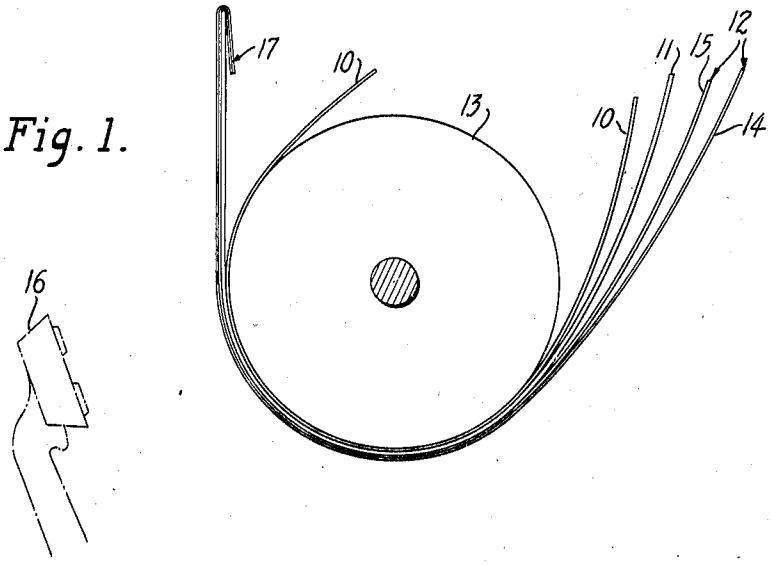
June 27, 1939. S. A. NEIDICH 2,163,958

REDUPLICATIVE SHEET

Filed Feb. 3, 1937

Fig. 1.



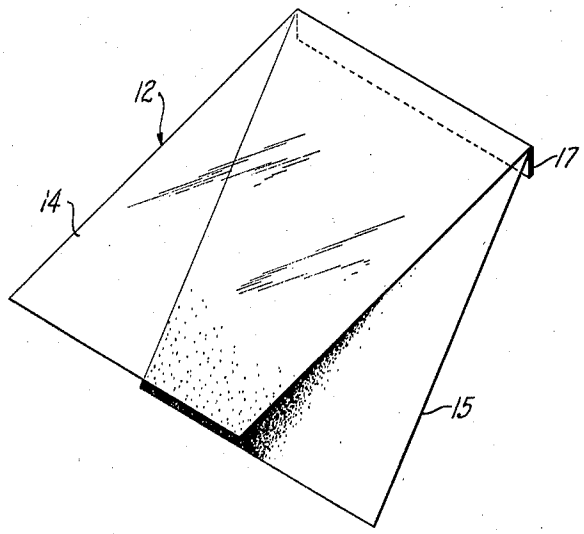


Fig. 2.

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Fig. 3.

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Fig. 4.

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REDUPLICATIVE SHEET

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Application February 3, 1937, Serial No. 123,792

5 Claims. (Cl. 41—31.6)

This invention relates to the preparation of reduplicative sheets of the sort used as master sheets in direct duplicating work. By the aid of such master sheets, quantities of copies may be produced in a spirit copier, or other machine of the hectograph class.

In preparing a reduplicative sheet of this kind in a typewriting machine, it has been customary to use a plain paper sheet to serve for the master sheet. This was inserted in the typewriter, together with a carbon or transfer sheet coated with hectograph transfer material, such as was commonly used in spirit copiers.

The hectograph inked face of the transfer sheet was placed against the back of the master sheet and this assemblage was inserted in the typewriter with the transfer sheet next to the platen. Hence, when the keys were operated, the types printed through the usual ribbon upon the outer face of the master sheet. Simultaneously, hectograph inked type impressions were made upon the back of the same sheet, and these impressions were in reverse.

Upon removal from the typewriter, the master and transfer sheets were separated, and the master sheet was placed in a spirit copier or other duplicating machine, with the hectograph inked reverse type impressions exposed, and a number of copies could be made therefrom in a known manner.

The usual typewriting ribbon, however, has a woven fabric body, whose thickness tends to dull the type impressions. The ribbon, being woven, also tends to produce discontinuous lines. Under magnification, a character is sometimes seen to be merely a rough series of dots, where a succession of cross threads have been impressed upon the paper by the type. The said impressions moreover are somewhat spoiled by the ink in the ribbon itself, which tends further to reduce the sharpness of the characters on the back of the master sheet. The ribbon has the advantage, however, in that it prints upon the front of the reduplicative sheet words that are typed in reverse upon the back of the same sheet. This ribbon print therefore enables the operator to read the work as the typing progresses, and is regarded as a necessity, since without the aid of the ribbon, the operator would not know what was being typed upon the back of the master sheet.

It is an object of this invention to sharpen and improve the characters that are printed in reverse on the back of the reduplicative or master sheet, while keeping the operator fully apprised of the typing without incurring the above noted objections that pertain to the use of the typewriter inking ribbon.

In order to gain these advantages, the usual inking ribbon may be removed from the typewriting machine, or the ribbon-vibrating mechanism may be silenced. In place of the ribbon, there may be inserted in the typewriting machine a combined reading sheet and soft carbon sheet. The reading sheet is of transpicuous tissue paper, and the carbon side of the soft carbon sheet is placed against the back of said reading sheet. No impression is made upon the front of the reduplicative sheet, but the typed matter is produced in reverse upon the back of the reading sheet. Hence it can be read through the transpicuous sheet as the typing progresses, and by means of this tell-tale arrangement, the operator is kept fully apprised of the typing that is being made in reverse upon the back of the reduplicative master sheet.

