

No. 737,424.

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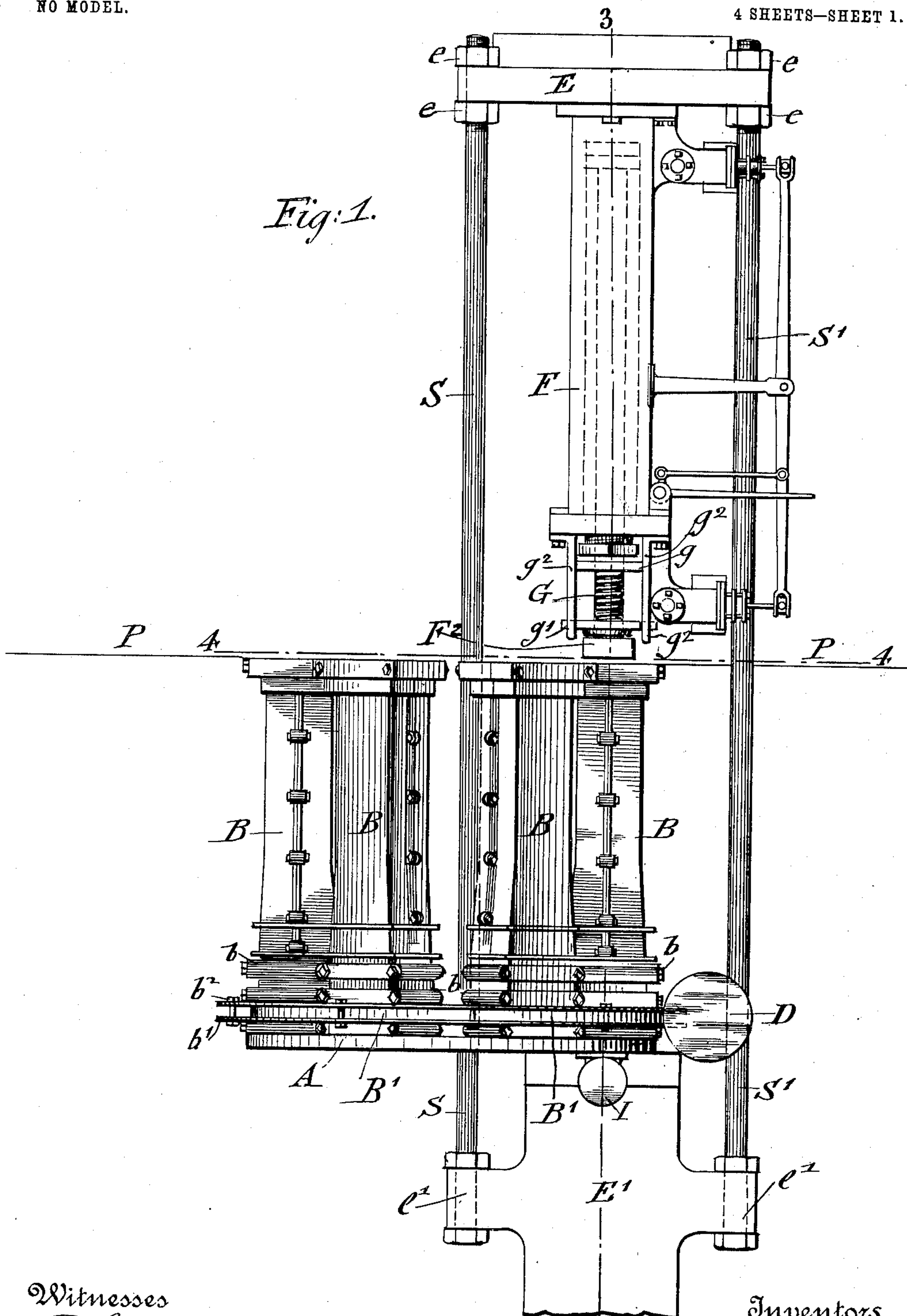
M. LAERNOES & J. DUNN.

MACHINE FOR COMPRESSING DETINNEED OR OTHER SCRAPS.


APPLICATION FILED JAN. 10, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses  
C. P. Goepel.  
C. Zimmer.


