

No. 737,427.

PATENTED AUG. 25, 1903.

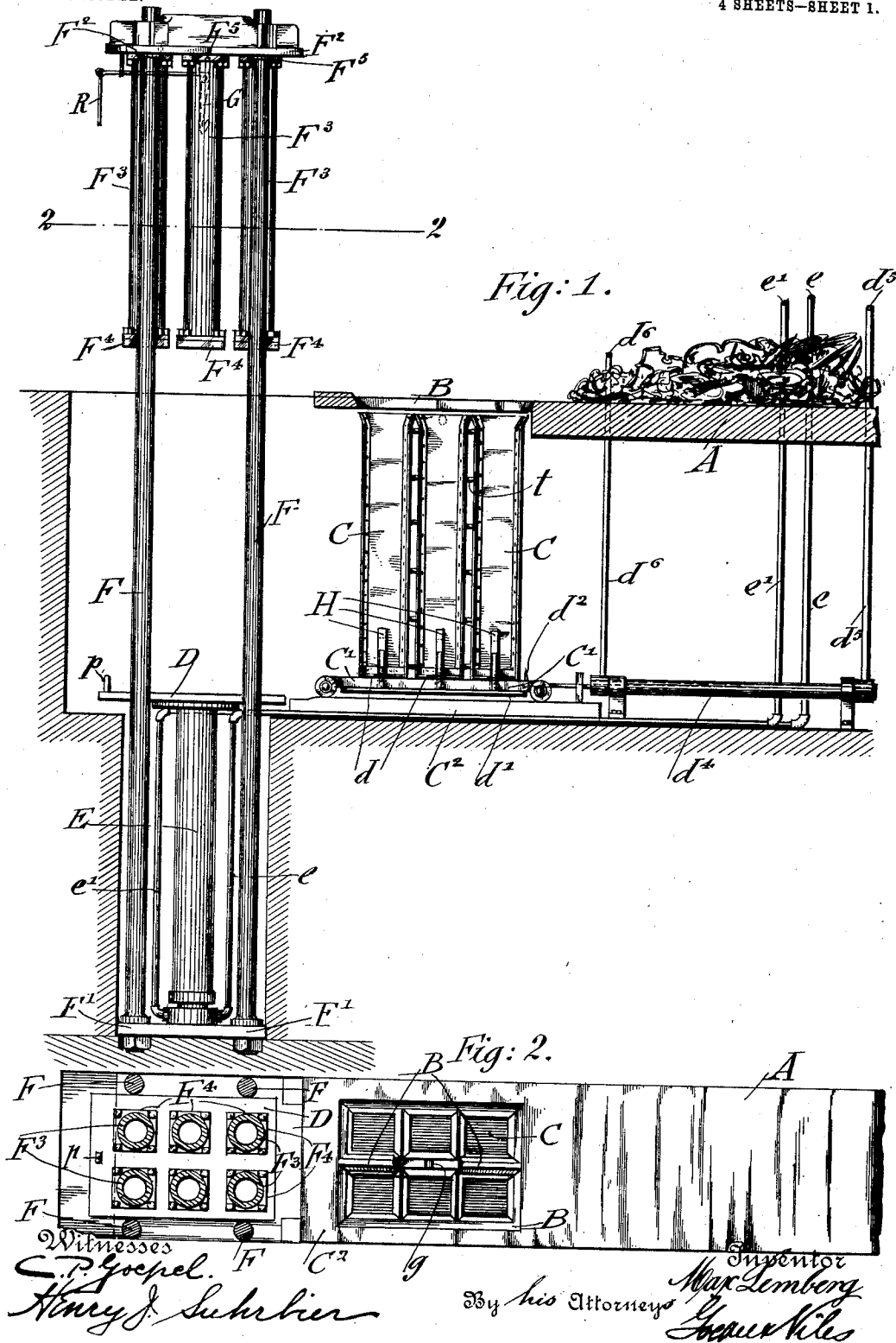
M. LEMBERG.

