

No. 856,803.

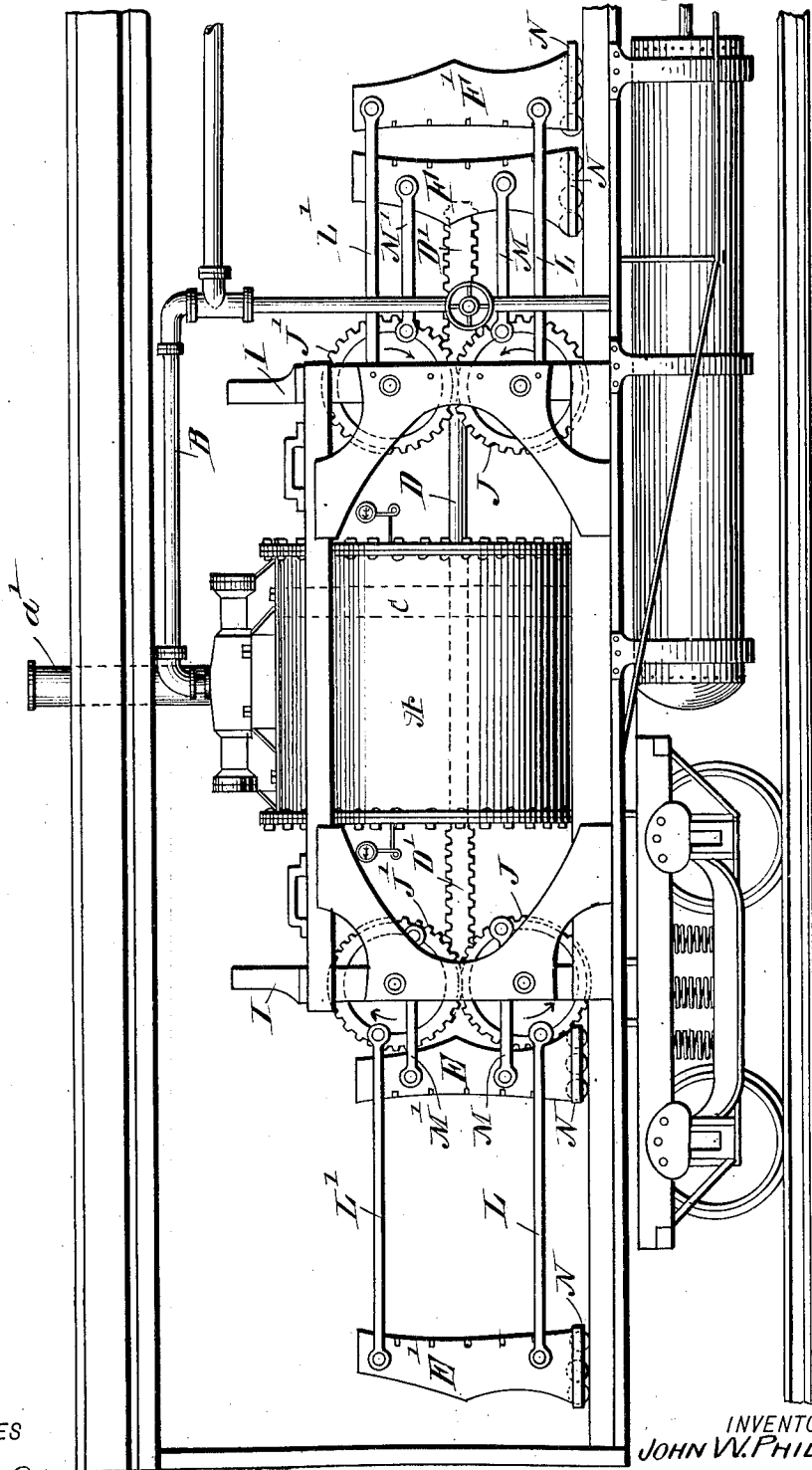
PATENTED JUNE 11, 1907.

