C. W. KINTER.

SCRAP BUNDLING PRESS.

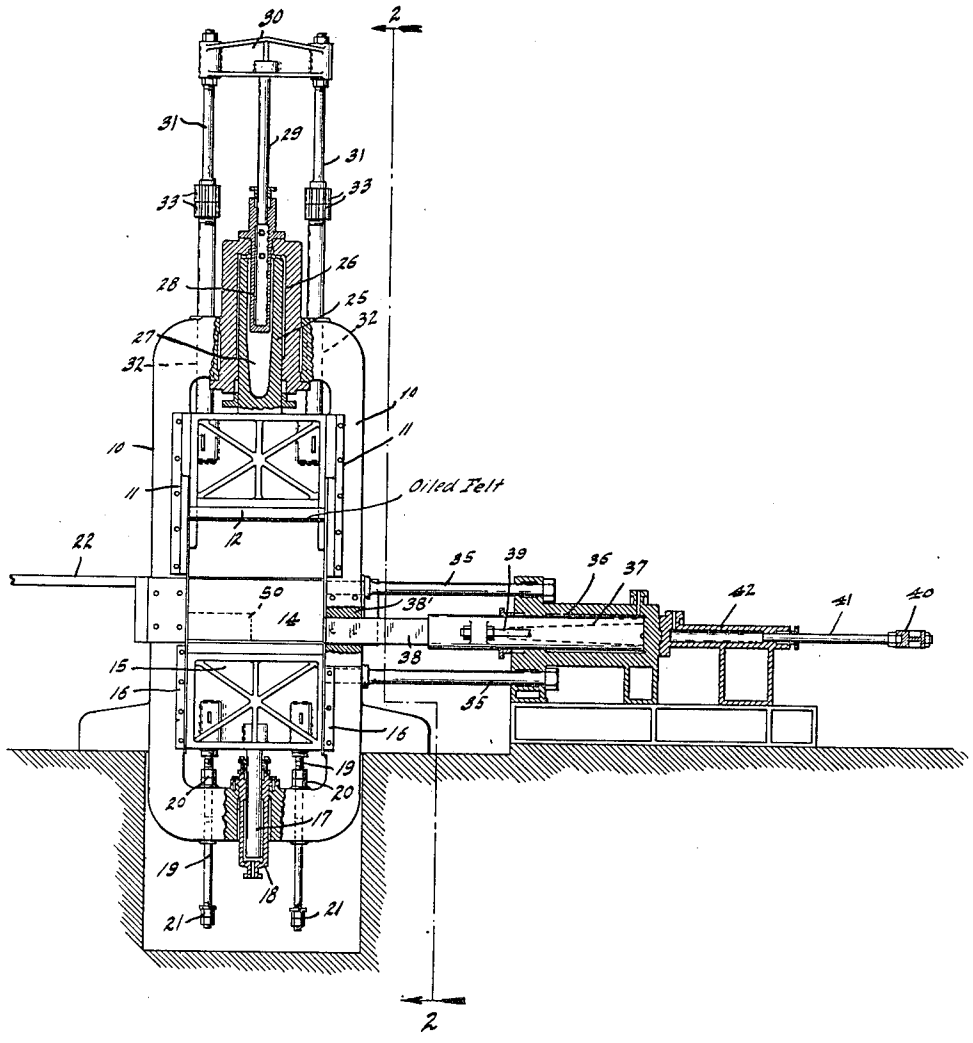
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1,120,655.

Patented Dec. 8, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Frank A. Fahle

