Aug. 23, 1938. H. B. ALLEN 2,128,200

METAL SUCTION TIP

Filed Sept. 30, 1936

Fig. 1.

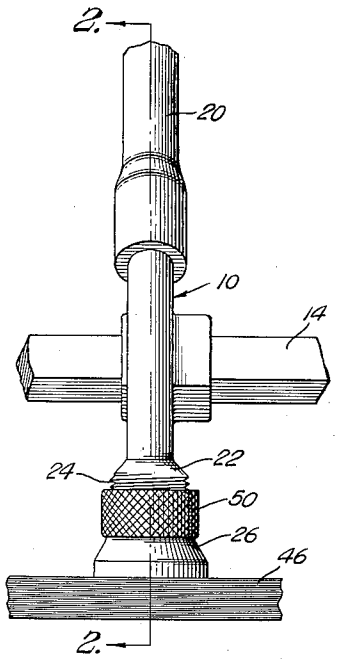


Fig. 2.

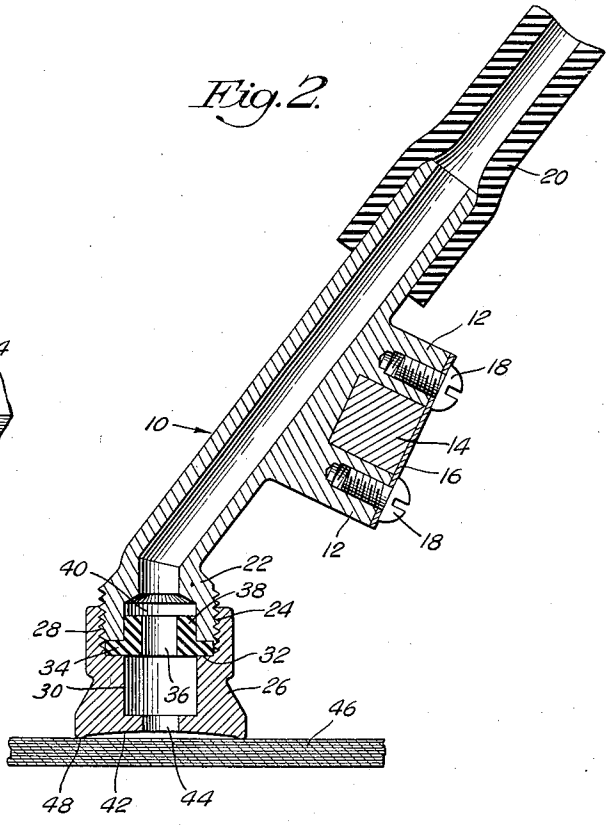


Fig. 3.

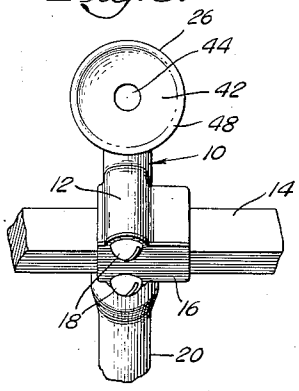
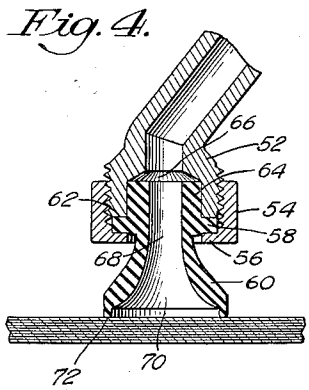


Fig. 4.



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2,128,200

METAL SUCTION TIP

Harry Bedford Allen, Highland Park, Mich.

Application September 30, 1936, Serial No. 103,441

3 Claims. (Cl. 294—64)

My invention relates to printing presses, and includes among its objects and advantages the provision of an improved metal suction tip.

The conventional suction tip is of a flexible nature, usually rubber and generally bell shaped in configuration. These tips when new feed sheets of paper into printing presses in an efficient manner but lose their efficiency within a short time because of wear and deterioration of the material. Slight imperfections in the rim of the tip because of wear or other damage results in an air bleed to the degree that perfect suction cannot be maintained. Then, too, the tips are not always limited to an action perpendicular to the sheet acted upon but are frequently of a lateral nature. Lateral forces tend to collapse the tips and operate to shorten the life thereof. Because of the short life of conventional tips, considerable time is lost in substituting new parts. Additional time is also lost in substituting suction tips of different capacity depending upon the nature of the sheets of paper to be fed into the printing press.

