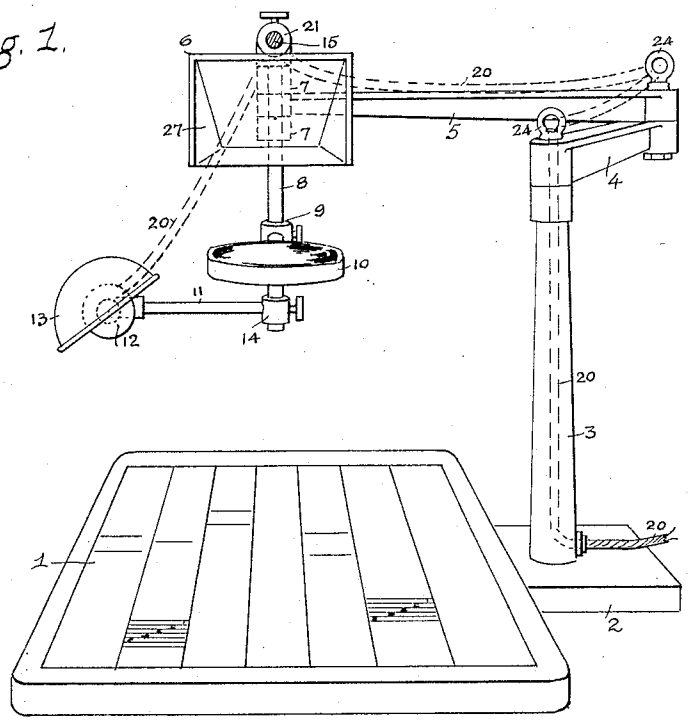
May 26, 1931. E. J. FREUND 1,806,896

TYPE FORM PROJECTOR

Filed Aug. 20, 1928 2 Sheets-Sheet 1

Fig. 1.



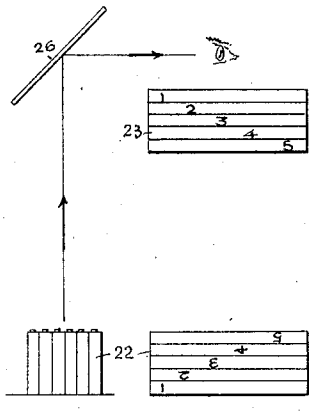


Fig. 2.

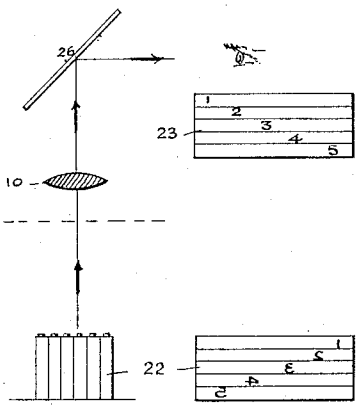


Fig. 3.

Edmund J. Freund *Inventor*

By W. E. Armstrong

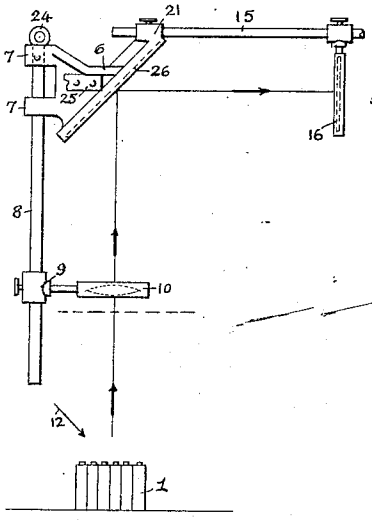
Attorney

May 26, 1931. E. J. FREUND 1,806,896

TYPE FORM PROJECTOR

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Fig. 4.



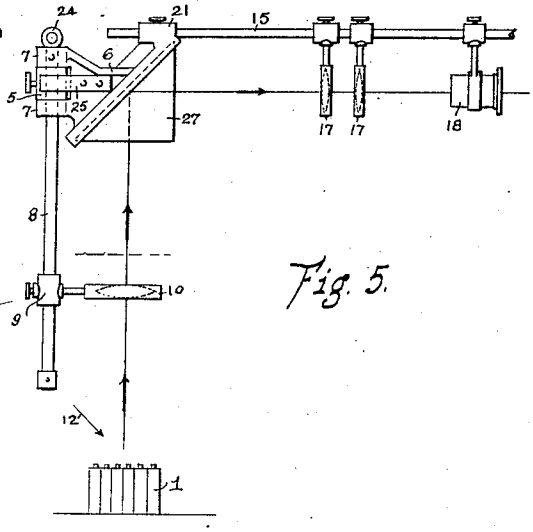


Fig. 5.