J. W. PHILLIPS.
PORTABLE COTTON COMPRESS OR BALING MACHINE.

APPLICATION FILED DEC. 14, 1905.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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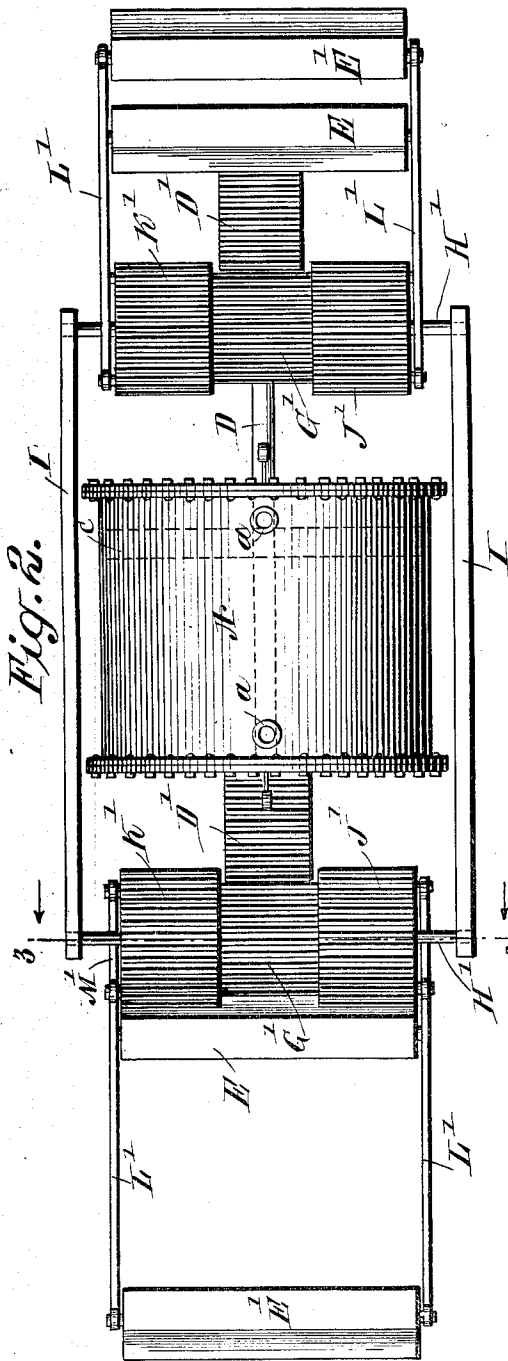


Fig. 2.

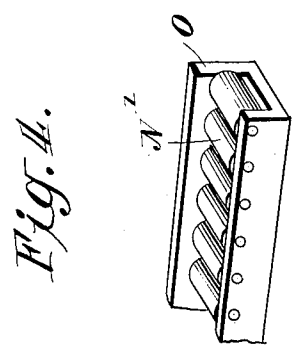


Fig. 4.

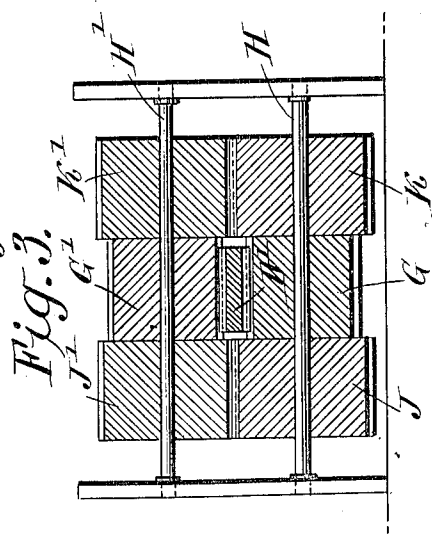


Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 6.

