No. 812,924. PATENTED FEB. 20, 1906.

S. G. GOSS.

STEREOTYPING APPARATUS.

APPLICATION FILED FEB. 21, 1903.

3 SHEETS—SHEET 1.

Fig. 1.

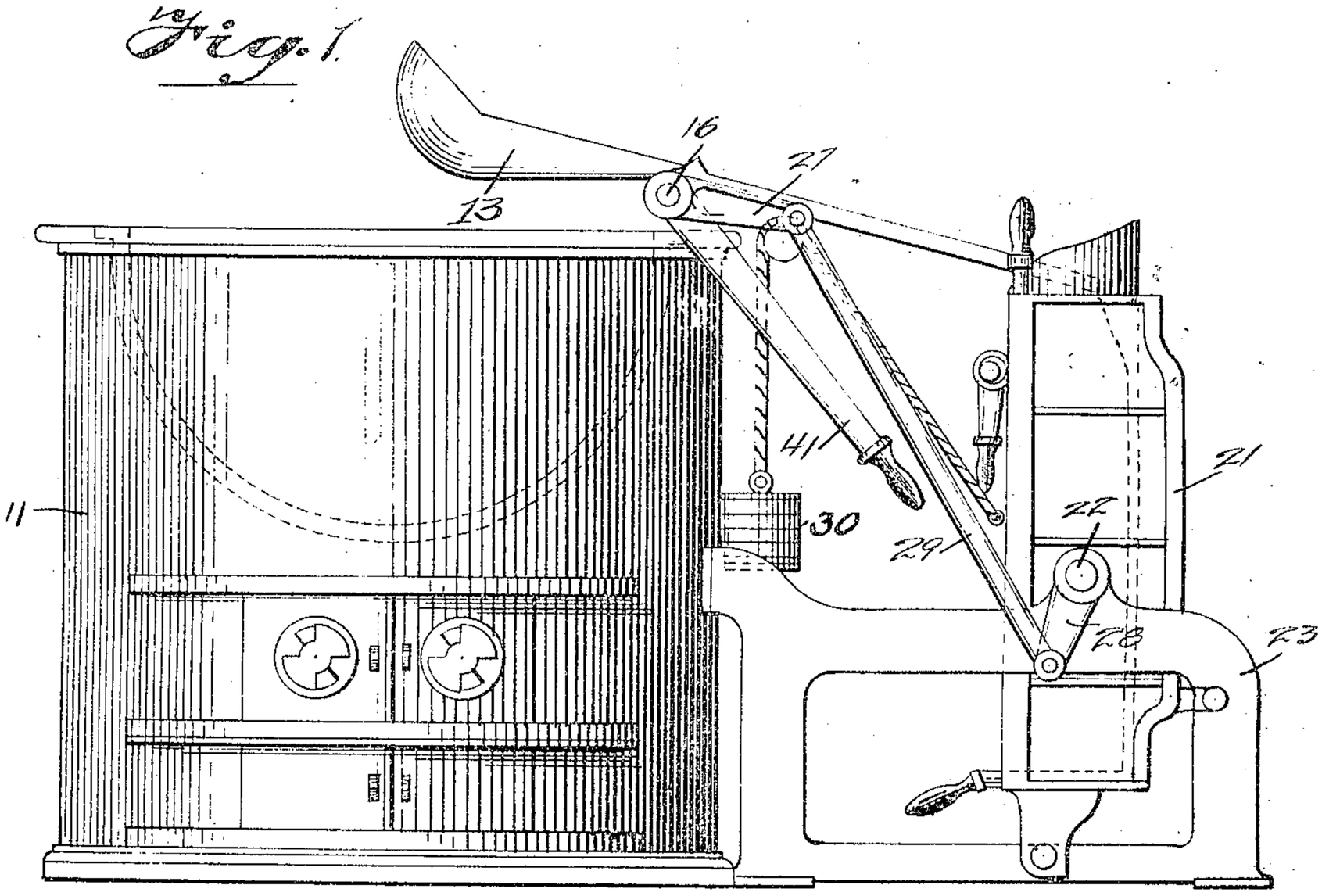
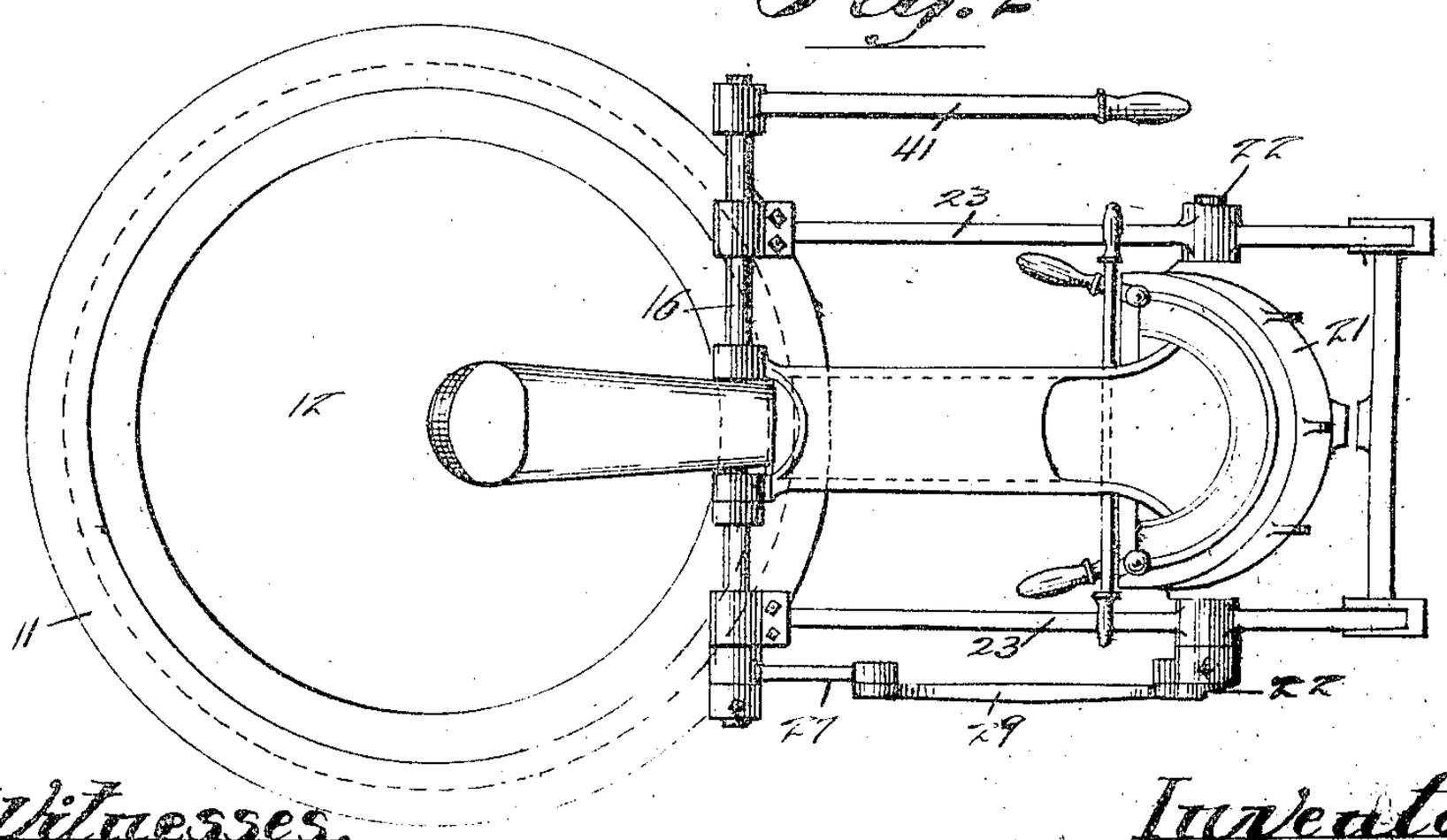