MACHINE FOR COMPRESSING DETINUED SCRAPS.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



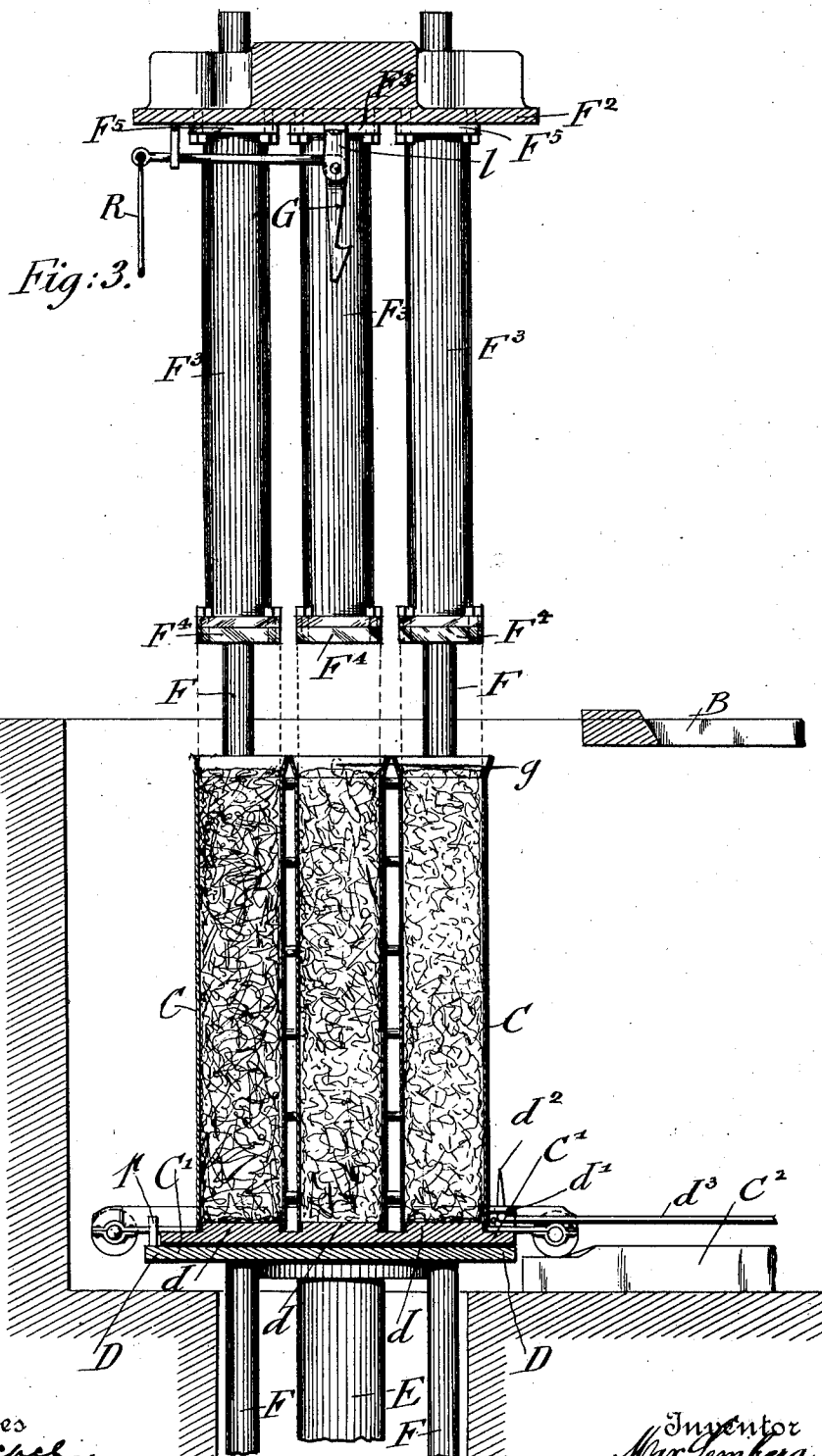
M. LEMBERG.

MACHINE FOR COMPRESSING DETINUED SCRAPS.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

4 SHEETS—SHEET 2.



Witnesses
C. P. Goepel.
Henry J. Schubert

Inventor
Max Lemberg
By his Attorneys
Gruen Viles

No. 737,427.