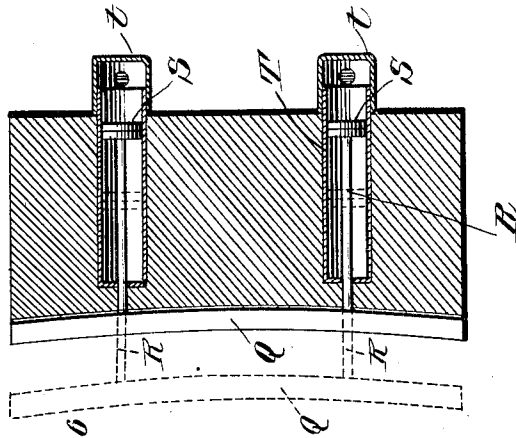
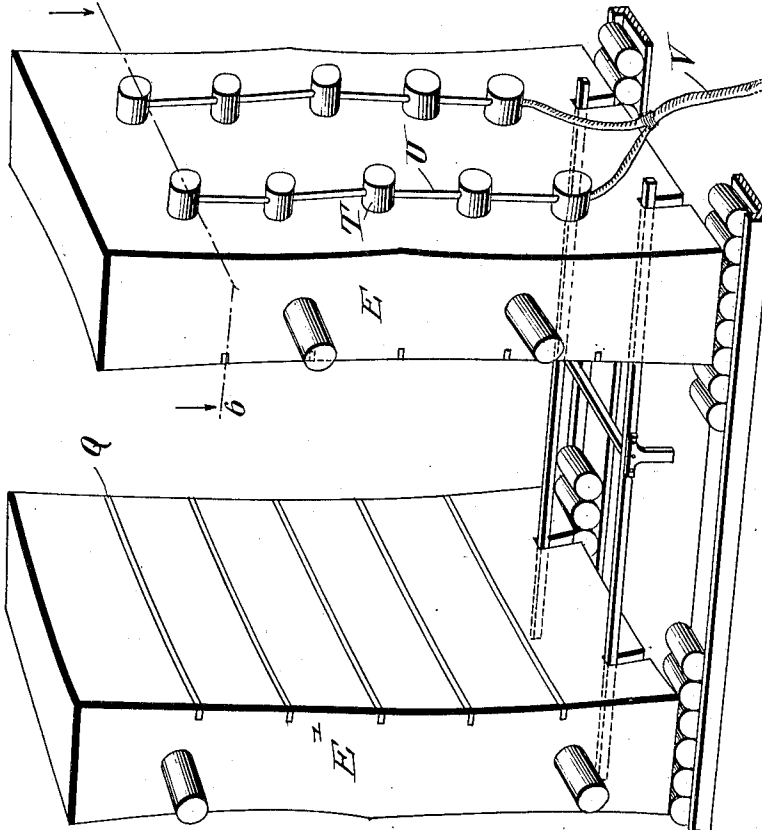


Fig. 5.