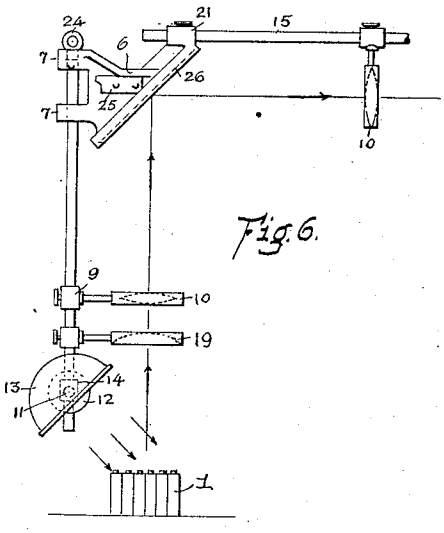


Fig. 6.

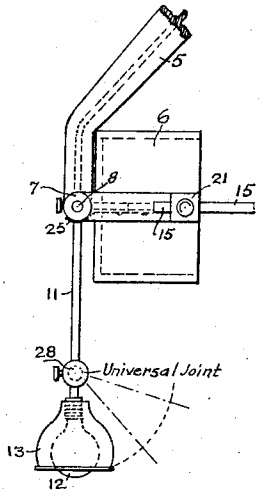


Fig. 7.

Edmund J. Freund Inventor

By H. J. Austutz

Attorney

Patented May 26, 1931 1,806,896

UNITED STATES PATENT OFFICE

EDMUND J. FREUND, OF VALPARAISO, INDIANA

TYPE FORM PROJECTOR

Application filed August 20, 1928. Serial No. 300,697.

My invention relates to improvements in type form projector and it more especially consists of the features pointed out in the annexed claim.

The purpose of my invention is to provide optical means that will enable the persons who make up printing forms consisting in the main of linotype slugs, monotype composition or individual type matter to read the same in normal relation, left to right while the "type" is in galley shape or in the chases; that by reason of the normal visualization the correcting of proofs will be facilitated, repetitive errors avoided and the general efficiency of type composition improved; that may utilize any desired combinations of mirrors, prisms, lenses and illumination which will project the type matter into position directly in front of the printer, visible directly on the reflecting surface or on a translucent surface such as a ground glass etc.; and that provides a self-contained unitary structure which may be quite portable and adjustable to serve all the matter in a given form without recourse to separate and unrelated illumination.

With these and other ends in view I illustrate in the accompanying drawings such instances of adaptation as will disclose the broad features of my invention without limiting myself to the specific details shown thereon or described herein.

Figure 1 is a perspective view of one form of a projector.

Fig. 2 is a diagrammatic elevation showing an inverted galley projected normally.

Fig. 3 is a diagrammatic elevation similar to Fig. 1 showing a galley in normal position and a normal projection through optical reversing means.

Fig. 4 is a diagrammatic elevation of a modified projector having a ground glass.

Fig. 5 is also a diagrammatic elevation of a projector provided with an eye piece.

Fig. 6 is a diagrammatic side elevation of a lens and lamp supporting means.

Fig. 7 is a top plan view of Fig. 6.

In carrying my invention into practice I may use whatever expedients or alternatives or equivalents of construction that the variable conditions of actual use may require without departing from the broad spirit of my invention.

A type form 1 is shown in Fig. 1 but this may be a galley or only a portion of a form or more than a single form. The projector may have a weighted base 2 to which a hollow pedestal 3 is attached. At the upper end of the pedestal a swinging arm 4 is placed. The outer end of the arm 4 supports a swinging arm 5. This latter arm serves to hold all the projector parts in operating relation under friction of spring 25.

The projector elements may be varied as desired. A reflector frame 6 may comprise an optically plane mirror 26, an ordinary reflecting prism 27 or a well known Porro erecting prism, not shown, and as required the cooperating accessories may be a single lens 10 placed above the reversing plane, between the type form 1 and the reflecting surface or a pair of reversing lenses 10, or a condensing lens 19, a pair of reversing lenses 17, a ground glass 16, an eye piece 18, and a lamp 12.