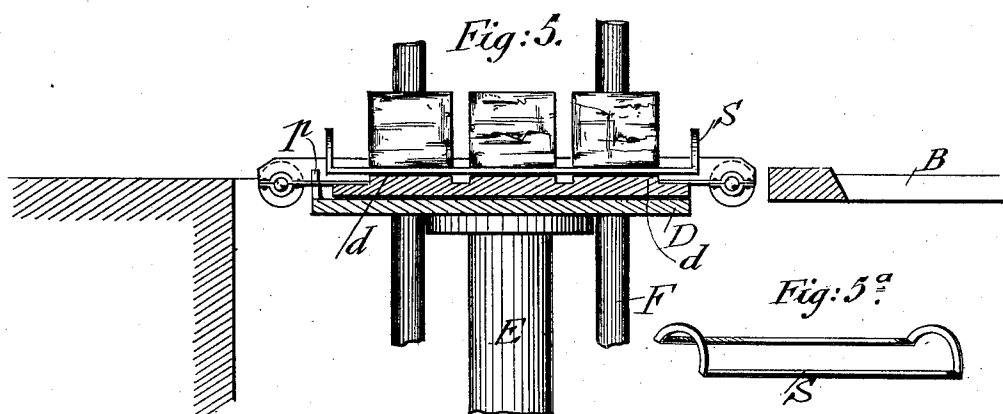
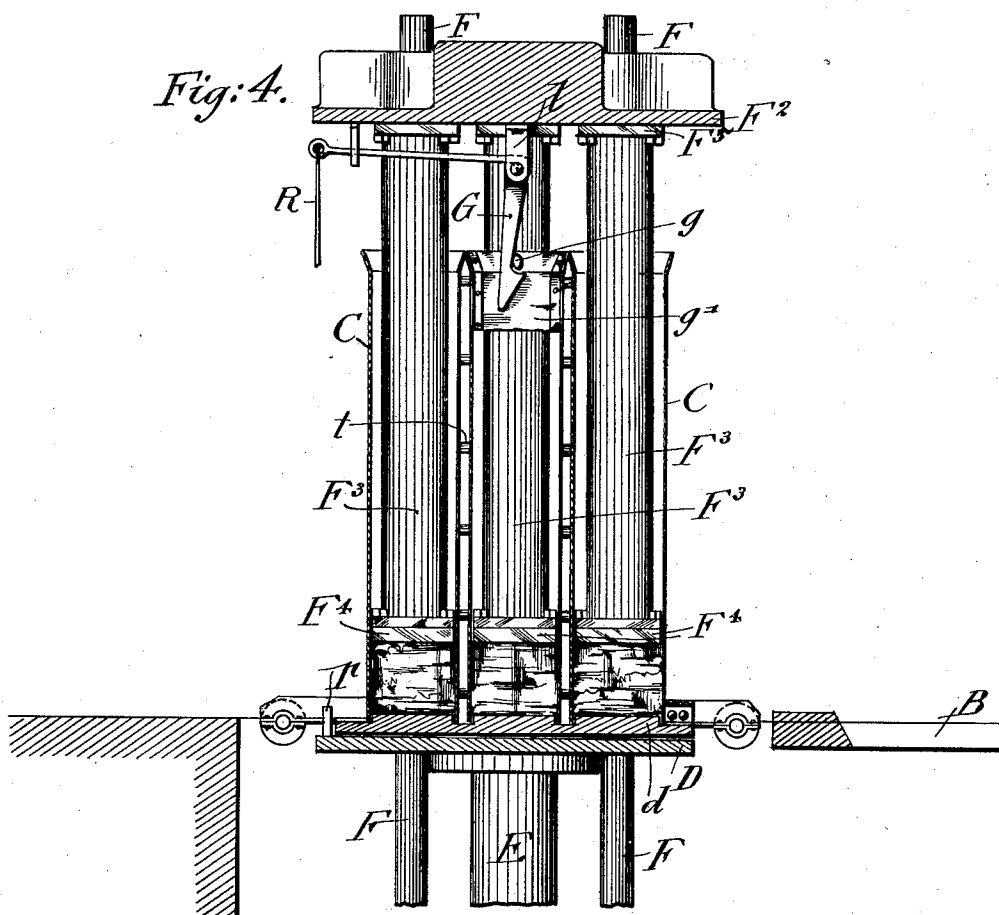
PATENTED AUG. 25, 1903.