 3 *Martin Laermoes & John Dunn* Inventors  
 By *their Attorneys* *Joseph Viles*

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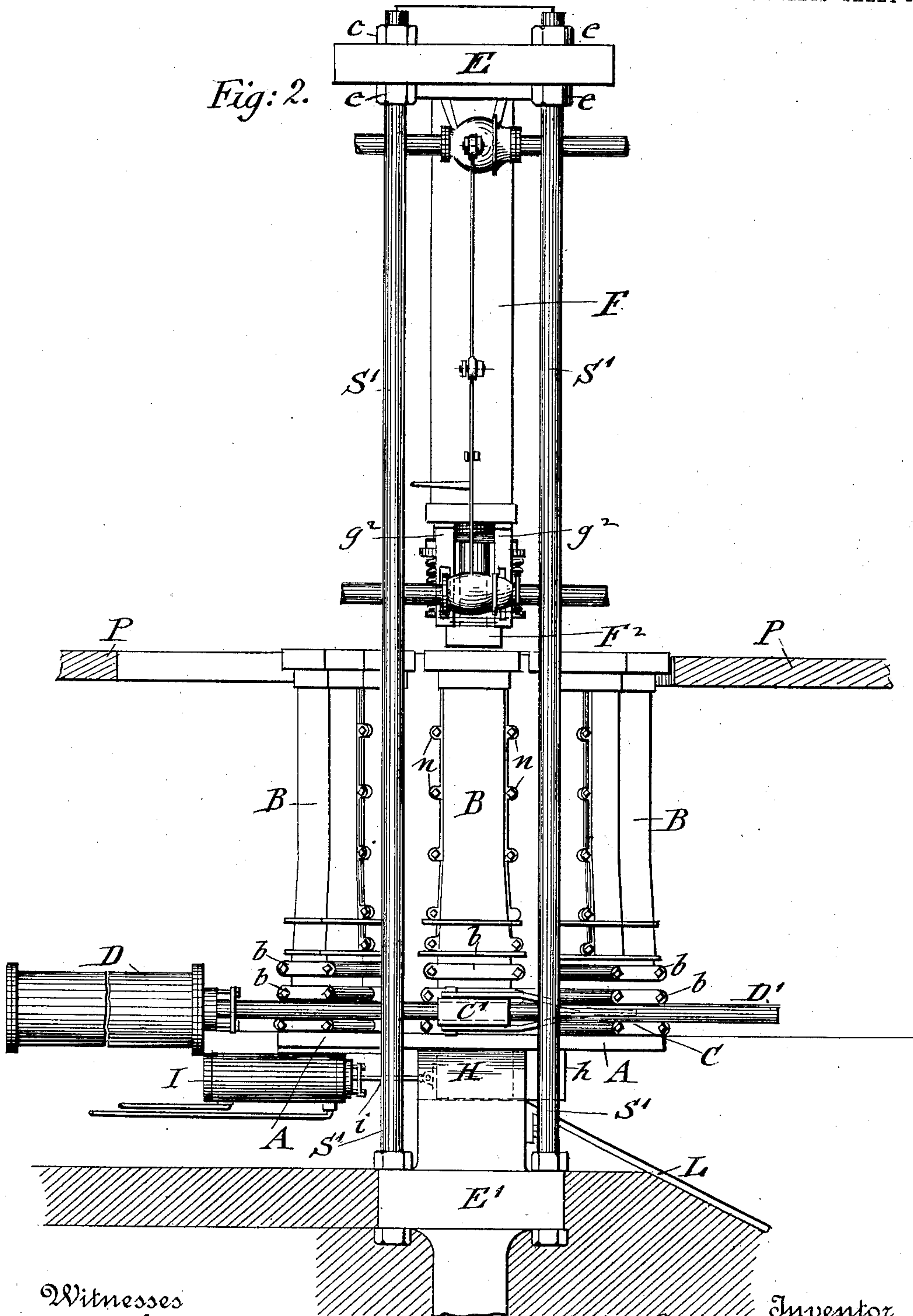
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By their Attorneys Joseph Hiles