Hence, in the typing operation, the carbon sheet having hectograph transfer material thereon is placed next to the platen with the inked side out. This hectograph-ink sheet is covered by the master sheet. The soft carbon sheet covers the master sheet; the carbon face being outward. The last mentioned or third sheet is covered by the tissue reading sheet.

Thus the master sheet may be very readily typed in reverse with hectograph ink, and all the characters made noticeably sharp and clear, without the necessity of depending upon a changeable typewriter ink ribbon, and yet with full ability given to the operator to read the work as it progresses.

Due to the light weight and softness of the tissue and carbon sheets, type impressions are transmitted through them to the reduplicative sheet with improved clarity and definition. This is of major importance in direct reduplication work, where the inked impression on the master sheet is transferred directly to a number of copies.

A feature of my invention is to provide a work-sheet comprising a thin transparent tissue and a soft carbon sheet that may be easily and readily inserted as a unit into a typewriter with the reduplicative sheet and its transfer medium, for the purpose of providing a readable copy of the typewritten matter.

Another feature resides in the novel method of aligning the work-sheet with the reduplicative sheet, as will be hereinafter described.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is a diagrammatic view showing the method of producing reverse impression reduplicative sheets.

Figure 2 is a perspective view of the work-sheet of my invention.

Figure 3 is an enlarged view of the type impression produced using the work-sheet of the invention.

Figure 4 is an enlarged view of the type impression produced using a typewriting ribbon.

In Figure 1, a sheet of hectograph carbon **10** having a hard carbon surface is overlaid by a paper sheet **11** so that the hard carbon surface faces the back of the paper sheet. This in turn is overlaid with a work pack **12**, and the sheets **10**, **11**, and **12** are fed around the platen **13** of a typewriter with the work pack exposed. The work pack **12** is composed of an outer transparent tissue **14**, and a soft carbon sheet **15** having its coated surface facing the transparent tissue **14**.

In making a reduplicative sheet, when the type **16** strikes the transparent tissue **14**, the impact is transmitted through the work pack **12** and paper sheet **11**, and a reverse type impression is produced on the back side of the paper sheet **11**. Due to the softness and thinness of the sheets of the work pack **12** a clear-cut impression of good definition, as shown by Figure 3, is produced on the reduplicate sheet **11**. At the same time, a reverse impression similar to that delineated by Figure 3 is produced on the back of the transparent tissue **14** by means of the carbon sheet **15**, and is viewed by the operator as a normal type imprint.

Figure 4 illustrates an enlarged reverse type impression, as made by the usual typewriter ribbon, and shows the markings of the woven fabric of such a ribbon.

Figure 2 illustrates the work pack **12**, and indicates a method of fastening the tissue **14** and carbon sheet **15** together. It is proposed to cement together a narrow strip along the top edge of the tissue and the carbon sheet, and then fold the work-sheet rearward and downward to form a flap as shown at **17**. When inserting work in a typewriter the reduplicative sheet **11** is first inserted under the flap **17** which will then serve as a guide to position the work-sheet **12** with respect to the reduplicative sheet **11**. This is desirable in case of the need to make erasures, in case of additions to the typed matter, or in case the work is removed from the machine to insert a different colored hectograph carbon.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. Means for preparing a reduplicative sheet for direct reduplication, comprising the combination of a transfer medium and the said reduplicative sheet with a transparent tissue work-sheet overlying said sheet, and a coated carbon paper interleaved therewith; whereby impressions made on the tissue will cause carbon reverse prints to be formed on the back of the reduplicative sheet and on the back of the transparent tissue.

2. Means for preparing a typewritten reduplicative sheet for direct reduplication, comprising, in combination, a transfer medium, a reduplicative sheet, a transparent tissue and a carbon sheet interposed between said reduplicative sheet and said transparent tissue, the types of the typewriter impinging directly on the transparent tissue and causing carbon impressions to be made on the backs of said transparent tissue and said reduplicative sheet.

3. A sheet assemblage for use in producing a hectographic master sheet in a typewriting machine, said assemblage including a transfer sheet coated on one side with hectographic ink or material, and placed next to the typewriter platen with the inked side of the sheet facing the master sheet, said coated sheet being overlaid by said master sheet, a transpicuous tissue reading sheet overlying said master sheet, and a carbon sheet interleaved between the reading sheet and the master sheet, and having a soft carbon coating upon its outer side, whereby no type impressions are made upon the front of the master sheet, but the matter is typed in reverse upon the back of the reading sheet, so that it can be read through the transpicuous sheet as the typing progresses, and keep the operator apprised of the typing, the master sheet being typed in reverse upon its inner face by means of the hectograph-coated transfer sheet; the reversely typed master sheet being adapted for direct printing of normal reading copies in a copying machine.

4. A sheet assemblage for use in the preparation of a reduplicative sheet, comprising a one-face-carboned sheet, a transpicuous sheet matching the carboned face of the first said sheet and secured thereto at one margin, and a flap at said margin for the insertion of the reduplicative sheet in back of the uncarboned side of the first said sheet.

5. The method of preparing a reduplicative sheet for multiple copying, which consists in arranging a transparent sheet over a second sheet having a transfer medium contacting the transparent sheet, arranging a reduplicative sheet next to the second sheet and arranging next to the reduplicative sheet a transfer sheet having a transfer medium contacting the reduplicative sheet, arranging the assembled sheets between positive impression devices and a platen with the transparent sheet in position to be struck by the impression devices, and operating the impression devices toward the platen to produce from the transfer mediums negative impressions on both the transparent sheet and the reduplicative sheet.

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