Fig. 2



Witnesses.

G. P. Dewey.

J. Bliss.

Inventor.

Samuel G. Goss,

by Bond Adams Richardson.

his Attys.

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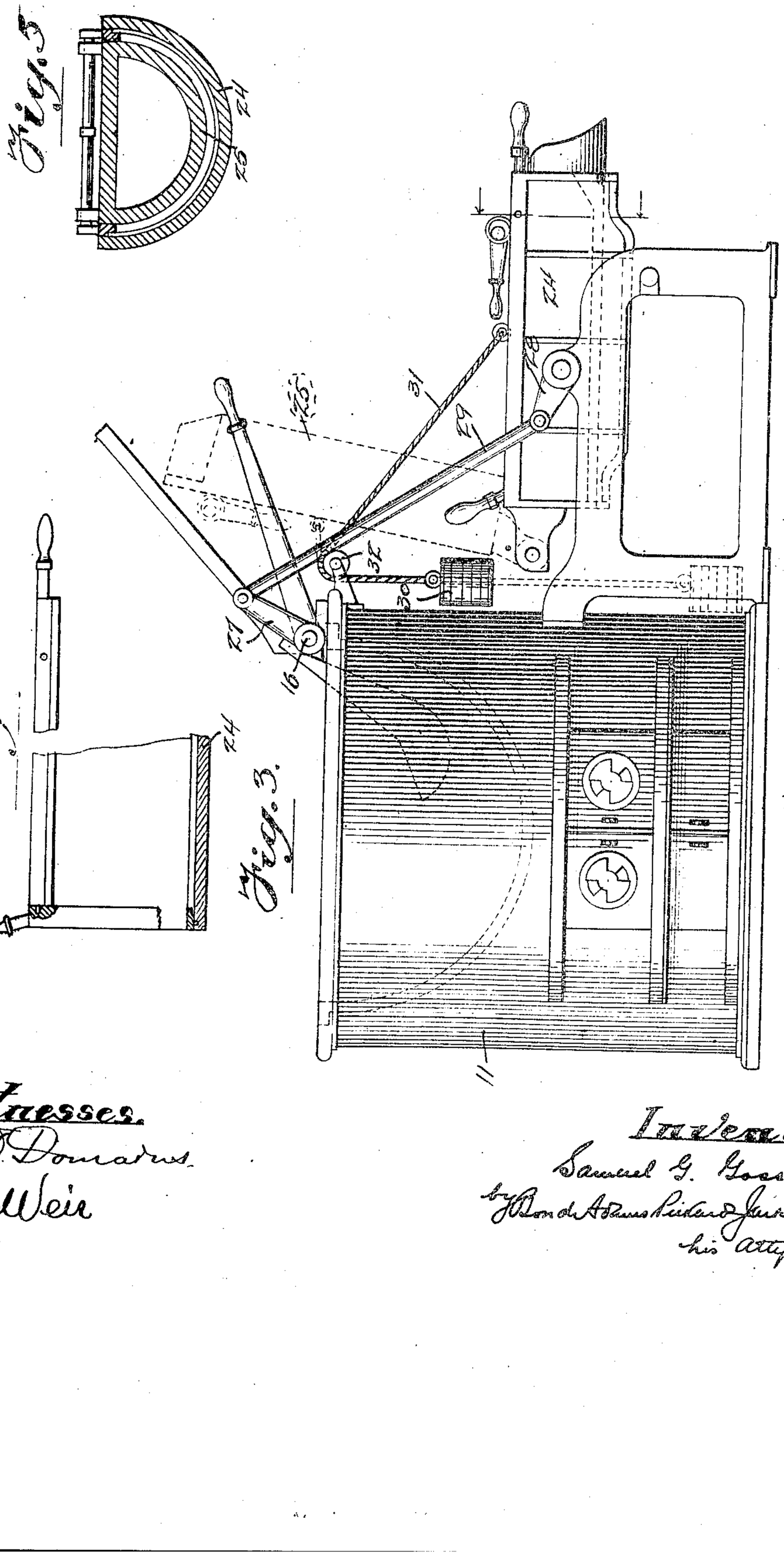
3 SHEETS—SHEET 2.



Witnesses.
L. F. Donaldson
J. B. Weir

Inventor.
Samuel G. Goss,
by Bond Adams Pickard & Jackson.
his Attys.

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3 SHEETS—SHEET 3.

Fig. 6.