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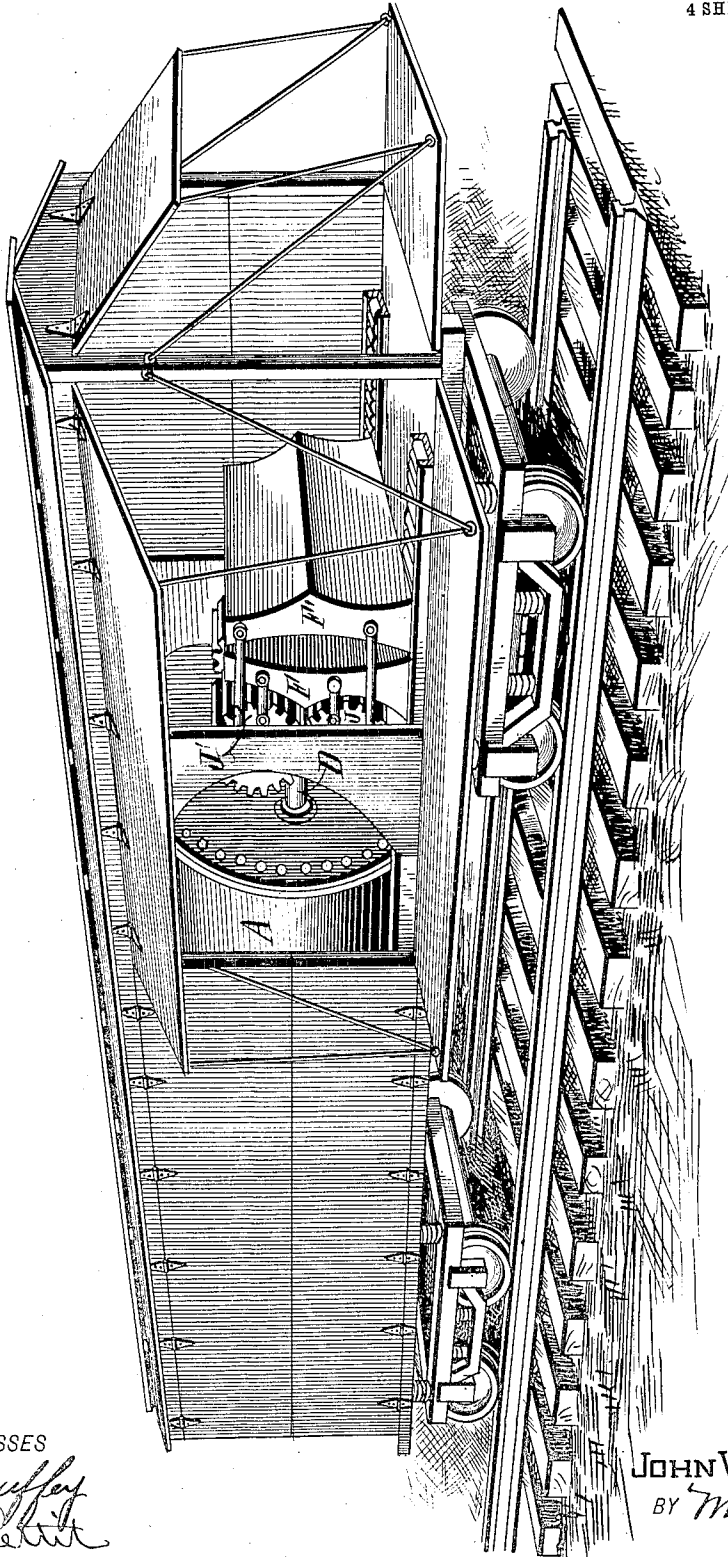


Fig. 7

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UNITED STATES PATENT OFFICE.

JOHN WILLIAM PHILLIPS, OF AUSTIN, TEXAS.

PORTABLE COTTON COMPRESS OR BALING MACHINE.

No. 856,803.

Specification of Letters Patent.

Patented June 11, 1907.

Application filed December 14, 1905. Serial No. 291,789.

To all whom it may concern:

Be it known that I, JOHN WILLIAM PHILLIPS, a citizen of the United States, a resident of Austin, county of Travis, State of Texas, have invented a certain new and useful Portable Cotton Compress or Baling Machine, of which the following is a specification.

My invention relates to reciprocating compressing devices or presses which operate in conjunction with a double-ended piston-rod and surrounding cylinder, and while the construction shown and described, is intended more especially for use in connection with compressing cotton-bales and the like, by portable double-acting twin-presses, it is nevertheless evident that the general principles thereof can be applied to other and various kinds of presses.

The object of my invention is to provide a simple, powerful and economic mechanism or device, by which the material to be pressed can be subjected to very great pressure, while the operation may be rapid and conducted in a manner to most satisfactorily compress the material with uniformity; and my invention consists in the various combinations and features of construction, arrangement and mode of operation, substantially as hereinafter described and more particularly illustrated by the attached drawings.