M. LEMBERG.
MACHINE FOR COMPRESSING DETINNED SCRAPS.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

4 SHEETS—SHEET 3.



Witnesses
C. P. Spence
Henry J. Suber

Inventor
Max Lemberg
By his Attorney
Frederick Vile

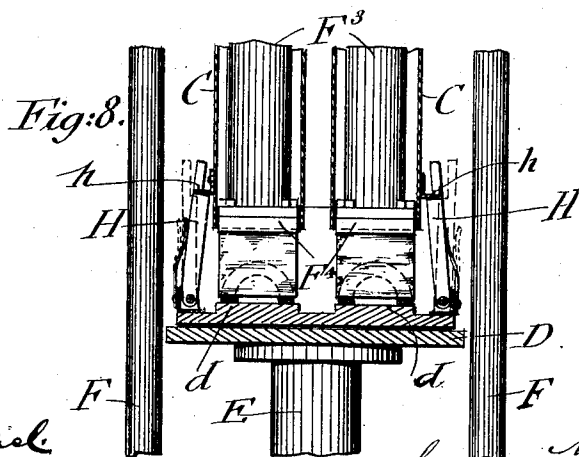
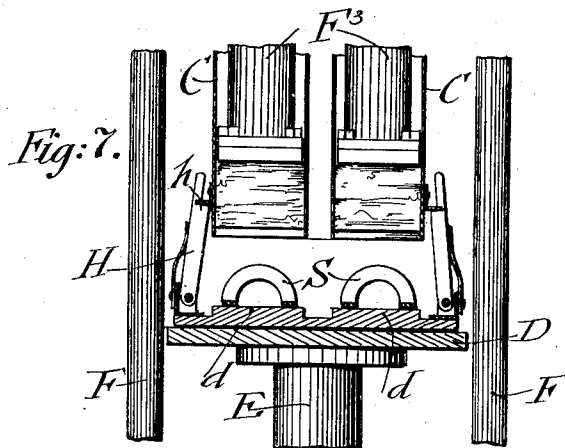
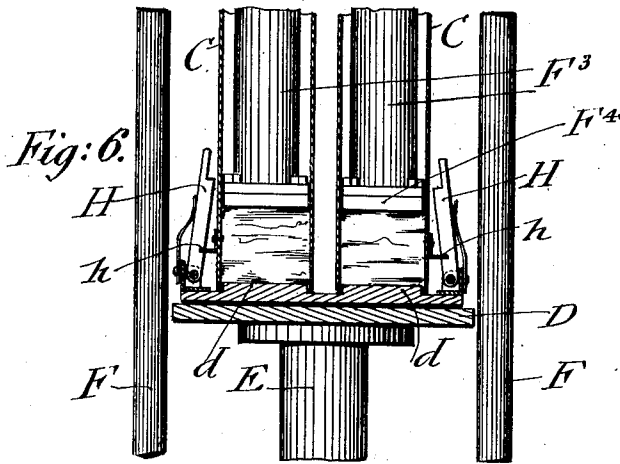
M. LEMBERG.

MACHINE FOR COMPRESSING DETINNED SCRAPS.

APPLICATION FILED DEC. 3, 1902.

NO MODEL.

4 SHEETS—SHEET 4.



Witnesses
C. P. Goepke
Harry J. Schrier

Inventor
Max Lemberg
 By his Attorneys
James Niles

UNITED STATES PATENT OFFICE.

MAX LEMBERG, OF SEWAREN, NEW JERSEY, ASSIGNOR TO THE VULCAN DETINNING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MACHINE FOR COMPRESSING DETINNED SCRAPS.