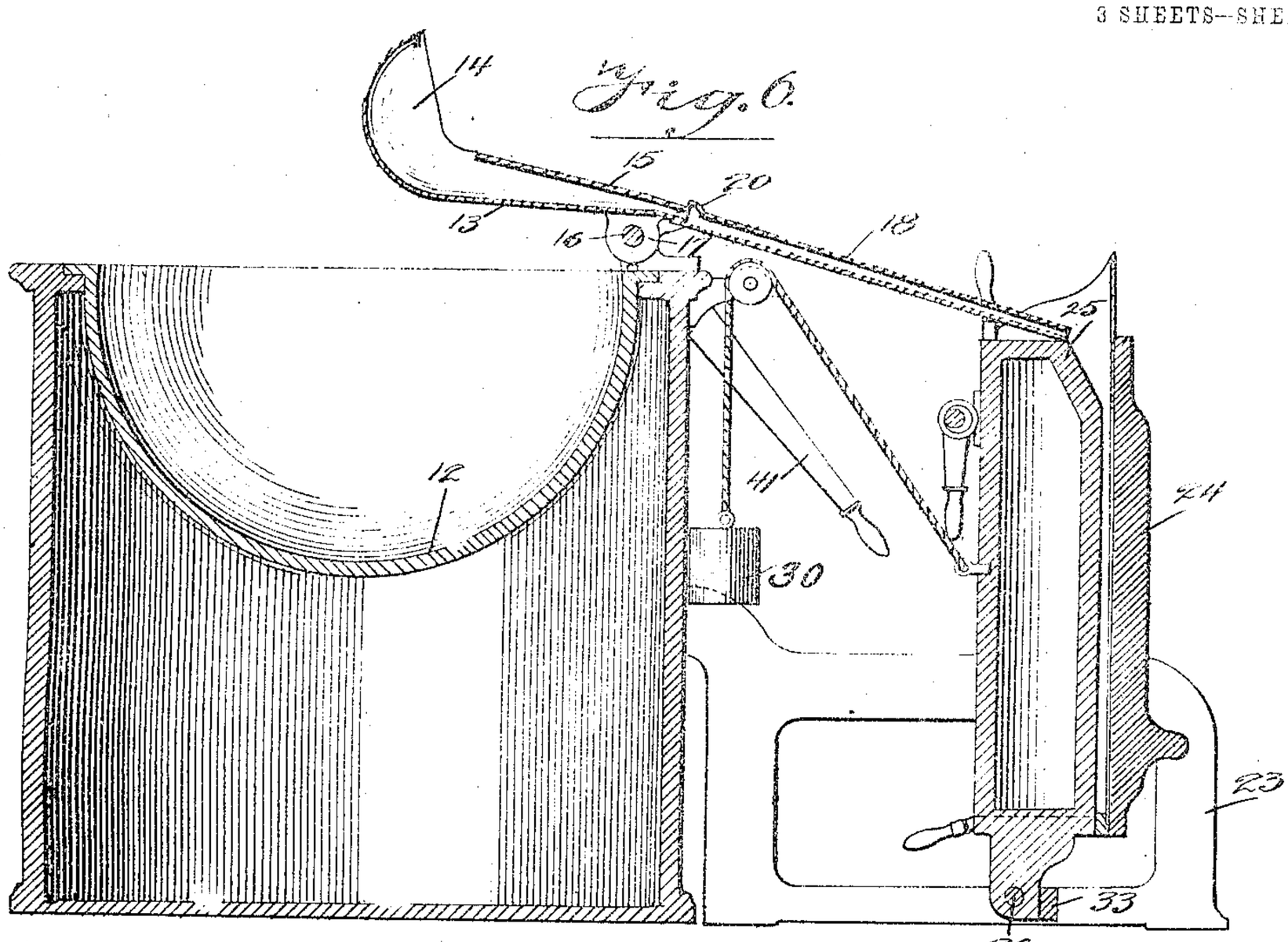


Fig. 7.