Figure 1 in said drawings is a side elevation of my improved compressing or baling machine, together with a portion of a specially constructed and novel-shaped railway car upon which the same is mounted for convenience of operation and transportation, said car being necessary for seeking and economically and expeditiously handling and compressing the original gin-pressed cotton bales. Fig. 2 is a plan view of the compressing apparatus proper; Fig. 3 is a transverse, vertical section on the line 3—3 of Fig. 2; Fig. 4 is a detail perspective view illustrating anti-friction rollers upon which the platens slide; Fig. 5 is a perspective view illustrating certain attachments of the platens which are employed for partially compressing the bales in such manner as to permit the removal of the original cotton ties therefrom, while the bale rests between the larger or main compressing platens, such partial compression and removal of the ties being effected immediately preceding the final compression of the bale by the platens. Fig. 6 is an enlarged

horizontal section on the line 6—6 of Fig. 5. Fig. 7 is a perspective view of my portable compress integrally installed upon, and co-acting with my specially constructed and novel shaped railway car, which latter may be pulled or propelled from point to point by suitable friction drums on spindle of main fly wheel and surrounding cables operatively connected at the outer end to some distant fixed object, wound by the same power mechanism used for operating my said compressing or baling machine therewith integrally constructed, comprised preferably of gasolene or similar explosive engine.

A—see Figs. 1 and 2—indicates a cylinder to which compressed air, steam, water, or other fluid is admitted by a pipe B that communicates with a suitable source of supply. Compressed air is, however, preferably employed. As indicated in Fig. 2, compressed air is admitted at opposite ends of the cylinder, at *a*, this being alternately, and exhaust takes place through a pipe *a'*—see Fig. 1. It is unnecessary to describe the valve mechanism employed for effecting this result, since it involves no particular novelty and forms no part of my invention proper.

Within the cylinder A is arranged a slidable piston C, the same being shown as near the right-hand end of the cylinder. Piston rods D are connected with each side of the piston and work in suitable stuffing-boxes provided at the ends of the cylinder. Those portions of the rods D which work in said stuffing boxes are cylindrical, but the outer portions of the rods indicated by D' are provided with teeth on the upper and under side, and are, hence, in effect, double rack-bars. On the opposite sides of the cylinder A are located platens for compressing cotton bales, the same being arranged in pairs, and so connected with operating devices that one set of platens opens as the other closes, and vice versa.

The platens E, E', on the left-hand side of the cylinder A are shown open, or separated, as required to receive a bale between them preparatory to compressing the same, while the platens F, F', on the right-hand side of the cylinder are closed or approximated as nearly as practicable, and to a greater degree than in actual compression of the bale. The means for operating the platens are as follows: As will be understood by reference to Figs. 2 and 3, the rack-bars D' pass be-

tween and engage cog or spur gears G, G', which are mounted upon the horizontal axles or shafts H, H', arranged in the same vertical plane and supported in the frame pieces, or standards I. The gears G, G', are arranged between larger gears J, J' and K, K', which are also mounted upon the same axles or shafts H, H', respectively. The gears J, J', mesh with each other and also the gears K, K'. It may be noted that it is immaterial whether the three gears G, J, K, or the gears G', J', K', be keyed upon the shafts H, H', so as to revolve therewith, or that they be mounted loose on the shafts H, H', and connect laterally so as to rotate together, which is the essential thing. It will be seen that the middle gears G, G', are reduced in diameter sufficiently to admit the rack bars D' between them. It will now be apparent that, compressed air being admitted to the right-hand end of the cylinder A, the piston C will be moved to the left, and that all the gears on both sides of the cylinder A will be rotated in the direction, indicated by arrows, but that the set of lower gears G, J, K, will be rotated in a direction opposite the companion gears G', J', K'. The reciprocation of the two sets of platens E, E', F, F', is effected through this rotation of the two sets of gears, and this takes place by reason of the connection between the larger outer gears and the platens through the medium of bars L, L', and M, M'. It will be understood that there are four longer bars L, L', and four shorter ones M, M', employed for operating each set of platens. The bars L, L', are about double the length of the other bars, since they are pivoted to the sides of the outer platens E', while the shorter ones are similarly pivoted to the inner platens E', the pivotal points of the bars M, M', being between the bars L, L'. The two sets of bars L, L', and M, M' are pivoted to the two gears J, J', K, K' at opposite points. It is apparent that the two sets of gears before described, never complete a revolution, but oscillate and make less than half a revolution, since the connecting bars cannot pass the axles or shafts H, H'. It is apparent that if the bale be placed between the platens E, E', for compression, and compressed air be admitted behind the piston C, the platens E, E', will be caused to approach each other by the traction of the rods L, L', and the pushing force applied through the rods M, M', and that the compressive action becomes greater and greater as the pivotal points where the respective rods are connected with the rotating gears approach horizontal alinement, the principle of action being thus similar to the well-known toggle lever. In like manner, as the power of compression increases at a certain stage, when the platens are approaching each other, so