SPECIFICATION forming part of Letters Patent No. 737,427, dated August 25, 1903.

Application filed December 3, 1902. Serial No. 133,756. (No model.)

To all whom it may concern:

Be it known that I, MAX LEMBERG, a citizen of the United States, residing in Sewaren, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Machines for Compressing Detinned Scraps, of which the following is a specification.

In the detinning of tin scraps, tin cans, &c., the tin of the scraps is dissolved in a suitable solution by the electric current. The remaining iron and steel scraps are then subjected to a washing operation, so as to remove the solution adhering thereto, and then transferred to a machine for compressing the same by power into compact bundles of rectangular or other shapes, so that it can be conveniently shipped to the iron and steel works for being remelted, and so again used in industries employing iron and steel.

The object of this invention is to furnish a machine for compressing the detinned scraps in a compact and effective manner, said machine being operated by hydraulic means; and for this purpose the invention consists of a machine for compressing detinned scraps which comprises a plurality of receiving-boxes, stationary plungers, a carriage for said boxes, means for reciprocating said carriage so as to place it vertically below the plungers, a platform for supporting said boxes, hydraulic means for raising the platform so as to move the boxes over the plungers, means for locking the boxes after the scraps have been compressed to the proper degree, means for delivering the compressed scrap through the lower ends of the boxes, and means for removing the compressed scrap.

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 represents a vertical longitudinal section of my improved apparatus for compressing detinned scraps, showing the boxes in position for receiving the scrap preparatory to compressing the same. Fig. 2 is a plan view, partly in horizontal section, on line 2 2, Fig.

1. Fig. 3 is a vertical longitudinal section through the boxes and plungers before compression drawn on a larger scale. Fig. 4 is a similar section after compression of the scraps in the boxes. Fig. 5 is a vertical longitudinal section of the platform with the carriage and compressed scraps on the same after the boxes are lifted away from the platform. Fig. 5^a is a perspective view of the skid used in my improved apparatus; and Figs. 6, 7, and 8 are vertical transverse sections through the platform and lower part of the boxes, showing the same, respectively, in the act of final compression of the scrap, in the act of lifting the boxes, and in the act of removing the compressed scraps from the lower ends of the boxes.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a platform on which the detinned and washed scrap is delivered. In line with the platform is arranged a hopper-shaped portion, which is made in the shape of a gridiron, so as to present as many openings as there are receiving-boxes for compressing the scrap. Below the hopper B are arranged the receiving-boxes C, a plurality of which is arranged sidewise of each other. In the drawings three pairs of receiving-boxes are shown, which are placed vertically below the three pairs of openings in the hopper B. The receiving-boxes are made of stout boiler-iron and reinforced at the corners by angle-irons riveted thereto, the upper ends being somewhat curved outwardly, funnel fashion, in line with the tapering openings of the hopper B, so as to prevent scraps from falling in the spaces between the boxes to facilitate the transferring of the scraps from the platform by forks into the receiving-boxes. In the spaces between the boxes are arranged stay-bolts *t*, by which the receiving-boxes are firmly held in vertical position and mutually strengthened. The receiving-boxes C are open at their upper and lower ends, the lower ends resting on a wheeled platform C', the wheels of said platform resting on a raised plate C², located vertically below the hopper B, said plate being provided

with a depression or incline at one end to permit the transfer of the boxes, with their charge of detinned scraps, onto a movable platform D at the upper end of the piston of a hydraulic cylinder E. The wheeled platform C' is provided with as many raised portions d of square shape as there are boxes, said raised portions fitting in the lower ends of the receiving-boxes C and closing the lower ends of the boxes during the compression action on the detinned scraps in the same. The wheeled platform C' is connected by a perforated cross-bar d' with the hook-shaped end d^2 of a piston-rod d^3 , the piston of which is guided in a horizontal cylinder d^4 , which is actuated hydraulically, being connected at its ingoing and outgoing ends with pipes d^5 d^6 , so that when the pressure fluid is permitted to enter into the cylinder d^4 the wheeled platform C', together with the receiving-boxes C, is moved forward, so as to transfer the wheeled platform C' and the receiving-boxes C onto the platform D of a vertical hydraulic cylinder E. The lower end of the hydraulic cylinder E is connected with pipes e e' , so as to operate the piston and raise thereby the platform D, together with the receiving-boxes on the same, as soon as the valve for supplying the pressure fluid is opened.