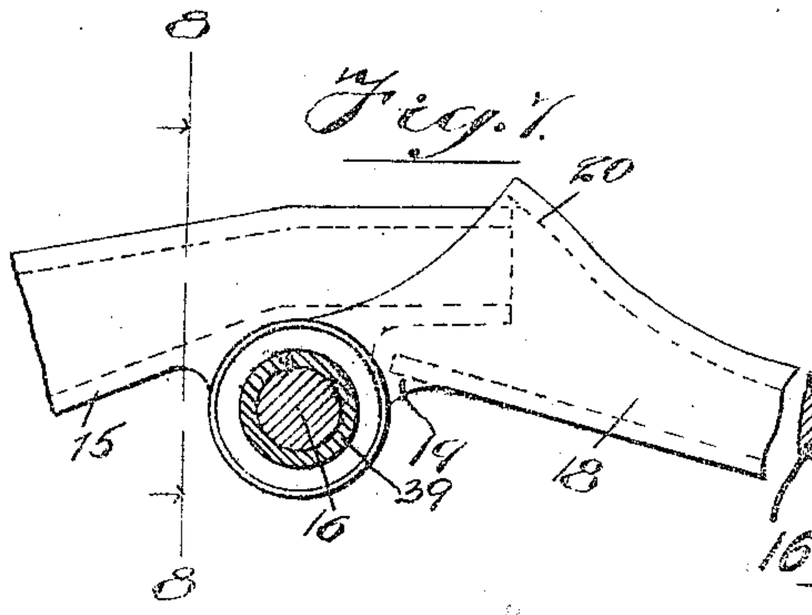


Fig. 8.

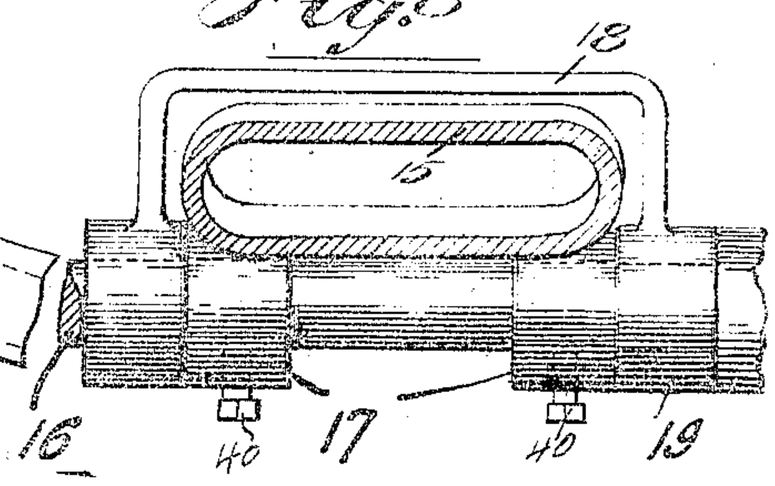


Fig. 9.

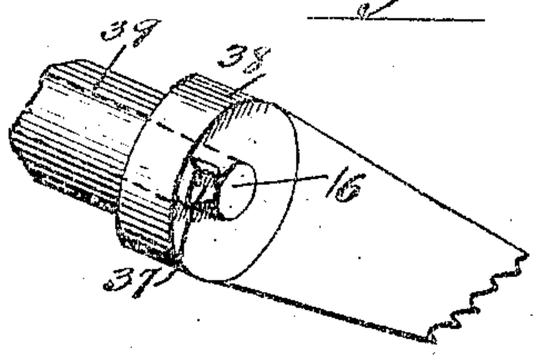
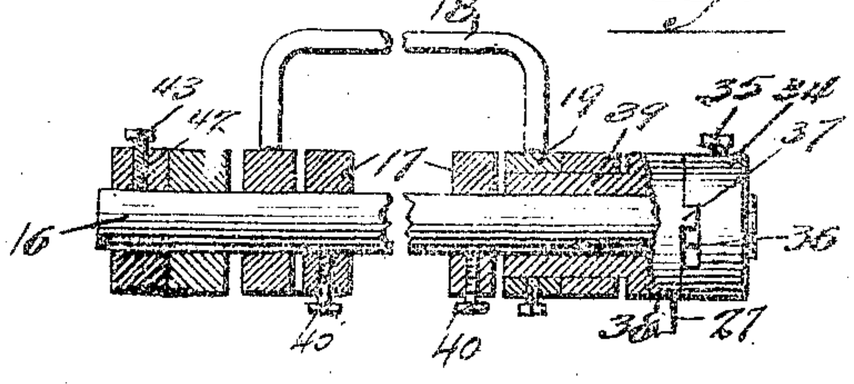


Fig. 10.



Witnesses.
Geo. D. Dornan-us.
J. B. Weir

Inventor
Samuel G. Goss.
by Bond Adams Pickard Jackson
his Attys.

UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

STEREOTYPING APPARATUS.

No. 812,924. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed February 21, 1903. Serial No. 144,640.

To all whom it may concern:

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stereotyping Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to stereotyping apparatus, and has for its object to provide means for automatically supplying type-metal to the casting-box.