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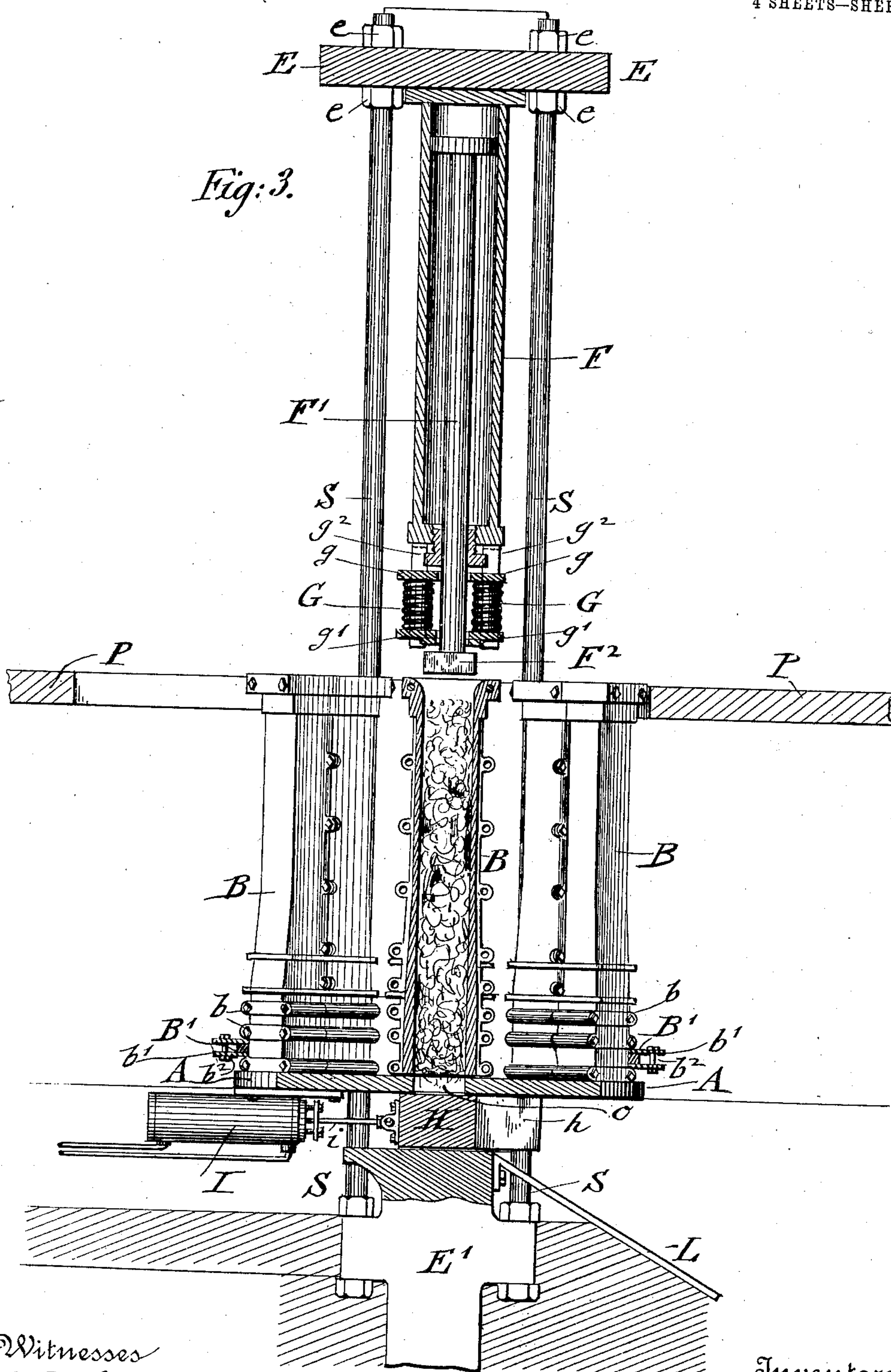
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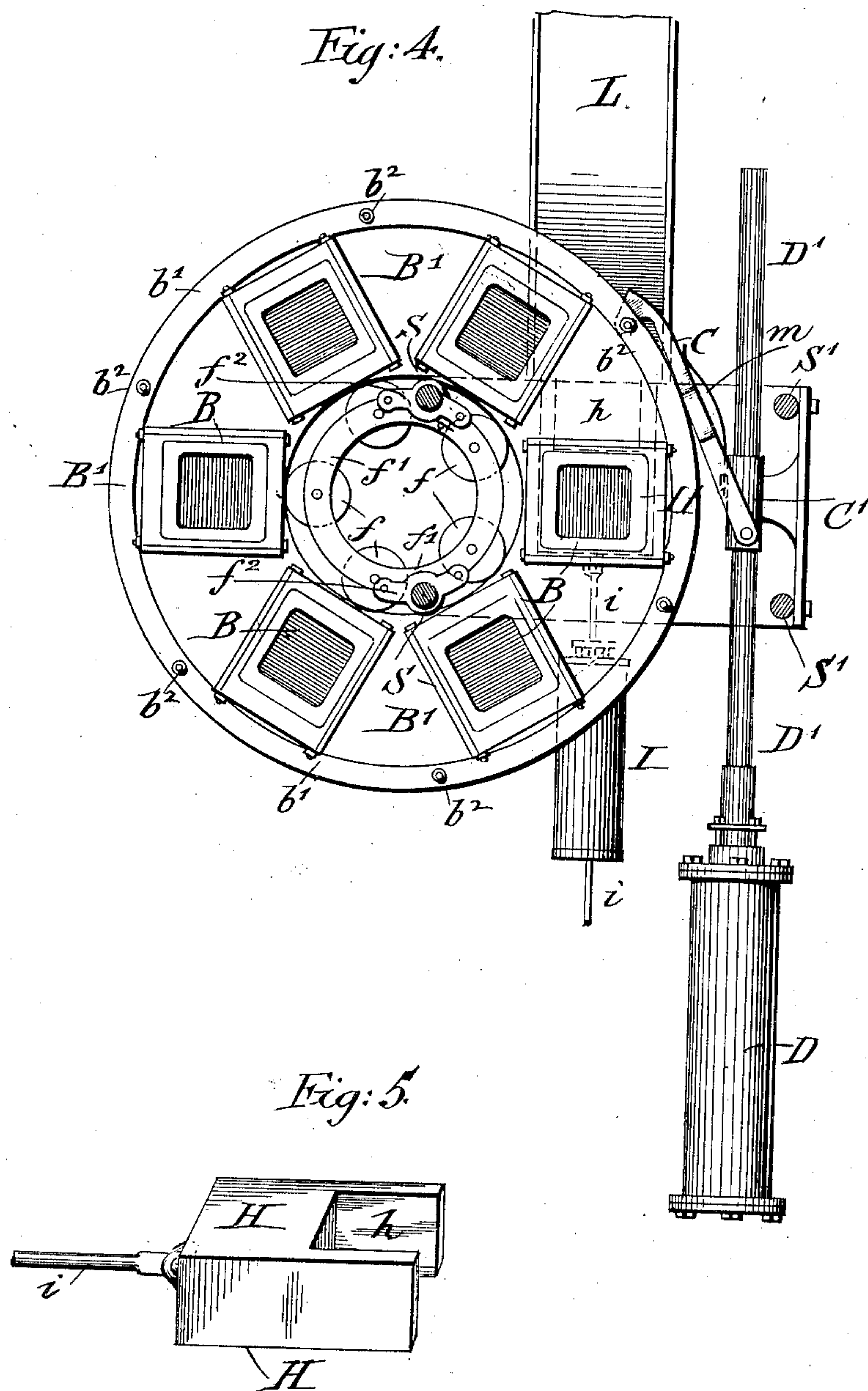
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4 SHEETS—SHEET 4