At either side of the hydraulic cylinder E is arranged an upright pillar F, which pillars are attached to a bed-plate F', that is located in a well of sufficient depth to provide for the hydraulic cylinder E, which is also secured to the bed-plate F'. Thereby the plate D is normally of the same level as the raised plate C², and the cylinder with the operating-piston being below the level will force the plate D in upward direction. To the upper ends of the upright pillars F is attached a stationary head F², which is firmly attached to said pillars, said head carrying a plurality of plungers F³, the number of plungers corresponding to the number of receiving-boxes C. To the lower ends of the plungers F³ are applied square heads F⁴, that are bolted thereto, said heads being made of steel or other suitable material and fitting closely into the rectangular receiving-boxes C, so that the latter can be readily moved along said heads when the boxes are raised by the action of the hydraulic cylinder E and plate D. The upper ends of the plungers F³ are also provided with square heads F⁵, which are bolted to the under side of the pillar-head F², as shown in Figs. 1 and 4.

To the stationary head F² of the pillars F is attached a lug l , to which is fulcrumed an elbow-shaped lever G, the downwardly-extending arm of which is made of hook shape, while to the horizontal arm an operating-rod R is applied. The hooking-lever G is preferably arranged at both sides of the head F², said levers serving for locking the receiving-boxes when they gradually arrive at their uppermost position, corresponding to the final compression of the scraps in the boxes, the

hook-shaped ends engaging elongated pins g , arranged on plates g' , attached to opposite sides of the receiving-boxes. During the upward motion of the receiving-boxes following the upward motion of the platform D the elongated or flattened pins g pass along the tapering ends of the hooks, press the same sidewise until the hooks are moved over the pins, so as to engage the same and hold thereby the receiving-boxes in raised position for permitting the return of the platform D without the boxes.

To opposite sides of the wheeled platform C' are pivoted spring-actuated locking-levers H, which are recessed at their upper ends and adapted to engage with outwardly-projecting stops h , that are attached to outer opposite sides of the receiving-boxes C, as shown clearly in Figs. 6, 7, and 8. The levers H engage automatically the outwardly-projecting stops h after the receiving-boxes are locked by and suspended from the hooks g , so as to support the receiving-boxes at some distance from the platform D, as shown in Fig. 7, and permit thereby the continuation of the lifting motion of the platform with the receiving-boxes, so that the heads of the plungers will force the compressed scrap-blocks through the lower open ends of the receiving-boxes, as shown in Fig. 8. As soon as the receiving-boxes are locked by the spring-actuated levers H skids or sleds provided with arched ends are placed in position on the platform of the carriage below the lower ends of the receiving-boxes, said skids being shown in perspective view in Fig. 5^a and adapted to receive the compressed scrap-blocks and to be easily removed with the scrap-blocks before the return motion of the platform takes place. When the platform D arrives at its lower or normal position, the wheeled carriage, with the receiving-boxes, is taken hold of by the hooked end d^3 of the piston-rod of the horizontal hydraulic cylinder d^4 and actuated by the piston in the latter and returned onto the raised platform C² below the hopper B, so as to receive the next charge of detinned scraps from the platform A.

My improved machine for compressing scraps is operated as follows: The scraps after being detinned and washed are placed on the platform A and from there transferred, by means of forks, into the receiving-boxes C until they are nearly filled up. The receiving-boxes are supported by and fit on the raised portions d of the wheeled platform C'. When the receiving-boxes are filled with scrap, the piston of the hydraulic cylinder is operated by opening its supply-valve, so that the wheeled platform, with the charged receiving-boxes, is moved over onto the platform D, attached to the piston-rod of the vertical hydraulic cylinder E. The wheeled platform is arrested by a stop-pin p of the platform D, as shown clearly in Fig. 3. The valve for supplying the pressure fluid to the vertical cylinder E is then opened, so that