A further object is to provide for supplying the type-metal in measured quantities or charges each sufficient to make a cast, and also to automatically connect the casting-box with a source of supply of the molten metal when the casting-box is moved into position to receive the charge. I accomplish these objects in the manner hereinafter described and as illustrated in the drawings.

What I regard as new is set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved apparatus, showing the casting-box in position to receive a charge. Fig. 2 is a plan view thereof. Fig 3 is a side elevation showing the position of the casting-box before or after it receives a charge. Fig. 4 is a detail, being a partial sectional view of the casing of the casting-box. Fig. 5 is a cross-section of the casting-box. Fig. 6 is a sectional view of the apparatus shown in Figs. 1, 2, and 3. Fig. 7 is an enlarged detail of a part of the ladling mechanism. Fig. 8 is a section on line 8 8 of Fig. 7. Fig. 9 is a detail of the operating-lever; and Fig. 10 is an elevation, partly in section, of parts thereof.

Referring to the drawings, 11 indicates a furnace in which the type-metal is reduced to a molten condition, said furnace having a bowl 12 in the upper portion thereof which is preferably hemispherical in form, as shown in Fig. 6. It will be understood that the furnace is provided with means under the bowl for supplying the requisite heat.

13 indicates a measuring-ladle comprising a bowl 14 and a stem 15. The bowl 14 is arranged at an angle to the stem and is employed to dip up the molten type-metal. It is of such capacity as to hold just the proper amount of type-metal requisite to charge the casting-box. The stem 15 is tubular and funnel-shaped, its larger end being nearer the bowl 14. The ladle is pivotally mounted at one edge of the bowl 12 upon a shaft 16 by means of lugs 17, which project from the under surface of the stem 15 near its end, as shown in Fig. 6. By this construction by rocking the ladle 13 on the shaft 16 it may be dipped into the bowl 12 to take up a charge or may be turned up to a more or less horizontal position to discharge the contents of its bowl 14 through the tubular stem.

18 indicates a spout, one end of which is pivotally connected with the shaft 16 by lugs 19 and telescopes upon the adjacent end of the stem 15, being flared, as shown at 20 in Figs. 6 and 7, for this purpose and to guard against accidental escape of type-metal. The opposite end of the spout 18 is adapted to discharge into the casting-box, as will be hereinafter explained.

21 indicates the casting-box, which may be of any approved type, single or multiple. In the construction illustrated I have shown an ordinary single casting-box mounted upon trunnions 22, provided with bearings in a frame 23. The casting-box 21 consists of the usual case 24 and core 25, pivoted to the case by a pivot 26, so that it may be swung into or out of operative position for the insertion of matrices and the removal of stereotyped plates. As will be understood by those familiar with the art, in the form of casting-box illustrated the matrix is placed in position when the casting-box is in its horizontal position and the core is in the elevated position. (Illustrated in dotted lines in Fig. 3.) The core 25 is then turned down into the case, occupying the position shown in Fig. 3 and illustrated in section in Fig. 5. When the parts are properly locked together, the casting-box is turned upon its trunnions to a substantially vertical position, as shown in Fig. 6, and a charge of molten type-metal is poured in at the upper end, thereby forming the stereotyped plate. The casting-box is then turned down again to its horizontal position and the plate removed.

In my improved apparatus the casting-box is so mounted in the frame 23 that when turned to its upright position the spout 18 will project over the upper end of the core in

the manner shown in Fig. 6, so as to discharge the contents of the ladle 13 between the core and the case. The requisite coöperation of the ladle and casting-box is secured by means of cranks 27 28, mounted, respectively, on the shaft 16 and one of the trunnions 22 and a connecting-rod 29, which connects said cranks, so that they are caused to rock in unison. The crank 27 is connected with the shaft 16, so that the swinging of said crank effects the rocking of said shaft, as will be hereinafter described, and consequently carries the ladle either into the bowl 12 or into its discharge position. (Shown in Fig. 6.) The cranks 27 28 are adjusted so that when the casting-box is in its horizontal position the ladle 13 is in the bowl 12, taking up another charge, and when the casting-box is in its upright position the ladle is carried into position to discharge. In order to facilitate the turning of the casting-box to its upright position, a counterbalance 30 is provided connected by a flexible connection 31 to the casting-box 24, which passes over a pulley 32, supported by the furnace 11, as shown in Fig. 3. The counterbalance 30 not only assists in raising the casting-box, but also, through the connection of said casting-box with the shaft 16, assists in raising the ladle with its charge into discharging position.