The reflecting means whether one form or another may have a suitable holding frame 6 which has projections 7, between which the outer end of the arm 5 is positioned. These projections have a depending stem 8 which forms a pivot for the arm 5. It also forms a support for the adjustable lens holders 9 and the lamp 12 and its shade 13 which are held by rod 11 on the stem 8 in an adjustable manner by means of the head 14 or a universal joint 28 on the rod 11.

The frame 6 for the reflector may have a boss 21 extending from its top in which the rod 15 is held adjustably. This rod may hold a ground glass 16, or an eyepiece 18 or the reversing lenses 17 as may be required. In Figure 2 the several lines of a galley 22 are shown in plan view alongside its elevation with the lines inverted. In the same figure the image of these lines is shown diagrammatically at 23 beneath the eye of an observer. In Fig. 3 the lines 22 are reversed but they read normally from the top downward and their image 23 is shown as in Fig. 2. Fig 5 shows a condensing lens 19 and a convex lens 10 between the type form 1 and the mir-

ror 26 and a ground glass 16 in front of 6, on which the image of the type may be projected when the type lines are illuminated by a source of light 12 or otherwise. Fig. 5 illustrates the use of an eye piece 18, reversing lenses 17 adjustably supported on the stem or rod 15 in front of a prism 26 in connection with a magnifying lens 10. The mirror 26 above a pair of reversing lenses 10 or a reversing lens 10 and condenser 19 and a magnifying lens in front of the mirror are shown in Fig. 6. The lamp 12 is supplied with current through a cord 20 which may be supported by eyes 24 placed above the upper projection 7, the pivot of the arms 4 and 5 and the top of the hollow pedestal 3, through which it may pass downward to a suitable attachable and detachable terminal.

The operation of my device is simplicity itself. A comparison of Figs. 2 and 3 shows that an ordinary reflector would compel the "make-up-man" to work with the form inverted. This would introduce more or less confusion. If the form, in the case of Fig. 2, should not be inverted the reversed characters of the type would appear in the image projected from the reflecting means, inverted and still reversed. The expedient instanced in Fig. 3 or any alternatives or substitutes thereof will present a normal form with its usual reversed characters, as an image reading normally from left to right and top to bottom.

My invention will eliminate the very frequent recurrence of errors in make-up through having to translate an erect and unreversed proof into an erect and reversed group of letters, lines, etc. With my device it is just as easy for a mere novice to correctly read the composition of associated type matter as the most expert printer. It is a notable fact that in the hurry and bustle of getting out a daily or any other paper, the last corrections and changes result in transposed letters, shifted slugs, etc., etc., which, because of the abnormal image presented to the operator, he is unable to visualize things as they will appear on the finally printed page without doing mental acrobatics in reversing the type face outlines. By means of my invention the operator not alone sees the type matter normally—erect and not reversed—but at the same time sees his own fingers while the type is being manipulated. This procedure might be designated a normalizing projection of reversed type matter.

In ordinary practice it is found necessary to read proof from the galley, then make up the form for a full page, lock it in the chase, take a proof and then unlock the chase to make the required corrections, and finally again lock up the chase for direct printing or stereotyping etc. With my invention it is easy to normally read from the type material of the form without the necessity of taking a first proof. Galleys can be similarly proof read. Even if an ordinary proof is used, the corrections can be more easily made with my device because, as already stated, there is no necessity for mentally reversing the type matter, thus insuring greater speed and accuracy as well as shortening the time for getting type matter in shape for final printing.

Should it be found desirable for the operator to correct the form by looking down onto it this may be done simply by using an ordinary prism, like 27 with its long silvered surface positioned vertically and facing toward the left hand edge of the form and its two clear surfaces forming a 90 degree angle to each other standing so that these surfaces face toward the right hand edge of the form. In this event the holder for the prism would be modified so that the long or diagonal face shown in Fig. 5 would stand parallel to the stem 8, without the attachments 17 and 18 on the rod 15 being used.

What I claim is:

In a device of the character described an optical reverser adaptable for the direct reading from left to right of any portion of a form of type that presents its letters reversed from right to left, which device is always associated with a form of printer's type and it comprises a standard or support positioned adjacent the group of type, a swinging arm comprising a plurality of pivoted members the free end of one member being pivotally connected to the support and the free end of a pivotally connected member being instantly movable above every portion of the type form on a horizontal plane, the reverser supported at the free end of the latter member, and a source of illumination also supported by the free end of said member adapted to illuminate the type.

In testimony whereof I affix my signature.

EDMUND J. FREUND.