the piston of the same, platform D, wheeled platform, and receiving-boxes are raised in upward direction, so that the receiving-boxes pass over the lower square ends F^4 of the plungers F^3 , by which the scraps are gradually compressed until cubical blocks are produced. During the upward motion of the receiving-boxes C the pins g on the opposite sides of the same pass over and are engaged by the locking-hooks G, so that the receiving-boxes are suspended from said hooks. The platform D is then lowered by reversing the pressure-fluid-supply valve until the upper recessed ends of the pivoted and spring-actuated levers H engage the stops h on the lower ends of the receiving-boxes, as shown in Fig. 7. The engagement of the levers with the stops takes place automatically. The valves of the hydraulic cylinder E are again reversed, so that an upward motion is again imparted to the platform D, whereby the receiving-boxes are lifted by means of the levers H engaging the stops h , so that the plungers force the compressed scrap-blocks at the lower ends of the receiving-boxes in downward direction onto the skids, which are placed below the receiving-boxes before the lifting motion of the platform with levers H is commenced. As soon as the compressed blocks clear the receiving-boxes and are placed on the skids the latter are removed with the blocks by the attendants by means of suitable tools. During the downward motion of the blocks until they clear the lower ends of the receiving-boxes the latter are supported on the lower ends of the levers H, as shown in Figs. 7 and 8. The upper ends of the receiving-boxes are then released from the suspension-hooks, so that they are permitted to slide down on the heads of the plungers, the locking-levers H being removed from the stop-lugs for this purpose. The platform D, with the receiving-boxes, is then lowered by reversing the motion of the valves of the vertical cylinder E until they arrive in position shown in Fig. 3. In this position the wheeled platform is connected to the hooked end d^2 of the piston-rod of the horizontal hydraulic cylinder d^4 and the platform with the boxes thereon moved in backward direction by proper manipulation of the valves until it arrives with the boxes on the platform C² below the hopper B ready for receiving the next charge of scraps.

By the machine shown in the drawings the scrap-blocks are simultaneously formed by the operation of the machine by the hydraulic action of the two cylinders d^4 and E. The scrap-blocks are then tied together by wire and shipped to the mill for being melted to be used in industries using iron and steel.

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

1. A machine for compressing detinned scraps, consisting of a plurality of upright receiving-boxes, a wheeled platform for said

receiving-boxes, a plurality of stationary plungers, a platform vertically below said plungers, means for transferring the wheeled platform and the receiving-boxes to the platform below the plungers, and means for raising both platforms and the receiving-boxes for compressing the scraps in the receiving-boxes by the plungers, substantially as set forth.

2. A machine for compressing detinned scraps, consisting of a plurality of upright receiving-boxes, a wheeled platform for said receiving-boxes, a plurality of stationary plungers, a platform vertically below said plungers, means for transferring the wheeled platform and receiving-boxes to the platform below the plungers, means for arresting the wheeled platform on the platform below the plungers, and means for raising both platforms and the receiving-boxes for compressing the scrap in the receiving-boxes by the plungers, substantially as set forth.

3. A machine for compressing detinned scraps, consisting of a plurality of upright receiving-boxes, a wheeled platform for said receiving-boxes, a plurality of stationary plungers, a platform vertically below said plungers, means for transferring the wheeled platform and the receiving-boxes to the platform below the plungers, means for raising both platforms and the receiving-boxes for compressing the scrap in the receiving-boxes by the plungers, and means for suspending the receiving-boxes at the upper end of the plungers and permitting the lowering of the platform without the boxes, substantially as set forth.

4. A machine for compressing detinned scraps, consisting of a plurality of upright receiving-boxes, a wheeled platform for said receiving-boxes, a plurality of stationary plungers, a platform vertically below said plungers, means for transferring the wheeled platform and the receiving-boxes to the platform below the plungers, means for raising both platforms and the receiving-boxes for compressing the scrap in the receiving-boxes by the plungers, and means for discharging the compressed blocks from the lower end of the receiving-boxes, substantially as set forth.