Witnesses  
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C. Zimmer.

Martin Laermoes & John Dunn  
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# UNITED STATES PATENT OFFICE.

MARTIN LAERNOES AND JOHN DUNN, OF STREATOR, ILLINOIS, ASSIGNORS  
TO THE VULCAN DETINNING COMPANY, OF NEW YORK, N. Y., A COR-  
PORATION OF NEW JERSEY.

## MACHINE FOR COMPRESSING DETINNED OR OTHER SCRAPS.

SPECIFICATION forming part of Letters Patent No. 737,424, dated August 25, 1903.

Application filed January 10, 1903. Serial No. 138,511. (No model.)

*To all whom it may concern:*

Be it known that we, MARTIN LAERNOES, a citizen of the Kingdom of the Netherlands, and JOHN DUNN, a citizen of the United States of America, both residing in Streator, in the county of LaSalle and State of Illinois, have invented certain new and useful Improvements in Machines for Compressing Detinned or other Scraps, of which the fol-  
10 lowing is a specification.

Tin scraps obtained in the manufacture of tin cans and from other sources, as well as waste pieces of tin, are detinned by dissolving the tin on the scraps by an electric cur-  
15 rent. The remaining iron and steel scraps are then transferred to a machine for compressing the same into compact bundles or blocks of rectangular or other shape, which are shipped to the iron and steel works for  
20 being melted and utilized.

