A. J. JOHNSON.

BURNER.

APPLICATION FILED NOV. 25, 1918.

1,360,753.

Patented Nov. 30, 1920.

2 SHEETS—SHEET 1.

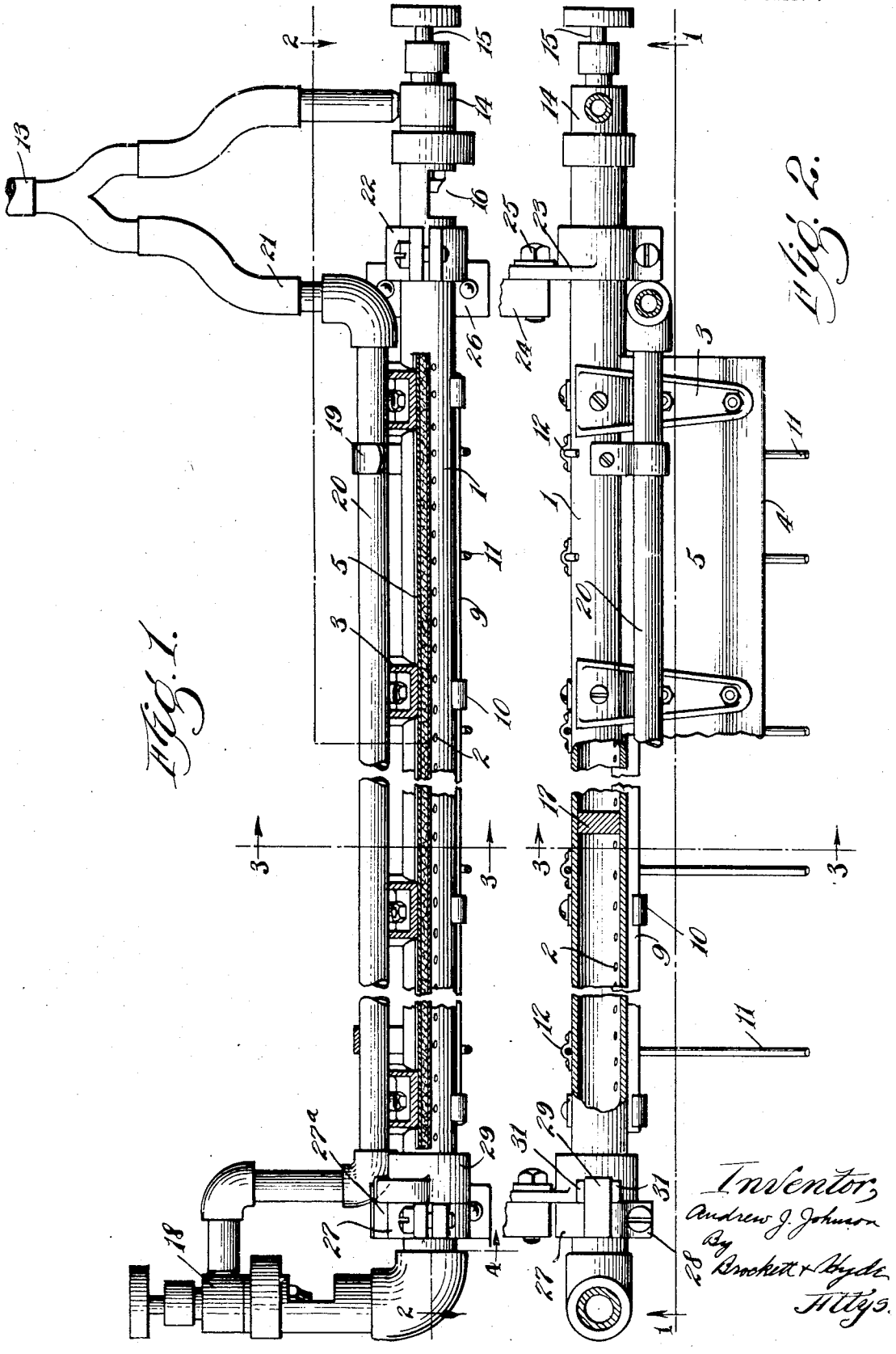


Fig. 1.

Fig. 2.

Inventor;
Andrew J. Johnson
By Brockett & Hyde
Attys.

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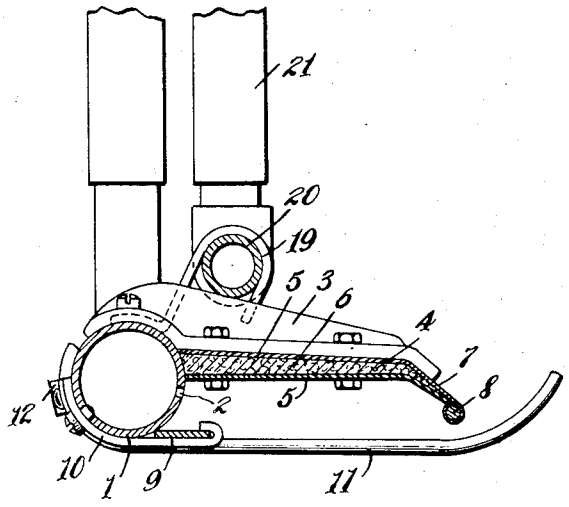


Fig. 3.