5. A machine for compressing detinned scraps, consisting of a plurality of upright receiving-boxes, a wheeled platform for said receiving-boxes, a plurality of stationary plungers, a platform vertically below said plungers, means for transferring the wheeled platform and the receiving-boxes to the platform below the plungers, means for raising both platforms and the receiving-boxes for compressing the scrap in the receiving-boxes by the plungers, suspension-hooks at the upper ends of the plungers, engaging pins at the upper ends of the receiving-boxes and pivoted and spring-actuated locking-levers on the wheeled platform, engaging lugs on the lower ends of the receiving-boxes for per-

mitting the lowering of the platforms and the delivery of the compressed scrap-blocks, from the lower ends of said boxes, substantially as set forth.

- 5 6. The combination of a vertically-movable platform, a plurality of stationary plungers above said platform, a wheeled platform on said vertically-movable platform, pivoted and spring-actuated locking-levers on said
10 wheeled platform, a plurality of scrap-receiving boxes on said wheeled platform provided with pins at their upper and lugs at their lower ends, suspension-hooks at the lower ends of said plungers, and means for raising
15 or lowering the vertically-movable platform for moving the receiving-boxes over the plungers, suspending the boxes, locking them in raised position, discharging the scrap-blocks and returning the boxes to the wheeled plat-
20 form, substantially as set forth.

7. In a machine for compressing detinned scraps, the combination, with a hydraulic cylinder, of a platform on the piston of said cylinder, a wheeled platform placed on said piston-
25 scrap supported on said wheeled platform, stationary plungers the lower ends of which correspond to the shape of the interior cross-section of the receiving-boxes, means for raising
30 the piston-platform for compressing the scrap in said boxes, means for suspending the boxes at the upper ends of the plungers, pivoted and spring-actuated locking-levers applied to the wheeled platform for engaging
35 stops at the lower ends of the receiving-boxes, for permitting the discharge of the compressed scrap-blocks at their lower ends onto the wheeled platform for being removed, substantially as set forth.

- 40 8. In a machine for compressing detinned scraps, the combination, with a wheeled platform provided with raised portions, of receiving-boxes fitted with their lower open ends on said raised portions, a vertically-arranged
45 hydraulic cylinder provided with a piston-rod, a platform on said piston-rod, means for arresting the wheeled platform on said piston-platform, stationary plungers supported vertically above said cylinder, the number of
50 plungers corresponding with the number of

receiving-boxes, and means for suspending the boxes from the stationary supporting-head of the plungers when the compressing action on the scrap in the receiving-boxes is completed, substantially as set forth.

9. The combination of a vertically-movable platform, a hydraulic cylinder for raising and lowering said platform, a plurality of stationary plungers above said platform, a wheeled platform, means for moving said wheeled plat-
60 form on the vertically-movable platform before compression and away from the same after compression, means for permitting the discharge of the scrap-blocks from the lower ends of the plungers after compression, and
65 means for removing the blocks from the wheeled platform, substantially as set forth.

10. In a machine for compressing detinned scraps, the combination, with a wheeled platform, of receiving-boxes on said wheeled plat-
70 form, means for moving said wheeled platform, a vertically-movable platform, a hydraulic cylinder for raising or lowering said platform, a plurality of plungers above the vertically-movable platform, means for com-
75 pressing the scraps in said boxes, means for discharging the scrap-blocks from the lower ends of the boxes, and means for receiving the blocks for transferring the compressed blocks from the wheeled platform, substan-
80 tially as set forth.

11. In a machine for compressing detinned scraps, the combination, with a wheeled platform provided with raised portions, of a plu-
85 rality of receiving-boxes arranged vertically side by side, the lower ends of said receiving-boxes fitting the raised portions of said wheeled platform, stays for securing said vertical receiving-boxes one to the other, said
90 receiving-boxes having their ends enlarged, funnel fashion, for preventing scraps from falling in and between said receiving-boxes, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in pres-
95 ence of two subscribing witnesses.

MAX LEMBERG.

Witnesses:

PAUL GOEPEL,
C. P. GOEPEL.