The object of this invention is to furnish a machine for compressing detinned or other scraps in a compact and effective manner, which machine is operated by steam or air in  
25 the nature of the well-known "steam-hammer," in connection with a number of receivers which are filled with scrap, successively subjected to the action of a power-plunger, so that the scraps in the boxes are  
30 compressed into small blocks, said blocks being then transferred by suitable mechanism to a conveyer ready for shipment; and the invention consists of a machine for compressing detinned and other scraps, which comprises  
35 a plurality of receiving-boxes that are arranged on a stationary foundation-plate that is provided with an opening, an anvil arranged below said opening, a vertically-reciprocating plunger located vertically above  
40 the opening in said foundation-plate, means for imparting a step-by-step motion to said receiving-boxes, and means for reciprocating the anvil so as to transfer the compressed scraps to a suitable conveying mechanism.

45 The invention consists, further, of certain details of construction and combinations of parts, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1  
50 represents a side elevation of our machine

or compressing detinned and other scraps. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical transverse section on line 3 3, Fig. 1. Fig. 4 is a plan view partly in horizontal section on line 4 4, Fig. 1; and Fig. 5  
55 is a perspective view of the reciprocating anvil.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a foundation-plate of our improved machine for compress-  
60 ing detinned tin and other scraps. The foundation-plate A is preferably made in the shape of a disk and of sufficient strength to support a number of receiving-boxes B, which are  
65 of rectangular, round, or other cross-section and reinforced at their lower ends by exterior strengthening-straps *b*. Each receiving-box B is composed of two or four parts, which are provided with perforated ears *n*, that are con-  
70 nected by means of fastening-bolts. The receiving-boxes may also be made of one piece, thereby doing away with bolts. They are made thicker at their lower ends, so as to resist the strain to which they are subjected  
75 when compressing the scraps. The upper ends are rounded off or tapered at their inner edge, so as to facilitate the feeding of the scraps into the same from a platform P, which surrounds the receiving-boxes B. A number  
80 of receiving-boxes is arranged on the foundation-plate A, six being shown in the drawings, which are arranged equidistantly from each other. These six receiving-boxes are connected near their lower ends by a ring-  
85 shaped frame B', which is provided with openings corresponding in shape and size to that of the receiving-boxes and so as to embrace said boxes. At the outer circumference of the frame B' are arranged flanges *b'*, which  
90 are equidistantly connected by bolts *b''*. The inner circumference of the ring-shaped frame B' is guided on antifriction-rollers *f*, which are pivoted to stationary rings *f'*, as shown  
95 in Fig. 4, said rings *f'* being firmly attached by straps *f''* to a pair of upright standards S, so that the ring-shaped plate B' may be turned along said rollers around the vertical central axis of the rings *f'* and the foundation-plate A. A step-by-step or intermittent rotary mo-  
100



tion is imparted to the ring-shaped frame B' by a hook-shaped lever C, which is pivoted to a collar C' on the piston-rod D' of the piston of a horizontal steam or air cylinder D, that is provided with suitable inlet and outlet valves, (not shown,) which are operated at the proper time. The hook-shaped end of the lever C is moved along the circumference of the frame B' and engages one of the bolts b<sup>2</sup> of the same, so as to move the frame and the receiving-boxes intermittently through the distance of one-sixth of the circumference of the frame B' as soon as the motor fluid is admitted to the cylinder D. By the outward motion of the piston and piston-rod of the cylinder D the hook-shaped lever C is moved again along the circumference of the frame B' into engagement with the next bolt b<sup>2</sup> on the ring-shaped frame B', and so on.

A second pair of upright standards S' is arranged outside of the foundation-plate A, the upper ends of said upright standards S and S' being connected with a strong top plate E, which is firmly held in position by suitable screw-nuts e. The lower ends of the standards S S' are likewise connected with the perforated ears e' of a bottom block E'. The top plate E serves to support a vertical cylinder F, which is provided with suitable inlet and outlet valves and a suitable lever mechanism for operating the same. To the lower end of the piston-rod F' of the cylinder F is attached a plunger F<sup>2</sup>, the shape of which corresponds exactly to the cross-section of the receiving-boxes, so as to fit snugly to the same. Between the plunger F<sup>2</sup> and the lower end or head of the cylinder F are interposed a number of stout cushioning-springs G, which are retained between a stationary plate g and a sliding plate g', the latter being arranged immediately adjacent to the plunger, said sliding plate being guided in stationary brackets or hangers g<sup>2</sup>, that are attached to the lower head of the cylinder F. After one of the receiving-boxes B charged with scrap is placed below the plunger by the spring-actuated hook-shaped lever C the plunger is operated by intermittently admitting steam or air to the vertical cylinder F, so as to produce a series of blows in quick succession for compressing the scraps in the receiving-box until they are compacted into a square bundle or block in the opening o of the foundation-plate A. The foundation-plate is made thick enough for this purpose. As the scrap is gradually compressed the strokes of the plunger are repeated at greater intervals, the force of the plunger being taken up at the end of each upstroke by the cushioning-springs, so as to facilitate the working of the plunger and cylinder and prevent injury to the latter.