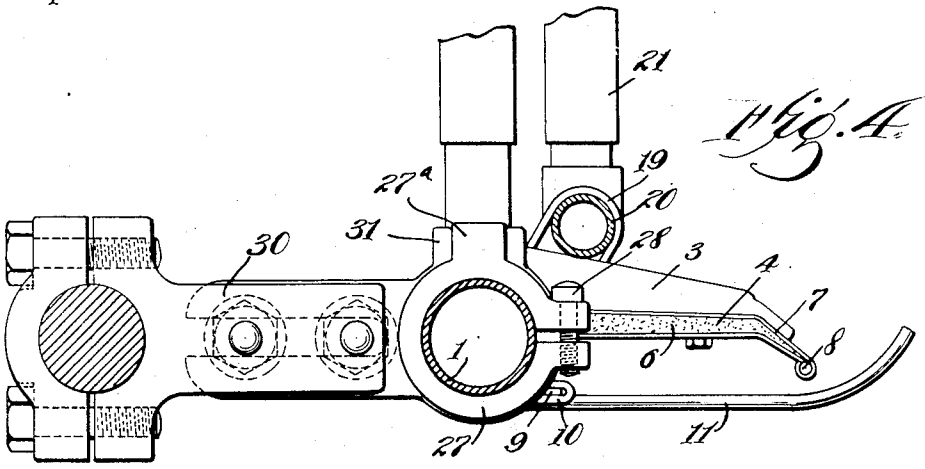


Fig. 4.

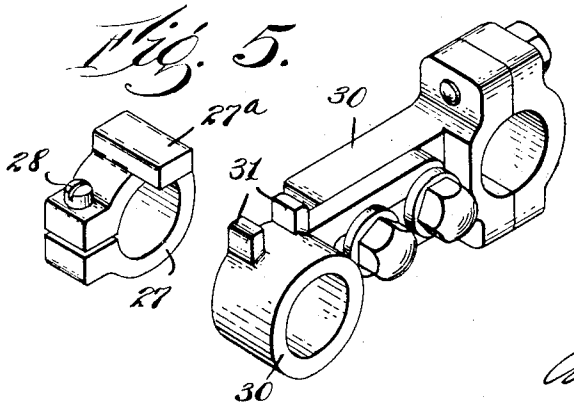


Fig. 5.

Inventor,

Andrew J. Johnson

By Brickett and Hyde

Attys.

UNITED STATES PATENT OFFICE.

ANDREW J. JOHNSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE JOHNSON PERFECTION BURNER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

BURNER.

1,360,753. Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed November 25, 1918. Serial No. 264,039.

To all whom it may concern:

Be it known that I, ANDREW J. JOHNSON, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Burners, of which the following is a specification.

This invention relates to gas burners for use on printing presses to heat the paper for the purpose of eliminating electrostatic effects and for drying the ink, thereby to do away with slip sheets and increase the speed of the press. The object of the invention is to provide an improved burner of this kind which throws the heat downwardly upon the upper surface of the paper, thereby applying it, where desired, directly to the printed surface, and also enabling the burner to be used when printing on heavy paper or cardboard. Another object of the invention is to provide a burner of simple compact form which can be applied to presses where the available space is limited and which is so arranged that only a portion of the burner need be used when desired, say when printing narrow sheets, and which burner is inexpensive both in first cost and in gas consumption.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

The invention comprises the burner hereinafter described and claimed.

In the drawings, which represent one suitable embodiment of the invention, Figure 1 is a sectional elevation on the line 1—1, Fig. 2; Fig. 2 is a sectional plan view on the line 2—2, Fig. 1; Fig. 3 is a cross section on a larger scale on the line 3—3, Fig. 1; Fig. 4 is a similar cross section on the line 4—4, Fig. 1, and Fig. 5 is a detail perspective view of a supporting arm.

The burner shown in the drawings comprises a main burner tube 1 of any desired length according to the width of the press, and which is suitably supported and is pierced along one side to form a row or series of closely spaced small jet openings 2 in longitudinal alinement with each other. Said tube has attached thereto at intervals along its upper surface a series of brackets 3, which extend horizontally outwardly from the jet side of the tube. To the under surfaces of said brackets is secured the deflecting plate 4 which may be heat insulated in any suitable manner. As shown said plate comprises two parallel thin metal sheets 5 between which is a layer 6 of asbestos or other heat insulating material. Plate 4 fits closely at its inner edge against the tube 1 and its outer portion is bent downwardly, as at 7, where the edge of one of its metal sheets is rolled around a stiff wire or reinforcing rod 8. The downwardly inclined outer tip of the plate serves as a guard to confine the flame and prevent it from passing around and beyond the deflecting plate.