Josephine Gasper

INVENTOR

Charles W. Kinter,

BY

Arthur M. Good

ATTORNEY

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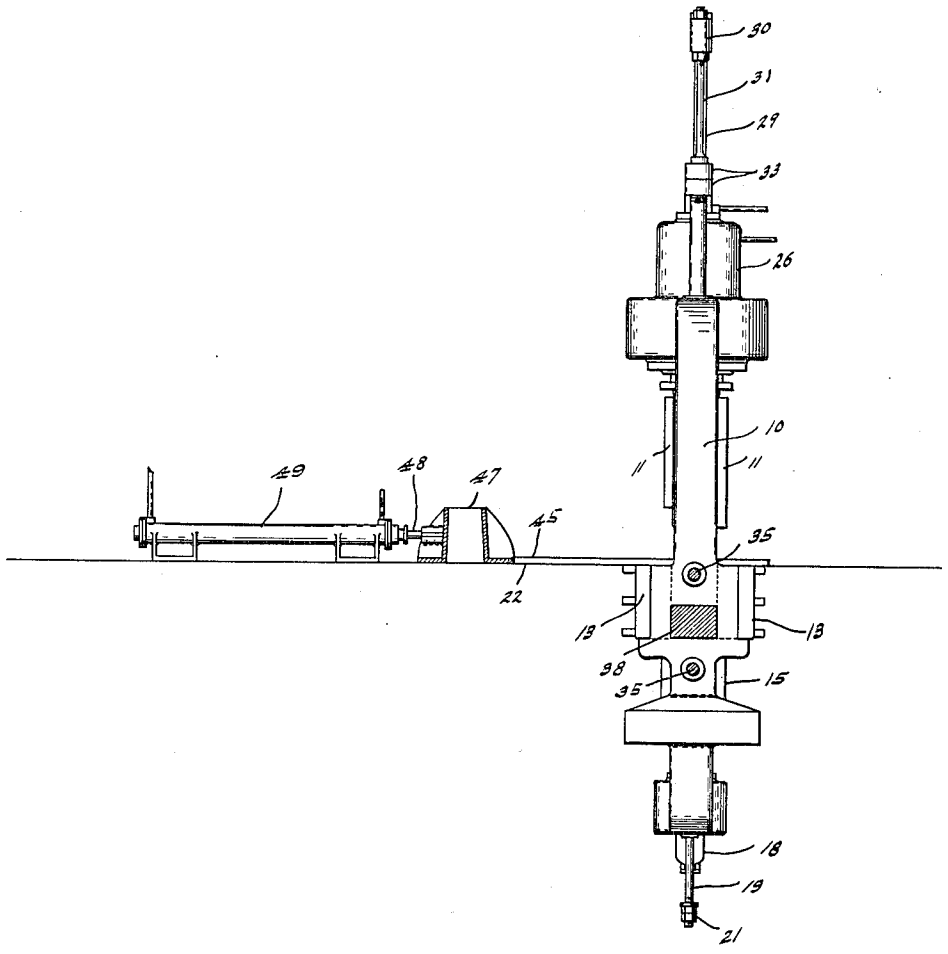
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

Frank A. Fahle

Josephine Gasper

INVENTOR

Charles W. Kinter,

BY

Arthur M. Hood

ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES W. KINTER, OF WELLSBURG, WEST VIRGINIA, ASSIGNOR TO THE NATIONAL ROLL & FOUNDRY COMPANY, OF AVONMORE, PENNSYLVANIA, A CORPORATION OF OHIO.

SCRAP-BUNDLING PRESS.

1,120,655. Specification of Letters Patent. Patented Dec. 8, 1914.

Application filed January 9, 1914. Serial No. 811,136.

To all whom it may concern:

Be it known that I, CHARLES W. KINTER, a citizen of the United States, residing at Wellsburg, in the county of Brooke and State of West Virginia, have invented a new and useful Scrap-Bundling Press, of which the following is a specification.

The object of my invention is to provide an efficient mechanism by means of which scrap, consisting to a great extent of sheet metal trimmings, etc., may be compressed into compact masses, usually called bundles, for convenient handling.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation, in partial section, of a press embodying my improvements, and Fig. 2 is a section largely on the line 2—2 of Fig. 1, the plane of section, however, being displaced as to the measuring box, so as to show the same in section.

In the drawings, 10 indicates a heavy main frame or housing comprising a pair of sides or posts, and connecting ends; in the upper part of the frame 10 are vertical guides 11, between which is mounted a cross head 12. About midway vertically of the frame 10, I connect the posts of the frame by heavy, ribbed plates 13, 13, which together with said posts, form a compression or die box 14, the bottom of which is formed by a vertically movable cross head 15 slidably mounted in suitable vertical guides 16 formed in the lower part of housing 10. This lower crosshead 15 is moved vertically by means of a plunger 17, mounted in a cylinder 18.

The head 15 is provided with depending rods 19 which project through suitable guides formed in the lower end of housing 10, and these rods 19 are provided with adjusting nuts 20 adapted to engage the housing, so as to limit the downward movement of the cross head 15, and also take the load, resulting in this direction from compressing the scrap. Rods 19 have their lower ends likewise provided with adjustable nuts 21, by means of which the upward stroke of cross head 15 may be controlled, so as to insure its perfect alinement with the charging floor 22.

The cross head 12 is movable toward and from the die box 14 and is held firmly within the box 14 by means of a plunger 25 and a cylinder 26, and, when held within the box it covers the scrap and forms the top of box.

In order to have the apparatus as compact as possible, and at the same time provide means requiring only a minimum volume of the motive fluid, the plunger 25 is made hollow in order to form a chamber 27 into which is projected a cylinder 28, carried by the upper end of cylinder 26. Within cylinder 28 is a plunger 29, considerably smaller than the plunger 25, and this plunger 29 is connected to a crosshead 30 which is connected by the vertical tie-rods 31, 31 with the crosshead 12, the said rods projecting through suitable guides 32 formed in the upper end of housing 10 and provided at an intermediate point with adjustable nuts 33 adapted to engage the upper member of housing 10 and thus limit the downward movement of the crosshead 12.

