the same time, the lifting of arms 37 causes the projections 40 to engage beneath the lower ring 28 and lift it out of engagement with the shoulder on the body member 30. Sheave 44 is rotated by means of crank 45, and since the cable 46 is passed around said sheave, the cable is moved so as to draw the lower ring out upon the track 49 until it is in position over the funnel 50. The oil cake is now removed from said ring by striking it a blow with a sledge or hammer and the cake drops into the funnel 50 and is carried down into the conveyer 52, by which it is carried away. The parts are then returned to their normal position, ready for the next operation, by rotating the sheave 44 and shaft 35 in the reverse direction.

We are aware that the particular embodiment which we have here set forth is susceptible of considerable variation without departing from the spirit of our invention, and, therefore, we do not wish to be restricted to the same. However, we have found in actual practice that this embodiment is to be preferred and, therefore, we desire to claim the same specifically as well as broadly as indicated by the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, said top member and head block having a passage therethrough, a hydraulic cylinder supported on said frame member, a piston or ram working in said cylinder, a body member carried by said ram, a hopper supported on said top member, a lower chute connecting said hopper with said pas-

sage through said top member, an upper chute delivering material to said hopper, a slide in said upper chute, a suitably supported guideway, a rack mounted in said guideway and connected to said slide, a suitably journaled shaft, a segmental gear on said shaft in mesh with said rack, a slide in said lower chute, a rack mounted in a suitable guideway, a segmental gear on said shaft in mesh with said rack, a plug closing the lower end of said passage through said top member and said head block, a rod extending upwardly through said passage and connected at its lower end to said plug, a drum mounted on said shaft, a cam slot in said drum, a suitably pivoted lever having one end connected to said rod and the other end working in said cam slot, upper and lower perforated pressing rings seated on said body member, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described and for the purpose specified.

2. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, said top member and head block having a passage therethrough, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a hopper supported on said top member, a lower chute connecting said hopper with said passage through said top member, an upper chute delivering material to said hopper, a slide in said upper chute, a slide in said lower chute, a plug closing the lower end of said passage through said top member and said head block, a rod extending upwardly through said passage and connected at its lower end to said plug, means for reciprocating said slide in said upper chute to open the same, means for reciprocating the slide in the lower chute, means for actuating said rod to open and close the passage through said block, a common operating means therefor so connected therewith that when the upper chute is open the lower chute and the passage through said block will be closed, upper and lower pressing rings seated on said body member, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described and for the purpose specified.

3. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, said top member and head block having a passage therethrough, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a hopper supported on said top member, a lower chute connecting said hopper with said passage through said top member, an upper chute delivering material to said hopper, means for controlling the flow of material through said upper chute, means actuated by said first named means for controlling the flow of material through said passage, whereby, when the passage through said upper chute is open, the passage through said head block is closed, upper and lower pressing rings seated on said body member, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

4. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, said top member and head block having a passage therethrough, a hydraulic cylinder supported on said frame members, a ram working in said cylinder, a body member carried by said ram, a hopper supported on said top member, a chute connecting said hopper with said passage through said top member, means for controlling the flow of material through said chute, upper and lower pressing rings seated on said body member, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

5. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, said top member and head block having a passage therethrough, a hydraulic cylinder supported on said frame members, a ram working in said cylinder, a body member carried by said ram, upper and lower pressing rings seated on said body member, a passage through said top member and said block delivering material into said pressing rings, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

6. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, an annular trough at the periphery of said body member, upper and lower pressing rings seated on said body member, a passage through said top member and head block delivering material into said pressing rings, and means for moving the lower ring from its seat to remove the oil cake therefrom, all coacting substantially as described and for the purpose specified.

7. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, an annular shoulder on said body member, a lower perforated pressing ring seated on the shoulder of said body member, an annular shoulder on the upper edge of said ring, an upper perforated pressing ring seated on the shoulder of said ring, pins secured to said upper ring, a rock shaft suitably journaled on said body member, arms fixed on the ends of said rock shaft, projections on the ends of said arms engaging said pins, projections on the lower edges of said arms engaging beneath the lower ring, a lug on one of said arms, a shaft suitably journaled on said body member, a cam carried by the inner end of said shaft and adapted to engage said lug, a lever fixed on said shaft for rotating the same, a frame fixed to said body member, pulleys mounted on said frame, a sheave rotatably mounted on said shaft, a cable passing over said pulleys and around said sheave and secured to opposite sides of the lower ring, means for rotating said sheave, and a track on which said lower ring is adapted to slide whereby said lower ring is brought to rest over a conveyer for carrying away the contents of said lower ring, all coacting substantially as described for the purpose specified.

8. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a lower perforated pressing ring seated on said body member, an upper perforated pressing ring seated on said lower ring, pins secured to said upper ring, a rock shaft suitably journaled on said body member, arms fixed on the ends of said rock shaft, projections on said arms engaging said pins, projections on said arms engaging beneath the lower ring, a lug on one of said arms, a shaft suitably journaled on said body member, a cam carried by the inner end of said shaft and adapted to engage said lug, a lever fixed on said shaft for rotating the same, and means for moving the lower ring from its seat on the body member to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

9. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a lower perforated pressing ring seated on said body member, an upper perforated pressing ring seated on said lower ring, a rock shaft suitably journaled on said body member, arms carried by said rock shaft engaging said rings, a lug on one of said arms, a shaft suitably journaled on said body member, a cam carried by the inner end of said shaft and adapted to engage said lug, means for rotating said shaft, and means for lifting the lower ring from its seat on the body member to remove the oil cake therefrom.

10. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a lower perforated pressing ring seated on said body member, an upper perforated pressing ring seated on said lower ring, means for lifting said upper ring from said lower ring, and said lower ring from said body member, and means for moving said lower ring from the body member to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

11. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a perforated pressing ring seated on said body member, means for lifting said ring from said body member, and means for moving said ring from said body member to remove the oil cake therefrom, all coacting substantially as described for the purpose specified.

12. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a perforated pressing ring seated on said body member, means for lifting said ring from said body member, a frame fixed to said body member, pulleys mounted on said frame, a sheave suitably journaled on said body member, a cable passing over said pulleys and around said sheave and secured to opposite sides of said ring, means for rotating said sheave, and a track on which said ring is adapted to slide whereby it is brought to rest over a conveyer, for carrying away the contents thereof, all coacting substantially as described for the purpose specified.

13. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported

on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a perforated pressing ring seated on said body member, means for lifting said ring from said body member, a track secured to said body member on which said ring is adapted to slide, a cable secured to opposite sides of the ring, and means for actuating said cable whereby the ring is brought to rest over a conveyer for carrying away the contents thereof, all coacting substantially as described for the purpose specified.

14. In a structure of the class described, the combination of a frame member, columns supported thereon, a top member supported on said columns and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a perforated pressing ring seated on said body member, means for lifting said ring from said body member, a track on which said lower ring is adapted to slide, and means for moving said lower ring on said track from its seat on the body member whereby said ring is brought to rest over a conveyer for carrying away the contents thereof, all coacting substantially as described for the purpose specified.

15. In a structure of the class described, the combination of a frame member, a top member suitably supported therefrom and carrying a head block, a hydraulic cylinder working in said frame member, a ram working in said cylinder, a receptacle receiving the material to be pressed and carried by said ram, a passage through said head block for delivering said material to said receptacle, a tapered plug, and means for lifting said plug to close said passage, all coacting substantially as described for the purpose specified.

16. In a structure of the class described, the combination of a frame member, a top member suitably supported therefrom and carrying a head block, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a receptacle receiving the material to be pressed and carried by said ram, and a passage through said head block for delivering said material to said receptacle, all coacting substantially as described for the purpose specified.

17. In a structure of the class described, the combination of a frame member, a head block suitably supported thereon, a hydraulic cylinder supported on said frame member, a ram working in said cylinder, a body member carried by said ram, a lower perforated ring seated on said body member, and an upper perforated ring seated on said lower ring, whereby the material to be pressed is forced by the head block into said lower ring, all coacting substantially as described for the purpose specified.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

GUS J. WAGNER. [L. S.]
MYRON H. HOPKINS. [L. S.]

Witnesses:
C. H. FOOTE,
FRANK B. ELMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."