So far as I am aware no suitable metallic suction tip has been invented. An object of my invention is to provide a metallic suction tip capable of long wear and one in which paper of different grades, as well as cardboard, may be handled in an efficient manner.

A further object is to provide a metallic suction tip so constructed as to embody an effective holding action on the sheet material and in which the tip is so designed as to afford protection for relatively thin and delicate paper without rupturing the same.

A further object is to provide a suction tip which is so designed as to embody a relatively large suction area effective on the paper for holding purposes.

Another object is to provide a metallic suction tip which may be associated with conventional printing press machinery without necessitating structural changes therein for accommodating the tips.

In the accompanying drawing:

Fig. 1 is an elevational view of a conventional tip supporting body illustrating my invention applied thereto;

Fig. 2 is a sectional view along the line 2—2 of Fig. 1;

Fig. 3 is a bottom plan view of the structure illustrated in Fig. 1; and

Fig. 4 is a sectional view of a resilient tip which may be employed for feeding relatively heavy paper.

In the embodiment selected to illustrate my invention, I make use of a conventional tip body 10 such as is employed on Kluge feeders and Kluge automatic platen printing presses. This body is in the nature of a tube having lateral extensions 12 between which the actuating bar 14 is positioned and retained therein by a spring pressure plate 16 mounted to the extensions by screws 18.

One end of the body 10 is detachably connected with a suction hose 20 which may be connected with a vacuum pump or equivalent device. The opposite end of the body 10 terminates in a hollow head 22 having a threaded exterior 24 on which the tip is mounted. The construction so far described is old and well known in the art.

My invention resides in the metallic tip 26 which includes a threaded bore 28 having threaded relation with the head 24. I provide the tip 26 with a smaller bore 30 which leads a shoulder 32 on which a resilient gasket 34 is positioned. This gasket includes an opening 36 and a tubular extension 38 which extends into the bore 40 in the head 22.

The lower end of the tip 26 is slightly concave at 42 and is provided with an opening 44 which establishes communication with the suction tube 20 so that the suction may be effective for lifting one sheet at a time off the supply 46 when the tip is brought into operating proximity with the upper sheet. The concavity 42 terminates slightly short of the outer diameter of the tip 26 so as to provide a slight flange 48. I have attained good results with a metallic tip of seven-eighths inch in outside diameter. Fig. 2 illustrates the tip slightly enlarged for the sake of clearness.

In operation, the metallic tip is capable of handling all types of papers up to four ply grade. The tip is capable of resisting wear indefinitely and eliminates the necessity of frequent substitutions of new tips. Because of the concavity 42, an effective suction action is attained on the paper. I have found that the suction area is substantially coextensive with the area of the concavity, while the slight degree of concavity provides a backing for thin paper which prevents such paper from being sucked into the tip, distorted, or otherwise damaged. In feeding relatively thin paper, the area of the opening 44 is sufficient for holding purposes, but in feeding stiffer paper, the suction area is effective throughout the area of the concavity 42.

I knurl the tip 26 at 50 for gripping purposes. The bore 30 serves no function other than weight reduction. In handling relatively heavy paper,

a flexible tip may be necessary, in which event I provide the head **52** of Fig. 4 with a collar **54** having threaded relation with the head, which head corresponds to the head **22** of Fig. 2. The collar **54** includes a flange **56** which is arranged to press the flange **58** of the flexible tip **60** against the end **62** of the head **52**. The tip **60** includes a tubular extension **64** extending into the bore **66** of the head **52**. The central opening **68** in the tip **60** is flared at **70**, while the operating end of the tip terminates in a flange **72**. I have found that the metallic tip illustrated in Fig. 4 is capable of handling more than 95% of the paper passing through the printing press. In the few cases requiring a flexible tip, a construction such as that illustrated in Fig. 4 may be easily and quickly connected with the head **52**.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A suction tip comprising a rigid body having a sheet engaging face of concave configuration, said body being provided with a suction opening communicating with said concavity, said concavity being of a larger area than the cross sectional area of said opening and constituting a backing for relatively thin sheet material.

2. A suction tip comprising a metallic body having a sheet engaging face of concave configuration, said body being provided with an opening communicating with said concavity, and a rigid flange carried by the sheet engaging face and defining the perimeter of the concavity, the concavity of the sheet engaging face being shallow, to constitute backing for relatively thin and flexible sheets.

3. A suction tip comprising a rigid body having a recessed sheet engaging face, the perimeter of the recessed sheet engaging face lying in a plane, said body being provided with a suction opening communicating with the recessed sheet engaging face, said recessed sheet engaging face being of larger area than the cross sectional area of said opening and constituting a backing for relatively thin sheet material.

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