During the compression of the scraps in the receiving-box B, that is located at the time below the plunger F<sup>2</sup>, an anvil H is located below the opening o in the foundation-plate A, as shown in Fig. 3, said anvil being provided with a recessed extension h, corre-

sponding approximately with the cross-section of the receiving-box, so that the scrap when compacted can be transferred from the opening o of the foundation-plate A into the recessed portion h of the anvil. A final stroke of the plunger transfers then the bundle or block bodily from the opening o in the foundation-plate A into a recess h of a horizontally-reciprocating anvil H after the same has been withdrawn sidewise. This is accomplished by a third cylinder I, which is operated by means of inlet and outlet valves, and the piston-rod i of which is connected with the solid portion of the anvil H. The anvil is shown in detail in Fig. 5, the recessed end of the same being somewhat larger than the block into which the scraps have been compacted, so as to freely receive the blocks when the anvil is withdrawn from and the recess h placed under the opening o in the foundation-plate A. The forward feeding of the block of compressed scraps is accomplished by the forward motion of the anvil, so that the block is delivered to an inclined chute L, which is attached to the anvil-supporting block E', as shown in Fig. 3. From this chute the package is either conducted directly to the car, by which it is sent back to the mill for remelting, or to a suitable conveyer to the place where they are stored for shipment. As soon as the anvil is replaced below the opening o of the foundation-plate the cylinder D, which imparts step-by-step or intermittent rotary motion to the receiving-boxes, is again operated by the attendant and the entire set of receiving-boxes, which are charged with scraps, are placed below the vertically-reciprocating plunger and the scrap in the same compressed, after which the operation of withdrawing the anvil and discharging the compressed scrap-block is repeated, as before described. These operations are repeated, the boxes being charged with scrap from the platform as they are rotated, so that one receiving-box after the other is placed below the plunger and over the opening in the foundation-plate closed by the anvil, whereby the scrap is compressed in the same. The operation of the machine is controlled by the three power-cylinders, the first cylinder bringing the charged receiving-boxes one after the other below the plunger, the second operating the plunger, so as to compact the scraps in the receiving-boxes, and the third actuating the anvil at the proper time, so as to receive the blocks and discharge them into the conveying-chute. By arranging the levers and valves of these three cylinders one attendant may operate the whole machine for compressing the detinned or other scraps, which are then shipped to the mill for further treatment.

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

1. A machine for compressing detinned or other scraps, which consists of a stationary



foundation-plate provided with an opening, a plurality of upright receiving-boxes supported on said foundation-plate, means for imparting a step-by-step rotary motion to said receiving-boxes, an anvil below the opening of the foundation-plate, and a vertically-reciprocating plunger located vertically above the opening of the foundation-plate, substantially as set forth.

2. In a machine for compressing detinned or other scraps, the combination, with a stationary foundation-plate provided with an opening, of a plurality of upright receiving-boxes supported on said foundation-plate, means for imparting a step-by-step rotary motion to said receiving-boxes, an anvil below the opening of the foundation-plate, and means for subjecting the scraps in the box then above the opening and anvil, to a successive compression and discharge action, substantially as set forth.

3. In a machine for compressing detinned or other scraps, the combination, with a stationary foundation-plate provided with an opening, of a plurality of upright receiving-boxes supported on said foundation-plate, means for imparting a step-by-step rotary motion to said receiving-boxes, an anvil below the opening of the foundation-plate, and means for compressing the scraps in the box, forcing the same from the box into the opening of the foundation-plate and discharging the compressed block from the opening of the foundation-plate, substantially as set forth.