33 indicates a stop which intercepts the lower end of the casting-box 24, as shown in Fig. 6, and prevents it from moving beyond the proper point when turned to its upright position.

Obviously it is important that the ladle should not discharge its contents into the spout 18 until the casting-box is in position to receive its charge, and to insure such operation provision is made by which the final tipping up of the ladle, by which the molten type-metal is discharged from it, is effected suddenly after the spout 18 has already assumed an inclined position and is ready to direct the type-metal to the casting-box. This is accomplished in the following manner: The crank 27, on which the shaft 16 is rocked, is mounted loosely upon said shaft and is connected therewith through a collar 34, which is keyed upon said shaft or secured thereto by a set-screw 35, as shown in Fig. 10. The collar 34 is provided with a recess 36, adapted to receive a lug 37, projecting laterally from the hub 38 of the crank 27, as shown in Fig. 10. The recess 36 is considerably wider than the lug 37, so that the crank 27 may swing through an arc of preferably fifteen or twenty degrees independently of the shaft 16, the object being to permit the shaft 16 to rotate to that extent after the crank 27 reaches its lowermost position. One of the lugs 19, by which the spout 18 is pivoted upon the shaft 16, is connected by a sleeve 39 with the hub 38 of the crank 27, as best shown in Fig. 10, and the other lug 19 of said spout is loosely mounted on the shaft 16, as best shown in Fig. 10. By this construction the spout 18 is rigidly connected with the crank 27 and moves therewith. The lugs 17, by which the ladle 13 is connected with the shaft 16, are keyed to said shaft, preferably by set-screws 40, so that the ladle 13 rocks with said shaft and has no movement independently thereof. 41 indicates a lever by which the shaft 16 is rocked to a limited extent independently of the crank 27. Said lever 41 has a hub or boss 42, by which it is connected to the shaft 16, a set-screw 43 or other equivalent device serving to secure said boss to the shaft. By the construction described when the casting-box is lifted from the position shown in Fig. 3 the crank 28, acting through connecting-rod 29, draws down crank 27, thereby rocking spout 18 down to meet the casting-box. At first the shaft 16 is not rotated; but as soon as the lug 37 reaches the upper end of the recess 36 and engages the collar 34 the shaft 16 begins to rock, carrying with it the ladle 13, which is carried up out of the bowl 12, swinging about the shaft 16 as a pivot. When the casting-box reaches its upright position, (shown in Fig. 6,) the spout 18 will have reached the position shown in the same figure, but the ladle 13 will not as yet have been tilted sufficiently to discharge its contents into said spout. At this time the lug 37 will still be in the upper end of the recess 36, being held in such position by the weight of the ladle. The operator then presses down on the lever 41, thereby rocking shaft 16 independently of the crank 27 and of the spout 18 to tilt the ladle sufficiently to discharge its contents into the upper end of said spout. When the cast has been made, the turning down of the casting-box to its horizontal position returns the ladle and spout to the positions shown in Fig. 3, this being accomplished automatically by the action of the cranks 27 28 and connecting-rod 29.

I wish it to be understood that while I have described my improvements in detail, as illustrated in the accompanying drawings, my invention is not restricted to the specific details of the construction described, but includes as well the invention generically set forth in the broader claims. Moreover, my improvements are not restricted in their application to apparatus for casting stereotype-plates.

The term "tubular" as applied to the stem of the ladle is used in a generic sense to indicate the fact that said stem is designed to serve as a conduit to conduct molten metal from the bowl of the ladle, and the claims are to be interpreted accordingly.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a casting apparatus, the combination

of a pivotally-mounted casting-box, means for maintaining a supply of molten metal, a pivoted ladling apparatus for transferring molten metal from said source of supply to the casting-box, and means operatively connecting said casting-box and ladling apparatus so that when said casting-box is raised into position to receive a charge said ladling apparatus is actuated to take up a supply of molten metal, substantially as described.

2. In a casting apparatus, the combination of a casting-box movable into and out of position to receive a charge, means for maintaining a supply of molten metal, and means operated by the movement of the casting-box into position to receive a charge, for elevating molten metal into position to be supplied thereto, substantially as described.