Just below the jet openings 2 the tube 1 carries a jet guard 9 which is shown as a long narrow metal strip held by a series of clips 10 secured to the tube. This guard at its inner edge fits closely against the tube. It extends outwardly horizontally, as shown in Fig. 3, beyond the jet openings and therefore shields them from direct flow of the outer air from beneath. At the same time a very material area of the deflector plate 4 is exposed beyond the guard strip to reflect the heat downwardly upon the paper passing beneath the burner.

At intervals along its length the burner may also be provided with guard fingers or paper deflectors in the form of rods 11 secured by clips 12 to the tube 1. These fingers extend outwardly below the guard strip and preferably also beyond the deflector plate 4 and at their outer ends are bent upwardly beyond the edge of said deflector plate. Fingers 11 serve to guard the paper against direct contact with the flame as they guide the sheet or web beneath the burner and prevent it from entering the combustion chamber or space in front of the jet openings.

Gas may be supplied to the burner in any desired manner. The drawings show for this purpose a gas supply tube 13 communicating with a suitable regulating valve member 14, having the usual rotatably adjustable needle valve spindle 15 and beyond which is the air inlet opening 16 into one side of the burner tube 1. The opposite end of said tube may be closed by a plug or otherwise with the gas supply entering only at the one end, but the drawings show said tube provided midway between its ends with a bridge wall or center plug 17 while the opposite end of said tube may be provided with a regulating valve device 18 similar in all respects to the one just described. The burner tube also is provided with a series of clips

19 supporting a supplemental gas pipe 20 communicating by a branch 21 with the main gas supply pipe 13, said pipe 20 delivering gas to the valve device 18. The plug 17 stops the flow of gas beyond the middle of the burner tube so that each half of said tube is supplied independently of the other half. Either half of the burner may, therefore, be used independently of the other when printing narrow sheets or cards, or both halves may be used together if desired.

The supports for the burner may be of any suitable form and preferably comprise brackets or arms connected to some part of the burner and arranged for attachment to the frame of the press to support the burner in the proper position. As illustrated, one end portion of the burner tube is held firmly in a split clamp 22 on an arm comprising two members 23, 24, one of which is slotted longitudinally, said members being secured together by the bolts 25 and the second member 24 being provided with a suitable clamp 26 adapted to be clamped to a part of the press frame.

The other end of the burner tube carries a split collar 27 rigidly secured thereto by a screw 28 and provided with a laterally projecting ear 27a. This collar is adjustable circumferentially and longitudinally of the tube to any desired position. Next to the collar 27 is an annular collar 29 on a two part arm 30 formed similarly to the arm at the other end of the burner tube. Collar 29 is provided with two spaced lugs 31 between which lies the ear 29. Collar 29 is a loose fit on the tube. This arrangement supports the burner on the press frame in proper position but the burner is held rigidly at only one end and is capable of longitudinal movement at its other end. Consequently, it can come and go with expansion and contraction due to changes in temperature.

The burner described is very efficient. The flames produced at the jet openings are projected out beneath the deflector plate and the heat therefrom is deflected downwardly directly on the inked surface. The ink is therefore, dried quickly at least to the extent of forming a tough skin thereon. Therefore, the use of slip sheets is unnecesary and multicolored printing processes or other processes involving repeated printing on the same surface may be carried out with the several applications to the sheet while traveling through a single press. Heating the paper also eliminates static electrical effects.

What I claim is:

1. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a deflector member carried by said tube above said openings and extending horizontally outwardly therefrom, and a series of paper guard fingers extending outwardly from said tube below said openings.

2. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a deflector member carried by said tube above said openings and extending horizontally outwardly therefrom, a guard plate extending outwardly from said tube below said openings, and a series of paper guard fingers extending outwardly from said tube below said openings.

3. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a deflector member carried by said tube above said openings and extending horizontally outwardly therefrom, a series of paper guard fingers extending outwardly from said tube below said openings and at their outer ends bent upwardly beyond the edge of said deflector plate.

4. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a deflector member carried by said tube above said openings and extending horizontally outwardly therefrom, a guard plate extending outwardly from said tube below said openings, and a series of paper guard fingers extending outwardly from said tube below said openings and at their outer ends bent upwardly beyond the edge of said deflector plate.

5. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a guard plate extending outwardly from said tube below said openings, and a series of paper guard fingers extending outwardly from said tube below said openings.

6. A burner for use on printing presses, comprising a burner tube having a series of jet openings along one side, a guard plate extending outwardly therefrom, a guard plate extending outwardly from said tube below said openings, and a series of paper guard fingers extending outwardly from said tube below said openings and at their outer ends bent upwardly beyond the edge of said deflector plate.

In testimony whereof I affix my signature.

ANDREW J. JOHNSON.