4. A machine for compressing detinned or other scraps, which consists of a stationary foundation-plate provided with an opening, a plurality of upright receiving-boxes supported on said foundation-plate, means for imparting a step-by-step motion to said receiving-boxes, a vertically-reciprocating plunger located vertically above the opening in said foundation-plate, an anvil below the opening in the foundation-plate, and means for reciprocating the anvil so as to permit the delivery of the block of compressed scraps from the opening in the foundation-plate, substantially as set forth.

5. A machine for compressing detinned or other scraps, which consists of a stationary foundation-plate provided with an opening, a plurality of upright receiving-boxes supported on the foundation-plate and open at the upper and lower ends, a frame embracing the lower ends of the receiving-boxes, means for imparting a step-by-step motion to said frame and receiving-boxes, an anvil below the opening in the foundation-plate, a vertically-reciprocating plunger located vertically above said opening, and means for reciprocating the anvil so as to permit the dropping and transferring of the block of compressed scraps, substantially as set forth.

6. A machine for compressing detinned or other scraps, which consists of a stationary foundation-plate provided with an opening, a plurality of upright receiving-boxes sup-

ported on said foundation-plate, a frame embracing the lower ends of the receiving-boxes, means for imparting a step-by-step motion to said frame and receiving-boxes, a vertically-reciprocating plunger located vertically above the opening in the foundation-plate, an anvil located below the opening in the foundation-plate and provided with a recessed extension, and means for reciprocating said anvil so as to permit the clearance of the block of compressed scraps through the opening in the foundation-plate into the recessed extension of the anvil, substantially as set forth.

7. A machine for compressing detinned and other scraps, consisting of a stationary foundation-plate provided with an opening, a plurality of receiving-boxes supported on said foundation-plate and provided with reinforcing devices at their lower ends, a ring-shaped frame embracing the lower ends of said receiving-boxes, antifriction-rollers for guiding the inner circumference of said frame, means for intermittently rotating said frame and the receiving-boxes, a vertically-reciprocating and spring-cushioned plunger for compressing the scraps successively in one receiving-box after the other, an anvil below the opening in the foundation-plate, and means for reciprocating said anvil so as to produce the delivery of the block of compressed scraps, substantially as set forth.

8. A machine for compressing detinned and other scraps, consisting of a stationary foundation-plate provided with an opening near its circumference, a plurality of receiving-boxes open at both ends on said foundation-plate, a platform on a level with the upper ends of the receiving-boxes for charging the same with scrap, a ring-shaped frame embracing the lower ends of said receiving-boxes, means for intermittently rotating said frame and receiving-boxes, a vertically-reciprocating and spring-cushioned plunger located vertically in line with the opening in the foundation-plate, means for actuating said plunger so as to compress the scraps gradually from the lower parts of the receiving-boxes into the opening in the foundation-plate, an anvil located below the opening in the foundation-plate, and means for reciprocating said anvil so as to permit the delivery of the block of compressed scraps from the opening in the foundation-plate, substantially as set forth.

9. A machine for compressing detinned and other scraps, consisting of a stationary foundation-plate, a plurality of upright receiving-boxes supported on said foundation-plate, a ring-shaped frame embracing the lower ends of said receiving-boxes, means for intermittently rotating said frame and the receiving-boxes, a vertically-reciprocating plunger for compressing the scraps successively in one receiving-box after the other, an anvil below the opening in the foundation-plate, a stationary supporting-block below the anvil, means for reciprocating said anvil so as to permit the discharge of the block of compressed scraps



from the opening in the foundation-plate onto the block, and an inclined chute attached to said block for conducting off the blocks of compressed scraps, substantially as set forth.

5 10. The combination, with two pairs of upright supporting-pillars provided with a transverse top plate and connecting bottom block, of a foundation-plate provided with an opening near its circumference, an anvil located between the opening in said foundation-plate and the bottom block, means for reciprocating said anvil, a plurality of receiving-boxes open at both ends supported on said foundation-plate, a ring-shaped frame connecting the lower ends of said receiving-boxes, means for guiding said frame, means for imparting intermittent rotary motion to said ring-shaped frame and receiving-boxes,

a vertically-reciprocating spring-actuated plunger located in line with the opening in the foundation-plate and the receiving-box then in position over said opening, and means for imparting vertically-reciprocating motion to said plunger for compressing the scraps in the receiving-box and delivering the same at the lower end of the box on the withdrawal of the anvil, substantially as set forth. 25

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

MARTIN LAERNOES.  
JOHN DUNN.

Witnesses:

HERMAN A. NATER,  
LOUIS NATER.