3. In a casting apparatus, the combination of a casting-box movable into and out of position to receive a charge, means for maintaining a supply of molten metal, and ladling mechanism operated by the movement of the casting-box into position to receive a charge, for elevating molten metal into position to be supplied thereto, and means for simultaneously actuating said ladling apparatus and casting-box to deliver molten metal to said casting-box substantially as described.

4. In a casting apparatus, the combination of a pivotally-mounted casting-box, means for maintaining a supply of molten metal, and means operated by the movement of the casting-box into position to receive a charge, for elevating molten metal into position to be supplied thereto, substantially as described.

5. In a casting apparatus, the combination of a casting-box, a swinging ladle, and separate means intermediately disposed between the casting-box and the ladle for conducting molten metal from said ladle to the casting-box, substantially as described.

6. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a pivotally-mounted ladle, and separate means between the casting-box and the ladle for conducting molten metal from said ladle to the casting-box, substantially as described.

7. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem, means for tilting said ladle to discharge the contents thereof through said stem, and separate means between the casting-box and the ladle for conducting the molten metal from said ladle to the casting-box, substantially as described.

8. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem, means for tilting said ladle to discharge the contents thereof through said stem, and a separate pivotally-mounted spout for conducting the molten metal from said ladle to the casting-box, substantially as described.

9. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem, and means operated by the movement of the casting-box into position to receive a charge, for tilting said ladle, substantially as described.

10. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem, means operated by the movement of the casting-box into position to receive a charge, for tilting said ladle, and means for conducting the molten metal from said ladle to the casting-box, substantially as described.

11. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem pivotally mounted adjacent to the source of supply of molten metal, and a spout adapted to receive molten metal from the stem of said ladle and discharge it into the casting-box, said spout and ladle being angularly adjustable, substantially as described.

12. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle having a tubular stem pivotally mounted adjacent to the source of supply of molten metal, a spout adapted to receive molten metal from the stem of said ladle and discharge it into the casting-box, said spout and ladle being angularly adjustable, means for moving said spout into operative position, and means for tilting said ladle after said spout is in its operative position, substantially as described.

13. In a casting apparatus, the combination of a casting-box, a metal-holding receptacle, a pivoted ladle having a tubular stem, a separate spout adapted to conduct molten metal from said stem to the casting-box, and means for moving said ladle and spout into and out of operative position, substantially as described.

14. In a casting apparatus, the combination of a casting-box, a metal-holding receptacle, a pivoted ladle, a spout adapted to conduct molten metal from said ladle to the casting-box, means for moving said ladle and spout into and out of operative position, and means for tilting said ladle to discharge its contents into said spout, substantially as described.

15. In a casting apparatus, the combination of a casting-box, a receptacle for molten metal, a shaft, a crank for rocking said shaft, said crank being adapted to rock slightly independently of said shaft, means operated by the movement of the casting-box into position to receive a charge, for operating said crank to rock said shaft, a spout loosely

mounted on said shaft and rigidly connected with said crank, a ladle mounted on and keyed to said shaft, said ladle being adapted to discharge into said spout, and means independent of said crank for rocking said shaft, substantially as described.

16. In a casting apparatus, the combination of a pivoted casting-box, a crank connected therewith, a receptacle for molten metal, a shaft arranged adjacent thereto, a crank loosely mounted on said shaft, a collar fixedly secured on said shaft, said collar having a recess, a lug carried by the latter crank and projecting into said recess, a spout loosely mounted on said shaft and rigidly connected with the latter crank, a ladle mounted on and keyed to said shaft and adapted to dip into said molten-metal receptacle, said ladle being adapted to discharge into said spout, a lever for rocking said shaft, and a connecting-rod connecting said cranks, substantially as described.

17. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle, and means, operated by the movement of the casting-box into position to receive a charge, for tilting said ladle, substantially as described.

18. In a casting apparatus, the combination of a casting-box, means for maintaining a supply of molten metal, a ladle, means, operated by the movement of the casting-box into position to receive a charge, for tilting said ladle, and means for conducting the molten metal from said ladle to the casting-box, substantially as described.

SAMUEL G. GOSS.

Witnesses:
HELEN M. COLLIN,
JOHN L. JACKSON.