the speed at which they are separated from each other increases until it reaches the maximum.

The reciprocation of the platens of one of the twin presses are opened or separated horizontally whenever the platens of the other press begin closing and this reciprocation ordinarily goes on continuously. It is apparent that the press is so constructed as to compress bales to small bulk and extraordinary density most expeditiously and economically so that they may be transported in small space, and hence economically.

To relieve the friction of the platens with the foundation or support, the same are provided with rollers N, at the base, which run on suitable tracks. In place of the platens being provided with rollers, the rollers may be arranged as shown at N', Fig. 4. That is to say, they may be placed side by side in series and the platens arranged to ride thereon adjacent to an outer rail, or guide, O.

In Fig. 1 my improved compress is shown arranged at the left-hand end of a railway car and the latter is to be provided with hinged side and end doors to allow access to and operation of the apparatus, the said doors being lowered and raised as required. In other words, one door will be let down to a level with, and thus serve as an extension of, the floor of the car, while the other will be lifted to a horizontal position so as to constitute practically a lateral extension of the roof of the car, suitable supports being provided as a matter of course.

Before inserting the bale of cotton within the compress, it is the usual practice—at some part of the storage platform distant from the compress proper,—to cut the long metal ties and remove same from the large sized gin-bale, and, at the same time and place, to temporarily fasten the loosened bagging there-around, by sour hooked-rods; two on each side. Such removal of said ties is, in itself, vexatious and tedious; as they invariably get "hung" to the bagging of the then quickly swelling cotton, as soon as the retaining compression of said ties is removed from the bale. When said "denuded" bale is placed between the platens, and shall have received sufficient partial compression to permit the unhooking from the bagging, the said hooked-rods are quickly removed from the bale and press by the hands of the pressmen. At this stage of the operation, and before said bale is fully compressed, it frequently happens that the cotton "layers" in the middle portion of the bale bulge out and roll from between the platens. This condition necessitates the numerous re-insertions of said layers of cotton in small sections only; every re-insertion requiring a separate "compression." Such practice is costly, as it loses time of laborers and machinery power.

To facilitate and make certain of a successful compression of the bale for each separate closing together of the main platens, I provide the platens with the attachment shown in Figs. 5 and 6. That is to say, the face of each platen is provided with a series of transverse grooves, in five of which are arranged what I term squeezing-bars Q, the same having rods R extending backward and provided with pistons S that work in the several small cylinders T, arranged in cavities in the platens. A cap *t* is applied to each of said cylinders, and the several cylinders are connected by a pipe U to a common supply pipe V which extends to the air compressor, not shown. The pistons, piston rods and cylinders constitute what may be termed pneumatic jacks. It is obvious that if due air pressure be applied through the medium of the tubes U, V, the squeezing bars S will be thus caused to project to a corresponding degree from the face of the platens, as shown by dotted lines, Fig. 6 and engage with and partially compress the adjacent bale whereby a space will be afforded between the platens and squeezing bars and the said partially compressed bale, sufficiently roomy for the insertion of a man's hands to unfasten the metal clips and remove them and the long loosened ties, from surrounding the partially compressed bale; after which, upon the release of air pressure, the squeezing bars will resume their original positions. The main presser platens then quickly advance toward each other and complete the compression necessary to secure the exceeding great density required for the economical storage and transportation of the cotton. After which, new ties, or the old ties shortened and straightened, may then be passed through said grooves in the platens, and passed around the compressed bale and properly secured. Any additional ties requisite, may also be thus adjusted.