Firmly connected to one of the vertical posts of housing 10, by the tie-rods 35, is a cylinder 36 within which is mounted a plunger 37, the forward end of which is formed into a rectangular scrap-compressing die 38 projecting through a suitable guide 38′ formed in one of the posts of housing 10 and just above the level of the top of lower crosshead 15 when in its lower position. Connected with plunger 37, by tie-rods 39 (which are partially broken away in Fig. 1) and a crosshead 40, is a plunger 41 of smaller area than the plunger 37 and this plunger 41 is mounted in cylinder 42 carried by the cylinder 36.

Slidably mounted in suitable guides 45 upon the charging floor 22 is a scrap meter or measuring box 47 which, as shown in Fig. 2, is preferably slightly tapered downwardly so as to facilitate the gravity discharge of the scrap therefrom. The meter box 47 is coupled to a piston rod 48, the piston of which works in a suitable air cylinder 49, provided with the usual control valves and piping whereby the meter box may be readily reciprocated to and from the operating plane of the press along the charging floor 22.

The cylinders 18, 26, 28, 36, and 42 are all provided with supply pipes and operating valves, (not shown on the drawings,) in connection with two hydraulic systems, one of high pressure and one of low pressure. Cylinders 18, 28, and 42 are oper-

ated on the low pressure system exclusively, cylinder 36 is operated exclusively on the high pressure system, and cylinder 26 is operated on both systems in the following manner:—The cylinder 28 allows the crossheads 12 and 30, the plungers 25 and 29 and the rods 31 to descend by gravity as fast as the fluid is allowed to escape from said cylinder 28; while this is going on, the cylinder 26 will automatically be filled from a tank, not shown on the drawings, until the crosshead 12 rests upon the scrap within the compression or die box. At this moment the high pressure is turned into the cylinder 26, which may force the crosshead 12 down sufficiently to bring the lock-nuts 33 in contact with the top of housing 10 and thus bring the crosshead 12 to a precise, predetermined level. Whether the crosshead 12 is enabled to reach this level, depends entirely on the quantity and nature of the scrap within the die box. It should be obvious, that the meter box plays an important part in gaging the quantity of scrap to such a degree as to allow the crosshead 12 to always descend to the same level. These several cylinders may receive any suitable motive fluid, although considering latitude of location, and exposure of press to winter weather, I can't help considering oil the preferable fluid. The cylinder 49, however, is more conveniently operated by compressed air or steam, because a higher speed of movement is here desirable.

In use, the scrap meter 47 is filled with the requisite amount of scrap, the various pieces being laid therein in such a relationship to each other as the operator may elect. Thereupon, the lower crosshead 15 is moved upwardly to the level of the charging floor 22, and the meter box with its load of scrap is brought in a position central above crosshead 15, and in the space left open between the posts of housings. After this, crosshead 15 is lowered to the position shown in Fig. 1, the scrap, meanwhile, following the crosshead 15 downwardly by gravity from the meter box and without material displacement of its various portions. After the crosshead 15 has again arrived at its lower position the meter box is withdrawn to its former position, and refilled while the press proper is being operated in the following manner: The crosshead 12 is now lowered to its proper position and held here by the fluid within cylinder 26, as described before. In ordinary practice there is no attempt at material compression of the scrap at this moment. When crosshead 12 has been brought into position, pressure is introduced into cylinder 36, and the compression die 38 is forced laterally into the box 14, between sides 13, lower crosshead 15 and upper crosshead 12, so as to compress the scrap into the compact bundle indicated at 50 in Fig. 1. Thereupon the die 38 and the upper crosshead 12 are withdrawn, and the lower crosshead 15 together with the bundle is forced upwardly to the level of the charging floor 22, and the bundle 50 is automatically pushed aside, and away from the press by the meter box, now making a new forward movement for the next charge.

By the use of this apparatus, I am able to handle large quantities of scrap very conveniently, and economically, and the bundles, if of steel, are in such a condition that they may be readily shipped without further binding of any kind, and may readily be put into the charging boxes of any open hearth furnace.

I claim as my invention:

1. A scrap-bundling press comprising a main frame, a charging floor associated with said main frame, a bottom head vertically reciprocable in the main frame toward and from the charging floor, a top head vertically reciprocable in the main frame toward and from the bottom head, and a compacting plunger projectable into and out of the space between the top and bottom heads.

2. A scrap-bundling press comprising a housing, a compression box, and top and bottom crossheads completing said box and having vertical reciprocating motion.

3. A scrap-bundling press, comprising a housing, a compression box, top and bottom crossheads movable toward and from the box, and a compression die projectable into and out of the space between top and bottom crossheads.

4. In a scrap bundling press, a main body comprising two side posts and end sections therefor, and a die box formed by the posts of said body and two plates connecting the posts.

5. In a scrap bundling press, a main body comprising two side posts and end sections therefor, a die box formed by the posts of said body and two plates connecting the posts, and a guide formed through one of said posts and leading to the die box.

In witness whereof, I have hereunto set my hand at Follansbee, Brooke county, West Virginia, this 5th day of December, A. D. one thousand nine hundred and thirteen.

CHARLES W. KINTER.

Witnesses:
CHAS. A. CLARK,
CLAUDE STRATFORD.