While a considerable advantage is obtained by means of the dual or twin press already described, it is obvious that my invention is applicable to a single press, or to a cylinder and a single set of platens connected with and operated by a rod connected with the piston of such cylinder. It is to be further understood that while the apparatus is shown arranged horizontally, it will work effectively if arranged vertically.

What I claim is—

1. A portable press, comprising a cylinder, a piston arranged to reciprocate therein, rods connected with the piston on opposite sides, and having their outer portions constructed as double rack-bars, two sets of platens, two sets of cog gears, rods connecting the two platens of each set with two of the meshing gears of each set, at opposite points, the double rack-bars meshing and coacting with the gears which are intermediate those with

which the platens are connected, whereby one set of platens is opened as the other set closes, substantially as described.

2. An improved press comprising a cylinder, a piston adapted to reciprocate therein, piston rods connected with opposite sides of the piston and having their outer portions constructed as double rack-bars, two double sets of gears each arranged at one end of the piston and each composed of two pairs of meshing gears arranged in the same vertical plane, and two intermediate gears between which the rack-bars work and with which they coact for rotating all the gears, two reciprocable platens, and connecting rods extending therefrom to the meshing gears and pivotally connected with the same at opposite points, substantially as described.

3. In a press, the combination, with an air cylinder and a piston adapted to reciprocate therein, a piston rod having its outer portion constructed as a rack bar, of two gears arranged on shafts in the same vertical plane and separated by a space sufficient to receive the rack-bars between them, two sets of meshing gears arranged on the same shafts in the same plane, reciprocable platens, and rods connecting them with the other gears at opposite points whereby the platens are caused to approach or recede from each other according to the direction at which the gears are rotated by the movement of the piston, the compressing power becoming greater as the platens closely approach each other, substantially as described.

4. In a press of the class indicated, the combination with a horizontal cylinder and a piston adapted to reciprocate therein, aligned piston rods projecting on opposite sides of the piston and from opposite ends of the cylinder, their outer portions being constructed as double rack bars, three sets of meshing gears arranged on the same transverse shaft, two of such sets corresponding and the intermediate set being of less diameter so that the piston rack bars will work between them, such gears being arranged on opposite sides of the cylinder, and two sets of platens and connecting rods by which they are operatively connected with the outer sets of gears, so that as the piston reciprocates, the platens on one side are caused to approach each other and those on the other to recede from each other, as described.

5. A portable press comprising a platform mounted on wheels and the press proper fixed on said platform, and comprising a cylinder, a piston adapted to reciprocate therein having rods constructed as double rack bars, gears with which such rack bars engage, and supplemental gears arranged on the side of the first-named gears which mesh with each other, reciprocable platens and rods connecting them with the side gears, substantially as described.

6. In a press, the combination, with platens adapted to approach and recede from each other, means for operating the platens simultaneously for this purpose, the faces of the platens having a series of grooves arranged transversely, bars arranged in said grooves, pistons and rods connecting them with said bars, cylinders in which said pistons reciprocate, the same being arranged in the body of the platens, and air-conducting tubes connected with the cylinders exteriorly, whereby, upon the application of due pneumatic pressure, the said bars may be projected from the faces of the platens to partially compress the bale as required for removal of the original bands or ties, substantially as described.

7. The combination of two platens arranged opposite and parallel, and devices arranged on the faces of said platens and which are movable outwardly therefrom, for partially recompressing a bale transversely at points separated from each other, and means for projecting said devices when required, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WILLIAM PHILLIPS.

Witnesses:
M. A. TAYLOR,
E. P. WILMOT.